

**Apple Pro Training Series** 

### Logic Pro 9 Advanced Music Production

**Creating and Producing Professional Music** 

David Dvorin



DVD-ROM with media and lesson files included

Level 2 certification

Find the media files for this eBook at: http://www.peachpit.com/ebookfiles/0321684338

# Apple Pro Training Series Logic Pro 9 Advanced Music Production

David Dvorin with Robert Brock

Apple Pro Training Series: Logic Pro 9 Advanced Music Production David Dvorin with Robert Brock Copyright © 2010 by David Dvorin

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# Getting Started

We are lucky to live during one of the most exciting periods in the music production industry. Just a few short years ago, you would need a studio filled with synthesizers, hardware effects processors, mixing consoles, and expensive multitrack tape machines to accomplish what you can now do in a small project-based environment with a computer, an audio interface, and the right software. It's a good time to be a musician.

Apple Pro Training Series: Logic Pro 9 Advanced Music Production is intended to show experienced composers, arrangers, and producers how to enhance their skills by working with real projects in real-world scenarios. You'll learn how to increase the efficiency of your production workflow and accelerate editing tasks. You'll work on refining your mixing techniques, manipulating tempo and pitch, creating notated parts and scores, mixing for surround sound, and working with video and film. You'll unlock the limitless potential of Logic's groundbreaking software instruments by creating your own sounds from scratch.

Whether you're tweaking a song structure, applying effects processing, or editing audio and MIDI tracks, this book will give you the insider tips that will make your time with Logic Pro 9 more productive and more creative.

#### The Methodology

This book is written for those who already have a working knowledge of Logic Pro. (Beginning or less-experienced Logic users should read *Apple Pro Training Series: Logic Pro 9 and Logic Express 9* by David Nahmani.) Composers, audio engineers, and music producers currently working with Logic Pro will have the most to gain from reading this book.

The book is divided into five sections:

- ► Lesson 1 lays the foundation by helping you customize your Logic workflow. You'll create an environment that will increase your efficiency on your own projects as well as on the exercises in the book. Lesson 2 reveals Logic's deep feature set for manipulating time and pitch, including the new Flex Time feature.
- ► In Lessons 3 through 6, you'll create your own sounds on Logic's most advanced software instruments: ES2, EXS24 mkII, Sculpture, and Ultrabeat. Gaining an understanding of these powerful synthesizers and samplers will bring a wealth of musical resources to your sessions.
- ► In Lessons 7 through 9, you'll shape your tracks into an arrangement. With Logic Studio's MIDI and audio editing tools, you can refine the sound and structure of your composition, correcting production problems and making the most of your best takes.
- ► A composition is only as good as it sounds, which makes mixing and mastering your arrangement an essential part of the creative process. Lessons 10 through 12 guide you in taking your composition to the final level, using Logic Pro's Mixer, automation, control surface support, and effects processing to bring the highest degree of production quality to your creative output.
- ► For many projects, Logic Pro will be an all-inclusive working environment that takes composers and producers from musical idea to final recording. But there are times when you need to get your ideas on paper or when you're using your musical skills to serve a visual image. Lesson 13 provides a foundation for developing your surround sound mixing skills by using Logic's extensive new surround support. In Lesson 14 you'll create objects in the Environment to process MIDI data in all sorts of interesting ways. Lesson 15 shows you how to use Logic Pro's extensive notation capabilities to create musical parts and scores. In Lesson 16 you'll explore Logic Pro's power as a film and video scoring tool. Finally, in Lesson 17 you'll learn how to best transport sessions between Logic and other DAWs, enabling you to freely collaborate with studios running other software applications.

#### **About the Apple Pro Training Series**

Apple Pro Training Series: Logic Pro 9 Advanced Music Production is part of the official training series for Apple Pro applications developed by experts in the field. The lessons are designed to let you learn at your own pace. You'll find that this book explores many advanced features and offers tips and techniques for using the latest version of Logic.

Although each lesson provides step-by-step instructions for creating a specific project, there's room for exploration and experimentation. It is recommended that you follow the book from start to finish or at least complete the lessons in each part of the book in order. Each lesson concludes with a review section summarizing what you've covered.

#### **System Requirements**

Before beginning to use *Apple Pro Training Series: Logic Pro 9 Advanced Music Production*, you should have a working knowledge of your computer and its operating system. Make sure that you know how to use the mouse, navigate standard menus and commands, and also open, save, and close files. If you need to review these techniques, see the printed or online documentation included with your system.

For the basic system requirements for Logic Pro 9, go to www.apple.com/logicstudio/specs.

**NOTE**  $\triangleright$  If your display resolution is less than 1440 x 900, the included lesson files will display differently than shown in the book. Even so, you will be able to follow the lessons as described.

#### **Copying the Logic Lesson Files**

The DVD-ROM provided with this book includes folders that contain the lesson files used in this course. Each lesson has its own folder. You must have a standard installation of Logic Pro 9 on your hard disk to perform the exercises in this book.

To install the Logic project files:

- 1 Insert the *APTS\_Advanced Logic 9* DVD into your DVD drive.
- **2** On your desktop, double-click the APTS\_Advanced Logic 9 icon to view the disk contents.
- **3** Drag the Advanced Logic 9\_Files folder from the DVD to the Music folder on your hard disk.

#### **About the Apple Pro Training Series**

*Apple Pro Training Series: Logic Pro 9 Advanced Music Production* is both a self-paced learning tool and the official curriculum of the Apple Pro Training and Certification Program.

Developed by experts in the field and certified by Apple, the series is used by Apple Authorized Training Centers worldwide and offers complete training in all Apple Pro products. The lessons are designed to let you learn at your own pace. Each lesson concludes with review questions and answers summarizing what you've learned, which can be used to help you prepare for the Apple Pro Certification Exam.

For a complete list of Apple Pro Training Series books, see the ad at the back of this book, or visit www.peachpit.com/apts.

