

SONAR™ X2 Power! The Comprehensive Guide

Scott R. Garrigus



Professional • Technical • Reference

Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

Not For Sale

Not For Sale



**SONAR™ X2 Power!: The
Comprehensive Guide**
Scott R. Garrigus

**Publisher and General Manager,
Cengage Learning PTR:**
Stacy L. Hiquet

Associate Director of Marketing:
Sarah Panella

Manager of Editorial Services:
Heather Talbot

Marketing Manager: Mark Hughes

Acquisition Editor: Orren Merton

Project and Copy Editor: Marta Justak

Technical Reviewer: Steve Thomas

Interior Layout Tech: MPS Limited

Cover Designer: Mike Tanamachi

Indexer: Sharon Shock

Proofreader: Megan Belanger

© 2014 Cengage Learning.

ALL RIGHTS RESERVED. No part of this work covered by the copyright herein may be reproduced, transmitted, stored, or used in any form or by any means graphic, electronic, or mechanical, including but not limited to photocopying, recording, scanning, digitizing, taping, Web distribution, information networks, or information storage and retrieval systems, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the publisher.

For product information and technology assistance, contact us at
Cengage Learning Customer & Sales Support, 1-800-354-9706

For permission to use material from this text or product, submit all requests
online at **cengage.com/permissions**

Further permissions questions can be emailed to
permissionrequest@cengage.com

Cakewalk® and SONAR™ are either trademarks or registered trademarks of Twelve Tone Systems, Inc. All other trademarks are the property of their respective owners.

All images © Cengage Learning unless otherwise noted.

Library of Congress Control Number: 2013930066

ISBN-13: 978-1-285-19894-1

ISBN-10: 1-285-19894-8

Cengage Learning PTR

20 Channel Center Street
Boston, MA 02210
USA

Cengage Learning is a leading provider of customized learning solutions with office locations around the globe, including Singapore, the United Kingdom, Australia, Mexico, Brazil, and Japan. Locate your local office at:
international.cengage.com/region

Cengage Learning products are represented in Canada by
Nelson Education, Ltd.

For your lifelong learning solutions, visit **cengageptr.com**

Visit our corporate website at **cengage.com**

Acknowledgments

First and foremost, I want to thank everyone who purchased this book. For technical writers and those of us who write for niche markets, every sale counts, so I truly appreciate your support.

I also want to thank my long-time fans and all the people who take the time to visit my website, in addition to reading my ramblings in the DigiFreq pro audio and music technology newsletter. Also, special thanks to those of you who took the time to inform me about your thoughts regarding past editions of the book, as well as any errata that were found. I appreciate your help.

Thanks to Tara Zanett, Marcus Dandurand, Jimmy Landry, Andrew Rossa, Joshua Langberg, Seth Kellogg, Zylar Vega, Ben Blanchard, Noel Borthwick, and the rest of the Cakewalk team.

Thanks to Steve Thomas for all his great work on the tech edit and helping me find any errors in the material that I missed.

Thanks to Orren Merton, Stacy Hiquet and the rest of the Cengage Learning team.

Special thanks to Marta Justak for all her hard work in keeping this project together. Without her help, this book would not have been possible.

And finally, thanks to my family, friends, and to God for all that I have.

About the Author

Scott R. Garrigus is a professional musician, artist, and multimedia developer. He has a B.A. in music performance with an emphasis in sound recording technology from UMass, Lowell. His current endeavors include the following:

- ▷ Garrigus.com (**garrigus.com**): Official website of Scott R. Garrigus.
- ▷ Power Books (**garrigus.com?PowerBooks**): Author of the Cakewalk SONAR Power! book series and the Sony Sound Forge Power book series.
- ▷ ProAudioTutor (**garrigus.com?ProAudioTutor**): Author of the ProAudioTutor music technology tutorial series.
- ▷ DigiFreq (**garrigus.com?DigiFreq**): Publisher of the DigiFreq music technology newsletter and website, a free resource for professional musicians and home recording users.
- ▷ NewTechReview (**garrigus.com?NewTechReview**): Publisher of the NewTechReview consumer technology newsletter and website, a free resource for consumers and technology enthusiasts.

