Contents

Foreword		xxvii
Chapter 1 What	t's New in Exchange 2000	1
Introduction		2
Product Versi	ions and Components	2
Exchange	2000 Server	3
Exchange	2000 Enterprise Server	4
Exchange	2000 Conferencing Server	4
Overview of F	`eatures	4
Windows	2000 and Active Directory Integration	5
Windo	ws 2000 Security	5
Active	Directory Connector	5
Micros	oft Management Console Integration	6
Using	the Help Files	8
Server Fe	atures	8
Multip	le Information Stores	8
Transa	action Logs	9
	able File System	10
	eb Store	10
	e Groups and Multiple Message Stores	11
-	le Public Folder Trees	14
On-De	mand Content Conversion	14
	Settings for Information Stores	15
Cluste		15
	nd Networking Features	15
	Routing of Messages between Servers	16
	ation with Internet Information Services	16
	ved System Monitoring of Exchange	16
1	ge Restrictions to Reduce Spamming	17
Client Fea		17
	sed Protocol Support	18
	ok 2000 and Outlook for Macintosh 8.2.2	18
	ing the Exchange Store from Microsoft Office and	
Win32	-Compliant Utilities	19

Accessing the Exchange Store from Browsers	19
Searching the Exchange Store Faster	20
Development Changes and Features	20
Application Development	21
OLE DB 2.5 Support	21
Utilization of Web Store Content in Web Sites	21
Event Modeling and Workflow Improvements	21
Advanced Concepts and Implementations	21
Instant Messaging	22
Chat Services	22
Data and Video Conferencing	22
Conferencing and Real-Time	
Communication Clients	23
Application Service Provider and	
Internet Service Provider Solutions	23
Exchange 2000 Resource Requirements	23
Exchange 2000 Resource	
Minimum Requirements	24
Exchange 2000 Resource	
Recommended Requirements	24
Exchange 2000 Licensing	25
Summary	25
FAQs	26
Chapter 2 Active Directory Integration	
with Exchange 2000	29
Introduction	30
Why Use Exchange 2000 on Active Directory	30
The Role of Active Directory in Exchange 2000	32
Exchange Server's Need for a Directory Service	32
Understanding Active Directory Architecture	32
Hierarchical Structure	33
Domain Trees	34
Organizational Unit Tree Structure	36
Global Catalog	37
Storage	39
Internet Standard Protocols	42
Domain Name System	42
Lightweight Directory Access Protocol (LDAP)	45
Kerberos Version 5	46
Replication	46
Policies	49
Working with the Architectural Details	49
How Exchange Connects to Active Directory	52
Administrative Tools	53

Certification Authority

Windows 2000 and Exchange 2000 Internal Security

Digital Envelopes

NT LAN Manager

Secure Networking

Client Access

Protocols

χV

103

103

104

105

106 106

107

Kerberos	109
Secure Sockets Layer	111
Certificates	112
Delegation in Exchange	116
Integrating Roles	116
Separating Roles	116
Permissions	117
Administration Delegation Wizard	117
Roles	118
Levels of Administration	119
IPSec	121
Security Policies	122
Account Policies	123
Group Policy	124
IP Security Policies	125
Firewalls	125
Firewall Strategies and Exchange 2000	127
Firewall Placement	127
Firewall Administration	131
Configuring Client Security	131
Securing Outlook	131
Encrypting File System	131
Securing Web Browsers	133
User Authentication	133
Encryption	136
Implementing a Smart-Card Environment	138
Authentication	139
Interactive Logon	139
Logon Request	139
Offline Logon	140
Smart Cards and Exchange 2000 Security	140
Summary	141
FAQs	142
Chapter 4 Basic Administration	145
Introduction	146
Exchange Administration Tools	149
Active Directory Users and Computers	150
Exchange System Manager	152
Administering Users, Contacts, and Groups	153
Administering User Accounts	155
Creating Mailbox-Enabled User Accounts	155
Configuring User Account Properties	157
Mailbox-Enabling an Existing User Account	167

