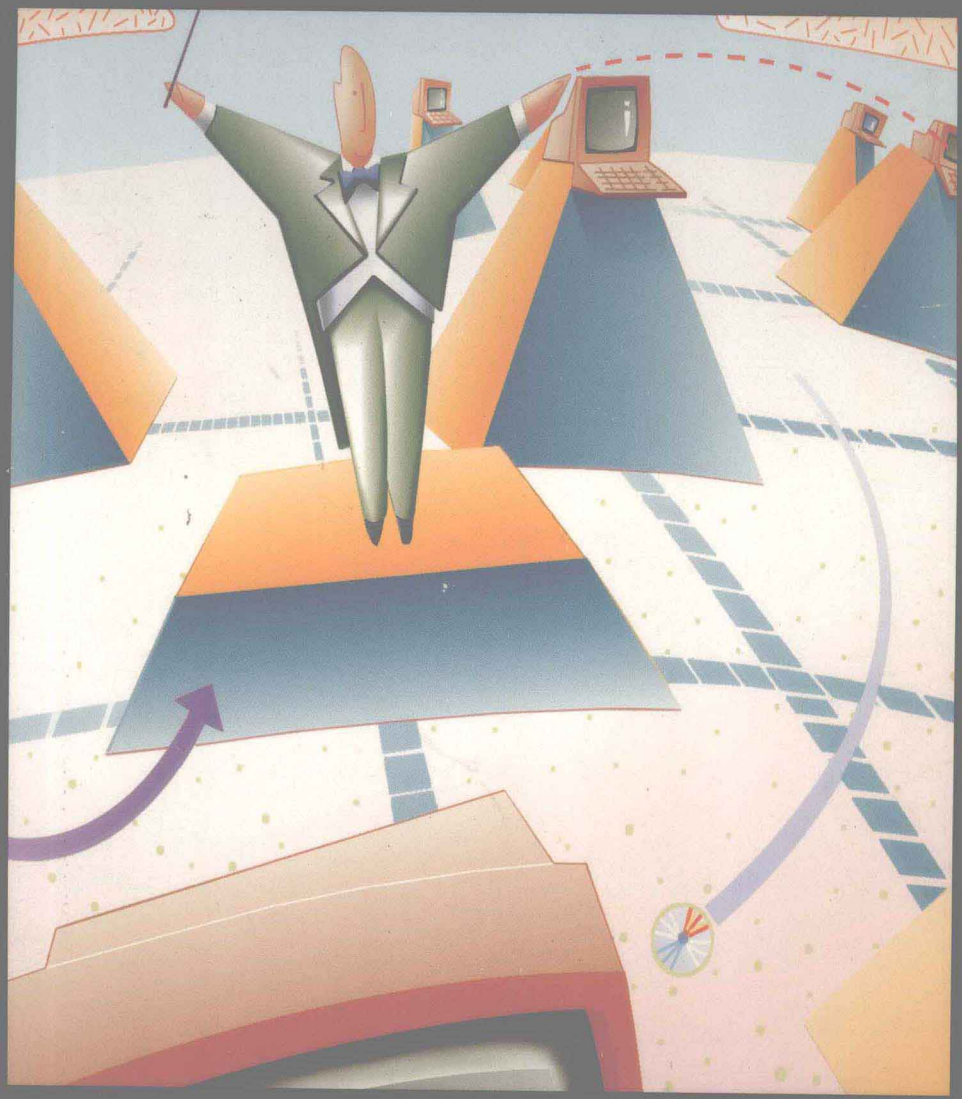
NETWORKING

Hands-On NETWARE

A Guide to NetWare® 4.1 with Projects



Ted L. Simpson

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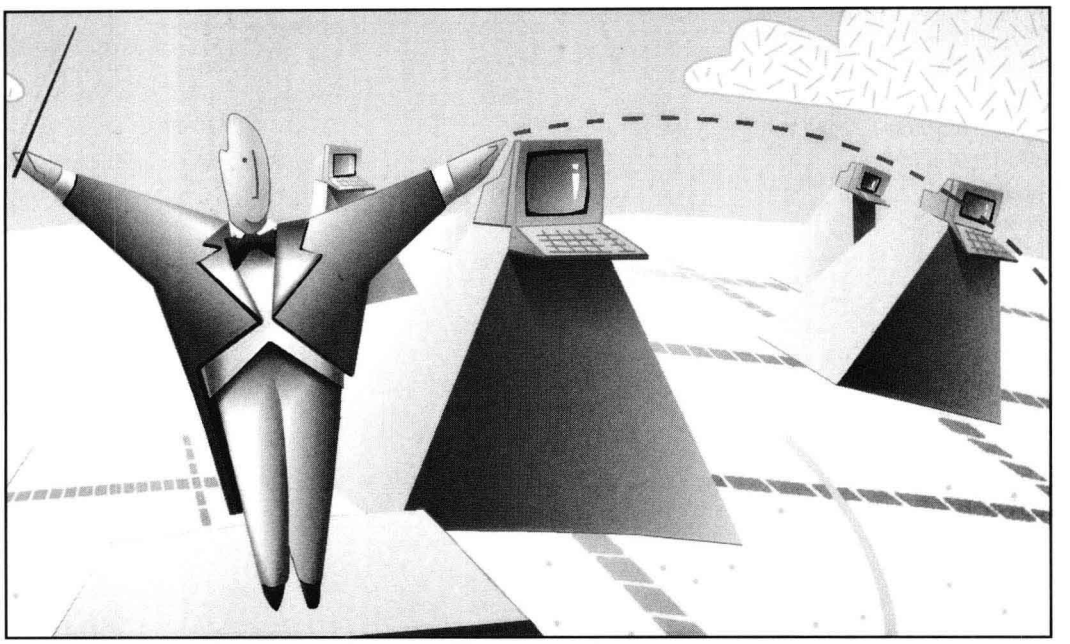

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INTRODUCTION

Since the 1980s, the Novell company has been the leader in Local Area Network (LAN) technology, with its NetWare products controlling over 60% of the market. The rapid growth of LANs during the 1990s has produced a need for larger and more powerful network systems. Novell has responded to this expanding need by developing the NetWare 4 system. NetWare 4 contains many features that make it a more efficient and reliable system for implementing large and diverse networks.

Being able to find qualified people who have the knowledge necessary to install and manage a LAN is a major problem facing many businesses in the 1990s. In order to help businesses be assured of hiring competent network professionals, Novell has instituted the Certified NetWare Administrator (CNA) program. To become a CNA, Novell requires that you pass a single CNA certification test for either NetWare 3.12 or NetWare 4.1 at an authorized testing center. Today many companies are looking for network administrators who have passed the CNA exam to implement their NetWare LANs.

Hands-On NetWare 4.1 is intended to provide you with the concepts, commands, and hands-on experience necessary to pass the NetWare 4.1 CNA exam. The approach used in this book is also designed to help you obtain the skills necessary to be able to apply NetWare 4.1 in the development of microcomputer LAN systems in a real office situation. These skills, along with the CNA designation, will put you in a position to take advantage of the many opportunities taking place in the rapidly growing and changing field of networked computing.

Features and Approach

