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# DIGITAL PERFORMER® 6 **P O W E R !**

The Comprehensive Guide



By Don Barrett

# Digital Performer<sup>TM</sup> 6 Power!: The Comprehensive Guide

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Don Barrett

**Course Technology PTR**

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*I would like to dedicate this book to every current and future user of Digital Performer; to my wonderful Nina (the brightest light of my life); to all my family and friends, whose unwavering support has helped me in countless ways; and to my Grandmother Frances (you are still with me every day).*



# Acknowledgments

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I initially thought that *Digital Performer 6 Power!* would be a breeze after working on *Digital Performer 5 Power!*. Let's just say that I was in for a monumental reality check. As before, it has been quite the educational and enlightening experience, to say the least. Incredibly, each day with DP brings many new (and fortuitous) revelations.

First, I would like to recognize fellow author Steve Thomas for his significant and substantial contribution. I would like to thank composer and friend Ron Jones, who originally guided me into the land of DP and whose relentless drive to be the master of his craft is the ultimate standard to which I will continue to strive.

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## About the Author

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**Don Barrett** has been a musician since the age of 10. Upon graduating from Purdue University, his training, performances, compositions, and recordings have included projects ranging from progressive rock (with veteran producers Mass Giorginni and Fergus Daly) to studying film scoring at UCLA under the instruction of acclaimed composers Robert Drasnin (*Mission Impossible*) and Lee Sanders (*The Amazing Race*). Don composed the original score for the popular series *Touched by an Angel* in its final season on CBS and is currently assisting Emmy-nominated and BMI award-winning composer Ron Jones (Fox's *Family Guy*), where he serves as orchestrator, composer assistant, and technical adviser. He recently completed original music for several short films, numerous Smart Post Sound projects, and the award-winning television pilot "The Real Life" by creator Krystal Jalene Thomas. Don has also composed nationally recognized concert works and continues to compose and arrange for competitive marching bands and concert percussion ensembles around the country.

Don resides in Los Angeles and continues to serve as a panelist at various technical seminars and provides guest lectures at the Art Institute of L.A. Currently, Don can be found hard at work in his private studio, promoting Don Barrett Music ([www.donbarrettmusic.com](http://www.donbarrettmusic.com)) and Patio 7 Productions ([www.patio7productions.com](http://www.patio7productions.com)).

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# Introduction

Mark of the Unicorn's Digital Performer began as a MIDI-only application (Performer) back in the mid-1980s. It was a great program that gave the Mac user an intuitive way to record, edit, and play back MIDI performances. During the mid-1990s, MOTU added digital audio capabilities to this already successful MIDI software application and took the music software industry by storm. Since then, DP has undergone incredible upgrades and enhancements, allowing the end user to manipulate MIDI and digital audio to a degree never before imagined.

This book offers a comprehensive overview of DP6's features, system setup, and configurations within the OS X environment, while also supplying useful engineering tips and shortcuts to help you get the most out of Digital Performer.

## How to Use This Book

In this book, I have tried to address the many different proficiency levels of the Digital Performer user; I've attempted to jumpstart the newbie, take the intermediate user to the next level, and show the power user an interesting trick or two.

I've organized the chapters and sections as they would appear within the context of the music production process. Reading straight through from start to finish will provide the user who is new to the program or unfamiliar with the audio production process with a solid grasp of how Digital Performer integrates within the studio environment. Users with an understanding of audio recording and mixing concepts may want to just skip to specific chapters.

For those who are already familiar with Digital Performer, Chapter 1 provides useful information on setting up and optimizing your Mac, while Chapter 2 walks you step by step through the DP6 setup and configuration process. If you're new to the world of digital audio and MIDI or multitrack recording in general, I suggest starting with Chapter 1.

## How This Book Is Organized

*Digital Performer 6 Power!* is divided into 15 chapters.

- Chapter 1, "About Digital Performer and Your Mac," provides an overview of the basic concepts of linear and nonlinear editing, digital audio workstations, hardware requirements and recommendations for Digital Performer, and Mac OS X configuration and optimization.

- Chapter 2, “Setting Up Digital Performer 6,” covers software installation, audio and MIDI configurations, and synchronization.
- Chapter 3, “Navigating Digital Performer 6,” covers Digital Performer’s main windows: the Consolidated Window, the Control Panel, the Tracks window, the Sequence Editor, the Mixing Board, and the Soundbites window.
- Chapter 4, “Setting Up a New Project,” provides a detailed step-by-step guide to creating and preparing a project for recording.
- Chapter 5, “Project Management: Part 1,” and Chapter 6, “Project Management: Part 2,” cover the management of your project and media assets in order to help you streamline your production workflow.
- Chapter 7, “Recording Audio,” focuses on getting the most out of your audio recordings, from proper gain staging and monitoring to working with alternate takes during the over-dubbing process.
- Chapter 8, “Recording MIDI,” focuses on the procedures involved with the recording and monitoring of your MIDI tracks.
- Chapter 9, “MIDI: The Region Menu, Plug-Ins, and Virtual Instruments,” provides an overview of the Region menu commands, MIDI plug-ins, and virtual instrument tracks.
- Chapter 10, “Editing,” provides an overview of the tools and procedures involved with editing digital audio, MIDI, and automation data within DP6.
- Chapter 11, “Arranging,” covers the use of Chunks and songs, as well as the detailed use of markers and clippings within the recording and mixing process.
- Chapter 12, “Mixing,” discusses the fundamentals of mixing within Digital Performer, from setting up inserts and sends to creating submixes and using mix automation.
- Chapter 13, “Processing and Mastering,” covers the use of audio effects processing, the concepts of file-based and real-time processing, destructive Waveform Editor processing, as well as the basics of the mastering process. Procedures for bouncing to disk and exporting your mixes are also explained.

This chapter also familiarizes you with the basic concepts and technical procedures involved with mastering music within the DP environment.

- Chapter 14, “Music Notation,” shows you how to convert MIDI notes into printable music, from individual parts to full-blown orchestral scores. You can take an existing MIDI track or use the QuickScribe tools to prepare and manipulate printable scores and parts. This chapter will take you through the process of transferring your music from computer screen to paper.
- Chapter 15, “Scoring to Picture.” Because of its flexible architecture, Digital Performer is also a popular scoring tool for many film composers and sound designers. This chapter takes you through the basic setup process for scoring to picture within DP.

## What's Not in This Book

This book covers a lot of ground, but it doesn't cover everything—I have assumed some basic knowledge on your part, and I have had to leave out certain topics due to space constraints.

- **Computer basics.** In this book, I assume that you already know how to get around on your Mac: how to make a new folder, empty the trash, install a program, or change the monitor resolution. If you're uncertain about some of these common procedures, seek out one of the numerous learning resources for the Mac, available in both print and online forms. Keep in mind that the Mac is the heart of your Digital Performer system, and being able to properly navigate and maintain it is essential to the health of your studio environment.
- **Older versions of DP.** It is assumed that most users have moved out of OS 9. However, many DP features have remained unchanged in the transition to OS X, so users of previous DP versions can still find *Digital Performer 6 Power!* a very useful resource.
- **Other programs.** If you're like me, you probably have a number of other software applications that you incorporate into the production process. There isn't enough space in this book to include detailed explanations of all these other programs, but I will discuss some key applications that I feel are important to the DP user, such as CD burning software and virtual instruments.

## Keeping It Current

The DAW-related software and hardware industry is in a constant state of change, ever evolving with the addition of faster computers, improved operating systems, and enhanced feature sets. Production cycles tend to run on a six-month schedule, so keeping the content of a book like this current is a challenge in itself. Everyone involved with the creation of *Digital Performer 6 Power!* has made a concerted effort to include the most up-to-date information concerning Digital Performer, OS X, and the other applications mentioned within this book.

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# 1

## About Digital Performer and Your Mac

**W**hat is Digital Performer? It is essentially a music studio in a box. Its comprehensive tools allow you to record, edit, mix, and master music. Of course, this is a simplification of a very deep program, but if you can keep yourself grounded in these basic processes, it will keep you from getting overwhelmed by DP's many complex feature sets.

This chapter will discuss:

- The basics of digital audio workstations
- The requirements for DP
- Suggestions for working with Mac OS X

### What Is a DAW?

In case you're wondering, DAW stands for *digital audio workstation*, which is usually made up of compositional and recording tools centered on a computer configured specifically for music production. The benefits of having all the necessary recording and mixing tools integrated in one place and right at your fingertips are great, but I would argue that the most incredible feature of any DAW—which many users often take for granted—is its nonlinearity.

Before the advent of programs such as MOTU's Digital Performer and Digidesign's Pro Tools, modern audio was recorded in a linear fashion directly to tape. I won't get into the age-old argument of digital versus analog here, but suffice it to say that tape has many disadvantages when it comes to the world of editing. With tape, audio (and video) is recorded in a linear fashion, meaning from start to finish. When tape travels across the head stack of a multitrack recorder, the audio is magnetically transferred in a continuous fashion until recording is stopped. If you want to fix a part within the recording, you have to physically rewind the tape machine and punch in, permanently erasing the previous material. If you blow the punch, or the musician's performance isn't ideal, there is no way to get back (or undo) the lost audio. Also, if you want to rearrange the order of the recorded material (maybe you need the chorus to happen two times instead of one, for example), you have to cut and splice the different sections together, which involves making two physical copies of the tape in real time (one for each chorus), then manually splicing it together with a razorblade!



## Nonlinear Editing

What NLEs (or *nonlinear editors*) offer is the ability to change the order of recorded data in a nondestructive way. The recorded audio is stored on the hard drive of the workstation's computer and can be instantaneously accessed (or read) from the hard drive in any specified order. It is a simple matter of building a playlist within the particular music program. Going back to my earlier example of creating two choruses for a song, if you're working in a nonlinear editor, such as Digital Performer, you can just tell it to play the chorus twice instead of once—it's as easy as that.

That sounds simple if you are thinking in terms of one audio file. However, multitrack sessions normally consist of many tracks with multiple audio files—sometimes as many as 100-plus tracks (a definite mixing challenge!). Audio recording and mixing can be a very taxing job for your Mac.

## Host- and Non-Host-Based Systems

Digital Performer is a *host-based* application, meaning that it relies on the CPU of the computer for all of its audio needs. On top of crunching all those numbers for DP, the CPU also has to run the Mac OS at the same time. This is why the quality and speed of your DAW components are so important. Faster hard drives, for example, can access audio faster, resulting in higher track counts and the ability to handle sessions that contain heavy edits. The amount of RAM available to Digital Performer impacts the number of tracks you can record and play back simultaneously. A high-performance video card will provide faster screen redraws, taking strain off the host processor. (It takes a lot of power to display all of those bouncing level meters and various windows in Digital Performer.) Audio cards with DSP (*digital signal processing*) can absorb many of the CPU stresses of recording audio. Finally, the processor speed and amount of RAM in your computer also directly impact the performance of virtual instruments and other processor-intensive tasks, such as real-time effects plug-ins. Although modern computers typically contain more than one processor (or processing “cores”) and are packed with plenty of power to handle the comprehensive duties of working with audio, it is always worth the time and effort to investigate your system to see what lies under the hood!

## Expansion Cards

In time, you may find that your audio production setup has evolved beyond your computer's “native” processing power. This can be a result of advanced processing plug-ins, extended virtual instrument libraries, or advanced monitoring needs (a combination of which can push even the latest Mac Pro's limits!). Hardware peripherals dedicated to running plug-ins or software-based synthesizers can also be integrated into a host-based system for additional horsepower, and some DAWs come preconfigured with these devices. Digidesign's top-of-the-line Pro Tools systems fall into the latter category. Instead of relying on the host processor to do all the work, PCI cards that contain dedicated processor chips are installed in your computer and supply the muscle for any audio processing. The computer's CPU only has to worry about running the program and the Mac OS—the dedicated PCI card handles all of the audio tasks.

Multiple cards can be used simultaneously, allowing you to create a very powerful and stable workstation. The drawback for many is the high cost and proprietary nature of Pro Tools and similar systems. Luckily, there are a few companies out there that offer expansion cards or units that work with host-based audio applications, such as Digital Performer. TC Electronic ([www.tcelectronic.com](http://www.tcelectronic.com)), Universal Audio ([www.uaudio.com](http://www.uaudio.com)), and Apogee Electronics ([www.apogeedigital.com](http://www.apogeedigital.com)) are three such companies. These expansion peripherals are fairly inexpensive when compared to other integrated workstations, which can run into the tens or hundreds of thousands of dollars.

## MIDI Interfaces

MIDI stands for *Musical Instrument Digital Interface*. MIDI is a language (or protocol) that allows electronic devices to communicate with each other. A means for MIDI communication is necessary to record MIDI data, whether it be an outboard unit (a MIDI interface) or a simple USB connection. The type of interface you choose usually depends on the number of external MIDI devices you need to control. The most basic setup will have a keyboard MIDI controller and a MIDI interface to get the data into your Mac. If you have just one MIDI keyboard, some models only require a USB connection. Otherwise, a 1×1 or 2×2 MIDI interface, such as MOTU's FastLane, would be appropriate. More elaborate setups requiring multiple MIDI I/O and sophisticated synchronization capabilities will benefit from MOTU's more advanced MIDI Timepiece AV.

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**MIDI without an Interface?** If you have multiple computers and work mainly with virtual instruments, the advent of MIDI Over LAN (*Local Area Network*), Network MIDI (available in later versions of the Mac OS), and MIDI Over IP (built into Apple's Leopard OS) allows you to use network connections to exchange MIDI data between your computers. This is a relatively simple process that requires no extra hardware, and better yet, does not limit you to a specific number of MIDI channels. For example, if you have two Macs, you could create a main Mac and slave Mac setup where the main Mac drives the slave Mac that serves as a virtual instrument host (much like a multi-timbral synth or hardware sampler).

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## Audio Interfaces

One of the most important aspects of a DAW is the audio interface. Though you can rely on the Mac's audio interface (see System Preferences > Sound to access the built-in audio options of your computer), you'll need a more "professional" device if you want to get the most out of your recording and mixing. You should use a dedicated audio interface that can handle multiple inputs of balanced audio. The audio interface is in charge of getting audio into and out of your Mac. This process is done with analog-to-digital (A/D) and digital-to-analog (D/A) converters. The analog signal is converted to digital on the way in, then converted back to analog on the way out to your studio monitors. This is the most crucial point in the concept of digital

audio, and the quality of the converter has a direct impact on the sound of your digital audio, as well as on the price of the interface.

PCI-based systems are available to relieve the Mac's processor of some of the stresses of recording and converting audio. These systems include DSP microprocessors that can “do the math” for the computer regarding audio signal conversion. MOTU offers its own version of a PCI-based unit called the *2408mk3*. This less-expensive unit integrates seamlessly into the DP work environment and is a viable option for a mid-level interface.

Other popular options include FireWire (also known as *IEEE 1394*) and USB interfaces. Many of these audio interfaces include DSP chips but rely on the respective FireWire or USB busses (connections) for the recording and mixing duties. With ease of connectivity and expansion, interfaces such as MOTU's Traveler and M-Audio's ProFire series have become widely popular.

## Digital Performer 6 Requirements

To run MOTU's Digital Performer 6, a Power Mac (G4 or G5) with a 1-GHz processor and 1 GB of RAM running Mac OS X 10.4.7 or higher is required. These are just the minimum requirements, however, and real-world experiences from DP users suggest a more powerful system is needed. If you plan on working with a lot of tracks, numerous effect plug-ins, and an array of virtual instruments, you'll want at least 2 GB of RAM—4+ GB will definitely provide you with better and more responsive system performance. Also, DP 6 is compatible with Intel-based Macs and takes full advantage of multi-core/multi-processor systems.

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**Is 1 GB of RAM Enough for My System?** Even though some Macs ship with only 1 to 2 GB of RAM, this may not be sufficient for extensively running media-based applications, such as Digital Performer. In reality, having more RAM will help to provide you with a more responsive overall system.

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## The Mac and Your DP System

The Mac, the OS, and its connected peripherals form the foundation for your Digital Performer studio. Proper care and feeding of your Mac is critical to maintaining a healthy Digital Performer system. The ins and outs of Mac maintenance are beyond the scope of the book, so investing in a Mac OS X-specific book is highly recommended. You can find out more about the Mac on the web by visiting the support section of Apple's website ([www.apple.com](http://www.apple.com)). In addition to the official Apple website, there are also various third-party sites that serve up a wealth of information on all things Mac-related.

### Hard Drives

The hard drive is the container for your OS, applications, and associated media files. When you play back or record audio in Digital Performer, the OS must physically access the drive to

retrieve or write the file. The faster the drive, the faster it will read or write a file. If DP were only reading or writing one file at a time, drive speed would not be a factor. But in actual use, the drive is very busy simultaneously playing back and recording multiple tracks, accessing OS-related files, streaming your large audio sample library, checking your e-mail, and so on.

To maximize your DP system's resources, you may want to consider using two hard drives: one drive for the Mac OS and another for your DP projects. Keep in mind that your DP system must constantly access your hard drive when playing back and recording audio—the faster your hard drive, the more tracks you will be able to play back and record. If your project resides on the same drive as the Mac OS, the drive will have to split up its time between accessing OS-related data and playing back/recording audio.

Most desktop Macs today come with multiple hard-drive bays, making it quite simple to install and configure a separate internal “audio” drive. Another option, considering the growing size of system hard drives (large-capacity single drives are typically included at purchase time), is to partition the single hard drive. This is like creating two hard drives from one. Think of it like organizing your garage—one side is for tools, one side is for your car. This can be done quickly with Apple's Disk Utility program or any other hard-drive maintenance software. In addition to the performance boost, keeping the Mac OS drive separate from your audio drive(s) makes routine maintenance tasks much easier.

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**Can I Start Working in DP with only One Hard Drive?** Of course you can run your projects off your internal (or “boot”) drive, and it's fine to get started that way. As your projects begin to increase in size and complexity, you'll start realizing the benefits of using additional drives.

If the idea of installing multiple internal hard drives is overwhelming, you might want to consider connecting an external FireWire or eSATA drive instead. USB can be used for smaller projects, though its performance is not as good as FireWire or eSATA for audio.

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Before you begin installing DP on your Mac, you should think about how you plan to use Digital Performer in your music production workflow. Will you be running virtual instruments that contain large sample libraries? Will you be working on large projects that contain a lot of audio tracks with effects processing? Or will your DP sessions be fairly small and consist of a few tracks of audio and MIDI?

If you plan to use large audio sample libraries within Digital Performer, you should also consider installing a separate hard drive dedicated to this purpose. Installing your audio sample libraries on a separate drive will help alleviate the bottlenecks that can occur when DP is simultaneously playing back (or recording) multiple tracks of audio, triggering audio sample libraries, and so on.

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**Multiple Hard Drives** An ideal system might contain four separate hard drives: one for the Mac OS, one for your Digital Performer audio files, another for backing up your DP projects, and a fourth that contains your audio sample libraries (virtual instruments). Of course, you can take this setup even further by having multiple hard drives for your DP audio files and sample libraries.

You could even install the Mac OS on another drive and use it specifically for your music applications. (This means no web surfing, word processing, or game playing on your DP-related system drive.) Having a duplicate “boot” drive is also a lifesaver for when disaster strikes.

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**Back Up Your Data!** Keep in mind that you may also need to reinstall the Mac OS when reconfiguring or installing hard drives in your DP system. Make sure you fine-tune your cloning strategy (using Leopard’s Time Machine, for example) or manually back up any important data to another hard drive or optical media (such as CD-R and DVD-R) before beginning any system reconstruction.

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## Disk Maintenance

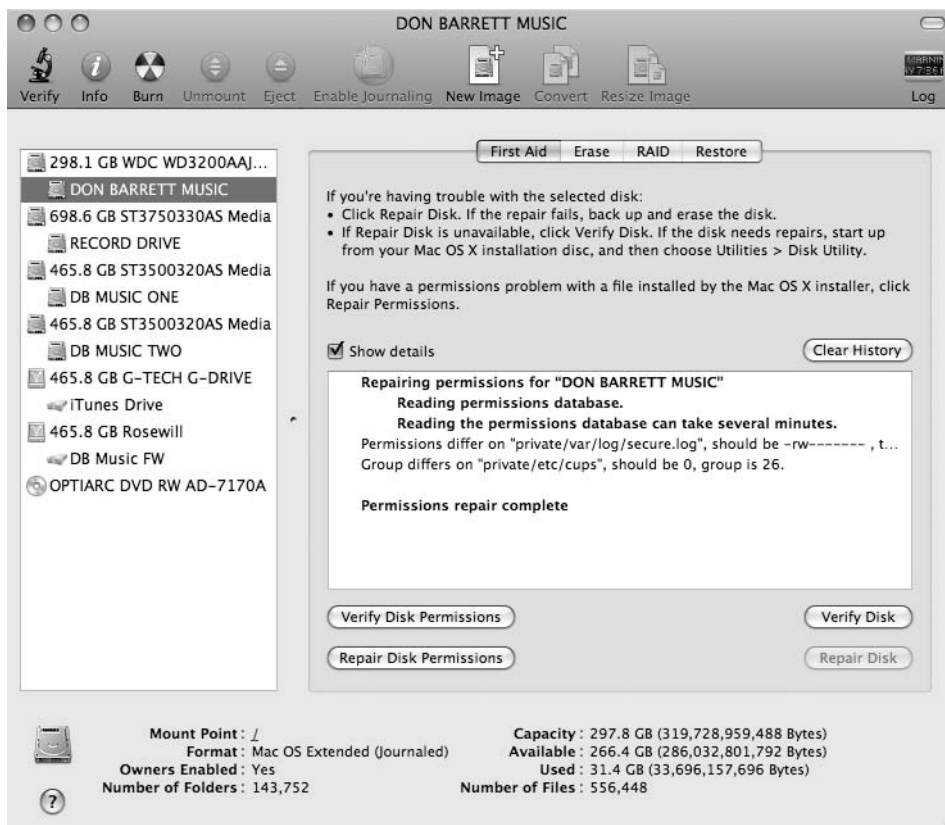
Disk maintenance is another critical piece of the Mac OS maintenance puzzle. The two main maintenance procedures you need to worry about for Mac OS X are repairing disk permissions and the disk directory, if needed.

### Repair Disk

The Repair Disk option, shown in Figure 1.1, in the Disk Utility window (OS Hard Drive > Applications > Utilities > Disk Utility) repairs (or corrects) the directory of any disks or disk partitions within your system when needed. A disk directory is like the table of contents for a book—it tells the OS where data is located on your hard drive(s). System crashes, hard restarts, or loss of power can lead to the corruption of a disk directory. Use the Repair Disk option to correct this kind of problem.

### Repair Disk Permissions

The Repair Disk Permissions option (OS Hard Drive > Applications > Utilities > Disk Utility) repairs the permissions for a system-related folder or file. When a file or folder is installed on the system, a file called a *receipt* is installed in the Receipts folder (OS Hard Drive > Library > Receipts). When the current permissions for a file/folder do not match the permissions described in its associated OS X receipt file, the Repair Disk Permissions option will reset (or correct) the disk permissions for that file or folder. Problems with disk permissions generally occur after the installation of new applications on your Mac, so be sure to repair disk permissions after the installation of any software.



**Figure 1.1** The Disk Utility window allows you to repair a disk and its permissions.

## SuperDrives

With the continuous fall in the price of DVD burners, adding a DVD burner to your Mac is a small investment (if you don't have one already—SuperDrives are included in most Macs currently shipping). These multifunction optical drives are capable of reading and writing both CDs and DVDs. Your DP projects can increase in size very quickly, so you'll need a convenient and inexpensive solution for your larger archiving needs; the DVD (although not as convenient and cost effective as a secondary external hard drive) is an option that fills this function nicely. Standard DVD±Rs will hold approximately 4 GB worth of data, while dual-layer discs can hold double that amount (though they are more expensive). In addition, most DVD burners will also burn CDs, so you'll be able to put your mixes on CD, also.

Many users underestimate the importance of backing up their material. Having a DVD burner connected to your system can help to ensure that you don't lose any important work. Refer to Chapter 5, "Project Management: Part 1," for a discussion of the backup and archival processes.

## Summary

Configuring your Mac to work with DP can be as comprehensive as you want it to be. Some users will want to jump right in, install the program, and begin working in DP. Other users may want to take a more planned approach to the configuration process. Exactly how you confront the installation and configuration process is up to you; just remember to perform the basic maintenance procedures, such as repairing disk permissions.

If you do decide, however, to reconfigure your Mac with additional hard drives, more RAM, and so on, be sure to back up any important files and follow the proper procedures for installing each new device. I strongly recommend performing installations or upgrades only if you are not in a deadline crunch with a project. If your DAW is running flawlessly and time is on your side, however, there is a common two-part question worth asking yourself before adding anything to your system: “Do I really need this right now, and how much will the added technology actually help me?”

# 2

## Setting Up Digital Performer 6

This chapter will focus on the setup procedures involved with Digital Performer, starting with the installation process and moving to the audio and MIDI configuration processes. I'll also discuss how you can use DP's Receive Sync and Transmit Sync commands to synchronize DP with other devices and applications.

This chapter will cover the following topics:

- The installation process
- How to configure your audio hardware to work with DP
- How to enable audio tracks and I/O routing assignments within a project
- How to use the Audio MIDI Setup window to configure your MIDI devices
- How to work with DP's synchronization features

### Installing Digital Performer 6

Once you have your Mac configured for your DP workflow (discussed in the previous chapter), you're ready to begin the installation process.

#### Installing Audio Hardware Drivers

Before installing the Digital Performer application, you should proceed with installing the necessary hardware drivers for your audio interfaces. These Core Audio drivers (explained in "The Configure Hardware Driver Window" section of this chapter) allow your audio interface to communicate with Digital Performer and other Mac OS X Core Audio-compatible applications. If you're working with MOTU audio interfaces, you can visit the Download section of MOTU's website ([www.motu.com](http://www.motu.com)). If you plan to use the Mac's built-in audio, you can skip this process.

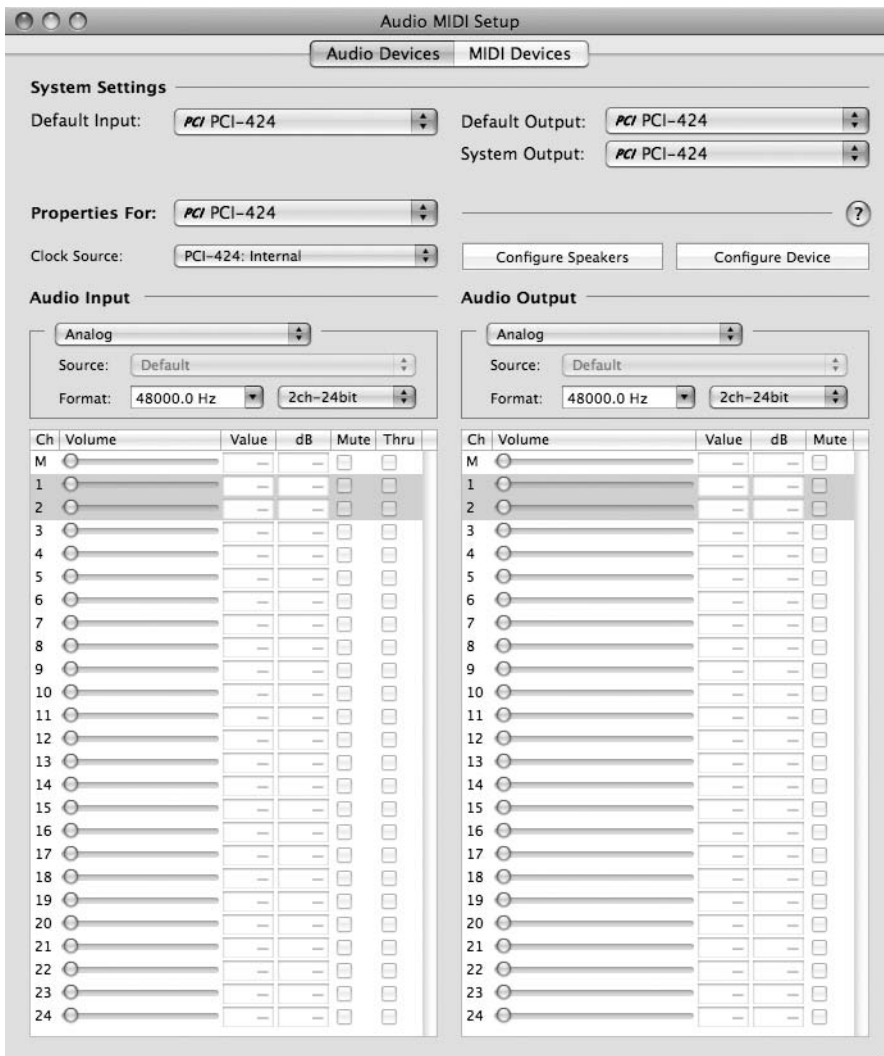
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**Updating Your Hardware Drivers** Be aware that some manufacturers will update their hardware drivers on a regular basis—some more often than others. You should take a trip to the manufacturer's website and check to make sure you have the most current



drivers available. Also, be sure to verify that the updated driver is compatible with your current Mac OS!

**Testing Your Audio Interface** Once you have installed the necessary Core Audio driver for your specific audio interface, you should test to make sure it is working properly. Because you haven't installed DP yet, you can use Mac OS X's iTunes music player instead. First, you'll need to open the Audio MIDI Setup utility from the System Hard Drive > Application > Utilities folder. Select the Audio Devices tab and choose your audio interface from the Default Output pop-up menu, as shown in Figure 2.1. Your



**Figure 2.1** The audio section of the Audio MIDI Setup window.

audio interface will appear in the list as long as its Core Audio driver is successfully installed. Make sure your audio interface is connected to a set of speakers (or headphones) so that you can verify playback. Open iTunes, play a song from your iTunes library, and you should hear the song play through your audio interface.

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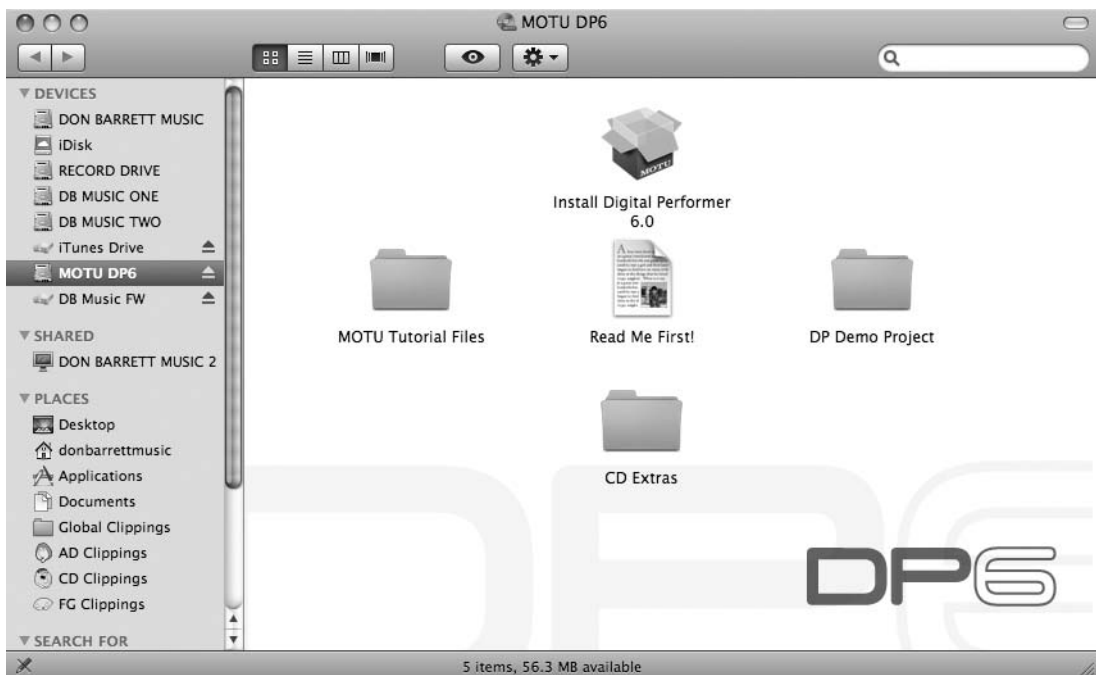
## Installing Core MIDI Drivers

If you plan to connect any MIDI devices to your DP system, you may need to install the Core MIDI drivers (or additional software) for your particular MIDI interface. Although many drivers are built into the Mac's OS, be sure to follow the manufacturer's installation guidelines to ensure that you install your MIDI drivers properly.

Use the Audio MIDI Setup utility (System Hard Drive > Application > Utilities folder) to connect any additional MIDI devices to your MIDI controller; these will automatically appear in Digital Performer when they are configured. Refer to the "MIDI Configuration" section of this chapter for an explanation of the MIDI device setup process.

## Loading Digital Performer 6 on Your System

When you have confirmed that your audio interface is working properly, begin installing DP onto your system's hard drive. Simply open up the installer disc and double-click the Install Digital Performer icon, as shown in Figure 2.2, and then follow the installation process as



**Figure 2.2** Click the DP installer icon to install Digital Performer on your Mac.

directed. After the DP items have been installed, the installer will need to run an optimization; click OK to proceed with the process. When the OS X optimization process is complete, click the Quit button to exit the installer.

---

**Registering Digital Performer 6** Be sure to promptly register your new copy of Digital Performer 6 at MOTU's website. MOTU will ask you to create a free motu.com account, which will provide you with members-only features, such as free updates, downloads, and information regarding your registered MOTU products. This is a great time to see whether there has been an update since you purchased your copy! If you are upgrading a previous version of DP, no action is necessary (you are already registered).

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When you have successfully completed the installation process, the MOTU DP 6 application icon will be located in your Applications folder on your hard drive (see Figure 2.3). In addition, a folder called Clicks and Grooves (containing DP's audio click and preset Groove Quantize files) will be placed in User > Library > Application Support > Digital Performer.



**Figure 2.3** The MOTU DP6 icon located in the Applications folder on the Mac's main hard drive.

**Adding DP to the Dock** For quick and easy access, try placing the DP application icon on the Dock (if it doesn't appear there automatically). The Dock is the small strip usually located at the bottom of the screen. Think of the Dock as a container for your shortcuts; it allows you to click on an application icon to launch the program without using the Mac's Finder.

Simply drag the icon onto the Dock and release the mouse button (see Figure 2.4). Once the icon is placed on the Dock, you can launch Digital Performer by clicking on the DP Dock icon. You may also consider placing other icons on the Dock to streamline your access to specific DAW-related applications, such as the Audio MIDI Setup utility.



**Figure 2.4** Drag the Digital Performer application icon onto the Dock for easy access to DP.

**Digital Performer Extras Disc** Don't forget to take a look at the Digital Performer Extras disc that comes bundled with DP; it is packed with more than 500 MB of royalty-free audio loops and REX files.

## Installing Third-Party Plug-Ins

In addition to audio hardware drivers, you may also have third-party plug-ins or virtual instruments to install for use with DP. Before installing them, however, you may want to launch DP to make sure the installation process was successful and that DP is functioning properly. When you're satisfied that DP is working correctly, quit the application and proceed with the installation of your third-party applications.

Audio plug-ins should be placed in the Library > Audio > Plug-Ins folder. You can install them in either the System Hard Drive > Library folder, which will give all users on your Mac access to these plug-ins, or the User > Library folder, which will provide plug-in access only to a specific user. If you're the only person working on your system, it doesn't really matter which location you choose. Most third-party plug-in installers will automatically place the plug-ins in the necessary folders, so you don't have to worry about manually placing them in the correct locations. MAS plug-ins (DP's native audio plug-ins), for example, are automatically placed in the Hard Drive > Library > Audio > Plug-Ins > MAS folder when DP6 is first installed. There will be times, however, when you will need to manually place plug-ins in their correct location.

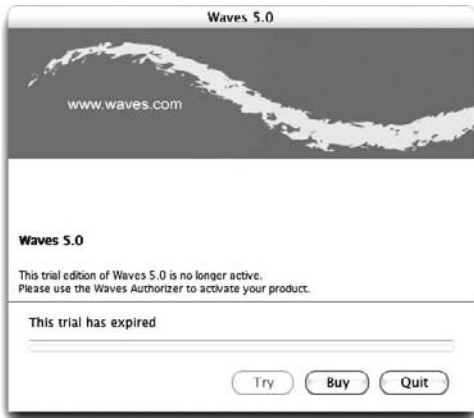
If you take a look at the Plug-Ins folder, shown in Figure 2.5, you can see that there are subfolders for each different plug-in type supported by Mac OS X (such as MAS, VST, and Audio Units). You'll also notice that there is no Audio Units plug-in folder. This is because AU plug-ins are actually stored in the Components folder. (Don't ask me why.) If you run into a situation in which a plug-in isn't showing up in your Digital Performer project, check to make sure that it's in the proper plug-in folder.



**Figure 2.5** Audio plug-ins are located in the Library > Audio > Plug-Ins folder. Audio Unit plug-ins can be found in the Components folder.

**Trial Versions** If you install trial versions of plug-ins, be aware that most will expire after a set period of time (typically 7 to 14 days). Once a plug-in has expired, DP will present you with an Expired Plug-In dialog box, as shown in Figure 2.6. If you want to continue using the plug-in, you can purchase it using the Buy button in the dialog box. If you don't want to purchase the plug-in, simply click the Quit button, and DP will not load it.

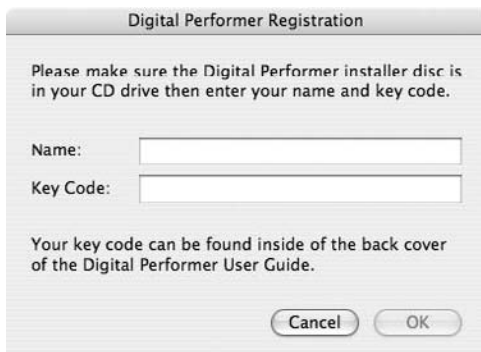
Keep in mind that this window will open every time you launch Digital Performer, which can get very annoying. To stop this window from appearing, simply remove the plug-in from the appropriate plug-in folder.



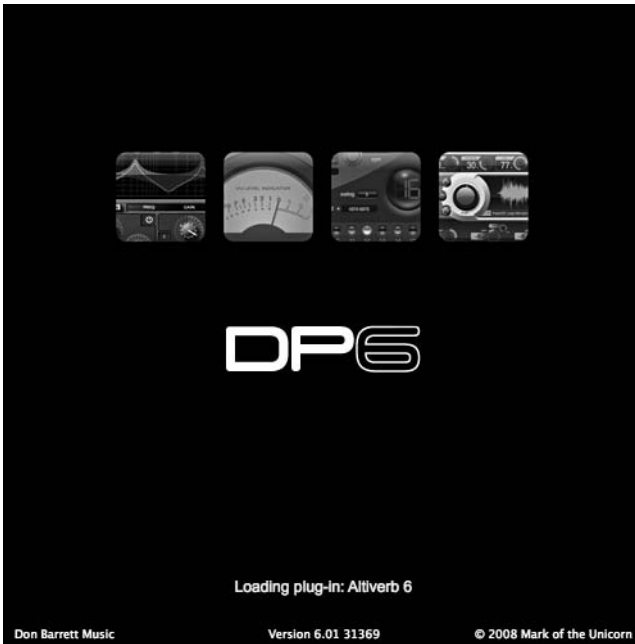
**Figure 2.6** In this example, the trial version of the Waves 5.0 plug-in has expired.

## Launching Digital Performer for the First Time

The first time you launch DP after installation, you will most likely be asked to keep the installation disk in your CD-ROM drive, and you will be presented with a Key Code dialog box, as shown in Figure 2.7. Enter your name and the key code located on the inside cover of the DP user's guide (typically the back cover). Click OK to continue loading the DP application; you should see DP loading available plug-ins, as shown in Figure 2.8. In addition, the first time DP is opened, it will examine the Audio Plug-In > Components folder for any Audio Unit plug-ins. Each AU plug-in is examined once. If DP finds a problem with an AU plug-in, the plug-in will not be loaded and will not be available in any of DP's plug-in menus. The results of the AU examination process are saved in a text file and placed on your hard drive.



**Figure 2.7** Your key code for DP is located inside the back cover of the user manual.



**Figure 2.8** When Digital Performer is launched, it will load available plug-ins for use in your DP projects.

DP will launch the Open dialog box by default, allowing you to open an existing project or create a new one, as shown in Figure 2.9. If you do not want to create or open a project, simply click the Cancel button. Keep in mind that you do not have to have a project open in order to configure DP's audio and MIDI settings. As long as Digital Performer is open, you will have



**Figure 2.9** By default, the Open dialog box will automatically open when you launch DP.

access to the necessary audio configuration windows and menus (explained in the next section). MIDI device configurations are handled directly by OS X, so you don't need DP to be open at all when setting up your MIDI connections.

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**Creating and Opening a Project** Procedures for creating, opening, and setting up a Digital Performer project are discussed in Chapter 4, "Setting Up a New Project." Be sure to configure your audio and MIDI devices (explained in the next section) before proceeding with the audio and MIDI recording processes.

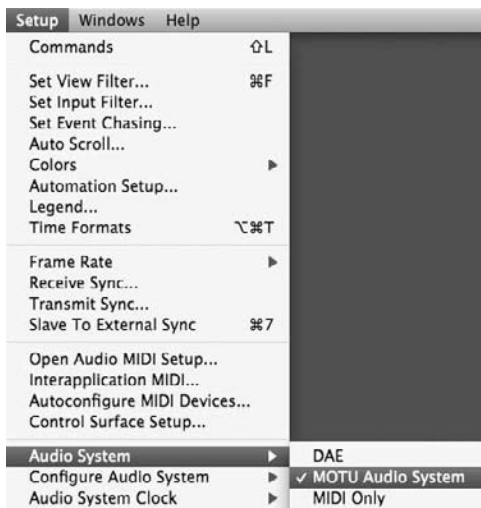
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## Audio Configuration

Before you jump into the audio playback and recording side of Digital Performer, you will need to configure any connected audio devices and their settings for your DP project. In addition, you must determine the specific audio system (MAS, DAE, or MIDI Only), tracks and internal buses, available inputs and outputs, input recording mode, and sample rates for your project.

### Audio System: Choosing MAS, DAE, or MIDI Only

The Audio System submenu (Setup > Audio System), as shown in Figure 2.10, provides three audio system options: DAE, MOTU Audio System, and MIDI Only. These options determine how audio operations, if any, are handled within Digital Performer—or which audio engine will perform DP's audio-related tasks.



**Figure 2.10** The Audio System submenu.

An audio engine basically provides or handles all of the audio-related processes (such as audio playback, recording, internal bussing, effects processing, and so on) for an application. For



example, Mac OS X's built-in applications (such as iTunes) rely on Mac OS X's Core Audio engine to play back audio. Digital Performer has its own built-in audio engine called the MOTU Audio System, or MAS. In addition to MAS, DP can also run under the Digidesign Audio Engine, or DAE. Selecting DAE will allow you to use Digital Performer as a front end for Pro Tools MIX and TDM systems. MIDI Only, however, will turn off DP's audio playback and recording capabilities all together—tremendously reducing the CPU consumption of your DP project.

- **DAE.** Choose this option if you want to run DP under Digidesign's audio engine, providing a front end for your Pro Tools TDM or MIX system. Keep in mind that, even though you will have access to TDM/HTDM and RTAS/AudioSuite plug-ins, you will not be able to use any of DP's native (built-in) plug-ins or any AU (Audio Unit) plug-ins when operating under DAE.
- **MOTU Audio System.** Enabled by default, the MOTU Audio System (or MAS) is DP's built-in audio engine. When MAS is selected, you will have access to all of DP's native effects, along with any other third-party AU and MAS plug-ins installed within your system.
- **MIDI Only.** This option will turn off DP's audio playback and recording capabilities all together.

The rest of this section will assume that you are running DP under the MOTU Audio System. For more information on DAE and using DP as a front end for Pro Tools TDM and MIX systems, consult the "Using Digital Performer with Pro Tools" chapter of the Digital Performer user manual.

## The Configure Hardware Driver Window

As discussed earlier, you will need to install the necessary Core Audio driver for your audio hardware interface before DP will be able to start communicating with it. Consult the manual (or installer disc) of your particular audio interface if you're not sure how to complete this process.

---

**Core Audio** Core Audio is a built-in technology that provides OS X with its comprehensive audio capabilities. Mac OS X's Audio MIDI Setup utility (System Hard Drive > Applications > Utilities > Audio MIDI Setup) provides controls for managing Core Audio (and Core MIDI) devices. For an audio interface to work with DP, it must be Core Audio-compatible and have its Core Audio driver installed within your Mac.

---

The Configure Hardware Driver window (Setup > Audio System > Configure Hardware Driver) allows you to control any Core Audio-compatible audio interfaces that are connected to your computer, including the Mac's built-in audio, as shown in Figure 2.11. Options for controlling the master device clock, sample rate, and audio clock mode for a selected hardware



**Figure 2.11** The Configure Hardware Driver window.

device are provided. In addition, global project settings for the buffer size, host buffer multiplier, and work priority are also displayed.

### ***The Hardware Driver List***

The Configure Hardware Driver window allows you to control any Core Audio-compatible audio interfaces that are connected to your computer, including the Mac's built-in audio. Installed hardware drivers will appear in the hardware driver list.

To enable an audio device for use with DP:

1. Open the Configure Hardware Driver by choosing Setup > Audio System > Configure Hardware Driver.
2. Click on a hardware driver within the list to enable it. Once enabled, it will be highlighted in blue.
3. DP allows you to simultaneously use multiple audio devices. Simply Control-Command-click on another driver to enable multiple audio devices in DP. Be aware that you will need to resolve the audio clocks of each device when working with multiple drivers (explained in the “Clock Modes” section later in this chapter).

### ***Master Device***

The Master Device setting only comes into play when you have multiple hardware drivers enabled (explained in the previous section). Enabled digital devices will operate at the sample rate that is designated in the Sample Rate drop-down menu (explained in the next section). To keep their digital signals locked together, you must designate one of the devices as the master clock source. Once a master clock is specified, the other digital devices in your system should be set to listen to it (commonly referred to as being a *slave* to the master).

For the other devices to listen to the master clock, you must physically output the audio clock of the master device to the other digital devices via a word clock, AES/EBU, or ADAT (9-pin) cable.

The type of sync you choose will be determined by the specific devices with which you're working. Resolving the audio clocks of multiple digital sources is essential when you are working with multiple digital devices. Audio clocks that are not resolved can cause digital distortion, as well as introduce digital pops and clicks in your audio signal.

### Sample Rate

Choose the sample rate for the project from the Sample Rate drop-down menu. Only sample rates supported by the selected hardware driver will appear in the list. Keep in mind that the chosen setting will apply to all audio devices that are enabled in the hardware driver list.

### Clock Modes

The Clock Modes section of the Configure Hardware Driver window contains two drop-down menus—the device list (left) and the clock source (right). Only audio devices enabled in the hardware list will appear in the device list. Once a device is selected, its clock source will appear in the Clock Source menu. By default, the clock source for a device is set to Internal, which means the selected device will listen to its own internal audio clock. Digital Performer will also use this clock as its master clock source when playing back and recording audio. If you have only one device enabled in the list, be sure to set its clock source to Internal—once it's set, you'll never have to worry about it again.

When using multiple devices, however, you will need to resolve the audio clocks of each device. Set the master device to Internal, and then choose the appropriate audio clock for the slaved devices, as shown in Figure 2.12. As discussed earlier, the type of clock source you choose will be determined by how each device is physically synced (or slaved) to the master device.

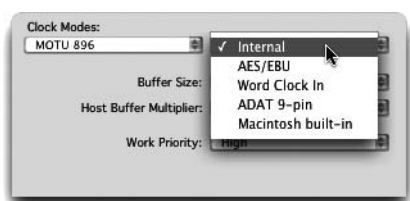


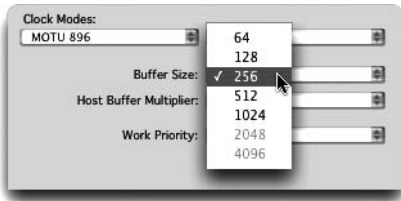
Figure 2.12 The Clock Source menu.

### Buffer Size

A *buffer* is basically a small chunk of memory. When you are working with digital audio, the buffer temporarily holds onto the audio that is traveling between your Mac and your audio device. The longer the buffer holds the audio, the more *monitoring latency*, or audible delay of the live signal, that is introduced. Lower buffer settings reduce monitoring latency but put additional strain on your Mac. The lower the buffer setting, the harder your computer must work to play back and record audio; this forces your Mac to allocate more CPU processing power for playback and recording functions, essentially reducing the number of effects plug-ins and processing that can be used in

a project. Higher buffer settings have the opposite effect—monitoring latency is increased, freeing up your Mac’s CPU for other tasks, such as effects processing.

Buffer sizes are measured in samples and can be changed by clicking on the Buffer Size menu, as shown in Figure 2.13.



**Figure 2.13** The Buffer Size menu. The actual settings listed will be dictated by the selected hardware device.

---

**When to Change the Buffer Size** The general rule when working with buffer settings is lower settings for recording (256 samples or lower) and higher settings for mixing (512 or 1,024+ samples). If you’re triggering virtual instruments within a project, however, you’ll need to find a middle ground—lowering the buffer enough to reduce monitoring latency, but not lowering it so much that you run out of CPU power for effects.

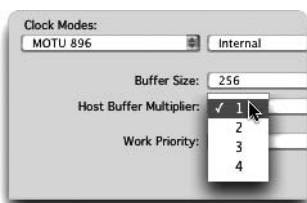
Keep in mind that the buffer setting can be changed at any point in your project and will be dictated by the specific task at hand. Be sure to use the Audio Performance window (explained in Chapter 13, “Processing and Mastering”) to monitor buffer activity.

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### **Host Buffer Multiplier**

The Host Buffer Multiplier menu, shown in Figure 2.14, helps to improve the performance of Digital Performer. MOTU recommends the following Host Buffer Multiplier settings:

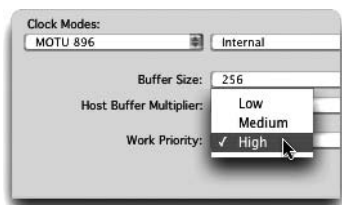
- 1. Use this setting if you only have one audio device enabled in the hardware driver list.
- 2. Choose 2 if you have two or more devices enabled.
- 3–4. Choose 3 or 4 if you are experiencing audio performance problems.



**Figure 2.14** The Host Buffer Multiplier setting.

## Work Priority

The Work Priority setting, shown in Figure 2.15, determines the priority the MAS engine receives from Mac OS X, so try to keep this setting as high as possible. MOTU audio devices can be set to High, while other devices may require Medium or Low settings. If you are working with third-party audio devices, you may need to experiment with this setting if you are experiencing performance problems.

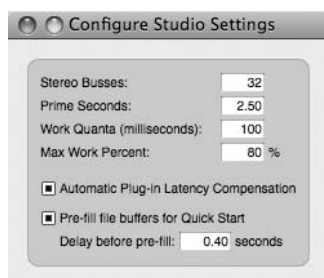


**Figure 2.15** The Work Priority setting.

Once you have enabled the necessary audio devices and properly configured their settings, click OK to confirm the audio settings. Remember that you can change these settings at any time during the music production process, allowing you to tailor the responsiveness of Digital Performer to work with your specific project needs.

## The Configure Studio Settings Window

The Configure Studio Settings window, shown in Figure 2.16, allows you to adjust certain parameters of Digital Performer's audio engine. Here you can decide how many stereo busses you need, as well as fine-tune settings that can make DP more responsive during playback.



**Figure 2.16** The Configure Studio Settings window.

## Stereo Busses

The Stereo Busses setting determines how many internal audio busses will be provided by MAS and will be seen within your Digital Performer work environment. The number of busses you can create is limited to a total of 99. MOTU states that this number is arbitrary and will not affect system performance. However, the actual number of busses simultaneously used in a project could, and most likely will, have an impact on your system resources.

***Prime Seconds***

The Prime Seconds setting determines how far in advance Digital Performer pre-cues audio or pre-renders any plug-in effects before playback begins. In other words, DP prepares (renders) audio in advance before attempting to play it, and this setting defines how much time DP is given to do this. If issues occur immediately after playback begins, try increasing this number. On the other hand, if DP is not responding as quickly as you would like when you hit Play, try decreasing this number.

***Work Quanta***

The Work Quanta number controls the intervals at which the MAS audio engine makes its calculations. Increasing this number can free up some processing power, allowing for more real-time effects. A lower number will help smooth the graphic elements of Digital Performer, such as the Playback Wiper.

***Max Work Percent***

Depending on the nature and size of your DP project, you can control the amount of processing power or CPU that is allocated to the MAS engine as it pre-renders or cues audio tracks for playback. Higher values in the Max Work Percent field benefit the audio engine, but at the expense of graphics display and other tasks. Lower values reduce CPU for audio but increase graphics performance (screen redraws and so on).

***Automatic Plug-In Latency Compensation***

The Automatic Plug-In Latency Compensation option will compensate for any delay that is introduced to an audio track when you're using real-time audio plug-ins. This option will also compensate for virtual instruments being triggered by prerecorded MIDI tracks. Refer to Chapter 13 for an explanation of the Automatic Plug-In Latency Compensation feature.

***Pre-Fill File Buffers for Quick Start***

The Pre-Fill File Buffers for Quick Start setting tells DP to pre-fill the play buffers before playback is initiated—essentially speeding up the responsiveness of DP when you hit the Play button. DP fills this buffer anytime you move the Playback Wiper or perform any action that is playback related.

***The Input Monitoring Mode Window***

The Input Monitoring Mode window, shown in Figure 2.17, determines how live audio signals are monitored in Digital Performer. The settings you choose here will affect overall monitoring latency and your ability to perform successful audio punches.

***Monitoring Thru Effects versus Direct Hardware Playthrough***

When the Monitor Record-Enabled Tracks Through Effects option is selected in the Input Monitoring Mode window, live audio signals are routed through Digital Performer before going out to your audio interface. This allows you to listen to the live signal through any effects plug-ins

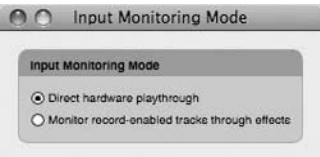


Figure 2.17 The Input Monitoring Mode window.

inserted in DP. The tradeoff is increased monitoring latency, because the audio signal must travel through Digital Performer and any plug-ins before you hear it.

**Recording in Sync** Regardless of which input monitoring mode setting you choose, live audio will always be recorded in the proper location, without any latency and in perfect sync with other tracks.

The Direct Hardware Playthrough option, however, introduces little (if any) delay to the live signal because it bypasses Digital Performer all together. The disadvantage to this method is the inability to process the input signal with DP’s cool effects plug-ins.

The Bundles Window

The Bundles window, shown in Figure 2.18, is a one-stop location for enabling (or disabling) the routing assignments of the audio and MIDI gear that is connected to your system. Unlike the

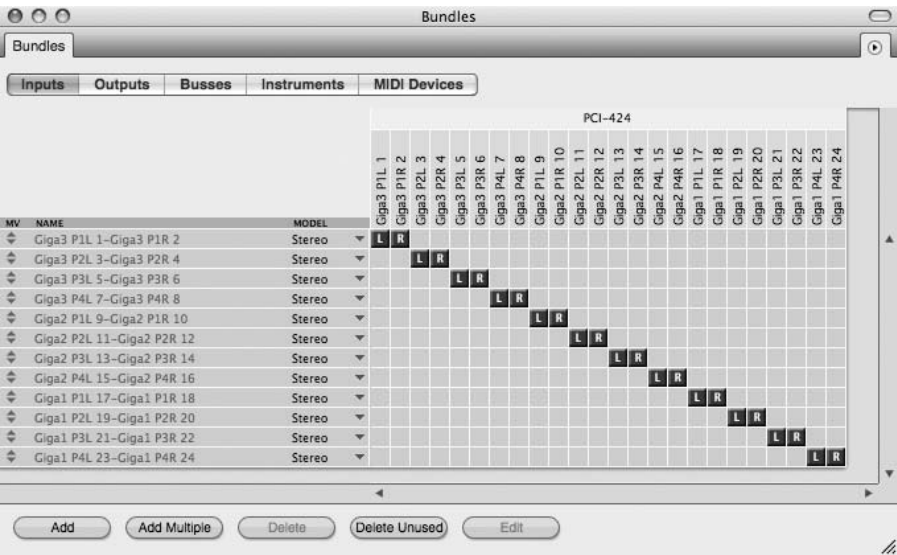


Figure 2.18 The Bundles window.

other configuration windows I have discussed so far, settings for the Bundles window are project specific, so you'll need to have a DP project open before this window will be available.

The Bundles window is divided into five tabbed sections, labeled Inputs, Outputs, Busses, Instruments, and MIDI Devices. Each section displays the name, channel format (or model), and routing assignments for each bundle. Buttons for adding, deleting, and editing bundles are located at the bottom of the window. Changes made in the Bundles window will be reflected in the I/O assignment menus and in the Meter Bridge (discussed in more detail in Chapter 7, "Recording Audio").

The five available tabbed sections are:

1. **Inputs.** This tab is where you can define and route all of the necessary audio inputs you will be using for your project.
2. **Outputs.** Here you can specify the audio outputs for the project.
3. **Busses.** The Busses tab allows for the creation of multiple internal audio busses. Remember, the number of busses you can add is limited to the number designated in the Configure Studio Settings window (mentioned previously). Anything beyond this will create a duplicate "shared" bus.
4. **Instruments.** In many Audio Unit (AU) plug-ins and ReWire-compatible applications, multiple audio outputs are available. The Instruments tab is where you can route these outputs to anywhere in the Digital Performer environment. Once the virtual instrument is instantiated, simply click the Add button to create as many bundles as needed.
5. **MIDI Devices.** The MIDI Devices tab in the Bundles window provides access to the same information regarding your MIDI setup as in the Audio MIDI Setup window (discussed in "The Audio MIDI Setup Utility (AMS)" section of this chapter). The presentation looks different, but all of your MIDI connections are represented, and any changes made here will appear in the AMS Utility window as well. You can add a device by simply clicking the Add button and define its properties by highlighting the new device and clicking the Edit button.

### ***What Are Bundles?***

A bundle is basically a set of inputs, outputs, and internal busses for audio, routing paths for virtual instruments, and I/O assignments for MIDI gear. Think of the Bundles window as a virtual patch bay. Although you are not changing the physical connections of your equipment (as most bundles are simply the physical inputs and outputs of your audio and MIDI interfaces), there is much freedom in assigning DP's internal busses. While it's possible to create audio bundles on the fly from DP's I/O assignment menus, the Bundles window provides you with a graphic interface allowing for the creation, removal, renaming, and rerouting of I/O assignments

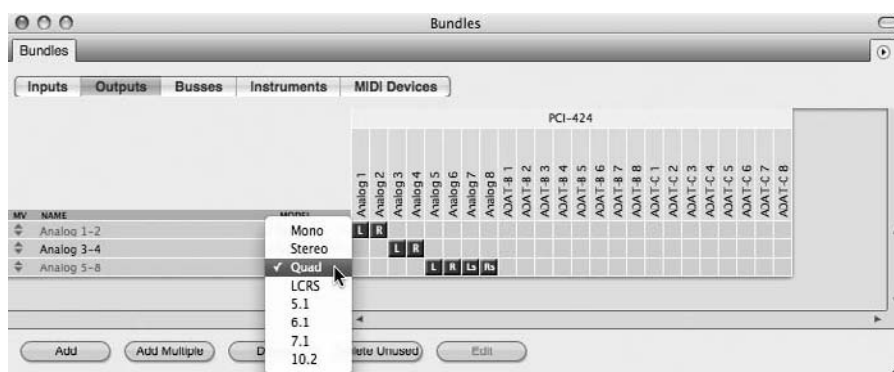


between Digital Performer and your connected audio and MIDI interfaces (and third-party virtual instruments, such as Stormdrum or Ableton Live).

First, I want to focus on creating audio bundles, and then we will look into MIDI connections and virtual instrument paths.

To create an audio bundle in the Bundles window:

1. Select the desired Inputs, Outputs, or Busses tab and click the Add button.
2. Specify the channel format for the audio bundle by clicking on the Model menu, shown in Figure 2.19.



**Figure 2.19** Set an audio bundle’s channel format from the Model menu. Notice that you can also choose surround configurations.

To remove or delete an audio bundle:

1. Click on the name of an audio bundle to select it. Drag to select multiple audio bundles.
2. Click the Delete button. You can also press the Delete key on your computer keyboard.

---

**Renaming Bundles** Another benefit to using the Bundles window versus DP’s I/O assignment menus is the ability to rename a specific input, output, or bus. You could, for example, call Bus 1-2 “Reverb” if you were using it as an effects send, or you could customize the input/output bundle names to correspond to any studio gear that’s physically connected to your audio interface. Customizing your audio bundle names can help you personalize and possibly speed up your Digital Performer workflow.

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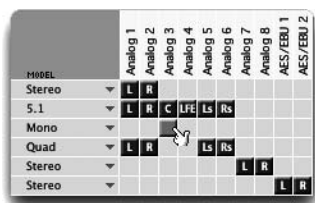
To rename an audio bundle, Option-click the name of the bundle. Enter the new name and press the Return key on your Mac’s keyboard to confirm the change.

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## Rerouting Input, Output, and Bussing Assignments for Audio and Virtual Instrument Bundles

The Tile Grid of the Bundles window is where you can change the routing assignment for a specific audio bundle. The selected audio hardware driver and third-party virtual instruments you have installed determine the audio devices and virtual instrument I/O that appear above the assignment grid in each tabbed section. The location of each tile determines the routing assignment of an audio bundle. Each bundle tile basically opens the connection between a specific DP input, output, or bus and a specific input, output, or bus on your connected audio device or virtual instrument. For example, suppose you have an audio interface with four analog outputs (two stereo pairs), and you have four speakers connected to these outputs (two for each pair). The hardware driver for the interface would allow you to create an audio bundle with two separate stereo outputs—say, Analog 1-2 and Analog 3-4. Now, in the Tile Grid, you are free to define the routing of audio (in DP) through these outputs.

- To make a new I/O routing assignment, click and drag a bundle tile to a new assignment, as shown in Figure 2.20.



**Figure 2.20** Click and drag a bundle tile to change the routing assignment for an audio bundle.

- To swap the left and right channels of a stereo bundle, drag the left or right bundle to the opposite channel.

---

**Sharing I/O Assignments** DP allows you to create bundles that share the same assignments as other bundles. This is especially handy when you are working with surround bundles, because you can create dedicated bundles for panning to specific speakers in a surround setup. This would allow you, for example, to pan specific “stems” to specific combinations of speakers (such as dialogue in the center, the music score in the front left/right and rear left/right channels, FX stems in 5.1, and so on).

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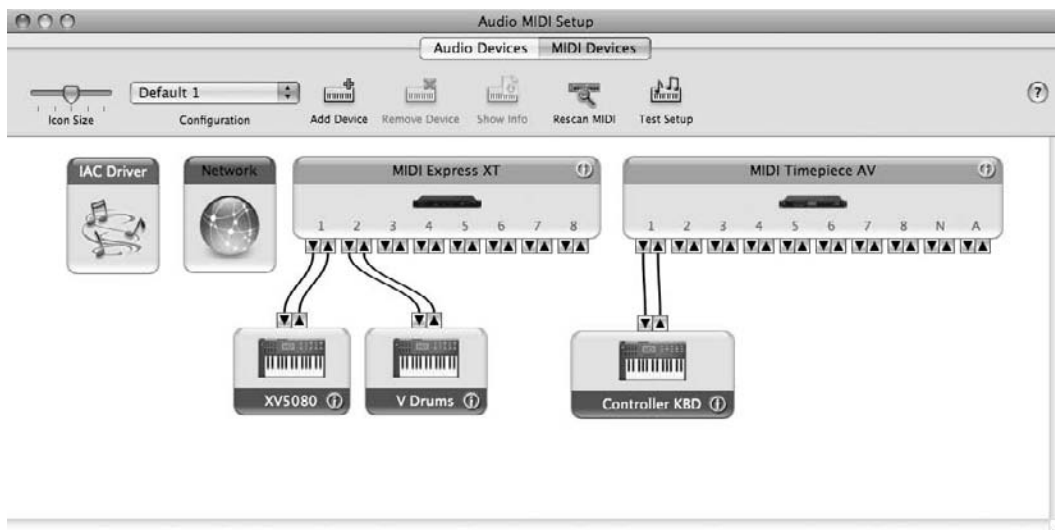
**Exchanging Bundles Between DP Projects** You can exchange bundles between DP projects simply by choosing the Export or Import Bundles option available in the Bundles window mini-menu. Just click the mini-menu button (located in the upper-right corner of the

Bundles window) and export your bundles for use in another DP project, or import a saved bundle into your current project.

## MIDI Configuration

MIDI device configuration has been greatly simplified in Mac OS X—you no longer have to rely on third-party applications (such as FreeMIDI or OMS) to connect Digital Performer with your studio's MIDI devices. Similar to how OS X handles audio (with Core Audio), Apple's Core MIDI technology connects your MIDI studio together at the system level, offering improved speed and performance. In addition, once your MIDI devices have been configured, other Core MIDI-compatible applications you may have installed on your Mac (such as Pro Tools, Finale, GarageBand, and so on) will also have access to this global MIDI setup.

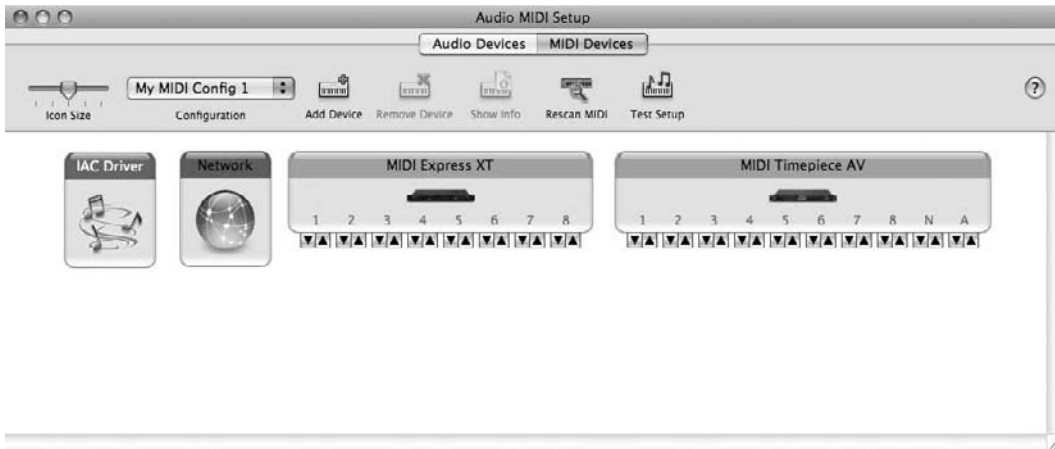
The Audio MIDI Setup window, shown in Figure 2.21, provides a virtual representation of your MIDI studio's physical setup. Use this window to connect your MIDI interface and MIDI devices to DP (and other Core MIDI applications). As discussed earlier in this chapter, the MIDI Devices tab in the Bundles window is also a place for you to configure your MIDI connections to DP via a Tile Grid. I will focus on the Audio MIDI Setup window, although the results are the same.



**Figure 2.21** The MIDI Devices tab of the Audio MIDI Setup window shows your system's MIDI routing assignments.

### The Audio MIDI Setup Utility (AMS)

The Audio MIDI Setup (AMS) window allows you to configure the routing assignments for all of your connected MIDI devices. Once you install the Core MIDI drivers for your particular MIDI interface, the drivers will automatically appear in the AMS window, as shown in Figure 2.22.



**Figure 2.22** Once you have installed the Core MIDI driver for your particular MIDI interface, it will automatically appear in the AMS window.

You can access this window directly in Digital Performer by choosing Setup > Open Audio MIDI Setup or by using Mac OS X's Finder.

### **Configuring Your MIDI Devices**

Once your MIDI interface is visible in the MIDI Devices tab of the AMS window, it's very easy to add, configure, and connect your MIDI devices.

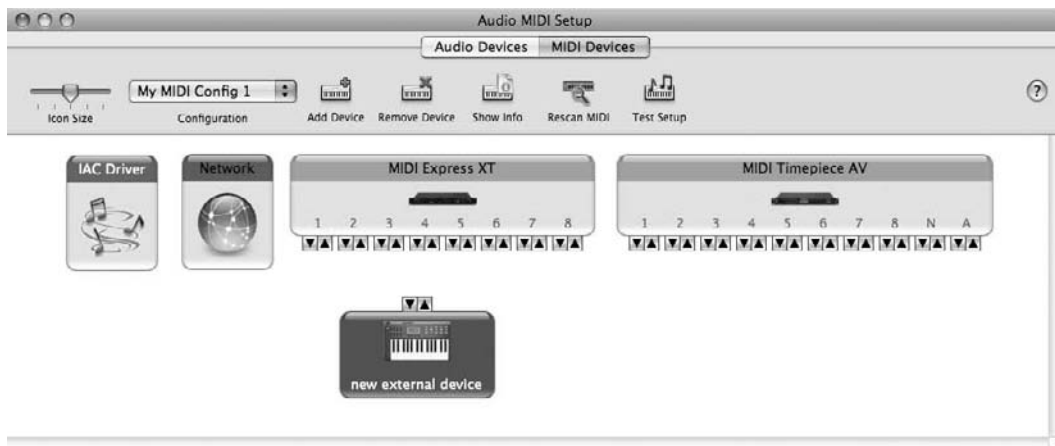
To add a new MIDI device:

1. Open the AMS window by choosing System Hard Drive > Applications > Utilities > AMS. You can also open the window from DP by choosing Setup > Open Audio MIDI Setup.
2. Once AMS is opened, click the MIDI Devices tab to display your MIDI configuration.
3. Click the Add Device button to add a new external MIDI device. You can also use the default keyboard shortcut Command+D. When you've created the new device, a device called New External Device will appear in the AMS window, as shown in Figure 2.23.

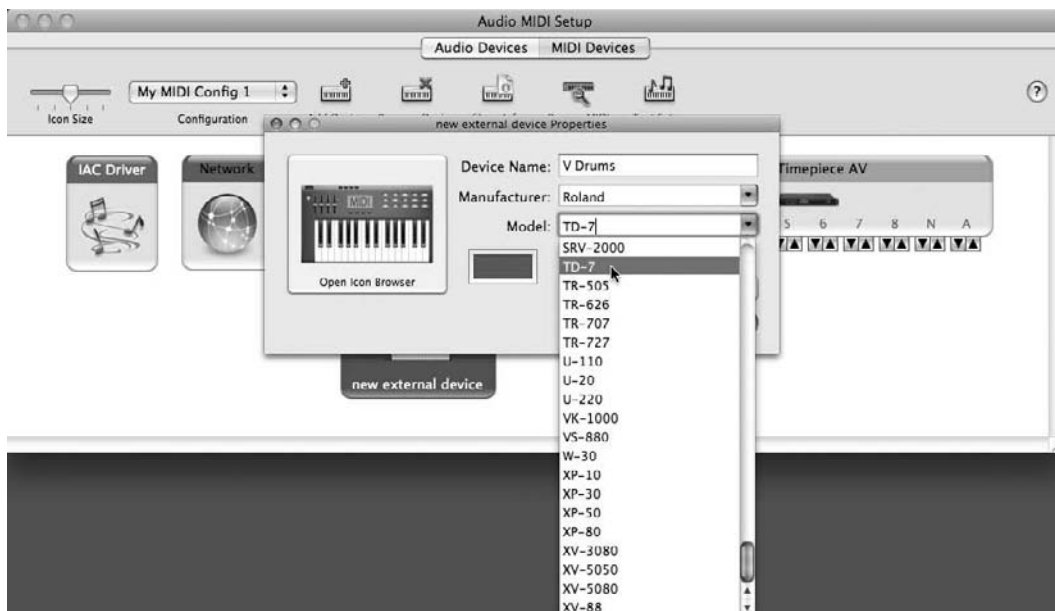
The new external device that is created will be a generic MIDI device. You can specify the manufacturer, model, and MIDI properties of the device from the Properties window. This allows DP to recognize a particular device's patch lists and so on.

To configure the new MIDI device:

1. Double-click the new external device you created in the previous section. The Properties window will open, allowing you to change the generic device's MIDI properties.
2. Specify the manufacturer and model name from the appropriate menus, as shown in Figure 2.24.

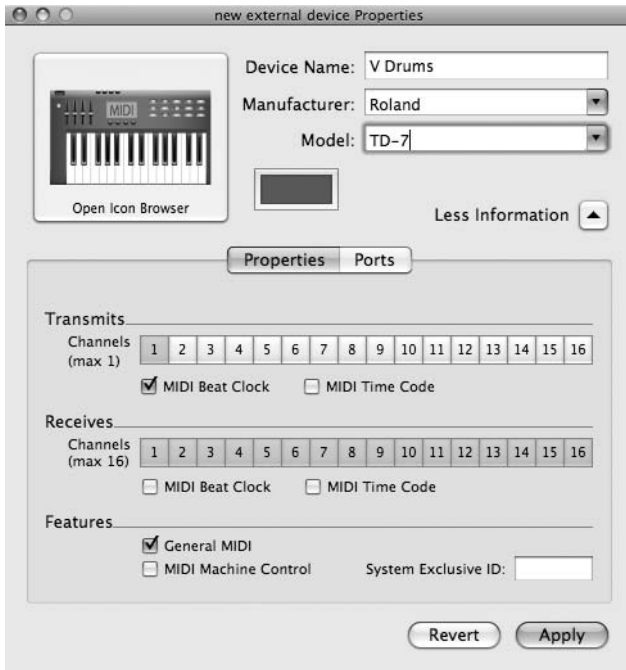


**Figure 2.23** Click the Add Device button to add a new external MIDI device.



**Figure 2.24** Double-click the device to define its properties.

3. Once defined, the device's properties will automatically be configured for the specific device. To view the actual properties for the MIDI device, click the More Information button (see Figure 2.25).
4. Make any necessary changes and then click the Apply button to confirm them.
5. Close the Properties window by clicking on the window's red Close button (located at the top-left corner of the window).



**Figure 2.25** The Properties tab of the AMS window.

Once you have configured the properties for your new MIDI device, it will appear with the model name you specified in the previous section (such as V Drums).

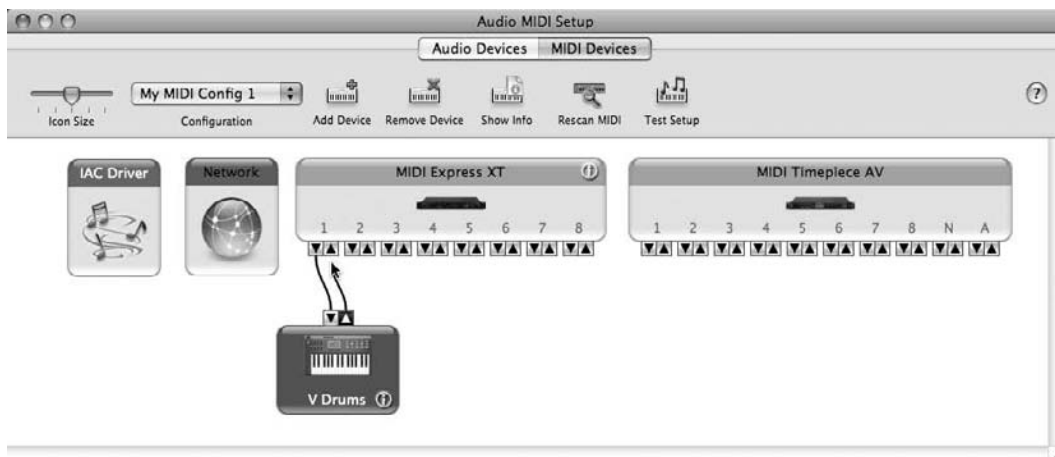
Next, you need to connect the device to your MIDI interface. Make sure the virtual connections you are making in the AMS window match the physical connections of your MIDI studio.

To connect your MIDI device:

- Click and drag the device's output/input arrows to the MIDI interface's input/output arrows, as shown in Figure 2.26.

Once you have configured your MIDI devices, made the appropriate connections, and so on, you can use the Configuration drop-down menu to edit the configuration. Here, you can duplicate, rename, or delete the current configuration, or you can create a new configuration. It is a good idea to duplicate your main configuration for backup purposes.

To quit the Audio MIDI Setup utility, simply choose Quit from the Audio MIDI Setup menu. You can also use the default keyboard shortcut Command+Q. Devices configured in AMS will automatically appear in Digital Performer and any other Core MIDI-compatible application.



**Figure 2.26** Drag the input/output arrows to connect devices in the AMS window.

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**AMS in the Dock** For quick access to the Audio MIDI Setup utility when you are not in Digital Performer, I suggest dragging the application icon onto your Dock. This eliminates just a few screen clicks, but every second counts when you are in a crunch!

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## Synchronization

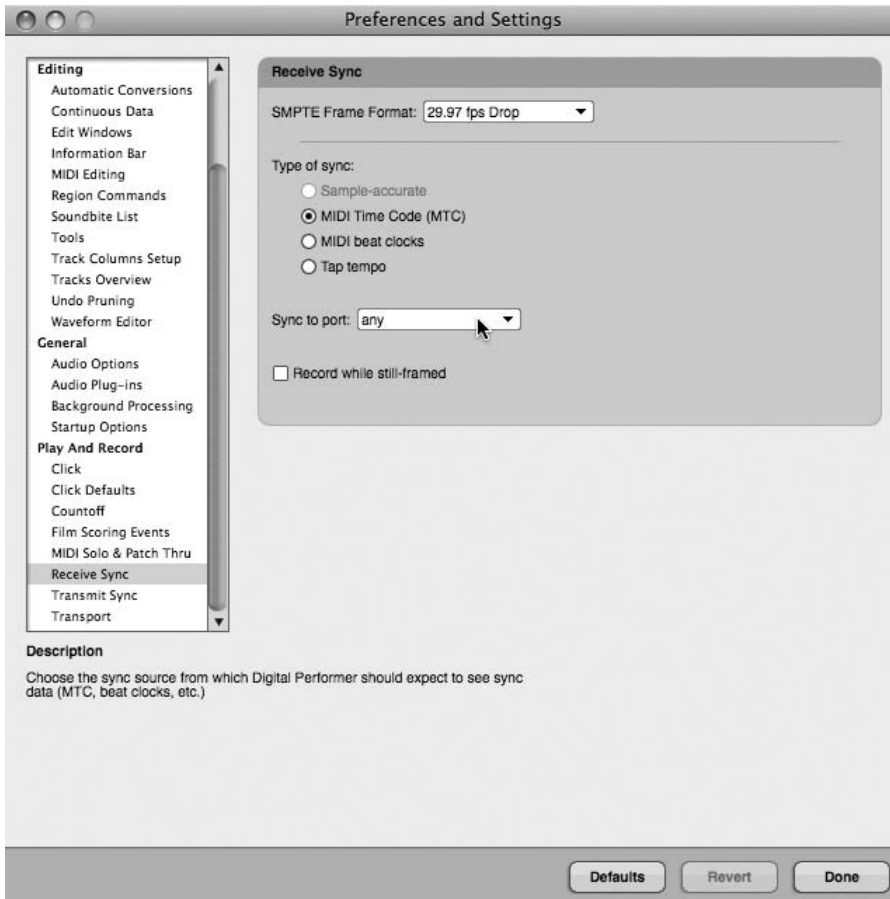
You can synchronize Digital Performer with other devices and applications. Digital Performer supports all standard synchronization modes, including SMPTE, standard MIDI beat clocks, and tap tempo sync. When receiving SMPTE time code, you can choose MIDI Time Code, Direct Time Lock, or Indirect Time Lock for the SMPTE-to-MIDI conversion that is required for SMPTE. Refer to the “Synchronization” chapter of the Digital Performer user manual for an explanation of DP’s different sync modes.

### Syncing DP

You can synchronize DP with other devices (and applications) using the Receive Sync and Transmit Sync commands. Even though Digital Performer can receive sync from a wide variety of synchronization modes, it can only transmit sync as MIDI beat clocks (a.k.a. standard beat clocks) or MIDI time code.

To slave DP to another device or application:

1. Open the Receive Sync command by choosing Setup > Receive Sync (or Receive Sync in the Preferences and Settings window).
2. Click the Sync to Port menu and choose the sync source, as shown in Figure 2.27. Selecting Any will enable DP to sync to any time code it receives.



**Figure 2.27** The Sync to Port menu allows you to set the sync source.

3. Choose the desired sync mode from the Type of Sync section.
4. Once you've specified the sync settings, click the Done button.
5. Next, select Slave to External Sync from the Setup menu. You can also use the default keyboard shortcut Command+7. Once enabled, the Control Panel's Slave to External Sync button will become highlighted, as shown in Figure 2.28.



The Slave to External Sync button

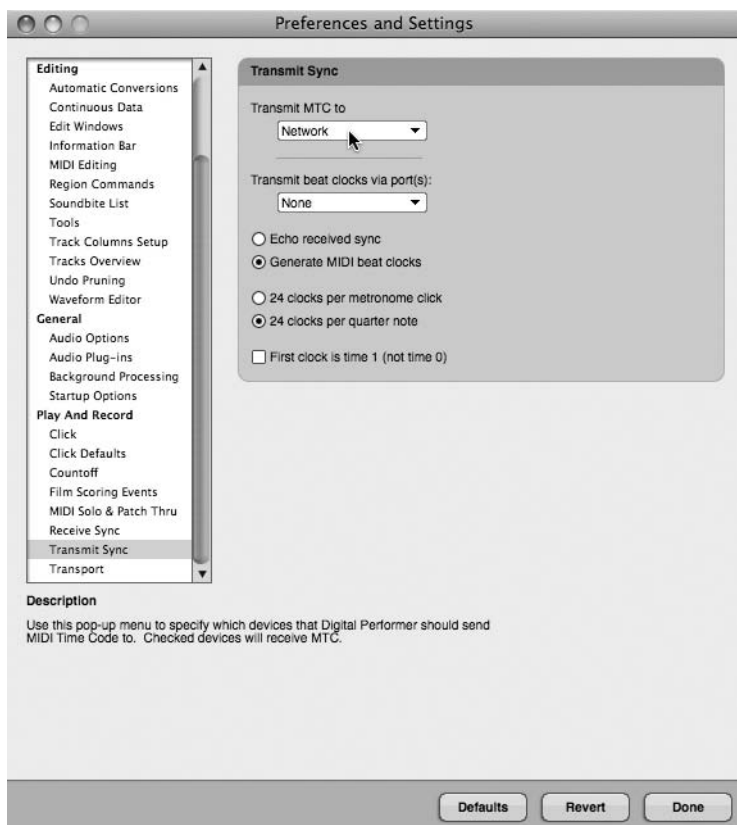
**Figure 2.28** The Slave to External Sync button. In addition to the methods provided in Step 5, you can also click on the Slave to External Sync button to toggle the Slave to External Sync feature on and off.



6. Press the Control Panel's Play or Record button. The Play button will flash, indicating that DP is waiting to receive sync from the device specified in Step 2.

To slave another device or application to Digital Performer:

1. Open the Transmit Sync command by choosing Setup > Transmit Sync (or Transmit Sync in the Preferences and Settings window).
2. Decide which type of sync you wish to transmit (either MIDI beat clocks or MIDI time code [MTC]) and then specify the sync destination from the appropriate Transmit menu, as shown in Figure 2.29. Keep in mind that you can transmit both types of sync simultaneously to multiple destinations, simply by making the desired assignments.
3. Once you have chosen the desired settings, click the Done button.



**Figure 2.29** Use the Transmit MTC or Transmit Beat Clocks via Port(s) menus to send MIDI time code or MIDI beat clock sync to another device or application.

Keep in mind that the device (or application) to which you're transmitting sync must be set to receive sync in order for DP to control the device. See the specific device's user manual for instructions on how to slave the device or application to Digital Performer.

## Summary

Once you have successfully installed DP and configured your audio and MIDI devices, you will be ready to start working in Digital Performer. See Chapter 3, "Navigating Digital Performer 6," for an overview of the major windows in Digital Performer. If you want to go ahead and dive into DP, refer to Chapter 4, "Setting Up a New Project," for an explanation of how to set up a project for recording.

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# 3

## Navigating Digital Performer 6

**D**igital Performer's interface is composed of various information windows that allow you to access its numerous tools and features sets. This chapter will provide an overview of the most important windows, which serve as the backbone for Digital Performer (see Figure 3.1). For information on DP's other windows and important features, check the Table of Contents of this book to find related chapters or appendixes.

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**A Modern User Interface?** Yes, it's true. Digital Performer 6 has a cleaner, more modern (and manageable) look and feel. Historically referred to as having far too many windows, menus, and so on, DP 6 is neater and more compact in its presentation of data. The navigation controls have been unified throughout so you are less likely to miss "hidden" information or be forced to tick through several windows just to make a simple adjustment. Keep in mind that although many aesthetic changes have been made, DP maintains its technical depth and magnitude of features. It's just more efficient and easier to use!

---

Following is a list of the windows and features discussed in this chapter:

- Consolidated Window
- Control Panel
- Tracks window
- Sequence Editor
- Mixing Board
- Soundbites window

### The Consolidated Window

The Consolidated Window feature allows you to view and configure DP's various windows in a single consolidated window, as shown in Figure 3.2. The Consolidated Window is broken up

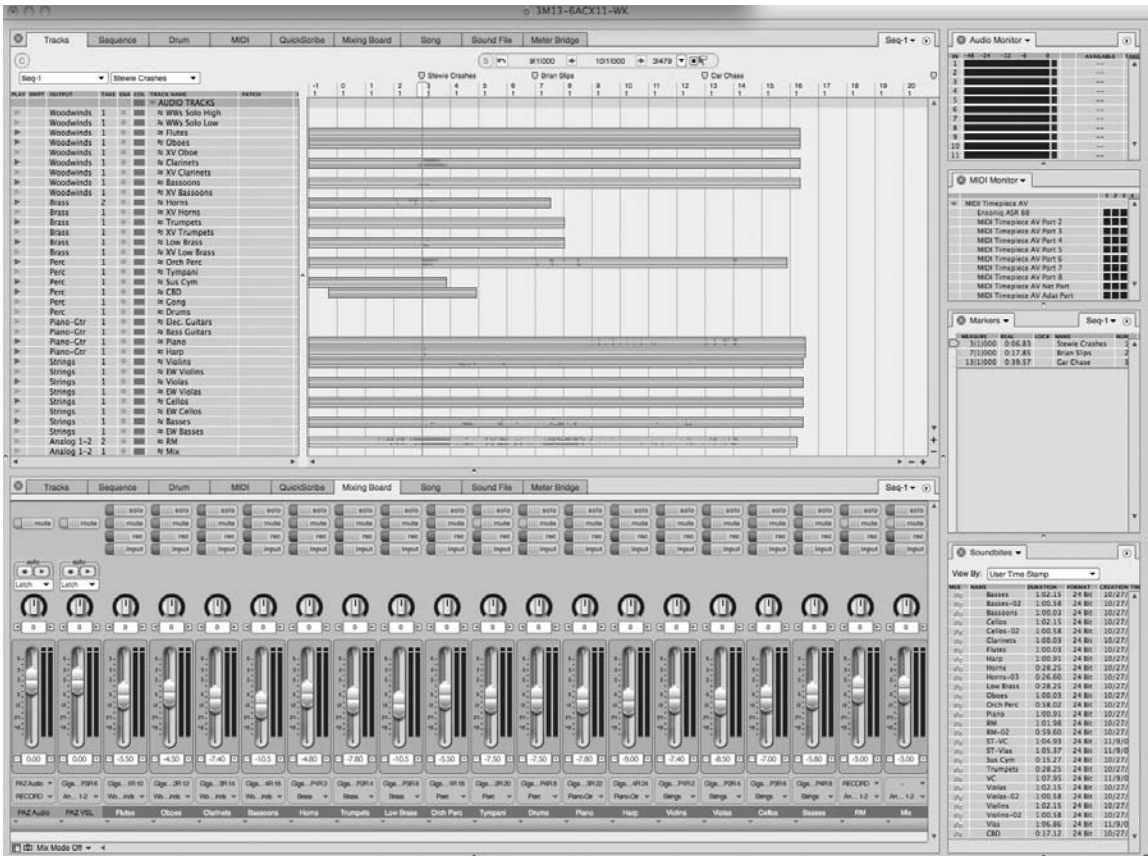


**Figure 3.1** Digital Performer's main windows: Control Panel, Tracks, Sequence Editor, Mixing Board, Soundbites, and the new Track Inspector.

into different sections that can be added, subtracted, or resized to fit your specific production needs. If you want to jump right into using this feature, you can access the provided default Consolidated Window sets from the Window Sets menu (Window > Window Sets).

The Consolidated Window preferences (Digital Performer > Preferences > Display > Consolidated Window) control the functionality of the Consolidated Window, as shown in Figure 3.3. From here, you can decide which windows will automatically open in the Consolidated Window, how many rows will initially appear, how projects created in older versions of DP are affected, and how the Mixing Board behaves when the Consolidated Window is turned on. You can also select options for enabling or disabling the Consolidated Window altogether.

See the “Customizing Your Workspace” section of Chapter 5, “Project Management: Part 1,” for an explanation of the Consolidated Window and the Consolidated Window preference settings.

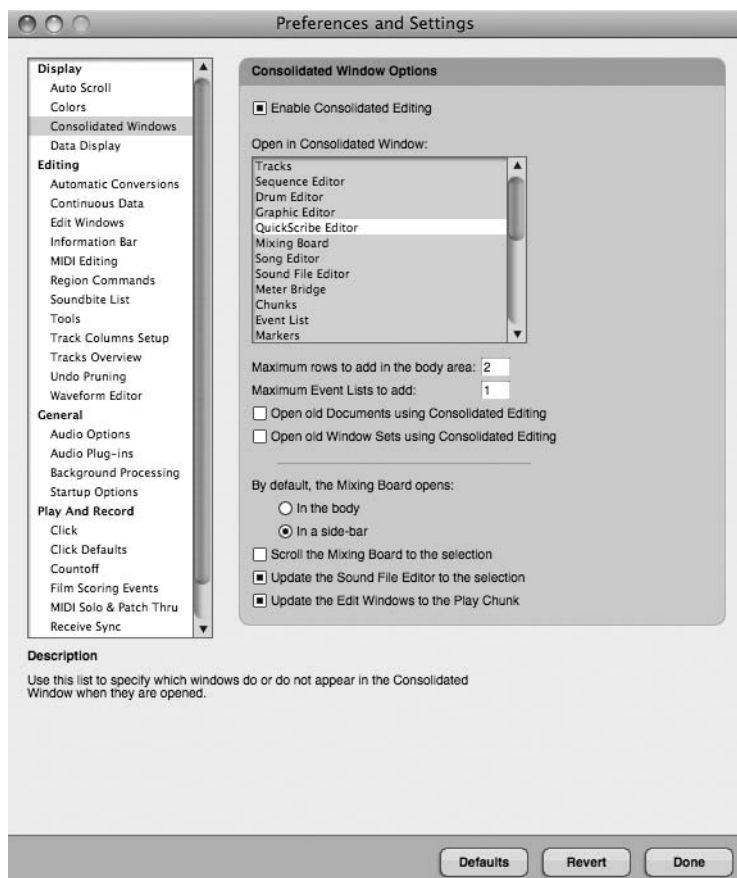


**Figure 3.2** The Consolidated Window feature allows you to display DP's various windows in a single consolidated window. In this example, the default Tracking window set is displayed.

**Tabs in the Consolidated Window** Digital Performer 6 offers a new approach for accessing different windows within the Consolidated Window. Across the top of the main body (center) section is a row of tabs, each representing a different editor or primary window. For example, to access the Mixer window, simply click on its corresponding tab, and it will appear in the main body of the Consolidated Window. Tabbed browsing is also available in sidebars and cells (discussed in Chapter 5).

## Control Panel

The Control Panel in Digital Performer 6 is divided into three main sections (see Figure 3.4). This window is the central location from which you can access playback controls in the Transport, view and adjust the Counter, and enable enhanced selection and tempo features in the



**Figure 3.3** The Consolidated Window preferences control the functionality of the Consolidated Window.

Status Strip. You can also quickly adjust audio settings for your project or toggle the various Transport buttons to access modes such as Overdub, Wait, and Solo. Unlike other DP windows, the Control Panel cannot be closed and will automatically open anytime a new session is created or opened.

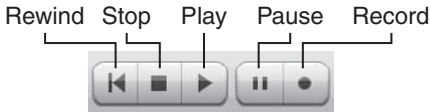
## Transport

The Control Panel's Transport controls operate like those on any standard multitrack recorder. The main transport, or “go,” functions (see Figure 3.5) are (from left to right):



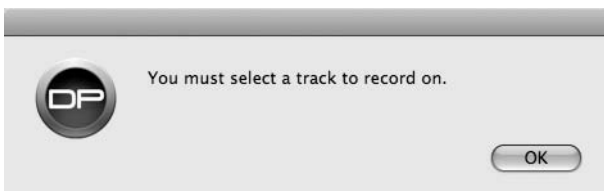
**Figure 3.4** The Control Panel consists of three main sections that make DP “go.”

- **Fast Rewind.** This button rewinds the sequence in fast motion.
- **Slow Rewind/Forward.** This combination button allows you to rewind or move forward in slow motion.
- **Fast Forward.** This button moves the sequence forward in fast motion.



**Figure 3.5** The main “go” functions of the Control Panel.

- **Rewind.** This button takes you to the beginning of the current sequence. If you have the Memory Bar options enabled, the Transport will rewind to the Memory Start location. If pressed during playback, there will be a momentary pause before DP resumes playback at the proper location. Pressing this button during the record process will stop the recording and begin the rewind normally. You can also press the number 1 key on the numeric keypad to instantly locate to the beginning of your project or Memory Start location.
- **Stop.** This button will halt playback and recording and will also turn off the Pause button, if it is engaged. If the Memory Bar’s Auto-Rewind button is turned on, DP will automatically rewind to the Memory Start location. You can also use the spacebar to stop or start playback.
- **Play.** This button begins playback. Use the spacebar to start or stop playback.
- **Pause.** This button suspends playback and puts the Transport in standby. If this is pressed during playback, DP will suspend playback without turning off any sounding MIDI notes. If it is pressed while the Transport is stopped, playback will be suspended until the Transport is “unpaused.”
- **Record.** This button engages playback and begins recording from the playback cursor’s current location. A track must be record-enabled for recording to begin. If you attempt to start recording when no tracks are armed, you will be presented with a warning dialog box (see Figure 3.6).



**Figure 3.6** A track must be record-enabled before you can begin recording.



## Counter

The Counter section of the Control Panel displays the current playback location for the enabled sequence. The Main and Auxiliary Counters can display four different formats: measures, real-time, SMPTE frames, and samples. Click on the time disclosure triangles located to the right of each Counter to change the display. Be aware that you cannot display the same time format in both Counters (see Figure 3.7).



**Figure 3.7** The Control Panel's Counter. In this example, the Main Counter is configured to display measures/beats/ticks, while the Auxiliary Counter displays SMPTE frame time.

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**The Large Counter Window** In addition to the Control Panel's Counter window, DP also has a "large" Counter window (see Figure 3.8) that you can access from the Studio menu. (The default keyboard shortcut is Shift+J.)



**Figure 3.8** The large Counter window.

The large Counter consists of a Main Counter and one to three Auxiliary Counters, depending on whether you enable all four time formats from the Set Display command located in the mini-menu. This command also lets you specify the time format that will be displayed in the Main Counter.

The mini-menu (see Figure 3.9) also provides a command for setting the Chunk Start Time. (See Chapter 11, "Arranging.")



**Figure 3.9** The Counter window mini-menu.

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**Chunks** Digital Performer refers to sequences as *Chunks*. DP projects can contain an unlimited number of Chunks and are managed from the Chunks window (Projects > Chunks). See Chapter 11 for a full explanation of Chunks.

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## Status Strip with Tempo Control

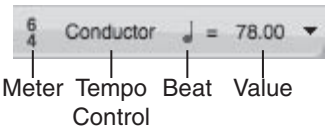
The Status Strip is located at the very bottom of the Control Panel's Counter (see Figure 3.10) and presents a great deal of sequence information. On the left, the strip has fields to enter Memory Start and End times, access to the Set To drop-down menu (discussed later in this chapter), the name of the project, and the sequence (Chunk) that is currently selected in the Sequence drop-down menu. (See the "Sequence and Marker Menus" section later in this chapter.) When Auto-Record mode is enabled, the project name and current Chunk fields will disappear and be replaced by the Punch-In and Punch-Out fields, wherein you can specify the exact locations for punch-in and -out recording. (For more information, see the "Punching In and Out" section of Chapter 7, "Recording Audio.")



**Figure 3.10** The Control Panel's Status Strip.

Located to the right of the Sequence menu (see Figure 3.11) are the current Meter, Tempo Control, Beat Value, and Tempo displays (from left to right). Last is a disclosure triangle that provides access to the Tempo Control drop-down menu.

- **Current Meter.** This displays the current time signature of the enabled sequence. This value can only be changed by selecting Project > Modify Conductor Track > Change Meter. You could also insert a meter event directly into the Conductor track. (See Chapter 4, "Setting Up a New Project," and Chapter 11 for details on working with meters within DP.)
- **Tempo Control.** This displays the current tempo mode of the sequence.
- **Current Beat Value.** This value determines which note gets the "beat," or subdivision, for the current tempo, displayed in beats per minute (BPM). See Chapters 4 and 11 for details on working with tempo within DP.
- **Current Tempo.** This displays the current tempo, or BPM, of the enabled sequence. You can click and drag directly into the BPM window to change the tempo (even during playback), as long as the tempo is not set to be controlled by the Conductor track (explained in the "Conductor Track" section of Chapter 11).
- **Tempo Control menu.** This menu allows you to select a specific tempo mode to control the current sequence. You can choose Tempo Slider, Conductor Track, Tap Pad, or Remote Control.

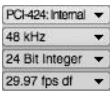


**Figure 3.11** The Control Panel’s current Meter, Tempo Control, Beat, and Value (from left to right).

**The Conductor Track** The Conductor track (discussed further in Chapter 11) is a special track that contains data related to tempo, meter, key signatures, and markers. Think of this track as a roadmap for the sequence. Unlike other tracks, it cannot be deleted. However, its data can be viewed and edited in the Graphic Editor or Event List window. When the tempo of a sequence is set to Conductor Track mode (discussed earlier), the data entered or recorded into this track will control the tempo(s) for the current sequence. You can even have separate takes for the Conductor track! (See Chapter 7 for information regarding takes.)

**Audio Settings**

The Audio Settings section (see Figure 3.12) allows you to specify audio clock sources, the sampling rate, bit depth, and the SMPTE frame rate without having to open their related windows.



**Figure 3.12** The Audio Settings section of the Control Panel.

**Routine Transport Buttons**

Located directly below the Transport controls and to the right of the Audio Settings section are various routine buttons that can help significantly streamline your workflow and allow you to concentrate more on the creative process (see Figures 3.13 and 3.14). For example, the Memory buttons can help you automate routine Transport procedures by allowing you to program the Transport controls to activate at specified times during playback or recording.



**Figure 3.13** The routine Transport buttons can help you significantly streamline your workflow.



**Figure 3.14** More routine Transport buttons are located to the far-right of the Control Panel.

- **Auto-Rewind.** Use this feature to immediately rewind to the Memory Start Time when playback is stopped.
- **Auto Stop.** This option causes playback and recording to stop at the Memory Stop Time.
- **Memory Cycle.** This button will force playback and recording to loop infinitely between the designated Memory Start and Stop Times. Multiple consecutive playbacks will occur until the Stop button is selected.
- **Link Playback to Memory.** This buttons functions just like the Memory Cycle button but will stop at the specified Memory Stop Time rather than repeat over and over. Once enabled, the Pre/Post Roll buttons become active (discussed later in this section).
- **Link Selection to Memory.** When this button is enabled, the Memory Start and Memory Stop Times will always match (update to) the current selection.
- **Auto-Record.** Use this button to automate punches within DP. Once enabled, the Punch Start and End times will become visible in the Status Strip. (See Chapter 7 for more information.)
- **Overdub Record.** When engaged, this option will merge recorded MIDI data with any data that already exists within a MIDI track. When Overdub mode is turned off, previously recorded MIDI data will be replaced when recording starts.

However, audio tracks operate differently. With Overdub mode enabled, newly recorded material will not be merged, but will be layered over existing soundbites. When Overdub mode is off, previously recorded soundbites in that track are erased.

- **Countoff.** This button enables the countoff for the MIDI metronome. The number of countoff measures can be set in the Countoff preferences, which you can quickly access by double-clicking the Countoff button.
- **Wait.** Click this button to place the Transport in standby mode. When playback or recording is initiated, DP will “wait” for a MIDI message before beginning playback or recording. (See Chapter 8, “Recording MIDI,” for more information.)
- **Slave to External Sync.** This button will turn on external sync. Double-clicking will open the Receive Sync window, where you can set specific sync options. Use this option when you wish to synchronize your Digital Performer system with another playback or recording device/application. Review Chapter 2 for an explanation of synchronization.
- **Metronome Click.** This option will turn on DP’s Metronome. Double-clicking on this button will open the Click preferences. See the “Setting Up a Click” section of Chapter 4 for an explanation of Digital Performer’s click.
- **Audible Mode.** Click on the speaker icon to enable Audible mode so you can listen to MIDI or audio data simply by clicking on notes or phrases in a track and holding down the mouse

button. Dragging the Playback Wiper with Audible mode turned on will also allow you to “scrub” existing MIDI data.

- **Auto Scroll.** This enables auto scrolling for the Tracks window. Option-click to open the Scroll preferences (explained in Chapter 5).
- **Solo.** Click on the S icon to turn on Solo mode. By default, the Tracks window’s Solo mode button will mute all tracks when enabled. See the note entitled “The Control Panel’s Solo Button” for a further explanation of the Tracks window’s Solo mode button.
- **Pre/Post Roll.** When you select the Link Playback to Memory button (discussed earlier in this chapter), these two buttons become active, allowing you to add “lead-in” or “lead-out” preparation time to the cycle. Consult the Digital Performer User Guide for more detail about Memory Cycle management.

---

**The Control Panel’s Solo Button** When enabled, the Solo button will temporarily mute all tracks. This is a very handy way to mute multiple tracks and listen to others. However, this can be confusing to users new to DP, because clicking on the Solo button does not necessarily solo a specific track. If you click the Solo button on the Control Panel, you will need to click on an individual track’s Play-Enable button to actually “solo” it. Think of it like this: When you traditionally solo a track with a single click, say, in the Mixer window, all tracks become muted apart from the soloed track. The Control Panel’s Solo button works in the same manner except you must play-enable the track or tracks you want to listen to (because a dedicated solo option is not available for each track in the Tracks window).

Remember, in order to solo an audio track, it must be “online” as well as play-enabled. (Placing audio tracks online or offline is discussed later in Chapter 7.)

The Solo mode button is global and affects all windows in a DP project. A track’s Play-Enable button changes color, depending on its current playback state. Orange indicates that the track is muted when in Solo mode, but it will play back (and become blue) when Solo mode is turned off. Blue means that the track will always play back, regardless of whether it is soloed. When the Play-Enable button is gray, the track is muted and will not play back even if it is soloed.

Tracks can, of course, be soloed or muted at any time during playback, and Digital Performer will remember a track’s soloed and un-soloed play-enabled state.

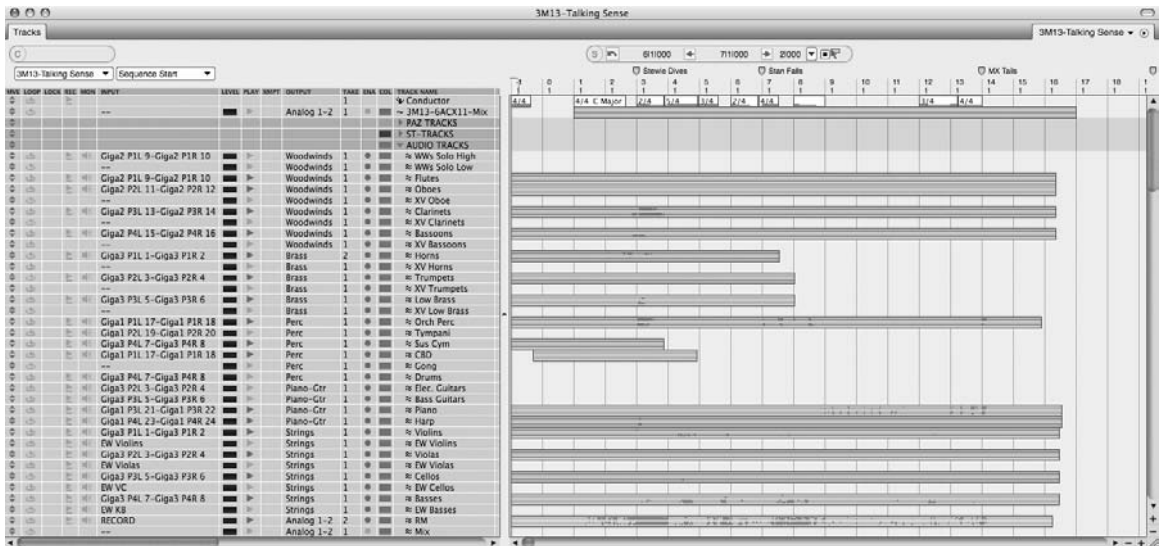
Preferences for further controlling how soloing functions in DP operate can be found in the MIDI Solo Setup and MIDI Patch Thru sections of the Preferences and Settings window. See Chapter 5 for an explanation of the MIDI Solo Setup preferences.

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**Control Panel Preferences** Digital Performer 6 adds two new Control Panel settings. You can specify the Control Panel as a floating window (meaning it will always “float” on top of other windows), and you can calibrate the Control Panel’s transparency. Simply use Digital Performer > Preferences > Control Panel to make these adjustments.

## Tracks Window

The Tracks window is the central window in Digital Performer (see Figure 3.15). It provides an overview of a project’s tracks, track data, and available sequences. This window is really divided into three main sections: the Information Bar, the Tracks List, and the Tracks Overview. Choose Project > Tracks or use the default keyboard shortcut Shift+T.

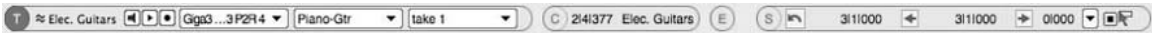


**Figure 3.15** The Tracks window is the central window in Digital Performer.

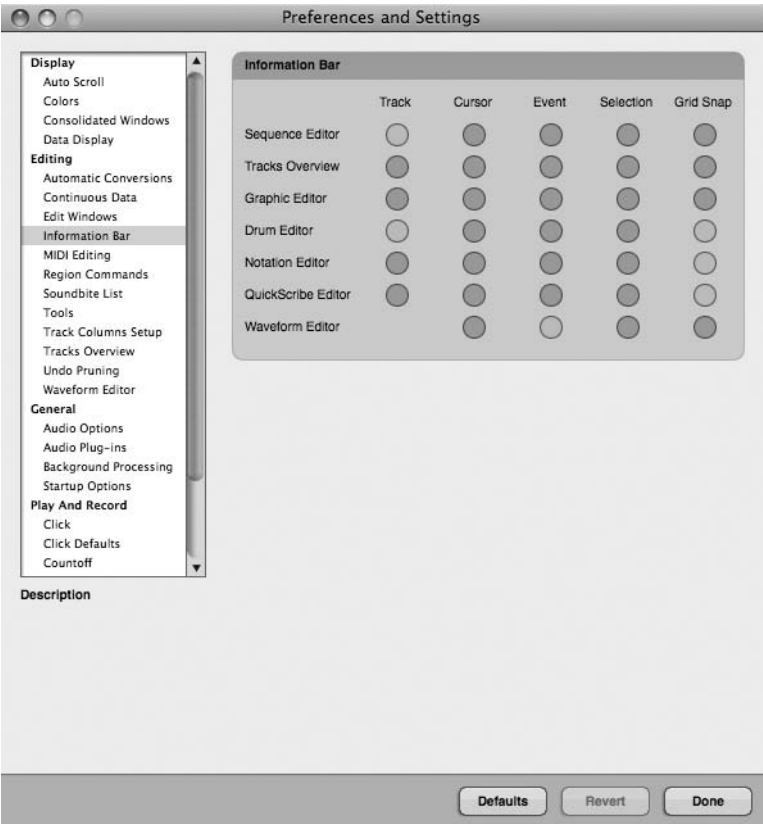
**Is Your Tracks Window Too Small?** New to Digital Performer 6 is the ability to vertically resize the Tracks window. I am not sure why it took so long, but this new feature brings much relief to users who have long been straining their eyes to view their track data in this window. Look for the + and – signs below the vertical scroll bar (at the right side of the window) and use them to expand or shrink the graphic overview of the Tracks window.

### Information Bar

Located in the Tracks window (just above the Tracks List and Tracks Overview sections) and in each of the edit windows is the Information Bar (see Figure 3.16). This bar—or “strip”—contains data fields representing some or all of the information provided in each of the Information windows (discussed in the “Floating Information Windows” section later in this chapter). You can select the data fields you want to make visible in the strip by selecting Digital Performer > Preferences > Information Bar (see Figure 3.17).

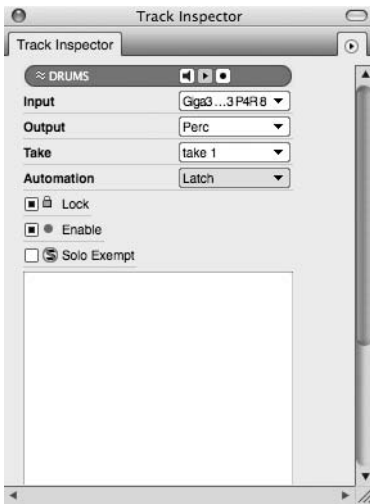


**Figure 3.16** The Information Bar contains a wealth of information regarding your sequence.



**Figure 3.17** The Information Bar preferences allow you to select the data fields you want to see in the “strip” of each window.

**“Floating” Information Windows** The information located in the Information Bar is also available in separate “floating” windows. You can keep these windows open, and they will continually update while you work. Each set of data fields is represented by a corresponding letter in parentheses, such as (T) for Track Inspector (see Figure 3.18). Just double-click on any letter in the strip, and the data will appear in its own floating window. (You can also Option-click to open the window in configuration mode or Command-click a letter for quick access to the Information Bar preferences.) Additionally, each separate window is accessible in the Studio menu, such as Studio > Track Inspector.



**Figure 3.18** The Track Inspector information in a separate floating window.

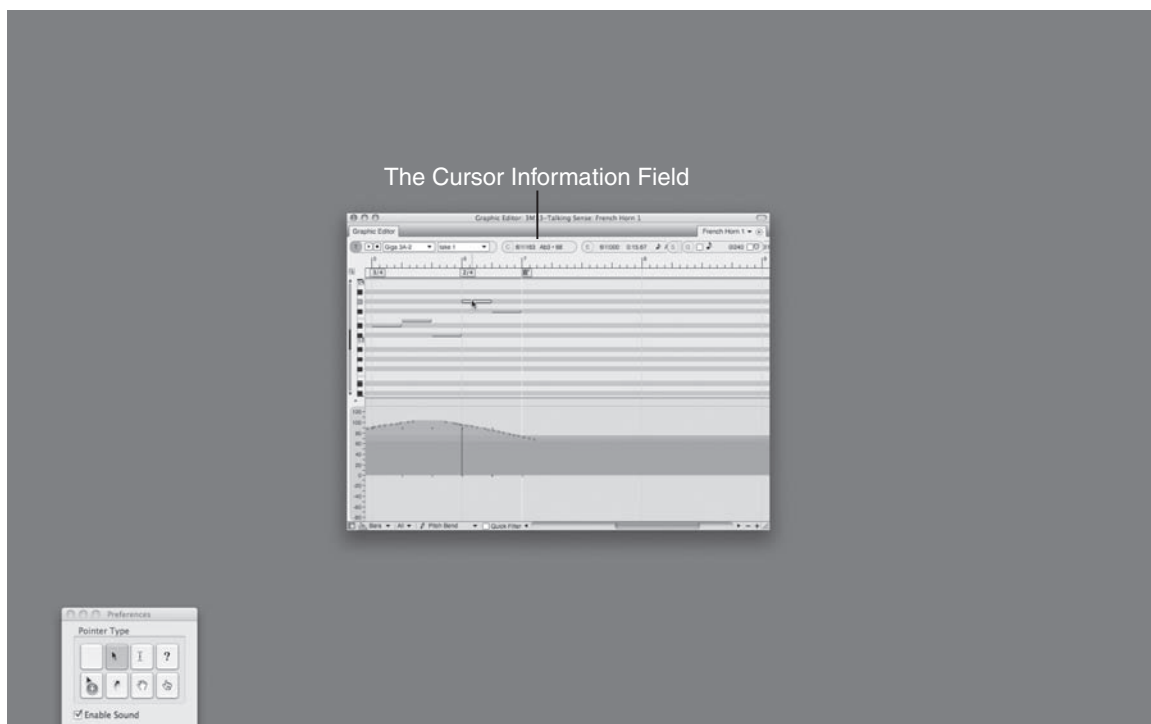
There is yet another window available in the Studio menu that does not appear in the Information Bar. The Sound File Information window (discussed in the “Sound File Information Window” section later in this chapter) provides details about currently selected soundbites. (See Chapter 6, “Project Management: Part 2,” for more information about soundbites and audio files.)

You can choose from the following options. (By default, the Tracks window only displays Cursor and Selection information.)

- **Track Inspector (T).** When a track (or a portion of a track) is highlighted, these data fields show information regarding the selected track’s color, icon, name, play-enable status, record-enable status, input monitor, input, output, take, automation, default patch/patch (for MIDI tracks), lock, and solo exempt status.



- **Cursor Information (C).** This field displays time and track name information relating to the current location of the mouse cursor (pointer). It continually updates as you move the mouse horizontally and/or vertically around the screen. In the Graphic Editor (discussed in Chapter 10, “Editing”), the Cursor Information data field will also display MIDI pitch information (see Figure 3.19).

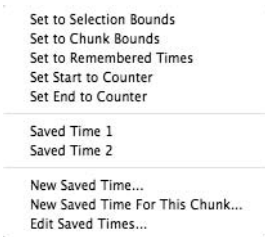


**Figure 3.19** Cursor information is displayed in the Cursor Information data field of the Graphic Editor. In this example, data represents a MIDI note’s measure and beat position, pitch value, and MIDI note number.

- **Event Information (E).** This field displays details about a single event that has been selected (much like the Event List discussed later in Chapter 10). For example, if you highlight a MIDI note, that note’s pitch, on velocity, off velocity, and duration data are presented in the appropriate fields.
- **Selection Information (S).** These fields show the Selection Start and End times for a selected (highlighted) region of a track or tracks. These times are used to define the in and out points of the segment that you wish to edit. When clicked, the Selection Start and Selection End arrows will place the current Counter location (position of the Playback Wiper) into the corresponding start or end field. The “curved” arrow (located to the far left) is used to recall a Remembered Time (discussed in the “Set to Remembered Times and New Saved Time

Commands” section later in this chapter), and the Smart Selections button (located to the far right) is used to toggle the Smart Selections command on or off. Consult the Digital Performer User Guide for more details about Smart Selections.

You can also use the Set To drop-down menu (discussed later in this chapter) to access shortcuts for setting or loading times, as shown in Figure 3.20. New to version 6, the New Saved Time and Set to Remembered Times options give you even quicker access to time selections (discussed in the “Set to Remembered Times and New Saved Time Commands” section of this chapter).



**Figure 3.20** The Set To menu provides shortcuts for setting or loading time-range selections. Notice the saved times listed in the center of the window.

- **Grid Snap Information (G).** This data field contains “snapping” and “nudging” information according to the Edit Grid settings (discussed in the “Grids, Time Rulers, and Zooming” section later in this chapter and in Chapter 10).

### ***The Set To Menu Shortcuts***

The Set To menu provides the following options for quickly making time-range selections.

- **Set to Selection Bounds.** This shortcut will automatically set the Selection Start and End times to the current time-range selection in the Time Ruler (located directly above the Tracks Overview window). You can make a time-range selection by simply clicking and dragging in the sequence timeline or anywhere in the Tracks Overview window. You will notice the Start and End times will automatically update as you click and drag to make your time-range selection.
- **Set to Chunk Bounds.** This option will set the Start and End times to the entire range of the current sequence.
- **Set to Remembered Times.** This option will set the Start and End times to any “remembered” time-range selections made using the Command+R shortcut (discussed in the “Set to Remembered Times and New Saved Time Commands” section of this chapter).
- **Set Start to Counter.** This will set the Selection Start point to the time displayed within the Control Panel’s Main Counter. You can also accomplish this by clicking the Sequence Start button.

- **Set End to Counter.** This will set the Selection End time to the time displayed within the Control Panel's Main Counter. Clicking the Sequence End button will give the same results.
- **New Saved Time.** This option will allow you to name and save a time-range selection for Memory Cycle or Auto Record purposes.
- **New Saved Time for This Chunk.** This option will allow you to name and save a time-range selection that will only appear in this menu for the Chunk in which it was created.
- **Edit Saved Times.** Use this option to rename and delete saved time-range selections.

---

**Remember Saved Times and New Saved Time Commands** Digital Performer 6 adds a new set of features that allow you to create “remembered” or “saved” times. These features enable speedier recall of time-range selections and can significantly accelerate the editing process. They both perform similar functions but are configured and recalled in different ways. Consult the Digital Performer User Guide for more details regarding these new features.

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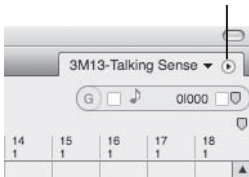


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**Mini-Menus** Mini-menus appear in most of DP's windows. In previous versions of DP, these menus were located in the upper-left corner, but in version 6, they are located in the upper-right corner and are represented by a small disclosure triangle, as shown in Figure 3.21. Each one contains different options pertaining to the respective window. Many of these menus also provide access to the Preferences and Settings window.

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The Mini-Menu Disclosure Triangle



**Figure 3.21** Mini-menus appear in most of DP's windows and are represented by a small disclosure triangle.

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## Tracks List

The Tracks List section, shown in Figure 3.22, displays various features that allow you to manage tracks within the Tracks window. The following subsections describe the features that you will find in the Tracks List section.

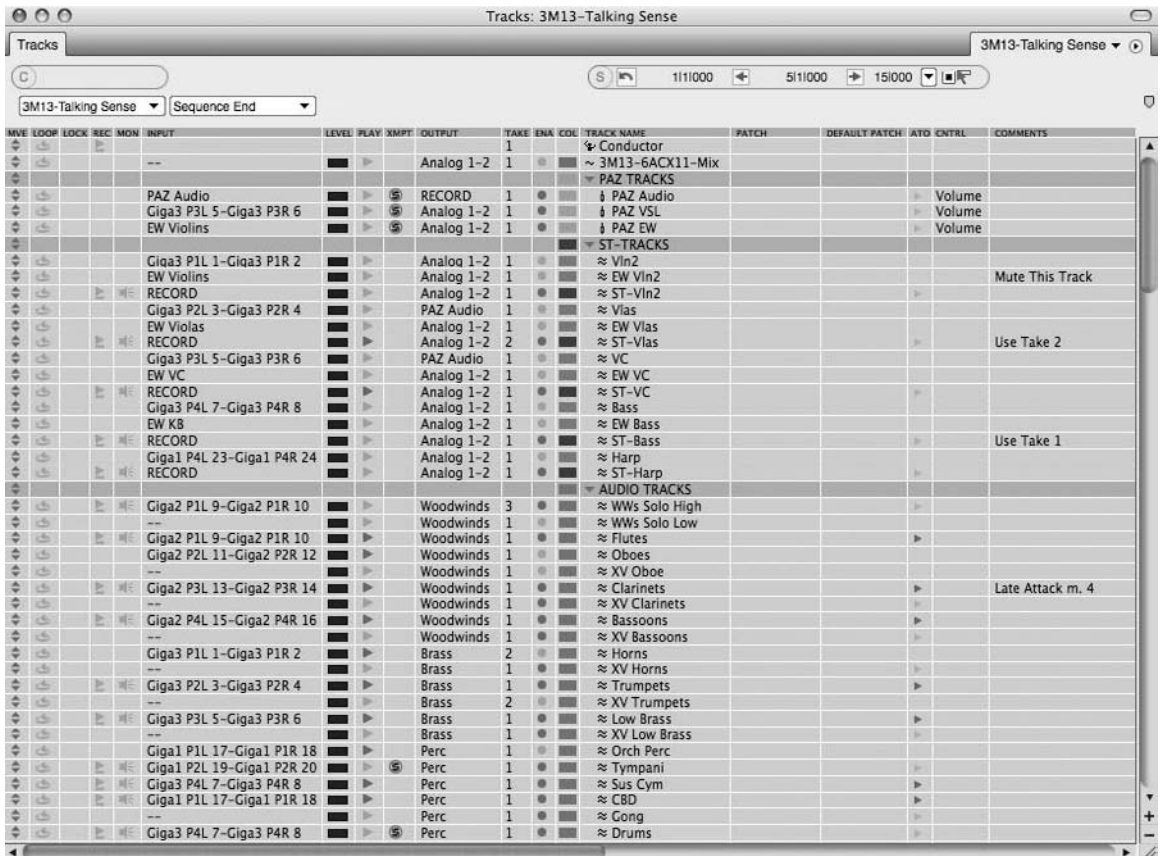


Figure 3.22 The Tracks List.

### Sequence and Marker Menus

Located above the Track Columns (discussed in the “Track Columns” section of this chapter), you will find two drop-down menus. In the Sequence menu, you can switch between sequences (provided you have more than one sequence in your project), create a new sequence, rename or delete the current sequence, or copy a selection to a new sequence.

In the Marker menu, you can quickly proceed to specific marker locations in the current sequence. The Marker menu also provides other important timeline locations, such as the Sequence Start and End times. See Chapter 11 for more information about the Sequence and Marker menus.

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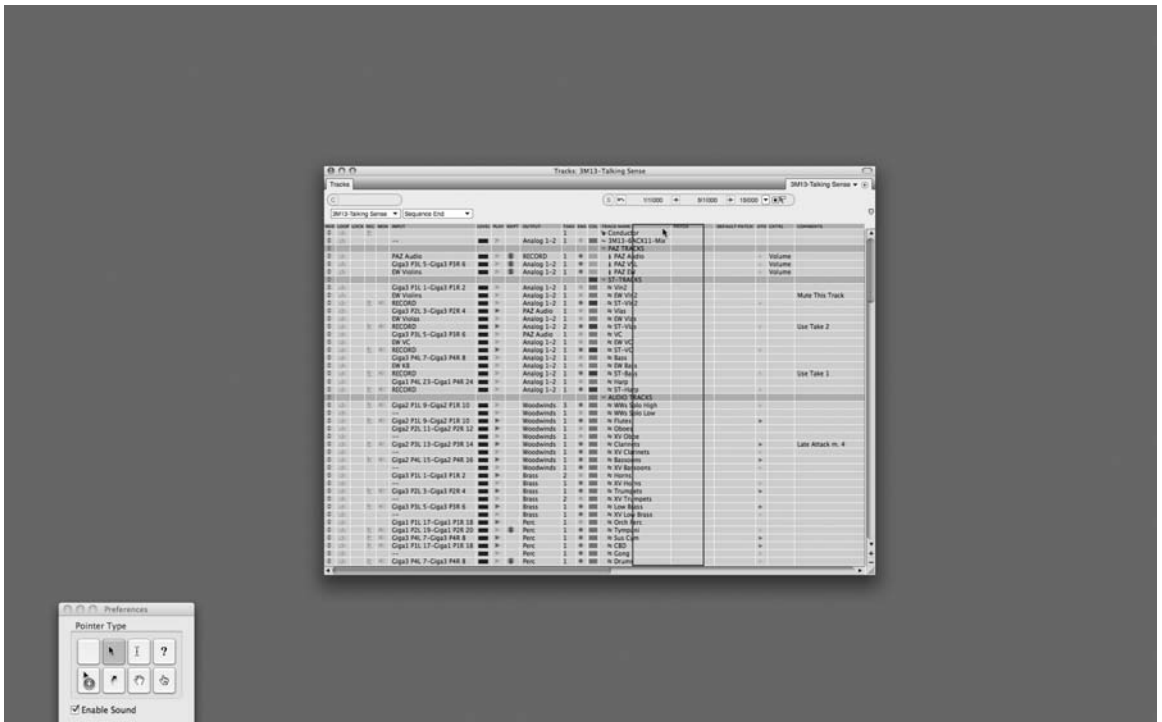
**Window Target Menus** Be on the lookout for Window Target menus (new to version 6). These menus are located in the upper-right corner (and to the immediate left of the mini-menu’s disclosure triangle button) in the Tracks window and all editor windows. Basically,

these menus provide efficient access to a list of “target” destinations, such as a different track or sequence. For example, if you are editing a section of audio in the Waveform Editor (discussed in Chapter 13, “Processing and Mastering”), and you want to make a brief edit to a different audio track (using the current editor), simply use the Window Target menu to select the new “target” track, and the waveform of the new audio track will promptly appear. This new feature saves only a few clicks, but it can be very beneficial in a deadline crunch!

Beware, switching sequences using the Window Target menu in the Tracks window or the Sequence Editor does not work like the conventional Sequence menu. It switches the display to the new sequence but does not play-enable it.

## Track Columns

Track Columns (see Figure 3.23) allow you to manage track I/O assignments, MIDI patches, takes, track order, comments, and so on. Choose Track Columns Setup from the mini-menu to show and hide specific columns within this list. You can even double-click on a column heading



**Figure 3.23** Track Columns display the settings for each track within a sequence. Click and drag the column heading to change the column order within the Tracks List.

to open the Track Columns Setup window without using the mini-menu. To change the order of the columns within the list, click and drag on a column name. The various columns and their associated controls are as follows (from the default left to right placement):

- **Move.** Click on the Move handle of a track and drag up or down to change the position of a track within the Tracks List.
- **Loop.** A track's Loop icon will be highlighted when a track contains a loop. Keep in mind that you can't click directly on a track's Loop icon to insert a loop. Use the Region menu's Set Loop command or the Loop tool to loop a track. See Chapter 11 for an explanation of looping in Digital Performer.
- **Lock.** Click the Lock button to "lock" a track. Once a track is locked, all data within the track will be locked to its current SMPTE frame location. Be aware that this feature does not prevent or "lock" data from being edited within a track.
- **Record.** Click the Record button to record-enable a track. Record-enabled tracks are designated with a red Record icon. An input and output assignment must be made before a track can be armed for recording.
- **Monitor.** Once this is enabled, you can monitor an incoming signal of an audio track's input.
- **Input.** This column provides the input assignment menu for each track.
- **Level.** These activity meters display the output level of a track.
- **Play.** Click the Play-Enable button to enable track playback. When the Play icon is blue, tracks will play back. When it is dimmed, tracks will be muted. When in Solo mode, an orange state indicates that the track is muted.
- **Xmpt.** This is the Solo Exemption column. Enabling this feature will prevent a track from being muted when other tracks are soloed. This is especially handy for tracks that are usually never muted, such as aux and master tracks.
- **Output.** This column provides the output assignment menu for each track.
- **Take.** Click on this column to access the Take menu for a track. See Chapter 7 for information on recording and managing alternate takes.
- **Enable.** This button places an audio track online or offline in order to manage CPU resources.
- **Col.** Click on a track's Color column to change the color of a specific track. See Chapter 5 for an explanation of track colors.
- **Track Name.** This column displays the name of a track. Option-click the track name to rename a track.

- **Patch.** This is the “current” patch setting for the selected MIDI track. If a patch is not selected, the setting will be blank. (Think of patches as available sounds in your selected MIDI device.)
- **Default Patch.** This feature determines what MIDI patch the track will always start with. This setting is saved with the project, allowing you to reopen a project and return to the correct sound or patch for a track.
- **Ato.** This is the automation menu for each track. See Chapter 12, “Mixing,” for an explanation of DP’s track-automation features.
- **Cntrl.** This feature lets you choose controller data to overlay on top of existing data within a track.
- **Comments.** This column displays comments that have been entered within a track. To enter or change comments, simply click on a track’s Comments column.

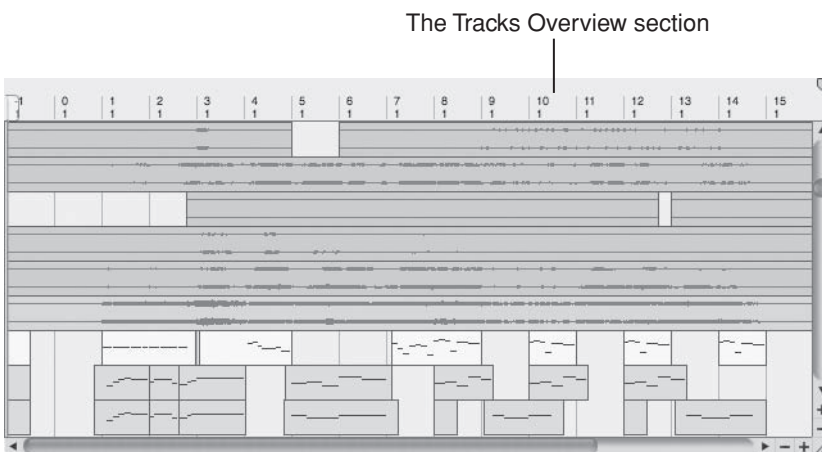
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**The Disappearing Tracks List** Perhaps you might like to gain more screen space. Digital Performer 6 presents a new and nifty little feature that allows you to make the Tracks List quickly disappear. Simply double-click on the divider (located between the Tracks List and the Tracks Overview section) to hide or reveal the Tracks List.

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## The Tracks Overview Section

The Tracks Overview section displays the audio and MIDI data for all available tracks, as shown in Figure 3.24. This is a global look at all the tracks within a sequence, including Conductor



**Figure 3.24** The Tracks Overview section provides a global look at all audio and MIDI data within a sequence’s tracks. Phrases of MIDI data are intuitively grouped into blocks. You must first select data before you can edit it.

track data, such as meter, tempo, and marker events. Within the Tracks Overview section of the Tracks window, you can view tracks, select tracks, make edits over entire sections of a sequence, or add and delete tracks from a project. Unlike other tracks, however, the Conductor track cannot be deleted from a sequence. See Chapter 11 for an explanation of the Conductor track within Digital Performer.

### ***MIDI and Audio Data***

The Tracks Overview section displays MIDI and audio data in blocks. Phrases of MIDI data are intuitively grouped into blocks by Digital Performer's Dynamic Phrase Parsing feature. This feature looks at the amount of empty time between blocks, as well as density of the MIDI data. Within a MIDI block, notes are displayed as purple bars, while controller data appears as green bars. You can customize how MIDI data is phrased from the Tracks Overview section of the Preferences and Settings window (Digital Performer > Preferences and Settings) or by selecting the Tracks Overview Preferences in the Tracks window's mini-menu. See Chapter 5 for an explanation of the Tracks Overview preferences.

Audio soundbites appear as entire blocks that contain the waveform display of the audio data and are selected and edited as single objects. Although you can perform standard edits on audio tracks within the Tracks window, the edges of soundbites cannot be trimmed in the Tracks Overview. Use the Sequence or Waveform Editor to trim the edges of soundbites in DP (discussed in Chapter 10).

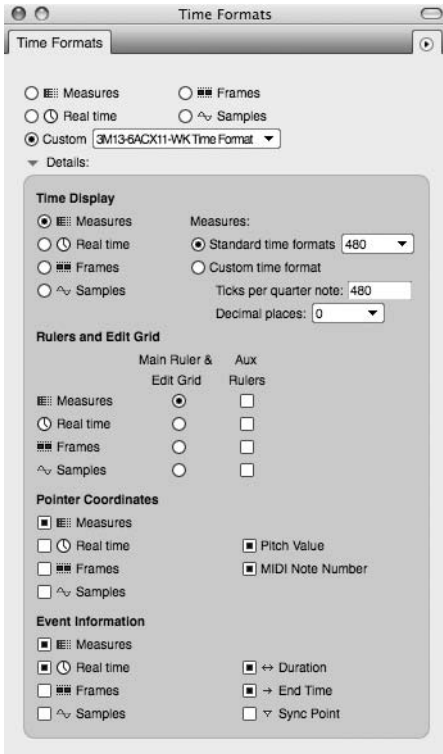
### ***Time Rulers and Grids***

The Time Ruler, located directly above the Tracks Overview section, is broken up into columns, or grids. By default, one grid column is equal to one measure of music. You can use the horizontal Zoom buttons (+ and -), located at the bottom-right corner of the Tracks window, to change the resolution of the grid. If you wish to display other time formats within the Time Ruler, select Setup > Time Format and choose the appropriate options (see Figure 3.25). Unlike other editors within DP, the Snap to Grid feature within the Tracks window cannot be disabled. However, it can be temporarily overridden by pressing the Command key while making an edit selection.