	Contents
Administering Contacts	168
Creating Mail-Enabled Contacts	168
Administering Groups in Exchange 2000	171
Considering Administrative and Routing Groups	171
Managing Security and Distribution Groups	173
Mail-Enabling an Existing Security Group	177
Administering Exchange Server	179
Configuring Exchange Global Settings	180
Administering Address Lists	181
Managing Online Address Lists	182
Default Address Lists	182
Creating Custom Address Lists	184
Editing and Removing Address Lists	184
Setting Client Permissions for Online Address Lists	186
Managing Offline Address Lists	187
Creating Offline Address Lists	187
Editing and Removing Offline Address Lists	189
Rebuilding Offline Address Lists	189
Customizing Address Book Templates	190
Managing Policies on Exchange 2000	191
Administering System Policies	192
Configuring Server Policy	192
Configuring Mailbox Store Policy	194
Configuring Public Store Policy	197
Administering Recipient Policies	198
Creating a New Recipient Policy	199
Changing Recipient Policy Priority	200
Forcing Recipient Policy Updates	201
Administering Exchange Server Protocols	201
Configuring SMTP Virtual Servers	203
Configuring IMAP4 and POP3 Virtual Servers	207
Managing Exchange Data Storage	207
Administering Mailbox Stores	207
Administering Public Folders	212
Maintaining Public Folder Store	212
Managing Connectors	213
Configuring Routing Group Connectors	214
Configuring SMTP Connectors	216
X400 Connectors	218
Connectors to Foreign Systems	218
Summary	219
FAQs	220

xvii

Chapter 5 Client Access to Exchange 2000 for E-Mail	223
Introduction	224
Physical Access	224
Local Area Networks	226
Wide Area Networks	227
Dial-Up Connections	228
Virtual Private Networks	230
VPN Authentication and Encryption	
Protocol Considerations	231
VPN Security Considerations	234
Using Windows 2000 Routing and	
Remote Access Servers	237
Clients	237
MAPI Clients	238
Outlook 2000	240
Outlook 98	252
Outlook Web Access Clients	252
Migrating from Exchange 5.5 OWA	255
Outlook Web Access Authentication	256
Exchange Server Placement	259
Internet Explorer, Version 5	262
Netscape Navigator	263
POP3 and IMAP4 Clients	264
Migrating a POP3 Client to Use	004
Exchange 2000 Server	264
Outlook Express	264
Netscape Navigator Mail Eudora	266
LDAP Clients	267 268
	268 268
LDAP Background Outlook Express LDAP	270
Troubleshooting	270
Stuck in the Middle of the Outbox	271
The Missing Files	272
POP3 Oddities	273
User Misunderstanding	273
Attachments	273
Protocol Logging	$\frac{274}{274}$
Summary	275
FAQs	276
Chapter 6 Deploying Exchange 2000 Server Introduction	279
Green Field Deployment	280 281
Preparing Active Directory	281
reparing active Directory	201

Using ForestPrep	282
Preparing Your Domains	285
Using DomainPrep	285
Deploying Servers Running Exchange 2000	287
Establishing the First Administrative Group	287
Deploying Exchange Using Terminal Services	288
Deploying Support for Multiple Languages	289
Deploying Exchange on a Windows 2000 Cluster	290
Unattended Installation	291
Deploying Exchange System Manager	292
Upgrading from Previous Versions of Exchange	292
Upgrading the Directories to Active Directory	293
When to Consolidate before Deploying	297
Tools Used to Upgrade the Windows NT 4.0 SAM	298
Using the Active Directory Migration Tool	298
Tools Used to Upgrade the Exchange	
Server 5.5 Directory	299
Using the Active Directory Connector	299
Site Replication Service	305
Using the Active Directory Account Cleanup Wizard	306
Directory Upgrade Scenarios	307
Using the In-Place Upgrade Method	307
Upgrade Using ADMT then ADC	308
ADC then In-Place Upgrade then ADClean	309
Upgrade Using ADC then ADMT then ADClean	312
Directory Upgrade Considerations	314
When to Require a Native Mode Domain	315
How to Successfully Use Universal Groups	316
Upgrading the Messaging Environment	317
Performing an In-Place Upgrade	318
Performing a Move-Mailbox Upgrade	318
Using the Leapfrog Method	319
Moving to a New Organization	321
Using the Exchange Mailbox Migration Program	321
Upgrading Supporting Servers	321
Upgrading Connector Servers	322
Upgrading Client Access Using Front-end Servers	323
Testing Your Scenario	323
Summary	324
FAQs	327
Chapter 7 Defending Exchange 2000 from Attack	329
Introduction	330
What Are the Potential Threats to Exchange 2000?	330
Unsolicited Commercial E-Mail	331
Carolina Commission II IIIII	

