

Contents at a Glance

<i>Introduction</i>	1
<i>Part I: Bringing the Future Home</i>	7
Chapter 1: Exploring the Possibilities of Home Automation	9
Chapter 2: Filling Your Home Automation Toolkit with Linux Software.....	23
<i>Part II: Connecting Multiple Computers without the Wires</i>	37
Chapter 3: Going Wireless	39
Chapter 4: Creating a Wireless Access Point	67
Chapter 5: Routing Network Traffic for Free.....	89
<i>Part III: Entertaining Your Brain with a Little Help from Linux</i>	111
Chapter 6: Building a Personal Video Recorder with MythTV	113
Chapter 7: Streaming Music without the Wires	129
Chapter 8: Having Fun with a Webcam	141
Chapter 9: Setting Up a Smart Phone System	157
<i>Part IV: Keeping a Linux Eye on the Sky</i>	185
Chapter 10: Letting Linux Watch the Weather For You.....	187
Chapter 11: Getting Online Weather Information.....	199
Chapter 12: Staying Comfortable with Thermostat Controls	211
<i>Part V: X10-ding Your Environment with Home Automation</i>	225
Chapter 13: Introducing X10 Home Automation	227
Chapter 14: Going Wireless with X10.....	249
<i>Part VI: Controlling and Securing Your Automation Network</i>	259
Chapter 15: Controlling Your House with MisterHouse	261
Chapter 16: Controlling X10 from MisterHouse.....	281
Chapter 17: Using the Web Interface for Remote Control	297
Chapter 18: Remotely Accessing Your MisterHouse Controls.....	313

<i>Part VII: The Part of Tens</i>	331
Chapter 19: (Nearly) Ten Cool Chores You Can Automate	333
Chapter 20: Ten Gadgets Worth Checking Out	339
<i>Appendix</i>	345
<i>Index</i>	351

Table of Contents

<i>Introduction</i>	1
About This Book.....	1
Foolish Assumptions	2
Conventions Used in This Book	3
What You Don't Have to Read	3
How This Book Is Organized.....	4
Part I: Bringing the Future Home.....	4
Part II: Connecting Multiple Computers without the Wires.....	4
Part III: Entertaining Your Brain with a Little Help from Linux.....	4
Part IV: Keeping a Linux Eye on the Sky.....	4
Part V: X10-ding Your Environment with Home Automation	5
Part VI: Controlling and Securing Your Automation Network	5
Part VII: The Part of Tens	5
The CD appendix	5
About the CD-ROM.....	5
Icons Used in This Book.....	6
Where to Go from Here.....	6
<i>Part I: Bringing the Future Home</i>	7
Chapter 1: Exploring the Possibilities of Home Automation	9
Functional and Fun: Home Automation Applications	9
Controlling your environment	10
Taking your entertainment wherever you go	15
Watching the weather	18
Creating a sophisticated phone system	20
Using Linux to Your Advantage	21
Chapter 2: Filling Your Home Automation Toolkit with Linux Software	23
Using New Software on Old Hardware.....	23
Choosing a Linux distribution	23
Choosing computer hardware	24
Finding Linux-Based Home Automation Software.....	25
About X10	25
Software for ActiveHome, HomeDirector, and Firecracker devices.....	26
Software for X10 Firecracker devices (CM17A).....	29
Home networking	31

Digital video recorder and media center.....	32
Motion detection	33
Remote control.....	33
Smart telephone system.....	33
Weather.....	34
Webcams, home security, and videoconferencing.....	34
Finding even more software.....	35
Doing the Tough Work with Low-Level Software	35
Dressing Up the Rough Stuff.....	36