#### **Apple Pro Certification Program**

The Apple Pro Training and Certification Programs are designed to keep you at the forefront of Apple's digital media technology while giving you a competitive edge in today's ever-changing job market. Whether you're an editor, graphic designer, sound designer, special effects artist, or teacher, these training tools are meant to help you expand your skills.

Upon completing the course material in this book, you can become an Apple Certified Pro by taking the certification exam at an Apple Authorized Training Center. Certification is offered in Final Cut Pro, Motion, Color, Soundtrack Pro, DVD Studio Pro, Shake, and Logic Pro. Certification as an Apple Pro gives you official recognition of your knowledge of Apple's professional applications while allowing you to market yourself to employers and clients as a skilled, pro-level user of Apple products.

For those who prefer to learn in an instructor-led setting, Apple offers training courses at Apple Authorized Training Centers worldwide. These courses, which use the Apple Pro Training Series books as their curriculum, are taught by Apple Certified Trainers and balance concepts and lectures with hands-on labs and exercises. Apple Authorized Training Centers have been carefully selected and have met Apple's highest standards in all areas, including facilities, instructors, course delivery, and infrastructure. The goal of the program is to offer Apple customers, from beginners to the most seasoned professionals, the highest-quality training experience.

For more information, please see the ad at the back of this book, or to find an Authorized Training Center near you, go to training.apple.com.

#### Resources

*Apple Pro Training Series: Logic Pro 9 Advanced Music Production* is not intended as a comprehensive reference manual, nor does it replace the documentation that comes with the application. For more information about Apple Logic Pro 9, refer to these sources:

- ► Logic Pro 9 User Manual: Accessed through the Logic Pro 9 Help menu, the User Manual contains a complete description of all the features.
- ► Apple's website: www.apple.com

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- ► Caesar Filori and Wide Band Network for providing "Anatomy of a Human Bomb"
- ▶ Brandon Jaehne for use of "Gibsonia"

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# Lesson FilesAdvanced Logic 9\_Files > Lessons > 04\_EXS24\_Start.logicMediaAdvanced Logic 9\_Files > Media > EXS24MediaAdvanced Logic 9\_Files > Media > EXS24TimeThis lesson takes approximately 60 minutes to complete.GoalsBuild new sampler instruments from audio regions<br/>Assign pitch mapping and tuning to zones<br/>Create loop points for sustaining sounds<br/>Use groups to assign common parameters to multiple zones

Use filters and modulation to change the character of sampled material

Route output of specific groups for individual processing

# Lesson **4** Sampling with the EXS24 mkII

A sampler is an extremely versatile tool. Essentially, it allows you to map digital audio files, or *samples*, across pitch ranges for triggering via MIDI. It does this by dynamically changing the playback speed of the samples in real time to match the pitch specified by the MIDI note value.

Individual samples are referenced and mapped within a *sampler instrument*. In this lesson, you will explore the abilities of the EXS24 mkII by creating unique sampler instruments using specific audio regions from the Arrange window.

#### **Creating Sampler Instruments**

Traditionally, new sampler instruments are produced by first creating a blank sampler instrument, and then adding and mapping individual samples one by one, building it from the ground up. However, one of the new features in Logic Pro 9 is the ability to use a single command to automatically create a new EXS24 mkII track loaded with a new sampler instrument wrapped around a selected audio region in the Arrange window. This makes it especially easy to extend the creative possibilities of audio files, placing under your fingertips the ability to trigger and process.

- **1** Choose File > Open.
- 2 In the file selector dialog, navigate to Music > Advanced Logic 9\_Files > Lessons and open 04\_EXS24\_Start.logic.
- **3** Use the Mute tool to unmute the Vox Note region on Track 1.
- 4 Play the project, listening to the Vox Note audio region.

You will use this recording of a singer holding a single pitch for your first sampler instrument.

- 5 Stop playback.
- **6** Go to the beginning of the project.
- 7 In the Arrange area, select the Vox Note region, if it's not already selected.
- 8 From the local Audio menu, choose Convert Regions to New Sampler Track.



The Convert Regions to New Sampler Track dialog appears.

Here, you can set how the selected audio region will be initially mapped within the new sampler instrument. Samples are mapped within zones, which contain settings controlling how the sample will be played back, including key ranges.

Create Zones From:	Regions     Transient Markers	
EXS Instrument Name:	Vox Note	.exs
Trigger Note Range:	C-2 (0) ; G8 (127) ;	J
OK creates an EXS inst selected region(s), incl	rument with 1 zones (of a maximum of 1 uding a MIDI trigger region.	.28) from 1

9 Select Create Zones From Regions, if it's not selected already.

This will create a single zone that references the Vox Note audio region (as outlined at the bottom of the dialog).

You can also set the pitch range of the zone that will be created, as specified by the Trigger Note Range menus (low to high). Since only a single audio region was selected (you can also select multiple), it will only utilize the lowest trigger note to map the region.

10 Click the first Trigger Note Range pop-up menu and choose C3 (60).



This will create a new zone at C3, right in the middle of the keyboard.

**11** Click OK.

A new EXS24 track (named Vox Note) is created below the original track, along with a new MIDI region. This new region contains a held C3 note that triggers the newly mapped audio file for the same duration as the original audio region. Note that the original region is muted. The new MIDI region in effect replaces the original one in the arrangement.



**12** Play the project, listening to the new Vox Note MIDI region played through the EXS24.

The playback sounds identical to before.

This new zone will be automatically velocity mapped; the harder you strike the key, the louder the file playback.

13 Press the C3 on your MIDI keyboard at varying velocities, listening to the result.

The Vox Note audio file plays as long as you hold down the key, changing volume (amplitude) along with your keyboard velocity.

#### **Using the EXS24 Instrument Editor**

Let's take a look inside the newly created sampler instrument, with the goal of exploring the creative potential offered by the EXS24. Sampler instruments are edited within the EXS24 Instrument Editor, which is accessible from within the EXS24 interface.