Contents

xix

Considering Defense Strategies	332
Setting Policy	332
Educating Users	333
Protecting the Message Store	334
Physical Security	334
Antivirus Protection for Exchange	334
Vendor Solutions	338
Client-Side Protection	341
Protecting the Workstation	341
Protecting the Outlook Client	341
Microsoft Outlook Security Patch	343
Vendor Solutions	345
Firewall and Gateway Strategies	346
Point of Entry Protection	347
Handling Inbound UCE	347
Vendor Solutions	348
Preventing Unwanted SMTP Mail Relay	349
Configuring SMTP Protocol Logging	351
Hosting	352
Managing Exchange 2000 Security	352
Summary	353
FAQs	354
Chapter 9 Peal Time Communication	
Chapter 8 Real-Time Communication in Exchange 2000	355
Introduction	356
The Value of Instant Messaging to Your Business	356
Architecture	357
MSN Messenger Service	357
Exchange 2000 Instant Messaging Client	357
Exchange 2000 Instant Messaging Cheft Exchange 2000 Instant Messaging Server	358
Before You Install Your Instant Messaging Servers	360
Implementing Instant Messaging Servers	361
User Administration	363
	365
	365
Client Configuration	505
Troubleshooting	
Troubleshooting Using Chat Services	366
Troubleshooting Using Chat Services Implementing Chat Services	366 366
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation	366 366 367
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation Client-Side Configuration	366 366 367 370
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation Client-Side Configuration Troubleshooting Chat	366 366 367 370 370
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation Client-Side Configuration Troubleshooting Chat Can Conferencing Server Keep Your Travel Budget Down?	366 366 367 370 370 372
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation Client-Side Configuration Troubleshooting Chat Can Conferencing Server Keep Your Travel Budget Down? Background	366 366 367 370 370 372 373
Troubleshooting Using Chat Services Implementing Chat Services Server-Side Installation Client-Side Configuration Troubleshooting Chat Can Conferencing Server Keep Your Travel Budget Down?	366 366 367 370 370 372

	Contents	xxi
Joining and Managing Conferences	376	
Installing Exchange Conferencing Server	379	
Configuration	380	
Server Side Configuration	381	
Client-Side Configuration	387	
Troubleshooting	391	
More Information	394	
Summary	394	
FAQs	395	
Chapter 9 Application Service Providers	397	
Introduction	398	
Defining Application Service Providers	398	
ASP Definitions	398	
ASP Messaging Service Models	400	
Dedicated Service Model	400	
Shared Service Model	400	
Hosting Services Using Exchange 2000		
and Active Directory	401	
Using Exchange 2000 to Host Basic Messaging	401	
Using Exchange 2000 to Host Premium Messaging	402	
Using Exchange 2000 to Host Basic Web Messaging Using Exchange 2000 to Host	402	
Premium Web Messaging	402	
Hosting Other Services Integrated		
with Exchange 2000 and Active Directory	403	
Exchange 2000 Conferencing Server	403	
Exchange 2000 Instant Messaging	403	
Custom Applications	403	
Third-Party Add-ons	403	
Architecture for Shared Hosting	404	
Architectural Overview	404	
DMZ	404	
Back-end Servers	407	
Scaling Exchange 2000 and Active Directory	409	
Planning and Configuring the Active Directory		
and Exchange 2000 Hosting Infrastructure	410	
Windows 2000 and Active Directory	411	
Forest and Domains	411	
Domain Controllers and Global Catalogs	411	
User Identification	411	
Creating Organizational Units	413	
Configuring Security Groups	413	
Securing Organization Units	414	

Configuring Exchange 2000	417
Configuring Front-end Exchange 2000 Servers	417
Configuring Recipient Policies	417
Configuring SMTP Connectors	420
Configuring Address Lists	421
Configuring POP3/IMAP4	426
Configuring HTTP	426
Configuring Storage Groups	429
Security Considerations	430
Additional Resources	430
Summary	430
FAQs	431
Chapter 10 Is Your Backup and Restore Really Working?	433
Introduction	434
Exchange 2000 Architecture Overview	434
Database Components	434
Transaction Logging	435
Internet Information Server	436
Certificate Authority/Key Management Server	437
Site Replication Service	437
Exchange 2000 Back Up Basics	438
Online Backups	438
Offline Backups	438
Exchange 2000 Restore Basics	438
Restoring Individual Mailboxes	440
Tools and Products to Back Up Your Exchange 2000 Data	441
NTBackup	441
Third-Party Backup Products	442
ExMerge Utility	443
Mailbox Recovery and Deleted Item Recovery	443
Types of Backup Procedures	443
Normal Backups	444
Differential Backups	445
Incremental Backups	445
Copy Backups	445
When to Back Up	446
Preventing Data Loss: What to Back Up and Why	447
Types of Data to Back Up	447
Types of Losses	448
Planning Data Loss Prevention and Recovery	450
Backup Devices	450
Tape Library	450
Local Tape Drives	451
Backup to a File	451