Hands-On NetWare 4.1 sets itself apart from other networking books through its unique hands-on approach and its orientation to real-world situtations and problem solving. To ensure that students comprehend how Novell NetWare concepts and techniques are applied in real business organizations, this text incorporates the following features:

Chapter Hands-On Activities. In each chapter, network topics are explained in the context of a case in which students assume the role of the network administrator at the fictitious Universal Aerospace Corporation. As the case scenario progresses, students work in conjunction with a CNA consultant and follow the steps performed by real networking professionals who set up and maintain networks. The case provides students with a strong conceptual foundation, so that when they embark on the hands-on projects integrated into each chapter, they understand them in the context of a real-life network. Completing the chapter hands-on activities is important in order to perform the end-of-chapter projects and complete the Universal Aerospace network system.

Command Summary, Key Terms and Review Questions. Each chapter concludes with meaningful Review Questions that test students' understanding of the concepts and commands presented in the chapter. A Command Summary and a list of Key Terms provide a valuable reference to help students review the material covered in the chapter.

End-of-Chapter Projects. At the end of each chapter, students have the opportunity to reinforce the concepts and techniques learned in the chapter to their own network installation projects. These exercises build on each other from chapter to chapter so that by the end of the book, each student will have setup a functional network environment complete with users, software menus, shared files, and printers. End-of-chapter projects build on each other and as a result you will need to complete the projects at the end of each chapter in order to perform the projects in subsequent chapters and complete the Universal Aerospace network system.

