

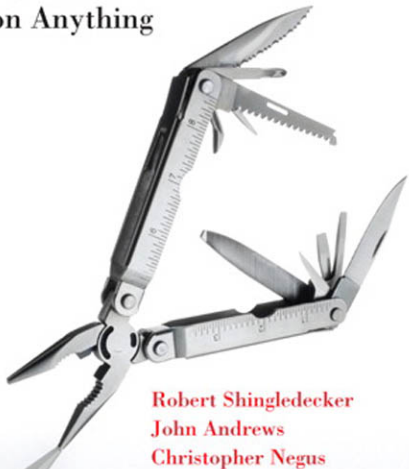
NEGUS LIVE LINUX SERIES

THE OFFICIAL

# Damn Small<sup>®</sup> Linux<sup>®</sup>

BOOK

The Tiny Adaptable Linux That  
Runs on Anything



Robert Shingledecker  
John Andrews  
Christopher Negus



# **The Official Damn Small Linux<sup>®</sup> Book**

***Your practical, hands-on guides to getting  
real results with free software***

Books in the Negus Live Linux Series encourage and challenge you to advance in the free software world. Boot the live DVD or CD that comes with each book and watch the Linux system, applications, and content described in the book come to life before your eyes.

Start as a novice by trying out examples and finish as a professional, mastering the many topics covered in the series, from building PHP/MySQL sites to customizing live CDs and more. When you are finished, you will know how to use, customize, and rebuild that free and open source software yourself.

Overseeing the series is Christopher Negus, bestselling author of the Red Hat Linux Bible series, Linux Toys series, and the signature book for this series, *Live Linux CDs*.

NEGUS LIVE LINUX SERIES

# The Official Damn Small Linux<sup>®</sup> Book

**The Tiny Adaptable Linux<sup>®</sup>  
That Runs on Anything**

**Robert Shingledecker, John Andrews,  
Christopher Negus**



An Imprint of Pearson Education

Upper Saddle River, NJ ■ Boston ■ Indianapolis ■ San Francisco

New York ■ Toronto ■ Montreal ■ London ■ Munich ■ Paris ■ Madrid

Cape Town ■ Sydney ■ Tokyo ■ Singapore ■ Mexico City

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and the publisher was aware of a trademark claim, the designations have been printed with initial capital letters or in all capitals.

The authors and publisher have taken care in the preparation of this book, but make no expressed or implied warranty of any kind and assume no responsibility for errors or omissions. No liability is assumed for incidental or consequential damages in connection with or arising out of the use of the information or programs contained herein.

The publisher offers excellent discounts on this book when ordered in quantity for bulk purchases or special sales, which may include electronic versions and/or custom covers and content particular to your business, training goals, marketing focus, and branding interests. For more information, please contact:

U.S. Corporate and Government Sales  
(800) 382-3419  
corpsales@pearsontechgroup.com

For sales outside the United States please contact:

International Sales  
international@pearsoned.com



#### **This Book Is Safari Enabled**

The Safari® Enabled icon on the cover of your favorite technology book means the book is available through Safari Bookshelf. When you buy this book, you get free access to the online edition for 45 days.

Safari Bookshelf is an electronic reference library that lets you easily search thousands of technical books, find code samples, download chapters, and access technical information whenever and wherever you need it.

To gain 45-day Safari Enabled access to this book:

- Go to <http://www.prenhallprofessional.com/safarienabled>
- Complete the brief registration form
- Enter the coupon code MZMJ-WP3L-2RXB-HYLV-GTMI

If you have difficulty registering on Safari Bookshelf or accessing the online edition, please e-mail [customer-service@safaribooksonline.com](mailto:customer-service@safaribooksonline.com).

Visit us on the Web: [www.prenhallprofessional.com](http://www.prenhallprofessional.com)

Library of Congress Cataloging-in-Publication Data

Shingledecker, Robert.

The official Damn Small Linux book : the tiny adaptable Linux that runs on anything / Robert Shingledecker, John Andrews, Christopher Negus.

p. cm.

ISBN 0-13-233869-6 (pbk. : alk. paper) 1. Linux. 2. Operating systems (Computers) I. Andrews, John, 1971- II. Negus, Chris, 1957- III. Title.

QA76.76.O63S555554 2007

005.4'32—dc22

2007020589

Copyright © 2008 Pearson Education, Inc.

All rights reserved. Printed in the United States of America. This publication is protected by copyright, and permission must be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permissions, write to:

Pearson Education, Inc  
Rights and Contracts Department  
501 Boylston Street, Suite 900  
Boston, MA 02116  
Fax (617) 671 3447

ISBN-13: 978-0-13-233869-1

ISBN-10: 0-13-233869-6

Text printed in the United States on recycled paper at RR Donnelley in Crawfordsville, Indiana.

First printing August, 2007

#### **Editor-in-Chief**

Mark L. Taub

#### **Acquisitions Editor**

Debra Williams Cauley

#### **Development Editor**

Songlin Qiu

#### **Managing Editor**

Gina Kanouse

#### **Project Editors**

San Dee Phillips

Jovana San Nicolas-Shirley

Michael Thurston

#### **Copy Editor**

Kelli Brooks

#### **Indexer**

Erika Millen

#### **Proofreader**

Water Crest Publishing

#### **Publishing Coordinator**

Dan Uhrig

#### **Multimedia Developer**

Dan Scherf

#### **Interior Designer**

Jake McFarland

#### **Cover Designer**

Alan Clements

#### **Composition**

Jake McFarland

Nonie Ratcliff

***John Andrews' dedication:***

*I would like to dedicate my parts of this book  
to Jennifer, Marja, Kelsey, and Maddie, who had  
to deal with a busy husband and daddy while  
I took the time to write my chapters.*

***Robert Shingledecker's dedication:***

*In loving memory of my parents, Winston and Stella.*

***Christopher Negus' dedication:***

*As always, I dedicate my contribution to this book  
to my wife, Sheree.*

*This page intentionally left blank*

# Contents

	<b>Acknowledgments . . . . .</b>	<b>xvii</b>
	<b>About the Authors . . . . .</b>	<b>xix</b>
	<b>Introduction . . . . .</b>	<b>1</b>
	As You Read This Book. . . . .	2
	Audience for This Book. . . . .	3
	Organization of This Book . . . . .	4
	What You Need to Use This Book. . . . .	5
<b>PART I</b>	<b>Using Damn Small Linux. . . . .</b>	<b>7</b>
<b>CHAPTER 1</b>	<b>Overview of Damn Small Linux . . . . .</b>	<b>9</b>
	Measuring Damn Small Linux Success . . . . .	10
	Understanding What Damn Small Linux Does Best . . . . .	11
	Getting the Most Out of Damn Small Linux . . . . .	14
	Booting DSL. . . . .	15
	Customizing the Desktop . . . . .	15
	Adding Applications with MyDSL. . . . .	16
	Saving and Restoring Settings and Data . . . . .	16
	Running DSL on Older PCs. . . . .	17
	Building Projects with DSL . . . . .	17
	Making Your Own DSL Software . . . . .	17
	What Is Damn Small Linux? . . . . .	18
	Understanding Operating Systems . . . . .	18
	Understanding Live CDs . . . . .	19



	Based on Debian and KNOPPIX . . . . .	20
	Answers from the DSL Developers . . . . .	20
	The Damn Small Linux Community . . . . .	24
	On the CD . . . . .	26
	Summary . . . . .	27
<b>CHAPTER 2</b>	<b>Bootling DSL . . . . .</b>	<b>29</b>
	Understanding How DSL Boots . . . . .	30
	Hardware Requirements . . . . .	31
	Software Requirements–DSL Versions . . . . .	32
	Getting Damn Small Linux . . . . .	32
	Downloading Damn Small Linux . . . . .	33
	Getting to the Boot Prompt . . . . .	33
	Understanding Boot Stages of DSL . . . . .	35
	The First Boot Stage: Choosing Boot Options . . . . .	35
	The Second Boot Stage: Autoconfiguration . . . . .	39
	The Third Boot Stage: Setting Up X . . . . .	41
	Advanced Boot Options . . . . .	45
	Running in Background Services Daemons of DSL . . . . .	45
	Summary . . . . .	46
<b>CHAPTER 3</b>	<b>Using DSL Applications. . . . .</b>	<b>47</b>
	The Logic Behind Our Choices . . . . .	47
	The Fluxbox Window Manager . . . . .	48
	Navigating Virtual Desktops . . . . .	48
	The Fluxbox Pager. . . . .	50
	Grouping Applications with Tabs . . . . .	51
	Mounting Drives and Controlling Volume . . . . .	53
	Using the JWM Window Manager . . . . .	54
	Using DSL Applications . . . . .	55
	X-Based Applications . . . . .	55
	Terminal-Based Applications . . . . .	63
	Lua Applications. . . . .	66
	Daemon Applications. . . . .	67
	Summary . . . . .	69

<b>CHAPTER 4</b>	<b>Configuring and Saving DSL Settings . . . . .</b>	<b>71</b>
	Backing Up and Restoring Your Configuration. . . . .	72
	Backup and Restore—The Basics . . . . .	72
	Selecting Files and Directories to Back Up with .filetool.lst . . . .	73
	Excluding Files and Directories from the Backup . . . . .	74
	Restoring Your Setting . . . . .	75
	Configuring the Desktop . . . . .	75
	Selecting Your Desktop . . . . .	76
	Managing Icons . . . . .	76
	Selecting Backgrounds and Wallpapers . . . . .	80
	Setting Date and Time . . . . .	81
	Identifying Screen Resolution . . . . .	82
	Connecting to the Net . . . . .	83
	Configuring a Modem . . . . .	83
	Ethernet Configuration. . . . .	87
	Native Wireless Configuration Tools. . . . .	88
	Other Wireless Card Using Ndiswrapper . . . . .	89
	Printing Using Apsfilter. . . . .	90
	Printer Driver Selection . . . . .	90
	Printer Interface Setup . . . . .	92
	Paper Format . . . . .	93
	Printing a Test Page . . . . .	93
	Saving Your Settings on the Web . . . . .	96
	Summary . . . . .	98
<b>CHAPTER 5</b>	<b>Extending Applications with MyDSL . . . . .</b>	<b>99</b>
	Introducing MyDSL. . . . .	99
	Overcoming Shortcomings of Hard Drive Installations . . . . .	99
	The Birth of MyDSL . . . . .	100
	Loading Extensions Dynamically. . . . .	101
	Exploring the MyDSL Software Bazaar . . . . .	102
	Using Desktop Icon for Easy Point-and-Click Access . . . . .	103
	Changing Download Repository Mirror . . . . .	109
	Accessing DSL Extensions via a Web Browser. . . . .	110
	Getting Extensions from the Official DSL Website . . . . .	110
	Getting Extensions via DSL's Help Screen . . . . .	110

Saving Your Extensions . . . . .	113
Boot Time Automatic Extension Loading . . . . .	114
Optional Command-Line Extension Access . . . . .	115
Remote Access via the Command Line . . . . .	115
Local Access with the Command Line . . . . .	116
Setup and Usage Errors . . . . .	116
Summary . . . . .	117

## **PART II                      DSL Beyond the Live CD . . . . . 119**

### **CHAPTER 6                Running a Native Pen Drive Install . . . . . 121**

USB Boot Types—Background on the Two Types of USB Layouts . . . . .	122
USB-ZIP . . . . .	122
USB-HDD . . . . .	122
Boot: Install . . . . .	124
USB-HDD . . . . .	124
USB-ZIP Installation . . . . .	128
What to Do When Your Computer's BIOS Does Not Support USB Booting . . . . .	133
After Install: Setting Default Backup/Restore and MyDSL Partitions . . . . .	134
A Note on DSL-embedded.zip . . . . .	136
Developments in the Wiki . . . . .	136
Summary . . . . .	137

### **CHAPTER 7                Running DSL Embedded in Windows . . . . . 139**

Running DSL in Qemu . . . . .	139
Using DSL-Embedded . . . . .	141
Accessing Native Files from Within the Virtual Environment . . . . .	144
Using Your DSL-Embedded Equipped Pen Drive for Native BIOS Bootng . . . . .	145
Increasing Qemu's Performance with KQemu . . . . .	145
Running DSL in VMPlayer—VMWare's Free Virtual Machine . . . . .	146
Comparing VMPlayer to Qemu . . . . .	147
Running VMPlayer with Damn Small Linux . . . . .	148
Summary . . . . .	149

<b>CHAPTER 8</b>	<b>Installing DSL in Alternate Ways . . . . .</b>	<b>151</b>
	Overview . . . . .	151
	Starting a DSL Installation . . . . .	153
	Frugal—The Most Popular Way to Install DSL . . . . .	154
	Partitioning with Cfdisk . . . . .	154
	Frugal Grub Hard Drive Install . . . . .	156
	Frugal Lilo CompactFlash Install . . . . .	159
	Poorman's—An Easy Way to Try DSL . . . . .	163
	Prepare Boot Floppies . . . . .	163
	DSL Installed on Windows 9x or DOS Partition . . . . .	164
	DSL Installed on an Existing Linux Partition . . . . .	165
	Frugal DSL Install on Windows 9x or DOS . . . . .	166
	Booting DSL from Native DOS Mode Using LinLd . . . . .	166
	Booting DSL from Native DOS Mode Using LoadLin . . . . .	167
	Poorman's Revisited . . . . .	168
	Use an Alternate Machine. . . . .	168
	Poorman's DSL from PCMCIA . . . . .	169
	Poorman's DSL from USB Drive . . . . .	169
	Poorman's DSL from a Zip Drive . . . . .	169
	Installing from a Stack of Floppy Diskettes . . . . .	169
	No Operating System Network Install via Tomsrtbt . . . . .	172
	Hardware Requirements for Network Install. . . . .	172
	Starting the Network Install . . . . .	173
	Summary . . . . .	175
<b>CHAPTER 9</b>	<b>Performing a Traditional Hard Drive Install. . . . .</b>	<b>177</b>
	Conventional Hard Drive Install Versus Frugal Install . . . . .	177
	Some Debian Compatibility . . . . .	178
	Hardware Requirements . . . . .	179
	Pre-Installation Preparation . . . . .	180
	Partitioning with Cfdisk . . . . .	180
	Creating the Swap File . . . . .	182
	The Hard Drive Install Script . . . . .	183
	Enabling Apt-Get with Dpkg-Restore . . . . .	186
	Summary . . . . .	186

<b>PART III</b>	<b>Creating Extensions and Remastering . . . . .</b>	<b>187</b>
<b>CHAPTER 10</b>	<b>Adding Applications and Creating Shareable Extensions. . . . .</b>	<b>189</b>
	Overview. . . . .	189
	Creating MyDSL Extensions . . . . .	190
	Understanding MyDSL Extensions . . . . .	191
	Common Elements to All MyDSL Extensions . . . . .	192
	The Menu Element . . . . .	192
	The Icon Element . . . . .	193
	Creating DSL and UNC Extensions . . . . .	194
	The DSL Extension Type . . . . .	194
	The UNC Extension Type . . . . .	198
	Creating TAR.GZ and UCI Extensions. . . . .	201
	Compiling from Source to Create a TAR.GZ Extension. . . . .	202
	The UCI Extension Revealed . . . . .	205
	Sharing Your Extension with the World . . . . .	207
	The Info File for All to Read . . . . .	208
	Checksum File for Quality Assurance . . . . .	208
	Submitting Your Extension for Publication . . . . .	209
	Summary . . . . .	209
<b>CHAPTER 11</b>	<b>Setting Up a Full Remastering Environment . . . . .</b>	<b>211</b>
	Making Your Frugal MyDSL Installation into a Bootable CD-ROM . . . . .	212
	Getting Started. . . . .	213
	Starting the MkMyDSL Script . . . . .	215
	Recording Your ISO Later Using CDW . . . . .	218
	Booting Your New CD . . . . .	220
	Full Remastering . . . . .	221
	Setting Up from Published DSL CD-ROM . . . . .	221
	Making Modifications, Additions, and Removals. . . . .	223
	Other Customizations . . . . .	227
	Advanced Customizations . . . . .	228
	Creating the Isolinux Standard ISO Image . . . . .	230
	Creating the Syslinux ISO Image. . . . .	233