## **The Sequence Editor**

The Sequence Editor is very similar to the Tracks window in that it displays audio and MIDI data, as well as Conductor track events (see Figure 3.26). Where it differs, however, is in its ability to display a project's QuickTime movie, show and hide specific tracks, reveal automation data, display audio waveforms, and perform edits that are not constrained to a grid. In addition, you can zoom horizontally and vertically in order to perform detailed edits, even down to the sample level! This is a powerful, one-stop editing window for working with tracks in DP. Choose Project > Sequence Editor or use the default keyboard shortcut Shift+S to open the Sequence Editor window.





**Figure 3.25** The Time Formats window provides options for controlling the display of time formats within DP's various windows. Choose the Custom option to simultaneously show different time formats within a Time Ruler.

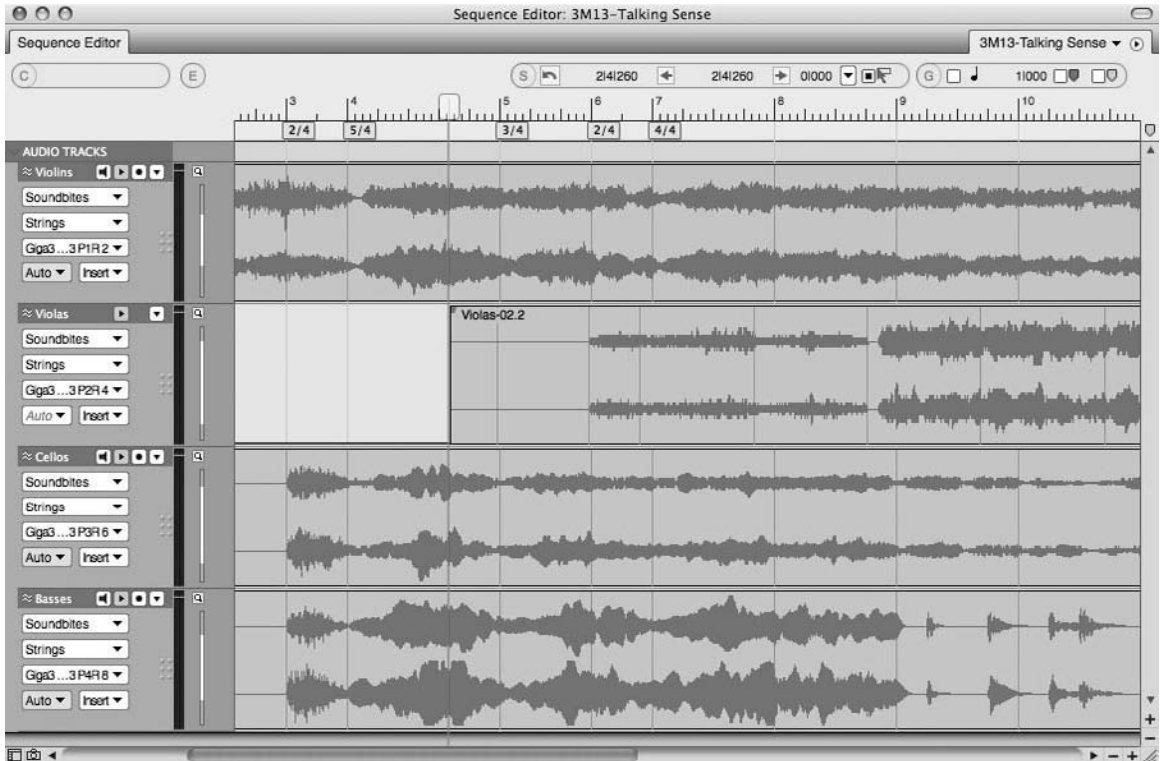
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**The Sequence Editor Information Bar** As discussed earlier in this chapter, the Information Bar in the Sequence Editor (and all other editing windows) contains the same data as the Information Bar in the Tracks window. Remember, you can use Digital Performer > Preferences > Information Bar to customize this "strip" for each window.

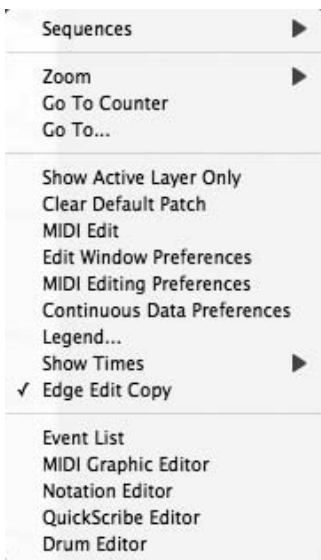
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## Sequence Editor Mini-Menu

The mini-menu provides various items and commands for controlling the Sequence Editor and accessing other important windows (see Figure 3.27). Some of these options were already covered in the "Tracks Window" section earlier in this chapter or are straightforward enough that they don't require an explanation. MIDI-related commands, such as the Continuous Data preferences, can be found in the "MIDI Editing in the Graphic Editor" section of Chapter 10.



**Figure 3.26** The Sequence Editor is a one-stop window for your track editing needs.



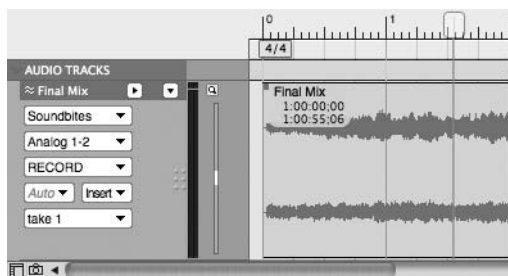
**Figure 3.27** The Sequence Editor's mini-menu.

The items that are important or unique to the Sequence Editor are as follows:

- **Sequences.** This menu is a duplicate of the Sequence menu located in the Control Panel and Tracks window.
- **Show Active Layer Only.** This option hides all data that is not chosen as the active layer for each track (discussed in the “Track Settings Panel” section of this chapter).
- **Show Times.** This option will display the time stamp for soundbites within the Sequence Editor. Choose the appropriate format from the Show Times submenu.
- **Edge Edit Copy.** When enabled (checked), this feature will create a new soundbite when the edge of a soundbite is trimmed. This prevents the original soundbite from being modified, which is handy when you have multiple instances of the same soundbite within a track, but you only want to affect a single instance of that soundbite. Turning this feature off (leaving it unchecked) will cause the original soundbite (plus any instances of that soundbite) to be affected when trimmed. You can, however, Option-drag the edge of a soundbite to override the current Edge Edit Copy setting.

## Track Settings Panel

The Track Settings panel displays important information about a track, making it possible to complete the majority of your track management without having to return to the Tracks window. This panel varies slightly, depending on whether you are working with an audio or a MIDI track. The Settings panel for an audio track is shown in Figure 3.28.



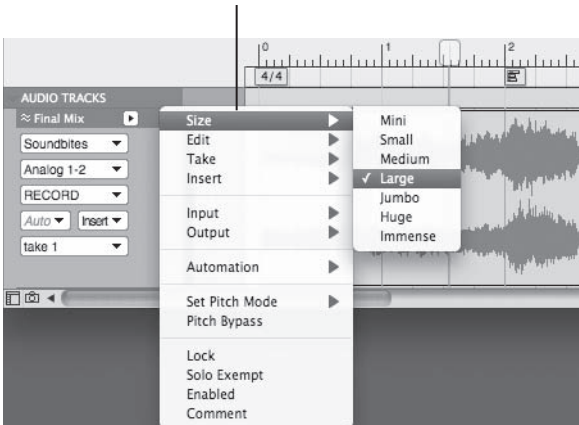
**Figure 3.28** The Sequence Editor's Track Settings panel for an audio track.

Many of these features—such as the Play/Mute and Record Enable buttons, the Take menu, automation settings, Lock, Solo Exempt, and Comments—are universal to other editors and are covered in their respective chapters. The Track Settings panel's important and unique features are as follows (from top to bottom):

- **Track Type icon/Color Selector.** This feature is located to the left of the track name. The Track Type icon allows you to visually differentiate between track types. Clicking on this icon will also allow you to change the track color.

- **Track name.** Click the name of a track to select it. Option-click to rename a track. Command+double-click to open the Mixing Board.
- **Track Settings menu.** This menu provides a list of all of a track's settings (see Figure 3.29). This is useful because a track's size can be minimized to conceal all of the track settings contained within the Track Settings panel or increased to make it easier to edit a track's visible audio or MIDI data. You can access this menu by clicking on the small black triangle located to the right of the track name.

The Track Settings menu

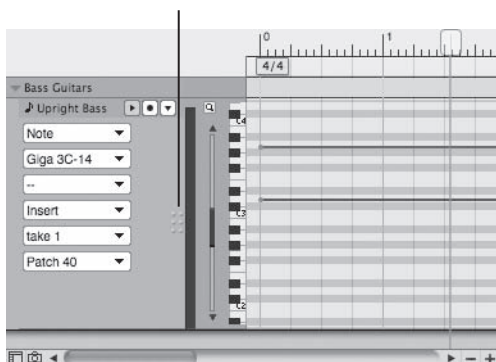


**Figure 3.29** The Track Settings menu displays the track's various settings as a list.

- **Waveform Vertical Zoom.** Located to the right of the Track Settings menu, this button (the magnifying glass icon) controls the vertical height of an audio track's waveform display or a MIDI track's note data.
- **Active Layer.** This option allows you to choose the type of information or data that is displayed in the top layer of a track, such as automation data or loop information. Choosing Volume for an audio track, for example, will overlay volume automation data over the track's waveform display (which will be dimmed).
- **Insert menu.** This menu allows you to insert certain types of data into a track. See the "Inserting Automation Data" section of Chapter 12 for an explanation on inserting data within a track.
- **Horizontally Resize.** Use the Resize handles (gray dots) to drag and resize the Track Settings panel into a horizontal position.

The Track Settings panel for a MIDI track appears in Figure 3.30. Unique to a MIDI track's Settings panel are the following features:

The Horizontal Resize button



**Figure 3.30** A MIDI track's Settings panel with the Horizontal Resize button.

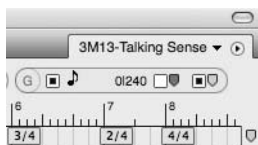
- **Default Patch.** This button determines the MIDI patch that the track will always start with. You can clear this setting from the Tracks window's mini-menu.
- **Note Grid (piano roll) scroll bar.** Use this slider to scroll the note grid up and down. The size of the slider is determined by the overall height of the MIDI track.

## Graphic Editing

You can perform comprehensive graphic editing of audio and MIDI tracks in the area located to the right of each track's Settings panel. See Chapter 10 for a detailed look into the editing process.

## Grids, Time Rulers, and Zooming

Like the Tracks window, you can configure the Sequence Editor to conform to a specific grid value (see Figure 3.31). These values are displayed in the Grid Snap Information data fields (usually located in the far-right corner of the Information Bar). Any edits and selections made with the grid enabled will constrain the action(s) to the user-defined grid resolution.



**Figure 3.31** You can confine your edits to a specific grid setting. In this example, all edits will “snap” to eighth-note values.

## Edit Grid, Beat Grid, and Snap to Markers

Grid Snap Information consists of three main sections; Edit Grid, Beat Grid, and Snap to Markers.

- **Edit Grid.** The current grid resolution (a.k.a. measurement units you want to use while editing) is determined by the Unit indicator icon, which by default is represented by a note value. (Other values appear according to selections made in the Time Formats window (Setup > Time Formats). Click on the Note icon to change the resolution grid. (Matching numeric values will update in the aligned data fields.) To turn the grid on or off, click the Edit Grid button (to the left of the Unit indicator).
- **Beat Grid.** The Beat Grid toggle button (located to the left of the Beat Grid icon, a purple chevron) determines whether specific editing actions will “snap” to beats within the actual audio waveform (even if they don’t match up with “units” in the Edit Grid). Consult the Digital Performer User Guide for more information about this advanced feature.
- **Snap to Markers.** The Snap to Markers section does exactly what the name implies. When its toggle button is selected (located to the left of the Marker icon, a yellow chevron), editing actions “snap” to marker locations in the current sequence. Using Snap to Markers and Edit Grid features together provides an even greater editing flexibility, especially when marker locations don’t “line up” perfectly with units in the edit grid.

### ***Time Ruler***

Below the Information Bar is the Time Ruler, which consists of a “main” ruler that measures the time of a sequence horizontally. The time formats displayed are determined by the options set in the Time Formats window (select Setup > Time Formats). Making selections within the Time Ruler allows you to make time-range selections that will include all visible tracks.

### ***Zoom Buttons***

Like the Tracks window, the Sequence Editor has zoom controls built directly into the window. Located at the bottom-right corner are zoom control buttons that control the vertical and horizontal zooming (see Figure 3.32). Click the horizontal plus and minus buttons on the left to zoom horizontally. Click the vertical plus and minus buttons on the right to zoom vertically. Option-click on a zoom button to instantly zoom to the minimum or maximum zoom resolution. These buttons are global controls and will affect all visible tracks. To affect the zoom resolution for a particular track, choose the Size option from the Track Settings menu discussed earlier in this chapter.



**Figure 3.32** The Sequence Editor’s horizontal and vertical zoom buttons.

## Track Selector

This button (located in the bottom-left corner of all editor windows) will reveal or hide the Track Selector List as shown in Figure 3.33, from which you can choose to show or hide specific tracks in the editor's window. Tracks that are showing will be highlighted in blue (or your custom Mac OS highlight color). You can click on a specific track or drag over multiple tracks to show or hide them. Option-clicking on the name of a track will hide all other tracks, while Command-clicking will reveal all tracks except the one you click on.



**Figure 3.33** The Track Selector button will reveal or hide the Track Selector List.

---

**Universal Track Selector** Since many of DP's windows contain a Track Selector List, it can be fairly inconvenient to manage each one as you switch between windows. New to version 6 is the Universal Track Selector (Studio > Track Selector). Because it updates to the current active window, this separate "floating" window makes it possible to use one Track selector for all edit windows.

---

## The Mixing Board

The Mixing Board provides a comprehensive environment for mixing audio, MIDI, and virtual instrument tracks within Digital Performer. Modeled on traditional mixing consoles, the Mixing Board, shown in Figure 3.34, also offers access to real-time plug-in inserts, sends, automation modes, and helpful features for managing your mixes.

### Window Target Menu and Mini-Menu

The Mixing Board's Window Target menu is similar to other Window Target menus within DP. (See the "Window Target Menus" note earlier in this chapter.) However, in addition to being able to switch sequences, you can use this menu to create new V-Racks or switch between existing V-Racks. A V-Rack is a "virtual" rack used as a central location for effects processing or virtual instruments. For more details regarding V-Racks, see the "V-Racks" note in Chapter 11.

The Mixing Board's important mini-menu features, shown in Figure 3.35, are as follows (from top to bottom):

- **Mixer Settings Show/Hide.** The first section of the mini-menu (starting with Inserts and ending with the Input/Output settings) provides a list of mixer settings that can be shown (checked) or hidden from display (unchecked) within the Mixing Board. To show only one item while hiding all other items, Option-click with the mouse. Command-clicking an item

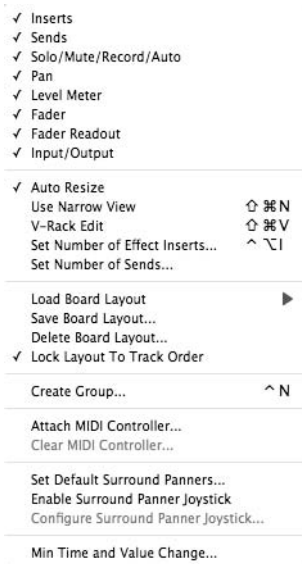


**Figure 3.34** Digital Performer's Mixing Board offers a familiar environment for mixing audio and MIDI tracks.

will have the opposite effect, hiding one track and showing all the others. In order for this shortcut to work, be sure to press the Option or Command key before you access the mini-menu items.

- **Auto Resize.** When this option is checked, the Mixing Board will automatically resize itself when mix settings or tracks are shown or hidden.
- **Use Narrow View.** Turn this feature on to shrink tracks horizontally within the Mixing Board. This will allow you to display more tracks within the same amount of space.
- **V-Rack Edit.** This item is used to toggle the Mixing Board to the last viewed V-Rack.
- **Set Number of Effects Inserts.** Choose this option to set the number of inserts that will be displayed within the Mixing Board. The default number of effect inserts is five. A maximum number of 20 effect inserts per audio/aux track can be made available for mixing!





**Figure 3.35** The Mixing Board’s mini-menu provides options for managing track layouts, the number of effect inserts and sends, mix groups, and surround features within DP’s Mix window.

- **Set Number of Sends.** Choose this option to set the number of sends that will be displayed within the Mixing Board (see Figure 3.36). The default number of effect inserts is four. A maximum number of 20 sends per audio/aux track is available in mono, stereo, and surround formats.



**Figure 3.36** Use the Mixing Board mini-menu’s Set Number of Sends option to specify the number of sends that will be available in a project.

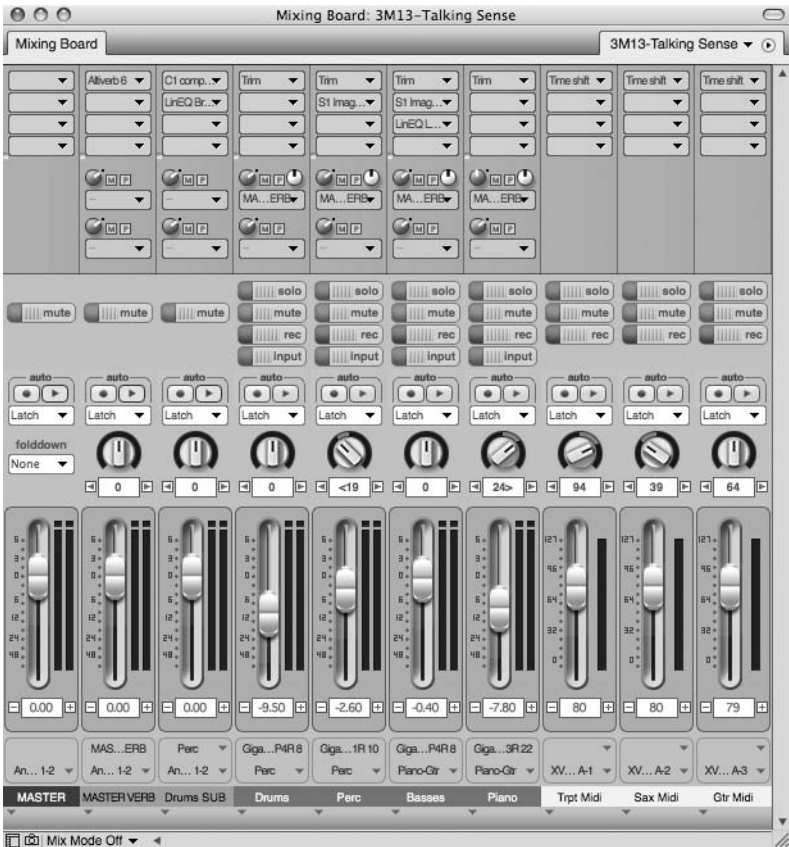
- **Load/Save/Delete Board Layout.** These options are used to manage board layouts within the Mixing Board. See Chapter 12 for an explanation of these options.
- **Lock Layout to Track Order.** Checking this option will force the horizontal track order within the Mixing Board to adhere to the vertical track order within the Sequence Editor and Tracks windows. Uncheck this option to make the track layout independent of these other windows.
- **Create Group.** This option will allow you to create track groups. See Chapter 12 for an explanation of track groups.

- **Attach/Clear MIDI Controller.** The Attach feature lets you connect a fader or knob within the Mixing Board to a MIDI controller. Use the Clear option to remove the connection.
- **Set Default Surround Panners.** This option lets you set the surround panner plug-in that will be used when a surround track is first created.
- **Enable/Configure Sound Panner Joystick.** Use these features to enable and configure a standard USB joystick to control surround panner plug-ins within DP.
- **Min Time and Value Change.** This control sets the minimum amount of time between a volume or pan move that DP records when making changes with the Volume faders and panners. You can use this to control the amount of data that is recorded when making automation moves, for example. Using higher settings can reduce the amount of data but may also introduce unwanted noise and artifacts.

## Track Strips

The track strips (or channel strips) within the Mixing Board, shown in Figure 3.37, are broken into sections that contain standard mixing options for inserting real-time plug-ins, controlling volume and panning, enabling automation, and so on. Audio and MIDI tracks differ in that MIDI tracks do not contain Sends sections. The various sections are as follows (from top to bottom):

- **Inserts.** You can insert real-time audio and MIDI effects by clicking on the Insert menus (located at the top of each track strip; they appear with small gray triangles). You can also insert virtual instrument plug-ins into unassigned instrument tracks. See Chapters 9 and 13 for explanations of this feature.
- **Sends.** Sends are used to send, or route, signals from audio and aux tracks to additional sources within your system. See Chapter 12 for an explanation of this standard mixing feature.
- **Solo/Mute/Record/Input.** Use these buttons to solo, mute, record-enable, or monitor the input of a track. Only instrument, aux, and master tracks contain Mute buttons.
- **Automation.** The Automation section provides buttons for turning on and record-enabling automation on a track. You can access the different automation modes from the Automation menu. See Chapter 12 for an explanation of Digital Performer's automation features.
- **Pan knob and Pan Readout field.** Click and drag a track's Pan knob to pan a track. You can also type a pan value directly into the Pan Readout field or use the left and right arrow buttons, which will change the pan value by increments of 1 (see Chapter 12).
- **Volume and Metering.** The Volume fader controls the output (post-hard disk) level of a signal, while the Level meters display the audio output levels or MIDI velocities of a track. As with the Pan Readout controls, you can use the Volume Readout section to make level adjustments to a track.



**Figure 3.37** The track strips within the Mixing Board resemble traditional mixing console channel strips. MIDI and master tracks do not contain Sends sections.

Keep in mind that the level numbers to the left of the audio track faders appear to be representing traditional analog values (or average volume levels of a track expressed), but this is not actually the case. In DP, audio volume is expressed in decibels, where zero is unity gain. These audio faders include an extra +6 dB of boost (headroom). This is the case throughout the program wherever audio volume values are displayed.

- **Input/Output menus.** These two menus display the current input and output assignments of a track. Click on each menu to access track I/O assignments without returning to the Tracks window or the Sequence Editor. You can hide the I/O menu from a channel strip all together by unchecking it in the mini-menu.
- **Track Name.** Option-click to rename a track. You can change the track order within the Mix window by clicking and dragging on the name of a track. Double-clicking on a track

name will launch an editor window for the track. This setting can be specified in DP's Preferences window. (See the "Edit Windows" section of Chapter 5.)

- **Input/Output Assignment menu.** Located directly below the track name, you can access this menu by clicking on the down arrow. Similar to the Input/Output menu, this menu lets you configure input and output assignments without leaving the Mixing Board. Unlike the previous Input/Output menu, this menu cannot be hidden from the mini-menu, and it offers additional options for solo exempting, deleting, or placing a track online or offline (see Figure 3.38).



**Figure 3.38** Hidden below the track name, the Input/Output Assignment menu lets you configure I/O and voicing assignments without leaving the Mixing Board.

**Snapshot Camera Buttons** You may have noticed the small camera icon (see Figure 3.39) located in the bottom-left corner of the Mixing Board window (to the right of Track Selector button). This button is used to take an automation “snapshot” that subsequently inserts automation data into a track (at a specified location and time). See the “Snapshot Automation” section of Chapter 12 for more information.



Figure 3.39 The Snapshot button (camera icon) is used to insert automation data into a track.

# Soundbites Window

The Soundbites window allows you to view and manage soundbites within Digital Performer. This window is divided into three sections—List, Info, and Edit—as shown in Figure 3.40.

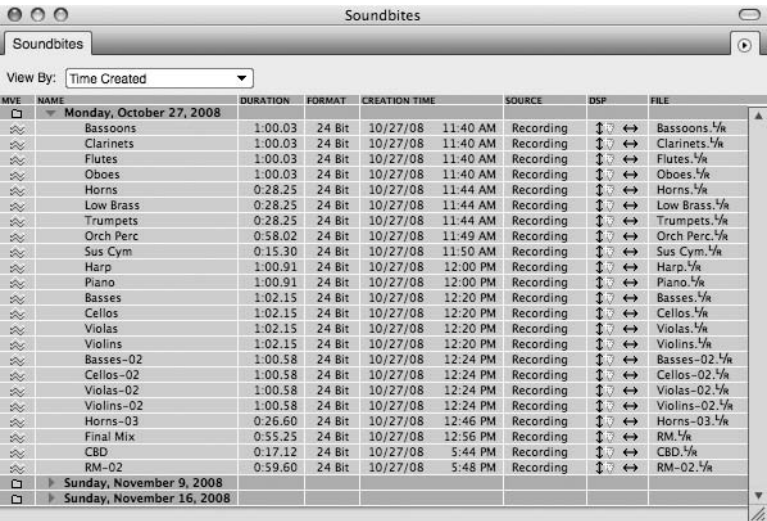


Figure 3.40 The Soundbites window.

## The Soundbites Mini-Menu

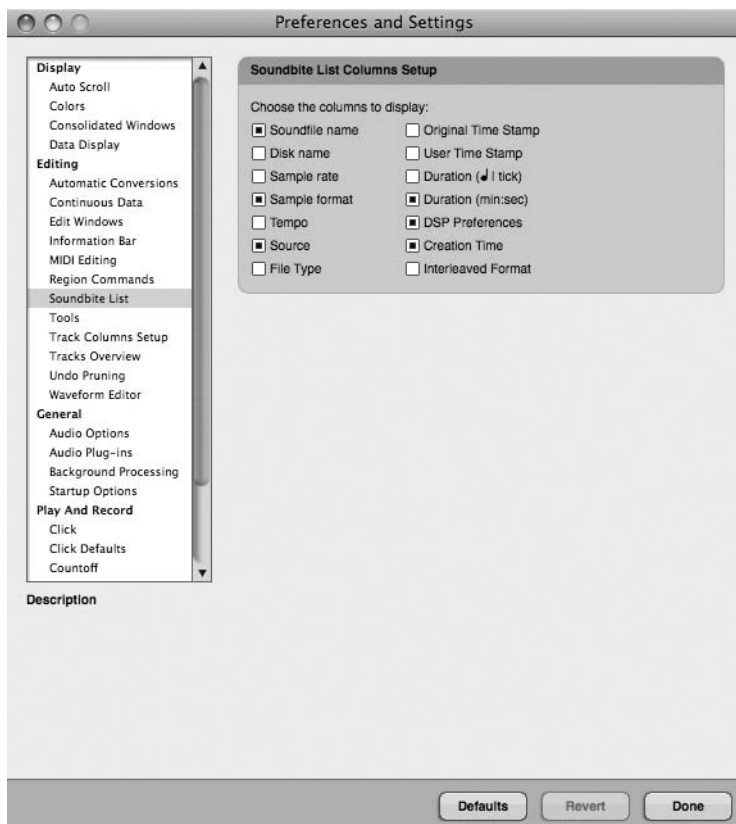
The Soundbites window mini-menu’s important options are explained in the following list (from top to bottom). The mini-menu is shown in Figure 3.41.

- **New Sound File.** This option creates a new empty audio file. Choose the file format (mono, stereo, and so on) from the New Sound File submenu. Once created, the file will be a half-second long and will only contain silence. You can use this file for anything you like, from pasting audio data (of any length) into it, to using it like a “video slug.”



**Figure 3.41** The Soundbites window mini-menu.

- **New Sound File from Selection.** This option creates a new sound file based on the audio selection within the Soundbites window Waveform Editor. Simply highlight a selection within the Waveform Editor and choose this command to create a new soundbite from the existing selection. You can also use this command to simply duplicate an entire sound file that is highlighted in the Soundbite List.
- **Import Audio.** This option will open the Import Audio window. See Chapter 7 for a detailed explanation of this feature.
- **Export Selected Bites.** Use this command to export a selected soundbite. See Chapter 13 for an explanation of the Export command.
- **Edit Audio Export Formats.** Use this option to make changes to any saved export formats.
- **Columns Setup.** Choose this option to open the Soundbite List preferences in the Preferences and Settings window, which allows you to configure the columns that are actually displayed within the List section of the Soundbites window (see Figure 3.42).
- **Create New Folder.** This option remains dimmed until Folders view is selected from the View By menu. See Chapter 6 for an explanation of this feature.
- **Select Unused Soundbites.** Use this command to select all the soundbites that are not being used in any tracks in any sequences within a project.
- **Compact.** This command will compact a selected audio file. See Chapter 6 for an explanation of the compacting process.
- **Convert Sample Rate or Sample Format.** Use these commands to convert a selected soundbite's sampling rate or bit depth. See Chapter 13 for more information on sample rate and sample format conversion. These options will remain dimmed until a soundbite is selected.
- **Automatic Conversions Settings.** Select this option to open the Automatic Conversions window. See Chapter 7 for an explanation of the automatic conversions process.



**Figure 3.42** The Soundbite List preferences allow you to specify which columns to display in the List section of the Soundbites window.

- **Remove from List.** Use this option to remove selected soundbites from a project while leaving any corresponding regions intact. (See the “Managing Audio Files and Soundbites” section of Chapter 6.)
- **Delete.** This option removes selected soundbites from the Soundbite List and deletes any reference to their parent audio files. Parent audio files will not actually be deleted until the last referencing region is deleted. (See the “Managing Audio Files and Soundbites” section of Chapter 6.)

## List

The Soundbite List displays a complete list of all soundbites that are in a project (see Figure 3.43). The List columns provide detailed information on each soundbite and can be managed from the Soundbites window mini-menu (explained earlier), while the View By menu lets you sort the Soundbite List for easy viewing.

| NAME       | ORIGINAL TIME | USER TIME  | DURATION | # Ticks | TEMPO          | SAMPLING RATE | FORMAT | CREATION TIME     | SOURCE    | DSP | FILE           | LINK         | FILE TYPE         | INTERLEAVE     |
|------------|---------------|------------|----------|---------|----------------|---------------|--------|-------------------|-----------|-----|----------------|--------------|-------------------|----------------|
| Orch Perc  | 0:59:59.29    | 0:59:59.29 | 0:58.02  | 621323  | avg. # = 64.80 | 48000         | 24 Bit | 10/27/08 11:49 AM | Recording | 1.7 | Orch Perc.1/4  | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Sus Cym    | 0:59:59.29    | 0:59:59.29 | 0:15.30  | 171379  | avg. # = 69.75 | 48000         | 24 Bit | 10/27/08 11:50 AM | Recording | 1.7 | Sus Cym.1/4    | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Harp       | 0:59:59.29    | 0:59:59.29 | 1:00.91  | 651107  | avg. # = 64.25 | 48000         | 24 Bit | 10/27/08 12:00 PM | Recording | 1.7 | Harp.1/4       | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Piano      | 0:59:59.29    | 0:59:59.29 | 1:00.91  | 651107  | avg. # = 64.25 | 48000         | 24 Bit | 10/27/08 12:00 PM | Recording | 1.7 | Piano.1/4      | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Basses     | 0:59:59.29    | 0:59:59.29 | 1:02.15  | 661154  | avg. # = 64.02 | 48000         | 24 Bit | 10/27/08 12:20 PM | Recording | 1.7 | Basses.1/4     | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Cellos     | 0:59:59.29    | 0:59:59.29 | 1:02.15  | 661154  | avg. # = 64.02 | 48000         | 24 Bit | 10/27/08 12:20 PM | Recording | 1.7 | Cellos.1/4     | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Violas     | 0:59:59.29    | 0:59:59.29 | 1:02.15  | 661154  | avg. # = 64.02 | 48000         | 24 Bit | 10/27/08 12:20 PM | Recording | 1.7 | Violas.1/4     | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Violins    | 0:59:59.29    | 0:59:59.29 | 1:02.15  | 661154  | avg. # = 64.02 | 48000         | 24 Bit | 10/27/08 12:20 PM | Recording | 1.7 | Violins.1/4    | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Basses-02  | 0:59:59.29    | 0:59:59.29 | 1:00.58  | 641448  | avg. # = 64.31 | 48000         | 24 Bit | 10/27/08 12:24 PM | Recording | 1.7 | Basses-02.1/4  | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Cellos-02  | 0:59:59.29    | 0:59:59.29 | 1:00.58  | 641448  | avg. # = 64.31 | 48000         | 24 Bit | 10/27/08 12:24 PM | Recording | 1.7 | Cellos-02.1/4  | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Violas-02  | 0:59:59.29    | 0:59:59.29 | 1:00.58  | 641448  | avg. # = 64.31 | 48000         | 24 Bit | 10/27/08 12:24 PM | Recording | 1.7 | Violas-02.1/4  | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Violins-02 | 0:59:59.29    | 0:59:59.29 | 1:00.58  | 641448  | avg. # = 64.31 | 48000         | 24 Bit | 10/27/08 12:24 PM | Recording | 1.7 | Violins-02.1/4 | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Horns-03   | 0:59:59.29    | 0:59:59.29 | 0:26.60  | 301121  | avg. # = 68.23 | 48000         | 24 Bit | 10/27/08 12:46 PM | Recording | 1.7 | Horns-03.1/4   | RECORD DRIVE | Sound Designer II | Noninterleaved |
| Final Mix  | 1:00:06.21    | 1:00:06.21 | 0:55.25  | 581141  | avg. # = 63.30 | 48000         | 24 Bit | 10/27/08 12:56 PM | Recording | 1.7 | RM.1/4         | RECORD DRIVE | Sound Designer II | Noninterleaved |

**Figure 3.43** The Soundbite List displays detailed information for every soundbite contained within a project.

## List Columns

The list columns are as follows (from left to right):

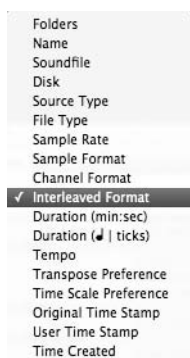
- **Move.** Click and drag on a soundbite to change its position in the list.
- **Name.** This column displays the name of the soundbite. Option-click to rename a soundbite. If Audible mode is engaged (the speaker icon is turned on), then clicking on the name of soundbite will allow you to audition it. Double-clicking the name will open the soundbite in a separate Waveform Editor or third-party software editor.
- **Original Time.** This is the time the soundbite was originally created, often referred to as the *original time stamp*.
- **User Time.** This is the user-defined time stamp. Choose Audio > Time Stamps to apply a user time stamp to a selected soundbite.
- **Duration.** This column displays the length of the soundbite in minutes, seconds, and milliseconds.
- **Ticks.** This column displays the length of a soundbite in quarter notes/ticks. The soundbite must have a defined tempo map, or this column will be blank.
- **Tempo.** This shows the soundbite's tempo map. If the soundbite does not have a tempo map, then this column will be blank. If the tempo varies, DP will display an average tempo. To manually define the tempo map, choose Audio > Set Soundbite Tempo.
- **Sampling Rate.** This displays the soundbite's sampling rate.
- **Format.** This displays the sample format or bit depth of the soundbite.
- **Creation Time.** This column shows the date/time when the soundbite was created or imported into DP.
- **Source.** This offers a description of how the soundbite was created.



- **DSP.** This column shows how a soundbite's time scaling and transposing preferences are set. (See Chapter 13 for an explanation of PureDSP and transposition in Digital Performer.)
- **File.** This is the audio file that the soundbite is referencing. Option-click to rename the audio file. Double-click on the filename to replace or relocate the soundbite.
- **Disk.** This displays the disk location of the soundbite.
- **File Type.** This displays the type of soundfile.
- **Interleaved Format.** This shows whether the file is an interleaved (combined left and right mono files) or non-interleaved file (separate left and right mono files—a.k.a. *split stereo*).

### The View By Menu

The View By menu contains a list of sorting criteria (see Figure 3.44). Choose a specific criterion by which to sort the Soundbite List. Once sorted, the soundbites will be displayed with disclosure triangles that group soundbites into a specific hierarchy. Use this sorting feature to quickly find specific soundbites.



**Figure 3.44** The View By menu allows you to sort the Soundbite List by specific criteria.

### The Sound File Information Window

The Sound File Information Window (Studio > Sound File Information), shown in Figure 3.45, displays important information about a selected soundbite. This window is divided into three sections: the Sound File, Soundbite, and Audio Loop panes.

#### The Sound File Information Pane

The first pane displays information about the soundbite's parent audio file. Click on the menu located at the top of this section to choose another parent audio file. You can use the Comments section to enter specific comments on the sound file. Comments are global and will be imported with the file when it is used in other Digital Performer projects.

**Sound File Information**

Sound File: Piano

File: /Volumes/RECORD DRIVE/DP Sessions/Family Guy Sessions/6ACX11/3M13/Audio Files/Piano.1/4

File Type: Sound Designer II

Sample Format: 24 Bit

Channels: Stereo

Interleaved Format: Noninterleaved

Sample Rate: 48000

Length in Samples: 2924893

Length in Time: 1:00.93

Date Created: 10/27/08, 11:59 AM

Date Last Edited: 10/27/08, 12:00 PM

Automatic Conversions:

- ☐ Convert Sample Rate
- ☐ Convert File Format
- ☐ Convert Interleaved Format
- ☒ Adjust To Sequence Tempo
- ☒ Use Original File For Transpose, Timescale and Spectral Effects
- ☒ Use Original File For Tempo Conversions

Description:

Author:

Copyright:

Comment:

Soundbite: Piano.3

Name: Piano.3

Start: 1348639

End: 2923776

Length: 1575137

Length in Time: 0:32.81

Source: Editing

Sync Point: 1348639

Original Time Stamp: 1:00:28:02

User Time Stamp: 1:00:28:02

Transpose:  Use PureDSP™ Pitch Shift

Time Compress/Expand:  Allow Time Scale

Creation Date: Sunday, November 16, 2008 2:50 PM

Tempo:  = 46.91 to 70.25, avg.  = 60.74

Time Signature: 4/4

Sample Pitch: C3

Pitch Fraction: 0

Bite Volume Bypass: Play Bite Volume Automation

Bite Gain: +0.00

Audio Loop:

Name:

Start:

End:

Length:

Length in Time:

Loop Type:

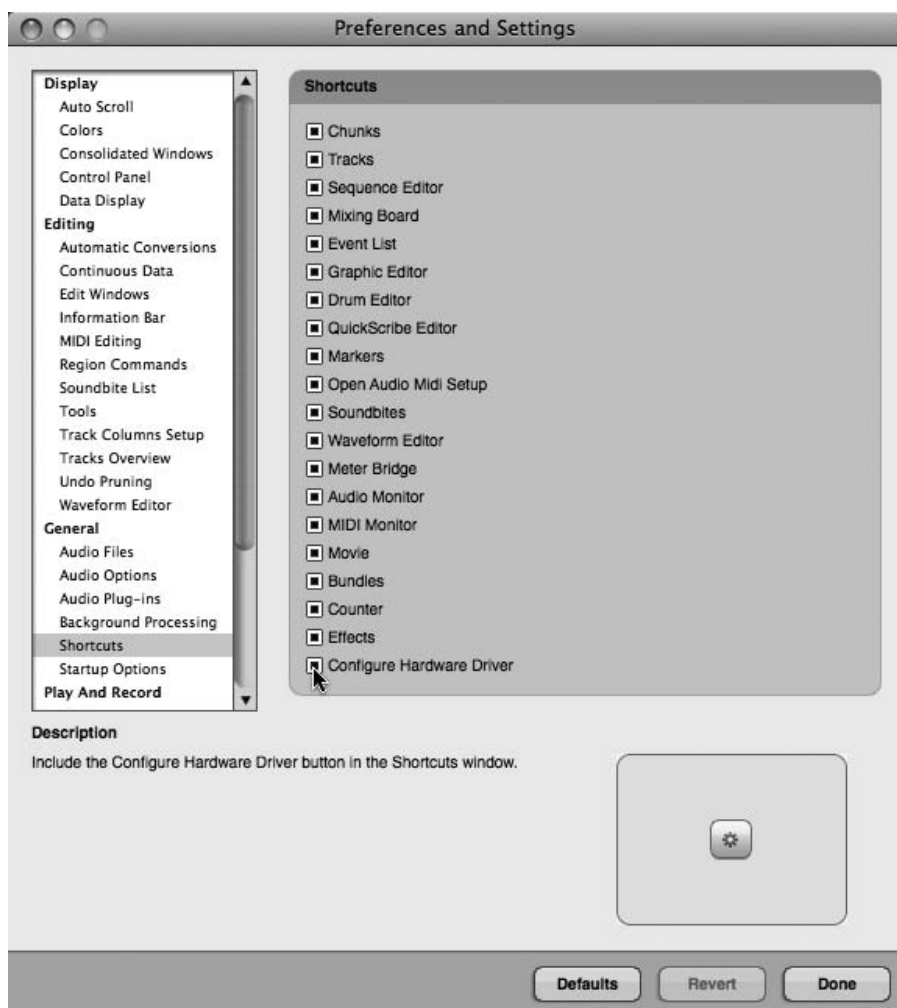
Loop Tune:

Transfer In Soundbites:

**Figure 3.45** The Information window is divided into three sections that display important information about a selected soundbite.

### The Soundbite Information Pane

This pane displays information about the currently selected soundbite. Like the Sound File information pane, there is a menu located at the top of this section that will allow you to select other soundbites that exist within a project. The Transpose and Time Compression/Expansion menus allow you to set the preferences for their respective process. (See Chapter 13 for information on PureDSP and transposing a soundbite in DP.) You can also bypass any Bite Volume settings or change the Bite Gain value of any selected soundbites from within this pane. (See Chapter 12 for information regarding Bite Volume and Bite Gain settings.)



**Figure 3.46** Use DP's Shortcuts preferences to choose which buttons you would like to appear in the Shortcuts window.

### ***The Audio Loop Information Pane***

The Audio Loop information pane allows you to view any loop points and settings that have been created by a sampler. If no settings exist, this section will be blank. These loop settings have no effect on the behavior of the file within DP.

---

**DP's Shortcuts** I'd like to mention one more navigation feature in version 6 (included in the 6.02 update that was made available at the time of the writing of this book). DP's Shortcuts window (Studio > Shortcuts) is a host for buttons that give you quick access to frequently used windows and dialogs. You can choose which buttons you would like to appear in the Shortcuts window by choosing Digital Performer > Preferences > Shortcuts to toggle your selections (see Figure 3.46). This feature comes as a relief to many DP users who yearned to have their "buttons" back (available in the form of Quick Access Drawers in earlier versions).

---

## **Summary**

This chapter has, I hope, provided you with a basic understanding of the way Digital Performer's main windows appear and function in version 6. It is important to take plenty of time to practice navigating DP in order to establish an efficient strategy for your sessions. More detailed explanations of these and other DP features are covered throughout the various chapters of this book.

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# 4

## Setting Up a New Project

Now that we've discussed the optimization process for your Mac, installed Digital Performer, connected and configured our audio and MIDI devices, and learned how to navigate DP, we're ready to create a new project. Digital Performer offers a number of different ways to access its many comprehensive features: through the main application menus, through various floating windows or a Consolidated Window, and by using extensive keyboard shortcuts. Though this versatility allows you to really customize, it can be very overwhelming for the novice (and even for the experienced) DP user. Instead of bombarding you with every option and detailed function, this chapter will focus on helping you quickly and efficiently set up a project for recording.

This chapter will cover the following topics:

- How to create a new Digital Performer project
- How to configure the project's sample rate via the Control Panel
- How to create Track Folders
- How to manage busses with the Configure Studio Settings window
- How to add, delete, rename, and move audio and MIDI tracks
- How to configure input and output routing assignments for audio and MIDI tracks
- How to set up the tempo and meter for a project
- How to set up a click with internal and/or external MIDI sources

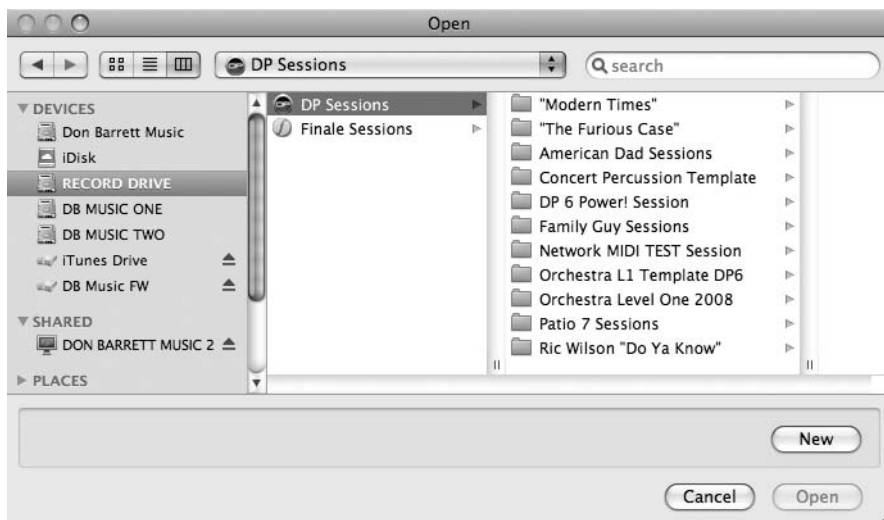
### Project Basics

Unlike some applications, Digital Performer only allows one project to be open at a given time. A project must be closed before you can open or create another one.

To create a new Digital Performer project:

1. Launch Digital Performer.

- From the File menu, choose New. If you are prompted to open an existing project, click on the New button instead (see Figure 4.1). You can change the Startup options from the Preferences and Settings window (Digital Performer > Preferences). See Chapter 5, “Project Management: Part 1,” for an explanation of DP’s Startup preferences.



**Figure 4.1** The Open dialog box prompts you to open an existing project file or create a new one.

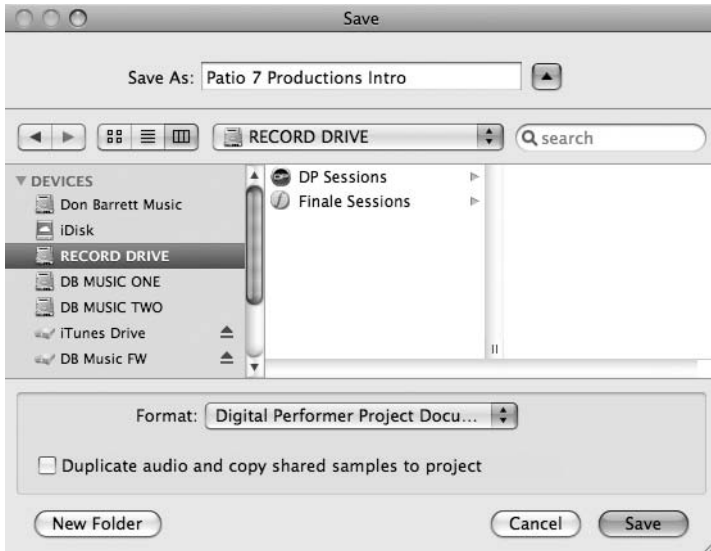
- In the Save As field, name your new project (see Figure 4.2).
- Select the destination hard drive and folder for the new project file. If you want to create a new folder for the project, click on the New Folder button. Name the folder and click OK.
- Click on the Save button to save the new Digital Performer project.

Once the new project is saved, a new Digital Performer project folder will be created in the designated folder and hard drive. This project folder will contain your new project document and a folder called Audio Files (see Figure 4.3).

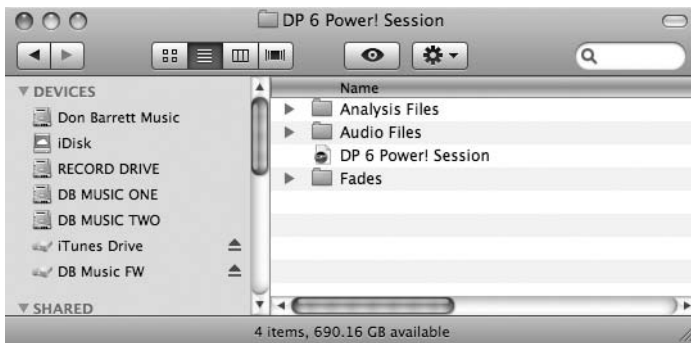
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**Periodically Saving Your Project** Remember to periodically save your project (File > Save). How often you save really depends on your personal workflow habits. Keep in mind, however, that when you experience a crash (the endless spinning beach ball), any changes made to the project since your last save will be lost forever. If speed is a priority, try incorporating the default keyboard shortcut Command+S to save your project without using the mouse.

---



**Figure 4.2** The Save As dialog. This window prompts you to create a name and destination for your new project file.



**Figure 4.3** The Digital Performer project folder. This is where you will find all files related to the newly created project. (Analysis, Fades, and Undo folders only appear once the project contains these types of files.)

## The Default Workspace

The default workspace within Digital Performer consists of two windows: the Control Panel and the Tracks window. The Control Panel (see Figure 4.4) operates much like the standard transport of a multitrack recorder, with basic controls for playback, recording, and locating to specific points within your project. Buttons for customizing the project tempo and Metronome,

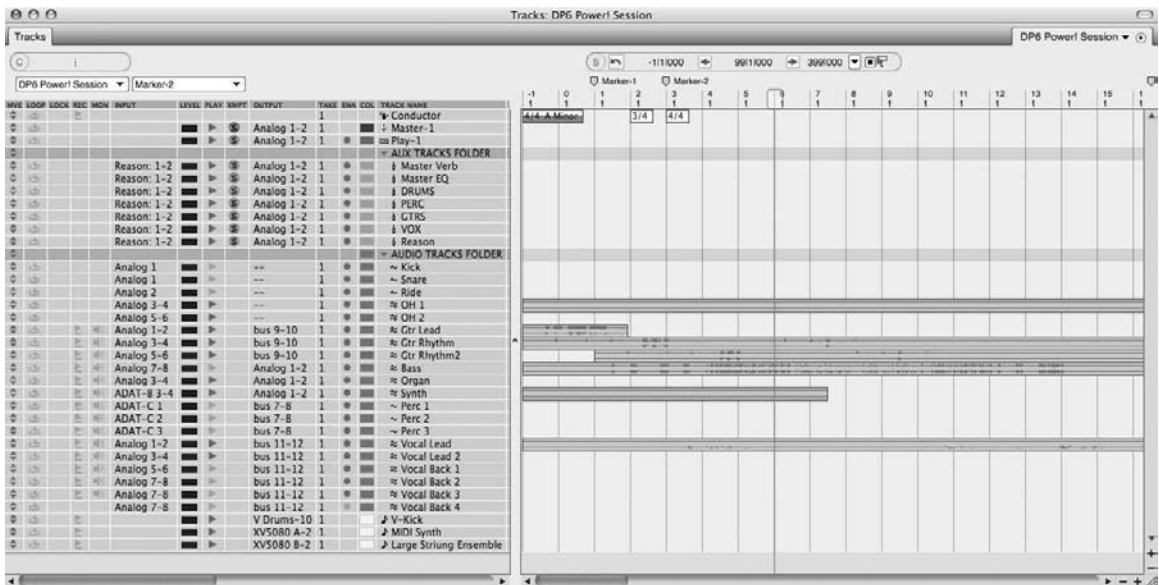




**Figure 4.4** The Control Panel.

setting memory locate points, auto recording, and controlling sequences can also be found here. Positioned to the right of the Main Counter are additional buttons for quick access to audio settings, tempo control, solo mode, and pre/post roll settings. Review Chapter 3 for a detailed look at Digital Performer’s Control Panel.

Considered to be the “central” window by many DP users, the Tracks window (see Figure 4.5) is basically a container for viewing and editing all tracks within your project. Corresponding information, such as track name, I/O and voice assignments, playback level metering, play and record enable buttons, as well as MIDI patch assignments, is located to the left of the window. Audio and MIDI data are stored to the right within the actual track. Any selections or edits made to audio or MIDI data in a track are conformed to a grid by default. The grid size is determined by the current viewing resolution of the Tracks window. Click on the plus or minus icon located at the bottom-right corner of the Tracks window to expand the grid horizontally or vertically. Review Chapter 3 for a detailed look at the Tracks window.



**Figure 4.5** The Tracks window provides an overview of all tracks within a Digital Performer project.

---

**Customizing Your DP Workspace** By default, Digital Performer adds blank MIDI and audio tracks to your new project. You can change this basic track configuration, along with any other default parameter, by creating and configuring a project to your liking, then saving the project as a template. You can create multiple templates for different project scenarios, which greatly reduces project setup time. Digital Performer templates are discussed in detail in Chapter 5.

---

## Setting the Sample Rate

A *sample rate* is simply the number of times per second a signal is being “sampled” or recorded. For example, a sample rate of 44.1 kHz results in a signal being sampled 44,100 times per second during recording. Generally, the higher the sample rate, the better the sound quality. *Bit depth*, or *sample format*, refers to the theoretical dynamic range of a recorded signal. The higher the bit depth, the more accurately a signal’s dynamic range can be captured, especially the quieter levels. However, higher sample rates and bit depths also result in larger audio files that take up more disk space.

Even though you configured the sample rate in Chapter 2, every new project you create will have its own specific setup needs and requirements. Just because you can record at 192 kHz doesn’t mean you should. Intended playback medium, the artist’s budget, available hard drive space for the project, DAW performance issues—these are just some of the things you will need to take into consideration before your project begins. Careful planning in the early stages of a project will save you many headaches later in the production process.

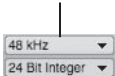
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**Bit Depth** Historically, all audio files within a DP project had to match the designated setting (16 bit or 24 bit) for proper playback. Now you can freely mix and match files of either bit depth within the same project or sequence. You can still, however, change an audio file’s bit depth in the Convert Sample Rate or Format command in the Soundbites window mini-menu.

---

To quickly change the sample rate and bit depth of a project from the Control Panel, simply select the desired rate and bit depth from the available drop-down menus (as shown in Figure 4.6).

The Sample Rate and Bit Depth menus



**Figure 4.6** The Control Panel’s Sample Rate and Bit Depth drop-down menus.

---

**Changing the Sample Rate or Bit Depth When Audio Data Already Exists within a Project**

You can change the sample rate and bit depth at any time during a project, but be aware that audio files not matching the project's current sample rate will need to be converted before becoming available for playback. You can perform this procedure manually or configure DP to carry out the conversion automatically. Conversion options are located within the Soundbites mini-menu and the Preferences and Settings windows. See Chapter 7, "Recording Audio," for a detailed look into this process.

---

## Tracks in Digital Performer

Tracks within Digital Performer (or any multitrack recorder or sequencer) are basically containers for storing audio and/or MIDI data. Different information is stored within different track types, and you can employ several methods to add audio and MIDI data to a DP project, including the following:

- Audio and MIDI data can be recorded directly to an audio or MIDI track, respectively.
- Audio and MIDI data can be loaded from another Digital Performer sequence.
- Audio and MIDI data can be "dragged" into a corresponding audio or MIDI track directly from the desktop or other folder.
- Audio can be imported from another source, such as a CD or hard drive.
- MIDI sequences can be opened from a standard MIDI file.
- MIDI data/events can be manually inserted within a track.

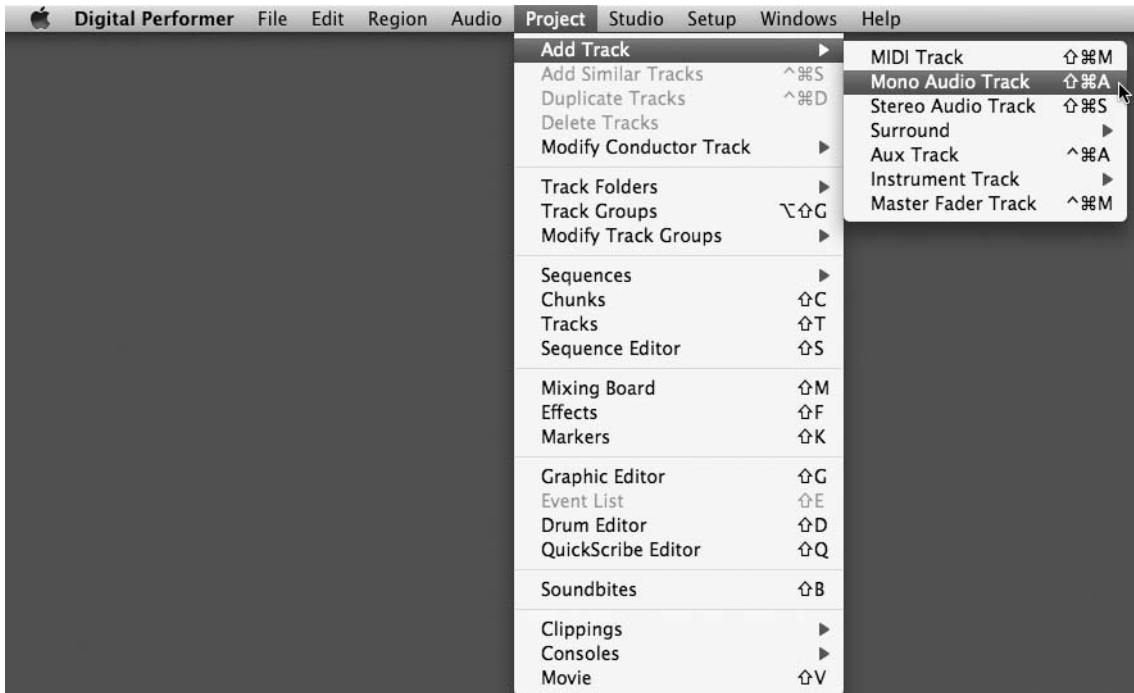
Because tracks form the basic foundation of any multitrack recorder (digital or analog), familiarity with them will greatly enhance your music production workflow, allowing you to move between various music applications and/or platforms with greater ease.

## Deleting Tracks

As noted earlier, Digital Performer defaults to adding basic MIDI and audio tracks to newly created projects. If you would like to begin your project with a blank canvas, simply delete the existing tracks.

To delete an existing track or tracks:

1. Select the track you want to delete by clicking on the name of the track within the Tracks window's Track Name column. To select multiple adjacent tracks, click and drag with the mouse. Command-Shift-click to select multiple tracks that are not located next to each other.
2. Once your tracks are selected, choose Delete Tracks from the Project menu.



**Figure 4.7** Tracks can be added from the Add Track submenu.

## Adding Tracks

There are basically six types of tracks that can be created in Digital Performer (see Figure 4.7).

- MIDI tracks. See Chapter 8, “Recording MIDI,” for more information.
- Instrument tracks (for use with virtual instrument plug-ins). See Chapter 9, “MIDI: The Region Menu, Plug-Ins, and Virtual Instruments,” for more information.
- Audio tracks (mono or stereo). See Chapter 7 for more information.
- Surround (multichannel audio tracks).
- Aux tracks (stereo-only auxiliary tracks). See Chapter 12, “Mixing.”
- Master fader tracks (can be used to control a subgroup or an entire mix). See Chapter 13, “Processing and Mastering.”

To add a track or tracks:

1. Select **Project > Add Track** and choose the type of track you want to create.

2. To add multiple tracks at once, press and hold the Option key before selecting Add Track from the Project menu. You'll notice the Add MIDI and Audio Tracks commands now appear with the word *multiple* preceding them (such as Add Track > Multiple MIDI Tracks). Once an Add Multiple Track command is selected, the Multiple Tracks options window will open.
3. Enter the number of tracks you want to create in the pop-up window and click the OK button (see Figure 4.8).



**Figure 4.8** The Multiple Tracks options window.

---

**Adding Multiple Tracks and Default Positions** Only multiple audio and MIDI tracks can be created with the Option key method. Surround, aux, instrument, and master fader tracks must be added individually.

Also, DP will add tracks to default positions in the Tracks List (usually below any previously existing tracks). This can become problematic if you are adding tracks to a project already containing a large number of tracks, or if you have groupings of similar tracks in designated areas. (Scrolling to the bottom of a large project every time you add tracks can be awkward and inefficient.) Simply highlight a track in the desired area of the Tracks List *before* adding a track, and DP will place the new track just below the highlighted track.

---

## Renaming Tracks

It's always a good idea to rename your tracks for easy identification. Audio files, in particular, benefit from this because, by default, their filenames are based on their track names. Renaming your audio tracks *before* you begin recording can save you headaches and prevent your Soundbites window from filling up with files generically named Audio-1, Audio-2, Audio-3, and so on.

To rename a track:

1. Hold the Option key and click on the name of the track. The name will appear highlighted.
2. Type the desired name and press the down arrow key to proceed to the next track.
3. Once all of your tracks are renamed, press the Return key to confirm the last change.

---

**Did You Forget to Name Your Audio Tracks Before Recording?** If you forget to name your audio tracks before you begin recording (as mentioned earlier), have no fear. Digital Performer offers several locations where you can rename the recorded soundbites. When you change a soundbite's name, all instances of that soundbite will reflect the change. See “Renaming Existing Audio Files or Soundbites” in Chapter 6, “Project Management: Part 2.”

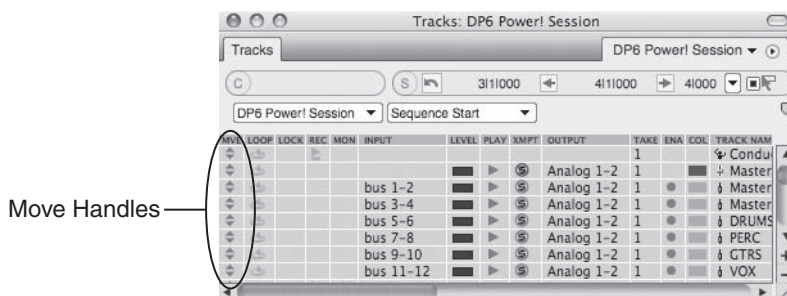
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## Moving Tracks

Once you have renamed your tracks, you may want to change their order. Many engineers and producers like to categorize their tracks by specific groups or instruments. This is a matter of personal taste, of course, but keeping your tracks organized is another way to speed up your production workflow. You can reorder tracks in several different locations, each of which causes DP to update all relevant windows.

To move a track in the Tracks window:

- By default, track Move handles are located to the far left of the Tracks columns. They are represented by the up and down arrow icons within the MVE (Move) column (see Figure 4.9).

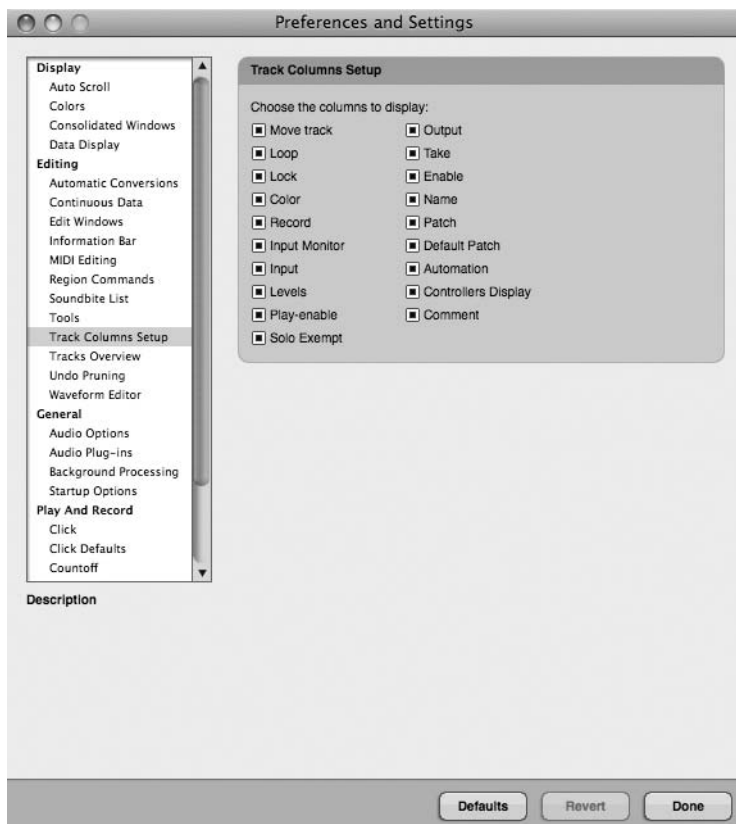


**Figure 4.9** Use the track Move handles to change the track order.

- Click on the Move handle icon and drag the track to a new location. A solid outline will allow you to preview the new location for the track.

---

**Tracks Window Columns** You can show or hide Tracks window columns from the Tracks List preferences (see Figure 4.10) by selecting Tracks List Preferences from the mini-menu in the Tracks window or by double-clicking directly on a column heading. Unchecked items will not appear within the Tracks window.



**Figure 4.10** Use the Tracks List preferences to show or hide specific columns in the Tracks window.

To rearrange their order of appearance, click and drag the corresponding column headings to a new location. A dotted outline will allow you to preview the new location for the column.

---

To move a track in the Mixing Board:

1. In the Mixing Board, make sure the desired tracks appear by using the Track Selector List (discussed earlier in Chapter 3).
2. In the track strip, click and hold in the blank gray area just below the track name so the entire strip becomes highlighted.
3. Drag left or right to the new location.

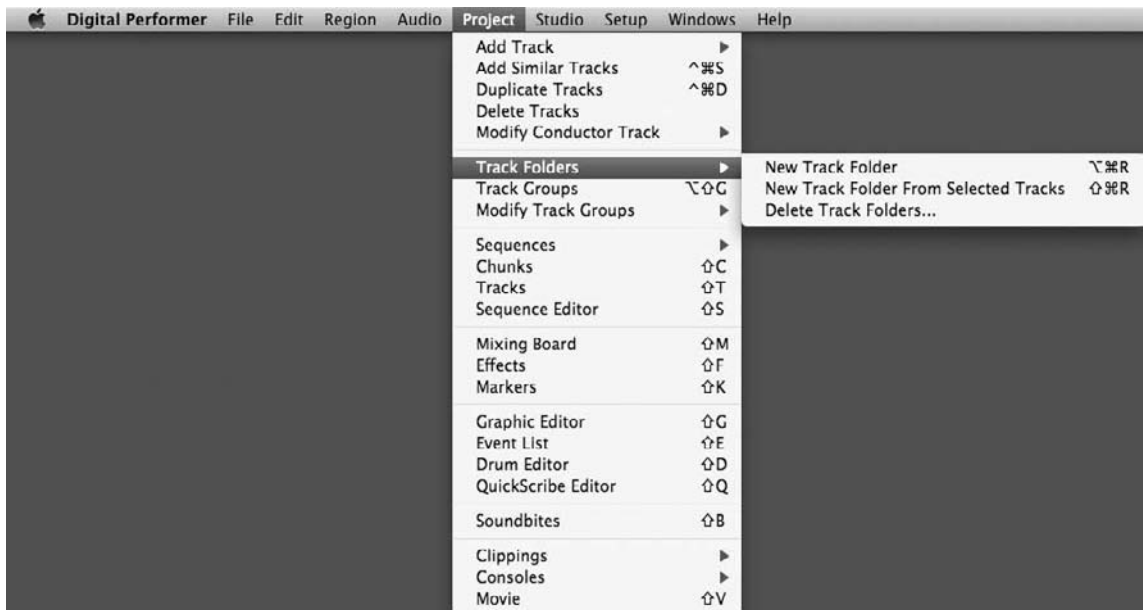
To move a track in the Sequence Editor:

1. In the Sequence Editor, make sure the desired tracks appear by using the Track Selector List.
2. Click and hold in the blank gray area of the track's Information panel (discussed in Chapter 3), and the pointer arrow will become vertical arrows.
3. Drag up or down to the new location.

## Track Folders

Track Folders are a great way to keep tracks organized and to save space or reduce clutter. Track Folders will also appear in the Track Selector List, making it easier to navigate large multitrack projects.

You can create a Track Folder and move tracks into it or create a Track Folder from selected tracks (see Figure 4.11).



**Figure 4.11** The Track Folders option from the Project menu.

To create a Track Folder and move tracks into it:

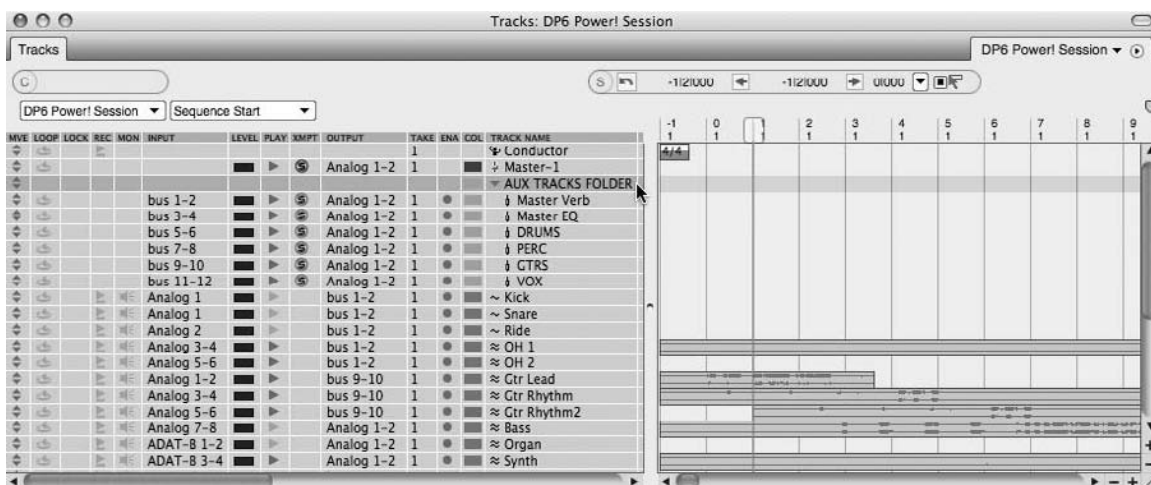
1. In the Tracks Overview window, go to the Project menu, select Track Folders, and select New Track Folder from the submenu. A new Track Folder will appear in the Tracks List.



2. Option-click the untitled folder to name it (just as you would name other tracks).
3. Simply use the Move handles to drag tracks into the Track Folder.

To create a Track Folder from selected tracks:

1. In the Tracks Overview window, highlight a track or Shift-highlight several tracks. Tracks do not have to be adjacent.
2. Go to the Project menu and select Track Folders > New Track Folder from Selected Tracks. A new Track Folder will appear in the Tracks List containing the selected tracks (see Figure 4.12).



**Figure 4.12** A Track Folder for all of this project's aux tracks was created using the New Track Folder from Selected Tracks option.

You can show or hide tracks within Track Folders by clicking on the disclosure triangle to the left of each Track Folder name. Deleting Track Folders is simple. However, it is important to distinguish between *deleting* and *removing* Track Folders. Deleting will delete a Track Folder and all of its contents (tracks and track data). Removing will simply remove the Track Folder and place all of its contents back in the Tracks List.

To delete or remove a Track Folder:

1. Go to the Project menu and select Track Folders > Delete Track Folders.
2. A dialog will appear, asking you to choose the Track Folders from the list provided (see Figure 4.13). You can highlight one Track Folder or Shift-click to highlight several Track Folders at once.



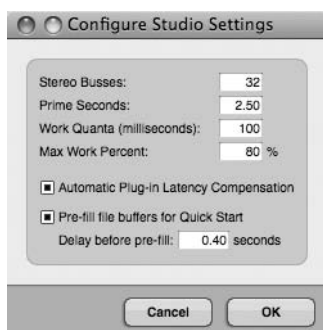
**Figure 4.13** The Delete Track Folders dialog box.

3. Choose Delete or Remove. Track Folders will be deleted or removed as specified. If a Track Folder is removed, all of its contents will be moved up one level in the Tracks List.

## Audio Tracks and Internal Busses

In Chapter 2, I explained how DP's built-in audio engine, the MOTU Audio System (MAS), works to provide the digital audio capabilities (such as playback, recording, internal bussing, effects plug-ins, and so on) for Digital Performer. The number of available audio tracks is determined by the speed of your computer, your hard drive, and the amount of available RAM.

If you create aux tracks for your project, you must also make available the necessary number of internal busses. The Stereo Busses setting controls the total number of internal busses that are available within a project. Busses are internal signal paths where audio is routed from one place to another or combined with other audio to create a submix (see Chapter 12). Digital Performer's virtual bussing system is much like the conventional mixing board. And with the MOTU Audio System, you can create as many busses as you need (up to 99 total), as shown in Figure 4.14.



**Figure 4.14** The Configure Studio Settings dialog box.

To define the number of internal stereo busses:

1. Go to Setup > Configure Audio System > Configure Studio Settings.
2. Within the Configure Studio Settings box, type in the desired number of stereo busses.
3. Once you have enabled the necessary stereo busses, click the OK button.

## Input and Output Assignments for Audio and Aux Tracks

Tracks must be assigned or routed to the necessary inputs and outputs in order to record or play back audio and MIDI data.

Audio tracks are assigned to either the Mac's built-in audio or the inputs and outputs of a connected audio hardware interface. MIDI tracks are assigned to MIDI devices, such as MIDI controllers, external sound modules, or virtual instrument plug-ins.

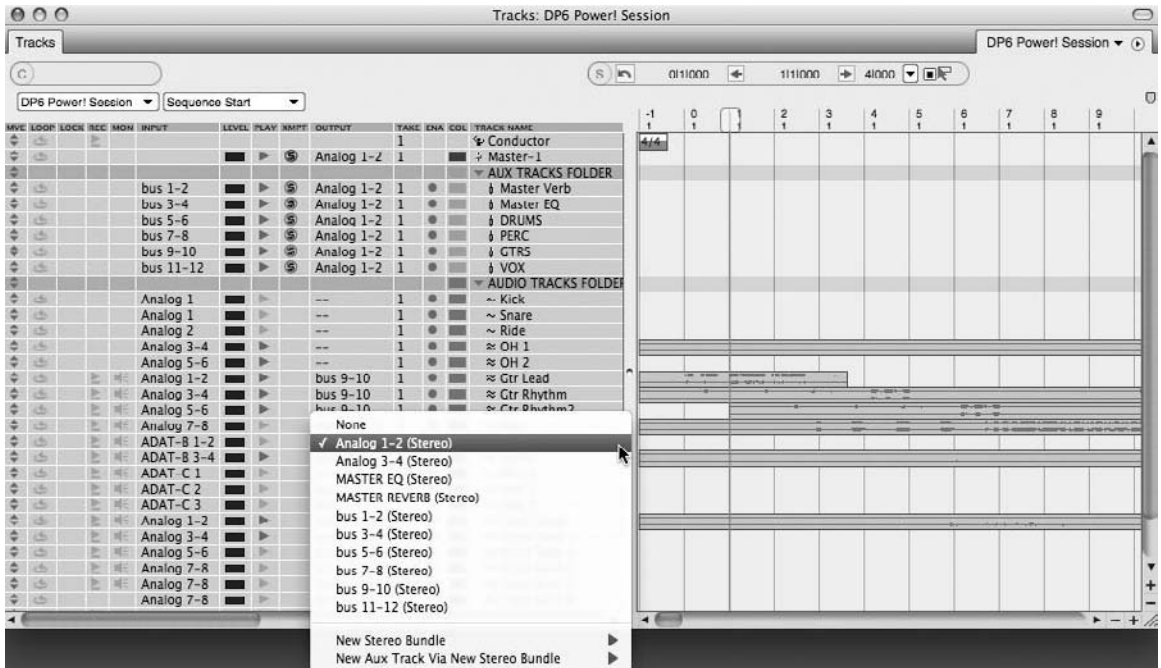
### Audio and Aux Track I/O

Following are a few things to keep in mind when working with audio and aux tracks within Digital Performer:

- Audio and aux tracks cannot be assigned to multiple inputs or outputs.
- Audio cannot be recorded to or placed into an aux track.

To configure the I/O assignments for an audio or aux track:

1. Click on the track's Input or Output menu, located within the Input or Output column of the Tracks window. Unassigned tracks are designated by a dotted line, as shown in Figure 4.15.
2. Currently enabled inputs and outputs (also called *audio bundles*) are listed below the None assignment. If the necessary audio bundles are not enabled, you will need to create a new bundle assignment from the New Mono or New Stereo Bundle drop-down menu. Here you will find a list of available hardware I/O and internal busses. (The default names for hardware I/O assignments are Analog 1, Analog 2, AES/EBU 1, AES/EBU 2, and so on.)
3. Make the necessary routing assignment by selecting the I/O destination with the mouse. Clicking again on the drop-down menu will reveal a check mark next to the track's current I/O assignment.
4. If you want to change the current routing assignment of a track, simply click on the Input or Output menu and make a new selection.



**Figure 4.15** Tracks that are unassigned or set to None are designated by a dotted line. Enabled audio bundles are listed directly below the None assignment in an Input or Output assignment's pop-up menu.

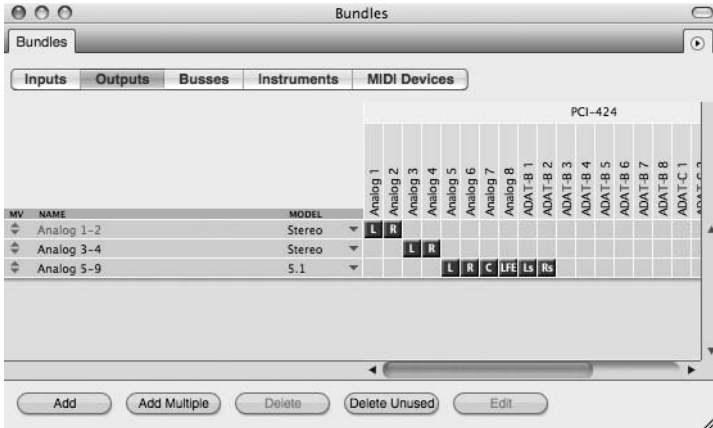
5. Routing assignments can also be made or changed in the Mixing Board and Sequence Editor windows. (Review Chapter 3 for more information regarding routing assignments in these windows.)

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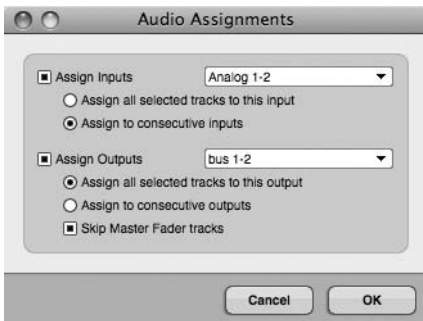
**Audio Bundles** A bundle basically groups a set of inputs, outputs, internal busses, virtual instrument routings, or MIDI connections. Bundles for audio can be mono, stereo, or multichannel I/O configurations. Although you can create a bundle on the fly from within any assignment menu, the Bundles window (Studio > Bundles, or Shift+U) provides you with a graphical interface that allows for the creation, removal, and rerouting of I/O assignments between DP and any connected audio hardware, MIDI interfaces, or installed virtual instruments (see Figure 4.16).

When you're working with internal busses, only busses that have been made available from the Configure Studio Settings window (Setup > Configure Audio System > Configure Studio Settings) will appear within the Audio Bundles window or in DP's various assignment menus. Review Chapter 2 for a detailed look at the Bundles window.

---



**Figure 4.16** The Bundles window with various audio bundle configurations.



**Figure 4.17** The Audio Assignments window lets you change the routing assignments of multiple tracks.

---

**Making Multiple I/O Assignments with the Audio Assignments Window** The Audio Assignments window (Studio > Audio Assignments) offers a convenient way to reassign the inputs and/or outputs for multiple tracks (see Figure 4.17).

Begin by selecting the tracks you want to affect by clicking on the name of the track. (Shift-click to make multiple selections.) Then open the Audio Assignments window. (The default keyboard shortcut is Option+A.) Make the appropriate reassignments and choose OK.

Be aware that audio bundles must be enabled before they will become available within the appropriate Audio Assignment drop-down menus. See Chapter 7 for an in-depth look at the Audio Assignments window.

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## MIDI Track I/O

Following are a few things to keep in mind when working with MIDI tracks in Digital Performer:

- MIDI tracks can be assigned to either an external MIDI device or a virtual MIDI instrument.
- Multi Record mode is used to record from several MIDI devices at once. When you're working with MIDI tracks, only the output assignment needs to be configured if Multi Record mode is turned off (the default setting in DP). Turn Multi Record mode on from the Studio menu in order to specify input from a specific MIDI device.
- MIDI tracks can be assigned to multiple outputs through the use of MIDI device groups.
- You must create an audio or aux track to monitor (hear) external MIDI devices or ReWire synths within Digital Performer. However, if you are using an audio interface equipped with DSP (*Digital Signal Processor*) hardware-based monitoring (such as MOTU's CueMIX DSP), this step is not necessary. Consult your interface manual for more information.
- A virtual AU or MAS instrument (or RTAS if you are working DAE mode) must be inserted into an instrument track before the virtual instrument plug-in's outputs will become available in the output menu of a MIDI track.
- Aux/audio tracks are not needed to monitor AU/MAS virtual instruments, because the audio output of the virtual instrument goes directly to the output of the associated instrument track.
- By default (when Multi Record mode is turned off), DP will not allow you to change the input source of a MIDI track. When a MIDI track is record enabled, it will receive MIDI data from *any* connected MIDI device and transmitting MIDI channel. If you do not need to record MIDI data from a specific source, you can skip this process.

To set the input source for a MIDI track:

1. To record MIDI data from a specific MIDI device/channel, turn on Multi Record mode from the Studio menu. Once enabled, it will appear with a check mark, as shown in Figure 4.18.
2. Select the input source for the MIDI track. Only one MIDI device and MIDI channel can be specified for a track (see Figure 4.19).

To output MIDI data to an external MIDI device:

1. Click on the Output menu for the MIDI track in the Output column of the Tracks window. The default output for a MIDI track is MIDI channel 1 of your MIDI interface (see Figure 4.20).

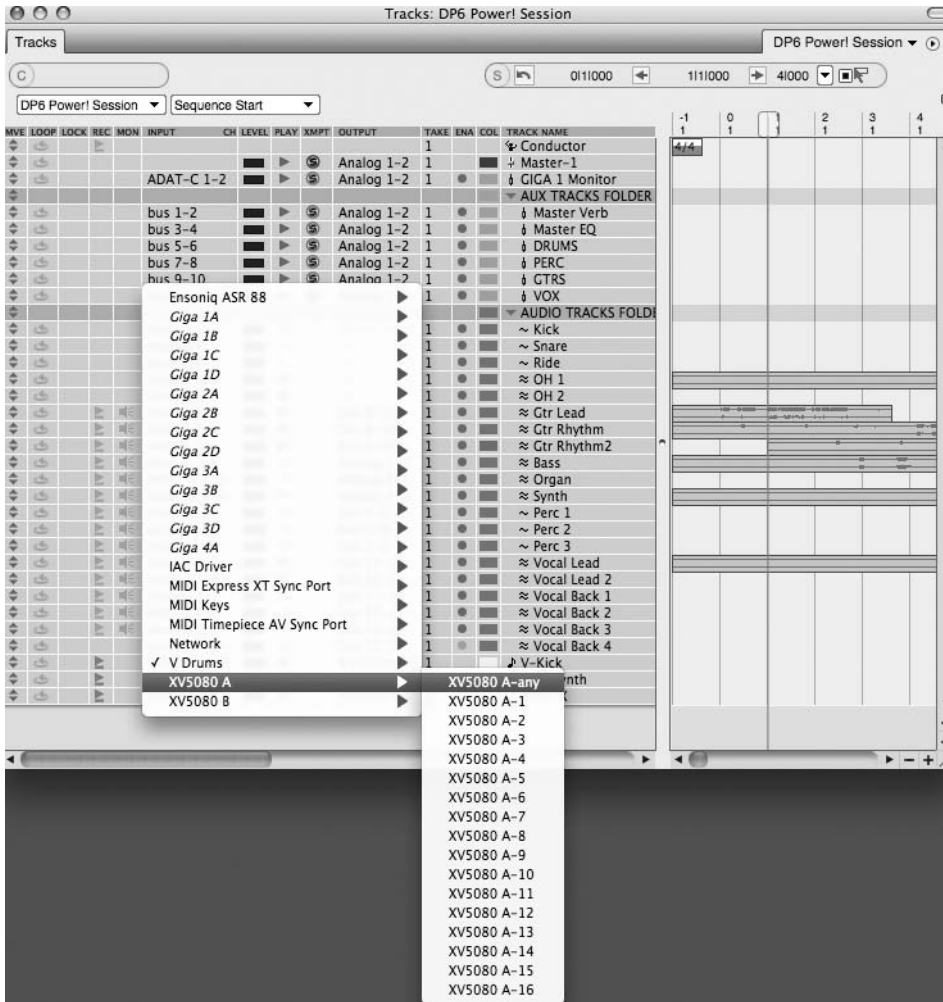
|                               |      |
|-------------------------------|------|
| Control Panel                 | ⇧X   |
| Counter                       | ⇧J   |
| ✓ Tools                       | ⇧O   |
| Shortcuts                     |      |
| Background Processing         | ⇧R   |
| Audio Performance             | ⇧Y   |
| Meter Bridge                  | ⇧Z   |
| MIDI Keys                     | ⇧⌘K  |
| Step Record                   | ⌘8   |
| Polar                         | ⇧P   |
| Snap Information              | ⇧⇧G  |
| Cursor Information            | ⇧⇧C  |
| Event Information             | ⇧E   |
| Selection Information         | ⇧I   |
| Sound File Information        | ⇧⌘⌘A |
| Track Selector                | ⇧⌘T  |
| Track Inspector               |      |
| Audio Monitor                 | ⇧A   |
| MIDI Monitor                  | ⇧W   |
| MIDI Machine Control          | ⇧H   |
| Input Quantize                | ⇧⇧I  |
| Bundles                       | ⇧U   |
| Audio Assignments...          | ⌘A   |
| MIDI Device Groups            | ⇧I   |
| Remap MIDI Devices...         |      |
| Click                         | ⌘5   |
| Click Preferences...          |      |
| ✓ Multi Record                | ⇧⇧⌘M |
| ✓ MIDI Patch Thru...          |      |
| Audio Patch Thru              | ▶    |
| Stop Sounding MIDI Notes      | ⌘1   |
| Clear All Clipping Indicators | ⌘\   |

**Figure 4.18** Multi Record mode is enabled from the Studio menu and will appear with a check mark when enabled.

2. Connected external MIDI devices will be listed below the None assignment. Choose the appropriate device and MIDI channel. If the MIDI channel for a specific device is not listed, you will need to configure it from the Audio/MIDI Setup utility (Setup > Open Audio MIDI Setup). Review Chapter 2 for a detailed look into this procedure.
3. If you want to output your MIDI track to multiple MIDI devices, you will need to create a MIDI device group.

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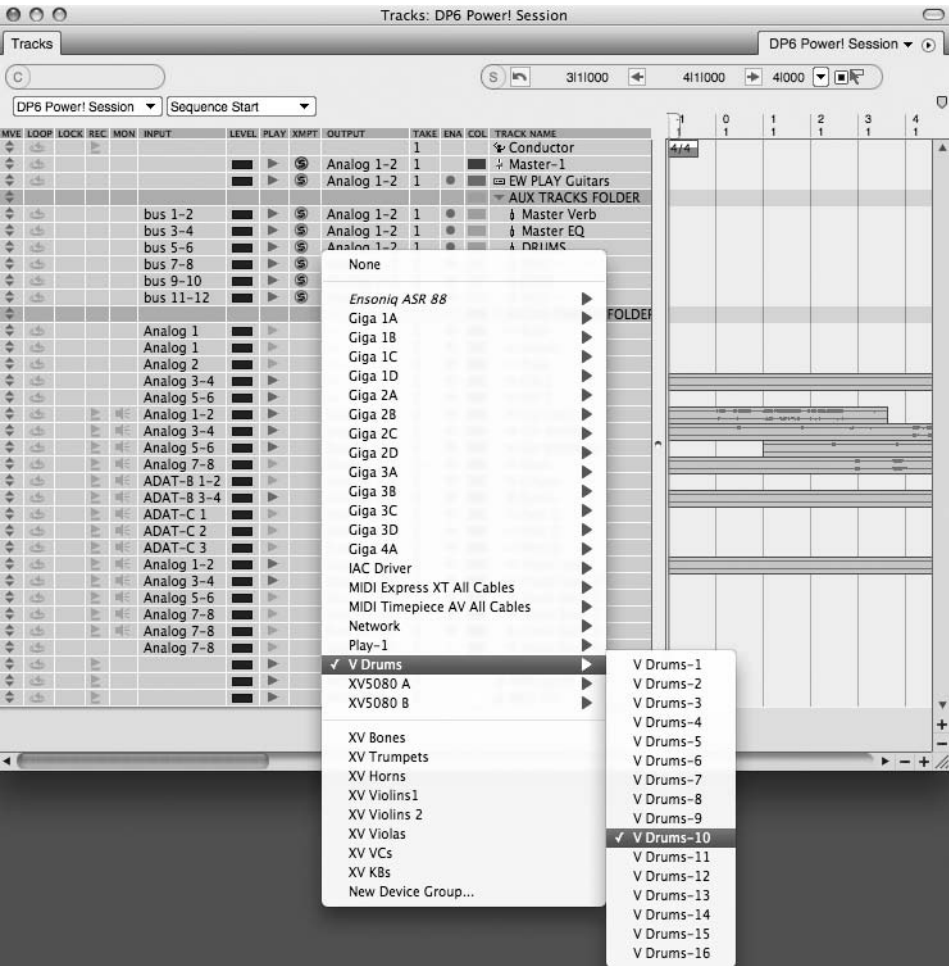
**Device Groups** MIDI device groups allow you to assign the output of a MIDI track to multiple MIDI channels and/or devices. A maximum of 10 MIDI channels from any combination of devices can be used within a device group (see Figure 4.21).



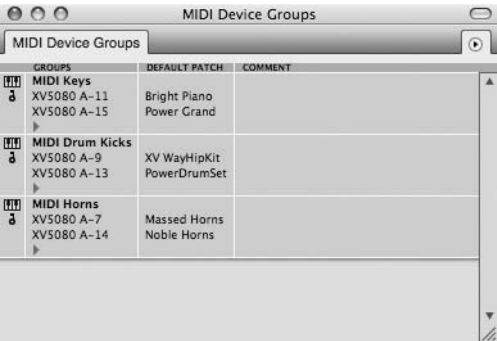
**Figure 4.19** With Multi Record mode enabled, specific MIDI input sources can be assigned to a MIDI track.

To output to a device group, select the device group from the MIDI track's Output menu. If you need to create a new device group, choose New Device Group and add the appropriate MIDI devices and/or MIDI channels. The newly added device groups will appear near the bottom of the output assignments list. See Chapter 8 for a detailed look at the process of creating and editing MIDI device groups in Digital Performer.





**Figure 4.20** Configuring the output assignment for a MIDI track from the Output menu.



**Figure 4.21** The MIDI Device Groups window lets you assign the output of a MIDI track to multiple MIDI channels/devices.

## Monitoring External MIDI Devices

If you have the audio output of your MIDI instrument connected to an audio input of your audio hardware interface and you want to monitor the MIDI instrument in Digital Performer, you'll need to use an aux or audio track. The simplest setup, however, is through the use of aux tracks.

---

**DSP Monitoring** As mentioned earlier in this chapter, if you are using an audio interface equipped with DSP (*Digital Signal Processor*) hardware-based monitoring (such as MOTU's CueMIX DSP), creating aux tracks for monitoring MIDI devices is not necessary. DSP monitoring is set up independently of Digital Performer and allows signals to be routed directly to the main outputs (without having to internally pass through DP first). Consult your audio interface manual for more information.

---

To monitor the audio output of an external MIDI device with an aux track:

1. Add an aux track. (The default keyboard shortcut is Control+Command+A.)
2. Assign the input of the aux track to the appropriate inputs of your connected audio hardware interface.
3. Confirm the output routing assignment of the track. The output should be assigned to the main outputs of your audio hardware interface in order for you to hear the audio through your studio monitors.
4. Consider naming the aux track appropriately, such as MIDI Piano Monitor.

---

**Connecting and Monitoring External MIDI Devices** In my studio the physical outputs of my MIDI piano are connected directly to analog inputs 3 and 4 of my MOTU 2408mk3 PCI-424 audio interface. If I didn't have CueMix DSP, in order to monitor (hear) my piano, I would need to assign the input of an aux track to analog inputs 3 and 4.

Review Chapter 3 for additional info on the procedures for connecting external MIDI devices to your Digital Performer system.

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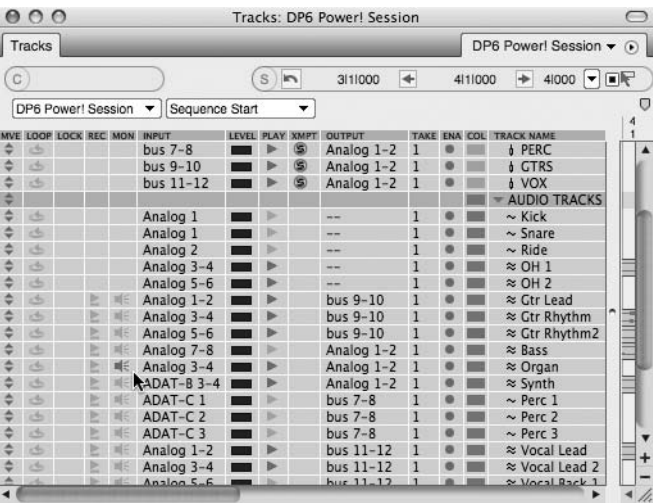


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**Monitoring MIDI Devices with an Audio Track** The setup procedures for monitoring an external MIDI device or virtual instrument with an audio track are similar to the procedures for monitoring with an aux track, but with a few exceptions.

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- Audio tracks must have the Input button selected (Mixing Board), an Input Monitor icon selected (Tracks or Sequence Editor window), as shown in Figure 4.22, or be record-enabled when monitoring.



**Figure 4.22** The Input Monitor icon is enabled in the MON column of the Tracks List in order to monitor a MIDI organ through an audio track.

- Record-enabling a track enables input monitoring automatically, even if the track's Input Monitor button or icon is not engaged.
- Remember, audio tracks must also be online when monitoring. (Refer to Chapter 3 for more information regarding placing an audio track online or offline.)

---

**The Pros and Cons of Monitoring MIDI Devices and Instruments with Audio Tracks** The advantage: When you are ready to record the output of the MIDI device or virtual instrument as audio, you simply start recording on the configured audio track.

The disadvantage: A project with multiple audio tracks used for monitoring multiple MIDI tracks or groups of MIDI tracks can rapidly deplete your CPU resources.

See Chapter 8 for a deeper look into this process.

---

### Monitoring MAS/AU Instruments

When working with AU or MAS virtual instruments (or RTAS instruments if you are in DAE mode), the new instrument track replaces the aux/audio track during the monitoring process.

Keep in mind that you must first create an instrument track before the virtual instrument will become available within the output menu of a MIDI track.

See Chapters 8 and 9 for an in-depth look at the process of working with virtual instruments and instrument tracks in Digital Performer.

To set up an AU or MAS virtual instrument track:

1. Begin by creating a new instrument track for the specific instrument (Project > Add Track > Instrument Track > Virtual Instrument). Select Unassigned if you want to create a blank instrument track.
2. Once the track is added, the virtual instrument will become available within the output menu of any MIDI track (see Figure 4.23).

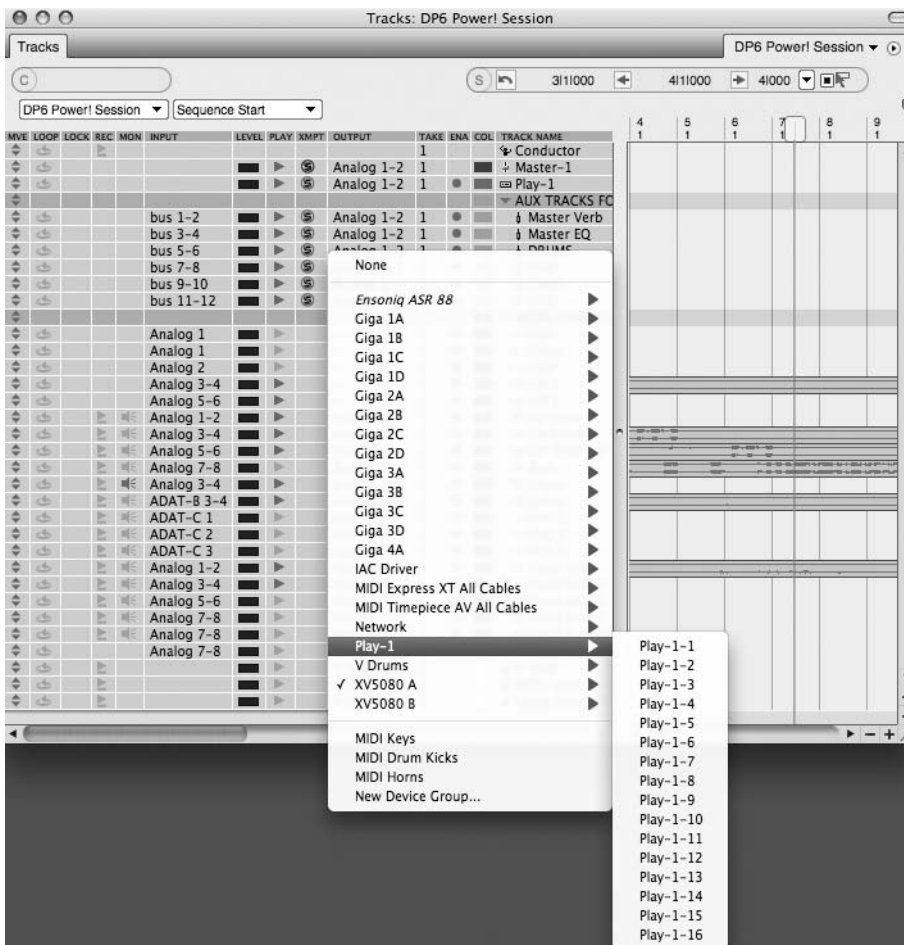


Figure 4.23 A MIDI track's output menu.

3. Assign the virtual instrument and its corresponding MIDI channel to the output of a MIDI track.

## Monitoring ReWire Instruments

When working with ReWire virtual instruments, Digital Performer must be opened before you launch the ReWire synth. Then you must create the necessary virtual instruments in the ReWire application before they will become published in the output menu of DP's MIDI tracks. Once published, they will appear as available busses.

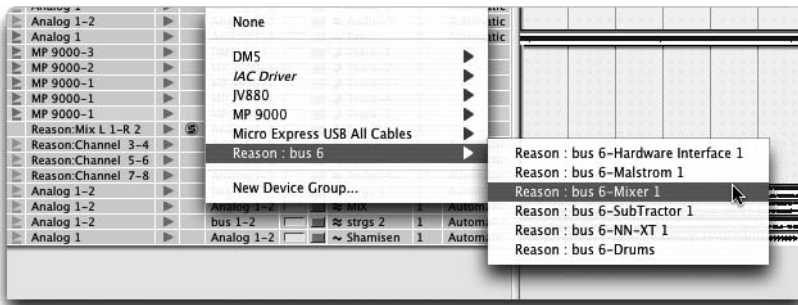
To set up a ReWire instrument within DP:

1. Start by launching Digital Performer.
2. Create an aux or audio track to monitor the ReWire instrument and assign the audio input to any available ReWire output, as shown in Figure 4.24. This is a crucial step because you must have at least one DP input assigned to a ReWire instrument output in order for the ReWire application to recognize DP as a valid audio output destination.



**Figure 4.24** Digital Performer aux tracks that have been configured to monitor individual ReWire instruments.

3. Launch the ReWire application and create the desired ReWire virtual instruments.
4. In Digital Performer, create a MIDI track and assign the MIDI output to the newly created ReWire instrument, as shown in Figure 4.25. Once assigned, the MIDI track will send MIDI data from DP to the ReWire synth. Then the ReWire instrument will output its audio to the Digital Performer aux track you created and configured in Step 2.

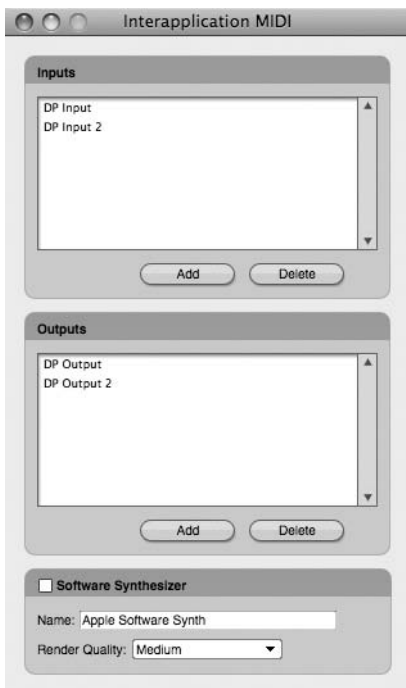


**Figure 4.25** ReWire virtual instruments will appear as busses within a MIDI track's output menu.

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**Interapplication MIDI** Many applications, such as Propellerhead's Reason, publish their own MIDI inputs and outputs that automatically appear within Digital Performer's assignment menus. There may be times, however, when you are working with programs (or older versions of programs) that do not have this capability. You can use Digital Performer's Interapplication MIDI feature to publish DP's MIDI inputs and outputs to these applications (see Figure 4.26). Think of Interapplication MIDI as "virtual" MIDI cables.

---



**Figure 4.26** Digital Performer's Interapplication MIDI window.

## Tempo and Meter

Another integral part of any session is the proper setup of a project's tempo and meter. You can, of course, begin recording MIDI and audio data without worrying about this process. But you won't be able to take full advantage of DP's nonlinear editing capabilities, utilize the built-in Metronome, make use of MIDI processes such as quantization, or properly output MIDI data within the QuickScribe Editor.

There are numerous ways to control tempo and meter within DP, but because this chapter is aimed at quickly getting your project up and running, we will focus only on the most basic setup procedures. See Chapter 11, "Arranging," for additional information on tempo and meter in Digital Performer.

### Setting the Tempo

Digital Performer displays the currently enabled sequence's (Chunk's) meter, tempo beat value, and tempo within the metronome section of the Control Panel, shown in Figure 4.27. The Tempo Control menu, shown in Figure 4.28, determines how tempo will be controlled, providing you with five different ways of controlling tempo.



**Figure 4.27** The Control Panel displays the tempo, tempo beat value, and meter for the currently enabled sequence.



**Figure 4.28** The Control Panel's Tempo Control menu determines the tempo source.

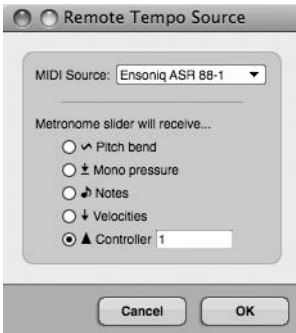
- **Tempo Slider.** Use the Tempo slider when you want to change tempo simply by dragging the slider with the mouse (see Figure 4.29). Dragging the slider to the left will decrease the tempo, while dragging it to the right will increase the tempo. When Tempo slider is selected as the tempo source, you can also quickly type new tempo values in the Tempo box.



**Figure 4.29** When the Tempo Control source is set to the Tempo slider, you can use the slider as well as the Control Panel's Tempo box to control tempo.

- **Conductor Track.** Use the Conductor track when you want your sequence to reflect tempo information (also known as a *tempo map*) contained in the Conductor track.

- **Tap Pad.** Use the Tap Pad when you want to manually “tap” in the desired tempo by clicking repeatedly on the available Tap Pad. This feature is best used when your sequence is stopped, as DP will not reflect your tempo tapping while the sequence is playing.
- **Remote Control.** Use the Remote Control feature when you want to control tempo from an external MIDI source, such as a modulation wheel or a programmable dial on a MIDI keyboard. The MIDI source can be defined using the Set Remote Source option (see Figure 4.30).



**Figure 4.30** The Remote Tempo Source window allows you to define a MIDI source to control tempo.

- **Backslash Key.** Much like the Tap Pad button, press repeatedly on the backslash key of your QWERTY keyboard to set your tempo, and the Tempo box will update accordingly. This nifty shortcut works in all modes except Conductor Track mode.

---

**Projects with a Constant Tempo** The Tempo slider can be used for sequences that have a constant tempo. Because you are not working with a set tempo map, you are free to make changes to the tempo at any time, even on the fly, without affecting playback of MIDI tracks. If your project requires tempo changes, however, you will need to program the change and use another tempo source, such as the Conductor track. I recommend defining all tempo settings prior to recording audio, because any adjustments made later will cause audio tracks to be shifted or moved in the timeline of your sequence.

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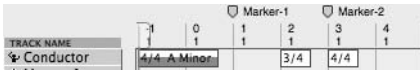


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**The Conductor Track** The Conductor track in Digital Performer, shown in Figure 4.31, is a container for tempo, meter, key change data, and markers. This information can be inserted directly into the Conductor track and automated over time. (This is how you can achieve variable clicks, such as tempo ritardandos and accelerandos, within DP.) See Chapter 11 for more information on the Conductor track.

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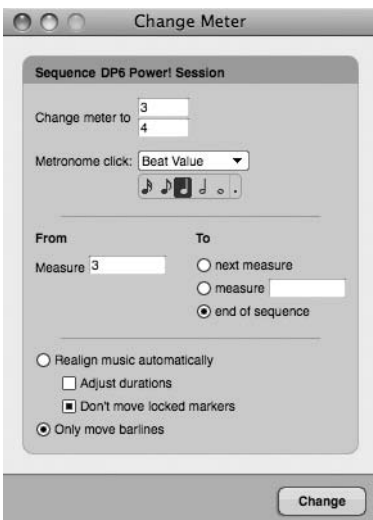
**Figure 4.31** The Conductor track contains tempo, meter, markers, and key change information.

## Setting the Meter

Digital Performer sequences default to a meter of 4/4 (unless you are working with a Digital Performer template whose meter has been set to a different value). Like tempo, meter has a direct impact on event editing, click and countoff options, and the display of information within the QuickScribe Editor. Unlike the Tempo slider, however, any meter changes made to a sequence must be programmed with the Change Meter command.

To set the meter of a sequence:

1. Open the Change Meter window by choosing Project > Modify Conductor Track > Change Meter.
2. Enter the new meter by clicking and typing directly in the Change Meter To field (see Figure 4.32). You can also change the values by clicking and dragging up or down with the mouse.



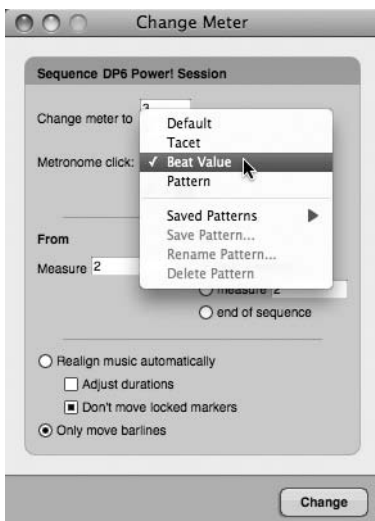
**Figure 4.32** The Change Meter window.

3. Next, you will need to specify the measure start and end locations for the change. If you would like to change the meter for the entire project, enter a value of 1 in the From Measure location box. In the To location section, click on the End of Sequence button.

**Multiple Meter Changes** If you have many meter changes within a project that contain the same beat value (the bottom number, or denominator), DP makes it very simple to quickly create the different meters. As in Step 2, once you have entered the number of beats per measure (the top number, or numerator) for Measure 1, select Next Measure from the To column. You will notice the beats per measure value becomes highlighted automatically, allowing you to simply use the number pad to change the value of each measure and hit Enter consecutively until the meter map is completed. With this method, the From value updates automatically as well.

4. In the Options section of the window, choose Only Move Barlines, which will leave any existing data within the sequence unaffected.
5. Once the meter parameters have been adjusted, click on the Change button to set the new meter for the sequence.
6. Close the window by clicking on the title bar's Close button.

**Metronome Click in the Change Meter Window** Also appearing in the Change Meter window is a Metronome Click area (as shown in Figure 4.33). Here you can designate the type of click you want for a specified time range. You can select and define the basic beat value or even remove clicks for a measure or a range of measures. Default clicks and click patterns can be accessed and created here as well. (See the section on “Creating a Click Default” later in this chapter.)



**Figure 4.33** The Metronome Click menu allows you to designate a click type for a specified time range.

## Setting Up a Click

Recording audio and MIDI data to a click has many benefits. Besides giving the performer a stable timing reference, it also provides an easier recording and mixing environment for the audio engineer, which allows him, for example, to take advantage of bar/beat editing, to quickly create time-based effects that are synced to a project's tempo, or to achieve better results when working with Digital Performer's Beat Detection Engine.

Before you can successfully begin using a click within Digital Performer, you will need to configure it from the Click preferences in the Preferences and Settings window.

To set up the click from the Click preferences in the Preferences and Settings window:

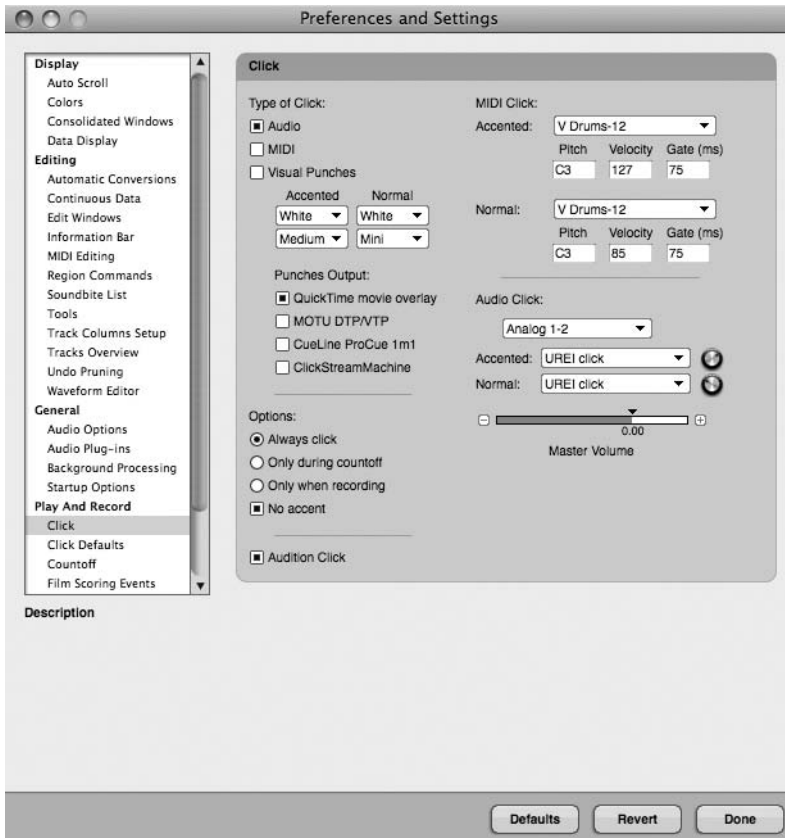
1. Open the Click preferences by double-clicking on the Metronome button in the Control Panel, as shown in Figure 4.34. You can also access the window by choosing Digital Performer > Preferences.

The Metronome button



**Figure 4.34** Double-click on the Control Panel's Metronome button to quickly open the Click preferences located in the Preferences and Settings window.

2. Select the Audition Click option to audition (hear) the current click settings. Once enabled, parameter changes made in this window will be updated in real time.
3. Choose the source of the click (see Figure 4.35):
  - The Audio option will generate a click from a variety of preset click sounds that can be assigned to any available audio outputs in your system.
  - The MIDI option will transmit a MIDI note (to a designated MIDI device/channel) for each click sound.
  - Selecting both options will produce click sounds from both the Audio and MIDI designations.
  - Visual Punches are flashes that appear onscreen with each click. The flashes become visible once a movie has been imported into Digital Performer. They are closely related to Streamers and Flutters and are commonly used as conducting tools when scoring to picture. Visual Punches are triggered by tempo beats and can be used without engaging an audible click. There are also options to output the punches to other hardware devices so the punches can be visible on another screen. (Read more about Visual Punches in Chapter 15, "Scoring to Picture.")



**Figure 4.35** Use the Click preferences located in the Preferences and Settings window to configure Digital Performer’s click.

4. If you selected MIDI as the click source, you will need to specify the MIDI instrument that will be used to produce the accented and normal click sounds from the MIDI Click section of the Click preferences. If you selected an audio click, you can proceed to Step 7.
  - The accented click will be played on Beat 1 of a measure.
  - The normal click will be played on all other beats of a measure.
5. Choose the MIDI device and channel from the Accented and Normal pop-up menus. Devices within this list are determined by the Mac’s Audio MIDI Setup utility (AMS). Refer to Chapter 2 for information on configuring MIDI devices with AMS.
6. Specify the Pitch, Velocity, and Gate values for the accented and normal click sounds.
  - **Pitch.** This determines the MIDI note that will be played when the click sounds. The letter represents the actual note within a scale, while the number represents the

octave of the note. A pitch of C3, for example, represents middle C. Use the number sign (#) to designate a sharp and the letter b to designate a flat.

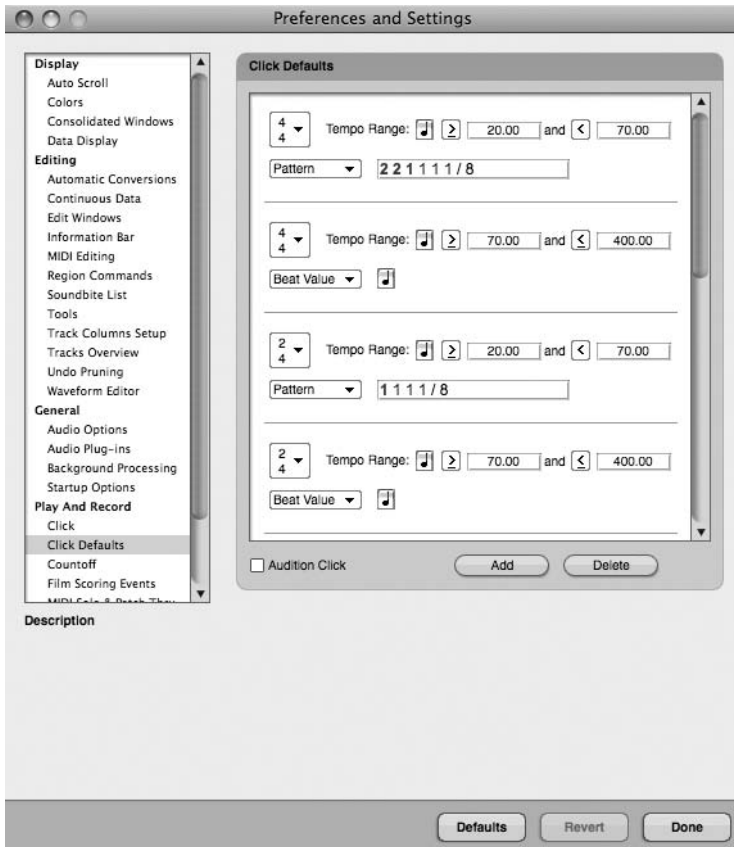
- **Velocity.** This sets the volume of the click sound. Values range from 0 to 127.
  - **Gate.** This determines the length of the note in milliseconds.
7. If you chose an audio click, you can set the overall volume of the click with the Master Volume slider (located below the Audio Click section). Keep in mind, if you are using Built-in Audio as your click output, that the Mac's Sound Preference settings (Applications > System Preferences > Sound) will also affect the overall volume of Digital Performer's click.
  8. Next, specify when the click will sound with the Click options.
    - **Always Click.** This forces the click to sound during countoff, recording, and playback.
    - **Only during Countoff.** This forces the click to sound only during countoff measures. The click will stop once playback or recording actually begins.
    - **Only When Recording.** This forces the click to sound only during recording.
    - **No Accent.** This eliminates the accent on Beat 1 of a measure. This setting affects both the internal and MIDI clicks.
  9. Save your project (File > Save)!
  10. If you plan to reuse this specific project configuration or you want to base your future Digital Performer projects on the one you just created, then choose File > Save As Template. Name the project and click OK. (See Chapter 5 for details on creating Digital Performer templates.)

## Creating a Click Default

This feature allows you to choose and/or create a specific click scheme for any meter or tempo range (see Figure 4.36). You can choose between preset beat values or patterns, or you can customize your own. DP will automatically use these default clicks when the Click button is enabled and the sequence Conductor track matches the tempo range and meter of the default click. *It is important to keep in mind that in order to use a click default, you must select Default in the Metronome Click drop-down menu in the Change Meter menu discussed previously.*

To set up a default click from the Click Defaults preferences in the Preferences and Settings window:

1. Choose Digital Performer > Preferences.
2. Select the Click Defaults option.



**Figure 4.36** The Click Defaults Preferences window.

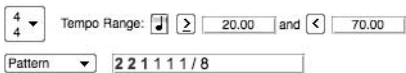
3. Choose a preset by clicking in the white space of the appropriate click, and the chosen click default will become highlighted in blue. (You can audition the click at any time by selecting Audition Click, located just below the Click Defaults list.)
4. In the Meter drop-down menu, select the desired meter.
5. In the Tempo Range section, choose the tempo's beat value by clicking on the quarter-note icon. Most tempos are based on the quarter note, but DP allows you to choose among sixteenth notes, eighth notes, quarter notes, half notes, whole notes, and dotted versions of all of these.
6. Next, choose a tempo range that will apply to the designated click default. When the tempo of your sequence falls within this designated range, the current click default will “activate.” Use the greater-than or less-than arrow to customize these parameters.
7. Just below is the Beat Value or Pattern drop-down-menu (for the sounding click). If you select Beat Value, the click will be based on the meter (designated in Step 4). However,

you can change the beat value of the sounding click (it can be different than the tempo's beat value) by, again, clicking on the quarter-note icon located to the right of the Beat Value drop-down menu. (DP defaults to quarter notes.) Skip to Step 9 if you will only be using Beat Value default clicks.

8. Selecting Pattern in the drop-down menu allows you to choose between several preset saved patterns, or you can create your own. (Unfortunately, DP's preset saved patterns only include 4/4 and 12/8.) If you want to create your own pattern, see "Pattern Clicks (the Ultimate in Clicks)" in the next section.
9. Once you have selected the desired beat value or pattern, close the window by clicking Done.

### Pattern Clicks (the Ultimate in Clicks)

Sometimes projects require a sequence with many different meters and tempos. In the past, you were limited to one or two types of clicks for the entire sequence, and if you needed a different click for just one measure (or a subdivision of the click), you were out of luck. Not anymore! DP's pattern clicks involve exactly what the name implies—patterns (see Figure 4.37). For example, suppose you have a sequence that involves a long, slow ritard at the end. A quarter-note click can be very difficult for performers to follow, especially at very slow tempos. With a pattern click, you can create a click that changes once the ritard begins. Depending on rhythms in the music, the click could change on any part of the measure to, say, eighth notes or triplets, and can even contain accents on beats other than count one. This is quite an effective tool for recording.



**Figure 4.37** DP's new pattern clicks are an effective tool for recording.

Patterns in DP are created using an editable text code. This syntax can be somewhat confusing at first and requires some practice. However, it is quite simple once you grasp the general idea. Beware, though: A bit of math is involved!

Each pattern is based on a string of numbers and text (the letter *d* for "dotted"). Just as in normal rhythms, each type of note is given a numerical value, and the numerical values of the pattern are determined by the *last* two numbers of the string (separated by the slash sign [/]). The final number (to the right of the slash) is referred to as the *indicator*. Table 4.1 shows the indicator values in DP.

The number *after* the slash (the indicator value) indicates the numeric value of the number *before* the slash. Remember, indicator values from Table 4.1 refer *only* to the number after the slash.

**Table 4.1** Indicator Values in Digital Performer

| Indicator | Value                 |
|-----------|-----------------------|
| 1         | Whole note            |
| 2         | Half note             |
| 2d        | Dotted half note      |
| 4         | Quarter note          |
| 4d        | Dotted quarter note   |
| 8         | Eighth note           |
| 8d        | Dotted eighth note    |
| 16        | Sixteenth note        |
| 16d       | Dotted sixteenth note |

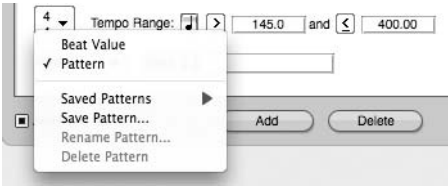
For example, a string ending with 2/8 means the pattern will be based on eighth notes (according to Table 4.1, because 8 is an eighth note), and all 2s appearing in the string must be interpreted as eighth notes (the 8 makes the 2 an eighth note). In this case (and here is where simple math comes in), if 2 means an eighth note, then 4 (twice as large as 2) means a quarter note, and 1 (half the value of 2) means a sixteenth note. So, a pattern of 4 4 2 2 2 2/ 8 will result in a sounding click of two quarter notes (4 is twice as large as 2), followed by four eighth notes (the 8 makes the 2s eighth notes). A pattern of 2 2 1 1 1 1 / 4 will result in a sounding click of two half notes (2 is twice as large as 1), followed by four quarter notes (the 4 makes the 1 a quarter note).

To set up a custom click pattern:

1. Choose Digital Performer > Preferences.
2. Select the Click Defaults option in the Preferences and Settings list.
3. Select the Add button in the bottom-right corner under the Click Defaults list. (I suggest creating a new pattern rather than changing 1 of DP's preset patterns.)
4. Scroll to the bottom of the Click Defaults list; DP will place a new generic click default here.
5. In the Meter drop-down menu, select the desired meter.
6. In the Tempo Range section, choose the tempo's beat value by clicking on the quarter-note icon. Refer to the tempo beat values discussed in the previous section.



7. Next, choose a tempo range that will apply to the designated click default. Again, use the greater-than or less-than arrow to further adjust these parameters.
8. In the Beat Value drop-down menu, select Pattern.
9. In the Pattern (or string) window, enter your custom numerical pattern. Make sure to leave a space between each entry.
10. To accent a click in the pattern, highlight the number you want to accent and enter Command+B. This makes the number bold and red. Make sure No Accent is *not* selected in the Click preferences window discussed earlier in this chapter.
11. Save the new custom pattern by selecting Save Pattern from the Pattern drop-down menu (see Figure 4.38).



**Figure 4.38** The Save Pattern option.

12. In the Save Click Pattern window, enter a name for the pattern and click OK. The newly created pattern will appear in the Saved Patterns list.
13. You can also rename or delete patterns in the Pattern drop-down menu. These actions apply to whatever pattern is present in the Pattern window.
14. To delete the entire click default, simply make sure it is highlighted in red and then choose the Delete button located below the Click Defaults window.

Again, creating your own click patterns will take some practice, but with a little trial and error, you can design what seems like limitless click opportunities.

---

**The Indicator Value** When creating a custom click pattern, I suggest starting with the indicator value and working your way backward. Remember, the indicator value will be the basis for the click pattern. In other words, if you know you want a click pattern that includes sixteenth notes, use 16 as your indicator value. Once you establish this, it's much easier to do the math to create the remaining beats of the pattern.

---

## Defining the Countoff

Often a preparatory period is necessary before recording or playback begins. This allows performers or engineers the opportunity to get ready or to become set for action. This is called the *countoff*. The countoff is typically two bars of click based on the first measure of the sequence, so if Measure 1 is a 4/4 bar, then the countoff is usually 8 counts long (two bars of 4/4).

However, Digital Performer provides an extensive array of customizable countoff features. In the same manner as click defaults, you can construct your own countoff scheme, including its beat value, pattern, number of measures, total number of beats, and whether you want to enable it for recording purposes only. You can also assign various visual aspects of the countoff feature. (See Chapter 15 for more information regarding these new countoff features.)

To specify the countoff preferences:

1. Choose Digital Performer > Preferences (or double-click the Countoff or 2-Bars button located to the right of the Metronome button in the Control Panel).
2. Select the Countoff option in the Preferences and Settings list. The Countoff window will appear (see Figure 4.39).
3. Select the Click button to enable a sounding click for countoff. Leaving this button unselected will result in a silent countoff.
4. In the drop-down menu located just below the Click button, select the type of countoff click you want to use for your project. You can choose a default click, a beat value, or a click pattern (all discussed at length earlier in this chapter). If you select Pattern, you have another opportunity to design, save, delete, or rename a custom click pattern. However, the pattern chosen or created here affects the countoff click only, not the main sequence metronome click.
5. In the Options section of the Countoff window, enter the number of measures to determine the length of the countoff. You can also specify extra beats, which is especially useful when the sequence starts with a pickup note or an odd meter. Any changes here will automatically be updated in the Control Panel's Countoff button.
6. Now select the Countoff Only When Recording option if you want the countoff to activate only for actual recording purposes.
7. Click the D1 button to exit the Countoff preferences.

Now that you have set up your countoff click, it is important to enable it by making sure the Countoff button in the Control Panel is activated (darkened). You can easily toggle this button on and off while you are working in your project. Also, it is not necessary to be at the beginning of your sequence (Measure 1) for the countoff to work. You can be located anywhere in the



**Figure 4.39** The Countoff Preferences window.

timeline, and if activated, DP will provide the defined countoff before recording or playback begins.

## Summary

Obviously, there likely will be other parameters or features specific to your project that you'll need to set up before recording or mixing. The steps and procedures provided in this chapter are meant to get you up and running quickly with Digital Performer 6. We'll dive into the details of DP's tools and enhanced features in the upcoming chapters of this book.

# 5

## Project Management: Part 1

**P**roject management is an extremely important, though often overlooked, part of the music production process. Keeping audio files, multiple versions of a project, and your Digital Performer workspace organized requires careful planning and consideration, but it doesn't have to be an overwhelming task.

One of the common misconceptions about project management is that only serious professionals working on large projects need to worry about it. On the contrary, even the smallest of projects and studio setups can benefit from some organization. Proper audio file management, for example, can provide a more stable operating environment for Digital Performer by preventing unneeded files from consuming precious disk space, which can negatively affect the performance of the Mac OS.

Digital Performer contains a number of features to help you manage the various aspects of your sessions, from customization of the DP workspace to the compacting and archiving of your projects. I've chosen to break up this complex topic into two chapters. Part 1 will discuss basic project management concepts, such as creating, saving, and opening projects and customizing your DP workspace. Part 2 (Chapter 6) will discuss the project Undo History window, audio file management, and backup solutions.

Here is a summary of topics discussed in this chapter:

- How to open and save existing Digital Performer projects
- The differences between Save and Save As
- How to create and manage project templates
- How to open and save standard MIDI and OMFI files
- How to customize the Digital Performer workspace
- The Consolidated Window

## The Digital Performer Project

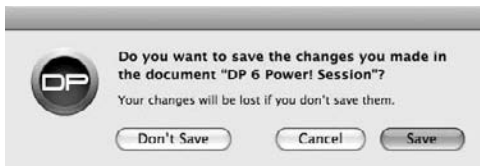
When you create a new Digital Performer project, a project file (document) is created and placed in the new project's folder. Within this document is all the information associated with the project, from track layout and window placement to mix settings and recorded MIDI data. Everything that is needed to re-create the project is saved in this document, with the exception of audio files, audio file undo history information, fades, and analysis files. Remember, soundbites (audio files/regions) in a DP project are only pointers that reference the actual audio files, which exist on a hard drive within your system. This is why the project file is relatively small—the much larger audio files are not actually contained in the Digital Performer document but in separate distinctive folders. DP automatically links these separate folders to your main project file.

As noted in Chapter 4, Digital Performer will allow only one project to be open at a given time (though an unlimited number of sequences, or Chunks, can exist within a given project). You must close a project before you can open or create a new one. See Chapter 11, “Arranging,” for a detailed look at Chunks within Digital Performer.

### Opening an Existing Project

To open an existing Digital Performer project from the File menu:

1. Launch Digital Performer.
2. Choose File > Open. The default keyboard shortcut is Command+O.
3. Choose the project file from the appropriate folder or hard drive and click OK. If you have an unsaved project currently open, you will be prompted to save the file before DP closes it and opens the newly chosen one (see Figure 5.1). Choosing Don't Save will close the currently open project, discarding any changes made since your last save.



**Figure 5.1** The Save Changes before Closing dialog.

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**Other Methods for Opening a Project** In addition to File > Open, there are two other methods for opening a Digital Performer project.

- **Drag and drop.** Drag the Digital Performer project you want to open directly onto the DP application icon. This method will also work when the application icon resides in the Dock.

- **Double-click.** Double-click the Digital Performer document icon you want to open. If DP is not currently running, this method will launch the program before opening the project file.
- 

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**Working with Multiple Versions of DP** If you have multiple versions of Digital Performer installed on your system, you may have experienced instances in which DP opened a project in the “wrong” version of the application when you used the double-click method. You can remedy this problem and force a file to open within a specific version of DP using the Finder’s Get Info command (see Figure 5.2).

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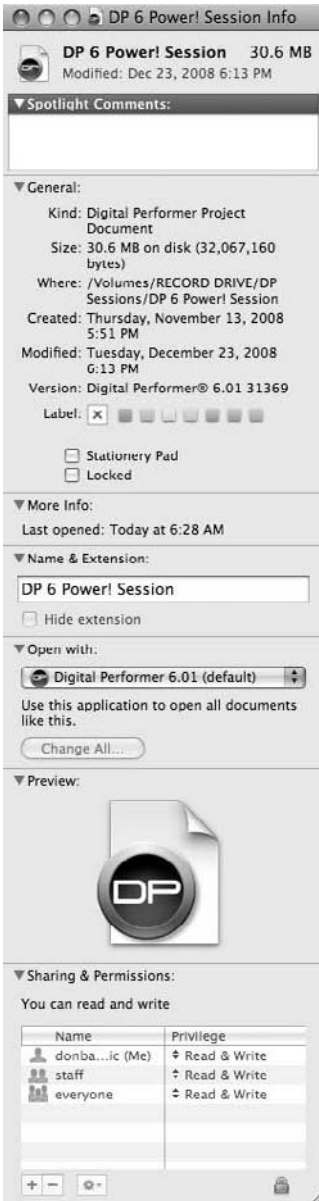
To force a project to open in a specific version of Digital Performer:

1. Select the Digital Performer project icon by clicking on it. Don’t double-click, or you will accidentally launch the program and open the selected project.
2. From the Finder’s File menu, choose Get Info. The default keyboard shortcut is Command+I.
3. Click to display the Open With section pane of the Get Info window.
4. Click the disclosure triangle to access the Open With pop-up menu.
5. In the pull-down menu, select the specific version of the Digital Performer application in which you would like the file to open.
6. If you would like all similar DP projects to open with the application version you just selected, then click on the Change All button. An “Are You Sure” dialog will open, asking you to cancel or continue with the change. Select Continue.
7. Close the Get Info window.
8. Now, when you double-click on the project file, it will open in the designated version of DP.

## Opening Other File Types

Digital Performer can also open the following types of files created in earlier versions of DP, Performer, or other supported applications:

- Projects created in earlier versions of Digital Performer and Performer
- Projects created in AudioDesk
- Standard MIDI files



**Figure 5.2** The Finder's Get Info command.

- OMF Interchange files (for transfer with other applications)
- AAF Interchange files (for transfer with other applications involving video)
- Final Cut Pro XML files (for transfer with editing projects involving Apple's Final Cut Pro)

Once opened, the file will be converted to a Digital Performer file. Choose the Save As command to export a file back into its original format. Standard MIDI and OMF Interchange files are discussed in further detail in the “Standard MIDI Files” and “OMF Interchange and AAF Interchange Files” sections later in this chapter.

## Saving Your Project

Save! Save! Save! Why do we need to save? And why do we lose precious changes that haven’t been saved, for example, when a program crashes? The answer is simple. When a project file is opened, it is loaded into RAM. So you are actually working on a copy of the project and not the original file, which is stored on your hard drive. Until you save, any modifications or changes you make to a file exist only in RAM and are not updated in the original document.

Redundancy can rescue us many times over, so if you would like to save a different version of your project for backup purposes or export it into a different file format, you’ll need to choose the Save As command.

### The Save Command

To save a Digital Performer project:

1. From Digital Performer’s File menu, choose Save. The universal keyboard shortcut for saving on a Mac is Command+S.
2. If you are saving a project for the first time, you will be prompted to name the file before saving.

