

Contents

Preface	ix
Why You Need This Book	ix
Who Should Read This Book?	ix
What Is the Audience Level for This Book?	x
What's in This Book?	x
What Conventions Are Used in this Book?	xi
Acknowledgments	xiii

Part I: Making Basic Network Choices 1

Chapter 1: Quick Start – Sharing on a Network	3
Overview of the Process	3
Taking inventory	4
Looking at resources to share	5
Listing steps for a workgroup network	5
Listing steps to add a server	7
Finding the Help You Need	7
Planning your network	7
Using the network	9
Using the Internet, e-mail, and intranets	10
Managing the network	11
Summary	11
Chapter 2: Understanding Network Basics	13
Understanding Networks	13
Planning your network	15
Introducing network equipment	15
Introducing networking software	16
Looking at the Advantages and Disadvantages of a Network	17
Considering the advantages	17
Considering the disadvantages	21
Understanding Network Types	26
Using a workgroup network	26
Using a client/server network	28
Deciding between client/server and workgroup	32
Converting workgroup to client/server	33
Getting Your Family Ready for a Network	33
Setting limits	34
Setting guidelines	35
Using naming conventions	36
Understanding rights and permissions	36
Teaching the use of the network	36
Summary	38

Chapter 3: Understanding Workgroup Networking 39

Understanding Workgroup Requirements	39
Boosting computer performance	39
Boosting network performance	43
Dividing Computer Duties and Resources	45
Assigning computer duties	45
Dividing resources	47
Understanding the Limits of Workgroup Networking	50
Considering performance	50
Thinking about security issues	51
Limiting the number of users	51
Troubleshooting Workgroup Networks	51
Summary	52

Chapter 4: Understanding Client/Server Networking 53

Understanding Client/Server Requirements	53
Considering network requirements	55
Considering server requirements	56
Considering client requirements	57
Considering Network Operating Systems	57
Choosing a network operating system	57
Considering network operating system essentials	58
Looking at Available Network Operating Systems	59
Using Windows 2000 Server	60
Using Novell NetWare	60
Looking at Mac OS X Server	61
Considering Linux	61
Looking at a Windows 98 or XP Professional server	62
Looking at Client Operating Systems	65
Using Windows 95/98	66
Looking at Windows Me	66
Considering Windows XP Home Edition	66
Looking at Windows XP Professional Edition	66
Using Windows 2000 Professional	67
Using Mac operating systems	67
Using various Linux flavors	68
Summary	69

**Part II: Planning and Setting Up Networking –
Hardware and Software**

71

Chapter 5: Preparing for a Network 73

Defining Network Goals	73
Looking at family needs	74
Considering your budget	76
Considering security	77
Thinking about other network issues	78
Planning the Network	79
Drawing a network map	80
Understanding network requirements	83

Planning Computer Contents	86
Managing folders	86
Managing shares	88
Considering applications	94
Summary	95
Chapter 6: Understanding and Installing Traditional Cabling	97
Understanding Methods of Network Cabling	97
Considering Networking Topologies and Technologies	98
Choosing a topology	98
Choosing a network technology	103
Understanding Cabling	105
Deciding on the type of cable	105
Defining coaxial	106
Defining twisted-pair (Ethernet)	108
Looking at Cable Connectors	110
Using coaxial cable connectors	111
Using twisted-pair cable connectors	112
Using Networking Tools	115
Working with coaxial cable tools	115
Working with Ethernet tools	116
Considering Network Kits	116
Looking at the advantages of a kit	117
Using the kit	117
Looking at Ethernet network kits	118
Installing Cable	119
Sketching a plan	119
Understanding and using the cabling rules	121
Laying the cable	122
Checking the cabling	124
Deciding to Use Other Networking Hardware	124
Summary	125
Chapter 7: Using Wireless Network Connections	127
Considering Wireless Methods	127
Using Radio Frequency for Networking	128
Advantages and Disadvantages of Wireless Technologies	131
Advantages of wireless	131
Disadvantages of wireless	132
Looking at performance	133
Considering interference	133
Securing a wireless network	135
Considering Wireless Standards	136
Using the 802.11b standard	137
Using the 802.11a standard	138
Using the 802.11g standard	138
Looking at HomeRF	138
Looking at Bluetooth	139
Choosing the Devices	139
Using wireless network adapter cards	140
Considering access points	142
Using antennas	142