1 In the Inspector, double-click the EXS24 in the Arrange channel strip to open the EXS24 interface.



The EXS24 Parameter window opens, with the newly created sampler instrument, Vox Note, displayed. You will be working with the parameters in this window later on in the lesson, but for now, you will use it to quickly access the EXS24 Instrument Editor.

2 Click the Edit button, located at the top right.



The EXS24 Instrument Editor opens.

Zenes         Croups         Instrument * Edit * Zene * Group * View *         Shew Velecity         IXX24	0.0					EXS24 I	nstrumer	t Editor: \	Vox Note.	exs								
ence       Audio File       Pitch       Key & Casee       Fine       Voit       Pan       Scale       Output       Lo       HI       Pitch       Ishor       Reverse         Ungrouped       Vox Note.31       Vox Note.alf       *       C3       0 </th <th>Zones Gro</th> <th>ups Instru</th> <th>iment + Edit + Zone + I</th> <th>Croup +</th> <th>View</th> <th>- 5</th> <th>how Velo</th> <th>city</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>EXS24</th>	Zones Gro	ups Instru	iment + Edit + Zone + I	Croup +	View	- 5	how Velo	city										EXS24
All Zones       Name       Key & Carse       Fine       Vol       Pan       Scale       Output       Io       HI       Pich       15hor       Reverse         Ungrouped Vox Note       Vox Note.1       Vox Note.alf       *       C3       0       0       0       0       Group :       C3       C3       C3       C3       C3       C3       C3       C3       C4       Carse       Car	nes	Zone	Audio File		Pitch			Mixer					Key Ra	nge	Playba	ck		
Ungrouped Vox Note:       Vox Note: alf       C3       0       0       0       0       Group       C3       C3       C3       C4	All Zones	Name	Name		Key A	Coarse	Fine	Vol	Pan	Scale	Output		LO	HI	Pitch	1Shot	Reverse	
	Vox Note	Vox Note.1	Vox Note alf	*	C3	0	0	0	0	0	Group	:	3	G	Ø			

For now, you can close the window to save some screen real estate.

3 Close the EXS24 Parameter window (not the EXS24 Instrument Editor).

The EXS24 Instrument Editor has two views: Zones and Groups. You are currently looking at the Zones view (more on Groups later), as indicated by the selected button at the top left.



The top portion of the EXS24 Instrument Editor is called the Parameters area, and it displays the settings of each sample referenced by the sampler instrument. The bottom portion of the window displays how each sample is mapped to various pitches, represented by the keyboard at the bottom of the window. As you can see, a new zone, named Vox Note.1 was created, mapped to C3 on the keyboard.

When you create a sampler instrument with the Convert Regions to New Sampler Track command, the zone created is without range—that is, only mapped to a single pitch.

You can, of course, extend the zone's range to map the audio file to multiple pitches. This is done either by changing settings within the Key Range columns of the Parameters area, or by dragging directly on the zone in the bottom area.

4 Within the Key Range parameters, double-click the Hi field and enter *c4*. Press Return.



The zone extends in range to the right, from C3 to C4.

**5** In the bottom area of the EXS24 Instrument Editor, drag the zone's left border to the left, extending the range to C2.



6 Play the C2 to C4 keys on your MIDI keyboard, listening to the result.

The pitch (and speed) of the sample shifts up and down, mapped in relation to your MIDI keyboard input.

NOTE ► You can also create new sampler instruments by choosing New from the EXS24 Instrument Editor's Instrument menu, or by clicking the Edit button on the EXS24 interface when an instrument isn't currently loaded. This creates a blank sampler instrument where you can manually add zones by choosing New Zone or Load Multiple Samples from the Zones menu. You can also create new zones by dragging and dropping audio files from the Logic Bin or Browser, or even the Finder.

If you have perfect pitch, you might have noticed that the sung note is a little flat compared to standard tuning (A440). This wouldn't be a problem if this was the only instrument used in the project, but if other instruments will be played at the same time, it would sound out of tune. Using the zone's Pitch parameters in the Instrument Editor, you can compensate for tuning discrepancies (Coarse equaling semitones, and Fine equaling cents, or 1/100th of a semitone).

The best way to tune a zone by hand is by inserting a Tuner plug-in on the EXS24 channel, monitoring the results as you adjust parameters.

7 Click the top insert slot of the new Vox Note (EXS24) channel, and select Metering > Tuner > Stereo.



The Tuner opens.

8 While watching the Tuner readout, hold down the C3 key on your MIDI keyboard and drag the zone's Fine parameter upwards to about 28 cents (the Tuner's readout should bob around the 12 o'clock position).



The sample plays back in tune in relation to standard tuning.

**9** Close the Tuner window.

#### **Creating Loop Points**

Looping is a technique that stems from the day when samplers had tiny memory stores (by today's standards) in which to load samples. Many sounds start off with complex attacks but soon settle into a more or less steady waveform. By repeating this "settled" area, a sample can be sustained indefinitely without using valuable memory space. Even with modern software samplers that have access to gigabytes of memory (like the EXS24), looping is a useful technique to create sustaining sounds out of material that is otherwise quite short, like the audio file you are working with in this exercise.

By default, this editor only displays some of the Zone parameters, while hiding others, including the Loop parameters. You can select the parameters that you want to display within the View menu.

1 Click the local View menu and choose View All.



All Zone parameters are displayed, including the Loop parameters.

Loop	,				
On	Start	End	Tune	XFade	E. Pwr
	0		0	0	

**NOTE** ► Depending on the size of your EXS24 Instrument Editor window, you might need to scroll to the right to view the Loop parameters.

In order to enable looping, you first need to select the Loop On box.

2 In the Loop parameters, click the Loop On box.

Although you could enter start and end times (by sample number) in the parameters area, this would be arbitrary and counterintuitive. It is much easier to select an area on the waveform itself by using the Sample Editor.

**3** In the Audio File parameters for the zone, click the small disclosure triangle to the right of the audio file name and choose Open in Sample Editor.