	Building the DSL Qemu Embedded Version . . . . .	235
	Building the DSL VMware Edition . . . . .	236
	Using a New Kernel for DSL . . . . .	237
	Summary . . . . .	241
<b>PART IV</b>	<b>Making Damn Small Linux Projects . . . . .</b>	<b>243</b>
<b>CHAPTER 12</b>	<b>Running DSL on Alternative Hardware . . . . .</b>	<b>245</b>
	An Argument for Using DSL in Embedded Systems . . . . .	245
	USB Mountable Appliances . . . . .	246
	Alternative CPU-Based Hardware . . . . .	247
	Embedded Systems and Thin Clients . . . . .	247
	Mini-ITX Systems . . . . .	248
	Special Considerations for Running Alternative Hardware . . . . .	250
	Other People's Garbage (Resurrecting Old Laptops) . . . . .	252
	From Thin Client to Work Station Paradise . . . . .	254
	Green Machines . . . . .	257
	Summary . . . . .	257
<b>CHAPTER 13</b>	<b>Making an Edna Music Server in DSL . . . . .</b>	<b>259</b>
	About the Edna Music Server . . . . .	259
	Installing the Edna Server on DSL . . . . .	260
	Editing the Path to Your Music . . . . .	262
	Set Up Walk-Through . . . . .	264
	Configuration Options, Customization, and Saving Setting . . . . .	267
	Edna and Accessing Remote Music . . . . .	268
	Summary . . . . .	269
<b>CHAPTER 14</b>	<b>Using Skype VoIP Service in DSL . . . . .</b>	<b>271</b>
	Introduction to Skype and VoIP . . . . .	272
	Setting Up VoIP Hardware . . . . .	274
	Setting Up ALSA Sound in DSL . . . . .	275
	Starting with Skype in DSL . . . . .	277
	Installing Skype . . . . .	277
	Getting a Skype User Account . . . . .	278
	Using Skype . . . . .	280
	Trying a Test Call . . . . .	282
	Finding People to Connect To . . . . .	282

	Working with Groups of Contacts . . . . .	284
	Sending Contacts Lists . . . . .	284
	Making Free Calls . . . . .	285
	Participating in Chats . . . . .	285
	Using Skype For-Pay Services and Products . . . . .	286
	Purchasing Calling Time . . . . .	287
	Purchasing Accessories . . . . .	287
	Restarting DSL to Use Skype . . . . .	288
	Troubleshooting Skype . . . . .	288
	Summary . . . . .	290
<b>CHAPTER 15</b>	<b>Running a Digital Media Frame with DSL . . . . .</b>	<b>291</b>
	Setting Project Goals . . . . .	292
	Choosing a Laptop . . . . .	293
	Asking About a Used Laptop . . . . .	293
	Evaluating a Used Laptop . . . . .	295
	Getting the Parts You Need . . . . .	297
	Adding Parts to the Laptop . . . . .	297
	Getting Parts for the Frame . . . . .	298
	Installing and Configuring the Software . . . . .	299
	Partitioning the Disk . . . . .	300
	Choosing an Install Type . . . . .	300
	Adding Multimedia Player and Networking Software . . . . .	301
	Configuring the Digital Media Frame . . . . .	302
	Adding Digital Content . . . . .	305
	Adding Other Media Players and Content . . . . .	307
	Modifying the Laptop Hardware . . . . .	308
	Before Dismantling the Laptop . . . . .	309
	Tips for Dismantling and Mounting the Laptop . . . . .	309
	Expanding Your Digital Media Frame . . . . .	311
	Summary . . . . .	311
<b>CHAPTER 16</b>	<b>Setting Up an XAMPP Web Server in DSL . . . . .</b>	<b>313</b>
	Installing XAMPP . . . . .	314
	Check That XAMPP Is Working . . . . .	315
	Securing Your XAMPP Server . . . . .	318
	Understanding General Security Issues . . . . .	318

Checking Basic XAMPP Security . . . . .	319
Setting Up a Firewall. . . . .	321
Configuring Your XAMPP Server. . . . .	325
Setting Up Your Network Interface . . . . .	325
Editing XAMPP Configuration Files . . . . .	326
Configuring XAMPP from Your Browser . . . . .	328
Adding Content to Your XAMPP Server . . . . .	330
Saving Your XAMPP Server . . . . .	331
Restarting Your XAMPP Server . . . . .	335
Restarting from a USB Flash Drive . . . . .	335
Restarting from the Hard Drive . . . . .	335
Backing Up Your XAMPP Server . . . . .	336
Summary . . . . .	337
<b>PART V</b>	
<b>Appendixes . . . . .</b>	<b>339</b>
<b>APPENDIX A</b>	
<b>On the CD . . . . .</b>	<b>341</b>
<b>APPENDIX B</b>	
<b>MyDSL Extensions . . . . .</b>	<b>345</b>
<b>Index. . . . .</b>	<b>409</b>



*This page intentionally left blank*

# Acknowledgments

I would like to thank all the fine folks at Prentice Hall for giving me this opportunity. A special thanks to Chris Negus for shepherding me through the authoring process. Standing on the shoulders of giants such as Richard Stallman, Linus Torvalds, Klaus Knopper, and many others who have contributed and continue to contribute to Free Open Source Software, a big thank you. For without such, this project would not exist.

Thanks to John Andrews for founding and sharing his creation. Many thanks to the community of DSL users. Thanks for the suggestions, bug reports, sharing your knowledge with others, and the many application extensions known as the MyDSL repository. Thanks to community members, mikshaw, thehatsrule, cbagger01, and many others who over several years have continually helped make this project a success.

I would also like to express my thanks to Joe Rabinsky for reading my initial manuscripts and offering suggestions for improvements.

**—Robert Shingledecker**

I am very in debt to my wife, Jennifer Lew-Andrews, who has acted like an unpaid editor for everything I've written in this book. Robert Shingledecker is largely responsible for incorporating the advanced functionality into DSL that has made it so popular today.

The DSL community also needs to be acknowledged. Much of the reforms and improvements in DSL are direct results of the feedback and hacks posted in the DSL forums by our knowledgeable users. I'd like to thank Melodie and Antonina

who do a lot behind the scenes to keep DSL afloat as we put time and money into the project. Finally, a big “thank you” to Chris Negus who worked very hard to make this book a reality.

—**John Andrews**

Special thanks to Debra Williams Cauley and Mark Taub of Prentice Hall for believing that a book about a small, free operating system could find a big audience. Thanks to Songlin Qiu, Jovana San Nicolas-Shirley, and San Dee Phillips for seeing the book through the production phases and Kelli Brooks for her thorough copy editing. Thanks to Joe Brockmeier and Bryan Helvey for their thoughtful technical editing.

Finally, I’d like to thank John Andrews and Robert Shingledecker for taking the time to share their insights into what I believe is the finest compact desktop operating system available today.

—**Christopher Negus**

# About the Authors

**Robert Shingledecker's** IT career spans 35 years, beginning with hand-coding machine language programs targeted for Burroughs Corporation minicomputers. Later, he enjoyed using an assembler and then COBOL. Always having a passion for computers, he was an advocate for COMAL, and was an early hacker on MINIX and Coherent OS.

In regards to Linux projects, Robert led the first large-scale deployment of Linux in the city of Garden Grove, California, where in 1994 he deployed Samba on DG/UX systems. He also designed a massively scalable Linux/AOLserver/Sybase e-commerce system. Robert then became CTO of several Linux-based dot-com companies.

While building Linux-based, no install, live CD-ROM appliances, including firewalls, VPN, web, email, and database appliances, he became interested in Damn Small Linux. Soon, Robert joined John Andrews to help lead Damn Small Linux development.

Now retired, Robert spends his time writing code and working on Damn Small Linux. He also enjoys traveling.

**John Andrews** is the creator of Damn Small Linux (DSL). As owner of a bead and jewelry store in 1996, John learned HTML and Perl to develop his own website. It eventually broadened to running websites for others on Linux servers. His interest in Linux encouraged him to switch to a Linux desktop full time.

The appeal of fast and efficient applications led John to develop Damn Small Linux. After trying several mini-distributions, primarily for diagnostic and system recovery, John wanted to build a sub-50MB distribution that essentially had what

he needed to accomplish a day's work; the result was the Damn Small Linux distribution. John's proficiencies include Perl, shell scripting, Lua, awk, \*SQL, php, and some C programming languages.

**Christopher Negus** has been one of the world's leading writers of Linux books for nearly a decade. His *Red Hat Linux Bible* series has sold more than one-quarter million copies worldwide. Chris also authored or coauthored the books *Linux Bible* (2005 through 2007 editions), *Linux Toys*, *Linux Toys II*, and *Linux Troubleshooting Bible* for Wiley Publishing. For Prentice Hall, Chris is the editor of the *Negus Live Linux Series* and author of that series' flagship book, *Live Linux CDs*.

Before becoming a full-time author, Chris Negus worked on UNIX operating system development teams at AT&T Bell Labs, UNIX System Labs, and Novell in the 1980s and 1990s. In particular, Chris worked in the areas of UNIX system administration and networking.

When not working on computer books, Chris likes to spend time with his family: Sheree, Seth, and Caleb. Chris also enjoys playing soccer, singing opera (when nobody can hear him), and making things out of old computers.

# Introduction

Damn Small Linux (DSL) started as an exercise by John Andrews to fit an entire desktop computer system into a compressed 50MB image. Within a few years, DSL grew to one of the most popular Linux systems in the world (in the Top Ten, by some accounts) without growing beyond that 50MB target.

In a world where desktop systems are bloated with eye candy and many rarely used features, you may wonder what makes this little operating-system-that-could so popular? Well, it could be that people don't want to throw away a usable computer because the latest Windows system won't run. It could be that people are tired of waiting for common computer operations to complete while who-knows-what goes on in the background. Or maybe it's just a love for simplicity and elegance.

DSL sets out to include all the basic features you need in a modern desktop computer system—and then makes those features functional, fast, and efficient. As a result, DSL can run well on hardware that is smaller, older, or less powerful than what most of today's desktop systems demand.

Some wonderful offshoots of DSL development are that you can do the following with DSL:

- **Take it anywhere.** It fits on a live CD, USB flash drive (also called a pen drive or a thumb drive), Zip drive, or a bootable business card CD that you can carry around with you.
- **Run it anywhere.** All you need is a standard PC (with a minimal processor, small amount of RAM, and no required disk space) that you can reboot. Or, you can run a special version of DSL that's set up to run from a Windows desktop. If you like, you can even do a traditional hard drive install of DSL.

- **Add software.** If you only need a couple more applications, a few clicks download, install, and save the applications you need.
- **Build projects.** To make a computer into a music server, tiny web server, or digital media frame, DSL doesn't fill up your hard disk or RAM with software you don't need so you have more room for the music, web content, or digital images you want (see Part IV, "Making Damn Small Linux Projects," for these and other projects).
- **Run securely.** By running DSL from a CD (or other read-only medium), you are assured that a secure operating system is only a reboot away. If you think that someone has compromised or intruded on your system, simply check that any data you save is not infected, reboot your DSL live CD, and you are running securely from a clean copy.

As the project grew, DSL also grew by adding an important developer. When Robert Shingledecker joined the Damn Small Linux development team, he implemented some of the key features of DSL previously mentioned. Robert's innovations brought about easy procedures for installing DSL to a USB flash drive and adding MyDSL extensions to a running DSL system.

Today, Damn Small Linux ([www.damnsmalllinux.org](http://www.damnsmalllinux.org)) has a thriving community of supporters, active forums and mailing lists, and tons of interesting ways to use and customize it. This book provides you with an entry to all the possibilities of what Damn Small Linux can be for you.

## AS YOU READ THIS BOOK

To make the best use of the individual talents of the three authors of this book, we divided it up by chapters that play best to each of our strengths. As you read, you will notice that we often use the first person. Because the person describing a feature was often the person who developed the feature, first person seemed a good way to go.

If you find yourself wondering who "I" is in each chapter where it appears, we are providing that information here.

Robert Shingledecker wrote the following chapters:

- "Bootng DSL" (Chapter 2)
- "Configuring and Saving DSL Settings" (Chapter 4)
- "Extending Applications with MyDSL" (Chapter 5)
- "Installing DSL in Alternate Ways" (Chapter 8)

- “Adding Applications and Creating Shareable Extensions” (Chapter 10)
- “Setting Up a Full Remastering Environment” (Chapter 11)

John Andrews wrote these chapters:

- “Using DSL Applications” (Chapter 3)
- “Running a Native Pen Drive Install” (Chapter 6)
- “Running DSL Embedded in Windows” (Chapter 7)
- “Performing a Traditional Hard Drive Install” (Chapter 9)
- “Running DSL on Alternate Hardware” (Chapter 12)
- “Making an Edna Music Server in DSL” (Chapter 13)

Christopher Negus contributed most of the introductory material and appendices, as well as the following chapters:

- “Overview of Damn Small Linux” (Chapter 1) and this introduction
- “Using Skype VoIP Service in DSL” (Chapter 14)
- “Running a Digital Media Frame in DSL” (Chapter 15)
- “Setting Up an XAMPP Web Server in DSL” (Chapter 16)

The bottom line is that most of the chapters Robert and John wrote tell you about features they developed for DSL. Chapters that Chris wrote help to introduce the features Robert and John describe and add a few fun and interesting projects to the mix.

## AUDIENCE FOR THIS BOOK

If you want to use, customize, or contribute to one of the world’s most popular compact Linux operating systems, Damn Small Linux, this book is for you.

You don’t have to be a computer expert to use Damn Small Linux. Even as a beginner, this book can help you use DSL as a portable computer system that you carry with you or as a permanently installed Linux system.

If you are a computer expert, you can use this book to learn more advanced skills, such as remastering DSL to make your own, custom DSL live CD. You can also learn how to package your own MyDSL software extensions to contribute to the growing repository of software available to use with Damn Small Linux.

If you are just someone who likes to tinker with computers, this book can teach you how to build interesting projects using Damn Small Linux as their base. Because the basic DSL is so extraordinarily compact in size and efficient in its use,



you can make use of a much wider range of PC hardware (such as older, low-powered computers) than you would need to build projects with other computer systems.

## ORGANIZATION OF THIS BOOK

This book is designed to get you up and running quickly with Damn Small Linux. After you have had your hands on DSL and understand how it works, we move quickly to present you with the many ways you can use this versatile mini-operating system. You will learn a variety of permanent and portable ways of using DSL.

The book is divided into four major parts and two appendices:

- **Part I, “Using Damn Small Linux”**—In this part, you learn what DSL is and how to use it to do what you want. Chapter 1 provides an overview of the many uses and features of DSL. That chapter features a question-and-answer section where John Andrews and Robert Shingledecker describe DSL’s design decisions and goals of the project. Chapter 2 provides tips for booting up DSL, including ways to start services and deal with hardware issues from the boot prompt.

Chapter 3 provides descriptions of the applications (both graphical and command line) that come with DSL. Chapter 4 tells how to make DSL look and feel the way you like, and how to save all your personal settings and data for the next reboot. Chapter 5 shows how to get additional software, packaged as MyDSL extensions, to add the applications you want to your DSL configuration.

- **Part II, “DSL Beyond the Live CD”**—To help you do more than simply run DSL from a live CD, chapters in this section address how to run DSL in different ways and on different media. Chapter 6 addresses how to install DSL on a USB flash drive (pen drive) to have a totally portable and writeable live DSL.

In Chapter 7, you learn how to run DSL *virtualized* so you can use it on a Windows desktop system. Chapter 8 describes alternate ways of installing DSL to a hard drive, including setups where a CD drive is not available (using floppies, Zip drives, or other media). Chapter 9 covers more traditional hard drive installs, where all DSL files are copied and booted from a hard drive.