Configuring Wireless Technologies	144
Installing a wireless network adapter card	144
Configuring access points	145
Securing the Wireless Network	149
Changing the administrator's password	150
Using IP addresses and enabling MAC address filtering	150
Securing the SSID	150
Changing WEP keys	150
Using Wireless in Conjunction with Cabled Networks	152
Examining Wireless Products	154
PC wireless devices	154
Mac wireless devices	157
Summary	158
Chapter 8: Using Alternative Cabling Methods	159
Connecting Two Computers or Two Users	159
Using a direct cable	159
Using the Buddy BeTwin to connect two users	169
Using network cards and crossover cable	171
Using Phone Lines for Your Network	171
Understanding phone line networks	172
Looking at home phone line network kits and products	174
Using Your Home's Electrical Wiring for a Network	176
Looking at power line networking	177
Looking at power line products	177
Looking at the Future of Networking Alternatives	179
Summary	180
Chapter 9: Purchasing and Installing Networking Hardware	181
Understanding Networking Hardware	181
Defining network interface cards	183
Defining hubs	185
Defining switches	187
Defining access points and base stations	187
Looking at routers	187
Purchasing and Installing a Network Interface Card	188
Purchasing the NIC	188
Installing a network interface card	193
Purchasing and Installing a Hub or Switch	196
Purchasing a hub or switch	196
Installing a hub or switch	198
Purchasing and Installing an Access Point or Base Station	199
Purchasing an access point or base station	199
Installing an access point or base station	200
Working with a Router	200
Summary	201
Chapter 10: Configuring Networking Software	203
Understanding Networking Software	203
Defining adapters	204
Defining the network client	204
Defining protocols	205
Defining services	207

Installing and Configuring the Network Software	207
Adding a network adapter	210
Adding the protocol	216
Adding the service	219
Completing the installation	223
Summary	226

Chapter 11: Accessing the Network with Various Operating Systems 227

Understanding Additions to the Network	227
Adding to a workgroup network	228
Adding to a client/server network	229
Adding a Windows-based computer versus a non-Windows-based computer	230
Using Various Windows Operating Systems	230
Adding Windows XP	231
Adding Windows 2000	233
Using Windows Me	234
Using Windows 98	235
Dealing with problems between Windows computers	235
Using Portables on Your Network	236
Using notebooks or laptops on the network	236
Looking at handheld computers	237
Considering tablets	240
Adding a Macintosh to Your Network	240
Networking the Macintosh	241
Accessing Windows data	243
Using Linux with Your Network	248
Summary	249

Part III: Working with Networked Computers 251

Chapter 12: Sharing Resources 253

Understanding Sharing	253
Limiting access	253
Understanding the rules of sharing	254
Sharing Between Operating Systems	260
Sharing Folders and Drives	260
Locating a folder	261
Designating a share	262
Setting access limits	264
Sharing Files	265
Hiding files	265
Using the Read-Only attribute	266
Sharing Printers and Other Peripherals	267
Sharing printers	267
Sharing a modem	272
Sharing scanners	273
Sharing CD/DVD burners	274
Summary	274

Chapter 13: Accessing the Network	275
Logging On to the Network	275
Setting logon preferences	276
Understanding usernames	282
Understanding passwords	283
Logging off the network	285
Mapping Drives	285
Understanding network paths	286
Mapping a drive in Windows	287
Mapping a drive on a Macintosh	288
Accessing and disconnecting a mapped drive	289
Using Network Commands	291
Understanding DOS commands	292
Using common MS-DOS network commands	293
Using batch files for permanent connections	295
Using Mac network commands	298
Using Linux network commands	298
Protecting the Network from Viruses	298
Looking closer at viruses	299
Looking at antivirus programs	301
Finding and applying virus fixes	301
Summary	302
Chapter 14: Finding Computers on the Network	303
Using Network Paths	303
Using the Run command	304
Using address bars	305
Using Find Computer	306
Using My Computer	308
Locating the networked computers	309
Working with the networked computer	312
Using the Windows Explorer	316
Copying and moving files	316
Performing other network tasks	317
Using the Network Neighborhood or My Network Places	318
Using the entire network	319
Finding resources in the Network Neighborhood	321
Finding Computers on Macs	321
Finding Computers on Linux Machines	325
Summary	325
Chapter 15: Printing on a Network	327
Understanding Basic Printing	327
Using the Print dialog box	327
Using drag-and-drop printing	329
Installing and Removing a Network Printer	332
Installing the printer	333
Removing the printer	337
Setting Options for the Printer	337
Setting basic options	338
Setting printer properties	338
Capturing a printer port	339

Managing Workgroup Network Printing	340
Understanding the print queue	341
Controlling your own print queue	341
Controlling the network print queue	343
Managing Client/Server Network Printing	345
Printing between Operating Systems	345
Printing between Windows computers	346
Printing between Windows and Mac computers	346
Printing between Windows and Linux	350
Troubleshooting Printing	350
Checking basics first	351
Locating the problem	351
Summary	352