Contents

Introduction	xv
Chapter 1 Getting to Know SONAR X2	1
The Way SONAR Works	1
Skylight and the Views	1
SONAR Producer vs. Studio vs. Essential	3
A Basic Studio Setup	3
Computer	4
Audio Interface (Sound Card)	4
MIDI Interface	6
MIDI Keyboard Controller	6
Control Surface	6
Microphone	6
Speakers (Monitors)	7
Finding Help When You Need It	7
Chapter 2 SONAR X2 Customization	9
Organizing Files	9
Changing File Locations	9
Customizing Audio Folders	10
Per-Project Audio Folders	10
The Picture Folder	10
Customizing the Workspace	11
Colors	11
The Control Bar	11
Program and Plug-In Menus	12
Working with Screensets	15
X-Ray Windows	17
Using Key Bindings	18
Transforming the Track View	19
Customizing MIDI Settings	21
Working with MIDI Devices	21
Setting Global MIDI Options	22
Understanding Instrument Definitions	22
Optimal Audio Settings	27
Adjusting the Buffer Size Slider	27
Setting Driver Mode	27

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

ASIO Drivers	28
Setting Queue Buffers and I/O Buffer Sizes	28
Read and Write Caching	29
Panning Laws	29
Chapter 3 Creating and Working with Projects	31
Opening Projects	31
Opening in Recovery Mode	32
Finding Missing Audio Files	32
Creating a New Project	34
What's a Template?	35
Creating Your Own Template	35
Saving Your Project	40
Project File Types	40
Additional Saving Features	42
Chapter 4 Finding Your Way Around the SONAR Workspace	45
The Now Time	45
Show Me the Now Time	45
Setting the Now Time	47
The Go Functions	49
Go-Time (G)	49
Go-From and Go-Thru (Shift+G)	49
Go-Beginning and Go-End (Ctrl+Home and Ctrl+End)	49
Go-Previous Measure and Go-Next Measure (Ctrl+PgUp and Ctrl+PgDn)	50
Go-Previous Marker and Go-Next Marker (Ctrl+Shift+PgUp and Ctrl+Shift+PgDn)	50
Markers, Oh My!	50
Make Your Mark(ers)	50
Editing the Markers	51
Navigating with Markers	52
Searching for Data	53
Chapter 5 Recording Audio and MIDI	55
Preliminary Parameters	55
The Inspector	55
Metronome	55
MIDI Echo	57
MIDI Input Quantize	59
Sampling Rate and Bit Depth	60
Input Monitoring	60
Record Mode	61

Recording and Playback	62
Multiple Track Recording and Playback	64
Loop Recording	64
Punch Recording	66
Step Recording	67
Importing	70
The Media Browser	70
Importing from SONAR Project Files	72
Importing MIDI Files, Project5, and Step Sequencer Patterns	73
Importing Audio Files	73
CD Ripping	74
Synchronization	74
Synchronization Basics	74
MIDI Sync	75
SMPTE/MIDI Time Code	75
Chapter 6 The Basics of Editing	79
The Global Editing Tools	79
The Smart Tool and Other Tools	79
The Edit Filter	80
Snap to Grid Settings	81
Arranging with the Track View	82
Dealing with Tracks	83
Dealing with Clips	92
Using the Piano Roll View	107
Working with Multiple Tracks	109
Dealing with Notes	110
Dealing with Drum Tracks	115
Dealing with Controllers	120
The Inline Piano Roll View	122
Using the Step Sequencer View	123
Opening the Step Sequencer View	124
Setting Up the Step Sequencer View	124
Working with Notes	125
Working with Controllers	128
Step Recording Patterns	128
Working with Step Sequencer Clips	129
Using the Event List View	130
Opening the View	130
Filtering Events	130
Editing Events	131

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

Using the Tempo View	133
Opening the View	133
Editing Tempo Changes	133
Using the Tempo Commands	134

Chapter 7 Advanced Audio and MIDI Editing 137

Advanced Data Selection	137
Selecting a Range of Data by Time	137
Selecting a Range of Data by Filter	138
Some Selection Applications	138
Advanced Audio Editing	139
Removing DC Offset	139
Adjusting Audio Volume	140
Getting Rid of Silence	144
Playing It Backward	145
The Process Menu	146
Deglitch	146
Slide	146
Nudge	147
Quantize	147
The Groove Quantize Feature	149
Saving Groove Patterns	150
The Find/Change Feature	151
The Length Feature	153
The Retrograde Feature	153
The Transpose Feature	154
The Scale Velocity Feature	154
Fit to Time	154
Fit Improvisation	155
Audio Snap	155
AudioSnap Preparation	156
Fix and Regroove (Quantize)	158
Extract a Groove and MIDI	159
Multitrack AudioSnap Alignment	160

Chapter 8 Using Soft Synths in Your Projects 163

Using Soft Synths	163
The Insert Soft Synth Function and the Browser	165
The Synth Rack	168
The Cakewalk TTS-1	173
TTS-1 Basics	173