### The Save As Command

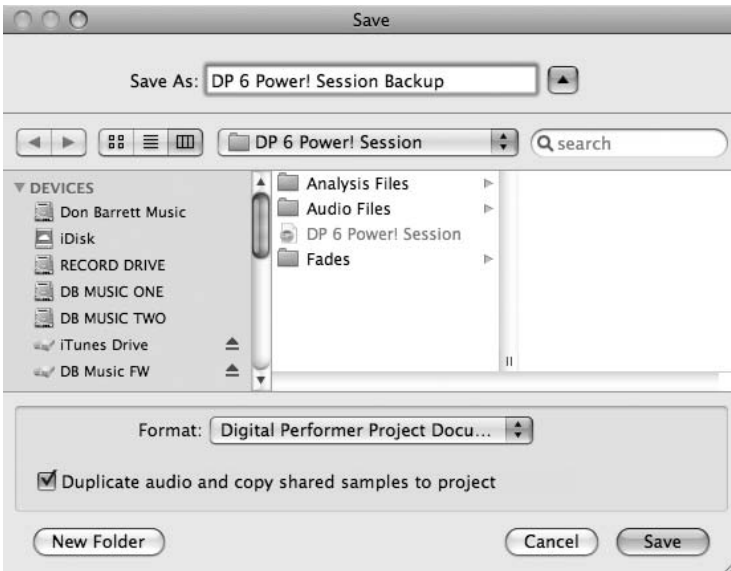
The Save As command (File > Save As) has multiple uses, including the following:

- Creating an alternate version of a project with a different file name
- Exporting a project in a different file format
- Saving to create a backup or duplicate copy of a project

To save an alternate version of a project:

1. Choose Save As from Digital Performer’s File menu.
2. Name the project. Try to choose a descriptive name or devise a specific naming scheme to keep your alternate project files organized.
3. If you need to make duplicate copies of your project audio files to include with this alternate version, click the Duplicate Audio and Copy Shared Samples to Project option, as shown in Figure 5.3.





**Figure 5.3** The Save As dialog with the Duplicate Audio and Copy Shared Samples to Project option selected.

4. Select the destination for the new version and click OK.
5. Once saved, DP will automatically save and close the original file, and you will be working on the new (alternate or backup) version of the project.

---

**Saving a Copy As** If you would like to save an alternate version of a project but continue working on the current version, use the Save a Copy As command (File > Save a Copy As). Be aware that unlike the normal Save As command, Save a Copy As will not automatically save the project you're currently working with. You will need to manually save to preserve any changes you have made since your last save.

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**Beware When Using the Save As Command** Many users find out the hard way: A new and separate Audio Files folder is not created when using the Save As command, unless you enable the Duplicate Audio and Copy Shared Samples to Project option. When this option is left unchecked, any alternate versions of a project you create will still refer to the original Audio Files, Fades, Analysis, and Undo folders. If you delete an audio file in one version of a project, for example, it will disappear from any and all alternate versions that may have been created with the standard Save As command.

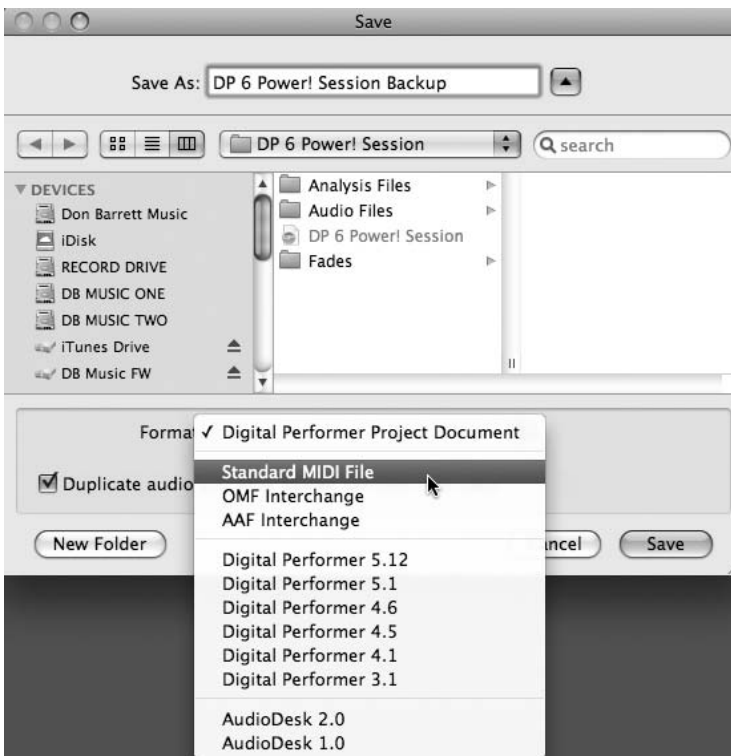
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If you like to keep the alternate versions of a project organized by removing unused audio files from the Soundbites window, be sure to use the Remove from List command. (Choose Remove from List from the mini-menu in the Soundbites window.) This will remove the audio from the specific document's Soundbites window without actually deleting the regions (soundbites) associated with the original audio files.

---

To export your project in a different file format:

1. Choose Save As from Digital Performer's File menu.
2. Name the project.
3. Choose the destination folder and/or hard drive for the file.
4. Select the new format from the Format pop-up menu, as shown in Figure 5.4.



**Figure 5.4** The Save dialog with supported file format options.

5. Click OK to save.

See the “OMF Interchange and AAF Interchange Files” and “Final Cut Pro XML Interchange” sections of this chapter for detailed information on exporting to these file formats.

---

**Working with Previous Versions of DP** Digital Performer projects are not backwards compatible with earlier versions. You cannot, for example, open a project created in DP 6.02 in version 5.13. If you need to open a project in an earlier version of Digital Performer (perhaps you are collaborating with another musician who has an older version of DP), then use the Save As command and simply select the desired version of DP in the Format drop-down menu.

---

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**Ensuring Compatibility** Be aware that certain features, such as virtual instrument tracks, may not be successfully exported to previous versions. For example, exporting a DP 6.02 project containing an instrument track to an older version will result in the instrument track appearing as an empty aux track.

Here are a few suggestions for ensuring compatibility with older versions of Digital Performer and/or differently configured systems:

- Print (record) any existing instrument tracks as audio files. The method you choose (Freeze Tracks, Bounce to Disk, Real-Time Audio Bounce, and so on) will depend on your particular setup and workflow. Each feature is discussed in detail in upcoming chapters of this book.
  - If you are supplying a project for another musician to perform overdubs (and not mix), for example, you may be able to get away with bouncing the entire project to disk as a stereo file.
  - Find out what audio interface the other DP user is working with. Can his system handle your project's sample rate, track, and plug-in count? If the answer is no, you may be forced to bounce to disk, remove effects plug-ins, or convert the project's sample rate and/or bit depth.
  - Remember, it's a smart practice to supply the other user with only what he needs. Don't rely on him to figure it out when he receives your project! Besides being courteous, you'll be able to retain more control over how the project will return to you when the user's work is completed.
-

## Save As Template

A much-overlooked project management feature in Digital Performer is the project template. If you constantly find yourself reinventing the wheel, so to speak, by devoting a lot of time to setting up projects, creating new tracks, renaming those tracks, making specific I/O assignments, arranging the workspace, and so on, you may want to incorporate templates into your production workflow. In DP 6, you have the ability to save multiple project templates with the Save as Template command (File > Save as Template).

### *Saving a Template*

You can create templates tailored to accommodate your specific recording, mixing, and/or composition needs. Prepare them ahead of time or save them as your projects are created.

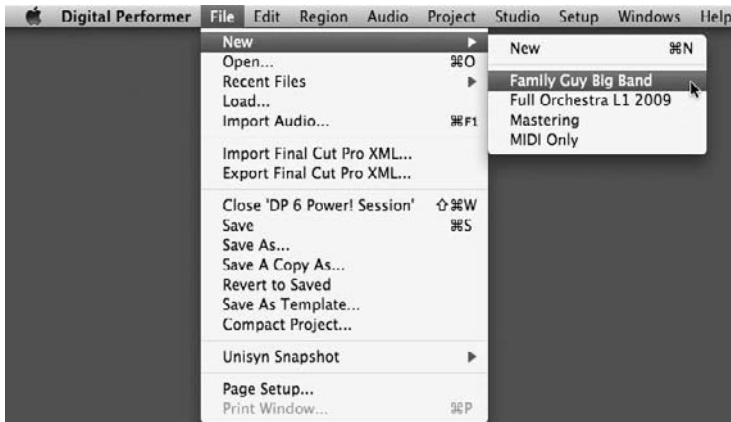
To create a project template using the Save As Template command:

1. Begin by setting up your Digital Performer project. This may entail adding and renaming specific tracks, configuring specific audio bundles, setting up the Mixing Board with effects plug-ins inserted on your tracks, and so on.
2. Once you have configured your project, choose Save As Template (File > Save As Template).
3. Name the template (see Figure 5.5). Try to choose a descriptive name to help you easily identify the nature of the template.



**Figure 5.5** The Save As Template window.

4. If you would like the template to become the default template, select the Use as Default New Template option.
5. Click OK to save the template.
6. Once saved, the template will appear in the File > New submenu, as shown in Figure 5.6.



**Figure 5.6** The New submenu. Descriptive naming schemes allow for easy identification of project templates.

---

**Preventing a Template in Previous Versions from Being Overwritten** The greatest benefit to DP's New Template submenu is that you cannot accidentally overwrite a project template. When you choose a template as the basis for a new project, you are not actually using the original project used to create the template; you are simply creating a new project based on the selected template.

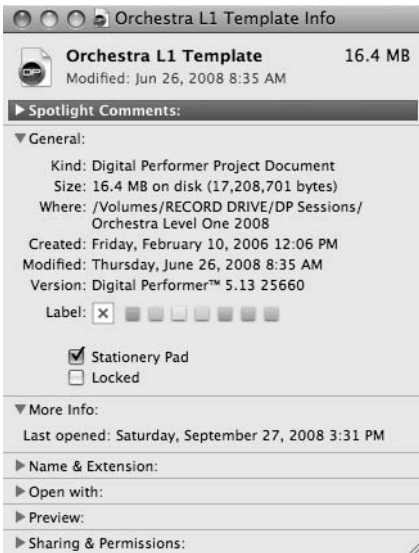
When working with versions prior to DP 4.1, you are limited to the creation of one template with the Save as New Template command. To work around this restriction, you can use a normal DP project and choose Save As to create a pseudo template on which to build other projects. In this scenario, however, it is very easy to accidentally overwrite your makeshift template, or even worse, create “new” projects that share the same Audio Files folder!

Thankfully, there is an easy way to prevent a project from being overwritten, and believe it or not, it is a standard feature of the Mac OS—see the next set of steps.

---

To prevent a Digital Performer project from being overwritten:

1. Select the project's document icon by clicking on it. Be careful not to double-click on the document, or you will accidentally open the project.
2. From the Finder's File menu, choose the Get Info command. The default keyboard shortcut is Command+I.
3. Click to show the General section pane of the Get Info window, shown in Figure 5.7.



**Figure 5.7** The General section pane of the Get Info window with the Stationery Pad option selected.

4. Select the Stationery Pad option.
5. Close the Get Info window.
6. Now when you open this project (or template), you will be forced to Save As, creating a new project (with its own Audio Files folder) that is entirely independent from the original “template” (see Figure 5.8).



**Figure 5.8** When attempting to open a project with the Stationery Pad feature enabled, you will be forced to Save As, ensuring that the file is not overwritten. Choosing Cancel will automatically close the file.

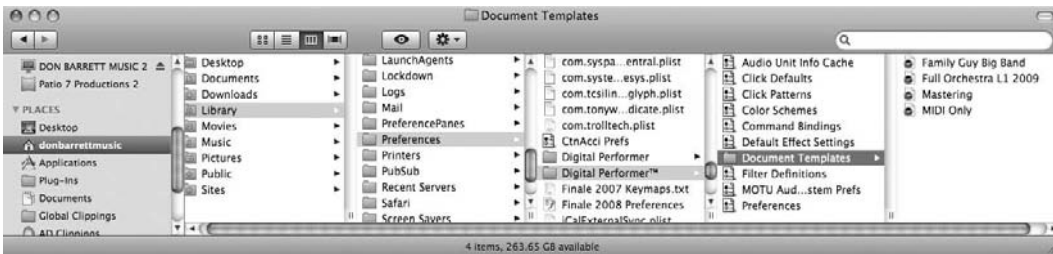
---

**Don't Double-Click to Open a Project Template** Be sure to use Digital Performer's Open command (File > Open) when opening a project (or pseudo template) protected with the Finder's Stationery Pad feature. If you use the double-click method, only a copy of the original file will be created and opened. This "copy" will be created in the project folder of the protected document and, more importantly, will share the same Audio Files folder as the original project!

---

### ***Deleting, Moving, and Renaming Templates***

Digital Performer templates are stored in the User > Library > Preferences > Digital Performer > Document Templates folder (see Figure 5.9). Once a template is created in DP, it can be managed only from the Finder menu. DP will automatically update to reflect any changes made to the Document Templates folder.



**Figure 5.9** DP templates are stored in the Document Templates folder.

To delete a project template:

1. Navigate to the User > Library > Preferences > Digital Performer > Document Templates folder.
2. Drag the template document to the Trash, or use the keyboard shortcut Command+Delete.

To remove the project template without deleting it:

1. Create a new folder (File > New Folder) outside the Document Templates folder in a location of your choosing.
2. Navigate to the User > Library > Preferences > Digital Performer > Document Templates folder.
3. Drag the template document to the folder you created in Step 1.

To rename a project template:

1. Navigate to the User > Library > Preferences > Digital Performer > Document Templates folder.
2. Select the document template by clicking on it.
3. Click again, and the name will become highlighted.
4. Type the new name.
5. Press the Return key to confirm the change.

---

**Opening Documents and Folders from Within DP** Digital Performer's Clippings feature allows you to create shortcuts to documents, folders, and website links (almost anything that resides outside of DP). This saves you the hassle of leaving the application and navigating with the Mac OS Finder. See Chapter 11 for details on using Clippings.

---

## Standard MIDI Files

The standard MIDI file format (SMF) was created to facilitate the transfer of MIDI data across different applications and, most importantly, different computer platforms (see Figure 5.10). Almost every music software sequencer can open and save MIDI data in the SMF format. This allows a musician working in Digital Performer, for example, to save a MIDI sequence as an SMF and exchange it with a PC user without the loss of any data.



**Figure 5.10** The Standard MIDI File icon created in Digital Performer.

There are basically two types of standard MIDI files that DP can work with, Type 1 and Type 0. Digital Performer replaces the term *type* with *format*.

- **Format 1.** This setting preserves the layout of individual MIDI tracks and includes tempo and meter information.
- **Format 0.** This setting includes tempo and meter information but merges all MIDI tracks into a single multichannel track. DP also has the ability to save a format 0 SMF that only includes tempo and meter map information.

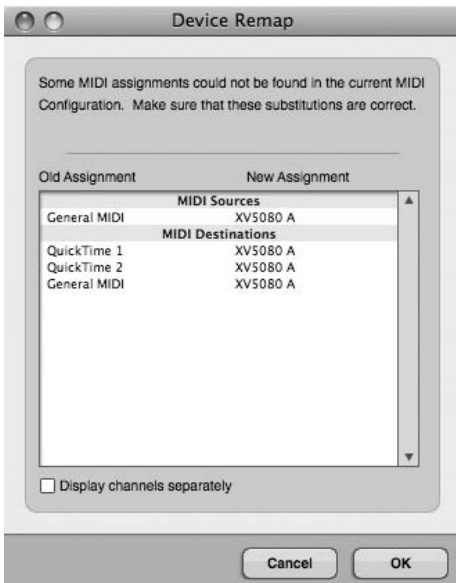
In addition to this information, track names and other descriptive data will be stored when opening and exporting standard MIDI files from Digital Performer.



### Opening Standard MIDI Files

To open a SMF via the File menu:

1. In Digital Performer, choose File > Open. The default keyboard shortcut is Command+O.
2. Select the standard MIDI file and click the Open button.
3. If the MIDI assignments in the SMF do not match the MIDI configuration of Digital Performer, then the Device Remap window will appear and attempt to make the appropriate substitution (see Figure 5.11).



**Figure 5.11** The Device Remap window.

4. Click OK to confirm the recommended substitution. Choosing Cancel will ignore the substitutions and assign the MIDI inputs or outputs to NONE.

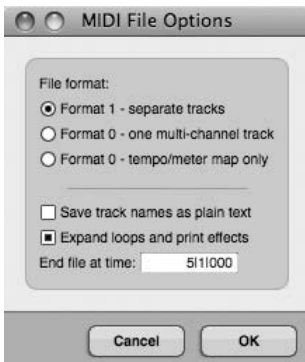
To import a SMF into an existing project via the drag-and-drop method:

1. In Digital Performer, open the Chunks window (Project > Chunks). The default keyboard shortcut is Shift+C.
2. Within the Mac OS Finder, select the standard MIDI file and drag the SMF into DP's Chunks window. Once imported via drag and drop, the SMF will appear as a sequence in Digital Performer's Chunks window. MIDI assignments will not be substituted but will default to an assignment of NONE. There is no need to Save As, because the SMF will be copied directly into the existing project.

## Exporting Standard MIDI Files

To export a standard MIDI file using the Save As command:

1. In Digital Performer choose File > Save As.
2. Name the project and choose the destination folder and hard drive. Be aware that DP doesn't automatically add the standard .mid extension to the end of the file name. Be sure to include this extension (.mid) when naming the standard MIDI file to ensure that the destination program is able to read it correctly.
3. Select Standard MIDI File from the Format pop-up menu.
4. Click on the Save button.
5. Specify the SMF options in the MIDI File Options window, shown in Figure 5.12.



**Figure 5.12** The MIDI File Options window.

6. Select the options for the standard MIDI file. Keep in mind that MIDI effects and MIDI loops cannot be exported with your SMF, so you will need to enable the Expand Loops and Print Effects option, then use the End File at Time option to specify the end time of the printed loop.
  - **Format 1 - Separate Tracks.** This setting will maintain the separation of MIDI tracks and include the tempo and meter data as the first track. This standard exporting option is enabled by default. It's a good idea to use the Format 1 option if you're unsure of the standard MIDI file format you should be using.
  - **Format 0 - One Multi-Channel Track.** This option will create a multichannel MIDI track with tempo and meter at the beginning.
  - **Format 0 - Tempo/Meter Map Only.** This option will export only the Conductor track with tempo and meter data.
  - **Save Track Names as Plain Text.** This option will only save plain text events, such as track names, with the SMF. Track comments and other special text events will not be

saved with the file. Use this option to ensure compatibility with programs that do not support special text.

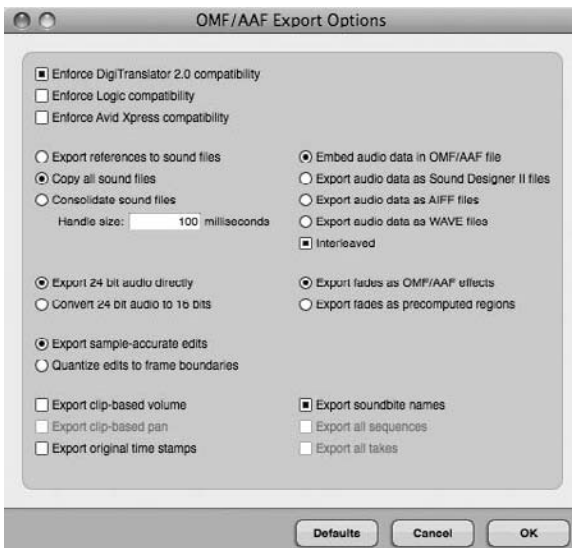
- **Expand Loops and Print Effects.** Loops and real-time MIDI effects cannot be included in standard MIDI files. This option will print any real-time MIDI effects and convert any loops into a region of repeated MIDI data. Use the End File at Time option to specify the end time of the printed loop.

7. Once you have specified the MIDI file options, choose OK to export the standard MIDI file.

## OMF Interchange and AAF Interchange Files

OMFI (*Open Media Framework Interchange*) and AAFI (*Advanced Authoring Format Interchange*) are industry-standard formats for exchanging digital files between applications, such as Digidesign's Pro Tools and Apple's Final Cut Pro. These formats speed up the production workflow by allowing media files and metadata created in one program to be made available in another.

Digital Performer supports OMFI 1.0 and 2.0 formats, as well as AAFI 1.0 and 1.1, and can also export OMFI files that are compatible with Digidesign's DigiTranslator 2.0 (see Figure 5.13).



**Figure 5.13** The OMF/AAF Export Options window.

## Final Cut Pro XML Interchange

There is nothing more frustrating when scoring to picture than being notified that new visual edits have been made *after* the music track has been written and recorded. New to Digital

Performer 6 is the support of advanced session interchange features via the Final Cut Pro XML Interchange protocol. This new method adds an entire new dimension of communication between DP and Final Cut Pro. Gone are the days of a composer or songwriter having to painstakingly scan through a newly edited piece of film or video to locate recent changes that have been made by the Final Cut Pro editor. Basically, when an editor makes edits to a project, he can then export an XML file that accounts for and itemizes the changes. This XML file can be imported into DP, and all the new editorial changes will appear in DP's Import Final Cut Pro XML window. This window will provide a detailed list of the changes where the composer or songwriter can simply double-click any edit to view a color-coded comparison in DP's Sequence Editor timeline. A blue border will represent the old position, and a red border reveals the new position of the edit. This timesaving new feature makes the process of adjusting music to new picture edits much more efficient and less complicated.

Although the extent of the XML Interchange procedure is beyond the scope of this book, let's briefly discuss the simple process of importing and exporting Final Cut Pro XML files. The importing and exporting options are located in a different place than the traditional Save As location for OMF and AAF Interchange files (discussed earlier in this chapter).

---

**XML Alerts** When media files cannot be imported into DP, a warning dialog box will appear. There are three reasons why this may occur: The file path for the media may be incorrect on the host machine (DP can't find the media), the media file is in an unsupported format (a format that DP can't play or convert), or the media is in a format that DP understands but cannot play natively.

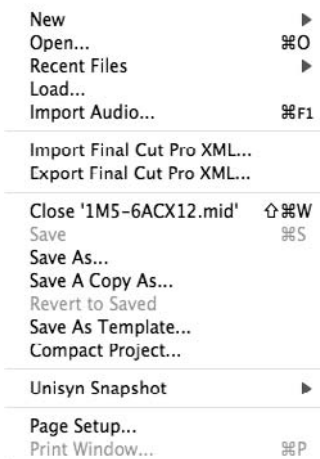
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To import a Final Cut Pro XML Interchange file:

1. In Digital Performer, choose File > Import Final Cut Pro XML Interchange (as shown in Figure 5.14).
2. The Import Final Cut Pro XML window will appear. Simply double-click any edit in the list, and DP will scroll to and highlight the location of the edit in the Sequence Editor timeline.

To export a Final Cut Pro XML Interchange file:

1. In Digital Performer, choose File > Export Final Cut Pro XML Interchange.
2. The Export Final Cut Pro XML window will appear (as shown in Figure 5.15). Choose the desired options and click Export.



**Figure 5.14** The Import and Export Final Cut Pro XML options located in the File menu of Digital Performer 6.



**Figure 5.15** The Export Final Cut Pro XML window provides several options for creating an XML file from all sequences in the currently open DP project.

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**DP and Final Cut Pro on the Same Machine?** To further streamline the XML Interchange process, in DP 6 you can import or export XML files directly to or from the Final Cut Pro application using the Import Direct from Final Cut Pro or Export Directly to Final Cut Pro command. For these features to work, however, Final Cut Pro must be running on the same computer as DP 6. Consult the Digital Performer User Guide for more information.

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## Customizing Your Workspace

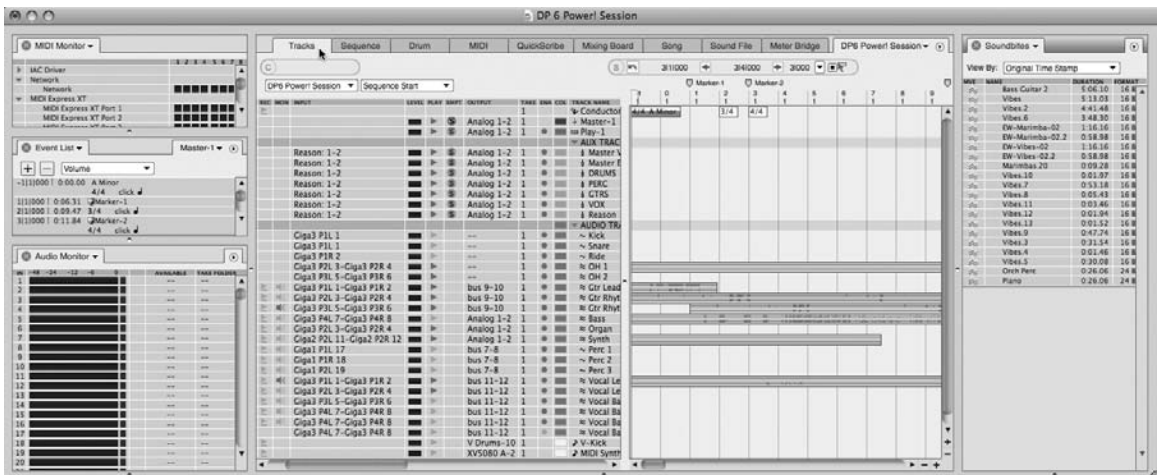
Organizing your Digital Performer workspace is much like organizing the desk in your office. When working in a physical space, it is important to keep files, documents, pens and pencils, and so on in logical locations that allow for easy access, storage, and management. These rules are

just as applicable within the desktop environment. Digital Performer has many different windows that you will need to access within the course of the music production process. Like physical office space, screen real estate is limited—unless you are lucky enough to have a 30-inch Cinema display!

Digital Performer has a number of features that allow you to customize your DP workspace, from project-specific window configurations and track colors for easy track identification, to the customization of keyboard shortcut commands and preferences. Digital Performer's Consolidated Window feature provides additional control for managing the numerous windows in DP.

## The Consolidated Window

When enabled, the Consolidated Window feature allows you to view multiple windows in a single, consolidated environment. The Consolidated Window, shown in Figure 5.16, displays various tabs across the top of the window. These tabs provide quick access to many of DP's main windows—when clicked, the desired window will open in the main body or center of the Consolidated Window. Sidebars are available for displaying other windows, such as the Audio Monitor, Chunks, Markers, Event List, and Undo History windows.



**Figure 5.16** Click on a tab to open the desired window in the main body of the Consolidated Window. In this example, the Tracks Overview window is revealed in the center section of the Consolidated Window.

## The Title Bar

The Consolidated Window's title bar closely resembles the title bars found in DP's editors, but it adds one extra feature: You can Command-click the name of the project file to reveal the path of the file on your hard disk (as shown in Figure 5.17).



**Figure 5.17** Command-click the project name in the title bar of the Consolidated Window to reveal its path on your hard disk.

## Sidebars and Cells

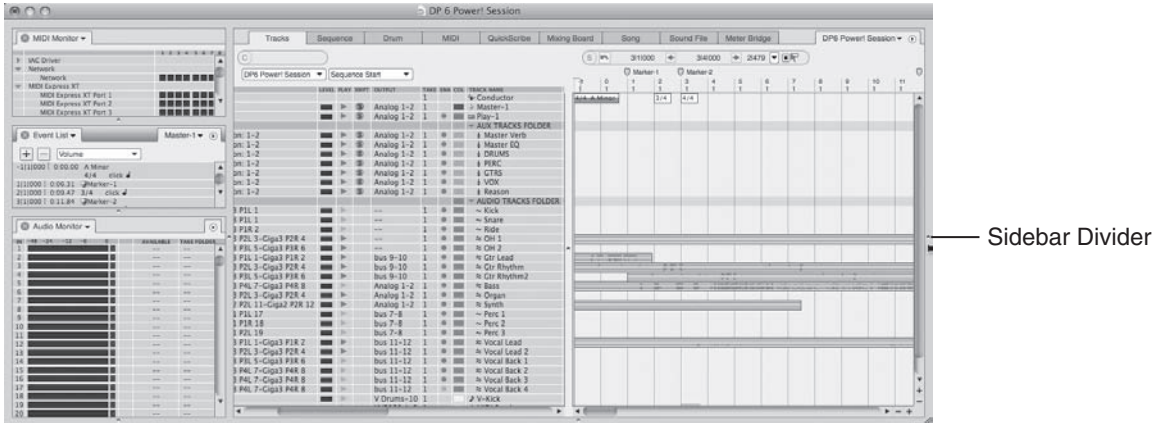
Sidebars are additional sections that allow you to display other selected windows (cells) to the left or right of the main body (center section) of the Consolidated Window (see Figure 5.18). You can open and close several cells in each sidebar, and each contains the appropriate mini-menu options associated with the selected cell. To open a sidebar simply double-click the divider, as shown in Figure 5.19, or choose Windows > Open/Close Left (or Right) Sidebar.



**Figure 5.18** Sidebars include additional windows (or cells) to the left and right of the Consolidated Window's main body section.

Once a sidebar is open, you can change what is displayed in each sidebar cell using the window selector menu that becomes available when you click on the cell's title (as shown in Figure 5.20). Keep in mind that editor windows do not appear in this list and cannot be displayed in a sidebar.

In addition, a sidebar cell can be “popped” out of the sidebar and into its own separate window. To “pop” a cell out of the sidebar and into its own separate window, simply double-click the empty space in the Tab bar of the cell (see Figure 5.21). The cell will “pop” out in a separate window. Double-click the empty space in the Tab bar again, and the window will return to the sidebar of the Consolidated Window. To close a sidebar cell, just click the X next to its title (or use the traditional Apple shortcut Command+W).

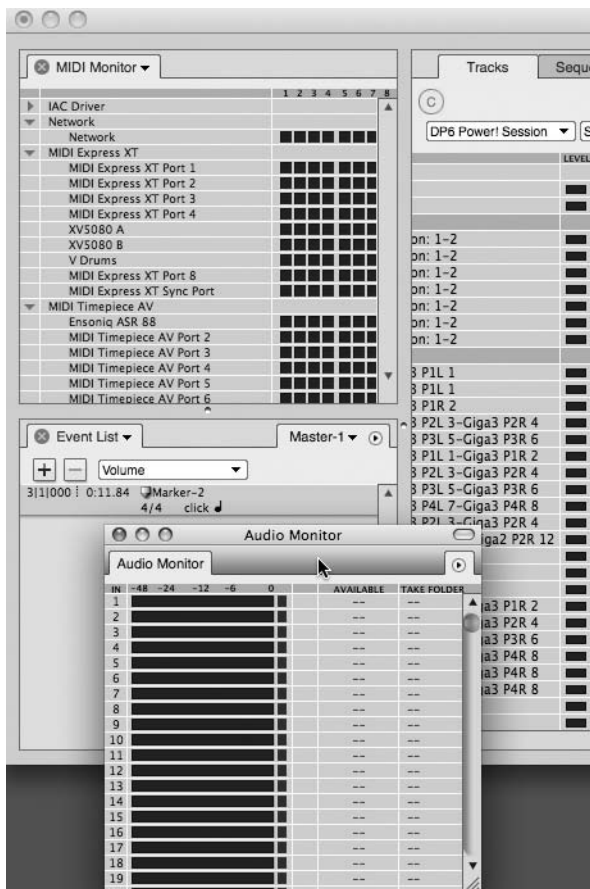


**Figure 5.19** To open a sidebar, simply double-click the body/sidebar divider.



**Figure 5.20** You can change what is displayed in each sidebar cell by using the window selector menu.





**Figure 5.21** Sidebar cells can be “popped” out of the sidebar and into their own separate window by double-clicking the empty space of the cell’s Tab bar.

**Multiple Tabs in Sidebar Cells** By default, each sidebar cell contains only one window (cell). However, you can add multiple windows within a single cell (see Figure 5.22). These windows will appear as tabs and are manipulated in the same manner as single cells. To add a tab, choose the Add Tab option located in the window selector menu.



**Figure 5.22** A sidebar cell can have multiple windows as “tabs.”

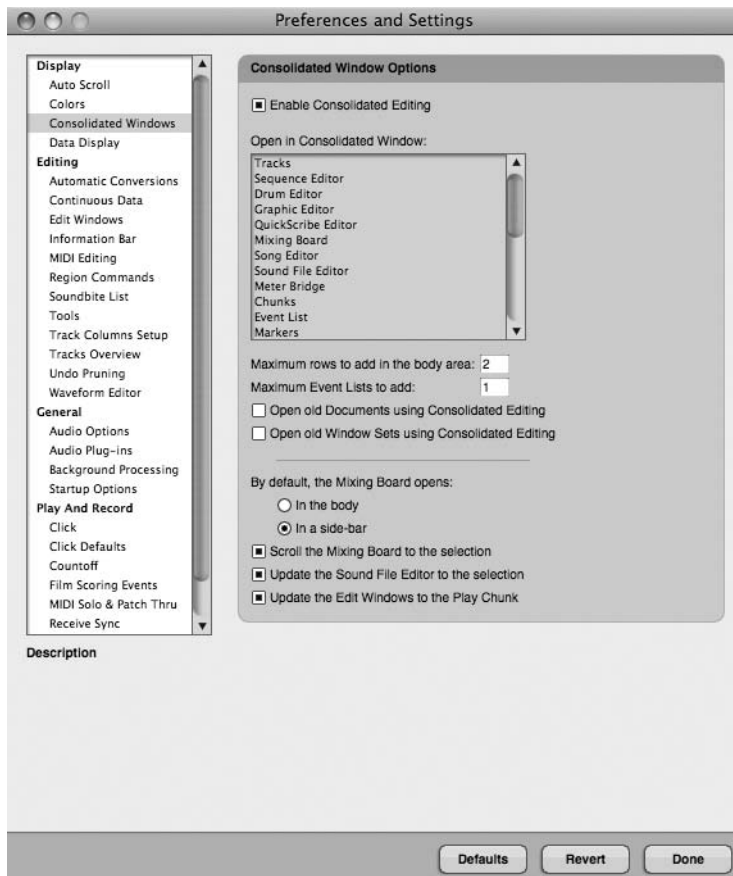
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**Cell Focus** Cell *focus* is similar to the front-most window when working with multiple windows. In DP, when a cell is currently selected, it has *focus*. And when a cell is in focus, its Tab bar (title bar) has a slightly darker shade. Because certain operations in DP only pertain to a cell that currently has the focus, it is important to become familiar with the “focus” concept and how to direct it. To apply focus to a specific cell, simply click its Tab (title) bar.

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## Setting Up the Consolidated Window

The Consolidated Window feature can be enabled or disabled entirely from the Consolidated Window preferences, as shown in Figure 5.23. The preferences listed are global and will affect all of your Digital Performer projects. However, changes made to these preferences will not affect previous projects. In other words, if you disable Consolidated Windows but open an older project that used Consolidated Windows, Consolidated Windows will be active in the project until you close and reopen the individual windows.



**Figure 5.23** The Consolidated Window preferences allow you to enable or disable the Consolidated Window all together.

The Consolidated Window preferences are as follows:

- **Enable Consolidated Editing.** This button toggles the Consolidated Window on and off.
- **Open in Consolidated Window.** This section contains a list of Digital Performer windows that can be included in the Consolidated Window. Windows highlighted in blue are included, while unhighlighted windows will open as separate windows.
- **Maximum Rows to Add in the Body Area.** This setting determines how many rows (or windows from the tabbed selections) will be automatically added to the main body or center section of the Consolidated Window when opened. To add or remove rows manually, simply drag on the Consolidated Window's horizontal divider.
- **Maximum Event Lists to Add.** This setting determines the maximum number of Event Lists you can open in the Consolidated Window. If you attempt to exceed the specified maximum number, DP will simply replace one of the Event Lists you have currently open with the new Event List. Keep in mind that this setting does not prevent you from manually opening an Event List from the sidebar cell menus.
- **Open Old Documents Using Consolidated Editing.** Enable this option if you want to have older DP projects (created in versions prior to 4.5) automatically open in the Consolidated Window layout. Turn off this option if you wish to work with these older documents in their original window layout. Keep in mind that you can always migrate these older documents into the Consolidated Window layout at your own pace.
- **Open Old Window Sets Using Consolidated Editing.** Enable this feature if you want window sets created in older versions of DP (prior to DP 4.5) to open in a Consolidated Window layout. Disable this option if you want to preserve the original layout of the older window set. Refer to the "Window Sets" section of this chapter for an explanation of window sets.
- **By Default, the Mixing Board Opens.** Use this option to determine where the Mixing Board will automatically open in the Consolidated Window if you have the Mixing Board highlighted in the Open in Consolidated Window section.
- **Scroll the Mixing Board to the Selection.** Turn on this option if you want the Mixing Board to automatically scroll and display the channel strip for a selected track. This option only applies when the Mixing Board appears in the Consolidated Window and is especially handy when viewing the Mixing Board in a sidebar. This option is the same as the Consolidated Window mini-menu's Scroll Mixing Board to Selection option.
- **Update the Sound File Editor to the Selection.** Similar to the Scroll the Mixing Board to the Selection option, this option causes a soundbite selected in a DP editor, such as the Sequence Editor or the Tracks window, to always display in the Waveform Editor

(when the Waveform Editor is visible in the Consolidated Window). You can also enable this setting from the Consolidated Window mini-menu.

- **Update the Edit Windows to the Play Chunk.** Use this option if you want DP's various editor windows to always display tracks from the currently play-enabled Chunk. You can also enable this setting from the Consolidated Window mini-menu.

To enable or disable the Consolidated Window feature:

1. Open the Consolidated Window preferences by choosing Digital Performer > Preferences > Consolidated Window Preferences.
2. Click the Enable Consolidated Editing button to toggle the Consolidated Window feature on or off.

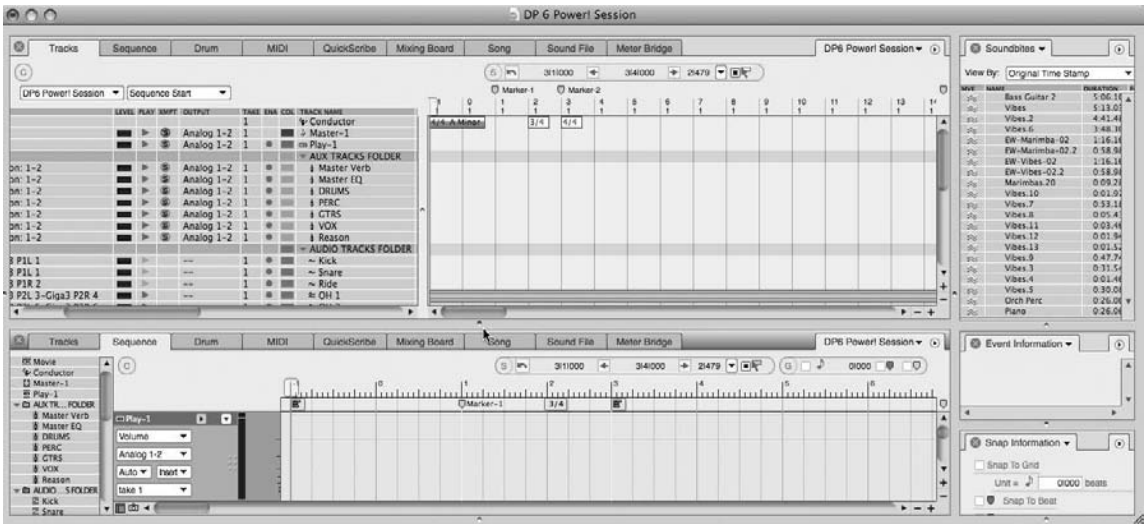
Once you have decided to work in the Consolidated Window, and you have enabled it from the Preferences and Settings window, you will need to decide which particular windows will open in the Consolidated Window. The Open in Consolidated Window section of the Consolidated Window preferences provides a list of windows that are to be included or excluded from the Consolidated Window. Windows highlighted in blue will be included, whereas unhighlighted windows will open independently. Keep in mind that you can “pop” windows in or out (explained earlier) to manually separate a window or force it back into the Consolidated Window.

To determine which windows will open in the Consolidated Window:

1. Open the Consolidated Window preferences by choosing Digital Performer > Preferences > Consolidated Window preferences.
2. In the Open in Consolidated Window section, click to highlight the window or windows you want to have included. All the windows in the list should be highlighted (in blue) by default. Windows that are not highlighted will automatically open in a separate window.

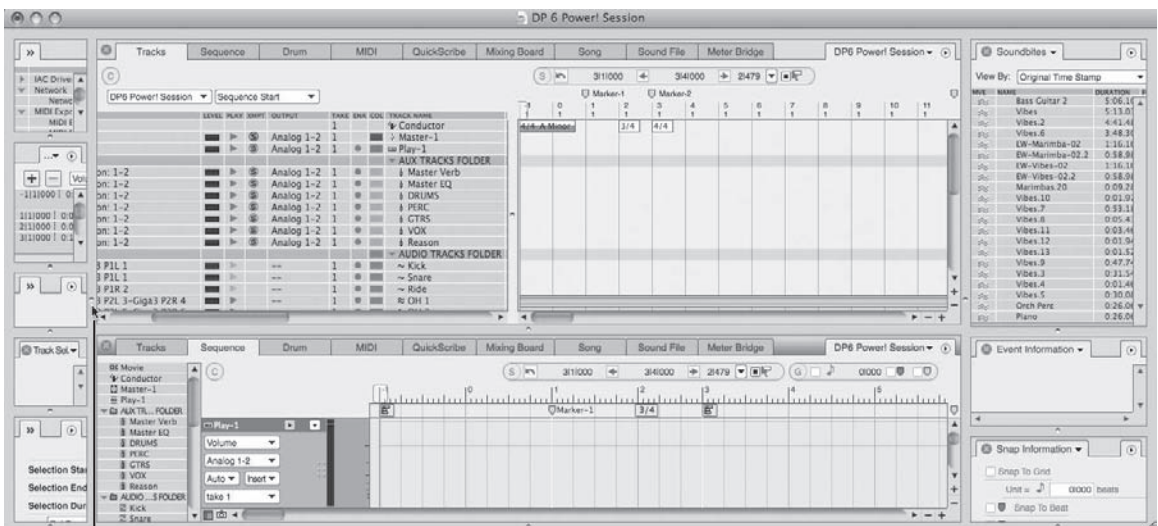
**The Main Body and Rows.** The main body section is the center section of the Consolidated Window and is used to display the main windows in DP. Use the tabs located above the main body to display a particular window. Drag the main body section's horizontal divider to manually show or hide additional sections (or rows), as shown in Figure 5.24. New rows will appear with their own sets of tabs, allowing you to display multiple windows in this center section of the Consolidated Window. Keep in mind that you can set the number of rows that are automatically opened in the main body section from the Consolidated Window preferences (explained earlier).

**The Sidebars and Cells.** As discussed earlier in this chapter, the left and right sidebars of the Consolidated Window are used to display DP's secondary windows, such as the list windows, and monitor windows (with the exception of the Mixing Board, which can be displayed in a



**Figure 5.24** Drag on the main body section's horizontal divider to add or remove rows from the Consolidated Window.

sidebar or main body section). If a sidebar is hidden, drag on its vertical sidebar divider (shown in Figure 5.25). Similar to the main body section, which contains rows, the sidebars are divided into individual cells. Drag on a sidebar's horizontal divider to create additional cells or to horizontally resize a cell or reveal more cells.



Vertical Divider

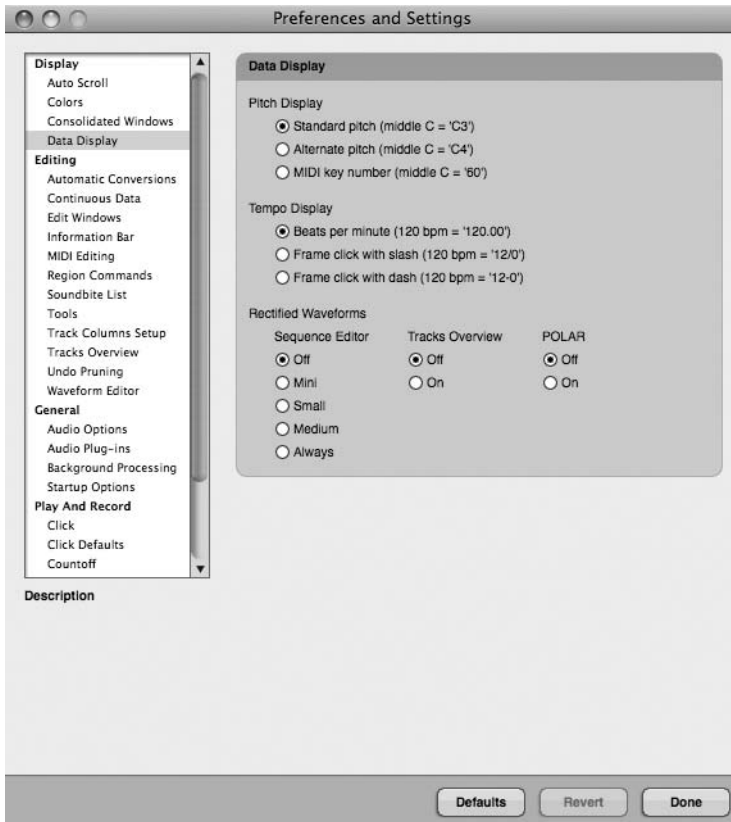
**Figure 5.25** Drag on a sidebar's vertical divider to reveal the sidebar.

**Working with Rows and Cells.** Digital Performer provides various ways to control the Consolidated Window's rows and cells. Remember, rows or cells that are currently selected (also called the *focus*) will appear with the title bar slightly darker.

- **To open a new row or cell:** Drag upward on the main body section's or the main sidebar's horizontal divider to create a new row or cell. As you locate your pointer on the divider, an up and down arrow icon will appear, indicating a new row or cell is being added. Keep in mind that to create a third row or cell (provided your preferences are set to three or more), you must drag on the lowermost main body section's or lowermost sidebar's horizontal divider to create the newest row or cell. Rows and cells, when added by the dragging method, appear according to the order of the Tabbed Section (from left to right) and the Window Selector List (from top to bottom).
- **To close an existing row or cell:** Click on the desired window's Close button, located at the leftmost part of the title bar. If the particular row/cell is in focus, you can also use the Close Cell command (choose Close Cell from the Windows menu) or the default keyboard shortcut Command+W. You can also simply drag the horizontal dividers of any row or cell (except the uppermost row or cell) to the bottom of the main Consolidated Window or sidebar to delete.
- **To open/close the left or right sidebar:** Double-click the sidebar's vertical divider, drag the divider away from the main body section, or choose Open/Close Left (or Right) Sidebar from the Windows menu.
- **To vertically resize a sidebar:** Vertically drag on the sidebar's divider.
- **To focus a row or cell:** Simply click on the title bar or any area within a particular row or cell. A window that is in focus will appear with its title bar shaded darker.
- **To resize a row or cell:** To horizontally resize a row or cell, drag on its horizontal divider. To resize vertically, click and drag on the sidebar dividers.
- **To pop out a row or cell from the Consolidated Window:** Double-click the empty space in the Tab (title) bar of the cell or row. The cell or row will "pop" out in a separate window. You can also use the default keyboard shortcut Control+1 to pop out a focused row or cell.
- **To force a separate window back into the Consolidated Window:** Double-click the empty space in the Tab (title) bar, and the window will return to the sidebar or row of the Consolidated Window.

## The Preferences and Settings Command

Digital Performer's Preferences and Settings window, shown in Figure 5.26, provides options for customizing DP. Choose Digital Performer > Preferences to open the Preferences and Settings window. The settings found here are global and affect all DP files.



**Figure 5.26** Digital Performer's Preferences and Settings window.

Preferences are listed on the left side of the window. Once a preference option is selected (highlighted), its various settings will appear to the right (in the main section of the window). In this section, you can position the cursor over a setting to see its description listed below, in the Description area.

If you have made changes to the current preferences and you need to return to the previous settings, click the Revert button. Keep in mind that once you click the Done button and close the Preferences and Settings window, the Revert button will no longer remember the previous settings and will not be able to undo or revert to the last changes made before the window was closed. Use the Defaults button to restore the preferences to their factory default settings. Be aware that this change is instantaneous and cannot be undone.

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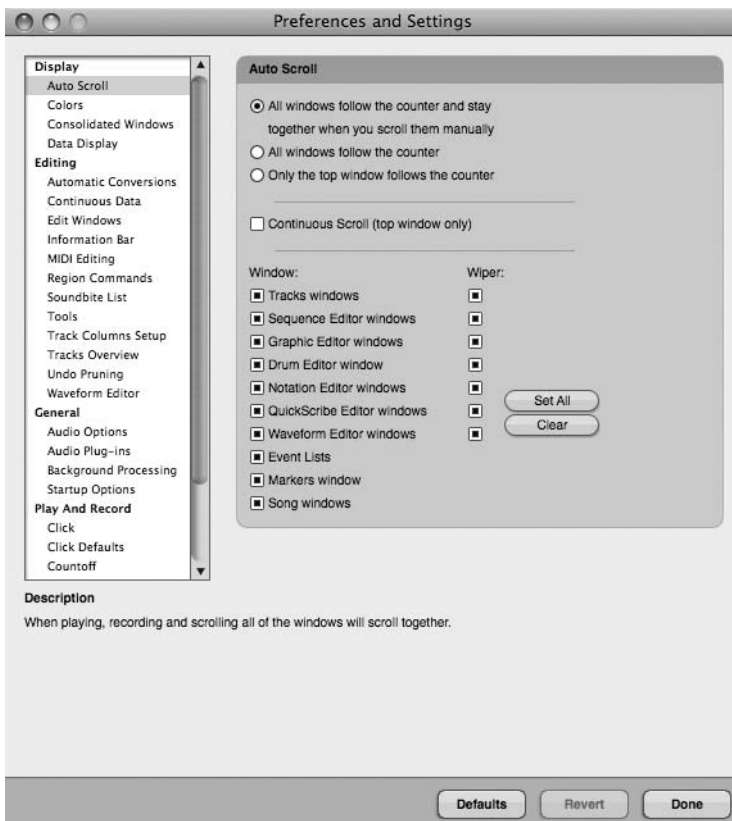
**Preferences in Older Versions of DP** DP has consolidated most of the preferences and settings into the Preferences and Settings window, though many of these settings can still be accessed via DP's various menus. Users working with older versions of DP may find that

many of the preferences discussed in this chapter do not apply to them, since they are new additions introduced in version 6.

## Display Preferences

The Display preferences provide options for controlling auto scrolling, colors, Consolidated Windows, and data display settings.

**Auto Scroll.** The Auto Scroll preferences, shown in Figure 5.27, provide a centralized location for controlling how and if DP's various windows will scroll, whether a particular window's Playback Wiper will be visible, and what type of auto scrolling is used—paging or continuous scrolling. Be aware that auto scrolling will only affect the windows that relate to the currently play-enabled sequence or Chunk.



**Figure 5.27** Digital Performer's Auto Scroll preferences.

- **All Windows Follow the Counter and Stay Together When You Scroll Them Manually.** This option basically forces all windows to scroll together during playback and recording, stopping, rewinding, fast-forwarding, or when performing any type of cueing



function. Windows will also scroll together when dragging the Playback Wiper or horizontal scroll bar to manually scroll a window.

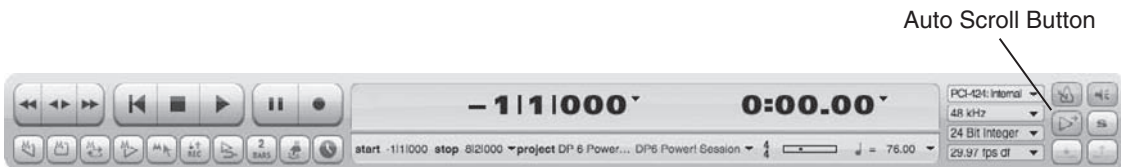
- **All Windows Follow the Counter.** This is the same as the first option, with the exception that the windows will not scroll together when you are scrolling a window manually.
- **Only the Top Window Follows the Counter.** This option will only scroll the topmost window within a sequence, providing the extra benefit of reducing the amount of processor load put on Digital Performer when scrolling. Depending on the speed of your computer, you may find this option improves the responsiveness of DP when scrolling is enabled.
- **Continuous Scroll (Top Window Only).** With this option turned off, DP will scroll windows one “page” at a time. This feature is referred to as *page scrolling* or *paging*. When the Playback Wiper reaches the last measure or event in a window, DP will automatically jump to the next measure or data event and update the window display, sort of like turning a page in a book.

When the Continuous Scroll option is enabled, DP will continuously scroll the topmost window smoothly from left to right, with the Playback Wiper centered in the window. If you want to move the Playback Wiper away from the center of the window when scrolling, you can press the Option key while dragging the Playback Wiper to the left or right.

- **Window.** Use the Window section to enable or disable auto scrolling for a specific window type.
- **Wiper.** This option determines whether the Playback Wiper is visible in a particular window.
- **Set All.** Click this button to enable all the options in both the Window and Wiper sections of the Preferences and Settings window.
- **Clear.** Click this button to quickly disable auto scrolling and Playback Wiper visibility for all windows.

---

**Using a Window Title Bar's Auto Scroll Button** You can also click on the Auto Scroll button located on the Control Panel within a window's title bar, shown in Figure 5.28, to manually turn off/on auto scrolling. This saves you the hassle of calling up the Preferences and Settings window if you need to temporarily enable or disable auto scrolling.



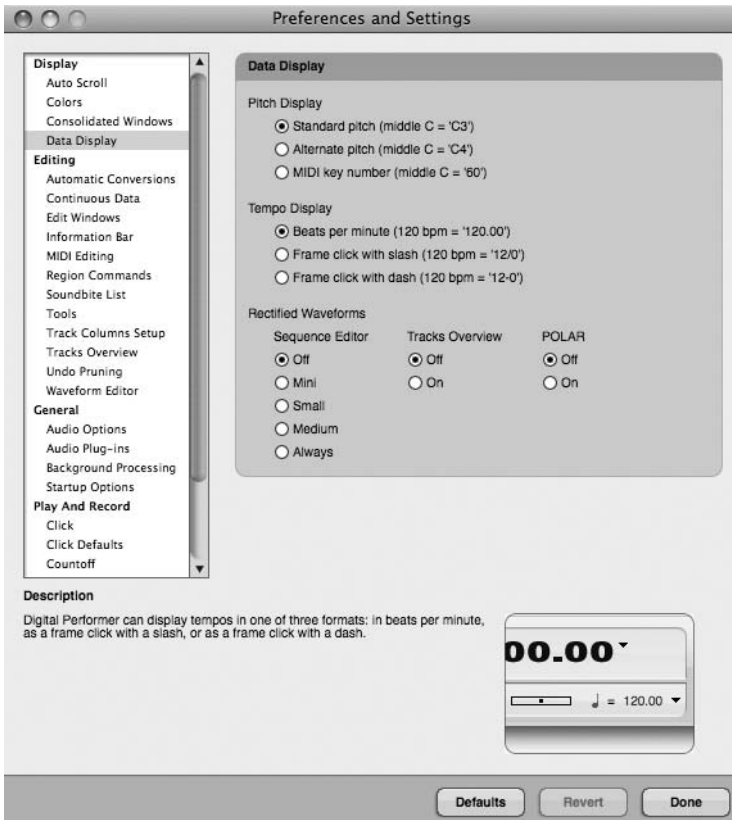
**Figure 5.28** Click on the Control Panel's Auto Scroll button to quickly enable or disable auto scrolling.

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**Colors.** The Colors preferences are explained later, in the “Track Colors” section of this chapter.

**Consolidated Windows.** The Consolidated Windows preferences were explained earlier, in “The Consolidated Window” section of this chapter.

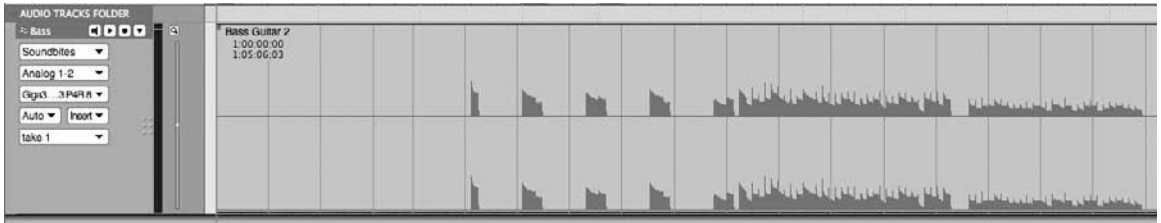
**Data Display.** The Data Display preferences, shown in Figure 5.29, control how certain types of data are displayed within Digital Performer.



**Figure 5.29** The Data Display preferences.

- **Pitch Display.** This option allows you to determine how octaves are numbered and displayed in a project.
- **Tempo Display.** This option determines whether tempo is displayed as beats per minute (BPM) or as frame clicks.
- **Rectified Waveforms.** This option will force DP to display only the positive arc of an audio waveform, allowing the information to be shown in half of the vertical space (see Figure 5.30). The Mini, Small, or Medium option will display waveforms rectified

when a specific size of track is selected. Checking the Medium option, for example, will display a track's waveforms rectified when a vertical track size of medium or smaller is selected. Separate options for displaying rectified waveforms within the Tracks and Polar windows are also provided.



**Figure 5.30** Rectified waveform display.

## Editing Preferences

The Editing preferences provide options for controlling how the Automatic Conversions option behaves, how information is displayed in DP's various editor windows, how the Tool palette functions, how to work with Undo Pruning settings, and so on.

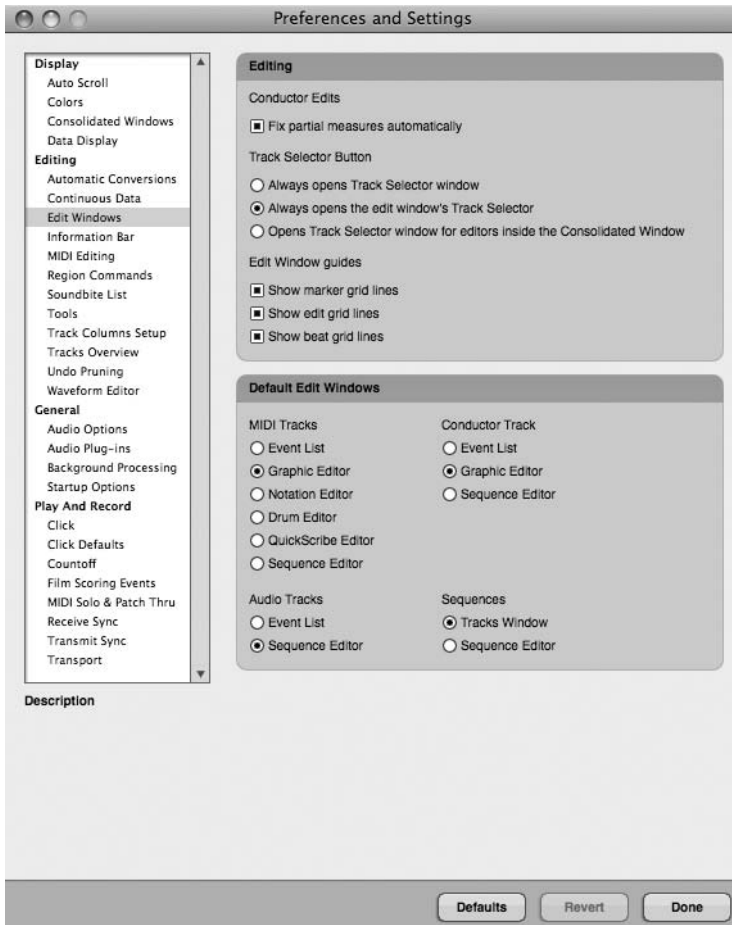
**Automatic Conversions.** The Automatic Conversions preferences provide options for controlling how and if audio is automatically converted when the material in question does not conform to the project's current tempo or sample rate. See Chapter 7, "Recording Audio," for an explanation of the Automatic Conversions preferences in DP.

**Continuous Data.** The Continuous Data preferences control the display of continuous data within DP's various MIDI Graphic Editors. See the "MIDI Editing in the Graphic Editor" section of Chapter 10, "Editing," for an explanation of continuous MIDI data and the Continuous Data preferences.

**Edit Windows.** The Edit Windows preferences, shown in Figure 5.31, control how DP handles partial measures, the display of grid lines within an edit window, and which specific editor will open by default when you are working with specific types of data.

- **Fix Partial Measures Automatically.** *Partial measures* are bars that contain an incomplete number of beats. A partial measure is created when a meter change is inserted in the middle of a bar. This happens because meter changes will always create a new measure, essentially truncating the measure in the process.

When the Fix Partial Measures Automatically option is checked, DP will automatically remove any partial measures by moving meter events as needed when a project is opened. You may need to check any MIDI data to make sure it aligns with the readjusted meters the way you want it to. Be sure to uncheck this option if you want to have partial measures remain within a project.

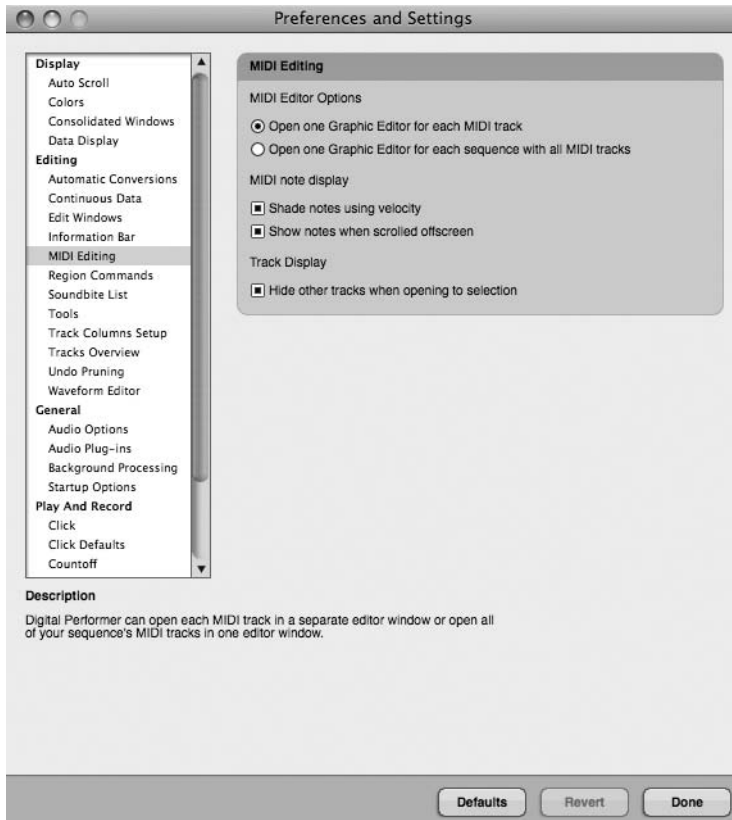


**Figure 5.31** Digital Performer's Edit Windows preferences.

- **Track Selector Button.** This setting determines how each edit window's Track Selector button will behave. For example, you can choose to have a separate Track Selector window open rather than the traditional manner of being attached to the left side of the edit window.
- **Edit Window Guides.** Enable these options to turn on marker and edit grid lines within an edit window, or beat grid lines within an audio track that has been analyzed with DP's Beat Detection Engine (BDE). Grid lines can be useful for making precise edits or moving around data that needs to conform to a specified grid. See Chapter 10 for an explanation of grid lines within DP.
- **Default Edit Windows.** This option determines which editor window opens when you double-click on a track.

**Information Bar.** Discussed in Chapter 3, this preference window allows you to designate how (or if) Cursor, Event, Selection, and Grid Snap information will appear in the information “strip” of each edit window.

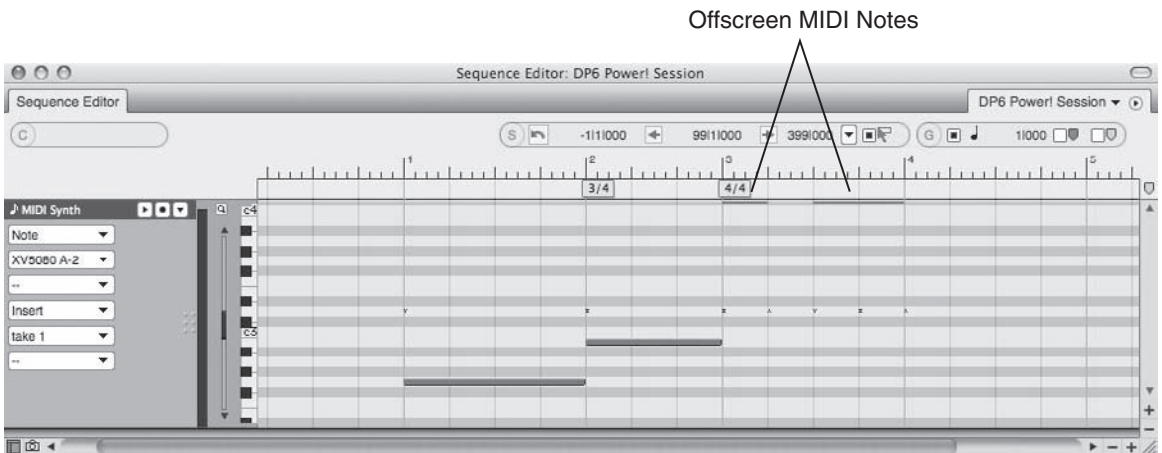
**MIDI Editing.** The MIDI Editing preferences determine what happens when you double-click on a MIDI track for editing and how MIDI notes are displayed in a track, as shown in Figure 5.32.



**Figure 5.32** Digital Performer’s MIDI Editing preferences.

- **Open One Graphic Editor for Each MIDI Track.** This option will force a separate editor window to open for each MIDI track that only displays the data for that track.
- **Open One Graphic Editor for Each Sequence with All MIDI Tracks.** This option will open a global editor window capable of displaying multiple MIDI tracks.
- **Shade Notes Using Velocity.** Enable this option if you want MIDI notes to be shaded according to their velocity. The higher the velocity, the darker the color will be, and vice versa.

- **Show Notes When Scrolled Offscreen.** When a MIDI note appears outside the currently displayed pitch range of a MIDI track, DP will show a small bar at the top or bottom border of a track, as shown in Figure 5.33.



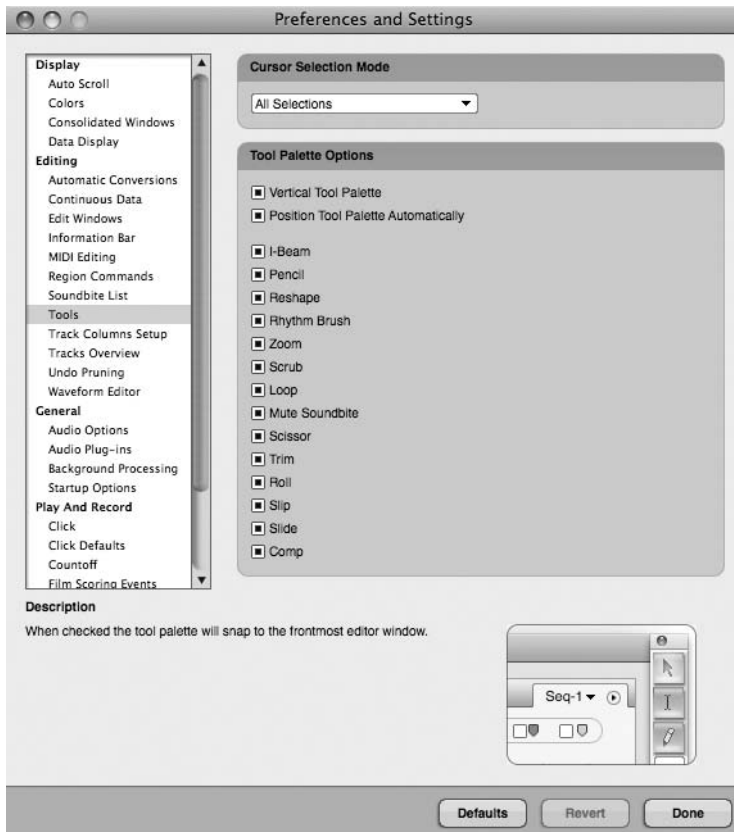
**Figure 5.33** MIDI notes that appear outside the currently displayed pitch range of a MIDI track will appear as a small bar when the Show Notes When Scrolled Offscreen option is enabled in the MIDI Editing section of the Preferences and Settings window.

**Region Commands.** This setting affects the behavior of Region menu command windows, such as Quantize or Change Velocity. DP allows only one Region menu command window to be open at a time, but you can decide how you want the windows to be presented. For example, if you need to change the MIDI velocities of several different tracks, you can elect to have the Velocity command window stay open. This eliminates the need to reopen the window as you change velocities of each track.

- **Apply Closes Window.** Choose this option if you want command windows to close when you click the Apply button or press Enter.
- **Apply Sends Window to Back.** Choose this option if you want to keep command windows open when you click Apply or press Enter, but you would like to send them to the back (of other windows).
- **Apply with Enter Key Sends Window to Back.** Choose this option if you want command windows to stay open when you click Apply or go to the back when you press Enter.

**Soundbite List.** The Soundbite List Columns Setup preferences determine which specific columns will appear in the Soundbites window. Refer to Chapter 3 for an explanation of Digital Performer's Soundbites window.

**Tools.** The Tools preferences, shown in Figure 5.34, determine how Pointer tool selections are executed and how the Tool palette functions in DP.



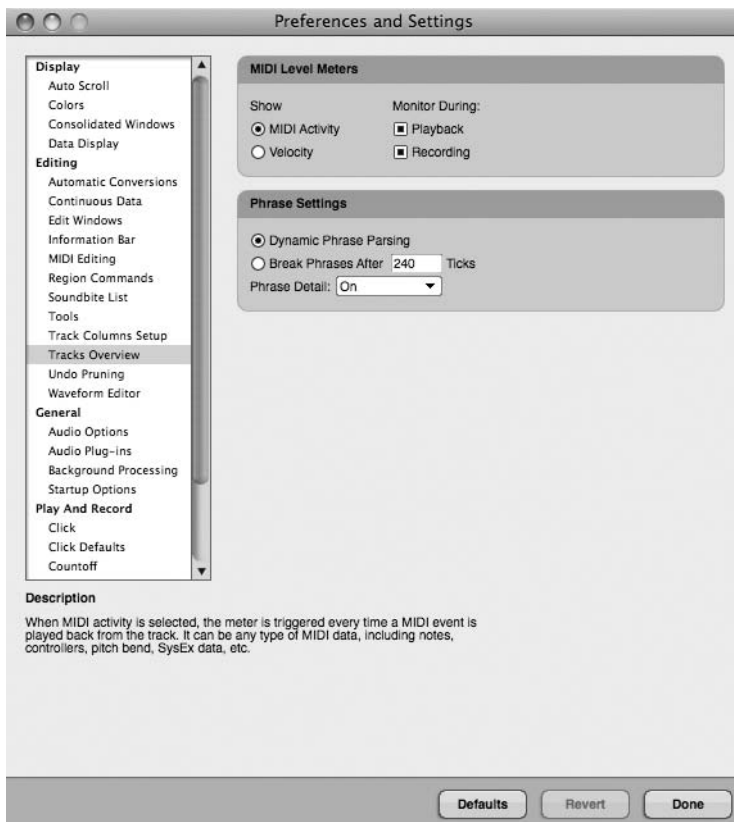
**Figure 5.34** Digital Performer's Tools preferences.

- **Cursor Selection Mode.** This menu allows you to specify how Pointer tool selections function within the Tracks Overview or the Sequence Editor. See Chapter 10 for an explanation of the Pointer tool and Pointer tool selections in Digital Performer.
- **Vertical Tool Palette.** Click this option to force the Tool palette into a vertical position when opened. You can use the keyboard shortcut Option+Shift+' to toggle between vertical and horizontal positions. Once this shortcut is activated, the Tool palette will automatically dock to the edge of the frontmost edit window.
- **Position Tool Palette Automatically.** This option will force the Tool palette to automatically dock with the frontmost edit window. When horizontal, it will snap to the bottom or top edge of the window. A vertical position will force it to the left or right edge of the window.

- **Tool Palette List.** This option lets you choose which tools are displayed in the Tool palette. Keep in mind that the keyboard shortcuts used to select a specific tool will continue to function even when they are hidden from the Tool palette.

**Track Columns Setup.** The Tracks List preferences are used to show or hide specific columns in the Tracks window. Refer to Chapter 3 for an explanation of the Tracks window.

**Tracks Overview.** The Tracks Overview preferences (shown in Figure 5.35) provide options for controlling MIDI level meters and the phrasing of MIDI data that appears in the Tracks Overview window. Refer to Chapter 3 for an explanation of MIDI phrasing in the Tracks Overview section of the Tracks window.



**Figure 5.35** Digital Performer's Tracks Overview preferences.

- **Show MIDI Activity or Velocity.** MIDI level meters can display either MIDI data or note-on velocity. Choose MIDI Activity to trigger the MIDI level meter every time a MIDI event occurs. Choosing Velocity will trigger the MIDI level meter and display the note-on velocity of each MIDI note that is played back.



- **Monitor during Playback or Recording.** Use these two options to enable or disable MIDI level metering during the playback and/or recording process. If you are working on a slower Mac, you may find that disabling the MIDI level meters will make your DP system more responsive during playback and recording.
- **Dynamic Phrase Parsing.** Click this option to turn on DP's Dynamic Phrase Parsing feature, which will automatically control how MIDI data is phrased and placed into blocks in the Tracks window. Review Chapter 3 for an explanation of MIDI phrasing and MIDI blocks.
- **Break Phrases After \_\_\_\_ Ticks.** This option provides a simpler approach to MIDI phrasing by allowing you to specify the amount of empty space (specified in MIDI ticks) that must be present before a MIDI block ends and a new one begins.
- **Phrase Detail.** This option determines how much detail and priority is given to the data that is displayed in a MIDI block. Operations such as scrolling and zooming, which cause DP to redraw data in the Tracks Overview, are directly impacted by the Phrase Detail setting, and vice versa. The Phrase Detail options are as follows:
  - **On.** This setting will give phrase detailing a high priority and will always be computed before any screen redrawing occurs. This option produces the best visual results but also results in the slowest screen redraws.
  - **On Demand.** This setting will cause DP to only display the outline of blocks when screen redraws are occurring. Once they are completed, DP will fill in the detail of the blocks. Though not as visually impressive, this option strikes a nice balance between high detail and responsiveness.
  - **Off.** Select this option to completely turn off phrase detailing. Blocks are instead filled with a generic pattern. This setting provides the most responsiveness, though it sacrifices all the detail within a block.

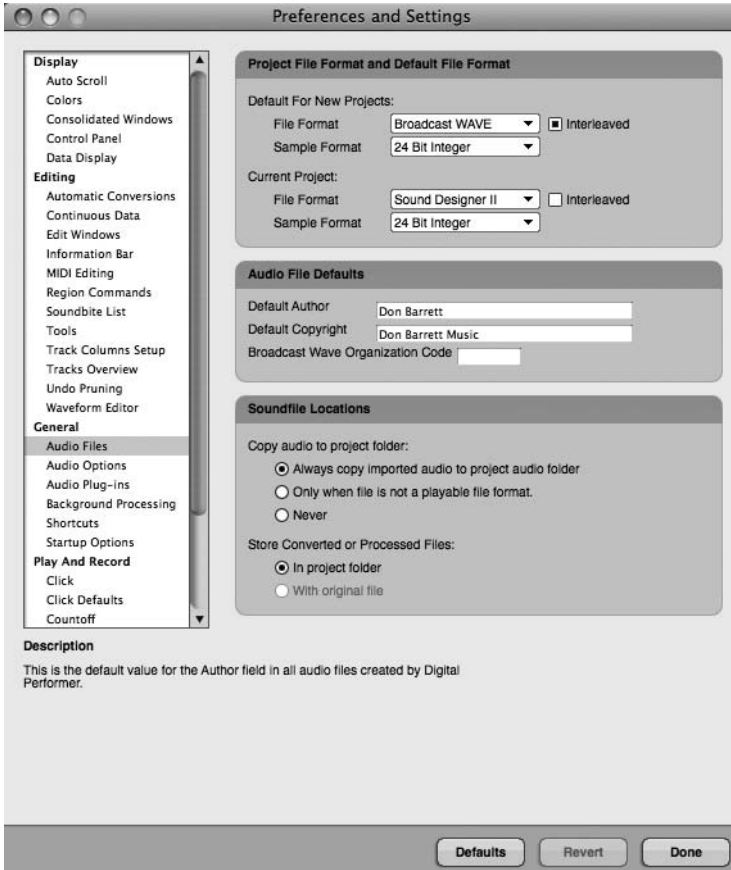
**Undo Pruning.** The Undo Pruning preferences provide controls for determining how Digital Performer's Undo History windows manage overall disk space and RAM consumption, as well as the number of undoable actions that are remembered within a project. See Chapter 6, "Project Management: Part 2," for an explanation of the Undo History windows and their Undo Pruning preferences.

**Waveform Editor.** The Waveform Editor preferences allow you to control how stereo audio waveforms are displayed, whether edits will be automatically crossfaded, and whether Stereo/Mono Conversion settings will be applied when mono material is pasted into a stereo file and vice versa. See Chapter 13, "Processing and Mastering," for an explanation of the Waveform Editor and the Waveform Editor preferences.

## General Preferences

The General preferences contain options for controlling audio recording, the locations of imported or processed audio files, background processing, and basic startup options.

**Audio Files.** These settings, as shown in Figure 5.36, affect how audio files are recorded and managed and whether DP presents a warning when the processor overloads and playback is interrupted.



**Figure 5.36** Digital Performer's Audio Files preferences.

- **Project File Format and Default File Format.** These determine a default sample format (discussed later in this chapter) for new audio files created in Digital Performer projects or a different sample format for the current project. Currently, DP works with 16-bit, 24-bit, and 32-bit floating-point sample formats.

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**Bit-Depth Basics** Let's get slightly technical for a moment. Just as the frequency range of recorded audio is determined by the sample rate (such as 44.1k), the dynamic range (potential loudness or softness) of recorded audio is determined by the sample format, otherwise known as *bit depth*. If you choose to record your audio at a higher sample format, such as 24-bit, you are, in essence, increasing the dynamic range of the recorded audio by a theoretically determined number of decibels (dBs) per sample. Unlike 16-bit and 24-bit, however, 32-bit floating-point is not "fixed" to a theoretical maximum dynamic range. Think of it as 24-bit *plus* a scaling factor that allows a much larger range of values, from very small to very large. Many who work with digital audio prefer higher bit depths because they can hear a larger dynamic spectrum of their recorded tracks. Keep in mind that using higher bit depths (and sample rates) requires more hard disk space for audio files!

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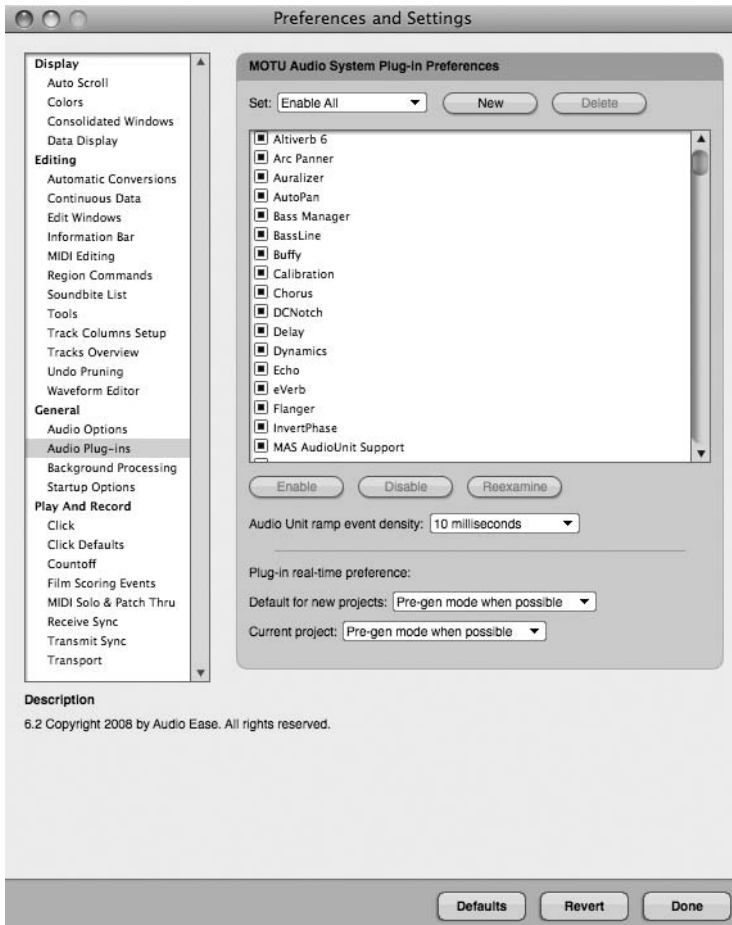
- **Audio File Defaults.** Here is where you can define the default author, default copyright, and Broadcast Wave Organization Code (if applicable) of all audio files created in your projects.
- **Soundfile Locations.** These settings determine where imported, processed, and converted audio will be stored in a project. See the "Importing Audio" section of Chapter 7 for an explanation of the Soundfile Locations preferences.

#### Audio Options.

- **Show Alert When Playback Overloads the Processor(s).** Enabling this option will cause a warning dialog box to appear when a lack of system resources interrupts playback.
- **Show Alert When Disk(s) Can't Keep Up with Record.** Choosing this option will cause a warning dialog to appear when a lack of system resources interrupts recording.
- **MultiRecord Is Always On for Audio Tracks.** When this option is checked, you can simultaneously record-enable two or more audio tracks. Disabling this option, however, will allow only one track to be armed for recording at a time.

**Audio Plug-Ins.** This section of DP's Preferences and Settings is where you can manage all of the plug-ins installed in your system (see Figure 5.37). Remember, audio plug-ins are software units that are installed separately and then "plugged in" to DP, such as processing effects or virtual instruments (discussed in Chapter 9, "MIDI: The Region Menu, Plug-Ins, and Virtual Instruments," and Chapter 13). The settings in this window allow you to enable, disable, or reexamine any or all of your plug-ins. You can create custom sets that include your favorite or most-used plug-ins. This can be very helpful on projects where you want to save processing power or if you have a lot of plug-ins and you don't want to wait for all of the plug-ins to load. This window is also the place to choose whether your plug-ins will run in real time or will be generated ahead of

time with DP's Pre-Gen feature. Consult the Digital Performer User's Guide for more details regarding the Audio Plug-Ins preferences.

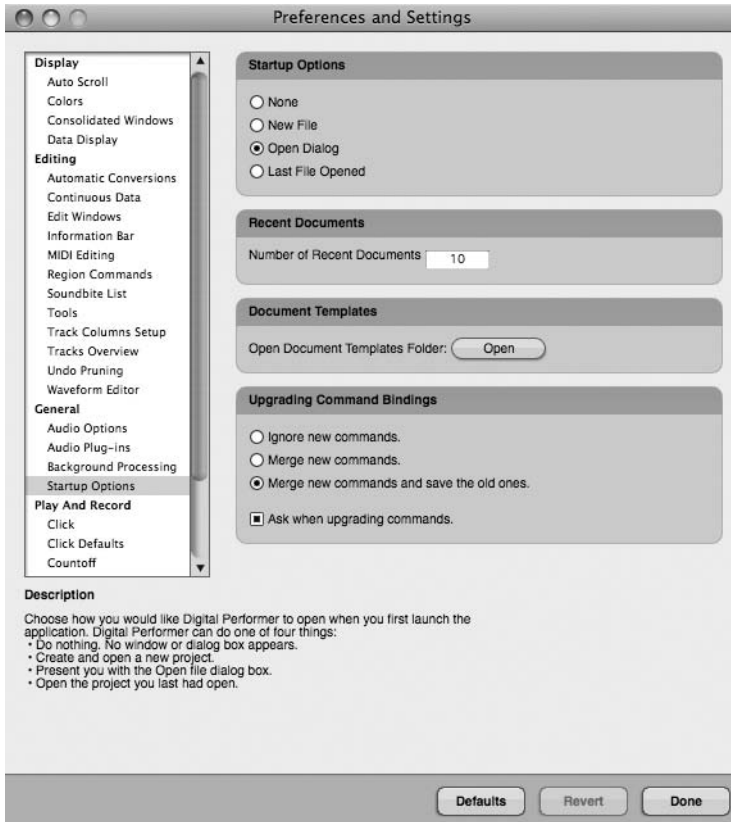


**Figure 5.37** DP's new Audio Plug-Ins preferences allow you to manage all of your audio plug-ins.

**Background Processing.** These settings affect how background processing occurs in Digital Performer. See Chapter 13 for an explanation of DP's Background Processing feature and the Background Processing preferences.

**Startup Options.** The Startup Options preferences control what happens after Digital Performer is launched, as shown in Figure 5.38.

- **None.** Once Digital Performer is launched, no window or dialog box will appear and prompt you to open or create a new project. Only DP's menu bar will be visible at the



**Figure 5.38** Digital Performer’s Startup Options preferences.

top of the screen. Choose Open or New from the File menu to begin working on a project.

- **New File.** The New Project dialog will automatically open when DP is launched, allowing you to create a new project.
- **Open Dialog.** This setting will launch the Open dialog, allowing you to choose a DP project to open.
- **Last File Opened.** This will automatically open the last DP project you had open.
- **Recent Documents.** For quicker access, this is the number of previous projects DP will list in the Recent Files option in the File menu.
- **Document Templates.** This option provides simpler access to your Document Templates folder, stored in User > Library > Preferences > Digital Performer > Document Templates, discussed earlier in this chapter.

- **Upgrading Command Bindings.** This setting determines what happens to DP's command key bindings (keyboard shortcuts) when you upgrade to a newer version of Digital Performer.

### ***Play and Record Preferences***

The Play and Record preferences provide settings for controlling DP's Click, Countoff, and Film Scoring Events options, how MIDI Patch Thru and track soloing behaves, how DP's synchronization features operate, and how the Transport will respond in Wait mode.

**Click.** Click preferences allow you to configure Digital Performer's click. Review the "Setting Up a Click" section of Chapter 4 for an explanation of DP's click options.

**Click Defaults.** This feature allows you to choose and/or create a specific click pattern for any meter or tempo range. You can choose between beat values and beat patterns. In addition, you can create your own customized beat patterns. DP will automatically use these default clicks when the Click button is enabled and the sequence Conductor track matches the tempo range and meter of the default click. Refer to the "Creating a Click Default" section of Chapter 4 for more information regarding click default options.

**Countoff.** The Countoff preferences provide customizable settings for the countoff click, including newly added visual aspects of the countoff. See the "Defining the Countoff" section of Chapter 4 or see Chapter 15, "Scoring to Picture," for more information regarding countoff options.

**Film Scoring Events.** Yet another new set of features (introduced in Digital Performer 5) is the Film Scoring Events preferences (see Figure 5.39). Composers, conductors, and anyone working with pictures generate streamers, punches, and flutters. These visual cues are superimposed on a specified video screen and act as a reference to visual material. See Chapter 15 for more details regarding Film Scoring Events.

**MIDI Solo and Patch Thru.** MIDI Patch Thru allows Digital Performer to "patch" or route incoming MIDI data "thru" to any connected MIDI devices and/or virtual instruments. This feature basically lets you hear your MIDI devices or instrument plug-ins when you play a note on your MIDI controller. MIDI data will only be patched through to MIDI tracks that have been record-enabled. The MIDI Solo preferences shown in Figure 5.40 determine how soloed MIDI tracks function in DP.

- **MIDI Patch Thru Mode - Off.** This setting turns off MIDI Patch Thru all together.
- **MIDI Patch Thru Mode - Direct Echo.** Use this setting to echo incoming MIDI data on the same channel it was received. So if DP is receiving MIDI data from Channel 16 of your MIDI controller, for example, Digital Performer will echo or send that MIDI data out on MIDI Channel 16. Data that is direct-echoed bypasses most of DP's MIDI processing and is unaffected by the Setup menu's Input Filter settings. See Chapter 8, "Recording MIDI," for an explanation of the Input Filter window.

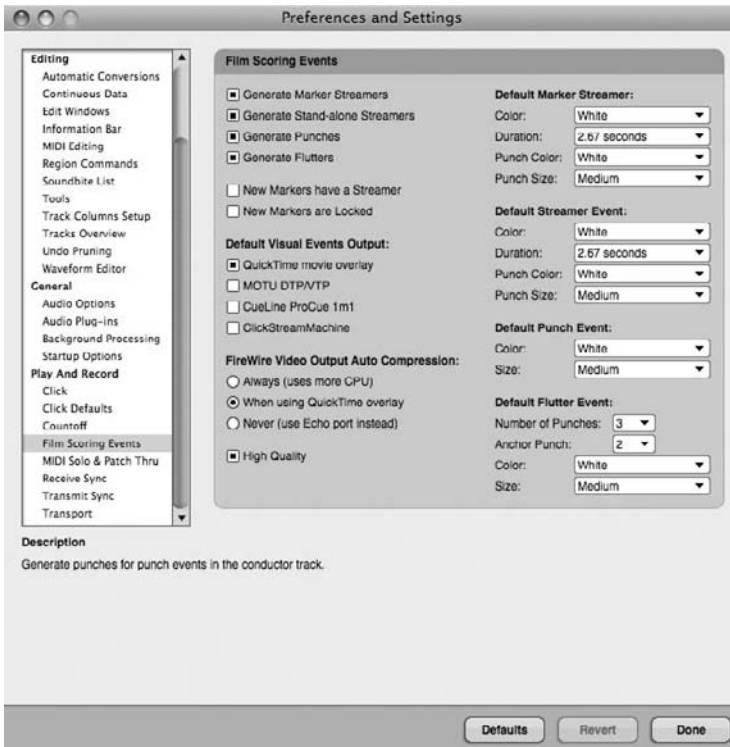
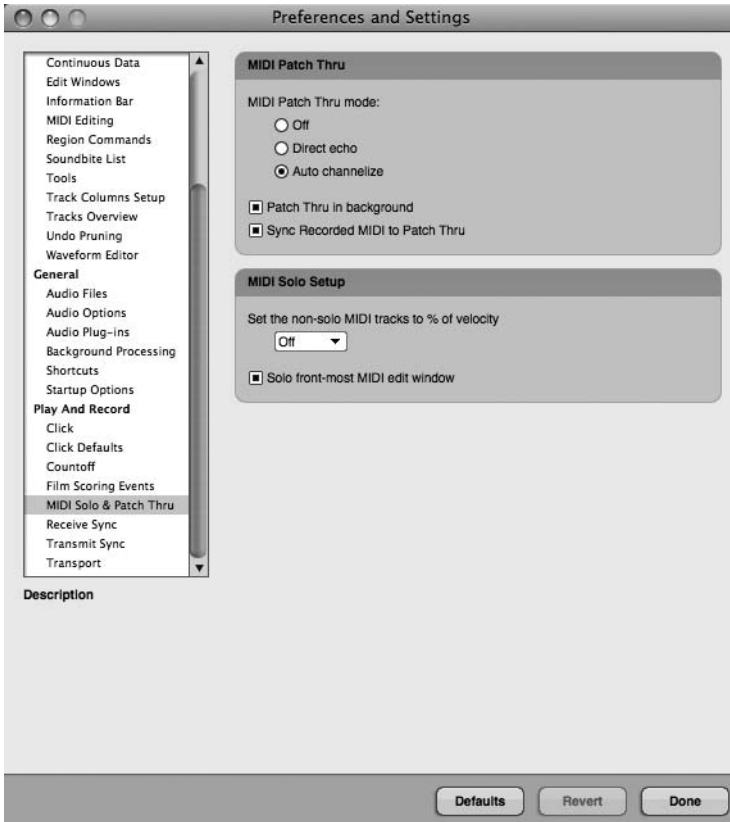


Figure 5.39 The Film Scoring Events preferences window.

- **MIDI Patch Thru Mode - Auto Channelize.** This option is enabled by default and will route MIDI data from your MIDI controller to the currently record-enabled track, regardless of the MIDI device or virtual instrument to which the MIDI track is assigned. Simply arm a track and play a note on your MIDI controller, and the data will be routed to the MIDI device assigned to the output of the record-enabled MIDI track. If the MIDI output of a track is assigned to a device group, all devices in the group will sound.

Unlike the Direct Echo setting, auto channelizing is directly affected by the Setup menu's Input Filter settings. Any MIDI data options that are disabled in the Input Filter window will not be passed through to connected MIDI devices, device groups, or virtual instruments.

- **Patch Thru in Background.** Turn this option on if you need to continue to patch through MIDI data even when DP is in the background and is not the currently active application. When working with ReWire synths—such as Propellerhead's Reason, for example—this option allows you to play a note on your MIDI controller and trigger a Reason instrument—even when DP is operating in the background.
- **Sync Recorded MIDI to Patch Thru.** This option compensates for the small millisecond delay that occurs when you are recording MIDI tracks via DP's MIDI Patch Thru



**Figure 5.40** Digital Performer's MIDI Patch Thru and MIDI Solo preferences.

option, ensuring what you hear when recording your MIDI tracks will be what is heard during playback. This option is unavailable if you have the Use CoreMIDI Patch Thru option turned on.

- **Set the Non-Solo MIDI Tracks to % of Velocity.** Also called *Partial Solo*, this option lets muted MIDI tracks actually be heard at a reduced volume when other tracks are soloed. Click the Partial Solo pop-up menu to set the reduced percentage value or to turn off partial soloing all together.
- **Solo Front-Most MIDI Edit Window.** This option determines what is soloed when soloing a track in an editor window, such as the Sequence or Graphic Editor. When this option is enabled, the track you are soloing is soloed by itself. When this option is turned off, the soloed tracks will be determined by what is soloed in the Mixing Board and how Solo mode is configured in the Tracks Overview section of the Tracks window. Refer to Chapter 3 for an explanation of the Tracks window's Solo Mode feature.

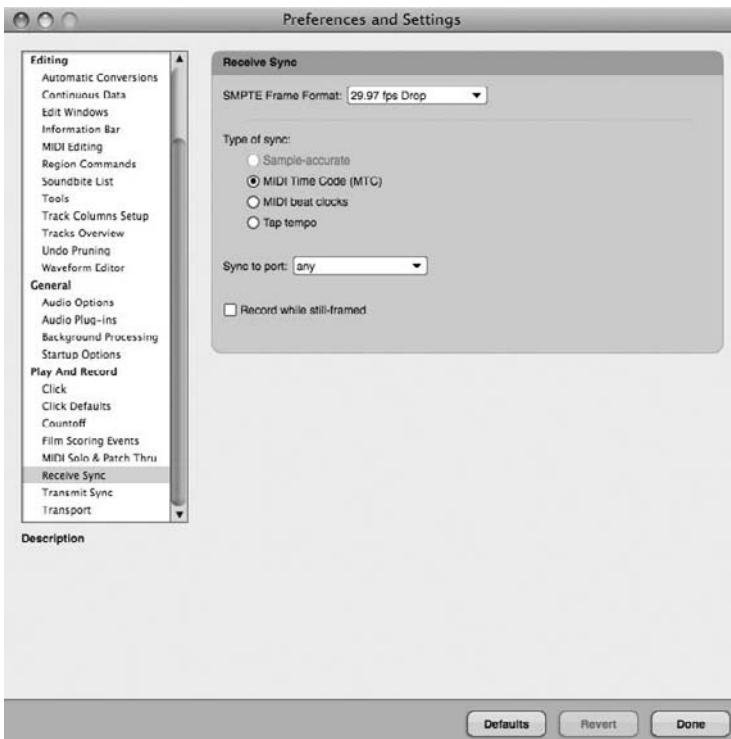


**Receive and Transmit Sync.** The Receive Sync and Transmit Sync preferences, shown in Figure 5.41, control how DP's synchronization features operate—whether DP will be transmitting or receiving sync, and what type of source clock will be used in the synchronization process. Refer to Chapter 2 for an explanation of DP's Receive Sync and Transmit Sync commands.

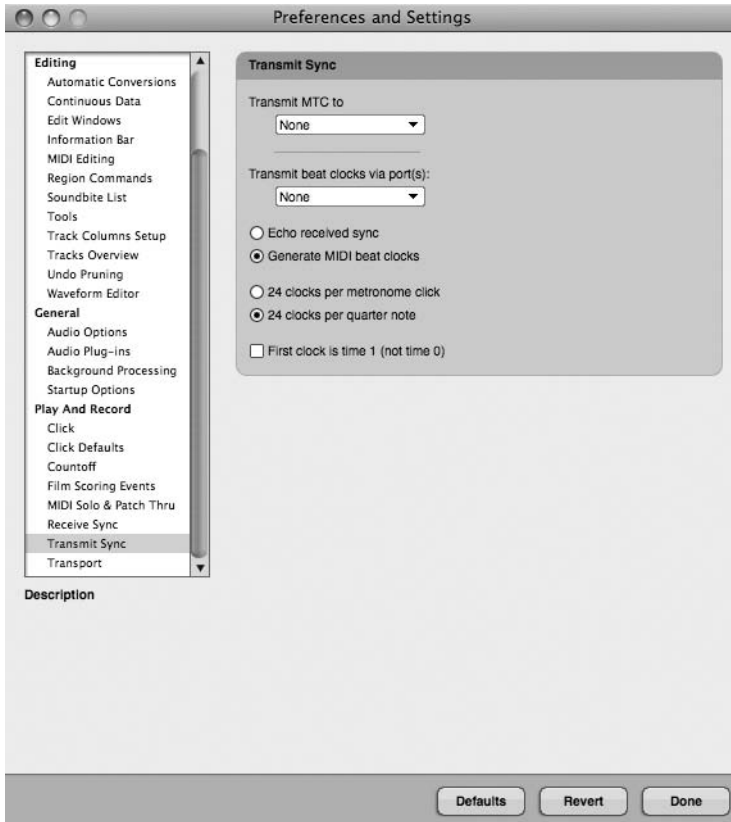
**Transport.** This setting determines how the Control Panel (or Transport bar) will respond when the Wait button is activated. When in Wait mode, the Transport can wait for a MIDI note to be played or a controller message to be received, or it can wait upon any MIDI activity before it starts recording or playback.

## Window Sets

An often-overlooked feature of Digital Performer is the ability to create window sets. One of the most daunting and overwhelming obstacles for even the advanced DP user is managing the various windows. This becomes even more apparent if you are short on screen real estate. Window sets enable you to name, capture, and save window layouts, allowing you to instantly reconfigure your Digital Performer workspace to suit your specific music-production needs. Even though the default window sets provided with Digital Performer are all based on a Consolidated Window layout, you can use the Window Sets feature regardless of whether the Consolidated Window feature is turned on or off.



**Figure 5.41** Digital Performer's Receive Sync and Transmit Sync preferences.



**Figure 5.41** (Continued)

To recall an existing window set:

- Choose the desired preset from the Window Sets submenu (Windows > Window Sets). If you are working in the Consolidated Window, you can also access window sets from the Consolidated Window mini-menu.

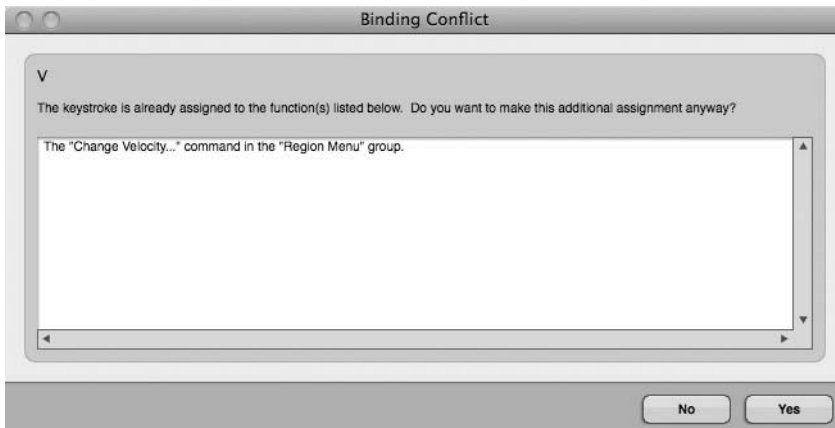
To save a window configuration layout:

1. Begin by arranging DP's windows to your liking. Position them in the location that you want them to appear when a window set is recalled.
2. Choose Windows > Window Sets > Capture Window Set.
3. Name the window set, as shown in Figure 5.42.
4. If you would like to assign your new window set to a desired hot key or custom key binding (keyboard shortcut), click in the Key Binding input field and press a key on your computer keyboard.



**Figure 5.42** The Name Window Set window.

5. If the hot key is assigned to another command, a warning dialog will open, asking whether you want to continue with the additional assignment (see Figure 5.43). Custom key bindings are explained later, in “The Commands Window” section of this chapter.

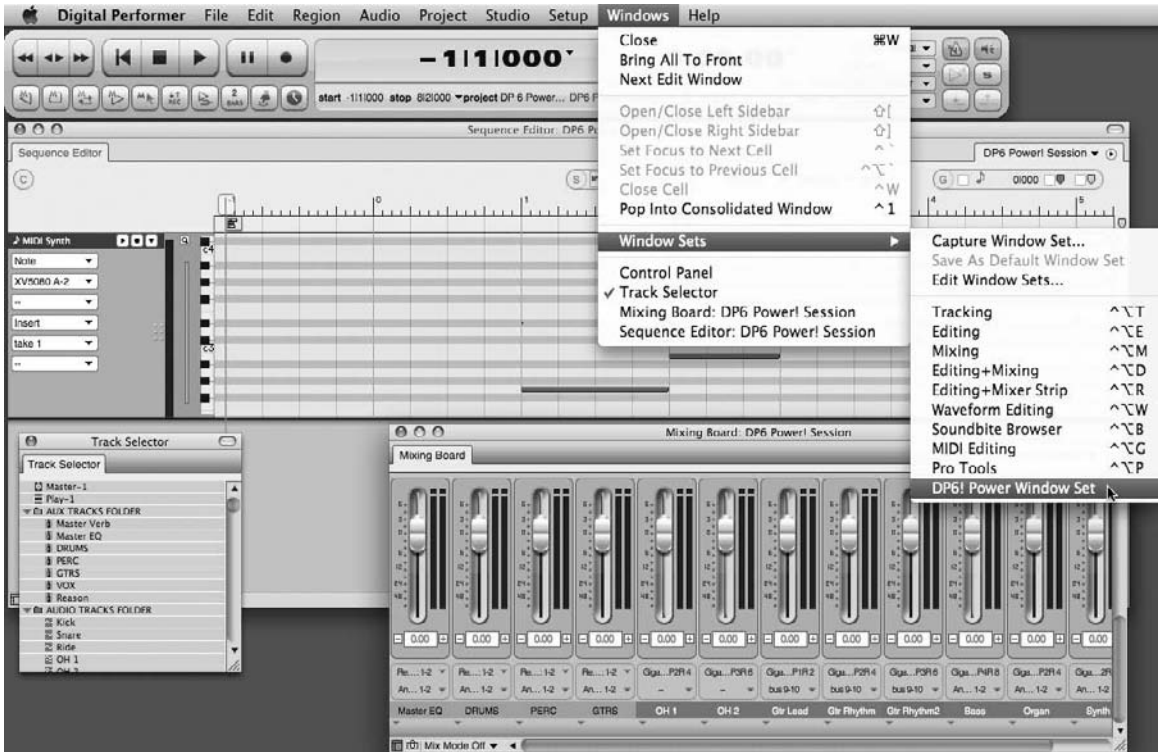


**Figure 5.43** When attempting to assign a key binding that is already in use by another command, DP will present you with a warning dialog.

6. Once named, click the OK button, and your window set will appear within the Window Sets submenu, as shown in Figure 5.44.

To modify an existing window set:

1. Repeat the steps for creating a new window set.
2. When naming the set, however, choose the exact name of the window set you want to modify.



**Figure 5.44** The Window Sets submenu.

To delete or rename an existing window set:

1. Choose Windows > Window Sets > Edit Window Sets.
2. Select the window set you want to modify.
3. To rename the window set, click the Rename button and type the new name. Click OK to confirm the change.
4. To delete the window set, click the Delete button. A warning dialog will open, asking you to confirm the action. Click OK to delete the window set.

To change the order of window sets within the Window Sets menu:

1. Choose Windows > Window Sets > Edit Window Sets.
2. Click on the icon located to the left of the window set name and drag it up or down within the menu.

To assign a keyboard shortcut (key binding) to an existing window set:

1. Choose Windows > Window Sets > Edit Window Sets.
2. Associated key bindings are listed to the right of each window set.
3. Click on the existing key binding or empty slot and enter the desired hot key (key combination).
4. If the hot key is assigned to another command, a warning dialog will open, asking whether you want to continue with the additional assignment. Click Yes to assign the key binding.

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**Streamline the Window Sets Menu** If the default window sets that appear in the Window Sets menu don't fit your production needs, you may want to think about deleting them all together and starting from scratch. Having a menu that contains only window sets you actually use will certainly be more helpful than a list full of window sets you never look at. Of course, you don't have to create your window sets in one sitting; simply create them during the normal course of production, and you'll have a menu full of useful window sets in no time at all.

---

## Track Colors

Another customization feature in DP is the ability to assign track colors. You can assign any color you want to a single track, selected tracks, or tracks of the same type. This feature is just another way to quickly distinguish between different tracks or track types within the various editor windows. Colors within DP are grouped into color schemes (preset color groups), which you can edit to suit your specific needs. You can also create your own color schemes by duplicating and modifying existing ones.

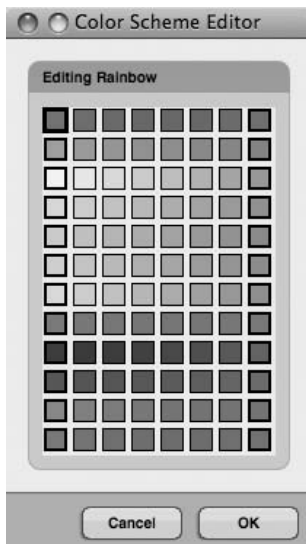
### Color Schemes

A color scheme is a set of colors that is displayed within Digital Performer's Color palette pop-up window. Stock color scheme presets are listed in the Colors submenu (in the Setup menu). Simply choose a preset to change the color scheme for a project. You can also edit schemes by choosing Setup > Colors > Edit Color Schemes. The Edit Color Schemes window provides you with several options for customizing these presets (see Figure 5.45).

- **Edit.** Double-click on a color scheme, or select it and click the Edit button to modify an existing preset. This will open the Color palette for the selected color scheme (see Figure 5.46). Click to modify the color of a tile. This action will cause the Mac OS Color Picker to open, allowing you to choose a specific color for the tile (see Figure 5.47). Only the left- and right-most color tiles within the palette can be modified, however. You can



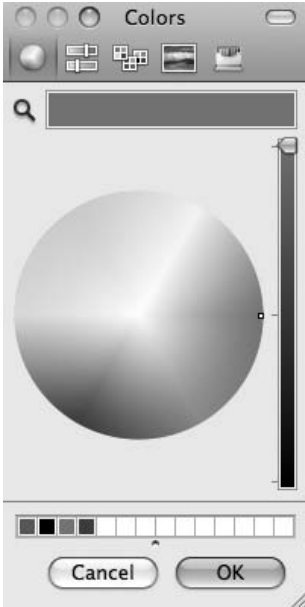
**Figure 5.45** The Edit Color Schemes window provides several options for modifying color schemes. The currently selected scheme will be highlighted.



**Figure 5.46** Click the Edit Color Schemes dialog’s Edit button to modify the selected color scheme. Only the left- and right-most color tiles (designated with a heavy border) can be modified.

also change the position of these “heavy bordered” tiles by dragging with the mouse. DP will automatically fill in the in-between tiles with a variable shade of the two colors.

- **Duplicate.** This option will duplicate the currently selected (highlighted) color scheme. Once you choose a color scheme, you will be prompted to enter a new name for the duplicated scheme (see Figure 5.48). Use this option when you want to create your own preset. Once you have duplicated the scheme and given it a new name, select OK and then click the Edit button to customize the preset.

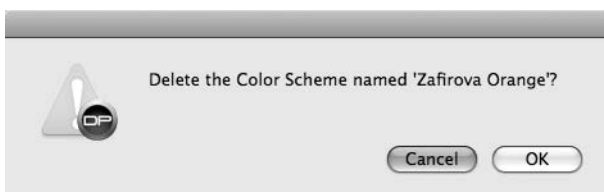


**Figure 5.47** Double-clicking on the left or right (heavy bordered) color tiles within a color scheme will launch the Mac OS Color Picker.



**Figure 5.48** The Name Color Scheme window.

- **Delete.** Click this button to delete a color scheme. A warning dialog will open, asking you to confirm the action (see Figure 5.49).

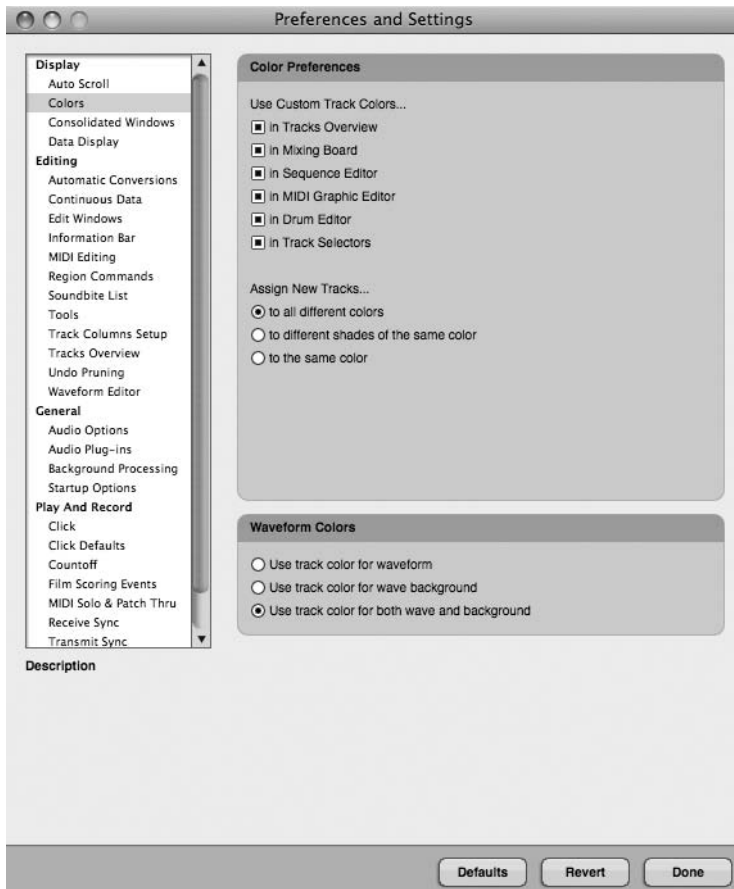


**Figure 5.49** The Delete Color Scheme warning dialog.

- **Rename.** Click this button to rename a color scheme.
- **Done.** Click this button to close the Edit Color Schemes window.

### Color Preferences

The Color preferences (Setup > Colors > Color Preferences or Digital Performer > Preferences and Settings) will affect how colors are used throughout DP's various edit windows (see Figure 5.50).



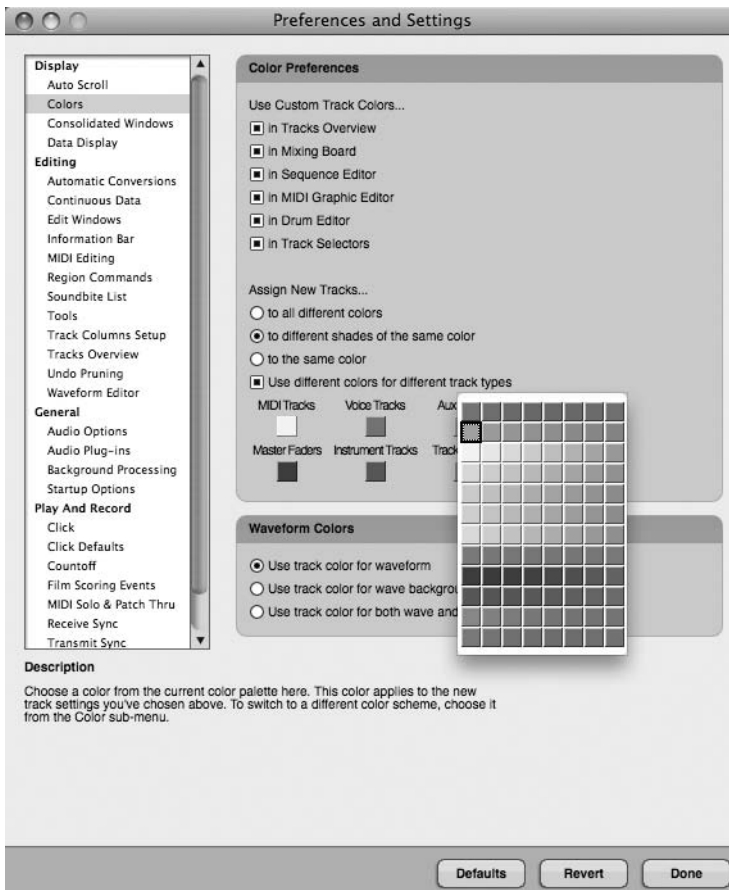
**Figure 5.50** The Color preferences are located in the Preferences and Settings window.

- **Use Custom Track Colors.** These options allow you to specify whether custom colors are used within Digital Performer's various edit windows.
- **Assign New Tracks.** These options determine how custom colors are assigned to new tracks. If you choose the To Different Shades of the Same Color or the To the Same



Color option, the Color preferences will update and display the Use Different Colors for Different Track Types option.

- **Use Different Colors for Different Track Types.** When this option is unchecked, you can change the specific color that will be assigned to a track by clicking on the Pick a Color option. When this option is checked, however, DP will display multiple color swatches, allowing you to choose a different color for each track type (see Figure 5.51). Available colors will be determined by the currently selected color scheme.



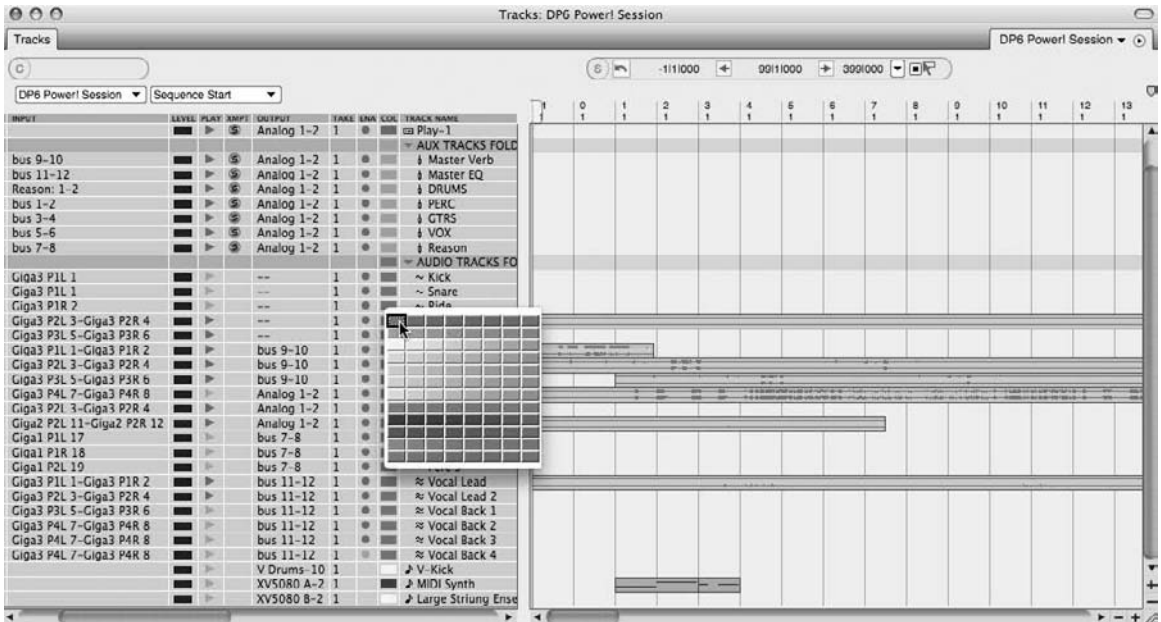
**Figure 5.51** The Use Different Colors for Different Track Types option. Once enabled, color swatches for each track type will become available.

- **Waveform Colors.** In Digital Performer 6, you can use these new options to designate colors for audio waveforms, waveform backgrounds, or both. These color choices are based on the colors you have chosen for each individual track.

## Changing the Colors of Tracks in the Tracks Window

To set the color for a track:

1. In the Tracks window, click on the color swatch of the desired track within the Color column. A Color palette pop-up window will appear, as shown in Figure 5.52.

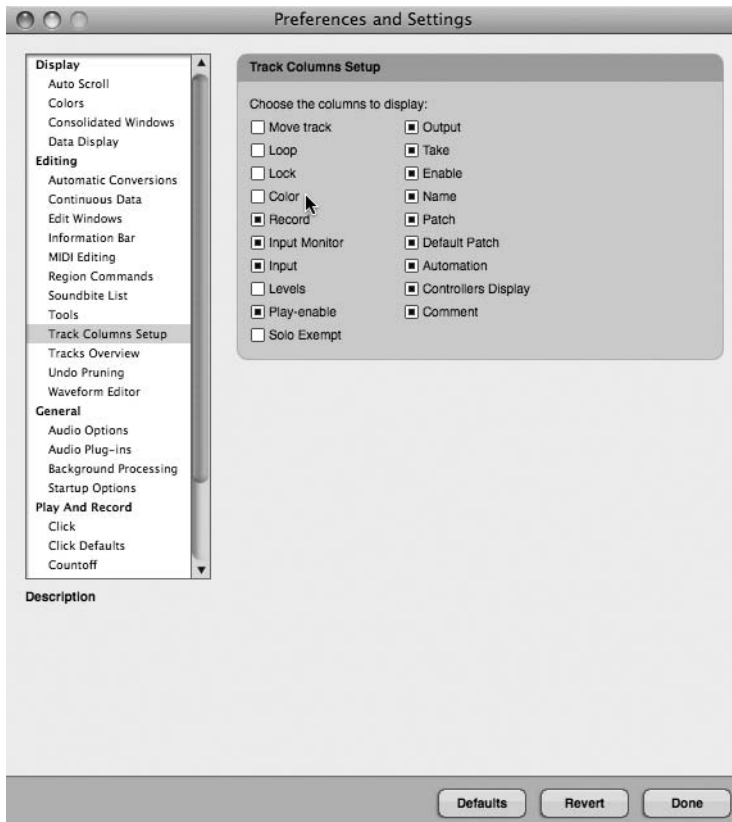


**Figure 5.52** Click on a color swatch within the Tracks window's Color column to assign a color to a specific track.

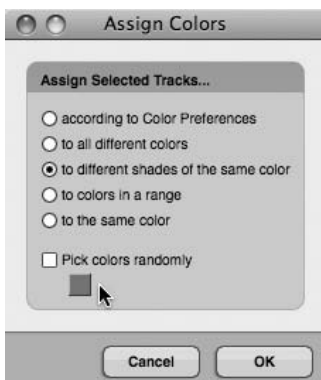
2. Click on a tile within the Color palette to assign the new color to the track.
3. If the Color column isn't visible, choose Digital Performer > Preferences and Settings > Track Columns Setup List and enable the Color column (see Figure 5.53).

To set the color for multiple tracks:

1. Select the tracks you want to affect. Remember to Shift-click to make multiple selections if the tracks are adjacent (or simply click and drag up or down). Command-Shift-click to select nonadjacent tracks.
2. Choose Setup > Colors > Assign Colors to access the Assign Colors window, as shown in Figure 5.54 (or simply hold down the T key while changing the color for one of the tracks, and the others will automatically change to the newly chosen color).



**Figure 5.53** Click the Color option to make the Color column visible within the Tracks window.



**Figure 5.54** The Assign Colors command determines how colors are assigned to multiple tracks.

3. As you select an option, a color button will appear, providing access to the color swatch. Choose the option you want from the following:
  - **According to Color Preferences.** This option allows you to make color assignments according to the settings within the Colors preferences.
  - **To All Different Colors.** This option automatically assigns a color to the selected tracks. Colors are determined by the current color scheme, starting with the beginning color of the palette. Enabling the Pick Colors Randomly option will force colors to be assigned in a random order.
  - **To Different Shades of the Same Color.** This option allows you to designate a specific color from the Color palette. Once more, a Color palette will appear when this option is selected. When a color is chosen for the first track, only colors from the same palette row will be used for the other tracks within the selection.
  - **To Colors in a Range.** This option lets you select a start and end color from the current Color palette. Once start and end colors are chosen, DP will cycle through the in-between colors when making color assignments to the selected tracks.
  - **To the Same Color.** This option assigns all selected tracks to the same color.
  - **Pick Colors Randomly.** Enabling this option makes many of the above color assignments happen in a random order.

## The Commands Window

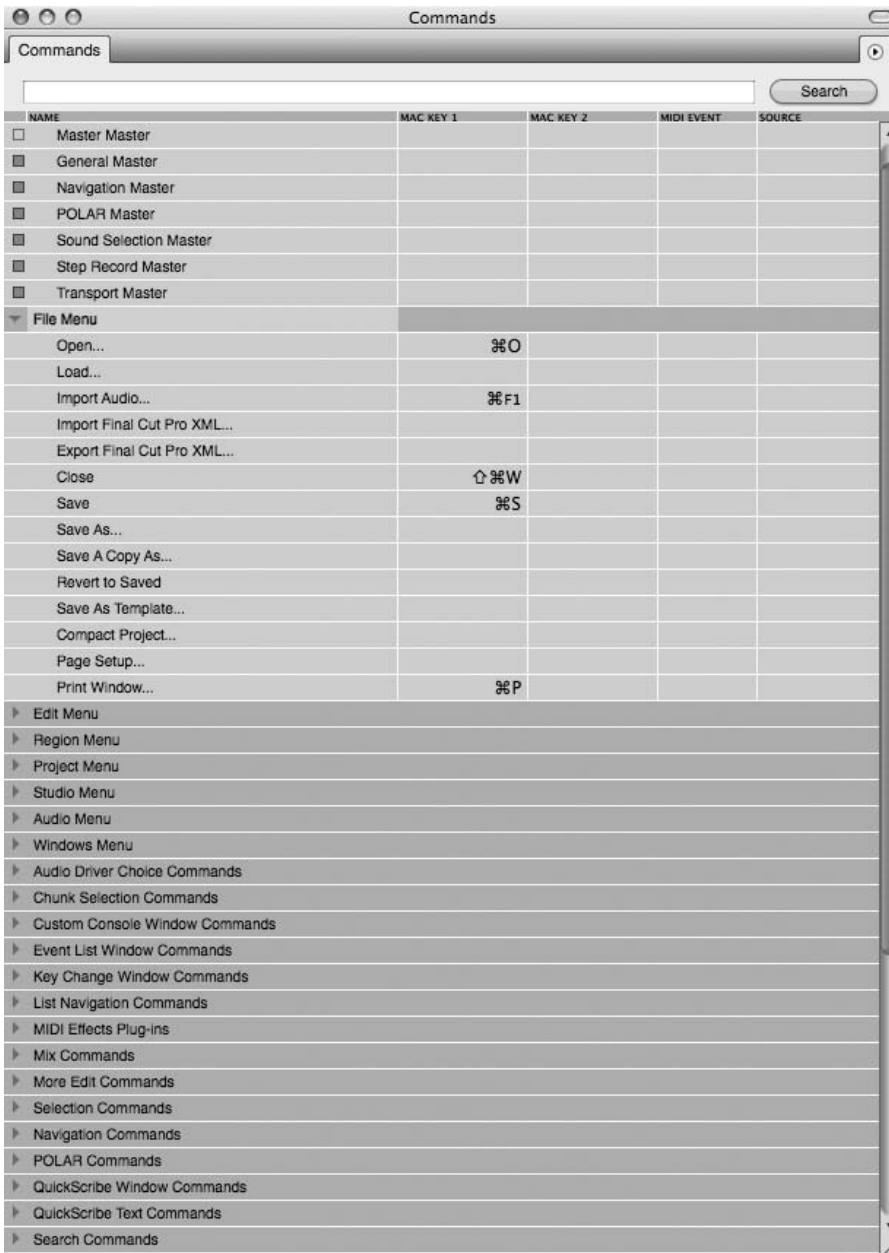
The Commands window, shown in Figure 5.55, provides a central location for accessing and customizing Digital Performer's extensive keyboard shortcut commands. You can even assign specific MIDI events to functions within DP, which allows you to trigger commands from your MIDI controller in place of the computer keyboard. Keyboard shortcuts within DP are called *key bindings*.

### Navigating the Commands Window

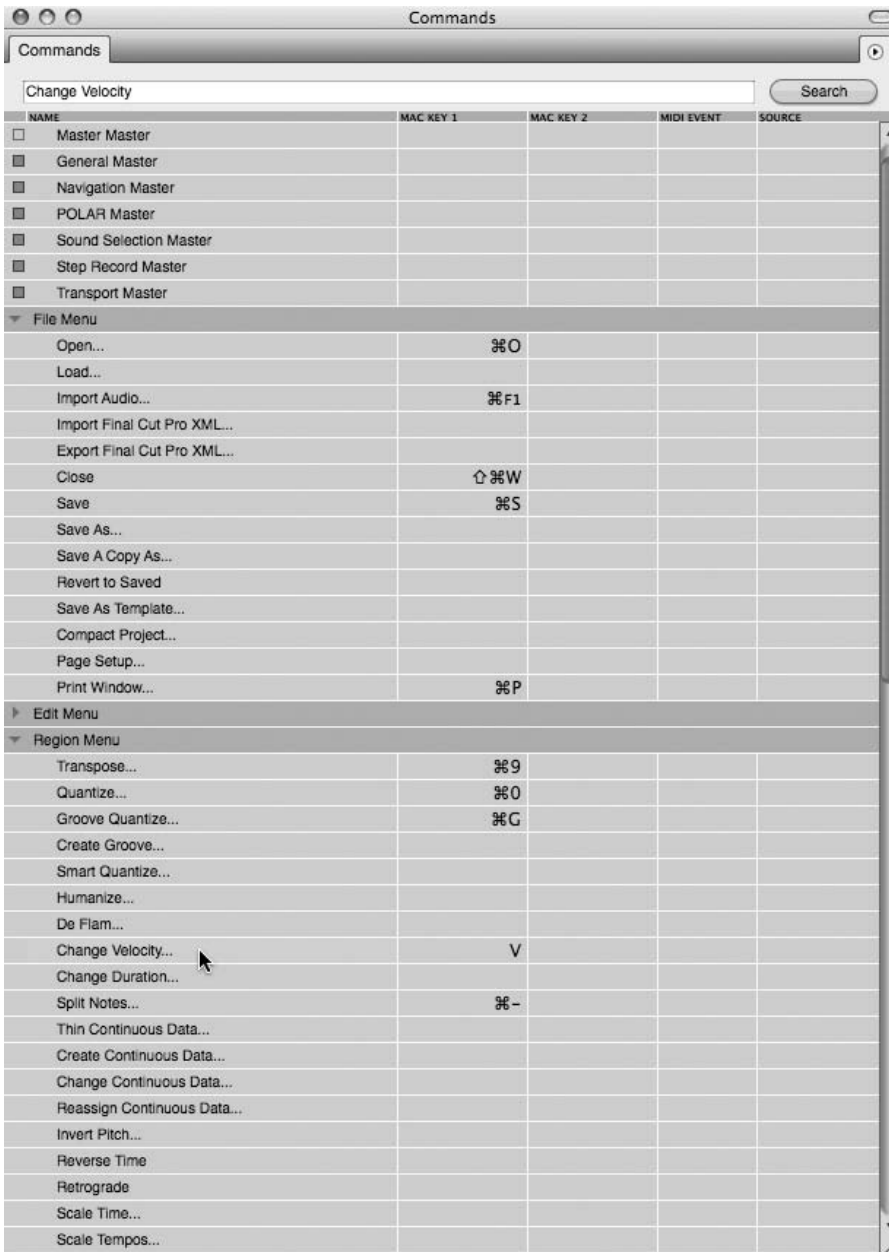
All commands within the Commands window are organized into logical groups. Click on the disclosure triangle located to the left of the group name to view the commands within that group. Option-click on a triangle icon to show or hide all command groups.

To search for a specific command:

1. Choose Setup > Commands or use the default keyboard shortcut Shift+L.
2. In the search field located at the top of the window, type in the command (or text string) you want to find.
3. Click the Search button or press the Return key to begin searching.
4. DP will return the results by highlighting the appropriate command (see Figure 5.56).



**Figure 5.55** The Commands window provides a central location for accessing and customizing key bindings in Digital Performer.



**Figure 5.56** DP will return search results by highlighting the appropriate command within the Commands list. In this example, the Change Velocity command has been searched for and found.

To assign a keyboard shortcut (key binding) to a specific command:

1. Find the command you want to modify.
2. Click in the Mac Key column.
3. Press the desired key combination. It will be entered into the Mac Key column.
4. If the key binding you entered is already assigned to another command, a warning dialog will open, asking whether you want to proceed with the assignment.
5. You can assign two key bindings to a command by using both the Mac Key 1 and Mac Key 2 columns.

To assign a MIDI event to a specific command:

1. Find the command you want to modify.
2. Click with the mouse in the MIDI Event column (located to the right of the Mac Key columns).
3. Enter the MIDI event by pressing the appropriate key on your MIDI controller.
4. For even further customization, specify the MIDI source by clicking in the Source column and choosing the specific MIDI device.

### ***Numeric Base Note***

When entering numeric values for certain commands (recalling markers, for example), DP will allow you to use your MIDI controller in place of the numeric keypad on your keyboard. To properly take advantage of this feature, you must set the numeric MIDI base note by choosing Set Numeric MIDI Base Note from the Commands window's mini-menu. This option sets the value for the base MIDI note or basically tells DP which MIDI note will correspond to the number 1 key on your computer keyboard. If you choose C4, for example, a value of 1 will be the C4 key on your MIDI controller. A value of 2 will be C#4, a value of 3 will be the pitch D4, and so on.

To set the numeric base note value:

1. Choose Set Numeric MIDI Base Note from the mini-menu in the Commands window (see Figure 5.57).
2. Specify the base pitch by pressing the appropriate note on your MIDI controller.
3. Click OK to confirm the change.



**Figure 5.57** The Set Numeric MIDI Base Note command.

## Key Bindings

Key commands in DP are called *key bindings*. A key binding can be a single key command or a set of commands that are contained in a project. Project key bindings are saved in the Command Bindings file located in the Digital Performer Preferences folder, as shown in Figure 5.58.



**Figure 5.58** Project key bindings are stored within the User > Library > Preferences > Digital Performer > Command Bindings file.

Key bindings can be exported out of or imported into a Digital Performer project, allowing you to further customize the DP workspace. This allows you to create personalized key bindings that you can save and open in another Digital Performer system, back up your key bindings, or save them before importing a different set of commands.

To export a set of key bindings:

1. Choose Export Key Bindings from the mini-menu in the Commands window.
2. A standard Save dialog will open. Choose the destination for the new key bindings file.
3. Click the Save button to export the key binding.

To import a set of key bindings:

1. Choose Import Key Bindings from the mini-menu in the Commands window.
2. Choose the key bindings file you want to open.



3. Click Open.
4. Next, DP will open a dialog asking you either to merge any new custom bindings that differ from the current set or to simply import the entire file and replace the current key bindings.
5. Click on the desired button to import or merge the new key bindings.

## Summary

Digital Performer has a number of feature sets that allow you to organize and customize your DP projects. Each feature by itself may have only a limited impact on your workflow, but used in combination, these features offer a powerful solution for managing the music production process. The next chapter, “Project Management: Part 2,” will focus on the more complex Undo History, audio management, and backup processes.

# 6

## Project Management: Part 2

In this chapter, we will dive deeper into the topic of project management within Digital Performer 6. Here is a summary of topics discussed within this chapter:

- Using DP's Undo History windows
- Efficiently managing audio files and hard drive space
- Understanding your options and solutions for backup and archival of your DP projects, including third-party software

### The Undo History

Digital Performer supports unlimited undos and redos, which you can manage from the Undo History windows. There are basically three Undo History windows in DP—the main project Undo History, the Polar Undo History, and the audio files Undo History windows. The audio files Undo History windows are unique in that each individual audio file in DP has its own independent Undo History window. Each Undo History window provides you with a complete list of actions, a timeline, and preferences for controlling undo behaviors. DP even supports unlimited branching, which I'll discuss later in this section. Every edit you make when working on a project is remembered, unless you configure the Undo History preferences (called the *Pruning* preferences) to do otherwise.

Though the main project Undo History window is found in the Edit menu, I've chosen to discuss this feature within the “Project Management: Part 2” chapter of this book because of its direct impact on the project management process. Many of the features that I will discuss in this chapter require an understanding of the Undo History, the Pruning preferences, and their related terms.

I will cover undo commands contained within the Edit menu in detail in Chapter 10, “Editing.”

