Microsoft® Exchange Server 2010
Administrator’s Pocket Consultant

William R. Stanek
### Contents

**Acknowledgments**  
**Introduction**

**Chapter 1  Exchange Server 2010 Administration Overview**  
Exchange Server 2010 and Your Hardware  
Exchange Server 2010 Editions  
Exchange Server and Windows  
Services for Exchange Server  
Exchange Server Authentication and Security  
Exchange Server Security Groups  
Exchange Server and Active Directory  
Understanding How Exchange Stores Information  
Understanding How Exchange Routes Messages  
Using the Graphical Administration Tools  
Using the Command-Line Administration Tools

**Chapter 2  Deploying Exchange Server 2010**  
Exchange Server Messaging Roles  
Understanding Exchange Server Messaging Roles  
Deploying Mailbox Servers: The Essentials  
Deploying Client Access Servers: The Essentials  
Deploying Unified Messaging Servers: The Essentials  
Deploying Transport Servers: The Essentials  
Integrating Exchange Server Roles with Active Directory  
Using Hub Transport Servers with Active Directory  
Using Client Access Servers with Active Directory  
Using Unified Messaging Servers with Active Directory

---

What do you think of this book? We want to hear from you!  
Microsoft is interested in hearing your feedback so we can continually improve our books and learning resources for you. To participate in a brief online survey, please visit:  
[msft.com/learning/booksurvey]
Running and Using Cmdlets .......................... 95
Running and Using Other Commands and Utilities .. 96
Working with Cmdlets ................................... 97
Using Windows PowerShell Cmdlets ................. 97
Using Cmdlet Parameters .............................. 100
Understanding Cmdlet Errors ......................... 101
Using Cmdlet Aliases .................................. 101
Using the Exchange Management Shell ............. 103
Logging Exchange Management Console Commands 103
Running and Using the Exchange Management Shell 104
Working with Exchange Cmdlets ..................... 115
Working with Object Sets and Redirecting Output .... 116

Chapter 5  User and Contact Administration ........ 117
Understanding Users and Contacts ................... 117
Understanding the Basics of E-Mail Routing ........... 119
Managing User Accounts and Mail Features ........... 120
  Configuring the Exchange Control Panel ........... 120
  Accessing and Using the Exchange Control Panel ... 121
  Finding Existing Mailboxes, Contacts, and Groups .. 126
  Creating Mailbox-Enabled and Mail-Enabled User Accounts .... 128
  Understanding Logon Names and Passwords .......... 128
  Adding Mailboxes to Existing Domain User Accounts 140
  Setting or Changing the Display Name and Logon Name for User Accounts ... 142
  Setting or Changing Contact Information for User Accounts .... 143
  Changing a User’s Exchange Server Alias and Display Name ...... 143
  Adding, Changing, and Removing E-Mail Addresses ... 144
  Setting a Default Reply-To Address for a User Account ... 145
  Changing a User’s Web, Wireless Service, and Protocol Options ... 146
  Requiring User Accounts to Change Passwords .... 147
  Deleting Mailboxes from User Accounts .......... 148
  Deleting User Accounts and Their Mailboxes ...... 148
Managing Contacts ......................................................... 149
Creating Mail-Enabled Contacts 150
Mail-Enabling Existing Contacts 152
Setting or Changing a Contact’s Name and Alias 153
Setting Additional Directory Information for Contacts 153
Changing E-Mail Addresses Associated with Contacts 154
Disabling Contacts and Removing Exchange Attributes 155
Deleting Contacts 155

Chapter 6  Mailbox Administration  157
Creating Special-Purpose Mailboxes ................................. 157
Using Room and Equipment Mailboxes 158
Creating Room and Equipment Mailboxes 160
Creating Linked Mailboxes 162
Creating Forwarding Mailboxes 165
Creating Archive Mailboxes 166
Creating Arbitration Mailboxes 167
Creating Discovery Mailboxes 168
Creating Shared Mailboxes 169

Managing Mailboxes: The Essentials ............................... 169
Viewing Current Mailbox Size, Message Count,
and Last Logon 170
Setting Alternate Mailbox Display Names for
Multilanguage Environments 172
Hiding Mailboxes from Address Lists 172
Defining Custom Mailbox Attributes for Address Lists 173

Moving Mailboxes .......................................................... 173
Moving Mailboxes: The Essentials 173
Performing Online Mailbox Moves 175

Configuring Mailbox Delivery Restrictions, Permissions,
and Storage Limits ....................................................... 182
Setting Message Size Restrictions for Contacts 182
Setting Message Size Restrictions on Delivery to
and from Individual Mailboxes 182
Setting Send and Receive Restrictions for Contacts 183
Setting Message Send and Receive Restrictions
on Individual Mailboxes 183
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitting Others to Access a Mailbox</td>
<td>184</td>
</tr>
<tr>
<td>Forwarding E-Mail to a New Address</td>
<td>186</td>
</tr>
<tr>
<td>Setting Storage Restrictions on an Individual Mailbox</td>
<td>187</td>
</tr>
<tr>
<td>Setting Deleted Item Retention Time on Individual Mailboxes</td>
<td>189</td>
</tr>
</tbody>
</table>

## Chapter 7  Working with Distribution Groups and Address Lists  191

Using Security and Distribution Groups. .......................... 191
- Group Types, Scope, and Identifiers .............................. 191
- When to Use Security and Standard Distribution Groups .......... 193
- When to Use Dynamic Distribution Groups ........................ 194

Working with Security and Standard Distribution Groups ........... 195
- Creating Security and Standard Distribution Groups ........... 195
- Assigning and Removing Membership for Individual Users, Groups, and Contacts 200
- Adding and Removing Managers ........................................ 202
- Configuring Member Restrictions and Moderation .................. 203

Working with Dynamic Distribution Groups ........................... 205
- Creating Dynamic Distribution Groups ............................... 205
- Changing Query Filters ................................................ 209
- Changing Filter Conditions .......................................... 209
- Designating an Expansion Server .................................... 210
- Modifying Dynamic Distribution Groups .............................. 210
  Using Cmdlets ................................................................... 210
- Previewing Dynamic Distribution Group Membership .............. 212

Other Essential Tasks for Managing Groups ............................... 212
- Changing a Group’s Name Information ................................ 212
- Changing, Adding, or Deleting a Group’s E-Mail Addresses .......... 213
- Hiding Groups from Exchange Address Lists .......................... 214
- Setting Usage Restrictions on Groups ................................ 214
- Setting Message Size Restrictions for Delivery to Groups ........ 215
- Setting Out-of-Office and Delivery Report Options for Groups ... 216
- Deleting Groups ........................................................... 216
Managing Online Address Lists ........................................ 217
  Using Default Address Lists 217
  Creating and Applying New Address Lists 218
  Configuring Clients to Use Address Lists 222
  Updating Address List Configuration and Membership Throughout the Domain 222
  Editing Address Lists 223
  Renaming and Deleting Address Lists 224

Managing Offline Address Books ................................. 225
  Creating Offline Address Books 225
  Configuring Clients to Use an Offline Address Book 228
  Assigning a Time to Rebuild an Offline Address Book 229
  Rebuilding Offline Address Books Manually 229
  Setting the Default Offline Address Book 230
  Changing Offline Address Book Properties 230
  Changing the Offline Address Book Server 231
  Deleting Offline Address Books 232

Chapter 8  Implementing Exchange Server 2010 Security 233
  Configuring Standard Permissions for Exchange Server .......... 233
    Assigning Exchange Server Permissions to Users, Contacts, and Groups 234
    Understanding the Exchange Management Groups 235
    Assigning Standard Exchange Management Permissions 239
    Understanding Advanced Exchange Server Permissions 240
    Assigning Advanced Exchange Server Permissions 242
  Configuring Role-Based Permissions for Exchange Server ........ 244
    Understanding Role-Based Permissions 244
    Creating and Managing Role Groups 249
    Viewing, Adding or Removing Role Group Members 253
    Assigning Roles Directly or via Policy 254
    Performing Advanced Permissions Management 259
  Auditing Exchange Server Usage ................................. 268
    Using Auditing 268
    Configuring Auditing 268
**Chapter 9  Managing Data and Database Availability Groups**

Navigating the Information Store ........................................... 277
Using Databases ..................................................................... 278
Understanding Database Structures ........................................ 279
Improving Availability .............................................................. 282
Introducing Active Manager .................................................... 285
Creating and Managing Database Availability Groups ............. 287
Creating Database Availability Groups ..................................... 287
Managing Availability Group Membership .............................. 292
Managing Database Availability Group Networks ..................... 295
Configuring Database Availability Group Properties ................ 301
Removing Servers from a Database Availability Group .............. 303
Removing Database Availability Groups .................................... 304
Switching over Servers and Databases ..................................... 304

**Chapter 10  Mailbox and Public Folder Database Administration**

Working with Active Mailbox Databases ................................. 311
Understanding Mailbox Databases ......................................... 312
Creating Mailbox Databases .................................................... 313
Setting the Default Public Folder Database and Default Offline Address Book ........................................ 316
Setting Mailbox Database Limits and Deletion Retention .......... 317
Recovering Deleted Mailboxes ................................................. 321
Recovering Deleted Items from Mailbox Databases ................... 322
Working with Mailbox Database Copies .................. 323
  Creating Mailbox Database Copies 324
  Setting Replay, Truncation, and Preference Values for Database Copies 327
  Suspending and Resuming Replication 327
  Updating Mailbox Database Copies 329
  Monitoring Database Replication Status 333
  Removing Database Copies 337

Using Public Folder Databases ......................... 338
  Understanding Public Folder Databases 338
  Creating Public Folder Databases 338
  Setting Public Folder Database Limits 340
  Configuring Public Folder Replication 343
  Configuring Public Folder Referrals 345
  Recovering Deleted Items from Public Folder Databases 347

Managing Mailbox and Public Folder Databases ........ 348
  Mounting and Dismounting Databases 348
  Setting the Maintenance Interval 352
  Moving Databases 353
  Renaming Databases 355
  Deleting Databases 355

Chapter 11  Accessing and Managing Public Folders 357

Accessing Public Folders ............................... 357
  Accessing Public Folders in Mail Clients 358
  Accessing Public Folders Through the Information Store 359

Creating and Working with Public Folders ............. 363
  Creating Public Folders in Microsoft Outlook 363
  Creating Public Folders Using the Public Folder Management Console 364
  Creating Public Folders Using the Exchange Management Shell 365
  Determining Public Folder Size, Item Count, and Last Access Time 366
  Adding Items to Public Folders Using Outlook 368
Managing Public Folder Settings ........................................ 372
Controlling Folder Replication, Messaging Limits, Quotas, and Deleted Item Retention 372
Setting Client Permissions 373
Granting and Revoking Send As Permissions for Public Folders 376
Propagating Public Folder Settings and Data 377
Manipulating, Renaming, and Recovering Public Folders 378

Chapter 12 Managing Hub Transport and Edge Transport Servers 381
Working with SMTP Connectors, Sites, and Links ............ 382
Connecting Source and Destination Servers 382
Viewing and Managing Active Directory Site Details 383
Viewing and Managing Active Directory Site Link Details 385
Creating Send Connectors 387
Viewing and Managing Send Connectors 392
Configuring Send Connector DNS Lookups 394
Setting Send Connector Limits 395
Creating Receive Connectors 397
Viewing and Managing Receive Connectors 403
Connecting to Exchange 2003 Routing Groups 407
Completing Transport Server Setup ................................. 409
Configuring the Postmaster Address and Mailbox 409
Configuring Transport Limits 410
Configuring the Transport Dumpster 411
Configuring Shadow Redundancy 413
Enabling Anti-Spam Features 414
Subscribing Edge Transport Servers 416
Configuring Journal Rules 423
Configuring Transport Rules 425
Managing Message Pickup, Replay, Throttling, and Back Pressure .................................................. 430
Understanding Message Pickup and Replay 430
Configuring and Moving the Pickup and Replay Directories 431
Changing the Message Processing Speed ........................................... 432
Configuring Messaging Limits for the Pickup Directory .................. 433
Configuring Message Throttling .................................................. 434
Understanding Back Pressure ..................................................... 435
Creating and Managing Accepted Domains .................................. 436
  Understanding Accepted Domains, Authoritative Domains, and Relay Domains 436
  Viewing Accepted Domains ..................................................... 437
  Creating Accepted Domains ................................................... 438
  Changing the Accepted Domain Type and Identifier ....................... 440
  Removing Accepted Domains ................................................ 441
Creating and Managing E-Mail Address Policies ........................... 441
  Viewing E-Mail Address Policies ............................................ 442
  Creating E-Mail Address Policies ........................................... 443
  Editing and Applying E-Mail Address Policies ............................ 446
  Removing E-Mail Address Policies .......................................... 448
Creating and Managing Remote Domains .................................... 448
  Viewing Remote Domains ..................................................... 448
  Creating Remote Domains ................................................... 449
  Configuring Messaging Options for Remote Domains .................... 451
  Removing Remote Domains .................................................. 453
Configuring Anti-Spam and Message Filtering Options ................. 453
  Filtering Spam and Other Unwanted E-Mail by Sender .................. 453
  Filtering Spam and Other Unwanted E-Mail by Recipient ............... 455
  Filtering Connections with IP Block Lists ................................ 456
  Defining Block List Exceptions and Global Allow/Block Lists .......... 460
  Preventing Internal Servers from Being Filtered ....................... 464

Chapter 13 Managing Client Access Servers .................................. 467
Managing Web and Mobile Access ............................................. 467
  Using Outlook Web App and Exchange ActiveSync with IIS ............ 468
Chapter 14  Exchange Server 2010 Maintenance, Monitoring, and Queuing 531

Understanding Troubleshooting Basics ........................... 531
Performing Tracking and Logging Activities in an
Organization .............................................................. 535
Using Message Tracking 535
Using Protocol Logging 541
Using Connectivity Logging 547

Monitoring Events, Services, Servers, and Resource Usage ........................................... 549
Viewing Events 549
Managing Essential Services 552
Monitoring Exchange Messaging Components 554
Using Performance Alerting 556

Working with Queues .................................................. 561
Understanding Exchange Queues 561
Accessing the Queue Viewer 563

Managing Queues ....................................................... 564
Understanding Queue Summaries and Queue States 564
Refreshing the Queue View 565
Working with Messages in Queues 566
Forcing Connections to Queues 567
Suspending and Resuming Queues 567
Deleting Messages from Queues 567

Chapter 15  Backing Up and Restoring Exchange Server 2010 569

Understanding the Essentials of Exchange Server Availability and Recovery .................... 569
Ensuring Data Availability 570
Backing Up Exchange Server: The Basics 572
Creating a Disaster Recovery Plan Based on Exchange Roles 574
Finalizing Your Exchange Server Disaster Recovery Plan 575
Choosing Backup and Recovery Options 577
Performing Backup and Recovery on Windows Server 2008 ........................................ 579
Getting Started with Windows Server Backup 579
Backing Up Exchange Server on Windows Server 2008 580
Performing a Full Server Recovery 583
Recovering Exchange Server 585
Performing Additional Backup and Recovery Tasks ............ 590
Using the Recover Server Mode 590
Cloning Edge Transport Server Configurations 592
Mounting Mailbox Databases on Alternate Servers 593

Chapter 16  Managing Exchange Server 2010 Clients  595
Configuring Mail Support for Outlook and Windows Live Mail ........................................ 597
Understanding Offline Address Books and Autodiscover 597
Configuring Outlook for the First Time 598
Configuring Windows Live Mail for the First Time 603
Configuring Outlook for Exchange 605
Adding Internet Mail Accounts to Outlook and Windows Live Mail 605
Repairing and Changing Outlook Mail Accounts 606
Leaving Mail on the Server with POP3 ......................... 608
Leaving Mail on the Server: Outlook 608
Leaving Mail on the Server: Windows Live Mail 610
Checking Private and Public Folders with IMAP4 and UNIX Mail Servers .............................. 610
Checking Folders: Outlook 610
Checking Folders: Windows Live Mail 611
Managing the Exchange Server Configuration in Outlook ........................................ 612
Managing Delivery and Processing E-Mail Messages 612
Accessing Multiple Exchange Server Mailboxes 616
Granting Permission to Access Folders Without Delegating Access 618
Acknowledgments

To Scott Schnoll, Darcy Jayne, Patricia Eddy, and the Microsoft Exchange team—you know why, and thank you!