Part II: Connecting Multiple Computers without the Wires.....37

Chapter 3: Going Wireless 39

Wireless Networking 101.....	39
Wireless hardware components.....	41
Wireless network standards: 802.11.....	42
Linux wireless support	43
Getting Started with NdisWrapper.....	45
Before you start	46
Hardware setup	46
NdisWrapper drivers.....	48
Configuring NdisWrapper.....	49
Compiling a Custom Kernel.....	50
Backing up your current kernel.....	51
The compiling.....	52
Configuring LILO.....	58
Configuring GRUB.....	60
Getting Started with WPA-Supplicant	61
Compiling WPA-Supplicant.....	62
Configuring WPA-Supplicant	62
Installing the startup script	64

Chapter 4: Creating a Wireless Access Point 67

Discovering the Linksys WRT54GL.....	67
Discovering OpenWrt	69
Preparing to Install and Configure Your WAP	71
LAN information	73
WAN information	75
Wireless information.....	77
Upgrading Your WAP to OpenWrt	78
Configuring Your WAP	81
Touring OpenWrt.....	85

Chapter 5: Routing Network Traffic for Free 89

A Brief Introduction to IP Routing.....	89
Getting Acquainted with Quagga	92
Installing Quagga via a Package Manager	93
Compiling and Installing Quagga.....	96
Installing Quagga on Your WRT54GL.....	98
Routing with Quagga.....	99
Configuring Quagga.....	100
Routing About.....	103

***Part III: Entertaining Your Brain
with a Little Help from Linux 111*****Chapter 6: Building a Personal Video Recorder with MythTV 113**

Building Your MythTV PVR.....	114
Selecting the hardware	114
Installing MythTV	115
Configuring MySQL	117
Configuring the MythTV backend server	117
Configuring the MythTV frontend server.....	122
Watching TV.....	125
Managing Your Recordings	125
Scheduling your recordings	125
Watching your recordings	126
Deleting a recording.....	126
Managing Your Media	127
Playing music with MythTV	127
Playing videos with MythTV	128
Viewing image slide shows with MythTV.....	128

Chapter 7: Streaming Music without the Wires 129

Selecting the Hardware and Software.....	129
Configuring Your System.....	132
Installing and configuring the media server	132
Connecting and configuring the D-Link media client.....	134
Choosing Your Music Format	137
Ripping CDs and Encoding Music Files with Grip.....	137
Streaming Your Audio.....	139

Chapter 8: Having Fun with a Webcam 141

Sharing the Fun with a Webcam	141
Installing CamStream	142
Viewing your webcam on your computer with CamStream	146

Having Fun with Videoconferencing.....	151
Installing Ekiga.....	152
Configuring Ekiga.....	152
Making calls.....	153
Looking Around with Pan and Tilt	155
Putting Your Webcam to Work.....	156

Chapter 9: Setting Up a Smart Phone System157

Asterisk 101.....	158
Dial plans	159
Context.....	161
Gathering the Ingredients	165
Fitting the hardware pieces together.....	166
Configuring the SPA-3000.....	167
How the other half lives: The software.....	176
Making a Smart Call	182

Part IV: Keeping a Linux Eye on the Sky 185

Chapter 10: Letting Linux Watch the Weather For You187

Choosing the Weather Station Hardware and Software	187
Building the Weather Station	188
Installing the Weather Station Software	189
Configuring the weather station program.....	191
Making the weather station cable	193
Configuring additional weather station settings	193
Mounting the Weather Station.....	197
Putting Your Weather Data on the Web.....	198

Chapter 11: Getting Online Weather Information199

Getting Weather Data on Your Desktop.....	199
Getting Weather Data from Your Browser.....	203
Using MythTV to Get Weather Data.....	207
Setting up MythWeather	207
Viewing your MythWeather information	209

Chapter 12: Staying Comfortable with Thermostat Controls211

Installing Thermostat Controls	212
Installing the TXB16 thermostat.....	212
Installing a two-thermostat X10 control system.....	216
Installing a Thermostat Set-back Controller	218
Waking Up to a Warm House.....	219
Saving Money with Controlled Heating	219
Saving money by using X10 thermostat systems	220
Saving money with the Linux DIY Zoning Project	220