Part IV: Adding the Internet, E-Mail, and an Intranet 353

Chapter 16: Accessing the Internet 355

Understanding Internet Access	355
Exploring advantages and disadvantages of Internet access	357
Looking at Internet services	358
Understanding Internet Connections	361
Using phone lines	362
Using cable and DSL modems	363
Using high-speed lines	364
Understanding Access Equipment	364
Using analog modems	364
Using digital modems	365
Sharing Internet Connections	366
Using software to share a connection	367
Using hardware to share a connection	368
Working with Web Browsers and E-Mail	369
Internet Explorer and Outlook Express	370
Using Netscape Navigator and Netscape Mail	372
Using Mac Web browsers	374
Using Linux browsers	374
Applying Protection to Your Connections	375
Understanding and using firewalls	376
Choosing firewall products	377
Understanding and using proxy servers	378
Protecting various operating systems	380
Using Linux as a firewall	380
Summary	381

Chapter 17: Using E-Mail 383

Understanding E-Mail	383
Using Internet e-mail	383
Using Web-based e-mail	384
Examining E-Mail Programs	387
Using Windows e-mail programs	387
Using Mac e-mail programs	392
Using Linux e-mail programs	394

Applying Security in E-Mail	394
Using digital IDs and encryption	394
Using virus protection	395
Summary	397
Chapter 18: Using Chat Programs	399
Understanding Chat Programs	399
Using Internet instant messaging programs	399
Using LAN instant messaging programs	401
Looking at LAN-Only Chat Programs	402
Using WinPopup Gold	402
Installing WinPopup Gold	403
Other LAN chat programs	405
Looking at Internet and LAN Chat Programs	407
Securing Chats	409
Summary	410
Chapter 19: Setting Up an Intranet	411
Understanding an Intranet	411
Defining an intranet	412
Advantages and disadvantages of an intranet	413
Exploring three possibilities	415
Creating Content for the Intranet	416
Using common programs for creating content	416
Using common design elements	420
Making the Preparations	422
Creating content and a folder	422
Sharing the folder	422
Installing TCP/IP	422
Creating a Workgroup Intranet without a Server	423
Looking at what you need	423
Looking at the basic steps	424
Creating a Workgroup Intranet with a Server	425
Looking at what you need	426
Looking at Web servers and other utilities	426
Creating a Client/Server Intranet	427
Looking at what you need	427
Looking at Internet Information Services	428
Using Linux as an Intranet Server	429
Summary	429

Part V: Working with Files, Folders, and Applications 431

Chapter 20: Working with Applications	433
Understanding Local and Network Applications	433
Using local applications	433
Using network applications	435
Employing Application Types on Your Network	437
Using Microsoft Office on a network	437
Using Internet applications	438

Using accounting applications	439
Using groupware	439
Using vertical applications	440
Using network games	441
Examining Mac and Linux Network Applications	444
Mac software	444
Linux software	445
Summary	445
Chapter 21: Working with Files and Folders	447
Storing Files	447
Choosing a storage area	448
File storage tips	450
Backing Up Files	451
Backing up to the network or locally	451
Considering the files you should back up	453
Using backup devices	454
Backing up the Registry	454
Using the Windows Backup program	456
Understanding the process of restoring backups	464
Restoring from the Microsoft Backup program	464
Backing Up Your Mac Files	466
Backing Up a Linux Box	466
Securing Files and Folders	466
Looking at security risks	467
Looking at security solutions	467
Summary	469
Part VI: Managing the Network	471
Chapter 22: Using Network Management Tools	473
Understanding Network Management	473
Using Windows Monitoring Tools	475
Using Net Watcher for Windows 98	475
Monitoring the network with Windows XP	482
Looking at other network monitors	485
Using System Monitor	485
Using the Windows 98 System Monitor	485
Using the Windows XP System Monitor	486
Using third-party system monitors	486
Understanding Pretty Good Privacy	488
Monitoring on the Mac	490
Considering Linux Network Monitoring	490
Summary	491
Chapter 23: Using Policies to Secure Windows	493
Understanding Policies	493
Understanding the System Policy Editor	494
Changing user policies	495
Changing computer policies	496
Using the System Policy Editor	496

Understanding Group Policies in Windows 2000 and XP	497
Using Group Policies	497
Setting user policies	497
Setting computer policies	499
Understanding Security Templates	500
Understanding default security settings	501
Using predefined templates	501
Using Security Configuration and Analysis	503
Summary	506
Chapter 24: Working with the Registry for Windows	507
Understanding the Registry	507
Defining the Registry database	508
Deciding when to modify the Registry	511
Backing Up the Registry Files	512
Backing up the Registry	512
Recovering the Registry	513
Modifying the Registry	516
Starting the Registry Editor	517
Using the menus	518
Displaying keys, subkeys, and values	520
Working with values	522
Using the Registry to Modify Network Settings	523
Limiting the use of network properties	524
Limiting the use of passwords	525
Changing Internet properties	525
Adding IP addresses to a network adapter	526
Summary	527
Part VII: Adding to Your Home Network	529
Chapter 25: Understanding Multimedia	531
Understanding Multimedia	531
Looking at Multimedia Hardware	532
Considering processors	532
Examining RAM and cache	532
Considering drives	533
Exploring expansion slots	534
Scanning ports	535
Exploring monitors	536
Considering CD drives	536
Buying a video card	538
Buying a sound card	539
Investigating speakers	540
Looking at network upgrades for multimedia	541
Considering Digital Cameras and Scanners	543
Examining digital cameras	543
Looking at scanners	544