- **Part III, “Creating Extensions and Remastering”**—In this part, we get into the more technical aspects of DSL. Chapter 10 explores how the MyDSL facility of DSL works to add applications to your DSL system, including ways of creating your own MyDSL extensions. Chapter 11 describes remastering procedures so you can build a custom version of DSL for yourself.
- **Part IV, “Making Damn Small Linux Projects”**—Ways of using DSL to build interesting projects are covered in this chapter. Chapter 12 describes cool different types of hardware that DSL will run on. In Chapter 13, you can learn how to make a music server in DSL using Edna Music Server software. Chapter 14 shows how to set up a DSL system to act as a Skype VoIP client for making audio calls over the Internet. In Chapter 15, you learn to build a digital media frame based on DSL. Chapter 16 tells how to set up a tiny, yet full-featured, web server using DSL and the XAMPP project.
- **Appendix A, “On the CD”**—This appendix provides details about the contents of the CD that comes with this book. The CD includes all the components you need to run the procedures and build the projects described throughout the book.
- **Appendix B, “Using MyDSL Extensions”**—This appendix offers descriptions of the free MyDSL extensions that you can download, install, and store to run with your DSL system.

## WHAT YOU NEED TO USE THIS BOOK

You should use this book alongside the CD that is packaged with the book. Although you can certainly read the book without following along with the CD, descriptions and instructions the book provides are most helpful if you have your hands on DSL.

To use the CD that comes with this book, all you really need is a personal computer. The easiest way to use the CD is to boot the CD from your PC. If your PC doesn't have a CD drive, however, we include instructions for getting DSL to run on older machines that may include floppy drives or Zip drives for booting the system.

You may want to have alternative media available for storing your DSL data. In particular, a USB flash drive (also called a pen drive or thumb drive) can be particularly useful as a medium for storing your DSL settings, data, as well as DSL itself.

Some of the projects described in the last part of this book require extra hardware. Check Chapter 12 for some interesting PC hardware for running DSL. Speakers and microphones are useful for audio projects in Chapters 13 and 14. Making a digital media frame requires an old laptop computer, a frame, and a few other bits.

*This page intentionally left blank*

# Part I

## Using Damn Small Linux

<b>CHAPTER 1</b>	<b>Overview of Damn Small Linux</b>	<b>9</b>
<b>CHAPTER 2</b>	<b>Booting DSL</b>	<b>29</b>
<b>CHAPTER 3</b>	<b>Using DSL Applications</b>	<b>47</b>
<b>CHAPTER 4</b>	<b>Configuring and Saving DSL Settings</b>	<b>71</b>
<b>CHAPTER 5</b>	<b>Extending Applications with MyDSL</b>	<b>99</b>

*This page intentionally left blank*

# Overview of Damn Small Linux

The Damn Small Linux mantra is *small is beautiful*.

Weighing in at about 50MB, Damn Small Linux (DSL) is a fully functional, mini-live CD desktop operating system. Despite its size, DSL can do just about everything you would expect from a modern desktop system, such as browse the web, send and receive email, write documents, manage files, play music, work with spread sheets, and manipulate images.

Many operating systems offering similar software features require a mountain of expensive computer hardware to run well and are burdened with slow, bloated applications. Damn Small Linux takes a different tack.

Unlike what you get with other computer systems, applications packaged with DSL are chosen for their size, speed, and efficient features. Even on low-powered hardware, applications in DSL are startlingly fast and surprisingly powerful. Despite its size, DSL runs faster and more efficiently than many desktop operating systems for the most important things you need a desktop operating system to do.

The book you are holding in your hand is *The Official Damn Small Linux Book*. We say official because the authors of this book include the two key developers of DSL: John Andrews, the creator of Damn Small Linux, and Robert Shingledecker, the lead developer for many of the technical innovations in DSL.

Although this book will step you through the components you can use in DSL, it will also take you much further. You will learn how to install and run DSL from different devices, save your data across reboots, and add applications to DSL to meet your needs. Later, the book will walk you through how to build projects with DSL, such as a music server, Internet telephone service, and portable web server.

## MEASURING DAMN SMALL LINUX SUCCESS

Despite its small size, Damn Small Linux has consistently ranked among the most popular Linux distributions. According to rankings from various websites that monitor Linux sites, DSL has consistently been among the most active. According to Google, there are nearly 1,000,000 references to Damn Small Linux on the web. Yahoo indicates the existence of about 1,480,000 inbound links to the Damn Small Linux home page.

At Distrowatch ([www.distrowatch.com](http://www.distrowatch.com)) for the past three years, DSL has consistently ranked in the top ten Linux distributions for page hits, often ranking among well-known Linux systems such as Debian, Slackware, KNOPPIX, and Gentoo. According to Alexa ([www.alexa.com](http://www.alexa.com)), which monitors website popularity, in early 2007, the DSL website ([www.damnsmalllinux.org](http://www.damnsmalllinux.org)) was around 33,350 in popularity on the web. That number made it more popular than home websites for Ubuntu, SuSE, Slackware, KNOPPIX, Mepis, Morphix, and other Linux distributions.

As for media coverage, dozens of articles and reviews have been written about Damn Small Linux. In May, 2004, DSL was highlighted on TechTV's *The Screen Savers* show. A DSL CD has been included with magazines such as *Linux Format*, *Linux User & Developer*, *Sys Admin*, *Linux Journal*, *PC Magazine*, *PC World*, *Computer Power User (CPU)*, and *Linux Pro*.

Although Damn Small Linux was not the first Linux live CD (in fact, it was originally based on the KNOPPIX live CD), there are many *firsts* to its credit. DSL was the first Linux live CD distribution to do the following:

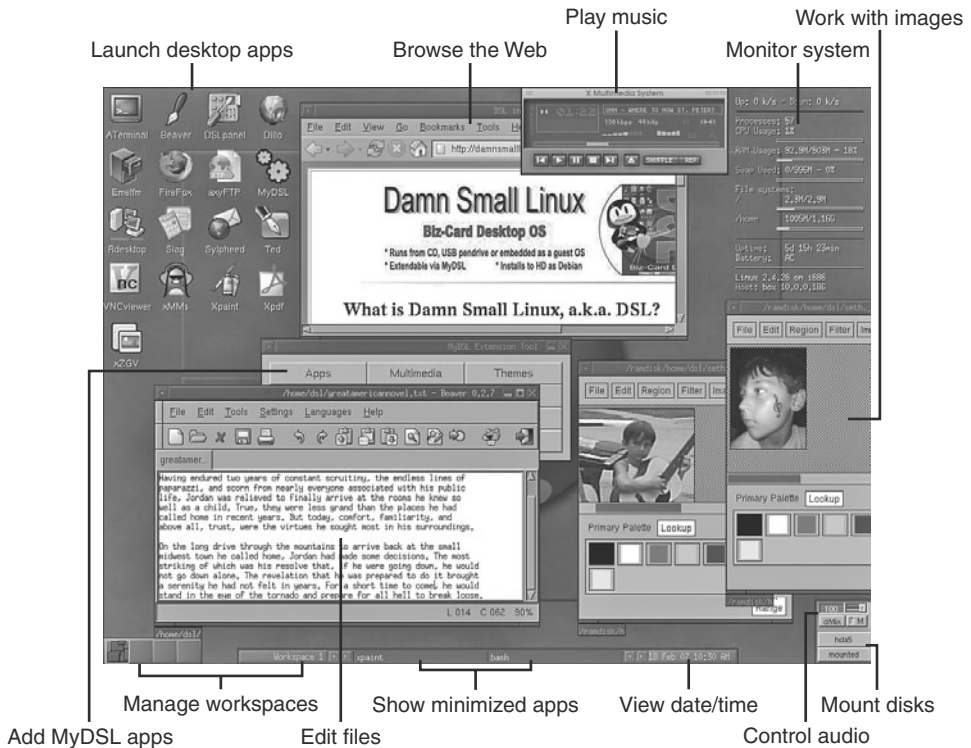
- Offer backup and restore capabilities.
- Use download scripts to add software while it was running (in ramdisk).
- Employ extendable software modules that could be used from live CD or disk.
- Integrate USB install scripts.
- Run virtually on Windows desktops using a special embedded version of DSL that includes Qemu virtualization software.
- Offer low-RAM extensions designed to run on live CDs or USB drives.

DSL also included many *firsts* specifically associated with desktop-oriented live CDs. It was the first desktop-oriented live CD to fit on a bootable business card, offering the smallest footprint of any desktop operating system. It also was the first to use the Tiny X Kdrive server as the desktop's X display server. To implement many standard Linux utilities, DSL was the first to use the BusyBox space-saving utility.

Although the features just mentioned help gauge the success of DSL, the best way to measure DSL's value to you is to try it out for yourself.

## UNDERSTANDING WHAT DAMN SMALL LINUX DOES BEST

When you boot up Damn Small Linux, the first thing you see is a boot screen. In most cases, you can press Enter and after a few moments, a desktop system appears. With a few clicks, you could be browsing the web, editing documents, playing music, or doing dozens of other activities. Figure 1-1 shows an example of a busy DSL desktop.



**FIGURE 1-1** Damn Small Linux offers a sleek and efficient desktop interface.

The DSL desktop in Figure 1-1 shows some of the basic features of the DSL desktop, along with a few applications. You can launch applications (by a single left mouse click) from the icons shown in the upper-left corner of the screen. In the upper-right corner, view data about system resources (CPU, processes, file system, etc.). The docked.lua tool (lower-right corner) lets you adjust audio and mount disk



partitions. The bottom panel displays the current date/time, minimized applications, and a tool for managing workspaces. Use the tool in the lower left to move applications among workspaces.

The applications shown running in Figure 1-1 include the Firefox web browser, XMMS music player, XPaint image editor, and Beaver text editor. In the upper-right corner is the excellent torsmo system monitor, for watching all your system resources (processor, RAM, swap, disk, and other resource usage). These and other applications that are available natively in DSL are described in detail in Chapter 3, “Using DSL Applications.”

One administrative tool displayed in Figure 1-1 is the MyDSL Extension tool. You can use that tool to download and install applications that are prepackaged to run in DSL (see Chapter 5, “Extending Applications with MyDSL”).

Although the applications shown in the DSL desktop in Figure 1-1 are packaged with the basic 50MB bootable image DSL, the value of Damn Small Linux doesn’t end there. If DSL doesn’t do exactly what you want it to do (and where you want to do it), the project helps you improve on what you can do with DSL in the following ways:

- **It’s expandable**—Using the MyDSL feature and a connection to the Internet, tons of extra applications can be downloaded and installed on your running DSL system with just a couple of mouse clicks. Because DSL has its roots in other popular Linux distributions (in particular, Debian and KNOPPIX), software created for those distributions can often also just be dropped in and run in DSL. See Appendix B, “MyDSL Extensions.”
- **It’s portable**—Although the standard DSL is made to run on a medium as small as a 50MB bootable business card, it can be easily made to run from your hard disk, standard CD or DVD, USB pen drive, or other fixed and removable media. It can even run embedded from installed Linux or Microsoft Windows systems.

Many people have put DSL on a USB pen drive, along with other applications and data (documents, music, images, and presentations). So instead of carrying a whole laptop with you, you can carry everything you need on a USB flashdrive or pen drive that’s about the size of a stick of gum.

Keeping the basic DSL system small, fast, and efficient makes it both a neat tool in itself and a great foundation to build on. Here is a list of some of the best reasons for using DSL:

- **Old machines get new life**—DSL can run on computers with as little as 16MB of RAM and a 486DX processor. DSL developers offer versions of DSL

that boot on older machines that need a smaller boot image (using Syslinux). As a result, the PC gathering dust in the closet can find new life as a simple desktop system, or by adding some extra software, a firewall, web server, or music player PC.

- **Fits in small places**—Damn Small Linux fits on a bootable business card CD. So carrying around DSL can take up as little space as a credit card in your wallet. DSL's small size also means that, in places where there is limited storage space (such as an old hard disk or handheld device), you can devote what space you have to holding your extra applications and personal files.
- **Runs fast!**—Because the DSL operating system and the applications that come with it are small, lightweight, and tuned for efficiency, they run fast, even on meager hardware. If you have at least 128MB of RAM, you can also use DSL's `toram` feature, which runs the entire DSL operating system from memory. Using `toram`, applications launch almost instantaneously and run faster than you would believe.
- **Runs efficiently**—By focusing on important desktop features, instead of every possible desktop feature, the DSL desktop makes it easy to get to the features you need. All your desktop applications and system tools are available with a right-click of your mouse from anywhere on the desktop. Desktop tools let you easily view your system processing, change workspaces, mount storage media, and adjust your audio volume.
- **Travels with you**—By their nature, live CD operating systems are made to be portable. Because of its excellent hardware support, DSL runs on most common PC hardware. So, if you are going somewhere that already has a PC you can use, you may not need to lug your laptop with you. You can simply carry DSL and any extra software or data you need in your pocket.
- **Versatility**—Using the tools that come with DSL itself, you can configure DSL to run in many different ways from different storage devices. Besides the default (a DSL boot image burned to a live CD), easy install procedures let you install and run DSL from a USB flash drive, hard disk, or other storage media.

There are also different ways in which you can configure to save and use DSL, your applications, and your data. For example, you can keep your data on a flash drive, whereas DSL itself is run from a live CD or hard disk. When a new version of DSL comes out, you simply boot that new version and combine it with your data. No messy upgrade or reinstall procedures are needed.

- **Security**—Running your operating system from a read-only media can reduce the ability of an intruder to take over (and effectively own) your computer. If you suspect your computer's security has been compromised, you

can simply do a clean reboot of DSL. The operating system itself returns to its original state, so you only need to check the data you have saved for potential problems.

Because DSL was created primarily as a desktop system, there are also no network services running by default that an intruder could exploit. If you want to turn on or add new network services, you can add firewall software from MyDSL (see Chapter 16, “Setting Up an XAMPP Web Server in DSL”) and configure a professional-quality firewall built on the standard Linux iptables facility.

- **Network and server features**—DSL automatically detects and configures most wired Ethernet cards, and includes tools for configuring many wireless cards. With an available DHCP server on the wire, DSL can often just boot up to an active Internet connection. Applications for using the Internet, web browsing, email, file transfer, instant messaging, and others are included in the basic DSL distribution.

DSL also includes efficient versions of some network servers that you can enable, if you choose. From the DSL menu, select System, Daemon and choose a service to start. Start `ssh` to allow secure remote login (`ssh`), file copy (`scp`), or FTP service (`sftp`) to your machine. Or choose `nfs-common` to be able to share directories over the network. Choose Monkey web server to start a simple web server (HTTP) or FTPd to open your DSL system as an FTP server. Because it is Linux, there are also tons of other services you can add to DSL from open source projects.

- **Build projects**—By starting with a minimal operating system, it's easy to make a system that is configured to do a specialized task. For example, if you want a system tuned just to be a firewall, music player, telephony device, or some other specialized device, you can add only the software you need to an otherwise efficient system. The result can be a system that does just what you need, so all your additional space can be devoted to holding your data. Part IV of this book, “Making Damn Small Linux Projects,” contains several interesting projects you can build, starting with DSL.

The uses and advantages of DSL just described are the ones we have found. After you start using DSL, you will probably find many uses on your own.

## GETTING THE MOST OUT OF DAMN SMALL LINUX

Within a short time, you should be able to figure out how to boot from the DSL live CD and use the DSL desktop. However, this book is here to teach you how to adapt

DSL to do exactly what you want it to do. To that end, chapters in this book guide you through techniques for tuning DSL to suit your needs and adapting DSL to suit your computer equipment.

The following are some of the major topics covered in this book.

## Booting DSL

With a PC and copy of Damn Small Linux (like the one on this book's CD), most people can reboot and be up and running DSL with no instruction. If some other piece of hardware isn't working, pressing F2 shows you boot options that can help overcome most simple problems.

When you boot DSL, there are other boot-options you can pass to DSL that help direct the boot process. Some of those options can make DSL work better for your particular hardware (such as video cards that can't be properly detected). Others let you run DSL in special ways (such as running DSL completely from RAM). Still others let you identify where bundles of data are located that you can pull into your DSL system (such as your backed-up desktop settings or saved applications).

Boot options you might need to get DSL working initially are included in Chapter 2, "Booting DSL." Some options for identifying where your personal settings are backed up to and restored from are covered in Chapter 4, "Configuring and Saving DSL Settings." Options for running DSL in different hardware environments are covered in Chapter 8, "Installing DSL in Alternate Ways."

## Customizing the Desktop

Fluxbox is the window manager that is used by default with Damn Small Linux. Despite its compact size, there are many ways to tune Fluxbox to look and behave the way you like. A window manager defines how menus, mouse activities, keyboard navigation, backgrounds, and other features related to the look and feel of your graphical interface operate.