Something wonderful and unexpected happened during the writing of this book, and I wanted to share this “happening” with readers. So here goes. When I began my research for Microsoft Exchange Server 2010 Administrator’s Pocket Consultant back in 2008, I had no idea how challenging this project would be. To say that Exchange Server 2010 is completely different from its predecessors is a considerable understatement. Exchange Server 2010 represents a massive, top-to-bottom overhaul of Exchange Server. Every corner of Exchange Server has been tweaked, updated, or replaced entirely. In fact, I’ll go so far as to say that Exchange Server 2010 seems more like an entirely different product than a new release of Exchange Server.

Exchange Server has evolved into a comprehensive messaging and collaboration platform that is completely integrated with Active Directory and fully scalable to meet the needs of the most demanding environments. What’s more, just about every facet of Exchange Server 2010 is completely customizable, and many of the customizations can be performed only from the command line. With literally thousands of customizations and an extensive role-based architecture that can easily span multiple servers even in small businesses, the challenge in writing a day-to-day administrator’s guide to Exchange Server 2010 lay in figuring out the best approach to organizing the material as well as in identifying essential information so that I could provide you with the critical details in one portable, precise, and concise guide.

I’ve been writing about Exchange Server professionally since 1999. My first Exchange Server book was published in 2000, and I’ve since written several others on Exchange 2003 and Exchange 2007. But I’ve never had the Exchange team get behind a book 100 percent, and that’s what happened here. Not only did the Exchange team get behind the book, but team members Scott Schnoll, Darcy Jayne, and Patricia Eddy spent many hours providing deep technical insights and offering suggestions for improving the book. Scott and Darcy in particular were extremely helpful. Although we didn’t always agree, I am certain our meeting of the minds made for a much better book. Indeed, no one anywhere knows more about Exchange Server than the team that created it. If I am in some way considered an Exchange guru, these folks are truly Exchange deities. So I want to thank the Exchange team for their helpful insights and suggestions.

With that in mind, I had to carefully review the text, making sure I organized the material appropriately, focused on the core topics, and included all the tips, tricks,
and techniques you’ve come to expect from Pocket Consultants. The result is the book you hold in your hand, which I hope you’ll agree is one of the best practical, portable guides to Exchange Server 2010.

As I’ve stated in other books, the team at Microsoft Press is top-notch. On this project, I worked with Carol Vu, Karen Szall, Martin DelRe, and others. Everyone was great to work with and very supportive of my unique approach to this book. Martin DelRe in particular believed in the book from the beginning and was really great to work with. Completing and publishing the book wouldn’t have been possible without their help!

Unfortunately for the writer (but fortunately for readers), writing is only one part of the publishing process. Next came editing and author review. I must say, Microsoft Press has the most thorough editorial and technical review process I’ve seen anywhere—and I’ve written a lot of books for many different publishers. John Pierce was the project editor, Roger LeBlanc was the copy editor, and Todd Meister was the technical reviewer. A good experience, and thank you!

I would also like to thank Martin and everyone else at Microsoft who has helped at many points of my writing career and been there when I needed them the most. Thank you also for shepherding my many projects through the publishing process!

I hope I haven’t forgotten anyone, but if I have, it was an oversight. Honest. ;-)
Microsoft Exchange Server 2010 Administrator’s Pocket Consultant is designed to be a concise and compulsively usable resource for Exchange Server 2010 administrators. This is the readable resource guide that you’ll want on your desk at all times. The book covers everything you need to perform the core administrative tasks for Exchange Server 2010, whether your servers are running on Windows Server 2008 or Windows Server 2008 R2. Because the focus of this book is on giving you maximum value in a pocket-size guide, you don’t have to wade through hundreds of pages of extraneous information to find what you’re looking for. Instead, you’ll find exactly what you need to get the job done.

In short, this book is designed to be the one resource you turn to whenever you have questions regarding Exchange Server 2010 administration. To this end, the book zeroes in on daily administrative procedures, frequently performed tasks, documented examples, and options that are representative although not necessarily inclusive. One of the goals is to keep the content so concise that the book remains compact and easy to navigate while at the same time ensuring that the book is packed with as much information as possible—making it a valuable resource. Thus, instead of a hefty 1,000-page tome or a lightweight 100-page quick reference, you get a valuable resource guide that can help you quickly and easily perform common tasks, solve problems, and implement advanced Exchange Server 2010 technologies such as EdgeSync subscriptions, database availability groups, Outlook Anywhere, SMTP connectors, and Active Directory site links.

Who Is This Book For?

Microsoft Exchange Server 2010 Administrator’s Pocket Consultant covers the Standard and Enterprise editions of Exchange Server 2010. The book is designed for the following readers:

- Current Exchange Server 2010 administrators
- Current Windows administrators who want to learn Exchange Server 2010
- Administrators upgrading to Exchange Server 2010 from Exchange 2007
- Administrators upgrading to Exchange Server 2010 from Exchange 2003
- Administrators transferring from other messaging servers
- Managers and supervisors who have been delegated authority to manage mailboxes or other aspects of Exchange Server 2010

To pack in as much information as possible, I had to assume that you have basic networking skills and a basic understanding of e-mail and messaging servers. With this in mind, I don’t devote entire chapters to explaining why e-mail systems are needed or how they work. I don’t devote entire chapters to installing Exchange Server 2010 either. I do, however, provide complete details on the components of
Exchange organizations and how you can use these components to build a fully redundant and highly available messaging environment. You will also find complete details on all the essential Exchange administration tasks.

I also assume that you are fairly familiar with Windows Server. If you need help learning Windows Server, I highly recommend that you buy Windows Server 2008 Administrator’s Pocket Consultant or Windows Server 2008 Inside Out.

How Is This Book Organized?

Microsoft Exchange Server 2010 Administrator’s Pocket Consultant is designed to be used in the daily administration of Exchange Server 2010. As such, the book is organized by job-related tasks rather than by Exchange Server 2010 features. If you are reading this book, you should be aware of the relationship between Pocket Consultants and Administrator’s Companions. Both types of books are designed to be part of an administrator’s library. Pocket Consultants are the down-and-dirty, in-the-trenches books, while Administrator’s Companions are the comprehensive tutorials and references that cover every aspect of deploying a product or technology in the enterprise.

Speed and ease of reference are essential parts of this hands-on guide. The book has an expanded table of contents and an extensive index for finding answers to problems quickly. Many other quick reference features have been added as well. These features include quick step-by-step instructions, lists, tables with fast facts, and extensive cross-references.

The first two chapters provide an overview of Exchange servers and Exchange clients. Chapter 1 provides an overview of Exchange Server 2010 administration concepts, tools, and techniques. Chapter 2 discusses deploying Exchange Server.

Next I cover the fundamental tasks you need for Exchange Server administration. Chapter 3 details how Exchange environments are organized, how information is stored in Exchange Server, and how Exchange Server works. The chapter also explores Exchange message queues and Exchange Server service management. Chapter 4 discusses Windows PowerShell and the Exchange Management Shell, providing the essential background for using these powerful command-line environments for Exchange Server administration. Chapter 5 takes a look at creating and managing users and contacts. You'll learn all about Exchange aliases, enabling and disabling exchange mail for individual users, forwarding mail off-site, and more. Chapter 6 discusses mailbox administration, including techniques for configuring special-purpose resource mailboxes, moving mailboxes, and configuring mailbox delivery restrictions. In Chapter 7, you’ll find a detailed discussion of how to use distribution groups and address lists. You’ll also learn how to manage these resources. Chapter 8 covers how to implement Exchange security.

In the next several chapters, I discuss advanced tasks for managing and maintaining Exchange organizations. Chapter 9 provides the essentials for managing
database availability groups and using full-text indexing. Chapter 10 examines administration of mailbox and public folder databases. The chapter also covers how to recover disconnected mailboxes and deleted messaging items. Chapter 11 looks at how you can use public folders in the enterprise.


In Chapter 14, you’ll learn about troubleshooting essentials as well as Exchange maintenance, monitoring, and queuing. You’ll learn key techniques for using message tracking, protocol logging, and connectivity logging for troubleshooting. You’ll also learn techniques for automated monitoring and managing Exchange message queues—both of which can help ensure that your Exchange organization runs smoothly. Chapter 15 details how to back up and restore Exchange Server. You’ll learn key techniques that can help you reliably back up and, more important, recover Exchange Server in case of failure.

Chapter 16 covers Exchange client setup and management, and Chapter 17 extends the Exchange client discussion and looks at mobile Microsoft Office Outlook users as well as Exchange Active Sync, Outlook Web App, and Outlook Anywhere. With more and more users working on the road or from home, this chapter helps ensure that you can give these mobile users the best support possible.

**Conventions Used in This Book**

I’ve used a variety of elements to help keep the text clear and easy to follow. You’ll find code terms and listings in monospace type, except when I tell you to actually type a command. In that case, the command appears in bold type. When I introduce and define a new term, I put it in italics.

Other conventions include:

- **Best Practices** To examine the best technique to use when working with advanced configuration and administration concepts.
- **Cautions** To warn you of potential problems you should look out for.
- **More Info** To provide more information on the subject.
- **Notes** To provide details on a point that needs emphasis.
Real World  To provide real-world advice when discussing advanced topics.
Security Alerts  To point out important security issues.
Tips  To offer helpful hints or additional information.

I truly hope you find that *Microsoft Exchange Server 2010 Administrator’s Pocket Consultant* provides everything you need to perform essential administrative tasks as quickly and efficiently as possible. You’re welcome to send your thoughts to me at williamstanek@aol.com, or visit http://www.williamstanek.com/. Thank you.

Support for This Book

Every effort has been made to ensure the accuracy of this book. As corrections or changes are collected, they will be added to a Microsoft Knowledge Base article accessible via the Microsoft Help and Support site. Microsoft Press provides support for books, including instructions for finding Knowledge Base articles, at the following Web site:

http://www.microsoft.com/learning/support/books/

If you have questions regarding the book that are not answered by visiting the site above or viewing a Knowledge Base article, send them to Microsoft Press via e-mail to mspinput@microsoft.com.

Please note that Microsoft software product support is not offered through these addresses.

We Want to Hear from You

We welcome your feedback about this book. Please share your comments and ideas via the following short survey:

http://www.microsoft.com/learning/booksurvey

Your participation will help Microsoft Press create books that better meet your needs and your standards.

**NOTE**  We hope that you will give us detailed feedback via our survey. If you have questions about our publishing program, upcoming titles, or Microsoft Press in general, we encourage you to interact with us via Twitter at http://twitter.com/MicrosoftPress. For support issues, use only the e-mail address shown above.
If you thought Microsoft Exchange Server 2007 was a radical departure from its predecessors, wait till you get acquainted with Microsoft Exchange Server 2010. Exchange Server 2010 completely redefines the Exchange Server messaging platform, and right up front you should know that Exchange Server 2010 does away with the concepts of storage groups, Local Continuous Replication (LCR), Single Copy Clusters (SCC), and clustered mailbox servers.

In previous releases of Exchange Server, you used storage groups to group mailbox and public folder databases into logical units of management. In Exchange Server 2010, databases are no longer associated with storage groups. For mailbox databases, database availability groups can now be used to group databases for high availability, and mailbox databases are managed at the organization level instead of at the server level. For public folder databases, database management has been moved to the organization level, but the functionality hasn’t changed from how it was implemented in Exchange Server 2007.

To support these and other changes, relevant storage group functionality has been moved to the database level. Further, mailbox databases are now peers to servers in Active Directory. The Exchange store schema has been changed to remove the dependency of mailbox databases on server objects, and this reduces the Exchange store’s reliance on secondary indexes maintained by the Extensible Storage Engine (ESE).
Exchange Server 2010 integrates high availability into the core architecture by enhancing aspects of Cluster Continuous Replication (CCR) and Standby Continuous Replication (SCR) and combining them into a single high-availability solution for both on-site and off-site data replication. Exchange Server 2010 also provides for automatic failover and recovery without requiring clusters when you deploy multiple mailbox servers. Because of these changes, building a high-availability mailbox server solution no longer requires cluster hardware or advanced cluster configuration. Instead, database availability groups provide the base component for high availability. Failover is automatic for mailbox databases that are part of the same database availability group.

The rules for database availability groups are simple. Each mailbox server can have multiple databases, and each database can have as many as 16 copies. A single database availability group can have up to 16 mailbox servers that provide automatic database-level recovery. Any server in a database availability group can host a copy of a mailbox database from any other server in the database availability group.

This seamless high-availability functionality is made possible because Exchange Server 2010 disconnects mailbox databases from servers and assigns the same globally unique identifier (GUID) to all copies of a mailbox database. Because storage groups no longer exist, continuous replication occurs at the database level. Transaction logs are replicated to each member of a database availability group that has a copy of a mailbox database and are replayed into the copy of the mailbox database. Failover can occur at either the database level or the server level.

Although I discuss the architectural and administrative impact of these extensive changes throughout this and other chapters of this book, you need to know this information up front because it radically changes the way you implement and manage your Exchange organization. Why? With these changes, you might not need to use Redundant Arrays Of Inexpensive Disks (RAID) for your Exchange data and you might not need to ever perform routine backups of your Exchange data. Although these are radical ideas, they are possible—especially if you implement data-retention rules as necessary for regulatory compliance and remember to rotate Exchange data to off-site storage periodically to ensure that you are protected in extreme disaster recovery scenarios.

As you get started with Exchange Server 2010, you should concentrate on the following areas:

- How Exchange Server 2010 works with your hardware
- What versions and editions of Exchange Server 2010 are available, and how they meet your needs
- How Exchange Server 2010 works with Windows–based operating systems
- How Exchange Server 2010 works with Active Directory
- What administration tools are available
Exchange Server 2010 and Your Hardware

Before you deploy Exchange Server 2010, you should carefully plan the messaging architecture. As part of your implementation planning, you need to look closely at preinstallation requirements and the hardware you will use. Exchange Server is no longer the simple messaging server that it once was. It is now a complex messaging platform with many components that work together to provide a comprehensive solution for routing, delivering, and accessing e-mail messages, voice-mail messages, faxes, contacts, and calendar information.

Successful Exchange Server administration depends on three things:

- Knowledgeable Exchange administrators
- Strong architecture
- Appropriate hardware

The first two ingredients are covered: you’re the administrator, you’re smart enough to buy this book to help you through the rough spots, and you’ve enlisted Exchange Server 2010 to provide your high-performance messaging needs. This brings us to the issue of hardware. Exchange Server 2010 should run on a system with adequate memory, processing speed, and disk space. You also need an appropriate data-protection and system-protection plan at the hardware level.

Key guidelines for choosing hardware for Exchange Server are as follows:

- **Memory** Exchange Server 2010 has been tested and developed for maximum memory configurations of 64 gigabytes (GB) for Mailbox servers and 16 GB for all other server roles except Unified Messaging. For Unified Messaging, the maximum is 8 GB. For multirole servers, the maximum is 64 GB. The minimum random access memory (RAM) is 2 GB. In most cases, you’ll want to have at least twice the recommended minimum amount of memory. The primary reason for this is performance. Most of the Exchange installations I run use 4 GB of RAM as a starting point, even in small installations. In multiple Exchange server installations, the Mailbox server should have at least 2 GB of RAM plus 5 megabytes (MB) of RAM per mailbox. For all Exchange server configurations, the paging file should be at least equal to the amount of RAM in the server plus 10 MB.