Contents

The Roland GrooveSynth	176
Working with Synth Sounds	176
Working with Drum Kits	177
The Pentagon I	178
Loading and Saving Programs	178
The PSYN II	179
Loading and Saving Programs	180
The Cyclone	181
Cyclone Basics	181
RXP REX Player	185
RXP Basics	186
TruePianos (Amber Module)	188
Basic Interface	188
Global Options	189
Advanced Interface	189
ReWire	190
SoundFonts	190
Using the sfz SoundFont Player	190
Session Drummer 3	192
Session Drummer 3 Basics	192
Dimension Pro	196
Working with Programs	196
Using Elements to Create Programs	197
Using the Modulators Section	198
Rapture	199
Working with Programs	200
Using Elements to Create Programs	201
DropZone	205
DropZone Basics	205
Using Elements to Create Programs	206
z3ta+	209
Loading and Saving Programs	209
Using z3ta+ as an Effects Processor	210
Cakewalk Sound Center	211
Studio Instruments	211
Interface Basics	212
SI-Bass Guitar	213
SI-Drum Kit	213
SI-Electric Piano	214
SI-String Section	215

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

Chapter 9 Creating Music with Beats and Loops	217
Groove Clips	217
Creating Groove Clips	217
The Loop Construction View	219
Saving Groove Clips	222
Exporting MIDI Groove Clips	222
Working with Groove Clips	222
Controlling Project Pitch	222
Pitch Markers	223
The Matrix View	224
Grabbing Files for the Grid	225
Configuring Columns and Rows	226
Controlling Cells and Columns	227
Record a Matrix View Performance	228
Chapter 10 Mixing Music in SONAR	231
The Console View	231
The MIDI Track Strips	232
The Audio Track Strips	235
The Buses	238
The Mains	241
Configuring the Console and Track Views	242
Strip Arrangement and Selection	242
Number of Buses	242
The Track Managers	242
Show/Hide Console Components	243
Changing the Meters	243
Chapter 11 Exploring Effects Plug-Ins	247
Offline or Real Time?	247
Offline Processing	247
Real-Time Processing	248
Audio Effects	253
Equalization	254
Delay	259
Chorus	261
Flanging and Phasing	262
Reverberation	264
Dynamics	271
Changing Time and Pitch	280

Amplifier Simulation	287
Analog Tape Simulation – Cakewalk FX2 Tape Sim.	289
Analog Vacuum-Tube Simulation – TL-64 Tube Leveler	289
Other Effects	291
Sidechaining Effects	318
External Hardware Effects	320
MIDI Effects	321
Automatic Arpeggios	321
Chord Analysis	322
Echo Delay	322
MIDI Event Filter	323
Quantize	323
Transpose	324
Velocity	324
Chapter 12 Automation and Control Surfaces	327
Taking Snapshots	327
Automating the Mix	328
Automation Write Modes	328
Automation Time Base	329
Recording Automation	330
Grouping	330
Quick Groups	331
Creating Permanent Groups	331
Ungrouping and Deleting Groups	332
Group Properties	332
Remote Control	333
Global Remote Control Support	334
Control Surface Setup	334
Edirol PCR-800 MIDI Controller	335
The Active Controller Technology (ACT) MIDI Controller	335
Where Am I?	339
Working with Envelopes	340
Automation Lanes	340
Creating and Editing Envelopes	341
Additional Envelope Editing	345
Automating Effects and Soft Synths	347
Automating Effects Parameters	347
Automating Soft Synth Parameters	347
The Next Steps	348

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

Chapter 13	Export Audio and Burn CDs	349
Preparing a Project for CD Audio		349
Converting Your MIDI Tracks		349
Exporting Your Audio Tracks		352
Burning CDs with SONAR		354
Chapter 14	Surround Sound with SONAR	357
Setting Up Your Studio		357
Surround Sound Cards		357
Surround Sound Monitors		358
Setting Up SONAR for Surround		360
Surround Project Option		361
Surround Sound Business		364
Surround Sound Mixing		365
Surround Sound Panning		366
Surround Sound Effects		370
Dedicated Surround Effects		370
Using Stereo Effects in Surround		372
Exporting Your Surround Project		374
Downmixing		375
Exporting to Multichannel WAV or WMA		375
Encoding and Burning		376
Chapter 15	Standard Music Notation via the Staff View	377
The Staff View		377
Changing the Layout		379
Percussion Tracks		380
Showing Pedal Events and Chord Grids		381
Changing Text Fonts		381
Rhythmic Appearance		382
Dealing with Notes		383
Selecting		383
Editing		384
Drawing (or Adding)		385
Erasing		385
Scrub and Step Play		385
Dealing with Symbols and Lyrics		386
Chord Symbols and Grids		386
Expression Marks		389
Hairpin Symbols		391

