

Contents

About This Bookxxi
Intended Audience	xxi
Prerequisites	xxi
About the CD-ROM.	xxi
Features of This Book	xxiii
Informational Notes.	xxiv
Notational Conventions	xxv
Keyboard Conventions	xxvi
Getting Started	xxvi
Hardware Requirements.	xxvi
Software Requirements	xxvii
Setup Instructions.	xxvii
The Microsoft Certified Professional Program	xviii
Certifications	xxix
Requirements for Becoming a Microsoft Certified Professional	xxx
Technical Support	xxx
Evaluation Edition Software Support	xxxi

Part 1 Learn at Your Own Pace

1	Understanding Windows Server 2003 Networks	1-1
	Before You Begin.	1-1
	Lesson 1: Understanding Network Infrastructures	1-3
	Defining a Network Infrastructure	1-3
	Analyzing Windows Server 2003 Networks	1-6
	Lesson Review	1-11
	Lesson Summary	1-12
	Lesson 2: Networking with Default Components in Windows Server 2003	1-13
	Viewing Network Connections.	1-13
	Default Networking and Workgroups	1-20
	Routing and Windows Server 2003 Network Infrastructure	1-20
	Lesson Review	1-21
	Lesson Summary	1-22
	Lesson 3: Extending a Windows Server 2003 Network Infrastructure	1-23
	Adding Components to a Connection	1-23
	Installing Windows Networking Components	1-25
	Adding Active Directory to a Windows Infrastructure	1-28
	Lesson Review	1-28

Lesson Summary 1-29
Case Scenario Exercise 1-30
Exam Highlights 1-31
 Key Points 1-31
 Key Terms 1-32
Questions and Answers 1-35

2 Understanding TCP/IP 2-1

 Before You Begin 2-1
 Lesson 1: Understanding TCP/IP 2-2
 Exploring the Layers of the TCP/IP Model 2-2
 Lesson Review 2-5
 Lesson Summary 2-6
 Lesson 2: Understanding IP Addressing 2-7
 Using Public IP Addresses 2-7
 Using Private IP Addresses 2-7
 Examining IP Addressing Methods 2-8
 Understanding the Structure of IP Addresses 2-9
 Subnet Masks 2-16
 Understanding Default Gateways 2-18
 Practice: Working with Octet Notations 2-18
 Lesson Review 2-19
 Lesson Summary 2-20
 Lesson 3: Subnetting and Supernetting IP Networks 2-22
 Understanding Subnetting 2-22
 Estimating Subnet Address Ranges 2-32
 Summarizing Routes Through Supernetting 2-32
 Using Classless Interdomain Routing 2-33
 Using Variable-Length Subnet Masks 2-34
 Practice: Working with Subnet Masks and Subnets 2-37
 Lesson Review 2-40
 Lesson Summary 2-41
 Lesson 4: Installing and Configuring TCP/IP 2-42
 Installing TCP/IP 2-42
 Examining TCP/IP Configuration Methods 2-43
 Practice: Configuring TCP/IP Addresses 2-47
 Lesson Review 2-50
 Lesson Summary 2-50

Case Scenario Exercise	2-51
Exam Highlights	2-54
Key Points	2-54
Key Terms.	2-55
Questions and Answers	2-56
3 Monitoring and Troubleshooting TCP/IP Connections	3-1
Before You Begin.	3-2
Lesson 1: Analyzing Traffic Using Network Monitor	3-3
Understanding Network Monitor	3-3
Exploring Network Monitor Components	3-4
How Network Monitor Works	3-6
Adding Parsers to Network Monitor.	3-12
Practice: Using Network Monitor.	3-13
Lesson Review	3-16
Lesson Summary	3-17
Lesson 2: Troubleshooting TCP/IP Connections	3-19
Faulty TCP/IP Configuration	3-19
Network Diagnostics	3-20
Troubleshooting Connections Using Ping and PathPing	3-23
Troubleshooting with Tracert.	3-25
Troubleshooting Using the ARP Tool	3-26
Practice: Running Network Diagnostics and Netdiag.	3-26
Lesson Review	3-30
Lesson Summary	3-31
Case Scenario Exercise	3-31
Exam Highlights	3-34
Key Points	3-34
Key Terms.	3-35
Questions and Answers	3-36
4 Configuring DNS Servers and Clients	4-1
Before You Begin.	4-2
Lesson 1: Understanding Name Resolution in Windows Server 2003	4-3
Comparing DNS and NetBIOS.	4-3
Disabling NetBIOS.	4-7
Practice: Capturing Name Resolution Traffic	4-8
Lesson Review	4-10
Lesson Summary	4-10