- **CPU** Exchange Server 2010 runs on the x64 family of processors from AMD and Intel, including AMD64 and Intel Extended Memory 64 Technology (Intel EM64T). Exchange Server 2010 provides solid benchmark performance with Intel Xeon 3.4 GHz and higher or AMD Opteron 3.1 GHz and higher. Any of these CPUs provide good starting points for the average Exchange Server system. You can achieve significant performance improvements with a high level of processor cache. Look closely at the L1, L2, and L3 cache options available—a higher cache can yield much better performance overall. Look also at the speed of the front-side bus. The faster the bus speed, the faster the CPU can access memory.
Exchange Server 2010 runs only on 64-bit hardware. The primary advantages of 64-bit processors over 32-bit processors are related to memory limitations and data access. Because 64-bit processors can address more than 4 GB of memory at a time without physical address extension, they can store greater amounts of data in main memory, providing direct access to and faster processing of data. In addition, 64-bit processors can process data and execute instruction sets that are twice as large as 32-bit processors. Accessing 64 bits of data (versus 32 bits) offers a significant advantage when processing complex calculations that require a high level of precision.

**NOTE** At the time of this writing, 64-bit versions do not support Intel Itanium.

- **SMP** Exchange Server 2010 supports symmetric multiprocessors, and you’ll see significant performance improvements if you use multiple CPUs. Microsoft tested and developed Exchange Server 2010 for use with dual-core and multicore CPUs as well. The minimum, recommended, and maximum number of CPUs—whether single core, dual core, or multicore—depends on a server’s Exchange roles. (See the “Exchange Server Messaging Roles” section in Chapter 2, “Deploying Exchange Server 2010.”) Still, if Exchange Server is supporting a small organization with a single domain, one CPU with multiple cores should be enough. If the server supports a medium or large organization or handles mail for multiple domains, you might want to consider adding processors. When it comes to processor cores, I prefer two 4-core processors to a single 8-core processor given current price and performance tradeoffs. An alternative is to distribute the workload across different servers based on where you locate resources.

- **Disk drives** The data storage capacity you need depends entirely on the number and size of the data that will pass through, be journaled on, or stored on the Exchange server. You need enough disk space to store all data and logs, plus workspace, system files, and virtual memory. Input/output (I/O) throughput is just as important as drive capacity. Rather than use one large drive, you should use several drives, which allow you to configure fault tolerance with RAID.

- **Data protection** You can add protection against unexpected drive failures by using RAID. For the boot and system disks, use RAID 1 on internal drives. However, because of the new high-availability features, you might not want to use RAID for Exchange data and logs. You also might not want to use expensive disk storage systems either. Instead, you might want to deploy multiple Exchange servers with each of your Exchange roles. If you decide to use RAID, remember that storage arrays typically already have an underlying RAID configuration and you might have to use a tool such as Storage Manager For SANs to help you distinguish between logical unit numbers (LUNs) and physical disks. For data, use RAID 0 or RAID 5.
For logs, use RAID 1. RAID 0 (disk striping without parity) offers good read/write performance, but any failed drive means that Exchange Server can’t continue operation on an affected database until the drive is replaced and data is restored from backup. RAID 1 (disk mirroring) creates duplicate copies of data on separate drives; you can rebuild the RAID unit to restore full operations and can continue operations if one of the drives fails. RAID 5 (disk striping with parity) offers good protection against single drive failure, but it has poor write performance. For best performance and fault tolerance, RAID 10 (also referred to as RAID 0 + 1), which consists of disk mirroring and disk striping without parity, is also an option.

- **Uninterruptible power supply** Exchange Server 2010 is designed to maintain database integrity at all times and can recover information using transaction logs. This doesn’t protect the server hardware, however, from sudden power loss or power spikes, both of which can seriously damage hardware. To prevent this, connect your server to an uninterruptible power supply (UPS). A UPS gives you time to shut down the server or servers properly in the event of a power outage. Proper shutdown is especially important on servers using write-back caching controllers. These controllers temporarily store data in cache. Without proper shutdown, this data can be lost before it is written to disk. Note that most write-back caching controllers have batteries that help ensure that changes can be written to disk after the system comes back online.

If you follow these hardware guidelines and modify them for specific messaging roles, as discussed in the next section, you’ll be well on your way to success with Exchange Server 2010.

**Exchange Server 2010 Editions**

Several editions of Exchange Server 2010 are available, including Exchange Server 2010 Standard and Exchange Server 2010 Enterprise. The various server editions support the same core features and administration tools, which means you can use the techniques discussed throughout this book regardless of which Exchange Server 2010 edition you are using. For reference, the specific feature differences between Standard Edition and Enterprise Edition are as follows:

- **Exchange Server 2010 Standard** Designed to provide essential messaging services for small to medium-size organizations and branch office locations. This server edition supports a limited number of databases.

- **Exchange Server 2010 Enterprise** Designed to provide essential messaging services for organizations with increased availability, reliability, and manageability needs. This server edition supports up to 100 databases (including all active databases and copies of databases) on a particular server.
NOTE Throughout this book, I refer to Exchange Server in different ways, and each has a different meaning. Typically, I refer to the software product as Exchange Server. If you see this term, you can take it to mean Microsoft Exchange Server 2010. When necessary, I use Exchange Server 2010 to draw attention to the fact that I am discussing a feature that’s new or has changed in the most recent version of the product. Each of these terms means essentially the same thing. If I refer to a previous version of Exchange Server, I always do so specifically, such as Exchange Server 2007. Finally, I often use the term Exchange server (note the lowercase s in server) to refer to an actual server computer, as in “There are eight Exchange servers in this routing group.”

REAL WORLD Microsoft provides a single binary for x64 systems, and the same binary file is used for both the Standard and Enterprise edition. The license key provided during installation is what determines which edition is established during installation.

You can use a valid product key to upgrade from a trial edition to the Standard edition or the Enterprise edition of Exchange Server 2010 without having to reinstall. Using a valid product key, you can also upgrade from the Standard to the Enterprise edition. You can also relicense an Exchange server by entering a new product key for the installed edition, which is useful if you accidentally used the same product key on multiple servers and want to correct the mistake.

There are several caveats. When you change the product key on a Mailbox server, you must restart the Microsoft Exchange Information Store service to apply the change. When you change the product key on an Edge Transport server, you must resubscribe the server in the Exchange organization to apply the change. Additionally, you cannot use product keys to downgrade editions. To downgrade editions, you must uninstall Exchange Server and then reinstall Exchange Server.

You can install Exchange Server 2010 on a server running Windows Server 2008 with Service Pack 2 or later as well as on a server running Windows Server 2008 Release 2. A client accessing an Exchange server requires a Client Access License (CAL). With either Exchange Server edition, the client can use a Standard CAL, an Enterprise CAL, or both. The Standard CAL allows for the use of e-mail, shared calendaring, contacts, task management, Microsoft Outlook Web App (OWA), and Exchange ActiveSync. The Enterprise CAL allows for the use of unified messaging, advanced compliance capabilities, and antivirus/antispam protection. A client must have both a Standard CAL and an Enterprise CAL to make full use of all Exchange Server features.

Beyond the editions and CALs, Exchange Server 2010 has several variants. Microsoft offers on-premises and online implementations of Exchange Server. An on-premises Exchange Server is one that you install in your organization. An online Exchange Server is delivered as a subscription service from Microsoft. In Exchange Server 2010, you can manage both on-premises and online implementations of Exchange Server using the same management tools.
When you install Exchange Server 2010, the system partition and all disk partitions used by Exchange must be formatted using the NTFS file system. Additional preinstallation requirements are as follows:

- In the Active Directory forest where you plan to install Exchange 2010, the Schema master must be running on a server with Windows Server 2003 or a later version of Windows and Active Directory must be in at least Windows Server 2003 forest functionality mode.

- In every Active Directory site where you plan to install Exchange 2010, you must have at least one global catalog server that is running Windows Server 2003 or a later version of Windows.

- For forest-to-forest delegation and free/busy availability selection across forests, you must establish a trust between the forests that have Exchange Server installed.

- The domain should be configured to use multiple-label Domain Name System (DNS) names, such as cpandl.com or adatum.local, rather than single-label DNS names, such as cpandl or adatum. However, single label names can be used.


Exchange Server 2010 requires Microsoft Management Console 3.0 or later, the Microsoft .NET Framework version 3.5.1, and Windows PowerShell Version 2.0 for the Exchange Management Shell and remote management. The Windows PowerShell remoting features are supported by the WS-Management protocol and the Windows Remote Management (WinRM) service that implements WS-Management in Windows. Computers running Windows 7 and Windows Server 2008 Release 2 and later include WinRM 2.0 or later. On computers running earlier versions of Windows, you need to install Windows Management Framework, which includes Windows PowerShell 2.0 and WinRM 2.0 or later as appropriate. Other prerequisites are role-specific and discussed in Chapter 2.

If you want to manage Exchange Server 2010 from a workstation, you need to install Windows Management Framework. Because WinRM 2.0 and Windows PowerShell 2.0 are used for remote management whether you use the GUI or the command line, you need to enable remote commands on the workstation.

You can verify the availability of WinRM 2.0 and configure Windows PowerShell for remoting by following these steps:

1. Click Start, All Programs, Accessories, Windows PowerShell. Start Windows PowerShell as an administrator by right-clicking the Windows PowerShell shortcut and selecting Run As Administrator.
2. The WinRM service is configured for manual startup by default. You must change the startup type to Automatic and start the service on each computer you want to work with. At the PowerShell prompt, you can verify that the WinRM service is running by using the following command:

```
get-service winrm
```

As shown in the following example, the value of the Status property in the output should be Running:

<table>
<thead>
<tr>
<th>Status</th>
<th>Name</th>
<th>DisplayName</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running</td>
<td>WinRM</td>
<td>Windows Remote Management</td>
</tr>
</tbody>
</table>

If the service is stopped, enter the following command to start the service and configure it to start automatically in the future:

```
set-service –name winrm –startuptype automatic –status running
```

3. To configure Windows PowerShell for remoting, type the following command:

```
Enable-PSRemoting –force
```

You can only enable remoting when your computer is connected to a domain or private network. If your computer is connected to a public network, you need to disconnect from the public network and connect to a domain or private network and then repeat this step. If one or more of your computer’s connections has the Public connection type, but you are actually connected to a domain or private network, you need to change the network connection type in Network And Sharing Center and then repeat this step.

In many cases, you will be able to work with remote computers in other domains. However, if the remote computer is not in a trusted domain, the remote computer might not be able to authenticate your credentials. To enable authentication, you need to add the remote computer to the list of trusted hosts for the local computer in WinRM. To do so, type the following:

```
winrm s winrm/config/client '@{TrustedHosts="RemoteComputer"}';
```

where `RemoteComputer` is the name of the remote computer, such as:

```
winrm s winrm/config/client '@{TrustedHosts="CorpServer56"}';
```

When you are working with computers in workgroups or homegroups, you must use HTTPS as the transport or add the remote machine to the TrustedHosts configuration settings. If you cannot connect to a remote host, verify that the service on the remote host is running and is accepting requests by running the following command on the remote host:

```
winrm quickconfig
```
This command analyzes and configures the WinRM service. If the WinRM service is set up correctly, you'll see output similar to the following:

```
WinRM already is set up to receive requests on this machine.
WinRM already is set up for remote management on this machine
```

If the WinRM service is not set up correctly, you see errors and need to respond affirmatively to several prompts that allow you to automatically configure remote management. When this process completes, WinRM should be set up correctly.

Whenever you use Windows PowerShell remoting features, you must start Windows PowerShell as an administrator by right-clicking the Windows PowerShell shortcut and selecting Run As Administrator. When starting Windows PowerShell from another program, such as the command prompt (cmd.exe), you must start that program as an administrator.

Exchange Server 2010 uses the Windows Installer (the Installer) and has a fully integrated installation process. This means you can configure Exchange Server 2010 much like you can any other application you install on the operating system. The installation can be performed remotely from a command shell as well as locally.

Chapter 2 provides detailed instructions for installing Exchange Server 2010. With an initial installation, Windows Installer first checks the system configuration to determine the status of required services and components. As part of this process, Windows Installer checks the Active Directory configuration and the availability of components, such as IIS (Internet Information Services), as well as operating system service packs, installation permissions for the default install path, memory, and hardware.

After checking the system configuration, the Installer allows you to select the roles to install. Whether you use the Standard or Enterprise edition, you have similar options. You can do any of the following:

- Install an internal messaging server by selecting the individual server roles to install and combining the Mailbox role, Client Access role, Hub Transport role, and Unified Messaging role as required for your environment. Generally, you will not want an internal Exchange server to also be configured as a domain controller with a global catalog.

  **NOTE** For details on how the various server roles are used, see Chapter 2, which also provides guidelines for sizing and positioning the various server roles. Before you install the Client Access role on servers with the Mailbox role, you'll want to consider whether you want to use client access arrays. A client access array is a grouping of client access servers in a load balanced array. Servers that are members of the array cannot have the Mailbox role.

- Install a Messaging server in a perimeter zone outside the organization's main network by selecting only the Edge Transport role. Edge Transport servers are not members of the internal Active Directory forest and are not
configured on domain controllers. They can, however, be members of an extranet Active Directory forest, which is useful for management purposes.

- Install the management tools.
- Specify the path for the Exchange Server installation files.
- Specify the path for the Exchange Server installation.

If you want to change the configuration after installation, you can use Exchange Server 2010 maintenance mode, as discussed in the "Adding, Modifying, or Uninstalling Server Roles" section in Chapter 2.

Exchange Server 2010 includes the following antispam and antivirus capabilities:

- **Connection filtering**  Allows administrators to configure IP Block lists and IP Allow lists, as well as providers who can supply these lists.
- **Content filtering**  Uses intelligent message filtering to scan message content and identify spam. Spam can be automatically deleted, quarantined, or filed as junk e-mail.

**TIP**  Using the Exchange Server management tools, administrators can manage messages sent to the quarantine mailbox and take appropriate actions, such as deleting messages, flagging them as false positives, or allowing them to be delivered as junk e-mail. Messages delivered as junk e-mail are converted to plain text to strip out any potential viruses they might contain.

- **IP reputation service**  Provides Exchange Server 2010 customers with exclusive access to an IP Block list provided by Microsoft.
- **Outlook Junk E-mail Filter list aggregation**  Allows the junk e-mail filter lists of individual Outlook users to be propagated to Exchange servers.
- **Recipient filtering**  Allows administrators to replicate recipient data from the enterprise to the server running the Edge Transport role. This server can then perform recipient lookups on incoming messages and block messages that are for nonexistent users, which prevents certain types of attacks and malicious attempts at information discovery.
- **Sender ID verification**  Verifies that incoming e-mail messages are from the Internet domain from which they claim to come. Exchange verifies the sender ID by examining the sender’s IP address and comparing it to the related security record on the sender’s public DNS server.
- **Sender reputation scoring**  Helps to determine the relative trustworthiness of unknown senders through sender ID verification and by examining message content and sender behavior history. A sender can then be added temporarily to the Blocked Senders list.

Although these antivirus and antispam features are extensive, they are not comprehensive in scope. For comprehensive antivirus protection, you need to install Forefront Protection for Exchange Server. Forefront Protection for Exchange Server helps protect Exchange servers from viruses, worms, and other malware using
multiple antivirus scan engines and file-filtering capabilities. Forefront Protection provides distributed protection for Exchange servers with the Mailbox server, Hub Transport server, and Edge Transport server roles. Although you can install Forefront Protection on Exchange servers with these roles to gain substantial antivirus protection, you do not need to install Forefront Protection on Exchange servers with only the Client Access server or Unified Messaging server role.

You can use the Forefront Protection Setup program to install the server and management components. The management components include the Forefront Server Security Administration Console and the Forefront Management Shell. When you are working with the console, you can configure the way real-time and scheduled scanning for viruses and spyware works. In the shell, you’ll find Forefront-specific cmdlets for performing similar tasks.

Exchange Server and Windows

When you install Exchange Server and Forefront Protection for Exchange Server on a server operating system, Exchange Server and Forefront Protection make extensive modifications to the environment. These modifications include new system services, integrated authentication, and new security groups.