### The Project Undo History

The project Undo History window (Edit > Undo History) displays a complete list of edits made within the project (see Figure 6.1). Besides the name of the action, other information, such as the time, the date, and the amount of memory and disk space required to remember the action, is listed. Although every action remembered will require a small amount of RAM, disk space is

only needed for actions that require it in the first place, such as recording or disk-based processing.



**Figure 6.1** The Undo History window.

### ***The Undo History Timeline***

At the top of the Undo History window is the timeline. The Time of Day strip provides a linear timeline that you can drag to the left or right to move backward or forward in time. Zoom buttons (+/–) located to the right of the strip let you magnify or shrink the timeline. The green line or current action marker indicates the timeline position of the current action.

Directly below the Time of Day strip is the Editing strip. The white area represents the life of the project, from the beginning to the most recent action. Actions are displayed as vertical lines. You can click and drag vertically in this white area to quickly zoom within the timeline. Clicking directly on a vertical action line will highlight it in blue and automatically locate the action within the Undo History List for easy identification.

### ***The Undo History List***

The Undo History List is located below the timeline, in the main body of the Undo History window. There are seven columns that provide important information about the listed actions.

- **Now.** A shaded arrow in this column represents the current action. Double-click in this column next to an action to jump to that point in your project's history. Actions that have been undone are shaded in blue. This shaded arrow corresponds to the Time of Day strip's current action marker (the vertical green line).

- **Name.** This column offers a brief description of the action. Customizing your project beforehand by renaming your tracks, sequences, and sound files can help you quickly identify an action.
- **Time.** This column shows the time the action occurred.
- **Date.** This column shows the day, month, and year the action occurred.
- **Branch.** This column indicates whether a branch has occurred within the Undo History timeline. (I'll explain branches shortly.) Branches are separated from other actions by heavy lines. A branch menu, which is indicated by an inverted triangle, is displayed if One Branch at a Time is chosen in the View pop-up menu.
- **Memory.** This column displays the amount of RAM needed to remember the action.
- **Disk.** This column displays the amount of hard drive space required to remember the action. Only certain actions (such as recording and processing) will consume disk space.

---

**Taking Advantage of the Name Column** To speed up your navigation of the Undo History List, be sure to rename your tracks, audio files, soundbites, and sequences with appropriate, descriptive names. DP will add a brief description of the action within the Name column of the Undo History window, based on the name of the file in question.

For example, if your tracks are called Audio 1, Audio 2, Audio 3, and so on, then you may wind up with an action called "recorded on track Audio 4," or "edit fade in track Audio 5." If you are working on a larger project, you may not remember offhand what track Audio 4 is. Renaming your tracks something specific, such as Bass, may spare you the task of searching by trial and error.

---

## Branching

What sets Digital Performer's Undo History apart from that of other applications is its support for unlimited branching. You can think of branches as separate but dependent undo timelines, or sets of actions. Here's how branching works: Because Digital Performer remembers all of your actions within a project, you can jump backward within the timeline (undoing the current action) and begin a new set of actions (branch off), and DP will remember *both* sets of actions, or branches. The new actions are basically "branching off" in a new direction, so to speak, creating two branches in the process. The first branch is the set of undone actions and will be represented in the Branch menu by heavy lines and a disclosure triangle, and it will be named after the first undone action of the branch. The second branch is simply the new set of actions. This branch point will be created where your new actions start.

When working with branches, the current active set of actions (the "not undone" actions) is always considered the main branch. Any branches you are not working with will be undone.

Keep in mind, “undone” really means removed from your set of actions (main branch) and not “erased.”

Once you’ve created a branch, you can choose it by clicking on the Branch pop-up menu. When you select another branch, its actions will be displayed in a shade of blue, indicating that the branch is in an undone state. Double-click in the Now column next to the name of an undone action to make the branch active. This branch will become the main branch again, and all other branches will immediately disappear from the list and be marked as undone.

### ***The Undo History in Action***

The concept of branching can be difficult to grasp when you are just reading about it, so to demonstrate better how it works, I’ll walk you through a hypothetical session, complete with screenshots. It begins with the recording of a piano track.

1. First, I create a session called Digital Performer 6 Power! I record a few passes on the piano track. I process the track with a Waves C1 comp-gate (m) plug-in compressor, then record a few more passes. At this point in time, the Undo History looks like that in Figure 6.2.
2. I decide to undo the processing from the piano track, so I double-click in the Now column next to the Record on Track ‘Piano’ action—the one that immediately precedes the Apply C1 comp-gate (m) to Track ‘Piano’ action (see Figure 6.3). I have now undone all the actions needed to get back to the uncompressed piano track.
3. Next, I record a bass guitar track. This new action automatically creates a new branch (or a new set of actions). The undone C1 comp-gate processing actions are preserved in the first branch (see Figure 6.4).



**Figure 6.2** The Undo History window for the example. The shaded arrow next to the most current action in the Now column indicates that no actions have been undone.



**Figure 6.3** The Waves C-1 processing has been undone. Undone actions are shaded in blue.



**Figure 6.4** I record a bass guitar track, automatically creating a new branch. Branch points are indicated by heavy lines and a disclosure triangle.

4. I record two more bass guitar passes, as shown in Figure 6.5.
5. Clicking on the Branch pop-up menu reveals the original undone C1 comp-gate processing, as shown in Figure 6.6. Selecting the C1 comp-gate branch displays the undone actions, as shown in Figure 6.7.
6. In Figure 6.8, the C1 comp-gate branch has been made active again by double-clicking in the Now column next to the *last* action of the C1 comp-gate branch. (The Bass branch automatically becomes undone.) If you were to view the undone Bass branch, it would look like that in Figure 6.9.



Figure 6.5 Two more bass guitar passes are recorded.



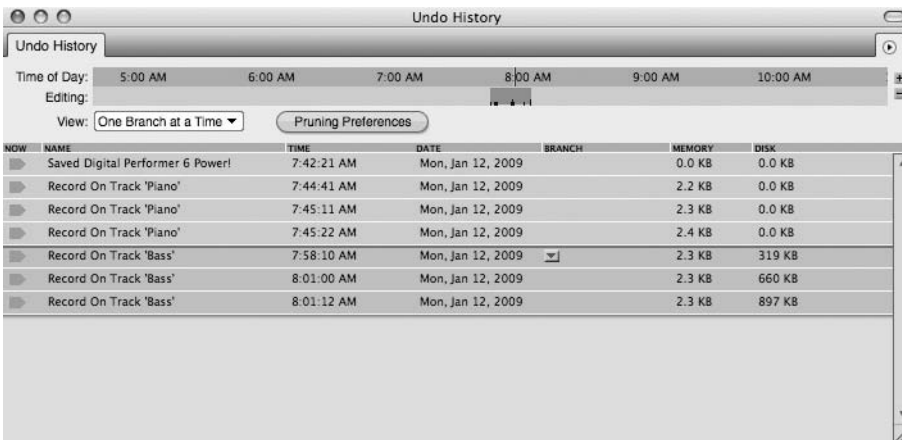
Figure 6.6 Clicking on the Branch menu reveals a check mark next to the currently selected main branch, as well as the C1 comp-gate processing branch that has been undone.



Figure 6.7 Selecting the C1 comp-gate branch in the Branch menu displays the undone actions.



**Figure 6.8** The C1 comp-gate branch that was previously undone is made active again. Notice the shaded arrow next to the most current action in the list. This branch has now become the main branch.



**Figure 6.9** Selecting the Bass branch reveals that it has been undone.

- Next, I decide to undo both sets of actions, the original C1 comp-gate branch and the newly created bass guitar recordings. To do this, I must double-click the Now column to select the action just prior to the first Record on Track 'Bass' action (see Figure 6.10). I now decide to record a vocal take (see Figure 6.11).
- If you click on the Branch pop-up menu, you can see all three branches, as shown in Figure 6.12. The check mark next to the Vox branch tells you that it is the main branch and is currently active.
- In Figure 6.13, you can see that I've recorded another vocal take. In the View drop-down menu, however, I've selected All Branches at Once. Notice that the Branch menus

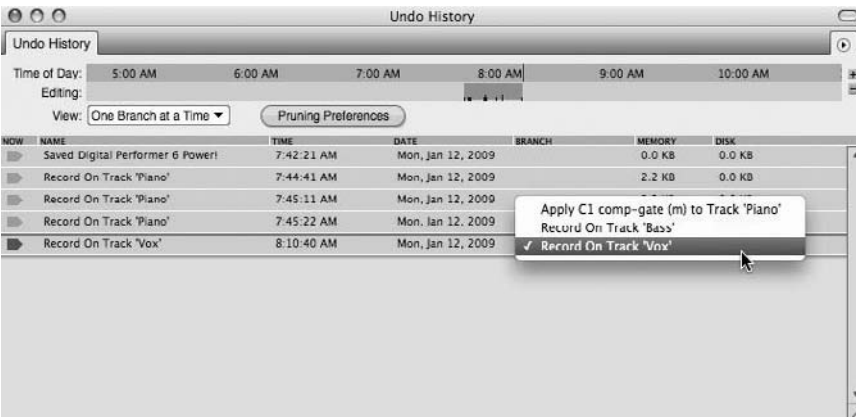




**Figure 6.10** I have undone both branches by selecting the action just prior to the branch point.



**Figure 6.11** I have recorded a new vocal (Vox) track, creating a third branch within the Undo History timeline.



**Figure 6.12** The Branch menu displays all three branches. The main, or active, branch is designated by a check mark.

are no longer visible, and the non-active branches (which have been undone) are displayed shaded in blue and separated by heavy lines.



**Figure 6.13** Selecting All Branches at Once in the View drop-down menu will display all actions within all branches. Actions within a branch will appear grouped in chronological order.

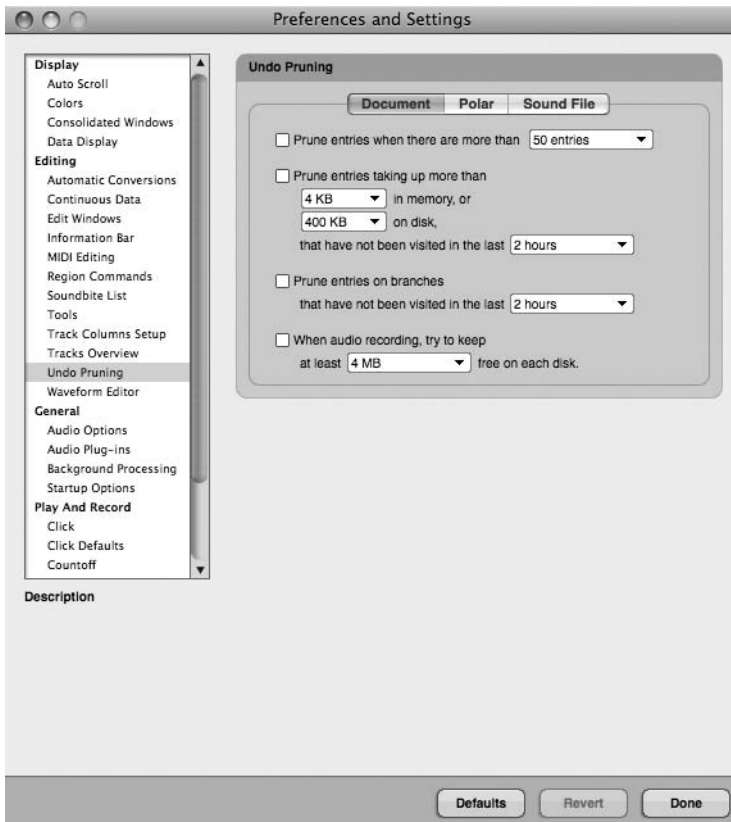
## Managing the Undo History Windows

As a project progresses and DP begins to keep track of undone actions, branches, and so on, the remembered actions will begin to consume precious RAM and disk space. Digital Performer provides a number of features to customize the undo process. You can set up DP's Undo History windows to automatically manage themselves through the Pruning preferences. For example, if you find that as you work, you never go back in your project timeline to undo an action that is, say, two hours old, DP can discard or “prune” all actions that were made before the current two-hour work period. You can also “prune” manually using the options provided within the Undo History window's mini-menu.

### Pruning Preferences

Each Undo History window has its own independent preferences, located in the Undo Pruning section of the Preferences and Settings window. These preferences allow you to establish a set of criteria to automatically manage the amount of memory and disk space that the Undo History windows can consume. You can access the Undo Pruning preferences from any one of DP's Undo History windows by clicking on the Pruning Preferences button (see Figure 6.14). You can also choose Digital Performer > Preferences.

Unlike the three Undo History windows, the Undo Pruning preferences are centralized in the Preferences and Settings window. From the Undo Pruning section, use the Undo Pruning tabs, shown in Figure 6.15, to set the Undo Pruning preferences for a specific Undo History window. This Undo Pruning drop-down menu offers three options.

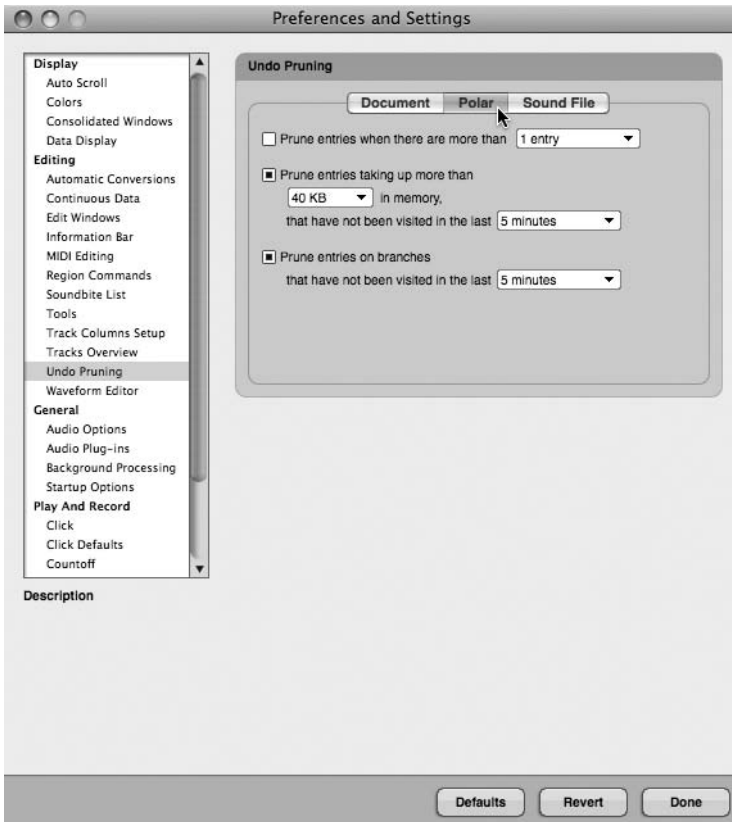


**Figure 6.14** Click the Pruning Preferences button in any of DP's Undo History windows to open the Undo Pruning preferences, located in the Preferences and Settings window.

- **Document Undo Pruning Setup.** Preferences for a project's main Undo History window.
- **Polar Undo Pruning Setup.** Preferences for the Polar Undo History window.
- **Sound File Undo Pruning Setup.** Preferences for audio file Undo History windows.

Within the Undo Pruning preferences, you have the following four options for controlling each Undo History window:

- **Prune Entries When There Are More Than.** This setting limits the total number of entries that will be remembered in an Undo History list.
- **Prune Entries Taking Up More Than.** This option is used to automatically discard (or prune) any action that consumes a specific amount of memory and disk space and hasn't been visited within a set time. This option will affect actions within all branches.

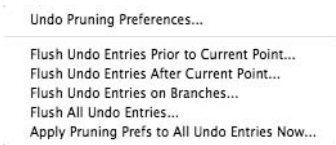


**Figure 6.15** Click on the Undo Pruning tabs to set the pruning preferences for a specific Undo History window.

- **Prune Entries on Branches.** This option only affects actions that are on branches (that is, actions that have been undone). This option will discard actions within branches that have not been visited within a set amount of time. Actions on the main branch, or current actions, will not be affected.
- **When Audio Recording, Try to Keep.** This option will discard actions when available hard drive space falls below a specified value during the recording process. Actions that are furthest back within the Undo History List will be pruned first.

### ***Manually Pruning the Undo History from the Mini-Menu***

Even though the Undo Pruning preferences can be set independently for each Undo History List to automatically discard, or flush, actions, these settings are global and not project specific. For even greater control, DP provides extra options for manually flushing each Undo History List. These options are contained within the mini-menus of each Undo History window, as shown in Figure 6.16, and can also be accessed from the Commands window.



**Figure 6.16** Contained in each Undo History window's mini-menu are controls for manually flushing the undo entries and branches.

- **Flush Undo Entries Prior to Current Point.** This command will discard any entries, or actions, that occur before the current action (the action designated with a shaded arrow in the Now column).
- **Flush Undo Entries after Current Point.** This command will discard any entries that occur after the current action.
- **Flush Undo Entries on Branches.** This command will discard entries on all branches that are not part of the main branch. These are basically actions that have been undone.
- **Flush All Undo Entries.** This command will flush the entire Undo History List, so use it with caution!
- **Apply Pruning Prefs to All Undo Entries Now.** This command will immediately apply any settings you have within the Undo Pruning preferences (minus any time settings) to all actions within the Undo History window.

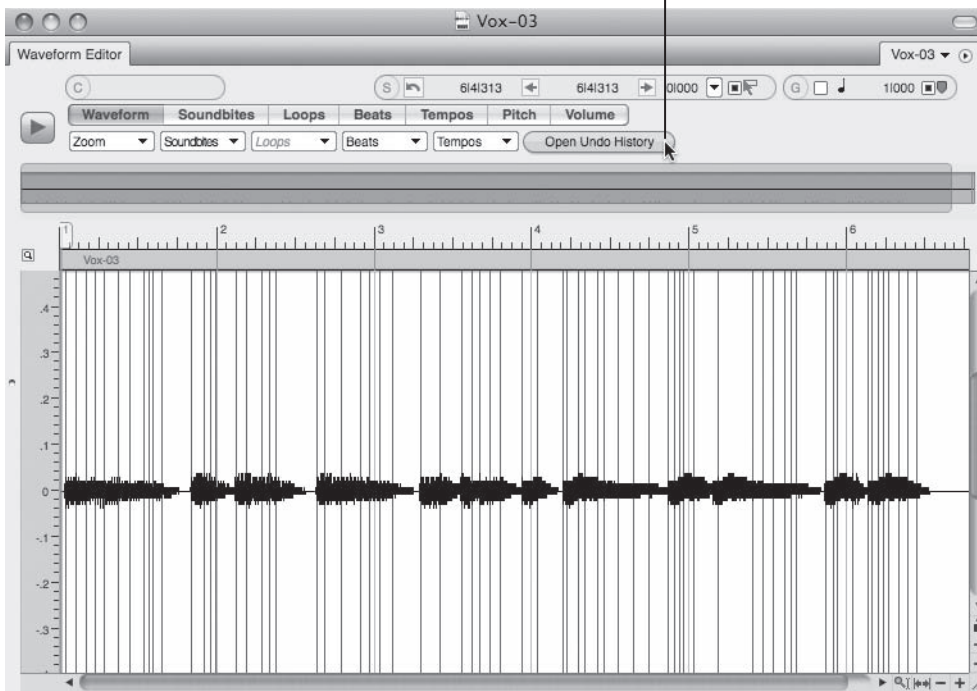
Following are a few points to keep in mind when working with DP's manual flush commands:

- Flush commands always apply to the front-most Undo History window. If no window is open, the commands will be applied to the project's main Undo History window.
- If the Polar Undo History window is in the foreground, then pruning commands will be applied to the open Polar session.
- If the Soundbites window is in the foreground, then pruning commands will be applied to any selected parent audio files. Only the Flush All Undo Entries and Apply Pruning Preferences to All Undo Entries commands can be applied in this manner, however. To use the other commands, open the Undo History window for the specific audio file.

## Audio File Undo History Windows

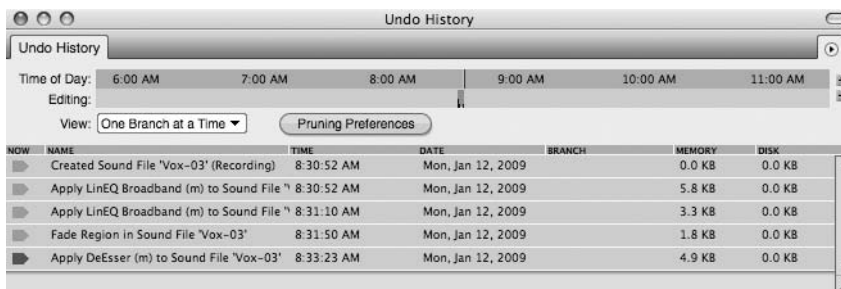
Each audio file in DP has its own independent Undo History window, which can be accessed from an audio file's Waveform Editor (see Figure 6.17). This is one of the most overlooked components of the Undo History because many users have yet to discover its versatility. What sets this Undo History window apart from the main project and Polar Undo History windows is your ability to modify or remove an action without affecting the actions that come after it. Modifications can be made to plug-ins or to DSP processing that has been applied to an audio file.

The Waveform Editor's Open Undo History Button



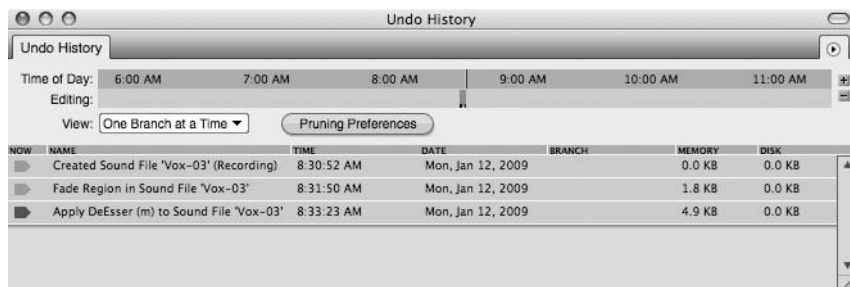
**Figure 6.17** The Waveform Editor. Click on the Open Undo History button to open an audio file's Undo History window.

In the following example, a Waves LinEQ, fade, and DeEsser have been applied to a soundbite called Vox-03. Because the file has been processed in the Waveform Editor, the actions are stored within the audio file's independent Undo History window, shown in Figure 6.18. To modify the LinEQ action, simply double-click on the name of the action. This will reopen the EQ plug-in window with the original settings used to EQ the Vox-03 soundbite. Make the necessary changes to the EQ setting and reapply the effect.



**Figure 6.18** An audio file's Undo History window.

Keep in mind that modifications made to actions within an audio file's Undo History List are not undoable. To return to your original setting, you will need to reapply the effect. If you would like to remove the action, click the name of the action and choose Edit > Erase or press the Delete key. Deleting an action will not affect actions that occur after it, as shown in Figure 6.19. Once an action is removed, DP will essentially “fix” the audio file in order to reflect the change that has been made.



**Figure 6.19** Deleted actions will not affect actions that come after it. Notice the Fade and DeEsser actions have been left intact even though the preceding LinEQ actions have been removed.

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**Sequence Editor versus Waveform Editor** It is important to understand that the independent Undo History window for audio files applies only to those processing actions taken from within an audio file's Waveform Editor. Applying an effect to an audio file in the Sequence Editor will redefine the sound file as “Created Sound File” in its Undo History, and the effect cannot be modified or undone from this window. (You can, however, still undo the action from the main Undo History window in the Edit menu.) In addition, any processing performed on an audio file in the Sequence Editor will flush the file's independent Undo History in the Waveform Editor.

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## Polar Undo History Window

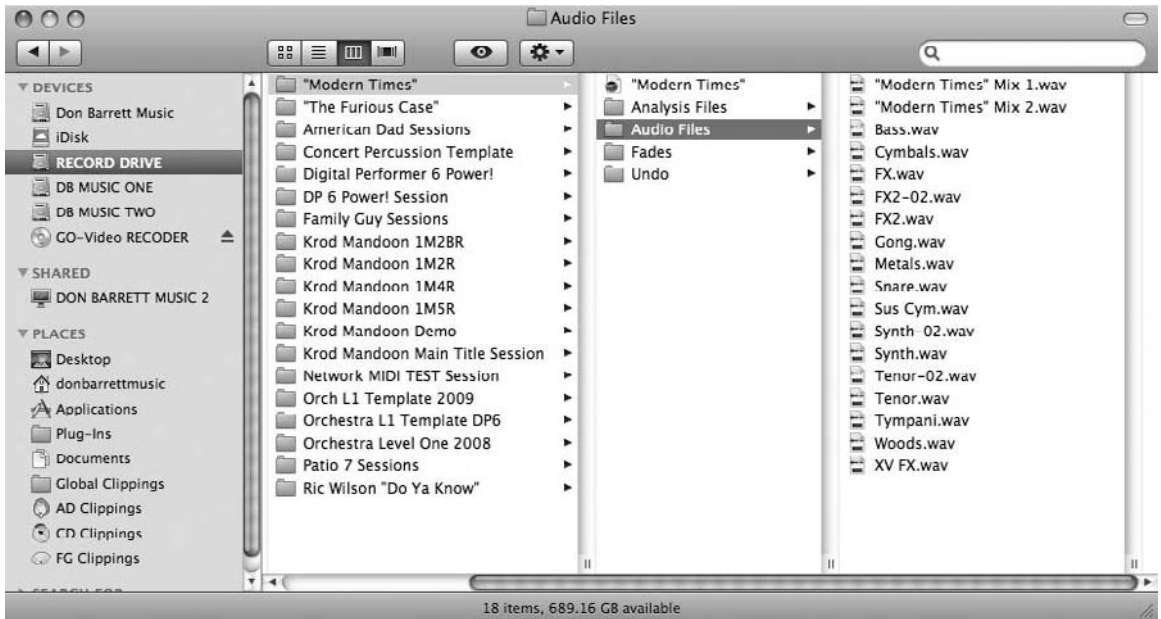
The Polar window also has its own independent Undo History window, as shown Figure 6.20. The Polar Undo History works much like the project's main Undo History. The Undo List applies to the currently open Polar session. Unlike the other Undo History windows, however, Polar Undo Histories are discarded when the Polar session is closed.



**Figure 6.20** Click the History button to open Polar's Undo History window.

## Managing Audio Files and Soundbites

By default, audio files in a new DP project are stored within the project's Audio Files folder, shown in Figure 6.21. This allows you to take a hands-off approach, relying on DP to automatically place newly created take files in the proper location.



**Figure 6.21** The project folder's Audio Files folder. Here we see audio files with the .wav extension new to version 6.

## Changing the Location of Audio Files and Soundbites

Audio files do not have to be placed in this folder, however. They can be located within different folders or even across multiple hard drives. You can change the location of your audio files before the actual recording process or after audio has been placed within the Audio Files folder. Digital Performer will automatically keep track of the audio files regardless of which folder or hard drive they are moved to.

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**Understanding Soundbites and Regions** It is important to know that *soundbite* is a term synonymous with *region*. However, DP often uses the *region* term in an entirely different context with regard to its Region menu. So, for the purposes of this discussion, *regions* and *soundbites* are one and the same. And yes, DP's mention of *sound files* simply refers to audio files.

So, a soundbite is only a reference (or link) to a specific portion (or region) of a parent audio file that exists on your hard drive. This region information (length of the soundbite—in



other words, start and end times) is stored within (and cannot be separated from) its parent audio file.

This is how nonlinear, nondestructive editing is able to work. Suppose you have imported an audio file into your project. You can make multiple copies of this file or cut the file into multiple sections (soundbites) and move them around or even delete some of them. Because these multiple soundbites are only referencing the same parent audio file and not duplicating it each time, they are not using up more space on your hard drive. On playback, your drive links to the soundbite reference pointers (region information) and plays just that portion of the original audio file (as many times as the soundbite appears in your project).

To change the destination folder or hard drive for your audio files before recording:

1. In Digital Performer, arm an audio track by clicking the Record-Enable button in the Tracks or Mixing Board window (discussed in Chapter 7, “Recording Audio”).
2. Choose Studio > Audio Monitor. The Audio Monitor window provides information concerning the inputs of record-enabled tracks, including input level meters, location, and available hard drive space for that location.
3. Double-click on the location of the take file in the Take Folder column to display the full path name for a file. Click on the abbreviated locations to expand the full path.
4. The destination for each armed audio input can be set independently or globally for all take files. To change the location for a specific take file, double-click on the name of the take file. (This is usually the track name located to the right of the input level meters, as shown in Figure 6.22.) The Choose a Folder dialog window will open, asking you to choose the location for the specific audio input.



**Figure 6.22** Double-clicking on the name of a take file within the Audio Monitor window will allow you to specify the destination folder of audio files for an armed input before recording.

5. Navigate to the desired folder or hard drive. If you would like to create a new folder, click on the New Folder button. Rename the folder and click Open. To choose an existing folder, select the folder and click Choose.

6. If you would like to simultaneously change the destination folder for multiple/all take files, select the take files by clicking on the first take file name, then Shift-clicking the rest. To quickly select adjacent take files, drag over them with the mouse. To select all the files in the list, use the default keyboard shortcut Command+A.
7. From the Audio Monitor's mini-menu, choose Set Take Folder. A dialog asking you to select the destination folder or hard drive for the selected take files will open.
8. If you need to set the take file locations for other take files, repeats Steps 4 through 6 as needed.

To change the location of existing audio files:

1. Within the Finder, simply move the audio files to a new location by dragging with the mouse. DP will automatically keep track of the audio files' new location.
2. If for some reason DP loses track of a file, it will ask you to manually locate the file.

To find the location of an existing audio file:

- Select the audio file or soundbite within the Soundbites window and then click on the Info Pane button. The File column of the parent file will display the full path.
- You can also select the audio file or soundbite and use the keyboard shortcut Option+R. This method will launch the Finder and open up the actual folder in which the selected audio file is located. Keep in mind that you can use this method to determine the location of an audio file or soundbite without opening the Soundbites window.

## Organizing Audio Files and Soundbites into Folders

Within the Soundbites window, audio files and soundbites can be organized into folders. This often-overlooked feature allows you to clean up and organize the Soundbites window List section. Placing soundbites into folders will also keep any regions created by the editing process with their parent soundbites.

To create a folder within the Soundbites window:

1. Open the Soundbites window by choosing Project > Soundbites. You can also use the default keyboard shortcut Shift+B or use the Open Soundbites button in the Quick Access drawer of the Control Panel.
2. With the List section visible, click on the View By menu and choose Folders.
3. Choose Create New Folder from the Soundbites window mini-menu. Folders are indicated by a dark-gray band.

4. To rename the new folder, Option-click on the folder name.
5. Drag the desired soundbite or soundbite icons from the far-left Move column into the folder.

## Renaming Existing Audio Files or Soundbites

Audio file and soundbite names can be changed from any location in which they appear within DP, including the Mac OS Finder. Regardless of where you change the name, Digital Performer will automatically update the name wherever the file appears.

To change the name of an existing audio file or soundbite:

- To rename an audio file or soundbite within the Soundbites window (or any other editor in which the file appears), Option-click the name with the mouse.
- To rename an audio file from within the Finder, click on the name of the file and type the new name.

## Deleting Audio Files and Soundbites

One of the most frightening processes of project management is deleting media files. This is why you should make a backup copy of your project (including its Audio Files folder) before continuing with this process. Accidents do happen—seemingly unimportant files that you delete turn out to be the lead vocal tracks, or the band decides that they really *did* want that alternate track you just deleted to regain disk space. Chances are, you have been in some situation where you deleted something, only to discover that you shouldn't have. Making backups of your important files can prevent, or at least minimize, the damage of losing precious data.

You can delete a project's audio files from within the Finder by dragging them directly to the trash, but if you do so, DP will not know what happened to them. Their references will remain in the project's Soundbites window but will appear as lost sound files. More importantly, however, you won't be able to verify whether the audio file in question contains regions that are actually being used within a project.

The Delete command in the Soundbites window will delete an audio file and/or its associated soundbites from the current project. This command will also delete a soundbite's reference points to its parent audio file. Keep in mind that this command will only delete the audio file from the project, not from your hard disk. The actual parent audio file will remain on your disk until the last soundbite referring to the parent audio file is also deleted. In other words, before an audio file is deleted from disk, DP makes sure there are no remaining references to the audio file existing somewhere in the project (or another project sharing the audio file).

For example, you have soundbites A, B, C, and D. Each of these soundbites references Audio File 1. If you use the Delete command in the Soundbites window to delete A, B, and C, Audio File 1 remains on your hard disk until soundbite D has been deleted.

To permanently delete an audio file from disk, again, all soundbites referencing the parent audio file must have been deleted using the Delete command, or you can use DP's Compact commands to delete unused portions of a parent audio file (discussed in the "Compacting an Audio File" section later in this chapter).

To delete an audio file and/or region from a project:

1. In the Soundbites window, select Soundfile from the View By menu. This will ensure that any soundbites will be listed with their parent audio files. If you need to audition the soundbite, make sure Audible mode (the title bar's speaker icon) is turned on.
2. Select the soundbite you want to delete. Shift-click to make multiple selections.
3. Choose Delete from the mini-menu to delete the audio. The keyboard shortcut is Command+Delete.
4. If the soundbite currently exists within a track, DP will display a warning dialog asking whether you really want to delete the selection. Click OK to continue.
5. If the soundbite is the last remaining reference to a parent audio file, a dialog will open, asking whether you want to delete the audio selection the next time the Undo History is flushed (see Figure 6.23).
  - Choose No to delete the audio file or region without flushing the Undo History. This allows the action to still reside within the Undo History List, and you can use the keyboard shortcut Command+Z to undo the process.
  - Choose Yes to delete the audio file/soundbite.
6. Another dialog will open, asking whether you want to immediately flush the Undo History (see Figure 6.24).
  - Choose Don't Flush to preserve the audio file or soundbite within the Undo History until it is manually flushed.
  - Choose Flush to immediately flush the Undo History, permanently deleting the selected audio files and/or regions from the project and from your hard disk.



**Figure 6.23** You can undo the deletion process as long as the Undo History has not been flushed! To bypass this warning dialog, hold down the Option key before selecting Delete from the mini-menu.



**Figure 6.24** Immediately flushing the Undo History will permanently delete the selected audio files and/or regions from the project and the hard disk. Choosing Don't Flush will preserve the data within the Undo History until it is manually flushed.

## “Removing” Audio Files and Soundbites

There will be times when you want to simply remove an audio file or soundbite from a project without actually deleting the region information from its parent file—perhaps the soundbite is being used in another project, or you simply wish to preserve the sound file’s region data or playlist information for future use. This can be accomplished using the Remove from List command, located in the Soundbites window’s mini-menu.

To remove a file or soundbite from a project:

1. In the Soundbites window, select Soundfile from the View By menu. This will ensure that any individual soundbites will be listed with their parent audio files.
2. Click with the mouse to select the soundbite you want to remove. Shift-click to make multiple selections.
3. Choose Remove from List from the mini-menu. This will remove the soundbite from the project without deleting the region information from its parent audio file.
4. If the soundbite currently exists in a track, DP will display a warning asking whether you really want to delete the selection. Click OK to continue. This action will remain in the Undo History List until it is manually flushed.

## Compacting an Audio File

Even though the Delete and Remove from List commands will delete sound files and regions from a project, often audio files will still reside on your hard drive and consume valuable disk space. DP’s compact commands, however, will permanently delete portions of unused audio files from disk. In this process, unused audio data that is not referenced by a soundbite is erased, and the remaining portions are placed end to end. This is a destructive procedure and should be used with caution.

Think of the imported audio file example from earlier in this chapter. When you made multiple edits (cuts, copies, and so on), numerous soundbites were created that referenced the audio file.

Even though, in the process of working, you decide to delete some of these soundbites from your project, their references to the audio file are still using disk space. Compacting permanently deletes these portions of the audio file and then closes the gaps between the leftover regions (or soundbites still being used in your project). The result can be significant amounts of reclaimed free space on your hard disk!

Here are a few points to keep in mind when using the Compact commands:

- Only audio data that is not referenced by an existing soundbite is deleted.
- Soundbites that are not deleted with the Delete command or have simply been “removed” with the Remove from List command will not be compacted.
- If you want to compact a soundbite that has been removed, import the soundbite again and use the Delete command to delete the region.
- The amount of time it takes to compact a file depends on the amount of data that is being removed.
- Once a file or project is compacted and the Undo History flushed, any deleted audio files will be permanently discarded from your hard drive.

To compact an audio file or files:

1. In the Soundbites window, begin by selecting the soundbites or regions you want to discard from the project.
2. You can quickly select all of the unused soundbites in a project by choosing Select Unused Soundbites from the mini-menu. This will highlight all of the soundbites that are not in use within the current project.
3. Choose Delete from the mini-menu. This will remove the soundbites from the project while deleting the region data from the parent audio file.
4. Now, select a soundbite from the audio file you want to compact. Shift-click to make multiple soundbite selections.
5. Choose Select All from the mini-menu if you want to compact all of the audio files within the Soundbites window. The default keyboard shortcut is Command+A.
6. Choose Compact from the mini-menu.
7. Within the Compact Soundfiles window, specify the amount of extra audio at the beginning and end of each soundbite that you want to preserve. This is necessary if you have crossfades, you wish to use crossfades, or you want to make any edits to the edges of the soundbites (see Figure 6.25).

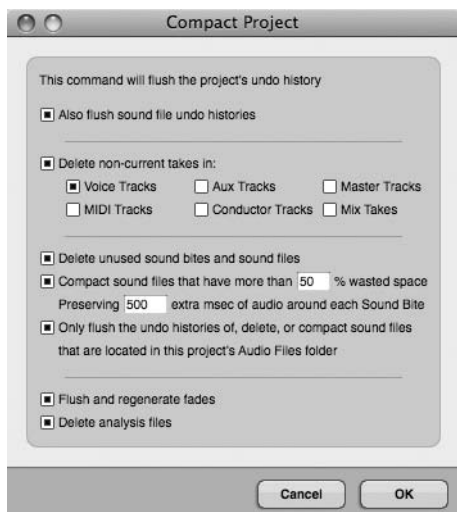


**Figure 6.25** The Compact Soundfiles window.

8. Another dialog box will open, asking whether you want to immediately flush the Undo History. Click the Flush button to flush the Undo History and permanently discard the removed audio data.

## Compacting a Project

The File menu's Compact Project command allows you to discard the unwanted portions of a project, from flushing the main Undo History and audio Undo Histories to deleting unused soundbites and sound files. The Compact Project window provides you with various options for managing the compact process (see Figure 6.26) and has the benefit of regaining significant portions of unused disk space. You can apply this command at any time during a project. Be aware, however, that this procedure is permanent and will flush the project's main Undo History! I suggest using the Compact feature at the end of the production process when you are ready to back up your finished project.



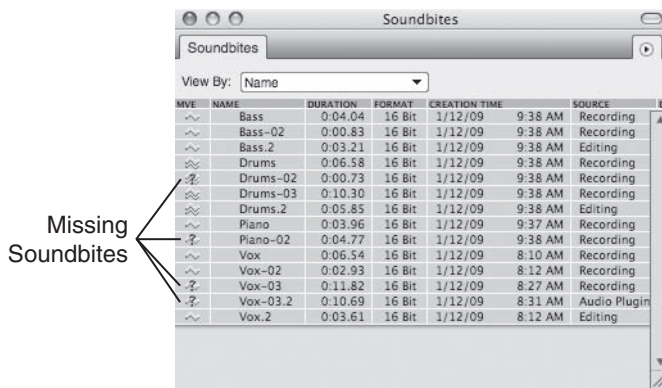
**Figure 6.26** The Compact Project window.

To compact an entire project:

1. Choose File > Compact Project.
2. In the Compact Project window, select the items you want to discard.
3. Click OK. A warning dialog will launch, informing you that the procedure is not undoable.
4. Click OK to proceed. The data you selected will be discarded immediately.

## Locating Missing Audio Files or Soundbites

Occasionally, DP may lose track of or misplace a soundbite—perhaps you moved it to another location or deleted it with the Finder. When this happens, you can correct the situation by simply pointing DP to the new location. Lost soundbites will be indicated by a question-mark icon over the Move handle of a soundbite within the Soundbites window, as shown in Figure 6.27.



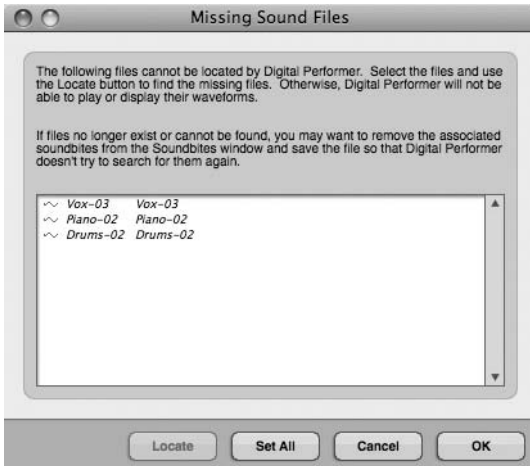
**Figure 6.27** The question-mark icon indicates that the soundbite's location is unknown to Digital Performer.

If you are opening a project that contains missing soundbites or sound files, DP will first launch the Missing Sound Files window, shown in Figure 6.28, which will allow you to locate the files before opening the project.

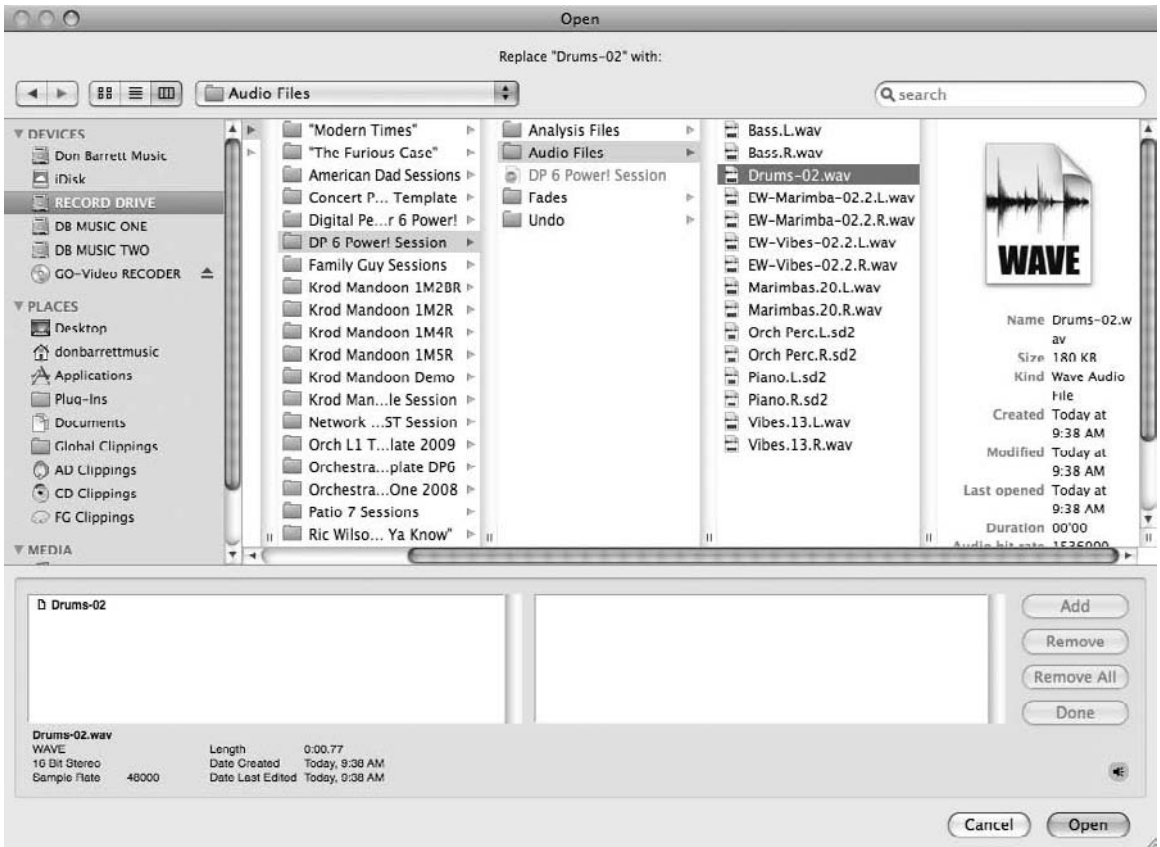
To locate a missing file in an open project:

1. In the Soundbites window, select the soundbite you want to find. Missing soundbites are indicated by a question mark.
2. Choose Audio > Replace Soundbite.
3. Navigate to the missing soundbite and click Open (see Figure 6.29).





**Figure 6.28** The Missing Sound Files window will appear when you attempt to open a project with missing soundbites.



**Figure 6.29** The Replace Soundbites command can be used to locate and replace missing soundbites.

To locate a missing file when you first open a project:

1. Open a project that contains missing soundbites. DP will launch the Missing Sound Files window, prompting you to locate the files. Missing files will be displayed in *italics*. Once the window is opened, you will be presented with three choices.
  - **Cancel.** Click this button to cancel the process and close the selected project.
  - **OK.** Click this button to skip the location process and open the project. Lost files will appear as missing soundbites within the Soundbites window. You can use the Replace Soundbite command to find the missing files.
  - **Set All.** Click this button to select all the missing files within this window. Once a file is selected, the Locate button will become available. You can also skip the Set All button and simply click on a file to begin the location process.
2. To locate a missing file, click the file and choose Locate. Click the Set All button to select all of the missing sound files.
3. In the Open dialog, navigate to the location of the missing file.
4. Select the file and click Open.
5. If you have chosen the location for more than one sound file, repeats Steps 3 and 4.
6. Once found, the missing file will no longer appear in italics, indicating that DP is aware of its location in your system.
7. Once you have found the selected files, click OK. The Soundbites window will automatically update to reflect the changes.

## Backup and Project Archival

Though seemingly similar, backing up a project and archiving it are very different procedures. A backup is more of a temporary procedure, while archiving is more long term or permanent. Both are extremely important within the music production process (or any production process, for that matter) and can help prevent loss of valuable work or can safeguard data that you may want to access even after a project has been completed. This section will discuss different approaches and solutions for backing up and archiving your Digital Performer projects.

### Backups

As stated earlier, backups can be thought of as temporary solutions or precautions for protecting work in progress. It is imperative that you back up regularly to prevent the accidental loss of data. Even the most stable of systems can fail; having a current backup copy of your project can spare you the time and hassle (and even embarrassment) of re-creating hours or days of lost work.

It's best to save your backups to a separate hard drive. It won't do you any good to back up to the same drive as your original copy if the drive fails or is damaged. Although it might seem like

an unnecessary additional expense, having an extra hard drive is really the most convenient and cost-effective solution for backing up your data. If a separate drive isn't available, then go ahead and back up to your main drive. Though not ideal, doing so is better than not backing up at all. As an extra precaution, or if you do not need a lot of storage space, you might also consider backing up to CD (CD-R or CD-RW) for projects less than 700 MB in size or DVD (DVD-R or DVD-RW) for projects less than 4.4 GB in size (or 8 GB for dual-layer DVDs).

How often you should back up your projects depends on your personal workflow and setup. You might consider performing quick backups every 10 to 15 minutes, then performing a more substantial backup procedure later, wherein you actually make duplicate copies of the project's audio files. This more substantial backup could be performed at the end of the day or perhaps every six hours. As a general rule, back up as often as you can.

To perform a quick backup of a project (without duplicating audio files):

1. Choose File > Save a Copy As.
2. Rename the project. You might try devising a naming system for these temporary backup copies—something as simple as adding a number after the project name might do. This will help you easily recognize which version is which when you're saving every 15 minutes.
3. Choose the destination for the backup copy. Consider creating a new folder called Temporary Backups or something similar for quick recognition. You might place this new folder within the main project folder, but if you *really* want to be safe, save the folder to a separate drive.
4. Click Save. Remember that the Save a Copy As command will not save the current version you are working on. It only creates a backup copy (alternate version) of the current project.

To back up a project and its audio files:

1. First, choose File > Save to save the project.
2. Choose File > Save a Copy As. If you choose Save As, DP will close the original project, and you will be working on the new backup copy when you hit the Save button. To keep working on the original copy after creating your backup copy, choose the Save a Copy As command.
3. Rename the project. You might also try devising a naming system for your more serious backup copies or creating a backup folder.
4. Choose the destination. This copy should be placed on a separate drive (if possible). Creating a new folder called Backups, for example, can help you easily locate the project when disaster strikes.

5. Click the Duplicate Audio Data option. This option will make a duplicate copy of every audio file contained within the current project, even if the audio is scattered across multiple hard drives. Analysis and fade files will also be duplicated.
6. Click Save to create your backup copy.

## Archiving

The archival process can be thought of as a more permanent backup solution. Finished projects and files that are rarely used should be archived and stored in a safe location. This process will usually involve archiving to a separate storage medium in order to regain precious disk space within your system. DP's Compact Project command can be a handy feature for reducing the overall file size of a project by eliminating unused audio files that can take up huge amounts of disk space. Besides archiving to a separate drive or removable storage medium, you should also try to store your archived projects in a separate room or building. Investing in a fireproof safe for storage of important projects, software disks, serial numbers, and so on is just another way of protecting your studio assets against catastrophe.

There are many storage possibilities for your archived projects, from external FireWire/USB 2 drives to various forms of removal media. The solution you choose will really depend on your personal workflow, budget, and overall size of your projects.

## External Hard Drives

External drives are basically IDE or SATA drives (5400 RPM or 7200 or 10,000 RPM) housed in an external enclosure with USB, FireWire, and/or eSATA ports. Some allow you to install your own IDE drive, and some are preconfigured, while others allow you to hot-swap drives for easy removal and installation. Generally speaking, external kits do not provide a real price advantage over normal external drives, but they do allow you to take an internal drive from your computer, for example, and instantly turn it into an external unit. Hot-swappable drives are typically more expensive but can provide you with greater flexibility.

FireWire, USB, and eSATA external drives are very common, as the overall price of hard drives has fallen over recent years. The greatest benefits, however, come from the inherent nature of the storage medium. Large projects can be quickly backed up and easily moved between different systems. Some engineers are even using these external drives as their main recording drives.

## CD-R versus DVD-R

CD-Rs are not the greatest backup or archival solution because of their limited storage capacity. Six- to seven-hundred megabytes of data may seem like a lot of storage, but where audio (or video) files are concerned, it is not much. A four-minute/16-track project recorded at 24-bit/48-kHz would consume about 550 MB of disk space. Start editing and processing the tracks, and the project will quickly grow larger than the 700-MB capacity of the CD-R. You can, of course, spread the project files over multiple disks, but this can be an inconvenient as well as time-consuming endeavor.

4.7-GB DVD can actually hold about 4.2 GB of data, which should be enough space to contain a typical DP project. DVD-R technology is steadily progressing, with read/write speeds becoming faster and faster. Double-sided DVD-R (dual-layer) media sporting capacities of 8.54 GB are also available.

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**Running a Session from a CD-R or DVD-R** Keep in mind that even though you can archive your projects to both CD-R and DVD-R formats, you can't actually run a project off of these media due to their slow read speeds. They are really only suitable for archiving, contrasted with external hard drives, from which you can run a session.

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All of these recent advances in the technology can be confusing for the end user. If you already have a DVD burner (perhaps a built-in Apple SuperDrive), be aware of its maximum burning speed (1x, 2x, 4x, 8x, 16x) when purchasing DVD-R media. Pricing is based on write speeds, so there is no need to purchase 16x DVDs if your burner only has 4x write capabilities.

## Rewritable Media

Rewritable media are typically much more expensive than write-once disks. For archival purposes, they are not very practical because you probably won't be rewriting data onto the disk on a regular basis, which defeats the purpose of using rewritable media. On top of this, many consumer CD players will not play audio that is burned to a CD-RW.

On the DVD-rewritable side of things, there are different formats to choose from, such as DVD-RAM and DVD+RW. These formats function like CD-rewritable media but have a larger storage capacity.

## USB Flash Drives

I don't recommend backing up or archiving your data to these convenient little drives, but they are great for the quick transfer or temporary storage of project sessions, audio files, or any other data with which you are working. They are typically about the size of your thumb and connect easily to any of your computer's USB ports. Considering that some are available in sizes larger than most desktop hard drives from a few years ago, you can squeeze a lot of data on one. They have relatively fast transfer speeds and are fairly durable. (My little Memorex drive survived a Maytag wash cycle!) Like a lot of media technology, prices have dropped considerably, with 2- or 4-GB drives selling for around \$10 to \$20 (as of the writing of this book). Not a bad deal when you think about having your band's entire demo session and mixes on your keychain!

## Software Solutions

These days there are many available software applications that concentrate specifically on the backup and archival process. These powerful applications make it much easier for the user to store data in efficient and systematic ways without becoming too inundated in storage routines.

### CD/DVD-Burning Software

Roxio's Toast Titanium software, shown in Figure 6.30, is probably the most widely used CD/DVD-burning software for the Mac. Its simple yet intuitive interface makes burning disks a no-brainer. (Of course, you cannot schedule a backup with a burning program like this; archival and backup must be performed manually.) As of this writing, supported formats include CD-R, CD-RW, DVD-R, DVD+RW, and DVD-RAM. Be aware that the "lite" version bundled with many CD burners doesn't support DVD burning. You will need to upgrade to a Titanium version in order to burn DVDs and take advantage of the program's more advanced features. Don't forget, if your budget doesn't allow for the added software expense, you can also burn discs directly from the Mac OS X Finder if your computer has a Combo Drive or a SuperDrive. Browse the Mac Help menu for more information.



Figure 6.30 Roxio's Toast Titanium.

### Dedicated Backup Software

A more sophisticated approach is to utilize dedicated backup software, such as Retrospect by EMC Insignia. This application is highly respected and widely used within the Mac and PC worlds. Various disk types and tape-drive formats are supported. You can back up data existing on multiple drives or networked computers according to a user-specified schedule. You can also perform full or incremental backups. Keep in mind that programs like this are not tailored to understand the specific requirements of media applications such as Digital Performer. If you have files that are scattered over multiple drives, you will need to tell the program exactly which files need to be backed up.

Mezzo by Mezzo Technologies is a dedicated backup/archival program built specifically for media applications such as DP, Pro Tools, and Final Cut Pro. It supports disk mirroring (simultaneous backups to multiple hard drives), CD, DVD, and various tape devices. You can perform full and incremental backups manually or automatically at specific times and intervals, even in the background. So far, this program sounds much like Retrospect. Where this program shines, however, is in its understanding of Digital Performer projects. Once you tell Mezzo that it is working with a DP project, you can simply drag the project document into Mezzo, and it will search for and back up all related project files! Restoring a project is just as easy, placing the files back to their original, multiple disk locations. Mezzo also tracks changes in your DP projects, allowing you to back up only the data that has been changed.

Beyond just backing up data from your Digital Performer projects, what if your entire hard drive containing your operating system starts to fail? SuperDuper! by Shirt Pocket is an inexpensive Mac-based program that can simplify the process of creating a fully bootable backup system. In a few simple steps, you can completely duplicate your boot drive to another drive or partition, say an external FireWire drive. So, if your system drive does fail you (if it makes that unwanted clicking noise or refuses to boot), you can simply boot from your most recent backup drive and be up and running again in minutes. And to save more time, once you have copied the entire boot drive to the backup drive, selecting the Smart Update option the next time you use the program will only copy any changes that have been made to your boot drive since the last backup process (eliminating the need to duplicate the entire drive each time you use the program). And like Mezzo, SuperDuper! can be put on a schedule so backups are done automatically.

### **Offsite Storage**

The future of data backup and archival just may lie in the ever-growing trend of secure offsite storage facilities. Big companies having been doing this for years, and now so can you. Think of this concept as simply involving very large hard drives (called *servers*) that are located—you guessed it—at a place different from your home or studio. Basically, just as you subscribe to an Internet service for access to the World Wide Web, you pay a fee to gain access to server space, such as Amazon S3. The cost is typically based on the amount of storage you need (measured in gigabytes) and is accessed via a personal account. There are many advanced offsite systems available, but Apple's iDisk (shown in Figure 6.31) is very straightforward and provides a standard 20 GB of storage for Mac and PC users via their MobileMe personal or family accounts. This relatively easy storage solution allows you to create separate folders and simply drag and drop files just as you would with traditional hard drives. Keep in mind that broadband high-speed Internet connections, such as cable or DSL, are typically required for offsite storage services, and although the true beauty of this process is that all of your backed-up data is located at a different “secure” place, I suggest using offsite storage *in conjunction* with traditional backup and archival methods, just in case!



**Figure 6.31** Apple's iDisk is a good option for offsite storage.

## Summary

Project management is an integral part of the music production process. In addition to speeding up routine functions, such as project setup, backup and archival procedures can prevent the loss of important data when disaster strikes.



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# 7

## Recording Audio

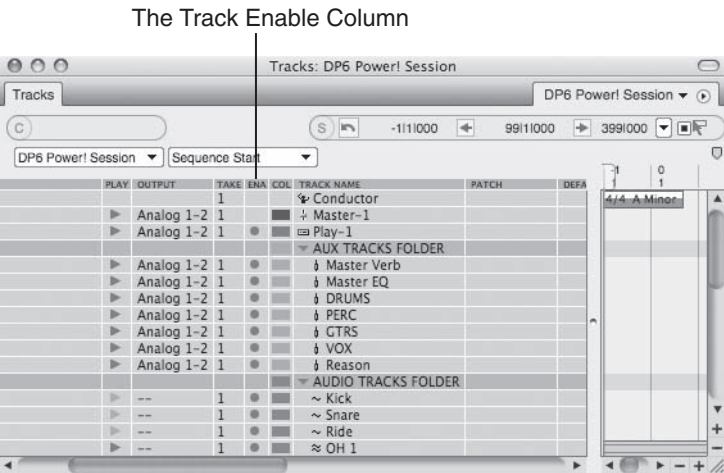
**D**igital Performer offers a number of powerful tools and feature sets for recording audio. This chapter will focus on the steps necessary for getting audio into DP and for properly recording it. Besides audio recording basics, I will discuss recording features, such as the Audio Assignments and Meter Bridge windows, alternate takes, cycle recording, and recording with effects.

Following is a list of topics covered in this chapter:

- How to use the Audio Assignments window to configure multiple track I/O assignments
- How to monitor incoming audio
- How to set input levels
- How to designate a specific location for recorded audio files
- How to use the Meter Bridge
- How to record, overdub, and cycle record
- How to work with alternate takes
- How to create Comp Takes
- How to record audio with effects
- How to import audio files into a DP project

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**Online or Offline in Digital Performer** The Track Enable option in the Tracks window (as shown in Figure 7.1) is similar to the Mute Frees System Resources option in previous versions of DP. It places tracks online or offline, allowing for better CPU management during a project. Tracks must be online for playback, recording, and monitoring. Tracks that are offline no longer use any CPU resources, and their Record-Enable and Input Monitor buttons cannot be selected. By default, DP automatically places new tracks online. Keep in mind, the process of muting a track is instantaneous, while placing a track online or offline may take a couple of seconds.

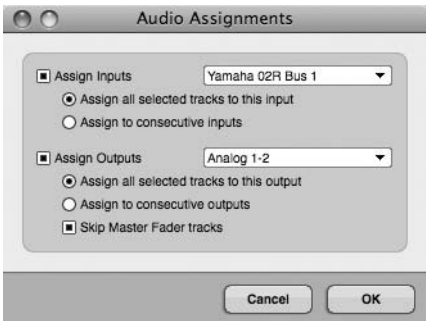


**Figure 7.1** DP’s Track Enable option places tracks online or offline for better CPU management.

If you do not see the Enable column in the Tracks window (represented by blue dots for online tracks and gray dots for offline tracks), go to the mini-menu in the Tracks window and select Track Columns Setup, and then select Enable as a column to be included in the Tracks window. Also, make sure to keep all tracks online for the purposes of this chapter.

## Input Assignments and the Audio Assignments Window

Before you can begin setting audio levels for recording, you will need to arm the necessary audio tracks. Before you can record-enable a track, however, you must assign the input to either the Mac’s built-in audio or a connected hardware audio interface (such as a MOTU 2408mk3). The specific steps for configuring the input assignment of a single audio track, as well as those for making multiple audio assignments with the Audio Assignments window, were covered in Chapter 4. Here, I’ll cover the Audio Assignments window in greater detail (see Figure 7.2).



**Figure 7.2** The Audio Assignments window allows you to make I/O and voice assignments for multiple tracks.

At least one audio track must be selected before the Audio Assignments window will become available. Simply click on the name of a track to select it, and then Shift-click to make multiple track selections. Once you have selected the necessary tracks, open the Audio Assignments window from the Studio menu. The default keyboard shortcut is Option+A. Be aware that inputs and outputs must be enabled from the Audio Bundles window before they will appear in the Audio Assignments window.

To configure the input assignment for multiple tracks:

1. Make the necessary track selections.
2. Open the Audio Assignments window (Option+A).
3. Enable the Assign Inputs option.
4. Choose the desired input from the Input pop-up menu. Be aware that only inputs (audio bundles) that are already enabled will appear in this menu. If the input assignment you want to use isn't listed, close the window and enable the desired inputs from the Audio Bundles window. (Refer to Chapter 2.)
5. Next, choose the appropriate option from the Assign Input section.
  - **Assign All Selected Tracks to This Input.** This option will assign the selected tracks to the input that is selected within the Input menu.
  - **Assign to Consecutive Inputs.** Enabling this option will assign the tracks to consecutive inputs starting with the input that is selected within the Input menu.
6. Click OK to confirm the input assignments. If you want to continue with output assignments, proceed to Step 1 of the next section before clicking the OK button.

To configure the output assignment for multiple tracks:

1. Enable the Assign Outputs option.
2. Choose the desired output from the Output menu. Again, be aware that only outputs (audio bundles) that are already enabled will appear in this menu. If the output assignment you want to use isn't listed, close the window and enable the desired outputs from the Audio Bundles window. (Refer to Chapter 2.)
3. Choose the appropriate option from the Assign Output section.
  - **Assign All Selected Tracks to This Output.** This option will assign the selected tracks to the output that is selected within the Output menu.
  - **Assign to Consecutive Outputs.** Enabling this option will assign the tracks to consecutive outputs, starting with the output that is selected within the Output menu.

- **Skip Master Fader Tracks.** This option will ignore master fader tracks when making output assignments.
4. Once you have chosen the desired settings, click OK to confirm the input or output assignments.

## Monitoring Input Signals

An essential part of recording is monitoring your live input signal. You basically have three choices when working with Digital Performer (or any other DAW, for that matter).

- Monitor through Digital Performer with Audio Patch Thru (using the MOTU Audio System).
- Monitor through your hardware interface with Direct Hardware Playthrough (bypassing the MOTU Audio System).
- Connect your DP system to an external mixer.

Refer to Chapter 2 for an in-depth look into the different monitoring configurations within Digital Performer.

### Audio Patch Thru

To monitor a live signal through Digital Performer (MAS), Audio Patch Thru must be turned on from the Studio menu. For example, imagine you are recording a live singer. You will want to be able to hear the singer through your Digital Performer system as you set input levels or begin to record. The signal needs a pathway to get from the singer, to Digital Performer, to your computer's processor, and back out to you in order to begin proper recording. Once enabled, Audio Patch Thru does exactly what its name implies. It passes the incoming signal from a track's designated input to its specified output assignment. Choose an output destination (such as the outputs of your hardware interface) that is connected to a set of speakers or a pair of headphones, and you'll be able to listen to the signal.

When using an audio track (as the pathway) for monitoring a signal, the audio track must be record-enabled or the Input Monitor button must be selected before you will be able to hear the incoming audio. You can also use an aux track to monitor audio signals. The setup procedure is the same as for audio tracks, except that the aux track is always active (instead of being active only when the Input Monitor button is selected or the track is record-enabled).

---

**New Audio Patch Thru Options in Version 6** Since version 5, DP has replaced the Monitor the Inputs of Record-Enabled Tracks option in the Input Monitoring Mode window with four Audio Patch Thru options in the Studio menu. To get started, simply select Studio > Audio Patch Thru > Auto.

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The four different Audio Patch Thru options located at Studio > Audio Patch Thru (as shown in Figure 7.3) are:



**Figure 7.3** The four Audio Patch Thru options located in the Studio menu.

- **Off.** The incoming signal is never audible, even if the track is record-enabled or the Input Monitor button is selected.
- **Input Only.** You will hear the incoming signal only when the track is record-enabled or the Input Monitor button is selected. If there is existing audio material on the track (refer to the “Monitoring during the Overdub Process” note later in this chapter), the existing audio will not be heard during playback.
- **Auto.** This is the same as Input Only except that, when you are using Auto Record, you will hear any existing audio material on the track until punch-in occurs. During punch-in, you will only hear the incoming “live” signal.
- **Blend.** When the track is record-enabled or the Input Monitor button is selected, you will hear both the existing audio material and the incoming “live” signal.

## Monitoring with External Mixers

If your system is connected to an external mixer, then it is possible for you to monitor live signals directly through your console instead of through Digital Performer. Be sure to turn off Audio Patch Thru to avoid hearing the live signal twice. With this configuration, you will be listening to the audio signal before it actually reaches Digital Performer, or pre-multitrack. The advantage to this setup, of course, is the elimination of any monitoring latency.

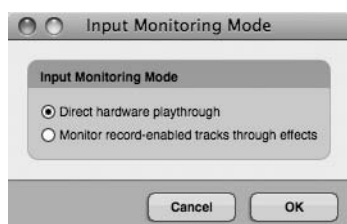
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**What Is Monitoring Latency?** *Monitoring latency* is the slight delay of a live input signal. When monitoring through Digital Performer, for example, the signal must travel through your audio interface, through DP, back to the audio interface, and out to your speakers or headphones. This monitoring setup introduces an audible delay in the live signal. The amount of delay introduced is determined by the buffer settings of your audio interface and Digital Performer. With monitoring latency, even though you will be hearing the signal “late,” the audio will actually be recorded in time, precisely as it’s being input into DP.

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## Direct Hardware Playthrough

As noted earlier, the best way to deal with monitoring latency is to use an external mixer with your DP system. You can, of course, monitor without external equipment and get excellent results. Another option is to use your soundcard or connected audio interface to directly monitor the live signal (as long as your audio hardware device has this monitoring capability). When using the MOTU hardware, you can monitor the signal with DP's Direct Hardware Playthrough option, located in the Input Monitoring Mode window. With this configuration, monitoring latency is eliminated or dramatically reduced, the tradeoff being the inability to listen to the signal through any plug-in effects (see Figure 7.4).



**Figure 7.4** The Input Monitoring Mode window.

MOTU also offers CueMix DSP with its audio hardware interfaces. With this additional program, the monitoring tasks take place on the PCI card (for PCI-based interfaces) or a DSP chip (for FireWire interfaces). This eliminates the need for the signal to make the roundtrip through Digital Performer and your computer's processor to your speakers. Many other manufacturers include their own version of the direct hardware playthrough feature, so be sure to consult the manual for your specific interface.

## Setting Input Levels

Before you begin recording, you'll need to set the level of any incoming audio. This is a crucial step in the recording process. Setting levels too low may result in a noisier track, and setting the levels too high may result in digital distortion. Before you can “see” the input levels within Digital Performer, however, you must first arm, or record-enable, a track.

## Arming a Track

Remember that tracks are like containers for audio and MIDI data. Before you can bring an audio signal into Digital Performer, its input must be assigned to a track, and the track must be armed (and placed “online”). For information about making basic track I/O assignments, refer to Chapter 4.

To record-enable an audio track:

1. First, make sure the audio track's input and output assignments have been properly configured. If the output is not assigned, for example, the Record-Enable buttons for the track will not be available.

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**The Record Column of the Tracks Window** If the I/O and voice assignments have been properly made but the Record-Enable buttons are still not visible, check to see whether the Record column within the Tracks window is showing. If the Record column is hidden, choose the Track Columns Setup option from the mini-menu in the Tracks window. When the window is open, select the Record option to make the Record-Enable buttons within the Tracks window visible. Be aware that when working in the Sequence Editor or Mixer window, however, the Columns Setup options will have no effect on the visibility of the Record-Enable buttons. In these windows, they will become available as soon as the proper track I/O assignments are made.

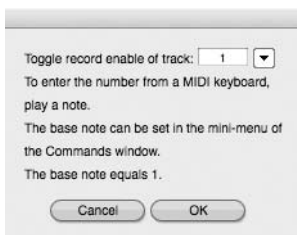
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2. Click on the track's Record-Enable icon to arm the track.
3. To arm adjacent audio tracks, click and drag with the mouse. Remember that you must enable the Audio Options preferences Multi Record Is Always On feature (located in the Preferences and Settings window) in order to simultaneously arm multiple audio tracks.

---

### Shortcuts for Arming Tracks

- **Shift+Control+R.** This key command will open the Track Record Enable window (see Figure 7.5). Enter the track you want to record-enable and click OK. You can also choose tracks from your connected MIDI keyboard.
- **Up/down arrow keys.** If a track is record-enabled, you can use the keyboard's up and down arrow keys to proceed to the next or previous record track.



**Figure 7.5** You can access the Track Record Enable window with the keyboard shortcut Shift+Control+R.



- **Command-click the Record-Enable button.** This will arm all other tracks within a sequence that can be record-enabled, while ignoring the track in question. If the selected track was already record-enabled, it will be unarmed in the process.
- **Option-click the Record-Enable button.** This shortcut will arm the track in question while simultaneously unarming all other tracks.

**Arming Tracks on the Fly** Tracks can be armed or unarmed (or placed online or offline) on the fly during playback, but not during the actual recording process (when the Record button is red or flashing red). The ability to arm tracks on the fly may sound like a really useful feature, but doing so isn't actually such a smooth process—actual playback tends to be momentarily interrupted.

## Audio Monitor Window

Once a track or a set of tracks has been record-enabled and placed online, you will be able to view the incoming signals in Digital Performer. Input signals can be viewed in the Audio Monitor window (see Figure 7.6) or the Meter Bridge window (discussed in “The Meter Bridge Window” section later in this chapter). Besides displaying incoming signal levels in the Audio Monitor window, DP allows you to change the location of take files and control how these files are named. (Refer to Chapter 6 for details on naming take files.)



**Figure 7.6** The Audio Monitor window.

To set input levels with the Audio Monitor window:

1. When a track or a set of tracks has been armed, its corresponding input row will be highlighted (see Figure 7.7). If you have the Scroll to Record Enabled Inputs option enabled from the mini-menu (which is turned on by default), the Audio Monitor window will automatically scroll to display the record-enabled track.
2. You can click on the Input Monitor button for the record-enabled track in order to hear the incoming signal (although record-enabling a track will automatically allow you to



**Figure 7.7** In this example, three stereo audio tracks have been armed. Besides being highlighted, the take-file names appear in the take-file columns.

hear the signal even without the Input Monitor button selected). You can do this in the track strip of the Mixer window or in the Monitor column of the Tracks window.

3. Check your audio input level. You should see the incoming signal (represented in green) in the input level window.
4. You can change the meter resolution in the Audio Monitor window by choosing Level Range from the mini-menu. Remember that signals recorded at low levels may result in increased noise levels, while signals that are too hot can clip, causing unwanted digital distortion. When operating in the MOTU Audio System (MAS), the Retain Clip option (in the Audio Monitor window's mini-menu) is enabled by default to help you see whether a signal actually clips. If you notice that clips are not being retained, check to see whether this option is actually turned on.

---

**Tips on Setting Input Levels** Even after your input levels are set, you'll probably want to keep the Audio Monitor or Meter Bridge open throughout the recording process. Input levels tend to change over the course of a recording session, so it's good to have constant visual feedback warning you when adjustments are necessary. Also keep in mind that performers tend to play louder and with more energy when you actually press the red button, so you should set your levels accordingly. If the incoming audio gets too high and overloads (most likely resulting in distortion), you may want to rerecord it. Remember that digital distortion can instantly render a great performance useless.

---

In addition to highlighting a track's corresponding row in red in the Audio Monitor window, DP will also display take-file names in standard text, along with the available hard disk space, but only when a track is armed. Checking these settings is an important part of the DP recording process.

To check the take-file location and amount of available hard disk space:

1. When a track is armed, the take-file location name appears. The default take-file location is the project's Audio Files folder. The abbreviated take-file location will appear in the Take Folder column. Double-click on the folder name to display the full path. You

can also change this location by double-clicking on the take-file name in the Take File column.

2. This will open a dialog box, asking you to choose a new take folder for the specific audio input (see Figure 7.8).



**Figure 7.8** Double-clicking on the name of a take file within the Take File column will open the Finder and allow you to change the location of the take file.

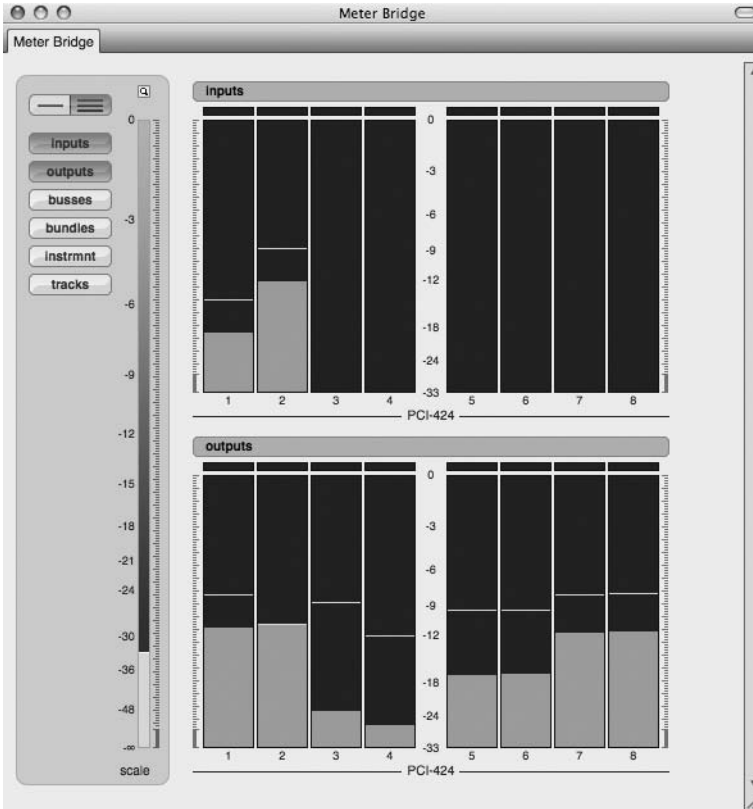
3. Choose the location for the take file. Keep in mind that you can even designate separate hard drives for individual take files.
4. After confirming the take-file location, be sure to check on the amount of free hard disk space. Click to toggle the display between minutes and megabytes. It's always best to have extra disk space when recording audio, so you should plan accordingly.

Besides setting levels in DP, you must take care that the signal chain going into DP has been set properly in order to get the most out of your audio signal. Check the integrity of the audio at each point in the input chain to maximize levels and keep noise at a minimum.

## The Meter Bridge Window

Analyzing levels in your DP project can get a little frustrating if you find yourself switching among the various windows in order to view specific levels. In addition, trying to balance more precise input levels via the Audio Monitor's level range can be quite the strain on the eyes.

The Meter Bridge window (see Figure 7.9) displays level meters for all inputs, outputs, busses, audio tracks, and instrument tracks. You can choose to view them independently or simultaneously by clicking on their buttons in the left portion of the window. All of the routing information displayed in the Meter Bridge window reflects your studio configurations in the Bundles window. Any changes made in the Bundles window will immediately appear in the Meter Bridge. (Refer to Chapter 4 for more information about routing assignments and bundles.)



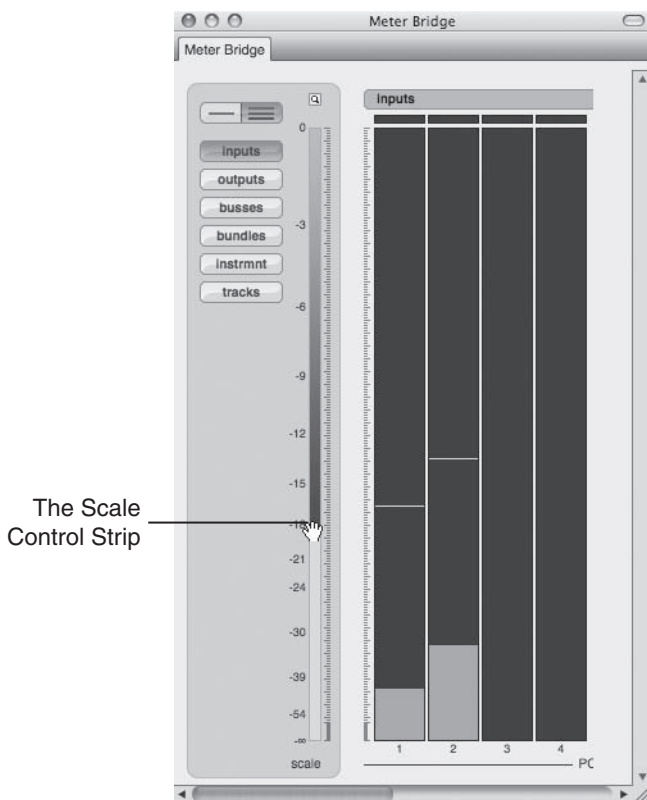
**Figure 7.9** DP's Meter Bridge window can display level meters for all inputs, outputs, busses, audio tracks, and instrument tracks. In this example, you see a Wrap view (a bird's-eye view) of inputs and outputs.

The Meter Bridge window provides a more detailed look at the audio levels in your DP project. As in the Audio Monitor window, you can specify the level range in decibels as well as magnify the width of the meters. You can also customize the layout by choosing the Linear View option (which puts the meters in a horizontal row) or the Wrap View option (which creates a bird's-eye view of all selected meters). Let's take a look at the various options of Meter Bridge window.

To customize the Meter Bridge window:

1. Open the Meter Bridge by choosing Studio > Meter Bridge or by using the keyboard shortcut Shift+Z. The Meter Bridge will appear.
2. Use the Meter buttons on the far left to select the sets of meters you want to view. For example, if you are getting ready to record, it might be beneficial to view the input meters during the recording process.

3. Directly above the meter buttons are the View buttons. Here you can choose Linear view or Wrap view. Keep in mind that if you have multiple meter buttons selected, horizontal scroll bars are provided if you run out of screen space in Linear view.
4. Adjust the level range using the Scale control, as shown in Figure 7.10. Simply move your cursor over the scale strip, and it will change to a hand. Use the hand to move the range up and down. You will notice the bottom number changing to the left of the meters as you move the Scale control.



**Figure 7.10** Adjust the level range of the Meter Bridge (seen here in Linear view) by dragging in the Scale control strip.

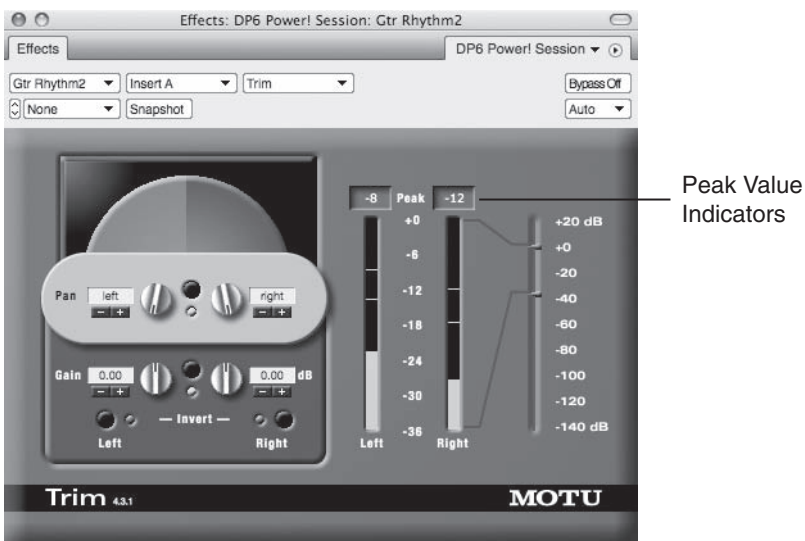
5. Next, adjust the width of the meters by clicking on the small magnifying glass located above the Scale control strip.
6. Finally, as with other DP windows, you can leave the Meter Bridge open as you work, pop it into or out of a Consolidated Window set, or simply close it.

**Level Ranges and Clipping** Depending on the nature of the music being recorded, adjusting the Scale control strip in the Meter Bridge can be very helpful for viewing levels in a more precise manner. For example, if you know you will be recording audio that will most likely involve hotter signals—say, rock guitar tracks—consider adjusting the Scale control to a lower number. This will provide a smaller spectrum of level ranges, making it easier to be more accurate while monitoring. In other words, your incoming signal could be represented in the meters between  $-20$  dB and  $0$  dB, rather than  $-51$  dB and  $0$  dB.

Level meters in the Meter Bridge will turn red for a few seconds after clipping occurs to let you know that a signal has clipped. If the meters remain red for a longer period of time, this signifies continuous clipping, and some level adjustments may need to be made. Also, meters have a peak level indicator. This is the last part of level reading (in green) that has a delayed dissolve from the screen. Unfortunately, you have to be pretty quick to catch it, and, as of the current version of DP, there is no peak-hold setting (where peak values stay onscreen until cleared).

## DP's Trim Plug-In

If you need to utilize a peak-hold feature, you can use DP's Trim plug-in (see Figure 7.11). This handy little plug-in is another great way to monitor levels in your project. Like the Meter Bridge and the Audio Monitor windows, you can adjust the level range to the needs of your session. The



**Figure 7.11** DP's Trim plug-in is another great way to monitor levels within your project. Notice the peak value indicators.

Trim plug-in utilizes peak hold in two different ways—visually in the meters and by numbers in the Peak Value windows. To clear the peak value indicators, just click in each window to reset them. This is not the only feature of the Trim plug-in, but it is one of its most powerful with regard to monitoring levels while recording.

To use the Trim plug-in to view levels and peak-hold values:

1. First create an aux track. The default keyboard shortcut is Control+Command+A.
2. Rename the track Input Trim or something appropriate and make sure it is online.
3. Assign the aux track's input as if you were recording on an audio track. Make sure you choose the input for the signal you want to record.
4. Assign the aux track's output to whatever output you're using to monitor with (Analog 1-2, for example). These are typically the outputs connected to your speakers.
5. Insert DP's Trim plug-in on the aux track (in the Inserts menu of the aux track's strip in the Mixer window).
6. Once the Trim plug-in is inserted, double-click on its name in the track strip to open the Trim plug-in window.
7. Test your signal levels and peak indicators in the Trim plug-in window.
8. You can now create an audio track with the same inputs and outputs and begin recording. The signal levels you see in the Trim plug-in window should be the same signal levels that will be recorded.

---

**The Trim Plug-In as a Gain Stage** In the aforementioned example, you set up DP's Trim plug-in as a way to monitor levels and peak indicators in your project. You can put the plug-in to further use by using it as a tool for changing the volume levels of your incoming signal. In Step 4, simply assign the aux track's output to an available bus. In Step 8, simply assign the audio track's input to the bus used for the aux track's output. Now record-enable the audio track, and any adjustments made in Gain value windows of the Trim plug-in will affect the recorded signal. Keep in mind that you must be in Monitor Record-Enabled Tracks through Effects mode in the Input Monitoring Mode window. (See the "Recording with Effects" section later in this chapter.)

---

## Recording Audio

In previous chapters, I discussed the proper optimization and setup procedures for your Mac, connected audio hardware, and the Digital Performer project. Now your Digital Performer system should be configured for recording audio, also. If you are still hesitant or unclear on the

steps leading up to this point in the music production process, you might want to refer to Chapters 2 and 4 before proceeding.

Once you have armed your tracks and checked the levels of the incoming audio signal with the Meter Bridge or the Audio Monitor, you will be ready to begin recording.

To record audio into DP:

1. Start by moving the Counter location to the point where you want to begin recording. You can type a location directly into the Control Panel's Counter window, or you can click and drag the Playback Wiper to the desired location.
2. If you need to, turn on the built-in click. Though not strictly necessary, it's always a good idea to record your audio and MIDI data to a click, preferably the click within Digital Performer. Doing so will ensure that your recorded tracks will be properly aligned with DP's grid, allowing you to take full advantage of the program's editing features. (Refer to the "Setting Up a Click" section of Chapter 4 for a detailed look at the setup procedures for DP's built-in metronome.)
3. To start recording, click on the Control Panel's Record button. (You can also begin recording by pressing the number 3 key on your computer keyboard's numeric keypad. If you have a MIDI keyboard controller attached to your system, you can also send a MIDI message to begin recording. For specific information on assigning a MIDI event to a specific command, see the "Navigating the Commands Window" section in Chapter 5.) Once recording begins, DP will display the audio as a red bar scrolling from left to right on your screen.
4. When you are finished, click the Control Panel's Stop button. (You can also use the keyboard's spacebar or the 0 key.)

Once recording had stopped, Digital Performer will take a moment to process the audio data and convert the red bar to a normal waveform display. Only when recording has stopped and the waveform display has been fully updated will you be able to edit the soundbite. Newly recorded audio will appear in the Soundbites window. Remember to name your tracks before recording in order to easily recognize the new sound files in the Soundbites window!

To undo recorded audio:

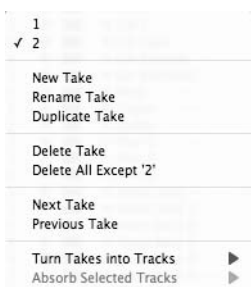
1. To undo a record pass, choose Edit > Undo. You must immediately choose this option before beginning another action. Once undone, the take file will be placed in the trash. Only when another undoable action is performed will the discarded take file be deleted from disk.



2. If you decide to undo a recording after you have taken other actions, you will need to use the Undo History List. Keep in mind that any actions that were taken after the undone action will also be undone in the process. Refer to Chapter 6 for details on the Undo History window.

## Recording and Managing Takes

*Takes* are basically alternative versions of any data that's stored within a Digital Performer track. By default, DP records data into Take 1 of a track (see Figure 7.12). A track can contain an unlimited number of takes.



**Figure 7.12** The Take Column menu allows you to manage takes for individual tracks.

Takes are managed through DP's Take menu, found in the Tracks List or the Sequence Editor Information panel. The options are as follows:

- **New Take.** This option creates a new, blank take.
- **Rename Take.** This option allows you to rename the currently selected take. Current takes are indicated with a check mark.
- **Duplicate Take.** Choose this option to create a duplicate of the current take.
- **Delete Take.** The option deletes the currently selected take.
- **Delete All Except.** This option discards all of the takes except the current take.
- **Next Take.** This option selects and displays the next available take.
- **Previous Take.** This option selects and displays the previous available take.
- **Turn Takes into Tracks.** Use this option to remove takes from a track and “explode” them into separate tracks. The Current Take submenu option will appear only when there is more than one take and allows you to select the current take or all takes.
- **Absorb Selected Tracks.** This option collects takes from other tracks and places them into the current track from which you are using the Absorb Selected Tracks command. The

Current Takes and All Takes submenu options allow you to absorb the current take or all takes from the selected tracks.

To create a new take for recording:

1. Arm the appropriate audio tracks.
2. Click on the track's Take menu and choose New Take. This will create a new blank take while preserving the track's original data in the previous (original) take.
3. To rename the new take, simply Option-click on the name of the take within the track's Take column. You can also use the Take menu's Rename Take option.
4. To return to the original take, click on the track's Take menu column and select it with the mouse.

---

**Keyboard Shortcuts for Managing Takes** You must arm and select the appropriate tracks before you can use keyboard shortcuts to manage takes. Remember that you can select a track by clicking on its name. Shift-click to make multiple track selections. Also, if there are no record-enabled tracks, all take commands (such as New Take, Delete Take, and so on) will apply to the selected track.

- To create a new take, press Control+Option+N.
  - To delete the current take, press Shift+Control+Delete.
  - To erase the contents of the current take, press Option+Control+Delete.
  - To proceed to the next available take, press Option+Control+up arrow.
  - To proceed to the previous available take, press Option+Control+down arrow.
- 

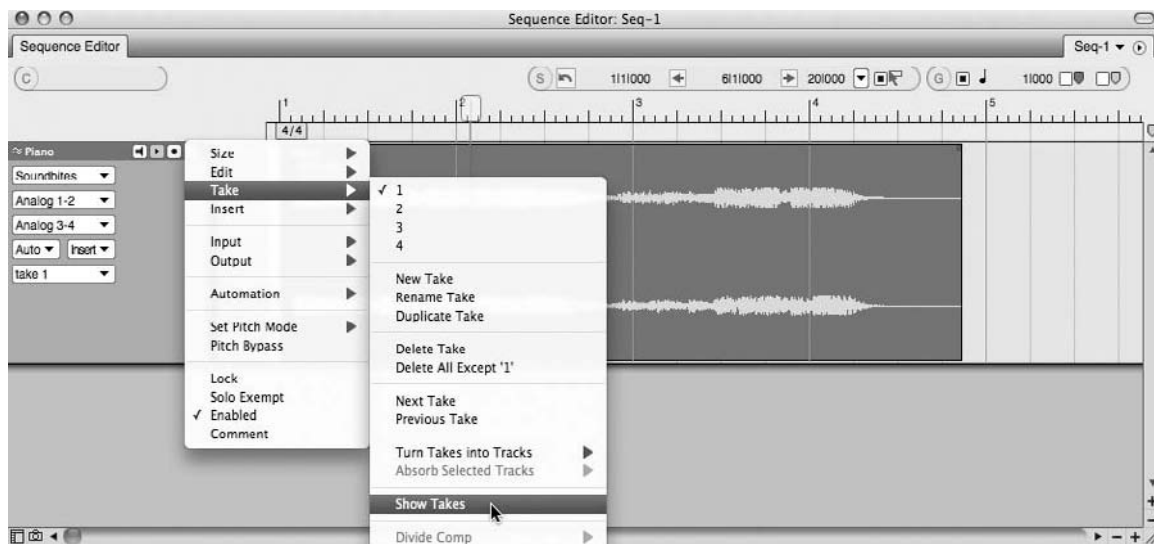
### **Comp Takes (or Track Comping)**

Let's talk more take talk (in this case, easier done than said!). The phrase *Comp Take* is short for "composite take" or simpler yet, "comping." Basically, comping involves the process of selecting pieces of regular takes and combining them into one unified take. For example, let's say you've recorded four separate piano takes. You can use the Comp Takes feature to pick the best parts of each take and seamlessly play through the chosen pieces as if they all reside on the same track. This powerful feature is new to Digital Performer 6 and can undoubtedly

help make recording audio a much more efficient and orderly exercise. The scope of DP's new comping power is fairly substantial, so for the sake of this book, let's explore the basics.

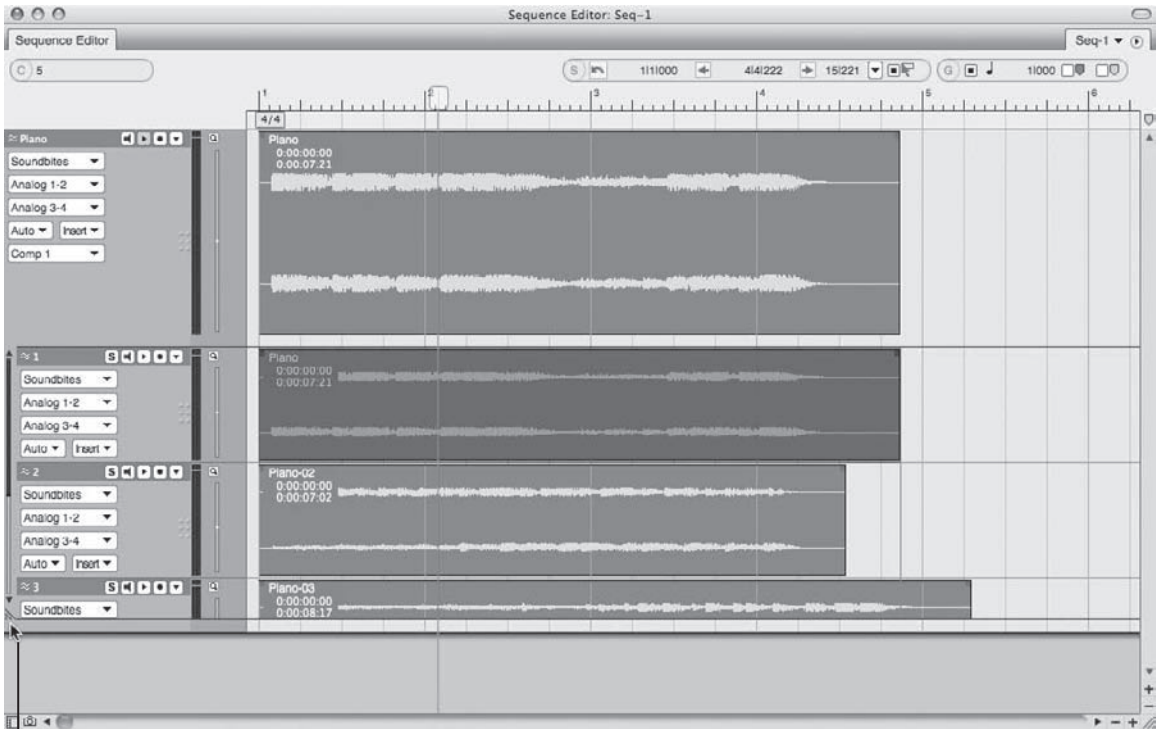
Assuming you have already recorded an audio track with numerous takes, to create a Comp Take for the track:

1. In the Sequence Editor, choose Track Information panel > Track Settings > Take > Show Takes (see Figure 7.13).



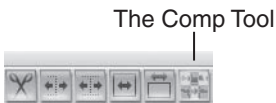
**Figure 7.13** A Comp Take is created by using the Show Takes option in the Take menu of the Track Information panel.

2. A full editable Comp Take track is created along with a scrolling, resizable Take Grid. (By default, DP will use *Comp 1* as the Comp Take name.) Use the scroll controls to reveal all takes in the Take Grid, as shown in Figure 7.14. Each take will also appear in the Sequence Editor's Track selector.
3. The Comp Take contains a copy of the contents of the current take at the time the Show Takes command was selected, as indicated by the current take's shading in the Take Grid.
4. Now, use Shift+O (or Windows > Tools) to open the Tool palette and select the Comp tool, as shown in Figure 7.15.
5. Simply drag over the desired portion (region) of a take to add it to the Comp Take track. The selected regions of each take will be shaded and outlined by red dividers (as shown in Figure 7.16).



The Scroll Grid Resize Handle

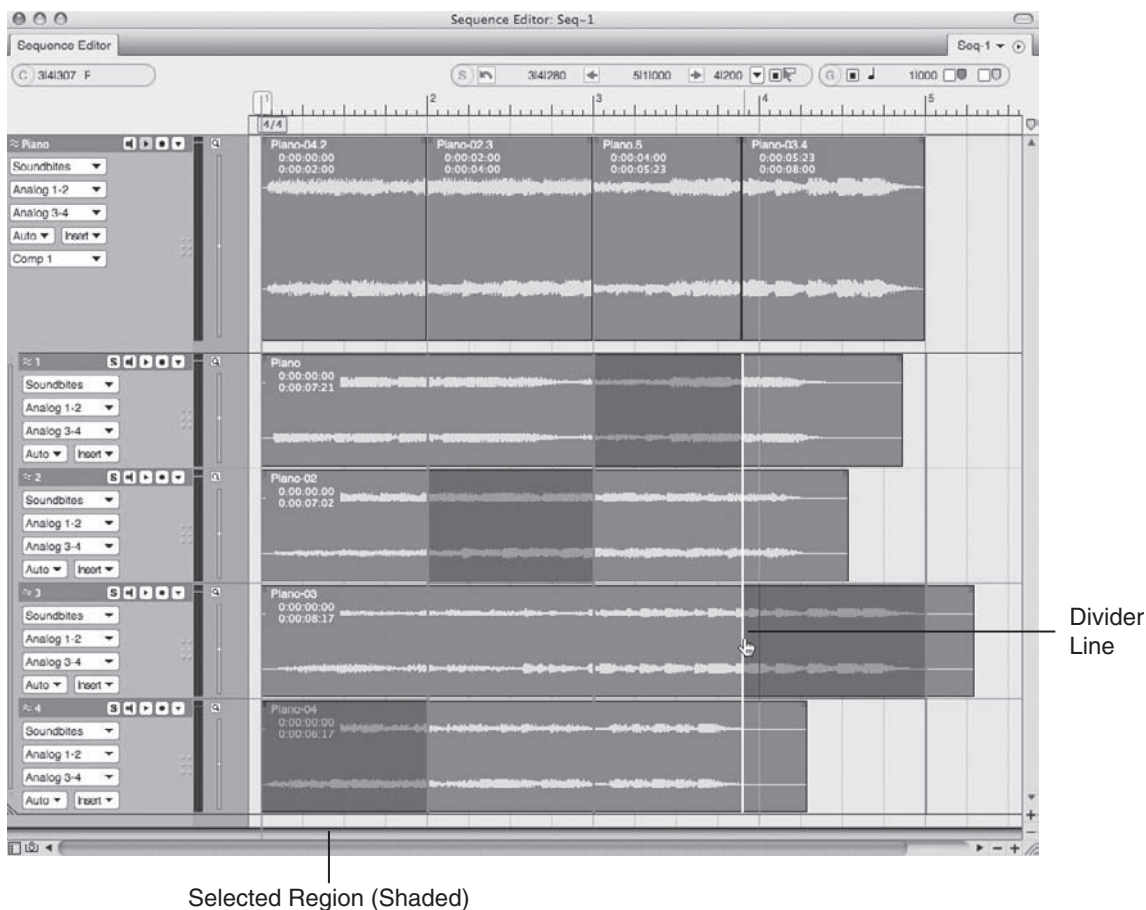
**Figure 7.14** Once a Comp Take is created, all takes can be revealed using the Resize handle of the Take Grid. In this example, Take 1 is the current take and is shaded in the Take Grid.



The Comp Tool

**Figure 7.15** The Comp tool in DP's Tool palette. Consult the DP6 User Guide for information regarding advanced Comp tool operations.

6. Use the finger pointer to move each divider line as desired by placing the cursor over a divider line. Notice the Comp Take track updating as you select regions and/or move the divider lines.
7. To hide the Take Grid, go to Comp Take > Track Information panel > Take > Hide Takes.
8. Press Play on the Control Panel to play back your newly created Comp Take.



**Figure 7.16** Desired portions of each take have been selected, and the finger pointer is used to move divider lines.

---

**Manipulating Comp Takes** When a Comp Take is created and the Take Grid is revealed, you will notice that each take will have its own Track Information panel with many of the same controls as a standard audio track. You can resize, reorder, show/hide, rename, automate, and edit each take. However, if you make an edit (such as a fade) to a take's region currently being used in the Comp Take track, you will need to click in the edited region of the take with the Comp tool so the Comp Take track can inherit the changes. On the contrary, if you make a change to the Comp Take track itself, the corresponding regions of each take will not be affected (and clicking on said regions with the Comp tool will reset the Comp Take accordingly).

---

## Punching In and Out

The terms *punching in* and *punching out* refer to the process of starting and stopping recording in the middle of a track. Instead of recording from the very beginning of your project, you can start and stop recording at any point in a track during playback, regardless of how many tracks are armed. Digital Performer allows you to perform both manual, on-the-fly punches (punching in and out during playback) and automated punches. Automating a punch saves you the hassle of pressing the Record button on the Transport and allows you to perform very precise punches. This a great feature for when you are recording yourself, and you need your hands free to play an instrument.

Punching can occur within an empty track or in the middle of recorded material. Punching in the middle of existing audio to replace what is currently there is called *overdubbing*.

---

**Monitoring During the Overdub Process** To properly overdub audio data, you need to be able to hear (monitor) what already exists on a track. Auto mode allows you to do this. Auto mode automatically switches between the “live” input signal and playback (preexisting audio), depending on the state of the Transport. When playing back and not recording, you will hear playback of any existing audio material. As soon as recording is initiated (you’ve punched in), Digital Performer automatically switches to the “live” signal, allowing you to hear what you are actually recording. Once you punch out, you will immediately hear playback of the material that already existed within the track.

---

To punch in manually on the fly:

1. Arm the appropriate audio tracks.
2. Press the spacebar to begin playback.
3. Press the number 3 key on your computer keyboard’s numeric keypad to punch in (begin recording). Or, press the Control Panel’s Record button to begin recording.
4. Press the number 3 key again to punch out (stop recording).
5. Repeat Steps 3 and 4 as needed.
6. When you are finished recording, press the spacebar to halt playback.

To automate a punch:

1. Arm the appropriate audio tracks.
2. Enable the Control Panel’s Auto Record button (see Figure 7.17). Punch In and Out fields will appear within the Status Strip, and the Auto Record button will be highlighted.



The Auto Record Button

The Punch In and Out Fields

**Figure 7.17** The Control Panel's Auto Record button allows you to perform punches at precise locations within a track.

3. Enter the location for when recording is to start and stop. The punch-in point is where recording will begin, and the punch-out point is where recording will stop. These positions are represented by red arrows in the timeline of the Tracks or Sequence Editor window. (They can be moved manually for quicker adjustments.)
4. Position the playback cursor at a point before the punch-in location. Remember to give yourself or the artist enough pre-roll so that you can properly prepare for the punch.
5. Press the number 3 key on your computer keyboard's numeric keypad to begin recording. Once recording is engaged, playback will begin with the Record button flashing. Actual recording will begin at the specified punch-in point, and the Record button will be continuously highlighted. When the punch-out location is reached, Digital Performer will go out of Record mode, and the Record button will begin flashing again. Playback will continue until it is stopped.
6. Press the spacebar to stop playback.

---

**Tips on Performing Seamless Punches** Here are a few tips for getting the most out of your punches:

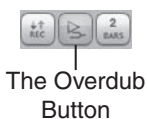
- When possible, punch in and out on a downbeat and avoid punching in the middle of a line or continuous note. Of course, you can always go back and "fix" your edit point if the punch is audible, but it's good practice to make your initial punches as seamless as possible, for when you are working on that "old school" analog recorder.
- When recording other performers, remember to give them sufficient pre-roll. If you're trying to overdub on an existing track, ask the performers to start playing or singing along as soon as they know where they are at in the recording. This will help ensure that they are breathing properly and will give them time to match their own tones and nuances from their previous performance. Continuity is a key factor in executing seamless punches.
- When recording vocalists, be conscious of their breathing and don't cut off the breaths.
- Set up markers before beginning an overdub session. Being able to quickly jump to any important locations within a track will keep your session running smoothly and,

most importantly, will keep your artists happy. There is nothing that will frustrate your performers more than having to wait while you try to locate that third chorus. See Chapter 11, “Arranging,” for information on using markers within your projects.

---

## Overdub Record Mode

Overdub Record mode is a handy feature that allows further control over the overdubbing process. Under normal recording circumstances (with Overdub Record mode off), existing audio (and/or MIDI data) is removed and replaced by new data when you punch in on a track. When the Overdub Record feature is enabled, however (see Figure 7.18), new data is placed on top of any existing soundbites. Deleting the new recording will reveal the original audio data, allowing you to quickly return to the previous performance.



**Figure 7.18** The Overdub Record Mode button.

Overdub Record mode can be combined with cycle recording to achieve a looping-style recording mode that automatically creates new takes during each record pass.

## Cycle Record Mode

Cycle, or *loop-style*, recording can be achieved by enabling both the Memory Cycle and the Overdub Record features (see Figure 7.19). This is handy for when you want to record multiple passes of audio or MIDI data over a specific section of a project. When cycle recording audio data, DP will automatically create a new take for each record pass, preventing the previous passes from being recorded over. You can also incorporate DP’s Auto Punch feature to initiate recording in a designated section within the Memory Cycle in and out points, essentially providing you with pre-roll and post-roll roll when cycle recording. However, with the Auto button selected, new takes will not automatically be created. You will simply be replacing the punch selection in each record pass.



**Figure 7.19** Enable the Memory Cycle and Overdub Record Mode buttons to cycle record within Digital Performer. The Status Strip’s Start and End times determine the length of the section that will be looped.



For even greater control over the cycle-recording process, utilize Digital Performer's comprehensive Polar window, discussed in "The Polar Window" note later in this chapter.

To enable cycle recording:

1. Engage the Memory Cycle and Overdub Record buttons within the Control Panel.
2. In the Memory Bar, specify the start and end points for the section to loop. The end time should be the beginning (or Count 1) of the measure where you want the loop to end. For example, when setting an 8-bar loop that starts on measure 1/1/000, the end time would be Measure 9/1/000.
3. Begin the recording process as discussed earlier in this chapter. Keep in mind that recording will be continuous and will create a new record take for each record pass.
4. To allow yourself some pre-roll and post-roll time during the cycle-record process, incorporate DP's Auto Punch In and Out feature (Auto Record). Turn on Auto Record and set the punch-in and punch-out times. (See the previous section on punching in and out for more information on this feature.)
5. Readjust your original Memory Cycle start and end times to reflect the changes. Now when you begin recording, DP will cycle through the specified section but will only record between the punch-in and punch-out points (see Figure 7.20).



**Figure 7.20** In this example, the Auto Punch In and Out feature is being used together with Cycle Record mode. The Transport is set to loop between Measures 1 and 6 but will only record audio between Measures 3 and 5. Incorporate the Auto Record feature to provide pre-roll and post-roll during the cycle-recording process.

---

**The Polar Window** Another great tool for performing loop-style or cycle recording is DP's Polar feature. (Polar stands for *Performance Oriented Loop Audio Recording*.) Polar is ideal if you are working alone and you need to record multiple passes of material. With Polar, you can record each pass either individually or in layers, and each pass is automatically stored as a new take that gets muted as you begin a new take. Polar can also be set up to start recording as soon as it receives an incoming signal or the incoming signal reaches a certain volume threshold. What makes Polar different from normal recording is that Polar records your material entirely into RAM rather than writing it to hard disk (ROM). This allows DP to instantaneously respond to newly recorded or overdubbed material. When you are finished, you simply record your RAM-based audio to hard disk using the normal recording process in DP! See the "Polar" chapter of your Digital Performer User Manual for more information.

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## Recording with Effects

When it comes to recording a signal *with* processing effects to disk (or tape), opinions vary widely. Some people will argue that you shouldn't risk screwing up your audio and that you can always add any processing in the mix, and others say that if you know what you want, then recording with effects will save you time from having to process later. Then there is the middle path, where engineers use effects such as mild compression to get a hotter signal to disk (tape) or brick-wall limiters to prevent digital distortion. Regardless of your philosophy, just keep in mind that there aren't any rules. Better safe than sorry, though, so if you are not confident about using effects during recording, save the processing for later. Once a signal is recorded with an effect, you can't remove it.

When you insert a plug-in or effect on a record-enabled audio track in Digital Performer, you won't actually be recording the effected signal to your hard drive. You will only be listening to (monitoring) the effected signal post-hard disk. This is like placing an effect in the "monitor section" of traditional signal flow. In other words, you hear the effect, but you are not recording it. To record a signal that has a plug-in inserted in it, you need to send the effected signal to the hard disk to be recorded. How do you do this? By creating an "input" fader, then bussing (sending) the effected signal to an audio track (see Figure 7.21).

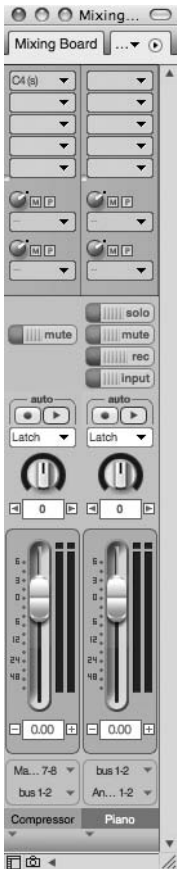
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**The Monitor Record-Enabled Tracks Through Effects Setting** Don't forget to select Monitor Record-Enabled Tracks through Effects in the Input Monitoring Mode window (Setup > Configure Audio System > Input Monitoring Mode). If this option is not selected, you can still record the signal with the applied effect plug-in; however, you will not be able to hear the effect until recording is finished and you begin playback.

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To record an effected signal to disk:

1. First create an aux track. The default keyboard shortcut is Control+Command+A.
2. Rename this track Input Fader or something related to the inserted plug-in (such as Compressor or Reverb). It's always good practice to name your tracks as you create them. This will keep you organized and will save you many headaches later.
3. Assign the aux track's input as if you were recording on an audio track. Be sure to choose the input for the signal you want to record.
4. Assign the aux track's output to an available bus. If no busses appear in the track's output options window, select a bus from the New Stereo Bundle (or mono) drop-down menu. (Refer to Chapter 2 for more information regarding busses.)
5. Now create an audio track. Assign its input to the same bus as the output of the aux track. The signal coming into the aux track is now routed through the audio track.



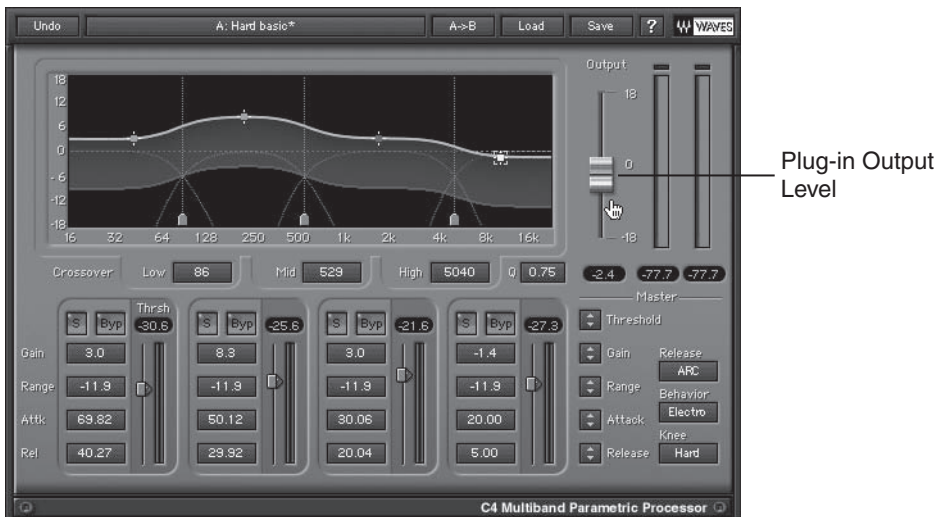
**Figure 7.21** A basic example of recording an effected audio signal to disk. In this setup, the aux track (named Compressor) receives the incoming signal and processes it with a Waves C4 stereo compressor plug-in. The effected signal is then routed from the aux track, via Bus 1-2, to the Piano audio track, where it is recorded to disk.

6. The output assignment for the audio track should be whatever output you use to monitor with (Analog 1-2, for example). These are typically the outputs connected to your speakers.
7. Arm the track and check your levels with the Audio Monitor window or the Meter Bridge.
8. Now insert the desired effect on the aux track or input fader you created in Step 1.
9. Adjust the effects parameters to your liking.

**Audio Levels and Proper Gain Structure** Once you have set your plug-in parameters, you may notice that there is a rise or drop in input level because of the processing that is occurring. Be careful that you don't re-adjust the input level going into DP (your preamp, for example) to compensate! If you do, you will be increasing the signal level going into your audio interface, possibly distorting the audio and throwing off all your plug-in parameter settings in the process.

Here is where proper gain structure is important. You need to adjust audio levels at the output stage of the plug-in. If you are inserting a compressor, for example, adjust the output level to boost or cut the signal level being sent from the plug-in to the audio track (as shown in Figure 7.22). If there is no available output level adjustment on the effect, then insert DP's Trim plug-in and use the gain settings to adjust the output of the aux track there (as discussed earlier in this chapter).

Be sure to keep an eye on the Audio Monitor or Meter Bridge window!



**Figure 7.22** The Waves C4 (s) compressor provides an additional gain stage to control the level of the signal being sent to the audio track.

10. If necessary, adjust the output level of the plug-in to compensate for the processing. Check the levels of the audio track in the Audio Monitor window or the Meter Bridge while making any changes.
11. Begin recording, and the effected signal will be recorded to disk.

---

**Simultaneously Recording the Dry and Effected Signals** If you would rather be safe than sorry, you can simultaneously record the dry and effected signals by creating another audio track and assigning its input to the same input as the aux track (input fader). The incoming signal is sent to two separate tracks for recording, resulting in one with the effect and one without the effect.

---

## Importing Audio

In addition to recording audio directly to a track, you can import existing audio into Digital Performer. This audio can reside in DP's native Sound Designer II format or can exist in other formats, such as AIFF, MP3, WAV, Broadcast WAV, REX, and even as AVI and QuickTime movie soundtracks. Imported compatible audio files will remain unchanged, while all other formats will be converted to the project's audio file format.

Before you begin importing audio, there are a few settings that you should take a look at.

### Sound File Locations

Located in Preferences and Settings is the Audio Options window. This global preference window determines where imported, converted, and processed audio is stored. The Soundfile Locations preferences are described in the following sections.

#### ***Copy Audio to Project Folder***

The settings contained in this section of the Audio Options preferences determine where imported audio will be stored within a project. By default, imported files will always be copied to the project folder.

- **Always Copy Imported Audio to Project Audio Folder.** This option tells DP to always copy any imported audio files to the project's Audio Files folder. This option is enabled by default and is convenient if you want to consolidate all of your project audio files into one central location.
- **Only When Format Is Not a Playable File Format.** This option will convert and import any non-native formatted audio files into the project's Audio Files folder.
- **Never.** This option will place any imported files—even if they need to be converted—in a specified location.

---

**To Import Means to Duplicate** Keep in mind that files imported with the Import Audio command are never removed from their original locations. Instead, duplicate files are made and imported into DP.

---

### ***Store Converted or Processed Files***

This setting specifies where converted and processed audio will be stored. By default, all processed and converted files are saved to the project's Audio Files folder. Keep in mind that the last two options become available when the Always Copy Imported Audio to Project Audio Folder or the Only When Format Is Not a Playable Format option is selected.

- **In Project Folder.** This option will place converted and processed files in the project's Audio Files folder.
- **With Original File.** This option will keep converted and processed files with the originals.

### **Automatic Conversions Preferences**

Located in the mini-menu of the Soundbites window are the Automatic Conversions preferences. When audio that does not conform to a project's sampling rate, bit depth, or tempo is imported into Digital Performer, these preferences will govern the conversion of those files and force them to adhere to the project's current settings. Processing is done in the background and can also be used to convert the files of an existing project to a new sampling rate, bit depth, and/or tempo. To turn on Automatic Conversions, simply go to Digital Performer > Preferences > Automatic Conversions and select Enable Automatic Conversions for this project. You can also toggle the automatic conversions setting by using the default keyboard shortcut Option+- (minus).

The Convert Sample Rate, Convert File Format, Convert Interleaved Format, and Convert to Sequence Tempo options provide you with the setting choices explained here.

- **On Import.** This option will force files that do not match the project to be converted on import. Files that do not match the project tempo will be converted when they are placed on a track.
- **Whenever File Doesn't Match.** This option does the same thing as the On Import option but will also convert audio anytime there is a circumstance in which a file's settings differ from the project. For example, if you change the sample format in the middle of a project, DP will automatically convert existing soundbites to the new setting.
- **When Bite Is Added to a Track.** Unique to the Convert to Sequence Tempo option, this setting will force a soundbite that contains embedded tempo data to conform to the sequence tempo when added to a track.
- **Never.** Choosing this option will turn off Automatic Conversions for the specific file setting. Remember that you can use the Enable Automatic Conversions for This Project option to globally enable or disable Automatic Conversions for a project.

---

**Convert to Sequence Tempo** Files that contain embedded tempo data—such as REX files and Apple Loops, for example—will automatically adjust to the sequence tempo if you

have the Convert to Sequence Tempo preference set to either the When Bite Is Added to a Track or Whenever File Doesn't Match setting.

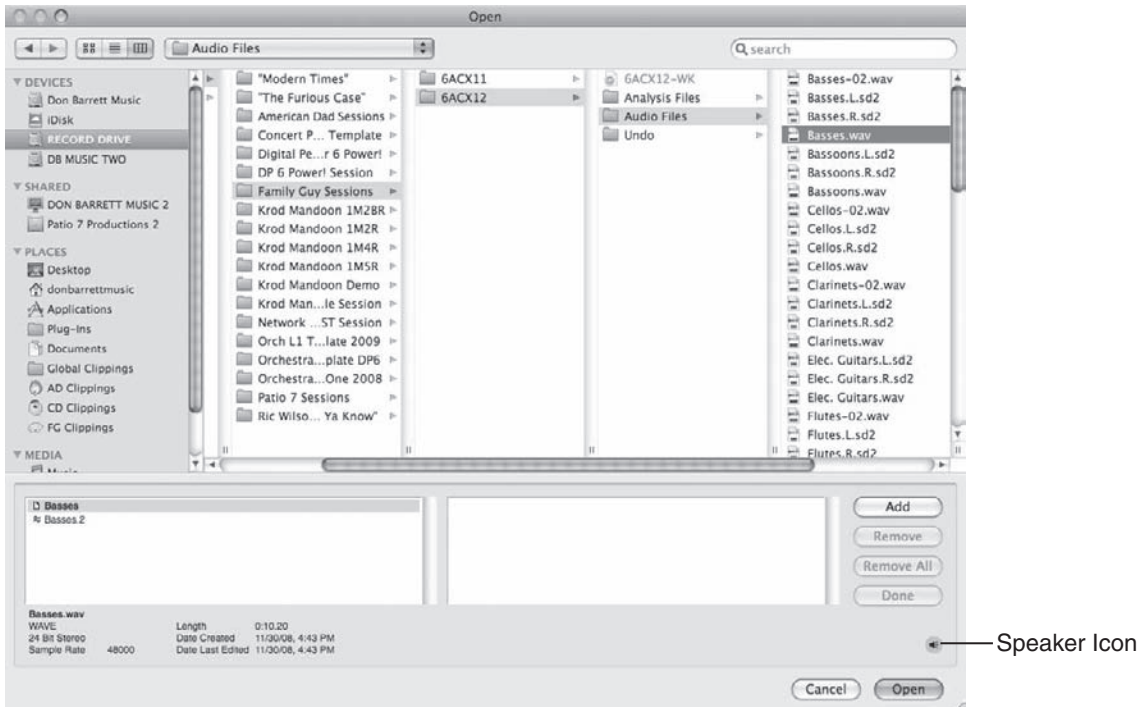
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## The Import Audio Command versus Drag and Drop

There are several ways to import audio into Digital Performer, including using the Import Audio Command and dragging and dropping files directly into DP. The benefit of using the Import Audio command is that you can import specific regions that are associated with an audio file. With the drag-and-drop method (though it is more convenient at times), you are limited to the importation of entire files. The two methods of importing audio are further described here.

To import audio without leaving Digital Performer, first choose one of the following methods for importing:

- Choose File > Import Audio.
  - Press the Command+F1 default keyboard shortcut.
  - From the Soundbites window, choose Import Audio from the mini-menu.
1. When you use one of the methods for importing audio, the Import Audio dialog box will open, allowing you to audition audio files before they are imported into DP. This window also lets you import soundbites, or individual *regions*. Regions associated with a sound file automatically appear underneath the parent file in the Add list.
  2. Navigate to the desired folder/hard disk.
  3. Select the file you want to import. The file will appear in the bottom-left pane of the Import Audio window. The audio file will be indicated in bold type, with any individual regions listed below the parent audio file.
  4. If you want to audition the file or regions before importing, click on the speaker icon, located below the Done button, to enable the Audition feature (see Figure 7.23).
  5. Highlight the name of the file in the left pane and click the Add button to place the file or region in the To Be Imported column (right pane).
  6. If you decide that you do not want to import a file that has been placed in this column, select it and click the Remove button. Use the Remove All button to clear the list of any files or regions.
  7. Once you have added your selections to the To Be Imported column, click OK. The files and/or regions will be imported into DP.



**Figure 7.23** Click the speaker icon to enable the Audition feature and audition a selected soundbite or region.

To import audio using the drag-and-drop method:

1. Before you import any files, decide whether you want DP to automatically convert the files to the project's current settings. (See the "Automatic Conversions Preferences" and "Sound File Locations" sections of this chapter.)
2. Locate the file you want to import from the Mac's Finder window. You can hold down the Command key and press the Tab key to quickly navigate to the Finder (or any open application) within Mac OS X. Tab to the Finder application in the list and release the Command key.
3. With both the selected file and the target Digital Performer window visible, click and drag the file into DP.
4. If the Automatic Conversions feature is turned on, DP will automatically convert the file to the project's current settings and allow for immediate playback of the file. If you have Automatic Conversions disabled, the file will appear with an X icon next to the file name in the Move column of the Soundbites window, as shown in Figure 7.24. In addition, if the soundbite resides on a track, it will appear dimmed within the Sequence Editor.





**Figure 7.24** Files that cannot be played (say, the sample rate does not match) will appear in the Soundbites window with an X icon in the Move column.

**Dragging Files into DP** You can drag files to any windows that hold audio. You can drag them directly into an audio track as long as the channel format is the same. For example, you cannot drop a mono file onto a stereo track, and vice versa. If you need to drag files of mixed channel formats, drag them into the Soundbites window instead.

**Exporting Audio Files via Drag and Drop** You can also export audio files by dragging them from DP and dropping them into a Finder window or on the desktop. Exported files will be in the format of the current project.

# Summary

Digital Performer offers a powerful approach to digital audio, with sophisticated audio recording and importing capabilities. Extensive features, such as Comp Takes, allow you to further modify your recording operations, while the dedicated Audio Monitor and Meter Bridge windows provide visual feedback during the audio recording process. In addition to its standard recording capabilities, Digital Performer’s Polar window provides a self-contained RAM-based loop-recording module.

# 8

## Recording MIDI

**D**igital Performer provides a number of powerful features for managing how MIDI is handled within a project. In this chapter I will discuss the basic process of recording data on your MIDI tracks, as well as how to overdub MIDI data, cycle record, step record, and record with MIDI quantizing. In addition to these MIDI recording-related operations, I'll discuss other MIDI features, such as the Input Filter, MIDI Patch Thru, interapplication MIDI, and device groups.

Following is a list of topics covered in this chapter:

- How to use the MIDI Monitor window to verify incoming MIDI signals
- How to alter recorded MIDI data using the Input Filter and Input Quantize commands
- How to create multiple MIDI output destinations with MIDI device groups
- How to select MIDI patches for specific MIDI channels
- How to set up MIDI tracks for recording
- How to output MIDI data to external MIDI devices and virtual instruments
- How to record MIDI data
- How to overdub, punch in, cycle record, and step record MIDI data

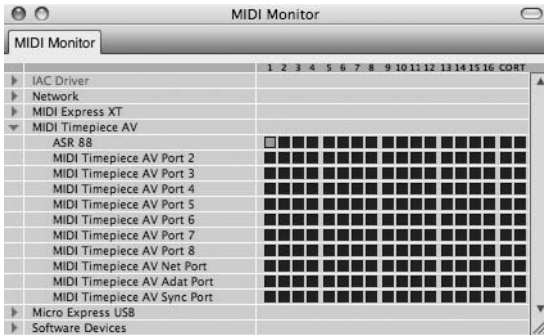
### MIDI-Related Windows and Commands

In this section—before you dive into the actual MIDI recording process—I'll discuss a few of Digital Performer's MIDI-related windows and commands that can be used to affect how MIDI data is recorded within a project.

#### The MIDI Monitor Window

The MIDI Monitor window, shown in Figure 8.1, provides a visual display of any MIDI data, system controller information, or MIDI sync data (such as MIDI beat clocks, DTL, DTLe, and system reset commands) that is being received by Digital Performer. Use this window to verify that DP is actually receiving MIDI signals from a connected MIDI device. To open the MIDI

Monitor window, choose Studio > MIDI Monitor or use the default keyboard shortcut Shift+W.



**Figure 8.1** The MIDI Monitor window.

Each MIDI interface that is connected to DP in the current Audio MIDI Setup (AMS) configuration (explained in Chapter 2) will appear in the MIDI Monitor window. Click the MIDI interface’s disclosure triangle to reveal MIDI devices that are connected to the interface. Each device row displays a blue indicator box that will light up when a MIDI signal is being received on a specific MIDI channel (numbered from 1 to 16). The Co (*System Common*) indicators display MIDI data that is non-channel-specific, such as system exclusive data. The RT (*System Real-Time*) indicators display real-time sync data, such as MIDI beat clocks.

Keep in mind that the Input Filter (explained in the next section) has no effect on the MIDI Monitor window.

## The Set Input Filter Command

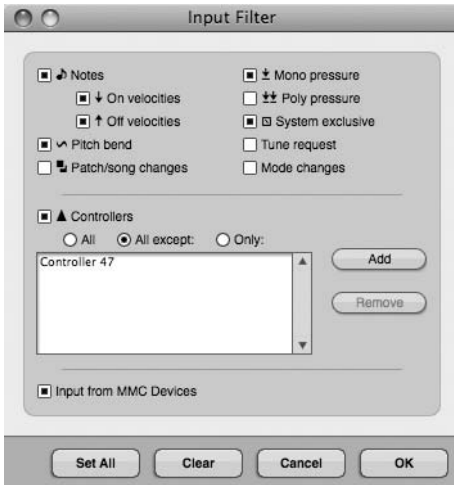
The Input Filter, shown in Figure 8.2, “filters” incoming MIDI data—it basically determines what type of MIDI data can be recorded (or not recorded) in a MIDI track. For example, you can use the Input Filter to allow on-velocities to be recorded in a MIDI track, but any mod-wheel messages will be ignored (“filtered” out). Choose Setup > Set Input Filter to open this window. Be aware that these settings are global and will affect all MIDI data that is recorded.

To prevent a specific type of MIDI data from being recorded on a track:

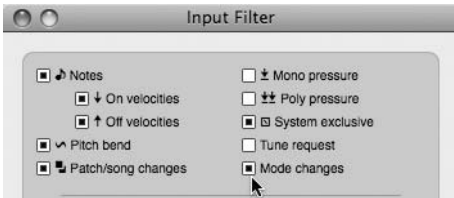
1. Open the Input Filter window by choosing Setup > Set Input Filter.
2. Uncheck the box located left of the data type, as shown in Figure 8.3.

To determine the type of MIDI controller data that is recorded:

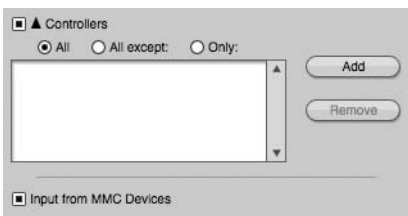
1. Enable the Controllers section of the Input Filter window by clicking on its check box.



**Figure 8.2** The Input Filter allows you to filter out MIDI data that you do not want to record.



**Figure 8.3** Simply uncheck an item to prevent it from being recorded.



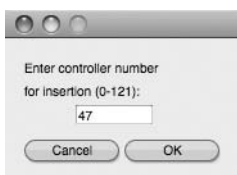
**Figure 8.4** Use the buttons located below the Controllers check box to determine the types of controller data that are recorded.

2. Use the buttons located below the Controllers check box to quickly determine the type of data that will be affected, as shown in Figure 8.4.
  - **All.** Click this option to record all types of MIDI controller data.
  - **All Except.** Click this option to record all types of controller data except the specific controller numbers added to the Controllers list (explained in the next section).

- **Only.** Click this option to record only the controller numbers added to the Controllers list.

To add or remove a controller number from the Controllers list:

- To add a controller number, click the Add button and type the controller number in the pop-up window, as shown in Figure 8.5. Click OK to enter the controller number into the Controllers list.



**Figure 8.5** The Controllers section pop-up window.

- To remove a controller number, click on the specific number (which will become highlighted in blue) and click the Remove button. To quickly select more than one controller number in the list, drag with your mouse.

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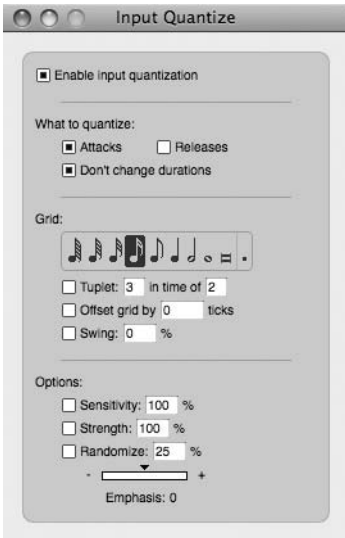
**The Set View Filter Command** Similar to the Input Filter I just discussed, the View Filters window determines the type of MIDI data (already contained in a project) that is displayed within a project or Event List. Soundbites, audio volume, and panning, as well as automation data, can also be affected. See Chapter 10, “Editing,” for more information on the View Filters window.

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## The Input Quantize Command

Use the Input Quantize command, shown in Figure 8.6, to quantize incoming MIDI data that is being recorded to a track. This is a destructive process, meaning that your MIDI data is automatically quantized and then recorded to the specified MIDI track. This feature is very useful when you want to automatically “fix” the timing of your performance and you do not wish to make manual adjustments after your MIDI track is recorded. For nondestructive quantizing options, see the “MIDI Effects Plug-Ins” section of Chapter 9, “MIDI: The Region Menu, Plug-Ins, and Virtual Instruments.” Choose Studio > Input Quantize to open the Input Quantize window.

If you’re already familiar with the standard Quantize command (explained in Chapter 9), you’ll find this command very straightforward.



**Figure 8.6** The Input Quantize command quantizes MIDI data as it is being recorded to a track.

To quantize MIDI data during the recording process:

1. Open the Input Quantize window by choosing Studio > Input Quantize. You can also use the default keyboard shortcut Shift+Control+I.
2. Click the Enable Input Quantize option to turn on Input Quantize, and then choose the desired quantize settings. Once Input Quantize is enabled, MIDI data being recorded to a track will automatically be quantized.

The quantize settings listed in the Input Quantize window are identical to the settings found in the Note section of the standard Quantize command. Refer to Chapter 9 for an explanation of the Region menu's Quantize command.

## MIDI Device Groups

Digital Performer's MIDI Device Groups command, shown in Figure 8.7, allows you to send MIDI data to multiple MIDI output destinations. Choose Studio > MIDI Device Groups to open this window.

MIDI device groups are especially useful when you are stacking multiple MIDI sound modules (or virtual instruments) to create a layered “patch” or sound. For example, you might have three external MIDI devices in your studio that you use to create a “layered” bass sound. Instead of creating separate MIDI tracks for each sound, you can create a MIDI device group containing the three devices you're using. Once created, the group will appear in the output assignment menus of all MIDI tracks, as shown in Figure 8.8.

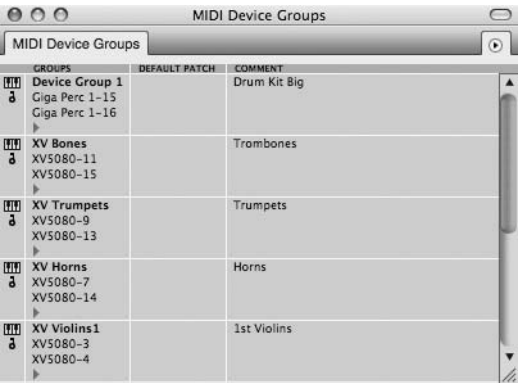


Figure 8.7 The MIDI Device Groups window.

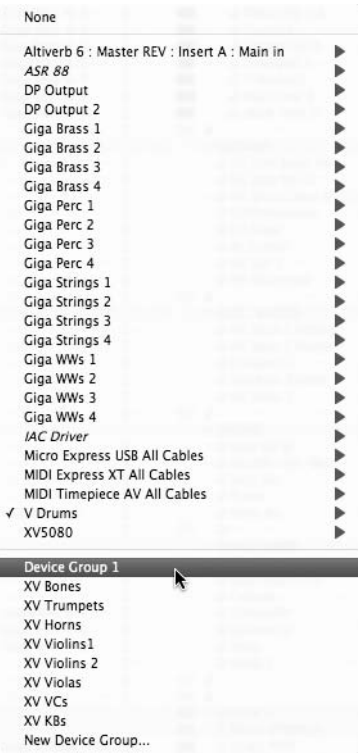


Figure 8.8 Once created, device groups will appear in the output assignment menus of MIDI tracks.

**The Maximum Number of MIDI Channels in a Device Group** The maximum number of MIDI devices/channels that can be added to a MIDI device group is 10.

To create a new MIDI device group:

1. Open the MIDI Device Groups window by choosing Studio > MIDI Device Groups or by using the default keyboard shortcut Shift+I. If you want to create a new device group without going to the Studio menu, simply choose New Device Group from a MIDI track's output assignment menu. If you use this method, proceed to Step 3.
2. From the MIDI Device Group window's mini-menu, choose the Add Device Group option, as shown in Figure 8.9. An empty device group called Device Group 1 will appear in the window. Hold the Option key while creating a new device group to quickly add multiple device groups.