From the Fluxbox desktop, most DSL activities can be directed from a single desktop menu (right-click the desktop to see the DSL menu). Select Desktop, Fluxbox Configuration to see a listing of available desktop settings that you can change. Figure 1-2 shows examples of these menus.

Besides changing the look and feel of your desktop, you can use various desktop utilities to manage your workspaces, mount and unmount file systems, and manage tasks. Using various desktop tools and applications is described in Chapter 3.

**FIGURE 1-2**

Customize your desktop settings from the DSL menu.



## Adding Applications with MyDSL

Although not everyone needs every available piece of software to run with their live CD, nearly everyone needs at least a few software packages beyond those chosen for DSL. Using the MyDSL facility that was designed for DSL, you can add prepackaged software to your live system, save those packages to restore later, and include them (or not) the next time you reboot DSL.

Chapter 5 includes descriptions of the MyDSL facility. Descriptions of MyDSL center on the MyDSL Extension tool, shown in Figure 1-3.

**FIGURE 1-3** Customize your desktop settings from the DSL menu.

## Saving and Restoring Settings and Data

For any live CD to be useful over time, you need to be able to save your data files, your system settings, and any additional applications you use regularly, across reboots. DSL offers a lot of flexibility in how you save your personal files across reboots.

The DSL backup and restore features let you choose exactly what files and directories of data you want to back up and where you want that data to be stored. If you save that data in a specific way, DSL automatically finds and restores that data

on your next reboot. The data can be on a disk partition, USB flash drive, or CD, depending on how you chose to store it.

Chapter 4 contains procedures for backing up and restoring your data.

## Running DSL on Older PCs

One thing that DSL does better than most operating systems (certainly most new, commercial systems) is let you reuse older computer equipment. DSL works on computers with as little as 16MB of RAM and a 486DX processor (see Chapter 2 for details). In fact, because of its size and efficiency, DSL actually runs well on many machines that some people would just throw away.

To facilitate some of these older machines, DSL developers created special procedures that take into account the weaknesses of some older hardware. For example, you may be dealing with a machine that either can't boot from a CD drive or has no CD drive at all. So, you may need to install DSL to hard disk, and then boot it from a floppy or a boot loader on the hard disk. These techniques are described in Chapter 8.

## Building Projects with DSL

The small size and efficient processing of DSL doesn't just make it a neat desktop system. Those attributes also make DSL a great platform for building useful projects. For example, by adding just a few software packages, you can transform that old computer into a useful web server, music server, or Internet telephony machine.

In the Part IV of this book (Chapters 12 through 16), you can find descriptions of projects you can build using DSL as the foundation. Because the operating system and few extra packages don't take up a lot of room, limited disk space can be used to store the music, web content, or other data needed to go with your software project.

## Making Your Own DSL Software

There is no MyDSL package available for the software you want. Likewise, you may find it more efficient to put together the software you want on a remastered DSL image than to simply add packages after the fact. This book describes how to handle both of those cases.

In Chapter 11, "Setting up a Full Remastering Environment," there are descriptions of how you can take the software you want and create a shareable MyDSL extension for it. In Chapter 12, "Running DSL on Alternate Hardware," you

can learn how to remaster your own DSL image to include any applications or data you like (without having to merge extra applications and data at boot time).

## WHAT IS DAMN SMALL LINUX?

Before heading on any further, we need to define exactly what Damn Small Linux is. Damn Small Linux is an operating system, designed to run from live media (such as a bootable business card-size CD) that, at its heart, is controlled by a Linux kernel. It is based on another Linux live CD called KNOPPIX, which, in turn, was created from a Linux distribution called Debian.

Now, we need to sort all that out.

## Understanding Operating Systems

An operating system is computer software that manages the interactions between the computer hardware and the applications you run to use that hardware. In the proprietary personal computing world, you are probably most familiar with Microsoft Windows and Mac OS/X operating systems. In the free and open source software (FOSS) world, most operating systems trace their roots back to UNIX.

Damn Small Linux is one of many FOSS operating systems that carries the Linux name because it includes the Linux software that is referred to as the kernel. The Linux kernel is the most critical part of the operating system because it provides the most basic system services: process management, device driver framework, file system support, and other critical system features. As new hardware, file system types, and other components are connected to a Linux system, they can be added to the kernel in what are called *loadable kernel modules*.

Linus Torvalds created the Linux kernel and continues to lead Linux kernel development today. This software is available from the Linux Kernel Archives (<http://kernel.org>). Most Linux distributions add a set of basic system utilities from the Free Software Foundation GNU project ([www.gnu.org](http://www.gnu.org)), which include many clones of commands that were originally available on UNIX systems.

Although the latest available kernel is the 2.6 kernel, DSL has chosen to stay with the 2.4 kernel tree. This is primarily because the 2.6 kernel is considerably larger. As security holes are found, however, backports of fixes from the 2.6 kernel are included with the 2.4 kernel used by DSL. Backports for improvements can be added in the same way.

Likewise, instead of including the GNU utilities in the basic DSL, many Linux utilities are implemented through a single, compact utility called BusyBox. (Because BusyBox is not completely compliant with the GNU utilities some people

expect, a MyDSL package called `gnu-utils` is available to bring those important utilities into DSL.)

Although the kernel, a command interpreter (called the shell), and a few utilities are really all you need to have an operating system, most Linux systems include other components as well. For example, the X Window system provides the graphical framework for using most Linux systems, including DSL. A window manager (such as Fluxbox in DSL) implements menus, icons, and other graphical desktop elements.

## Understanding Live CDs

Most computer operating systems are installed permanently on a hard disk. A live CD, on the other hand, is typically created so that you can safely ignore any software installed on a computer's hard disk and so you can run entirely from the operating system contained on the CD. This has some advantages and some disadvantages.

Live CDs have the advantage of letting you put together a known set of software and be sure that you can return to that software the next time you reboot. This makes a live CD a great medium for demonstrations, portable desktops, or rescue media. You can take a whole computer system with you in your pocket that you can run from most PCs (provided you are allowed to reboot the PC).

The downsides of live CDs include some of the same features that are their attributes. For example, with any system that you use over time, you want to save some data and applications. By default, live CDs are run from the read-only CD-ROM medium. So, you can't just save files the same way you would if you were running your system from hard disk.

Damn Small Linux has overcome many of the challenges of using a desktop system that was designed to run from a live CD. Some features that were already mentioned (and will be described further later in the book) let you save files and applications so they are available the next time you boot DSL. There are also ways in which you can install DSL to hard disk, so it will behave like most installed operating systems.



### NOTE

Although the term live CD is commonly used to describe a computer system image that is typically booted and run from a read-only medium, the same type of image can be run from other media as well. As you will see from descriptions in this book, a *live CD* can also run from a DVD, USB flash drive, or ZIP drive. Likewise, a live CD can be booted from a floppy disk, and then continued from CD, hard disk, or other medium.



## Based on Debian and KNOPPIX

Because a Linux kernel alone doesn't let you do that much with a computer, most Linux distributions draw on the vast landscape of free and open source software. Debian GNU/Linux is one of the most popular free operating systems available today. KNOPPIX is a live CD Linux distribution that was created from Debian software. Technology from both of those projects is incorporated into DSL.

The Debian distribution (<http://debian.org>) has literally thousands of software packages that have been compiled to run on Debian. Debian packages are stored in .deb format and can be downloaded and installed from the Internet using tools such as `apt-get` and `dpkg`. Many Debian applications can be downloaded and installed to DSL using `apt-get` (available from the `dsl-dpkg` MyDSL package).

KNOPPIX ([www.knopper.net/knoppix/index-en.html](http://www.knopper.net/knoppix/index-en.html)) was the first popular desktop-oriented live CD. It included a highly regarded facility for detecting and configuring hardware (a must for live CDs). Using compression techniques, it was able to fit the equivalent of about 1.5G of software within a standard 700MB CD image. Many specialized utilities were included in KNOPPIX to configure some of the trickier hardware components, such as wireless cards, printers, and modems.

Damn Small Linux creator John Andrews began with some of the technology just described. Then he began whittling it down and tuning it up.

## ANSWERS FROM THE DSL DEVELOPERS

In case you didn't notice from the cover, this book combines the experiences of three writers. John Andrews created Damn Small Linux. Robert Shingledecker has developed many of the critical technical innovations of DSL. Christopher Negus has authored many Linux books, such as the *Red Hat Linux Bible*, *Linux Toys*, and *Live Linux CDs*.

So in this section, you get to find out first-hand how and why DSL came about. Chris asks John and Robert some hard-hitting questions about why they have developed DSL, what are its greatest attributes, and where it is going.

### *John, what encouraged you to create DSL?*

**John:** It was a reaction to the trend of ever increasing size of applications and the typical Linux desktop environment. I wanted to see if it were possible to build a functional desktop environment that could be compressed into 50MBs.

One of my original draws to Linux was the fast and light applications that were available in the late 90s. By the time I was working on DSL, many of the applications I loved seemed to slow down to a crawl on my computer.

In essence, the typical Linux desktop was pushing me to a hardware upgrade the same way Microsoft and Mac operating systems tend to do. I hoped (and still do hope) that there would be a resurgence of efficiency in the Linux community where people treat code bloat like the cancer it is.

DSL is also a testament to function over form. We avoid over indulging in eye candy. Some core applications that are in DSL have better functionality than their later incarnations that are larger in size. To the developers of DSL, it is not about the latest or the best looking; it is about functionality and stability.

I was searching for a light portable environment that I could take with me on a business card CD. At the time, the best sub 50MB distribution was LNX-BBC, but its orientation is much more toward being a rescue disk. I thought it would be possible to work within the same limited space but instead build a distribution that focused on having a functional desktop. Being an efficiency fan, I modeled DSL after my desktop and used most of the same lightweight applications.

### ***Robert, what encouraged you to join DSL development?***

**Robert:** I have been involved with Linux CD-ROMS since the early 1990s. I created install-type CDs to automate the specialized setup of servers and desktops while I was working at the City of Garden Grove, California. Later, I worked for a Linux startup and created live Linux CD server appliances. We created firewalls, mail servers, VPN, LAMP-style systems, several database servers, MySQL, Postgres, and even some prototype commercial ones like Raining Data's D3.

These live CDs were automated to provide whatever services the customer desired. During this development, I had created my own live desktop. Occasionally, I would check Distrowatch.com to see if anyone else was doing the desktop approach. I always felt that there are far more desktops than servers. Demo Linux and later KNOPPIX were far too slow to be practical for everyday use at that time. When I found John's Damn Small Linux, I liked what I saw and began to explore ways to expand its capabilities.

### ***What were the first goals of Damn Small Linux and have they changed?***

**John:** The first goal of DSL was to have a functional and efficient Linux desktop distribution that was under 50MB, small enough to fit on a business card-size CD. Over the years, business card CDs became a lot less relevant as affordable USB pen drives have started coming into the market. Yet, we have maintained the 50MB upper limit, which has forced us to think in unconventional ways and innovate instead of just adding applications.

The goal of maximum functionality in a tiny package has been a constant. What has changed are the applications and the growth of the extension technology.

**Robert:** I certainly have not had a roadmap. Things just progressed in an evolutionary way: from adding a flexible backup/restore system to needing a write-enabled /opt directory to add more programs. Later, we created self-contained compressed mountable applications, originally called .ci extensions, later named UCI. My goal was to honor John's original goal of keeping the distribution at or under 50MB.

Many would remaster DSL only to add or change an application. So, my thoughts were focused on how to allow easy yet flexible additional applications to be added to DSL. These additional applications I called MyDSL extensions. Originally, they were tarballs and UCI. They would either load into the RAM disk under /opt or mount under /opt. Some of the user community really wanted to use Debian on the live DSL CD. This led to a script to make much of the filesystem write-enabled, which led to the .dsl extension type. This is basically a tarball, but the unique extension type would trigger the script to set up all the symlinks needed.

Recently, I added the capability to use mountable compressed overlay images. These new overlay mounts do not need to be self-contained, yet they have the same advantage in low system resource use as the UCI. I try to keep DSL updated with newer technology, while at the same time, keeping the distribution under 50MB and also acknowledging and fully supporting the smaller, older, less capable hardware.

We are constantly looking for the best of breed, *small is beautiful* applications and utilities—for example, Lua. We heavily use Lua and Lua Fltk and create many of our own GUIs. We are not only a small distro; we run well on small resources.

### ***What draws people to DSL?***

**John:** DSL bucks the trend of ever-increasing bloat and the ever-increasing demands on hardware. People who use DSL are not into eye candy for eye candy's sake. They want their computer to work and be reliable. The fact that DSL runs from an ISO image and is inherently durable also makes it appealing, DSL is very hard to break and easy to fix. Of course, there is the modularity and portability aspects, too.

If you want an application, you can just grab it. If you want to take your desktop on the road, it is very easy to do via USB pen drive, or live CD and remote backups. DSL's small but functional base also makes a great platform to build on for custom applications. DSL is a Linux desktop without the 500 pounds of Styrofoam padding.

**Robert:** DSL is a small distribution and one that runs very well on very small resources. It is extremely flexible in offering many choices of configuration and expandability. After you read the chapters that follow, you will begin to realize the potential.

The DSL project welcomes the user community. The MyDSL extensions only represent the framework. The actual extensions are requested, discussed, and created by the community of DSL users. This active community shares in the ownership of these seamless extensions.

### ***What is the most interesting hardware known to running DSL?***

**Robert:** What comes to my mind is the original ThinkNic Internet Appliance, which is a CD-based machine with a 4MB ramdisk (to save configuration), a Winmodem, and an Ethernet port. We fully support this “first of breed” Linux appliance.

**John:** For me, the most interesting hardware to run DSL has not been applied yet—there are so many possibilities. I personally work on a homemade laptop based on a eBox III thin client and a cheap 8-inch LCD monitor. I’d like to be able to hook it up to a small solar panel. It will have to run an IDE flash Disk On Module (dom); it will be passively cooled and 100% silent.

### ***Why is DSL good for hobbyists?***

**John:** Oh, there is just so much you could do with DSL. It is small, it requires very little RAM, it can run on ancient hardware, and it can run without a hard drive. DSL can run in RAM with as little as 128MB. It could run with as little as 16MB of RAM with a conventional hard drive install. With DSL, you can take junk and make it into workable hardware.

DSL is also easy to modify, and upgrade. We have an extension system that allows DSL to morph in any direction a developer could want without the need to do a custom remastering. We make heavy use of scripting languages. So if you want to get into the meat of what makes DSL DSL, all you have to do is dig around.

**Robert:** The fun of tinkering with that old hardware you found in the closet. Now you have a neat small web server, a picture frame, or a car MP3 player. Your creativity is set free to explore and share with a community of DSL users. You can create and share MyDSL extensions or learn to code with Bash, Perl, C, Lua, Lua/Fltk. It’s all in there.

DSL includes lots of hardware support. So, you can build a web surfing appliance for Grandma. Or perhaps buy or obtain old “throw-away” laptops. We support many of them. Or even buy an embedded device and use DSL as the embedded OS. We are like Tinkertoys for Linux: a Linux construction kit. It’s all about having fun!

### ***What are the challenges to someone who comes to DSL from MS Windows?***

**John:** In the modern MS desktop, you are prevented from looking under the hood. In DSL, there is no hood at all—you are free to dig as deep as you want to. There

are no restrictions, and you will want to learn a little about the way DSL works to get the most out of it.

**Robert:** All the decisions are NOT forced on you. If tinker toys or a construction kit are not fun for you, the basic desktop is still fully functional when you start out. However, with so many choices and options available for extending DSL, it can be overwhelming to a new user. But they will soon want to explore.

Even the community of DSL users does not agree on a single installation or run-time environment for DSL. We often have “Tastes Great! Less Filling!” types of forum debates.

Also, DSL is Linux, and therefore we respect the UNIX file permissions. Some users are used to running everything as the superuser. We do not. Some expect every new device to be instantly supported, which is not possible given our constraints of size and development. Usually, answers and solutions can be had within the resources of the community.