Services for Exchange Server

When you install Exchange Server and Forefront Protection for Exchange Server on Windows, multiple services are installed and configured on the server. Table 1-1 provides a summary of key services, how they are used, and which server components they are associated with.

<table>
<thead>
<tr>
<th>SERVICE NAME</th>
<th>DESCRIPTION</th>
<th>SERVER ROLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIS Admin</td>
<td>Enables the server to administer the IIS metabase. The IIS metabase stores configuration information for Web applications used by Exchange. All roles need IIS for WinRM and remote Powershell. CAS needs IIS for OWA and Web services</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange Active Directory Topology</td>
<td>Provides Active Directory topology information to Exchange services. If this service is stopped, most Exchange services will not be able to start.</td>
<td>Hub Transport, Mailbox, Client Access, Unified Messaging</td>
</tr>
<tr>
<td>SERVICE NAME</td>
<td>DESCRIPTION</td>
<td>SERVER ROLE</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Microsoft Exchange Anti-Spam Update</td>
<td>Maintains the antispam data for Forefront Protection on an Exchange server.</td>
<td>Hub Transport, Edge Transport</td>
</tr>
<tr>
<td>Microsoft Exchange EdgeSync</td>
<td>Provides EdgeSync services between Hub and Edge servers.</td>
<td>Hub Transport</td>
</tr>
<tr>
<td>Microsoft Exchange File Distribution</td>
<td>Distributes Exchange data to other Exchange servers.</td>
<td>All</td>
</tr>
<tr>
<td>Microsoft Exchange Forms Based Authentication</td>
<td>Provides form-based authentication for Outlook Web App and the Web management interface.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange IMAP4</td>
<td>Provides IMAP4 services to clients.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange Information Store</td>
<td>Manages the Microsoft Exchange Information Store. This includes mailbox stores and public folder stores.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Mail Submission</td>
<td>Submits messages from the Mailbox server to the Hub Transport servers.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Mailbox Assistants</td>
<td>Manages assistants that are responsible for calendar updates and booking resources.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Mailbox Replication</td>
<td>Enables online mailbox moves by processing mailbox move requests.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange Monitoring</td>
<td>Provides support for monitoring and diagnostics.</td>
<td>All</td>
</tr>
<tr>
<td>Microsoft Exchange POP3</td>
<td>Provides Post Office Protocol version 3 (POP3) services to clients.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange Protected Service Host</td>
<td>Provides secure host for Exchange Server services.</td>
<td>All</td>
</tr>
<tr>
<td>Microsoft Exchange Replication Service</td>
<td>Provides replication functionality used for continuous replication.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange RPC Client Access</td>
<td>Manages client remote procedure call (RPC) connections for Exchange Server.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Microsoft Exchange Search Indexer</td>
<td>Controls indexing of mailboxes to improve search performance.</td>
<td>Mailbox</td>
</tr>
</tbody>
</table>
**TABLE 1-1** Summary of Key Services Used by Exchange Server 2010

<table>
<thead>
<tr>
<th>SERVICE NAME</th>
<th>DESCRIPTION</th>
<th>SERVER ROLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Exchange Server Extension for Windows Server Backup</td>
<td>Provides extensions for Windows Server Backup that allow you to backup and recover Exchange application data using Windows Server Backup.</td>
<td>All</td>
</tr>
<tr>
<td>Microsoft Exchange Service Host</td>
<td>Provides a host for essential Exchange services.</td>
<td>All</td>
</tr>
<tr>
<td>Microsoft Exchange Speech Engine</td>
<td>Provides speech processing services for Microsoft Exchange. If this service is stopped, speech recognition services will not be available to unified messaging clients.</td>
<td>Unified Messaging</td>
</tr>
<tr>
<td>Microsoft Exchange System Attendant</td>
<td>Provides monitoring, maintenance, and Active Directory lookup services.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Throttling</td>
<td>Provides throttling functions to limit the rate of user operations.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Transport</td>
<td>Provides mail transport for Exchange Server.</td>
<td>Hub Transport, Edge Transport</td>
</tr>
<tr>
<td>Microsoft Exchange Transport Log Search</td>
<td>Provides search capability for Exchange transport log files.</td>
<td>Hub Transport, Mailbox</td>
</tr>
<tr>
<td>Microsoft Exchange Unified Messaging</td>
<td>Enables voice and fax messages to be stored in Exchange and gives users telephone access to e-mail, voice mail, the calendar, contacts, or an automated attendant.</td>
<td>Unified Messaging</td>
</tr>
<tr>
<td>Microsoft Forefront Server Protection ADO/EWS Navigator</td>
<td>Navigates the objects in Active Directory for Forefront Protection by connecting with Exchange Web Services (EWS) or Exchange ActiveX Data Objects (ADO) to retrieve objects.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Microsoft Forefront Server Protection Controller</td>
<td>Controls the interaction between Forefront Protection and the Microsoft Exchange Information Store. Ensures that Forefront Protection initializes properly with the information store. The Microsoft Forefront Server Security Controller starts and stops scan jobs and applies engine updates.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Service Name</td>
<td>Description</td>
<td>Server Role</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Microsoft Forefront Server Security Eventing Service</td>
<td>Processes incidents, and manages quarantine logging, performance logging, and notifications.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Microsoft Forefront Server Security for Exchange Registration Service</td>
<td>Ensures the Forefront Transport Agent is registered with Exchange Server.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Microsoft Forefront Server Security Mail Pickup</td>
<td>Provides mail pickup services for Forefront Protection.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Microsoft Forefront Server Security Monitor</td>
<td>Monitors the information store, SMTP/IMS, and Forefront Protection processes to ensure that Forefront Protection provides continuous protection.</td>
<td>Forefront Protection</td>
</tr>
<tr>
<td>Microsoft Search (Exchange)</td>
<td>Provides search services for mailboxes, address lists, and so on.</td>
<td>Hub Transport, Mailbox</td>
</tr>
<tr>
<td>Secure Sockets Tunneling Protocol Service</td>
<td>Provides support for Secure Sockets Tunneling Protocol (SSTP) for securely connecting to remote computers.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Web Management Service</td>
<td>Enables remote and delegated management for the Web server, sites, and applications.</td>
<td>Client Access</td>
</tr>
<tr>
<td>Windows Remote Management Service</td>
<td>Implements the WS-Management protocol. Required for remote management using the Exchange console and Windows PowerShell.</td>
<td>All</td>
</tr>
<tr>
<td>World Wide Web Publishing Services</td>
<td>Provides Web connectivity and administration features for IIS.</td>
<td>Client Access</td>
</tr>
</tbody>
</table>

**Exchange Server Authentication and Security**

In Exchange Server 2010, e-mail addresses, distribution groups, and other directory resources are stored in the directory database provided by Active Directory. Active Directory is a directory service running on Windows domain controllers. When there are multiple domain controllers, the controllers automatically replicate directory data with each other using a multimaster replication model. This model allows any
domain controller to process directory changes and then replicate those changes to other domain controllers.

The first time you install Exchange Server 2010 in a Windows domain, the installation process updates and extends Active Directory to include objects and attributes used by Exchange Server 2010. Unlike Exchange Server 2003 and earlier releases of Exchange, this process does not include updates for the Active Directory Users And Computers Snap-In for Microsoft Management Console (MMC), and you do not use Active Directory Users And Computers to manage mailboxes, messaging features, messaging options, or e-mail addresses associated with user accounts. You perform these tasks using the Exchange Management tools.

Exchange Server 2010 fully supports the Windows Server security model and relies on this security mechanism to control access to directory resources. This means you can control access to mailboxes and membership in distribution groups and you can perform other Exchange security administration tasks through the standard Windows Server permission set. For example, to add a user to a distribution group, you simply make the user a member of the distribution group in Active Directory Users And Computers.

Because Exchange Server uses Windows Server security, you can’t create a mailbox without first creating a user account that will use the mailbox. Every Exchange mailbox must be associated with a domain account—even those used by Exchange for general messaging tasks. For example, the SMTP and System Attendant mailboxes that Exchange Server uses are associated by default with the built-in System user. In the Exchange Management Console, you can create a new user account as part of the process of creating a new mailbox.

**NOTE** To support coexistence with Exchange Server 2003, all Exchange Server 2010 servers are automatically added to a single administrative group when you install Exchange Server 2010. This administrative group is recognized in the Exchange System Manager in Exchange Server 2003 as “Exchange Administrative Group.” Although Exchange Server 2003 uses administrative groups to gather Exchange objects for the purposes of delegating permission to manage those objects, Exchange Server 2007 and Exchange Server 2010 do not use administrative groups. Instead, you manage Exchange servers according to their roles and the type of information you want to manage using the Exchange Management Console. You’ll learn more about this in Chapter 3, “Exchange Server 2010 Administration Essentials.”

**Exchange Server Security Groups**

Like Exchange Server 2007, Exchange Server 2010 uses predefined universal security groups to separate administration of Exchange permissions from administration of other permissions. When you add an administrator to one of these security groups, the administrator inherits the permissions permitted by that role.

The predefined security groups have permissions to manage the following types of Exchange data in Active Directory:
Organization Configuration node  This type of data is not associated with a specific server and is used to manage databases, policies, address lists, and other types of organizational configuration details.

Server Configuration node  This type of data is associated with a specific server and is used to manage the server's messaging configuration.

Recipient Configuration node  This type of data is associated with mailboxes, mail-enabled contacts, and distribution groups.

NOTE In Exchange Server 2010, databases have been moved from the Server Configuration node to the Organization Configuration node. This change was necessary because the Exchange schema was flattened and storage groups were removed. As a result of these changes, all storage group functionality has been moved to the database level.

The predefined groups are as follows:

- **Delegated Setup**  Members of this group have permission to install and uninstall Exchange on provisioned servers.

- **Discovery Management**  Members of this group can perform mailbox searches for data that meets specific criteria.

- **Exchange All Hosted Organizations**  Members of this group include hosted organization mailbox groups. This group is used to apply Password Setting objects to all hosted mailboxes.

- **Exchange Servers**  Members of this group are Exchange servers in the organization. This group allows Exchange servers to work together.

- **Exchange Trusted Subsystem**  Members of this group are Exchange servers that run Exchange cmdlets using WinRM. Members of this group have permission to read and modify all Exchange configuration settings as well as user accounts and groups.

- **Exchange Windows Permissions**  Members of this group are Exchange servers that run Exchange cmdlets using WinRM. Members of this group have permission to read and modify user accounts and groups.

- **ExchangeLegacyInterop**  Members of this group are granted send-to and receive-from permissions, which are necessary for routing group connections between Exchange Server 2010 and Exchange Server 2003. Exchange Server 2003 bridgehead servers must be made members of this group to allow proper mail flow in the organization. For more information on interoperability, see Chapter 2.

- **Help Desk**  Members of this group can view any property or object within the Exchange organization and have limited management permissions, including the right to change and reset passwords.

- **Hygiene Management**  Members of this group can manage the antispam and antivirus features of Exchange.
- **Organization Management** Members of this group have full access to all Exchange properties and objects in the Exchange organization.
- **Public Folder Management** Members of this group can manage public folders and perform most public folder management operations.
- **Recipient Management** Members of this group have permissions to modify Exchange user attributes in Active Directory and perform most mailbox operations.
- **Records Management** Members of this group can manage compliance features, including retention policies, message classifications, and transport rules.
- **Server Management** Members of this group can manage all Exchange servers in the organization but do not have permission to perform global operations.
- **UM Management** Members of this group can manage all aspects of unified messaging, including unified messaging server configuration and unified messaging recipient configuration.
- **View-Only Organization Management** Members of this group have read-only access to the entire Exchange organization tree in the Active Directory configuration container and read-only access to all the Windows domain containers that have Exchange recipients.

**Exchange Server and Active Directory**

Like Exchange Server 2007, Exchange Server 2010 is tightly integrated with Active Directory. Not only does Exchange Server 2010 store information in Active Directory, but it also uses the Active Directory routing topology to determine how to route messages within the organization. Routing to and from the organization is handled using transport servers.

**Understanding How Exchange Stores Information**

Exchange stores four types of data in Active Directory: schema data (stored in the Schema partition), configuration data (stored in the Configuration partition), domain data (stored in the Domain partition), and application data (stored in application-specific partitions). In Active Directory, schema rules determine what types of objects are available and what attributes those objects have. When you install the first Exchange server in the forest, the Active Directory preparation process adds many Exchange-specific object classes and attributes to the schema partition in Active Directory. This allows Exchange-specific objects, such as agents and connectors, to be created. It also allows you to extend existing objects, such as users and groups, with new attributes, such as attributes that allow user objects to be used for sending
and receiving e-mail. Every domain controller and global catalog server in the organization has a complete copy of the Schema partition.

During the installation of the first Exchange server in the forest, Exchange configuration information is generated and stored in Active Directory. Exchange configuration information, like other configuration information, is also stored in the Configuration partition. For Active Directory, the configuration information describes the structure of the directory, and the Configuration container includes all of the domains, trees, and forests, as well as the locations of domain controllers and global catalogs. For Exchange, the configuration information is used to describe the structure of the Exchange organization. The Configuration container includes lists of templates, policies, and other global organization-level details. Every domain controller and global catalog server in the organization has a complete copy of the Configuration partition.

In Active Directory, the Domain partition stores domain-specific objects, such as users and groups, and the stored values of attributes associated with those objects. As you create, modify, or delete objects, Exchange stores the details about those objects in the Domain partition. During the installation of the first Exchange server in the forest, Exchange objects are created in the current domain. Whenever you create new recipients or modify Exchange details, the related changes are reflected in the Domain partition as well. Every domain controller has a complete copy of the Domain partition for the domain for which it is authoritative. Every global catalog server in the forest maintains information about a subset of every Domain partition in the forest.

**Understanding How Exchange Routes Messages**

Within the organization, Hub Transport servers use the information about sites stored in Active Directory to determine how to route messages, and they can also route messages across site links. The Hub Transport server does this by querying Active Directory about its site membership and the site membership of other servers, and then it uses the information it discovers to route messages appropriately. Because of this, when you are deploying an Exchange Server 2010 organization, no additional configuration is required to establish routing in the Active Directory forest.

For mail delivery within the organization, additional routing configuration is necessary only in these specific scenarios:

If you deploy an Exchange Server 2010 organization with multiple forests, you must install Exchange Server 2010 in each forest and then connect the forests using appropriate cross-forest trusts. The trust allows users to see address and availability data across the forests.

In an Exchange Server 2010 organization, if you want direct mail flow between Exchange servers in different forests, you must configure SMTP send connectors and SMTP receive connectors on the Hub Transport servers that should communicate directly with each other.

The organization’s Mail Transport servers handle mail delivery outside the organization and receipt of mail from outside servers. You can use two types of Mail Transport servers: Hub Transport servers and Edge Transport servers. You deploy Hub Transport servers within the organization. You can optionally deploy Edge Transport servers in the organization’s perimeter network for added security. Typically a perimeter network is a secure network set up outside the organization’s private network.

With Hub Transport servers, no other special configuration is needed for message routing to external destinations. You must configure only the standard mail setup, which includes identifying DNS servers to use for lookups. With Edge Transport servers, you can optimize mail routing and delivery by configuring one-way synchronization from the internal Hub Transport servers to the perimeter network’s Edge Transport servers. Beyond this, no other special configuration is required for mail routing and delivery.

Using the Graphical Administration Tools

Exchange Server 2010 provides several types of tools for administration. The graphical tools are the ones you’ll use most frequently. Exchange Server and Forefront Protection for Exchange Server have separate management consoles. If you follow the instructions for installing Exchange Server in Chapter 2, you’ll be able to access the Exchange tools by selecting Start, choosing All Programs, and then using the Microsoft Exchange Server 2010 menu. To access the Forefront Protection tools, select Start, choose All Programs, and then use the Microsoft Forefront Server Security menu.

