

- Acknowledgments p. xxv
- Introduction p. xxvii
- Part I Networking Basics
- 1 The OSI Model p. 3
 - What Is a Packet? p. 4
 - OSI Model Basics p. 6
 - Other Network Models p. 16
 - Summary p. 20
- 2 Ethernet and Wireless LANs p. 21
 - Ethernet Basics p. 22
 - WLANs p. 40
 - Summary p. 49
- 3 Frame Relay p. 51
 - How Frame Relay Works: Core Concepts p. 52
 - How Frame Relay Works: Advanced Concepts p. 68
 - Summary p. 75
- 4 ATM and ISDN p. 77
 - What Is Asynchronous Transfer Mode? p. 78
 - What Is Integrated Services Digital Network? p. 91
 - Summary p. 99
- 5 TCP/IP Fundamentals p. 101
 - TCP/IP History p. 102
 - Individual Protocols p. 103
 - Bringing It All Together p. 125
 - Summary p. 126
- 6 Advanced IP p. 127
 - IP Addressing Basics p. 128
 - Simple Subnetting p. 142
 - Complex Class-Based Subnetting and VLSM p. 167
 - Other TCP/IP Enhancements p. 185
 - NAT and Private Addressing p. 188
 - Multicasting p. 192
 - Summary p. 195
- 7 The IPX/SPX Suite p. 197
 - The IPX/SPX Suite p. 198
 - IPX Framing p. 205
 - Bringing It All Together p. 206
 - Summary p. 207
- Part II Cisco Technology Overview
- 8 Cisco Hardware Layout p. 211
 - Hardware Form Factors p. 212
 - Internal and External Components p. 213
 - Modularity p. 217
 - Cabling p. 219

- Summary p. 222
- 9 Basic Switch Terminology p. 223
- Cisco Switching Fundamentals p. 224
- Switch Classification Chart p. 227
- Summary p. 244
- 10 Individual Switch Series Reference p. 245
- The 1548 Series Microswitches p. 246
- The 1900 and 2820 Series p. 247
- The 2900 and 2900XL Series p. 249
- The 3000, 3100, and 3200 Series p. 252
- The 3500XL Series p. 252
- The 3900 Series p. 253
- The 4000 Series p. 254
- The 4840 Series p. 255
- The 5000 Series p. 255
- The 5500 Series p. 257
- The 6000 Series p. 258
- The 6500 Series p. 260
- The 8500 Series p. 262
- Specialized Switching Solutions p. 262
- Summary p. 264
- 11 Basic Router Terminology p. 265
- Cisco Router Types p. 266
- Router Modularity p. 267
- Router Hardware Terms p. 267
- Router IOS p. 267
- Router Classification Chart p. 269
- Summary p. 312
- 12 Individual Router Series Reference p. 313
- The 600 Series p. 314
- The 700 Series p. 314
- The 800 Series p. 314
- The 1000 Series p. 316
- The 1400 Series p. 317
- The 1600 Series p. 318
- The 1700 Series p. 319
- The 2500 Series p. 320
- The 2600 Series p. 322
- The 3600 Series p. 325
- The 7100 Series p. 328
- The 7200 Series p. 330
- The 7500 Series p. 332
- The 10000 Series p. 335
- The 12000 Series p. 336

- Summary p. 338
- 13 Access Servers, Cache Engines, and Security Products p. 339
 - Access Servers p. 340
 - Cache and Content Engines p. 346
 - Cisco Security Products p. 351
 - Summary p. 356
- 14 IOS Basics p. 357
 - What Is the IOS, Anyway? p. 358
 - Booting a Cisco Device p. 362
 - Basic Cisco Device Configuration p. 362
 - Working with the IOS p. 369
 - The Flash RAM File System p. 380
 - Syslog Messages p. 381
 - Configuration Registers, Boot Options, and Password Recovery p. 384
 - Cisco Discovery Protocol p. 390
 - Summary p. 398
- 15 Standard IOS Commands: Part 1 p. 399
 - Common User Mode Commands p. 400
 - Common Enable Mode Commands p. 432
 - Summary p. 446
- 16 Standard IOS Commands: Part 2 p. 447
 - Common Global Configuration Mode Commands p. 448
 - Common Interface Configuration Mode Commands p. 464
 - Summary p. 469
- 17 Set-Based IOS Commands p. 471
 - Common clear Commands p. 472
 - The configure Command p. 477
 - The copy Command p. 478
 - The delete Command p. 479
 - The history Command p. 480
 - The ping Command p. 480
 - The quit Command p. 481
 - The reset Command p. 481
 - The session Command p. 482
 - Common set Commands p. 483
 - Common show Commands p. 496
 - Summary p. 518
- Part III Cisco LAN Switching
 - 18 Basic Switch Configuration p. 521
 - Configuring the General System Information p. 522
 - Configuring Logging and Passwords p. 529
 - Configuring Boot Parameters p. 535
 - Saving the Configuration p. 536
 - Summary p. 538

- 19 Layer 2 Switching p. 539
- Spanning Tree Protocol (STP) p. 540
- Virtual LANs (VLANs) p. 566
- Summary p. 587
- 20 Layer 3 Switching p. 589
- Layer 3 Switching Overview p. 590
- How Layer 3 Switching Works p. 592
- Layer 3 Switching Configuration p. 600
- Layer 3 Switching Troubleshooting and Optimization p. 617
- Summary p. 627
- 21 Layer 4 Switching p. 629
- Layer 4 Switching Overview p. 630
- How Layer 4 Switching Works: SLB p. 631
- How Layer 4 Switching Works: Congestion Management p. 637
- Layer 4 Switching Configuration: SLB p. 649
- Layer 4 Switching Configuration: Congestion Management p. 656
- Verifying and Troubleshooting Congestion Management p. 670
- Summary p. 672
- Part IV Cisco Routing
- 22 Understanding Routing p. 675
- How Routing Works p. 676
- Basic Router Configuration: Interface Configuration p. 698
- Static Routing Configuration, Verification, and Troubleshooting p. 708
- Summary p. 713
- 23 RIP Versions 1 and 2 p. 715
- How RIP Works p. 716
- Basic RIP Configuration p. 729
- Advanced RIP Configuration and Optimization p. 730
- Troubleshooting RIP p. 743
- Summary p. 745
- 24 Interior Gateway Routing Protocol p. 747
- How IGRP Works p. 748
- IGRP Configuration p. 764
- Troubleshooting IGRP p. 795
- Summary p. 808
- 25 Enhanced Interior Gateway Routing Protocol p. 809
- How EIGRP Works p. 810
- EIGRP Configuration and Troubleshooting p. 884
- Summary p. 910
- 26 Open Shortest Path First p. 911
- OSPF Overview p. 912
- How OSPF Works p. 922
- Configuring OSPF p. 996
- Troubleshooting OSPF p. 1012

- Summary p. 1018
- 27 Access Lists p. 1019
- Understanding Packet Filtering p. 1020
- Using NAT and PAT with Packet Filtering p. 1025
- Understanding DMZs p. 1027
- ACL Configuration p. 1036
- Summary p. 1046
- A Command Reference p. 1047
- Index p. 1091