- Lesson 2: Understanding DNS in Windows Server 2003 Networks 4-12
 - Exploring DNS 4-12
 - DNS Components 4-14
 - Understanding How a DNS Query Works 4-16
 - Understanding How Caching Works 4-22
 - Lesson Review 4-24
 - Lesson Summary 4-25
- Lesson 3: Deploying DNS Servers 4-26
 - Installing the DNS Server Service 4-26
 - Configuring a DNS Server 4-27
 - Understanding Server Types 4-29
 - Creating Resource Records 4-31
 - Viewing and Clearing the DNS Server Cache 4-37
 - Practice: Installing a DNS Server 4-38
 - Lesson Review 4-42
 - Lesson Summary 4-43
- Lesson 4: Configuring DNS Clients 4-44
 - Configuring Client Settings 4-44
 - Configuring Dynamic Update Options 4-51
 - Default Client Update Behavior 4-52
 - Configuring TCP/IP Settings for DNS Clients 4-53
 - Viewing and Clearing the DNS Resolver Cache 4-54
 - Practice 1: Configuring a Primary DNS Suffix 4-55
 - Practice 2: Configuring a DNS Server to Perform Recursion 4-56
 - Lesson Review 4-59
 - Lesson Summary 4-59
- Case Scenario Exercise 4-60
- Troubleshooting Lab 4-61
- Exam Highlights 4-63
 - Key Points 4-63
 - Key Terms 4-64
- Questions and Answers 4-65

5 Implementing a DNS Infrastructure 5-1

- Before You Begin 5-2
- Lesson 1: Configuring DNS Server Properties 5-3
 - Exploring DNS Server Properties Tabs 5-3
 - Practice 1: Comparing NetBIOS and DNS Name Resolution Traffic 5-12
 - Practice 2: Verifying SRV Resource Records for Active Directory in DNS 5-14

Lesson Review	5-18
Lesson Summary	5-19
Lesson 2: Configuring Zone Properties and Transfers	5-20
Exploring DNS Zone Properties	5-20
Practice: Deploying a Secondary DNS Server	5-37
Lesson Review	5-40
Lesson Summary	5-42
Lesson 3: Configuring Advanced DNS Server Properties	5-43
Tuning Advanced Server Options	5-43
Lesson Review	5-52
Lesson Summary	5-55
Lesson 4: Creating Zone Delegations	5-56
Delegating Zones	5-56
Creating a Zone Delegation	5-59
Practice: Creating a Zone Delegation	5-59
Lesson Review	5-62
Lesson Summary	5-64
Lesson 5: Deploying Stub Zones	5-65
Understanding Stub Zones	5-65
Benefits of Stub Zones	5-66
When to Use Stub Zones	5-66
Stub Zone Updates	5-70
Practice: Deploying a Stub Zone	5-71
Lesson Review	5-72
Lesson Summary	5-73
Case Scenario Exercise	5-74
Troubleshooting Lab	5-76
Exam Highlights	5-78
Key Points	5-78
Key Terms	5-79
Questions and Answers	5-80
6 Monitoring and Troubleshooting DNS	6-1
Before You Begin	6-1
Lesson 1: Using DNS Troubleshooting Tools	6-3
Querying DNS with Nslookup	6-3
Viewing the DNS Events Log	6-9
DNS Debug Log	6-11
Practice: Using DNS Troubleshooting Tools	6-12

