
Contents

1	The Beginning	1
1.1	Outline	1
1.2	Preparation	2

Part I Core Services

2	Foundations	11
2.1	Network Time Protocol	11
2.2	Domain Name System	15
2.3	Redundant Services	23
2.3.1	Secondary NTP Server	24
2.3.2	Secondary DNS Server	25
2.4	Other DNS Uses	28
2.4.1	Host Aliases	28
2.4.2	Service Records	29
2.4.3	Trivial Load Balancing	30
2.4.4	Other DNS Records	31
3	Kerberos V	33
3.1	Kerberos Network Authentication Protocol	33
3.2	Master KDC	36
3.2.1	Creating the Realm	36
3.2.2	Realm Configuration	38
3.2.3	Tuning Kerberos	40
3.3	Slave KDC	45
3.3.1	Host Principals	45
3.3.2	The <code>xinetd</code> Daemon	47
3.3.3	Kerberos Database Propagation	48
3.3.4	Service Discovery	51
3.4	Testing Kerberos	51

3.4.1	Preparing the Test Environment	51
3.4.2	Pluggable Authentication Modules.....	53
4	LDAP	57
4.1	Lightweight Directory Access Protocol	57
4.2	Master LDAP	58
4.2.1	Installing LDAP	58
4.2.2	Removing the Administrator.....	61
4.2.3	Building a Tree	64
4.2.4	Kerberizing LDAP with GSSAPI	65
4.2.5	Access Control Lists	69
4.3	Replication	71
4.4	Testing LDAP	74
4.4.1	Creating LDAP Entries	74
4.4.2	Name Service Switch.....	77
5	OpenAFS	81
5.1	The OpenAFS Distributed Filesystem.....	81
5.2	The First OpenAFS Server	85
5.2.1	Preliminaries	85
5.2.2	Installing OpenAFS	87
5.2.3	Notes on the Cache	89
5.2.4	Kerberizing OpenAFS	91
5.2.5	Configuring the Database Server	92
5.2.6	Configuring the File Server	97
5.2.7	Volume Creation	98
5.2.8	Structuring the Cell	102
5.3	Additional Servers	109
5.3.1	Secondary Database Servers	110
5.3.2	Secondary File Servers	113
5.3.3	Volume Management	114
5.4	Replication and Backup	116
5.4.1	Replicas.....	116
5.4.2	Backup	121
5.5	Testing OpenAFS	141
5.5.1	Users and Groups	141
5.5.2	User Volumes	141
5.5.3	Backup Volumes	143
5.5.4	LDAP Information	144
5.5.5	PAM and OpenAFS	145

6	Samba	149
6.1	Samba and Server Message Block	149
6.2	Understanding Samba	151
6.2.1	A Windows Workgroup	151
6.2.2	A Simple Windows Domain	154
6.3	The Samba Domain	160
6.3.1	LDAP Configuration	161
6.3.2	Installing Samba	162
6.3.3	Samba Users	167
6.3.4	Samba and OpenAFS	169
6.3.5	Testing Samba	175
6.3.6	Backup Domain Controller	177
<hr/>		
Part II Pushing the Core Services		
<hr/>		
7	Further Services	185
7.1	DHCP	185
7.2	Emergency System	188
7.2.1	TFTP	189
7.2.2	NFS	190
7.3	Certificate Authority	193
7.3.1	Installing OpenSSL	196
7.3.2	Creating a CA	198
7.3.3	Managing Certificates	201
7.3.4	Revoking Certificates	206
8	Web Server	209
8.1	The World Wide Web	209
8.2	Apache	210
8.2.1	Installing Apache	211
8.2.2	Secure HTTP	215
8.3	MySQL	220
8.4	Adding PHP	225
8.5	Apache with Kerberos and AFS	227
8.5.1	Web Server Principal	228
8.5.2	Personal Web Pages	231
8.6	WebDAV	232
8.7	Redundant Web Server	235
9	Electronic Mail	237
9.1	The Electronic Mail System	237
9.2	Mail Transport with Postfix	239
9.2.1	Installing Postfix	240
9.2.2	Testing Postfix	242

9.2.3	Secure Delivery	244
9.2.4	Testing TLS with Postfix	245
9.2.5	Authenticated Mail Relay	246
9.2.6	Local Delivery with Procmail	250
9.3	Reading Mail with Courier	254
9.3.1	Installing Courier	254
9.3.2	Configuring Courier	255
9.3.3	Testing Courier	259
9.4	Redundant Mail System	260
10	Newsgroups	263
10.1	The Usenet	263
10.2	INN	264
10.2.1	Configuring INN	265
10.2.2	Testing INN	267
10.3	Posting with Authentication	269
10.3.1	Authentication with FreeRADIUS	269
10.3.2	Secure INN	271
11	PostgreSQL Database	275
11.1	Database Software	275
11.2	PostgreSQL Installation	276
11.2.1	Configuring PostgreSQL	276
11.2.2	PostgreSQL with Kerberos	277
11.2.3	Testing Kerberos Authentication	278
11.2.4	Securing PostgreSQL	279
11.3	PostgreSQL Users	280
11.3.1	User Privileges	281
11.3.2	Access from Web Scripts	283
12	Further Web Applications	287
12.1	Web Application	287
12.2	Mailman Mailing List Manager	288
12.2.1	Installing Mailman	288
12.2.2	Postfix Configuration	289
12.2.3	Mailman Configuration	290
12.2.4	Apache Configuration	291
12.2.5	Starting Mailman	293
12.3	Horde Groupware	295
12.3.1	Installing Horde	296
12.3.2	Configuring Horde	297
12.3.3	Additional Packages	299
12.4	ILIAS e-Learning System	304
12.5	Calendaring	307

Part III Applications

13 Client Systems	311
13.1 Server-side Configuration	311
13.2 Ubuntu Linux	312
13.3 Apple MacOS X	318
13.4 Microsoft Windows XP	327
14 Clustering	335
14.1 Introduction	335
14.2 Secure Shell	336
14.3 MPI and PVM	339
14.3.1 Message Passing Interface	339
14.3.2 Parallel Virtual Machine	341
14.4 MOSIX Cluster Management	344
14.4.1 Patching the Kernel	344
14.4.2 Configuring MOSIX	346
14.4.3 Testing MOSIX	348
15 Laboratories	351
15.1 Foreword	351
15.2 Multiboot Clients	351
15.2.1 Machine-specific Boot	352
15.2.2 Customized GRUB	353
15.3 PC Cloning	355
15.3.1 Customizing RIP Linux	355
15.3.2 Partition Images	358
15.4 Kiosks	359
15.4.1 Configuring a Kiosk	359
15.4.2 Stand-alone Kiosks	360
16 Collaborative Software	363
16.1 Foreword	363
16.2 Instant Messaging	363
16.2.1 Using Backports	365
16.2.2 Installing Jabber	365
16.2.3 Securing Jabber	367
16.3 Collaborative Development	371
16.3.1 Anonymous Users	371
16.3.2 Concurrent Versions System	373
16.3.3 Subversion	375
17 Where To Go From Here	377

A Technical Summary 379

References 385

Web Resources 387

Index 393



<http://www.springer.com/978-3-540-36633-1>

Distributed Services with OpenAFS
for Enterprise and Education

Milicchio, F.; Gehrke, W.A.

2007, XVI, 395 p. 67 illus., Hardcover

ISBN: 978-3-540-36633-1