Exchange Server 2010 has several graphical tools that replace or combine features of the graphical tools in Exchange Server 2003 and earlier editions. The Exchange Management Console, shown in Figure 1-1, replaces Exchange System Manager.
As discussed further in Chapter 14, “Exchange Server 2010 Maintenance, Monitoring, and Queuing,” and Chapter 15, “Backing Up and Restoring Exchange Server 2010,” the Toolbox node in the Exchange Management Console provides access to a suite of related tools, including the following:

- **Best Practices Analyzer**  Checks the configuration and health of your Exchange organization to ensure that it complies with current best practices recommended by Microsoft. Because best practices are periodically updated, the tool includes an update facility to ensure that the most current best practices are in place.

- **Details Templates Editor**  Helps administrators customize client-side GUI presentation of object properties accessed through address lists. You can use this tool to customize the presentation of contacts, users, groups, public folders, and more in the client interface.

- **Mail Flow Troubleshooter**  Helps troubleshoot problems related to mail flow and transport configuration by providing suggested resolutions for symptoms observed by administrators.

- **Message Tracking**  Allows administrators to track messages as they are routed through the Exchange organization.

- **Performance Monitor**  Allows administrators to graph system performance. Also allows administrators to create performance logs and alerts.
Wide arrays of Exchange performance objects are available for tracking performance.

- **Performance Troubleshooter** Helps troubleshoot problems related to performance by identifying possible bottlenecks and providing suggested solutions.

- **Public Folder Management Console** Allows administrators to manage public folders using a graphical interface rather than the command line.

- **Queue Viewer** Allows administrators to track message queues and mail flow. Also allows administrators to manage message queuing and remove messages.

- **Remote Connectivity Analyzer** Allows administrators to perform connectivity tests for inbound e-mail, ActiveSync, Exchange Web Services, Outlook Anywhere, and Outlook 2003 RPC over HTTP.

- **Role-Based Access Control (RBAC) User Editor** Allows administrators to assign users to RBAC groups and roles.

- **Routing Log Viewer** Helps administrators troubleshoot routing problems on transport servers by providing information about routing topology.

- **Tracking Log Explorer** Provides access to the message tracking logs for troubleshooting.

Other administration tools that you might want to use with Exchange Server are summarized in Table 1-2.

**TABLE 1-2** Quick Reference Administration Tools to Use with Exchange Server 2010

<table>
<thead>
<tr>
<th>ADMINISTRATIVE TOOL</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Management</td>
<td>Starts and stops services, manages disks, and accesses other system management tools.</td>
</tr>
<tr>
<td>DNS</td>
<td>Manages the DNS service.</td>
</tr>
<tr>
<td>Event Viewer</td>
<td>Manages events and logs.</td>
</tr>
<tr>
<td>IIS Manager</td>
<td>Manages Web servers used by Exchange as well as the management service configuration.</td>
</tr>
<tr>
<td>Microsoft Network Monitor</td>
<td>Monitors network traffic, and troubleshoots networking problems.</td>
</tr>
<tr>
<td>Server Manager</td>
<td>Adds, removes, and configures roles, role services, and features.</td>
</tr>
</tbody>
</table>

You access most of the tools listed in Table 1-2 from the Administrative Tools program group. Click Start, point to All Programs, and then point to Administrative Tools.
Using the Command-Line Administration Tools

The graphical tools provide just about everything you need to work with Exchange Server. Still, there are many times when you might want to work from the command line, especially if you want to automate installation, administration, or maintenance with scripts. To help with all your command-line needs, Exchange Server includes the Exchange Management Shell.

The Exchange Management Shell is an extension shell for Windows PowerShell that includes a wide array of built-in commands for working with Exchange Server. Windows PowerShell commands are referred to as cmdlets (pronounced *commandlets*) to differentiate these commands from less powerful commands built into the command prompt and from more full-featured utility programs that can be invoked at the command prompt.

**NOTE** For ease of reading and reference, I’ll usually refer to command prompt commands, command shell cmdlets, and command-line invoked utilities simply as commands.

The Exchange Management Shell, shown in Figure 1-2, is accessible by selecting Start, choosing All Programs, choosing Microsoft Exchange Server 2010, and then choosing Exchange Management Shell.

![Figure 1-2 The Exchange Management Shell](image)

The basics of working with the Exchange Management Shell are straightforward:

- Type `get-command` to get a full list of all available cmdlets on the server.
- Type `get-excommand` to get a full list of all Exchange-specific cmdlets available.
Type **help cmdletName** to get help information, where *cmdletName* is the name of the command you are looking up.

You’ll find a comprehensive discussion of the Exchange Management Shell and Windows PowerShell in Chapter 4, “Using the Exchange Management Shell,” as well as examples of using cmdlets for Exchange Server management throughout the book.

Like Exchange Server, Forefront Protection for Exchange Server has a management console and a management shell. You use the Forefront Server Security Administration console to manage Forefront Protection using a graphical interface. You use the Forefront Management Shell to manage Forefront Protection from the command line. This shell is accessible by selecting Start, choosing All Programs, choosing Microsoft Forefront Server Security, and then choosing Forefront Management Shell.

Forefront Management Shell loads extensions that allow you to manage the configuration of Forefront Protection for Exchange Server. The basics of working with the Forefront Management Shell are straightforward:

- Type **get-command** to get a full list of all available cmdlets on the server.
- Type **get-command *fse*** to get a full list of all Forefront Protection–specific cmdlets available.
- Type **help cmdletName** to get help information, where *cmdletName* is the name of the command you are looking up.

Because Forefront Management Shell does not load the Exchange Server cmdlets, you cannot access the Exchange-specific cmdlets from this shell by default. Because the Exchange Management Shell does not load the Forefront Protection–specific cmdlets either, you cannot access the Forefront Protection–specific cmdlets from the Exchange Management Shell by default.
CHAPTER 6

Mailbox Administration

- Creating Special-Purpose Mailboxes 157
- Managing Mailboxes: The Essentials 169
- Moving Mailboxes 173
- Configuring Mailbox Delivery Restrictions, Permissions, and Storage Limits 182

The difference between a good Microsoft Exchange administrator and a great one is the attention he or she pays to mailbox administration. Mailboxes are private storage places for messages you've sent and received, and they are created as part of private mailbox databases in Exchange. Mailboxes have many properties that control mail delivery, permissions, and storage limits. You can configure most mailbox settings on a per-mailbox basis. However, you cannot change some settings without moving mailboxes to a different mailbox database or changing the settings of the mailbox database itself. For example, you set the storage location on the file system, the default public folder database for the mailbox, and the default offline address book on a per-mailbox-database basis. Keep this in mind when performing capacity planning and when deciding which mailbox database to use for a particular mailbox.

Creating Special-Purpose Mailboxes

Exchange Server 2010 makes it easy to create several special-purpose mailbox types, including:

- **Room mailbox** - A room mailbox is a mailbox for room scheduling.
- **Equipment mailbox** - An equipment mailbox is a mailbox for equipment scheduling.
- **Linked mailbox** - A linked mailbox is a mailbox for a user from a separate, trusted forest.
- **Forwarding mailbox** - A forwarding mailbox is a mailbox that can receive mail and forward it off-site.
- **Archive mailbox**: An archive mailbox is used to store a user's messages, such as might be required for executives and needed by some managers.

- **Arbitration mailbox**: An arbitration mailbox is used to manage approval requests, such as may be required for handling moderated recipients and distribution group membership approval.

- **Discovery mailbox**: A discovery mailbox is the target for Discovery searches and can't be converted to another mailbox type once it's created.

- **Shared mailbox**: A shared mailbox is a mailbox that is shared by multiple users, such as a general mailbox for customer inquiries.

The sections that follow discuss techniques for working with these special-purpose mailboxes.

### Using Room and Equipment Mailboxes

You use room and equipment mailboxes for scheduling purposes only. You'll find that:

- Room mailboxes are useful when you have conference rooms, training rooms, and other rooms for which you need to coordinate the use.

- Equipment mailboxes are useful when you have projectors, media carts, or other items of equipment for which you need to coordinate the use.

Every room and equipment mailbox must have a separate user account associated with it. Although these accounts are required so that the mailboxes can be used for scheduling, the accounts are disabled by default so that they cannot be used for logon. To ensure that the resource accounts do not get enabled accidentally, you need to coordinate closely with other administrators in your organization.

**NOTE** The Exchange Management Console doesn't show the enabled or disabled status of user accounts. The only way to check the status is to use domain administration tools.

Because the number of scheduled rooms and amount of equipment grows as your organization grows, you'll want to carefully consider the naming conventions you use with rooms and equipment:

- With rooms, you'll typically want to use display names that clearly identify the rooms' physical locations. For example, you might have rooms named "Conference Room 28 on Fifth Floor" or "Building 83 Room 15."

- With equipment, you'll typically want to identify the type of equipment, the equipment's characteristics, and the equipment's relative location. For example, you might have equipment named "NEC HD Projector at Seattle Office" or "Fifth Floor Media Cart."

As with standard user mailboxes, room and equipment mailboxes have contact information associated with them. To make it easier to find rooms and equipment, you should provide as much information as possible. Specifically, you can make rooms easier for users to work with by using these techniques:
If a room has a conference or call-in phone, enter this phone number as the business phone number on the Address And Phone tab of the Mailbox Properties dialog box.

Specify the location details in the Office text box on the Organization tab of the Mailbox Properties dialog box.

Specify the room capacity in the Resource Capacity text box on the Resource Information tab of the Mailbox Properties dialog box.

The business phone, location, and capacity are displayed in Microsoft Office Outlook.

After you’ve set up mailboxes for your rooms and equipment, scheduling the rooms and equipment is straightforward. In Exchange, room and equipment availability is tracked using free/busy data. In Outlook, a user who wants to reserve rooms, equipment, or both simply makes a meeting request that includes the rooms and equipment that are required for the meeting.

The steps to schedule a meeting and reserve equipment are as follows:

1. Create a meeting request:
   - In Outlook 2007, click New, and then select Meeting Request. Or press Ctrl+Shift+Q.
   - In Outlook 2010, click New Items, and then select Meeting. Or press Ctrl+Shift+Q.

2. In the To text box, invite the individuals who should attend the meeting by typing their display names, Exchange aliases, or e-mail addresses, as appropriate. (See Figure 6-1.)

![Figure 6-1](image_url)
3. Type the display name, Exchange alias, or e-mail address for any equipment you need to reserve.

4. Click the Rooms button to the right of the Location text box. The Select Rooms dialog box appears, as shown in Figure 6-2. By default, the Select Rooms dialog box uses the All Rooms address book. Rooms are added to this address book automatically when you create them.

5. Double-click the room you want to use. This adds the room to the Rooms list. Click OK to close the Select Rooms dialog box.

![Select Rooms dialog box](image)

**FIGURE 6-2** Select a room to use for the meeting.

6. In the Subject text box, type the meeting subject.

7. Use the Start Time and End Time options to schedule the start and end times for the meeting.

8. Click Scheduling Assistant to view the free/busy data for the invited users and the selected resources.

9. After you type a message to accompany the meeting request, click Send.

**Creating Room and Equipment Mailboxes**

You can create room and equipment mailboxes by completing the following steps:

1. In the Exchange Management Console, expand the Recipient Configuration node and then select the Mailbox node.
NOTE If you want to create the user account for the room or equipment mailbox in a domain other than the current one, you first need to set the scope for the Mailbox node, as discussed in the “Finding Existing Mailboxes, Contacts, and Groups” section of Chapter 5, “User and Contact Administration.”

2. Right-click the Mailbox node, and then select New Mailbox. This starts the New Mailbox Wizard.
3. On the Introduction page, select either Room Mailbox or Equipment Mailbox, as appropriate, and then click Next.
4. On the User Type page, verify that New User is selected and then click Next. Each room or piece of equipment must have a separate user account. This is necessary to track the unique free/busy data for the room or piece of equipment.
5. On the User Information page, the Organizational Unit text box shows where in Active Directory the user account will be created. By default, this is the Users container in the current domain. Because you'll usually need to create room and equipment accounts in a specific organizational unit rather than in the Users container, select the Specify The Organizational Unit check box and then click Browse. Use the Select Organizational Unit dialog box to choose the location in which to store the account, and then click OK.
6. Type a descriptive display name in the Name text box.
7. In the User Logon Name text box, type the logon name. Use the drop-down list to select the domain with which the account is to be associated. This sets the fully qualified logon name.
8. The first 20 characters of the logon name are used to set the pre–Microsoft Windows 2000 logon name, which must be unique in the domain. If necessary, change the pre–Windows 2000 logon name.
9. Type and then confirm the password for the account. Even though the account is disabled by default, this password must follow the conventions of your organization's password policy.
10. Click Next. On the Mailbox Settings page, enter an Exchange alias. The Exchange alias is used to set the default e-mail address.
11. If you want to specify a mailbox database rather than use an automatically selected one, select the Specify Mailbox Database check box, and then click the Browse button to the right of the Mailbox Database text box. In the Select Mailbox Database dialog box, choose the mailbox database in which the mailbox should be stored. Mailbox databases are listed by name as well as by associated server.
12. If you want to create an archive mailbox for the resource, select the related check box. Items in the mailbox will be moved automatically to the archive mailbox based on the default retention policy.
13. Click Next, and then click New to create the account and the related mailbox. If an error occurs during account or mailbox creation, neither the account nor the related mailbox will be created. You need to correct the problem and repeat this procedure.

14. Click Finish. For all mailbox-enabled accounts, a Simple Mail Transfer Protocol (SMTP) e-mail address is configured automatically.

In the Exchange Management Shell, you can create a user account with a mailbox for rooms and equipment by using the New-Mailbox cmdlet. Sample 6-1 provides the syntax and usage. Although the account is disabled by default, you must enter a secure password for the account when prompted.

**NOTE** For rooms, you must use the –Room parameter. For equipment, you must use the –Equipment parameter. By default, when you use either parameter, the related value is set as $true.

**SAMPLE 6-1 Creating room and equipment mailboxes**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>New-Mailbox -Name 'DisplayName' -Alias 'ExchangeAlias' -OrganizationalUnit 'OrganizationalUnit' -UserPrincipalName 'LogonName' -SamAccountName 'prewin2000logon' -FirstName '' -Initials '' -LastName '' -Database 'Server\MailboxDatabase' [-Room &lt;$false</td>
<td>$true&gt;</td>
</tr>
</tbody>
</table>

**Creating Linked Mailboxes**

A linked mailbox is a mailbox that is accessed by a user in a separate, trusted forest. Typically, you use linked mailboxes when your organization’s mailbox servers are in a separate resource forest and you want to ensure that users can access free/busy data across these forests.

All linked mailboxes have two user account associations:

- A unique user account in the same forest as the Mailbox server. The same forest user account is disabled automatically so that it cannot be used for logon.
A unique user account in a separate forest for which you are creating a link. The separate forest user account is enabled so that it can be used for logon.

You can create a linked mailbox by completing the following steps:

1. In the Exchange Management Console, expand the Recipient Configuration node and then select the Mailbox node.
2. Right-click the Mailbox node, and then select New Mailbox. This starts the New Mailbox Wizard.
3. On the Introduction page, select Linked Mailbox and then click Next.
4. On the User Type page, verify that New User is selected and then click Next.
5. On the User Information page, the Organizational Unit text box shows where in Active Directory the user account will be created. By default, this is the Users container in the current domain. Select the Specify The Organizational Unit check box and then click Browse to create the new user account in a different container. Use the Select Organizational Unit dialog box to choose the location in which to store the account, and then click OK.
6. Type the user’s first name, middle initial, and last name in the text boxes provided. These values are used to create the Name entry, which is the user’s display name.
7. In the User Logon Name text box, type the user’s logon name. Use the drop-down list to select the domain with which the account is to be associated. This sets the fully qualified logon name.
8. The first 20 characters of the logon name are used to set the pre–Windows 2000 logon name, which must be unique in the domain. If necessary, change the pre–Windows 2000 logon name.
9. Type and then confirm the password for the account. Although the account will not be used for logon, this password must follow the conventions of your organization’s password policy.
10. Click Next. Enter an Exchange alias for the user. Make sure the alias matches the one used in the resource forest.
11. If you want to specify a mailbox database rather than use an automatically selected one, select the Specify Mailbox Database check box, and then click the Browse button to the right of the Mailbox Database text box. In the Select Mailbox Database dialog box, choose the mailbox database in which the mailbox should be stored. Mailbox databases are listed by name as well as by associated server.
12. Click Next. On the Master Account page, click Browse to the right of the Linked Forest text box. In the Select Trusted Forest Or Domain dialog box, select the linked forest or domain in which the user’s original account is located and then click OK.
13. If you need additional administrative permissions to access the linked forest, select the Use The Following Windows Account check box. Then type the user name and password for an administrator account in this forest.

