

INSIDE NOVELL NETWARE[®] SPECIAL EDITION

Debra Niedermiller-Chaffins

Novell NetWare大全(专版)

清华大学出版社



Prentice-Hall

**INSIDE NOVELL NETWARE®
SPECIAL EDITION**

NOVELL NETWARE 大全
(专 版)

Debra Niedermiller-Chaffins



清 华 大 学 出 版 社
Prentice-Hall International Inc.

(京)新登字 158 号

内 容 提 要

本书集 NetWare 的技术、方法与操作步骤之大成,是为富有经验的计算机用户初涉 NetWare 提供的完备指南。作为专版,本书的内容有较大的扩充与增补,并配有含 ASAP、Express IT、P. S. Menu 三个全特征程序的磁盘,对 NetWare 的安装、系统的建立以及配置都有详尽的说明。本书所覆盖的版本有:NetWare2. 2, 3. 11, PC DOS 3. 1—5. 0; DR DOS6. 0。全书共 12 章,分别为:网络概念;组建网络;NetWare 特点;工作站软件;访问文件服务器;管理目录;增加用户及用户安全性;Novell 网络打印;建立 NetWare 环境;系统管理与故障排除;数据恢复和保护;网络 E-mail。书后有 4 个附录和命令参考集。

本书对象为负责 Novell NetWare 作业并欲作深入了解的读者,以及所有对 NetWare 感兴趣的人。

©清华大学出版社/Prentice Hall Inc. 1994

版权所有。

本书任何部分之文字,未经出版者书面同意,
不得用任何方式抄袭、节录及翻印。

Original edition published by New
Riders Publishing. Copyright ©
1992. This reprint jointly published by
Tsinghua University Press/Prentice
Hall. This edition is authorized for
sale in mainland China only.

中国〔大陆〕版

INSIDE NOVELL NETWORK®
SPECIAL EDITION
NOVELL NETWORK 大全(专版)
Debra Niedermiller-Chaffins

清华大学出版社 出版
Prentice-Hall Inc.

北京 清华园

清华大学印刷厂印刷

新华书店总店科技发行所发行

开本:787×1092 1/16 印张:51.5
1994 年 7 月第 1 版 1994 年 7 月第 1 次印刷
印数:0001—1000
ISBN 7-302-01554-6/TP·642
定价:102.00 元

About the Authors

Debra R. Niedermiller-Chaffins is Education Director for Computer Data, Inc. in Madison Heights, Michigan. Ms. Niedermiller-Chaffins started the education department at Computer Data in 1988 to help organizations develop autonomy and self-sufficiency in training future Certified NetWare Engineer (CNE) operations. She is a Certified NetWare Instructor (CNI) and a CNE, specializing in training future CNEs. Aside from teaching, Ms. Niedermiller-Chaffins also supports a small client base, which provides her with a background of real-world networking scenarios. She is the author of *Inside NetWare Lite* also published by New Riders Publishing.

Brian Chaffins is Technical Director for Computer Data, Inc. in Madison Heights, Michigan. He believes that network users are best served by committing himself to providing quality services and technical excellence. Mr. Chaffins was one of the first three CNEs in Michigan and has earned a reputation of being an ace troubleshooter. He also is the co-author of *Inside NetWare Lite* published by New Riders Publishing.

New Riders Publishing extends special thanks to the following contributors to this book:

Timothy A. Gendreau, who contributed the first half of the Command Reference. Mr. Gendreau is president of Training Solutions, a Novell Authorized Education Center located in Tempe, Arizona. He is a Certified NetWare Engineer and a Certified NetWare Instructor and is active in teaching many aspiring CNEs and CNIs.

Danny R. Kusnierz, who contributed the second half of the Command Reference. Mr. Kusnierz is a Novell Certified NetWare Engineer with more than 13 years' experience in the personal computer industry. He is a computer consultant with an emphasis on local area networks. His experience in the computer industry includes computer sales, end-user training, programming, and systems engineering.

Richard Leach, who contributed to the development of Appendixes A and B and served as a technical editor. Mr. Leach is a technical support specialist for Prentice Hall Computer Publishing, located in Carmel, Indiana. He is a Certified NetWare Engineer.