- Lesson Review 6-18
- Lesson Summary 6-19
- Lesson 2: Using DNS Monitoring Tools 6-20
 - Using Replication Monitor 6-20
 - Monitoring DNS Performance with System Monitor 6-24
- Lesson Review 6-27
- Lesson Summary 6-28
- Case Scenario Exercise 6-29
- Troubleshooting Lab 6-30
- Exam Highlights 6-32
 - Key Points 6-32
 - Key Terms 6-33
- Questions and Answers 6-34

- 7 Configuring DHCP Servers and Clients 7-1**
 - Before You Begin 7-2
 - Lesson 1: Configuring the DHCP Server 7-3
 - Benefits of DHCP 7-3
 - Installing the DHCP Server Service 7-4
 - Authorizing the Server 7-5
 - Configuring Scopes 7-6
 - Assigning DHCP Options 7-11
 - Activating a Scope 7-13
 - Configuring the Client 7-13
 - Verifying the Configuration 7-15
 - Practice: Installing and Configuring a DHCP Server 7-15
 - Lesson Review 7-20
 - Lesson Summary 7-21
 - Lesson 2: Managing DHCP in Windows Networks 7-22
 - Changing DHCP Server Status 7-22
 - Managing DHCP from a Command Line 7-24
 - Connecting Clients to Remote DHCP Servers 7-26
 - Using Superscopes 7-26
 - Changing the Addressing of a Subnet 7-30
 - Backing Up the DHCP Server Database 7-31
 - Manually Compacting a DHCP Server 7-33
 - Using Options Classes 7-34
 - Practice 1: Performing a Manual Backup of the DHCP Server 7-37
 - Practice 2: Creating a New Superscope 7-37

Lesson Review	7-39
Lesson Summary	7-40
Lesson 3: Configuring DHCP Servers to Perform DNS Updates.	7-41
Configuring Dynamic Updates with DHCP.	7-41
Lesson Review	7-45
Lesson Summary	7-46
Case Scenario Exercise	7-46
Troubleshooting Lab	7-48
Exam Highlights	7-50
Key Points	7-50
Key Terms.	7-50
Questions and Answers	7-51
8 Monitoring and Troubleshooting DHCP	8-1
Before You Begin.	8-2
Lesson 1: Analyzing DHCP Traffic.	8-3
Understanding How Clients Obtain Configuration	8-3
Practice: Analyzing DHCP Messages	8-14
Lesson Review	8-18
Lesson Summary	8-19
Lesson 2: Monitoring DHCP Through Audit Logging	8-20
Exploring DHCP Audit Logging.	8-20
Understanding DHCP Server Log File Format	8-22
Lesson Review	8-25
Lesson Summary	8-26
Lesson 3: Troubleshooting DHCP.	8-27
Verifying the Client Configuration	8-27
Verifying the Server Configuration.	8-32
Reconciling the DHCP Database.	8-34
Checking Event Viewer.	8-35
Lesson Review	8-37
Lesson Summary	8-38
Case Scenario Exercise	8-38
Troubleshooting Lab	8-40
Exam Highlights	8-41
Key Points	8-41
Key Terms.	8-42
Questions and Answers	8-43