Additional Exercises. In addition to the hands-on projects and end-of-chapter assignments, each chapter also has additional exercises that provide students with the chance to be creative in designing and developing a network system to support the processing needs of another fictitious organization, Superior Technical College. All of the end-of-chapter exercises can be removed from the book and submitted to the instructor to provide a simple and useful way to track the students' progress and understanding. Performing the additional exercises is not necessary to complete projects or exercises in subsequent chapters.

To the Student

In order to complete the projects and set up your own version of the Universal Aerospace network, your instructor has assigned you to a NetWare 4.1 classroom server and given you a user name, password, student reference number, and home directory. Your user name has been granted the privileges necessary for you to build your own network system by creating and managing network objects such as users, groups, printers, and files without affecting other students use of the server. Your home directory is the work area on classroom server where you have been given all rights to create and manage files and directories needed to complete the projects and exercises. In order to perform certain projects you will need a copy of the student work disk containing sample files and applications for Universal Aerospace. The projects at the end of Chapter 1 instruct you how to download a copy of the student work disk from the classroom server.

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If you will be performing the hands-on activities and projects on your own computer network, you will need to install NetWare 4.1 on your server and follow the network step instructions provided by your instructor or follow the steps provided in the setup document file found on the student disk.

Text and Graphic Conventions

In addition to the normal discussions within each chapter of this book are icons representing notes, and hands-on exercises:

The Note icons are used to present additional helpful material related to the subject being described.

Each hands-on activity in this book is preceded by the hands-on icon and a description of the exercise that follows.

Located at the end of each chapter is a continuing running case that is indicated by the Project icon. In this extensive case example, students are asked to implement the skills explained in the chapter at the fictitious Universal Aerospace Corporation. For more information on the hands-on exercises in this book, see the features and approach section in this preface.

The Supplements

Instructor's Manual. The Instructor's Manual that accompanies this textbook was written by the author and has been quality-assurance tested. It includes:

- Answers and solutions to all Review Questions and Projects
- A disk containing solutions files from the projects
- Teaching notes containing tips from the author about the instructional progression in each chapter

Student Work Disk. The Student Work Disk contains sample software, files for use in the Universal Aerospace Project, and Review Questions. Adopters of this text are granted permission to distribute these files to any student who purchases a copy of this text. To obtain a student disk, see the inside front or back cover of this book.

File Server Setup Disk. The setup program can copy the contents of the Student Work Disk to the file server. One of the students' first assignments could be to copy the contents of the Student Work Disk onto a blank disk for use in the projects.

Course Test Manager 1.1. Accompanying this book is a powerful assessment tool known as the Course Test Manager. Designed by Course Technology, this cutting-edge Windows-based testing software helps instructors design and administer tests and pre-tests. In addition to being able to generate tests that can be printed and administered, this full-featured program also has an online testing component that allows students to take tests at the computer and have their exams automatically graded.

Acknowledgments

While I have spent a great many hours writing this book, it would never have been completed without the help of many others. I especially owe many thanks to my editor Mary-Teresse Cozzola, whose vision and advice has helped to shape and polish this book into a valuable product. The credit for making this book so useful goes to the Course Technology staff, especially Richard Keaveny and Nancy Ray, who have had the difficult job of coordinating all the tasks and maintaining the schedule despite deadlines that slipped far too often. Thanks is also due to the excellent reviewers including Behrouz Forouzan (De Anza College) and Roger Simerly (Volunteer State Community College) who added important comments and suggestions that I have incorporated into the finished book. I also feel very fortunate to the many testers who performed the complex and detailed job of testing the exercises and verifying the technical content of the materials.

I want to thank my wife Mary whose loving and patient help enabled me to complete this project. In addition, any success this book achieves is ultimately due to my parents, William and Rosemarie, who have made many sacrifices to provide a stable and motivating environment for learning and growing. I would also like to acknowledge Jan Brill, Bert Richard, Tom Lemler, and Lois Eichman at Wisconsin Indianhead Technical College for maintaining our school as a leader in the area of Novell Education. Finally, I would like to dedicate this book to the Computer Information System students at WITC, and other colleges, who are taking on the challenge of becoming computer networking professionals. I hope this text and its exercises will help prepare you to succeed in your goals.