Audio File	Pitch								
Name		Key	*	Coarse	Fine	Vol			
Vox Note.aif	Q	Loa	d Ai	udio Sam	ple ^	F			
		Open in Sample Editor							
		Reveal in Finder							

The Sample Editor opens, displaying the referenced audio file, Vox Note.aif.

**NOTE** > You most likely will need to expand the Sample Editor window to do the following exercise. If you have limited screen real estate, you can minimize the EXS24 Instrument Editor window, temporarily storing it in your Dock.



**TIP** Double-clicking an audio file within a zone also opens the audio file in the Sample Editor.

By default, the Sample Editor displays bars/beats in its timeline. It is much more helpful to view the timeline when setting loop points in samples (1 sample =  $1 \div$  sample rate per second). This will correspond to the numerical display within the EXS24 Instrument Editor.

**NOTE** Samples as a measurement of time is not to be confused with the term *samples*, mentioned earlier in the chapter. The latter is another way of saying "digital audio files," while the former refers to the tiny components that make up a digital waveform.

**4** From the local View menu, choose Samples.



The timeline is now displayed in samples.

The trick to setting loop points is to find a sustaining portion within the audio file that can be repeated without interruption. In order to make smooth edits, it is necessary to make selections that do not interrupt the waveform above or below the zero axis (thereby creating an audible click). When Snap Edits to Zero Crossings is enabled within the Sample Editor, all new selections will be justified to the nearest point the waveform crosses the zero axis.

- **5** From the local Edit menu, choose Snap Edits to Zero Crossings.
- 6 Using the help tags, select an area from approximately 28800 to 91900 samples (refer to the following illustration).



You can audition your selection by selecting the Prelisten and Cycle buttons at the top of the Sample Editor.



- 7 Click the Prelisten and Cycle buttons to listen to your selection looping.
- 8 Click the Prelisten button, stopping playback.

Your loop points may sound a bit rough at first, but with further massaging, you can create a smoother result. This is done by zooming in on the start and end loop points and fine-tuning the selection while auditioning.

Now that you've identified the area you want to be looped, you need to set the start and end loop points to the zone in the EXS24 Instrument Editor.

**9** From the Sample Editor's local Edit menu, choose Selection > Sample Loop.

The Sample Loop lane within the Sample Editor displays the selected area in green.



**10** Close the Sample Editor.

The results of your selection appear within the Loop parameters of the EXS24 Instrument Editor.

Loop	<b>,</b>	
On	Start	End
	28791	91935

11 Hold down a C3 on your MIDI keyboard, listening to the result.

The sample plays, now looping the selected area for as long as you hold down the key.

To aid you in helping to smooth out the repeating loop's start and end points, you can apply a short crossfade. This is similar to how you smooth region transitions in the Arrange window.

**12** In the Loop parameters, double-click the Xfade field and enter *30*. Press Return.



There is also an option to have the crossfade be equal powered, which creates an exponential curve with a 3 db boost in volume in the middle to compensate for the dip in volume that normally occurs within a linear crossfade.

**13** In the Loop parameters, click the E. Pwr box to enable it.



14 Hold down a C3 on your MIDI keyboard, listening to the result.

The sample plays, smoothly looping the selected area for as long as you hold down the key.

#### **Using the Parameter Window**

After a sampler instrument is loaded, the triggered sounds are further refined and processed by the global playback parameters located on the interface of the EXS24 mkII itself. These parameters are nearly identical to the sound processing functionality of a synthesizer, allowing you to further shape your sampler instrument sounds.

1 In the EXS24 Instrument Editor window, click the EXS24 button.



The EXS24 Parameter window (interface) opens. This offers a convenient way to access the EXS24 playback parameters without having to go back to the channel strip.

**2** Close the EXS24 Instrument Editor.

A Save dialog appears.



3 Click Save.

Now look at the EXS24's interface. Note that the EXS24 shares many interface characteristics with the ES2 synthesizer covered in Lesson 3. It has filter, output, modulation routing, and modulation source sections in similar places within the interface.



Modulation section

In this exercise, you will use the amplitude envelope to change the character of the Vox Note sampler instrument to that of a swelling choir-like pad that decays slowly. In the EXS24, Envelope 2 is hardwired to amplitude, and it controls the dynamics of how the sound is shaped over time for each key pressed.

4

In the controls for Envelope 2, drag the Attack slider upwards to about midway (about 820 ms).



**TIP** You can split the Attack controls of both Envelopes 1 and 2 to create a range. This intensity range is modulated via note velocity, wherein high values trigger the sound more quickly (represented by the lower half of the control), and low values trigger the sound more slowly (represented by the upper half of the control).

**5** In the controls for Envelope 2, drag the Release slider upwards to about midway (about 820 ms).



- 6 Hold down a chord between C2 and C4 on your MIDI keyboard, listening to the result. You should hear a swelling, sustained choir sound, based off of the original audio file, Vox Note.aif.
- 7 From the preset menu, choose Save Setting As.
- 8 In the file selector dialog, name the preset Vox Note and then click Save.
- 9 Close the EXS24 window

#### **Creating Multiple Zones from Region Transients**

In the previous exercises, you created a single zone sampler instrument from an audio file in the Arrange window. Using a similar technique, you can create a sampler instrument with multiple zones based off of detected transients in the audio file. This is especially useful when dealing with rhythmic material such as drum and percussion loops that have clear transients.

In the following exercises, you will create a new sampler instrument from a basic drum loop and explore ways to extend and transform the sound using the EXS24 playback parameters and routing flexibility.

- **1** Use the Mute tool to mute the new Vox Note region (Track 2).
- **2** Select the Basic Drums track (Track 3).
- **3** Use the Mute tool to unmute the Basic Drums regions on Track 3.
- **4** Play the project, listening to the Basic Drums region to become familiar with the material.
- **5** From the Arrange window's local Audio menu, choose Convert Regions to New Sampler Track.

The Convert Regions to New Sampler Track dialog appears.