***Part V: X10-ing Your Environment with Home Automation*.....225**

Chapter 13: Introducing X10 Home Automation227

Introducing X10 Power Line Carrier	228
X10 PC interfaces.....	230
A (very short) list of X10 modules	231
Purchasing X10 devices	232
Building a Starter Kit	233
The software: Compiling Heyu.....	234
The hardware.....	235
Module setup	236
Cool Things to Do with X10	237
Egg timer.....	238
Sunrise, Sunset	240
X10-powered printer	242
Troubleshooting X10 Problems	244
Common problems.....	245
Isolating a problem.....	247

Chapter 14: Going Wireless with X10249

Getting Familiar with the X10 Interfaces	250
Gathering the Tools	251
Software.....	252
Hardware	253
Setting Up the X10 Wireless Network	253
Setting up the X10 transceiver.....	253
Starting the Apache http server (httpd)	254
Installing BlueLava	255
Installing BottleRocket.....	255
Configuring BlueLava.....	256
Using your wireless X10 network	258

***Part VI: Controlling and Securing Your Automation Network*.....259**

Chapter 15: Controlling Your House with MisterHouse261

Introducing MisterHouse	262
The MisterHouse interfaces	263
So what can MisterHouse do?.....	263
Installing MisterHouse.....	265
Logging in as root.....	266
The installation.....	266

Preparing MisterHouse for Setup.....	268
Setting Up MisterHouse.....	272
Starting MisterHouse	272
Modifying the parameters	274
Restarting MisterHouse	275
Using MisterHouse to Retrieve Your Favorite Comics	276
A Maze of Twisty Little Passages	279
Chapter 16: Controlling X10 from MisterHouse	281
Getting What You Need	281
Setting Up X10 for MisterHouse	282
Creating MisterHouse Tables.....	284
Sending and Receiving X10 Commands	287
Creating X10 macros	289
x10_test.pl	290
Disabling user code.....	291
x10.pl.....	292
x10_II.pl.....	294
Chapter 17: Using the Web Interface for Remote Control	297
Exploring the MisterHouse Main Web Page.....	297
Accessing and Controlling X10.....	300
Using the HTML Template.....	302
A brief history of the Web and HTML	303
Creating Web pages with an HTML template.....	304
Introducing the My MH Web Page.....	305
Installing a weather report page.....	306
Adding the Weather Report button.....	308
Chapter 18: Remotely Accessing Your MisterHouse Controls	313
Securing Your Home Network	315
Administering Linux.....	316
Replacing telnet and FTP with ssh and sftp	316
Understanding public and private keys	317
Accessing an ssh system.....	318
Setting up encryption keys	319
Locking Up with iptables.....	321
Understanding the iptables.sh script	321
Installing the iptables.sh script	323
Connecting with PuTTY	324
Installing PuTTY	324
Generating ssh keys with PuTTYgen	326
Building tunnels.....	328

<i>Part VII: The Part of Tens</i>	331
Chapter 19: (Nearly) Ten Cool Chores You Can Automate	333
Controlling a Greenhouse	333
Watering Your Lawn with Your Computer	334
Checking for Snail Mail	334
Hacking Your Bass (You Know, Billy the Bigmouth Bass).....	335
Opening and Closing the Window Shades	335
Letting Fido Out When You Aren't Home	336
Watching Your Kids from the Internet	336
Losing Weight with Home Automation.....	337
Heating Your Car Seat on Cold Mornings.....	338
Chapter 20: Ten Gadgets Worth Checking Out	339
Streaming Music Clients.....	339
Streaming Media Clients and Servers.....	340
Standalone Print Servers.....	340
Ninja Camera Mounts	341
Remote Control Your Devices.....	341
Socket Rockets	342
Universal Remote Controls	342
Motion Detectors	343
Nokia 770 Internet Tablet.....	344
INSTEON System	344
<i>Appendix</i>	345
System Requirements	345
Using the CD with Linux.....	345
What You'll Find	346
If You Have Problems (Of the CD Kind).....	350
<i>Index</i>	351