**Figure 8.9** Choose Add Device Group to create a new device group.

3. You'll probably want to customize the new device group's name so that you can easily recognize it. To rename the device group, Option-click the device group name.

To add a specific MIDI device/channel to your new device group or remove one from it:

1. Click the disclosure triangle located below the device group name. A list of connected MIDI devices and channels will open. Select the specific MIDI device and channel from the list, as shown in Figure 8.10. Once chosen, the MIDI device/channel will be added to the MIDI device group.
2. To add additional devices to the group, repeat Step 1 (or see the following note entitled "The Expand/Compress Icon").
3. To remove a device from the group, select it and choose Delete from the mini-menu.

---

**The Expand/Compress Icon** The Expand/Compress icon, shown in Figure 8.11, toggles the display of all MIDI devices that are connected to your MIDI interface. As in the MIDI Monitor window, each MIDI device channel is displayed as a box. Clicking a channel box will add that MIDI channel to the selected device group. MIDI channels assigned to the device group will appear highlighted in black.

Use the expanded view to quickly add (or remove) MIDI channels to a device group without using the MIDI device list discussed in Step 3 of the previous section, which only allows you to add one MIDI channel at a time.

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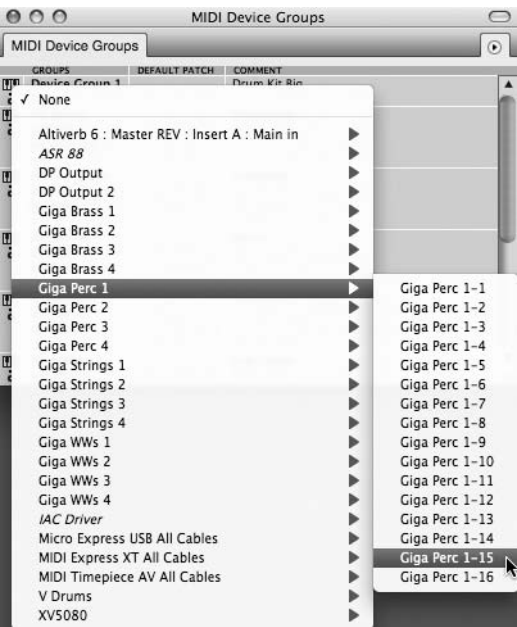


Figure 8.10 Add a MIDI device to the group from the MIDI device list.

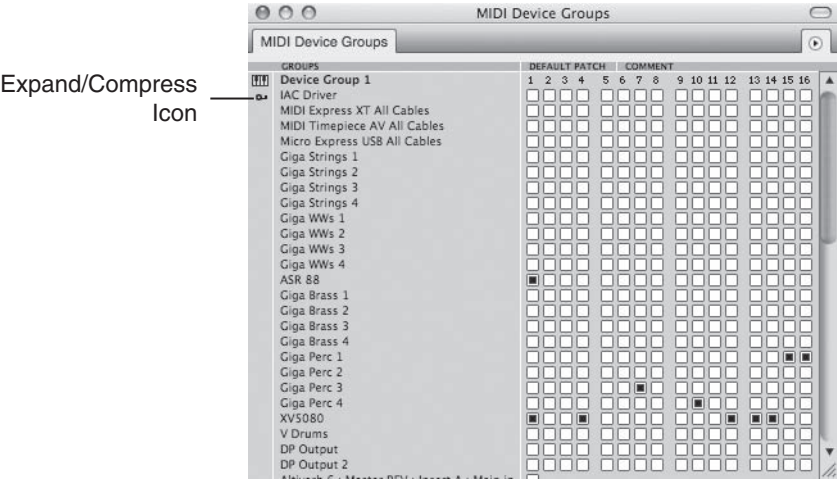


Figure 8.11 Click the Expand/Compress icon to view all connected MIDI devices/channels within the MIDI Device Groups window. MIDI channel boxes that are highlighted in green indicate that they are part of the device group.

---

**Undoing Actions Taken in the MIDI Device Groups Window** Be aware that any actions taken in the MIDI Device Groups window (such as creating and deleting device groups) cannot be undone.

---

To set or clear the default patch for a specific MIDI channel contained in your device group:

- To set the default patch, click in the Default Patch column directly to the right of the particular channel and choose the desired patch from the list.
- To clear the default patch for a specific MIDI channel, click the MIDI channel name and choose Clear Default Patch from the mini-menu.
- To clear the default patch lists for an entire device group, click the device group name and choose Clear Default Patch from the mini-menu.

---

**The Default Patch** A MIDI channel's default patch is basically the first patch (or sound) from your synthesizer or sound module that DP uses when you play a MIDI track. This patch is remembered and saved with the project, so the next time you open the session, DP will know what patch to select and play back. Be aware that when a MIDI channel is using a default patch, it will automatically override any manual patch changes you make on the specific MIDI device. To have a different patch play back, you will need to change the default patch, remove the default patch, or program a patch change.

Be sure not to confuse the standard Patch (or Current Patch) column with the Default Patch column. MIDI patches selected in the Patch column won't be remembered with a project, so be sure to use the Default Patch column if you want DP to recall the patch the next time you open your project. DP's MIDI patch lists are explained in the next section.

---

## MIDI Patch Lists

A patch list contains the names of a MIDI device's (or a virtual instrument's) sounds or patches, as shown in Figure 8.12.

Digital Performer relies on Mac OS X to supply the default factory patch names of connected MIDI devices. The patch names for most of the popular MIDI devices and instruments (including their expansion boards) in use today are recognized by OS X. Patch names that aren't recognized, however, are listed with generic patch names, such as Patch-1, Patch-2, Patch-3, and so on (see Figure 8.13).

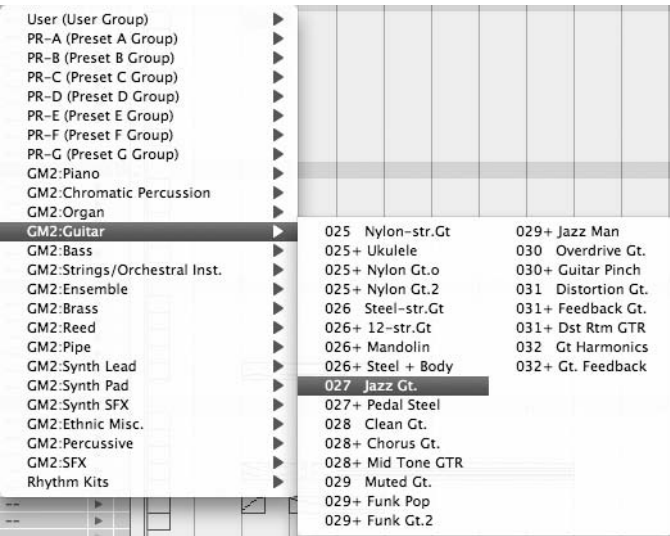


Figure 8.12 Patch names recognized by OS X will be displayed with their factory default names.

|             |             |             |               |
|-------------|-------------|-------------|---------------|
| 1 Patch 1   | 33 Patch 33 | 65 Patch 65 | 97 Patch 97   |
| 2 Patch 2   | 34 Patch 34 | 66 Patch 66 | 98 Patch 98   |
| 3 Patch 3   | 35 Patch 35 | 67 Patch 67 | 99 Patch 99   |
| 4 Patch 4   | 36 Patch 36 | 68 Patch 68 | 100 Patch 100 |
| 5 Patch 5   | 37 Patch 37 | 69 Patch 69 | 101 Patch 101 |
| 6 Patch 6   | 38 Patch 38 | 70 Patch 70 | 102 Patch 102 |
| 7 Patch 7   | 39 Patch 39 | 71 Patch 71 | 103 Patch 103 |
| 8 Patch 8   | 40 Patch 40 | 72 Patch 72 | 104 Patch 104 |
| 9 Patch 9   | 41 Patch 41 | 73 Patch 73 | 105 Patch 105 |
| 10 Patch 10 | 42 Patch 42 | 74 Patch 74 | 106 Patch 106 |
| 11 Patch 11 | 43 Patch 43 | 75 Patch 75 | 107 Patch 107 |
| 12 Patch 12 | 44 Patch 44 | 76 Patch 76 | 108 Patch 108 |
| 13 Patch 13 | 45 Patch 45 | 77 Patch 77 | 109 Patch 109 |
| 14 Patch 14 | 46 Patch 46 | 78 Patch 78 | 110 Patch 110 |
| 15 Patch 15 | 47 Patch 47 | 79 Patch 79 | 111 Patch 111 |
| 16 Patch 16 | 48 Patch 48 | 80 Patch 80 | 112 Patch 112 |
| 17 Patch 17 | 49 Patch 49 | 81 Patch 81 | 113 Patch 113 |
| 18 Patch 18 | 50 Patch 50 | 82 Patch 82 | 114 Patch 114 |
| 19 Patch 19 | 51 Patch 51 | 83 Patch 83 | 115 Patch 115 |
| 20 Patch 20 | 52 Patch 52 | 84 Patch 84 | 116 Patch 116 |
| 21 Patch 21 | 53 Patch 53 | 85 Patch 85 | 117 Patch 117 |
| 22 Patch 22 | 54 Patch 54 | 86 Patch 86 | 118 Patch 118 |
| 23 Patch 23 | 55 Patch 55 | 87 Patch 87 | 119 Patch 119 |
| 24 Patch 24 | 56 Patch 56 | 88 Patch 88 | 120 Patch 120 |
| 25 Patch 25 | 57 Patch 57 | 89 Patch 89 | 121 Patch 121 |
| 26 Patch 26 | 58 Patch 58 | 90 Patch 90 | 122 Patch 122 |
| 27 Patch 27 | 59 Patch 59 | 91 Patch 91 | 123 Patch 123 |
| 28 Patch 28 | 60 Patch 60 | 92 Patch 92 | 124 Patch 124 |
| 29 Patch 29 | 61 Patch 61 | 93 Patch 93 | 125 Patch 125 |
| 30 Patch 30 | 62 Patch 62 | 94 Patch 94 | 126 Patch 126 |
| 31 Patch 31 | 63 Patch 63 | 95 Patch 95 | 127 Patch 127 |
| 32 Patch 32 | 64 Patch 64 | 96 Patch 96 | 128 Patch 128 |

Figure 8.13 A patch list containing generic patch names.

To edit the patch list for a specific MIDI device:

1. Open the Bundles window by choosing Studio > Bundles (or by using the keyboard shortcut Shift+U).

2. Select the MIDI Devices tab.
3. Highlight the MIDI device from the MIDI device list.
4. Choose the Edit button.
5. The MIDI Device Properties window will appear. Select the Patches tab.
6. Make the appropriate selection from the available patch list. Keep in mind that the Name, Manufacturer, and Model data fields must be completed before any compatible patch lists will appear in the list. Use this window or the Audio MIDI Setup utility to identify these data fields.

---

**Patch List Editors/Librarians** If you're tired of seeing generic patch names in your patch lists, you can use a dedicated MIDI patch list editor/librarian application, such as MOTU's Unisyn, to supply DP with the correct patch names. These programs contain expanded lists of different MIDI devices and their patch names. MOTU's Unisyn will even allow you to edit a device's sounds and rename them.

---

### ***The Current Patch versus the Default Patch***

Digital Performer basically contains two different patch features (both reference the same patch list)—the current patch column and the default patch column, as shown in Figure 8.14. The patches contained in each list are identical. Where they differ is in their functions.

|   |          |   |  | Patch          | Default Patch |
|---|----------|---|--|----------------|---------------|
| ▶ | XV5080-2 | 1 |  | ♪ XV Distorted | Grungeroni    |
| ▶ | ---      | 1 |  | ---            | ---           |
|   |          |   |  | ♪ ELEC. BASSES |               |
| ▶ | XV5080-9 | 1 |  | ♪ AC Bass 1    | Hugo Bass     |
| ▶ | XV5080-5 | 1 |  | ♪ ElecBass 1   | Sub Zero      |

**Figure 8.14** The (current) Patch and Default Patch columns allow you set the current or default patch assignment for a specific MIDI channel in the Tracks window.

As explained earlier, the default patch list tells DP which MIDI patch should always be played first on a specific MIDI track. As long as the patch change doesn't exist with a MIDI track (via Controller Data Automation), the selected default patch will always play when playback is engaged—even if you manually change the patch on the MIDI device or virtual instrument. Use the default patch list if you want Digital Performer to remember the MIDI patches you are using even after you close your DP project.

The current patch list (or Patch column) always displays the currently selected MIDI patch and will even update on the fly when you have patch changes inserted on a MIDI track. As with the

default patch list, you can assign MIDI channels to a specific patch by choosing the desired patch from the list. If you don't want DP to automatically play certain patches (or the default patch), use the current patch list when you assign a MIDI channel to a specific patch.

---

**Clear Default Patch** I have always found it a little strange that once a default patch is selected for a MIDI track, there is no option in the Default Patch column to clear the default patch or select "None." To clear a default patch, you must highlight the MIDI track in the Tracks List and then go to Tracks Window > Mini-Menu > Clear Default Patch.

---

## Recording MIDI

Now that you've seen some of the various MIDI-related features that can affect the MIDI recording process, you're ready to begin recording. This section will cover the various ways to record MIDI data on your MIDI tracks.

---

**Setting Up Your MIDI Tracks** Chapter 4 demonstrated the proper setup procedures for creating MIDI and instrument tracks, setting the MIDI input and output assignments, and monitoring your MIDI devices and/or virtual instruments. If you're shaky on the ins and outs of this process, refer to Chapter 4 for an in-depth look at how to set up your MIDI tracks for recording.

---

### *Setting Up to Record a MIDI Track*

Because I have already explained the MIDI track setup process in detail in Chapter 4, I'll assume that you understand MIDI track configuration, and I'll only provide a review of the track and I/O setup process here.

To set up a MIDI track for recording:

1. Create a MIDI track using the default keyboard shortcut Shift+Command+M. To create multiple MIDI tracks, press Shift+Option+Command+M. By default, the track will automatically be record-enabled.
2. Assign the MIDI track to the desired MIDI device (and channel) from the track's output menu. If you want to assign the track to a virtual instrument instead, you'll need to create the instrument before it will show up in the output menu.
3. Next, set up an aux track to monitor your MIDI device. Press Control+Command+A to add an aux track. If you are monitoring through a DSP program, such as MOTU's CueMix, skip Steps 3 and 4.

4. In the aux track's input menu, choose the audio hardware inputs that correspond to your MIDI device. For example, if the physical outputs of your MIDI device are connected to Analog 1-2 of your audio interface, choose Analog 1-2 for the aux track inputs.
5. If necessary, select the specific sound you want to use for your MIDI track from the current or default patch list (explained a moment ago).
6. Since the track is already record-enabled, press some notes on your MIDI controller to make sure you "have signal." If you aren't hearing anything, open up the MIDI Monitor window (explained earlier in this chapter) and verify that DP is receiving MIDI data from the specific MIDI device.

---

**MIDI Patch Thru** MIDI Patch Thru allows you to hear your MIDI devices or instrument plug-ins when you play a note on your MIDI controller. Be sure to enable MIDI Patch Thru, or you won't hear anything when you press a note on your MIDI controller, regardless of whether DP is receiving MIDI data from your connected MIDI devices. Refer to "The Preferences and Settings Command" section of Chapter 5 for an explanation of the MIDI Patch Thru feature.

---

### ***Setting Up an Instrument Track***

When working with virtual instruments (VIs), you need to create the desired instrument track before it will become available in a MIDI track's output menu. There are a couple of different ways to create your Digital Performer instrument tracks. One way is to add a specific type of instrument track. The other way is to create an empty (or unassigned) instrument track and assign its instrument at a later time. Unassigned instrument tracks are especially useful when you are creating project templates.

---

**Working with Virtual Instruments That Exist in Another Application** If you want to assign a MIDI track to a virtual instrument that exists in another application (outside DP), you need to create the VI before it will show up in DP. Some third-party applications have specific setup requirements that you must follow in order to publish their VI in a Digital Performer MIDI track (such as Fable Sounds' Broadway Big Band instruments). Consult the specific program's user manual for the proper setup instructions.

---

To add a Digital Performer instrument track that's assigned to a specific virtual instrument:

- Choose Project > Add Track > Instrument Track and select the specific virtual instrument from the instrument track list.

To add an unassigned (empty) instrument track:

- Choose Project > Add Track > Instrument Track > Unassigned or press Shift+Command+I.
- To create multiple assigned tracks, choose Project > Add Track > Instrument Track > Add Instruments. You can also use the default keyboard shortcut Shift+Option+Command+I.

---

**Adding Multiple Virtual Instruments** When using the Add Instruments option to add several instances of a virtual instrument, the Add Instrument Track window (shown in Figure 8.15) offers a few extra shortcuts. In this window, you can choose the virtual instrument and the desired number of instances of the instrument. You may need new MIDI tracks to trigger the instruments, so you can also specify a number of new MIDI tracks to create, and DP will automatically map each new MIDI track to a separate channel of the virtual instrument (as long as the virtual instrument includes multiple MIDI destinations). Finally, you can also create a new Track Folder for the tracks. DP will automatically place the virtual instrument tracks and the accompanying MIDI tracks in a Track Folder named after the virtual instrument, such as Stormdrum Folder.

---



**Figure 8.15** The Add Instrument Track window offers a few extra shortcuts when adding multiple instances of a virtual instrument.

## Basic MIDI Recording

Once you have configured your MIDI and/or instrument tracks, and you have confirmed that you have signal, you're ready to begin recording.

To record on a MIDI track:

1. Record-enable (or arm) the MIDI track by simply clicking in the REC column of the MIDI track in the Tracks window.
2. Test the signal by playing a few notes on your MIDI controller.

3. Click the Control Panel's Record button to begin recording. You can also press the number 3 key on the numeric keypad to start recording.
4. Press the number 3 key again to stop recording but continue playback (or punch out of record), or hit the spacebar to stop recording and playback at the same time.
5. If you don't like the recording and you want to try it again, press Command+Z to undo the record pass. You can also use the Undo History window to undo the performance (as explained in Chapter 6). Press the number 1 key on the numeric keypad to rewind to the beginning of the sequence.
6. Repeat Steps 3 through 5 as needed.

### **Punch Recording**

*Punch recording* (or punching in on a track) is the process of replacing existing material by recording over a specific portion of a track. For example, suppose you record a 16-bar MIDI performance and, upon listening to playback of the track, you decide you're very happy with the first half of the track but you're not satisfied with the second half (Bars 8 to 16). Instead of rerecording the entire track and losing your great performance during Bars 1 to 8, you could just rerecord Bars 8 to 16; this is called *punching in* on a track. There are basically two ways to execute a punch within DP: manually and automatically.

To manually punch in on a MIDI track:

1. Arm the MIDI track on which you want to punch in.
2. Move the Playback Wiper close to where you want to start recording—anywhere from 5 to 20 seconds (or 4 to 16 bars) before the punch-in point. Exactly how much pre-roll you use is really up to you.
3. Press the spacebar to begin playback.
4. To make the punch-in as seamless as possible, make sure you (or the artist you're recording) start playing along with the track as soon as you know where you are within the song.
5. At the desired location, press the number 3 key on the numeric keypad to start recording and "punch in" on the track.
6. Press the number 3 key again to punch out of record.
7. Repeat Steps 4 through 6 as needed. When you've completed your punches, press the spacebar to stop recording and playback.
8. Hit the number 1 key to return to the beginning of the sequence.



To automatically punch in on a MIDI track:

1. Arm the MIDI track on which you want to record.
2. Engage the Control Panel's Auto Record button, as shown in Figure 8.16.



Auto Record Button

**Figure 8.16** Use the Control Panel's Auto Record button to perform an "auto punch."

3. With the Auto Record button enabled, set the punch-in and punch-out times, as shown in Figure 8.17.



**Figure 8.17** Use the Auto Record button's punch-in and -out times to set the duration of the punch-in.

4. Move the Playback Wiper close to where you want to start recording—anywhere from 5 to 20 seconds (or 4 to 16 bars) before the punch-in point. How much pre-roll you use is really up to you.
5. Press the number 3 key to begin recording. The Record button on the Control Panel will flash (red) repeatedly until playback reaches the specified punch points, where it will become solid during the punch record.
6. To make the punch-in as seamless as possible, make sure you (or the artist you're recording) start playing along with the track as soon as you know where you are in the song.
7. When playback reaches the designated punch-in start time, DP will punch in on the track. At the specified punch-out time, DP will punch out of record.
8. Press the spacebar to stop playback.
9. Press the number 1 key on the numeric keypad to locate to the beginning of the sequence.

### Overdub Recording

After you get a satisfactory first MIDI record pass, you might want to add (or layer) on additional passes of the same sound or MIDI channel. (You might want to add another chord on top of the previous record pass, for example.) This is called *overdub recording*, or *overdubbing*.

When you're working with audio tracks, you must use a new track to perform overdub recording, or overdubs. If you overdub in the same audio track, you will actually be erasing the existing

material when you press the Record button. Digital Performer MIDI tracks, however, allow you the option of layering new MIDI record passes onto existing material without actually deleting the existing MIDI data—essentially, you’re merging the new data with the existing data.

To overdub record on a MIDI track:

1. Arm the track on which you want to overdub.
2. Click the Overdub button on the Control Panel, as shown in Figure 8.18.



Overdub Button

**Figure 8.18** The Overdub button, when engaged, will allow you to layer, or overdub, new MIDI data onto existing data within a MIDI track.

3. Press the number 3 key on the numeric keypad to start playback and recording.
4. Begin playing your MIDI controller to layer your new performance onto the existing MIDI data.
5. When you are ready, press the number 3 key to punch out of record.
6. Press the spacebar to stop recording and playback all together.
7. Press the number 1 key on the numeric keypad to return to the beginning of the sequence.

### Cycle Recording

When the Overdub record feature is combined with the Control Panel’s Memory Cycle feature, DP allows you to cycle record (or *loop record*) audio and MIDI data. Set the Transport to loop continuously, engage the Overdub record feature, and you can overdub continuously over a specific time range.

To engage cycle-record mode:

1. Click the Control Panel’s Memory Cycle and set the Memory Start and Stop Times, as shown in Figure 8.19. The Start and Stop Times will basically define the loop beginning and end.



Memory Cycle  
Button

**Figure 8.19** Use the Control Panel’s Memory Start and Stop Times to specify the loop points for the cycle-record process.

2. Engage the Overdub button.
3. Press the number 3 key on the numeric keypad to start playback and recording.
4. Begin playing your MIDI controller to layer your new performance onto the existing MIDI data.
5. When DP reaches the specified Stop Time for the loop, it will jump back to the Memory Start Time and continue overdub recording, merging the new material with the existing MIDI data.
6. When you are finished recording, press the number 3 key to punch out of record.
7. Press the spacebar to stop recording and playback all together.
8. Press the number 1 key on the numeric keypad to return to the beginning of the sequence.

---

**Recording Alternate Takes** The process of using takes with MIDI tracks is identical to that of using audio tracks. Refer to the “Recording and Managing Takes” section of Chapter 7 for an explanation of takes within Digital Performer.

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### Step Recording

When you’re step recording, MIDI data is not recorded in real time, but is inserted one note at a time into a MIDI track. Digital Performer’s Step Record command, shown in Figure 8.20, allows you to step record MIDI notes of a specific duration that are automatically quantized. This feature can be useful for entering especially difficult rhythmic passages that you cannot perform or for creating a lead sheet for use in DP’s QuickScribe Editor or other notation software applications, such as Finale.



**Figure 8.20** The Step Record window.

The basic process of inserting a MIDI note with the Step Record command is very simple. Refer to Chapter 22 of the DP6 User Guide for an in-depth discussion of the Step Record command.

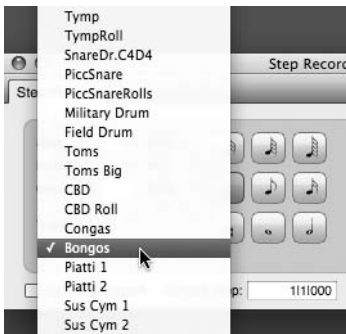
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**Step Recording and the MIDI Graphic Editor** Using the MIDI Graphic Editor window while step recording can provide a more detailed look at the MIDI data you are entering. Simply open a MIDI Graphic Editor window for a desired MIDI track, use the zoom buttons and magnifying tool to resize (if necessary), and open the Step Record window. During the step-recording process, you can view each step as it is recorded.

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To step record MIDI notes:

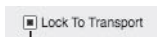
1. Open the Step Record window by pressing Command+8 or by choosing Studio > Step Record.
2. Select the MIDI track you want to step record on from the Current Record Track pop-up menu, as shown in Figure 8.21.
3. Choose the desired note duration with the Step Duration buttons, as shown in Figure 8.22.
4. If you want to have the Step Record window linked to DP's main Transport controls, click the title bar's Transport Lock button, shown in Figure 8.23. Use this button to toggle the locked or unlocked state of the Step Record window.



**Figure 8.21** The Current Record Track menu determines the track into which you will step record.



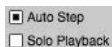
**Figure 8.22** Use the Step Duration buttons to specify the note value to be entered.



Transport Lock  
Button

**Figure 8.23** The Transport Lock button.

5. If you want DP to automatically advance to the next step once you have inserted a MIDI note, make sure the Auto Step button (shown in Figure 8.24) is engaged.



**Figure 8.24** The Auto Step button.

6. To insert a note (or chord), press and hold the desired notes on your MIDI controller. Be sure to press the notes together—and cleanly—to ensure that the notes are inserted in the same location (or step).
7. Release the notes, and they will be automatically inserted in the selected MIDI track.
8. If you step record an incorrect note, use the Backstep button.
9. Repeat Steps 3, 5, 6, and 7 to continue step recording.

---

**Step Recording versus the Pencil Tool** Don't confuse step recording with the basic process of inserting notes with the Pencil tool. Although they are technically similar in function, the Pencil tool provides more versatility when inserting notes directly into a MIDI track within the Graphic or Sequence Editor. The process of inserting notes with the Pencil tool is discussed in the "MIDI Editing in the Graphic Editor" section of Chapter 10.

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**Entering MIDI Data with MIDI Keys** If you need to enter MIDI data and you do not have a MIDI controller keyboard available, Digital Performer offers a convenient alternative. The MIDI Keys window (Studio > MIDI Keys) turns your computer keyboard into a basic MIDI controller. In this window, you can use your qwerty keyboard to enter notes, adjust octaves, change velocities, and apply modulation, pitch bend, and MIDI sustain. Simply record-enable a MIDI track and open the MIDI Keys window to begin entering MIDI data (see Figure 8.25). This may not be the most efficient way to get MIDI data into your project, but when the creative mood strikes and you are sitting on a plane with your laptop, MIDI Keys can come to the rescue!

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**Figure 8.25** The MIDI Keys window turns your qwerty keyboard into a basic MIDI controller.

## Summary

In addition to the basic MIDI recording process, Digital Performer contains a number of powerful MIDI recording tools. Features such as cycle, overdub, and step recording allow you to tailor the recording process to meet your specific MIDI production needs.

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# 9

## MIDI: The Region Menu, Plug-Ins, and Virtual Instruments

**N**ow that you've seen the MIDI recording process in Chapter 8, I'll discuss DP's related MIDI commands, plug-ins, and virtual instruments tracks.

Following is a list of topics covered in this chapter:

- The Region menu commands
- How to use MIDI plug-ins
- How DP handles virtual instruments and instrument tracks
- How to use the Freeze Selected Tracks command

### Region Menu Commands

The majority of Digital Performer's MIDI commands are located in the Region menu, shown in Figure 9.1. Region menu commands allow you to apply changes to selected MIDI data and tracks—similar to the way Audio menu plug-ins can be applied to audio tracks for file-based processing. Region menu commands will alter the original MIDI data you're working with, so you may want to create a copy of the tracks you're modifying by duplicating the track take or by duplicating the track all together.

Many of the Region menu commands (including the MIDI effects plug-ins) can be used non-destructively, and in real-time, by inserting the desired effect within the Mixing Board. Real-time effects have the benefit of not altering your MIDI track's original data. In addition, you can change the plug-in settings at any time if you aren't satisfied with the plug-in's current settings.

This section will highlight some of the more frequently used Region menu commands and provide a basic overview of their processes. We'll also discuss how the Region command windows function compared to DP's other edit commands. Refer to the "Region Menu" chapter of the Digital Performer User Manual for a comprehensive look at the Region menu commands.



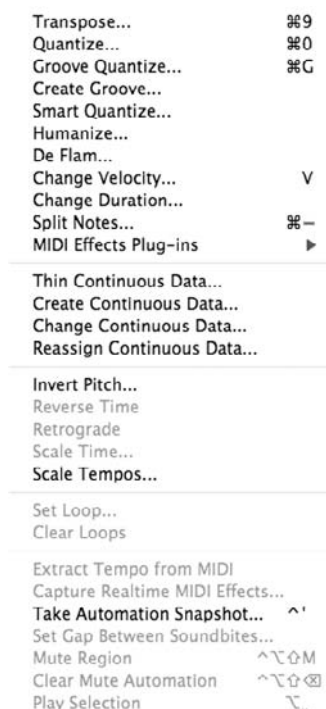


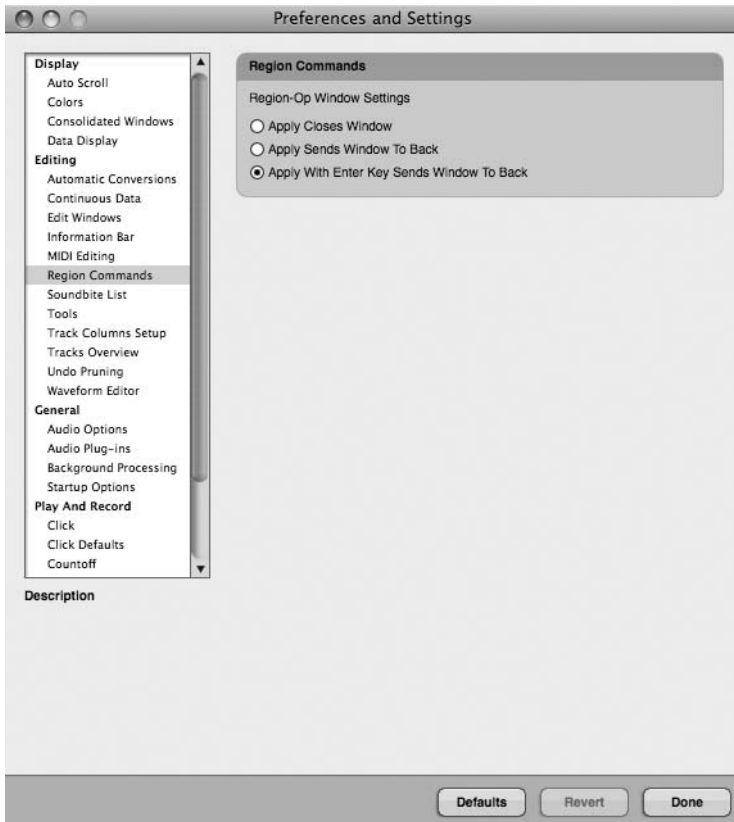
Figure 9.1 The Region menu.

## Region Commands Preferences and Settings

Unlike DP's standard edit command windows, which won't allow you to perform other operations until you apply or cancel the command, Region command windows can stay open while you perform other actions within a project—though you can only have one Region command open at a given time. Choosing another Region menu command will replace the current window with the new one.

The Region Commands window in DP's Preferences, shown in Figure 9.2, controls what happens to a Region command window after a setting is applied. Keep in mind that the options listed are global and will affect all Region command windows.

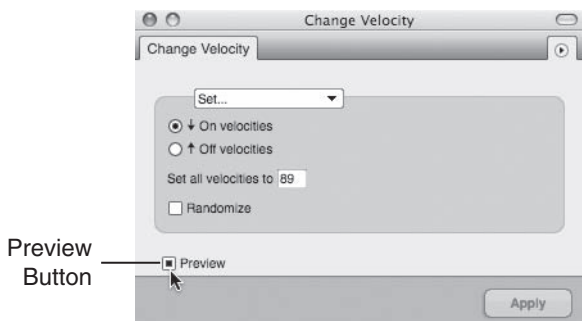
- **Apply Closes Window.** This option will close the window when you hit the Apply button or press the Return key on your Mac's keyboard.
- **Apply Sends Window to Back.** This option will force the window into the background when you hit the Apply button or press the Return key on your Mac's keyboard.
- **Apply with Enter Key Sends Window to Back.** This option will force the window into the background when you press the Return key on your Mac's keyboard. Hitting the Apply button will apply the command but keep the window in the foreground.



**Figure 9.2** These Region Commands preferences control what happens to a window when a setting is applied.

Some of the Region menu commands allow you to audition or preview settings before applying them. Click the window's Preview button to turn on previewing, as shown in Figure 9.3.

If the window supports previewing, the mini-menu will also contain a previewing option that controls how the preview feature behaves when a window is not in the foreground, as shown in Figure 9.4.



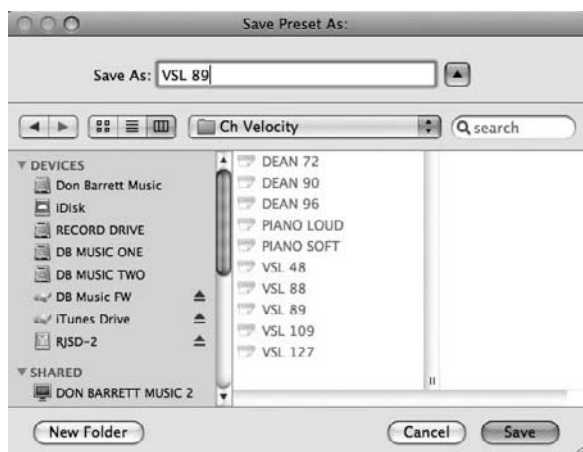
**Figure 9.3** The Preview button.



**Figure 9.4** Use the mini-menu's Preview option to keep previewing turned on when a window is in the background.

Check the Preview Stays On When Window Not in Front option if you want the window to continue auditioning a Region command's settings, even when the window is forced to the background.

Similar to audio plug-in presets, some of the Region commands allow you to save the window's current settings for future use. Once the Save Settings command is selected, the Finder will open, allowing you to name the preset and save it in the appropriate folder, as shown in Figure 9.5. If you have a particular setting that you want to use again, use the Save Settings command in the window's mini-menu. To edit a preset, choose Show Presets in Finder from the mini-menu.

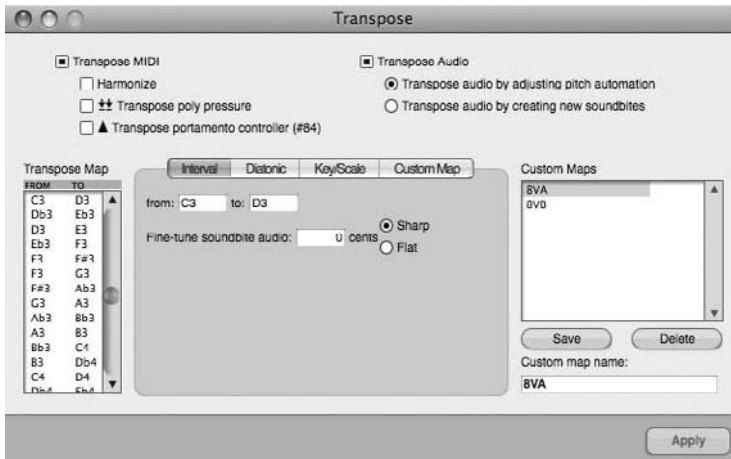


**Figure 9.5** In this example, I have chosen the Save Settings command from the Change Velocity mini-menu to save a custom velocity preset that will automatically be placed in DP's Ch Velocity folder.

- To save a preset, choose Save Settings from the mini-menu. Enter the name for your new preset in the Save Preset As window. Click OK to name the new preset.
- If you want to rename, delete, or duplicate a preset, choose Show Presets in Finder from the mini-menu. A Finder window containing all of the presets for the current Region command will appear, allowing you to make the necessary adjustments.

## The Transpose Command

Use the Region menu's Transpose command, shown in Figure 9.6, to change the pitch of selected MIDI notes (and audio files). Choose Region > Transpose or use the default keyboard shortcut

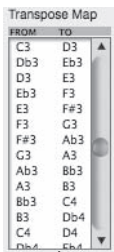


**Figure 9.6** The Region menu's Transpose command.

Command+9 to open the Transpose command. Once it is open, you can choose to transpose selected notes, modifying the original data in the process, or you can harmonize the selected notes, which will create a new harmonized version and merge it with the original material. Use the Transpose and Harmonize options to set the window to either transpose or harmonize.

### **The Transpose Map**

The Transpose Map, shown in Figure 9.7, contains two columns: From and To. The From and To columns include a list of all 128 MIDI pitches that determine the interval of the transposition. For example, if you would like to transpose a selected region of MIDI notes up a major third, simply choose the appropriate interval from the list, such as C3 to E3 (four semitones).



The Transpose Map

**Figure 9.7** The Transpose Map.

### **The Interval, Diatonic, Key/Scale, and Custom Map Options**

The Interval, Diatonic, Key/Scale, and Custom Map options (shown in Figure 9.8) determine which notes will actually be displayed in the To and From columns of the Transpose Map. Use these different options to transpose pitches to a certain type of scale (chromatically, diatonically, and so on).



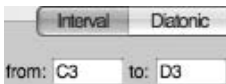
**Figure 9.8** The Transpose command's different scale options.

---

**Diatonic or Key/Scale Mode** When you choose Diatonic or Key/Scale mode, the scale steps in the source key (the key you define in the In the Key Of data field) become bold-faced in the From column. This can be helpful if those pesky scale lessons from music theory class have escaped you. However, at the time of the writing of this book, DP's new user interface and the small size of the font make it somewhat difficult to distinguish the scale steps in bold type. Hopefully, a future version will remedy this issue. Until then, keep staring at the list like it's one of those 3D stereogram images, and the bold scale steps may eventually appear!

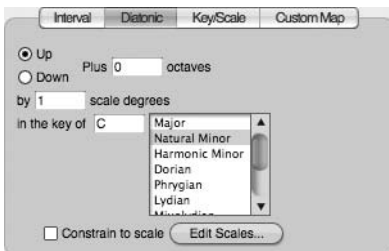
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- **Interval.** Select this option when you want to transpose or harmonize notes chromatically. All selected notes will be pitched up or down according to the interval that you set in the From and To input fields, as shown in Figure 9.9. The actual notes you enter do not matter—only the interval will be used when changing the notes. You can also use the Interval option to transpose audio data. Refer to Chapter 13, “Processing and Mastering,” for an explanation of pitch-shifting audio. Click Apply to transpose the selected data.



**Figure 9.9** Use the To and From input fields to set the interval for the pitch change.

- **Diatonic.** The Diatonic option, shown in Figure 9.10, allows you to change the pitch of a note (up or down) by a specific number of scale steps within a designated key (or scale mode).

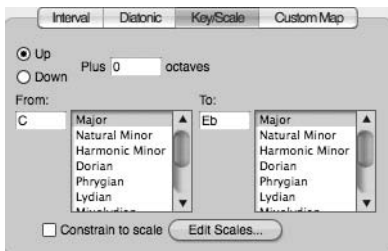


**Figure 9.10** The Diatonic option and related settings. In this example, all MIDI notes will be transposed up one scale degree in the key of C Natural Minor.

Start by choosing the proper key and scale mode for the selected data. Type in the number of scale steps by which the selected data is to be transposed in the By \_\_\_\_ Scale Degrees input

field. Set the direction for the pitch change using the Up and Down options. Use the Plus \_\_\_\_ Octaves setting to pitch-shift notes by more than one octave. Click the Apply button to diatonically transpose the selected data.

- **Key/Scale.** Use the Key/Scale option, shown in Figure 9.11, to change a selection from one scale to another (or one key to another). Set the selection's current key in the From input field and set the scale mode from the list. Use the To input field and list to specify the destination key and scale mode. Set the direction of the pitch change using the Up or Down and Plus \_\_\_\_ Octaves options. Click Apply to pitch-shift the selection.



**Figure 9.11** The Key/Scale option and related settings. In this example, all MIDI notes will be transposed up from the key of C Major to the key of Eb Major.

---

**The Constrain to Scale Option** The Constrain to Scale option forces all notes that are not contained in the set scale to be shifted to the closest note within the destination scale. This option will only appear when the Diatonic or Key/Scale option is selected.

---

- **Custom Map.** Use the Custom Map option to create a custom scale of notes. Choose the Transpose option (Interval, Diatonic, or Key/Scale) on which you wish to base your custom Transpose Map. Enter your transposition data in the available windows. Once the settings are changed, the Transposition Map window will automatically adjust to the custom map. (Continue modifying the new scale as needed.)

To save the custom scale for later use, name the custom map and click the Save button, shown in Figure 9.12. If your new custom map does not appear in the Custom Maps

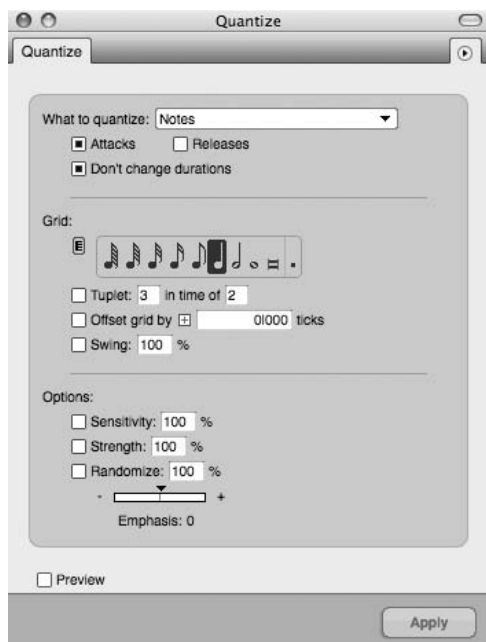


**Figure 9.12** Saved custom map presets will appear in the Custom Maps list.

window, simply click anywhere in the white space of the window, and the name should appear. Click the Apply button to apply your customized scale to the current MIDI selection.

## The Quantize Command

The Quantize command, shown in Figure 9.13, is probably the most popular and widely used Region menu command. Choose Region > Quantize or use the default keyboard shortcut Command+0 to open the Quantize command. Use this option to constrain the locations of selected data to a set rhythmic grid.

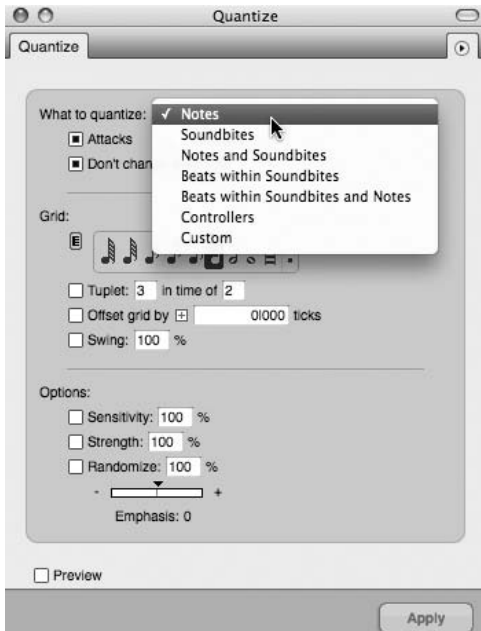


**Figure 9.13** The Region menu's Quantize command.

### Quantizing MIDI Notes

The most basic use of the Quantize command is to correct the rhythmic timing of a recorded MIDI performance. To quantize selected MIDI notes, select the notes you want to quantize, open the Quantize window, and then choose the Notes option from the What to Quantize menu. Set the Grid and Options settings as needed, and then click the Apply button. Remember that you can preview the selection before applying the Quantize settings by enabling the Preview option, located at the bottom of the window.

**The What to Quantize Menu.** The Quantize command can alter the attack/release times of MIDI data, change the start locations of soundbites and markers, and even change the locations of beats within a soundbite. The What to Quantize menu, shown in Figure 9.14, allows you to specify the type (or types) of data that will be quantized when you hit the window's Apply



**Figure 9.14** Use the What to Quantize menu to select the type of data that will be quantized.

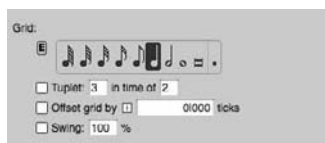
button. The Quantize options that appear in the window are dependent on the data type selected in the What to Quantize menu. Choose Notes to quantize a selection of MIDI notes.

**Quantizing the Attacks, Releases, and/or Durations of Notes.** Once you specify the type of data to be quantized in the What to Quantize menu, you'll need to decide whether the attacks, releases, and/or durations will be quantized.

- **Attacks.** Enabling this option will cause the attack (or start) of the note to be moved to the closest grid location.
- **Releases.** This option causes the release times of notes to be moved to the closest grid location, while preserving the attack times (or start times) of the selected MIDI notes.
- **Enabling Both Attacks and Releases.** Choosing both options will cause both the attacks and releases of selected notes to be moved to their closest grid locations; this can change note durations in the process. When both the Attacks and Releases options are enabled, the Don't Change Durations option will be disabled, as note durations will be automatically changed when quantizing both the attacks and releases of a selection.
- **Don't Change Durations.** Enable this option to preserve the durations of quantized MIDI notes. If this option is turned off, notes (or other types of data) may be truncated or lengthened when quantized, and this can significantly affect the performance of a selection. Be aware that this option is disabled when both the Attacks and Releases options are turned on.



**Setting the Resolution for the Quantize Grid.** The Grid section of the Quantize window determines the resolution of the Quantize Grid, or basically divides the Quantize Grid into the specified duration. By default, the Measures time format will be displayed in the grid section. This allows you align your MIDI data to specific note values, as shown in Figure 9.15.



**Figure 9.15** The Measures time format allows you to set the Quantize Grid to a specific note value.

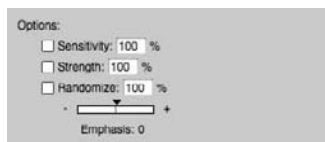
To change the time format that's displayed in the Grid section, click the Time Format button, as shown in Figure 9.16. Continue clicking to cycle through the available time formats. Keep in mind that MIDI notes can be quantized to any time format grid and are not limited to just the Measures time format.



**Figure 9.16** The Quantize window's Time Format button changes the time format of the Quantize Grid. In this example, the Minutes and Seconds time format has been selected.

Use the Grid section to choose the value for the Quantize Grid. You can specify the tuplet and swing settings and even offset the Quantize Grid by a certain number of ticks. Generally speaking, choosing the smallest note value that appears in your MIDI selection will allow you to “clean up” your performance without totally altering the performance (assuming that your original performance isn't too rhythmically inaccurate).

**The Quantize Options.** Of course, there will be many times when you do not want to quantize (or realign) your MIDI selection to the Quantize Grid, because doing so can cause your performance to feel robotic and emotionless. You can use the Options section, shown in Figure 9.17, to help maintain the rhythmic “feel” of a performance. When these options are



**Figure 9.17** The Quantize Options section.

disabled, however, the data set to be quantized will be moved and aligned precisely to the chosen Grid value.

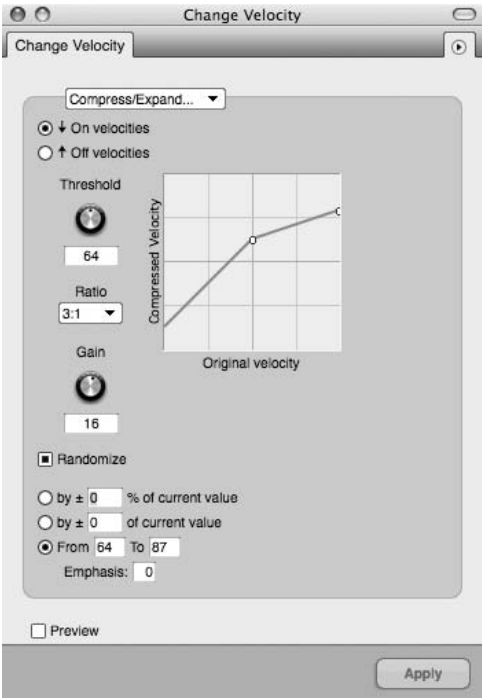
- **Sensitivity.** Use positive Sensitivity values to only affect the downbeats of a selection and negative values to only affect notes that are rhythmically inaccurate. The lower the Sensitivity value, the less the MIDI selection will be precisely aligned to the Quantize Grid. A setting of 100% is the same as not having the option turned on.
- **Strength.** Use settings lower than 100% to quantize a selection but still retain the overall “feel” of the performance. A setting of 50%, for example, only moves a selection halfway toward the specified grid when quantized.
- **Randomize.** Randomize basically has the opposite effect of quantizing. A setting of 100% allows the attacks, releases, and/or durations to be placed in totally random locations within the specified grid.
- **Emphasis.** Use this setting to determine whether randomly placed notes will appear earlier or later within the designated randomize range. Positive values place notes ahead of the beat, while negative values place notes behind the beat, resulting in a more laidback performance.

## The Change Velocity Command

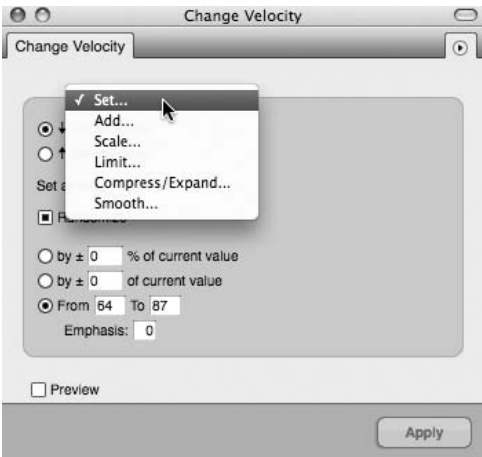
The Change Velocity command, shown in Figure 9.18, is used to alter the velocities (or change the volume) of a selection of MIDI notes. You can choose to modify a note’s on or off velocities with the On Velocities or Off Velocities option. Be aware that this command has no effect on audio data.

The Change Velocity command allows you to change the velocity of notes in different ways, as shown in Figure 9.19.

- **Set.** Use this option to change (or set) selected notes to a specific velocity (see Figure 9.20). For example, entering a value of 64 in the Set All Velocities to \_\_\_\_\_ input field will change all selected notes to a velocity of 64.
- **Add.** This option, shown in Figure 9.21, allows you to add a set number of velocity values to a MIDI note selection. Use the Add \_\_\_\_\_ to All Velocities input field to set the velocity value that will be added.
- **Scale.** This option scales a MIDI note selection by a percentage value. Use the Change to \_\_\_\_\_% of Current Value input field to specify the percentage value, as shown in Figure 9.22.
- **Limit.** This option limits the velocity values of a MIDI selection to a set velocity range, as shown in Figure 9.23.
- **Compress/Expand.** This option, shown in Figure 9.24, is similar to an audio compressor/expander plug-in. The Threshold knob determines when velocity compression/expansion



**Figure 9.18** The Region menu’s Change Velocity command. In this example, the Compress/Expand option has been selected.



**Figure 9.19** Select an option from this list to determine how velocities will be changed with the Change Velocity command.

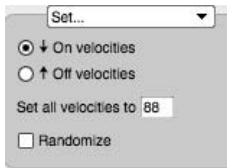


Figure 9.20 The Set velocity option.

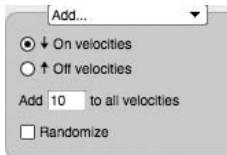


Figure 9.21 The Add velocity option.

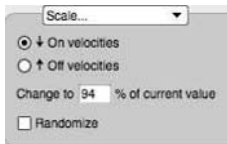


Figure 9.22 The Scale velocity option.

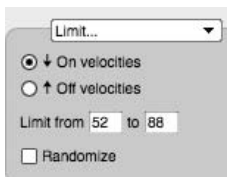


Figure 9.23 The Limit velocity option.

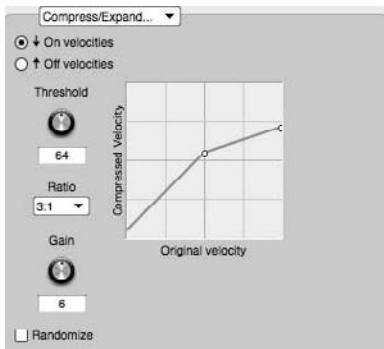
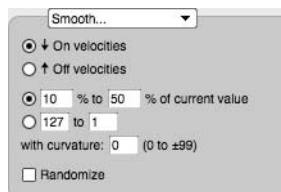


Figure 9.24 The Compress/Expand velocity option.

will start and stop. The Ratio setting determines the amount of compression/expansion applied. Use the Gain knob to make up any gain that's lost in the process.

- **Smooth.** The Smooth option, shown in Figure 9.25, basically automates a smooth velocity change along a set curve. The \_\_\_\_% to \_\_\_\_% of Current Value option is similar to the previously discussed Scale command, except that the MIDI selection will be scaled between the first and second percentage values that you specify.



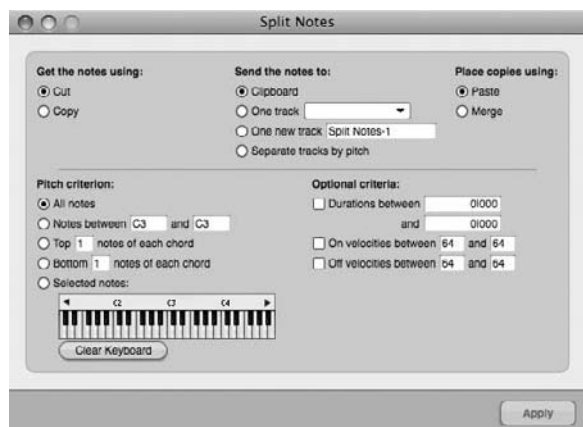
**Figure 9.25** The Smooth velocity option.

The \_\_\_\_ to \_\_\_\_ option sets the velocity of the first MIDI note within your selection to the first value and the last note velocity in your MIDI selection to the last value. Once set, the in-between values are automatically calculated to create a smooth velocity transition between the first and last notes in your selection.

The With Curvature setting determines the type of curve that will be used. A setting of zero creates a linear curve. Positive values apply the majority of the velocity changes toward the end of the curve, while negative values have the opposite effect.

## The Split Notes Command

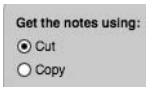
The Split Notes command, shown in Figure 9.26, is used to copy or cut specific notes from a MIDI track. Use this command to “explode” selected MIDI notes onto their own individual tracks.



**Figure 9.26** The Split Notes command.

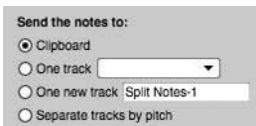
At first glance, the Split Notes window may seem confusing, but actually it's fairly straightforward. Once you've selected a MIDI region to work with (or an entire MIDI track), simply proceed to each section within the window and make the desired settings.

- **Get the Notes Using.** Select how DP will retrieve the specified notes from the MIDI selection by copying the notes (leaving the original MIDI data intact) or by cutting the notes (which will remove the selected notes all together), as shown in Figure 9.27. If you are using the Cut option, you may want to duplicate the track or take before beginning this process in order to have a backup of your MIDI data.



**Figure 9.27** The Get the Notes Using section.

- **Send the Notes To.** This section, shown in Figure 9.28, determines where the copied or cut material will be placed once you hit the Apply button. Notes can be placed on the Mac's clipboard, on an existing track, or on a new track. Choosing the Separate Tracks by Pitch option allows you to explode each different pitch onto its own new track.



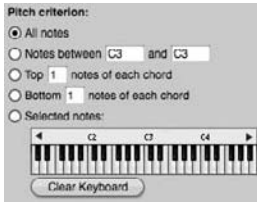
**Figure 9.28** The Send the Notes To section.

- **Place Copies Using.** This section, shown in Figure 9.29, determines whether copied or cut notes will be pasted in the destination track (overwriting the existing material) or merged with any existing data.

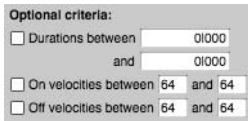


**Figure 9.29** The Place Copies Using section.

- **Pitch Criterion.** The Pitch Criterion section, shown in Figure 9.30, allows you to specify exactly which notes will be copied or cut with the Split Notes command. Choose the appropriate setting from the list. To choose specific notes, simply click on the note in the keyboard.
- **Optional Criteria.** The Optional Criteria section, shown in Figure 9.31, allows you to further specify the exact notes that will be split from the MIDI selection.



**Figure 9.30** The Pitch Criterion section.



**Figure 9.31** The Optional Criteria section.

When you have specified how and where the specified notes will be split, click the Apply button to execute the Split Notes command.

## MIDI Effects Plug-Ins

Similar to audio plug-ins, MIDI effects plug-ins can be applied in real time or as a file-based process. MIDI plug-ins located in the Region menu, shown in Figure 9.32, will permanently alter MIDI data that they process; real-time MIDI plug-ins inserted in the Mixing Board, shown in Figure 9.33, will only affect the real-time playback of a MIDI track.



**Figure 9.32** The Region menu's MIDI effects plug-ins are destructive processes that permanently alter the original MIDI data in a track.

## Processing with the Region Menu's MIDI Effects Plug-Ins

The procedures for processing selected MIDI data with the Region menu's MIDI effects plug-ins are identical to those of the Region menu commands. Simply select the MIDI data you want to modify and choose the desired plug-in from the Region menu's MIDI Effects Plug-Ins submenu. When you have configured the plug-in and hit the Apply button, the selected data will be destructively processed with the specified settings, permanently altering the selected MIDI data.



**Figure 9.33** Real-time MIDI plug-ins affect the playback of MIDI tracks while keeping the original MIDI data intact. Notice that the Mixing Board’s MIDI plug-ins menu even contains real-time versions of the Region menu’s various commands.

## Inserting Real-Time MIDI Plug-Ins

To insert a real-time MIDI plug-in, open the Mixing Board by pressing Shift+M. Navigate to the desired MIDI track, click on an available Insert slot, and then choose the MIDI plug-in from the list. Start playback to hear the inserted MIDI effect in real time. Refer to Chapter 12, “Mixing,” for an explanation of Insert slots and the Mixing Board.

---

**Recording MIDI Tracks into Audio Tracks: The Basics** Although the current trend is concentrated on virtual instruments and soft synths, you may be using MIDI tracks to activate hardware (outboard) MIDI sound modules, such as a Roland DM5 Drum Module or a Korg Wavestation synth. If so, you might want to include these tracks in the final mix of audio tracks (as well as apply any desired audio processing plug-ins). When you have made all of the necessary adjustments to your MIDI tracks, such as velocities, timings, or transpositions, the next step is to record your MIDI tracks into audio tracks.



This recording process involves all of the steps discussed in Chapter 7. The only difference is that the incoming signal consists of the sounds coming out of your MIDI hardware (such as a synthesizer, sampler, or sound module). Think of it like this: The data in your MIDI tracks is triggering chosen instruments from the device (via MIDI connections), and depending on your studio configuration, the triggered audio is sent from the device's audio outputs to specific inputs of your audio interface (via audio connections).

When recording from a MIDI track into an audio track, simply choose the input for the audio track that corresponds to the MIDI device. Once you have armed the track and checked the levels of the incoming signal, you are ready to begin recording. If you are still unclear about the signal flow of your MIDI devices, you might want to refer to Chapters 2 and 4 before recording.

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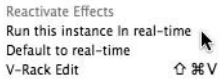
## Virtual Instrument Plug-Ins

Much like hardware MIDI devices, such as synthesizers, samplers, and sound modules, virtual instruments (plug-in instruments or *soft synths*) are triggered by data in corresponding MIDI tracks. However, virtual instruments reside within DP and are accessed via the inserts of an instrument track (in other words, “plugged in”). For a virtual instrument plug-in to show up in Digital Performer, it must be in the MAS (*MOTU Audio System*) or AU (*Audio Units*) format (explained in Chapter 2). DP also supports VI plug-ins that reside in other applications (such as Propellerhead's Reason and Ableton Live).

### Pre-Rendered Instrument Tracks (MOTU's Pre-Gen)

With third-party VI plug-ins, such as Spectrasonics' Trilian Bass or VSL's Vienna Instrument, there are two very important things to always consider: your computer's processor and available RAM. Today, feature-rich third-party VIs are quite amazing when it comes to their sound quality, flexibility, on-board effects, and so on. However, just a few instances of the coolest new plug-in can drain the resources of even the most robust computer system (not to mention the need to play nice in the same sequence with numerous audio tracks, accompanying effects processors, and an imported movie file—the combination can be treacherous!).

To the rescue (and new to version 6) is the ability to create and run more VIs without having to cross your fingers that the revolving beach ball doesn't pay repeated visits! In DP6, once you close a plug-in's window, a VI's output (from the created instrument track, discussed later in this chapter) is busily being *prerendered* (or assembled). MOTU refers to this process as *pre-gen*. This means your computer's CPU is allowed to ration out its available processing power before playback actually begins, resulting in real-time playback being less taxing on the system. Of course, you can always run a VI in conventional real-time mode by selecting Run This Instance in Real-Time in each plug-in's mini-menu (see Figure 9.34).



**Figure 9.34** In DP6, virtual instruments are pre-rendered unless Run This Instance in Real-Time is selected.

---

**Digital Performer Includes Six Virtual Instrument Plug-Ins** In DP, six virtual instrument plug-ins are included with your Digital Performer software. BassLine, Model 12, Modulo, Nanosampler, PolySynth, and Proton provide a nice variety of instrument sounds, such as analog-modeled bass guitars, various drum kits, and retro-style synthesizers. For a detailed look at these instruments and their various settings, consult the “Virtual Instrument Plug-Ins” chapter of your DP User Manual.

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**Virtual Instruments and DAE** Keep in mind that when running Digital Performer under DAE (*Digidesign Audio Engine*) and not MAS, AU/MAS/VST plug-ins will not be available. You will, however, be able to open up plug-ins and virtual instruments that are in the TDM, RTAS, and AudioSuite formats.

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**Working with ReWire Virtual Instruments** Refer to Chapter 4 for an explanation of the setup process involved with ReWire virtual instruments.

---

Once a supported virtual instrument plug-in has been installed, it will appear in the Instrument Track submenu, as shown in Figure 9.35.

As explained in Chapter 8, virtual instrument plug-ins must first be opened within an instrument track before they will appear in the output assignment menu of a MIDI track. Basically, you will not be able to send MIDI data to a virtual instrument plug-in until its instrument track has been created. Once a VI is created and opened (also referred to as *instantiated*), it will present (publish) its MIDI input channels (as shown in Figure 9.36), which also become immediately available in the output assignment menu of all MIDI tracks (as shown in Figure 9.37).

---

**Can't See or Hear Your Virtual Instrument?** Don't worry; it happens to the best of us! Remember, an available output (or bus routed to an available output) must be used when creating a virtual instrument track in order to open and ultimately hear the instrument. Sometimes a VI is created but no output assignment is defined for the track, resulting in an incomplete loading of the VI's window (which is usually the case with third-party plug-ins). As with an audio track, make sure to use the output assignment menu of the

instrument track to select an available output or bus (such as Analog 1-2). As is to be expected, if no output is selected, the VI title header will appear but will not fully load, and its MIDI inputs will not be available in the output assignment menu of your MIDI tracks (as discussed earlier in this chapter).



**Figure 9.35** The Instrument Track submenu provides a list of installed MAS and AU virtual instrument plug-ins.

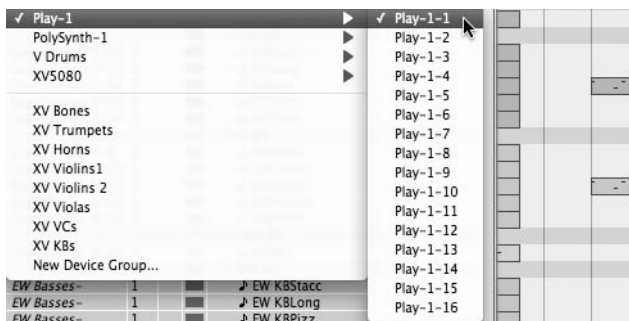
## Assigned Instrument Track

Digital Performer allows you to create two basic types of instrument tracks: assigned and unassigned. *Assigned* instrument tracks are created with a virtual instrument already assigned to them—simply choose the desired virtual instrument plug-in from the Instrument Track submenu. For example, to create an instrument track with MOTU's Bassline virtual instrument assigned to it, just choose Bassline from the Instrument Track submenu, as shown in Figure 9.38.

To create an assigned instrument track, choose Project > Add Track > Instrument Track and select the virtual instrument from the list. To add multiple assigned instrument tracks (and multiple corresponding MIDI tracks), choose Project > Add Track > Add Instruments.



**Figure 9.36** Once a VI is opened (instantiated), it will publish its available MIDI input channels. In this example, there is a contrabass “Big Sus” in MIDI channel 1 of EastWest/Quantum Leap’s Play virtual instrument.



**Figure 9.37** Once instantiated, the Play VI’s available MIDI input channels become available in the output assignment menu of a MIDI track.

## Unassigned Instrument Tracks

*Unassigned* instrument tracks, shown in Figure 9.39, are basically “empty” tracks that do not currently have a virtual instrument plug-in assigned or inserted. Unassigned instrument tracks are handy for creating project templates—they allow you to make a virtual instrument plug-in assignment at a later time.



**Figure 9.38** A Bassline virtual instrument is created by choosing Bassline from the Instrument Track submenu (shown earlier in Figure 9.35).

| INPUT | PLAY | OUTPUT     | TAKE | ENA | COL | TRACK NAME     | PATCH |
|-------|------|------------|------|-----|-----|----------------|-------|
|       |      |            | 1    |     |     | ✚ Conductor    |       |
|       |      |            |      |     |     | ▼ VI Tracks    |       |
|       | ▶    | Analog 1-2 | 1    | ●   |     | ▢ BassLine-1   |       |
|       | ▶    | Analog 1-2 | 1    | ●   |     | ▢ Instrument-1 |       |
|       | ▶    | Analog 1-2 | 1    | ●   |     | ▢ Instrument-2 |       |
|       | ▶    | Analog 1-2 | 1    | ●   |     | ▢ Instrument-3 |       |
|       | ▶    | Analog 1-2 | 1    | ●   |     | ▢ Instrument-4 |       |

**Figure 9.39** Unassigned instrument tracks are created with the default name “Instrument.” Notice that the assigned Bassline instrument tracks appear with the name Bassline-1.

To create an unassigned instrument track, choose Add Track > Instrument Track > Unassigned. You can also use the default keyboard shortcut Shift+Command+I.

Instrument Inserts and the Mixing Board

Within the Mixing Board, an instrument track functions almost identically to an audio track. You are free to insert effects, utilize sends, and so on. The difference, however, is that instrument tracks contain a special type of insert called an *instrument insert* that appears shaded yellow within the track’s Insert section. Clicking on the insert will reveal a list of available virtual instrument plug-ins. Use the instrument insert to assign an instrument to an unassigned track or to change the existing instrument to a new one.

To assign a virtual instrument to an unassigned instrument track:

- 1. Open the Mixing Board by pressing Shift+M.
- 2. Navigate to the unassigned instrument track. At the top of the channel strip is the first Insert menu, as shown in Figure 9.40. This is called the *instrument insert*.



**Figure 9.40** Within the Mixing Board, virtual instrument plug-ins have their own instrument inserts. Unassigned instrument inserts will appear blank.

3. Click on the instrument insert and choose the desired instrument plug-in from the list, as shown in Figure 9.41.

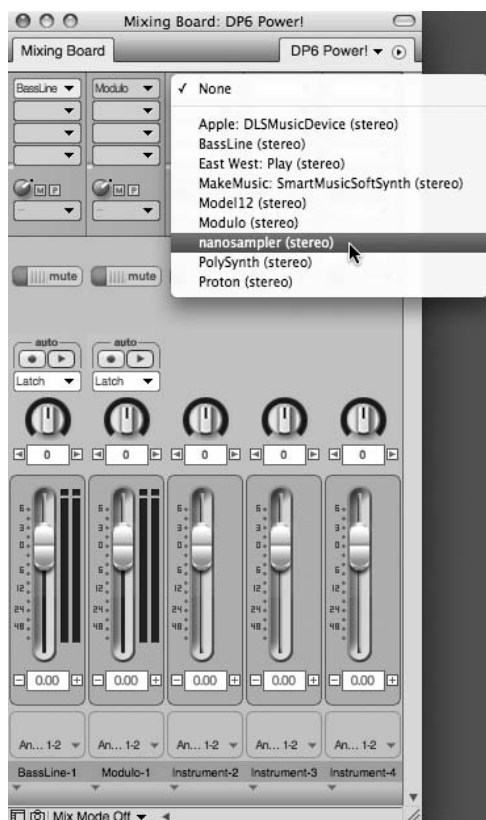
To insert a different virtual instrument in an assigned instrument track:

1. Open the Mixing Board by pressing Shift+M.
2. Navigate to the assigned instrument track. The name of the existing virtual instrument plug-in will be displayed in the instrument insert that's shaded red.
3. Click on the instrument insert and choose another instrument from the list.

---

**Virtual Instrument or Virtual Sampler?** We have already discussed *virtual instruments*, but what is a *virtual sampler*? Although these terms are often used interchangeably, let's take a deeper look. Without going too far into their extensive list of features, think of virtual

samplers as yet another container for your virtual instruments. Virtual samplers are also “plugged in” to DP via an instrument track and can be a host for a multitude of instruments and sounds. When you load your VI in a compatible sampler (rather than its own instrument track), you often have much more flexibility in manipulating the sound of the instrument (or, to use the latest term, “tweakability”). Within the virtual sampler, you can import, edit, synthesize, and process instruments, looped patterns, synths, and sounds, or like samplers of old, you can “sample” your own sounds to use as instruments, FX, and so on. MOTU’s MachFive and Native Instruments’ Kontakt are powerful examples of virtual samplers and are compatible with (or can import and convert) many of the virtual instrument libraries on the market. In addition, many virtual samplers include a large set of instruments and sounds, allowing you to start creating right out of the box.



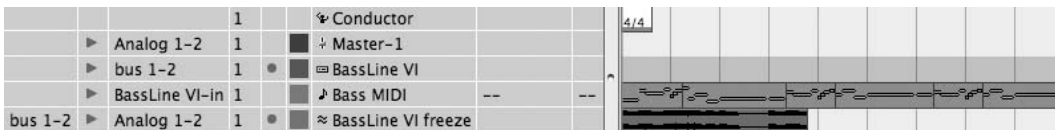
**Figure 9.41** Click the instrument insert to choose an instrument plug-in.

## The Freeze Selected Tracks Command

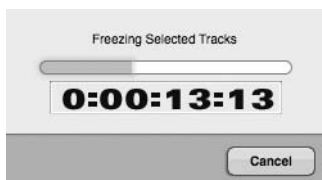
The Audio menu's Freeze Selected Tracks command enables you to automatically “print” or temporarily bounce selected tracks in real time, allowing you to free up your system's resources for other CPU-intensive tasks. When you freeze a track, DP will automatically assign tracks that are to be frozen to a new bus, create a new audio track with its input assigned to the new bus, and begin recording the outputs of the frozen tracks to the new audio track (with all real-time effects printed to the track). Not only is this a great way to lessen the strain on your CPU, it can also be very handy for creating a quick stereo mix of your project.

To freeze an audio, aux, or instrument track:

1. Click the name of the instrument track in the Tracks Overview section of the Tracks window.
2. Select the data you want to freeze.
3. If you're freezing an instrument track or an aux/audio track being used to monitor a MIDI device (as discussed in Chapter 4), be sure to include the associated MIDI track in the selection. Remember that you can Shift-click the names of tracks within the Tracks window to select multiple tracks. This is an important step—if you don't include the corresponding MIDI track, DP will create a frozen track that contains silence.
4. Choose Audio > Freeze Selected Tracks. DP will start the freeze process. In this example, DP automatically creates a new audio track with an input assignment on Bus 1-2 and assigns the tracks selected in Steps 1 and 2 to the new bus, as shown in Figure 9.42. The progress bar that appears is identical to the Bounce to Disk command's progress bar, as shown in Figure 9.43.



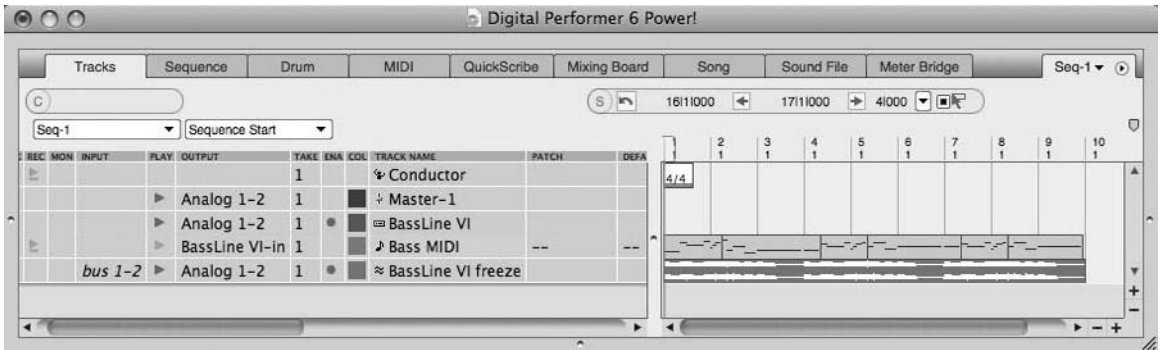
**Figure 9.42** Tracks are automatically created and assigned during the freeze process.



**Figure 9.43** The Freeze Selected Tracks progress bar.



- When the Freeze Selected Tracks process is completed, you'll need to mute the original MIDI track (shown in Figure 9.44) or assign the instrument track's voice to None so that you don't hear playback from the original tracks along with the newly created frozen track.



**Figure 9.44** In this example, the Freeze Selected Tracks process has been completed, and the MIDI track has been muted to prevent simultaneous playback of the original and frozen tracks.

- To unfreeze a frozen track, press and hold the Shift key and choose Audio > Unfreeze Selected Tracks. Use the Shift key to toggle between the Freeze and Unfreeze Selected Tracks commands.

---

**Freezing Tracks with Processing Effects** When using the Freeze Selected Tracks command, be aware that effects plug-ins must be run in real time in order for them to be “printed” on the frozen track. Use a plug-in’s mini-menu to toggle its real-time settings.

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**Bouncing Virtual Instrument Tracks to Disk** In previous versions of DP, you were required to either “freeze” VI tracks with the Freeze Selected Tracks command or record the audio output of the instrument tracks to separate audio tracks in real time (discussed below) before using the Bounce to Disk command (“bouncing” multiple audio tracks down to a single sound file). On account of MOTU’s new pre-gen feature, mentioned earlier in this chapter, Digital Performer 6 now has the ability to include VI tracks in a bounce-to-disk operation. For more information on the Bounce to Disk command, refer to Chapter 13.

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To record the audio output of an instrument track in real time, create a new audio track and assign its input to an available bus, such as Bus 1-2. Change the instrument track’s output assignment to Bus 1-2. Arm the audio track and hit Record, and the audio from the instrument track will be recorded into the audio track in real time.

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## Summary

DP's Region menu contains many powerful commands for altering MIDI data. In addition to these destructive MIDI operations, you can also use the Mixing Board's MIDI effects plug-ins to process MIDI tracks in real time, allowing you to audition different settings or change plug-ins all together without altering the original MIDI data within a track. Support for virtual instrument plug-ins and samplers, along with DP's instrument tracks, allows you to expand your library of sounds, while the Freeze Selected Tracks command helps to reallocate precious CPU resources when you are working with complex projects.

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# 10 Editing

**A**rguably the greatest advantage of nonlinear editors (such as Digital Performer, Pro Tools, Final Cut Pro, Photoshop, and so on) is their powerful features and tools for editing data. Every aspect of a track or project can be refined—wrong notes can be fixed, timing inaccuracies can be corrected, and so on. Nonlinear editors provide you with powerful ways to enhance and improve—or unknowingly destroy—your media projects. Just because you can tune the vocal to harmonic perfection doesn't mean you should. The Quantize command, for example, is a great tool for correcting rhythmic imperfections within a performance. When used (or abused) too aggressively, however, it can render a grooving track lifeless and robotic.

Digital Performer packs a powerful set of editing tools and feature sets. Various tools, editor windows, and keyboard shortcuts provide you with an arsenal of editing capabilities. In this section, I'll provide an overview of the basic (and most widely used) ways of editing audio and MIDI data. For a full explanation of the DP's selection capabilities, refer to the Digital Performer User Manual.

Following is a list of topics covered in this chapter:

- The Tool palette
- How to work with time formats, Time Rulers, and edit grids
- How to use the View Filters
- How to zoom
- How to select and move audio and MIDI data
- How to use DP's standard Edit menu commands
- How to edit audio in the Sequence Editor
- How to create fades and crossfades
- How to edit MIDI notes and controller events in the Graphic Editor
- How to use the Event List

## The Tool Palette

The Tool palette is like a toolbox for Digital Performer’s various editing tools. You can call up, or open, the Tool palette by pressing Shift+O. You can also choose Studio > Tools.

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**Positioning the Tool Palette** You can position the Tool palette vertically or horizontally by using Shift+Option+’. You can even force it to automatically stay docked with the active edit window by selecting Digital Performer > Preferences > Tools > Position Tool Palette Automatically.

---

Each tool within the Tool palette allows you to perform a certain function. Simply click on a tool to select it. You can also use DP’s many default keyboard shortcuts to quickly select a particular tool. To toggle (or temporarily select) a particular tool, press and hold its corresponding letter key. Double-tap the letter key to make the tool selection stick.

Following is a description of the various tools contained in the Tool palette, which is shown in Figure 10.1. The letter that comes after the tool name (in parentheses) is the tool’s default keyboard shortcut. Keep in mind that Insert/Reshape Curve and Reshape Mode cannot be accessed from the Mac’s keyboard.



**Figure 10.1** The Tool palette.

- **The Pointer tool (A).** Use the Pointer tool (also called the *Arrow tool*) to select and move audio and MIDI data.
- **The I-Beam tool (I).** Use the I-Beam tool (also called the *Selector tool*) to make time-range selections within an editor window, regardless of the type data you’re working with.
- **The Pencil tool (P).** Use the Pencil tool to insert note and automation data. The Insert/Reshape Curve determines the shape or type of waveform that is drawn with the Pencil tool.
- **The Insert/Reshape Curve.** Use this drop-down menu to set the shape/curve of the Pencil tool.
- **The Reshape tool (R).** Use the Reshape tool to change the shape or curve of existing automation and controller data.
- **The Reshape Action (Mode).** Use the Reshape Mode to determine how data is affected by the Reshape tool.
- **The Pattern tool (E).** The Pattern tool (also called the *Rhythm Brush*) allows you to “paint” or draw notes within the Drum Editor.

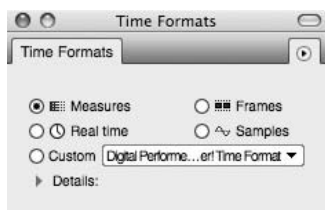
- **The Zoom tool (Z).** Use the Zoom tool (or *Zoomer tool*) to zoom in or out on a selection.
- **The Scrub tool (S).** Use the Scrub tool to “scrub” or audition the playback of data within an audio and MIDI track.
- **The Insert Loop tool.** Use this tool to insert a loop in a track by clicking and dragging horizontally in the marker strip.
- **The Mute Soundbites tool (M).** Use this tool to quickly mute or un-mute a soundbite. Once muted, the soundbite will appear dimmed. Keep in mind that the Automation Setup window’s Mute Frees System Resources setting has no effect on soundbites muted with the Mute tool.
- **The Scissors tool (C).** Use the Scissors tool to split a soundbite or MIDI note. You can repeatedly split a soundbite or note into sections that are constrained to a specific grid value by dragging with this tool (with the edit grid turned on).
- **The Trim tool.** This tool allows you to relocate the right or left edge of a soundbite with a simple click in the desired location.
- **The Roll tool.** When two soundbites are adjacent, this tool allows you to edge edit the end of one soundbite and the beginning of another at the point where the two soundbites come together.
- **The Slip tool.** This tool allows you to edge edit the start and end of a soundbite without changing the position of the soundbite in the track. In other words, you can move (slip) the audio back and forth within the edge-edited soundbite location.
- **The Slide tool.** Use this tool to move the position of a soundbite while leaving the soundbite’s audio at the same playback time.
- **The Comp tool.** Use this tool to create a composite (or *Comp*) Take from multiple takes in an audio track. See the “Comp Takes (or Track Comping)” section of Chapter 7 for more information.

## The Time Formats Window, Time Ruler, and Edit Grid

There are a few specific features that you should be familiar with in order to efficiently edit data within Digital Performer. Time formats and the Time Ruler directly affect how audio and MIDI data is selected, while the edit grid constrains edits and selections to a specified grid value.

### The Time Formats Window

Digital Performer provides four different time formats that can be displayed within a project—Measures, Real-Time (minutes and seconds), Frames (SMPTE), and Samples (audio samples). Each time format can be displayed individually or simultaneously. The Time Formats window, shown in Figure 10.2, allows you to set the time formats that will appear throughout a project—including the various Counters, rulers, Event Lists, and so on.



**Figure 10.2** The Time Formats window.

To set the time format for a project:

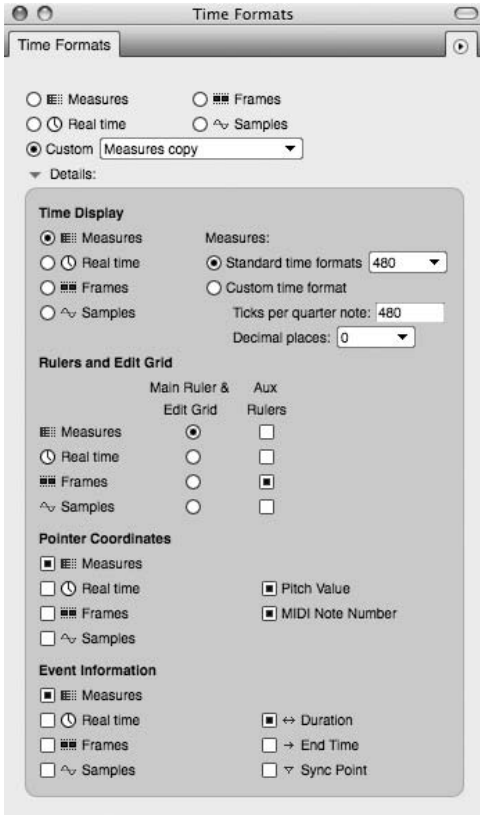
1. Choose Setup > Time Formats. The Time Formats window will open.
2. Select the time format to be displayed. Changes are instantaneous and will be reflected anywhere time can be shown.

Multiple time formats can also be displayed. You can even specify different time formats for the Time Ruler, edit grid, pointer coordinates, and event information from the Details section of the Time Formats window, as shown in Figure 10.3. The Rulers and Edit Grid section uses aux rulers to display multiple time formats, because only one time format can be designated as the main ruler.

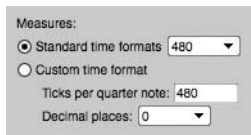
The Pointer Coordinates and Event Information sections, however, allow you to enable multiple time formats by simply clicking on each time format check box. Additional parameter setting information, such as pitch value, MIDI note number, duration, end time, and sync point, can also be displayed.

To enable multiple time formats for a project:

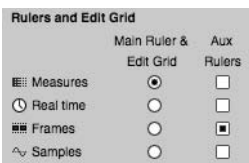
1. Open the Time Formats window by pressing Option+Command+T.
2. Click the Details disclosure triangle to display the Custom options.
3. In the Time Display section, select the main Time Ruler that will be displayed throughout your project. If you select Measures, you can further customize the Measures time format from the Measures section of the window, as shown in Figure 10.4.
4. Next, choose the desired time format settings for the Rulers and Edit Grid section, the Pointer Coordinates section, and the Event Information section. Notice that the Rulers and Edit Grid section allows you to display multiple time formats with the use of aux rulers, as shown in Figure 10.5. Once an aux ruler (or secondary time format) is enabled, the particular time format will appear above a Time Ruler's main ruler, as shown in Figure 10.6.



**Figure 10.3** The Details section of the Time Formats window is displayed by clicking the Details disclosure triangle, located below the Custom option.

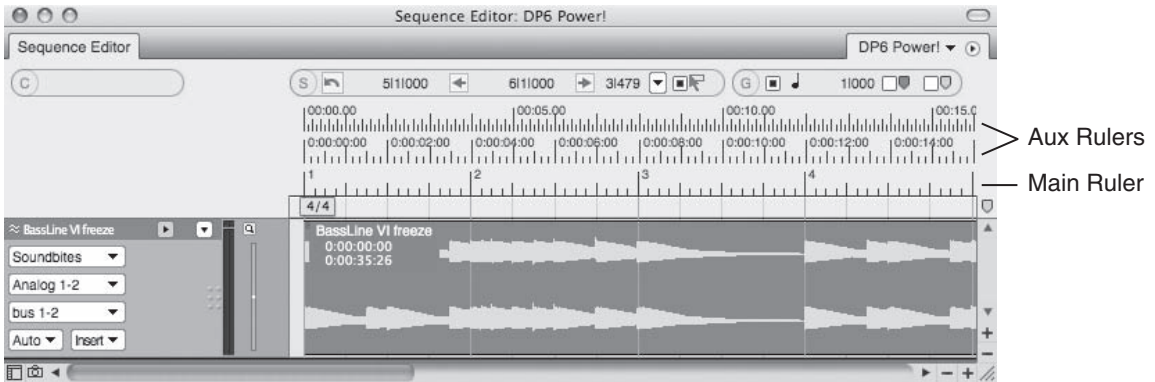


**Figure 10.4** Use the Measures section to further customize how the Measures time format will be displayed in DP.



**Figure 10.5** Enable an aux ruler to display multiple time formats within a Time Ruler.



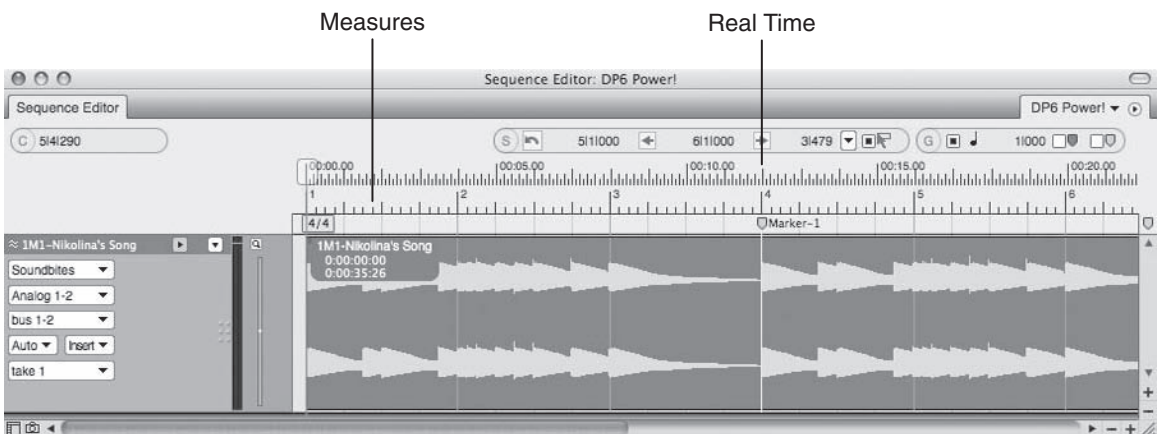


**Figure 10.6** In this example, the Time Ruler's main ruler is set to Measures.

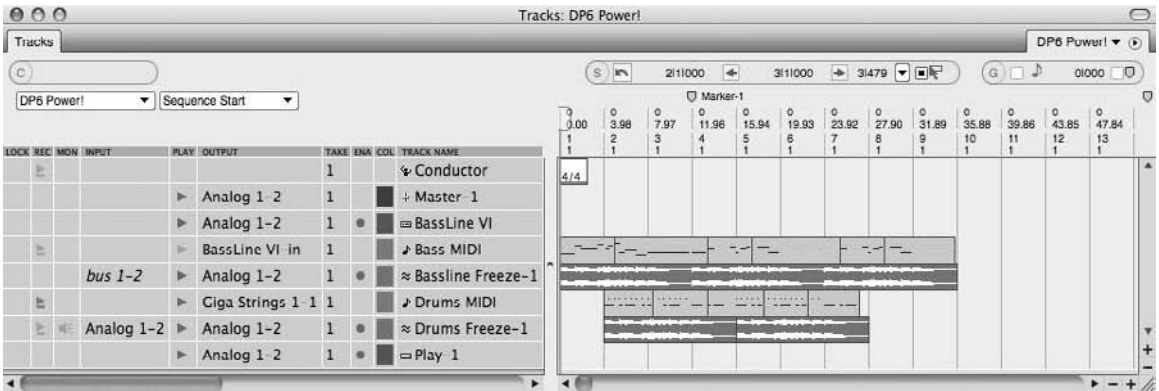
5. Custom settings will be saved automatically and listed in the Custom drop-down menu located to the right of the Details disclosure triangle.
6. Close the Time Formats window. There is no need to apply the new settings—any changes made to the Time Formats window will be instantaneous.

## The Time Ruler

Each editor window in DP (except the QuickScribe Editor) contains a Time Ruler that is located below the window's title bar and/or Information Bar, as shown in Figures 10.7 and 10.8. A Time Ruler consists of a main ruler and/or secondary aux rulers. To designate a specific time format for the main and aux rulers, refer to the previous section.

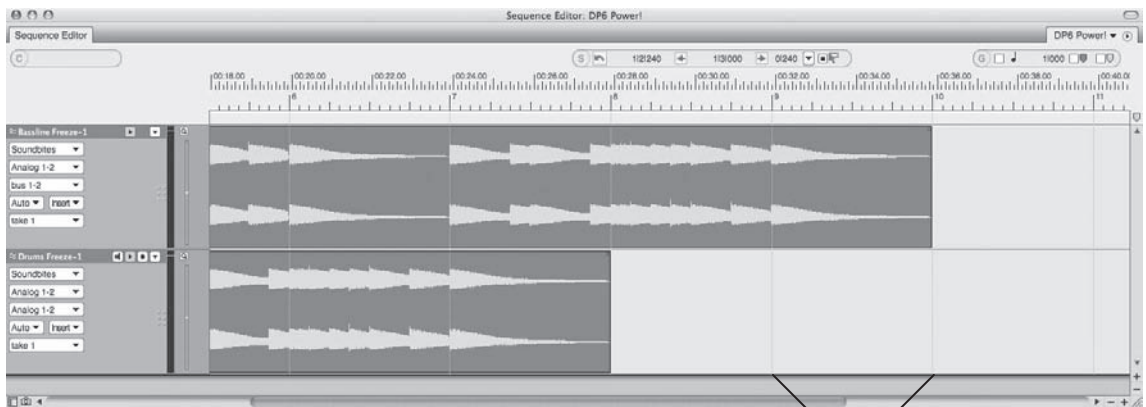


**Figure 10.7** In this example, the Sequence Editor's main Time Ruler is shown as Measures. Notice that a secondary (aux) ruler displaying Real Time has been enabled. Vertical lines divide the window into sections or subdivisions.



**Figure 10.8** The Tracks window's Time Ruler appearance is simple compared to the other editor windows.

The Time Ruler basically displays a linear measurement of time throughout an editor window, with vertical lines that extend and divide a window into equal segments (or subdivisions). The size of each subdivided section depends on the current horizontal zoom resolution and time format that are displayed in the main ruler. For example, if I horizontally zoom in far enough in the Sequence Editor, I can view each measure within a track, as shown in Figure 10.9. Notice that the Time Ruler's vertical lines extend from Beat 1 of each measure through each visible track.



Vertical Lines Extend  
Through the Window

**Figure 10.9** The Time Ruler displays vertical lines that extend through an editor's window. These lines divide a track (or window) into equal subdivisions.

If I horizontally zoom out, the main Time Ruler's subdivisions will become larger, allowing me to view more of the track's data within the same amount of physical space, as shown in Figure 10.10. Notice that the Time Ruler vertical lines no longer appear at the beginning of



**Figure 10.10** In this example, I have horizontally zoomed out on the tracks. Notice that the main Time Ruler now displays four-bar subdivisions.

each measure; now they appear every four measures—basically subdividing the tracks into four-bar segments.

The Time Ruler is a critical part of DP's editor windows that allows you to visually navigate to specific times or points within a sequence and view the relationship between a sequence's timeline and data within a track. You can even make time-range selections directly in the Time Ruler by simply clicking and dragging. In addition to the Time Ruler's vertical lines that subdivide an editor window, edit grid lines can be enabled to constrain edits to a specified grid. The edit grid is explained in the following section.

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**Which Time Formats Should You Display in the Time Ruler?** Remember that the type of time measurement that is displayed in the Time Ruler's main and aux rulers is determined by the specific time formats selected in the Time Formats window. Exactly which formats you choose to work with and display is entirely up to you and will be dictated by the type of project and the specific type of editing tasks you need to accomplish. Feel free to change the displayed time formats at any time within a project.

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## The Edit Grid

An edit grid is a staple of nonlinear editing applications. Edit grids basically subdivide a window or track into equal segments (or a grid). An edit grid's resolution setting (or value) determines

the amount of time between each grid line. For example, if you enable the edit grid and set its resolution to a quarter-note value, any edits that are made will be automatically constrained to quarter-note divisions, as shown in Figure 10.11.



**Figure 10.11** In this example, the Sequence Editor’s edit grid has been enabled and set to a quarter-note value. Notice that the visible grid lines, divided into quarter-note subdivisions, constrain the selection at Measure 8.

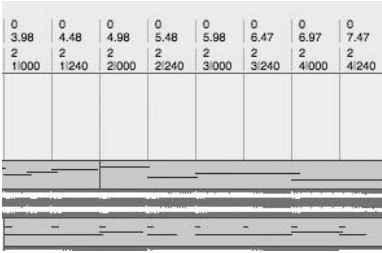
With the edit grid set to a quarter-note resolution, you could make a quarter-note time-range selection, a half-note selection (two quarter notes), a whole-note selection (four quarter notes), and so on. Any time range that can be divided by a quarter note is possible. An eighth-note selection, however, would not be possible, because it is smaller than the specified quarter-note grid. Refer to the “Grids, Time Rulers, and Zooming” section of Chapter 3 for a review of grid resolution settings.

### ***Working with DP’s Edit Grids***

Some of DP’s editor windows (such as the Tracks window, the Notation Editor, and the Drum Editor) automatically constrain edits and selections to an edit grid and will not allow you to disable this grid. Other windows, such as the QuickScribe Editor and the Event List, do not contain edit grids. The Sequence, Graphic, and Waveform Editors, however, give you an option for enabling and disabling the edit grid and setting its resolution—providing you increased flexibility when editing audio and MIDI data (see Figure 10.12).

### ***The Tracks Window***

The Tracks window, by its nature, automatically constrains edits and selections to a grid. The Time Ruler’s main time format, along with the current zoom setting, determines the actual size of the grid. Zooming in within the Tracks window, for example, will reduce the size of the grid, allowing you to make smaller edits and selections, as shown in Figure 10.12.



**Figure 10.12** In this example, I've zoomed in enough within the Tracks window to allow eighth-note edits.

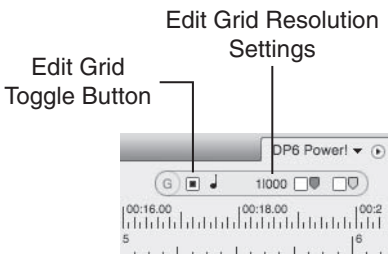
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**Overriding the Grid in the Tracks Window** Digital Performer won't allow you to permanently turn off the Tracks window's grid, but you can temporarily override the feature. Simply press and hold the Command key to temporarily toggle the grid off.

---

### *The Sequence, Graphic, and Waveform Editors*

The Sequence, Graphic, and Waveform Editors allow you enable or disable the window's edit grid. This gives you more flexibility in the editing process because it allows you to make edits and selections freely (without being constrained to a set grid value). The Grid Snap Information settings can be found at the far-right corner of the Information Bar, as shown in Figure 10.13. Keep in mind that, as we discussed in Chapter 3, you must have Grid Snap selected in Digital Performer > Preferences > Information Bar for Grid Snap Information (G) to appear in specified windows.

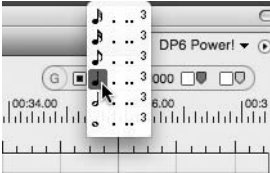


**Figure 10.13** The Edit Grid toggle button and Edit Grid Resolution settings.

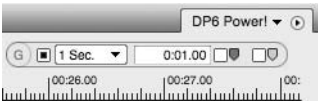
To enable/disable the edit grid:

- Click on the Edit Grid box to turn the edit grid on or off. The box will be highlighted blue when the grid is on.
- Press the Command key to temporarily toggle the edit grid on or off. Keep in mind that this will not work in the Waveform Editor.

When you're working in the Measures time format, the Edit Resolution pop-up menu, shown in Figure 10.14, will display note values, along with dotted, double dotted, and triplet markings. When the main ruler is set to Real-Time, Frames, or Samples, the Edit Grid Resolution pop-up menu will change to display the corresponding values, as shown in Figure 10.15. An input field allows you to type in the exact value if you need to.



**Figure 10.14** Note values will be displayed in the Edit Grid Resolution pop-up menu when the main ruler is set to Measures.



**Figure 10.15** In this example, the Edit Grid Resolution is set to Real-Time.

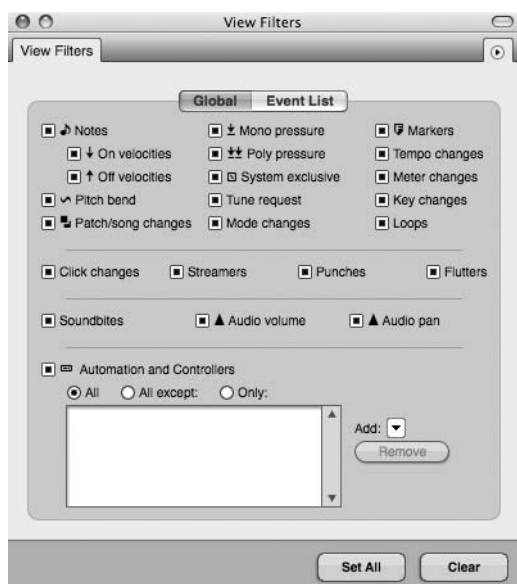
To set the resolution for the edit grid:

1. Click the Edit Grid Resolution pop-up menu. If you're working with measures, note values will be displayed in the pop-up menu.
2. Choose the desired grid value from the pop-up menu. Changes to the edit grid are instantaneous.

## The View Filters

In Chapter 8, I discussed the use and function of the Input Filter window and how it's used to determine what type of MIDI data will be recorded—as well as how the window basically filters out selected data during the MIDI input stage. View Filters, shown in Figure 10.16, operate in a similar fashion, except that this setting determines what types of data will be visible in a track *after* it has been recorded or inserted. This allows you to decide what types of data can be edited within DP by filtering out the data you don't want to work with. Keep in mind that this only affects the global appearance of data within a project—it doesn't actually remove or alter it.

You can open the View Filters window by choosing Setup > Set View Filter or by using the default keyboard shortcut Command+F. Once the window is open, click to enable or disable the particular type or types of data you want to view within your project. Data that is unchecked will not be visible. You can set the View Filters separately for the Event Lists by clicking on the Event List tab, as shown in Figure 10.17.



**Figure 10.16** The View Filters.



**Figure 10.17** Select the Event List tab to configure the view settings for all Event Lists within a project.

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**The Invisible Project** Clicking the Clear button in the View Filters window will cause the data in your project to disappear but will not affect playback! If your project becomes “invisible,” simply use the View Filters window to re-enable desired data.

---

## Zooming

Digital Performer provides a number of different methods for zooming in and out within a window or data selection. In addition to an editor window’s dedicated zoom buttons, the Zoomer tool allows you to zoom in and out and also provides more control for zooming in on specific data or parts of a track.

To zoom with the Zoomer tool:

1. Call up the Zoomer tool by double-tapping the Z key. You can temporarily invoke the tool by pressing and holding the Z key.
2. Click at the desired location to zoom.
3. To control exactly what you’re zooming in on, click and drag over a selection of data instead. Release the mouse, and DP will zoom into the section.
4. To zoom out, press and hold the Option key while zooming.

You can also zoom from the keyboard, even when the Zoomer tool is not enabled. Keep in mind, however, that this method will simply enlarge/shrink the current view of the window—you'll need to use the Zoomer tool to zoom in on specific selections.

To zoom from the keyboard:

- To zoom horizontally, press and hold the Command key while hitting the left and right arrow keys to zoom in and out.
- To zoom vertically in the Sequence or Graphic Editor, press and hold the Command key while hitting the up and down arrow keys to zoom vertically. This basically increases or decreases the height of visible tracks. Although you can use the zoom buttons to vertically resize the Tracks window in Digital Performer 6, these keyboard shortcuts do not apply in the Tracks window.

---

**Leopard's Spaces** The new Spaces feature in Mac's latest operating system (Leopard) allows you to configure the same keys for swapping desktop spaces as DP's keyboard shortcuts for zooming. In this case, Spaces will override Digital Performer.

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## Selecting and Moving

Within Digital Performer, you can use the Pointer and I-Beam tools to select and move audio, MIDI, and breakpoint automation data—you can even change the duration of MIDI notes. This section will discuss the procedures for selecting and moving audio data and MIDI notes.

Selecting is the most basic part of the editing process—data must be selected before it can be edited. There are basically two ways to select data within DP—by clicking on it or by dragging with a selected tool. Once data is selected, it will become highlighted.

To select the Pointer tool:

- Click on the Pointer tool in the Tool palette.
- Double-tap the letter A key.
- Press and hold the letter A key to temporarily invoke the Pointer tool.

To select the I-Beam tool:

- Click on the I-Beam tool in the Tool palette.
- Double-tap the letter I key.
- Press and hold the letter I key to temporarily invoke the I-Beam tool.



---

**Selecting with the Edit Grid Turned On** When enabled, the edit grid will constrain any selections and confine them to the current grid resolution. If you want to select freely, be sure to turn the edit grid off. To temporarily disable the edit grid, press and hold the Command key.

---

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**The Select All/Deselect All Commands** If you want to select all of the contents of a window, such as audio and MIDI data on all tracks within the Tracks window or an entire soundbite within the Waveform Editor, use the Edit menu's Select All command. (The default keyboard shortcut is Command+A.) Keep in mind that this command only works on visible data and affects the active window (the window in the foreground). To deselect everything, choose Edit > Deselect All or press Command+D.

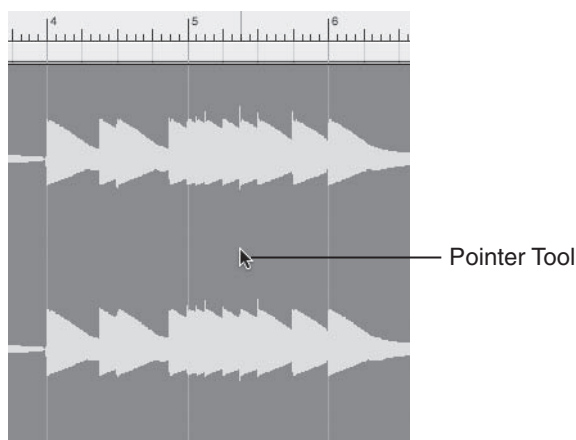
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## Selecting and Moving Audio

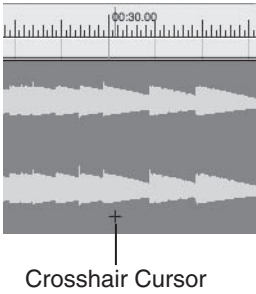
Audio data can be edited in the Tracks window, the Sequence Editor, the Event List, or the Waveform Editor. When audio data is selected with the I-Beam tool or crosshair cursor, it will appear highlighted blue. When an entire soundbite is selected, however, it will be highlighted yellow in the Tracks window and yellow with a blue band in the Sequence Editor.

### *The Pointer Tool*

The Pointer tool is unique in that it will change states, depending on where it's positioned. Position the Pointer over a soundbite, about a third of the way up the soundbite, and you will see the normal Pointer (or Arrow) tool, as shown in Figure 10.18. Move the Pointer below this area, and it will change to the crosshair cursor, as shown in Figure 10.19.

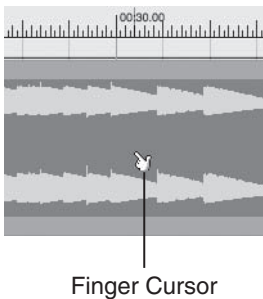


**Figure 10.18** The Pointer tool.



**Figure 10.19** The crosshair cursor.

If you place the Pointer tool over a selected soundbite, however, it will change to the finger cursor. The finger cursor, shown in Figure 10.20, is identical to the normal Pointer tool and is used by DP to indicate that you have positioned the Pointer over a selected soundbite.



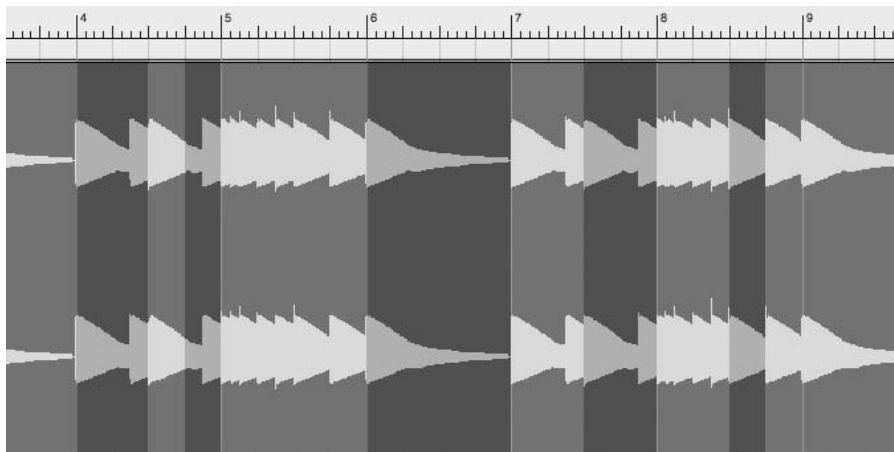
**Figure 10.20** The finger cursor.

Use the Pointer tool to do the following:

- **Select a single soundbite.** Click on a soundbite to select it.
- **Move a soundbite.** Click and drag a soundbite to move it. The soundbite will be placed where you release the mouse. This allows you to drag audio between different tracks and even different windows.

Use the crosshair cursor to do the following:

- **Select a single soundbite.** Click and drag across the entire soundbite.
- **Select a portion of a soundbite.** Click and drag over the portion of audio you want to select.
- **Shorten/extend/add to an existing selection.** After you have made an initial selection, press and hold the Shift key while making a new selection or adjusting the existing one, as shown in Figure 10.21. You can even make selections that aren't adjacent to one another.



**Figure 10.21** You can Shift and drag with the crosshair cursor to make noncontiguous selections.

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**Edge Editing with the Pointer Tool** For quick edge-editing tasks, you can place the pointer, the finger, or the crosshair cursor at either edge of a soundbite, and it will automatically change to the Trim tool. Simply click and drag to create an edge edit at either end of a soundbite.

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### ***The I-Beam Tool***

The I-Beam tool is used to make time-range selections. Selections can contain audio data, or they can be made in an empty part of a track. When you're selecting audio with the I-Beam tool, the top soundbite will be selected, along with any underlying automation data. Incorporate the Shift key to shorten or extend a selection. Unlike the crosshair cursor, the I-Beam tool cannot be used to make noncontiguous selections.

---

**The I-Beam Tool versus the Crosshair Cursor** The I-Beam tool and the crosshair cursor are nearly identical to one another in behavior and function. Both will make time-range selections and can select both audio and MIDI data. Unlike the I-Beam tool, however, the crosshair cursor will not allow you to create insertion points or anchor points for selections (discussed in the upcoming section).

---

Use the I-Beam to do the following:

- **Make an empty time-range selection.** Click and drag across an empty portion of a track. Press the Shift key while dragging to extend or shorten a selection.

- **Make a time-range selection of audio data.** Click and drag across a soundbite.
- **Select data across all tracks.** Click and drag in the Time Ruler.
- **Select an entire soundbite.** Double-click on a soundbite.
- **Create an insertion point (anchor point) for edit commands, such as Paste.** Simply click at any location to insert the I-Beam cursor, which will appear as a flashing vertical black line.

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**The Flashing I-Beam Cursor** Once placed into a track, the I-Beam cursor becomes an anchor point for selections and edit commands, such as Paste, Merge, Split, Splice, and Trim End.

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**Selecting Only the Visible Portion of a Soundbite with the I-Beam Tool** When a portion of a soundbite is covered by another soundbite and you double-click on it with the I-Beam tool, you will be selecting the entire soundbite, not just the visible portion. To work around this, press and hold the Option key before double-clicking the soundbite with the I-Beam tool.

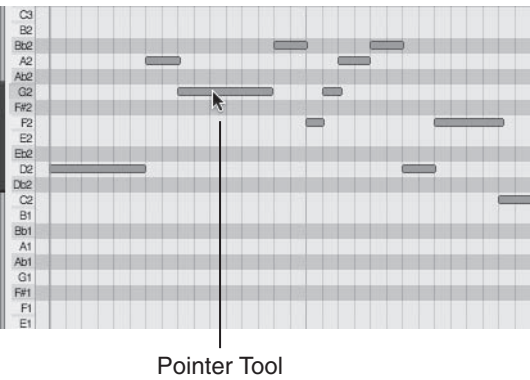
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## Selecting and Moving MIDI Notes

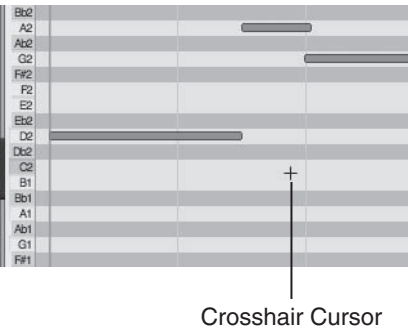
Digital Performer can edit MIDI data in every editor window except the Waveform Editor. Each editor window provides a different way of displaying MIDI data. The Tracks window shows MIDI data as phrases and blocks, the Notation and QuickScribe Editors show MIDI notes as standard notation, the Event List displays MIDI notes (and MIDI data) as event information within a list, and the Graphic and Sequence Editors show MIDI notes as horizontal bars within a “scrolling piano”-style note grid.

MIDI note selection with the Pointer tool and crosshair cursor is similar to audio data selection. Position the Pointer tool directly over a MIDI note to see the normal Pointer, as shown in Figure 10.22. Move the Pointer outside a note to see the crosshair cursor, as shown in Figure 10.23. If you place the Pointer over a MIDI note that has been selected, you will see the finger cursor, as shown in Figure 10.24. Selected notes will be shaded lighter (or brighter) than non-selected notes.

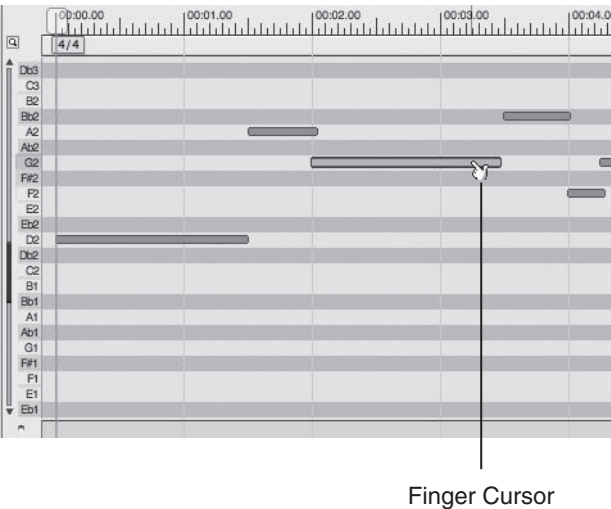
The finger cursor is identical to the normal Pointer tool and is only used by DP to indicate that you have positioned the Pointer over a selected note. The finger and crosshair cursors will not be available when working in the Event List and QuickScribe Editor. Use the normal Pointer tool when working in these windows.



**Figure 10.22** In this example, the Pointer tool is positioned over a MIDI note.



**Figure 10.23** Place the Pointer in an empty area of a MIDI track to invoke the crosshair cursor.



**Figure 10.24** The finger cursor will appear when you place the Pointer tool over a selected MIDI note.

Use the Pointer tool to do the following:

- **Select a single note.** Click on a note to select it.
- **Move a note.** Click and drag a note to move it. The note will be placed where you release the mouse. This allows you to drag notes between different tracks. Move the note horizontally to change its location within the track. If the edit grid is turned on, the note will “snap” to the next Grid Resolution value. If the edit grid is turned off, you can position notes freely.
- **Change the pitch of a note in the Graphic Editor.** Click and drag the note vertically. Drag the note up to raise the pitch. Drag the note down to lower the pitch.

---

**Finger Pointer Extras** In the MIDI Graphic Editor, you may notice that once a MIDI note is selected, the finger pointer changes shape when placed at the beginning or end of a MIDI note. It becomes a “pinching” form and allows you to stretch or shrink (lengthen or shorten) a MIDI note’s duration either from the beginning or from the end of the note. This action will be constrained to the edit grid when the grid is activated.

In addition, the finger pointer becomes a *two-finger* pointer when used in conjunction with the Option-click combination, allowing you to quickly copy MIDI notes and drag them to a new location. This efficient feature can be used for both MIDI and audio data in the Sequence Editor and Tracks window!

---

Use the crosshair cursor to do the following:

- **Select a single note.** Click and drag over the note.
- **Select multiple notes.** Click and drag over the notes.
- **Add notes to an existing MIDI note selection.** After you have made an initial selection of notes as described a moment ago, press and hold the Shift key while dragging to include (or exclude) notes from the current note selection.

---

**Nudging Audio and MIDI Data** Data that exists within a track can be moved, or nudged, in small increments. Simply press the keyboard’s left or right arrow key to nudge data forward or backward in time. This feature is especially useful in post-production work, where you need to nudge a sound by single-frame increments to match it to a specific cue or action onscreen.

You can set the nudge amount by double-clicking on the Grid Snap Information icon (G) in the Information Bar. Use the Nudge drop-down menu to make nudge amount selections.

---

## Basic Edit Commands

In this section, I'll discuss some of the more common and useful edit commands contained in DP. Keep in mind that these commands can be used to affect audio and/or MIDI data. In addition, each command that's discussed here is undoable. Simply press Command+Z to undo an action. If you need more control over the undo operations in DP, refer to "The Undo History" section of Chapter 6 for an in-depth look into the Undo History windows.

### The Erase Command

The Erase command (Edit > Erase) will basically delete or remove a selection from a track or window. The default keyboard shortcut is Command+B, though most users will simply use the Mac keyboard's Delete key instead. Be aware that some windows will not allow the use of the Erase command. When the Erase command is unavailable, it will appear dimmed within the Edit menu.

### The Copy, Cut, Paste, Repeat, and Merge Commands

Probably the most fundamental parts of the editing process (next to the selection process) in any software program—including non-music applications—are the basic Copy, Cut, and Paste commands. Like most applications on the Mac, these commands are located in DP's Edit menu.

#### *The Copy and Cut Commands*

The Copy command will copy a selection and place the contents on the Mac's virtual clipboard, leaving the original data in the selection intact. The copied data will remain stored in the clipboard until other data is copied with the Copy or Cut command. The Cut command is similar to Copy, except that it erases (or removes) the original data once it has been copied to the clipboard.

To copy or cut a selection:

1. Start by selecting the data you want to affect.
2. Choose the Copy or the Cut command from the Edit menu. You can also use the default keyboard shortcuts Command+C to copy a selection and Command+X to cut a selection.

#### *The Paste Command*

Once a selection has been copied or cut and stored on the clipboard, it can be placed or pasted into another track or window. Choose Edit > Paste or use the default keyboard shortcut Command+V.

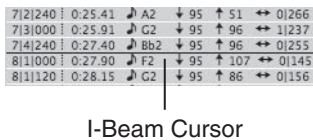
To use the Paste command, you have to tell Digital Performer *where* the copied or cut material needs to be placed. There are a couple of different ways to do this.

To paste a copied or cut selection into a track:

- Enable the I-Beam tool with the letter I key and click at the desired location. The flashing I-Beam cursor will appear. Press Command+V to paste the copied/cut selection at the I-Beam cursor location.
- Make a time-range selection with the crosshair cursor or I-Beam tool. Press Command+V, and DP will paste the copied/cut material at the start of the time-range selection.
- Deselect everything and do not use the I-Beam cursor. This will tell DP to paste the copied/cut material at the current location of the Playback Wiper within the original track. Press Command+V to paste the data that's residing in the clipboard.

To paste a selection into the Event List:

- Enable the I-Beam tool with the letter I key and click on the white line that separates two events. The flashing I-Beam cursor will appear, as shown in Figure 10.25. Press Command+V to paste the copied/cut selection at the I-Beam cursor location.



**Figure 10.25** Click between two event rows to insert the I-Beam cursor in the Event List.

### The Repeat Command

The Repeat command (Edit > Repeat) basically takes a selection of data and repeats it a specified number of times. The repeated material can be pasted, merged, or spliced into the destination track. Once you have made a selection and selected Repeat from the Edit menu, the Repeat window (shown in Figure 10.26) will open, presenting you with the following options:



**Figure 10.26** The Repeat window.

- Repeat selected data \_\_\_\_\_ time(s). Use this option to set the number of times the selection will be repeated.



- **Paste.** Paste will copy and repeat the selection while overwriting any data that exists on the track.
- **Merge.** Merge will merge (or combine) the repeated material with the existing data on the track.
- **Splice.** Splice will move any existing data forward in time to make room for the repeated material.

To repeat a selection:

1. Start by making a data selection.
2. Press Command+R or choose Edit > Repeat.
3. The Repeat window will open. Set the number of times the selection is to be repeated.
4. Next, choose what happens to the repeated data from the Place Copies Using section of the window.
5. Click OK to repeat the selected material.

### ***The Paste Repeat Command***

The Paste Repeat command combines the standard Paste and Repeat commands. Use this command to fill a time-range selection with the copied or cut material that resides on the clipboard. DP will automatically paste and repeat the clipboard contents as needed to fill the time-range selection.

To paste repeat into a track:

1. Start by copying or cutting a selection of data.
2. Make a time-range selection.
3. Press Control+Command+V or choose Edit > Paste Repeat.

### ***The Paste Multiple and Paste Multiple Repeat Commands***

Two other variations to the standard Paste command are the Paste Multiple and Paste Multiple Repeat commands. The Paste Multiple command allows you to copy or cut a selection from one track and paste into multiple target tracks. The Paste Multiple command is only visible when you press and hold the Option key.

To paste into multiple tracks:

1. Start by copying or cutting a selection of data from a single track.
2. Select the target tracks by following the selection procedures for the standard Paste command. If you're using the I-Beam cursor, use the Shift key to place the cursor in multiple tracks.

3. Press Option+Command+V to paste the clipboard contents into multiple tracks. You can also press and hold the Option key and then choose Edit > Paste Multiple.

The Paste Multiple Repeat command takes the Paste command a step further by combining the Paste Multiple and Paste Repeat commands. Like the Paste Multiple command, you must press and hold the Option key in order for this command to appear within the Edit menu.

To paste repeat into multiple tracks:

1. Start by copying or cutting a selection of data from a single track.
2. Make a time-range selection across the target tracks. Remember to Shift-click to include multiple tracks.
3. Press Control+Option+Command+V to paste repeat the clipboard contents into multiple tracks. You can also press and hold the Option key and then choose Edit > Paste Multiple Repeat.

### ***The Merge Command***

The Merge command (Edit > Merge) allows you to combine selected track data with the contents of the clipboard. New data is mixed (or merged) with the existing data on the track. When you're working with soundbites, however, data isn't merged together, but is placed on top of any existing soundbite data instead. If you drag the new soundbite or remove it, you'll find that the old soundbite still exists in its original location.

To merge selected data:

1. Start by copying or cutting a selection of data from a single track.
2. Select the data in the track with which you want to have the clipboard contents merged.
3. Press Command+M or choose Edit > Merge to merge the data.

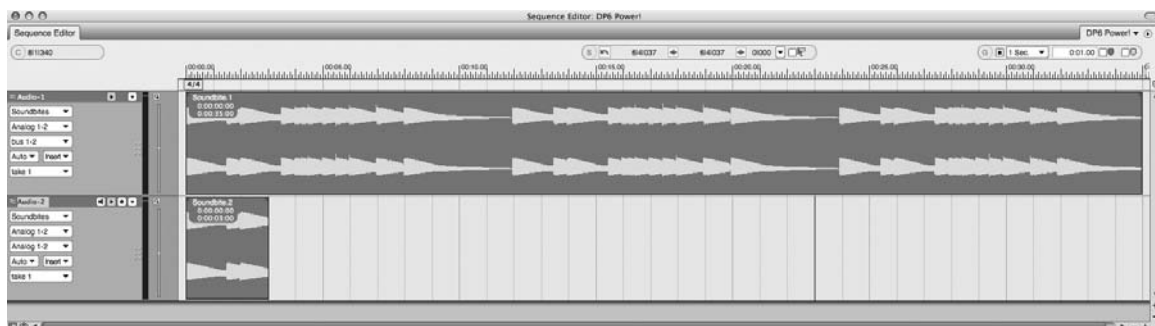
## **Editing Audio in the Sequence Editor**

The Sequence Editor is by far the most versatile and comprehensive editor window for editing audio data. The Sequence Editor's graphic environment allows for standard editing commands, such as Copy, Paste, and Repeat, and it also provides unique operational features that allow you to quickly trim (edge edit), fade, cross-fade, mute, and even time-stretch audio data.

### **Edge Editing Soundbites**

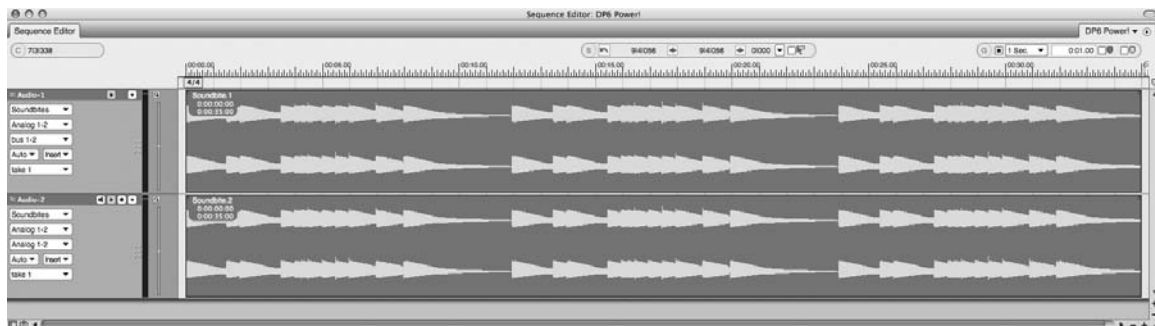
A soundbite, as you know, is a region of audio. Soundbites are not, however, audio files. They are only references, or pointers, to the parent audio file that resides on your hard drive. Soundbites can represent an entire audio file or only a portion of it.

Edge edits allow you to shorten or extend the duration of a soundbite—for example, if you have a three-second soundbite that references a much longer soundbite that's 35 seconds long (see Figure 10.27).



**Figure 10.27** A three-second-long soundbite (Soundbite.2) and its related 35-second soundbite (Soundbite.1).

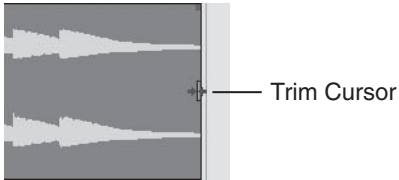
If you trimmed the edge of the soundbite to the right, you could drag to extend its duration until the entire five-minute soundbite was displayed, as shown in Figure 10.28. Keep in mind, however, that you cannot extend a soundbite beyond its original boundaries.



**Figure 10.28** The shorter soundbite (Soundbite.2) has been edge edited, displaying the entire length of the soundbite. Even though Soundbite.1 and Soundbite.2 are individual soundbites, they both reference the same parent audio file.

**The Trim Cursor.** The trim cursor, shown in Figure 10.29, allows you to edge edit or trim soundbites within the Sequence Editor. Like many other tools within DP, the trim cursor must be positioned in the correct place in order for it to be visible. Place the Pointer tool at the very edge of a soundbite and below the colored title bar to invoke the trim cursor.

**The Edge-Edit Copy Option.** When the Edge-Edit Copy feature is turned on, a new soundbite (or an alternate version of the soundbite) will be created when you edge edit a soundbite with the trim cursor. This can be a helpful feature when you have multiple instances of the same soundbite



**Figure 10.29** Use the trim cursor to edge edit soundbites.

within a project and you want to trim a single instance of that soundbite. Instead of affecting each instance of the soundbite, DP just creates a new, trimmed version of the soundbite.

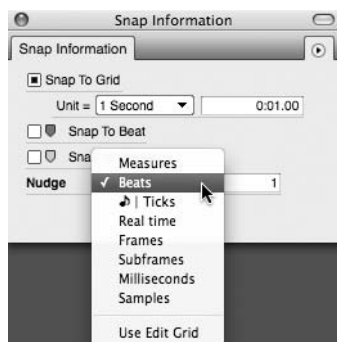
If Edge-Edit Copy is turned off, however, when you edit an instance of a soundbite, each and every other instance of that soundbite will also be edited. Sometimes this is just how you need the edge-edit feature to operate—it really depends on the type of editing you need to do and whether you want to affect all instances or just a single instance of a soundbite.

To temporarily disable the Edge-Edit Copy option, press and hold the Option key while edge editing a soundbite. To turn off this option all together, choose Edge-Edit Copy from the Sequence Editor’s mini-menu and then uncheck the option.

## Soundbite Editing Shortcuts

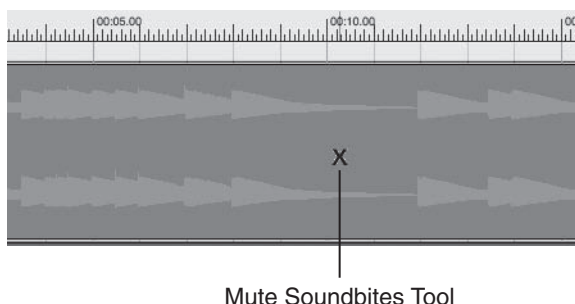
In addition to the standard Edit menu commands discussed earlier, Digital Performer provides a number of keyboard shortcuts that affect how audio is handled (or edited) in the Sequence Editor. This section will provide a list of various keyboard shortcuts and a brief description of how they are used.

- To constrain vertical and horizontal movements, press the Shift key while dragging.
- To quickly copy a soundbite, Option-drag it. (The one-finger cursor becomes a two-finger cursor.)
- To force a soundbite to snap to another soundbite when dragging, select the soundbite and then Control-drag in the desired direction.
- To copy a soundbite and “throw” it end to end with an adjacent soundbite, press Control+Option and then drag (or throw) the soundbite in the desired direction. (The finger pointer becomes a throwing hand.)
- To nudge a soundbite, press the Mac keyboard’s left and/or right arrow keys. Remember that you can set the nudge value by double-clicking on the Grid Snap icon (G) in the Information Bar, shown in Figure 10.30.
- To trim (or edge edit) the edge of a soundbite, position the cursor at the beginning or end of a soundbite. The cursor will change to the trim cursor. Click and drag to trim (or change the boundary of) the soundbite.



**Figure 10.30** The Snap Information window.

- To quickly mute a soundbite, invoke the Mute Soundbites tool by pressing and holding the letter M key and clicking on a soundbite (or a portion of a soundbite) to mute it, as shown in Figure 10.31. Drag with the Mute Soundbites tool to mute multiple adjacent soundbites. Muted soundbites become dimmed.

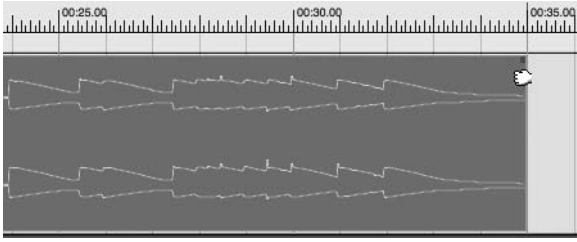


**Figure 10.31** The Mute Soundbites tool can be used to mute a soundbite (or a portion of a soundbite).

- To quickly split a soundbite, invoke the Scissors tool by pressing and holding the letter C key, and then click on a soundbite to split it. Drag the Scissors tool across a soundbite (with the edit grid turned on) to split soundbites into sections that conform to the current grid resolution.
- To graphically time-stretch audio, position the Pointer over the left or right edge of a soundbite's colored title bar (as shown in Figure 10.32) to display the hand cursor. Click and drag to time-stretch the soundbite. See Chapter 13, "Processing and Mastering," for an explanation of time-stretching in DP.

## Fades and Crossfades

Fades and crossfades are continuous gain or volume changes that are computed by Digital Performer. Fades can occur at the beginning (a fade-in) or end (a fade-out) of a soundbite, while crossfades can only be placed at the boundary points (or splice points) of two adjacent soundbites.



**Figure 10.32** Dragging to graphically time-stretch a soundbite.

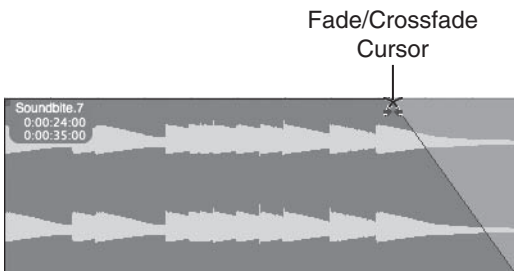
There are two ways to insert fades within Digital Performer—with the Sequence Editor’s Fade Handles and with the Audio menu’s Fade command. Fades and crossfades within DP are non-destructive (unless they are created with the destructive Fade command). When a fade is created, DP calculates the volume change and then places this new audio over the original soundbite. Calculated fade files are stored in the Fades folder within the main project folder.

### ***Fade Handles***

A soundbite’s Fade handles, shown in Figure 10.33, are located at the left and right edges of the soundbite, directly below the colored title bar. When you position the Pointer tool over a Fade handle, the fade/crossfade cursor will appear. Click and drag to insert a fade, as shown in Figure 10.34.



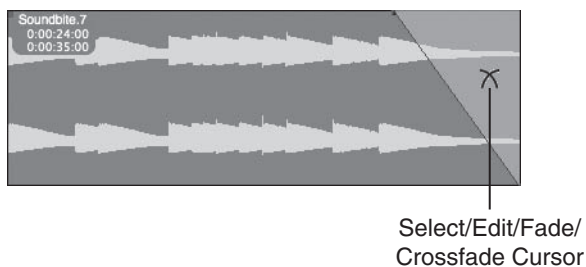
**Figure 10.33** The Fade handles.



**Figure 10.34** Drag the Fade handles to insert a fade. Notice that the fade/crossfade cursor appears when you’re creating or adjusting fades.

When the edges of two soundbites are touching (adjacent), you can drag on either soundbite's Fade handle to cross-fade them together. Once a fade or crossfade is created, you can double-click on it to open the Create Fades window (explained in the next section), allowing you to edit the curve of the fade or change the fade type all together.

You can remove a fade or crossfade by dragging the Fade handle again—until the fade is no longer visible—or you can select it and choose the Delete Fade command (explained in the next section). When you position the Pointer over an existing fade, the select/edit fade/crossfade cursor will appear, as shown in Figure 10.35.



**Figure 10.35** The select/edit fade/crossfade cursor.

### ***The Fade and Delete Fade Commands***

In addition to the Fade handles, you can also use the Audio menu's Fade command. Start by making a time-range selection at the beginning (to fade in) or end (to fade out) of a soundbite. The length of the selection will determine the length of the fade-in or fade-out. Next, choose Audio > Fade to open the Create Fades window. You can also use the default keyboard shortcut Control+F.

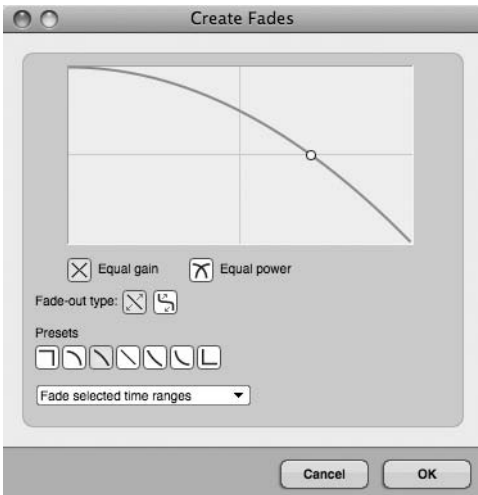
When the Create Fades window (shown in Figure 10.36) opens, DP will automatically select the fade type it thinks is most appropriate for your time-range selection. If you're satisfied with the type DP has chosen, simply click the OK button. If you want to edit or change the selected fade type, choose the fade you want from the various options before clicking OK.