### *What future plans do you have for DSL?*

**John:** Tough calls lay in our future. The truth is, very few in the Linux applications development community sees the future of Linux the same way we do. This puts us in a bind. Many of the lean projects are getting abandoned and replaced with other projects that have an enormous amount of package dependency.

Our old friend GTK1.2 is being left behind by most currently developed projects. Other light graphical tool kits are slow in development or even stalled for years at a time. There are a few nuggets of hope out there, and I will never give up on the pursuit of a tiny and functional desktop. I hope that projects like DSL encourage developers of lean applications to continue their work.

In the shorter run, you will likely see a smaller and a larger DSL cousin, as well as more framework for those who want to build custom applications based on the DSL infrastructure.

**Robert:** I would like to see more modularization of DSL. Offer even more choices to the community. Our process is not formal. It is evolutionary based on our own interests and those expressed by the community of DSL users. And it must be fun and interesting for me and John too!

## THE DAMN SMALL LINUX COMMUNITY

Damn Small Linux has a thriving, active community of contributors and users. Although Robert and John direct the activities of the central 50MB DSL distribution, the framework for MyDSL extensions offer the opportunity for anyone to extend the functionality of DSL for themselves and others. To grow the knowledge

base of DSL, there are several communications venues available. And, of course, financial contributions are welcome for helping the project grow.

Communications opportunities for the DSL project include forums, a wiki, and a place to blog about DSL. Here's where you can find out more about those opportunities:

- **DSL forums** ([www.damnsmalllinux.org/cgi-bin/forums/ikonboard.cgi](http://www.damnsmalllinux.org/cgi-bin/forums/ikonboard.cgi))—In the forums, you can find information on more than 30 topics relating to DSL. Popular topics include hard drive installs, DSL ideas and suggestions, and networking issues.
- **DSL wiki** ([www.damnsmalllinux.org/wiki](http://www.damnsmalllinux.org/wiki))—The DSL wiki brings together a lot of information related to the DSL project. From the wiki, you can find answers to frequently asked questions, learn about installation and boot options, and read about common issues that DSL users encounter.
- **DSL IRC** (<irc://irc.freenote.net/damnsmalllinux>)—Participate in real-time, online chats with other DSL users.
- **DSL blog** ([www.damnsmalllinux.org/talk](http://www.damnsmalllinux.org/talk))—At the DSL blog, you can feel free to present your musings and personal experiences that relate to Damn Small Linux.

Because DSL is freely distributed, development is funded through contributions and through purchases from the DSL store. Contributing to DSL in one of these ways can do a lot to further development of Damn Small Linux. Here are suggestions for contributing:

- **DSL donations** ([www.damnsmalllinux.org/donate.html](http://www.damnsmalllinux.org/donate.html))—If you enjoy DSL and can afford to contribute, monthly subscriptions of \$1, \$2, \$5, and \$10 contributions can be made from this page. You can also make one-time donations via PayPal or credit card.
- **DSL store** ([www.damnsmalllinux.org/store](http://www.damnsmalllinux.org/store))—At the DSL store, you can purchase a variety of mini-ITX computer supplies. This is also the place to buy a DSL CD or DSL on a bootable USB pen drive (currently, 1GB models are offered). One of the great features of the bootable USB drive is that it includes the QEMU version of DSL that can be booted and run on a Windows desktop.

Before I became associated with John and Robert to write this book, I purchased a DSL USB pen drive from the DSL store. I still use that drive today to show people DSL. I can plug the USB drive into a running Windows system, select one file from that drive, and in a few moments give a demonstration of Damn Small Linux within a window on the Windows desktop.

## ON THE CD

DSL itself only takes up about 50MB of space on your boot media. However, with several different versions of DSL (for booting from different media) and some available MyDSL software extensions, you can experience DSL in different ways. For those reasons, we have included a standard-size CD with this book (about 700MB) that we have filled with a whole lot of software you can use with DSL.

The CD that comes with this book boots up to the latest version of Damn Small Linux. By default (press Enter), you will get exactly what you would were you to download the standard 50MB DSL image from the Internet. With our specially remastered CD, however, you get a whole lot more.

- **Official Damn Small Linux (dsl-3.3.iso)**—This is the standard DSL that you would normally burn to CD and boot live.
- **Official DSL for older machines (dsl-3.3-syslinux.iso)**—If you have a PC that requires a floppy boot image on the CD to boot up, you can use this ISO image. This image (contained in the /images directory) features the Syslinux boot loader, which includes a small 1.4MB boot image. To use this ISO, you need to burn it to a separate CD.
- **Virtual DSL for Windows with QEMU (dsl-3.3-embedded.zip)**—This archive is unzipped on the live CD so that you can run DSL virtually within a window on your Windows desktop.
- **Virtual DSL scripts for VMware (dsl-3.3-vmx.zip)**—Using the scripts included in this zip file, you can run DSL virtually from a variety of environments using VMware.
- **Special DSL projects**—Chapters 13 through 16 describe how to create special software and hardware projects with Damn Small Linux. You can directly boot up to versions of DSL that include the software packages needed to complete those projects. These projects include:
  - DSL Edna music server:** Manage, play, and serve your music collection from DSL using Edna music server software (see Chapter 13, “Making an Edna Music Server in DSL”).
  - DSL Skype VoIP service:** Make Internet telephone calls using Skype IP telephony service (see Chapter 14, “Using Skype VoIP Service in DSL”).
  - DSL digital picture frame:** Play slide shows of any collection of digital images from DSL as a standalone digital picture frame (see Chapter 15, “Running a Digital Picture Frame in DSL”).

- DSL web server:** Include XAMPP software with DSL to create an instant web server to share your web content over the Internet (see Chapter 16).
- **DSL boot images**—Some older hardware that has no bootable CD drive (or no CD drive at all) may need a floppy boot image to be able to boot DSL. Several different boot images are included in the `/images` directory of the CD.
- **Chapter 10 and Chapter 11 scripts**—Scripts that are described in Chapter 10, “Adding Applications and Creating Shareable Extensions,” and Chapter 11 in this book are contained in the `/chapter10` and `/chapter11` directories, respectively, on the CD. The scripts will help you make your own MyDSL extensions and remaster your own DSL live CD.
- **MyDSL packages**—There are several extra software packages that are very popular with DSL users. By including some of these packages, available as software extensions with the MyDSL facility, on the CD, we can save you the trouble of downloading them over the Internet. In the `/mysdl` directory in the top-level directory of the CD, you can find packages for installing standard GNU utilities (gnu-utils package), ALSA sound drivers and utilities (alsa-sound package), and the OpenOffice.org office applications (openoffice package).

You can use the software contained on the CD if you don’t have an Internet connection. As time goes by, however, you should check the Damn Small Linux website for the availability of later versions of the software included on the CD.

## SUMMARY

Damn Small Linux is the premiere business card-size Linux desktop live CD available today. Within its 50MB footprint, DSL contains nearly every type of application you would expect to find in a modern desktop operating system. Although DSL is designed to run from a read-only CD medium, you can add data, software extensions, and system settings that can be backed up separately and used again the next time you reboot.

This chapter is an introduction to the features that make DSL both a useful and fun operating system for computer enthusiasts. It presents some of the ways in which you can boot, install, reuse, and enhance DSL that are described in greater depth in later chapters of the book. It also discusses ways in which you can learn more about the DSL community and contribute to its success.



*This page intentionally left blank*

# Index

## Numbers

7color-theme.tar.gz extension, 385  
7matrix-theme.tar.gz extension, 385  
8211.o extension, 406  
855patch extension, 407  
855wrap extension, 407

## A

a\_steroid.dsl extension, 355  
abe-sdl.dsl extension, 354  
abiword.dsl extension, 346  
abiword-gtk2-2.2.7.dsl extension, 362  
abiword-gtk2-2.2.7.unc extension, 402  
abiword.unc extension, 402  
abs-guide.uci extension, 387  
abuse.dsl extension, 354  
accessories (Skype), 287-288  
accounts (Skype), 278-279  
Ace of Penguins, 55  
ace.dsl extension, 354  
ace.uci extension, 388  
acm.dsl extension, 354  
acpid.unc extension, 402  
adm8211.o extension, 407  
Advanced Linux Sound Architecture.  
    *See* ALSA  
aespipe.dsl extension, 376  
airsnort-0.1.1.dsl extension, 371  
airsnort-gtk2-0.2.7.dsl extension, 362  
Alexa, 10  
aliendebs.dsl extension, 377  
almostX-theme.tar.gz extension, 385

ALSA (Advanced Linux Sound  
    Architecture), 275-276  
ALSA-Drivers-1.0.11.dsl extension, 377  
alsa.dsl extension, 377  
alsa.unc extension, 402  
alsa4dslv2.dsl extension, 377  
alsadebs.dsl extension, 377  
alternative devices  
    definition of, 245  
    embedded systems, 245-248  
    environmentally friendly nature of, 257  
    Mini project, 249-250  
    Mini-ITX systems, 248-249  
    old laptops, 252-254  
    processing power limitations, 250-251  
    RAM limitations, 251-252  
    thin clients, 254-257  
    USB mountable appliances, 246  
altitude-theme.tar.gz extension, 386  
amaya.uci extension, 388  
amber-theme.tar.gz extension, 386  
amsn-0.94.tar.gz extension, 371  
amsn-0.94.uci extension, 388  
amsn.tar.gz extension, 371  
amsn-telnet-0.95-ver3.dsl extension, 371  
amule-gtk2-2.1.3.dsl extension, 362  
Andrews, John, 20-24  
antiword.dsl extension, 346  
Apache Web Services  
    httpd.conf file, 326-327  
    security pages, 319  
apache-2.0.54.tar.gz extension, 371  
Apple Bootcamp, 31

applets, 311  
 applications. *See specific applications*  
 apps extensions, 103, 348-354  
 Apsfilter tool  
     paper format, 93  
     printer driver selection, 90-91  
     printer interface setup, 92-93  
     test pages, 93-95  
 apt-get, enabling with dpkg-restore, 186  
 armagetron.dsl extension, 354  
 Aterm, 55  
 atmusbdrivers.dsl extension, 377  
 atmelwlandrivers.dsl extension, 377  
 audacity-1.2.2.tar.gz extension, 364  
 audacity-1.2.2.uci extension, 388  
 audacity.uci extension, 388  
 audio. *See* ALSA (Advanced Linux Sound  
     Architecture); Skype VoIP service  
 aumix.dsl extension, 365  
 autoconfiguration in DSL boot process, 39-40  
 Axy FTP, 56  
 azbook.uci extension, 388  
 azureus-2.3.0.6.uci extension, 388

## B

backgrounds, 80-81, 227  
 backing up data, 16-17  
     DSL settings, 72-75  
     XAMPP server, 336-337  
     Webdata backup, 96-98  
 backup/restore partitions, 134-135  
 bc.dsl extension, 346  
 bcm5700.tar.gz extension, 377  
 Beaver, 56  
 BetaFTPD daemon, 68  
 billard-gl.dsl extension, 355  
 BitTornado.uci extension, 388  
 bittorrent-cli.dsl extension, 372  
 bittorrent-gui.dsl extension, 372  
 blast.tar.gz extension, 355  
 blender.uci extension, 388  
 blender223.dsl extension, 365  
 bluez-utils.unc extension, 402  
 boot commands, 75  
 boot floppies, 34, 133, 163-164  
 boot images, 342  
 boot loaders, 185  
     digital media frames, 303-304  
     linld, 166-167  
     loadlin.exe, 167-168

boot prompt, 36  
 boot.msg file, 228  
 bootable CD-ROMs, creating  
     advantages, 212-213  
     booting from DSL CD-ROM, 214  
     booting new CD, 220-221  
     CDW utility, 218-219  
     MkMyDSL script, 215-217  
     MyDSL extensions, 215  
     overview, 213-214  
     working directories, mounting, 214  
 bootable images, creating, 217  
 Bootcamp (Apple), 31  
 booting  
     autoconfiguration, 39-40  
     boot floppies, 34  
     boot options, 30, 35, 38-39  
         *boot install*, 124  
         *dma*, 45  
         *failsafe*, 39  
         *host*, 45  
         *lowram*, 39  
         *running background services from*  
             *boot prompt*, 45  
         *secure*, 45  
         *toram*, 39  
         *video options*, 38-39  
     boot prompt, 36  
     booting from DSL CD-ROM, 214  
     booting new CDs, 220-221  
     default settings, 30  
     hardware requirements, 31  
     help, 37  
     install option, 153  
     overview, 15, 29-30  
     remastering boot options, 228-230  
     software requirements, 32  
     troubleshooting, 33  
     X setup, 41-45  
 briquolo.tar.gz extension, 355  
 briquolo.uci extension, 389  
 bugsquish.dsl extension, 355  
 buzz.tar.gz extension, 355

## C

calc.uci extension, 389  
 Calcoo, 56  
 Calendar, 67  
 Call List tab (Skype), 281  
 calls (Skype), 285-287

- camserv.dsl extension, 365
- cbb-gtk2-0.79.dsl extension, 362
- cdparanoia-9.8.tar.gz extension, 365
- CDs
  - bootable CD-ROMs, creating
    - advantages*, 212-213
    - booting from DSL CD-ROM*, 214
    - booting new CD*, 220-221
    - CDW utility*, 218-219
    - MkMyDSL script*, 215-217
    - MyDSL extensions*, 215
    - overview*, 213-214
    - working directories, mounting*, 214
  - Live CDs, 19, 133-134
    - booting USB pen drives with*, 133-134
    - Gparted*, 186
    - overcoming shortcomings of*, 99-100
  - The Official Damn Small Linux Book CD*, 26-27, 341-343
- CDW utility, 218-219
- cfdisk command, 123, 154-156, 180-182
- cgboban.dsl extension, 355
- chameleon.dsl extension, 346
- chat sessions (Skype), 285-286
- checkinstall.dsl extension, 377
- checksum files, 208-209
- cheops.dsl extension, 372
- chromium.dsl extension, 355
- chroot command, 224-225
- cicq.dsl extension, 372
- cinepaint.dsl extension, 346
- circuslinux.dsl extension, 356
- clapton-theme.tar.gz extension, 386
- clients, thin, 247-248, 254-257
- codecpak.dsl extension, 378
- color depth, 43
- commands. *See specific commands*
- CompactFlash install (Lilo), 159-163
- compiling kernel, 237-241
- configuration
  - ALSA (Advanced Linux Sound Architecture), 275-276
  - backing up, 72-75
  - desktop, 75
    - backgrounds/wallpapers*, 80-81
    - date/time*, 81
    - icons*, 76-80
    - screen resolution*, 82-83
    - selecting*, 76
  - digital media frames, 302-305
  - Edna Music Server, 267-268

- FTP servers, 327-328
- modems, 83-85, 87
- PHP, 327
- printing
  - paper format*, 93
  - printer driver selection*, 90-91
  - printer interface setup*, 92-93
  - test pages*, 93-95
- rc.firewall script, 322-324
- restoring, 75
- saving to Web, 96-98
- wired Ethernet, 87
- wireless Ethernet, 87-88
  - Ndiswrapper*, 89-90
  - Wlanconfig*, 88
- XAMPP server
  - httpd.conf file (Apache Web Services)*, 326-327
  - network interface*, 325-326
  - overview*, 325
  - php.in file (PHP configuration)*, 327
  - phpMyAdmin*, 328
  - phpSQLiteAdmin*, 329
  - proftpd.conf file (FTP server configuration)*, 327-328
  - Webalizer*, 329-330
- conky.uci extension, 389
- connecting to Internet. *See Internet connections*
- consolefonts.uci extension, 389
- contacts (Skype), 282-284
- copperwine-theme.tar.gz extension, 386
- coreutils.uci extension, 389
- cron30.dsl extension, 378
- ctorrent.tar.gz extension, 372
- cups-client.dsl extension, 378
- cups.dsl extension, 378
- cups.unc extension, 402
- cvs.dsl extension, 378

## D

- d4x.dsl extension, 372
- daemons
  - BetaFTPD, 68
  - Monkey Web Server, 68-69
  - network file system (NFS), 68
  - OpenSSH, 67
  - SSHD, 67
  - starting from DSL boot prompt, 45
- Damn Small Machine (DSM), 248, 255

