# TABLE OF CONTENTS

PREFACE	xiii
CHAPTER ONE	
INTRODUCTION TO NETWORKING	1
History	1
TCP/IP Networks	2
UUCP Networks	13
Linux Networking	14
Maintaining Your System	16
CHAPTER TWO	
ISSUES OF TCP/IP NETWORKING	19
Networking Interfaces	19
IP Addresses	20
Address Resolution	22
IP Routing	23
The Internet Control Message Protocol	29
Resolving Host Names	30

×

.

CHAPTER THREE	
CONFIGURING THE NETWORKING HARDWARE	32
Kernel Configuration	35
A Tour of Linux Network Devices	41
Ethernet Installation	42
The PLIP Driver	45
The PPP and SLIP Drivers	48
Other Network Types	48
CHAPTER FOUR	
CONFIGURING THE SERIAL HARDWARE	49
Communications Software for Modem Links	49
Introduction to Serial Devices	50
Accessing Serial Devices	51
Serial Hardware	54
Using the Configuration Utilities	55
Serial Devices and the login: Prompt	59
CHAPTER FIVE	
CONFIGURING TCP/IP NETWORKING	63
Mounting the /proc Filesystem	64
Installing the Binaries	64
Setting the Hostname	65
Assigning IP Addresses	65
Creating Subnets	67
Writing hosts and networks Files	67
Interface Configuration for IP	69
All About ifconfig	77
The netstat Command	80
Checking the ARP Tables	83
CHAPTER SIX	
NAME SERVICE AND RESOLVER CONFIGURATION	85
The Resolver Library	
How DNS Works	93
Running named	100

# CHAPTER SEVEN SERIAL LINE IP

SERIAL LINE IP	116
General Requirements	116
SLIP Operation	117
Dealing with Private IP Networks	119
Using dip	120
Running in Server Mode	126
50 - <b>15</b>	- 14 -
CHAPTER EIGHT	
THE POINT-TO-POINT PROTOCOL	129
PPP on Linux	130
Running pppd	131
Using Options Files	132
Using chat to Automate Dialing	133
IP Configuration Options	136
Link Control Options	139
General Security Considerations	141
Authentication with PPP	142
Debugging Your PPP Setup	145
More Advanced PPP Configurations	146

# CHAPTER NINE TCP/IP FIREWALL

CP/IP FIREWALL	151
Methods of Attack	152
What Is a Firewall?	153
What Is IP Filtering?	155
Setting Up Linux for Firewalling	156
Three Ways We Can Do Filtering	158
Original IP Firewall (2.0 Kernels)	159
IP Firewall Chains (2.2 Kernels)	168
Netfilter and IP Tables (2.4 Kernels)	179
TOS Bit Manipulation	188
Testing a Firewall Configuration	190
A Sample Firewall Configuration	192

CHAPTER TEN	200
P ACCOUNTING	200
Configuring the Kernel for IP Accounting	200
Configuring IP Accounting	207
Using IP Accounting Results	209
Resetting the Counters	210
Flushing the Ruleset Passive Collection of Accounting Data	210
CHAPTER ELEVEN	
IP MASQUERADE AND NETWORK ADDRESS TRANSI	LATION211
Side Effects and Fringe Benefits	213
Configuring the Kernel for IP Masquerade	. 214
Configuring IP Masquerade	215
Handling Name Server Lookups	218
More About Network Address Translation	218
CHAPTER TWELVE	
IMPORTANT NETWORK FEATURES	219
The inetd Super Server	21
The tcpd Access Control Facility	22
The Services and Protocols Files	22
Remote Procedure Call	22
Configuring Remote Login and Execution	22
CHAPTER THIRTEEN	
THE NETWORK INFORMATION SYSTEM	23
Getting Acquainted with NIS	23
NIS Versus NIS+	23
The Client Side of NIS	23
Running an NIS Server	24
NIS Server Security	24
Setting Up an NIS Client with GNU libc	24
Choosing the Right Maps	24
Using the passwd and group Maps	24
Using NIS with Shadow Support	24

CHAPTER FOURTEEN	
THE NETWORK FILE SYSTEM	250
Preparing NFS	251
Mounting an NFS Volume	252
The NFS Daemons	254
The exports File	255
Kernel-Based NFSv2 Server Support	257
Kernel-Based NFSv3 Server Support	258
CHAPTER FIFTEEN	
IPX AND THE NCP FILESYSTEM	259
Xerox, Novell, and History	259
IPX and Linux	260
Configuring the Kernel for IPX and NCPFS	262
Configuring IPX Interfaces	262
Configuring an IPX Router	265
Mounting a Remote NetWare Volume	269
Exploring Some of the Other IPX Tools	273
Printing to a NetWare Print Queue	274
NetWare Server Emulation	278
CHAPTER SIXTEEN	
MANAGING TAYLOR UUCP	279
UUCP Transfers and Remote Execution	281
UUCP Configuration Files	283
Controlling Access to UUCP Features	298
Setting Up Your System for Dialing In	300
UUCP Low-Level Protocols	304
Troubleshooting	306
Log Files and Debugging	308
CHAPTER SEVENTEEN	

# 

\_310

What Is a Mail Message?		31	1
How Is Mail Delivered?		31	4
Email Addresses	:	31	5

How Does Mail Routing Work?	317
Configuring elm	323

#### CHAPTER EIGHTEEN SENDMAIL

DMAIL	326
Introduction to sendmail	326
Installing sendmail	327
Overview of Configuration Files	327
The sendmail.cf and sendmail.mc Files	328
Generating the sendmail.cf File	334
Interpreting and Writing Rewrite Rules	334
Configuring sendmail Options	339
Some Useful sendmail Configurations	341
Testing Your Configuration	349
Running sendmail	353
Tips and Tricks	354

# CHAPTER NINETEEN

GETTING EXIM UP AND RUNNING	358
Running Exim	359
If Your Mail Doesn't Get Through	361
Compiling Exim	362
Mail Delivery Modes	362
Miscellaneous config Options	364
Message Routing and Delivery	364
Protecting Against Mail Spam	369
UUCP Setup	370

#### CHAPTER TWENTY NETNEWS

NETNEWS	372
Usenet History	372
What Is Usenet, Anyway?	373
How Does Usenet Handle News?	374

#### CHAPTER TWENTYONE C NEWS

	378
	378
	380
	382
	385
	387
	389
	392
	393
	396
Al de la	396

# CHAPTER TWENTY-TWO

NNTP AND THE NNTPD DAEMON	398
The NNTP Protocol	400
Installing the NNTP Server	406
Restricting NNTP Access	407
NNTP Authorization	408
nntpd Interaction with C News	409

# CHAPTER TWENTY-THREE

#### INTERNET NEWS\_\_\_\_\_

Some INN Internals		410
Newsreaders and INN		413
Installing INN		413
Configuring INN: the Basic Setup		414
INN Configuration Files	· · ·	414
Running INN	teni s	430
Managing INN: The ctlinnd Command		430

410

CHAPTER TWENTY-FOUR	
NEWSREADER CONFIGURATION	436
tin Configuration	437
trn Configuration	437
nn Configuration	438

APPENDIX A	
EXAMPLE NETWORK: THE VIRTUAL BREWERY	441
APPENDIX B	
USEFUL CABLE CONFIGURATIONS	443
APPENDIX C	
LINUX NETWORK ADMINISTRATOR'S GUIDE, SECOND	
EDITION COPYRIGHT INFORMATION	445
APPENDIX D	
SAGE: THE SYSTEM ADMINISTRATORS GUILD	453
	••••• •
INDEX	455