9	Routing with Windows Server 2003	9-1
	Before You Begin	9-2
	Lesson 1: Configuring Windows Server 2003 for LAN Routing	9-3
	Understanding Routing	9-3
	Using Routing And Remote Access	9-4
	Using the Routing And Remote Access Console	9-5
	Configuring Routing And Remote Access Service Properties	9-7
	Managing General IP Routing Properties	9-12
	Working with Routing Tables	9-14
	Exploring LAN Routing Scenarios	9-18
	Understanding Static Routes	9-20
	Static Routing Design Considerations	9-25
	Practice: Enabling and Configuring Routing And Remote Access	9-25
	Lesson Review	9-26
	Lesson Summary	9-27
	Lesson 2: Configuring Demand-Dial Routing	9-28
	Configuring Demand-Dial Interfaces	9-28
	Deploying a Demand-Dial Router-to-Router Configuration	9-36
	Troubleshooting Demand-Dial Routing	9-37
	Practice: Configuring Demand-Dial Routing	9-38
	Lesson Review	9-43
	Lesson Summary	9-44
	Lesson 3: Configuring NAT	9-45
	Understanding NAT	9-45
	Troubleshooting NAT	9-48
	Practice: Installing and Configuring NAT	9-48
	Lesson Review	9-54
	Lesson Summary	9-56
	Lesson 4: Configuring and Managing Routing Protocols	9-57
	Understanding Routing Protocols	9-57
	Configuring RIP	9-58
	OSPF Overview	9-61
	Understanding DHCP Relay Agent	9-63
	Lesson Review	9-67
	Lesson Summary	9-67
	Lesson 5: Configuring Packet Filters	9-68
	Understanding Packet Filters	9-68
	Lesson Review	9-73
	Lesson Summary	9-74

Exam Highlights	9-78
Key Topics	9-78
Key Terms.	9-79
Questions and Answers	9-80
10 Configuring and Managing Remote Access	10-1
Before You Begin.	10-2
Lesson 1: Configuring Remote Access Connections	10-3
Using Dial-Up Networking.	10-3
Using Remote Access Client Addressing	10-4
Configuring Remote Access Authentication	10-7
Practice: Creating a Dial-Up Access Server	10-19
Lesson Review	10-22
Lesson Summary	10-23
Lesson 2: Authorizing Remote Access Connections.	10-24
Configuring Dial-In Properties of the User Account	10-24
Understanding Remote Access Policies.	10-27
Exploring Remote Access Authorization Scenarios	10-34
Troubleshooting Dial-Up Remote Access Connections.	10-39
Configuring Access Beyond the Remote Access Server.	10-40
Managing Remote Access Clients.	10-42
Practice: Deploying Remote Access	10-43
Lesson Review	10-47
Lesson Summary	10-48
Lesson 3: Implementing VPNs.	10-49
Understanding Virtual Private Networks	10-49
Troubleshooting Remote Access VPNs	10-55
Troubleshooting Router-to-Router VPNs	10-55
Configuring VPN Types	10-56
Practice: Configuring a VPN	10-61
Lesson Review	10-67
Lesson Summary	10-68
Lesson 4: Deploying the Internet Authentication Service	10-69
Exploring RADIUS Server Scenarios	10-69
Exploring RADIUS Proxy Scenarios	10-72
Deploying IAS as a RADIUS Server	10-74
Practice: Deploying a RADIUS Server	10-78
Lesson Review	10-81
Lesson Summary	10-81
Case Scenario Exercise	10-82

Troubleshooting Lab 10-83
Exam Highlights 10-84
 Key Topics 10-85
 Key Terms. 10-85
Questions and Answers 10-86

11 Managing Network Security 11-1

 Before You Begin. 11-2
 Lesson 1: Implementing Secure Network Administration Procedures 11-3
 Introducing Network Security Protocols 11-3
 Using Security Templates to Administer Network Security 11-4
 Understanding Security Template Settings That
 Affect Network Security 11-12
 Applying the Principle of Least Privilege. 11-13
 Practice: Creating and Using the Security Configuration
 And Analysis Console 11-14
 Lesson Review 11-22
 Lesson Summary 11-23
 Lesson 2: Monitoring Network Protocol Security 11-24
 Understanding IPSec 11-24
 Negotiation Configuration. 11-27
 Negotiation Process 11-28
 Understanding Kerberos 11-39
 Practice: Using Network Security Protocols 11-51
 Lesson Review 11-69
 Lesson Summary 11-70
 Lesson 3: Troubleshooting Network Protocol Security 11-71
 Problem 1: Making Your IPSec Policy Work 11-72
 Problem 2: Determining Whether Your IPSec
 Blocking Rules Are Working 11-73
 Problem 3: Determining Whether Kerberos Is Being
 Used for Authentication 11-74
 Practice 1: Troubleshoot IPSec with IPSec Monitor 11-74
 Practice 2: Troubleshoot Logon Issues with Network Monitor 11-77
 Practice 3: Use Event Logs for Troubleshooting 11-78
 Lesson Review 11-79
 Lesson Summary 11-81
 Troubleshooting Lab 11-82
 Exam Highlights 11-87
 Key Points 11-87
 Key Terms. 11-88
 Questions and Answers 11-89