HANDS-ON NETWARE:
A GUIDE TO NETWARE 4.1 WITH PROJECTS

1 NETWORKING BASICS

2 DEFINING NETWORK OBJECTS

3 DESIGNING THE FILE SYSTEM

4 IMPLEMENTING NDS

5 FILE SYSTEM SECURITY

6 IMPLEMENTING NETWORK PRINTING

7 IMPLEMENTING ELECTRONIC MAIL

8 NETWARE LOGIN SCRIPTS

9 IMPLEMENTING NETWARE MENUS

10 OPERATING THE SERVER CONSOLE

APPENDIX A INSTALLING NETWARE 4.1

APPENDIX B CNA OBJECTIVES

READ THIS BEFORE YOU BEGIN

To the Student

To use this book, you must have a Student Work Disk. See the inside front or inside back cover for details on how to obtain a copy of the Student Work Disk. Since most of the hands-on exercises in this book require access to a file server, your workstation will need to be connected to a network and your instructor will provide you with a valid username on your assigned file server.

To the Instructor

Setting up the classroom file server. To complete the exercises and projects in this book, your students will need to access a classroom file server. Providing student access to the classroom file server involves creating a username and two directories for each student along with copying some sample files and uploading the Student Work Disk. To help you perform the file server setup process, Course Technology, Inc. has provided a special File Server Setup Disk. See the inside front or inside back cover for details on how to obtain copies of the Student Work Disk and the File Server Setup Disk. To setup your classroom file server, follow the instructions in the README file located on the File Server Setup Disk. Complete file server setup instructions are also included at the beginning of your Instructor's Manual.

README File. The README.TXT file located on the File Server Setup Disk provides additional notes on performing the file server setup process. You can view the README.TXT file using any word processor or text editor.

System Requirements

The minimum software and hardware requirements for each network lab computer are as follows:

- Windows 3.1 or higher
- A 386 or higher processor with a minimum of 4 MB of RAM (486 recommended)
- VGA monitor
- A network card cabled to the classroom file server
- A hard disk drive with 10 MB free is highly recommended
- NetWare client software necessary to log in to the file server
- DOS v5.0 or higher (if the computer has a hard drive, DOS should be installed on the hard drive)
- At least one high density disk drive

The minimum file server hardware requirements are as follow:

- A 486 or higher computer system with a minimum of 16 MB of RAM
- A volume with at least 4 MB free for each student's directories
- At least 100 MB disk space for the SYS volume, sample files and print queues

TABLE OF CONTENTS

CHAPTER ONE

Networking Basics 1

Network Components 2

Client Computers 2

Servers 4

Volumes 8

Printers 8

Network Cables 9

Network Topology 12

Network Interface Cards 15

Popular Protocol Stacks 20

Network Applications 22

Logging In 22

Sending Messages 23

NWUSER Program 24

Universal Aerospace Project 29

Orientation 29

Company Tour 30

Designing the Universal Aerospace Network 32

Protocol Usage 34

Chapter Summary 35
Command Summary 36
Key Terms 37
Review Questions 41
Universal Aerospace Network System 42
Additional Exercises 44

CHAPTER TWO
Defining Network Objects 49
Novell Directory Services 50
NDS Components 50
Designing an NDS Tree Structure 53
NDS Partitioning and Replicating 56
NDS Context 59
Installing NetWare 4.1 Client Software 60
Installing DOS Clients 62
Windows 3.1 Clients 67
Windows 95 Clients 68
Working with NDS 70
The CX Command 70
The LOGIN Command 74
The NLIST Command 75
NetWare Administrator Utility 76
Chapter Summary 83
Command Summary 85
Key Terms 85
Review Questions 87
Universal Aerospace Network System 88
Additional Exercises 88

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CHAPTER THREE

Designing the File System 95

File System Components 96
Volumes 96
Directories and Subdirectories 108
Files 114
Establishing the Universal Aerospace Directory Structure 119
Define Processing Needs 119
Design the Structure 121
Creating the Directory Structure 126
Drive Pointers 137
Specifying Network Paths 137
Network Drive Pointers 138
The MAP Command 142
Planning Your Drive Mappings 156
Chapter Summary 158
Command Summary 160
Key Terms 161
Review Questions 162
Universal Aerospace Project 165
Additional Exercises 167