- DamnSmallLinux.org website, 33, 40, 110, 343
- date/time, 81
- daughterboards, 248
- dd command, 34, 246
- Debian, 20, 178-179
- decentralized peer-to-peer networks, 272
- depth of color, 43
- desktop, 11-12
  - backgrounds/wallpapers, 80-81
  - customizing, 15
  - date/time, 81
  - default desktop, 228
  - icons, 76
    - adding*, 78
    - displaying*, 77
    - layout*, 77-78
    - removing*, 79-80
  - screen resolution, 82-83
  - selecting, 76
- dfm.dsl extension, 378
- dia-0.88.1.dsl extension, 346
- Dial tab (Skype), 281
- digital media frames
  - applets, 311
  - configuration
    - bootloader*, 303-304
    - overview*, 302
    - players*, 302
    - .xinitrc file*, 304-305
  - digital content, adding
    - removable media*, 305
    - via network interface*, 305
    - via Samba*, 306-307
    - via SSH*, 306
  - goals of, 292-293
  - laptops
    - adding parts to*, 297-298
    - dismantling and mounting*, 308-311
    - evaluating with Damn Small Linux*, 295-296
    - evaluating with Tom's Root Boot*, 296-297
    - requirements*, 293-295
  - obtaining parts for, 298
  - overview, 291
  - remote control, 311
  - software installation
    - disk partitions*, 300
    - install types*, 300-301
    - multimedia player and networking software*, 301-302, 307-308
    - overview*, 299
  - timers, 311
  - warnings, 292
- Dillo, 56-57, 252
- directories
  - excluding from backup, 74-75
  - /home/dsl/.xtdesktop, 193
  - /opt, 334
  - selecting for backup, 73-74
  - /tmp/mydsl.menu, 192
  - working directories, mounting, 214
- Distrowatch, 10
- dma boot option, 45
- dmix, 67
- Docked.lua tool (Fluxbox), 53-54, 67
- doom.dsl extension, 356
- DOS systems, installing DSL on
  - Frugal installs, 166-168
  - Poorman's installs, 164-165
- dosbox.dsl extension, 346
- dossizola.dsl extension, 356
- download repository mirror, 109
- downloading
  - DSL, 32-33
  - MyDSL extensions
    - with Extension tool*, 106-107
    - from DSL website*, 110
    - with DSL help screen*, 110-113
  - Skype VoIP service, 277
- dpkg-restore, 186
- dreaming-theme.tar.gz extension, 386
- drivers, printer, 90-91
- drives. *See* hard drives; USB drives
- drmP.h extension, 407
- DSL
  - advantages, 12-14, 22-23
  - challenges, 23-24
  - downloading, 32-33
  - DSL blog, 25
  - expandability, 12
  - forums, 25
  - future plans for, 24
  - goals, 21-22
  - history, 20-21
  - popularity, 10
  - portability, 12
  - store, 25
  - versions, 32

- website, 33, 40, 110, 343
- wiki, 25
- dsl-3.3-embedded.zip file, 342
- dsl-3.3-syslinux.iso file, 342
- dsl-3.3-vmx.zip file, 342
- dsl-3.3.iso file, 342
- dsl-aterm.tar.gz extension, 346
- dsl-base.bat, 141
- dsl-config script, 228
- dsl-cube.tar.gz extension, 356
- dsl-dpkg.dsl extension, 378
- dsl-dpkg.unc extension, 402
- DSL-Embedded**
  - installing on USB pen drives
    - backup/restore partitions, 134-135*
    - boot floppies, 133*
    - boot install option, 124*
    - DSL-embedded.zip drives, booting within Windows, 136*
    - LiveCDs, 133-134*
    - MyDSL partitions, 134-135*
    - native BIOS booting, 145*
    - overview, 121*
    - USB-HDD, 122-128, 135*
    - USB-ZIP, 122, 128-132, 135*
    - wiki resources, 136*
  - running in Qemu
    - dynamic translation, 139*
    - generic virtual DSL, setting up with dsl-base.bat, 141*
    - KQemu, 145-146*
    - native files, accessing within virtual environment, 144-145*
    - overview, 139-141*
    - virtual hard drives, setting up, 141-144*
  - running in VMPlayer, 146-149
- dsl extensions, 104**
  - creating, 194
    - adding icons, 197-198*
    - creating extension, 196*
    - installing and testing packages, 196*
    - restoring Debian Package Management System, 195*
    - saving extension, 197-198*
    - setting up DSL for extension building, 195*
    - testing extension, 197*
  - definition of, 191
- dsl-hdinstall script, 183-185**
- DSL IRC, 25**
- dsl\_logo-theme.tar.gz extension, 386**

- dsl-vhd.bat, 144**
- DSL VMware, 236**
- DSM (Damn Small Machine), 248, 255**
- dynamic translation, 139**
- dynamically loading extensions, 101**

## E

- e16.uci extension, 389**
- easytag-1.0.dsl extension, 365**
- eboard.dsl extension, 356**
- eBox III, 248, 255**
- eciadsl-usermode-0.11-ver2.dsl extension, 372**
- Edna Music Server**
  - accessing remote music, 268-269
  - configuration options, 267-268
  - customizing, 267
  - editing path to music, 262-264
  - edna.dsl extension, 372
  - installing on DSL, 260-262
  - overview, 259-260
  - restarting, 264
  - walk-through, 264-266
- elmo.dsl extension, 372**
- emacs-21.4.unc extension, 403**
- email, Sylpheed, 60**
- embedded systems, 245-248**
- EmelFM, 57**
  - emel\_fm2-gtk2-1.12.dsl extension, 362
- End User License Agreement (Skype), 279**
- endeavour2.dsl extension, 347**
- enigma.uci extension, 389**
- enrapture.tar.gz extension, 356**
- environmentally friendly hardware solutions, 257**
- epic4.dsl extension, 373**
- errors**
  - Error reading from drive B, 171
  - MyDSL extensions, 116
  - Non DSL User, 116
  - Please mount media containing optional dir and try again, 116
  - Skype VoIP service, 288-289
- Ethernet configuration**
  - wired Ethernet, 87
  - wireless Ethernet, 87-88
    - Ndiswrapper, 89-90*
    - Wlanconfig, 88*
- etree-scripts\_3.1-2.dsl extension, 365**
- evilwm.tar.gz extension, 398**

evilwm.uci extension, 389  
 expandability of DSL, 12  
 ext2 filesystem, 184  
 ext3 filesystem, 184  
 extensions. *See specific extensions*

## F

f2 file, 229  
 f3 file, 229  
 failsafe boot option, 39  
 falling\_tower.tar.gz extension, 356  
 feh.unc extension, 403  
 festival.dsl extension, 365  
 festival.unc extension, 403  
 figurine.dsl extension, 347  
 files. *See specific files*  
 filesystems, 184  
 .filetool.lst tool, 73-74  
 findutils.uci extension, 389  
 Firefox, 57-58  
     firefox-1.5.0.6.uci extension, 390  
     firefox-1.5.uci extension, 390  
     firefox-2.0-gtk1.uci extension, 390  
     firefox-gtk1.2-1.0.6.uci extension, 390  
     firefox-gtk2-1.0.4.tar.gz extension, 363  
 firewalls, 321-324  
 flac.dsl extension, 365  
 flex-bison-libtool.dsl extension, 378  
 floppies, boot  
     creating, 34, 133, 163-164  
     installing DSL from, 169-172  
     Tom's Root Boot, 296-297  
 fltk.uci extension, 390  
 Fluxbox  
     Docked.lua tool, 53-54  
     fluxbox-0.9.11.tar.gz extension, 398  
     fluxbox\_0.9.14.uci extension, 390  
     Fluxter, 50-51  
     overview, 15, 48  
     tabbed applications, 51-53  
     virtual desktops, navigating, 48-50  
 Fluxter, 50-51  
 formatting swap partitions, 182  
 forums (DSL), 40  
 FOSS (free and open source software), 18  
 Free Software Foundation GNU project, 18  
 freebirth.dsl extension, 366  
 freeciv.dsl extension, 356  
 frobtads.uci extension, 390  
 frozen-bubble.dsl extension, 357

## Frugal installs

compared to hard drive installs, 177-178  
 definition of, 152  
 Grub hard drive install, 156-159  
 Lilo CompactFlash install, 159-163  
 overview, 154  
 partitioning with Cfdisk, 154-156  
 on Windows 9x or DOS  
     linld boot loader, 166-167  
     loadlin.exe boot loader, 167-168

## FTP, 63

AxY FTP, 56  
 configuring, 327-328

full KNOPPIX remastering. *See*  
 KNOPPIX remastering

fuse module, 268

fusion\_dsl\_xmms\_skin.tar.gz extension, 386

## G

gaim-1.5.0.unc extension, 403  
 gaim-gtk2-1.3.1.dsl extension, 363  
 gambas.dsl extension, 347  
 games, 103, 355-364  
     Ace of Penguins, 55  
     Xtris, 62  
 gcc1.dsl extension, 379  
 gcc1-with-libs.dsl extension, 379  
 gcc1-with-libs.unc extension, 403  
 gcc-2.95.unc extension, 403  
 gcompris-1.2.1-2.dsl extension, 357  
 gcompris2.dsl extension, 357  
 generic virtual DSL, setting up with  
     dsl-base.bat, 141  
 gftp-gtk2-2.0.17.dsl extension, 363  
 gimp-1.2.dsl extension, 347  
 gimp-gtk2-2.2.8.dsl extension, 363  
 gkrellm-gtk2-2.2.2.dsl extension, 363  
 glest.dsl extension, 357  
 gLinks.uci extension, 252, 390  
 Global Index technology (Skype), 273  
 gmoo.dsl extension, 347  
 gnomeicu.dsl extension, 373  
 GNU project, 18  
     gnu-utils.dsl extension, 379  
     gnu-utils.unc extension, 404  
     gnucash.dsl extension, 363  
     gnumeric.dsl extension, 363  
     gnumeric.unc extension, 403  
     gnupg.dsl extension, 379  
     gnupg.unc extension, 403

- gnuplot.tar.gz extension, 347
- gnupod.dsl extension, 366
- Gparted live CD, 186
- gPhone, 58
- gps.dsl extension, 379
- gpsk31.dsl extension, 347
- GQview, 301-302
- gqview-1.2.2.uci extension, 390
- gqview.dsl extension, 347
- graphics. *See* images
- grip-3.0.0.dsl extension, 366
- groups of contacts (Skype), 284
- Grub, 185-186
  - grub.dsl extension, 379
  - hard drive install, 156-159
- gRun, 58
- gscore-gtk2-0.79.dsl extension, 363
- gtetrinet.dsl extension, 357
- GTK+, 47
- gtk+-2.10.9.unc extension, 404
- gtk-theme-switch.unc extension, 404
- Gtk2 extensions (MyDSL), 104
  - gtk2-0705.dsl extension, 363
  - gtk2-0705.unc extension, 404
- gtkam.dsl extension, 366
- gtkedit.tar.gz extension, 347
- GtkFind, 59
- gtkfind.dsl extension, 348
- gtkgep.dsl extension, 366
- gtkgnutune.dsl extension, 366
- gtkpod-gtk2-0.93.dsl extension, 363
- gtksee.dsl extension, 348
- gtoaster\_1.0beta6.dsl extension, 366
- guile.uci extension, 391
- gv.dsl extension, 348
- Gvu, 59

## H

### hard drive installs

- apt-get, enabling with dpkg-restore, 186
- compared to Frugal installs, 177-178
- Debian compatibility, 178-179
- dsl-hdinstall script, 183-185
- Grub, 156-159
- hardware requirements, 179
- multi-boot systems, 186
- partitioning with Cfdisk, 180-182
- single user mode, 183
- swap file formatting, 182

### hard drives

- partitions, 300
  - creating with Cfdisk, 154-156, 180-182*
  - swap partitions, 182*
- restarting XAMPP from, 335-336
- saving XAMPP server to, 334-335
- swap file formatting, 182
- virtual hard drives, 141-144

### hardware requirements, 31

- hard drive installs, 179
- network installs, 172-173
- Skype VoIP service, 274

### headsets (Skype), 288

### helixplayer.uci extension, 391

### help, 37

### hexxagon.tar.gz extension, 357

### /home/dsl/.xtdesktop directory, 193

### host boot option, 45

### httpd.conf file (Apache Web Services), 326-327

### hydra-5.2.uci extension, 391

### hydrogen.dsl extension, 366

## I

### Ibiblio, 109

### icewm.uci extension, 391

### icons, 76

- adding, 78
- creating, 225-226
- displaying, 77
- layout, 77-78
- removing, 79-80

### ifconfig command, 173

### imagemagick.tar.gz extension, 348

### imagemagick.uci extension, 391

### images

- backgrounds/wallpapers, 80-81
- bootable images, 217
- icons, 76
  - adding, 78*
  - creating, 225-226*
  - displaying, 77*
  - layout, 77-78*
  - removing, 79-80*
- Isolinux ISO image, 230-233
- Syslinux ISO image, 233-235

### imlib-palette.dsl extension, 379

### impress1.1\_beta9.dsl extension, 348

### inadyn.dsl extension, 373



- index utility, 63
  - .info files, 208
  - inform.uci extension, 391
  - inkscape-gtk2-0.39.dsl extension, 364
  - install command, 156
  - installation
    - digital media frame software
      - disk partitions, 300
      - install types, 300-301
      - multimedia player and networking software, 301-302, 307-308
      - overview, 299
    - DSL on USB pen drives
      - backup/restore partitions, 134-135
      - boot floppies, 133
      - boot install option, 124
      - DSL-embedded.zip drives, booting within Windows, 136
      - LiveCDs, 133-134
      - MyDSL partitions, 134-135
      - native BIOS booting, 145
      - overview, 121
      - USB-HDD, 122-128, 135
      - USB-ZIP, 122-123, 128-132, 135
      - wiki resources, 136
    - Edna Music Server, 260-262
    - firewalls, 322
    - Frugal installs
      - compared to hard drive installs, 177-178
      - definition of, 152
      - Grub hard drive install, 156-159
      - Lilo CompactFlash install, 159-163
      - overview, 154
      - partitioning with Cfdisk, 154-156
      - on Windows 9x or DOS, 166-168
    - hard drive installs
      - apt-get, enabling with dpkg-restore, 186
      - compared to Frugal installs, 177-178
      - Debian compatibility, 178-179
      - dsl-hdinstall script, 183-185
      - hardware requirements, 179
      - multi-boot systems, 186
      - partitioning with Cfdisk, 180-182
      - single user mode, 183
      - swap file formatting, 182
    - installation menu, 153
    - network installs
      - hardware requirements, 172-173
      - overview, 172
      - step-by-step process, 173-175
    - overview, 151-152
    - Poorman's installs
      - on alternate machines, 168
      - boot floppies, preparing, 163-164
      - on existing Linux partitions, 165-166
      - from floppy disks, 169-172
      - definition of, 152
      - overview, 163
      - from PCMCIA, 169
      - from USB drives, 169
      - on Windows 9x or DOS, 164-165
      - from Zip drives, 169
    - Skype VoIP service, 277
    - XAMPP, 314-315
  - intellivision\_gamepak.dsl extension, 357
  - Internet connections
    - modems, 83-87
    - wired Ethernet, 87
    - wireless Ethernet
      - configuring, 87-88
      - Ndiswrapper, 89-90
      - Wlanconfig, 88
  - invaders.tar.gz extension, 357
  - ion2.dsl extension, 399
  - iptables.dsl extension, 379
  - ipw2100-k2.4.31.dsl extension, 379
  - ipw2200-k2.4.31.dsl extension, 380
  - irda-utils.unc extension, 404
  - irssi.uci extension, 391
  - iscribe.dsl extension, 373
  - Isolinux ISO image, creating, 230-233
    - makeimage script, 231-232
    - makeiso script, 232-233
  - ISOLINUX version, 32
  - isolinux.cfg file, 228
- ## J-K
- jhead.uci extension, 391
  - john-1.7.0.2.tar.gz extension, 380
  - jpilot.dsl extension, 348
  - jre1\_5\_0.uci extension, 391
  - JWM (Joe's Window Manager), 54, 76
  - k3b.dsl extension, 367
  - KaZaA, 272
  - kernels, compiling, 237-241