The Delete Fades command allows you to permanently remove or delete a fade or crossfade. Click the fade or crossfade you want to remove and press Shift+Control+F, or choose Audio > Delete Fades to delete the selected fade. To remove multiple fades, simply drag to select the fades before choosing the Delete Fades command.

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**Destructive Fades** Fades can be applied destructively from within the Waveform Editor by using the Audio menu's Fade command. See the "Processing" section of Chapter 13 for an explanation of destructive fades.

---



**Figure 10.36** The Create Fades window.

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**Editing Audio in the Waveform Editor** You can also edit audio in DP's Waveform Editor. The Waveform Editor allows you to apply all of Digital Performer's editing capabilities within this window. Unlike other editing windows, however, edits made to a soundbite in the Waveform Editor are destructive. In other words, any alteration made to a soundbite is permanent, and subsequently, the parent audio file is also modified.

The Waveform Editor's Transport Lock button allows you to use all of DP's Transport controls to control playback of a selected soundbite within the Waveform Editor window, such as skip forward/backward, pause, rewind, Memory Cycle mode, or Link Selection to Memory.

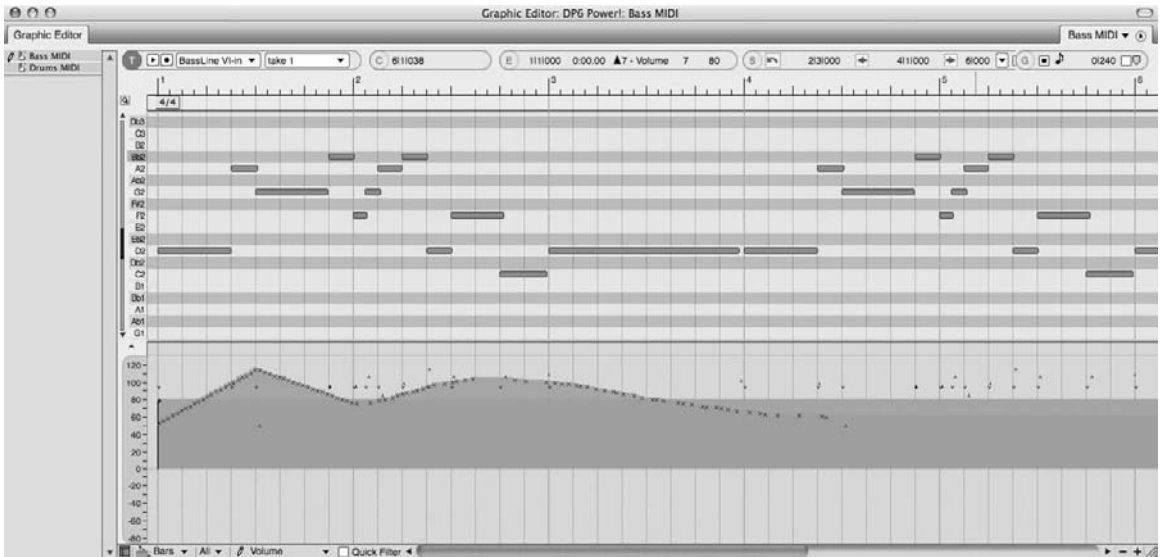
To edit a soundbite in the Waveform Editor, simply choose a soundbite and select **Audio > Edit in Waveform Editor**. Consult the "Waveform Editor" chapter of DP's User Manual for a detailed look at the Waveform Editor's features.

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## MIDI Editing in the Graphic Editor

Just as the Sequence Editor is the choice editor for soundbite editing, the Graphic Editor provides tremendous control over the MIDI editing process. Even though the Graphic Editor, shown in Figure 10.37, is a MIDI-only editing window, it is nearly identical to the Sequence Editor in that it allows for standard editing commands, such as Copy, Paste, and Repeat. Unlike the Sequence Editor, where MIDI controller data is layered below the notes of a MIDI track, the Graphic Editor provides two sections of the window that are dedicated to the editing of MIDI controller events. These sections are called the *Continuous Data Grid* and the *Median Strip*. In addition,



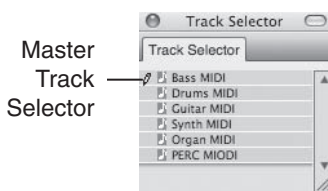


**Figure 10.37** The Graphic Editor.

the Graphic Editor will not display MIDI data in separate tracks; it will overlay MIDI notes into the same note grid when multiple tracks are being shown with the window's Track selector. Unlike the Sequence Editor, multiple Graphic Editors can be opened at the same time.

---

**The Track Selector** In Digital Performer, multiple tracks can be displayed simultaneously in a single Graphic Editor window. Use the Track selector (discussed in Chapter 3) and simply click on as many MIDI track names as desired. (Shift-clicking is not necessary in this case.) This feature is very handy for making note edits to several tracks at once or simply comparing one track to another. However, to edit controller data for a specific track (while multiple tracks are being displayed), use the Master Track selector (located in the Track Selector List as a Pencil icon), shown in Figure 10.38. This determines which track's Controller Data and Median Strip will be displayed and affected. Simply click next to the desired track name to activate it as the master track. Keep in mind, only one track can be selected as the master track at a time.



**Figure 10.38** The Master Track selector is indicated with the Pencil icon.

---

## Inserting, Removing, and Modifying Notes in the Note Grid

The note grid allows you to insert, remove, or modify MIDI notes within a MIDI track. MIDI notes are displayed as solid lines or bars, as shown in Figure 10.39. As with all tracks within DP, horizontal positioning determines where in the sequence a MIDI note will appear, while the length of a note sets the duration for that note. Vertical positioning determines the pitch.

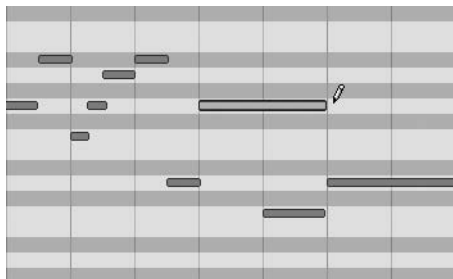


**Figure 10.39** MIDI notes within the note grid.

To the left of the note grid is the Pitch Ruler (the piano keys) and the Pitch Ruler scroll bar (the vertical slider). Each line or row that extends out from a piano key determines a note's pitch within the note grid. Click and drag the Pitch Ruler scroll bar to scroll the note grid up or down; doing so will reveal hidden pitches. To display more pitches within the note grid, zoom vertically in the Graphic Editor.

To insert a note within the note grid of the Graphic Editor (or Sequence Editor):

1. Select the Pencil tool with the letter P key. Make sure you double-tap the P key to make the selection stick.
2. Specify the master track if you're working with multiple tracks.
3. If you need to, scroll the vertical Pitch Ruler (located to the left of the piano roll) to display the appropriate pitches.
4. Click with the Pencil tool at the location where you want the note to start.
5. Drag horizontally to set the duration and vertically to set the pitch, as shown in Figure 10.40.
6. If you need to change the position or pitch of the note once it's been inserted, invoke the Pointer tool by pressing and holding the letter A key. Click and drag the note to the new location and pitch. Release the letter A key to revert back to the Pencil tool.
7. Repeat Steps 3 through 5 as needed.



**Figure 10.40** Inserting a MIDI note with the Pencil tool.

To change the duration of a note within the note grid of the Graphic Editor (or Sequence Editor):

1. Select the Pointer tool with the letter A key. Make sure you double-tap the A key to make the selection stick.
2. Specify the master track if you're working with multiple tracks.
3. If you need to, scroll the vertical Pitch Ruler (located to the left of the piano roll) to display the appropriate note.
4. Position the Pointer at the beginning or end of a note, as shown in Figure 10.41. Notice that the tool changes to allow you to grasp the edge of the note (as discussed in the "Finger Pointer Extras" note earlier in this chapter).



**Figure 10.41** Changing the duration of a MIDI note with the Pointer tool.

5. Drag to the left or right to shorten or extend the duration of the note.
6. Repeat Steps 4 and 5 as needed.

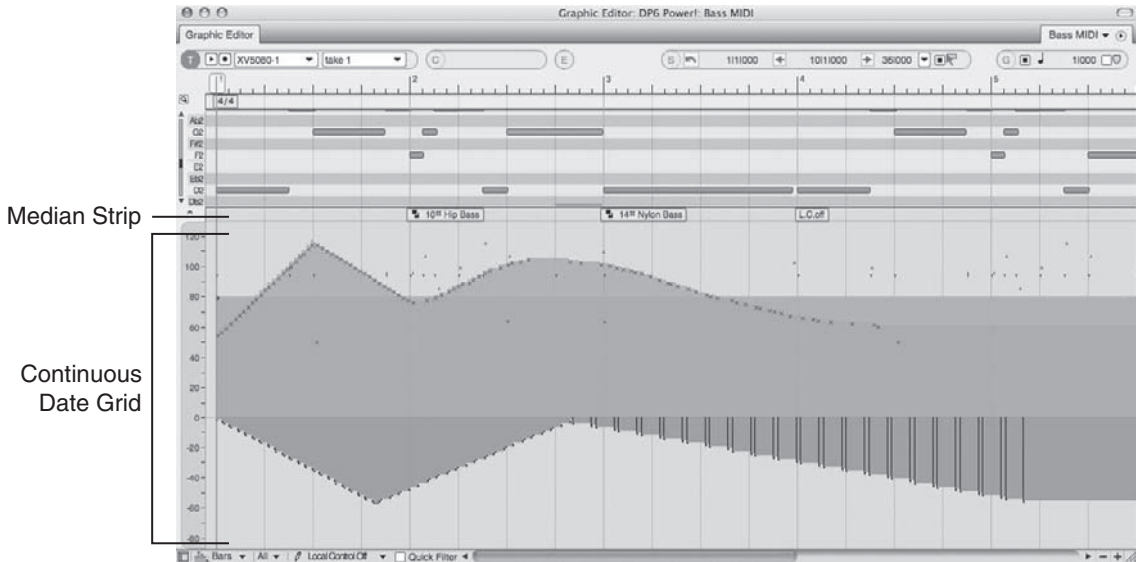
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**The Edit Grid** The edit grid, when enabled, will constrain any edits and movements to the set grid resolution. If you want to work freely within the note grid, make sure you turn the edit grid off or press and hold the Command key to temporarily disable it.

---

## The Median Strip and Continuous Data Grid

There are basically two types of MIDI controller data: events that are discrete (or do not have durations) and continuous controller data (events that occur over a period of time). Discrete events are displayed in the Graphic Editor's Median Strip, while continuous controller data appears in the Continuous Data Grid (see Figure 10.42).



**Figure 10.42** The Graphic Editor's Median Strip and Continuous Data Grid.

Each type of MIDI controller data within Digital Performer will be displayed with its own icon, indicating what type of MIDI event it is. To see a list of these icons and their MIDI event names, open the Legend window from the Graphic Editor, Sequence Editor, or Event List mini-menu. If you're working in the Consolidated Window, you can also open the Legend window from a sidebar's Window selector.

---

**The Legend Window** Use the Legend window, shown in Figure 10.43, to see the names of MIDI events and their associated icons. Learning these icons can help you speed up your MIDI controller editing tasks by allowing you to quickly determine what type of event you're working with.

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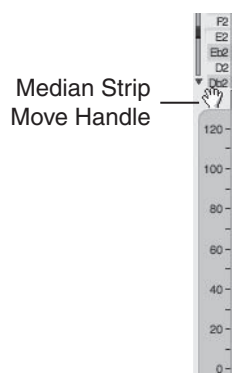
### ***The Median Strip***

The Median Strip divides the Graphic Editor's note grid from the Continuous Data Grid. Grab the Median Strip Move handle, shown in Figure 10.44, to move the Median Strip up or down. Doing so will change the overall size of the note grid and Continuous Data Grid. Double-click on the Median Strip Move handle to toggle the view of the Continuous Data Grid.

The Median Strip displays discrete MIDI events, such as patch changes, sustain events, and mute events. Each event will be displayed as a small block with its MIDI controller number, event name, and corresponding icon.



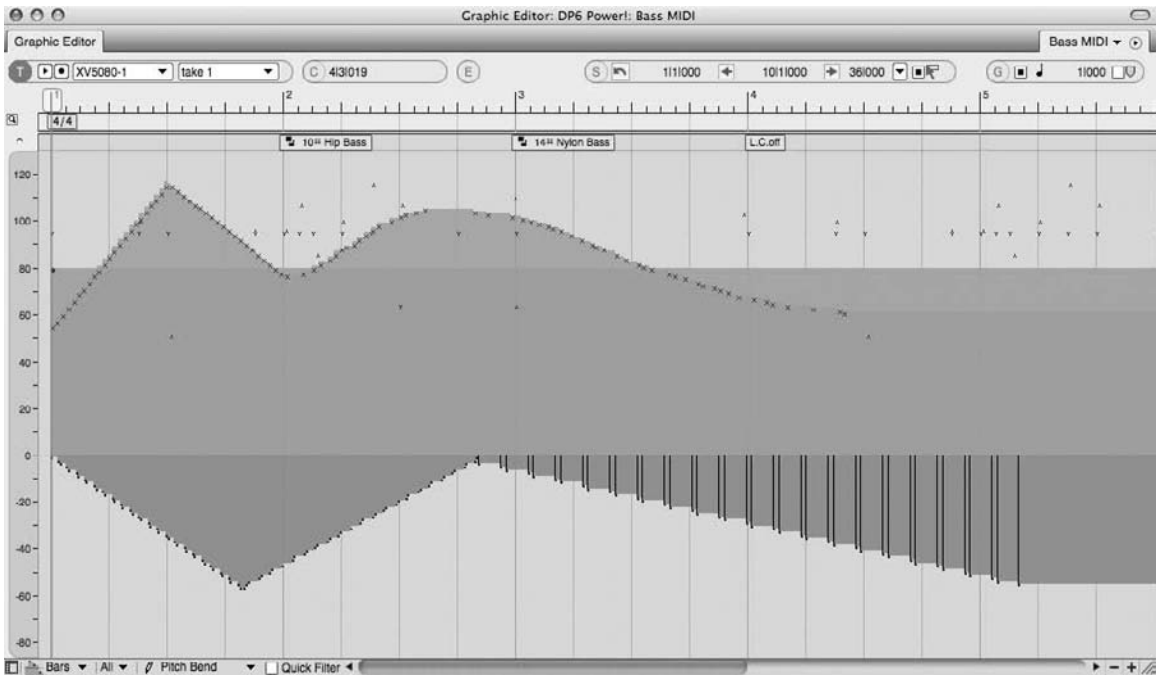
**Figure 10.43** The Legend window.



**Figure 10.44** Use the Median Strip Move handle to change the size of the note grid and Continuous Data Grid.

### ***The Continuous Data Grid***

The Continuous Data Grid, shown in Figure 10.45, displays continuous controller data, such as volume and pan changes, modulation changes, and so on. If you're new to MIDI and find this topic confusing, just think of continuous controller data as automation for your MIDI tracks that can be created via a MIDI controller, with DP's various MIDI features (such as the Tracks window's Patch and Default Patch columns), or by directly inserting a controller event into a MIDI track.



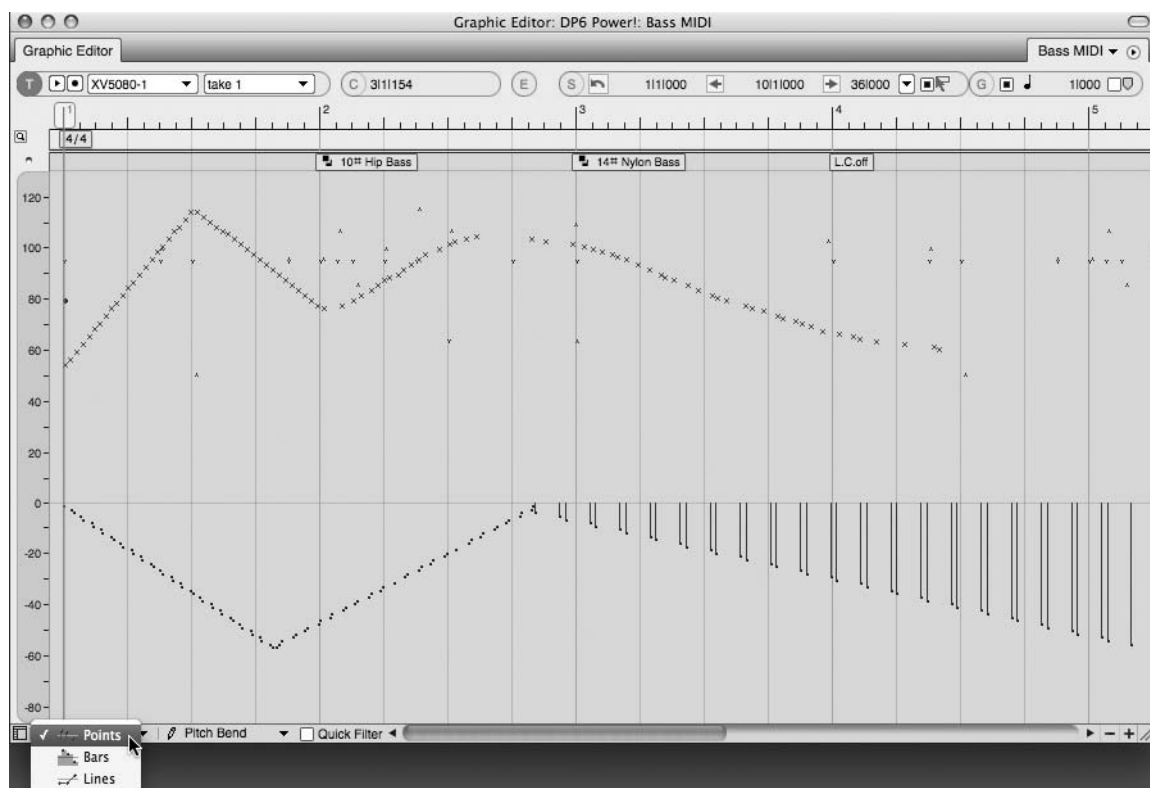
**Figure 10.45** The Graphic Editor's Continuous Data Grid.

**The Continuous Data Ruler.** On the left side of the Continuous Data Grid is the Continuous Data Grid Ruler, which displays a controller scale (from 0 to 127), a pitch-bend scale (from -8192 to 8191) that starts at the middle of the Continuous Data Grid, and a third scale that displays a combination of the controller and pitch-bend scales. Click on the Continuous Data Grid Ruler to toggle between the three different scales.

**The Grid Display Mode.** The Continuous Data Grid will display continuous MIDI data in three different ways: as points, bars, or lines. Use the Grid Display Mode pop-up menu to choose between the different view types. Points mode, shown in Figure 10.46, will display controller data as small points or dots within the grid. Controller data that's selected will appear with a small vertical line extending from the bottom of the window to the controller point.

Bars mode will display continuous controller data with small points that are connected by a colored bar, as shown in Figure 10.47. Use this view when you want to easily see the relationship between the current value of the event and its duration.

Lines mode, shown in Figure 10.48, will display continuous controller data as points connected by lines. These lines attempt to approximate the shape of the curve of the controller points. This view is similar to how breakpoint automation is displayed in non-MIDI tracks. Users more comfortable with breakpoint automation may find it easier to work in Lines mode than in Points and Bars grid display modes.



**Figure 10.46** Points mode will display continuous controller data as small points. Selected data will also appear with small vertical lines.

### ***Moving MIDI Controller Events***

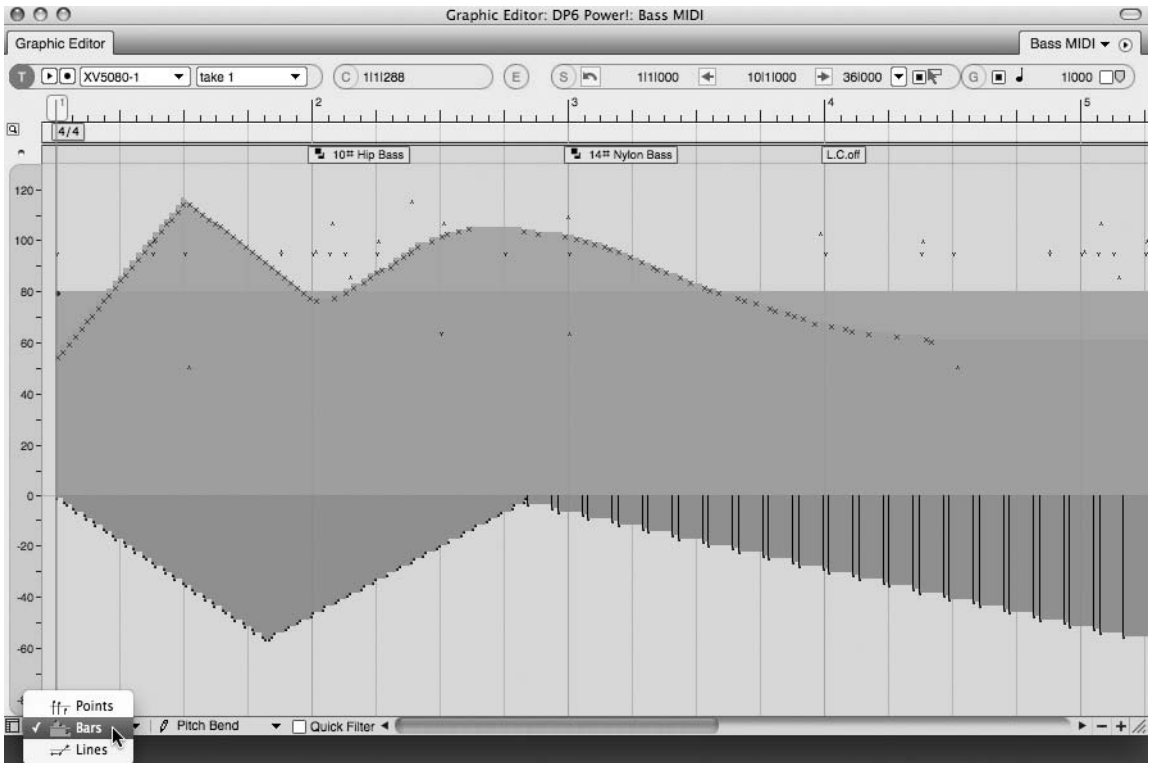
Moving MIDI controller events (both continuous and non-continuous) is identical to moving MIDI notes. Simply click and drag with the Pointer tool to move the event. To select multiple events, drag over the MIDI data with the crosshair cursor. Keep in mind that the edit grid, if enabled, will constrain any movements you attempt to make.

### ***Inserting MIDI Controller Events***

MIDI controller events can be inserted directly into the Median Strip and Continuous Data Grid. Remember that, as with any editing operation, the edit grid directly affects how data can be inserted, moved, and so on. If you want to constrain your edits to a specific grid resolution, be sure to turn on the edit grid and select the desired grid value.

To insert an event directly into the Median Strip or Continuous Data Grid:

1. Select the type of event you want to create from the Pencil Tool Data selector, shown in Figure 10.49. Keep in mind that the types of controller data that will be available are determined by the View Filter. Data that has been turned off in the View Filter will appear dimmed in the Pencil Tool Data Selector List, as shown in Figure 10.50.



**Figure 10.47** Bars mode connects each controller point with a colored bar.

2. Enable the Pencil tool by double-tapping the letter P key.
3. If you're going to be inserting continuous data, choose the shape of the curve to be inserted from the Tool palette's Insert/Reshape Flavor (Curve) menu, shown in Figure 10.51.
4. Click in the Median Strip or Continuous Data Grid to create a single MIDI controller event.
5. If the MIDI event has a duration, click and drag to create a continuous stream of controller events.

### ***Editing Existing MIDI Controller Events***

MIDI events in the Median Strip and Continuous Data Grid can be modified or changed all together.

To edit a MIDI event within the Median Strip:

- To delete an event, select the event and press the Delete key.
- To change or modify the properties of the MIDI event, select the event and press Shift+E to open it in an Event List. Once the Event List opens, the selected MIDI event will become



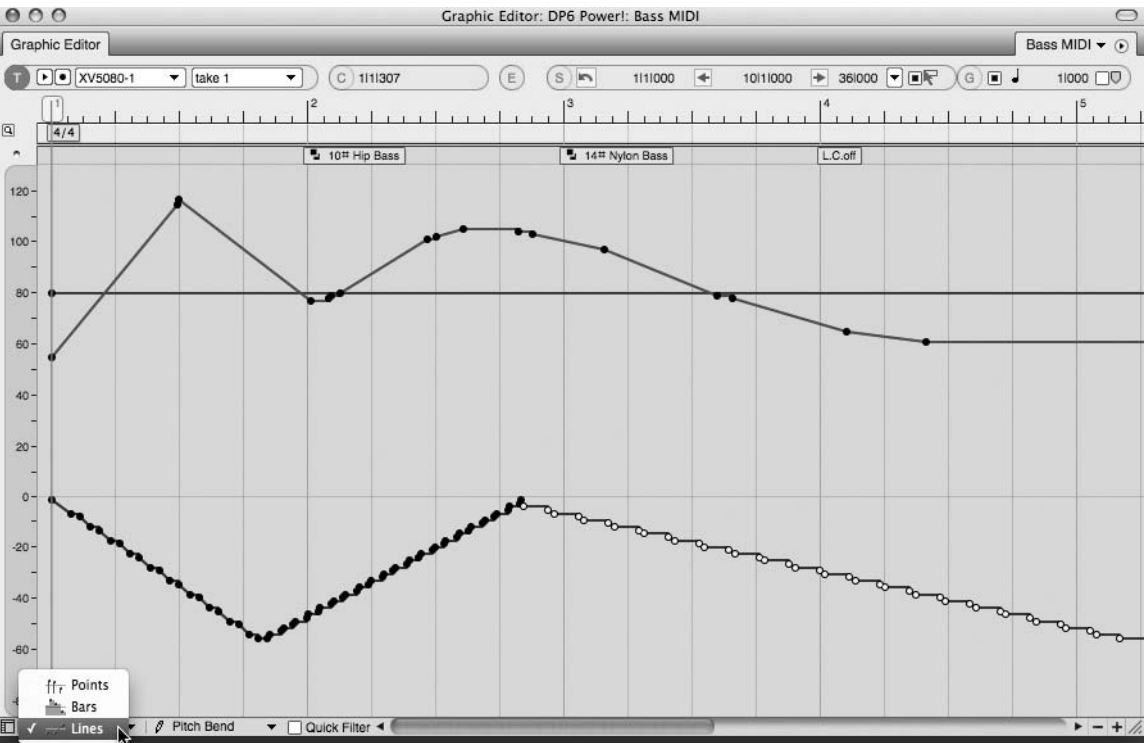


Figure 10.48 Lines mode connects each controller point with a line.

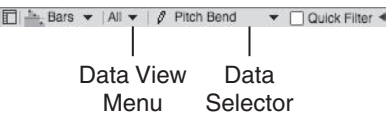


Figure 10.49 The Pencil Tool Data selector.

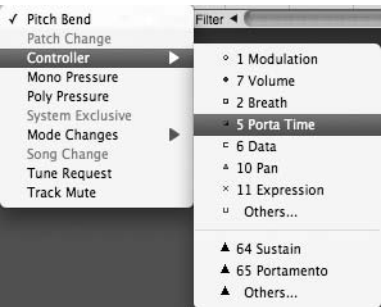


Figure 10.50 Controller data that appears dimmed has been disabled in the View Filter.



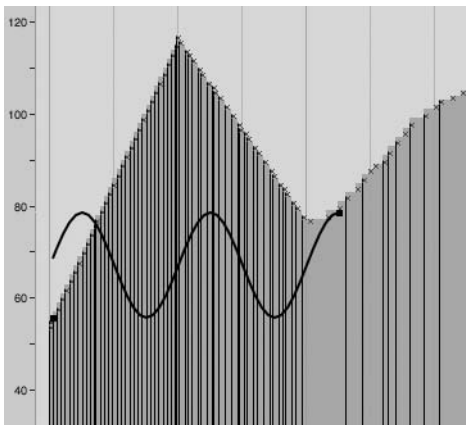
**Figure 10.51** The Insert/Reshape Flavor (Curve) menu.

highlighted blue. Click on the desired property to pop-edit its value. The Event List is explained in the next section.

- To move the event within the Median Strip, click and drag with the Pointer tool.

To edit continuous controller data within the Continuous Data Grid:

- To delete MIDI controller data, select the MIDI event and press the Delete key. To delete a stream of continuous MIDI data, click and drag over the events with the crosshair cursor and then press the Delete key (or simply double-click one event to select the entire stream).
- To change the value of MIDI controller data, vertically drag the data within the grid.
- To move the data to a different location in the track, horizontally drag the data.
- To change the existing curve of a stream of continuous controller data, select the Reshape tool by double-tapping the letter R key. Select the shape for the new curve from the Insert/Reshape Flavor menu. Click where you want to start changing the curve and then drag to reshape the existing stream of data, as shown in Figure 10.52.



**Figure 10.52** In this example, the Insert/Reshape Flavor menu's sine curve is being used to reshape the existing stream of continuous MIDI controller data.

---

**MIDI Controller Data within the Sequence Editor** When you're working in the Sequence Editor, MIDI tracks do not have separate Continuous Data Grids and Median Strips. Instead, MIDI controller data will appear stacked within a MIDI track. Use the track's Active View layer to bring notes and controller data into the foreground of the track. Only active layers can be edited.

---

## The Event List

The Event List, shown in Figure 10.53, displays selected audio and MIDI data in rows that are chronologically organized from top to bottom. Multiple Event Lists can be opened for each track within a project. Simply select the track or any data contained in the track and press Shift+E. You can also choose Project > Event List.



**Figure 10.53** The Event List.

The Event List may seem intimidating at first glance because the data listed is displayed only as text. Understanding all the symbols and positioning of the data takes time, but with a little patience and help from the Legend window (if you're working with MIDI controller data), you'll be editing away in the Event List like a seasoned pro.

## Event List Basics

The Event List displays event information in rows. If multiple events occur at the same time location, they will appear as a block of information. The location (or start time) of an event will be displayed to the right of an event row. The time format displayed is determined by the Time Formats window settings. The event properties will appear after the start location; which properties appear depends on the type of data you are viewing. Refer to the Digital Performer User Manual for a detailed explanation of how data and its associated properties are shown.

## Editing the Parameter of an Event

It's very easy to edit existing events within the Event List. You can even insert MIDI controller data directly into the list and apply standard Edit menu commands.

- To edit an event property, double-click on its parameter field, as shown in Figure 10.54. A pop-up text box will allow you to change the current parameter setting.



**Figure 10.54** Double-click on an event property to modify its current parameter setting.

- To apply standard Edit menu commands, select the event and choose the desired command. To paste material that exists on the clipboard, insert the I-Beam cursor at the desired location before pressing Command+V.
- To insert MIDI controller data, click on the Event List title tab's Insert button (+) and choose the type of data you want to insert. A new event row will appear. Set the controller data's properties from the pop-up text boxes. Press the Return key to confirm the property settings.

---

**Displaying Duration, End Time, and Sync Point Parameters** If you want to display the Duration, End Time, and Sync Point parameters within the Event List, make sure you enable these options in the Event Information section of the Time Formats window.

---

## Summary

The audio and MIDI editing capabilities of Digital Performer are truly amazing. Every parameter of a soundbite, MIDI note, and automation/controller point can be manipulated to your heart's desire—from trimming unwanted silence within a soundbite to tweaking individual MIDI notes and associated controller data.

As I discussed earlier in this chapter, however, it's a fine line between fixing and improving a performance and editing the life out of one. Take time to frequently step back and “listen” to the big picture (meaning the song itself, not necessarily the individual tracks or notes), and you'll be able to edit your projects with positive, satisfying results.

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# 11

## Arranging

**A**rranging, as a musical term, sometimes refers to the act of creating the structure of a song or composition (for example, verse-chorus-bridge-chorus). It can also describe the selection of the instrumentation used within a composition (for example, piano-bass-drums). Digital Performer's arrangement tools allow you to manage the overall structure of a project, provide location points for easy navigation, or control compositional aspects, such as meter and tempo.

Some of the features discussed in this chapter have been mentioned or briefly explained in other parts of this book, and I could have discussed them in those chapters, but to maintain a degree of familiarity, I decided to follow MOTU's structuring scheme (as described in the official DP User Guide) and discuss certain features here in the "Arranging" chapter.

Following is a list of topics covered in this chapter:

- How to work with tempo, meter, key, and the Conductor track
- How to manage sequences within Digital Performer
- How to set up a V-Rack
- How to use Chunks and songs
- How to set up loops within a track
- How to make your projects more efficient through the use of Clippings
- How to use markers

### The Conductor Track

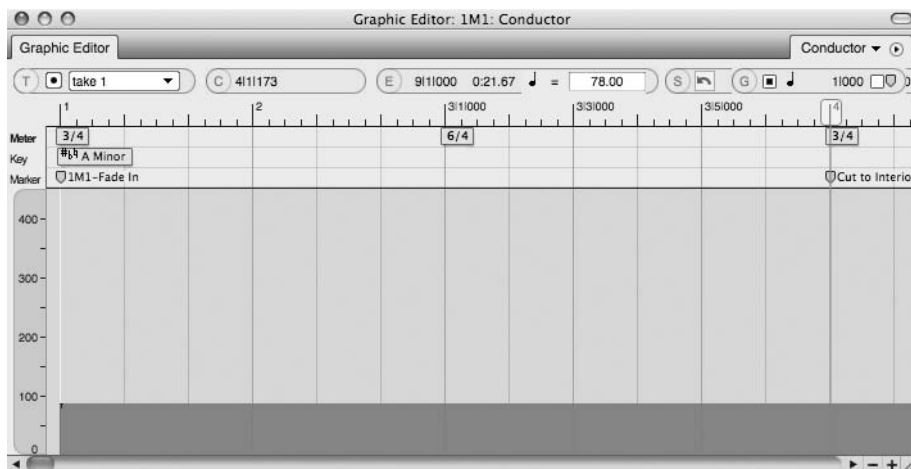
The job of a musical conductor is to literally "conduct" a musical piece or ensemble. The conductor controls the tempo of a composition, indicates meter, gives cues for musical entrances and dynamics, and so on. Digital Performer's Conductor track takes on the role of conductor and provides a "track" in which tempo, meter, key change, and marker information is stored.

The Conductor track is similar to other tracks in that basic edit commands—such as copying, pasting, and deleting—can be executed, and alternate takes can be created. The Conductor track

can also be record-enabled to input tap tempo event information. Unlike other tracks, however, the Conductor track cannot be moved, deleted, looped, or renamed. The Conductor track can be edited in the Event List and other editor windows where it is visible. Here, we are going to discuss two windows specifically: the Event List (shown in Figure 11.1) and the Graphic Editor (shown in Figure 11.2). You can edit Conductor events in both windows, though the method for viewing and modifying event data in each window is very different.



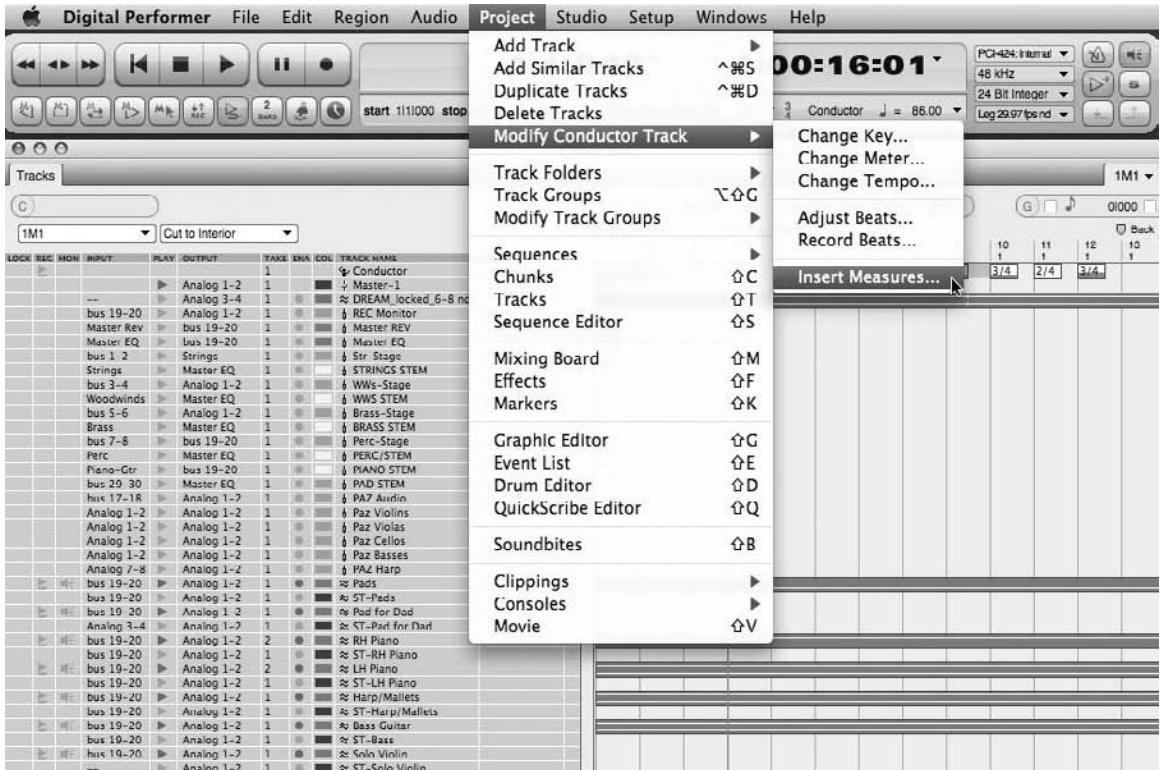
**Figure 11.1** The Event List displays Conductor track data as a list. Tempo, meter, and key information is shown separately from marker information.



**Figure 11.2** The Graphic Editor displays Conductor track data in a linear fashion. Meter, key, and marker information appears below the Time Ruler at a fixed viewing resolution, while tempo data is shown as continuous controller data, represented by a colored bar.

## Modify Conductor Track Menu

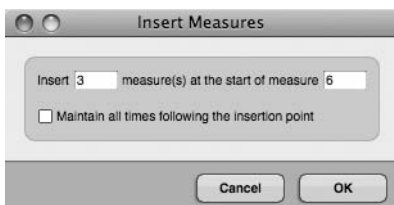
The Modify Conductor Track menu, located in the Project menu, contains separate commands for inserting key, meter, and tempo data, as shown in Figure 11.3. You'll also find here additional commands for inserting measures (explained in a moment), as well as for adjusting and recording beats.



**Figure 11.3** The Modify Conductor Track menu provides commands for inserting measures and changing the key, meter, and tempo of a sequence. Advanced options for adjusting and recording beats are also provided.

To insert a measure using the Insert Measures command:

1. Open the Insert Measures command by choosing Project > Modify Conductor Track > Insert Measures (see Figure 11.4).



**Figure 11.4** The Insert Measures command allows you to insert a blank measure at any location within a sequence.

2. Specify the number of measures you want to insert in the Insert field.
3. In the Start of Measure field, enter the location (measure number) at which you want to insert the measures.



4. If you want to preserve the SMPTE times of all events that occur after the insertion point, select the Maintain All Times Following the Insertion Point option.
5. Click OK to insert the measures.

---

**Inserting Measures** Be aware that audio data that resides at the insertion point will be split, while MIDI notes will not. If you would like MIDI to be split, use the Edit menu's Split command (Command+Y) before inserting any measures.

---

## Editing Conductor Track Data

You can edit Conductor track events directly in the Conductor track of DP's various editors and in the Event List. The windows you choose will determine how and what type of editing can be executed. Standard edit commands, such as Cut, Copy, and Paste, however, can be used regardless of the window in which you are editing.

When working with markers, be aware that they behave differently, depending on the window in which you are working. For example, markers within the Event List will react to standard edit commands, such as Cut, Copy, Paste, and Delete, but their properties cannot be modified within the Event List window. The Graphic Editor, however, will allow you to rename a marker and also change its location.

### *The Event List*

In the Event List, Conductor track data will appear as a list, similar to the way in which MIDI data is presented and viewed (refer to Figure 11.1). You can open the Event List for the Conductor track by selecting the Conductor track within the Tracks window or the Sequence Editor and pressing Shift+E on your keyboard. Remember that markers will only accept standard edit commands, such as Cut, Copy, Paste, and Delete. Marker properties, such as location and name, must be edited in another window, such as the Markers window or the Graphic Editor.

To modify existing Conductor track events in the Event List:

1. Double-click on a Conductor track event within the Event List. The specific event will become active, allowing you to modify the existing data.
2. Make the necessary modifications, then press the Return key to confirm the change.

To insert new Conductor track data within the Event List:

1. Click on the Event List's Insert button. This is the + button located directly below the Event List title tab.
2. Choose the type of event you want to insert from the Insert drop-down menu.

3. Enter the location (in measures) and press the Return key. Use the Tab key to quickly move to the next input field.
4. Double-click on the new event to make any changes and then hit the Return key to confirm the modification.

### ***The Graphic Editor***

When editing the Conductor track in the Graphic Editor, events such as key, meter, and markers are displayed within the window's Median Strip. Once an event is selected, its settings are displayed in the Graphic Editor's Information Bar. Located below the Median Strip are any tempo events that exist; these are displayed as continuous controller data and are represented by a colored bar (refer to Figure 11.2).

---

**The Conductor Track Median Strip** Unlike Median Strips in normal MIDI tracks, the Conductor track's Median Strip is larger, with a fixed width, and is positioned directly below the Time Ruler. In addition, there is no note grid because the Conductor track does not contain any notes.

---

To insert a key or meter event within the Conductor track's Graphic Editor:

1. Enable the Pencil tool by double-tapping the letter P key on the Mac keyboard.
2. If you need to, enable the edit grid to constrain the event location to the current grid value.
3. Click on the Median Strip to insert a key or meter event. The vertical position will determine which type of event (key or meter) is inserted. The horizontal position will determine the location in time. You cannot insert marker events using this method.

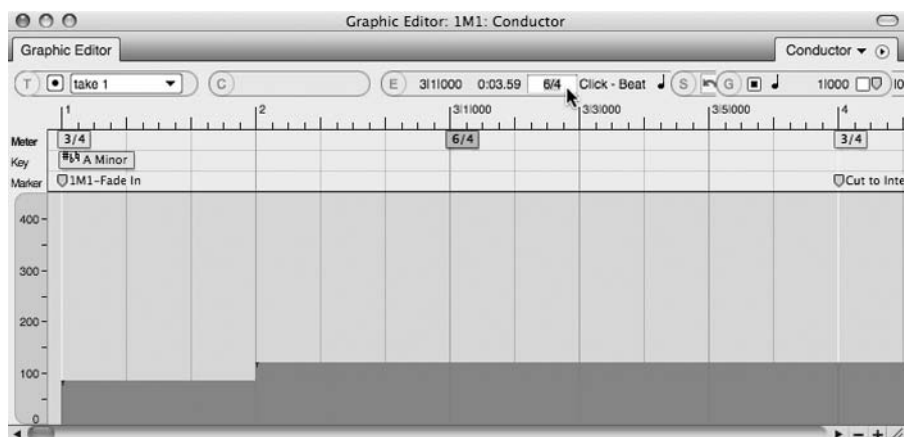
To edit existing key or meter events in the Conductor track's Graphic Editor:

1. Begin by clicking on a key or meter event. Once selected, the event will become visible in the Information Bar, which is located directly below the title bar.
2. In the Information Bar, click on the event data. It will immediately become active, allowing you to make any modifications (see Figure 11.5).
3. When you're finished, press the Return key to confirm the changes.

---

**Dragging in the Median Strip** In addition to the procedures just described, you can also click and drag an event within the Median Strip to change its location.

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**Figure 11.5** Click on an event in the Graphic Editor's Information Bar to make changes to the selected key or meter event.

Unlike in the Event List, marker properties such as location and name can be modified in the Graphic Editor:

- To change the position of a marker, click on it below the Median Strip and drag with the mouse.
- To rename a marker, double-click on it. Hit the Return key to confirm the change.

**The Tempo Change Grid.** Located below the Graphic Editor's Median Strip is the tempo change grid, which shows tempo events as continuous controller data. The Tempo Ruler on the left side of the grid vertically displays tempo, with slower values appearing at the bottom and increasing toward the top. Placing the mouse over the Tempo Ruler changes the cursor to a magnifying glass icon that allows you to zoom in for greater accuracy when inserting and editing tempo events (see Figure 11.6). Clicking on the Ruler allows you to toggle between the normal zoom and magnified resolutions.

Keep in mind that the tempo source must be set to Conductor track (Control Panel > Tempo Control Drawer) in order for Digital Performer to follow any tempo changes that reside in the Conductor track.

---

**Inserting Tempo Change Events** You can insert tempo events directly into the tempo change grid by enabling the Pencil tool and clicking with the mouse. Though this sounds like a simple procedure, getting your events exactly where you want them with one mouse click can be challenging because DP does not constrain your mouse movements to the edit grid, even when it is enabled! The Information Bar will prove helpful in this situation because it will display the vertical (tempo) and horizontal (Time Ruler location) of the mouse. Once you insert the tempo event and discover that it isn't exactly where you want it, simply select it with the Arrow tool and edit it in the Information Bar or the Event List.

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**Figure 11.6** Click on the Temporal Ruler (indicated with the magnifying glass icon) to change the viewing resolution.

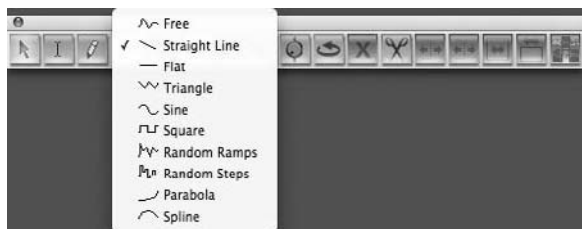
To insert a single tempo event in the Conductor track's Graphic Editor:

1. Double-tap the letter P key on your computer keyboard to quickly enable the Pencil tool.
2. Click in the tempo change grid to insert a tempo event. The vertical position determines the tempo, while the horizontal position determines its location within the Time Ruler. Once the event is inserted, a colored bar will appear with a small icon located at the top-left corner. This small icon is the actual tempo event, while the bar represents the duration of the tempo change.
3. If the actual tempo or location isn't exactly where you want it, enable the Arrow tool and select the event by clicking on the small tempo event icon. Once the event is selected, its settings will appear in the Graphic Editor's Information Bar.
4. Click on the setting you want to change (either the location or the actual tempo) and change it as needed. Hit the Return key to confirm the change.

In addition to single events, tempo events that change over time (such as *accelerandos* and *ritards*) can also be inserted in the Graphic Editor. The Change Tempo command also provides options for creating tempo changes that need to occur over a specific period of time.

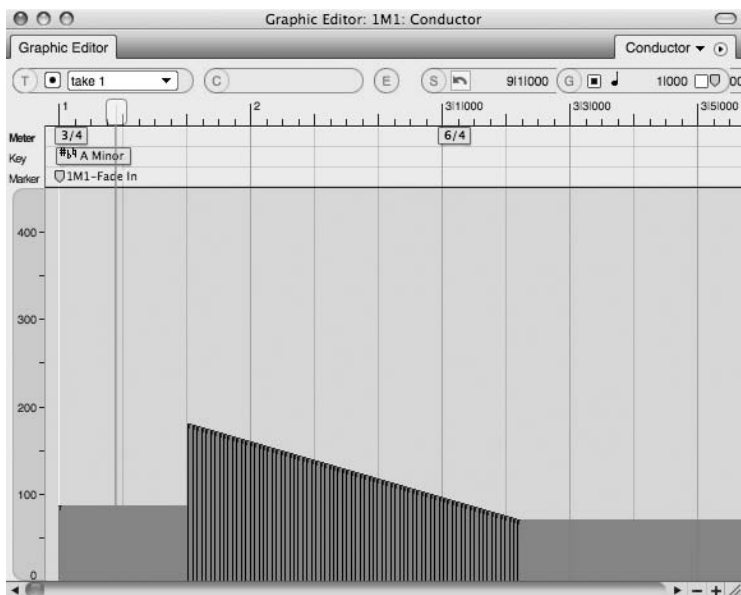
To insert a tempo event that changes over time:

1. Enable the Pencil tool by double-tapping the letter P key on the Mac keyboard.
2. Choose the shape of the curve you want to insert from the Tool palette's Insert/Reshape Curve button, shown in Figure 11.7. Choosing a straight line, for example, will allow you to insert a continuous and even tempo change.



**Figure 11.7** The Tool palette's Insert/Reshape Curve button lets you choose the type of curve that will be used when creating tempo events that change over time.

3. Click in the tempo grid where you want the tempo change to begin and drag the mouse to the position where you want the change to end. Dragging up or down will change the tempo, and dragging to the left or right will set the length of the tempo change.
4. Release the mouse to insert the tempo change (see Figure 11.8). Once the tempo change is inserted, multiple tempo events will be created between the start and end points of the tempo change.



**Figure 11.8** Tempo change events created with the Straight Line tool. In this example, the newly created events are selected (indicated by vertical black lines).

To edit existing tempo events:

- To change the actual tempo or location of an event, enable the Arrow tool and drag the event with the mouse. Drag vertically to change the tempo or horizontally to change the event's location within the Time Ruler.

- You can also select the event and edit its properties within the Graphic Editor's Information Bar. Click on an Information Bar setting to activate it, and then enter the change and hit the Return key.
- To cut, copy, and/or delete, select the events with the Arrow tool and apply the appropriate command from the Edit menu or keyboard.
- To paste a cut/copied event, place the cursor at the position where you want the event to be pasted and choose Edit > Paste, or use the default keyboard shortcut Command+P.

## Tempo

Now that you know how to create and edit tempo events within the Graphic Editor, I'll discuss setting tempo sources within Digital Performer, the use of the more standard Change Tempo command window, and advanced Tap Tempo features. I'll also explain the various Audio menu tempo commands.

### Tempo Sources and the Tempo Control Menu

Tempo sources basically tell Digital Performer what is dictating the tempo of the sequence. There are four tempo sources to choose from, though only one tempo source can be chosen at a time. The Control Panel's Tempo Control menu allows you to set the tempo source for a project. (Refer to Chapter 3 for a look at the Tempo Control menu.) Simply click on a source within the Tempo Control menu to set DP's source tempo.

- **Tempo slider.** The Tempo slider allows you to change the tempo of a sequence at any time by simply dragging on the slider control. This is like a manual setting and will ignore any tempo events that may exist within the Conductor track. The Tempo slider is the simplest way to set a project's tempo—just set the tempo with the slider and start recording.
- **Conductor track.** Setting the control to Conductor track will tell DP to follow the sequence's tempo map or tempo events that exist within the Conductor track. (This was explained earlier in the chapter.)
- **Tap Pad.** Use this setting to force DP to listen to a “tap” from any designated MIDI source. Click on the Tap Pad button repeatedly to establish a tap tempo. The Tap Pad feature, however, does not function while playback is engaged, so you'll need to tap in your tempo while the Transport is stopped. To have DP track your tapping during playback, you need to use the Receive Sync command's Tap Tempo feature.
- **Remote Control.** This setting allows you to control DP's Tempo slider from a MIDI controller's modulation wheel or any other source that can output continuous controller data.

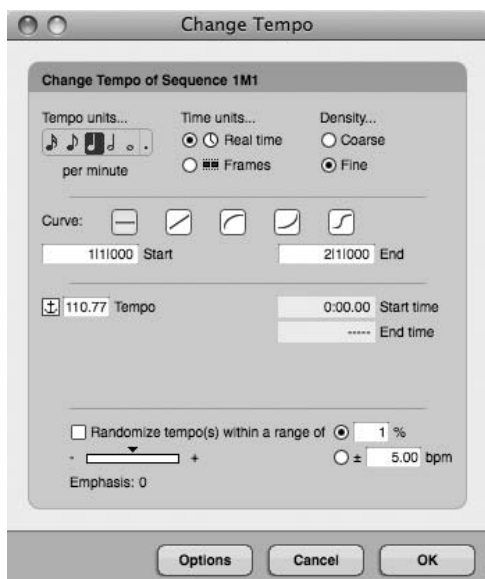
## Adjusting Tempo

There are several ways to set the tempo of a sequence in Digital Performer. I've already discussed the use of the Conductor track's Graphic Editor. This section will cover the creation of tempo events with the following methods:

- The Change Tempo command
- The Tap Tempo feature
- The Adjust and Record Beats commands

### *Change Tempo Command*

The Change Tempo command is located within the Project menu's Modify Conductor Track submenu (Project > Modify Conductor Track > Change Tempo). The Change Tempo window provides options for creating and inserting tempo events within a sequence's Conductor track (see Figure 11.9). Its various settings and options (from top to bottom) are explained in the following list.



**Figure 11.9** The Change Tempo window.

- **Tempo Units.** This is the beat value of the tempo or the note value on which the tempo will be based.
- **Time Units.** Click on this setting to set the tempo parameter display to real time or frames.

- **Density.** This option determines the number of tempo events that are created for every beat. The Fine setting will create 12 tempo events for every beat, while the Coarse setting will create fewer events. Use the Fine setting when you need more accuracy and control over tempo events.
- **Curve.** Use this setting to set the type of tempo change that will be created. Each setting has its own options that will be displayed directly below the Curve section of the window. (This will be explained in the “Tempo Curves” sidebar later in this chapter.)
- **Randomize Tempo(s).** You can use this setting to randomize the tempo changes by a percentage or a bpm value. Use the Emphasis slider to force the randomization to occur at higher or lower tempo values. Positive settings will randomize higher tempos, while negative values will randomize lower ones.
- **Options button.** The Options button (located next to the OK button) allows you to toggle between the different methods of setting curve parameters. The parameter settings that are displayed are dependent on the type of curve selected. You can use the End Time setting to have DP calculate the tempo for a specific duration, which is handy when you’re working with film or video and you need tempo changes to occur at specific points in time.
- **Anchoring.** Located next to the Start and End tempos is an anchor icon, which enables the Anchoring feature. Anchoring allows you to use the current tempo that is at the sequence’s current location. Use this feature to ensure that the tempos before and after the region match; doing so will prevent any sudden changes or jumps between tempo changes.

To insert a static tempo change:

1. Open the Change Tempo window by choosing Project > Modify Conductor Track > Change Tempo.
2. Set the tempo unit. For a standard tempo of 120bpm, for example, choose a quarter-note value. This basically tells DP that a single beat is equal to one quarter note.
3. Set the tempo curve to constant. This is the first button within the Curve section of the window and is represented by a straight-line icon.
4. Set the Start and End measures for the tempo change. The Start Time is where the tempo change will begin, and the End Time is where the change will stop.
5. Type a value in the Tempo field. This value is in beats per minute, or bpm.
6. If needed, set the Randomize Tempo options, then click OK.



---

**Tempo Curves** DP provides five different tempo curves that allow for greater control over tempo changes (see Figure 11.10).



**Figure 11.10** The Change Tempo command's five tempo curves are, from left to right: Straight-Line, Linear, Logarithmic, Exponential, and Polynomial.

Instead of manually inserting multiple tempo changes, you can use the provided curves to automate much of the process. The various curves determine how a change will be implemented over a specified period of time. The first curve (Straight-Line) will insert one tempo at the beginning of a region, while the remaining curves (Linear, Logarithmic, Exponential, and Polynomial) will create multiple tempo events to simulate the shape of the chosen curve.

When working with the last three curves, you have an additional curve setting called *Curvature*. This setting controls the amount of tempo change that will occur at the “changing” point of the curve, allowing you to smooth out or over-exaggerate the shape of a chosen curve. Lower values will smooth out the tempo change and force it to more closely resemble the Linear curve setting. Higher values will force any tempo changes to happen closer to the beginning or end of a curve, depending on which one is selected. For example, when you're using the Logarithmic curve (the middle curve button), higher curvature values will cause the majority of the tempo change events to happen toward the beginning of the curve.

When working with the Polynomial curve (the leftmost curve button), you can also specify the *Mid-Beat* parameter. This setting tells DP where the most rapid tempo changes will occur.

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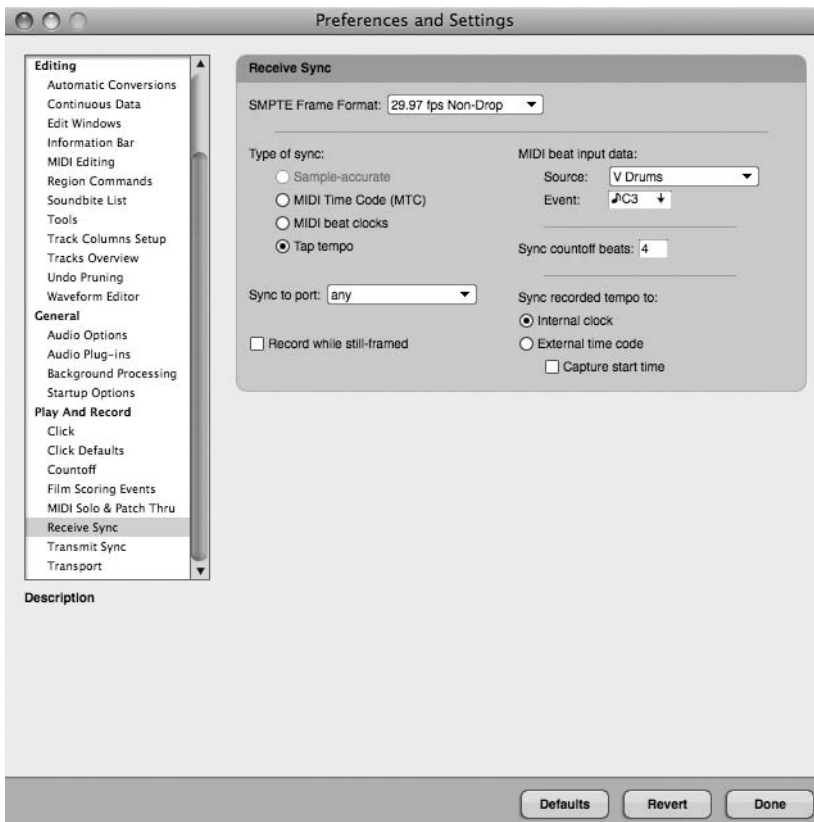
To insert a smooth tempo change that starts with one tempo and ends with another:

1. Open the Change Tempo window by choosing Project > Modify Conductor Track > Change Tempo.
2. Set the tempo unit. For a standard tempo of 120bpm, for example, choose a quarter-note value. This basically tells DP that a single beat is equal to one quarter note.
3. Choose the curve you want (any curve except the Straight-Line curve). Notice that the settings update to provide additional options for setting the End tempo, Curvature, and/or Mid-Beat settings.
4. Set the Start and End measures.

5. Enter the Start and End tempos for the change. Remember that you can toggle the Option button to activate the End Time setting, which will let DP automatically calculate the Start or End tempo for you.
6. Set the Randomize, Curvature, and/or Mid-Beat settings as needed and click OK.

### ***Tap Tempo and the Receive Sync Command***

The simplest form of DP's Tap Tempo command is the Control Panel's Tap Pad feature. Simply click on the Tap Pad button to "tap" in a tempo. Unfortunately, you cannot use the Tap Pad function while playback is engaged. To have DP track a tempo during playback, or to record a tapped tempo into the Conductor track, you'll need to use the Receive Sync command's Tap Tempo option (see Figure 11.11). Setting DP to receive sync from a tap tempo source will basically slave Digital Performer to an incoming tap tempo MIDI source; this can be used during any part of the music production process. Keep in mind that this setting will override any Conductor track tempo settings!



**Figure 11.11** The Receive Sync command's Tap Tempo feature allows you to slave DP to an external tap tempo source.

Once the Tap Tempo command is chosen, DP's Tap Tempo options become available. They are as follows:

- **MIDI Beat Input Data.** This section controls the MIDI source and event number (note). Use the Source section to set the MIDI device you will be using to tap tempos. Once the device is chosen, press a note on your MIDI controller to set the MIDI event or note that will be used to tap the tempo.
- **Sync Countoff Beats.** This setting is the number of taps that will be used as a countoff. You can set the number from 1 to 127.
- **Sync Recorded Tempo To.** The External setting will let you slave DP to an external clock source while in Tap Tempo mode. Enabling the Capture Start Time option will tell DP to remember the exact SMPTE frame of the first tap after the countoff. This will ensure that the sequence will always start at the correct time.

To record tap tempo events into the Conductor track:

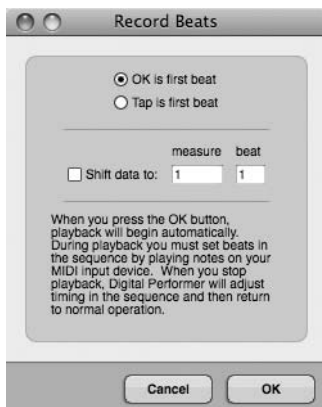
1. Begin by ensuring that DP is set to the correct meter with the Change Meter command (Project > Modify Conductor Track > Change Meter).
2. Choose Receive Sync (Setup > Receive Sync). Set the MIDI source and event. If you are planning to simultaneously record a MIDI performance into MIDI tracks, make sure you choose a MIDI event that will not be in use for this “performance.” Also remember to have the Multi Record option enabled from the Studio menu.
3. Set the number of countoff taps in the Sync Countoff Beats section (as explained earlier).
4. Set the Sync Recorded Tempo To option to either Internal or External and then click OK.
5. Enable the Slave the External Sync option from the Setup menu. The default keyboard shortcut for this is Command+7, or you can simply enable the Slave to External Sync button in the Control Panel.
6. Record-enable the Conductor track (and any other tracks, if needed). Be aware that Overdub mode will not function on the Conductor track during this process. Any tempo events that exist within the track will be erased, regardless of which recording mode is selected. To get around this, create an alternate take before beginning the recording process.
7. Press Record; the default keyboard shortcut is the number 3 key on the numeric keypad. The Record button will begin flashing in the Control Panel, and DP will be ready for you to begin tapping your tempo.

8. Disable the Metronome button on the Control Panel.
9. Start tapping the MIDI note or event on the specified MIDI controller. Digital Performer will wait to “hear” the specific number of countoff beats (specified in Step 3) before playback and recording begin.
10. Enter (tap) the tempo into DP. You can be as expressive as you wish.
11. Hit the spacebar when you are finished tapping, and DP will calculate the new tempo.
12. Unarm any record-enabled tracks, place the Control Panel’s Tempo Source into Conductor Track mode, and disable the Slave to External Sync button.
13. Hit Play to check your results. (Make sure you re-enable the Metronome button.)

### ***Adjust Beats and Record Beats Commands***

Digital Performer contains more advanced commands that allow you to adjust the tempo for a sequence: the Adjust Beats and Record Beats commands (Project > Modify Conductor Track > Adjust Beats or Record Beats). These commands allow you to realign DP’s bar lines to match the tempo of existing music. Both commands are extremely useful for situations in which you have an existing piece of music that was not recorded to a metronome click, and you would like to align DP’s bar and beat lines to the music without changing the original performance.

**The Record Beats Command.** The Record Beats command lets you tap a new tempo while listening to playback of existing material. Once you have finished, DP will calculate the new tempo and automatically readjust bar lines and beat markers to match the tempo you entered, while leaving the existing musical material intact. This feature is very similar to the Tap Tempo feature, but it offers dedicated options for greater control in this specific type of situation (see Figure 11.12).



**Figure 11.12** The Record Beats command window.

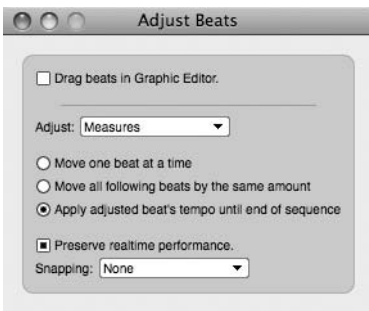
- **OK Is First Beat.** This option will make the first beat or tempo event occur at the counter's current location.
- **Tap Is First Beat.** Use this option to make your first tap the first beat of the realignment procedure. This is like a manual setting, allowing you begin playback and wait before you begin tapping the new tempo.
- **Shift Data To.** Use this setting to compensate for any pickup notes (notes that may occur before the actual beginning of a measure). For example, if you have material that starts on Beat 1 of Measure 3 but contains two quarter-note pickups, set the values to Measure 2 Beat 3.

To use the Record Beats feature:

1. First record new material (without concern for the click) or import an existing piece of music.
2. Place the playback cursor at the precise location at which the material starts. If the material is an audio region, you can zoom in and manually place the playback cursor at the proper location. If it is a MIDI track, open the Event List (Shift+E) and make note of the location of the first MIDI event.
3. Disable the Metronome button on the Control Panel.
4. Open the Record Beats command by choosing Project > Modify Conductor Track > Record Beats.
5. Choose the OK Is First Beat option. This will automatically place the first beat at the current location that you set in Step 2.
6. If the material contains pickup notes, use the Shift Data To option to compensate.
7. Now you should get ready to start tapping any note on your MIDI controller. Once you hit the OK button, DP will automatically tap the first beat, and you will need to begin tapping on the second beat.
8. Click OK and start tapping on the second beat.
9. When the song is finished, press the spacebar to stop playback. DP will automatically calculate the new tempo for the song and realign the bar/beat lines.
10. Unarm any record-enabled tracks, place the Control Panel's Tempo Source into Conductor Track mode, and hit Play to check your results.
11. If you want to use the Tap Is First Beat option to manually place the first beat, start by placing the playback cursor at a location prior to where you want the first tap to occur. In other words, give yourself some pre-roll.

12. Open the Record Beats command and select the Tap Is First Beat option.
13. Click OK to begin playback.
14. Start tapping at the desired location. DP will not begin recording beats until your first tap.
15. Repeat Steps 8 through 10 as needed.

**The Adjust Beats Command.** The Adjust Beats command (see Figure 11.13) allows you to manually realign DP's Time Ruler to match the tempo of existing material. Instead of tapping in a tempo as you listen back to an existing audio or MIDI track (as with the Record Beats command), you manually drag the bar and beat lines of the Time Ruler. As you might have guessed, this can be a time-consuming process, depending on the length of the material you are working with; this option is really aimed at tempo-mapping rubato passages or other material that the built-in Beat Detection Engine has trouble analyzing.



**Figure 11.13** The Adjust Beats command window.

For simpler situations in which you need to realign a sequence to an existing soundbite with a constant tempo or clearly defined transients, use the Beat Detection Engine to analyze the soundbite and then use the Adjust Sequence to Soundbites Tempo command to align the sequence to the soundbite in question.

The Adjust Beats command window provides options for controlling the adjustment process. They are, from top to bottom:

- **Drag Beats in Graphic Editor.** Click this option to turn on the Adjust Beats feature.
- **Adjust pop-up menu.** The Adjust option's pop-up menu, shown in Figure 11.13, allows you to adjust beats by entire measures, individual beats, or a fixed-note duration. When the Fixed Duration option is selected, a note value pop-up menu will appear and allow you to choose the specific note duration you want to work with.
- **Move One Beat at a Time.** Choose this setting when you need to make individual beat adjustments in the Time Ruler.

- **Move All Following Beats by the Same Amount.** Select this option when you want to move one beat and have all the beats that appear after it move by the same amount.
- **Apply Adjusted Beat's Tempo until End of Sequence.** When this option is selected, the tempo change generated by moving a beat will be applied until the end of the sequence.
- **Preserve Realtime Performance.** This option tells DP to only adjust the Time Ruler and not the original audio or MIDI data.
- **Snapping.** This option forces realigned beats to snap to MIDI notes and audio beats (if they exist within the track you are dragging in) or markers. Choose None to turn off snapping all together.

To use the Adjust Beats feature:

1. First record new material or import an existing piece of music.
2. Open the Adjust Beats command by choosing Project > Modify Conductor Track > Adjust Beats.
3. Click the Drag Beats in Graphic Editor option to enable the Adjust Beats command. Keep in mind that the Adjust Beats window must be open in order for the Adjust Beats feature to work.
4. Start by adjusting the downbeats of the first measure. Choose Measures from the Adjust pop-up menu.
5. Open the Sequence Editor for the track, zooming as needed so that you can see the individual measures within the Time Ruler. It also helps if the track you are working on is at the very top of the window, so use the Track Selector List to hide all the other tracks, including the Conductor track.
6. Position the cursor over the downbeat of the first measure within the Time Ruler. The actual data that you want to align may start later within your sequence—say, at Measure 8. If this is the case, simply start with that measure. You could also trim the soundbite or MIDI region so that it begins precisely on Beat 1 of Measure 1.
7. Drag the downbeat of the measure within the Time Ruler to the actual beginning of Beat 1 in the track. As you drag, you should see a red bar line appear, indicating the new bar/beat position.
8. Release the mouse, and DP will realign the Time Ruler.
9. Proceed with adjusting the individual beats. Change the Adjust pop-up menu to Beats.
10. Click and drag the Time Ruler's individual bar/beat markers and align them with the individual beats of the music.

11. If you are working with a rubato passage, make sure you enable the Move One Beat at a Time option, which will let you adjust each beat independently.
12. Repeat Steps 5 through 11 as needed.

## Audio Menu Tempo Commands

Soundbites within DP may or may not contain a tempo map. Audio that is recorded within DP will take on the tempo of the sequence at the time of recording, while audio that is imported will contain a tempo map only if it is present in the original file (for example, an audio file from a “loop” sound library, an Apple Loop, or an ACID WAV file).

Digital Performer’s Audio menu contains a number of tempo commands, shown in Figure 11.14, that allow you to set or change the tempo map for an existing soundbite, force a soundbite to match the sequence tempo (time compressing or expanding it in the process), or change the sequence tempo to match a soundbite’s tempo. These commands give you tremendous control over how audio and your sequences interact with each other, providing you with the flexibility to work with many different audio sources without worrying about their original tempo maps.



**Figure 11.14** The Audio menu’s various tempo commands.

## Soundbite Tempos

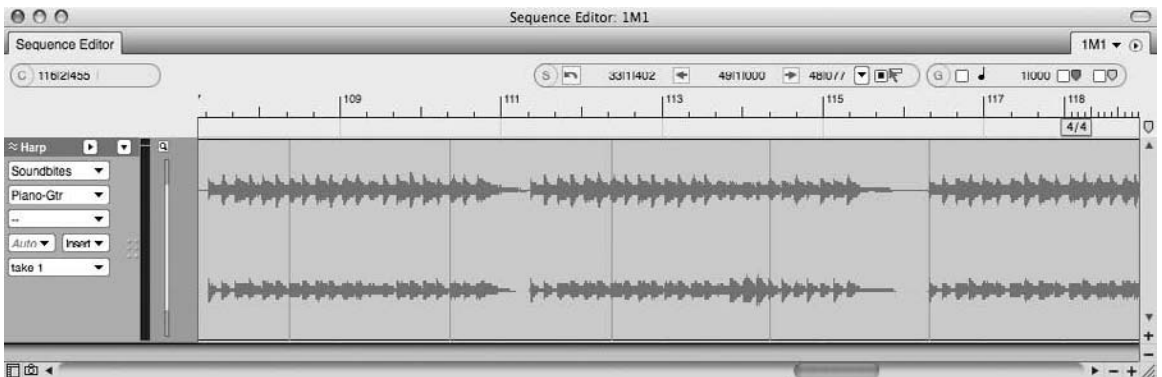
If a soundbite contains a tempo map, then the tempo map will be displayed throughout DP’s various windows. The List section of the Soundbites window displays this information in the Tempo and Quarter Note columns. If these columns are blank, then the soundbite does not contain a tempo map. (Refer to Chapter 3 for information on the columns within the Soundbites window.) Within the Sequence Editor, soundbites with tempo maps are displayed with red grid lines, as shown in Figure 11.15. If the tempo map matches the sequence’s tempo, these grid lines will line up with the Sequence Editor’s Time Ruler. If the tempo map is different, however, these lines will not line up with the sequence’s Time Ruler (see Figure 11.16).

Tempo maps can be applied to a soundbite by using the Set Soundbite Tempo or Copy Sequence Tempo to Soundbite command. These commands will not change the actual audio of the soundbite; they only change the tempo maps associated with the files. Soundbites must contain a tempo map in order for you to take advantage of DP’s more advanced time-stretching and





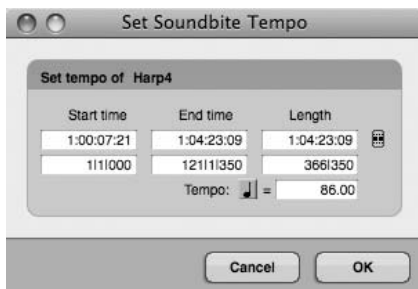
**Figure 11.15** If a soundbite contains a tempo map that matches the sequence’s tempo, it will be displayed with red grid lines that line up with the Time Ruler.



**Figure 11.16** Soundbites that contain tempo maps that do not match the sequence tempo are displayed with grid lines that do not line up with the Time Ruler.

compression features, such as the Adjust Soundbites to Sequence and Adjust Sequence to Soundbite Tempo commands.

**Set Soundbite Tempo.** Use the Set Soundbite Tempo command to define a constant tempo map for a soundbite or a selected portion of a soundbite (see Figure 11.17). You must know the



**Figure 11.17** The Set Soundbite Tempo window.

duration of the soundbite for this command to work properly. The options provided in the Set Soundbite Tempo command window are as follows:

- **Start Time.** Displays the start time of the selection. This value cannot be edited.
- **End Time.** Shows the end time of the selection. Only the bar/beat input fields can be modified.
- **Length.** The duration of the selection is displayed here. Like the End Time values, only the bar/beat input fields can be modified.
- **Tempo.** The calculated tempo is displayed here. Once a value is entered in the End Time or Length section, the tempo is automatically calculated for the soundbite. You can also enter a tempo directly into the Tempo field if you want.

To apply a tempo map to a soundbite using the Set Soundbite Tempo command:

1. Begin by selecting a soundbite. You can also select a portion of a soundbite. Be aware that this command will only work on one soundbite at a time.
2. Open the Set Soundbite Tempo command by choosing Audio > Set Soundbite Tempo.
3. Enter the value for the length of the selected soundbite in quarter notes.
4. Once the information is entered, DP will automatically calculate the tempo for the selection.
5. Click OK.

To remove a tempo map from a soundbite using the Clear Soundbite Tempo command:

1. Begin by selecting a soundbite. You can also select a portion of a soundbite. Be aware that this command will only work on one soundbite at a time.
2. Choose the Clear Soundbite Tempo command, and the tempo map will be immediately removed from the soundbite.

**Copy Sequence Tempo to Soundbite.** Use this option to copy the tempo of a sequence to selected soundbites. In other words, this command will imprint the tempo map of the sequence to the soundbite. This is handy when you want the soundbite to automatically conform to any (sequence) tempo changes made at a later time. This command will affect multiple soundbites but will not function on portions of a soundbite. The entire soundbite must be selected before this command will function.

To copy the sequence tempo to a soundbite:

1. Begin by selecting a soundbite or soundbites. You must select an entire soundbite—this command will not work on portions of a soundbite.

2. Choose the proper tempo control from the Control Panel. For example, if you have the Conductor track selected, any tempo events or custom tempo maps will be copied.
3. Choose Audio > Copy Sequence Tempo to Soundbite to copy the sequence tempo to a soundbite.

### ***Adjust Soundbites to Sequence Tempo***

Once a soundbite contains a tempo map, you can take advantage of DP's more advanced tempo features. Unlike the previous Audio menu tempo commands, the Adjust Soundbites to Sequence Tempo command will automatically time stretch or compress a selected soundbite to match the sequence tempo. Keep in mind that this will only work on soundbites that contain a tempo map. If a soundbite doesn't have a tempo map, then use the Set Soundbite Tempo command to apply one. Also, set the Time Compressing and Expanding option in the Soundbites window's Info Pane to Allow Time Scale. (Refer to Chapter 3.)

---

**Tempo Map Tangle** Recently, I was in quite a jam regarding an audio file that did not match my DP session tempo (for a cue in a short film that was to be delivered later that day!). I had previously contracted a small group of live players to record a track that would eventually be combined with a mix of several electronic stems (several audio tracks merged together, such as drums, strings, brass, and so on). However, as one should expect in this business, a new cut of the film arrived with a last-minute edit that required a slightly faster tempo for the cue. For my MIDI tracks, it was no problem. (I simply rerecorded the tracks at the new tempo.) However, the live mix from the players was definitely not going to line up with my new tempo—and worse yet (and for unknown reasons), the track was not embedded with a tempo map from the live session! So, after my heart rate became normal again, I quickly used the Control Panel's Tap Pad feature to get an "average" of the live track's tempo (although I more or less knew the "click" to which it should have been recorded). Next, I used Set Soundbite Tempo and defined the tempo for the track as my Tap Pad average. Finally, knowing that my tapping was relatively accurate and the new tempo was not much faster than the original tempo, I proceeded to use Adjust Soundbites to Sequence Tempo and voilà, I was back in business. A few minutes late on delivery, but back in business!

---

### ***Adjust Sequence to Soundbite Tempo***

This command has the opposite effect from the previous Adjust Soundbites to Sequence Tempo command. It copies the tempo map from a soundbite into the sequence. The new tempo will be copied into the current tempo source (for example, a Tempo slider or Conductor track).

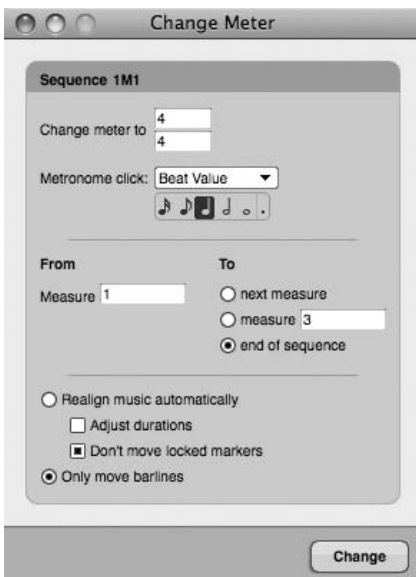
## Meter

Meter, along with tempo and key, serves as the foundation for modern music (*modern* being a relative term) and recording, determining how music is divided and counted within a song. Meter, displayed as a fraction (for example, 4/4 or 6/8), is made up of two parts, a numerator and a denominator. The first (or top) number is the numerator, which tells the musician or writer how many beats will be contained in a measure of music. The second (or bottom) number is the denominator, which represents the beat value. A denominator of 4 is a quarter note, a value of 8 is an eighth note, a value of 2 is a half note, and so on. So a standard meter of 4/4 tells us that there are four quarter notes within one measure of music, 6/8 would be six eighth notes to a measure, 5/4 would be five quarter notes to a measure, and so on.

The intricacies of meter and its complex role within music and music theory are beyond the scope of this book, and this section will focus on the functionality of meter as it applies to your Digital Performer projects. Basic use of DP's Change Meter command was discussed briefly at the end of Chapter 4; this section will offer further explanations on the options available in this window, while also discussing more advanced concepts, such as partial measures.

### The Change Meter Command

Choose Project > Modify Conductor Track > Change Meter to open the Change Meter command window, shown in Figure 11.18. This window provides a number of options for modifying the meter of a sequence; they are as follows:



**Figure 11.18** The Change Meter command window.

- **Change Meter To.** Click on the numerator and denominator values to change the meter.
- **Metronome Click.** This is the number of clicks within a measure; it also determines how often the Transport's Counter will be updated. For example, when Beat Value is selected and a meter of 4/4 is chosen, a value of one quarter note will tell DP to click four times within a measure. Selecting an eighth note would force the Metronome to click eight times, and so on.

Also appearing in the Metronome Click drop-down menu are options such as Tacet (removes clicks for a measure or a range of measures), Default (applies any Click Defaults for the specified meter), and Patterns (allows you to create or use a saved click pattern). Refer to Chapter 4 for more information on Click Default settings and pattern clicks.

- **From.** This is the start location for the meter change, indicated in measures.
- **To.** This is the end location for the meter change. The Next Measure option will tell DP to affect one measure at a time.

The To Measure option will force a meter change up to the measure number entered in this field. Keep in mind that this ending measure will not be included in the change. For example, a meter change starting at Measure 1 and ending at Measure 9 would change Measures 1 through 8, leaving Measure 9 unaffected.

The To End of Sequence option will tell DP to apply the meter change from the start measure until the end of the sequence.

- **Realign Music Automatically.** When this option is enabled (and the Adjust Durations option is turned off), DP will automatically delete notes or add rests as needed to force a sequence to adhere to applied meter changes.
- **Adjust Durations.** This option can only be enabled when the Realign Music Automatically option is selected. Adjust Durations will shorten or lengthen notes to force existing notes to conform to the new meter change. Only notes that fall on the beats affected by the meter change will be modified.
- **Don't Move Locked Markers.** This option leaves all locked markers in their locked position in the timeline of your sequence.
- **Only Move Barlines.** This option keeps existing music intact and only moves the Time Ruler's bar lines when a meter change is applied.

## Applying and Editing Meter Changes

Applying meter changes with the Change Meter command is a fairly straightforward process. Simply open the Change Meter window by choosing Project > Modify Conductor Track > Change Meter. Set the new meter, enter the start and end locations, enable any extra options as needed, then choose OK.

Once applied, meter events can be edited within the Conductor track. See the previous “The Conductor Track” section of this chapter for an explanation of the process of editing Conductor track events.

## Partial Measures

Partial measures can occur when meter changes are applied within the middle of an existing measure. How does this happen? Well, meter events within DP will always start a new measure. This is the rule, so if you insert a meter change on Beat 4 of a 4/4 measure (in the Conductor track’s Event List or Graphic Editor), DP will insert the meter event and create a new measure at that location. Now you have a situation in which the previous measure only contains three beats, but still retains a meter marking of 4/4.

Even though partial measures do not have an effect on the actual playback of music, they can be annoying when you’re trying to make edits, or they can be totally unacceptable when you’re working with notation in the QuickScribe Editor. DP provides a few options for correcting partial measures or for preventing them from occurring in the first place.

The most basic ways to fix a partial measure is to open up the Conductor track’s Event List and erase the change you previously applied and start over, or to insert a new meter change to “correct” the partial measure. The other way is to have DP automatically correct partial measures for you. Simply enable the Fix Partial Measures Automatically option within the Preferences window (Preferences > Edit Windows). When this option is turned on, DP will automatically move meter changes as needed to prevent partial measures from being created.

## Key

Within music, the *key* represents the musical scale that is used in a composition and is named after the dominant pitch of the scale, called the *tonic* (for example, the key of C). So if you are working in the key of C (major or minor), all of the notes within this scale will relate to and gravitate toward the pitch of C. In music of the Western Hemisphere, key signatures are the combination of flat (b) and sharp (#) symbols that are used to represent a certain key. Musicians and writers who read music can look at a key signature and automatically know which pitches within a scale should be flat or sharp. Of course, this explanation is a simplification of this part of music theory; knowing the available scales and their various forms takes training and practice. Simply put, music notation, along with its key and time signatures, is a visual language that represents music.

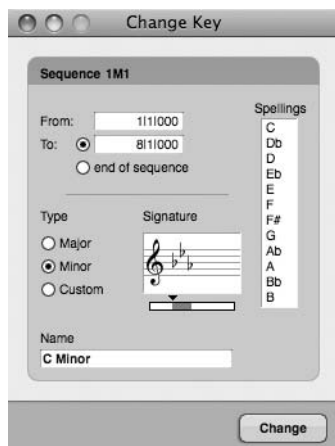
Luckily, key signatures within DP only affect the visual representation of notes, so you don’t need to know about key signatures and key unless you are working with notation or you are preparing to transpose (pitch-shift) MIDI and/or audio data.

Within Digital Performer, only one key change event can exist in a single location and will affect all tracks within a sequence (though you can have as many key changes as needed). If a sequence does not contain key change events, then a default key of C will be used. Key changes can only

be edited in the Conductor track (in the Event List, Graphic Editor, or Sequence Editor) and in the QuickScribe Editor.

## The Change Key Command

Digital Performer's Change Key command window (see Figure 11.19) provides options for inserting key change events within a sequence. These options are as follows:



**Figure 11.19** The Change Key command window.

- **From.** This is the start location for the key change, indicated in bars and beats.
- **To.** This is the end location for the key change. The End of Sequence option will tell DP to change the key from the start location to the end of the sequence.
- **Type.** Here you can specify whether the scale is major or minor or whether you would like to use a custom (modal) scale.
- **Signature.** Use the slider to choose a key signature. The Spellings list will automatically update to reflect the selection.
- **Name.** This field displays the default name for the selected key signature. You can type in a new name if you want; this can be useful when creating custom key signatures (for example, modal keys such as Phrygian, Mixolydian, Dorian, and so on). Names are only used for your reference and will not appear in the key event display in the Conductor track or Editor window.
- **Spellings.** The Spellings list provides a table with the existing notes of a selected scale. Use this column to change how notes are “spelled” within a standard key signature (for example, spelling a C as B# or Dbb) or when you are creating custom key signatures.

To apply a key change using the Change Key command:

1. Start by choosing Project > Modify Conductor Track > Change Key to open the Change Key window.
2. Set the start and end locations for the key change.
3. Set the key type (Major, Minor, or Custom) and move the slider to select the appropriate key.
4. If necessary, modify the note spellings in the Spellings list and the name of the key.
5. Click the Change button, and the new key event will be inserted.

---

**Where Key Changes Are Inserted...** Be aware that key changes are inserted into the active sequence window/editor or highlighted Chunk window. If a Chunk isn't selected, the key event will be placed in the play-enabled Chunk. Digital Performer helpfully displays the sequence you will be modifying in the top portion of the Change Key command window.

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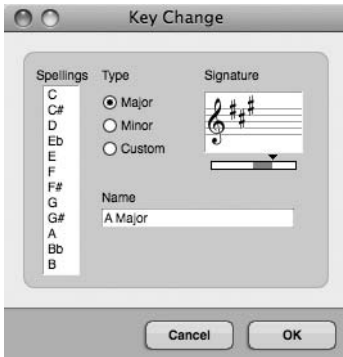
To edit the key signature of an existing key change event:

1. Navigate to the Conductor track within the Tracks window and double-click on the key change event. This will open the Event List for the Conductor track (as long as Event List is selected in Preferences > Edit Windows > Default Edit Windows > Conductor Track). If you are working in the Graphic Editor, clicking on the Conductor track's key change event will display the event within the Information Bar.
2. Within the Event List, double-click on the key change event. If you are in the Graphic Editor, click on the key signature that appears in the Information Bar.
3. The Key Change dialog window will open. This window is identical to the Change Key window, minus the start and end location section (see Figure 11.20).
4. Choose a new key signature and click the OK button.

To edit the location of an existing key change event:

1. In the Conductor track's Event List, double-click on the location of the key change event. The location will become active, allowing you to type in a new value.
2. If you are working in the Conductor track's Graphic Editor, select the event to display it in the Information Bar. Click on the location and enter a new value. You could also horizontally drag the event within the Conductor track and drop it in a new location. The drag-and-drop method also works in the Tracks window and the Sequence Editor.



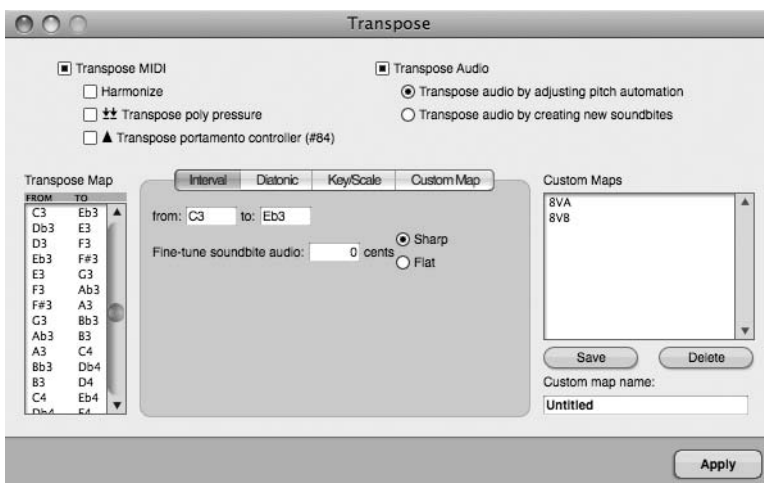


**Figure 11.20** The Key Change dialog window is identical to the Change Key command window, minus the start and end location section.

You can also use standard editing commands, such as Copy, Cut, and Paste, with key change events. See the earlier “The Conductor Track” section of this chapter for related information.

## Transposing Audio and MIDI Data

The difference between inserting a key change and transposing audio or MIDI data is huge. Key changes only affect the visual display of notes, while transposing data changes the actual pitch of MIDI and audio data. The Region menu’s Transpose command window, shown in Figure 11.21, provides powerful options for controlling how selected MIDI data and soundbites are transposed. Refer to Chapters 9 and 13 for an exploration into the use of the Transpose command.



**Figure 11.21** The Region menu’s Transpose command allows you to change the pitch of selected MIDI and audio data.

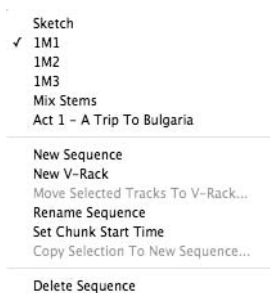
## Chunks

Many DP users find the term *Chunk* confusing. What is a Chunk? I'm glad you asked. A *Chunk* can be either a sequence (which is made up of multiple tracks) or a song (which is made up of multiple sequences or other songs). That's it. Sounds too simple, doesn't it? Well it is, really, once you understand how sequences, Chunks, and songs interact with each other. Even though sequences and Chunks are the same thing, you may have noticed throughout the book that I tend to favor one word or the other, depending on the situation and topic I'm discussing. Usually, when I'm referring to a single sequence, I use the word *sequence*, and when I'm referring to multiple sequences, I use the word *Chunk*. This is more of a nuance than anything, and some of you power users out there may have a different take on the subject. Regardless, a sequence is a Chunk, and a Chunk is a sequence. I'll leave it up to you to decide whether it's a "tomayto" or a "tomahto."

This section will explain the procedures for managing individual sequences within the Tracks window and will also discuss the Chunks window, which provides a dedicated location for managing multiple sequences (Chunks) and songs.

## Sequences

A *sequence* is basically a container for your audio and MIDI tracks. By default, a new sequence is automatically created when you create a new project. This sequence is called *Seq-1* and is displayed in the Control Panel's Sequence menu, shown in Figure 11.22.



**Figure 11.22** The Control Panel's Sequence menu provides options for creating, renaming, and play-enabling sequences.

### The Sequence Menu

You can click on the Sequence pop-up menu to rename the sequence or create a new one. If multiple sequences already exist, they will be listed within this menu. Simply select a sequence to play-enable it (that is, to make it the active sequence).

An unlimited number of sequences can exist within a project; the number is only limited by the amount of RAM you have installed within your system. Now, read that last sentence again—the

amount of RAM dictates the number of sequences you can efficiently have within a project. If you are going to be using multiple sequences (or Chunks) in a project, then make sure you have plenty of memory available to DP.

### ***Incorporating Sequences into Your Workflow***

If you look beyond the clear-cut definition of a sequence, you may begin to imagine the various ways you can incorporate the strength of sequences into your production workflow.

A really handy, though sometimes overlooked, feature is the Sequence menu's Copy Selection to New Sequence option. This command will take any track selection (including all its current settings) and place it into a new sequence. Simple enough, so what's the big deal? Well, this powerful feature can really help you streamline your entire workflow. The following subsections present a few examples of how you can incorporate this command into the music production process.

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**Copy Selection to New Sequence** The music-production process is a very dynamic and fluid combination of events. In a perfect world, we would move from one stage to another (for example, recording, then editing, then mixing, then mastering). In the real world, however, we find that many of these processes overlap. For example, you may be mixing a tune while you are still performing those last-minute overdubs and edits at 2 AM! Or, if you are involved in the film-scoring process, you can create separate sequences for each cue—1M1, 1M2, and so on. These separate “cues” would simply duplicate the “virtual” orchestration setup as well as share the same movie file. When it comes to your studio workflow, flexibility is the key, and the Copy Selection to New Sequence command is just one of the many helpful features that DP provides to help you accomplish this goal. It allows you to easily move (arrange) tracks or portions of tracks into separate sequences.

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**Recording.** If you are working on a project that contains multiple songs, such as an album project, you could record each song into a separate sequence instead of recording them into separate projects. This, of course, has its advantages and disadvantages.

One advantage is that you have each song within this single project under one roof, so to speak. If you would like to use a soundbite from one song and place it in another, you can easily do so. You can quickly switch between sequences when you need to, and project management is simplified because all your work is consolidated into a single project.

The disadvantage is that there is a danger in keeping all of your eggs (sequences) in one basket—if the project is corrupted for some reason, you run the risk of losing every sequence contained in the project. However, if you are executing proper backups, this shouldn't be a concern.

**Overdubbing.** When you're overdubbing, preparing your project to be as responsive and efficient as possible—for example, using low buffer settings, freeing up RAM and CPU—should be a prime concern. Providing a streamlined recording environment for your performer should be

your main focus and priority. This can be a problem if you are also in the middle of mixing the material to which you will be overdubbing (with many plug-ins), or if you have a ton of tracks eating up precious CPU and RAM. The Copy Selection to New Sequence feature can be the solution to this problem; read on to find out how.

To use the Copy Selection to New Sequence command during the overdub process:

1. Create a stereo version of your mix by bouncing your tracks to disk or by recording the summed output to a stereo track (make sure you name the track before recording) in real time.

---

**Bouncing Subgroups or “Stems”** For greater flexibility, you could bounce your tracks in subgroups (or *stems*)—for example, drums, bass, keys, guitars, and so on. This adds a little more work to the procedure, but it offers more control over the “mix” being provided to the artist.

---

2. If you’re using the Bounce to Disk command, make sure to tell DP to import the bounced file into the current sequence. Name it something appropriate, such as 2Mix or Stereo Mix. At this point, you should have a new stereo track (or multiple tracks) that contains a stereo mix of your song.
3. Select the new stereo files along with the Conductor track (this is important), and choose Copy Selection to New Sequence from the Sequence menu. The Create Chunk window will open, allowing you to name the new Chunk. Name it something appropriate, such as Piano Overdubs or Vocal Overdubs. Set the end time to Auto and click OK.

---

**Don’t Forget the Conductor Track!** You need the Conductor track so that your new sequence will retain the same meter, tempo, and any other Conductor track events.

If you’re really organized, you have already created markers at important song structure locations (for example, the intro, verse, chorus, bridge, outro, and so on). These location points will be copied over with the Conductor track into the new sequence. Markers are discussed in detail later, in the “Markers” section of this chapter.

---

4. Now, from the same menu, select the new Overdub sequence, and it will become the active sequence in the Tracks window. At this point, you should be viewing a stream-lined sequence (with freed-up RAM and CPU) that only contains the Conductor track and the bounced stereo mix of your song.
5. Next, lower your buffer settings if you need to reduce any monitoring latency. Create your headphone mix, and you’re ready to begin recording.

Once you have overdubbed any necessary parts, you're ready to combine your new tracks with the main sequence. To combine your tracks using the "copy" method, continue on with these steps.

6. Start by selecting all of the new tracks you overdubbed by choosing Edit > Select All. The default keyboard shortcut is Command+A. Make a note of the number and type of tracks you are selecting. This is important because you will need to duplicate the track layout in the main sequence in order for the material to be copied over correctly. If you have a combination of different tracks (for example, mono, stereo, and MIDI), you might want to group them together by type by changing the track order. This might make it easier for you when you are creating the new tracks within the original sequence.
7. Next, press the Shift key and click on the name of the Conductor track to exclude it from this procedure.
8. Once your tracks are selected, choose Edit > Copy (or press Command+C).
9. Next, choose the main sequence from the Sequence menu.
10. Create the same number of tracks (with the same format—for example, mono or stereo) within this main sequence. Make sure the order of the tracks is exactly like the order within the Overdub sequence.
11. Make sure your new tracks are selected by clicking on their track names.
12. Cue the Main Counter to the beginning of your sequence and choose Edit > Paste (or press Command+V) to paste the material into the main sequence.
13. Mute the bounced file you created in Step 1, then hit the spacebar to check your work.

---

**Overdubbed Tracks and the Soundbites Window** Because multiple Chunks (or sequences) within a project share the same Audio Files folder, another option regarding the placement of overdubbed tracks back into a main sequence is to use the Soundbites window. Once you have returned to the main sequence and created the same number of tracks (as in Step 4 in the previous section), simply drag each soundbite to its corresponding track. Remember our discussion of naming your tracks before recording? This is where track naming becomes very useful!

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**Chunks Window** Another method for combining tracks from one sequence into another is by using the Chunks window's Song feature. See "The Chunks Window" section of this chapter for an explanation of this procedure.

---

**Arranging.** You could also use the steps outlined in the preceding “How To” section to split the different sections of your song (the verse, chorus, and so on) into separate parts. Once they are separated into individual sequences, you could use the Chunks window to place them into a song to experiment with different versions or arrangements.

**Mastering.** This is always a very touchy and controversial subject, so I’ll start by adding my disclaimer: Mastering should be left up to professional mastering engineers! They *are* called “mastering” engineers for a reason. It takes many years of training, practice, and the right gear and studio environment to properly master a recording. (See Chapter 13 for a continuation of this discussion.)

Okay, with that said, the reality is that we DP users sometimes need to use Digital Performer for our mastering needs. Because the application was built to function more like a multitrack recorder than a dedicated two-track recorder, mastering can be a confusing task. How do you set up a DP project for mastering a collection of songs (such as for an album)? One way is through the use of Chunks. Start by placing each song in its own sequence (with its own plug-in chain) and open a separate Tracks window for each song. Then use the Chunks window (explained next) to quickly switch between each song. This setup lets you instantly jump between each song, allowing you to easily check the sonic and dynamic relationships between them.

## The Chunks Window

Now that I’ve covered a few different situations where you might use Chunks within a project, let’s take a look at the Chunks window, shown in Figure 11.23.



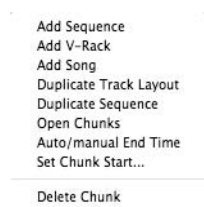
**Figure 11.23** The Chunks window. In this example, there are five sequences, one song, and two V-Racks. Notice the different icons that are used to represent them. Only one song or chunk can be play-enabled at a time (and V-Racks incorporate the online/offline icon).

You can access the Chunks window by choosing Project > Chunks or by using the default keyboard shortcut Shift+C. The main area of the Chunks window lets you specify the order of existing Chunks or songs, play-enable a specific Chunk/song, enter comments, and set song select numbers for cueing Chunks from a MIDI controller.

The options included in the Chunks window are as follows:

- **Type.** This column displays the Chunk or song icon. Chunk icons are yellow, and song icons are purple.
- **Play.** This column indicates which Chunk or song is currently play-enabled. Only one item can be play-enabled at a time.
- **S#.** This is the Song Select Number column, which is the number from 1 to 127 that can be assigned to a song or Chunk so that it can be cued from your MIDI controller. If the column contains a dash, then there is no song select number assignment. Playback order is also based on its placement within the list, so if a Chunk or song contains the same number, DP will play back the topmost item in the list first. Be aware that your MIDI controller must be able to send a song select message in order to take advantage of this feature.
- **End Time.** This is the end time of the Chunk. When this is set to Auto End Time, the measure after the last full measure of the Chunk is used and cannot be edited from this column. If it's set to Manual (which can be done by selecting the Chunk and choosing the mini-menu's Auto/Manual End Time option), the end time will be displayed in bold and can be edited directly in this column.
- **Name.** This column shows the name of the Chunk. Option-click to rename a Chunk.
- **Comment.** Click on the Comment column to enter comments for a specific Chunk.

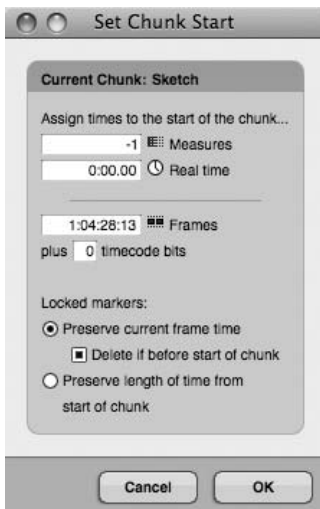
The Chunk window's mini-menu options, shown in Figure 11.24, are as follows:



**Figure 11.24** The Chunk window's mini-menu.

- **Add Sequence.** This option creates a new sequence. Holding down the Option key before opening up the mini-menu allows you to create multiple sequences at once.
- **Add V-Rack.** This option adds a V-Rack to the Chunks list (discussed later in this section).
- **Add Song.** This option creates a new song. Holding down the Option key before opening up the mini-menu allows you to create multiple songs at once.
- **Duplicate Track Layout.** Once a Chunk is selected, this command will become available. This option creates a blank sequence with the exact track layout as the selected Chunk.

- **Duplicate Sequence.** This option creates an exact duplicate of the selected sequence.
- **Open Chunks.** This option opens separate Tracks windows for selected Chunks and separate Song windows for selected songs.
- **Auto/Manual End Time.** Use this option to toggle a Chunk's end time to be either auto or manual. Only manual end times can be pop-edited in the main Chunk window.
- **Set Chunk Start.** This option opens the Set Chunk Start window, shown in Figure 11.25, in which you can change the actual start time for the selected Chunk. This is the same window you see when clicking on the Start Times button in the Control Panel's Tempo Control drawer.



**Figure 11.25** The Set Chunk Start window allows you to change the start time for a Chunk. This window even allows you to set negative start times, such as Measure  $-1$ .

- **Delete Chunk.** This option deletes selected Chunks.

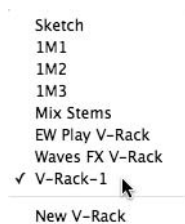
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**V-Racks** *V-Racks* are virtual racks that can be created in the Chunks window, the Sequence drop-down menu of the Control Panel, or Project > Sequences. V-Racks are simply a collection of aux tracks, virtual instruments, or master faders that is shared by all sequences (Chunks) in a project. These virtual racks are active regardless of what sequence is play-enabled, meaning their inputs and outputs are always available to the different sequences. For example, imagine you have four separate sequences within a project and you want to use the same set of virtual instruments for all sequences. By creating a V-Rack of the virtual instruments, you will not have to load them separately into each sequence, nor will you have to wait for the virtual instruments to reload each time you switch to a different sequence within a project. V-Racks are a great way to save memory and CPU resources—and, more importantly, time!



To create a V-Rack:

1. Choose New V-Rack from the Sequence drop-down menu in the Control Panel.
2. The Mixing Board will open automatically, revealing the newly created V-Rack. If not, simply open the Mixing Board (Shift+M) and select the new V-Rack from the Mixing Board's Sequence drop-down menu (see Figure 11.26).



**Figure 11.26** The Mixing Board's Sequence drop-down menu with a new V-Rack.

3. To add an aux track, virtual instrument, or master fader, use the standard techniques for adding tracks (Project > Add Track).
4. If you would like to move tracks from a sequence to the V-Rack, make sure the desired sequence is play-enabled, highlight the tracks you want to move, and choose Move Selected Tracks to V-Rack from the Sequence drop-down menu in the Control Panel.
5. To delete a track from the V-Rack, select the Delete Track option from the drop-down menu at the bottom of its mixer strip in the Mixing Board (see Figure 11.27).

Once a V-Rack is created, you can take it online or offline by enabling/disabling the V-Rack in the Chunks window. Also, V-Racks are only visible in the Mixing Board window.

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## Controlling Chunks

The Chunks window contains a number of features that control the playback of Chunks within a DP project. (Refer to Chapter 3 for a detailed look at the Control Panel.) Keep in mind that all of these features cannot provide smooth playback transitions between each Chunk, but you can use DP's Song feature to accomplish this.

### *Skipping, Cueing, and Chaining Chunks*

The Chunk Control buttons are used to manage the playback of Chunks within DP (see Figure 11.28). Use the Next and Previous Chunk buttons (the first two buttons from the left) to quickly move (skip) to the previous and next Chunks within the Chunks window. Once clicked, playback of the current Chunk will be interrupted, and the next or previous Chunk will automatically begin playback.



**Figure 11.27** The Delete Track option at the bottom of a track's mixer strip.

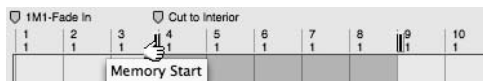


**Figure 11.28** The Chunk Control buttons control the playback of Chunks within DP.

The Cue Chunks button—the third button from the left—will automatically cue (bring up) the next Chunk within the Chunks window for playback. This is why the order of the Chunks within the Chunks list is so important. If you would like to use this feature, then make sure you have your Chunks in the correct playback order. You can rearrange the Chunks by simply grabbing the Chunks icon and dragging it to the desired location.

The fourth button from the left, Chain Chunks, will cause the next Chunk to automatically play back when the end of the current Chunk is reached. If you require a pause between the playback of one Chunk and another, simply change the end time of the first Chunk by the amount you want. Remember, you will need to set the end time to *Manual* to accomplish this.

When using the Cue Chunks or Chain Chunks feature, the Memory Bar's Start and Stop Time settings will update to show the start and end times for the current Chunk. In addition, the Time Rulers will display the Start and Stop bar-line markers (see Figure 11.29), which offer a visual representation of where and when the Chunk will start and end playback. You can drag these bar lines to new locations to quickly change when playback of the current Chunk will begin and end.



**Figure 11.29** Drag the Start and Stop bar lines within the Time Ruler to quickly change when playback will begin and end for the current Chunk.

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**Switching Chunks and Updating Edit Windows** Many times, you will use the Chunks window to switch to another Chunk while an Edit window is still open. This can be confusing, for example, if you play-enable a new Chunk and hit the Control Panel's Play button. This action will trigger the new Chunk, but you just may be looking at the previous Chunk's Tracks window! So keep in mind, Edit windows do not update to the selected Chunk. You must close and re-open Edit windows once a new Chunk has been play-enabled.

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## Songs

The Song window provides an environment for combining Chunks together. They can be daisy-chained for seamless playback, stacked for simultaneous playback, or a combination of both. Why would you need to do any of this? Let's go back to our previous "arranging" scenario. You could take an existing sequence and break the major sections (the intro, verse, chorus, and so on) into separate Chunks, then use the Song window to arrange them in different orders to audition multiple versions of your song. Maybe you find that verse-verse-chorus works better than verse-chorus-verse. You could also create smaller Chunks (say, a four-bar pattern) of various instruments (drums, bass, keyboard riffs, and so on) and use the Song window to construct a song. Once your arrangement has been created, you can even merge your song (with its multiple Chunks) into a single Chunk. The possibilities are endless.

### *The Song Window*

The Song window provides a flexible grid for arranging Chunks. Remember that a Chunk can also be a song, so it's entirely possible to have a song nested within another song (see Figure 11.30). A Chunk appears as a gray bar with the yellow Chunk icon located in the top-middle portion of the Chunk. Songs also appear as gray bars, but with the purple song icon as an identifier. Selected Chunks and songs will always be highlighted yellow.

The Chunk and grid is fairly easy to comprehend. The grid is divided into columns, or placement guides, that are represented by blue lines. When a song is created (choose Add Song from the

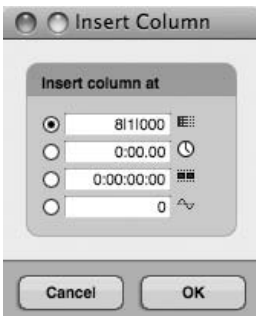


**Figure 11.30** The Song window can contain sequence Chunks and song Chunks.

Chunks window's mini-menu), a column is automatically placed at the beginning of the Song window. Columns must exist in order for a Chunk to be placed at a specific location. For example, if you want to place your first Chunk at Measure 8, you will need to manually insert a column at Measure 8 because the only column will exist at Measure 1/1/000. Be aware that DP will automatically delete manually inserted columns if a Chunk does not exist in that location. Be sure to place a Chunk in that location before DP redraws the Chunk grid.

To insert a column:

1. Open the Song window by double-clicking on the name of the song in the Chunks window. (Make sure you have created a new song, as mentioned a moment ago.)
2. Click Insert Column in the Song window's mini-menu. The Insert Column window, shown in Figure 11.31, will open.



**Figure 11.31** The Insert Column window. Four different time formats allow you to insert columns at precise locations.

3. Enter a value of 8 in the measure section. Click OK. Your new column will appear at Measure 8.
4. Now you can drag and drop a Chunk at that location. Once placed on the grid, DP will automatically insert another column at the end of the new Chunk.

To place a Chunk within the Chunk grid:

1. Start by creating a grid column at the location where you want to place the Chunk. If you need to place the Chunk at the beginning, don't worry about this step. DP automatically places a grid column at the start of the Song window (Measure 1/1/000).
2. Drag and drop a Chunk from the Chunks window into the Song window's Chunk grid. Again, if there aren't any columns available, then the Chunk will be placed at the start of the song. Besides vertical grid columns, the Song window is also divided into Chunk rows. These rows are invisible, but they allow you to horizontally stack Chunks so they can play back simultaneously, depending on their vertical locations.
3. To change the location of this Chunk, simply drag it to a new location. (Remember to insert a column if one isn't present already.)

**Markers in the Song Window.** Just like a normal sequence, songs can contain markers. Song markers appear beneath the Song window's Time Ruler. Markers not only provide organizational benefits, but they also automatically create grid columns at their locations. You can use markers when you need to create multiple grid columns without the fear of them being removed by DP. For an explanation of Digital Performer's markers feature, see the "Markers" section of this chapter.

To place a marker in the Song window:

1. With the Song window active and in the foreground, open the Markers window (Shift+K).
2. Click on the marker's mini-menu and choose Add.
3. Once you've created the marker, type in the desired location in the marker's Measure column. Your marker will be placed in the correct location along with a blue grid column.
4. To delete these markers, select the marker within the Markers window and choose Delete.

When working with song and Chunk markers in DP, you can delete any markers that are duplicated between your song and a selected Chunk.

To delete duplicate markers:

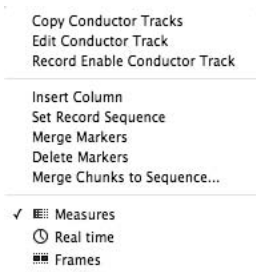
1. Start by selecting a Chunk.
2. Open the Song window's mini-menu and choose Delete Markers. Any song markers that are identical to the selected Chunk's markers will be removed.

Markers can also be merged between selected Chunks and placed in the Song window.

To merge Chunk markers:

1. Start by selecting the Chunks that contain the markers you want to merge.
2. Open the Song window's mini-menu and choose Merge Markers. The merged markers will be copied into the Song window.

**Mini-Menu.** I've already covered some of the mini-menu's features, but the mini-menu includes some additional controls (see Figure 11.32) that can allow you to dive deeper into the Song window.



**Figure 11.32** The Song window's mini-menu provides options for controlling songs and their related Chunks.

- **Copy Conductor Tracks.** This option copies the Conductor track from a selected Chunk into the Song window. If multiple Chunks are selected, DP will use the topmost Chunk when copying.
- **Edit Conductor Track.** This option opens the Event List or Graphic Editor for the song's Conductor track.
- **Record Enable Conductor Track.** This option record-enables the Song window's Conductor track so you can record tap tempo data. See the "Tempo" section of this chapter for an explanation of tap tempo.
- **Insert Column.** This option opens the Insert Column window. It is identical to the title bar's Insert button (I).
- **Set Record Sequence.** This option toggles the Record-Enable button for a selected Chunk. This feature allows you to record into a selected sequence while hearing playback of the entire song.
- **Merge Markers.** This option merges the markers of selected Chunks and places them into the Song window.
- **Delete Markers.** This option deletes markers that are duplicated between a song and selected Chunks.

- **Merge Chunks to Sequence.** Use this command to combine selected Chunks into a single Chunk. When you choose this option, the Merge Chunks window will open and present you with two options. The Copy All Tracks option will copy all of the tracks of the selected Chunks and place them into a new sequence. The Merge Tracks with Identical Names option is identical to the previous Merge Chunks to Sequence option except that it merges tracks that have the same names. Both options will place the new sequence in the Chunks window.
- **Time Ruler settings.** Here you can enable the listed time formats, and they will appear in the Song window's Time Ruler.

**Controlling Songs.** Just as with a “normal” sequence or Chunk, DP allows you to play back, record into, and edit songs.

To play back a song:

1. Click on the song's Play-Enable button in the Chunks window.
2. Press the spacebar.
3. You can also select the song within the Control Panel's Sequence menu.

To record audio or MIDI data into a song:

1. Double-click on the song in the Chunks window to open the Song window.
2. Double-click to select the Chunk into which you want to record. It will open in the Tracks window. Notice that there aren't any record-enable buttons.
3. Choose Set Record Sequence from the Song window's mini-menu to record-enable the selected Chunk. You should see the Chunk icon display a red dot, indicating that the Chunk is record-enabled. The Record-Enable buttons for each track within the Chunk will also become visible.
4. Arm the necessary tracks and proceed with the normal recording procedure.
5. When you are finished recording and you have stopped the Transport, return to the Song window's mini-menu and choose Set Record Sequence to toggle off or disable the Chunk's recording capabilities.

To record tap tempo data into a song's Conductor track:

1. Double-click on the song in the Chunks window to open the Song window.
2. From the mini-menu, choose Record Enable Conductor Track. This will arm the song's Conductor track and will be indicated by a check mark next to this option.

3. Double-click the Control Panel's Slave to External Sync button. The Slave to External Sync option will be enabled, and the Receive Sync window will open.
4. In the Receive Sync window, select the Tap Tempo option. Choose the tap tempo options you want and click OK.
5. Click the Record button and start tapping. (See the "Tap Tempo and the Receive Sync Command" section of this chapter for a detailed look at the procedure.)
6. Click the Stop button when you are finished.
7. Return to the Song window's mini-menu and click the Record Enable Conductor Track option to toggle off this feature.

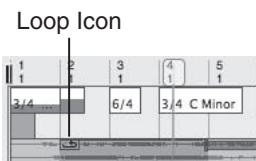
To edit Chunks in the Song window:

1. Double-click on the song in the Chunks window to open the Song window.
2. Select the Chunk you want to modify and apply the necessary command from the Edit menu (Cut, Copy, Paste, Erase, Select All, or Undo). The results of each command are identical to those in DP's standard Editor windows.
3. When using the Paste command, you will need to click with the mouse to tell Digital Performer where you would like to paste the selected Chunk.

## Looping

Digital Performer's looping feature allows you to loop or repeat selected regions in a track. Each track has its own independent loop capabilities, allowing you to set different loops for different tracks. Loops can even be nested within another loop. DP's looping capabilities provide a more efficient use of your Mac's resources than the more standard approach of copying and pasting the same region multiple times. In addition, you can quickly execute modifications to a loop, because you only have to change the loop points of the region. If you used the copy-paste method, you would have to edit multiple regions to make any changes.

There are three components that define a loop: the start point, the end point, and the number of repetitions. Loops within a track are indicated with a Loop icon, as shown in Figure 11.33. The



**Figure 11.33** Regions within a track will appear with a Loop icon. These icons are only visual markers to indicate that a loop is present and cannot be edited directly within a track.



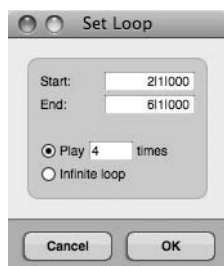
length of the loop indicator (either a gray bar or a gray bar with solid lines) identifies the duration of the loop and points to where the region will begin repeating. Audio or MIDI data that appears below the loop indicator bar will not play back and will be ignored by DP.

## Inserting a Loop Using the Region Menu

There are numerous ways to insert a loop. You can use the Region menu's Set Loop command, the Event List's Insert Button (+), or the Loop tool. The Set Loop command differs from the other methods in that it is global and allows you insert a loop regardless of the window in which you are working.

To insert a loop using the Set Loop command:

1. Begin by selecting the region or regions you want to loop. Keep in mind that the length of your selection will also define the amount of data that will be looped. For example, if a region is two bars long but you make a time-range selection of four bars (which includes the two-bar region), DP will loop the entire four-bar selection. So you will essentially be looping the two bars of music along with two bars of silence. In addition, you can make selections across multiple tracks to set multiple track loops with one command.
2. Choose Region > Set Loop. The Set Loop window, shown in Figure 11.34, will open.



**Figure 11.34** The Set Loop window.

3. Set the Start and End points for the loop. The initial values that appear will be based on the time-range selection you made in Step 1, so depending on your needs, you may not have to change these values.
4. Set the number of repeats for the loop. The Play \_\_\_Times option lets you enter a specific value. The Infinite Loop option forces the selection to loop indefinitely.
5. Click OK. The selection will update and appear with the Loop icon indicating that the region is looping.

To remove a loop using the Clear Loop command:

1. Select the region that contains the loop.
2. Choose Region > Clear Loop. The loop will be removed.

## Inserting a Loop in the Event List

You can also manage loops from the Event List. Unlike the Region menu commands, which only allow you to create and delete loops, the Event List also lets you edit existing loop parameters and will display nested loops if any are present.

To insert or delete a loop in the Event List:

1. Select the region or regions you want to loop.
2. Press Shift+E to open the Event List.
3. Click on the title bar's Insert button (the + icon) and choose Loop from the Insert menu.
4. The Start Point setting will appear, allowing you to enter a start value.
5. Tab to the End Point pop-up field and enter the loop's end point.
6. Tab to the Repeat pop-up field and enter the number of repetitions for the loop.
7. Press Return to confirm the settings. The Event List will display the location of the loop and the loop settings. The notes or soundbites being looped will be listed below the loop event.
8. To remove the loop, select the loop event within the Event List and press the Delete key.

To edit a loop in the Event List:

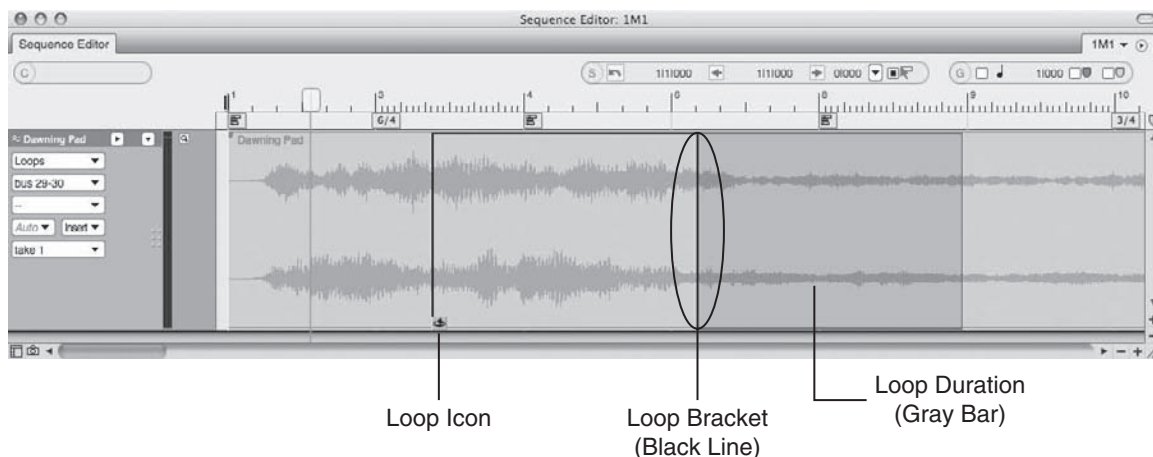
1. With the looped region selected and the Event List open, click on the parameter you want to modify. The setting will appear, allowing you to make the necessary changes.
2. Once modified, press the Return key to confirm the change.

## The Loop Tool

Using the Loop tool, you can insert a loop directly into the Sequence, Graphic, and Drum Editors. The loop settings will appear in the editor's Information Bar, and you can simply click on a setting to edit the values.

To insert or edit a loop in the Sequence Editor:

1. Activate the Loop tool by double-tapping the L key.
2. Click at the beginning of the desired region and drag to the right, stopping at the end of the region. Notice that a gray bar appears at the end of the selection (see Figure 11.35).



**Figure 11.35** The Loop icon indicates the beginning of a loop, while a loop bracket designates the loop End point. The gray bar that appears after the loop bracket shows the duration of the loop.

This represents the duration of the loop—where the region will begin to repeat and where it will end.

3. The loop settings will also appear in the editor's Information Bar when the loop is selected. To change a value, simply click on the setting to edit it.
4. You can also change the loop Start and End points directly in the track by dragging on the beginning loop icon or the ending loop bracket. However, you can only change the loop duration in the Information Bar.

To insert or edit a loop in the Graphic Editor:

1. Activate the Loop tool by double-tapping the L key.
2. In the marker strip (located below the Time Ruler), click at the desired location and drag to the right, stopping where you want the end loop point to be. Notice that a gray bar (with solid lines) appears at the end of the selection (see Figure 11.36). This bar represents the duration of the loop—where the region will begin to repeat and where it will end.



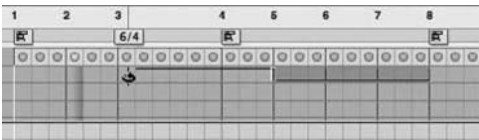
**Figure 11.36** A loop within the Graphic Editor's marker strip.

3. The loop settings will also appear in the editor's Information Bar when the loop is selected. To change a value, simply click on the setting to edit it.

4. You can also change the loop Start and End points directly in the marker strip by dragging on the beginning loop icon or the ending loop bracket. However, you can only change the loop duration in the Information Bar.

To insert or edit a loop in the Drum Editor:

1. Open the Drum Editor (Shift+D) and activate the Loop tool by double-tapping the L key.
2. Drag with the Loop tool in the note grid row that appears with the track name (see Figure 11.37). All other edit procedures are identical to those concerning the Graphic Editor, described previously.



**Figure 11.37** To insert a loop in the Drum Editor, drag with the Loop tool in the grid row that contains the track name.

## Clipping Windows

Clipping windows in Digital Performer (see Figure 11.38) are like containers for holding anything to which you would like to have quick access. A Clipping can be an audio or MIDI file; an FX chain consisting of your favorite plug-ins, sequences, and even text documents; web links; or entire folders located on your Mac's hard drives.



**Figure 11.38** The Digital Performer Clipping windows (from left to right): a Project Clipping window, a Startup Clipping window, and a Digital Performer Clipping window.

There are three types of Clipping windows in Digital Performer:

- **Digital Performer.** This Clipping window is global and can be accessed within any DP project.
- **Project.** This Clipping window is project-specific and can only be opened in the project in which it was created.

- **Startup.** This Clipping window is used to hold aliases of other documents that will automatically launch when a project is opened. Startup Clipping windows are project-specific, allowing you launch different documents or applications with specific DP projects. Keep in mind that Startup Clipping windows, like the other Clipping windows, can also contain normal MIDI and audio data.

How can you use Clippings in your everyday workflow? Suppose you're working on a film score, and you have created a recurring theme that consists of four tracks of strings. You want to be able to get to this element of the composition quickly, without having to import audio or load a sequence every time you need it, so all you do is copy your string tracks into the Digital Performer Clipping window, and the clipping instantly becomes available in any DP project on your computer. You could also save the lyrics to a song as a text file or an MS Word document so every time the song project is opened, DP opens the lyrics for you!

## Clipping Data Icons

Items that are placed in a Clipping window are given their own icons, allowing you to quickly determine the type of data that is held in the window:

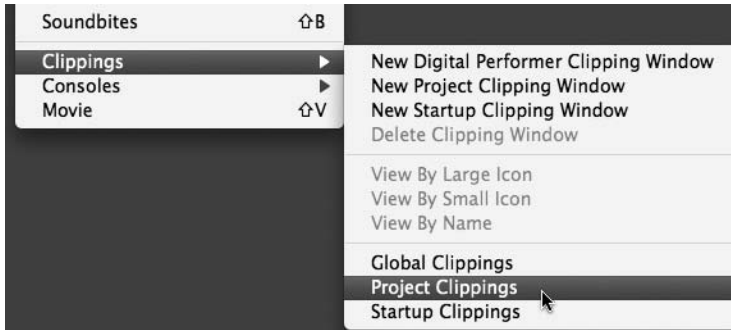
- **Audio.** Soundbites appear with a single- or double-waveform icon, depending on their format (mono or stereo). If the audio is grouped as a sequence, however, it appears with a note icon.
- **Track data.** Track data is represented by an eighth-note icon and consists of MIDI data, Conductor track information, and/or entire sequences (containing track data).
- **Plug-ins.** Individual plug-ins and plug-in chains are indicated by a small bar with dotted lines.
- **Documents.** Page icons represent documents.
- **Folders.** Folders appear with folder icons.

## Creating, Opening, and Managing Clippings

The Project menu's Clippings submenu (Project > Clippings) allows you to create new Clipping windows or access existing ones. Once a Clipping window is open, commands for deleting and changing the viewing options for the active Clipping window become available (see Figure 11.39).

To create a new Clipping window:

1. Choose Project > Clippings and select the type of Clipping you want to create (Project, Digital Performer, or Startup).
2. Name the Clipping and press the Return key to confirm the change.



**Figure 11.39** The Project menu's Clippings submenu provides options for creating, deleting, opening, and managing the viewing options of Clippings.

To open or delete an existing Clipping window:

1. To open an existing Clipping window, choose Project > Clippings and select the Clipping window you want to open from the list.
2. To delete that Clipping window, click the Clipping window to make it active.
3. Then, to continue with the deletion, choose Project > Clippings > Delete Clipping Window.

To change the order of Clippings within a Clipping window:

1. Open the desired Clipping window.
2. Place the cursor over a Clipping, and a hand icon will appear. Click and drag the Clipping to the desired position.

To delete a Clipping:

1. Open the desired Clipping window.
2. Click on the desired Clipping and press the Delete key.

## Where Clippings Are Stored

Clipping windows are actually folders and are stored in the project's Clippings folder (Project folder > Clippings folder) or, in the case of Digital Performer Clippings, in the User Library Preferences folder (User > Library > Preferences > MOTU Clippings). Once you realize that Clipping windows are actually folders on your hard drive, you can manage them directly within these locations. Creating a folder within the actual Clippings folder will create a new Clipping window that is accessible in Digital Performer. In addition, Clippings folders are dynamic and will automatically update in DP if they are changed at the Project or Preference folder level.

---

**Adding Folders to the Project Clippings Folder** Adding a folder directly to the Project Clippings folder will result in a standard Project Clipping window being created in that project. Startup Clipping windows can only be created by using the New Startup Clipping Window command (Project > Clippings > New Startup Clipping Window).

---

## Adding Audio and MIDI Data

You can add a soundbite and any data that is contained within a track (for example, audio, MIDI, and Conductor track data) to a Clipping window by dragging it from a track or Soundbites window into the Clipping window. An item that is dragged individually into the Clipping window will appear as its own Clipping. If you make a selection of multiple track items and drag them into the Clipping window, however, they will appear grouped as a single sequence or Clipping.

You can also select data and choose Edit > Copy to Clipping Window or use the keyboard shortcut Command+Option+C, which will copy the selected data to the last Clipping window to which you copied data.

## Saving Plug-In Settings

Plug-ins can also be placed within a Clipping window. This is an incredibly useful feature because it allows you to take an FX chain, for example, copy it into a global Digital Performer Clipping window, and access it within other projects. Imagine—once you have created the perfect set of processing plug-ins for, say, a great drum kit sound, you can simply drag the Clippings into a project the next time you want to quickly re-create the sound.

To save a plug-in chain as a Clipping:

1. Start by creating or opening a Digital Performer Clipping window.
2. Open the Mixing Board and select the plug-in from the Inserts section. Shift-click to select multiple plug-ins.
3. Drag the plug-in chain into the Clipping window. DP will automatically name the new Clipping according to the plug-ins that you add.
4. You can rename the Clipping by Option-clicking.

## Documents, Folders, and URLs

You can also add documents, folders, and URLs to a Clipping window for quick access. Think of these Clippings as shortcuts to your favorite items or websites. To add a document or folder, simply drag the item into the Clipping window or add an alias of the item directly into the Project Clippings folder or MOTU Clippings folder. Remember that you can place these items in any type of Clipping window. If you need certain documents or applications to automatically launch when you open a project, use the Startup Clippings feature.

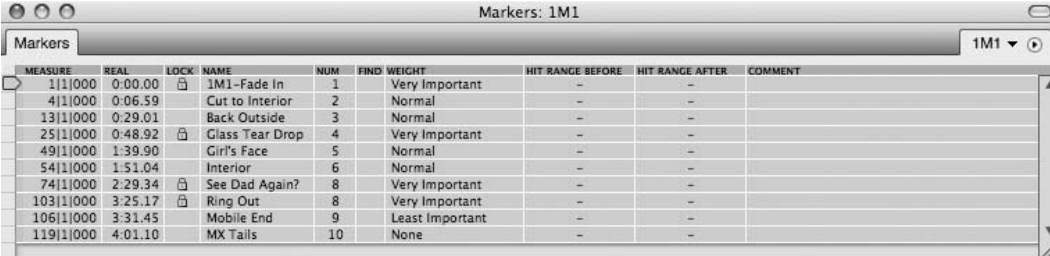
However, you cannot add URLs by dragging them directly into a Clipping window. You will need to drag the address from your web browser into the project's Clippings folder or the MOTU Clippings folder instead.

## Markers

The Markers window offers you a quick way to navigate to specific points within your Digital Performer projects. Markers are also referred to as *memory location points* or simply *locate points*. Users working with standard multitrack recorders—whether they are digital or analog—are probably already familiar with this very common, yet indispensable, feature. In addition to offering navigational benefits, markers can be given custom names in order to help identify various sections or a project. They can be used to quickly make time-range selections, and they can be recorded in real time, making the process of setting up cues for film and video scores a simpler process.

### Marker Basics

Before we dive into the actual use of markers, let's take a look at the interface (see Figure 11.40). You can access the Markers window in several ways.



| MEASURE   | REAL    | LOCK | NAME            | NUM | FIND | WEIGHT          | HIT RANGE BEFORE | HIT RANGE AFTER | COMMENT |
|-----------|---------|------|-----------------|-----|------|-----------------|------------------|-----------------|---------|
| 1 1 000   | 0:00.00 | 🔒    | 1M1-Fade In     | 1   |      | Very Important  | —                | —               |         |
| 4 1 000   | 0:06.59 |      | Cut to Interior | 2   |      | Normal          | —                | —               |         |
| 13 1 000  | 0:29.01 |      | Back Outside    | 3   |      | Normal          | —                | —               |         |
| 25 1 000  | 0:48.92 | 🔒    | Glass Tear Drop | 4   |      | Very Important  | —                | —               |         |
| 49 1 000  | 1:39.90 |      | Girl's Face     | 5   |      | Normal          | —                | —               |         |
| 54 1 000  | 1:51.04 |      | Interior        | 6   |      | Normal          | —                | —               |         |
| 74 1 000  | 2:29.34 | 🔒    | See Dad Again?  | 8   |      | Very Important  | —                | —               |         |
| 103 1 000 | 3:25.17 | 🔒    | Ring Out        | 8   |      | Very Important  | —                | —               |         |
| 106 1 000 | 3:31.45 |      | Mobile End      | 9   |      | Least Important | —                | —               |         |
| 119 1 000 | 4:01.10 |      | MX Tails        | 10  |      | None            | —                | —               |         |

**Figure 11.40** The Markers window.

1. Choose Project > Markers.
2. Use the default keyboard shortcut Shift+K.

Located in the Markers window title bar are standard controls for collapsing, resizing, and auto-scrolling. Markers that have been created are listed in the main body of the window, with basic columns describing the marker's name and location as well as any comments about the marker. The interface also includes advanced features that allow you to configure markers to be included within the mini-menu's powerful Find Tempo command. (See Chapter 15, "Scoring to Picture.")

To create or add a marker:

1. Open the Markers window by pressing Shift+K.
2. Click on the mini-menu and choose Add. A marker will be created at the current Counter position with a default name of Marker-1.

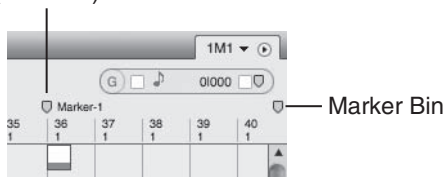


3. Click on the yellow position indicator (located to the left of the Measure column) to instantly locate to that marker position.

---

**The Marker Bin** When working in the Tracks window, you can click and drag a marker from the Marker Bin to quickly add a marker to the Time Ruler (see Figure 11.41). Use the horizontal zoom buttons to expand the Time Ruler grid for more detailed marker placements, and be sure to drag directly between the Time Ruler and the title bar.