6 Select Create Zones From Transient Markers.

Convert Regions to New Sampler Track	
Create Zones From: O Regions	
Transient Markers	

**NOTE** When you select to create zones by transient markers, Logic performs a quick transient detection similar to the one performed when you activate Flex view for the first time. The number of detected transients is displayed in the info area at the bottom of the Convert Regions to New Sampler Track dialog.

7 Click OK.

A new EXS24 track (also named Basic Drums) is created, along with a new MIDI region. This new region contains multiple note events that trigger each of the created zones in order, and for the same duration as the original audio region, replacing the original audio region in the arrangement.



**NOTE** ► This is similar to using the Slicing Flex mode, wherein an audio region is chopped up according to its transients.

8 Play the project, listening to the new Basic Drums MIDI region played through the EXS24.

The playback sounds identical to before.

- **9** In the Inspector, double-click the EXS24 in the Arrange channel strip to open the EXS24 interface.
- **10** Click the Edit button, located at the top right.

The EXS24 Instrument Editor opens, displaying the multiple zones created from transients.

Inter         Zone         Audio File         Pitch         Mixer         Key & Coarse         Fine         Vol         Pan         Scale         Output         Lo         Hi         Pitch         Reverse           Jungrouped Basic Drums Basic Dr	Zones Gro	ups Instrum	ient * Edit * Zone * C	Group *	View	• 5	how Velo	ocity								(	EXS24
Name         Name         New +         Coarse         Fine         Vol         Pan         Scale         Output         Lo         HI         Pich         13 bet         Reverse           Ingrouped Basic Drums.         Basic Drums.aif         C 73         0	ones	Zone	Audio File	Pitch			Mixer				K	ley Ran	ige	Playba	ck		
Basic Drums       Basic Drums.aif       •       C 3       0       0       0       0       Group 1:       C 3       C 3       C 1          Basic Drums       Basic Drums.aif       •       C 3       0       0       0       0       Group 1:       C 43       C 73       C 1 <td< th=""><th>All Zones</th><th>Name</th><th>Name</th><th></th><th>Кеу 🔺</th><th>Coarse</th><th>Fine</th><th>Vol</th><th>Pan</th><th>Scale</th><th>Output</th><th>L</th><th>.0</th><th>Hi</th><th>Pitch</th><th>15hot</th><th>Reverse</th></td<>	All Zones	Name	Name		Кеу 🔺	Coarse	Fine	Vol	Pan	Scale	Output	L	.0	Hi	Pitch	15hot	Reverse
Basic Drums       Basic Drums.aif       - C#3       0	- Ungrouped	Basic Drums	Basic Drums.aif	*	C3	0	0	0	0	0	Group	:	C3	C3			
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Basic Drums       Basic Drums.aif       •       F3       0       0       0       0       Group       1:       F3       F3       M          Basic Drums       Basic Drums.aif       •       F93       0       0       0       0       0       Group       1:       F93       M           Basic Drumsif       •       G3       0       0       0       0       G70up       1:       G3       G3       M		Basic Drums	Basic Drums.aif	*	E3	0	0	0	0	0	Group	\$	E3	E3			
Basic Drums       Basic Drums.aif <ul> <li>F#3</li> <li>0</li> <li>0</li></ul>		Basic Drums	Basic Drums.aif	*	F3	0	0	0	0	0	Group	:	F3	F3			
Basic Drums       Basic Drums.aif		Basic Drums	Basic Drums.aif	-	F#3	0	0	0	0	0	Group	:	F#3	F#3	M		
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		Basic Drums	Basic Drums.aif		G#3	0	0	0	0	0	Group	:	G#3	G#3			
						0	0000										
	CO		C1 C2	1		C3			C4			C5	-	1.11	C6		

As you can see within the Parameters area, each transient from the original audio file is mapped chromatically to MIDI pitches C3 through G#3.

11 Play the C3 through G#3 keys on your MIDI keyboard, listening to the result.

When playing the associated MIDI pitches on the keyboard, you hear each individual slice. However, the slice only plays for as long as you hold down the key, and it can sound truncated if you let go before the slice plays out in its entirety. In order for the sample to play back its complete length irrespective of the key release, you need to have 1Shot enabled within the Zone parameters.

- 12 Choose Select All from the EXS24 Instrument Editor's Edit menu.
- **13** On any of the selected zones, click the 1Shot box to enable it for all.

	C	EXS24							
Playback									
Pitch	1Shot	Reverse							

14 Play the C3 through G#3 keys on your MIDI keyboard, listening to the result.

The slices play through in their entirety.

Although this provides an effective way to trigger the drums as a performance instrument, let's explore additional playback parameters within the EXS24 Instrument Editor to further process the sound.

- **15** Click in the background of the EXS24 Instrument Editor to deselect all zones.
- **16** In the Parameters area, Command-click the zones mapped to C#3, D#3, and G#3 to select them.

**TIP** To use your MIDI controller to select zones, choose Zone > Select Zone of Last Played Key.

17 Click the Reverse box for one of the selected zones to enable it for all selected zones.

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Zones Gro	ups Instrum	ent * Edit * Zone * i	Group *	View	• 5	how Velo	city									EXS24
čones	Zone	Audio File		Pitch			Mixer					Key Rat	nge	Playback		
All Zones	Name	Name		Key 🔺	Coarse	Fine	Vol	Pan	Scale	Output		Lo	Hi	Pitch	15hot	Reverse
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Basic Dr	Basic Drums	Basic Drums.aif	*	C#3	0	0	0	0	0	Group	1	C#3	C#3	2		61
	Basic Drums	Basic Drums.aif		D3	0	0	0	0	0	Group	¢	D3	D3	•		C <sup>6</sup>
	Basic Drums	Basic Drums.alf		D#3	0	0	0	0	0	Group	\$	D#3	D#3			
	Basic Drums	Basic Drums.aif	-	E3	0	0	0	0	0	Group	\$	E3	E3			
	Basic Drums	Basic Drums.aif		F3	0	0	0	0	0	Group	\$	F3	F3			
	Basic Drums	Basic Drums.aif		F#3	0	0	0	0	0	Group	;	F#3	F#3			
	Basic Drums	Basic Drums.aif	*	G3	0	0	0	0	0	Group	\$	G3	G3			
	Basic Drums	Basic Drums.aif	Ŧ	G#3	0	0	0	0	0	Group	\$	G#3	G#3	1		1

18 Play the C#3, D#3, and G#3 keys on your MIDI keyboard, listening to the result.

The samples play back in reverse.