keyboards, DSL X setup options, 43-45

killall skype command, 289

kismet-2006-04-R1.uci extension, 391

kjvbible.dsl extension, 348

KNOPPIX remastering

application removal, 226

boot options, 228-230

content changes with chroot

method, 224-225

content changes with direct

method, 223-224

default desktop, 228

DSL VMware edition, 236

dsl-config script, 228

Isolinux ISO image, 230-233

*makeimage script*, 231-232

*makeiso script*, 232-233

kernels, 237-241

language, 227

menus/icons, 225-226

overview, 20, 221

passwords, 227

Qemu embedded version, 235-236

setup from published DSL

CD-ROM, 221-223

Syslinux ISO image

*initial ramdisk*, 234-235

*makesys script*, 233-234

themes/backgrounds, 227

timezone, 227

konsole.unc extension, 404

koth.dsl extension, 358

koules.dsl extension, 358

KQemu, 145-146

## L

lame.dsl extension, 367

language, setting, 227

laptops

adding parts to, 297-298

choosing for digital media frames, 293-295

dismantling and mounting, 308-311

evaluating

*with Damn Small Linux*, 295-296

*with Tom's Root Boot*, 296-297

running DSL on, 252-254

latex2rtf.dsl extension, 348

layout of desktop icons, 77-78

lfp\_fixed\_fonts.tar.gz extension, 380

lgames.dsl extension, 358

libc6-dev.dsl extension, 380

libc6.dsl extension, 380

libmysqlclient10.dsl extension, 380

libncurses5-dev.dsl extension, 380

libncurses5.dsl extension, 380

libssh-0.11.dsl extension, 381

lifelines.dsl extension, 348

lighttpd.uci extension, 392

Lilo, 159-163, 185-186

limewire4.8.0.dsl extension, 373

lincity.dsl extension, 358

linld boot loader, 166-167

linpsk.dsl extension, 349

Linux

installing DSL on, 165-166

Linux Security HOWTO, 319

linux-kernel-headers.dsl extension, 381

linvwin-theme.tar.gz extension, 386

liquidglass-theme.tar.gz extension, 386

liquidwar.dsl extension, 358

lists, Skype contacts, 284

Live CDs, 19, 133-134

booting USB pen drives with, 133-134

Gparted, 186

overcoming shortcomings of, 99-100

Load Local extensions (MyDSL), 104

loadable kernel modules, 18

loading

extensions

*at boot time*, 114-115

*dynamic loading*, 101

fuse module, 268

loadlin.exe boot loader, 167-168

logo.16 file, 228

lout.dsl extension, 349

lowram boot option, 39

Lua applications, 66-67

lynx.dsl extension, 373

## M

madwifi-ng-2.4.26.uci extension, 392

madwifi.dsl extension, 381

makeimage script, 231-232

makeiso script, 232-233

makesys script, 233-234

man.uci extension, 392

mathwar.dsl extension, 358

maxima.dsl extension, 349

MBR (Master Boot Record), 246

mc (Midnight Commander), 64

- mc.uci extension, 392
- md5sum program, 209
- media frames. *See* digital media frames
- memory
  - alternative devices, 251-252
  - hard drive install requirements, 179
- menus
  - creating, 225-226
  - elements (extensions), 192-193
- micq.dsl extension, 373
- Microcom, 63
- Midnight Commander, 64
- Mini project, 249-250
- Mini-ITX systems, 248-249
- minirt24.gz file, 229
- Mirror Select dialog box, 109
- mkisofs command, 207
- mkmysdl procedure
  - advantages, 212-213
  - boot time options, 216
  - bootable images, creating, 217
  - booting from DSL CD-ROM, 214
  - booting new CD, 220-221
  - CDW utility, 218-219
  - MkMyDSL script, 215-217
  - MyDSL extensions, adding, 215
  - overview, 213-217
  - target directory location, 216
  - working directories, mounting, 214
- mkqemu script, 235-236
- mkswap command, 156, 182
- mkvmx script, 236
- mmgolf.tar.gz extension, 358
- modems, configuring, 83-87
- modules extensions, 407
- Monkey Web Server, 68-69
- monkeys-audio.dsl extension, 367
- motion.tar.gz extension, 367
- Mount.lua, 67
- mounting
  - drives, 53-54
  - laptops, 308-311
  - working directories, 214
- mouse, DSL X setup options, 41-42
- mozilla-1.7.uci extension, 392
- mozilla-third-gtk2-1.0.2.dsl extension, 364
- mp3blaster.tar.gz extension, 367
- mp3gain.dsl extension, 367
- mpc.tar.gz extension, 367
- mplayer-1.0pre8cvs.uci extension, 392
- mplayer.dsl extension, 367
- mplayer.unc extension, 404
- mplayer-xfree86.tar.gz extension, 368
- mplayerplug-in.dsl extension, 368
- mplayerplug-in.unc extension, 404
- mrxvt.uci extension, 392
- MS Word Viewer, 66
- multi-boot systems, 186
- multimedia extensions, 103, 365-371
- multimedia players, 301-302, 307-308
- music server. *See* Edna Music Server
- MyDSL
  - accessing with MyDSL desktop icon, 103
  - advantages of, 99-100
  - development of, 100-101
  - download repository mirror, changing, 109
  - Extension tool, 103-108
  - extensions. *See also specific extensions*
    - accessing with MyDSL Extension tool, 107-108*
    - Apps category, 103*
    - choosing, 105-106*
    - command-line access, 115-116*
    - definition of, 99*
    - downloading with DSL help screen, 110-113*
    - downloading from DSL website, 110*
    - downloading with Extension tool, 106-107*
    - .dsl extension type, 104*
    - errors, 116*
    - Games category, 103*
    - Gtk2 category, 104*
    - launching newly installation extensions, 107*
    - Load Local category, 104*
    - loading during boot process, 114-115*
    - loading dynamically, 101*
    - Multimedia category, 103*
    - Net category, 103*
    - saving, 113*
    - System category, 104*
    - tar.gz extension type, 104*
    - Testing category, 104*
    - Themes category, 103*
    - UCI category, 104-105*
    - UNC category, 104-105*
    - WM\_Apps category, 104*
  - overview, 99
  - software for, 102

mysdl-load command, 116  
 mysdl-wget command, 115-116  
 MySQL, 319

## N

Naim, 64  
 naim\_TOC2.uci extension, 392  
 Nano, 65  
 native files, accessing within virtual environment, 144-145  
 nature-themes.tar.gz extension, 386  
 naturered-theme.tar.gz extension, 386  
 Ndiswrapper tool, 89-90  
 nedit-5.5.uci extension, 393  
 nedit.tar.gz extension, 349  
 nessus.dsl extension, 374  
 nessusd.dsl extension, 374  
 Net extensions, 103, 372-376  
 netcat.dsl extension, 374  
 Netconfig tool, 325-326  
 nethack.tar.gz extension, 358  
 Netrik, 65  
 network file system (NFS), 68  
 network installs  
   hardware requirements, 172-173  
   step-by-step process, 173-175  
 networks  
   decentralized peer-to-peer, 272  
   network interfaces, 305  
   networking software, 301-302  
 nicotine-python-gtk2-1.0.8.unc extension, 404  
 nmap-4.03.uci extension, 393  
 nmap.dsl extension, 374  
 no-ip.dsl extension, 374  
 Non DSL User (error message), 116  
 norestore option (boot command), 75  
 ntpdate\_4.1.0-8\_i386.dsl extension, 381  
 nvidia.dsl extension, 381  
 nvidia\_1.0.8762.dsl extension, 381  
 nvidia2.dsl extension, 381  
 nvu-1.0.uci extension, 393  
 nvu-gtk2-0.50.dsl extension, 364  
 NX.uci extension, 393  
 nxclient-1.4.0-75.dsl extension, 374  
 nxclient.tar.gz extension, 374

## O

octave.tar.gz extension, 349  
*The Official Damn Small Linux Book* CD, 26-27, 341-343  
 older PCs, running DSL on, 17, 252-254  
 opengl-libs.dsl extension, 381  
 OpenOffice.org office suite, 100  
   openoffice-1.1.4.tar.gz extension, 349  
   openoffice-2.0.uci extension, 393  
   openoffice.org2.0.uci extension, 393  
   openoffice.tar.gz extension, 349  
   OpenOffice.uci extension, 252, 393  
 OpenSSH daemon, 67  
 openssl-0.9.7j-includes.dsl extension, 381  
 opera-8.01.uci extension, 393  
 opera850.uci extension, 394  
 opera852.dsl extension, 374  
 opera9.uci extension, 394  
 opera910.unc extension, 404  
 operating systems, 18-19  
 /opt directory, 334  
 outguess.uci extension, 394  
 owfs.uci extension, 394

## P

P2P (peer-to-peer) networks, 272  
 p7zip-4.42.dsl extension, 382  
 p7zip.dsl extension, 382  
 packages, creating, 17-18  
 pacpc.tar.gz extension, 358  
 pagers, Fluxter, 50-51  
 pan-gtk2-0.14.2.dsl extension, 364  
 paper format, selecting, 93  
 parted.dsl extension, 349  
 partitions, 300  
   backup/restore partitions, 134-135  
   creating with Cfdisk, 154-156, 180-182  
   MyDSL partitions, 134-135  
   swap partitions, 182  
 passwd command, 227  
 passwords, changing, 227  
 pclock.tar.gz extension, 399  
 PCMCIA, Poorman's installs from, 169  
 peer-to-peer (P2P) networks, 272  
 penguin-command.dsl extension, 358  
 pente.tar.gz extension, 359  
 perfect-blue.tar.gz extension, 386

**PHP**

- configuring, 327
- php-4-monkey-0.9.1.tar.gz extension, 382
- php.in file, 327
- php.tar.gz extension, 382
- phpMyAdmin tool, 328
- phpSQLiteAdmin tool, 329
- security pages, 319

pipenightdreams.dsl extension, 359

Please mount media containing optional dir  
and try again (error message), 116

**Poorman's installs**

- on alternate machines, 168
- boot floppies, preparing, 163-164
- definition of, 152
- on existing Linux partitions, 165-166
- from floppy disks, 169-172
- overview, 163
- from PCMCIA, 169
- from USB drives, 169
- on Windows 9x or DOS, 164-165
- from Zip drives, 169

predict-gsat-2.2.2.dsl extension, 350

**printing**

- configuring
  - paper format*, 93
  - printer drivers*, 90-91
  - printer interface setup*, 92-93
- test pages, 93-95

procps.uci extension, 394

proftpd.conf file (FTP server  
configuration), 327-328

projects, 17, 342

ProzGUI.dsl extension, 374

ProZilla.dsl extension, 374

pspp.dsl extension, 350

ptbr.dsl extension, 382

pure-ftpd-gtk2-1.0.19.dsl extension, 364

pureadmin-0.2.2-1.dsl extension, 375

python.uci extension, 394

python2.3-gtk2.uci extension, 394

python2.3.tar.gz extension, 382

python2.5.unc extension, 405

**Q**

qcad.tar.gz extension, 350

qcad.uci extension, 394

Qemu, 32, 342

- building, 235-236
- dynamic translation, 139

generic virtual DSL, setting up with

dsl-base.bat, 141

KQemu, 145-146

native files, accessing within virtual  
environment, 144-145

overview, 139-141

virtual hard drives, setting up, 141-144

qemu-img.exe program, 142-143

qiv.dsl extension, 368

qsstv-5.2.dsl extension, 350

qtparted-gtk2-0.4.4.dsl extension, 364

quake2.dsl extension, 359

**R**

R.tar.gz extension, 350

RAM, 179, 251-252

rar.dsl extension, 382

ratpoison-1.3.0.dsl extension, 399

rawwrite program, 34

rc.firewall script, 322-324

rcfirewall.dsl extension, 375

rcfirewall.unc extension, 405

Rdesktop, 61

realplayer.uci extension, 395

reiserfsprogs.dsl extension, 382

**remastering**

bootable CD-ROMs, creating

*advantages*, 212-213

*booting from DSL CD-ROM*, 214

*booting new CD*, 220-221

*CDW utility*, 218-219

*MkMyDSL script*, 215-217

*MyDSL extensions*, 215

*overview*, 213-214

*working directories, mounting*, 214

full KNOPPIX remastering

*application removal*, 226

*boot options*, 228-230

*content changes with chroot method*,  
224-225

*content changes with direct method*,  
223-224

*default desktop*, 228

*DSL VMware edition*, 236

*dsl-config script*, 228

*Isolinux ISO image*, 230-233

*kernels*, 237-241

*language*, 227

*menus/icons*, 225-226

*overview*, 221

- passwords*, 227
- Qemu embedded version*, 235-236
- setup from published DSL CD-ROM*, 221-223
- Syslinux ISO image*, 233-235
- themes/backgrounds*, 227
- timezone*, 227
- overview, 211-212
- tools, 343
- remote control, 311
- remote music, accessing with Edna Music Server, 268-269
- removable media, adding to digital media frames, 305
- repositories, adding extensions to, 207-209
- resolution, screen, 42, 82-83
- restoring data, 16-17
  - Debian Package Management System, 195, 199
  - DSL settings, 75
- rexima.uci extension, 395
- rkhunter.dsl extension, 350
- rogue\_theme.tar.gz extension, 387
- rootCommand tag (Fluxbox), 227
- rox-theme.tar.gz extension, 387
- rox.dsl extension, 350
- ruby.dsl extension, 382

## S

- Samba, 306-307
  - samba.dsl extension, 375
  - samba.unc extension, 405
- saving
  - DSL settings to Web, 96-98
  - extensions
    - dsl extensions*, 197-198
    - unc extensions*, 201
    - on USB-HDD installation*, 135
    - on USB-ZIP installation*, 135
  - MBR (Master Boot Record), 246
  - MyDSL extensions, 113
  - XAMPP server
    - to hard drives*, 334-335
    - to USB flash drives*, 331-333
- sc.dsl extension, 350
- scite.dsl extension, 351
- scite.uci extension, 395
- screen resolution, 42, 82-83
- screen.dsl extension, 399

- scripts. *See specific scripts*
- scsi.unc extension, 405
- scummvm-0.8.0.dsl extension, 359
- scummvm-0.8.0.uci extension, 395
- sdl-libs.dsl extension, 368
- sdlroids.dsl extension, 359
- seamoney-1.0.3-gtk1.uci extension, 395
- seamoney.uci extension, 395
- secure boot option, 45
- security

### firewalls

- installing*, 322
- overview*, 321
- rc.firewall script*
  - configuration*, 322-324
  - starting*, 324

### XAMPP

- documentation*, 318-319
- firewalls*, 321-324
- overview*, 318
- xampp security command*, 319-321

## servers

### Edna Music Server

- accessing remote music*, 268-269
- configuration options*, 267-268
- customizing*, 267
- editing path to music*, 262-264
- installing on DSL*, 260-262
- overview*, 259-260
- restarting*, 264
- walk-through*, 264-266

### Monkey Web Server, 68-69

### XAMPP

- adding content to*, 330-331
- backing up*, 336-337
- component software*, 313
- configuring*, 325-330
- installing*, 314-315
- overview*, 313-314
- restarting*, 335-336
- saving*, 331-335
- security*, 318-324
- verifying configuration of*, 315-318

## services

### Apache Web Services, 326-327

### Skype. *See* Skype VoIP

- starting from DSL boot prompt*, 45

### setupFromCD script, 222

- sgi-fonts.tar.gz extension, 383

**shareable extensions, creating**

- adding to repositories, 207
- checksum files, 208-209*
- .info files, 208*
- submitting extensions for publication, 209*
- dsl extensions, 194-198
  - adding icons, 197-198*
  - creating extension, 196*
  - definition of, 191*
  - installing and testing packages, 196*
  - restoring Debian Package Management System, 195*
  - saving extension, 197-198*
  - setting up DSL for extension building, 195*
  - testing extension, 197*
- icon elements, 193-194
- limitations of extensions, 191
- menu elements, 192-193
- overview, 189-191
- tar.gz extensions, 191, 201-205
- uci extensions, 191, 201-202, 205-207
- unc extensions, 198-201
  - adding menus/icons, 200-201*
  - creating extension, 199*
  - definition of, 191*
  - installing and testing packages, 199*
  - rebooting, 199*
  - restoring Debian Package Management, 199*
  - saving extensions, 201*
  - setting up DSL for extension building, 198*
  - testing extension, 200*