14. Click the Browse button to the right of the Linked Domain Controller text box. In the Select Domain Controller dialog box, select a domain controller in the linked forest and then click OK.

15. Click the Browse button to the right of the Linked Master Account text box. Use the options in the Select User dialog box to select the original user account in the linked forest, and then click OK.

16. Click Next, and then click New to create the account and the related mailbox. If an error occurs during account or mailbox creation, neither the account nor the related mailbox will be created. You will need to correct the problem and repeat this procedure.

17. Click Finish. For all mailbox-enabled accounts, an SMTP e-mail address is configured automatically.

In the Exchange Management Shell, you can create a user account with a linked mailbox by using the New-Mailbox cmdlet. Sample 6-2 provides the syntax and usage. You’ll be prompted for two sets of credentials: one for the new user account and one for an administrator account in the linked forest.

### SAMPLE 6-2 Creating linked mailboxes

**Syntax**

```
New-Mailbox -Name 'DisplayName' -Alias 'ExchangeAlias'
-OrganizationalUnit 'OrganizationalUnit'
-Database 'Database'
-UserPrincipalName 'LogonName' -SamAccountName 'prewin2000logon'
-FirstName 'FirstName' -Initials 'Initial' -LastName 'LastName'
-ResetPasswordOnNextLogon State
-LinkedDomainController 'LinkedDC'
-LinkedMasterAccount 'domain\user'
-LinkedCredential:(Get-Credential 'domain\administrator')
```

**Usage**

```
New-Mailbox -Name 'Wendy Richardson' -Alias 'wendyr'
-OrganizationalUnit 'cpandl.com/Sales'
-Database 'Corporate Services Primary'
-UserPrincipalName 'wendyr@cpandl.com' -SamAccountName 'wendyr'
-FirstName 'Wendy' -Initials '' -LastName 'Richardson'
-ResetPasswordOnNextLogon $true
-LinkedDomainController 'CohoDC58'
-LinkedMasterAccount 'coho\wrichardson'
-LinkedCredential:(Get-Credential 'coho\williams')
```
Creating Forwarding Mailboxes

Custom recipients, such as mail-enabled users and contacts, don’t normally receive mail from users outside the organization because a custom recipient doesn’t have an e-mail address that resolves to a specific mailbox in your organization. At times, though, you might want external users, applications, or mail systems to be able to send mail to an address within your organization and then have Exchange forward this mail to an external mailbox.

**TIP**  You can send and receive text messages using Outlook Web App in Exchange 2010, or you can send text messages the old fashioned way. In my organization, I’ve created forwarding mailboxes for text-messaging and pager alerts. This simple solution lets managers (and monitoring systems) within the organization quickly and easily send text messages to IT personnel. Here, I’ve set up mail-enabled contacts for each text messaging e-mail address, such as 8085551212@adatum.com, and then created a mailbox that forwards e-mail to the custom recipient. Generally, the display name of the mail-enabled contact is in the form Alert *User Name*, such as Alert William Stanek. The display name and e-mail address for the mailbox are in the form Z *LastName* and AE-*MailAddress@myorg.com*, such as Z Stanek and AWilliamS@adatum.com, respectively. Afterward, I hide the mailbox so that it isn’t displayed in the global address list or in other address lists; this way, users can see only the Alert William Stanek mailbox.

To create a user account to receive mail and forward it off-site, follow these steps:

1. Using the Exchange Management Console, create a mail-enabled contact for the user. Name the contact Alert *User Name*, such as Alert William Stanek. Be sure to establish an external e-mail address for the contact that refers to the user’s Internet address.
2. Using the Exchange Management Console, create a mailbox-enabled user account in the domain. Name the account with the appropriate display name, such as Z William Stanek. Be sure to create an Exchange mailbox for the account, but don’t grant any special permission to the account. You might want to restrict the account so that the user can’t log on to any servers in the domain.
3. Using the Exchange Management Console, access the Properties dialog box for the user’s mailbox.
4. On the Mail Flow Settings tab, select Delivery Options and then click Properties.
5. In the Delivery Options dialog box, select the Forward To check box and then click Browse.
6. In the Select Recipient dialog box, select the mail-enabled contact you created earlier and then click OK three times. You can now use the user account to forward mail to the external mailbox.
Creating Archive Mailboxes

Each user can have an alternate mailbox for archives. An archive mailbox is used to store a user’s old messages, such as might be required for executives and needed by some managers. In Outlook and Outlook Web App, users can access archive mailboxes in much the same way as they access their regular mailbox.

You can create a user’s archive mailbox at the same time you create the user’s standard mailbox. To create an archive mailbox, right-click the standard mailbox in the Exchange Management Console, select Enable Archive, review the dialog box, and then click Yes when prompted to confirm. Using the Exchange Management Shell, you can create an archive mailbox using Enable-Mailbox. The basic syntax is as follows:

```
Enable-Mailbox [ -Identity ] Identity -Archive
```

such as:
```
enable-mailbox cpandl.com/engineering/tonyg -archive
```

Because each user can have only one archive mailbox, you get an error if the user already has an archive mailbox. Items in the user’s mailbox will be moved automatically to the archive mailbox based on the default retention policy. When you install Exchange Server, a default retention policy is created for all archive mailboxes.

Whether you use the Exchange Management Console or the Exchange Management Shell, several other parameters are set for archive mailboxes. The default name for the archive mailbox is set as Online Archive – UserDisplayName, such as Online Archive – Vamsi Kuppa. The default quota and warning quota are set as unlimited.

You can change the archive name and set quotas by using Set-Mailbox. The basic syntax is as follows:

```
Set-Mailbox [ -Identity ] Identity -ArchiveName Name -ArchiveQuota Quota -ArchiveWarningQuota Quota
```

When you set a quota, specify the value with MB (for megabytes), GB (for gigabytes), or TB (for terabytes), or enter ‘Unlimited’ to remove the quota. Here is an example:
```
set-mailbox cpandl.com/engineering/tonyg -ArchiveQuota '2GB' -ArchiveWarningQuota '900MB'
```

In the Exchange Management Console, you can set or remove a quota warning for an archive mailbox by right-clicking the entry for the user’s standard mailbox and selecting Properties. In the Properties dialog box, on the Mailbox Settings tab, double-click Archive Quota. To set a quota warning, select Issue Warning At, and then enter a quota in megabytes. To remove a quota, clear Issue Warning At.
To disable an archive mailbox, right-click the mailbox in the Exchange Management Console, select Disable Archive, and then click Yes when prompted to confirm. In the Exchange Management Shell, you can disable an archive mailbox by using Disable-Mailbox. The basic syntax is as follows:

```
Disable-Mailbox [-Identity] Identity -Archive
```

such as:

```
disable-mailbox cpandl.com/engineering/tonyg -archive
```

Creating Arbitration Mailboxes

Exchange moderated transport requires all e-mail messages sent to specific recipients to be approved by moderators. You can configure any type of recipient as a moderated recipient, and Exchange will ensure that all messages sent to those recipients go through an approval process.

Distribution groups are the only types of recipients that use moderation by default. Membership in distribution groups can be closed, owner approved or open. While any Exchange recipient can join an open distribution group, joining a closed group requires approval. Group owners receive join and remove requests and can either approve or deny those requests.

Distribution groups can also be unmoderated or moderated. With unmoderated groups, any approved sender (which is all senders by default) can send messages to the group. With moderated groups, messages are sent to moderators for approval before being distributed to members of the group. The only exception is for a message sent by a moderator. A message from a moderator is delivered immediately because a moderator has the authority to determine what is and isn’t an appropriate message.

**NOTE** The default moderator for a distribution group is the group’s owner.

Arbitration mailboxes are used to store messages that are awaiting approval. When you install Exchange Server 2010, a default arbitration mailbox is created. For the purposes of load balancing or for other reasons, you can convert other mailboxes to the Arbitration mailbox type by using the Enable-Mailbox cmdlet. The basic syntax is as follows:

```
Enable-Mailbox [-Identity] Identity -Arbitration
```

such as:

```
enable-mailbox cpandl.com/users/moderatedmail -Arbitration
```
You can create an arbitration mailbox by using New-Mailbox as shown in this example:

```
New-Mailbox ModeratedMail -Arbitration –UserPrincipalName ModeratedMail@cpandl.com
```

Creating Discovery Mailboxes

Exchange Discovery helps organizations comply with legal discovery requirements and can also be used as an aid in internal investigations or as part of regular monitoring of e-mail content. Exchange Discovery uses content indexes created by Exchange Search to speed up the search process.

**NOTE** By default, Exchange administrators do not have sufficient rights to perform Discovery searches. Only users with the Discovery Management role can perform Discovery searches.

You use the Exchange Control Panel (ECP) to perform searches. After you log on, click Reporting in the left pane, and then click the Mailbox Searches tab. Discovery searches are performed against designated mailboxes or all mailboxes in the Exchange organization. Items in mailboxes that match the Discovery search are copied to a target mailbox. Only mailboxes specifically designated as Discovery mailboxes can be used as targets.

**TIP** By default, Discovery search does not include items that cannot be indexed by Exchange Search. To include such items in the search results, select the Include Items That Can't Be Searched check box in Exchange Control Panel.

When you install Exchange Server 2010, a default discovery mailbox is created. You can convert other mailboxes to the Discovery mailbox type by using the Enable-Mailbox cmdlet. The basic syntax is as follows:

```
Enable-Mailbox [-Identity] Identity -Discovery
```

such as:

```
enable-mailbox cpandl.com/hr/legalsearch –discovery
```

You can create a Discovery mailbox by using New-Mailbox as shown in this example:

```
New-Mailbox LegalSearch -Discovery –UserPrincipalName LegalSearch@cpandl.com
```

Once a Discovery mailbox is established, you can't convert it to another mailbox type. You can't use Exchange Management Console to create Discovery mailboxes.
Creating Shared Mailboxes

Shared mailboxes are mailboxes that are shared by multiple users. Although shared mailboxes must have an associated user account, this account is not used for logon in the domain and is disabled by default. Users who access the shared mailbox do so using access permissions.

You can create a shared mailbox by using New-Mailbox, as shown in this example:

```
New-Mailbox CustomerService -Shared –UserPrincipalName customerservice@cpandl.com
```

A user account named CustomerService is created for this mailbox. This user account is disabled by default to prevent logon using this account. To share the mailbox with users who need to be able to access it, right-click the mailbox in the Exchange Management Console, select Manage Full Access Permission, and then follow the prompts.

Managing Mailboxes: The Essentials

You often need to manage mailboxes the way you do user accounts. Some of the management tasks are intuitive and others aren’t. If you have questions, be sure to read the sections that follow.

You can work with multiple recipients at the same time. To select multiple resources not in sequence, hold down the Ctrl key and then click the left mouse button on each resource you want to select. To select a series of resources, select the first resource, hold down the Shift key, and then click the last resource.

The actions you can perform on multiple resources depend on the types of recipients you’ve selected. Generally, you’ll want to work with recipients of the same type, such as either user mailboxes or room mailboxes, but not both types at the same time. The actions you can perform on multiple mailboxes include:

- Disable
- Disable Archive
- New Local Move Request
- New Remote Move Request
- Remove
- Send Mail

You also can edit the properties of multiple recipients at the same time. To do this, select the recipients you want to work with, right-click and then select Properties. Just about any property that can be set for an individual recipient can be set for multiple recipients.
**TIP** If the Properties option isn’t available when you right-click, you’ve probably selected one or more recipients of different types. For example, you might have intended to select only user mailboxes but selected a room mailbox as well.

**Viewing Current Mailbox Size, Message Count, and Last Logon**

You can use the Exchange Management Console to view who last logged on to a mailbox, the last logon date and time, the mailbox size, and the message count by completing these steps:

1. Expand the Recipient Configuration node and then select the Mailbox node.
2. Double-click the mailbox with which you want to work.
3. On the General tab, the Last Logged On By text box shows who last logged on to the mailbox, and the Modified entry shows the date and time the mailbox was last modified. (See Figure 6-3.)
4. On the General tab, the Total Items and Size (KB) areas show the number of messages in the mailbox and the current mailbox size in kilobytes, respectively.

![Figure 6-3 View mailbox statistics.](image-url)
If you want to view similar information for all mailboxes on a server, the easiest way is to use the Get-MailboxStatistics cmdlet. Sample 6-3 shows examples using this cmdlet. Use the –Archive parameter to return mailbox statistics for the archive mailbox associated with a specified mailbox.

**SAMPLE 6-3** Getting statistics for multiple mailboxes

**Syntax**

```
```

```
Get-MailboxStatistics -Server 'Server' | -Database 'Database' [-DomainController DomainController]
```

**Usage**

```
Get-MailboxStatistics -Server 'corpsvr127'

Get-MailboxStatistics -Database 'Engineering Primary'

Get-MailboxStatistics –Identity 'cpandl\williams'
```

When you are working with the Exchange Management Shell, the standard output won't necessarily provide all the information you are looking for. Often, you need to format the output as a list or table using Format-List or Format-Table, respectively, to get the additional information you are looking for. Format-List comes in handy when you are working with a small set of resources or want to view all the properties that are available. Once you know what properties are available for a particular resource, you can format the output as a table to view specific properties. For example, if you format the output of Get-MailboxStatistics as a list, you see all the properties that are available for mailboxes, as shown in this example and sample output:

```
get-mailboxstatistics -identity "cpandl\daniele" | format-list
```

```
AssociatedItemCount : 2655
DeletedItemCount    : 121
DisconnectDate      :
DisplayName         : Daniel Escapa
ItemCount           : 2451
LastLoggedOnUserAccount : NT AUTHORITY\SYSTEM
LastLogoffTime      : 6/15/2010 12:58:18 PM
LastLogonTime       : 6/15/2010 12:58:14 PM
LegacyDN            : /O=FIRST ORGANIZATION/OU=EXCHANGE ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=DANIEL ESCAPA
MailboxGuid         : d3f6ce55-fe3d-4beb-ae65-9c9f7edaf995c
```
Once you know the available properties, you can format the output as a table to get exactly the information you want to see. In this example, you get information about all the mailboxes in the Engineering Primary database and format the output as a table:

```
Get-MailboxStatistics -Database 'Engineering Primary' | format-table DisplayName, TotalItemSize, TotalDeletedItemSize, Database, ServerName
```

### Setting Alternate Mailbox Display Names for Multilanguage Environments

In some cases, the full display name for a mailbox won't be available for display. This can happen when multiple language versions of the Exchange snap-in are installed on the network or when multiple language packs are installed on a system. Here, the system cannot interpret some or all of the characters in the display name and, as a result, doesn't show the display name. To correct this problem, you can set an alternate display name using a different character set. For example, you could use Cyrillic or Kanji characters instead of standard ANSI characters.

You can set an alternate display name for a mailbox by following these steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the User Information tab, type the alternate display name in the Simple Display Name text box and then click OK.

### Hiding Mailboxes from Address Lists

Occasionally, you might want to hide a mailbox so that it doesn't appear in the global address list or other address lists. One reason for doing this is if you have administrative mailboxes that you use only for special purposes. To hide a mailbox from the address lists, follow these steps:
1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the General tab, select the Hide From Exchange Address Lists check box and then click OK.