- **19** Close the EXS24 Instrument Editor window.
- **20** Click Save in the Save dialog that appears.

#### **Using Filters and Modulation to Process the Sound**

Just like you used the ES2 synthesizer to process the oscillators' signal, you can use EXS24's filter and extensive modulation options to process the sampler instrument you created. In fact, the EXS24's filter and modulation router directly mirror the ones in the ES2, with the exception of only offering a single filter, instead of a pair.

The filter in the EXS24 is a multimode filter, offering high-pass, low-pass, and band-pass modes. In order to take advantage of its sound-shaping properties, you first need to switch it on.

1 Click the filter on/off button located at the right side of the filter section.



**NOTE** ► Having an on/off switch for the filter enables you to quickly audition sounds with and without the filter's influence. It also is worth noting that when the filter is active, it takes up more processor power, so it is a good idea to switch it off when you don't need it.

Now that the filter is switched on, you can apply filter settings to shape the sound.

**2** Do the following with the EXS24's filter settings (refer to the illustration below to double-check):

Click the 6 db low-pass (LP) filter mode/slope button to gradually attenuate frequencies above the cutoff frequency.

▶ Drag the Cutoff knob to about 68%.

Drag the Resonance knob to about 45%, accentuating the cutoff frequency by applying a gain boost.

Click the Fat button, enabling you to retain the low frequencies that are naturally diminished by high-resonance settings.

▶ Drag the Drive knob to about 20% distorting the filter and adding harmonics.



Now that you've created your filter settings, it's time to hear the result.

**3** Play the C3 through G#3 keys on your MIDI keyboard, listening to the result of the filter settings.

You can further expand on the filter's sound-shaping properties by applying modulation to the cutoff frequency. The goal is to create a surging filter sweep that is timed to the tempo of the song. You can do this by using the EXS24's modulation router, which is nearly identical to the ES2's modulation router, except that it calls the parameter that will be changed dynamically the destination instead of the target.

**4** In the third (empty) slot in the modulation router, choose filter cutoff (Flt Cutoff) as the destination (Dest), and LFO1 as the source (Src).



**5** Drag the Intensity slider to about +7.7%.



6 Select the top sawtooth setting for LFO1's waveform.



7 Drag LFO1's Rate knob to the left, setting it to 1/8.



This will create a filter sweep for every eighth note, no matter what the tempo of the project is.

**NOTE** ► The EXS24's LFO1 is polyphonic with its own envelope generator, just like the ES2.

Now it's time to test your modulation routing. Because it's tempo-dependent, let's listen to it playing in the Arrange window.

- 8 In the Transport bar, click the Cycle button.
- **9** Play the project, listening to the result.

You should hear a sweeping, pulsing, swelling drumbeat that is quite transformed from the original.

10 Stop the project.

While the loop was playing, you might have noticed the EXS24 distorting, and the channel volume pushing well into the red. This is because of the extra gain introduced by boosting the Drive and Resonance controls. You can buy back a little headroom by lowering the EXS24's own Volume control, located at the far right of the interface. **11** Drag the Volume knob downwards to a value of -7 db.



#### **Using Groups**

In the EXS24 Instrument Editor, zones can be organized into groups in order to apply common parameters to multiple zones simultaneously. Groups contain many of the same parameters used in zones, but they also offer some unique parameters of their own, such as the ability to offset both the filter settings and the envelopes. This allows you to create, for example, different cutoff and resonance values for different zones.

In the sampler instrument you created, the low-pass filter cuts out the high frequencies of all samples. By using groups, you can, in effect, apply a different cutoff frequency for just the snare hits.

1 On the EXS24 interface, click the Edit button.

The EXS24 Instrument Editor opens.

**2** From the local menu, choose Group > New Group.



A new group is created, Group #2, which appears within the Zones column.

000										
	Zones	Groups								
Zone	15									
🖳 All Zones										
	💼 Basic Drums									
	Group #2									

**NOTE** ► In addition to the newly created group, the Zones column displays All Zones, Ungrouped, and Basic Drums groups. The All Zones group contains all zones, regardless of their assignment. The Ungrouped group contains only zones that have no assignment whatsoever. The Basic Drums group, created by default when you imported the samples into the EXS24 Instrument Editor, contains all of the slices created by using the Convert Regions to New Sampler Track setting.

3 In the Zones column, double-click the name of the new Group (Group #2), and enter *Filter*. Press Return.



To display the parameters for the newly created group, you need to switch to Groups view.

4 Click the Groups view button.



The group parameters are displayed.

O O EX324 Instrument Editor: Basic Drums																		
Zones Gro	ups In	strument	. ♥ Edi	* Zon	e 🔻 Grou	up '	View	•	Show Vel	scity	]							EX524
Group	Key Ra	nge	Mixer	2			Voices	_				Filter O	ffsets	Envelo	pe 2 (Am	p) Offsets	-	
Name	Lo	Hi	Vol	Pan	Output		Poly.		Trigger	Dc	Time	Cutoff	Reso.	A	н	D	5	R
Basic Drums	C-2	G8	0	0	Main	:	Мах	:	Key Down ‡		0	0	0	0	0	0	0	0
Filter	C-2	C8	0	0	Main	:	Max	:	Key Down :	0	0	0	0	0	0	0	0	0
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**NOTE** by default, the editor only displays some of the group parameters, while hiding others. As you did with zones in an earlier exercise, you can select the parameters you want displayed within the View menu while in Groups view.