**Shingledecker, Robert (interview), 20-24****shntool.dsl extension, 368****shorten.dsl extension, 368****Siag (Scheme in a Grid), 59-60****sid1-theme.tar.gz extension, 387****simutrans.uci extension, 395****single user mode, 183****sketch-0.6.15.dsl extension, 351****Skype VoIP**

- advantages over typical VoIP services, 272-273
- ALSA (Advanced Linux Sound Architecture) configuration, 275-276
- calling time, purchasing, 287
- chat sessions, 285-286

**contacts**

- contacts lists, 284*
- finding, 282-283*
- free calls, placing, 285*
- groups of contacts, creating, 284*
- decentralized peer-to-peer network, 272
- downloading, 277
- EULA (End User License Agreement), 279
- free calls, placing, 285
- hardware requirements, 274
- headsets, 288
- installing, 277
- limitations of, 273
- online guides, 282
- overview, 271-274
- Skype forums, 274
- skype-0.93.tar.gz extension, 375
- skype-1.2.0.18.dsl extension, 375
- skype-1.2.0.18.unc extension, 405
- skype.tar.gz extension, 375
- SkypeIn, 287
- SkypeOut, 287
- starter kits, 288
- starting at boot, 288
- test calls, 282
- troubleshooting, 288-289
- user accounts, creating, 278-279
- user interface, 280-282
- video support, 274

**smbclient, 65, 144****smc-0.97-music.dsl extension, 359****smc-0.97.dsl extension, 359****snake.dsl extension, 359****snes9x.uci extension, 395****snownews.dsl extension, 375****snownews.uci extension, 395****software requirements, 32****soundmodem.dsl extension, 351****soundtracker.dsl extension, 368****sox-12.17.6.tar.gz extension, 369****sox.uci extension, 396****sox.unc extension, 405****spearofdestiny.tar.gz extension, 359****spice.uci extension, 396****spreadsheets, Siag (Scheme in a Grid), 59-60****SQLite, 65****SSH, getting digital content with, 306****SSHD daemon, 67****sshfs.dsl extension, 375****starter kits (Skype), 288****steghide.uci extension, 396**

Stein, Greg, 259  
 stella-2600.dsl extension, 359  
 stellarium.dsl extension, 369  
 strawberry-theme.tar.gz extension, 387  
 streamripper.dsl extension, 369  
 striking-theme.tar.gz extension, 387  
 success of DSL (Damn Small Linux), 10  
 sunbird.uci extension, 396  
 sunbird\_0.2a.tar.gz extension, 375  
 supermario.tar.gz extension, 360  
 supertux-0.1.3.uci extension, 396  
 supertux.dsl extension, 360  
 sweep.dsl extension, 369  
 switch.dsl extension, 387  
 Sylpheed, 60  
 synaptic.dsl extension, 376  
 synaptic.unc extension, 405  
 synaptics\_drv.o extension, 407  
 synergy-1.3.1.unc extension, 405  
 Syslinux, 342  
 Syslinux ISO image, creating  
     initial ramdisk, 234-235  
     makesys script, 233-234  
 SYSLINUX version, 32  
 system extensions. *See specific extensions*

## T

tabbed applications, Fluxbox, 51-53  
 tar.gz extensions, 104, 191-192, 201-205  
 tcc.dsl extension, 383  
 tel\_lib-blit.tar.gz extension, 383  
 tel\_lib-bwidget.tar.gz extension, 383  
 tel\_lib-img.tar.gz extension, 383  
 tel\_lib-tablelist.tar.gz extension, 383  
 tel\_lib-tix.tar.gz extension, 383  
 tel\_lib-tkhtml.tar.gz extension, 383  
 tel\_lib-tkpng.tar.gz extension, 383  
 tel\_lib-tktable.tar.gz extension, 383  
 teltk-8.4.uci extension, 396  
 teltk8.3.dsl extension, 383  
 TelTutor.uci extension, 396  
 Ted, 59  
 ted.dsl extension, 351  
 terminal-based applications  
     ftp utility, 63  
     index utility, 63  
     Microcom, 63  
     Midnight Commander, 64  
     Naim, 64  
     Nano, 65

Netrik, 65  
 smbclient, 65  
 SQLite, 65  
 Vim, 65  
 terminal emulators, Aterm, 55  
 terminus\_font.tar.gz extension, 384  
 test calls (Skype), 282  
 test pages, printing, 93-95  
 testing extensions, 104  
     dsl extensions, 197  
     unc extensions, 200  
 texinfo-4.8.unc extension, 405  
 text editors  
     Beaver, 56  
     Nano, 65  
     Ted, 59  
     Vim, 65  
 tf.tar.gz extension, 376  
 themes, 103, 227, 386-387  
 thin clients, 247-248, 254-257  
 ThinkNic Internet Appliance, 23  
 thunderbird-1.5.uci extension, 396  
 time, 81  
 timers, 311  
 timezone, 227  
 tinyfugue.tar.gz extension, 376  
 tinyirc.tar.gz extension, 376  
 tkdvd.dsl extension, 369, 384  
 tlf.dsl extension, 351  
 /tmp/mydsl.menu directory, 192  
 Tom's Root Boot, 296-297  
 tomsrtbt distribution, 172-175  
 toolbar, Skype, 280  
 toppler.dsl extension, 360  
 tor.dsl extension, 376  
 toram boot option, 39  
 torcs.dsl extension, 360  
 torsmo.tar.gz extension, 384  
 Torvalds, Linus, 18  
 trippy-theme.tar.gz extension, 387  
 trommler-3.4.tar.gz extension, 369  
 troubleshooting. *See also errors*  
     DSL boot process, 33  
     MyDSL extensions, 116  
     Skype VoIP service, 288-289  
 tuxcmd-gtk2-0.5.39.dsl extension, 364  
 tuxnes.tar.gz extension, 360  
 tuxpaint.dsl extension, 351  
 tuxracer.dsl extension, 360  
 tuxrip.uci extension, 397  
 tuxtype.dsl extension, 351



tuxtype.uci extension, 397  
 tuxvxp-theme.tar.gz extension, 387  
 twisted-1.3.0.tar.gz extension, 351  
 twlog.dsl extension, 352  
 twm.tar.gz extension, 399

## U

uci extensions, 104-105, 191-192, 202, 205-207, 389-398  
 Ultima-AOD.tar.gz extension, 360  
 Ultima-AOE.tar.gz extension, 360  
 unc extensions, 104-105, 403-406  
   creating, 198-201  
     *adding menus/icons, 200-201*  
     *creating extension, 199*  
     *installing and testing packages, 199*  
     *rebooting, 199*  
     *restoring Debian Package Management, 199*  
     *saving extensions, 201*  
     *setting up DSL for extension building, 198*  
     *testing extension, 200*  
   definition of, 191  
 unionfs.dsl extension, 384  
 USB drives  
   Flash drives  
     *restarting XAMPP from, 335*  
     *saving XAMPP server to, 331-333*  
   mountable appliances, 246  
   pen drives, installing DSL on  
     *backup/restore partitions, 134-135*  
     *boot floppies, 133*  
     *boot install option, 124*  
     *DSL-embedded.zip drives, booting within Windows, 136*  
     *LiveCDs, 133-134*  
     *MyDSL partitions, 134-135*  
     *native BIOS booting, 145*  
     *overview, 121*  
     *USB-HDD, 122-128, 135*  
     *USB-ZIP, 122-123, 128-132, 135*  
     *wiki resources, 136*  
   Poorman's installs from, 169  
   USB-HDD, installing DSL on, 122-128, 135  
     *cfdisk command, 123*  
     *USB drive address, determining, 122-123*  
   USB-ZIP, 122-123, 128-132, 135

USBview extension, 384  
 used laptops  
   adding parts to, 297-298  
   choosing for digital media frames, 293-295  
   dismantling and mounting, 308-311  
   evaluating  
     *with Damn Small Linux, 295-296*  
     *with Tom's Root Boot, 296-297*  
 user accounts (Skype), 278-279

## V

vba.dsl extension, 361  
 versions (DSL), 32  
 vgui.dsl extension, 384  
 vgui\_light.tar.gz extension, 384  
 video boot options, 38  
 video support (Skype), 274  
 Vim, 65  
 vim.uci extension, 397  
 vim\_full.tar.gz extension, 352  
 virtual desktops, 48-50  
 virtual hard drives, 141-144  
 VMPlayer, 146-149  
 VMware, 32, 236, 342  
 VNC Viewer, 60  
 vnc4x-1.4.6.dsl extension, 376  
 VoIP. *See* Skype VoIP  
 volume control (Fluxbox), 53  
 vtcl.uci extension, 397

## W

wallpaper, 80-81  
 wavbreaker\_0.6.1-1-fixed.dsl extension, 369  
 wavemon.dsl extension, 376  
 Web browsers  
   Dillo, 56-57, 252  
   Firefox, 57-58  
   GLinks, 252  
 Web servers. *See* servers  
 Webalizer, 329-330  
 Webdata backup, 96-98  
 .webdata.lst tool, 96-98  
 wesnoth-0.9.7.uci extension, 397  
 wesnoth.dsl extension, 361  
 wget command, 133  
 whitebox.dsl extension, 399  
 wikis  
   DSL wiki, 25  
   Installing\_to\_a\_USB\_Flash\_Drive, 136

**window managers**

## Fluxbox

*Docked.lua* tool, 53-54*Fluxter*, 50-51

overview, 48

*tabbed applications*, 51-53*virtual desktops, navigating*, 48-50

Joe's Window Manager (JWM), 54, 76

**Windows**

booting DSL-embedded.zip drives

within, 136

installing DSL on

*Frugal installs*, 166-168*Poorman's installs*, 164-165

rawwrite program, 34

running DSL-Embedded in

*overview*, 139*Qemu*, 139-145*VMPlayer*, 146-149

wine-0.9.17.unc extension, 406

wine-0.9.22.dsl extension, 384

wine-0.9.22.unc extension, 406

wine-0.9.28\_with\_opengl.unc extension, 406

wine-20050524.uci extension, 397

wingmaker-theme.tar.gz extension, 387

WinModems, 83-87

winspace-theme.tar.gz extension, 387

wipe.dsl extension, 385

wired Ethernet, 87

wireless Ethernet, configuring, 87-88

Ndiswrapper tool, 89-90

Wlanconfig tool, 88

Wlanconfig tool, 88

WM\_apps extensions, 104, 400-401

wmacpi\_1.99r7.dsl extension, 399

wmapm.tar.gz extension, 399

wmcacalc.dsl extension, 400

wmclock.tar.gz extension, 400

wmcube.dsl extension, 400

wmdiskmon.tar.gz extension, 400

wmdrawer.tar.gz extension, 400

wmdrawer.uci extension, 397

wmfrog.dsl extension, 400

wmii.uci extension, 397

wmmatrix.dsl extension, 400

wmmemmon.tar.gz extension, 400

wmmoonclock.dsl extension, 400

wmnetload.dsl extension, 401

wmpinboard.dsl extension, 401

wmppp.dsl extension, 401

wmpuzzle.dsl extension, 401

wmrack.tar.gz extension, 401

wmtictactoe.tar.gz extension, 401

wmwave.tar.gz extension, 401

wmweather+2.9.dsl extension, 401

wmwifi.dsl extension, 401

wmwifi.tar.gz extension, 401

wof.tar.gz extension, 361

wolfgl.tar.gz extension, 361

worker.tar.gz extension, 352

wv.dsl extension, 352

wvdial.dsl extension, 352, 376

**X****X**

setting during DSL boot process

*color depth*, 43*keyboard selection*, 43-45*screen resolution*, 42*server type*, 41*smouse selection*, 41-42

X-based applications

*Ace of Penguins*, 55*Aterm*, 55*AxY FTP*, 56*Beaver*, 56*Calcoo*, 56*Dillo*, 56-57*EmelFM*, 57*Firefox*, 57-58*gPhone*, 58*gRun*, 58*GtkFind*, 59*Gvu*, 59*Rdesktop*, 61*Siag (Scheme in a Grid)*, 59-60*Sylpheed*, 60*Ted*, 59*VNC Viewer*, 60*XMMS*, 61-62*Xpaint*, 62*Xpdf*, 61*Xtris*, 62*Xzoom*, 62*XXGV*, 62

X11Basic.tar.gz extension, 385

xampp security command, 319-321

XAMPP server

adding content to, 330-331

backing up, 336-337

component software, 313

- configuring
    - httpd.conf* file (*Apache Web Services*), 326-327
    - network interface*, 325-326
    - overview*, 325
    - php.in* file (*PHP configuration*), 327
    - phpMyAdmin* tool, 328
    - phpSQLiteAdmin* tool, 329
    - proftpd.conf* file (*FTP server configuration*), 327-328
    - Webalizer* tool, 329-330
  - installing, 314-315
  - overview, 313-314
  - restarting
    - from hard drives*, 335-336
    - from USB Flash drives*, 335
  - saving to USB flash drives, 331-335
  - security
    - documentation*, 318-319
    - firewalls*, 321-324
    - overview*, 318
    - xampp security command*, 319-321
  - verifying configuration of, 315-318
  - xasteroids.tar.gz extension, 361
  - xastir-1.4.0.dsl extension, 352
  - xastir.dsl extension, 352
  - xawtvdebs.dsl extension, 369
  - xbindkeys.tar.gz extension, 385
  - xboing.dsl extension, 361
  - xbubble.tar.gz extension, 361
  - xbubble.uci extension, 398
  - xcalc.dsl extension, 352
  - xchat-gtk2-2.4.3.dsl extension, 364
  - xchat.tar.gz extension, 376
  - xchat.uci extension, 398
  - xdesktopwaves.tar.gz extension, 352
  - xdrum.dsl extension, 369
  - xephem.dsl extension, 353
  - xeyes.tar.gz extension, 353
  - xf86config.dsl extension, 385
  - xfe-0.88.unc extension, 406
  - xfireworks.dsl extension, 353
  - xfishtank.tar.gz extension, 353
  - xfoil.dsl extension, 353
  - XFree86-devel.dsl extension, 385
  - XFree86-devel.unc extension, 406
  - XFree86.dsl extension, 385
  - XFree86.unc extension, 406
  - xgalaga.dsl extension, 361
  - xgammon.dsl extension, 361
  - xine-0.99.4.unc extension, 406
  - xine.dsl extension, 370
  - .xinitrc file, 304-305
  - xjig.uci extension, 398
  - xlog-0.9.9.dsl extension, 353
  - xmahjongg.tar.gz extension, 361
  - xmahjongg.uci extension, 398
  - xmame.dsl extension, 362
  - xmgr.dsl extension, 353
  - XMMS, 61-62
  - xmms-alarm.dsl extension, 370
  - xmms-cdread.dsl extension, 370
  - xmms-equ.dsl extension, 370
  - xmms-flac.dsl extension, 370
  - xmms-musepack-1.1.dsl extension, 370
  - xmms-shn.dsl extension, 370
  - xmms.dsl extension, 370
  - xmms\_chipmusic\_plugins.dsl extension, 370
  - xmms\_chipmusic\_songs.tar.gz extension, 370
  - xmms\_skins.tar.gz extension, 371
  - xnview.uci extension, 398
  - Xpaint, 62
  - xpat2.dsl extension, 362
  - Xpdf, 61
  - xpdf-3.01pl2.uci extension, 398
  - xpdf-3.01pl2.unc extension, 406
  - xplanet.dsl extension, 353
  - xpuyopuyo.dsl extension, 362
  - xscreensaverGTK.dsl extension, 353
  - xskat.dsl extension, 362
  - XtDesk, 76-80
  - Xtris, 62
  - xv.dsl extension, 353
  - Xvesa 2.0 standard, 62
  - xvid4conf-gtk2.dsl extension, 371
  - xvkbd.tar.gz extension, 354
  - xwave.dsl extension, 371
  - Xzoom, 62
- ## Y-Z
- yacas.tar.gz extension, 354
  - yasr.dsl extension, 371
  - zgv.tar.gz extension, 354
  - zile.dsl extension, 354
  - Zip drives, Poorman's installs from, 169
  - zsnes-1.42.dsl extension, 362
  - ZXGV, 62