Marker Icon  
(Chevron)



**Figure 11.41** Markers are indicated by a yellow chevron icon and will appear globally throughout DP's various Event and Editor windows. The Tracks window's Marker Bin (the chevron icon in the top-right corner) allows you to drag markers into the Time Ruler.

---

Once a marker has been created, it will appear throughout DP's Track Event and Editor windows. A marker is displayed with a yellow chevron icon along with its name (refer to Figure 11.41).

To change the name of an existing marker:

1. Option-click the name of a marker within the Tracks or Markers window to change its name.
2. Press the Return key to confirm the change.

To change the location of an existing marker:

- Open the Markers window and click a value in the Measure column to edit the location.
- Within an Editor window, simply click and drag the marker to a new location.

## Creating Markers on the Fly

Digital Performer also allows you to create markers while you listen to a track by pressing the default keyboard shortcut Control+M during playback or by using the mini-menu's Record Hits feature. To take advantage of this latter feature, however, you must have a MIDI controller attached to your DP system.

To add markers on the fly from your computer keyboard:

1. Begin playback.
2. At the desired time location, press Control+M on your computer keyboard to insert a marker on the fly.

To add markers on the fly using the Record Hits feature:

1. Begin by cueing up the playback cursor to the location at which you want to begin playback.
2. Open the Markers window and choose Record Hits from the mini-menu. The Record Hits window will open (see Figure 11.42).



**Figure 11.42** The Record Hits window.

3. Choose whether the markers will be locked or unlocked.

---

**Locked versus Unlocked Markers** Markers that are *locked* will be anchored to a SMPTE frame location. This will force the marker to retain that SMPTE frame location even if the tempo is changed. This is handy for post-production work, where you may want markers to remain locked to a specific scene within a movie. An *unlocked* marker will be anchored to its bar/beat location. Click on a marker's Lock column in the Markers window to toggle its locked state.

---

4. Click OK, and playback will automatically begin.
5. Press any note on your MIDI controller to add a marker at that location.
6. Press the spacebar to halt playback.

## Quantizing Markers

When you use the Record Hits feature, your marker location may be a little off—some markers may be early, while others may be late. You could manually move each marker by dragging it with the mouse or by typing in a new value in the Markers window, but there is an easier way.

The Quantize window isn't just for quantizing MIDI data or soundbites. Hidden within the Quantize window's Custom menu is an option to also quantize markers, allowing you to precisely align markers to a specified bar/beat grid or absolute time location. Of course, this isn't a solution to all your marker-location problems—it may be only appropriate for situations in which you want selected markers to snap to specific beats, such as the downbeats of measures. See the “MIDI Editing in the Graphic Editor” section in Chapter 10 for a detailed look at the Quantize window.

To quantize selected markers:

1. Click and drag in the Markers window to select the markers you want to quantize.
2. Open the Quantize window by pressing Command+0.
3. Click on the What to Quantize button and choose Custom.
4. Make sure the Markers option is enabled.
5. Select the Grid value, specify any options, and click Apply. The selected markers will instantly snap to the specified Grid value.

## Recalling Markers

Besides clicking on a marker's position indicator in the Markers window, there are different ways to navigate to a specific marker location.

- You can click on the Marker menu in the Tracks window (located to the right of the Sequence menu) and choose a marker.
- You can use the Control Panel's Marker menu (located below the auxiliary time format menu).
- You can use the Go-To-Marker window, as shown in Figure 11.43.



**Figure 11.43** The Go-To-Marker window.

To navigate to a marker using the Go-To-Marker window:

1. Use the default keyboard shortcut Shift+Control+M to open the Go-To-Marker window.
2. Use the number pad to enter a marker number and then press Return. You can also use your MIDI controller to specify the marker number by simply pressing the corresponding note.

You may need to confirm the Numeric Base Note value from the Commands window's mini-menu. See "The Commands Window" section in Chapter 5. If the Numeric Base Note value were set to C3, then pressing C3 on your MIDI controller would recall Marker 1. Pressing C#3 would recall Marker 2, and so on.

## Snapping and Shifting Data to a Marker Location

The Shift to Marker feature and Snap to Marker command allow you to move specific data to a marker or use markers as a form of edit grid.

To shift selected data to a marker location:

1. Select the data you want to shift.
2. Open the Shift command window by pressing Command+L (see Figure 11.44).

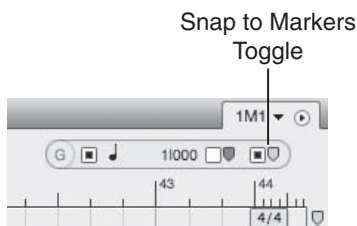


**Figure 11.44** The Shift command window.

3. Choose Shift to Time or Marker from the pop-up menu.
4. Select the marker you want to shift to from the Marker pop-up menu.
5. Click OK. The selected material will be moved to the specified marker location.

To snap data to a marker location:

1. Turn on the Snap to Markers feature by toggling the box next to the Marker chevron in the Snap Information section of the Information Bar (see Figure 11.45).



**Figure 11.45** In this example, the Snap to Markers feature is toggled on in the Sequence Editor.

You can also double-click the (G) icon to enable this feature in the Snap Information window.

2. Now any notes or soundbites that are dragged near a marker will “snap” to the marker location.

## Selecting with Markers

You can also use markers to make time-range selections for editing and recording by simply clicking on a marker within a non-Conductor track. Shift-click to select multiple markers and extend the time-range selection. Once you define a selection, you can use the Memory Bar’s Set to Selection Bounds feature (refer to Chapter 3) to set the Memory locate points and to define in and out points for an automated punch (refer to Chapter 7).

## Markers in Post-Production Work

You can also use markers in more advanced post-production settings when you are working with film and video scores. For example, you can attach streamers and punches to markers related to specific film-scoring events. See Chapter 15 for a discussion of these advanced features.

## Summary

Digital Performer provides many powerful tools and feature sets for controlling how your project’s sequences, Chunks, and songs behave. Some of these features (such as tempo and meter) form the foundation of your DP projects, while others are there to help streamline your production workflow.

# 12

## Mixing

**M**ixing in Digital Performer is mainly accomplished from the Mixing Board (see Figure 12.1). Similar to a traditional mixing console, the Mixing Board provides standard mixing features, such as volume and panning, inserts and sends, solos and mutes, automation modes, alternate mixes, access to I/O assignments and mix groups, along with mini-menu features for controlling how the Mixing Board reacts to user commands.

Here is a summary of what you'll learn in this chapter:

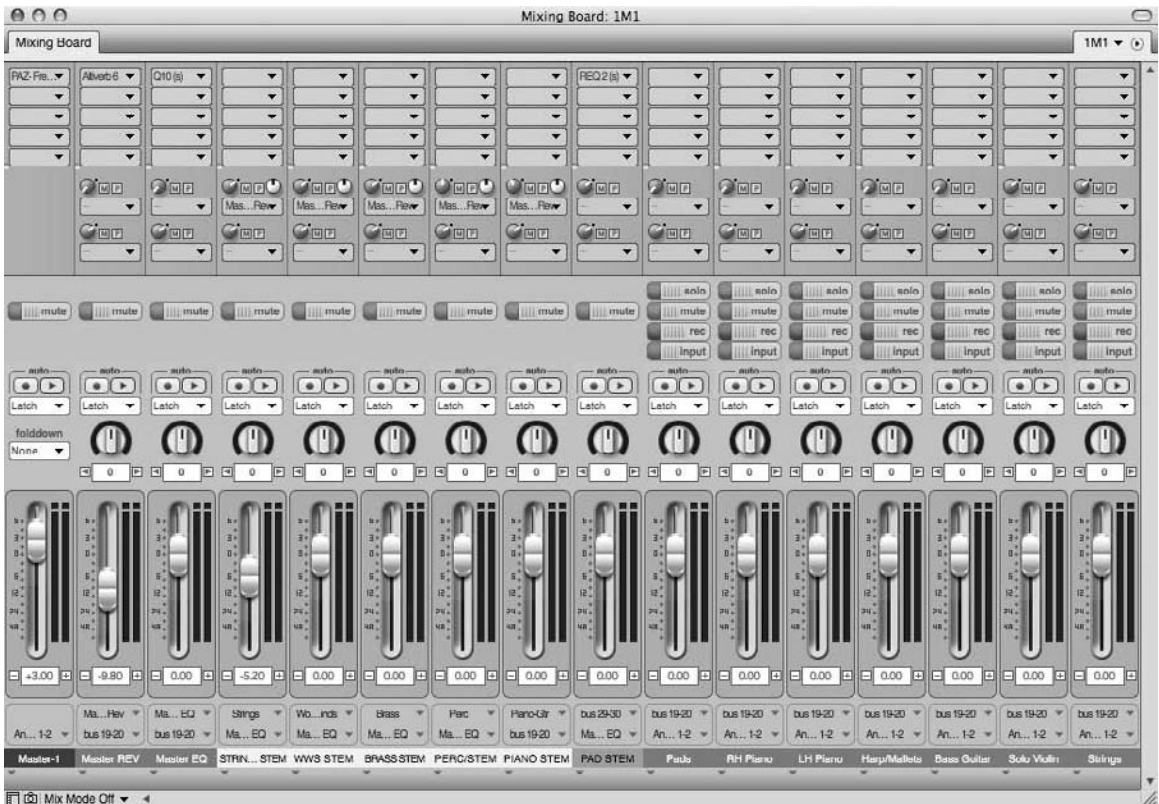
- How to customize the Mixing Board interface with board layouts
- How to create and manage mix groups
- How to create and manage alternate mixes
- How to use inserts and real-time plug-ins
- How to use aux tracks for send/returns and submixing
- How to use DP's mix automation features

### Mixing Board Setup

Digital Performer provides various features for controlling the look and feel of the Mixing Board, allowing you to show or hide the different sections (for example, inserts, sends, faders, meters, and so on) in the track strips. This allows you to get certain features out of the way when you're not using them. I discussed the actual Mixing Board interface (the mini-menu and track strip) in "The Mixing Board" section of Chapter 3, so let's dive straight into the actual mixing processes. If you need a refresher on the mini-menu options or sections within the track strips, refer to Chapter 3 before reading further.

### Showing and Hiding Track Strip Sections

A track strip's various sections can be shown or hidden from view. Showing or hiding sections affects the Mixing Board globally, meaning it affects all tracks within the Mixing Board.



**Figure 12.1** Digital Performer's Mixing Board resembles a traditional mixing console and can be customized for specific mixing needs.

To show or hide a section within a track strip:

1. Open the Mixing Board by choosing Project > Mixing Board. You can also use the default keyboard shortcut Shift+M.
2. Each track strip section is listed at the top of the Mixing Board's mini-menu (see Figure 12.2). Click on a section to toggle its visibility on and off. A check mark will indicate whether the section is showing.
3. To show all sections except the one you click on, press and hold the Command key before opening the mini-menu and clicking on the section you want to hide.
4. To hide all sections except the one you click on, press and hold the Option key before opening the mini-menu and clicking on the section you want to show.



**Figure 12.2** The track strip sections appear at the top of the Mixing Board’s mini-menu. Sections that are showing will appear with check marks.

## The Board Layout Feature

The Board Layout feature is an often-overlooked feature of the Mixing Board; it gives you the ability to save and load different Mixing Board configurations. If you use the Board Layout feature in conjunction with the previously discussed Show/Hide feature, you can really simplify the viewing process and tailor the Mixing Board to your specific needs. You could, for example, create a board layout that only shows your rhythm tracks or a layout for using headphone mixes that only contains the sends section for all of your tracks. The possible combinations are endless.

To save a board layout:

1. Start by configuring the Mixing Board to your liking. Show or hide specific sections from the mini-menu, and show or hide specific tracks within your mix.
2. Once your layout is set, choose Save Board Layout from the Mixing Board’s mini-menu.





**Figure 12.3** The Save Board Layout window.

3. Name the layout and click OK (see Figure 12.3).

---

**What's in a Name?** No need to get fancy with your naming schemes. The idea here is to have instant access to different mix configurations so that you can speed up your workflow. Choose something that's direct and to the point (for example, "Headphones" or "Drum Tracks") so you know at a glance what items the layout contains.

---

To load or rename a board layout:

1. Choose the Load Board Layout submenu from the Mixing Board's mini-menu. You'll be presented with a list that contains your custom board layouts, as well as standard layout presets, such as Showing All Tracks, Showing All Sections, and Showing Everything.
2. To rename an existing custom layout, choose the Rename Board Layout option. Select the layout you want to modify, enter the new name, and click OK (see Figure 12.4).



**Figure 12.4** The Rename Board Layout window. Choose from the list and rename the configuration.

---

**Load Board Layout Shortcut** Many users tend to overlook the Board Layout feature because they think they must return to the mini-menu every time they need to recall a layout, which can be a tedious affair. I myself ignored the Board Layout feature until I discovered a shortcut: Simply Option-click the Sequence menu (to the immediate left of the mini-menu), and you'll get a drop-down menu of your board layouts that is identical to the mini-menu's Load Board Layout command (see Figure 12.5).

---



**Figure 12.5** Option-click the Mixing Board’s title bar to load a board layout.

To delete a board layout:

1. Choose Delete Board Layout from the Mixing Board’s mini-menu. The Delete Board Layout window (see Figure 12.6) will open.



**Figure 12.6** The Delete Board Layout window.

2. Select the layout you want to delete and click OK.
3. A warning dialog will open, asking you to confirm the change (see Figure 12.7). Click OK.



**Figure 12.7** The Delete Board Layout warning dialog.

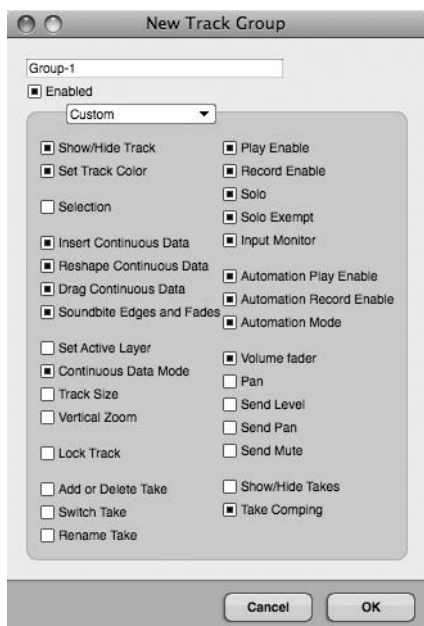
## Track Groups

Track groups (commonly referred to as *groups*) are a standard feature of the music production process that lets you link, or “group,” together selected tracks so they act as one. You can specify exactly which type of track parameters will be linked together (for example, volume and panning, solos and mutes, and so on). In DP, you can create an unlimited number of track groups that can be designated as mix groups, edit groups, or a combination of the two (the Edit & Mix option). You can also create specialized custom track groups.

Even though track grouping is also used in the editing and arranging processes, I'll discuss Digital Performer's Track Group feature here because it's especially used during the mixing process.

To create a track group from the Mixing Board:

1. Choose Create Group from the Mixing Board's mini-menu. You can also use the keyboard shortcut Control+N.
2. The cursor will change into a large plus (+) icon. Click on the faders or pan knobs of the tracks you want to group together. Selected tracks will be highlighted with a flashing green box.
3. To remove a track from the group selection, Shift-click the track.
4. Once you have selected the tracks you wish to group, press the Return or Enter key.
5. The New Track Group window will open (see Figure 12.8).



**Figure 12.8** The Custom group setting in the New Track Group window lets you pick and choose the specific parameters to link.

6. From the drop-down menu, choose the group type:
  - **Edit.** Edit groups will link time-range selections; the inserting, reshaping, and dragging of continuous data; and Sequence Editor active layer, continuous data mode, track resize, and vertical zoom characteristics.

- **Mix.** Mix groups will link volume, solos and mutes, solo exempt status (Solo Isolate), and automation controls (Automation Play Enable, Record Enable, and Automation modes).
  - **Edit & Mix.** This option will link both the Mix and Edit group functions explained above.
  - **Custom.** The Custom option will allow you to choose specific parameters for grouping.
7. Name the group and click OK.
  8. Once a parameter is linked, adjusting it on one track will affect the same parameter on all tracks within the group.

---

**Show and Hide Tracks** When tracks are grouped together as edit, mix, or edit/mix groups, their Show/Hide settings will become linked. Clicking on a track in the Track selector of a window will show or hide all the tracks within its associated group. To override this feature, create a custom group and disable the Show/Hide Track option.

---



---

**Temporarily Overriding a Group** When working with tracks that are grouped, you will sometimes need to adjust a setting on only one track. You could delete the group entirely, but that's not a very productive solution to the problem. Instead, temporarily override the group by pressing the Option key before making a parameter adjustment.

---



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**Modify Track Groups Submenu** The Project menu's Modify Track Groups submenu also allows you to group and ungroup tracks. This is handy for when you're not working in the Mixing Board. You can even temporarily suspend a group with the Suspend Track Grouping option.

---

### ***The Track Groups Window***

Once you create a track group, you can manage it from the Track Groups window (Project > Track Groups), as shown in Figure 12.9. You can open this window using the default keyboard shortcut Shift+Option+G.

The main body of the Track Groups window displays the group name, group type, Move handles (for changing the list order), and a button for turning the group on or off. The disclosure triangle, located to the left of the group name, will show the tracks that are contained within the group. At the very top of the group list is a group called All Tracks—turned off by default



**Figure 12.9** You can manage a track group from the Project menu's Track Groups window.

(indicated by italics)—which lets you quickly group all tracks within a sequence. The mini-menu provides options for further managing your groups.

To add a track to an existing track group:

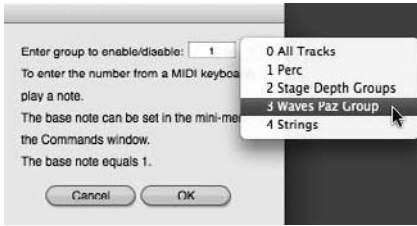
1. Select the desired track (or a part of the track) you want to add to the track group. Keep in mind that you can make this track selection from the Tracks window or another editor window by clicking on the name of the track.
2. Select the group to which you want to add the selected tracks in the Track Groups window.
3. Choose Add Selection to Group from the Track Groups window's mini-menu.

To remove or delete a track from an existing track group:

1. Click the track group's disclosure triangle and select the tracks.
2. Choose Remove/Delete Tracks from Group from the Track Groups window's mini-menu.

To temporarily suspend an existing track group:

1. Click the track group's On/Off check box in the Track Groups window. Disabled groups will appear in italics. You can also press Command+Option+G and enter the number for the group you want to disable (see Figure 12.10). The group number is listed in the order (from top to bottom) in which the group appears within the Track Groups window. Clicking 0 will choose the All Tracks group.
2. To globally suspend all track groups, choose Project > Modify Track Groups > Suspend All Track Grouping. You can also press and hold down the G key to temporarily disable all groups. Releasing the key will instantly re-enable all groups.



**Figure 12.10** The Suspend Track Groups window.

To change the type of an existing track group:

1. Open the Track Groups window (Shift+Option+G).
2. Click on the Type column of the desired group and select a new group type.

### **Temporary Track Groups**

You can create a temporary track group of selected tracks that aren't already in a track group.

To create a temporary group:

1. Select the desired tracks in the Tracks window or the Sequence Editor.
2. Hold down the letter T key on your computer keyboard (or double-tap the letter T key to make the temporary group “stick”). The tracks will remain grouped until you tap the letter T key again. Keep in mind that temporary groups are created “behind the scenes”—DP will not provide any visual or aural confirmation of the temporary grouping action.
3. If you are working in the Sequence Editor or the Mixing Board, you can temporarily group all visible tracks by pressing the letter W key. Tap the W key again to remove the group.

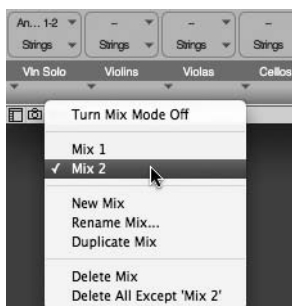
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**Groups versus Subgroups?** In Digital Performer, groups and subgroups are two completely different concepts. To place your tracks into a subgroup or submix, you basically bus desired tracks to the same aux track (or master fader). This configuration is tremendously flexible; because the selected tracks are not “track grouped,” you still have independent control of each track's parameters. The greatest benefit, however, is the ability to insert effects across your entire subgroup, which is a popular and effective mixing technique. This allows you, for example, to compress an entire drum kit or group of background vocals.

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## Alternate Mixes with Mix Mode

Another handy feature of the Mixing Board is the Mix Mode menu, shown in Figure 12.11, which allows you to create and manage new or alternate versions of a mix. By default, projects will start with Mix mode turned off, so you can think of this setting as your default mix. Keep in mind that Mix Mode Off does not mean you cannot create a mix. It simply indicates that if you switch to an alternate take of a track, its mix settings and automation data will switch along with the take. (See “Recording and Managing Takes” in Chapter 7 for more information on alternate takes.)



**Figure 12.11** The Mixing Board’s Mix Mode menu provides options for creating and managing alternative versions of a mix.

The New Mix command will create a new “empty” mix that contains the same volume, pan, and send positions that are currently visible in the Mixing Board, but it will not include any automation data or effect inserts. Duplicate Mix will create a copy of your current mix with all the previously mentioned data, including any automation and effect inserts. To delete an alternate mix, select it from the Mix Mode menu and choose Delete Mix. To return to your original (default) mix, choose Turn Mix Mode Off.

## Inserts and Plug-Ins

The Inserts section of the Mixing Board allows you to place, or “insert,” real-time processing on an audio or MIDI track. You can also insert virtual instrument plug-ins (such as MOTU’s MX4) on an instrument track. Real-time effects are nondestructive, meaning they will not change or modify the original audio or MIDI data that exists within a track, allowing you to audition different parameter settings or even change the inserted plug-in entirely. The disadvantage is that real-time effects consume CPU resources—some more than others. Time-based effects, such as reverb in particular, can be hungry when it comes to CPU usage. If Digital Performer starts to act sluggish, try increasing the Buffer Size setting located in the Configure Hardware Driver window (Setup > Configure Audio System > Configure Hardware Setting). For more information on buffer size and audio configuration settings in general, refer to Chapter 2. Refer to Chapter 13, “Processing and Mastering,” for a more in-depth look at effects plug-ins within Digital Performer.

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**Monitoring CPU Usage** You can monitor DP's CPU consumption from the Audio Performance window (Studio > Audio Performance). Refer to Chapters 2 and 13 for an explanation of the Audio Performance window.

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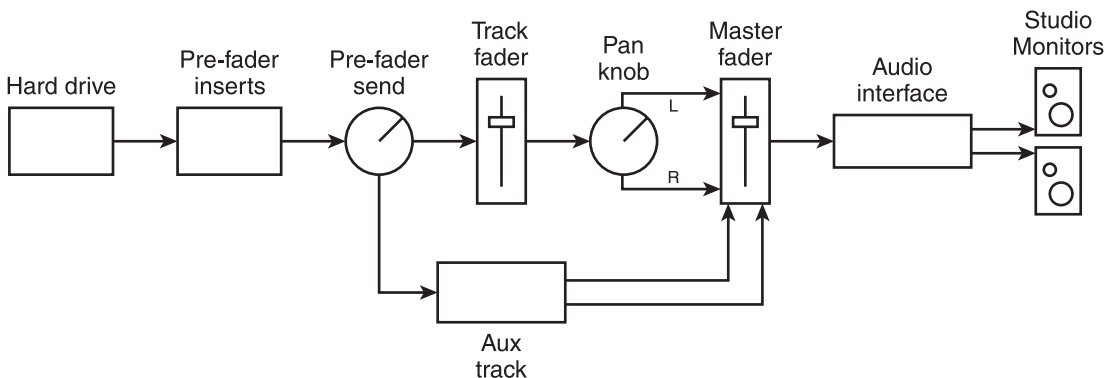
By default, Digital Performer creates five blank insert menus on every track. To change the number of inserts, choose Set Number of Effect Inserts from the Mixing Board's mini-menu (see Figure 12.12). You can have up to an incredible 20 inserts available on each track!



**Figure 12.12** The Number of Effect Inserts window allows you to set a maximum number of 20 effect inserts!

## Signal Flow

Inserts are labeled A, B, C, D, and so on from top to bottom and are set to pre-fader by default. This means that an audio signal, for example, will play back from your Mac's hard drive, travel through the Insert section (from top to bottom), continue through the Send section, and then go through the fader (see Figure 12.13). Any adjustment you make to the level of the track will have no effect on the signal going into the Insert section.



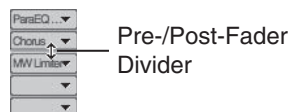
**Figure 12.13** Pre-fader inserts are independent of the track fader.

Because the signal is traveling through the inserts (or plug-ins) from top to bottom, the order in which you apply your effects is extremely important. A will have an effect on B, which will have an effect on C, and so forth. To change the order of inserted plug-ins, simply click and drag them to a new location.



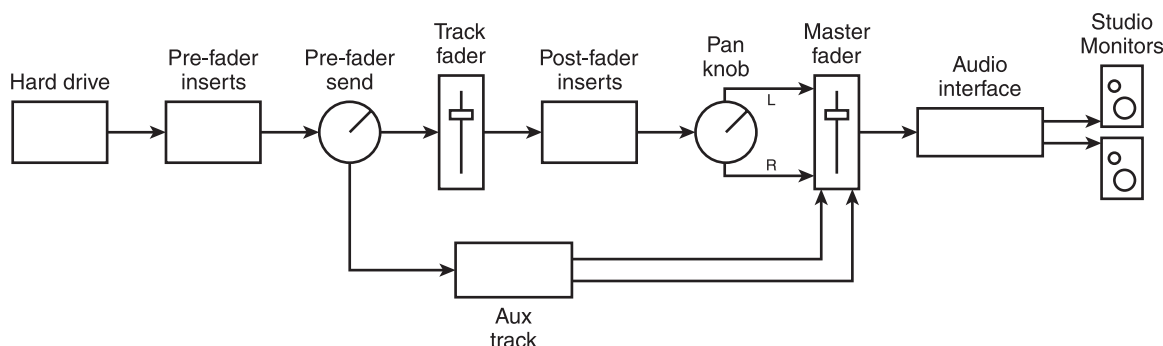
## Pre-/Post-Fader Divider

If you would like to set the Insert section to post-fader (where an inserted plug-in will appear after the fader in the signal flow), you will need to move the pre-/post-fader divider. By default, the divider is located at the bottom of the Insert section. Place the cursor at this location, and it will change to an up/down arrow icon (see Figure 12.14). Click and drag the divider up to the location where you want the post-fader section to begin.



**Figure 12.14** The cursor will change when placed over the pre-/post-fader divider.

Once an insert is designated as post-fader, the signal flow of the Mixing Board will change. Post-fader inserts have a dependent relationship on the track fader (see Figure 12.15).



**Figure 12.15** Post-fader insert are dependent on the level of the track fader. Any changes made to the fader will affect the input level of the post-fader inserts.

## Dynamic versus Time-Based Effects

Generally speaking, *dynamic effects* are used to control gain. Compressors, limiters, expanders, gates, and EQ are all considered dynamic effects. Digital Performer's Trim plug-in also falls into this category. Examples of time-based effects are reverb, delay, and echo.

Knowing when and where to place dynamic and time-based plug-ins within your tracks is very important. For example, will you use an insert or a send?

### Insert or Send?

The general rule is this: Direct inserts are used for dynamic effects, and sends are used for time-based effects. Why? The thinking is that dynamic effects, such as compression, are usually meant to work on one signal. The vocal is loud, so you strap a compressor across it. The voice is thin,

so you insert an EQ and boost 200 Hz. In these scenarios, you want the entire signal to be affected. When the signal leaves the plug-ins, you want it to be 100-percent wet. In other words, you only want to hear the compressed and EQ'd signal. If you used a send for this, you would have both a dry vocal and a compressed/EQ'd vocal being mixed together (though I know this is sometimes exactly what you want).

When working with time-based effects, you usually want to control the ratio between the dry (unaffected) and wet (affected) signals, so a send is just what the doctor ordered. You insert your reverb plug-in (such as Audio Ease's Altiverb plug-in) on an aux track (100-percent wet), send to the aux track from your audio track, and blend the two together. The fader level on your aux track determines how much reverb is heard on the track.

There's also another benefit to using sends: If you decide you want that reverb on another track, you simply turn up the send level for that track, and it also goes to the Altiverb plug-in. If you inserted your Altiverb plug-in directly on an audio track, however, you could only use it for that specific track. To have reverb on another track, you would be forced to insert a new instance of the plug-in. Conceptually, this scenario works, but it is hardly efficient. Besides having to open up the plug-in every time you need to adjust the wet/dry ratios, you would also be wasting valuable CPU resources. If you transplant this situation to the analog world, you would need a separate reverb unit for every track in which you wanted to include reverb—a very costly and wasteful endeavor!

### ***Special FX***

Special effects, such as flange, chorus, tremolo, and phasers, can be inserted or sent, depending on your needs. If you would like to use the same effect across multiple tracks (with the same parameters), you can employ a send. If you need the effect to be unique to a specific track, you could use an insert. Just realize that you must control the wet/dry ratio from the plug-in when using a direct insert.

## **Aux Tracks and Sends**

Aux tracks are similar to audio tracks, except they cannot contain audio data. Digital Performer aux tracks are similar to empty channels on a traditional analog console—like a miscellaneous track or channel used as a routing mechanism. Aux tracks can be used as effects returns, to sum together a set of tracks (submix), or to shuffle audio from one place to another. Inserts and sends, as well as solo, mute, volume, panning, and automation controls, are identical in nature to those for audio tracks. The channel format of an aux track is determined by its input assignment. For example, a mono input assignment will force the aux track to be mono.

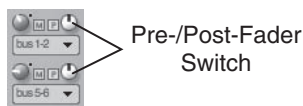
Sends allow you to “split” off a signal and send it to another destination. This destination can be a virtual bus or a physical hardware out, which could, for example, be connected to a headphone amp or an external reverb device. A send has no effect on the original signal from which it branches off, but it has a direct relationship to the original track, depending on its pre- or post-fader setting.

## Send and Returns

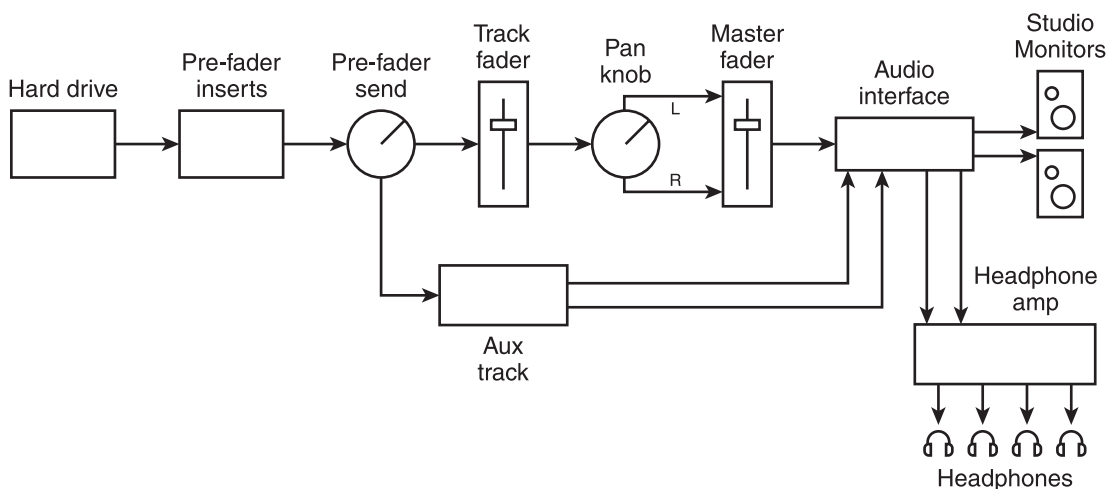
There are several ways to utilize aux tracks within the music production process. The main use for an aux track would be as a container for time-based effects, such as reverb. I have already discussed the benefits of using sends in the mixing process, and aux tracks are an integral part of the send “equation.” Once you create an aux track, you insert a reverb plug-in; next, you assign the track’s input to a bus, then you send from a track to that corresponding bus. The “sent” signal travels through the reverb plug-in, and the 100-percent wet reverb signal continues to the master fader, where it is mixed in (or *returned*) with the original dry signal. To change the amount of reverb on the original track, you simply adjust the aux track’s fader. The term *send and return* originates from the process of sending a signal to another destination—which could be a plug-in or external FX unit—and returning it through an auxiliary track (or master fader) back into the mix.

### Pre- versus Post-Fader Sends

You designate a send to be either pre- or post-fader with the Pre-/Post-Fader switch (as shown in Figure 12.16). This button (switch) is located to the right of the Send Level knob (it’s the letter P button), adjacent to the Send Mute button (the letter M button). As I discussed earlier, in the “Inserts and Plug-Ins” section of this chapter, a pre-fader setting allows a send (or an insert) to be independent of the track fader. Because of its location, turning up or down the track fader will have no effect on the level of the signal sent to the headphone amplifier (see Figure 12.17).

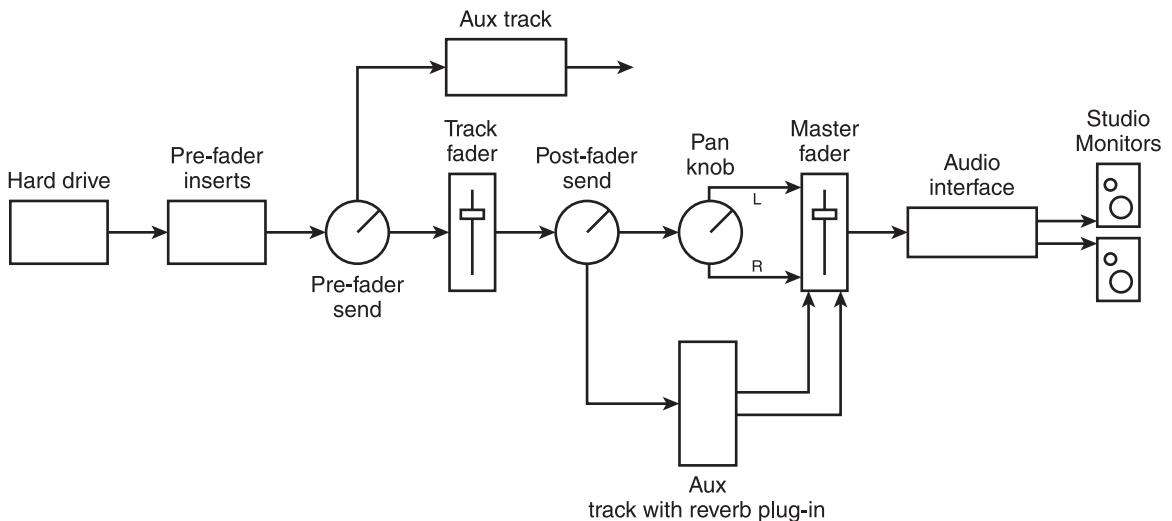


**Figure 12.16** The Pre-/Post-Fader switch toggles the send’s pre-/post-fader settings. When the Mixing Board is set to Narrow view, the pre-/post-fader settings will be listed in the Send menu.



**Figure 12.17** Headphone mixes are set to pre-fader to maintain independence from the track’s fader, Solo, and Mute buttons. When the Pre-/Post-Fader switch is dimmed, the send is set to pre-fader.

Soloing or muting the track will have no effect on the send. A post-fader reverb send, however, is located after the track fader in signal flow (see Figure 12.18).



**Figure 12.18** Reverb sends are usually set to post-fader so they will remain dependent on the track fader. With this configuration, any adjustments to the track fader, solo, or mutes will have a direct effect on the post-fader send. It is now considered to be dependent on the track fader.

So when should you use a pre-fader send and when should you use a post-fader send? Here is the general rule: Pre- is for headphone mixes, and post- is for effects. Why are headphone mixes pre-fader? You need a headphone send to be pre-fader so that it's independent of your mix. When you adjust a fader in the studio or when you solo a track, you don't want the artist to hear your adjustments. If the artist's headphone mix was dependent on yours, you wouldn't be able to multitask (for example, mix while you record or solo a track for troubleshooting purposes).

Effects, however, are typically post-fader because you usually want the relationship between the dry and wet signals to stay the same. So if you turn the level down on your original track, the reverb gets turned down with it. In this scenario, your reverb would be dependent on your original track fader. Of course, there will be times when you may want your effects to be pre-fader, allowing you to turn down the original track and have the reverb signal remain in the mix. Pre-fader effects are not an uncommon part of the mixing process.

### The Send Level Knobs

DP provides a total of 20 sends per audio track. Each send can be assigned to a mono, stereo, or multichannel output destination. Each Send Level knob allows you to adjust the level of the send and by default is set to Infinity (turned off). The small dot next to the knob (located at the two o'clock position) is called the *unity gain dot* and designates the unity gain or zero position of the Send Level knob. Double-click (or Control-click) the knob to force it to unity gain. When a Send

Level knob is adjusted, the dB value is displayed in a pop-up box, as shown in Figure 12.19. The M buttons designate mutes; simply click on a button to mute a send.



**Figure 12.19** When adjusting a Send Level knob, the dB value of the send is displayed in a pop-up box.

To set the number of available sends:

1. Choose Set Number of Sends from the Mixing Board's mini-menu to open the Number of Sends window, as shown in Figure 12.20.



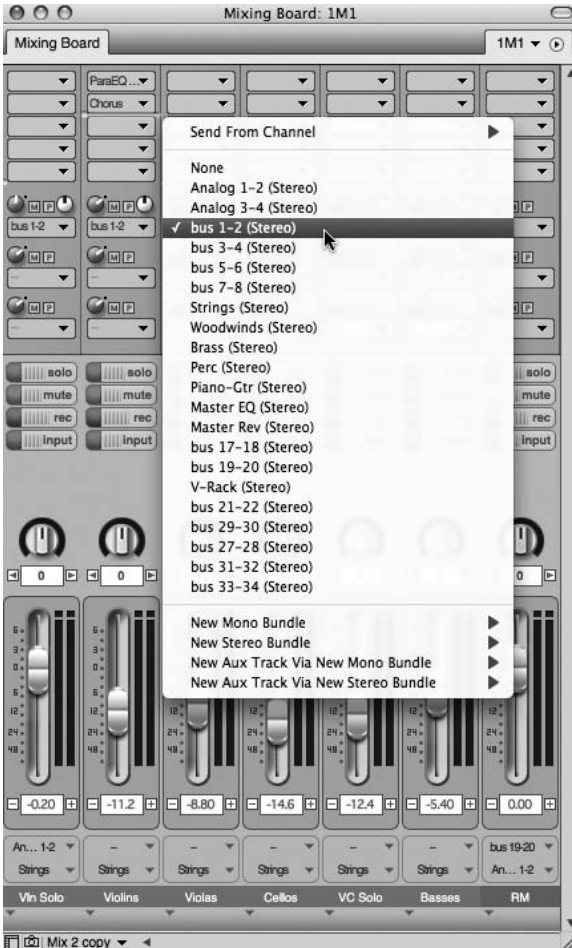
**Figure 12.20** Use the Number of Sends window to set the number of sends that are available in the Mixing Board.

2. Enter the desired number of sends (up to a total of 20).
3. Click OK to confirm the change.

### **The Send Menu**

The Send menu allows you to choose the desired routing assignment for a send and determine the channel source (L, R, or stereo) for the specific send. When the Mixing Board is set to Narrow view, the pre-/post-fader options will also be listed here. In addition to any currently enabled audio bundles, the send assignment submenus located at the bottom of the list (shown in Figure 12.21) allow you to create new audio bundles and aux tracks directly from the Send menu. The assignment submenus are described below.

- **New Mono/Stereo Bundle.** Choose an output assignment from the desired submenu to create a new audio bundle. The number of busses appearing in the list is determined by the Stereo Bus setting in the Configure Studio Settings window (Setup > Configure Audio System > Configure Studio Settings).
- **New Aux Track via New Mono/Stereo Bundle.** These two submenu options allow you to create a new aux track when you create a new mono or stereo audio bundle. The new audio bundle will then feed the newly created aux track. Think of these two options as shortcuts that allow you to quickly create an aux track while you're configuring a send assignment.



**Figure 12.21** Use the Send menu to route the send to an existing audio or bus output destination. New audio bundles, as well as new aux tracks, can be created directly in the Send menu.

To set up a send and return (aux track):

1. Click the Send menu (located below the Send Level knob) on the desired audio track.
2. Choose the New Aux Track via New Mono/Stereo Bundle option and select a bus from the drop-down list. Once selected, DP will assign the send to the chosen bus and create a new aux track. The input of the new aux track will be assigned to the send output in the process.

If you already have an aux track (effects return) configured, you can simply assign the send to a new or existing audio bundle.

To set up a send (without setting up a new aux track):

1. Click the Send menu (located below the Send Level knob) on the desired audio track.
2. Assign the send to an available bus or audio hardware output. If you need to create a new audio bundle, choose the New Mono Bundle or New Stereo Bundle option and the appropriate audio bundle from the drop-down list.

### ***Effects Returns***

As I discussed earlier, effects returns (or returns) are used for returning a signal that has been sent from a track back into your mix. Within Digital Performer, aux tracks are used as returns. Aux tracks can be automatically created via the aux track shortcuts (described in Step 2 of the previous How To section), or you can configure them manually as needed. The following How To section describes the procedures for setting up a reverb return. If you want to create a different type of effects return, such as an effects return for a delay plug-in, simply substitute the example reverb plug-in with a different plug-in.

To manually configure an aux track as a reverb return:

1. Create an aux track by choosing Project > Add Track > Aux Track. You can also use the default keyboard shortcut Control+Command+A.
2. Assign the input of the track to an available stereo bus (for example, Bus 1-2). Keep in mind that the channel format of the aux track is determined by the input assignment.
3. Assign the aux track's output to your main outs (for example, Analog 1-2).
4. Insert a plug-in on the aux track, making sure to set the plug-in's Mix parameter to 100%.
5. Now you can send a signal to Bus 1, and it will be bussed to the reverb plug-in and returned to your main mix (Analog 1-2) via the configured aux track.
6. Your aux track's fader level sets the amount of reverb being mixed with the audio track's dry signal, so adjust it accordingly. (For example, for less reverb in the mix, simply turn down the aux fader.)

### ***Setting Up a Headphone Mix***

Headphones mixes are different from typical reverb configurations in that they don't require an effects return. Once the signal is sent off to a headphone amp (and to each pair of your artist's headphones), the journey ends. The setup process is almost identical to that of the reverb send and return configuration. The aux track, however, is utilized as a group fader and not a return. Of course, you don't have to employ an aux fader in a headphone mix; you could send directly to the outputs of your audio interface (which is connected to your headphone amp). This setup configuration doesn't allow you much flexibility, but using an aux fader as a headphone-group

master between your individual track sends and your headphone amp will let you control the overall level going to the amplifier with relative ease. In addition, you'll have the ability to insert plug-ins if needed, allowing you, for example, to EQ or compress your entire headphone mix.

To set up a headphone mix (with a headphone-group master):

1. Make sure your headphone amp is directly connected to the outputs of your audio hardware interface (such as Analog 7-8).
2. Follow the procedures for setting up a send and assign the send to an available stereo bus, such as Bus 3-4. Be sure to use the Send menu's New Aux Track via Stereo Bundle option to create a new aux track in the process.
3. Set the output of the new aux track to Analog 7-8.
4. Rename the aux track to something appropriate, such as Phones Mix.
5. Turn up the Send Level fader you configured in Step 2 to send the track's audio signal to the headphone amp via the Phones Mix aux track.
6. To send from another track, assign a send on the desired track to Bus 3-4 and turn up the Send Level knob.
7. To adjust the overall output level of the headphone mix, simply turn up or down the Phones Mix aux track fader.

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**Pre-Fader Headphone Sends** Sends are set to pre-fader by default, so you do not have to worry about manually configuring each headphone level send to pre-.

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## Submixing

*Submixing* is the act of combining multiple signals and sending them through either an internal or an external bus. Submixing allows you to work around I/O limitations, efficiently apply effects across multiple tracks, and establish sends and returns. Also, it can greatly simplify complex mixes. Submixing is an especially common practice in the film and video post-production processes, where multiple submixes (or stems) are used to group common elements, such as dialogue, music, and sound effects. Submixing works especially well with instruments that are normally treated as one unit, such as string sections, or for instruments that are recorded with multiple microphones, such as drums and piano.

Submixing differs from track grouping in that it allows individual tracks within a subgroup to remain independent. For example, you can still make track-specific volume adjustments and insert individual plug-ins while controlling the overall volume of the entire group from the group master fader.



Within Digital Performer, subgroups are very easy to set up.

To set up a subgroup:

1. Create an aux track by choosing Project > Add Track > Aux Track. You can also use the default keyboard shortcut Control+Command+A.
2. Assign the input of the track to an available stereo bus (for example, Bus 5-6).
3. Assign the aux track's output to your main outs (for example, Analog 1-2).
4. Remember, it's always a good idea to rename your tracks for easy identification. To rename the new aux track, Option-click on the name of the track.
5. Change the output for the audio tracks you want to put in this subgroup to Bus 5-6. Remember that you can use the Assignments window to quickly assign multiple tracks to the same output channel (refer to Chapter 7). Now the desired audio tracks will be bussed through your aux track (group master fader), allowing you to easily control the overall volume or insert effects across the entire group.

## Automation

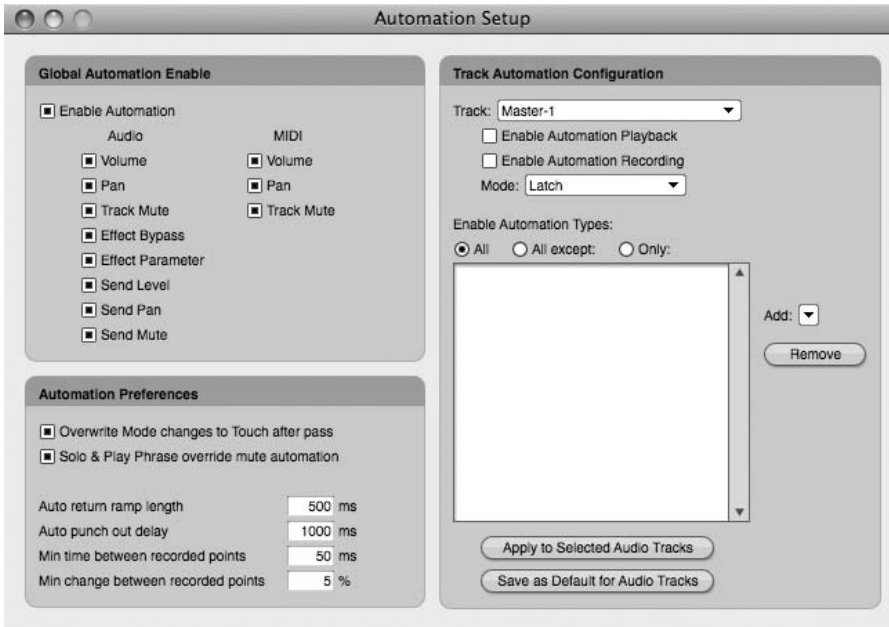
Automation is the process of automating various aspects of the mixing process, from simple fader moves (or volume changes) to more complex actions, such as manipulating the pitch of a soundbite (discussed in Chapter 13). Automation allows the mix engineer to fine-tune his mixes and perform real-time changes to multiple audio and MIDI events. Such changes would be nearly impossible without the automation process.

Automation events can be inserted with DP's various tools or recorded in real time by adjusting track/plugin parameters with the mouse. Automation modes determine how real-time automation is handled within a track, allowing you to write new data or update existing events. The Automation Setup window allows you to set track-specific and global automation parameters that affect how this data is recorded.

### **Automation Setup Window**

Digital Performer's automation features are so easy use that you may never need to pay a visit to the Automation Setup window. (I'm sure there are plenty of users out there who never have.) You owe it to yourself to get familiar with this window, however. Besides providing a complete list of parameters that can be automated within DP, the Automation Setup window also allows you to turn off specific automation settings, control how automation modes react within a track, and free up system resources. You can access the Automation Setup window by choosing Setup > Automation Setup (see Figure 12.22).

**Global Automation Enable.** This section determines the type of data that can be automated within DP. Note that only the Volume, Pan, and Track Mute settings can be automated within a MIDI track; audio tracks provide more extensive automation capabilities. Click on a specific



**Figure 12.22** The Automation Setup window provides global and track-specific automation preferences.

parameter button to globally enable/disable an automation parameter. (Buttons will appear blue when enabled.) Click the Enable Automation button to globally turn on or off automation within a project.

**Track Automation Configuration.** This section lets you control automation for a specific track. The Tracks List is a drop-down menu of all tracks within the current sequence. Choose a track to set its automation preferences. (Keep in mind that an audio track must be online in order to change its automation preferences.) Below this list are buttons for enabling/disabling automation playback or recording for the track. The Mode menu sets the automation mode for the selected track. These settings are identical to the automation play-enable and mode buttons in the Mixing Board's individual Tracks Lists (explained earlier in this chapter).

The Enable Automation Types section is where you can decide which parameters will be turned on or off.

To enable/disable specific automation parameters:

1. Select the desired track from the Tracks List.
2. Click the Add drop-down menu to select a setting and place it in the Tracks List.
3. Next, use the radio buttons below the Tracks List to decide whether the listed parameters will be turned on or off. All Except will exclude the parameters in the list, while Only

will turn on automation only for the listed parameters. All, of course, will enable all parameters for automation, regardless of the items that appear in the list.

4. To remove a parameter from the list, select it and click the Remove button.
5. If you would like to use the same settings on other tracks, select the tracks you want to affect and click the Apply to Selected Audio Tracks button.
6. To make the current list parameters the default settings for all audio tracks, click the Save as Default for Audio Tracks button.

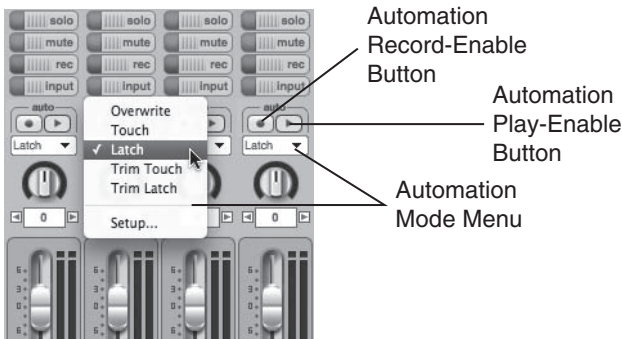
**Automation Preferences.** The Automation Preferences section provides several different preferences:

- **Overwrite Mode Changes to Touch After Pass.** This option will force a track's automation mode to Touch mode when an overwrite pass has been completed.
- **Solo & Play Phrase Override Mute Automation.** When this option is enabled, mute automation will be ignored when a track is either soloed or auditioned by pressing Command+spacebar.
- **Auto Return Ramp Length.** When automation recording is stopped, DP automatically inserts a *return ramp*, which creates a smooth transition between the new automation and the previous parameter setting. This option determines the length of the transition.
- **Auto Punch Out Delay.** This is the amount of time that DP waits before stopping the recording of automation after it receives the last automation event from an external controller.
- **Min Time/Change between Recorded Points.** The last two options set the number of control points that are recorded when making any automation moves. Higher numbers and lower percentages provide finer tracking of automation moves.

### **Automation Modes**

Digital Performer's five automation modes determine how automation data is recorded within a track. You can set the mode for a specific track either from the Automation Setup window or directly with a track's Automation Mode menu (see Figure 12.23).

- **Overwrite.** This mode writes new automation from when playback starts until it is stopped. Any existing automation data will be overwritten in the process. This mode will automatically switch to Touch if the Overwrite Mode Changes to Touch After Pass option is turned on from the Automation Setup window. When you begin your first automation pass or you want to erase any existing automation, use this mode.
- **Touch.** Touch mode will begin to write new automation data as soon as a fader or knob is touched and will continue to write data until it is released. The Automation Setup window's



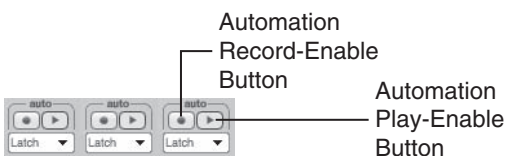
**Figure 12.23** A track's Automation Mode menu provides a list of automation modes and access to the Automation Setup window (Setup option). Located above the Automation Mode menu are the Automation Play-Enable and Record-Enable buttons.

Auto Ramp Length option determines how long it takes for DP to return to the original automation data once recording is stopped. Use this mode when you need to update only a portion of existing automation, and you want DP to return to the existing automation when you release the fader or knob.

- **Latch.** When Latch mode is engaged, automation will begin as soon as you grab a fader or knob, but unlike in Touch mode, automation data will continue to be written until recording is stopped.
- **Trim Touch/Latch.** This setting is identical to both normal Touch and Latch modes, except that the fader will change to display 0 (unity gain) as the current volume in the track. These two modes can only be used to update volume and pan data. All other automation events will be overwritten. This mode is handy when you need to raise or lower the overall automation values, while preserving the existing automation curves.

### **Enabling and Disabling Automation**

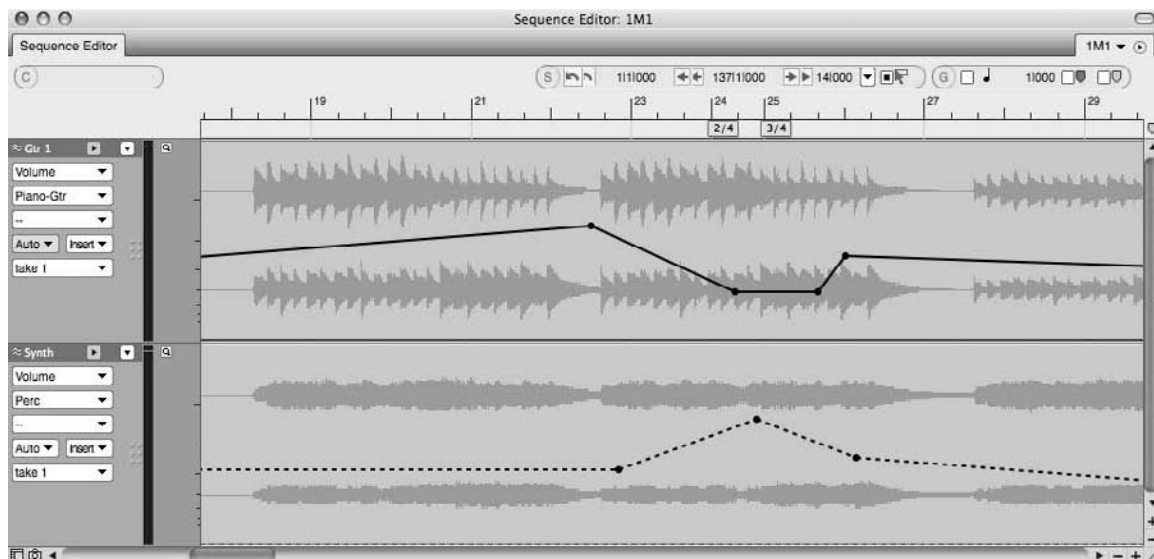
You can enable or disable automation in DP from several locations—globally in the Automation Setup window (explained earlier), in the ATO column of the Tracks window, in the Automation menu of each track strip in the Mixing Board, or in the Automation drop-down menu or Track Settings menu in the Sequence Editor (see Figure 12.24).



**Figure 12.24** You can enable or disable a track's automation by clicking on the Automation Play-Enable or Record-Enable button.

To enable the playback of recorded track automation, click the Automation Play-Enable button; it will be highlighted green. Click again to disable automation playback for the track; the button will return to a normal state. To record automation, click on the Automation Record-Enable button, and it will be highlighted red. Click again to turn off this feature.

Automation that is enabled will appear in bold (———), while disabled automation will appear as a dashed line (- - - -) within the Sequence Editor (see Figure 12.25).



**Figure 12.25** Within the Sequence Editor, automation that is enabled will appear in bold, while disabled automation will appear as a dashed line.

### **Recording Real-Time Automation**

Automation data can be recorded in real time from the Mixing Board.

To record new automation data in real time:

1. Start by opening the Mixing Board (Shift+M) and choosing Overwrite mode from the desired track's Automation Mode menu.
2. Turn on both the Automation Play and Record-Enable buttons. (They both should be highlighted, red for Record and green for Play.)
3. Begin playback at the desired position. Automation will immediately begin being recorded.
4. Make the desired automation moves (real-time parameter adjustments).
5. Press the spacebar when you are finished making your moves to stop recording.

6. Click the Automation Record-Enable button to turn off recording; doing so will prevent you from accidentally overwriting your recorded moves.
7. Return to the desired location and begin playback to hear (and see) your automation moves play back exactly as you executed them in Step 4.

To update existing automation data in real time:

1. Start by choosing Touch or Latch mode (or Trim Touch/Latch) from the desired track's Automation Mode menu. Both modes will only begin recording when you grab a fader or knob. Touch mode, however, will punch out of automation recording as soon as you stop making fader or knob adjustments, while Latch mode continues to write new data until playback is stopped.
2. Turn on both the Automation Play and Record-Enable buttons. (They should both be highlighted.)
3. Begin playback at the desired position.
4. Grab a fader or knob; automation recording will begin.
5. Press the spacebar to stop playback (and recording if in Latch mode).
6. Click the Automation Record-Enable button to turn off recording; doing so will prevent you from accidentally overwriting your recorded moves.
7. Return to the desired location and begin playback to hear (and see) your automation moves play back exactly as you executed them in Step 4.

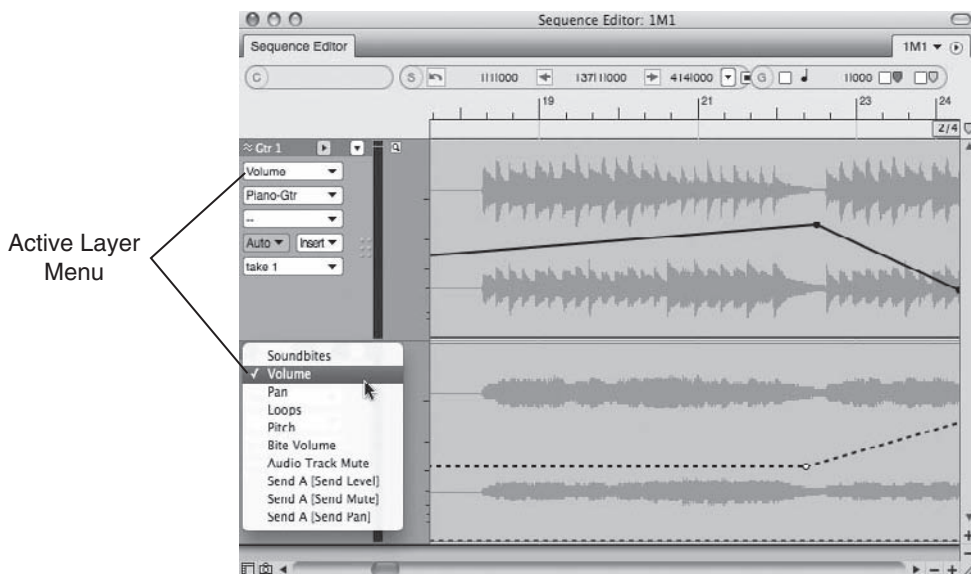
### ***Inserting Automation Data***

Automation data (which is represented by control points) can be inserted directly into a track from DP's various editor windows. A single control point can be drawn directly in a track by clicking once with the Arrow or the Pencil tool and is used to anchor a parameter to a specific value. To insert a parameter change over a period of time, you need at least two control points. The first point anchors the parameter and tells DP where you want the change to begin. The second point is where you want the parameter change to end. What happens in between these two points (how you draw the automation data) can determine whether the transition is smooth (for example, a 30-second fade-out) or instantaneous (for example, a volume mute).

For an explanation of inserting control points within the Graphic Editor, refer to the "Inserting MIDI Controller Events" section in Chapter 10.

To insert automation data in the Sequence Editor:

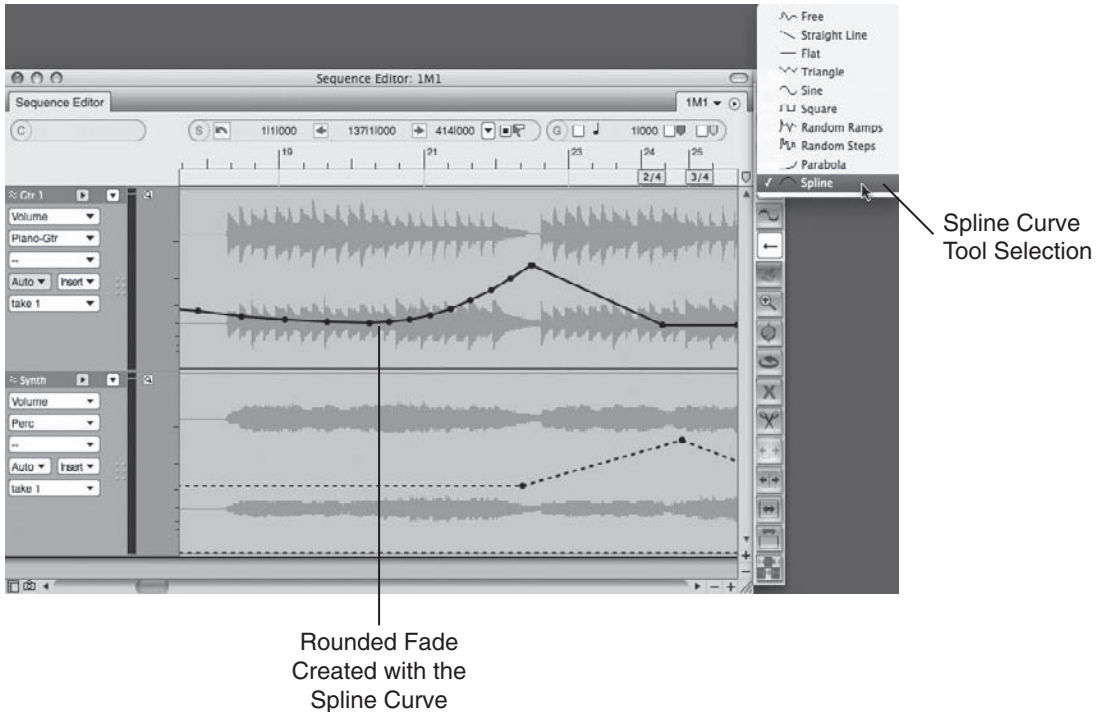
1. Open the Sequence Editor (Shift+S).



**Figure 12.26** Within the Sequence Editor, automation that is enabled will appear in bold, while disabled automation will appear as a dashed line. In this example, Send options are available because I am using the first send insert (A).

2. Click on the desired track's active layer and choose the parameter you want to automate (see Figure 12.26). Keep in mind that the options listed will vary, depending on the type of track you are working with (and Send options only become available when a send is being used).
3. Enable the Pencil tool by double-tapping the P key on your computer keyboard.
4. Set the shape of the Pencil tool from the Insert/Reshape Curve menu. (Refer to Chapter 10.) This setting determines the shape of the inserted automation.
5. Click where you want the parameter change to start and drag the cursor to where you want the parameter change to stop, then release the mouse. You can use the Information Bar to view the location of the cursor and its related parameter value. The horizontal position of the mouse release sets the duration of the automation move. The vertical position determines the amount of change for the parameter.

If you were inserting a volume fade-out, for example, the first control point would set the beginning of the fade. Once you click with the Pencil tool and insert the first automation point, you would drag the mouse vertically to the bottom of the edit window to turn down the track. How far you drag the cursor to the right before releasing the mouse would determine the duration (for example, minutes and seconds)



**Figure 12.27** In this example, a custom volume fade has been drawn in with the Pencil tool set to a spline curve.

of the fade-out. The type of curve you choose from the Insert/Reshape Curve button would determine how the fade was drawn in. If you wanted a fade with a rounded curve, you could use the spline curve (see Figure 12.27).

6. If you want a simple straight line, you could also use the Arrow tool. Click to insert a single automation point. Then insert another controller point and drag up or down with the mouse.

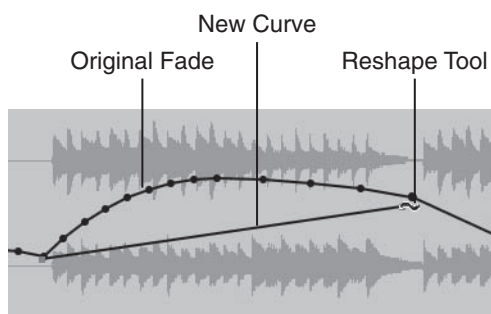
To select automation data in the Sequence or Graphic Editor:

1. Enable the Arrow tool by double-tapping the A key on your computer keyboard.
2. To select a single controller point, click with the mouse. Selected controller points will be highlighted yellow.
3. To make multiple controller-point selections, Shift-click with the Arrow tool. You can also click and drag within the Time Ruler or any open area within the track that doesn't contain automation data.



To edit automation data in the Sequence or Graphic Editor:

1. Enable the Arrow tool by double-tapping the A key on your computer keyboard.
2. Select the automation data you want to modify.
3. To change the location of the data, click on any selected controller point and drag with the mouse.
4. To change the shape of existing automation data, enable the Reshape tool by double-tapping the R key. Select a new curve from the Tool palette's Insert/Reshape Curve button. Click at the location where the move should start and drag to where you want the move to end (see Figure 12.28).



**Figure 12.28** In this example, the Reshape tool is used to change the shape of an existing automation curve. The top automation curve is the original automation fade, while the bottom fade shows the new curve.

5. Release the mouse, and the automation data will update to reflect the change, inserting new controller points if needed.
6. To delete selected events, simply press the Delete key.

You can use DP's standard edit commands, such as Cut, Copy, and Paste, to edit automation data. When pasting automation data in an audio track, however, you will need to use the Merge command in place of the Paste command to avoid affecting the actual audio data.

To cut, copy, and paste automation data in the Sequence Editor:

1. Begin by selecting the automation data you want to cut or copy.
2. Choose the Cut (Command+X) or Copy (Command+C) command from the Edit menu.
3. Insert a single automation point by clicking with either the Arrow tool or the Pencil tool at the location where you want to paste the data.
4. Now choose Edit > Merge to paste the selected data. Keep in mind that you can use the Paste command (Command+V) when working with MIDI tracks.

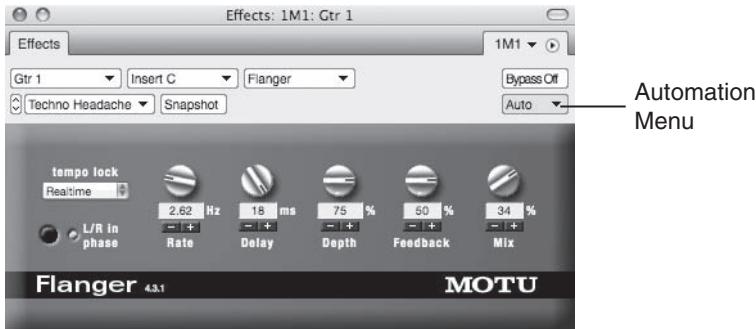
In addition to inserting data with the Arrow or Pencil tool, you can also use a track's Event List to insert automation data. This can sometimes prove to be time consuming, however, because the “list view” will force you to enter in each parameter setting as its own event. Inserting and editing automation events is identical to inserting or editing other data types. (Refer to Chapter 10.) To delete an automation event from the Event List, simply click on the event name and press the Delete key.

To insert automation data in a track's Event List:

1. Start by selecting the desired track and opening its Event List (Shift+E).
2. Click on the Insert button (+).
3. Select the parameter from the drop-down menu.
4. Pop-edit the location of the automation event, then set the parameter values.
5. Press the Return key to confirm the changes.

### Plug-In Automation

Besides standard track parameters, such as volume and panning, plug-in parameters can also be automated. Each Effects window contains an Automation menu (located below the mini-menu) identical to a track's Automation menu (see Figure 12.29).



**Figure 12.29** The Effects window's Automation button contains an Automation menu that provides access to DP's automation features.

Procedures for automating plug-in parameters are the same as for standard track automation. Simply engage the Automation Play and Record-Enable buttons for the track, select an automation mode, begin playback, and adjust the desired plug-in settings. You can also insert and edit automation data directly in a track (explained earlier) or incorporate DP's snapshot automation features (explained in the next section).

All of Digital Performer's bundled plug-ins can be fully automated, but you should keep in mind that some third-party plug-ins may not have this capability. Consult the specific plug-in's user manual for information on its automation features.

## Snapshot Automation

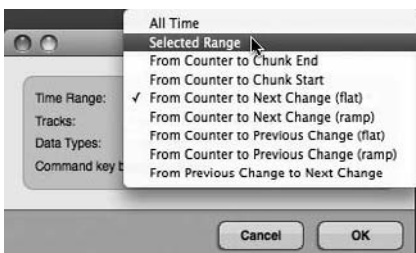
*Snapshot automation* is used to insert multiple automation points in a single step. This can be useful when you have many parameters that need to change simultaneously or that must remain static for a certain duration within a mix. This form of automation is especially useful in video and film post-production work, where mixes must sometimes change suddenly and dramatically in order to accommodate abrupt scene changes. Of course, there are many uses within the music production process as well, such as automating mutes across all tracks before the beginning of a song.

Within Digital Performer, you can apply snapshot automation to a single point in time or across a specified time range. Click on the Snapshot icon in the Mixing Board or Editor window's title bar to open the Automation Snapshot window, shown in Figure 12.30. Once you have specified a selection for each of the three drop-down menus, click the OK button to apply the snapshot.



**Figure 12.30** The Automation Snapshot window.

**Time Range or Location.** The first thing you need to do when inserting snapshot automation is to specify the location or time range of the inserted automation data. If you want to have the snapshot occur at a specific location, simply move the playback cursor to that location. The options you choose from the Time Range menu set the end point or duration for the snapshot, as shown in Figure 12.31. You can also make a time-range selection and choose Selected Range from the Time Range menu. To apply the snapshot to the entire sequence, thereby overwriting any existing automation data, choose All Time.



**Figure 12.31** The Time Range menu allows you to specify a time range for the automation snapshot.

The Time Range menu's various options are as follows:

- **All Time.** This option will apply the snapshot to an entire sequence, regardless of the playback cursor location, while overwriting any existing automation data.
- **Selected Range.** This option will apply a snapshot across the current time-range selection. Keep in mind that this setting will also overwrite any existing automation data within the selection.
- **From Counter to Chunk End/Start.** Use this setting to apply the snapshot from the Counter location until the Chunk end or start time.
- **From Counter to Next/Previous Change (Flat/Ramp).** This option will apply the snapshot from the Counter location until the next or previous automation or MIDI controller point. The flat setting will create a constant value (flat line) for each automation parameter, while the ramp setting will create a normal automation ramp (continuous and smooth change) from the Counter location until the next or previous controller point.
- **From Previous Change to Next Change.** You can use this setting to create a snapshot between two automation points. Place the cursor between two controller points and choose this option.

**Tracks.** After the location, you will need to specify the tracks that will be included in the automation snapshot (see Figure 12.32). The Tracks menu allows you to specify the tracks that will be included in the automation snapshot.

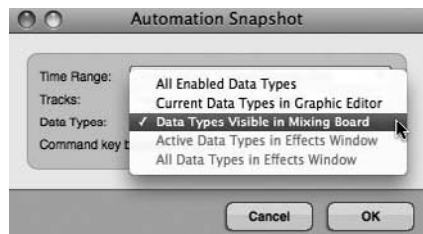


**Figure 12.32** The Tracks menu allows you to specify the tracks that will be included in the automation snapshot.

- **All Tracks.** Use this setting to include all tracks within a snapshot.
- **Selected Tracks.** This option will apply a snapshot only to selected tracks.
- **Tracks Shown in Graphic Editor.** Use this setting to apply the snapshot only to tracks that are visible (highlighted in the Show/Hide column) in the Graphic/Sequence Editor.

- **Tracks Shown in Mixing Board.** Use this setting to apply the snapshot only to tracks that are visible (highlighted in the Show/Hide column) in the Mixing Board.
- **Track Shown in Effects Window.** This option is available when you click on a plug-in's Snapshot Automation button.

**Data Types.** The last snapshot setting to specify is the type of automation data that is to be included (see Figure 12.33). The Data Types menu allows you to specify the type of automation data to be included in the automation snapshot.



**Figure 12.33** The Data Types menu lets you specify the type of automation data to be included in the snapshot.

- **All Enabled Data Types.** Use this setting to include all automation parameters that are enabled within the Automation Setup window.
- **Current Data Types in Graphic Editor.** This option will only include automation data that is currently visible within a track or is active within an audio track's active layer. This setting prevents you from writing automation data that doesn't already exist.
- **Data Types Visible in Mixing Board.** This setting only includes automation data that is visible within the Mix window. For example, if the Sends section is hidden, send volume and panning automation will not be written with the snapshot.
- **Active Data Types in Effects Window.** This setting will only include automation parameters for the plug-in currently showing in the Effects window.
- **All Data Types in Effects Window.** This setting will include all automation parameters for the plug-in currently showing in the Effects window.

### ***Using the Previous Snapshot Setting***

DP remembers the automation snapshot setting that was last used within a specific window. So, if you would like to override the Automation Snapshot window and simply take a snapshot with the window's previous setting, simply press the Command key and click the window's Snapshot button (the camera icon). You can also use the default keyboard shortcut Command+Control+' (single quote).

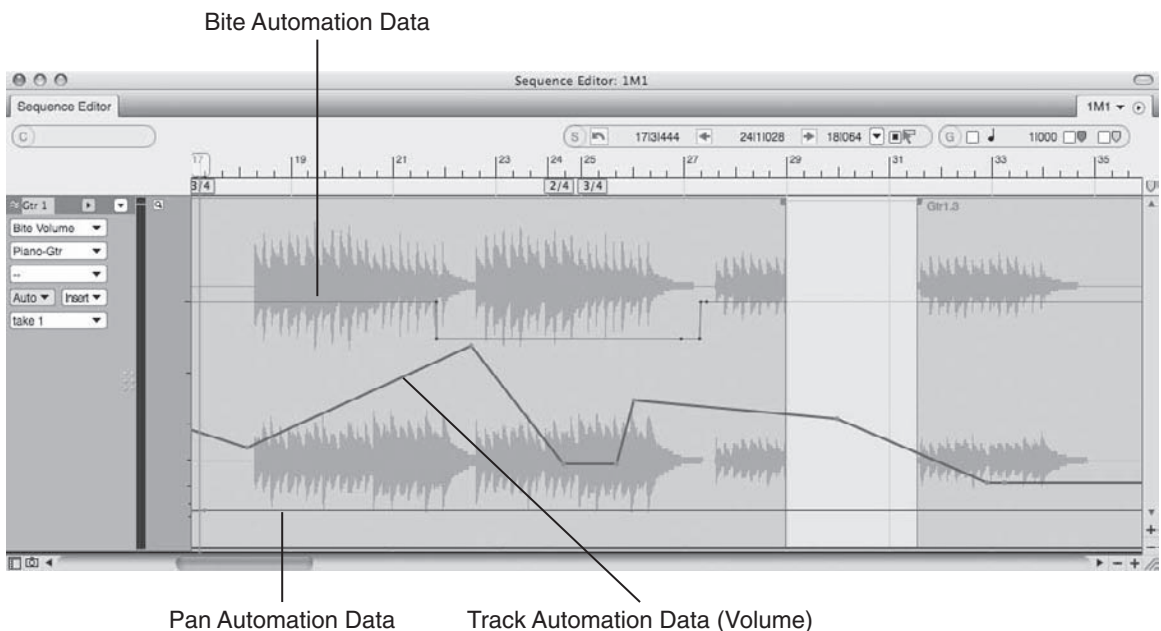
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**Snapshot of Initial Values** Possibly the most fundamental use of DP's Snapshot feature is to set initial values for various mix parameters that you will be automating. For example, suppose your mix involves several tracks. Rather than using the Pencil tool to manually

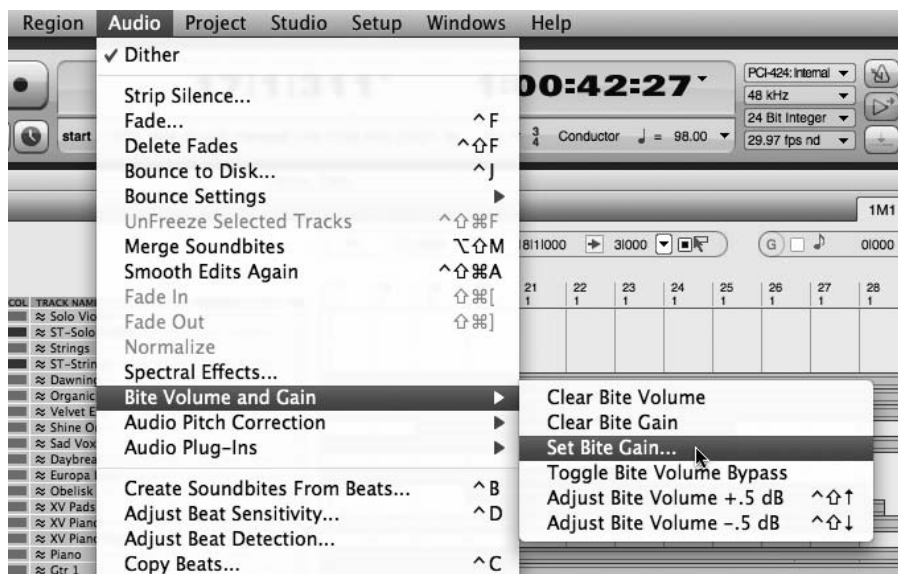
insert, say, the initial volume or pan settings, you can simply take a snapshot of these settings and then enable automation for each track. Now each track's data will have a starting point from which you can base all of your future automation moves.

**Soundbite Volume Automation** Digital Performer provides yet another level of volume automation by allowing you to nondestructively apply volume changes directly to a soundbite. This automation data exists independently of any track automation data and becomes part of the soundbite. In other words, the data stays with the soundbite if the soundbite is moved or copied. Further, soundbite automation data can be edited or deleted at any time.

Creating soundbite volume automation is just like inserting volume automation for a track (discussed earlier in this chapter). In the Active Layer drop-down menu of an audio track (in the Sequence Editor), simply choose Bite Volume and insert the desired volume changes for the soundbite. The soundbite volume automation curves will be superimposed over existing automation layers (see Figure 12.34). All soundbite volume automation data will also be visible in the Waveform Editor by selecting the Volume tab. In addition, adjustments to any soundbite volume automation data can be made in the Bite Volume and Gain submenu (Audio > Bite Volume and Gain), as shown in Figure 12.35. (Bite Gain settings will be discussed in Chapter 13.)



**Figure 12.34** Bite volume automation data is superimposed over any existing track automation data. Notice how the track volume and pan data continue, and the bite volume stays with the soundbite.



**Figure 12.35** Adjustments to bite volume automation data can also be made in the Bite Volume and Gain submenu.

## Summary

Even though Digital Performer provides many comprehensive mix features, such as snapshot automation and plug-in effects, don't neglect the most basic, yet powerful tools at your disposal—the Volume fader and Pan knob. A good mix begins with proper levels and panning. Before you even reach for an effect, you should start with these two fundamental controls.

Think about what the important elements are in your mix. Is it the vocals? Is it the rhythm section? Start by getting a basic blend of the most important tracks with only the track faders. If you are working on a larger project and feeling overwhelmed, simply turn down all the tracks and start building your mix track by track—this is always a good idea. Besides actually listening to what's on each track (you'd be surprised how many engineers don't listen to an individual track from start to finish), you'll be able to hear how one track affects another, both from a technical-engineering standpoint and from an emotional-performance standpoint.

As you're adjusting levels, listen for tracks that are competing with one another. Instead of immediately reaching for an EQ, think about panning and how you can use the stereo field to give each track its own space within your mix. If the heavy guitar track is fighting with the lead vocal, for example, try panning it left or right to add separation and clarity. You'll also need to take into consideration the balance of your instruments (for example, complementary frequency and volume distribution across the stereo field). In addition to the technical aspects, "headphone candy" should also play a role in your panning decisions—it can serve to keep the listener engaged while adding variety to your mix.

Believe it or not, I've heard some engineers refer to panning as the most difficult and delicate part of the mixing process, and they say how the simple act of changing the panning position of one instrument totally sent their mix back to the drawing board.

Once you've satisfied with your basic blend, you should start considering effects plug-ins. We've already discussed how to insert plug-ins, so the next chapter will continue with an explanation of real-time versus disk-based processing and highlight some of the plug-ins that come bundled with Digital Performer.



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# 13

## Processing and Mastering

*P*rocessing is the act of modifying audio or MIDI data with software- or hardware-based effects. This processing can occur in real time through the use of software plug-ins and hardware effects units, or it can occur as a file-based process that actually modifies and replaces the audio or MIDI data within a track. Even though this chapter appears after the “Mixing” chapter, audio and MIDI processing can happen anytime during the music production process—from the initial stage of recording and throughout the mixing and mastering stages. The processing section of this chapter, however, will focus specifically on audio soundbite processing. For information on MIDI plug-ins and processing, refer to Chapter 9.

*Mastering* is the last stage of the music production process (assuming the replication process is a separate entity outside the music studio environment). Mastering is your final chance to improve on the sound quality of an audio project before it is mass produced and shipped off to the public. Ideally, mixers should consider having their mixes mastered by an experienced mastering engineer (budget permitting, of course). Mastering engineers work in a fine-tuned studio environment that allows them to quickly pinpoint problems and shape a track (or a set of tracks) so that it will translate well across different types of playback systems. They also use their mastering tools to match the sonic quality of several audio tracks, so sequential playback of the tracks sounds more cohesive. There will be times, however, when you will want to or need to master mixes within Digital Performer.

Though by no means a comprehensive guide to the mastering process, the mastering section of this chapter will provide an overview of the basic procedures involved with mastering—showing you how you might incorporate DP’s various tools and feature sets to “master” your mixes in Digital Performer.

Here is a summary of topics covered within this chapter:

- The difference between real-time and file-based processing
- How Automatic Delay Compensation works
- How to use real-time effect inserts and file-based Audio menu plug-ins
- How to apply destructive processing in the Waveform Editor

- The Effects window
- How to transpose soundbites
- How to bounce to disk or perform a real-time bounce
- How to export soundbites in different file formats, including MP3
- An overview of the mastering process within DP
- How to use dither and noise shaping
- How to perform sample format and sample rate conversion

## Audio Processing

There are basically two ways to process audio data with effects in DP: through the use of effect inserts or with DP's file-based Audio menu plug-ins. Effect inserts (in the Mixing Board) are applied in real time and do not change the actual audio in a track. Audio menu plug-ins, however, are file based, meaning that a new sound file (mixed with the applied effect) will be created after a soundbite has been processed. There are, of course, advantages and disadvantages to both of these methods.

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**Real-Time versus File-Based Processing** Real-time effects are like when you plug a guitar into a series of effects pedals before sending it to an amp or recorder. File-based processing, however, is like taking an audio track that's already recorded and "printing" an effect on top of it (permanently merging the original audio and the effect together).

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## Automatic Delay Compensation

Regardless of which method you choose (real-time or file-based processing), be aware that plug-in processing may introduce a delay, called *latency*, to the processed signal. How much latency is introduced depends on the particular plug-in you're working with. To get around this limitation, enable DP's Automatic Delay Compensation (ADC) feature, which automatically adjusts the playback of the audio signal to compensate for any added latency—with sample accuracy (Setup > Configure Audio System > Configure Studio Settings).

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**When ADC Doesn't Work** Keep in mind that this feature only works on real-time audio processing and virtual instruments triggered by prerecorded MIDI data. ADC has no effect on live audio or MIDI data that is triggered in real time or file-based processing applied with the Audio menu plug-ins.

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## Real-Time Effects

Real-time plug-ins are the most versatile form of processing because they do not alter the audio track data. You are free to audition different settings or even bypass or remove plug-ins entirely—all in real time. The disadvantage is that inserted plug-ins consume your system’s CPU resources. Some plug-ins are only a light drain on your CPU resources, while others (such as Audio Ease’s Altiverb, Waves Mastering Bundle plug-ins, and so on) can slow down even the fastest Macs when you’re working with larger projects. You may want to work with higher buffer sizes when mixing with real-time effects. Higher buffer sizes have the benefit of freeing up your computer’s CPU resources. The tradeoff, however, is the unfortunate increase in monitoring latency, which can make recording extremely difficult. You can monitor DP’s resource consumption from the Audio Performance window (explained in “The Audio Performance Window” section of this chapter).

To insert a real-time effect plug-in:

1. Open the Mixing Board by choosing Project > Mixing Board. You can also use the default keyboard shortcut Shift+M.
2. Click on an effect insert and choose the desired plug-in from the drop-down menu (see Figure 13.1).
3. The plug-in will open in a separate Effects window (see Figure 13.2). If you close the Effects window, you can reopen it by double-clicking on the name of the plug-in in the Inserts section of the Mixing Board.
4. Adjust the plug-in parameters as needed.

To remove or switch to a new plug-in:

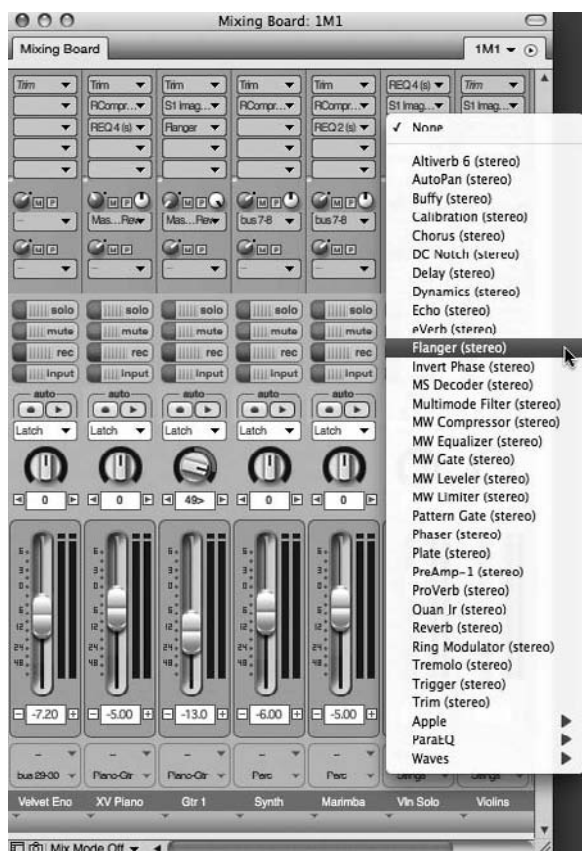
1. In the Mixing Board, click on the desired effect insert and choose None to remove the plug-in.
2. When working in the Effects window, click on the plug-in’s Effect menu and choose None.
3. To switch to a new plug-in, repeat Step 1 or 2, but instead of choosing None, choose the new plug-in from the drop-down menu.

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**Plug-In Compatibility** As I discussed in Chapter 2, Digital Performer supports the use of MAS, AU, and VST plug-ins. (VST plug-ins require a VST wrapper.). As long as they are installed within the correct plug-ins folder, they will appear in DP.

DAE users will have access to TDM, RTAS, and AudioSuite plug-ins—but not AU or native MAS plug-ins. DAE users wanting to use VST plug-ins can choose to use FXpansion’s VST/RTAS adapter.

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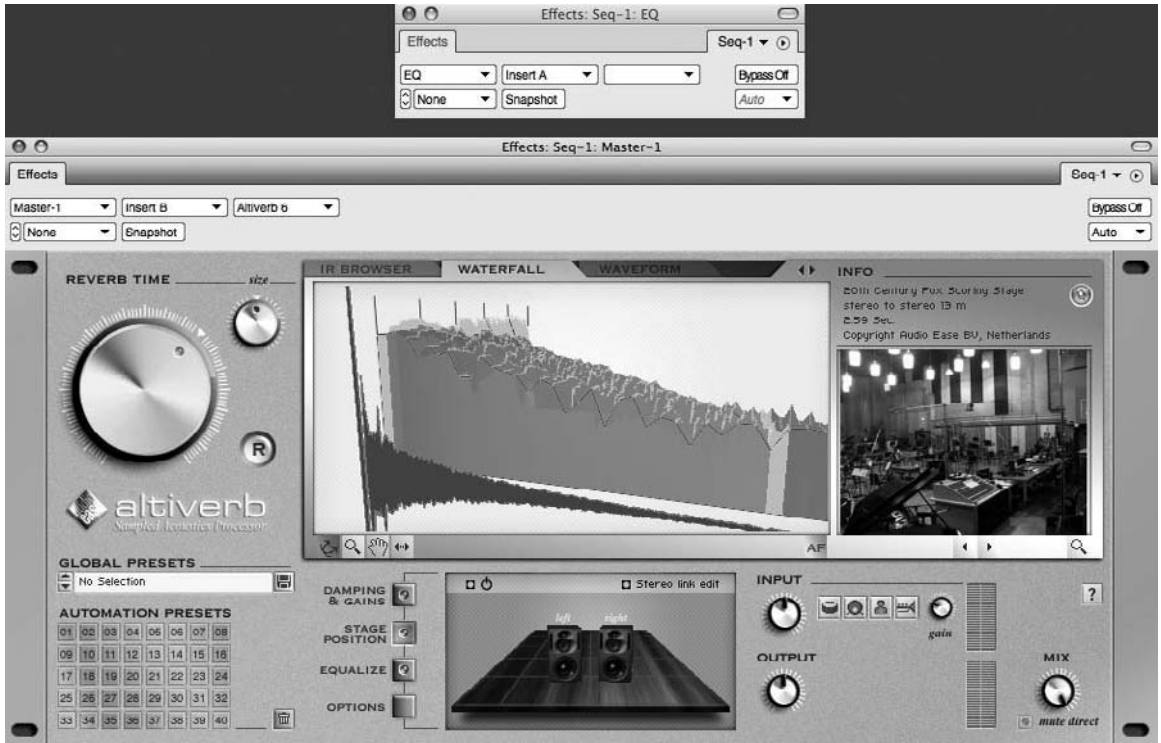


**Figure 13.1** The Inserts drop-down menu provides a complete list of compatible plug-ins that are installed within your system.

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**Real-Time versus Pre-Gen Effects** Much like our discussion of pre-rendered virtual instrument tracks, by default a processing effect in DP is also pre-rendered ahead of time (meaning DP goes to work once the effect window is closed). This “pre-gen” feature, as MOTU calls it, lightens the load on your computer’s processor during real-time playback. You can use the Digital Performer > Preferences > Audio Plug-Ins > Plug-In Real Time preference to adjust default pre-gen settings for projects. For example, you can select Pre-Gen Mode When Possible as the default setting for new projects or choose All Plug-Ins in Real Time for the current project. Keep in mind that no matter what you choose as a default setting, you still have the option to change the real-time setting of each effect plug-in in its mini-menu. (See “The Effects Window” section later in this chapter.)

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**Figure 13.2** Plug-ins will open up in their own Effects window. The first Effects window (top) is displaying an empty insert, while the second Effects window (bottom) displays an Altiverb plug-in that's been inserted in Slot A of the Main Reverb Aux track.

## File-Based Processing

File-based processing has the benefit of not consuming real-time system resources. You basically apply an effect from the Audio menu to a soundbite, which creates a new sound file of the processed audio. The disadvantage is that you must reapply the effect if you want to change it. This is a *constructive* process, meaning a new soundbite is created, so you can always return to the original file—at any time—simply by dragging the original soundbite into a track from the Soundbites window. You can apply file-based processing to a soundbite directly in an audio track or in the Waveform Editor (Soundbites > Edit). Keep in mind that, unlike track processing, Waveform Editor processing is a destructive process that permanently alters the soundbite. You can use the sound file's independent Undo History List to undo (or remove) any applied processing if you have the Sound File Undo History configured to remember your actions. Refer to Chapter 6 for an explanation of the Undo History window.

---

**The Normalize and Fade Commands** In addition to Audio menu plug-ins and other audio commands (such as the Region menu's Transpose command), the Waveform Editor will also allow you to apply destructive fades and normalization (explained in the “Normalizing

Soundbites” section later in this chapter). These Audio menu commands are only available when you are working in the Waveform Editor and will appear dimmed (or unavailable) when you are processing audio directly in a track.

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**Background Processing** Keep in mind that file-based effects processing occurs in the background, so you will be free to perform other actions while any processing is taking place. The Background Processing window controls how background processing functions in Digital Performer; it is explained later, in “The Background Processing Window” section of this chapter.

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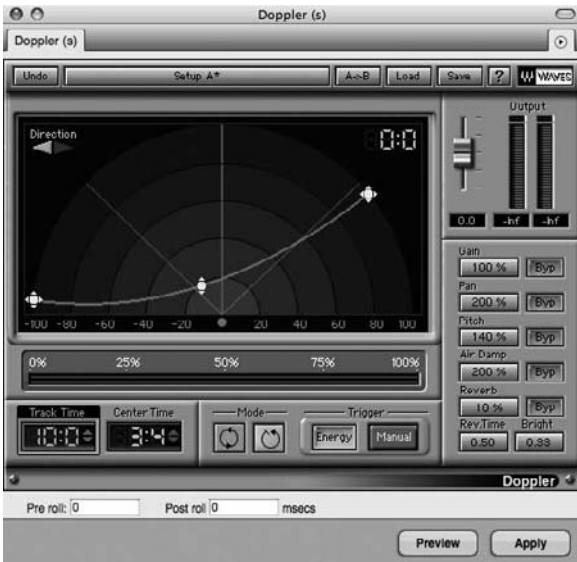
### ***Processing Audio within a Track***

You can process entire soundbites or only portions of soundbites within an audio track. Simply make the appropriate time-range selection, choose the desired plug-in from the Audio menu, and then apply the effect. Because this is a constructive process, a new audio file with the applied effect will be created in the Soundbites window and will replace the original soundbite within the track.

To process a soundbite within the Tracks window or Sequence Editor:

1. Begin by selecting the audio data you want to affect. You can select an entire soundbite or just a portion of it (explained in the “Selecting and Moving Audio” section of Chapter 10).
2. Select the desired plug-in by choosing Audio > Audio Plug-Ins. The plug-ins listed here are identical to the plug-ins found in the Inserts section of the Mixing Board.
3. Adjust the plug-in parameters and click the Preview button to audition the settings (see Figure 13.3).
4. Once you are satisfied with the plug-in settings, click the Apply button. The time it takes to process the soundbite depends on the type of process and the speed of your computer. Files that are being processed will appear as an outlined waveform, as shown in Figure 13.4.

Once a soundbite is processed, a new sound file will be created with the applied effect. This new file will replace the original file within the track. Keep in mind that the original file will remain intact within the Soundbites window, allowing you to return to the original version when you need to.



**Figure 13.3** Plug-ins that are accessed from the Audio menu contain additional controls for previewing, applying, and setting pre- or post-roll times.

### ***Processing Audio in the Waveform Editor***

The procedure for processing audio with effects within the Waveform Editor, shown in Figure 13.5, is similar to the way in which you process soundbites directly within a track.

Simply select the soundbite in the Soundbites window, make a time-range selection in the Edit pane (Waveform Editor), and then apply the desired plug-in from the Audio menu. You can also use the Audio menu's Normalize and Reverse commands when working in the Waveform Editor. As mentioned earlier, processing done in the Waveform Editor is destructive and will permanently alter the original file, so it's always a good idea to make sure you have a backup copy of the soundbite before applying any destructive processing/edits.

To make a copy of a soundbite in the Waveform Editor:

1. Open the Soundbites window and double-click the desired soundbite from the Soundbite List. A separate Waveform Editor window will automatically open.
2. Use the default keyboard shortcut Command+A to quickly select the entire soundbite.
3. Once the soundbite is selected, choose New Sound File from Selection from the Soundbites window's mini-menu. A copy of the soundbite will be created with the same name as the original soundbite. A numerical suffix will be added to differentiate the two files (such as Audio-1.1, Audio-1.2, Audio-1.3, and so on).
4. You may want to rename this new backup copy something more easily recognizable. If so, Option-click the soundbite name in the Name column and rename the soundbite.

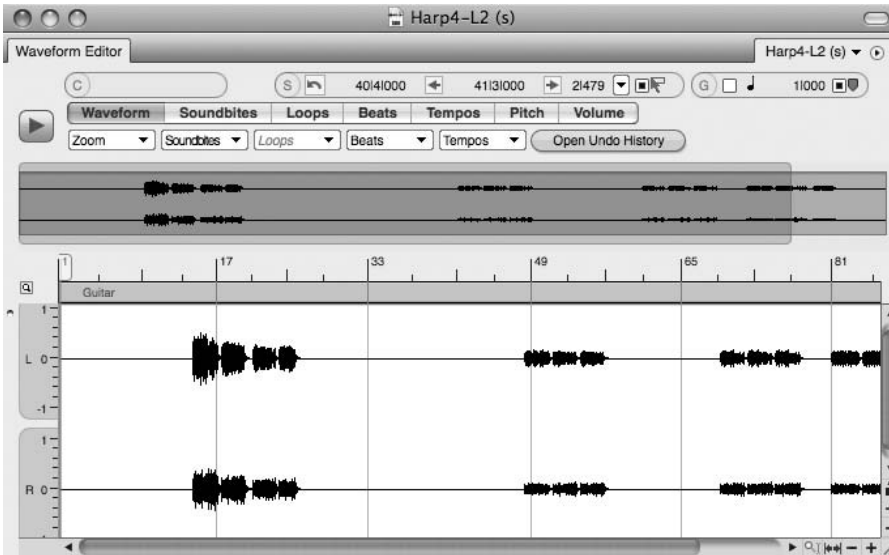




**Figure 13.4** Soundbites that are being processed will appear as an outlined waveform (top). Once an effect has been applied, it will change to a solid waveform (bottom).

To process a soundbite in the Waveform Editor:

1. Open the Soundbites window and double-click the desired soundbite from the Soundbite List. A separate Waveform Editor window will automatically open.
2. Select the audio data you want to affect. You can select an entire soundbite or just a portion of it. Use the default keyboard shortcut Command+A to quickly select the entire soundbite.



**Figure 13.5** The Waveform Editor allows you to perform destructive processing to a selected soundbite.

3. Select the desired audio plug-in by choosing **Audio > Audio Plug-Ins**. As discussed earlier, the plug-ins listed here are identical to the plug-ins found in the Inserts section of the Mixing Board.
4. Adjust the plug-in parameters and click the **Preview** button to audition the settings. If needed, set the pre- and post-roll times.
5. Click **Apply** to process the soundbite with the effect. The amount of time it takes to process the file depends on the plug-in being applied, the length of the selection to be processed, and the speed of your computer.

---

**Sound File Undo History** Keep in mind that processing (and editing) applied in the Waveform Editor is a destructive process—meaning that it will permanently alter the original file. Use a soundbite’s independent Sound File Undo History to undo/redo destructive actions that have been applied. Simply click on the Undo History button in the Waveform Editor to open a soundbite’s independent Undo History window. In the window, you should see a list of actions that have been performed on the particular file. Be sure to configure the Sound File Undo Pruning preferences to remember the necessary actions, or you may be surprised when you open the Undo History and find the list of actions discarded. Click on the Pruning Preferences button to access the Sound File Undo Pruning Setup.

---

**Normalizing Soundbites.** *Normalization* is the destructive process of raising a soundbite’s loudest peak to full-scale digital zero (or 0 dB). Because this command basically takes a soundbite

and makes it sound louder, it is commonly confused with the more sophisticated process of brickwall limiting (explained in the “Mastering” section of this chapter). When applied, the Normalize command will first scan an audio selection for its loudest peak. Once the peak is determined, DP will calculate how much overall gain needs to be applied to the soundbite to make the loudest peak reach 0 dB. Keep in mind that normalization affects an entire selection of audio—not just its loudest peak—and will also raise the audio file’s noise floor in the process; this can have the side effect of making the noise floor more noticeable.

The process for normalizing soundbites can only be applied to audio selections within the Waveform Editor and is the same as for effects processing (discussed in the previous section, “Processing Audio in the Waveform Editor”).

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**Soundbite Gain** Digital Performer allows you to nondestructively boost or attenuate (reduce) a soundbite’s gain by a specific number of decibels. For example, rather than normalizing a soundbite to make it sound louder (discussed in the previous section), you could add just a few decibels to slightly raise its volume. You can also quickly bypass any bite volume automation (discussed in the “Soundbite Volume Automation” sidebar in Chapter 12) that may be attached to the soundbite. To change a soundbite’s gain setting or to bypass any bite volume automation, simply use the Audio > Bite Volume and Gain submenu or the Bite Gain and Bite Volume Bypass options in the Information Pane of the Soundbites window.

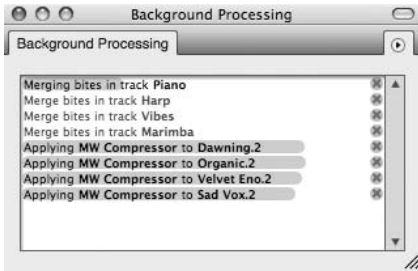
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**Applying Destructive Fades.** Fades can be applied destructively to a soundbite within the Waveform Editor. Simply make a soundbite selection within the Waveform Editor and choose Audio > Fade In/Out to apply a destructive fade-in or fade-out. Keep in mind that these fades are linear, and their fade curves cannot be changed.

If you need more versatility with the fade process, consider using the standard Fade command (Audio > Fades), which can be used in any other editor window (except the Waveform Editor) and is nondestructive.

## The Background Processing Window

Unlike some audio commands (such as the Audio menu’s Bounce to Disk command) that monopolize Digital Performer’s system resources, many of the tasks (such as DSP processing and beat detection analysis) that DP performs occur in the background. The Background Processing window automatically prioritizes background tasks, placing more important processes at the top of the list (see Figure 13.6). DP will even interrupt low-priority analysis tasks to work on high-priority ones first. You can control how Background Processing functions in the Background Processing preferences (explained in the “Background Processing Preferences” section later in this chapter).



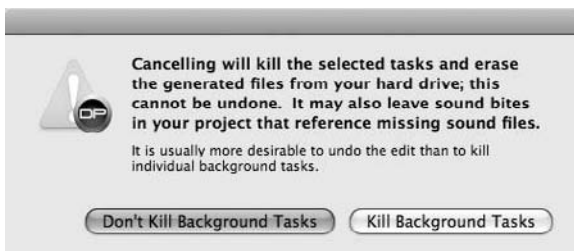
**Figure 13.6** The Background Processing window shows a list of tasks that are waiting to be processed.

### **Background Processing Tasks**

Actions that must be processed are called *tasks* and are listed in the Task List of the Background Processing window. Tasks that are currently being processed will appear at the top of the list—DP will always work on higher-priority tasks first—with the task name displayed in black text. In addition, tasks that are being processed have a progress bar (located behind the task name) that progresses from left to right. Once a task is processed, it will disappear from the Task List. Tasks that are waiting to be processed appear in the list without a progress bar.

Here are a few tips for managing background processing tasks:

- **To view the current tasks in the Task List:** Open the Background Processing window by choosing Studio > Background Processing. You can also use the default keyboard shortcut Shift+R. When first opened, the Background Processing window may appear with only a few tasks visible. You can expand the window by clicking on the title bar's Zoom button or by dragging the bottom-right portion of the window downward.
- **To stop a task:** Click on the task's Cancel button, indicated by a small x. You will be presented with a warning dialog, shown in Figure 13.7, asking whether you really want to continue with the cancellation process. Click the Kill Background Tasks button to stop the background processing for the specific task. Choose the Don't Kill Background Tasks button to continue with the task's background processing.

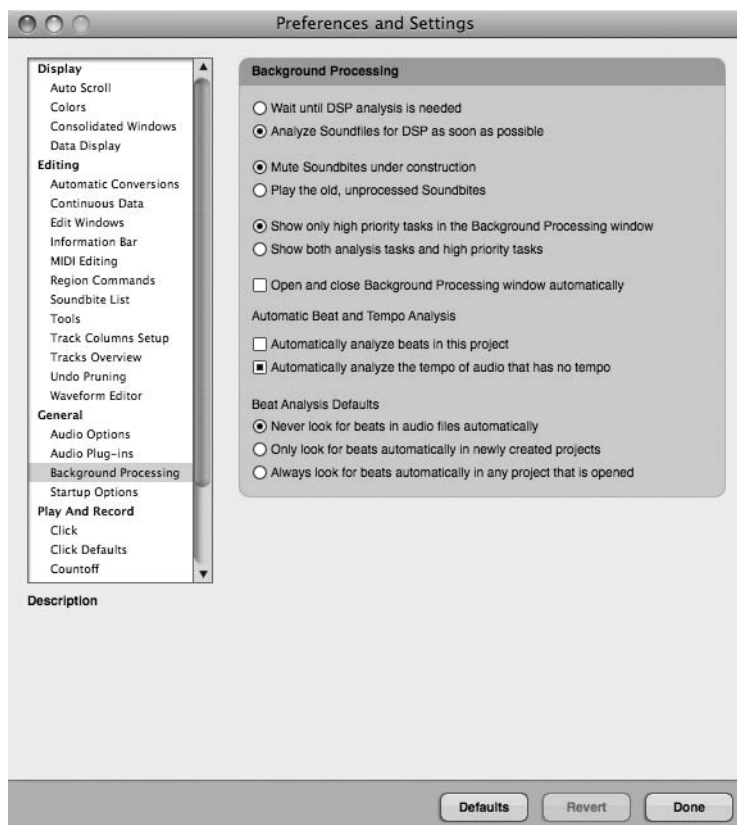


**Figure 13.7** Clicking on a task's Cancel button will launch the Kill Background Tasks warning dialog.

- **To begin running a task that has been stopped:** If Digital Performer encounters a problem and stops processing a task, you can run the process again by choosing the Run Stopped Task Again command from the Background Processing mini-menu.
- **To further customize how the Background Processing window functions in DP:** Open the Background Processing preferences and choose the desired settings (explained in the next section).

### **Background Processing Preferences**

The Background Processing preferences, shown in Figure 13.8, determine how background processing is handled in DP. The provided options are divided into three different sections: the Background Processing section, the Automatic Beat and Tempo Analysis section, and the Beat Analysis Defaults section.



**Figure 13.8** The Background Processing preferences provide options for controlling the functionality of DP's background processing.

**Background Processing Section.** The Background Processing section controls the overall functionality of DP's Background Processing feature; its options are as follows:

- **Wait Until DSP Analysis Is Needed.** Use this option if you do not want DP to automatically analyze soundbites listed in the Soundbites window. Soundbite analysis will occur only when you perform an audio process that requires it.
- **Analyze Soundfiles for DSP as Soon as Possible.** Select this option if you want DP to automatically analyze soundbites for future processing. This can come in handy if you are performing a lot of audio processing. DP will not have to perform this analysis for each audio process because it will have already been completed in the background. This option is enabled by default.
- **Mute Soundbites under Construction.** This option is enabled by default and will prevent a soundbite from being heard while it is still being processed. Once background processing has been completed, the soundbite will become available for playback.
- **Play the Old, Unprocessed Soundbites.** Choose this option to hear the unprocessed soundbite while background processing is occurring.
- **Show Only High Priority Tasks in the Background Processing Window.** Enabled by default, this option will hide any lower-priority preemptive analysis tasks from the Background Processing window's Task List. Since these tasks are always processed after higher-priority tasks, it really isn't as necessary to see them.
- **Show Both Analysis Tasks and High Priority Tasks.** Use this option to view all background processing tasks within the Task List.
- **Open and Close Background Processing Window Automatically.** Enabled by default, this option will automatically open and close the Background Processing window when background processing begins and ends. Disable this option if you want to manually control the visibility of this window.

**Automatic Beat and Tempo Analysis Section.** The Beat Detection Engine is able to detect the transients in an audio file, allowing DP to analyze where the locations of beats are in a soundbite. Once a soundbite is analyzed and its beats are detected, soundbites can be intuitively quantized and time-stretched or compressed to conform to a project's tempo. Preemptive beat analysis helps to automate the beat detection process by automatically analyzing soundbites contained in a project so that they are ready to go when you wish to apply any beat- or tempo-related commands.

The Automatic Beat and Tempo Analysis section of the Background Processing preferences determines how preemptive beat and tempo analysis functions in DP; its options are explained below.

- **Automatically Analyze Beats in This Project.** This option turns on preemptive beat analysis, which causes soundbites contained in the current project to be automatically analyzed.

Keep in mind that when turned on, this feature will override the Beat Analysis Default settings, explained in the next section.

- **Automatically Analyze the Tempo of Audio That Has No Tempo.** As with the previous option, enable this option if you want DP to automatically analyze a soundbite that doesn't contain tempo data.

**Beat Analysis Defaults Section.** The Beat Analysis Defaults options allow you to further control the functionality of DP's Beat Detection Engine. These options basically affect how the Automatically Analyze Beats in This Project option (explained in the previous section) functions when enabled. They are as follows:

- **Never Look for Beats in Audio Files Automatically.** Turn on this feature if you do not want DP to preemptively analyze beats. Keep in mind that the previously discussed Automatically Analyze Beats in This Project option will override this setting.
- **Only Look for Beats Automatically in Newly Created Projects.** Enable this option if you only want DP to look for beats in new projects that you create in the current version of Digital Performer—and to leave older, existing projects alone.
- **Always Look for Beats Automatically in Any Project That Is Opened.** Enable this option if you want DP to automatically look for beats when you open a project—regardless of the version of DP in which it was created.

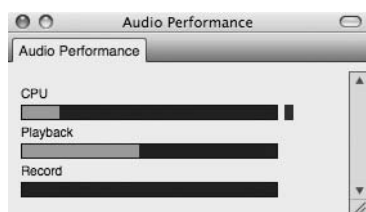
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**Disabling Preemptive Beat Analysis** Keep in mind that if you turn off DP's beat detection feature, you will need to perform soundbite beat analysis manually when you use any of Digital Performer's tempo- or beat-related commands.

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## The Audio Performance Window

Real-time audio plug-ins consume CPU power—some more than others, depending on the plug-in you are working with. DP's Audio Performance window provides visual feedback on the amount of CPU usage, along with Playback and Record buffer activity, as shown in Figure 13.9. Remember that your system's audio performance may suffer if you run out of CPU resources during playback. If this happens, you may need to scale down the number of real-time effects plug-ins you have inserted. You can also try increasing the hardware buffer size; this will free up your

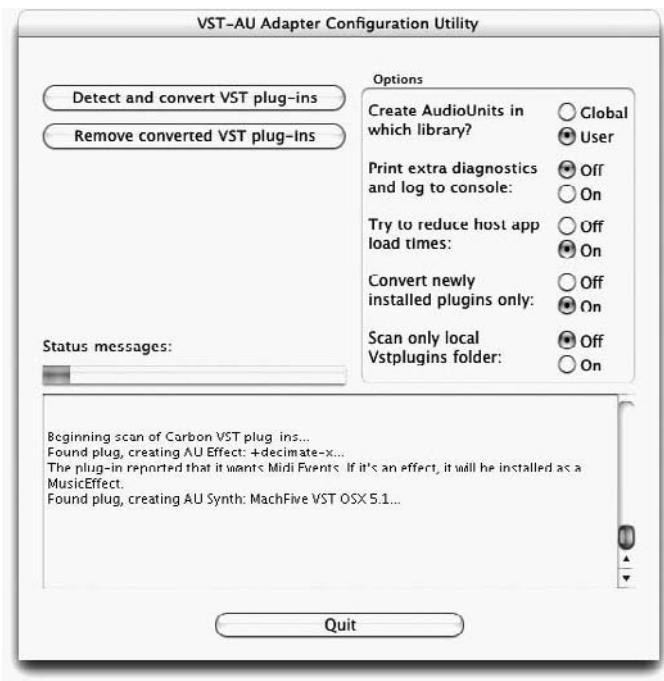


**Figure 13.9** The Audio Performance window provides visual feedback on DP's resource consumption.

system resources for more real-time effects. The tradeoff with higher buffer sizes is increased monitoring latency—this shouldn't be a problem, however, during the mixing process.

## Plug-In Formats

DP comes bundled with audio effect plug-ins that are in its native MAS (MOTU Audio System) format, and it also provides direct support for Apple's AU (Audio Units) format. You will need to install a third-party application—called a *wrapper*—if you want to incorporate VST effect and instrument plug-ins into your DP system (see Figure 13.10). Once installed and configured, these wrappers will automatically convert a VST-formatted instrument or effect plug-in into either the AU or MAS format (depending on the application) and make it available throughout Digital Performer.



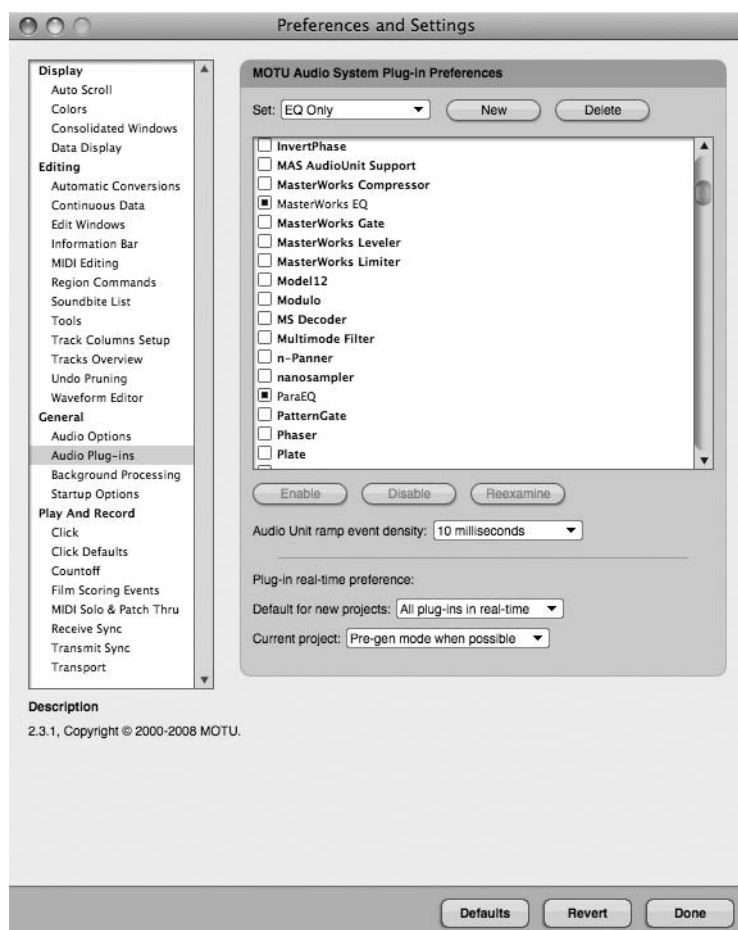
**Figure 13.10** FXpansion VST to Audio Unit Adapter allows access to installed VST effect and instrument plug-ins.

## Plug-In Locations

Audio plug-ins are stored in the System (User) > Library > Audio > Plug-Ins folder and are separated into different subfolders by plug-in type (such as MAS, VST, and Digidesign folders). AU plug-ins, however, are located in the Components folder. When installing plug-ins, keep in mind that you can store them in either the System or User Library folder. The only difference is that plug-ins installed in the User Library folder will only be available to that particular user. If you are working on a system that doesn't contain multiple user accounts, there really isn't anything to worry about—you'll have access to installed plug-ins, regardless of their System or User locations.



**Plug-In Management** As discussed in Chapter 5, Digital Performer 6 now offers extensive plug-in management options. You can freely enable and disable any native or third-party plug-ins, create customized plug-in sets, and force plug-ins to load even if they don't pass startup validation. Plug-in sets are a great way to manage plug-ins in DP. In other words, if you know your current project will only require a handful of plug-ins (such as a project where you will only be recording MIDI), simply create a set that includes only the necessary plug-ins! Go to Digital Performer > Preferences > Audio Plug-Ins to access the audio plug-ins preferences within DP (see Figure 13.11).



**Figure 13.11** The Audio Plug-ins Preferences in DP allow you to manage all native and third-party audio plug-ins. In this example, I have created a plug-in set labeled EQ Only for a mixing session.

### Installing AU Plug-Ins

Typically, plug-ins will automatically be placed in the proper folder by the installer program. However, it is important that when installing AU plug-ins manually, you make sure to place them in the Library > Audio > Plug-Ins > Components folder. Remember that you can place them in either the System or the User Library folder. The first time you launch DP after successful installation, DP will analyze each AU plug-in for problems during the loading process. At the end of the loading process, DP will display a dialog box showing you the results of the analysis. AU examination happens only once per plug-in and can take up to a few minutes, depending on the number of plug-ins to be analyzed. If an AU plug-in fails to load because of a problem, the plug-in will not be available for the project.

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**AU/MAS-Compatible Plug-Ins** When installed plug-ins are in both MAS and AU formats, DP will ignore the AU version and only load the MAS version for use in Digital Performer.

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**Dynamic CPU Management** DP has a unique method for handling the demands placed on your computer's processor by audio plug-ins. *Dynamic CPU management* means that when an effect plug-in—say, DP's Masterworks Limiter—is not receiving an audio signal, it is automatically and temporarily disabled until it receives more audio from its corresponding track. Once it receives audio again, it will automatically reactivate so it can perform its task. (No preferences or settings are involved!) Although all of the plug-ins included in DP support this feature, third-party plug-ins may or may not. Consult the company's resources to determine whether your third-party plug-ins can take advantage of dynamic CPU management.

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### The Effects Window

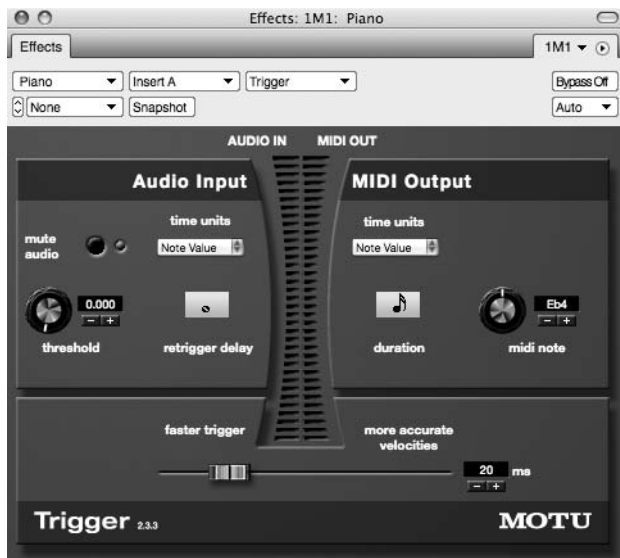
Digital Performer's Effects windows display real-time audio and MIDI plug-ins that are inserted in the Mixing Board, as shown in Figure 13.12. Multiple Effects windows can be open at the same time.

To open an Effects window for a specific audio track:

1. Highlight an audio track in the Tracks window.
- 2a. Choose Project > Effects (or use the shortcut Shift+F).

OR

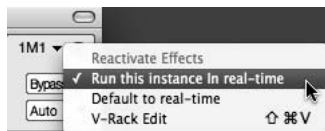
- 2b. Simply double-click on an existing plug-in insert in the Mixing Board.



**Figure 13.12** Digital Performer's Effects window displays real-time plug-ins that are inserted in the Mixing Board. In this example, DP's Trigger plug-in is shown.

### *The Mini-Menu*

The Effects window's mini-menu (as shown in Figure 13.13) contains options such as:

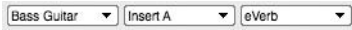


**Figure 13.13** The Effects window's mini-menu includes options for utilizing plug-in effects in real time.

- **Reactivate Effects (DAE Only).** This option makes TDM plug-ins active again (under the DAE audio system).
- **Run This Instance in Real-Time.** When selected, an effect plug-in will no longer take advantage of DP's pre-rendering feature (producing a plug-in's output in advance as soon as its window is closed). When a plug-in is run in real time, its "effect" will only be produced during playback (which, depending on the number of plug-ins running in real time, results in a greater demand on the CPU).
- **Default to Real-Time.** When this is selected for a plug-in, each time you activate the same plug-in, it will default to Run in Real-Time.
- **V-Rack Edit.** This option toggles between the current plug-in's Effects window and the last viewed V-Rack.

### ***Track, Insert, Effect, and Preset Menus***

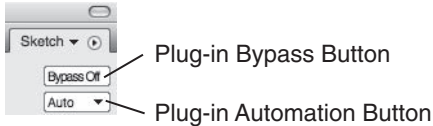
Located below the Effects window's title tab are four menus that allow you to access another track, access another effect insert (A, B, C, and so on), choose a different effect plug-in, or manage an effect's presets. (See the upcoming "Saving and Recalling Effect Presets" section for a detailed explanation of this process.) In addition to providing automation controls, the menus allow you to access inserted plug-ins—even if they are located on different tracks—with only one Effects window open (see Figure 13.14).



**Figure 13.14** Use the Track, Insert, and Effect menus to navigate between different plug-ins, even if they are located on different tracks.

### ***Bypassing or Automating an Effect***

You can bypass or temporarily disable inserted plug-ins by clicking on an effect's Bypass button (see Figure 13.15). If the plug-in window is closed, you can Option-click directly on an insert in the Mixing Board window to bypass it. In addition, you can access DP's automation options in the available Automation drop-down menu. You can even take an automation snapshot with the handy Snapshot button!



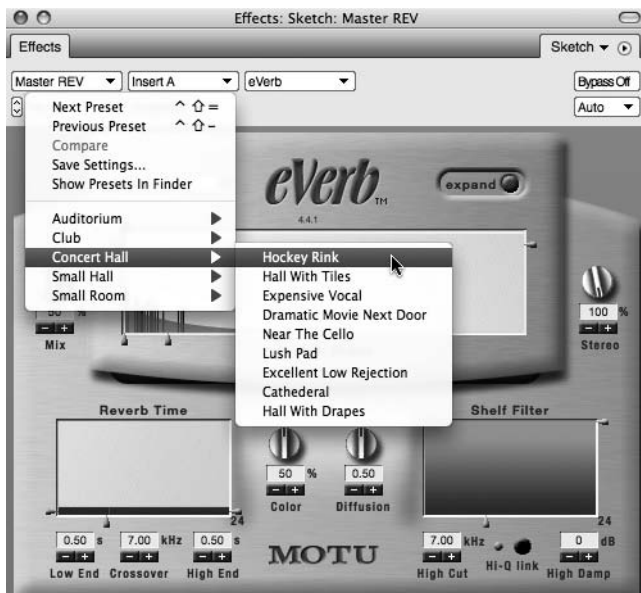
**Figure 13.15** The Effects window's Bypass button is used to temporarily disable a plug-in, while the Automation drop-down menu provides DP's options for automating an effect.

### ***Saving and Recalling Effect Presets***

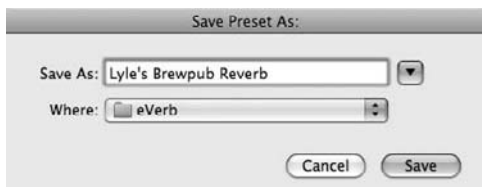
Many of DP's audio plug-ins (as well as third-party plug-ins) contain factory presets, which you can access from the plug-in's Preset menu. Presets are listed below the Save Settings and Show Presets in Finder commands, shown in Figure 13.16, and are available regardless of whether the plug-in is a real-time effect insert or a file-based Audio menu plug-in.

To choose a plug-in preset:

1. Open the desired plug-in from the Audio menu or the Mixing Board inserts.
2. Click on the plug-in window's Preset menu.
3. Select the desired preset to load it. Active presets are indicated by a check mark and will appear as the Preset menu's title. If you have modified any of the preset's settings, the name will become italicized. Use the available Compare menu item to compare a modified preset to the original, unmodified preset.



**Figure 13.16** Effect presets are listed in the specific plug-in's mini-menu.



**Figure 13.17** The Save Preset As window.

To save a plug-in preset:

1. Start by configuring the specific plug-in's parameter settings to your liking.
2. Once you are satisfied, click on the plug-in window's Preset menu and choose Save Settings.
3. Name the custom preset in the Save Preset As window (see Figure 13.17).
4. Click OK, and the new preset will appear in the User Presets section of the plug-in's Preset menu.

To modify the parameter settings of an existing preset:

1. Select the desired preset from the plug-in's Preset menu and then adjust the parameter settings as needed.

2. Once you're satisfied with the new changes, choose Save Settings from the plug-in's Preset menu.
3. Type in the same name of the effect preset in the Name Effect Preset window.
4. An alert will allow you to replace the preset.

## Pitch-Shifting Audio

When you are pitch-shifting audio, DP can transpose soundbites in two different ways: with standard pitch-shifting or with MOTU's proprietary PureDSP pitch-shifting algorithm. Standard pitch-shifting alters the frequencies of an audio file without affecting its length. With this method, the further you transpose a file away from its original pitch, the higher or lower the timbre of the pitch will be. This processing artifact leads to the well-known "chipmunk" sound. PureDSP processing, however, attempts to preserve the resonant frequencies of the sound without affecting the actual timbre or character of the audio file. By default, all audio files are set to use MOTU's PureDSP pitch-shifting algorithm. You can change a specific audio file's Transpose setting in the sound file's Information window (Studio > Sound File Information > Sound File drop-down menu), as shown in Figure 13.18.

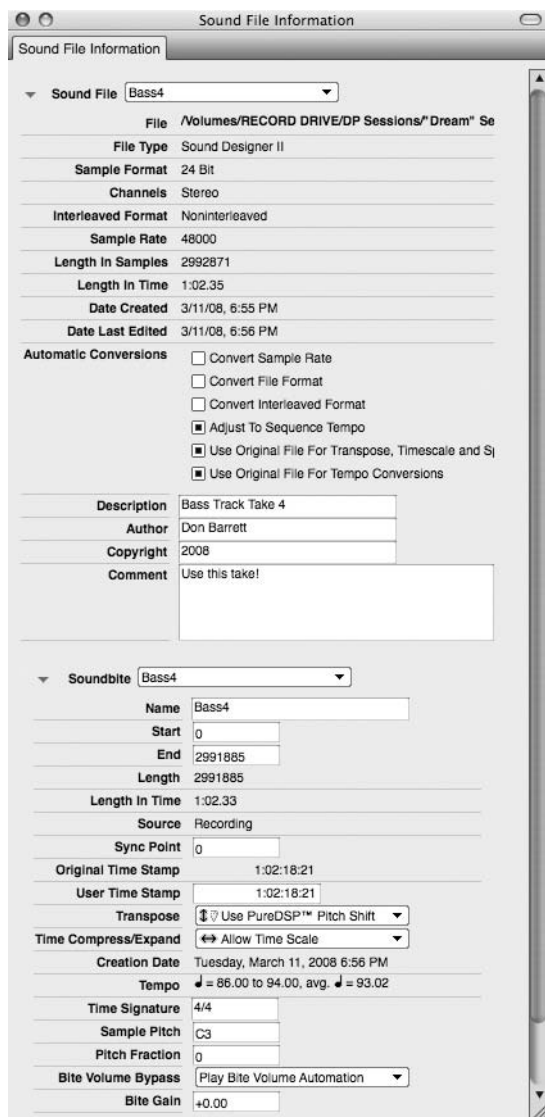
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**Dry Monophonic Audio Material** Pitch processing in Digital Performer produces much better results with dry monophonic audio material. In other words, make sure the audio you want to pitch-shift is a single voice (or instrument) and contains no effect processing, such as reverb or delay. Pitch-shifting a soundbite that contains chords, stacked vocals, effects, or a full mix will not produce tangible results. The success of pitch-shifting in Digital Performer (or any other audio program) is highly dependent on the nature and quality of the original recorded audio material.

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To change the Transpose setting of a soundbite:

1. Open the Sound File Information window by choosing Studio > Sound File Information.
2. Select the desired sound file from the Sound File menu. Once the sound file is selected, the Sound File Information window will update accordingly.
3. From the Soundbite section (the center section), click on the Transpose pop-up menu and choose the desired pitch-shifting algorithm, as shown in Figure 13.19. If you do not see the Soundbite section's details, be sure to click the disclosure triangle located to the left of the word *Soundbite*.
4. If you want to prevent a soundbite from being pitch-shifted all together, choose the Don't Pitch Shift option.

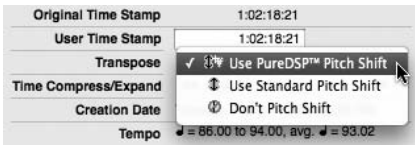


**Figure 13.18** You can configure an individual soundbite's Transpose setting in the Info Pane of the Soundbites window.

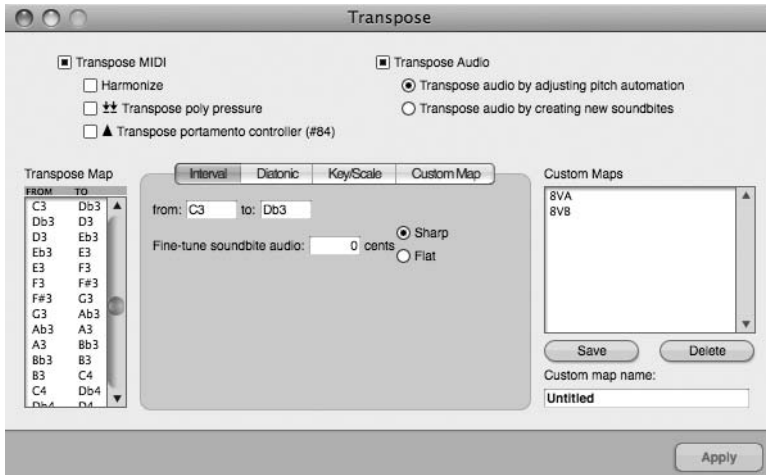
### ***The Transpose Command***

The Transpose command, shown in Figure 13.20, allows you to transpose or pitch-shift selected MIDI data and soundbites (or portions of MIDI data and soundbites).

You can even simultaneously transpose MIDI and audio data selections together—allowing you, for example, to transpose an entire project that contains both MIDI and audio data. Keep in



**Figure 13.19** Set the Transpose settings for a soundbite from the Info Pane’s Transpose pop-up menu. The Use PureDSP Pitch Shift option is enabled by default.



**Figure 13.20** The Region menu’s Transpose command can be used to transpose both audio and MIDI data.

mind that the specific pitch-shifting algorithm used by the Transpose command to transpose audio will be determined by an individual soundbite’s Transpose setting.

To transpose the pitch of an audio file using the Transpose command:

1. Select the soundbite you want to transpose. Remember that portions of a soundbite can also be transposed. (Simply use the I-Beam tool to select a portion of the soundbite, as discussed in the “Selecting and Moving Audio” section of Chapter 10.)
2. Open the Transpose command by choosing Region > Transpose. You can also use the default keyboard shortcut Command+9.
3. Enable the Transpose Audio button and choose between the options Transpose Audio by Adjusting Pitch Automation (transposition will be based on any existing pitch automation for the soundbite—discussed in the “Pitch-Shifting Audio with Pitch Automation” tip a bit later in this chapter) and Transpose Audio by Creating New Soundbites (transposition will result in a new soundbite).



4. Select the Interval option. Keep in mind that soundbites can only be transposed when the Interval option is selected. Once the Interval option is chosen, the Transpose Audio options will become available.
5. In the From and To interval input fields (located in the center of the Transpose window), set the transpose interval. This interval will determine how much a soundbite is pitch-shifted. The actual notes you choose to enter do not matter; only the interval between the two pitches will be used to transpose the selection. For example, if you want to transpose a soundbite up a whole step, you could enter a value of C3 in the From input field and a value of D3 in the To input field. You could also enter the pitches of G4 and A4, respectively.
6. If necessary, use the Fine-Tune Audio options to adjust the transposition up or down by a number of cents. Keep in mind that there are 100 cents per half step (or semitone).
7. Once you have entered the necessary values, click the Apply button to confirm the change.