Pedal Marks	392
Lyrics	393
The Fretboard and Tablature	394
The Fret Pane	394
Tablature	395
Printing Your Music	398
Chapter 16 Studio Control with StudioWare and Sysx	401
System Exclusive	401
The Sysx View	401
Receiving System Exclusive Data	402
Sending System Exclusive Data	404
Editing Bank Data	406
Sharing with Friends	407
Introducing Studio Ware	407
The StudioWare View	408
Opening a StudioWare Panel	408
Taking a Snapshot	409
Recording Control Movements	411
Chapter 17 The Cakewalk Application Language (CAL)	413
What Is CAL?	413
Running a CAL Program	414
The CAL Files	414
Dominant 7th Chord.CAL	414
Other Chord.CAL Programs	415
Random Time.CAL	415
Scale Velocity.CAL	416
Split Channel to Tracks.CAL	416
Split Note to Tracks.CAL	417
Thin Controller Data.CAL	418
Other Thin.CAL Programs	419
Viewing CAL Programs	419
Introduction to CAL Programming	420
The <code>include</code> Function	421
Variables	422
User Input	422
The <code>forEachEvent</code> Function	422
Conditions	422
Arithmetic	423

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

Master Presets	423
CAL Conclusion	425

Chapter 18 Audio for Video with SONAR 427

Importing Video Files	427
Exporting Video Files	430
Exporting Audio Files	431
Audio File Formats	431
Exporting to Windows Media	434
Exporting to MP3	435

Index	439
--------------	------------

Introduction

This is the first book on the market that deals exclusively with Cakewalk's SONAR X2. You can find other Cakewalk-related and generic books about using computers to create and record music that might provide a small amount of information about SONAR X2, but none of them provides complete coverage of the product. Of course, SONAR X2 comes with an excellent manual, but like most other manuals, it is meant only as a feature guide.

Instead of simply describing the features of the program and how they work, I'm going to dig deep down into the software and show you exactly how to use the product with step-by-step examples and exercises that will help make your composing and recording sessions run more smoothly. I'll explain the available features, and I'll do it in a manner you can understand and use right away.

With SONAR X1, Cakewalk redesigned the user interface and created an entirely new workflow. In SONAR X2, Cakewalk has built upon the foundation of X1 by adding new features and refining the workflow even more. With these changes, will it be difficult to get up and running with the new version? No. This *SONAR X2 Power!* book provides the information you need to get comfortable with SONAR X2. If you are a new SONAR user, I'll show you each of the features with information on what they are, why you need them, and how to use them. If you are a seasoned SONAR user, I'll let you know the differences between version X1 and X2. I will also cover what you need to know about the refined workflow. And since SONAR X2 comes in three different flavors (Producer, Studio, and Essential), I will also include information about what features are found in each.

What You Need to Begin

I'm going to assume that SONAR is installed on your computer and that you know how to start the program. In addition, you should have at least skimmed through the user's guide that comes with the software, and you should have all your external audio and MIDI gear set up already. I'm also going to assume that you know how to use your mouse for clicking, dragging, double-clicking, right-clicking, and so on. You also should know how to work with basic Windows features (such as Windows Explorer), and you should have access to the Internet.

In addition, a basic knowledge of music, MIDI, and digital audio concepts is required to use SONAR. Before going any further, I would recommend that you look at some of the following resources if you are just getting started with computer-based music creation:

- ▷ *Desktop Music Handbook*: garrigus.com?DesktopMusic
- ▷ *MIDI Power!*: garrigus.com?MIDIpower
- ▷ *The MIDI Manual*: garrigus.com?MIDIManual
- ▷ *Audio Made Easy*: garrigus.com?AudioMadeEasy

Not For Sale

SONAR X2 Power!: The Comprehensive Guide

Conventions Used in This Book

Throughout this book, you'll find a sort of shorthand to describe the various actions you need to take in order to perform tasks. Here is what you need to know before reading any further:

- ▷ **Clicking:** Whenever I say to click [*item*], it means to use the left mouse button to click the mentioned item. I may also tell you to Ctrl+click, Shift+click, or Alt+click an item, which means you need to hold the specific PC keyboard key while left-clicking the item. Right-clicking will be mentioned explicitly.
- ▷ **Choosing:** Whenever I say to choose *item* > *item*, it means to left-click on the specified SONAR menus. Most of the time, I will be talking about SONAR's main menu, but each view also has its own menu, so I will mention a specific menu when necessary.
- ▷ **Pressing:** Whenever I say to press *item* or press *item+item*, it means to press the specified key or key+key on your keyboard.
- ▷ **Preferences:** Whenever I mention SONAR's Preferences dialog box, I'm going to assume that you have the Advanced option activated. To do this, start SONAR and choose Edit > Preferences from the main menu. In the dialog box, choose the Advanced option, which is located at the bottom left. Click OK.
- ▷ **Website Links:** Whenever I provide a website link, type in exactly what is shown in **bold** and don't include any punctuation that may surround the link, such as a link to my website (**garrigus.com?SonarEventInspector**). For that link, you would type **garrigus.com?SonarEventInspector** without including the parentheses or period.

Lastly, be sure to sign up for my free pro audio and home recording newsletter (**garrigus.com?DigiFreq**) for additional SONAR articles, book updates, and free video tutorials. Thanks, and I hope you enjoy the book!