5 In the Filter Offsets parameters, double-click the Cutoff field and enter –5. Press Return.



This will lower the filter cutoff frequency for any zone assigned to this group.

Now that you created and modified the group, its time to assign the zones to the new group. This is done back in the Zones view.

6 Click the Zones view button.

You might be asking yourself "where did the zones go?" Not to worry; you are currently viewing the Filter group, which as of yet does not have any zones assigned to it.

7 Click the All Zones group.

All zones are displayed.

Zones can be easily assigned to groups by dragging and dropping onto the groups within the Zones column.

- 8 Command-click the zones mapped to D3 and G3 to select them.
- **9** Drag the selected zones to the Filter group.

000						EXS24 In			
Zones	Groups	Instrumen	t ▼ Edit ▼	Zone 🔻	Group 🔻	View 🔻			
Zones		Zone	Audio File	Pitch					
🖳 All Zones		Name	Name	Key 🔺					
Ungroupe	ed	Basic Drums	Basic Drum	is.aif	*	C3			
Rasis Dru	me	Basic Drums	Basic Drum	s.aif	*	C#3			
Basic Did		Basic Drums	Basic Drum	s.aif	*	D3			
Filter		Basic Drums	Basic Drum	s.aif	*	D#3			
		Basic Drums	Basic Drum	s.aif	*	E3			
		Basic Drums	Basic Drum	s.aif	-	F3			
		Basic Drums	Basic Drum	s.aif	*	F#3			
		Basic Drums	Basic Drum	s.aif	*	G3			
		Basic Drums	Basic Drum	is.aif	*	G#3			

**10** In the Zones column, select the Filter Group.

The two zones you added are displayed.

		EX52	4 In:	strument	Editor: B	asic Drun	15								_
Instrumen	t * Edit * Zone * Group *	View	•	Show	v Velocit	y							C	EXS2	4
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Name	Name	Key		Coarse	Fine	Vol	Pan	Scale	Output		Lo	Hi	Pitch	1Shot	Reve
Basic Drums	Basic Drums.aif	- D	3	0	0	0	0	0	Group	:	D3	D3		1	
Basic Drums	Basic Drums.alf	G	3	0	0	0	0	0	Group	:	G3	G3	۷	Ø	
	Sone Name Basic Drums Basic Drums	Instrument *     Edit *     Zone *     Group *       Zone     Audio File       Name     Basic Drums     Basic Drums.alf       Basic Drums     Basic Drums.alf     *	EXS2 Instrument * Edit * Zone * Group * View Zone Audio File Pric Name Key Basic Drums # Basic Drums.aif * G Basic Drums Basic Drums.aif * G	EXS24 In i Instrument v Edit v Zone v Group v View v Zone Audio File Pitch Name Key & Easic Drums Basic Drums.aif v D3 Basic Drums.aif v G3	EXS24 Instrument       Instrument     Edit       Zone     Audio File       Pitch       Name     Key & Coarse       Basic Drums     Basic Drums.aif       Basic Drums.     Basic Drums.aif	EXS24 Instrument € Edit ▼ Zone ▼ Group ▼ Visw ▼     Show Velocit       Zone     Audio File     Pitch       Name     Key ▲ Coarse Fine       Basic Drums.aif     ♥ D5     0       Rasic Drums. Rasic Drums.aif     ♥ G3     0	EX324 Instrument Editor: Basic Drum       Instrument * Edit * Zone * Group * View *     Show Velocity       Zone     Audio File     Pitch     Mixer       Name     Key & Coarse Fine     Vol       Basic Drums     Basic Drums.aif     D3     0     0       Basic Drums. Basic Drums.aif     *     G3     0     0	EXS24 Instrument Editor: Basic Drums       Instrument ▼ Edit ▼ Zone ▼ Group ▼ View ▼ Show Velocity       Zone     Audio File       Name     Key ▲ Coarse Fine     Vol       Basic Drums.     Basic Drums.aif     ▼ D3     0     0     0       Basic Drums.     Basic Drums.aif     ▼ G3     0     0     0	EXS24 Instrument Editor: Basic Drums           Instrument * Edit * Zone * Group * View *         Show Velocity           Zone         Audio File         Pitch         Mixer           Name         Key & Coarse         Fine         Vol         Pan         Scale           Basic Drums.         Basic Drums.alf         * DS         0         0         0         0         0           Basic Drums.         Basic Drums.alf         * G3         0         0         0         0         0         0	EXS24 Instrument Editor: Basic Drums       Instrument * Edit * Zone * Croup * View *)     Show Velocity       Zone     Audio File     Pitch     Mixer       Name     Key & Coarse     Fine     Vol     Pan     Scale     Output       Basic Drums.     Basic Drums.aif     * D3     0     0     0     0     Group	EXS24 Instrument Editor: Basic Drums           Instrument * Edit * Zone * Group * View *         Show Velocity           Zone         Audio File         Pitch         Mixer           Name         Name         Key & Coarse         Fine         Vol         Pan         Scale         Output           Basic Drums.         Basic Drums.alf         # D3         0         0         0         0         Group :	EXS24 Instrument Editor: Basic Drums           Instrument • Edit • Zone • Group • View • Show Velocity         Show Velocity         Key Ra           Zone         Audio File         Pitch         Miter         Key Ra           Name         Name         Key # Coarse         File         Vol         Pan         Scale         Output         Lo           Basic Drums.aif         • D3         0         0         0         0         Croup ±         D3           Basic Drums.aif         • G3         0         0         0         0         Croup ±         C3	EXS24 Instrument Editor: Basic Drums           Instrument * Edit * Zone * Group * View *         Show Velocity         Key         Key	EXS24 Instrument Editor: Basic Drums           Instrument ▼ Edit ▼ Zone ▼ Group ▼ Visw ▼         Show Velocity         Key Range         Playba           Zone         Audio File         Pitch         Mixer         Key Range         Playba           Name         Name         Key ▲ Coarse Fine         Vol         Pan         Scale         Output         Lo         Hi         Pitch           Basic Drums.         Basic Drums.alf         ▼ D3         0         0         0         Group 1         D3         Image: Course and C	EXS24 instrument Editor: Basic Drums           Instrument View V         Show Valocity         EXS24 instrument Editor: Basic Drums           Zone         Audio File         Pitch         Maxe         Maxe         Key Range         Pitch         Issic Drums         Basic Drums.aif         0

**11** Play the project, listening to the result.

The snare samples mapped to D3 and G3 have a slightly different filter cutoff frequency, changing the sound.