Best Practices for Backups and Restores	451
Test Your Backups Monthly	451
Consider Services Related to Exchange	452
Keep Half Your Database Drive Space Free	452
Keep an Eye on the Backup Logs	452
Keep an Eye on the Event Logs	452
Document Your Exchange Network	454
Have Components in a Central Location	454
Have Backup Hardware Standing By	454
Store Backup Tapes at a Safe Offsite Location	455
Implementing Backup	455
Using NTBackup to Back Up Exchange Databases	455
Using NTBackup for Other Exchange Databases	457
Backing Up Other Services	457
Internet Information Services	457
Certificate Authority	458
Using ExMerge to Back Up Mailboxes	458
Test Your Backups	459
Implementing Restore Scenarios	460
Restoring an Exchange 2000 Server	460
Performing a Full Restore	460
Restoring a Corrupted Database	460
Restoring the KMS and CA Databases	462
Restoring the Site Replication Service	462
Restoring the Active Directory	463
Deleted Mailbox Recovery	464
Deleted Item Recovery	464
From Brick-Level Backup	465
From ExMerge	465
From a Complete Database Restore	465
Restoring an Exchange Connector	467
Troubleshooting	468
Understanding the LegacyExchangeDN Identifier	468
Backup Problems	470
Corrupted Database	470
Errors in the Backup Log	471
Summary	471
FAQs	472
Chapter 11 Clustering Your Exchange 2000 Server	473
Introduction	474
Understanding Cluster Service and NLBS	475
What Is Microsoft Cluster Service?	476
What Is Network Load Balancing?	476

Contents

xxiii

Architecture	478
Cluster Service Basics	478
Quorum Drives	479
Networking Details	480
Resource Groups	480
The Failover Process	482
Exchange 2000 Cluster Basics	484
Network Load Balance Basics	485
Advanced Exchange Clustering	489
Active/Active Clusters	490
Datacenter Server	493
Planning Your Exchange Cluster	495
When to Use Clustering	495
When Not to Use Clustering	496
Database Corruption	496
Service Startup Time	496
Load Balancing Information Stores	497
Database Maintenance	497
Extra Work	497
Capacity Planning	497
Exceed Storage Group Limit During Failure	499
The Failback Option	500
Using Cluster Utilities	500
Installing an Exchange Cluster	501
Building a New Windows 2000 Cluster	501
Installing Exchange 2000 on a Cluster	509
How to Upgrade from an Exchange 5.5 Cluster	515
How to Install and Configure Network Load Balancing	518
Troubleshooting	518
Database Corruption	518
Quorum Drive Failure	519
Accidentally Stopping an Exchange Service	519
Summary	520
FAQs	521
Chapter 12 Basic Monitoring and Troubleshooting	
Methodology	523
Introduction	524
Basic Troubleshooting Methodology for Exchange 2000	526
Wait and Refresh	526
Know Your Services	526
Event Viewer Logs	529
Diagnostic Logging	530
Monitoring Services and Objects	531
Monitoring octaices and Objects	551

	Contents
Message Stores and Storage Groups	535
Message Stores and Storage Group Architecture	535
Information Stores	535
Transaction Logs	536
Reserve Logs	537
Storage Groups and Multiple Message Stores	538
Multiple Public Folder Trees	541
Problems with Databases, Storage Groups,	
and Public Folder Trees	541
Isinteg	542
Eseutil	545
Message Flow and Routing	548
Message Flow and Routing Architecture	549
Delivering a Message Within the Same Server	549
Delivering a Message Within the Same Routing Group	551
Delivering a Message to a Different Routing Group	553
Problems with Message Flow and Routing	555
Message Tracking Center	555
Queues Viewer	558
Protocol Logging	562
WinRoute	565
Message Flow Guidelines.	566
Summary	570
FAQs	571
Appendix A TCP and UDP Ports	573
Appendix B Physical Networking and	
VPN Protocol Details	577
Physical Networking	578
Types of Connections via Remote Access Servers	580
Analog	580
DSL	582
ISDN	583
VPN Protocol Details	586
IPSec	586
PPTP	587
L2TP	588
Index	591

XXV