CHAPTER FOUR

Implementing NDS 171

Working with NDS Objects 172
Creating NDS Objects 172
Moving Objects 184
Establishing Network Security 189
Login Security 190
Intruder Detection Limits 195
NDS Security 197
NDS Default Rights 214
Security Guidelines 216

Chapter Summary 217
Key Terms 219
Review Questions 220
Universal Aerospace Project 223
Additional Exercises 227

CHAPTER FIVE
File System Security 231
Access Right Security 232
Trustee Assignments 234
Inherited Rights 237
Calculating Effective Rights 239
Planning File System Security 241
Implementing Trustee Assignments 247
Attribute Security 260
File and Directory Attributes 261
Planning Attribute Usage at Universal Aerospace 266
Implementing Directory and File Attributes 267
FLAG Command Line Utility 273
Chapter Summary 275
Command Summary 276
Key Terms 277
Review Questions 279
Universal Aerospace Project 282
Additional Exercises 284

CHAPTER SIX
Implementing Network Printing 289
NetWare Printing Components 290
Print Queues 290
Print Server 292
Printers 293
Clients 295

Defining a Printing Environment 296
Define Printer Requirements 296
Printer Location and Attachment 298
Naming Printers and Print Queues 298
Plan Printer NDS Context 299
Setting Up the Printing Environment 300
Create Print Queues 300
Define and Configure the Printers 303
Create the Print Server Definition 305
Implementing and Managing Network Printing 308
Load the Print Server 308
Load Remote Printing Software 311
Jobs in the Print Queues 314
Customizing Network Printing 319
Managing Network Printing 326
Printer Menu Utilities 331
Chapter Summary 333
Command Summary 335
Key Terms 336
Review Questions 338
Universal Aerospace Network Printing Project 340
Additional Exercises 343

CHAPTER SEVEN

Implementing Electronic Mail 347

MHS Overview 348
How MHS Works 348
NDS Messaging Service Objects 350
Installing Messaging Services 352
Implementing MHS Electronic Mail 358
Adding Users 359
Creating Distribution Lists 361
Using FirstMail 362
Installing FirstMail in Windows 363
Sending Messages 364
Receiving Messages 367

Chapter Summary 373
Command Summary 373
Key Terms 373
Review Questions 374
Universal Aerospace Electronic Mail Project 375
Additional Exercises 377

CHAPTER EIGHT
NetWare Login Scripts 379
Login Script Programming 380
Login Script Variables 381
Writing Login Script Commands 386
Types of Login Scripts 394
Container Login Script 395
Profile Login Script 396
User Login Script 397
Default Login Script 397
Implementing Login Scripts 398
Identifying Login Script Requirements 399
Writing Login Scripts 400
Entering Login Scripts 402
Testing and Debugging Login Scripts 406
Troubleshooting Login Scripts 407
Documenting Login Scripts 409
Chapter Summary 410
Command Summary 411
Key Terms 413
Review Questions 413
Universal Aerospace Login Scripts 415
Additional Exercise 419

CHAPTER NINE

Implementing NetWare Menus **421**

The NetWare Menu System 422

Menu System Components 424

Creating a Menu System 425

Design the Menu Files 425

Write the Menus 426

Create the Menu Directory Structure 433

Enter and Compile the Menus 435

Test the Menus 437

Provide User Access 437

Chapter Summary 440

Command Summary 441

Key Terms 443

Review Questions 443

Universal Aerospace Menu System 445

Additional Exercise 448

CHAPTER TEN

Operating the Server Console **449**

Console Operations 450

Console Commands 450

NetWare Loadable Modules 457

Securing the Server Console 467

Remote Console Management 469

Understanding Remote Management 470

Setting Up Remote Management 473

Creating a Remote Console Operator 474

Using RCONSOLE 475

Backing Up Network Data 478

The Storage Management System 478

Establishing a Backup System 479

Chapter Summary 486
Command Summary 487
Key Terms 489
Review Questions 490
Universal Aerospace Server Console Operations 493
Additional Exercises 495

APPENDIX A
Installing NetWare 4.1 499
Preparing for NetWare Installation 500
Server Hardware Environment 500
Network Cards 503
Network Environment 504
Installing NetWare 505
Selecting an Installation Method 506
Performing a Custom Installation 506

APPENDIX B
CNA Objectives 517

INDEX 521

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