Table of Contents

Introduction	1
Who Should Read this Book?	2
What Versions are Covered?	2
What Topics are Not Included?	3
The Details of this Book	3
Conventions Used in this Book	6
Special Typefaces	7
Command Reference Conventions	7
Learning More about Networks and Operating Systems	8
 1 Understanding Networks	 11
Networking: The Latest Phase of Computer Technology	12
Examining Networking Opportunities	13
Getting Updated Information Immediately	15
Using New Technology with Existing Equipment	16
Sharing Programs, Data, and Backups	17
Protecting Information	18
Sharing Expensive Peripherals	19
Looking for Software Availability	22
Summary	24
 2 Building a Network	 27
Understanding File Servers	28
Examining File Servers	28
Reviewing Standard File Server Options	28
Examining Workstations	31
Choosing a Cabling System	32
Shielded Twisted Pair	33
Coaxial Cable	33
Unshielded Twisted Pair	34
Underwriters Laboratories Listed Cable	35

Examining Topologies	36
Arcnet	37
Ethernet	38
Token Ring	40
Fiber Optics	42
Wireless Connections	43
Sifting through the Options	43
Networking for the Small Office	44
Networking the Large Corporation	45
Choosing the System	46
Using Printers	47
Using Modems, Scanners, and Fax Machines	48
Modems	48
Fax Servers	49
CD ROMs	50
Summary	51

3 Examining NetWare's Benefits 53

Deciding between NetWare Versions 2.2 and 3.11	54
Version 2.2 Features	54
Version 3.11 Features	56
Examining Reliability and System Fault Tolerance	56
The Transaction Tracking System	57
SFT Level I	59
SFT Level II	59
SFT Level III	60
Using Network Security	60
Login/Password-Level Security	61
Directory-Level Security	63
User Rights	63
Directory Rights	64
Effective Rights	65
File-Level Security	65
Security Level Assignments	65
The End User	66
The Print Queue Operator	66
The Print Server Operator	66

The User Account Manager	66
The Workgroup Manager	67
The Supervisor Equivalent	67
The Supervisor	68
The Directory Supervisor	68
Checking Performance Issues	69
Directory Caching and Hashing	69
File Caching	70
Elevator Seeking	70
Multiple Disk Channels	71
Looking at Network Expandability	71
Disk Subsystems	71
Network Boards	73
Bridges and Routers	73
Gateways	75
Summary	77
4 Gathering Workstation Software	79
Choosing an Operating System	80
DOS	80
Windows	81
OS/2	82
UNIX	82
DR DOS V6.0	84
Introducing IPX	84
Exploring NETx, XMSNETX, and EMSNETX	85
NETx	85
XMSNETX and EMSNETX	86
Deciding Whether To Use NetBIOS	87
Examining Novell's ODI Solution	88
Examining Diskless Workstations	90
Summary	90

5 Accessing the File Server	93
Running WSGEN To Generate IPX	94
Using JUMPERS	100
Logging in through DOS	103
Logging in through Windows	108
Using Novell's ODI Interface	109
Logging in through ODI Drivers	110
Inside NET.CFG	118
TBM12	134
DOS Named Pipes	134
ODINSUP	135
Burst Mode	137
Logging in with a Macintosh, OS/2, or UNIX Workstation	138
Examining other Connection Services	144
ATTACH	144
LOGOUT	145
Summary	145
 6 Managing Directories	 147
Creating File Server Names	148
Accessing NetWare Volumes	149
Volumes, NetWare, and DOS	149
Naming and Setting Up Volumes	150
Understanding Required Directories	152
Exploring SYS:LOGIN	152
SYS:MAIL	153
SYS:PUBLIC	155
SYS:SYSTEM	155
Managing Required Directories	157
Using Recommended Directories	158
Home Directories	159
Application Directories	159
Data Directories	160

Understanding Attributes	161
File Attributes for v2.2 & v3.11	161
Archive Needed	161
Execute Only	162
Hidden File	162
Read Audit and Write Audit	162
Read Only and Read/Write	162
Shareable and Non-Shareable	163
System File	163
Transactional	163
Indexed (v2.2 only)	163
File Attribute for v3.11	163
Copy Inhibit	164
Delete Inhibit	164
Rename Inhibit	164
Purge	164
Directory Attributes for v2.2 & v3.11	164
Hidden Directory	164
System Directory	165
Purge Directory (v3.11 only)	165
Using Directory-Related Commands	165
Using the FILER Command	165
The Current Directory Information Menu	165
The Directory Contents Menu	167
The Select Current Directory Menu	170
The Set Filer Options Menu	170
The Volume Information Menu	173
Command Line Utilities	173
NCOPY	173
FLAG and FLAGDIR	175
NDIR	177
Path	178
Sort Parameters	178
Display Formats:	179
Attribute Searches	180
Restricted Displays	180
LISTDIR	182
Options	182
Summary	183