Defining Custom Mailbox Attributes for Address Lists

Address lists, such as the global address list, make it easier for users and administrators to find available Exchange resources, including users, contacts, distribution groups, and public folders. The fields available for Exchange resources are based on the type of resource. If you want to add more values that should be displayed or searchable in address lists, such as an employee identification number, you can assign these values as custom attributes.

Exchange provides 15 custom attributes—labeled Customer Attribute 1, Custom Attribute 2, and so on through Custom Attribute 15. You can assign a value to a custom attribute by completing the following steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the General tab, click Custom Attributes. The Custom Attributes dialog box appears.
3. Enter attribute values in the text boxes provided, and click OK twice.

Moving Mailboxes

To complete an upgrade, balance the server load, manage drive space, or relocate mailboxes when users move to a different location, you can move mailboxes from one server or database to another server or database. Exchange Server 2010 supports online mailbox moves.

Moving Mailboxes: The Essentials

In earlier releases of Exchange, moving mailboxes while they were actively being used wasn’t a good idea because it caused some disruption to the affected users. For this reason, Exchange Server 2010 performs move operations as a series of steps that allow a mailbox to remain available to a user while the move operation is being completed. When the move is completed, the user begins accessing the mailbox in the new location. Because users can continue to access their e-mail account during the move, you can perform online moves at any time.

The destination database for a move can be on the same server, on a different server, in a different domain, in a different Active Directory site, or in another forest. However, some caveats apply:

- When your source and destination Mailbox servers are running Exchange Server 2010 or Exchange Server 2007 SP2 or later and are in the same or different forests, you can use the Exchange Management Console or the
New-MoveRequest cmdlet to perform an online mailbox move. This might be necessary when you are moving mailboxes between an on-premises and an online Exchange organization. You perform the move from the Exchange 2010 Mailbox server. You can’t move mailboxes from Exchange 2007 SP1 or earlier.

- When your source servers are running Exchange Server 2003 SP2 or later and your destination servers are running Exchange Server 2010, you cannot perform an online mailbox move. You need to perform an offline mailbox move instead. You do this by starting the move operation on the Exchange 2010 Mailbox server with the New-MoveRequest cmdlet. You can’t move mailboxes from Exchange 2003 SP1 or earlier.

Performing online moves is a multistep process that is initiated with a Move Mailbox request that is sent to the Microsoft Exchange Mailbox Replication Service (MRS) running on a Client Access server in the source forest. The MRS queues the request for processing, handling all requests on a first-in, first-out basis. When a request is at the top of the queue, the replication service begins replicating mailbox data to the destination database. When the replication service finishes its initial replication of a mailbox, it marks the mailbox as Ready To Complete and periodically performs data synchronization between the source and destination database to ensure that the contents of a mailbox are up to date. After a mailbox has been moved, you can complete the move request and finalize the move.

In the Exchange Management Console, you can track the status of move requests by expanding Recipient Configuration and then selecting the Move Request node (see Figure 6-4). If a move request fails, you can get more information about the failure by double-clicking the move request and then clicking the View button to the right of the Failed Message entry.

![Exchange Management Console](image)

**FIGURE 6-4** Check the status of move requests.
When you move mailboxes from one server to another, or even to a different database on the same server, keep in mind that the Exchange policies of the new mailbox database might be different from the old one. Because of this, consider the following issues before you move mailboxes to a new server or database:

- **General policy** Changes to watch out for include those in the default public folder database, the offline address book, and message settings. The risk is that the users whose mailboxes you move could lose or gain access to public folders. They might have a different offline address book, which might have different entries. This address book will also have to be downloaded in its entirety the first time the user’s mail client connects to Exchange after the move.

- **Database policy** Changes to watch out for pertain to the maintenance interval and automatic mounting. If Exchange performs maintenance when these users are accessing their mail, they might have slower response times. If the mailbox database is configured so that it isn’t mounted at startup, restarting the Exchange services could result in the users not being able to access their mailboxes.

- **Limits** Changes to watch out for pertain to storage limits and deletion settings. Users might be prohibited from sending and receiving mail if their mailbox exceeds the storage limits of the new mailbox database. Users might notice that deleted items stay in their Deleted Items folder longer or are deleted sooner than expected if the Keep Deleted Items setting is different.

## Performing Online Mailbox Moves

With online moves, you can move mailboxes between databases on the same server. You also can move mailboxes from a database on one server to a database on another server regardless of whether the servers are in a different Active Directory site or in another Active Directory forest.

Normally, when you perform online moves, the move process looks like this:

1. You create a new move request for the mailbox or mailboxes that you want to move using either the Exchange Management Console or Exchange Management Shell.

2. The move request is sent to the Mailbox Replication Service running on a Client Access server in the current Active Directory site. This server acts as the Mailbox Replication Service proxy.

3. The Mailbox Replication Service (MRS) adds the mailboxes to the Move Request queue and assigns the status Queued For Move to each mailbox. This indicates the move has been requested but the move has not started.

4. When a move request is at the top of the queue, the MRS begins replicating the related mailbox to the destination database and assigns the Move In Progress status to mailboxes being moved. By default, the replication service can move up to 5 mailboxes on a single database at one time and up to 50 mailboxes at a time in total.
5. When the MRS finishes its initial replication of the mailbox, the service assigns the Ready To Complete status to the mailbox.

6. The mailbox remains in the Ready To Complete state until you or another administrator specifies that you either want to complete the move request or cancel the move request. If you complete the move request, the MRS assigns the Completing status while it performs a final data synchronization and then marks the move as completed.

7. When the move is completed, the mailbox or mailboxes are available in the new location. Because users can continue to access their e-mail account during a move, you can perform online moves at any time.

One way to perform online mailbox moves within the same Exchange forest is by using the Exchange Management Shell. The commands for performing online mailbox moves include the following:

- **Get-MoveRequest** View the detailed status of an ongoing mailbox move that was initiated using the New-MoveRequest cmdlet.

```powershell
Get-MoveRequest -Identity Identity [-Credential Credential] [-DomainController FullyQualifiedName] [-Organization OrganizationId] [-OrganizationalUnit OrganizationalUnitId] [-ResultSize Size] [-SortBy String]
```

```powershell
```

- **New-MoveRequest** Start a mailbox move. You also can verify readiness to move by using the –WhatIf parameter. Use the –Protect parameter to protect the move request for tenant administrators.

```powershell
New-MoveRequest -Identity Identity [-TargetDatabase DatabaseId] {AddtlParams}
```

```powershell
```

```powershell
New-MoveRequest -Identity Identity -RemoteGlobalCatalog GCServer -RemoteLegacy {$true | $false} -TargetDeliveryDomain Domain
```
Resume-MoveRequest  Resumes a move request that has been suspended or failed.

Resume-MoveRequest -Identity MoveRequestIdentity
[-DomainController FullyQualifiedUsername]
show two different ways you can verify whether Garrett Vargas’s mailbox can be moved:

```powershell
New-MoveRequest -Identity 'garrettv' -TargetDatabase "Engineering Primary" -WhatIf
'cpandl.com/users/Garrett Vargas' | New-MoveRequest -TargetDatabase 'Engineering Primary' -WhatIf
```

To initiate an online move, you use New-MoveRequest for each mailbox you want to move. The following examples show two different ways you can move Garrett Vargas’s mailbox:

```powershell
New-MoveRequest -Identity 'garrettv' -Remote -RemoteHostName 'mailserver17.cpandl.com' -mrsserver 'casserver21.cpandl.com' -TargetDatabase "Engineering Primary"
'cpandl.com/users/Garrett Vargas' | New-MoveRequest -Remote -RemoteHostName 'mailserver17.cpandl.com' -mrsserver 'casserver21.cpandl.com' -TargetDatabase 'Engineering Primary'
```

After you initiate a move, you can check the status of the online move using Get-MoveRequest. As shown in the following example, the key parameter to provide is the identity of the mailbox you want to check:

```powershell
Get-MoveRequest -Identity 'garrettv'
```

By default, basic information about the move request is displayed. To get more detailed information, add the –IncludeReport parameter as shown in this example:

```powershell
Get-MoveRequest -Identity 'garrettv' -IncludeReport
```

You can use Suspend-MoveRequest to suspend a move request that has not yet completed, and Resume-MoveRequest to resume a suspended move request. Resuming a suspended request allows it to complete.

You can cancel a move at any time prior to running the move request being completed by Exchange. To do this, run Remove-MoveRequest and specify the identity of the mailbox that shouldn’t be moved. An example follows:

```powershell
Remove-MoveRequest -Identity 'garrettv'
```

When your source and destination Mailbox servers are running Exchange Server 2010 and are in the same forest, you can move mailboxes by completing these steps:

1. In the Exchange Management Console, expand the Recipient Configuration node, and then select the related Mailbox node.
2. Right-click the mailbox, and then select New Local Move Request. This starts the New Local Move Request Wizard, as shown in Figure 6-5.

**TIP** You can select and move multiple mailboxes at the same time. To select multiple users individually, hold down the Ctrl key, and then click each user account that you want to select. To select a sequence of accounts, select the first user account, hold down the Shift key, and then click the last user account.

![New Local Move Request Wizard](image)

**Figure 6-5** Use the New Local Move Request Wizard to move mailboxes.

3. Click the Browse button to the right of the Target Mailbox Database text box. In the Select Mailbox Database dialog box, choose the mailbox database to which the mailbox should be moved. Mailbox databases are listed by name as well as by associated server.

4. Click Next. If corrupted messages are found in a mailbox, specify how you would like those messages to be handled. To skip the mailbox if corrupted messages are found, select Skip The Mailbox. To skip the corrupted messages if any are found but still move the mailbox, select Skip The Corrupted Messages.

5. If you elected to skip corrupted messages, you must also specify the maximum number of corrupted messages to skip. If this value is exceeded, the mailbox will not be moved.
6. When you click Next and then click New, Exchange Server creates a new move request. Click Finish.

7. Moving mailboxes can take several hours, depending on the size of the mailboxes you are moving. You can check the status of move requests by selecting the Move Request node under Recipient Configuration. While the move request is in the Moving or Queued state, you can cancel the move request by right-clicking it and then selecting Remove Move Request.

Moving Mailboxes Between Forests

You can perform online mailbox moves between different Exchange forests using the Exchange Management Console or Exchange Management Shell. When you are moving mailboxes between forests, you'll want to verify that mailboxes are ready to be moved before you submit a move request. To verify readiness, the Microsoft Exchange Mailbox Replication service proxy in the source forest checks the status of each mailbox you are moving and also ensures you have the permissions required to move the mailboxes from the source forest to the target forest. If a user has an archive mailbox or subscriptions, you will likely need to remove the archive mailbox, the subscriptions, or both before you are able to move the mailbox.

You can verify move readiness in the Exchange Management Shell by using New-MoveRequest with the –WhatIf parameter for each mailbox you plan to move. The following examples show two different ways you can verify whether Charlie Keen's mailbox can be moved:

```powershell
New-MoveRequest -Identity 'charliek' –Remote
RemoteHost 'mailserver17.cpandl.com'-mrsserver 'casserver21.cpandl.com'
-TargetDatabase "Engineering Primary" -WhatIf 'cpandl.com/users/Charlie Keen' | New-MoveRequest –Remote
RemoteHost 'mailserver17.cpandl.com'-mrsserver 'casserver21.cpandl.com'
-TargetDatabase 'Engineering Primary' -WhatIf
```

You can perform online mailbox moves between forests by following these steps:

1. In the Exchange Management Console, select the mailbox or mailboxes that you want to move. Right-click, and then select New Remote Move Request. This starts the New Remote Move Request Wizard. The mailboxes you selected are listed as the ones that will be moved. Click Next.

2. The source forest is the forest to which you are connected. In the Target Forest list, select the forest to which you are moving the mailboxes.

3. In the text box provided, type the fully qualified domain name of a Client Access server in the source forest that will act as the proxy server.
4. If you want to provide alternate credentials for the source forest, select the Use The Following Source Forest's Credential, type the user name, and then type the password for the account.

5. When the move request is complete, mail sent to the relocated users in the source forest will be redirected to the target forest. Enter the post-move external e-mail address for the user or users in the source forest.

6. When you click Next and then click New to initiate the move request, the Exchange Management Console calls into the shell and the shell runs New-MoveRequest for each mailbox you selected. Moving the mailboxes can take several hours, depending on the size of the mailboxes you are moving.

You can perform online moves in the Exchange Management Shell by using New-MoveRequest for each mailbox you plan to move. The following examples show two different ways you can move Bruno Denuit's mailbox:

```powershell
New-MoveRequest -Identity 'brunod' –Remote
RemoteHost 'mailserver17.cpandl.com' -mRSServer 'casserver21.cpandl.com'
TargetDatabase "Engineering Primary"

'cpandl.com/users/Bruno Denuit' | New-MoveRequest –Remote
RemoteHost 'mailserver17.cpandl.com' -mRSServer 'casserver21.cpandl.com'
TargetDatabase 'Engineering Primary'
```

After you initiate a move, you can check the status of the online move by using Get-MoveRequest. As shown in the following example, the key parameters to provide are the identity of the mailbox you want to check and the name of the proxy server:

```powershell
Get-MoveRequest –Identity 'brunod' -mRSServer 'casserver21.cpandl.com'
```

By default, basic information about the move request is displayed. To get more detailed information, add the –IncludeReport parameter as shown in this example:

```powershell
Get-MoveRequest –Identity 'brunod' -mRSServer 'casserver21.cpandl.com'
–IncludeReport
```

You can use Suspend-MoveRequest to suspend a move request that is not yet complete, and Resume-MoveRequest to resume a suspended move request. Resuming a suspended request allows it to complete.

At any time prior to running the move request completing, you can cancel the move by running Remove-MoveRequest and specifying the identify of the mailbox that shouldn't be moved, such as:

```powershell
Remove-MoveRequest –Identity 'brunod' -mRSServer 'casserver21.cpandl.com'
```
Configuring Mailbox Delivery Restrictions, Permissions, and Storage Limits

You use mailbox properties to set delivery restrictions, permissions, and storage limits. To change these configuration settings for mailboxes, follow the techniques discussed in this section.

Setting Message Size Restrictions for Contacts

You set message size restrictions for contacts in much the same way that you set size restrictions for users. Follow the steps listed in the next section.

Setting Message Size Restrictions on Delivery to and from Individual Mailboxes

Using the When The Size Of Any Attachment Is Greater Than Or Equal To Limit transport rule condition, you can set restrictions regarding the size of message attachments and specify what action to take if a message has an attachment that exceeds this limit. Sometimes, you need to set exceptions for specific users. For example, some users might need to be able to send large files as part of their job.

You set individual delivery restrictions by completing the following steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the Mail Flow Settings tab, double-click Message Size Restrictions. As shown in Figure 6-6, you can now set the following send and receive restrictions:

   ![Figure 6-6](image)

   You can apply individual delivery restrictions on a per-user basis.

   - **Sending Message Size** Sets a limit on the size of messages the user can send. The value is set in kilobytes (KBs). If an outgoing message exceeds the limit, the message isn’t sent and the user receives a non-delivery report (NDR).
   - **Receiving Message Size** Sets a limit on the size of messages the user can receive. The value is set in KBs. If an incoming message exceeds the limit, the message isn’t delivered and the sender receives an NDR.
3. Click OK. The restrictions that you set override the global default settings.
Setting Send and Receive Restrictions for Contacts

You set message send and receive restrictions for contacts in the same way that you set these restrictions for users. Follow the steps listed in the next section.

Setting Message Send and Receive Restrictions on Individual Mailboxes

By default, user mailboxes are configured to accept messages from anyone. To override this behavior, you can do the following:

- Specify that only messages from the listed users, contacts, or groups be accepted.
- Specify that messages from specific users, contacts, or groups listed be rejected.
- Specify that only authenticated users—meaning users who have logged on to the Exchange system or the domain—be accepted.