12	Maintaining a Network Infrastructure	12-1
	Before You Begin	12-2
	Lesson 1: Monitoring Network Performance	12-3
	Using the Networking Tab in Task Manager	12-3
	Performance Console Differences	12-7
	Monitoring Network Traffic with Netstat	12-13
	Windows Server 2003 “Lite” and “Full” Network Monitor Tools	12-16
	Practice: Sampling Performance	12-17
	Lesson Review	12-19
	Lesson Summary	12-20
	Lesson 2: Troubleshooting Internet Connectivity	12-21
	Identifying the Specific Networking Issue	12-21
	Verifying the Computer’s Network Settings	12-24
	Bridging Multiple Networks	12-26
	Practice: Verifying the Configuration of DNS Forwarding	12-28
	Lesson Review	12-28
	Lesson Summary	12-30
	Lesson 3: Troubleshooting Server Services	12-31
	Diagnosing and Resolving Issues Related to Service Dependency	12-31
	Using Service Recovery Options to Diagnose and Resolve Service-Related Issues	12-33
	Practice: Configuring Services	12-38
	Lesson Review	12-39
	Lesson Summary	12-40
	Case Scenario Exercise	12-40
	Exam Highlights	12-42
	Key Points	12-42
	Key Terms	12-43
	Questions and Answers	12-44

Part 2 Prepare for the Exam

13	Implementing, Managing, and Maintaining IP Addressing (1.0)	13-1
	Tested Skills and Suggested Practices	13-2
	Further Reading	13-4
	Objective 1.1: Configure TCP/IP Addressing on a Server Computer	13-6
	Objective 1.2: Manage DHCP	13-15
	Objective 1.3: Troubleshoot TCP/IP Addressing	13-27
	Objective 1.4: Troubleshoot DHCP	13-35

14	Implementing, Managing, and Maintaining Name Resolution (2.0)	14-1
	Tested Skills and Suggested Practices	14-2
	Further Reading	14-3
	Objective 2.1: Install and Configure the DNS Server Service.	14-5
	Objective 2.2: Manage DNS	14-17
	Objective 2.3: Monitor DNS	14-28
15	Implementing, Managing, and Maintaining Network Security (3.0)	15-1
	Tested Skills and Suggested Practices	15-2
	Further Reading	15-4
	Objective 3.1: Implement Secure Network Administration Procedures	15-5
	Objective 3.2: Install and Configure Software Update Infrastructure	15-16
	Objective 3.3: Monitor Network Protocol Security.	15-20
	Objective 3.4: Troubleshoot Network Protocol Security	15-29
16	Implementing, Managing, and Maintaining Routing And Remote Access (4.0)	16-1
	Tested Skills and Suggested Practices	16-2
	Further Reading	16-4
	Objective 4.1: Configure Routing And Remote Access User Authentication.	16-7
	Objective 4.2: Manage Remote Access.	16-19
	Objective 4.3: Manage TCP/IP Routing	16-26
	Objective 4.4: Provide Secure Access Between Private Networks	16-33
	Objective 4.5: Troubleshoot Client Access to Remote Access Services	16-38
	Objective 4.6: Troubleshoot Routing and Remote Access Routing	16-44
17	Maintaining a Network Infrastructure (5.0)	17-1
	Tested Skills and Suggested Practices	17-1
	Further Reading	17-3
	Objective 5.1: Monitor Network Traffic.	17-4
	Objective 5.2: Troubleshoot Connectivity to the Internet	17-11
	Objective 5.3: Troubleshoot Server Services	17-16
	Glossary.	G-1
	Index	I-1