7 Adding Users and User Security to the System 185

Defining Security Levels	186
The Supervisor	187
The Supervisor Equivalent	187
The FCONSOLE Operator	187
The Workgroup Manager	188
The User Account Manager	188
The PCONSOLE Operator	188
The End User	188
Using the SYSCON Menu Utility	189
Navigating the Menus	190
The Accounting Option	191
Setting Up a Network Account	194
Determining Charge Rates	196
Establishing Account Balances	198
The Change Current Server Option	199
The File Server Information Option	200
The Group Information Option	201
Full Name	201
Managed Users and Groups	203
Managers	203
Member List	203
Trustee Directory Assignments	204
The Supervisor Options	209
Default Account Balance/Restrictions and Default Time Restrictions	210
Edit System AUTOEXEC File and Edit System SERVER.CFG File	210
File Server Console Operators	212
Intruder Detection/Lockout	212
System Login Script	213
View File Server Error Log	213
Workgroup Managers	214
The User Information Option	214
Account Balance	217
Account Restrictions	217
Change Password	220

Full Name	220
Groups Belonged To	221
Intruder Lockout Status	221
Login Script	222
Managed Users and Groups	223
Managers	224
Other Information	225
Security Equivalences	225
Station Restrictions	227
Time Restrictions	228
Trustee Directory Assignments and Trustee File Assignments	228
Volume/Disk Restrictions	229
Using Command Line Utilities	229
The RIGHTS Command	230
The TLIST Command	231
The GRANT Command	231
The REVOKE Command	233
The REMOVE Command	233
The ALLOW Command	234
The MAKEUSER Utility	234
The USERDEF utility	235
Summary	239
8 Printing on a Novell Network	241
Understanding Network Printing	242
Setting Up Core Printing in a v2.2 Server	244
One Printer Servicing Multiple Queues	245
One Queue Using Identical Printers	246
Defining Queues Using PCONSOLE	247
Current Print Job Entries	249
Current Queue Status	254
Currently Attached Servers	255
Print Queue ID	255
Queue Operators	255
Queue Servers	255
Queue Users	255

Installing Print Servers	256
Directing Printer Output	265
The CAPTURE Command	266
The ENDCAP Command	266
The NPRINT Command	267
CAPTURE and NPRINT Flags	267
Controlling the Print Server	274
Customizing Printers Using PRINTDEF	278
Print Devices	279
Forms	283
Creating Print Jobs Using PRINTCON	284
Using Related Print Commands	288
The PSTAT Command	288
The PSC Command	289
The SET Command	292
Summary	293

9 Setting Up the NetWare Environment for Users .. 295

Mastering Drive Mappings	296
Networks and Drive Mappings	297
Networks and Search Drives	298
Setting Up Drive Mappings	300
Using Local Drive Mappings	300
Using Network Drive Mappings	300
Using Search Drive Mappings	302
Deleting Drive Mappings	303
Using the DOS CD Command on Drive Mappings	303
Developing Usable Login Scripts	305
System Login Scripts	306
User Login Scripts	306
Default Login Scripts	307
Script Parameters	307
Login Script Commands	307
The MAP Command	308
The WRITE Command	309
The PAUSE Command	311
The FIRE PHASERS Command	311

The IF..THEN..ELSE Statement.....	311
The BREAK ON/OFF Command	313
The DISPLAY and FDISPLAY Commands	313
The INCLUDE Command	314
DOS Commands.....	315
The COMSPEC Command	315
The DRIVE Command	315
The GOTO Command	315
Exit Commands	316
Remark Statements	317
Command Line Parameters	317
The ATTACH Command.....	317
Required Commands of Login Scripts	318
Identifier Variables	319
Creating Custom Menus	321
Understanding the Menu Format	322
Using Required Rights	324
Using the GO*.BAT and RESTART*.BAT Files	324
Understanding Menu Calling Procedures	325
Using Techniques for Setting Up Menus	326
Exploring the Utilities for End Users	334
The SESSION Utility	334
The USERLIST Utility	341
The SEND Command.....	343
The CASTOFF and CASTON Commands	344
The SALVAGE Command	344
The SETPASS Command	348
The SYSTIME Command	349
The WHOAMI Command	349
Summary	350