#### **Routing Individual Sounds for Processing**

As if the options offered by the EXS24's modulation and filter sections weren't enough, Logic allows you to further process the sound emanating from the EXS24 by inserting plug-ins in the signal chain. When you do this, the entire EXS24 signal is processed. Although this normally isn't a problem, there are some instances when you want to apply separate processing to individual zones within a sampler instrument.

To do this, you need to isolate the zone or group on its own mixer channel for individual processing. Fortunately, the EXS24 allows you to route individual sounds through separate virtual "outputs" to accomplish just that. These routings are selected by the Output menu in the Mixer parameters in either the Zone or Group parameters.

- 1 Click the Groups view button.
- 2 Click the Output field for the Filter group (it currently displays "Main"), and choose 3-4.



**NOTE** ► The first five selections represent stereo routings, and the last six selections represent mono.

3 In the local Instrument menu, choose Save.

To use this special function, you need to instantiate the EXS24 as a multi-output instrument. So far you've been working with the EXS24 as a stereo instrument and have done quite a bit of work modifying the zones and groups. Luckily, Logic allows you to keep all of the current settings when changing from stereo to multi-output instantiations.

**NOTE** ► For any software instrument, all settings and content contained in a software instrument will be transferred when switching modes (mono, stereo, multi-output, and 5.1).

- 5 At the bottom of the Arrange window, click the Mixer button to open the Mixer.
- 6 On the Basic Drums channel strip (Track 4), click-hold the Instrument slot to open the Instrument Plug-in menu and choose EXS24 (Sampler) > Multi Output (5xStereo, 6xMono).

1/0	_	
FXS24 (Sampler)	•	Mono
		✓ Stereo
No Plug-in		Multi Output (5xStereo, 6xMono)
EFM1 (FM Synth)	P	5.1
ES E (Ensemble Synth)		

The EXS24 interface opens after reloading the associated samples and current settings.

- 7 If necessary, move the EXS24 window so you can see the EXS24 Basic Drums channel strip (Track 4).
- **8** Just under the Solo button, click the small plus button (+) on the EXS24 Basic Drums channel strip (Track 4).



A new Aux 1 channel strip is created immediately to the right of the EXS24 Basic Drums channel strip (Track 4). This will be the receiving channel for our Filter group. By default, Logic creates an aux channel with the default stereo input of 3-4 for the associated multi-output instrument (in this case, the EXS24).



**9** Play the project, stopping after you've had a chance to observe the output of the Aux 1 channel.

The zones assigned to the Filter group play through the Aux 1 channel, while the remaining zones play through the EXS24 Basic Drums channel (Track 4).

TIP This technique works well for drum sampler instruments that need separate compression, EQ, and ambience treatments for individual drums (kick, snare, and so on).

Now that the snare slices are isolated on their own mixer channel, you can insert plug-ins or use send effects for further processing and not affect the other slices in the sampler instrument. In the following steps, you will send the snare slices through a simple Echo plug-in to create rhythmic echoes.

**10** Click the Aux 1 channel's top insert slot, and choose Delay > Echo >Stereo.



The Echo plug-in is instantiated, and its interface window opens.

**11** Click the Time menu, and choose 1/8T.



This sets the repeat time to eighth-note triplets.

**12** Drag the Wet slider down to 23%.

This will lower the volume level of the repeats so as not to overpower the original signal.

**13** Play the project, listening to the effect of all of the EXS24 programming you've done in the last few exercises.

The result is a surging, shuffling, processed drum loop, quite abstracted from the original audio file.

- **14** From the preset menu, choose Save Setting As.
- **15** In the file selector dialog, name the preset Vox Note and then click Save.

To give perspective on just how much has been changed, let's finish by listening to the original loop.

- **16** Close both the Echo and EXS24 windows.
- **17** Close the Mixer.
- **18** Using the Mute tool, select the Basic Drums.1 region on Track 3, unmuting the original region.

- **19** In the Transport bar, click the Solo button to enable it.
- 20 Play the project.
- **21** While the project is playing, select the original Basic Drums audio track (Track 3) and EXS24 Basic Drums software instrument track (Track 4) alternatively, soloing them.
- **22** Stop the project.
- 23 In the Transport bar, click the Solo button to disable it.

#### **Lesson Review**

- 1. Individual samples are referenced and mapped within what?
- 2. What contains the settings for how a sample will be played back, including key ranges?
- 3. Which tuning parameter in the EXS24 Instrument Editor would be used to tune by cents, Coarse or Fine?
- 4. Are loop points set within zones or groups?
- 5. What parameter in the EXS24 Instrument Editor is used to smooth out transitions between the end points and start points of a loop?
- 6. How are groups used in the EXS24 Instrument Editor?
- 7. Are filter and envelope offsets set within zones or groups?
- 8. What do multi-output instruments do?

#### Answers

- 1. Samples are mapped within sampler instruments.
- 2. Zones contain the settings for how a sample will be played back, including key range.
- 3. The Fine parameter is used to tune by cents.
- 4. Loop points are set within zones, as they refer to specific samples.

- 5. The Xfade parameter allows you to assign a crossfade between the end and start points of a loop, making it smoother.
- 6. Groups are used to assign common parameters to multiple zones.
- 7. Filter and envelope offsets are set within groups.
- 8. Multi-output instruments (such as Ultrabeat and EXS24 mkII) can route individual sounds to separate channel strips for isolation or further processing.



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