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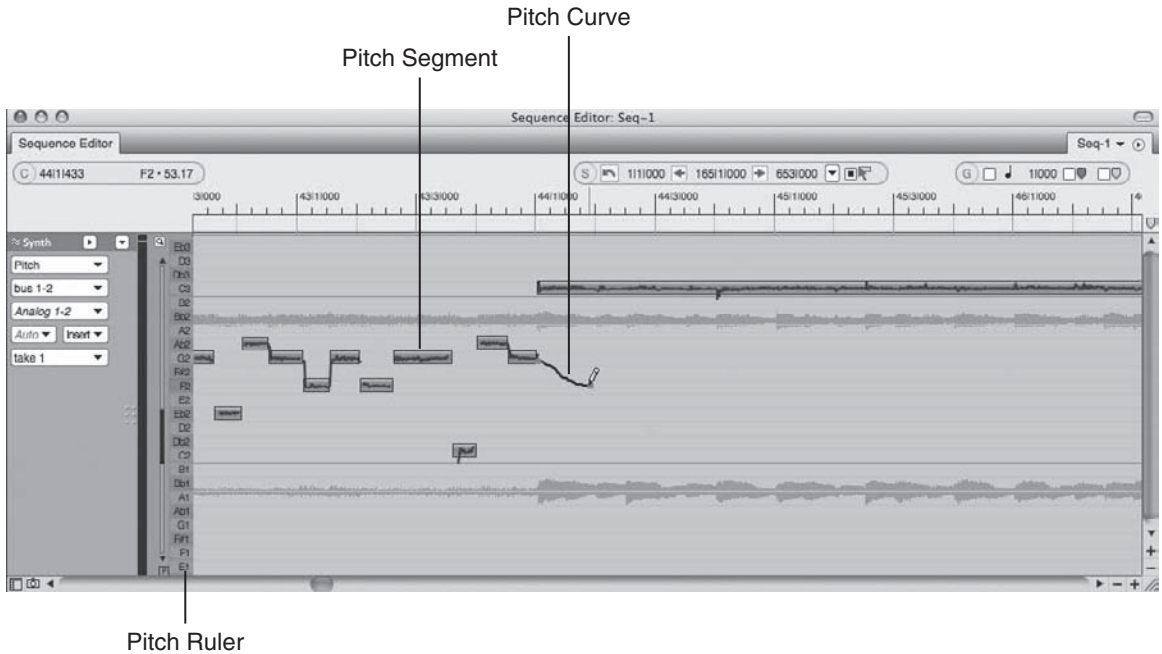
**Pitch-Shifting Audio with Pitch Automation** Like volume, pan, and bite volume (discussed in Chapter 12), the pitch of audio material can also be automated in Digital Performer (see Figure 13.21). Pitch automation is nondestructive and is output in real time during playback. In addition to providing a Pitch Ruler for reference, DP superimposes a pitch curve (a blue line) and a pitch segment (average root pitch of each note) over the audio waveform. You can perform a number of pitch-related actions, such as drawing in pitch corrections with the Pencil tool or slightly scaling the pitch curve of an entire section. As with bite volume, all pitch automation edits are linked to the soundbite and will travel with it if the soundbite is moved or copied. Pitch automation in Digital Performer is relatively simple but can be a very tedious and time-consuming process. For more detailed information, consult the Transposing Audio section of your DP User Manual.

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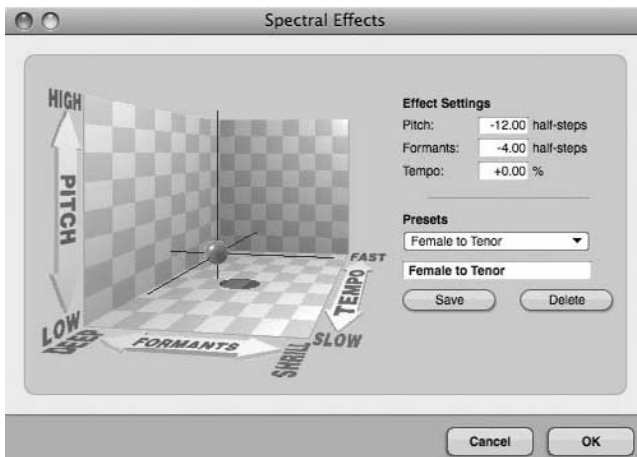
### ***The Spectral Effects Command***

Compared to the standard Transpose command, the Spectral Effects command, shown in Figure 13.22, offers a different approach to pitch-shifting audio. Besides being able to transpose an audio selection, the Spectral Effects command also lets you manipulate the formants and/or tempo of a sound—independent of the actual pitch of the audio file.

Keep in mind that the Spectral Effects command will ignore a soundbite's PureDSP settings (located in its Sound File Information window). A soundbite selected with the Spectral Effects command can always be processed, regardless of its PureDSP Settings.



**Figure 13.21** Pitch automation in DP is as simple as using the Pencil tool to draw in a pitch change or a pitch correction!



**Figure 13.22** The Spectral Effects command provides a 3D space for controlling the pitch, formants, and tempo of a sound source.

**What Are Formants?** *Formants* are the resonant frequencies present within a sound. These frequencies have fixed peaks that exist independently of the sound's fundamental pitch or note. This is what gives a sound its particular timbre and character. Think of two

instruments—say, an oboe and a trumpet—playing the exact same note of middle C. Even though both instruments are playing the same pitch, you can distinguish between the two instruments because of their unique timbres or formants. When working with the human voice, formants also determine the character of a voice and whether a voice sounds either male or female. Generally speaking, male voices have lower formants than female voices, vibrating at almost half the speed of their female counterparts. This is what makes the male voice sound lower than the female voice.

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**The Effect Settings Section.** The Spectral Effects command allows you to alter the pitch of a sound source independently of its formants and tempo. Mono sound sources work best when using this command. You can enter the desired values for the pitch, formants, and tempo directly in the Effect Settings input fields—or you can use the red globe within the 3D space. Located at the left of the Spectral Effects window, the 3D space shows the relationships between the pitch, formant, and tempo. Drag the red globe vertically to affect the pitch or horizontally to change the formant. Dragging the globe forward or backward in the space will change the tempo.

**Presets.** Digital Performer provides a number of gender-bending presets that you can access by clicking the Presets menu, as shown in Figure 13.23.



**Figure 13.23** Spectral Effects presets.

Presets such as Female to Tenor, Male to Soprano, Male to Lurch, and Human to Chipmunk are included. These presets automatically adjust the pitch, formants, and tempo values according to the preset you have selected. You can save your own custom preset by setting the necessary values, typing in the name of the new preset, and then clicking the Save button. To delete a preset, select it and click the Delete button.

**Applying the Spectral Effects Command.** Once you get used to the concept of formants, you'll find that the Spectral Effects command window is fairly straightforward.

To use the Spectral Effects command:

1. Select the soundbites you want to affect. Keep in mind that the Spectral Effects command works best with mono sound sources.
2. Choose Audio > Spectral Effects.
3. Once the Spectral Effects window is open, enter the desired pitch, formants, and tempo values in the Effects Settings input fields. Remember that you can also drag the 3D space's red globe to set these values.
4. If you would like to start with an existing preset, select it from the Presets menu.
5. Click OK to apply the changes.

---

**Start with a Preset** If you're new to the Spectral Effects window, try starting with one of the provided presets. Experiment to see how certain combinations of settings will change a sound. The 3D space can be especially useful in this situation because it allows you to actually "see" the settings and compare them to the altered sound.

---

## Time-Stretching Audio

Time-stretching allows you to change the duration of a soundbite without affecting its pitch. Digital Performer provides two different ways to time-stretch audio: graphically time-stretching soundbites by dragging with the hand cursor or applying the Region menu's Scale Time command to an audio selection.

---

**Time-Stretching and Tempo Commands** Digital Performer's various tempo-related commands (such as Set Soundbite Tempo) also time-stretch audio, but they will change the tempo of the soundbite in the process. Similarly, the Automatic Conversion option will also time-stretch audio files to force them to conform to a project's tempo, sample rate, and/or sample format—all without affecting the pitch of the audio. Refer to Chapter 12 for an explanation of tempo within DP and Chapter 7 for an explanation of the Automatic Conversion preferences.

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## Graphically Time-Stretching Audio

Time-stretching audio graphically within Digital Performer is a very simple process and can be accomplished within the Sequence Editor.

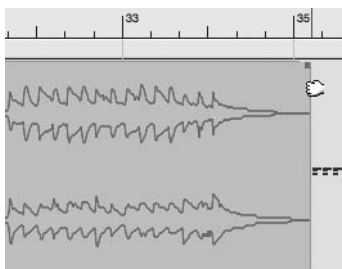
To graphically time-stretch audio in the Sequence Editor:

1. Open the Sequence Editor from the Project menu by choosing Project > Sequence. You can also use the default keyboard shortcut Shift+S.
2. Locate the soundbite you want to time-stretch and place the cursor at the left or right edge of the soundbite (just below the Fade handles). Once in position, you should see the cursor change to the Hand tool, as shown in Figure 13.24.



**Figure 13.24** Position the cursor over a soundbite's title bar to switch to the Hand tool.

3. Once the cursor switches to the Hand tool, click and drag the soundbite to time-stretch or time-compress it, as shown in Figure 13.25. How far you drag with the Hand tool will determine the duration of the time-stretched audio.



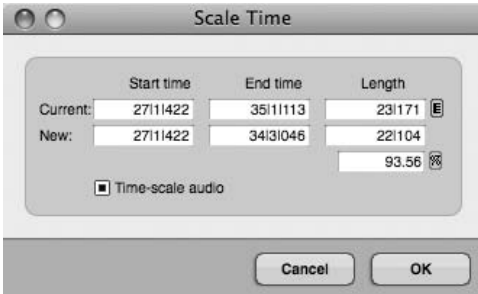
**Figure 13.25** Drag with the Hand tool to time-stretch a soundbite. Soundbites being time-stretched will appear with an outlined waveform display.

4. Release the mouse, and DP will begin time-stretching the audio.

Soundbites currently being processed will appear with their waveforms displayed as outlines. Once the time-stretching is completed, the soundbite will update and appear as a solid waveform display. Keep in mind that this is a constructive process, so DP will create a new time-stretched version of the soundbite to replace the original audio. DP will add a number to the end of the soundbite name (such as audio.1, audio.2, audio.3, and so on) to designate it as an alternative version.

## The Scale Time Command

The Scale Time command, shown in Figure 13.26, allows you to time-stretch (or time-scale) selected audio and/or MIDI data—even at the same time.



**Figure 13.26** The Scale Time command window.

The Scale Time command is divided into three separate columns that show the start, end, and length of the current selection (which is the first row showing the current time-range selection) and the new time-stretched selection (which is what the selection will be time-scaled to after you hit the OK button). Be aware that you cannot change the current selection values from within the Scale Time window. (These values will appear dimmed.) You must make a new time-range selection within an editor window in order to change the current selection values.

There are two settings that will impact whether audio can be time-stretched with the Scale Time command: the Scale Time command's Time-Scale Audio option and the soundbite's Time Compress/Expand setting (explained earlier). Both settings/options must be enabled in order for DP to time-stretch a soundbite. If the Time-Scale Audio option is turned off, DP will only change the start time of the selection, leaving the soundbite's current duration intact.

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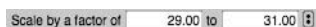
**Time Compress/Expand Is Enabled by Default** Keep in mind that the Time Compress/Expand setting (located in the Info Pane of the Soundbites window) is enabled on all soundbites by default, so you shouldn't have to worry about this PureDSP attribute under normal circumstances.

---

To time-stretch audio using the Scale Time command:

1. Start by selecting the soundbite you want to time-stretch.
2. Enter the desired value in the New Start Time, End Time, or Length column. If you only want to change the actual duration of the soundbite while preserving its start time, change the End Time or Length value. You'll notice that the End Time and Length input fields are linked together for greater flexibility.

3. You can also click the Percentage button, located below the New Length field, to change the input field from a percentage value to a scale factor (or ratio), as shown in Figure 13.27.



**Figure 13.27** Click the percentage button to toggle the values displayed in the Scale by a Factor Of input fields. This allows you to time-stretch audio by a specific ratio or scale factor.

4. Set the ratio for the time-stretching in the Scale by a Factor Of input fields.
5. Enable the Time-Scale Audio option and click OK.

## Mastering

As explained earlier in this chapter, the mastering process requires skill and experience to perform it correctly. An ideal situation would allow for your final mixes to be sent to a professional mastering engineer (of course, depending on your budget). There will be times, however, when you will need to master in Digital Performer. Many of DP's standard mixing and editing features (such as the master fader track, plug-in processing, the Waveform and Sequence Editors, and so on) can be used in the DP mastering process. Keep in mind that there really isn't a special way to configure a DP project for mastering. DP mastering methods and setups vary from user to user and project to project.

If you're new to the concept of mastering, you probably have a million questions, such as, "When should I EQ?" "Should I compress or limit my mix?" "How loud should I make my mastered mixes?" and "What is brickwall limiting?" Unfortunately, standard answers or step-by-step processes do not really exist. Every mix will be different, and experience will tell you what needs to be accomplished and what specific tools you can use to achieve the best results with the least amount of compromise.

A detailed tutorial of processing scenarios during the mastering stage is far beyond the scope of this book. This section will attempt to provide a very basic understanding of the procedures involved with music mastering and provide a few suggestions for mastering audio within DP. In addition, and if your budget allows, I highly recommend picking up a copy of the Bob Katz book *Mastering Audio: The Art and the Science* (Focal Press, 2007). This text—albeit advanced and sometimes perplexing—serves as a great guide for learning about all of the "mysterious" aspects of mastering. I keep my battered copy right next to my mixing console!

Before you dive into these concepts, I'll discuss some technical aspects of mastering in Digital Performer.

## The Master Fader

DP's master fader track, shown in Figure 13.28, is used to control the overall level of a specific bus or output assignment. Unlike audio and aux tracks, master faders do not have sends, record, or solo buttons.



**Figure 13.28** DP's master fader track.

You can use DP's master fader to apply processing or control the levels of an overall mix, either during the actual mixing process or during the mastering stage. The procedures for using a master fader are the same regardless of the type of situation you are working with.

To insert a master fader:

1. Create a master fader by choosing Project > Add Tracks > Master Fader Track. You can also use the default keyboard shortcut Shift+Control+M.



2. Assign the output of the master fader to the output of the other tracks in your project. For example, if the audio track you are working with is assigned to Analog 1-2, assign the master fader to Analog 1-2 as well.

---

**Setting Up the Master Fader** I suggest that the master fader be one of the first tracks you create in your Digital Performer project. When assigned to the mix output, this fader will allow you to control the overall volume of your entire mix. Because it also contains an Insert and Automation section, you can apply effects processing across your entire mix and even automate a fade-out of the song. In addition, you can use the master fader level meters to monitor the overall levels of your mix—ensuring that you do not overload the mix outputs, which can result in degraded audio integrity and unwanted digital distortion. Once the master fader is created, you can usually set it to unity gain and then forget about it. Usually, you must start working with this fader only when the mixing process begins.

---

## Mastering in DP

There is no set way to configure a project for mastering. Circumstances will dictate your specific setup and processing configurations. Following are just a few scenarios illustrating how you might set up your project for mastering in Digital Performer:

- You want to perform a quick “mastering” job on a demo you’ve been working on, so you insert a compressor (such as a UAD Fairchild or a Waves Renaissance Compressor) and a brickwall limiter (such as the MasterWorks Limiter or the Waves L3) on the master fader. You add some light mix bus compression (1.5:1 ratio with 1 to 3 dB of gain reduction) and turn the threshold down on the limiter to make your mix louder (3 to 6 dB of limiting). You bounce to disk and then burn a disc at 52 × speed.
- You need to master a number of songs for an album, so you import each song into DP at 24-bit/48-kHz, which will allow you to process the tracks at a high resolution. You work within the Waveform Editor and tweak the balance of each song by applying subtle amounts of EQ and/or compression, using Audio > Audio Plug-Ins, starting with the most important song. With the first track as your guide, you make any necessary adjustments to the remaining tracks. Next, you add brickwall limiting (and 16-bit dithering) to the track you started with. Using this track as a reference, you jump between the other songs as you limit them, adjusting the perceived loudness of each track in relation to one another. You also make any necessary head/tail edits and add quick fades to the beginning and end of each soundbite. You make sure to apply any fades at the last stage of the processing. You then perform real-time recordings of each edited and processed song or you bounce them all to disk. At last, you convert the sample rate of each 16-bit file to 44.1 kHz (explained in the “Sample Rate or Format Conversion” section of this chapter), export each processed track, and import the tracks into a CD burning program, such as Toast or

Jam. You set the track gaps as you listen back to each track, and then you burn a disk at  $4 \times$  speed.

- This scenario is similar to the previous one, except that you place all your import songs onto their own separate audio tracks within separate Chunks instead of working in the Waveform Editor. Each Chunk contains an audio track (which contains a song) and a master fader. You set up your workspace so that you can view all your Chunks at once, allowing you to quickly jump between and play back each song in your album. When you start processing your songs, you use the real-time inserts on each master fader instead of destructively processing in the Waveform Editor. This setup allows you greater flexibility because you can tweak the processing for each track in real time while jumping between the various songs. The processing is intensive because you have multiple Chunks with the same effects plug-ins duplicated multiple times across different tracks, but you have the RAM and processing speed to handle it.

## Processing Your Final Mix

When you think of the goal of music mastering, the first thing that may come to mind is making your mix louder. Anyone who has ever A/B'd (compared) one of his or her finished mixes with a professionally mastered mix knows exactly what I'm talking about. Other goals that may come to mind are balance, clarity, and punch. You can use processing in the mastering stage of music production to achieve these goals. Equalization, compression, volume automation, and brickwall limiting are some of the tools used by mastering engineers to shape a track or set of tracks. Regardless of the types of processing you choose to incorporate, here are a few tips to keep in mind:

- **Start subtly.** Even the subtlest of changes can be perceived when working on a two-channel mix (or a multichannel mix). Start with gentle processor settings and go from there.
- **A/B.** The best way to check whether you're making positive changes is to bypass the plug-in you're working with and compare the processed sound to the original mix.
- **Keep a reference track.** Keep a professionally mastered track nearby of the style of music you are working with so you can quickly reference it (or use it as a standard) as you master your own mix.

---

**The A/B Process** Even if you're not familiar with the term *A/B*, chances are that you've been using this process for a long time without knowing it. When you compare one file (or track, mix, setting, and so on) against another file, you are *A/Bing* the file. This applies even to situations in which you're comparing more than two things.

---

In addition to effects processing and editing, you'll also have to consider dither and sample rate conversion, which are necessary to get your high-resolution mix (for example, 24-bit/96-kHz)

into the 16-bit/44.1-kHz CD standard if you're going to be burning CDs. Dithering and sample rate conversion are discussed in the "Dither and Noise Shaping" and "Sample Rate or Format Conversion" sections of this chapter.

## Equalization

Tonal balance is one of the important components of a good mix. Too much bass and too many low-mid frequencies can make a song sound muffled or muddy. Too much energy in the high frequencies can have the opposite effect, making a mix sound thin and overly bright, while too much of the high-mid frequencies can make a mix shrill and bitey or even painful to listen to. In the ideal world, any obvious balance problems would be taken care of during the mix, or the track would be sent back for a re-mix if the mastering engineer requested it. There will be many times, however, when you will have to fix it in the mastering.

You can use equalization, or EQ, to subtly change the tone of a track or to surgically "fix" frequencies that stand out in a mix. Keep in mind that some EQ plug-ins will do a better job at certain tasks than others will. The MasterWorks EQ, shown in Figure 13.29, is an example of an EQ that can be used for both subtle and surgical corrections.

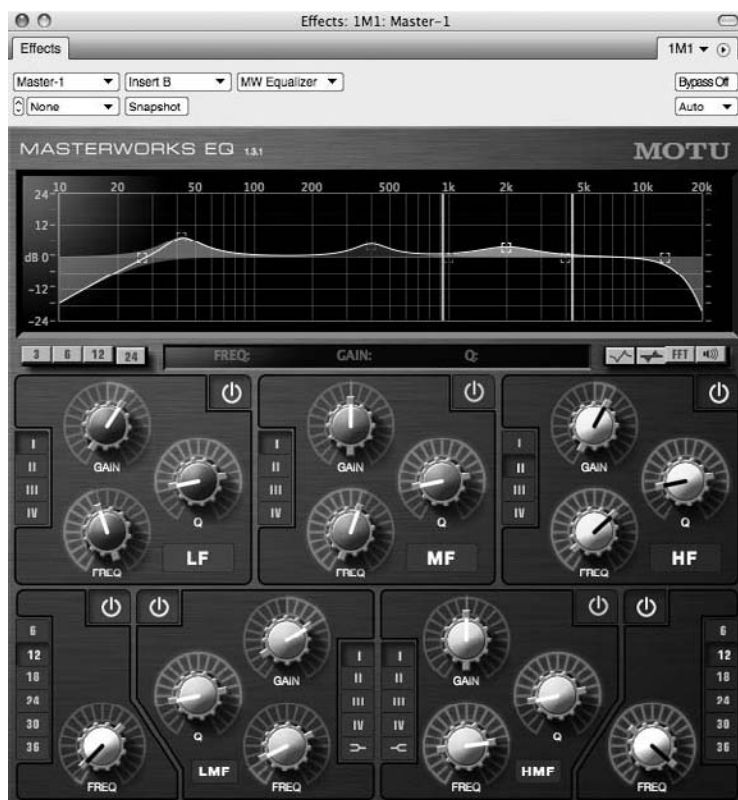


Figure 13.29 The MasterWorks EQ.

Here are a few thoughts and suggestions for using EQ in the mastering process, regardless of which type of EQ plug-ins you decide to use.

- **Low frequencies.** Extremely low frequencies contain a lot of energy, as you must turn them up louder compared to other frequencies in order to hear them. This can cause the low end to consume the precious headroom of a mix. Try inserting a low-cut filter at 40 Hz or below to control the low end of your mix. Because this type of low-frequency roll-off will affect other elements in your mix (not just the kick and bass), you may want to start the EQ shelf at 20 Hz and slowly raise the frequency, stopping when you hear the filter starting to adversely affect the mix.
- **EQ—surgery versus subtlety.** If you have specific frequencies that need to be tamed without affecting other surrounding frequencies, you can use an EQ band set to a narrow Q. Remember that the Q (or bandwidth) determines how many frequencies surrounding the center frequency will be affected—the higher the Q, the narrower the bandwidth, and vice versa. If you need to gently shape the sound, try using an EQ set to a wide band, or smaller Q.
- **Cause and effect.** Be aware that EQing not only affects the specific frequencies you're working with, but it also changes how other related frequencies (or instruments) are perceived in a mix. EQing the bass, for example, can cause the cymbals to sound less bright or can cause the vocal to lose presence. Always be aware of the EQ relationships of a mix before you start twisting those knobs.

### ***Compression versus Limiting***

When should you compress? When should you limit? Generally speaking, compressors are used to reduce the overall dynamic range of a signal by making the louder sounds quieter in relation to the softer sounds. Compressors can be used to also change the character of a signal's sound by strengthening the low- or mid-level passages. Limiters are basically compressors that are set to a harder ratio (the amount of output level change that results from a given input level change), such as 10:1 or 20:1. Limiters are typically used when you want to make a signal louder while maintaining transparency and without significantly changing the overall sound of a signal. Brickwall limiters are a special form of limiter that increases the apparent loudness of a sound in proportion to the amount of limiting that is applied. The lower the threshold (the level at which the limiter starts working), the louder the sound will be. The brickwall limiter is typically found at the very end of a mastering signal chain.

As you may already know, compressors and limiters come in many different flavors. Some compressor plug-ins are designed to handle broadband material with great results. Universal Audio's Fairchild and Waves' C4 Compressor (shown in Figure 13.30) are two such plug-ins.

**Multiband Compression.** DP's MasterWorks Compressor is also effective when working with mixed material, but it operates differently than a standard compressor. The MasterWorks



**Figure 13.30** Waves' C4 Compressor.

compressor, shown in Figure 13.31, is a multiband compressor. Multiband compression basically splits a signal into multiple frequency bands (typically three to four bands) and compresses them independently of one another, allowing you, for example, to compress only the low frequencies of a mix while leaving the high frequencies intact.

**Brickwall Limiting.** As discussed earlier, a brickwall limiter is a special type of limiter that makes a sound louder by limiting its transient peaks and raising the gain of the sound. Lower the limiter's threshold by 3 dB, and the gain of the signal will be raised proportionally by 3 dB. The limiter's threshold sets a ceiling for the sound that acts as a "brick wall," completely stopping any part of the signal from going over the specified threshold. Waves L3 Ultramaximizer, shown in Figure 13.32, is an example of a brickwall limiter.

Many brickwall limiting plug-ins also provide controls for dithering and noise shaping your high-resolution files from 24 bits to the 16-bit CD audio standard (explained in the next section). Use the dithering options only when the plug-in is the last step in your processing chain. Dither should always be applied at the very final stage of the mastering process.

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**Over-Limiting Your Mix!** As with any useful tool, applying too much limiting to a sound can have very negative effects on the audio quality. Besides the introduced harmonic distortion, excessively loud musical material can be fatiguing to the ear.

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Figure 13.31 Digital Performer's MasterWorks Compressor plug-in.

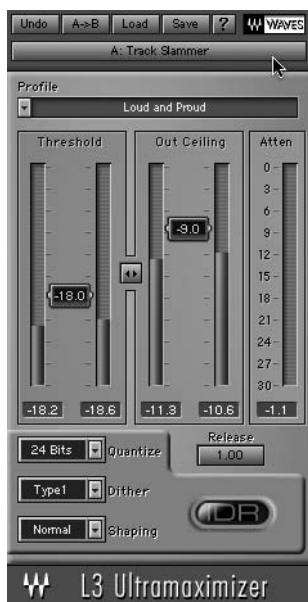


Figure 13.32 Waves L3 Ultramaximizer is an example of a brickwall limiter.

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**Compressing the Mix Bus with 2-Mix Compression** The *2-mix* is another name for your overall stereo mix. The *mix bus* refers to the bus or output that is used to sum the individual tracks in your mix down to two channels (or more) of audio. So when you hear the phrase *2-mix compression* or *mix-bus compression*, what people are referring to is the compression that is applied to your entire mix.

As with many audio engineering practices, there are many different schools of thought on mix-bus compression. Some feel that this type of compression should be saved for the mastering engineers, while others like the effect it has on their mixes.

If you're mixing and mastering your own tunes, however, you may find yourself using mix-bus compression along with other effects plug-ins—almost mastering your tunes during the mix process. As I mentioned earlier in this chapter, when and how you decide to approach mastering your mixes in DP is entirely up to you and will be determined by an indeterminate number of always varying factors.

---

### ***Dither and Noise Shaping***

A digital audio signal is described as a string of ones and zeros. In digital terms, the dynamic range of an audio signal is called *bit depth* (also referred to as the *sample format* or *resolution*). CDs use a 16-bit format, while DP internally operates at a resolution of 32-bit floating point. (See the “Bit-Depth Basics” note of Chapter 5 for more details.) Any time you reduce the bit depth of an audio file (such as when you are bouncing your mix to 16-bit/44.1-kHz to use in an audio CD), quantization distortion is introduced during the conversion process. *Dither* is the small amount of noise that is applied to a signal when its sample format is changed in order to reduce the amount of this quantization distortion. Since dithering actually adds noise (and raises the noise floor in the process), noise-shaping algorithms are usually employed to make this added noise less obvious (and more pleasant-sounding) to the listener.

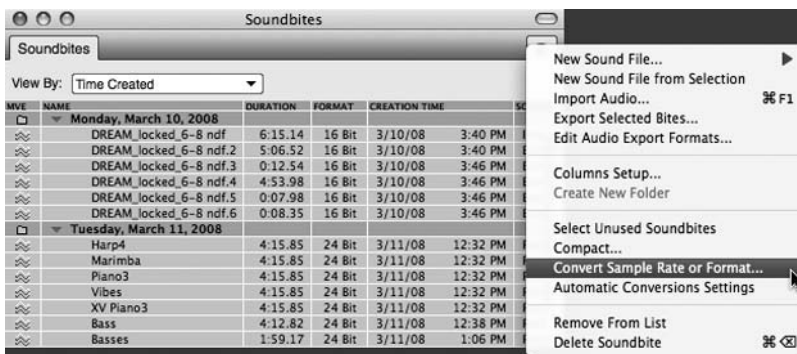
DP's MasterWorks Limiter (along with many other brickwall limiters) contains options for dithering and noise shaping your high-resolution signal to lower bit depths. You should always try to mix/master at the highest resolution possible to maintain the integrity of the sound, dithering and noise shaping at the final stage of the production process to bring your high-resolution audio files back into the 16-bit/44.1-kHz world of CDs.

If you plan to send your mixes off to be mastered by someone else, don't apply any dither or noise shaping to your audio! Simply keep your mix at the highest resolution possible and let the mastering engineer deal with this process. In addition, leave at least 2 to 3 dB of headroom on your master fader, and make sure it doesn't overload (go over digital 0) at any point in the mixdown process!

## Sample Rate or Format Conversion

In Digital Performer, you can change the sample rate or format (bit depth) of an audio file with DP's Convert Sample Rate or Format command, located in the mini-menu of the Soundbites window. Remember that standard CD audio operates at 44.1 kHz, so if your project is running at a higher rate (such as 48, 88.2, or 96 kHz), you'll need to "down-sample" your mixes when attempting to burn a CD. If convenience is a factor (suppose you just want to burn a quick demo of a song), you may be able to rely on your CD burning program to convert the sample rate for you. The results will vary, of course, depending on the sophistication of the program you are using.

To use DP's Convert Sample Rate or Format command, simply select the soundbite you want to convert from the Soundbite List and choose the Convert Sample Rate or Format command from the Soundbites window's mini-menu, shown in Figure 13.33. In the Audio File Conversion window, enter the new sample rate for the soundbite, choose the conversion quality, and then specify what happens to the soundbite after it is converted (shown in Figure 13.34).



**Figure 13.33** Use the Convert Sample Rate or Format command in the Soundbites window's mini-menu to change the sample rate or bit depth of an existing soundbite.

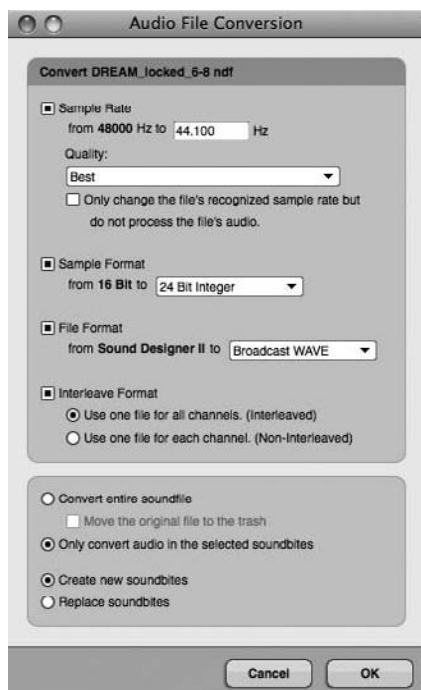
## Bouncing to Disk

Once you have mixed/mastered your project, you'll need to bounce your tracks to disk. The bounce-to-disk process basically takes multiple selected tracks and merges them together into a single track on your hard drive. Think of this as a mixdown process. Bouncing to disk is a constructive process, creating a new audio file while keeping your original tracks intact. There are two methods for bouncing to disk—using the Bounce to Disk command or using a real-time recording. Before you can use the Bounce to Disk command, you must first select the audio you want to bounce.

---

**Bouncing MIDI Tracks?** If you want to include your MIDI tracks in your final mix, there are times when you must convert them to audio first. If you're using MIDI tracks that are assigned to outboard MIDI sound modules or ReWire instruments, follow the procedures





**Figure 13.34** The Audio File Conversion window.

for recording MIDI tracks into audio tracks (explained in the “Recording MIDI Tracks into Audio Tracks: The Basics” tip in Chapter 9). If you’re running virtual instruments in real time, use the Audio menu’s Freeze Selected Tracks command to convert them to audio tracks before attempting a bounce. However, if you are taking advantage of DP’s new pre-gen feature (as discussed in Chapter 9’s “Pre-Rendered Instrument Tracks (MOTU’s Pre-Gen)” section), there is no need to convert them to audio first—go ahead and include them in your bounce! Although most MAS and AU plug-ins are compatible, be sure to verify that your MAS and AU plug-ins support this feature.

### ***The Bounce to Disk Command***

The Audio menu’s Bounce to Disk command, shown in Figure 13.35, provides several options for specifying the final format of your bounced audio file.

- **Format.** This menu, shown in Figure 13.36, allows you to specify the format for the bounce file. You can choose from a variety of formats or select Project Format if you want to use the current project’s settings as a basis for your bounce. You can also bounce files to a variety of different stereo-interleaved Core Audio formats supplied by Mac OS X.



Figure 13.35 The Bounce to Disk command.



Figure 13.36 The Bounce to Disk command's Format menu.

- **Channels.** This menu, shown in Figure 13.37, determines the channel format for the Standard Format (SD II) format option. Its options are:
  - **Mono (No Attenuation).** This option will create a mono sound file on your hard drive by summing together the left and right channels. This audio summing will result in an increased signal level of the file.

- **Mono (with 3.5 dB Attenuation).** This option creates a summed mono audio file, but compensates for the 3.5-dB increase that is a result of the mono-summing process.
- **Stereo.** Use this option to create a stereo file. If Interleaved is selected in the Format menu, an interleaved stereo file will be created. If Deinterleaved is selected in the Format menu, two separate mono files labeled with .L and .R extensions will be created.
- **Same as Source.** This option creates a file that has the same channelization as the output (or bundle) selected in the Source menu.



**Figure 13.37** The Channels menu provides options for specifying the channel format for DP's native non-interleaved SD II format.

- **Resolution.** The Resolution menu allows you to set the sample format (or bit depth) of the bounced file. Choices are 8-, 16-, 24-, and 32-bit floating point. Under normal circumstances, you'll probably want to choose the sample format that your project is already in (Project Default).
- **Import.** The Import menu determines what happens to the new file that is created as a result of the bounce-to-disk process. Choose Do Not Import if you only want to create the file on your hard drive. Use the Add to Soundbites Window option to add the bounced file to the current project's Soundbite List. Select Add to Sequence to create a new audio track in the current sequence that contains your bounced file.
- **Source.** Select the source for the audio bounce from this menu. For example, if you have your tracks all assigned to output Analog 1-2, choose Analog 1-2 from the drop-down menu.

- **File Name.** This is the name for the final bounce file. If needed, the appropriate extensions (such as .aiff and so on) will be automatically added to the newly created audio files.
- **Choose Folder.** This is the location for the new files that will be created during the audio bounce. By default, the current project's Audio Files folder will be selected. Click the Choose button to manually set a location for the bounced files.

To bounce an audio selection to disk:

1. Start by assigning all of the tracks you want to include in your bounce to the same output or bus pair.
2. Next, make a time-range selection in your sequence.
3. Select the soundbites you want to include in your bounce by Shift-clicking on the appropriate track names in the Tracks List.
4. Once the soundbites are selected, choose Audio > Bounce to Disk.
5. Make the desired Bounce to Disk settings (discussed earlier) and click OK.

Once you click OK, DP will begin bouncing the audio selection to disk. The Bouncing Selection to Disk progress window will appear and display the progress of the bounce (see Figure 13.38). In most situations, DP will bounce audio faster than real time. This really depends on the speed of your computer, the number of tracks, and the number of plug-ins that DP must process during the bounce.



**Figure 13.38** The Bouncing Selection to Disk progress window.

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**Bounce to Disk Is Not a Background Process** The bounce-to-disk process occurs in the foreground, so you will not be able to perform any other operations while DP is bouncing tracks to disk.

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### ***Bouncing Directly to an Audio CD or Disk Image***

You may have noticed two additional options in the Bounce to Disk window. Burn Audio CD and Audio CD Disk Image are new features that allow you to bounce selections directly to an

audio CD or disk image (see Figure 13.39). You can create a quick reference CD containing one track, or you can create a CD with multiple tracks (including track titles). In addition, you can define the pre-gap amounts (blank time between tracks) in the Set Gap Between Soundbites command in the Region menu.



**Figure 13.39** The Burn Audio CD option in the Bounce to Disk window allows you to bounce a selection directly to an audio CD!

The Base CD Tracks On menu allows you to specify the start of each track. Here you can choose Soundbites, Markers, or Soundbites and Markers. Once you have made your selection and pressed OK, the Bouncing Selection to Disk progress window will appear and display the progress of the bounce. When it is finished, a Burn Disc window will appear, asking you to insert a blank disc so the burning process can be completed (as shown in Figure 13.40). Naturally, this feature utilizes your built-in or installed disk burner, such as Apple's Superdrive. If you would like to bounce a selection to disk but burn your CD at a later time (or in a different CD burning program), simply choose Audio CD Disk Image (rather than Burn Audio CD) in the Format menu. This will create a disk image on your hard drive that you can burn at your convenience.



**Figure 13.40** A Burn Disc window appears after the Bounce Selection to Disk progress window has finished.

### ***Real-Time Recording (Printing Your Mix)***

Real-time recording is very similar to our recording audio discussion in Chapter 7. Instead of using the Bounce to Disk command to create a mixdown, selected tracks are routed to a new audio track within DP and recorded in real time. If you have virtual instrument tracks in your session and you don't want to freeze each track, then use the real-time recording process, which

will create a new track of your entire mix that also includes the audio outputs of your virtual instruments.

To perform a real-time recording of your entire mix:

1. Start by changing the output assignments of the tracks you want to include in the real-time recording to a new bus (for example, Bus 1-2). Don't forget to include any aux tracks that are being used to monitor MIDI tracks!
2. Create a new stereo audio track and assign its input to Bus 1-2. (Remember to name it accordingly, such as Rough Mix or Final Mix 1.)
3. Arm the track and begin recording. Use the Audio Monitor or Meter Bridge to verify the signal and its levels (as discussed in the "Audio Monitor Window" and "The Meter Bridge Window" sections in Chapter 7).
4. Look for the new audio file in the Soundbites window when the recording process is finished.

## Exporting Audio

DP's Export Selected Bites command, located in the Soundbites window mini-menu, allows you to export existing soundbites to a variety of different file formats. This command is different than the Audio menu's Bounce to Disk command, which creates new soundbites from selected tracks. Use the Export Selected Bites command to open the Export Soundbite window, shown in Figure 13.41, to export soundbites selected within the Soundbites window to a different file format or hard drive location.



**Figure 13.41** The Export Selected Bites command is used to open the Export Soundbite window in order to export selected soundbites to different file formats.

## Exporting and Bouncing to the MP3 Format

Digital Performer can export or bounce to disk in the MP3 format—simply choose the MP3 option when bouncing or exporting audio files to disk. Before you can begin using this feature, however, you must install the LAME MP3 codec, which you can find on the web. This open-source MP3 encoder does not come bundled with DP and will not be installed during the Digital Performer installation process.

### ***LAME Framework***

There are many different sites from which you can download this codec. Simply perform a web search for the Mac OS X-compatible version of the LAME codec (or the LAME framework) and download it to your computer. Once it's downloaded, place the LAME framework file in the System > Library > Frameworks folder.

When the LAME framework is installed and your computer is restarted, the LAME MP3 option will become available in both the Bounce to Disk and the Export Selected Bites commands.

### ***Converting to AAC with iTunes***

If you don't want to use Digital Performer to export to MP3, or you would rather convert your mix to the AAC format instead, you can use Apple's free iTunes music player. Keep in mind that the audio file must be in a supported iTunes format: MPEG-4, AIFF, WAV, MP3, or AAC.

To convert an audio file to the AAC format with iTunes:

1. First, drop your bounced mix into the iTunes window to import your song into iTunes.
2. Once it is imported, highlight the track in the list of your iTunes tracks.
3. Select Create AAC Version from the Advanced menu.
4. iTunes will create a new audio file in the AAC format. Once created, the audio file will appear in the list and in the iTunes Library.

## Summary

Processing and mastering are especially intricate and complex music production processes. Digital Performer contains many specialized tools to help you with these types of work—from the MasterWorks Limiter to the comprehensive Bounce to Disk and Export features. It takes a lot of time and training to obtain the proper skills and experience necessary to perform these jobs well. If you're new to the processes discussed in this chapter, fear not—practice makes perfect. For those users who are already working in these fields, you'll find that DP contains a wealth of valuable tools and feature sets that will allow you to perform many of these complex tasks with relative ease.

# 14

## Music Notation

**M**usic notation is a visual language and, like any language, it takes time to develop a full understanding of how to read and write it. To create a notated score or part, you do not need to be an expert in music theory; however, familiarizing yourself with notation methods and associated terms (for example, staves and brackets, margins, clefs, ledgers, codas, alternate endings and repeats, accidentals, and so on) will definitely accelerate your mastery of this comprehensive process.

Although you won't find Digital Performer's notation features to be as sophisticated or extensive as state-of-the-art notation programs, such as Sibelius or MakeMusic's Finale, you can still create competent and effective-looking scores and parts. In DP, MIDI tracks can be viewed as standard music notation within the Notation and QuickScribe Editor windows. The Notation Editor displays a single MIDI track as a scrolling grand staff, while the more accommodating QuickScribe Editor displays single MIDI tracks as notation or multiple MIDI tracks as full scores. In this chapter, I will introduce you to the basic notation options provided within the QuickScribe Editor. For a look at Digital Performer's more advanced notation features, such as score arranging, transcription, markers, and time-anchored text, consult the "Notation Editor" and "QuickScribe Editor" chapters of your DP User Manual.

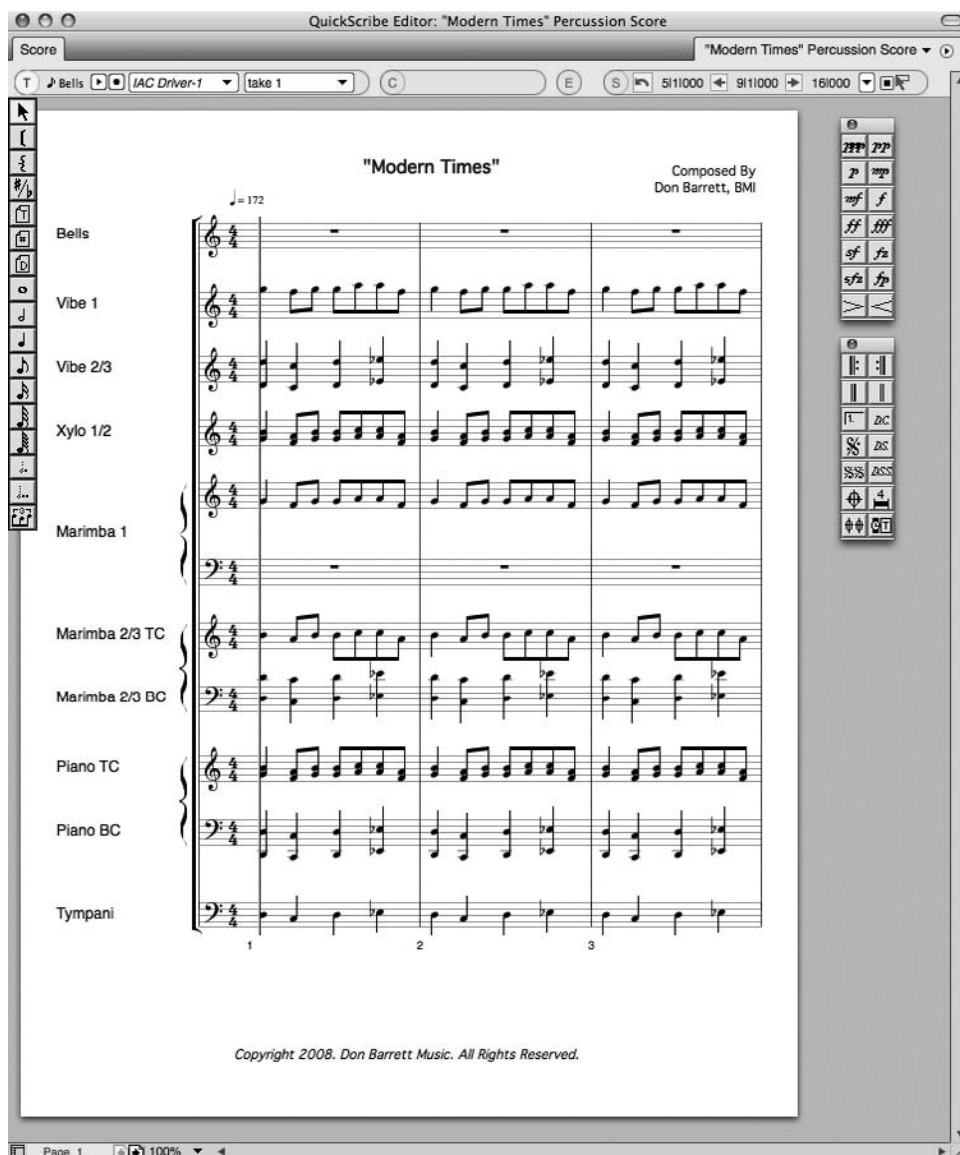
Here are some of the topics covered in this chapter:

- How to customize a score or an individual track
- How to use the QuickScribe Editor's Tool and Dynamics palettes
- How to insert key, meter, and tempo changes
- How to insert dynamic symbols
- How to print a score

### The QuickScribe Editor

The QuickScribe Editor, shown in Figure 14.1, is similar to the standard Notation Editor, but it offers more advanced features for greater control over the way notes are displayed within a part (a single track) or a score (multiple tracks).





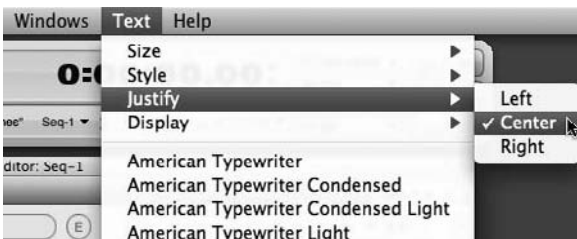
**Figure 14.1** The QuickScribe Editor's various tool palettes and advanced features offer greater control over the notation of individual parts and scores than the standard Notation Editor does.

Unlike the Notation Editor, the QuickScribe Editor provides a Tool palette from which you can choose specific note values when inserting notes and arrangement tools for controlling brackets and braces. It also offers tools for changing the spelling of accidentals, as well as inserting text, page numbers, and the current date. In addition, the QuickScribe Editor provides mini-menu options for customizing the look of individual parts and entire scores (see Figure 14.2), along



**Figure 14.2** The Options submenu in the QuickScribe's mini-menu provides various options for controlling the look of individual parts and scores, how the transcription engine handles MIDI data, and the overall length of a score.

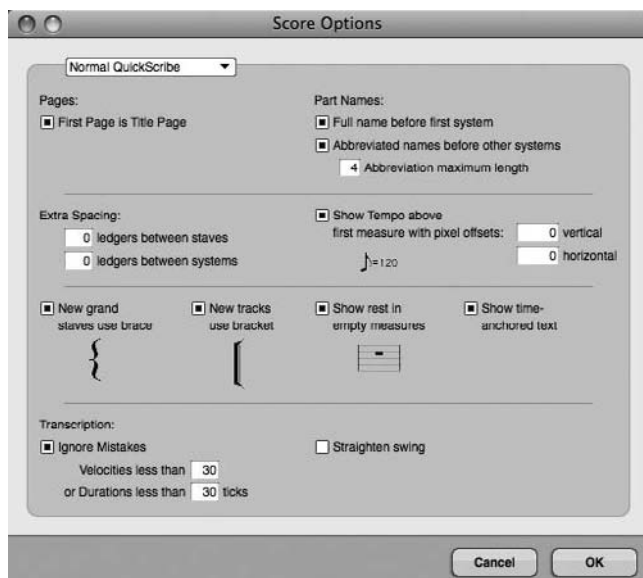
with the ability to display film cues to assist film composers in the film-scoring process. Once the QuickScribe Editor is open, a specialized Text menu will appear between Digital Performer's Windows and Help menus, as shown in Figure 14.3.



**Figure 14.3** The Text menu in DP's title bar is only visible when the QuickScribe Editor is open.

## Customizing the Appearance of a Score

The Score Options window, shown in Figure 14.4, contains various choices for controlling how a score's different elements are displayed. Instead of simply providing a list of the various options contained in the Score Options window, I've decided to explain many of the important options in the context of the score creation process.



**Figure 14.4** The Score Options window.

### ***The Different QuickScribe Views***

Digital Performer allows you to view your QuickScribe scores in three different ways: the Normal QuickScribe view, the QuickScribe + Film Cues view, and the Film Cues Only view. Each view maintains its own set of independent QuickScribe options. Some windows in particular (such as the Score Options, Marker Options, Measure Numbers, and Measure Spacing Options windows) provide a QuickScribe View pop-up menu so you can specify the particular QuickScribe view.

### ***The Title Page***

A score's title page is typically different than its normal body pages. In addition to the title (which may or may not appear within the body pages), other text elements, such as subtitles, composer credits, lyrics, and copyright notices, may appear on this page. Digital Performer provides tools for adding text, as well as the ability to adjust the system margins of the page to make room for these extra elements.

To customize the title page of a score:

1. Open the Score Options window by choosing Options > Score Options from the QuickScribe Editor's mini-menu.
2. Click the First Page Is Title Page option. This will allow you to format the first page of the score differently from the other score pages. You can even adjust the system margins on the title page separately from the body pages.

3. Click the Full Name before First System option to display the full name of an instrument at the beginning of the score. Instrument names are based on individual track names, so you may need to go back and rename your tracks accordingly.
4. If you would like all other instances of the instrument's name to be abbreviated, click the Abbreviated Names before Other Systems option. Next, specify the number of letters to be used in the abbreviations by typing a number in the Abbreviation Maximum Length field.
5. If you would like the tempo displayed at the beginning of the score, enable the Show Tempo above First Measure option.
6. Click OK to confirm the changes.
7. Now enter the title of the page by choosing the Text tool from the QuickScribe Tool palette (see Figure 14.5).
8. With the Text tool enabled, draw a text box at the top of the title page, as shown in Figure 14.6.
9. Set the text attributes (for example, the font, size, and justification) from the Text menu.
10. From the Display submenu, choose Both Title & Body Pages (see Figure 14.7). This will place the title of the score throughout each page of the score. If you only want the title to appear on the title page, however, choose Title Page Only.
11. Once you have specified the text attributes, type the desired text.
12. Click outside the text box to confirm the entry.

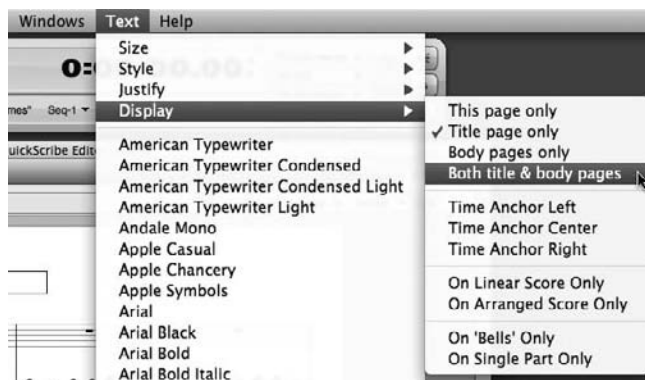
When you are working with text at the top of the title page, you may find that you do not have enough room to enter other text elements, such as the subtitle, composer, orchestrator, and so



**Figure 14.5** The QuickScribe Tool palette's Text tool.



**Figure 14.6** Click and drag with the Text tool to draw a text box.



**Figure 14.7** The Text menu's Display submenu provides options for how and where selected text will appear within a score.

on. Some modern scores may even contain the lyrics for a song on the title page, before the actual score begins. To get around the space limitations, DP allows you to move the system margins to make as much room at the top and bottom of your title page as you need to accommodate all your text elements.

To adjust the title page's system margins to accommodate additional text elements:

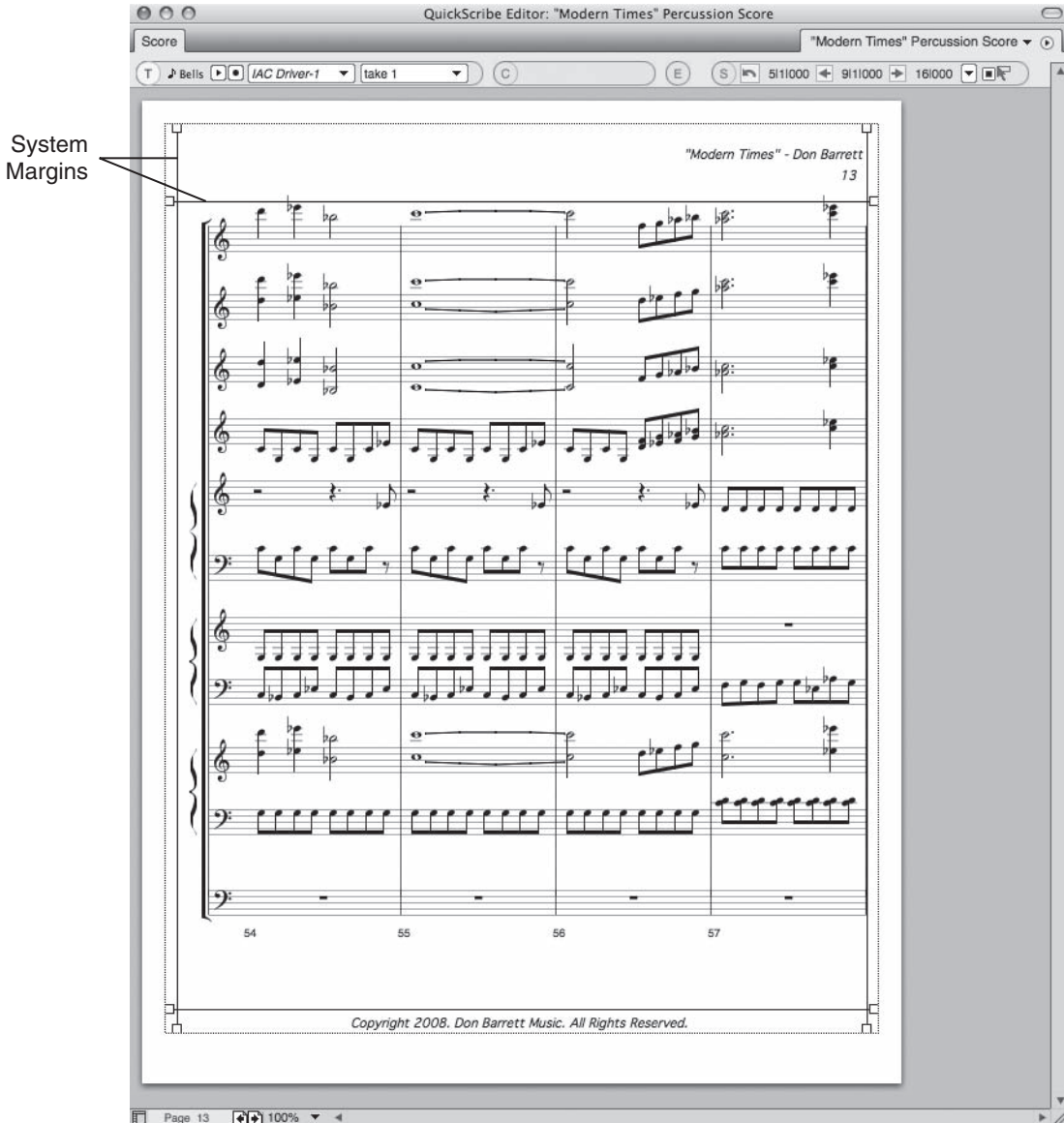
1. With the title page showing, choose Show System Margins from the QuickScribe Editor's mini-menu. The title page will update to display the system margins for the page (see Figure 14.8). Make sure the First Page Is Title Page option is still enabled in the Score Options window (explained earlier). If it is turned off, you will affect all pages within the score!
2. Drag the top horizontal margin toward the middle of the page. The actual music staves will move toward the bottom of the title page. How far you drag the margin depends on how much space above the first staves you need for text.

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**Adjusting Title Page Margins** The staves within the title page (as well as in body pages) will automatically adjust their locations to accommodate the new margin locations, moving to Page 2 of the score if necessary.

---

3. If you want to include text elements—such as copyright notices and so on—at the bottom of the title page, simply drag the lower horizontal margin toward the top of the title page.



**Figure 14.8** Enable the mini-menu's Show System Margins option to display a page's system margins.

4. When you are finished adjusting the margins, click the Show System Margins option again to hide them.
5. Enable the Text tool and add any additional text elements as needed. Keep in mind that the QuickScribe Tool palette will not be available when the mini-menu's Show System Margins option is turned on.

## Body Pages

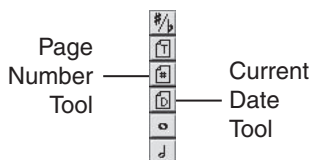
You can also customize body pages to include common text elements that appear on every page. If the title appears within the body pages, for example, it is sometimes displayed with a smaller font and in a different location than on the title page. You can also adjust system margins for the body pages to accommodate any additional text elements.

To add common text elements that appear on all body pages:

1. Begin by adjusting the system margins on the first body page (Page 2 of the score) to make room for the new text you will be adding. You can choose any body page to work with, because changes will be global—that is, they will affect all body pages in the score.
2. Once you have adjusted the system margins, enable the Text tool from the QuickScribe Tool palette.
3. Click and drag at the desired location to create a text box.
4. Set the text attributes (such as font, size, and justification) from the Text menu, then enter the text.
5. In the Text menu's Display submenu, be sure to choose Body Pages Only if you want the text to appear on every body page in the score.

## Inserting Page Numbers and the Current Date

You can insert page numbers and the current date into a score using the Page Number tool and the Current Date tool, as shown in Figure 14.9.



**Figure 14.9** The QuickScribe Tool palette's Page Number tool and Current Date tool.

To add page numbers throughout an entire score:

1. Select the Page Number tool from the QuickScribe Tool palette.
2. Click at the desired location to insert a page number. Once a page number is inserted, the Page Number tool will revert to the QuickScribe Arrow tool. In addition, DP will automatically place the correct number on the page and set its Display property to show the page numbers on both the title and body pages.
3. With the page number still selected, set its other text attributes (such as size, font, and justification) from the Text menu.

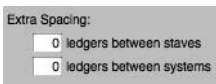
4. When you are satisfied with the text formatting, click anywhere outside the page number box to deselect it.

To insert the current date:

1. Select the Current Date tool from the QuickScribe Tool palette.
2. Click at the desired location to insert the current date, which is set by the Mac OS. Like the Page Number tool, the Current Date tool will automatically revert to the QuickScribe Arrow tool once the current date is inserted.
3. With the current date still selected, set the other text attributes (such as size, font, and justification) from the Text menu. The Display property will automatically be set to Title Page Only.
4. When you are satisfied with the text formatting, click anywhere outside the current date box to deselect it.

### ***Ledger Spacing between Staves and Staff Systems***

Within the QuickScribe Editor, single tracks are displayed as individual staves, while multiple tracks are displayed as a grouped-staff system. The Score Options command's Extra Spacing section allows you to adjust the spacing between a score's staves and staff systems, as shown in Figure 14.10. This will allow you, for example, to make room for dynamic markings, lyrics, or a track's extended ledger lines, which will help you create a less cluttered, easily legible score. These settings are global and will affect all staves and staff systems within a score.



**Figure 14.10** You can adjust the spacing between a score's staves and staff system from the Score Options command's Extra Spacing section.

In addition to affecting the global spacing of staves and staff systems, you can also change the ledger line spacing for individual tracks from the Track Options window (explained later in the "Inter-Staff Spacing" section of this chapter).

### ***Staff Bracket/Brace Options and Tools***

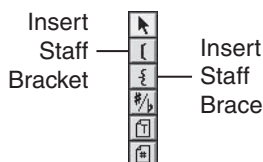
Digital Performer provides different options for controlling how staff brackets and braces are displayed within a score. The Score Options command lets you choose whether a bracket or a brace will be used when a new track is created, as shown in Figure 14.11. You can change the type of staff that a specific track is using—for example, set a MIDI piano track to a grand staff—from the Track Options window, or you can manually change a track's bracket or brace setting





**Figure 14.11** The Score Options command's staff brackets and staff systems options are used to determine whether a bracket or a brace will be used when a new track is created.

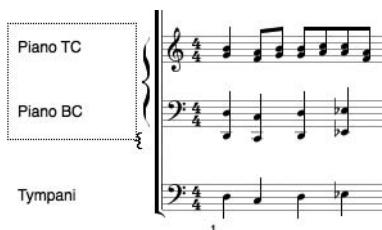
with the QuickScribe Tool palette's Insert Staff Bracket or Insert Staff Brace tools, shown in Figure 14.12.



**Figure 14.12** The QuickScribe Tool palette's Insert Staff Bracket tool (top) and Insert Staff Brace tool (bottom).

To manually insert, delete, or change the bracket setting for a track:

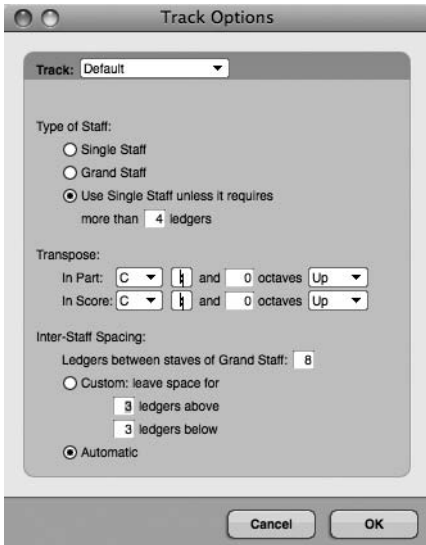
1. Select the Insert Staff Bracket or Insert Staff Brace tool from the QuickScribe Tool palette.
2. Once the tool is enabled, draw a box around the name of a track or tracks within the QuickScribe Editor that you want to affect, as shown in Figure 14.13.
3. The staff bracket or staff brace will be inserted or removed when you release the mouse.



**Figure 14.13** In this example, the Insert Staff Brace tool is used to remove the piano track's staff bracket so that it can be replaced with a staff brace.

## Customizing the Appearance of an Individual Track

The mini-menu's Track Options window, shown in Figure 14.14, allows you to set the appearance of a score on a track-by-track basis. Options for setting the staff type and clef (treble, bass, grand, alto, or tenor), part and score transposition settings, as well as inter-staff ledger settings, can be adjusted for individual tracks.



**Figure 14.14** The mini-menu's Track Options window provides options for controlling the appearance of individual tracks.

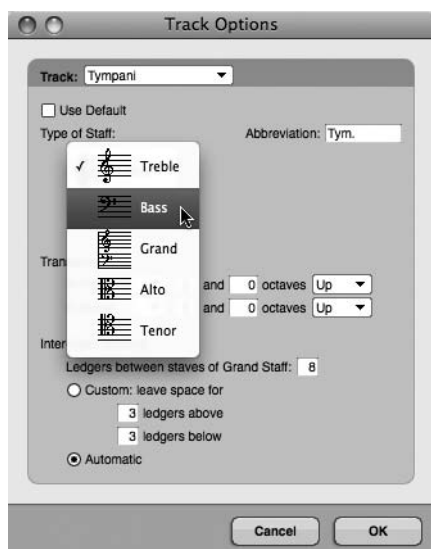
### ***Staff Types and Clefs***

The Track Options window's Type of Staff menu, shown in Figure 14.15, provides a list of available staves and clefs that can be used within a DP score. This menu is only visible when an individual track is selected from the Track menu and the Use Default option for the selected track is disabled.

To set the staff type for an individual track:

1. Choose Options > Track Options from the QuickScribe Editor's mini-menu.
2. Select the desired track from the Track drop-down menu.
3. If needed, click the Use Default button to turn off the default settings. Once the default settings are disabled, individual track options will become available.
4. Next, click the Type of Staff drop-down menu and choose the desired staff or clef from the list.
5. If you would like to change the staff settings for other tracks, repeat Steps 2 through 4.
6. When you are satisfied, click OK to confirm the changes.

The process of configuring QuickScribe Editor track settings is further simplified by the Use Default option. When an individual track is set to the Use Default option, its staff and clef settings are determined by the default track options. You can view and configure the default track options



**Figure 14.15** The Track Options window's Type of Staff menu lets you choose a specific staff or clef for individual tracks.

by choosing Default from the Track Options window's Track menu, as shown in Figure 14.16. Use this option to automatically assign the following specific Type of Staff settings to tracks in the QuickScribe Editor:

- **Single Staff.** Tracks set to the Use Default option will be displayed with a single staff. DP will automatically choose the type of clef (treble or bass) that uses the fewest ledger lines, depending on the MIDI data in the track.
- **Grand Staff.** Tracks set to the Use Default option will be displayed with a grand staff. DP automatically splits notes between the treble and bass staves, depending on the MIDI data in the track.
- **Use Single Staff Unless It Requires More Than \_\_\_ Ledgers.** This option will let DP automatically use a grand staff when tracks contain notes that exist above the specified number of ledger lines.



**Figure 14.16** The default track settings can be accessed by choosing Default from the Track Options window's Track menu.

## Transpose Settings

The Track Options Transpose options allow you to set a track's transposition settings differently when viewed as individual parts or as part of a score. This is extremely handy when you are creating full orchestral scores in which the conductor's score is written in concert pitch and individual instruments are written in their transposed keys (for example, clarinets scored in the key of Bb). Transposition settings are only visual and will not affect the actual MIDI data within a track.

## Inter-Staff Spacing

The Inter-Staff Spacing options determine how much space (that is, the number of ledger lines) is created above and below the staves for a specific track. A setting of Automatic lets DP automatically scale the space, depending on the data within a track.

---

**Where Is the Rest Tool?** While inserting notes into the QuickScribe Editor, you may have noticed that there is not a dedicated Rest tool. This is because DP automatically calculates any rests according to the type of notes that are inserted. However, if a measure is empty—it does not contain any MIDI data—you will need to choose whether to display these measures as blank measures or with whole rests. You can do this from the Score Options window of the mini-menu. Measures that do not contain any MIDI data can be left empty or set to automatically display a whole rest by enabling or disabling the Show Rests in Empty Measures option.

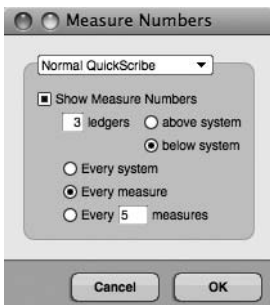
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## Working with Measures

The QuickScribe Editor provides powerful tools for controlling the appearance and visibility of measures within a score.

### Measure Numbers

The Measure Numbers command tells DP how to number measures within a score. Choose Options > Measure Numbers from the QuickScribe Editor's mini-menu to open the Measure Numbers window, shown in Figure 14.17.



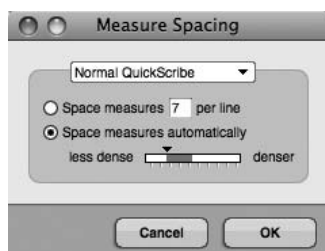
**Figure 14.17** The QuickScribe Editor's Measure Numbers window.

- **Show Measure Numbers.** Click this option to make measure numbers visible within a score.
- **\_\_\_ Ledgers.** These settings determine how many ledger lines above or below the staff the measure numbers will appear.
- **Every System.** Click this option to place measure numbers above or below the first measure of a staff system.
- **Every Measure.** Use this option to number every measure within a score.
- **Every \_\_\_ Measures.** Use this option to specify how often a measure number is placed in a score.

### Measure Spacing

Use the Measure Spacing command to determine how many measures will appear per staff line. You can set a specific number or let DP automatically adjust the size of measures according to the number of notes contained within a measure. Choose Options > Measure Spacing from the QuickScribe Editor's mini-menu to open the Measure Spacing window, shown in Figure 14.18.

- **Space Measures \_\_\_ per Line.** This option allows you to specify the exact number of measures that will appear within a staff line.
- **Space Measures Automatically.** This option allows DP to automatically control the number of measures that appear in a staff line, based on the value of the slider. Drag the slider to the left to create more space between notes in a measure. Drag the slider to the right to condense notes into a smaller space.



**Figure 14.18** The QuickScribe Editor's Measure Spacing window.

### The QuickScribe Tool Palette

The QuickScribe Editor's specialized notation tools are located in the QuickScribe Tool palette, shown in Figure 14.19. This palette is permanently docked to the top-left portion of the QuickScribe Editor. Its tools are, from top to bottom, as follows:

- **Pointer.** The Pointer tool is identical to the standard Tool palette's Arrow tool. Use this tool to make general selections within the QuickScribe Editor.



**Figure 14.19** The QuickScribe Tool palette provides specialized notation tools for inserting notes, arrangement brackets, and braces, as well as text and accidentals.

- **Insert Staff Bracket.** This tool allows you to insert or remove a staff bracket at the beginning of a single staff or a system staff (explained earlier).
- **Insert Staff Brace.** This tool allows you to insert or remove a staff brace at the beginning of a single staff or a system staff (explained earlier).
- **Change Enharmonic Spelling.** This tool allows you to change the spelling of accidentals. Keep in mind that you will need to insert the proper key changes within your score for notes to be spelled with their proper accidentals as they relate to their respective key signatures.
- **Text.** Use this tool to draw text boxes and insert text (explained earlier).
- **Page Number.** Use this tool to insert page numbers in a score. By default, inserting a page number on one page will automatically place page numbers on all pages of a score. DP handles the actual page-numbering process, so you don't have to worry about specifying the correct page number for a certain page. This tool will revert to the Pointer (Arrow) tool when a page number is inserted.
- **Current Date.** Use this tool to insert the current date in a score. This tool will revert to the Pointer (Arrow) tool when the current date is inserted. The current date is set by the Mac OS.
- **Note Durations.** The remaining tools allow you to choose specific note values when inserting notes directly into a score or part. Dot, double dot, and triplet tools are also provided for further accuracy.

## Inserting Notes

The process of inserting notes with the mouse is similar to that when using the Notation Editor. Standard edit commands, such as Cut, Copy, and Paste, also work in the QuickScribe Editor. To paste notes that have been cut or copied, click on the desired location with the Pointer tool and press Command+V. Region commands, such as Transpose, Quantize, and so on, can also be applied to selected notes.

To insert a note using the QuickScribe Tool palette:

1. Select the desired note value from the QuickScribe Tool palette.
2. Click with the mouse at the desired pitch location within the staff of a track. If you have Cursor Information enabled in Digital Performer > Preferences > Information Bar, you can use the Cursor Information fields of the Information Bar to help guide you to the exact beat location (see Figure 14.20). Drag up and down to change the pitch of a note.
3. If you want to add a dot, double dot, or triplet marking to the note, select the desired marking before choosing a note value from the QuickScribe Tool palette.



**Figure 14.20** The QuickScribe Editor's Cursor Information fields can help guide you as you enter notes in a staff. In this example, I am entering a quarter note with a pitch of A3 on Count 1 of Measure 4.

To change the value of an existing note:

1. Select the new duration from the QuickScribe Tool palette and click the desired note to change its value.
2. To change the duration of multiple notes to the same value, select the notes with the Pointer tool by Shift-clicking with the mouse or by dragging a selection box over them.
3. Once multiple notes have been selected, Command-click the new note duration in the QuickScribe Tool palette.

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**Temporarily Enabling the Pointer Tool** To temporarily enable the Pointer tool when working with other tools in the QuickScribe Tool palette, simply press and hold down the Option key. When you release the Option key, the Pointer will revert back to the tool that was previously selected.

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To delete an existing note from a part or score:

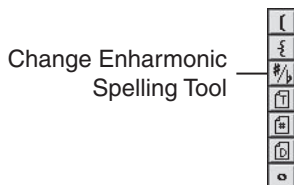
1. Select the note you want to affect by clicking with the Pointer tool. To select multiple notes, Shift-click or drag a selection box around the desired notes.
2. Press the Delete key.

### **Working with Accidentals**

*Accidentals* are flat or sharp notes that fall outside the notes of a specific scale or key signature. For example, the key of C does not contain any flat or sharp pitches, so if a flat or sharp note occurs within this natural scale, it is noted with an accidental (# or b). Digital Performer's transcription engine automatically controls the spelling of accidentals within a score, but there may be times when you need to change the way a particular note is spelled. By default, the note spellings are set to Auto. You can manually change a note spelling with the QuickScribe Tool palette's Change Enharmonic Spelling tool (the sharp/flat icon button).

To change the spelling of accidentals within a score:

1. Start by choosing the Change Enharmonic Spelling tool from the QuickScribe Tool palette (see Figure 14.21).
2. Click on a desired accidental and continue holding the mouse button down. A pop-up menu will appear with alternate spelling options.
3. Select the desired spelling from the list. Setting the spelling to Auto will allow DP's transcription engine to automatically choose a spelling for you.

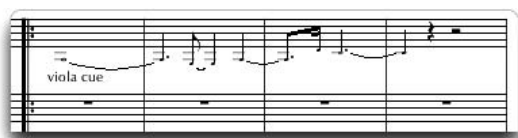


**Figure 14.21** Use the QuickScribe Tool palette's Change Enharmonic Spelling tool to change the spelling of accidentals within a score.



### ***Small Note Heads***

Certain musical elements, such as performance cues and grace notes, usually do not carry the same weight as normal notes within a score. To show the difference between normal notes, these musical elements are notated with smaller note heads, as shown in Figure 14.22.



**Figure 14.22** You can use small note heads to represent certain musical elements, such as performance cues and grace notes.

To change the size of note heads:

1. Select the note or notes you want to affect.
2. Choose Change Selected Notes To > Small/Normal Noteheads from the QuickScribe Editor's mini-menu.

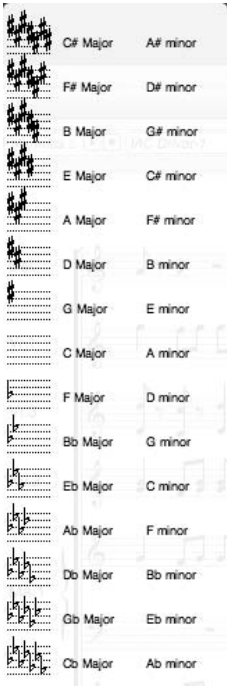
### **Inserting Key, Meter, and Tempo Changes**

Digital Performer allows you to insert key, meter, and tempo changes by clicking on a QuickScribe Editor bar line. Keep in mind that users of previous versions (prior to DP 4.5) will need to use the Modify Conductor Track command when inserting key, meter, and tempo changes in the QuickScribe Editor.

#### ***Inserting Key Changes***

You can make key changes directly in the QuickScribe Editor via a Key pop-up menu (shown in Figure 14.23), even if a key change doesn't exist. The procedures for inserting key changes are explained here.

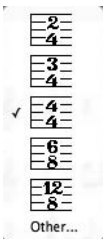
- **To modify an existing key signature:** Place the Pointer tool over the key signature. The pointer will change to the #/b cursor. Click on the key signature to display the Key Change pop-up menu and select a new key from the list.
- **To insert a key change where meter and key changes do not exist:** Press the Option key while place the Pointer tool over a bar line. Click to open the Key pop-up menu and insert a key change.
- **To insert a key change where a meter change already exists:** Place the Pointer tool to the left of the meter marking, a third of the way up from the bottom of the staff. Once in the correct position, the cursor will change to the #/b symbol. Click to open the Key pop-up menu.



**Figure 14.23** The QuickScribe Editor's Key pop-up menu.

### ***Inserting Meter Changes***

You can make meter changes in the QuickScribe Editor via a Meter pop-up menu (shown in Figure 14.24) by clicking directly on an existing meter marking or bar line. The QuickScribe Editor's Meter pop-up menu is explained here.



**Figure 14.24** The QuickScribe Editor's Meter pop-up menu.

- **To change the existing meter:** Place the Pointer tool over the existing meter marking. The cursor will change to the 4/4 cursor. Click on the existing meter marking to open the Meter pop-up menu and change the meter.

- **To add a new meter change after an existing key change:** Position the Pointer tool over the right edge of the key signature. The cursor will change to the 4/4 cursor. Click to open the Meter pop-up menu. Select a time signature from the list to change the meter.
- **To add a new meter change where key and meter changes do not exist:** Position the Pointer tool directly over a bar line to change the cursor to the 4/4 cursor. Click directly on the bar line to insert a new meter change.

### ***Inserting Tempo Changes***

You can make tempo changes in the QuickScribe Editor via the Set Tempo dialog box (shown in Figure 14.25) by clicking directly on a bar line. Be aware that tempo changes made in the QuickScribe Editor are placed in the Conductor track. The tempo source must be set to the Conductor track in order to be displayed in the QuickScribe Editor.



**Figure 14.25** The QuickScribe Editor's Set Tempo dialog box.

To insert a tempo change, while pressing the Control key, position the Pointer tool over a bar line to change the cursor to the bpm cursor. Click directly on the bar line to open the Set Tempo dialog box. Enter the new tempo and set the beat value if needed. Click OK to enter the new tempo change.

---

**Setting and Displaying Tempo in the QuickScribe Editor** Tempo changes that are inserted with the Set Tempo dialog box will continue on until the next tempo change. In addition, when the tempo source is set to the Conductor track and the tempo is displayed in the QuickTime Editor, only the initial tempo change located at the first measure will be visible. To display all tempo changes, you need to enable the Show Film Cues option from the QuickScribe Editor's mini-menu (discussed in the "Viewing Film Cues" section of Chapter 15, "Scoring to Picture.")

---

### **Inserting Dynamic Symbols**

The QuickScribe Editor's Dynamics palette, shown in Figure 14.26, lets you insert standard dynamic symbols into a score, including sforzandos and hairpin crescendos/decrescendos.



**Figure 14.26** The QuickScribe Editor's Dynamics palette allows you to insert standard dynamic symbols into a score. This palette is floating and can be positioned anywhere within your DP workspace.

To insert a dynamic symbol into a score:

1. Open the Dynamics palette by choosing Dynamics Palette from the QuickScribe Editor's mini-menu.
2. Choose the appropriate symbol from the palette.
3. Click at the desired score location to insert the symbol.

To move an existing dynamic symbol:

1. Enable the Pointer tool.
2. Click and drag the desired symbol to the new location.
3. To move dynamic symbols together with notes, select both with the Pointer tool and drag them to the desired location.

To insert hairpin crescendos and decrescendos:

1. Select the hairpin crescendo or decrescendo from the Dynamics palette.
2. Click at the desired score location to insert the symbol.
3. Drag the handles vertically or horizontally to adjust the angle or length of the symbol.

## Printing

Once you have formatted your individual parts and your overall score, you are ready to print them out. If you still need to work on the appearance of your manuscript pages, see the “Customizing the Appearance of a Score” and “Customizing the Appearance of an Individual Track” sections of this chapter.

To print individual parts:

1. Select the tracks you want to print by enabling them in the Track Selector List. Once the tracks are highlighted, they should all be visible within the QuickScribe Editor.

2. Choose Print Individual Parts from the QuickScribe Editor's mini-menu. All of the visible tracks will be printed as separate parts.

To save a part as a PDF document:

1. Select the track you want to turn into a PDF by enabling only that track in the Track Selector List. Only the part you want to work with should be visible within the QuickScribe Editor.
2. Press Command+P to open the Mac's Print window.
3. Click the Save as PDF button.
4. Give the part a name in the Save As column.
5. Choose the destination for the PDF document and click Save.

To print a score:

1. Select the tracks you want to include in the score by enabling them in the Track Selector List. Once the tracks are highlighted, they should all be visible within the QuickScribe Editor.
2. Press Command+P to open the Mac's Print window.
3. Set the print options as necessary and click the Print button.

To save a score as a PDF document:

1. Select the tracks you want to include in the score by enabling them in the Track Selector List. Once the tracks are highlighted, they should all be visible within the QuickScribe Editor.
2. Press Command+P to open the Mac's Print window.
3. Click the Save as PDF button.
4. Give the score a name in the Save As column.
5. Choose the destination for the PDF document and click Save.

## Summary

Digital Performer contains many features for working with musical notation, and many are beyond the scope of our discussion in this chapter. However, as with other editing windows in DP, it takes just a little practice to become comfortable with the capabilities of the

QuickScribe Editor. Though it is not entirely necessary, it is helpful to have some knowledge of music theory or music notation methods when you are creating a printed score or individual part. The basic steps covered in this chapter for generating a full score and individual parts from the MIDI tracks in your DP project provide a solid foundation on which you can further develop your knowledge and experience involving music notation.

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# 15

## Scoring to Picture

**T**he music-scoring process is the act of writing music for motion pictures—film, television, video games, Internet content, and other multimedia. In the past several years, Digital Performer has proven to be a dominant force in the music production of many blockbuster films and hit television series produced in Hollywood and around the world. In an industry full of erratic deadlines and constant revisions, film composers have long since determined that DP's versatile, intuitive, and straightforward nature helps make their scoring experiences more efficient, organized, and on target. In Digital Performer, you can import QuickTime movies directly into a project, providing movie playback that is perfectly synchronized to your audio and MIDI tracks (without the hassle of syncing an external video deck to your DP system). This approach provides a random-access digital picture, meaning you can easily locate any spot in the movie, advance or “scrub” forward or backward by frames, and create and display streamers, punches, and flutters that are superimposed on the movie image. Other sophisticated scoring features, such as the Find Tempo command and the Film Cues view, help with composing music cues within your Digital Performer project.

This chapter, however, will only make a small dent in the actual scoring process; it is a complex topic that is beyond the scope of this book. Like the previous chapter on music notation, familiarizing yourself with film-scoring methods and associated terms (such as SMPTE time code, frame rates, frame offsets, spotting notes, and full DV format) will help you to take full advantage of DP's powerful scoring features. I will be focusing on the technical aspects of how some of these features can be integrated into your music-scoring process.

Here is what you will learn in this chapter:

- How to import a QuickTime movie into a project
- How to output QuickTime video to an external monitor via FireWire
- How to work with DP's Film Cues feature
- How to set up a scoring project with markers and hits
- How to search for tempos that accommodate designated hit points



- How to insert DP's Film Scoring Events, such as streamers, punches, and flutters
- How to export a QuickTime movie that includes your soundtrack

## Music Scoring

Digital Performer provides a powerful environment for scoring music, giving you the ability to create hit points (or markers), calculate tempos, or even transmit synchronization signals to other systems. But before you can begin creating or setting your composition to picture, you must first have a movie to score. DP's Movie window supports the synchronized playback of QuickTime-formatted movies with your sequence's audio and MIDI tracks. You can, of course, sync Digital Performer to an external video deck or other playback medium, but in this section, I'll focus on the process of scoring to an imported QuickTime movie.

### Movie Window

Before you begin importing a QuickTime movie, make sure you have the latest version of QuickTime installed on your Mac. The QuickTime application is free and comes bundled and preinstalled on Mac OS X. If you are working with an older version of QuickTime, you can update it through OS X's Software Update or by visiting [www.apple.com/quicktime/download](http://www.apple.com/quicktime/download).

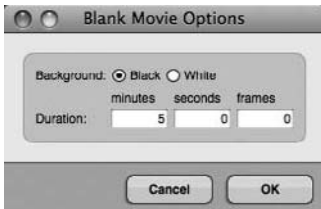
To open and close QuickTime movies in Digital Performer:

1. Choose Project > Movie or use the default keyboard shortcut Shift+V.
2. Select the movie you want to import and click the Open button.
3. Once a movie window is open, you can use the Open command in its mini-menu to switch to a different movie. You can only have one movie open at a time.
4. To close the movie but still keep it linked to your project, click the Movie window's red Close button. Digital Performer will remember movies that are closed in this fashion. Repeat Step 1 to reopen the previous movie.
5. To permanently close a movie, choose the mini-menu's Close command.

---

**Blank Movies?** When importing a movie, DP offers an option to create a blank movie for your project. This can be very useful when you need to create Film Scoring Events (discussed later, in the "Film Scoring Events" section of this chapter) or markers, but you have not received the actual movie. For example, suppose you are scoring a short commercial, and the music editor has provided all of the spotting notes and SMPTE time-code references for the picture regarding where the music begins and ends, where special FX will occur, and so on. Although you haven't received the actual picture from the production company (maybe the film editor is still making changes or adjustments), you can use the blank movie to get started.

When the picture finally arrives, your project is ready to seamlessly incorporate all of the Film Scoring Events into the finished or “picture-locked” movie. To create a blank movie, simply select **Project > Movie** and choose **Use Blank Movie**. The **Blank Movie Options** window will appear (as shown in Figure 15.1), allowing you to select a background and set the blank movie’s duration.



**Figure 15.1** The Blank Movie Options window allows you to choose a background and set the duration for a blank movie.

---

### ***The Movie’s Mini-Menu***

Once you have chosen a movie and opened the Movie window, you will have access to its various mini-menu commands and options (explained here).

- **Open Movie.** This option allows you to open a different movie. Use this option to close the existing movie and open a new one.
- **Open Blank Movie.** This option allows you to open a blank movie (discussed in the previous section).
- **Use Same Movie for All Sequences.** With this option enabled, all sequences in your project will use the same movie.
- **Use Black Background before/after Movie.** This option allows you to set a black background for your movie during the time periods before the picture starts and after the picture ends. This is useful if the tail of your score slightly overruns the last frame of the movie, or if you need to compose before the start of the movie.
- **Lock to Transport.** When selected, this option “locks” the movie to DP’s Transport (and vice versa). As you play, stop, or locate, the movie will slave to your actions. You can also use the controls at the bottom of the Movie window to control DP.
- **Close Movie.** This option permanently closes the Movie window (and “unlinks” it from your project).
- **Set Movie Start Time.** This command will open the Set Movie Start window, allowing you to set the SMPTE start time for the open movie.

- **Use Movie's Color Table.** If your movie contains a predetermined color table, enabling this option allows DP to use the color table in order to present truer colors.
- **Chase Graphical Edits.** This option will force the Movie window to follow any edits that you make in any of DP's editing windows, such as moving and trimming, allowing you to instantly see how your edits correspond to the picture you're working with.
- **Chase Numeric Edits.** This option will force the Movie window to follow numeric edits, such as clicking an event's numeric bar/beat location in the Information Bar of an editor window's title bar. When the event's parameter is highlighted for editing, you will see the movie jump to that location. Edit the event's location number, and the movie jumps to the new location, showing where the event will be placed in relation to the movie when you confirm the edit. Press the Return key, and the movie will jump back to the Counter location.
- **Half/Normal/Double Size.** Use these three options to quickly change the size of the window. The current size is indicated by a check mark.
- **Movie Floats on Top.** For those who do not have access to a second display monitor, select this option if you want your movie to always be visible (or to "float" on top of other windows).
- **Video Output.** This option allows you to send an opened DV-formatted movie out to a connected FireWire DV camera or FireWire video converter.
- **Video Output Playback Offset.** This command becomes visible when you enable FireWire video output. Choosing this command will open the Set Playback Offset window, allowing you to compensate for the inherent playback delay in FireWire video devices.
- **Copy Movie Audio to Sequence.** Choosing this command will copy the open movie's soundtrack to an audio track in the current sequence. This command will only be visible when a movie contains an audio track.

## Setup

Once you have opened your movie in DP, you'll need to configure your sequence's frame rate and start times to match that of your imported movie. You can even output the DV-formatted movie to a FireWire camera or FireWire converter in order to view the movie as a full-screen image on a standard television or video monitor.

**Frame Rate.** Digital Performer supports frame rates of 23.976, 24, 25, 29.97 Drop, 29.97 Non-Drop, and 30 frames per second. New to version 6, you can also select the Use Non-Standard Frame Rate option to designate non-standard frame rates such as 30 Drop, Legacy 29.97 Drop, and Legacy 29.97 Non-Drop. If you don't know the frame rate of your QuickTime movie, you can check its settings by opening it up in your Mac's QuickTime Player application.

To determine a movie's frame rate:

1. Open the movie in the QuickTime Player application.
2. Choose Window > Show Movie Inspector. You can also use the default keyboard shortcut Command+I. The frame rate, along with the movie's other attributes, will be displayed in the Movie Inspector window, as shown in Figure 15.2.

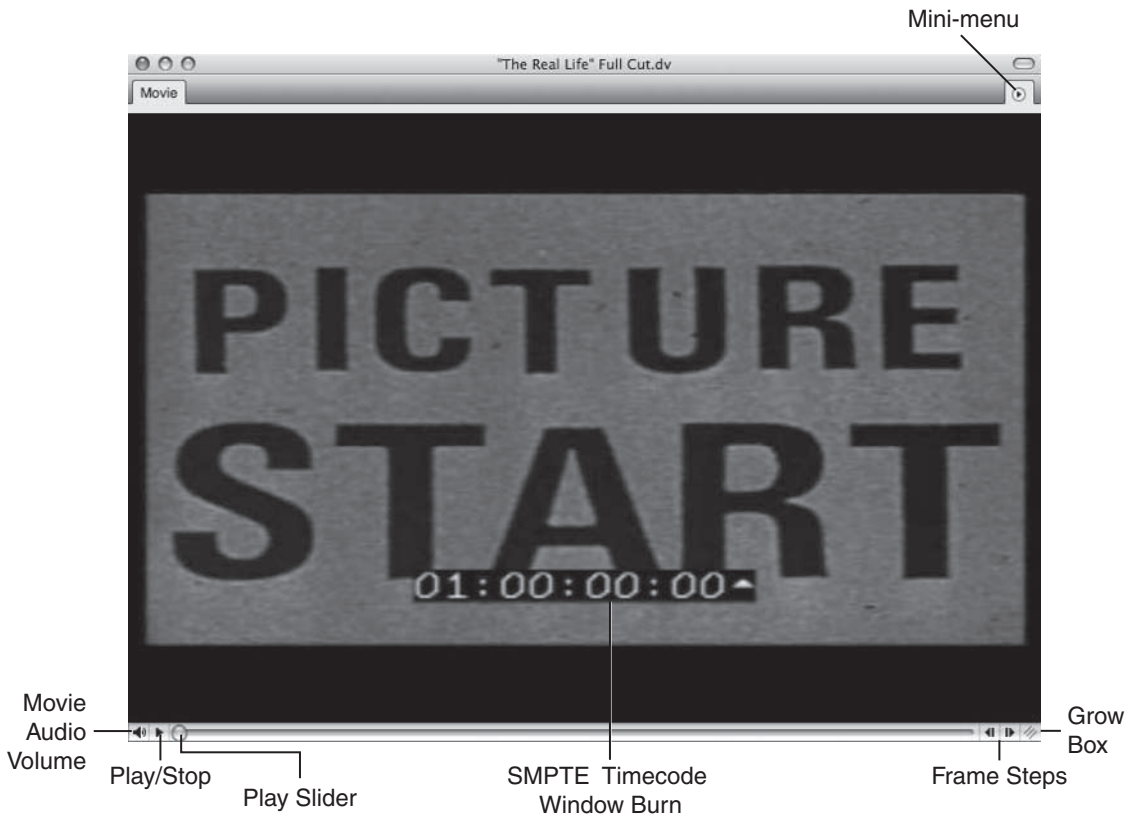


**Figure 15.2** QuickTime Pro's Movie Inspector window.

**Start Times.** Next, you'll need to set your QuickTime movie's start time and your sequence (or Chunk) start time so that the cues you are composing will be created in the proper locations. Doing so will ensure that you (the composer) and the post-production staff for the film are on the same page. Most likely your movie will have a visual superimposed SMPTE time code (called a *window burn*). If not, try a start time of 0:00:00:00. This may vary from project to project—and, remember, you can freely experiment with start times at any time while working in your session. When setting the start time of a sequence, however, you must determine whether your music will begin at the very beginning or at a later time of the movie.

To set the movie start time:

1. If your movie has a SMPTE time-code window burn, make sure the movie's Play slider is positioned to the far left (the very beginning of the movie) and make note of the time code at this position (see Figure 15.3).
2. Choose the Set Movie Start Time command from the Movie window's mini-menu.
3. Next, enter the correct start time from Step 1 (or 0:00:00:00 if there is no window burn) in the Set Movie Start window (shown in Figure 15.4).



**Figure 15.3** The various controls in the QuickTime Movie window.

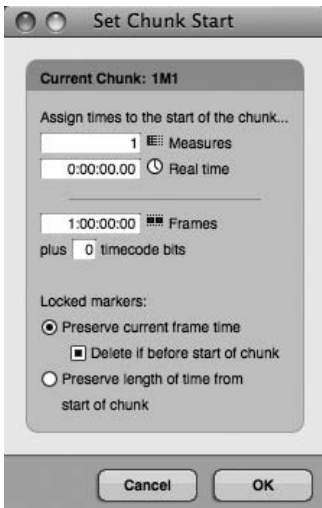


**Figure 15.4** The Set Movie Start window.

4. The Plus \_\_\_ Timecode Bits input field is used to offset the movie by a desired amount if the frame numbers in the window burn don't precisely line up with the frame numbers in the Counter of DP's Control Panel. It's helpful to know that there are 80 time-code bits in a single frame!

To set the sequence (or Chunk) start time when your music begins at the very beginning of the movie:

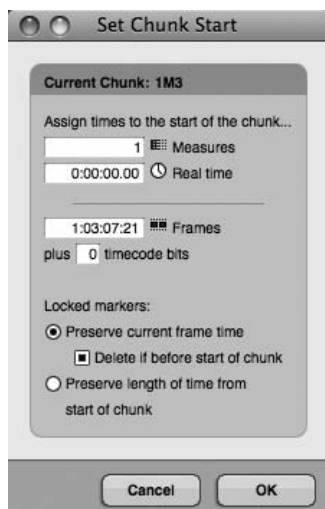
1. Use the Control Panel's Sequence menu to open the Set Chunk Start window, as shown in Figure 15.5.
2. In the Frames field, enter the start time for the sequence. (This should be the same number as the movie start time from Step 3 in the previous How-To section.)
3. If you have previously created locked markers within the sequence, use the Locked Markers options to specify what will happen to them when the Chunk start time is applied.



**Figure 15.5** The Set Chunk Start window.

To set the sequence (or Chunk) start time when your music begins later in the movie:

1. Use the Play slider in the Movie window to scroll to the point where the music will start, and make note of the SMPTE time code at this position (or refer to any of your spotting notes or cue information that may include music start times).
2. Use the Control Panel's Sequence menu to open the Set Chunk Start window.
3. In the Frames section of the Set Chunk Start window, enter the start time from Step 1. (See Figure 15.6.)
4. Again, if you have previously created locked markers within the sequence, you also need to specify what will happen to them when the Chunk start time is applied.
5. Once applied, the Play slider in the Movie window will automatically relocate to the sequence start time. For this sequence, DP's Transport controls will only take you back to this point in the movie. To return to the very beginning of the movie, simply use the Play slider in the Movie window to scroll back to the beginning.



**Figure 15.6** In this example, a different start time is entered for a sequence in which the music starts at a later time in the movie.

---

**Using the Same Movie for All Sequences** The Movie window's Use Same Movie for All Sequences option in its mini-menu is great for streamlining the film-scoring process. With this feature enabled, you could simply create a separate sequence (Chunk) for each piece of music (or cue) in your project, enter their respective start times (as discussed earlier), and then use the Sequence menu in the Tracks window or the Control Panel to quickly navigate between the different cues. This eliminates the need to create separate Digital Performer project files for each cue or having to repeatedly import the same movie file. Don't forget, the Copy Selection to New Sequence command is a great way to create separate sequences within a project by duplicating your "virtual" orchestration setup or making use of a fine-tuned template for each cue! Just make a selection in the timeline of the Tracks window and choose Copy Selection to New Sequence from the Sequence menu. The Create Chunk window will appear, allowing you to specify the parameters of the duplicated Chunk, such as sequence name and start time.

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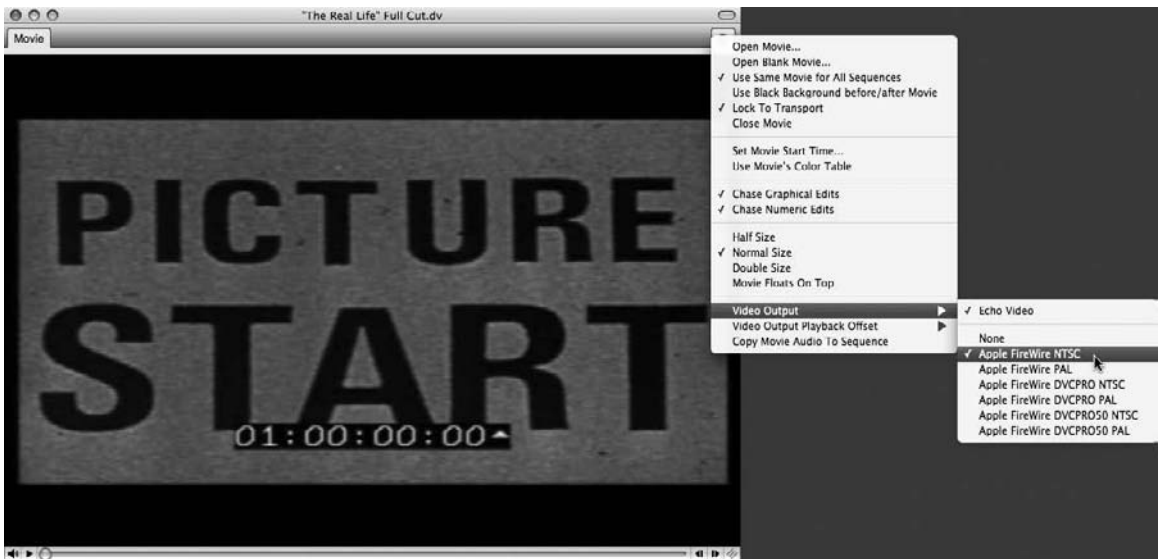
**Pre-Roll** Sometimes you may want to have some pre-roll (a preparatory period) before your sequence begins playback. To create pre-roll, simply enable the Countoff button on the Control Panel. Use the Countoff section of the Preferences and Settings window to determine the duration of the countoff. See the section in Chapter 4 entitled "Defining the Countoff" for more information.

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**FireWire Video Output.** Digital Performer's Movie window allows you to output your DV-formatted QuickTime movie to a FireWire DV camera or a FireWire converter (such as a Canopus ADVC110) in order to view your QuickTime movie as a full-screen image on a standard television or video monitor. Audio output via FireWire, however, is not supported. In other words, if the movie contains audio (such as a production dialog track), the audio cannot be output to the television or video monitor. However, DP does allow you to import a movie's audio track directly into your sequence. See the upcoming tip "Importing a Movie's Audio Track into Your Sequence" for more information.

To enable FireWire video output:

1. Choose Video Output from the Movie window's mini-menu. A list of FireWire DV formats (for example, Apple FireWire NTSC, Apple FireWire PAL, DVCPRO NTSC, and so on) that are supported by your system will appear, as shown in Figure 15.7.
2. To turn off FireWire video output, choose Video Output > None from the Movie window's mini-menu.



**Figure 15.7** The Movie window mini-menu's Video Output submenu provides a list of DV formats supported by your system.

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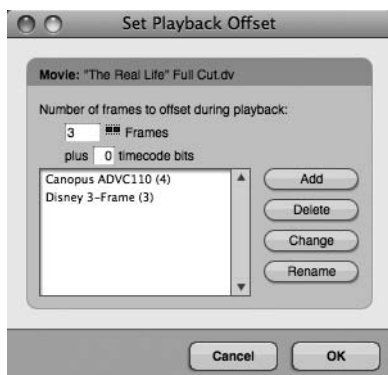
**Real-Time Video Compression** Digital Performer 6 now offers the ability to convert non-DV formatted movies in real time so you can view them (along with any film-scoring events that you create) on an external monitor. If your movie is not in the DV format (and you don't want to convert it manually with QuickTime), use the FireWire Video



Output Auto Compression options available in the Film Scoring Events preferences (discussed later in the “Film Scoring Events” section of this chapter). Keep in mind that this adds yet another hefty task to your computer’s processor!

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**FireWire Playback Delay Compensation.** When outputting DV video over FireWire, you may notice that the picture is delayed from the audio in Digital Performer. The amount of playback delay varies by device, but it is anywhere from three to nine frames. You can compensate for this delay in the Set Playback Offset window, shown in Figure 15.8.



**Figure 15.8** The Set Playback Offset window allows you to compensate for delays in video playback over FireWire, as well as create and manage offset presets.

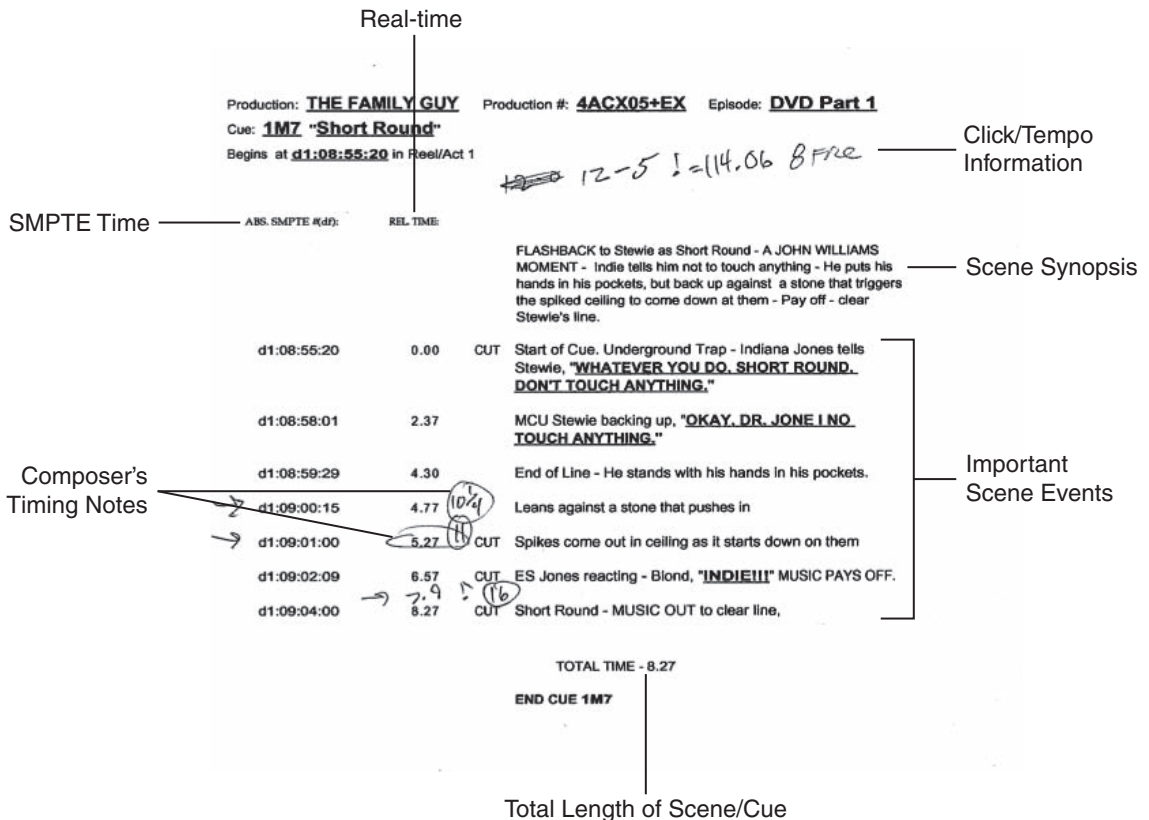
To set the playback offset for the Movie window:

1. Open the Set Playback Offset window by choosing Video Output Playback Offset from the Movie window’s mini-menu.
2. By default, the None option will be checked. Select the Other option to open the Set Playback Offset window.
3. Enter the appropriate number of frames in the Number of Frames to Offset during Playback input field, keeping in mind that you may have to experiment with different values.
4. For finer adjustments, use the Plus \_\_ Timecode Bits input field. This field allows you to offset the movie by a specific number of time-code bits. (There are 80 time-code bits to a single frame.)
5. Click OK to confirm the offset. If you want to save this setting as an offset preset, select the Add button and simply type in a name for the preset, then click OK.

**Importing a Movie's Audio Track into Your Sequence** If your movie has an audio track, you can import the audio directly into your sequence by selecting Copy Movie Audio to Sequence from the Movie window's mini-menu. Choosing this option will create a new audio track in your sequence and automatically place the movie's audio into it. Remember to pull down the Movie window's Volume slider to avoid doubling up the audio during playback!

## Cue Sheets

Cue sheets are timing notes that describe in great detail the composition of every shot within a movie or scene. The music editor typically prepares these sheets and supplies them to the composer so that he or she can use the information to decide where cues should start and be synchronized, and also to find appropriate tempos for a cue (see Figure 15.9). In simpler terms, composers use cue sheets to view the relationship between the events onscreen and the music in the score.



**Figure 15.9** A traditional cue sheet prepared by a music editor. In this example, composer Ron Jones made timing notes for a short cue in an episode of Fox's *Family Guy*.

If you find yourself having to take on some of the music editor's roles, don't worry: Digital Performer lets you create your own hit points with markers. These hit points can then be used to calculate tempos for a specific cue and can be viewed in the QuickScribe Editor as Film Cues.

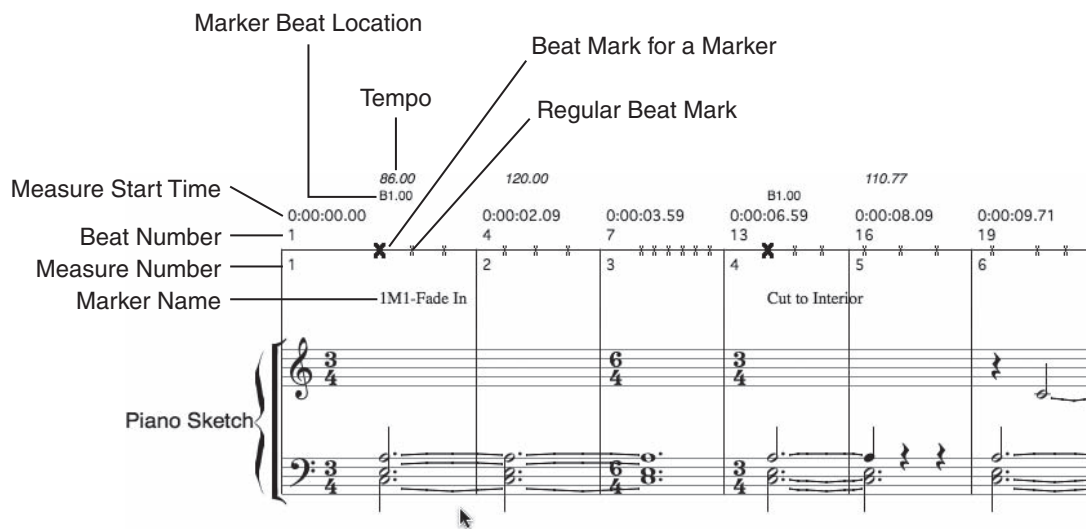
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**Cue Sheets and Licensing Royalties** Cue sheets are also used to provide specific information to performing rights organizations, such as BMI, ASCAP, and SESAC, in order for them to collect licensing royalties for composers. So, if you are your own music editor, be sure to keep track of cue information even if it means creating your own customized cue sheets. To find out more, visit [www.bmi.com](http://www.bmi.com), [www.ascap.com](http://www.ascap.com), or [www.sesac.com](http://www.sesac.com).

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## Viewing Film Cues

Though not as intricate and detailed as traditional cue sheets, Digital Performer's Show Film Cues feature displays film cue information in a logical and composer-friendly format. To turn on Film Cues, choose Show Film Cues from the QuickScribe Editor's mini-menu. Once enabled, it will display Film Cue information within the QuickScribe Editor, as shown in Figure 15.10.



**Figure 15.10** Film Cue information is displayed at the top of every staff system when the Film Cues option is enabled.

## Film Cue Information

When the Film Cues option is turned on from the QuickScribe Editor's mini-menu, Digital Performer will display Film Cue information at the top of every staff system. This information includes tempo changes, beat location, measure start times, beat/measure numbers, beat marks, as well as cue points or markers—and it is described in more detail in the following list.

- **Tempo changes.** The topmost line displayed in italics is the tempo, simply expressed as a bpm value or number.
- **Beat location.** The second row of information is the beat location of any cue points or markers. Plus and minus symbols appearing before (–) or after (+) the beat location indicate that the cue point occurs before or after the closest beat or half-beat. A marker’s hit ranges and skew settings (explained in the “Markers” section of Chapter 11) have a direct effect on whether a marker is considered early or late in relationship to the closest beat.
- **Measure start time.** The next line is a measure’s start time, displayed in minutes:seconds:milliseconds. The measure start time appears above every measure that is showing.
- **Beat number.** The beat number consists of two values. The number above the film cue’s horizontal line is the beat number (starting from the beginning of the sequence). The second number, located below the horizontal line, is the measure number (also starting from the beginning of the sequence).
- **Beat marks.** Beat marks indicate the location of beats within a measure and appear as X marks located directly on the Film Cue’s horizontal line. If a cue point or marker exists in a measure, the nearest beat will be indicated by a bold X mark.
- **Cue points.** Cue points are markers (explained in the “Markers” section of Chapter 11). You can choose whether to display markers or cue points all together, or you can set exactly how they will appear in the QuickScribe Editor from the mini-menu’s Marker Options window (explained in the “Marker Basics” section of Chapter 11). Keep in mind that a marker’s Hit Point and Skew setting (explained later, in the “Using Hit Points to Find Tempos” section of this chapter) also affects how markers (or cue points) are displayed in the Film Cue view. Also, markers whose weight is set to None will not appear in the Film Cue view.

### ***The Different Film Cue Views***

Digital Performer basically has three views when you are working with the QuickScribe Editor—Normal QuickScribe, QuickScribe + Film Cues, and Film Cues Only. You can select these viewing options in QuickScribe Editor by choosing Score Options from the mini-menu (explained in Chapter 14, in the section entitled “Customizing the Appearance of a Score”). The options are as follows:

- **Normal QuickScribe.** This view is displayed when the mini-menu’s Show Film Cues option is turned off (unchecked).
- **QuickScribe + Film Cues.** This view is displayed when the mini-menu’s Show Film Cues option is enabled and a single staff or set of staves (a track or multiple tracks) is visible in the QuickScribe Editor. If only the Film Cues are showing, click on a track in the Track selector to display its staff.

- **Film Cues Only.** This view is displayed when only the Film Cues are visible and tracks or staves are hidden from the QuickScribe Editor. If you want to work in Film Cues Only view, simply enable the mini-menu's Show Film Cues option and hide any tracks or staves with the QuickScribe Editor's Track selector. When working in Film Cues Only view, you cannot use the pop-up key signature menu, since key signatures are not displayed in this view.

## Hit Points

*Hit points* within a score are basically markers that indicate important points in a movie, such as a specific scene change, or certain actions in the film, such as an explosion or a car crash. You may already have these hit points mapped out from spotting sessions with the film's director and music editor—it will really depend on the project. Regardless of the pre-planning process, hit points are extremely easy to create in DP.

To create hit points in a sequence:

1. With the Movie window open, begin playback of the sequence.
2. When a significant point in the movie occurs, create a marker by pressing Control+M. Be sure to also place a marker at the beginning of each important cue, ensuring that the Find Tempo feature (explained in the next section) works properly.
3. Once you have created the necessary hit points, you may need to manually move the markers to place them in the exact SMPTE frame locations. See the "Markers" section of Chapter 11 for a detailed look at the Markers feature in DP.

## Using Hit Points to Find Tempos

There is nothing more time-consuming than manually experimenting with tempos in order to find one that is most suitable for a movie scene with many hit points. In fact, it's nearly impossible! Though I still believe in the traditional method of calculating tempos using frame-clicks and a Knudsen or Rose click book (a printed set of timing tables covering an extensive range of tempos), the Find Tempo command in DP is a very powerful and effective feature. Once you have created the necessary hit points in a score, you can use them to quickly calculate the most appropriate tempo for the cue. Like other features in DP, however, some practice and trial and error with the Find Tempo command will allow you to become much more comfortable with this process.

To calculate the tempo for specific hit points:

1. Open the Markers window by choosing Project > Markers. You can also use the default keyboard shortcut Shift+K.
2. Lock the markers that you want to include in the tempo search by clicking in the Lock column of each marker. (This will anchor the markers to their SMPTE frame locations.)

- Click the Find column of the hit points you want to include, making sure to include the marker that is located at the beginning of the cue. Included hit points are indicated by a check mark icon.
- Click the Weight column of a marker to set its weight (or importance).
- Set the hit range in the Hit Range column. In this column, you can designate a number of frames before and after the marker that constitute the specific hit point. In other words, you can define a small margin of error for the hit points rather than forcing them to be exact. You can use this feature when certain hit points occur over a range of frames. To assign a range to several markers at once, simply Shift-click the names of the markers and choose Set Hit Range from the Markers window's mini-menu. Remember, when scoring musical hits to picture, it is much better to be early than to be late.
- Once you have your search parameters set, choose Find Tempos for Locked Markers from the Markers window's mini-menu. The Find Tempo window, shown in Figure 15.11, will open.

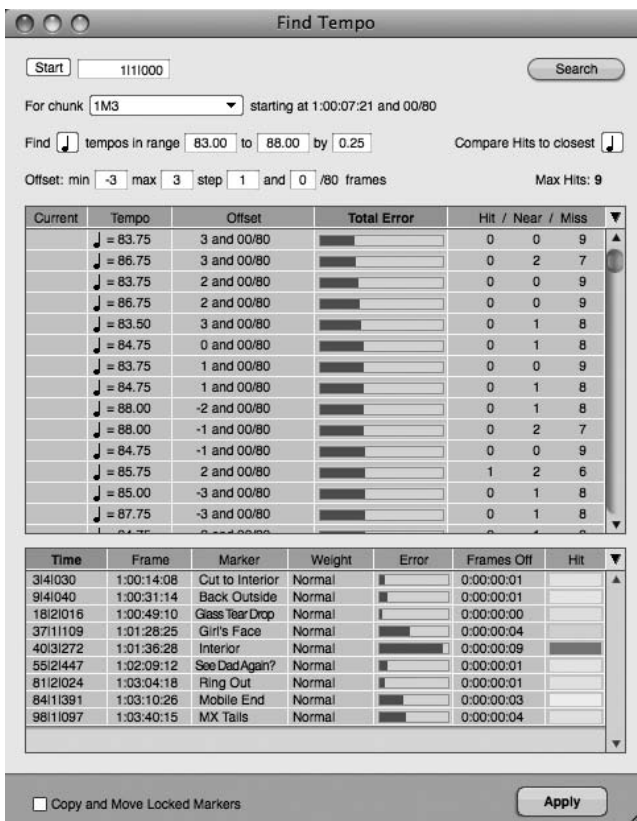


Figure 15.11 The Markers window's Find Tempo window.

7. In the Start field, enter the measure where you want to start the tempo search. Clicking the Start button will automatically enter the current Counter time (where the Playback Wiper is currently located).
8. Use the Chunk Selector drop-down menu to choose the sequence for which you are searching.
9. Choose a metric division in the Beat Value drop-down menu and a range of tempos in the Tempos in Range field. For example, you may want to view quarter-note tempos from 60 to 80 beats per minute (bpm).
10. In the By field, enter the frequency of tempos you want to view in the search results. The default frequency is 0.25. This means that if you are searching quarter-note tempos, every tempo—in quarter-bpm increments—will be searched within the specified tempo range. Smaller frequencies produce more tempos and increase the potential to find the most hit points. Larger frequencies produce fewer tempos but take less time for DP to calculate.
11. In the Compare Hits to Closest drop-down menu, set the beat resolution grid for hit points (markers) being searched. This is independent from the beat value of the tempo range. In other words, you can search for quarter-note tempos but examine hits that fall to the nearest sixteenth note.
12. In the Offset fields, enter an amount of offset in frames you want to consider from your sequence's current SMPTE start time. The Step fields allow you to determine how many of the specified offsets will be checked between the minimum and maximum frame numbers. For example, you could check the results of every tempo with offsets ranging from -3 to 3 frames with a Step setting of 1 and 0/80 frames. The results would include tempos with offsets of -3, -2, -1, 0, 1, 2, and 3. So, if you select a resulting tempo with an offset of -3 frames, the SMPTE start time will be changed to three frames earlier.
13. The Max Hits indicator includes the number of locked markers included in your search.
14. As you may have noticed, every time you enter a search parameter, DP begins searching and automatically updates the results. However, you can initiate your tempo search by clicking the Search button in the upper-right corner of the Find Tempo window.
15. In the Results section, click on any of the column headings to sort the tempo list by specific criteria. Use the bar graph in the Total Error column to quickly navigate to the more favorable tempos.
16. Click on a tempo row in the list to look at a detailed view of the selected tempo. In the Hit column, a colored bar displays how close a hit point falls on the beat (designated in Step 11). Green is a direct hit, yellow is a near miss, and red indicates a complete miss.

17. Once you have decided on a tempo, click the Apply button, and the new tempo will be written from the start time assigned in Step 7.

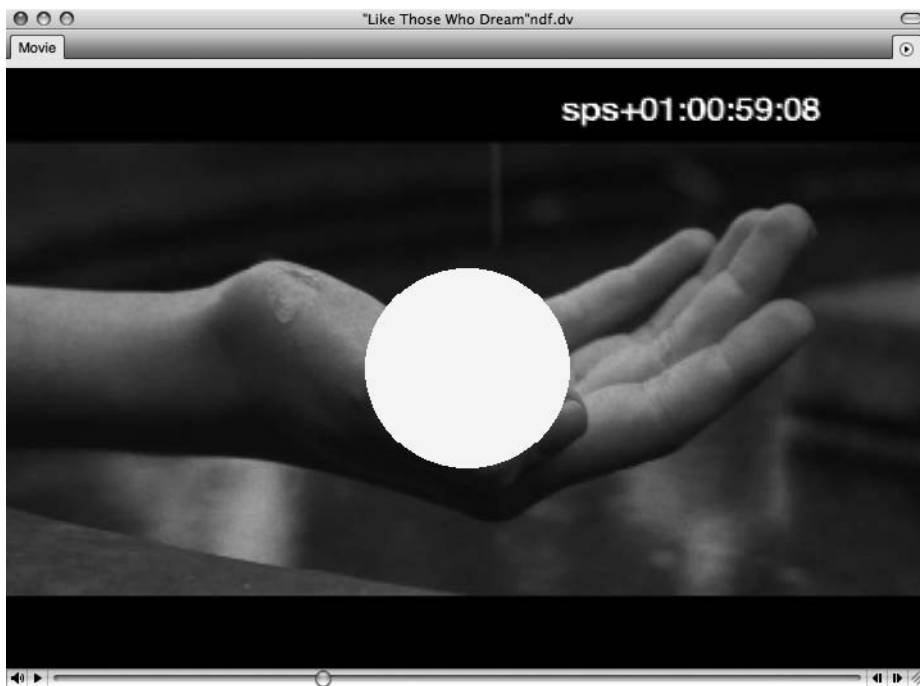
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**Copy and Move Locked Markers** If you have already composed your music score prior to searching for an appropriate tempo, you can select the Copy and Move Locked Markers option (located in the lower-left corner of the Find Tempo window) to create an unlocked copy of each existing marker that will move when the new tempo is applied. You can then view these moved markers to see how the tempo change has affected your composition. If you have data that you want to preserve (not move), simply lock the track before applying the tempo change by clicking in the track's Lock column in the Tracks window.

---

## Film Scoring Events

Film Scoring Events, such as streamers, punches, and flutters, are visual cues that are superimposed on a movie or video screen and are used to assist composers, conductors, and post-production staff during the writing and recording processes. For example, a green streamer (a colored vertical bar that travels across the screen from left to right) can signal the start of a cue or the location of a hit point, and a punch (a circle that flashes onscreen) can be used to emphasize the hit point (see Figure 15.12). A flutter is a flickering set of punches typically



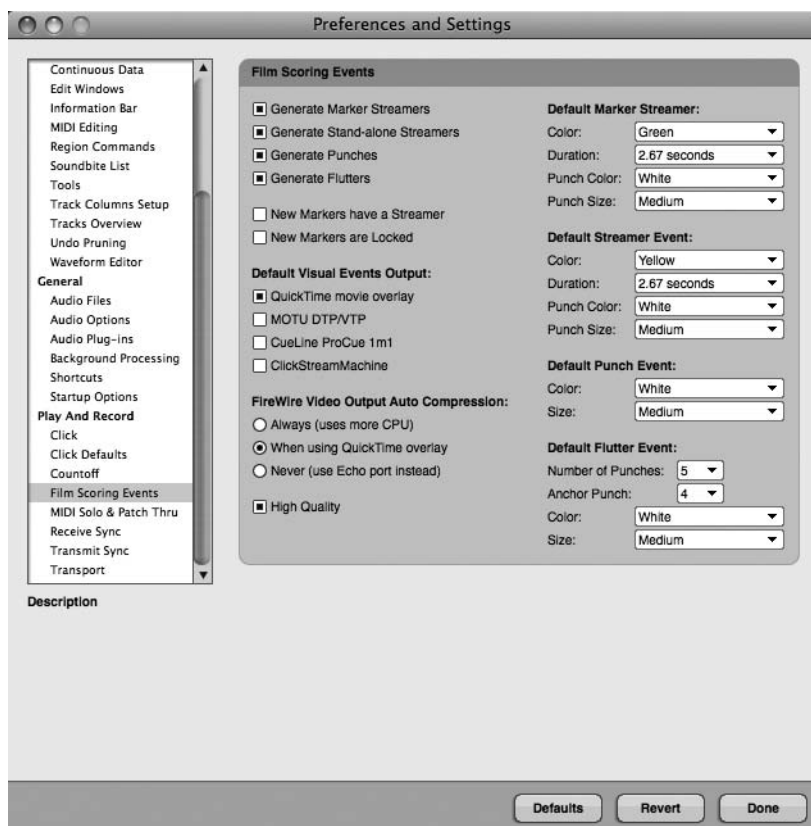
**Figure 15.12** In this example, a punch has been superimposed over a QuickTime movie in order to emphasize a hit point.



designated to mark the downbeats of measures. These events can be displayed as a QuickTime movie overlay (when viewed on your computer's monitor or an external video monitor connected to the FireWire video output from DP), on an external video monitor (when connected to a supported device than can generate streamers, punches, and flutters, such as a Video Timepiece or ClickStreamMachine), or on an exported QuickTime movie (discussed in the "Exporting a QuickTime Movie" section later in this chapter). In this section, we will focus on creating a streamer and a punch that are triggered by a specific marker (hit point) and viewing them as a QuickTime overlay. For more detail on Film Scoring Events, consult the Streamers, Punches, and Flutters chapter of your DP User Manual.

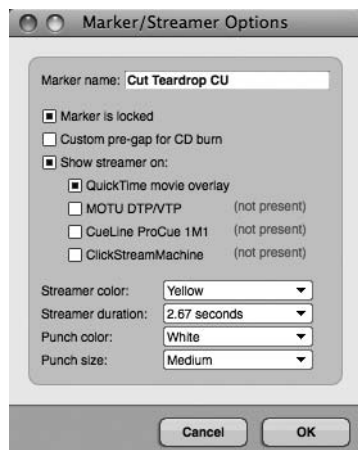
To create a streamer and punch for a specific marker:

1. Open the Film Scoring Events preferences to globally set your Film Scoring Events (Digital Performer > Preferences > Film Scoring Events), as shown in Figure 15.13.



**Figure 15.13** The Film Scoring Events preferences allow you to superimpose visual cues, such as streamers, punches, and flutters, on your QuickTime movie.

2. Enable the Generate Marker Streamers and Generate Punches options. Enable all options if you eventually would like to create independent events (not associated with markers—discussed in the “Film Scoring Events That Are Not Associated with a Marker” tip later in this chapter).
3. Enable the QuickTime Movie Overlay option in the Default Visual Events Output section.
4. To view your Film Scoring Events on an external monitor, select Always (Uses More CPU) or When Using QuickTime Overlay from the FireWire Video Output Auto Compression section.
5. Assign default settings to your Film Scoring Events using the drop-down menus located at the right side of the window. However, you can override most of these settings in other windows of DP.
6. Click Done.
7. Set the video output of your QuickTime movie accordingly (as discussed earlier in this chapter).
8. Open the Markers window for your sequence (Shift+K). Refer to the “Hit Points” section earlier in this chapter or the “Markers” section of Chapter 11 for more information regarding the creation of hit points and markers.
9. Select Show Streamers from the Markers window’s mini-menu to enable the Streamer column within the Markers window.
10. Highlight the name of a specific marker (hit point) in the Name column of the Markers window (or Shift-click to highlight multiple markers).
11. Open the Marker/Streamer Options window, as shown in Figure 15.14. (Choose Set Marker/Streamer Options from the mini-menu in the Markers window.)
12. Name the marker in the Marker Name field. If a marker has been previously named, the name will automatically appear in this window. If you are creating streamers for multiple markers at once, the Name column will not appear.
13. Enable the Marker Is Locked option if you want to include this marker in the Find Tempo process discussed earlier in this chapter.
14. Enable the Show Streamer On option and select QuickTime Movie Overlay.
15. To override default marker streamer settings (from Step 5 earlier), choose the attributes of your marker streamer in the Streamer Color, Streamer Duration, Punch Color, and Punch Size drop-down menus. (The Streamer Duration value indicates how long it will take for the vertical bar to pass from left to right on your Movie window screen.)

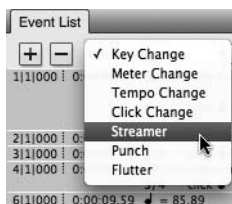


**Figure 15.14** Use the Marker/Streamer Options window to quickly create a streamer or punch that is associated with a hit point in your sequence.

16. Click OK.
17. In the Tracks window, use the Playback Wiper to scroll back in your sequence prior to the location of the marker and start playback. (Or you can use the shortcut Control+Shift+M, select the marker, enable the Countoff button in the Control Panel for pre-roll, and then press Play.)
18. Use the Movie window in your computer monitor or your connected external video monitor to view the superimposed streamer and punch.

---

**Film Scoring Events That Are Not Associated with a Marker** You can easily create a Film Scoring Event that is not attached to a marker by using the Event List of the Conductor track. Simply move the Playback Wiper to the desired position in the timeline, highlight the Conductor track, and select Project > Event List (or use the default shortcut Shift+E). Use the Insert button under the Event List title tab (the + icon) to insert a Film Scoring Event and press Return (see Figure 15.15). The event will be placed at the location of the Playback Wiper. As with other events in the Event List, you can edit a Film Scoring



**Figure 15.15** You can easily insert Film Scoring Events in the Event List window of the Conductor track.

Event simply by double-clicking on its location parameters or single-clicking its Color, Duration, and Output parameters. (Refer to the section in Chapter 10 entitled “The Event List” for more information regarding editing events in the Event List.)

---

**Missing Film Scoring Events?** For unknown reasons, punches and streamers may not always appear in your Movie window or external video monitor (even when the available output options have been assigned properly). This may be due to the demanding nature of video transfer via FireWire or the taxing process of real-time video compression. If this happens to you, stop playback and scroll the Playback Wiper farther back in the sequence, prior to the start of the events. Sometimes this allows DP to “reset” itself to allow events to materialize.

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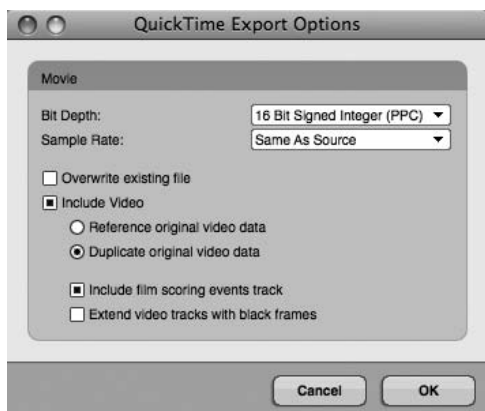
### ***Exporting a QuickTime Movie***

With Digital Performer, you can use the Bounce to Disk command to export a QuickTime movie that contains your composed soundtrack and any Film Scoring Events that you have created. For those scoring to picture, this can be an extremely efficient way of “dubbing” music (syncing sound to picture) and creating visual demos during the production process. For example, a composer could export a sketch or draft (often called a *mockup*) of each cue and supply the director or producer of the project with a QuickTime movie in order to gather feedback (before he or she begins the actual scoring process). Not only does this save time in the long run, but if recording sessions and live players are involved, it can save a lot of money!

To export a QuickTime movie:

1. In your sequence that contains a QuickTime movie, assign all of the audio tracks you want to include in the bounce to the same output bundle, such as Analog 1-2. Remember, audio tracks must be “online” and unmuted to be included in the Bounce to Disk process.
2. In the Film Scoring Events section of DP’s Preferences and Settings window, make sure you have enabled any streamers, punches, or flutters you want to include in the movie.
3. In the Tracks window, select the audio tracks over the range you want to bounce. Refer to the section in Chapter 13 entitled “Bouncing to Disk” for a review of this procedure.
4. Select Audio > Bounce to Disk (or use the default shortcut Control+J).
5. In the Bounce to Disk window, select QuickTime Export: Movie from the Format drop-down menu.

6. In the Source drop-down menu, select your output bundle (the same bundle designated in Step 1).
7. Name the movie in the File Name field and enable any Save Settings commands.
8. Choose a destination for the bounced file using the Choose Folder button.
9. Click OK.
10. The QuickTime Export Options window will appear, as shown in Figure 15.16.
11. Choose a bit depth and a sample rate for the file from the corresponding drop-down menus.
12. Enable Overwrite Existing File if you want to replace the existing movie; otherwise, the current movie (the source video) will not be affected during the bounce.
13. Enable the Include Video option.
14. Enable the Reference Original Video Data or Duplicate Original Video Data option. Referencing video data saves disk space, and duplicating video data creates a complete, self-contained movie file.
15. Enable the Include Film Scoring Events Track option if you want to include any streamers, punches, or flutters that you have created in your sequence.
16. Choose the Extend Video Tracks with Black Frames option if your audio is longer than the length of the video.
17. Click OK. Once the Bouncing Selection to Disk and Saving Self-Contained Movie progress windows are finished, the QuickTime movie will appear in your designated folder.



**Figure 15.16** The QuickTime Export Options window.

---

**Bouncing Movie Audio** If your QuickTime movie contains audio, such as production dialog or an FX track, and you want to include this in your QuickTime movie bounce, make sure you import the movie's audio using the Copy Movie Audio to Sequence command (discussed earlier in this chapter). Once the movie's audio has been imported into your sequence, simply include this track in the assignment of audio tracks in Step 1 of the previous How-To section.

---

## Summary

Digital Performer contains many powerful tools for scoring a film, television, video game, or multimedia soundtrack. Though not required, it is helpful to have some insight into the film-making and scoring processes when writing music for picture. This chapter only scratches the surface of DP's film-scoring capabilities, but it does provide a solid introduction that can jump-start your process. Considering DP's intuitive and straightforward nature, you can quickly develop a great deal of technical expertise regarding the production responsibilities of the composer.

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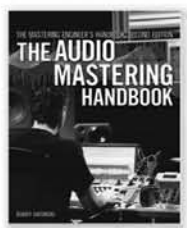
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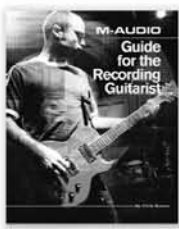
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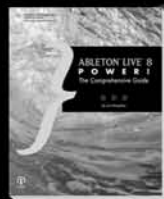


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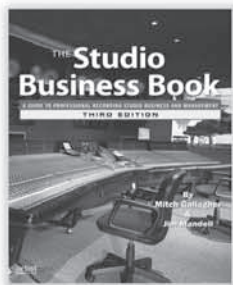
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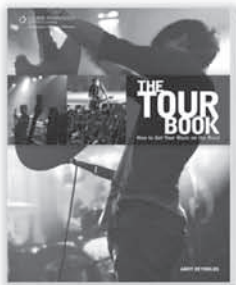


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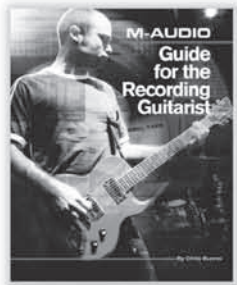
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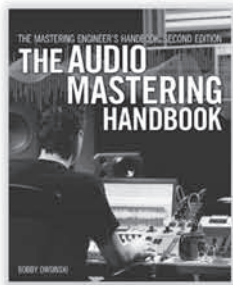
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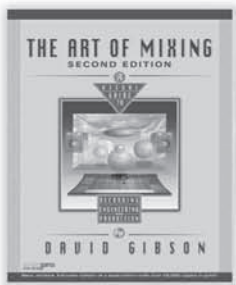
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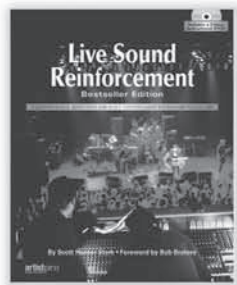
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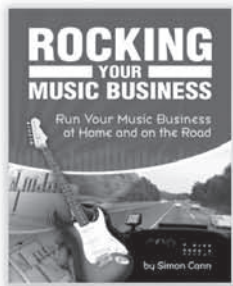
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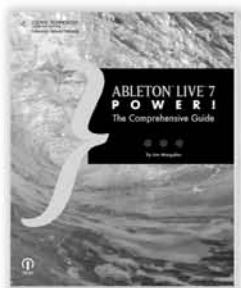
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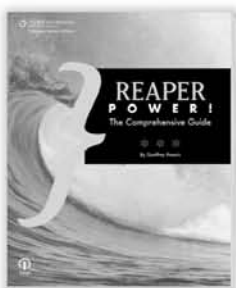
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