Looking at Multimedia Applications	546
Working with photographs and images	546
Creating 3D animations and movies	547
Exploring multimedia videos and video editors	547
Exploring music and sound editors	548
Examining CD/DVD burning	548
Working with Multiplayer Games	549
Console gaming	549
Online gaming	550
Understanding high-performance gaming	551
Creating games	551
Managing Multimedia in Windows 98	552
Using the Audio tab	552
Setting video options	554
Working with MIDI options	554
Adjusting CD music	555
Looking at multimedia devices	555
Managing Multimedia in Windows 2000/XP	555
Diagnosing DirectX in Windows 2000/XP	556
Working with other multimedia controls	557
Managing Multimedia in Linux and Macintosh	558
Using Your TV with the Web	559
Considering WebTV	559
Adapting your TV	559
Summary	560
Chapter 26: Considering Smart Homes	561
Understanding the Smart Home	561
Exploring smart features	562
How does it work?	563
Comprehending the Technologies	564
Considering wiring	564
Examining communications protocols	566
Looking at the computer ports	567
Integrating Today's Technology	568
Looking at security features	568
Examining appliances	570
Using smart phones	570
Identifying home theater technology	570
Handling messages	570
Looking into Internet access	571
Automating plant and pet care	571
Using robots in home automation	571
Exploring the Smart Home	571
Questions to ask the home automation professional	572
Looking at home products	572
Summary	574

Appendix A: Troubleshooting Network Operations and Connections . . . 575

Preventing Problems in Your Network	575
Documenting network problems	575
Using preventive maintenance	576
Taking the First Steps to Diagnosing a Problem	579
Using Microsoft System Information	580
Finding problems	584
Trying the simple solutions	585
Investigating computer problems	585
Using the System Monitor	586
Using the Network Troubleshooter	586
Examining the Network Hardware and Software	586
Exploring network card problems	587
Looking at protocol problems	590
Troubleshooting cabling problems	591
Considering hub problems	592
Examining bottlenecks	592
Investigating Peripheral Problems	593
Examining network printer problems	593
Looking at remote connection problems	595
Solving Specific Problems	597
Solving share problems	598
Missing the Network Logon dialog box	598
Troubleshooting with the System Configuration Utility	600
Troubleshooting Macs	601
Troubleshooting Linux	602

Appendix B: IP Addressing 603

Understanding TCP/IP	603
Examining the basics	604
Glimpsing the ISO/OSI model	605
Exploring IP Addressing	606
Examining an IP address	606
Understanding address classes	606
Looking at the subnet mask	607
Comprehending the gateway	607
Working with Domain Names	608
Regarding domain names	608
Understanding the domain name system	609
Why Use TCP/IP?	610
Looking at advantages of TCP/IP	610
Creating your own TCP/IP network	611
Using Windows 98 LinkLocal	612
Installing and Configuring TCP/IP	614
Using TCP/IP with Windows 98	614
Using TCP/IP for Dial-Up Networking and Windows 98	620
Comprehending the dial-up adapter TCP/IP settings	623
Working with TCP/IP and Windows XP	624
Using Dial-Up Networking in Windows XP	626

Using TCP/IP and the Macintosh	627
Creating a connection with the Mac	629
Creating a dial-up connection with Linux	630
Troubleshooting TCP/IP	631
Using ping	631
Using IPCONFIG	632
Using NETSTAT	633
Using WINIPCFG	635
Appendix C: Telecommuting	637
Understanding Remote Access	637
Examining types of remote access	638
Understanding Dial-up Networking	638
Distinguishing the remote access user	639
Using Terminal Services	640
Exploring Virtual Private Networks	641
Defining Modem Technologies	641
Identifying analog modems	642
Recognizing digital modems	642
Looking at communications lines	643
Installing and Configuring a Modem	643
Installing a modem	644
Configuring a modem	646
Installing and Configuring Dial-Up Networking	651
Installing Dial-Up Networking	651
Creating a connection in Windows 98	652
Creating a connection in Windows 2000/XP	654
Configuring the connection	655
Setting Up a Dial-Up Server in Windows 98	658
Installing the Dial-Up Server	658
Enabling the server	658
Enabling browsing on the server	659
Connecting to a remote server	659
Working with a Macintosh Modem	660
Working with a Linux Modem	662
Glossary	663
Index	697