10 System Administration and Troubleshooting..... 351

Using FCONSOLE for Management Operations	352
Cache Statistics	356
Disk Statistics	358
File Server Statistics Summary	359

Using MONITOR NLM for Management Operations	363
Connection Information	363
Disk Information	365
LAN Driver Information	365
Using Other Commands To Monitor the Network	368
Using RCONSOLE To Make the Connection	368
Checking the Directory Using CHKDIR	368
Checking Volume Space Using CHKVOL	369
Administering VOLINFO	370
Using NVER	370
Checking Connections with COMCHECK	371
Changing NET\$OS.EXE or ROUTER.EXE with DCONFIG	372
Troubleshooting Utilities	374
Repairing the Binderries Using BINDFIX	375
Limiting Disk Space Using DSPACE	378
Fixing Volumes Using VREPAIR	380
Troubleshooting and Optimizing Your File Server	382
Workstation Notes	383
DOS Memory Optimizing	383
NetWare 3.1x Server Components	384
NetWare Memory	385
Communications	386
Server Network Cards	388
Name Space	388
File System	389
Main Processor	392
Using NetWare's SET Options	394
Communications Options	394
Directory Caching	397
Disk Options	399
File System	400
File Caching	403
Locks	404
Memory	406
Miscellaneous	407
Transaction Tracking	410
Using Advanced Troubleshooting Methods	411
Summary	412

11 Management Concerns 413

Using File Server Backup Utilities	415
NBACKUP	415
SBACKUP	420
Backup Hardware	425
Interface Adapters	426
Media and Drive Types	427
Optical Drives	429
Software	431
Backup Plans	435
Responsibility	435
Frequency	436
Rotating Method	436
Grandfather Methods	436
Ten Tape Rotation	437
Tower of Hanoi Method	438
Off-Site Backups	439
Testing	439
Disaster Recovery	440
Proper Pre-Planning	440
Needed Equipment	440
Power Protection	441
Available Utilities	442
Support Issues	443
Training	443
Consultants	444
Summary	444

12 Network E-mail 445

Understanding E-mail Transports	446
Introducing Novell's MHS (Message Handling System)	446
Overview	446
Workgroups	449
Addresses	449
MHS Gateways	450
E-mail Forwarding	450

Discussion Groups	451
Library Services	451
Routing Services	451
Exploring E-mail Applications	452
Infinite Technologies ExpressIT!	452
Using the Internet	453
Learning E-mail Etiquette	454
Summary	455
A Installing NetWare v2.2	457
Preparing the Hardware	457
Hardware Requirements	458
Memory Requirements	459
Software Requirements	460
Installation Methods	460
Floppy-Drive Method	460
Hard-Drive Method	460
Network-Drive Method	461
The Four Install Modules	461
Basic Installation Option	462
Advanced Installation Option	463
Maintenance Installation Option	463
Upgrade Installation Option	464
Using the Command Line Options	464
The Command Line Options	465
Filling in the Blanks	466
Basic Installation Demonstration	466
Advanced Installation Demonstration	470
B Installing NetWare v3.11	477
Preparing the Hardware	478
Loading SERVER.EXE	481
Disk Drivers	482
Duplexing versus Mirroring	483
Performance Issues	484

The Install Program	484
Disk Options	484
Volume Options	487
System Options	489
Product Options	491
LAN Drivers	491
Loading LAN Drivers	492
Binding Protocols	495
Modifying the 3.11 Operating System	497
Changing Hardware	497
Adding Memory	497
Additional LAN Cards	498
Disk Channels	498
Optimizing the Environment (Set Commands)	499
Upgrading to v3.11	500
C History of the NetWare DOS Shell	501
D Using the Programs on the Bonus Disk	507
ASAP! for Networks	507
BIND	509
BINDSCAN	509
CHAT	510
P.S. Menu	511
ExpressIT!	512
USPACE	513
PKUNZIP	513
Using Shareware	513
NetWare Command Reference	515
Index	771