You set message send and receive restrictions by completing the following steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the Mail Flow Settings tab, double-click Message Delivery Restrictions. As shown in Figure 6-7, you can now set message acceptance restrictions.

3. If you want to ensure that messages are accepted only from authenticated users, select the Require That All Senders Are Authenticated check box.

![Message Delivery Restrictions](image)

**FIGURE 6-7** You can apply send and receive restrictions on messages on a per-user basis.
4. To accept messages from all e-mail addresses except those on the reject list, under Accept Messages From, select All Senders.

5. To specify that only messages from the listed users, contacts, or groups be accepted, select the Only Senders In The Following List option and then add acceptable recipients by following these steps:
   - Click Add to display the Select Recipient dialog box.
   - Select a recipient, and then click OK. Repeat as necessary.

   **Tip**  You can select multiple recipients at the same time. To select multiple recipients individually, hold down the Ctrl key and then click each recipient that you want to select. To select a sequence of recipients, select the first recipient, hold down the Shift key, and then click the last recipient.

6. To specify that no recipients should be rejected, under Reject Messages From, select No Senders.

7. To reject messages from specific recipients, under Reject Messages From, select Senders In The Following List and then add unacceptable recipients by following these steps:
   - Click Add to display the Select Recipients dialog box.
   - Select a recipient, and then click OK. Repeat as necessary.

8. Click OK.

### Permitting Others to Access a Mailbox

Occasionally, users need to access someone else's mailbox, and in certain situations, you should allow this. For example, if John is Susan's manager and Susan is going on vacation, John might need access to her mailbox while she's away. Another situation in which someone might need access to another mailbox is when you've set up special-purpose mailboxes, such as a mailbox for Webmaster@domain.com or a mailbox for Info@domain.com.

You can grant permissions for a mailbox in two ways:

- You can grant access to a mailbox and its content.
- You can grant the right to send messages as the mailbox owner.

If you want to grant access to a mailbox and its contents but not grant Send As permissions, use the Manage Full Access Permission Wizard. In the Exchange Management Console, right-click the mailbox you want to work with and then select Manage Full Access Permission. In the Manage Full Access Permission Wizard, click Add, and then use the Select User Or Group dialog box to choose the user or users who should have access to the mailbox. To revoke the authority to access the mailbox, select an existing user name in the Security Principal list box and then click Remove. Click Manage to set the desired access permissions.

If you want to grant Send As permissions, use the Manage Send As Permission Wizard. In the Exchange Management Console, right-click the mailbox you want...
to work with and then select Manage Send As Permission. In the Manage Send As Permission Wizard, click Add, and then use the Select Recipient dialog box to choose the user or users who should have this permission. To revoke this permission, select an existing user name in the Security Principal list box and then click Remove. Click Manage to set the desired Send As permissions.

In the Exchange Management Shell, you can use the Add-MailboxPermission and Remove-MailboxPermission cmdlets to manage full access permissions. Samples 6-4 and 6-5 show examples of using these cmdlets. In these examples, the AccessRights parameter is set to FullAccess to indicate you are setting full access permissions on the mailbox.

**Sample 6-4 Adding full access permissions**

**Syntax**

```powershell
Add-MailboxPermission –Identity UserBeingGrantedPermission
–User UserWhoseMailboxIsBeingConfigured –AccessRights 'FullAccess'
```

**Usage**

```powershell
Add-MailboxPermission –Identity 'CN=Jerry Orman,OU=Engineering,DC=cpandl,DC=com'
–User 'CPANDL\boba' –AccessRights 'FullAccess'
```

**Sample 6-5 Removing full access permissions**

**Syntax**

```powershell
Remove-MailboxPermission –Identity 'UserBeingGrantedPermission'
–User 'UserWhoseMailboxIsBeingConfigured' –AccessRights 'FullAccess'
–InheritanceType 'All'
```

**Usage**

```powershell
Remove-MailboxPermission –Identity 'CN=Jerry Orman, OU=Engineering,DC=cpandl,DC=com'
–User 'CPANDL\boba' –AccessRights 'FullAccess' –InheritanceType 'All'
```

If you want to allow another user to send messages as the mailbox owner, you can do this using the Manage Send As Permission Wizard. In the Exchange Management Console, right-click the mailbox you want to work with and then select Manage Send As Permission. In the Manage Send As Permission Wizard, click Add, and then use the Select User Or Group dialog box to choose the user or users who should have Send As permission on the mailbox. To revoke Send As permission, select an existing user name in the Security Principal list box and then click Remove. Click Manage to set the desired access permissions.
In the Exchange Management Shell, you can use the Add-ADPermission and Remove-ADPermission cmdlets to manage Send As permissions. Samples 6-6 and 6-7 show examples using these cmdlets. In these examples, the ExtendedRights parameter is set to Send-As to indicate you are setting Send As permissions on the mailbox.

**SAMPLE 6-6** Adding Send As permissions

**Syntax**

```
```

**Usage**

```
Add-ADPermission –Identity 'CN=Jerry Orman,OU=Engineering,DC=cpandl,DC=com' –User 'CPANDL\boba' –ExtendedRights 'Send-As'
```

**SAMPLE 6-7** Removing Send As permissions

**Syntax**

```
Remove-ADPermission –Identity UserBeingRevokedPermission –User UserWhoseMailboxIsBeingConfigured –ExtendedRights 'Send-As' –InheritanceType 'All' –ChildObjectTypes $null –InheritedObjectType $null –Properties $null
```

**Usage**

```
Remove-ADPermission –Identity 'CN=Jerry Orman,OU=Engineering,DC=cpandl,DC=com' –User 'CPANDL\boba' –ExtendedRights 'Send-As' –InheritanceType 'All' –ChildObjectTypes $null –InheritedObjectType $null –Properties $null
```

**NOTE** Another way to grant access permissions to mailboxes is to do so through Outlook. Using Outlook, you have more granular control over permissions. You can allow a user to log on as the mailbox owner, delegate mailbox access, and grant various levels of access. For more information on this issue, see the “Accessing Multiple Exchange Server Mailboxes” and “Granting Permission to Access Folders Without Delegating Access” sections in Chapter 16.

**Forwarding E-Mail to a New Address**

Except when rights management prevents it, any messages sent to a user’s mailbox can be forwarded to another recipient. This recipient can be another user or a mail-enabled contact. You can also specify that messages should be delivered to both the forwarding address and the current mailbox.
To configure mail forwarding, follow these steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the Mail Flow Settings tab, double-click Delivery Options.
3. To remove forwarding, in the Forwarding Address panel, clear the Forward To check box.
4. To add forwarding, select the Forward To check box and then click Browse. Use the Select Recipient dialog box to choose the alternate recipient.
5. If messages should go to both the alternate recipient and the current mailbox owner, select the Deliver Messages To Both Forwarding Address And Mailbox check box. (See Figure 6-8.) Click OK.

![Delivery Options](image)

**FIGURE 6-8** Using the Delivery Options dialog box, you can specify alternate recipients for mailboxes and deliver mail to the current mailbox as well.

### Setting Storage Restrictions on an Individual Mailbox

You can set storage restrictions on multiple mailboxes using global settings for each mailbox database or on individual mailboxes using per-user restrictions. Global restrictions are applied when you create a mailbox and are reapplied when you define new global storage restrictions. Per-user storage restrictions are set individually for each mailbox and override the global default settings.

**NOTE** Storage restrictions apply only to mailboxes stored on the server. They don’t apply to personal folders. Personal folders are stored on the user’s computer.
You'll learn how to set global storage restrictions in Chapter 10, “Mailbox and Public Folder Database Administration.” See the “Setting Mailbox Database Limits and Deletion Retention” section in that chapter.

You set individual storage restrictions by completing the following steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.

2. On the Mailbox Settings tab, double-click Storage Quotas. This displays the Storage Quotas dialog box, shown in Figure 6-9.

3. To set mailbox storage limits, in the Storage Quotas panel, clear the Use Mailbox Database Defaults check box. Then set one or more of the following storage limits:
   - **Issue Warning At (MB)** This limit specifies the size, in megabytes, that a mailbox can reach before a warning is issued to the user. The warning tells the user to clean out the mailbox.
   - **Prohibit Send At (MB)** This limit specifies the size, in megabytes, that a mailbox can reach before the user is prohibited from sending any new mail. The restriction ends when the user clears out the mailbox and the mailbox size is under the limit.
   - **Prohibit Send And Receive At (MB)** This limit specifies the size, in megabytes, that a mailbox can reach before the user is prohibited from sending and receiving mail. The restriction ends when the user clears out the mailbox and the mailbox size is under the limit.

   **CAUTION** Prohibiting send and receive might cause the user to think they've lost e-mail. When someone sends a message to a user who is prohibited from receiving messages, an NDR is generated and delivered to the sender. The original recipient never sees the e-mail. Because of this, you should rarely prohibit send and receive.

4. Click OK twice.
Setting Deleted Item Retention Time on Individual Mailboxes

Normally, when a user deletes a message in Microsoft Office Outlook, the message is placed in the Deleted Items folder. The message remains in the Deleted Items folder until the user deletes it manually or allows Outlook to clear out the Deleted Items folder. With personal folders, the message is then permanently deleted and you can’t restore it. With server-based mailboxes, the message isn’t actually deleted from the Exchange database. Instead, the message is marked as hidden and kept for a specified period of time called the deleted item retention period.

**NOTE** The standard processes can be modified in several different ways. A user could press Shift+Delete to bypass Deleted Items. As an administrator, you can create and apply policies that prevent users from deleting items (even if they try to use Shift+Delete). You can also configure policy to retain items indefinitely.

Default retention settings are configured for each mailbox database in the organization. You can change these settings, as described in Chapter 10 in the “Setting Mailbox Database Limits and Deletion Retention” section, or override the settings on a per-user basis by completing these steps:

1. Open the Properties dialog box for the mailbox-enabled user account by double-clicking the user name in the Exchange Management Console.
2. On the Mailbox Settings tab, double-click Storage Quotas. This displays the Storage Quotas dialog box, shown previously in Figure 6-9.
3. In the Deleted Item Retention panel, clear the Use Mailbox Database Defaults check box.
4. In the Keep Deleted Items For (Days) text box, enter the number of days to retain deleted items. An average retention period is 14 days. If you set the retention period to 0 and aren’t using policies that prevent deletion, messages aren’t retained and can’t be recovered. If you set the retention period to 0 but are using policies that prevent deletion, the messages are retained according to the established policies.
5. You can also specify that deleted messages should not be permanently removed until the mailbox database has been backed up. This option ensures that the deleted items are archived into at least one backup set. Click OK twice.

**REAL WORLD** Deleted item retention is convenient because it allows the administrator the chance to salvage accidentally deleted e-mail without restoring a user’s mailbox from backup. I strongly recommend that you enable this setting, either in the mailbox database or for individual mailboxes, and configure the retention period accordingly.
Index

Symbols and Numbers

$env:path, 96
$remoteSession, 107
$search session, 112
$sessionOptionsTimeout variable, 107
/modererecoverserver command, 574
| pipe symbol, 116
32-bit processors
description of, 4
I/O performance for Mailbox servers, 31
management tools for, 53
64-bit processors
description of, 3–4
I/O performance for Mailbox servers, 31

A

accepted domains
changing type and identifier, 440–441
creating, 438–440
removing, 441
understanding, 436–437
viewing, 437–438
accessibility options, Outlook Web App, 624,
629–630
active databases, 311
Active Directory
about, 14
accounts, disabling, 149
Client Access servers and, 40
configuring, 51
data storage and, 74–75
Edge Transport server and, 41–42
Exchange data in, 15–17
Exchange Server 2010 and, 39–44
Exchange Server and, 7, 17–19
global catalogs, 46, 74–75
Hub Transport servers and, 39–42, 60
IP subnets, 60
Mailbox servers and, 41
mailboxes, 117–118
multimaster replication, 74
permissions, 245, 362
preparing for Exchange Server 2010, 43–44
remote management tools, 32, 35, 38
roles, integrating with, 39–42
site details, 383–385
site link details, 385–387
site-based routing, 59–60
Unified Messaging servers and, 41
users, 117
Active Directory Lightweight Directory Services
(AD LDS), 39, 41–42
Active Directory Topology, Microsoft Exchange, 11
Active Directory Users and Computers, 15, 45
active mail profile, 620
Active Manager, 285–287
ActiveSync. See Exchange ActiveSync
Add A Recipient To The To Field Addresses
(transport rules), 426
Add cmdlets
Add-ADPermission, 362, 377
Add-Computer, 97, 99
Add-DistributionGroupMember, 201–203
Add-IPAllowListEntry, 461
Add-IPBlockListEntry, 463
Add-MailboxDatabaseCopy, 284, 326, 571, 592
Add-PSSnapin, 111
Add-PublicFolderAdministrativePermission, 362
Add-PublicFolderClientPermission, 362, 376
Add-WindowsFeature, 38
Add/Remove Self As Member permission, 241
Address Book feature (Outlook Web App), 627
Address Book Search feature (Outlook Web App), 627
Address Book service, 11
address books, offline. See OAB (offline address book)
Address Lists role, 245
Address Lists segmentation, 470
address lists, managing. See also OAB (offline address book)
configuring clients to use, 222
creating and applying, 218–221
custom mailbox attributes, defining, 173
domainwide configuration and updates, 222–223
groups, hiding from, 214
lists, editing, 223–224
lists, renaming and deleting, 224–225
mailboxes, hiding from, 172–173
overview, 71
using default lists, 217–218
administration of mailboxes
mailbox properties, configuring, 182–189
mailboxes, moving, 173–181
management essentials, 169–173
administration of special purpose mailboxes

administration of special purpose mailboxes
arbitration mailboxes, 158, 167–168
archive mailboxes, 158, 166–167
discovery mailboxes, 158, 168
forwarding mailboxes, 157, 165
linked mailboxes, 70, 157, 162–164
room and equipment, creating, 160–162
room and equipment, using, 157–160
shared mailboxes, 158, 169
administration tools
command-line, 22
graphical, 19–21
quick reference table, 21
administrative groups, 15, 63
administrative permissions, 362
Administrative Tools program group, 21
Adobe PDF documents, viewing, 528
age limits, 99, 341
alerts, 20, 165
aliases
Exchange Server aliases, 117–118, 143–144
for cmdlets, 98, 101–103
for contacts, 153
missing, 445
All Contacts address list, 217
All Extended Writes permission, 241
All Groups address list, 218
All Rooms address list, 218
All Users address list, 218
All Validated Writes permission, 241
Allow setting, 630
anonymous authentication or permission enable/disable, 480
for mailboxes, 619
HTTP server, 477
permissions, changing, 374
Receive connector, 404
virtual directories, 478–479
anti-spam features
automatic updates, 415–416
capabilities, 10–11
enabling, 414–416
Hygiene Management Group, 16
anti-spam message filtering
by recipient, 455–456
by sender, 453–455
internal servers, 464–465
with IP block lists, 456–460
Anti-Spam Update, 12, 551
anti-virus/spam capabilities, Exchange Server, 10–11, 13–14
Append Disclaimer Text (transport rules), 426
application data, 17, 579
application log, 549
Apply Message Classification (transport rules), 426
apply-filter containers (dynamic groups), 192
arbitration mailboxes, 158, 167–168
architecture layers, 25–26
archive mailboxes, 146, 158, 166–167, 570
area code (dial-up connections), 634–635
ASP.NET impersonation, 477, 481
assigning permissions, 234–235
asynchronous replication technology, 30
attachments
size restrictions, 182
storage location, 76
viewing without opening applications, 528
Audit Logs role, 245
auditing Exchange usage, 268–270
authentication
basic, 109, 477
cmdlets, 479
credential for, 106–107
directory layer and, 25
enabling/disabling, 8, 89
Exchange Server and, 14–15
method specification, 111
methods, 477–478
OAB, 484, 598
POP3 and IMAP4, 492–493
settings for virtual directories, 478
types of, 109
Author permission, 374, 620
authoritative domains, 436
authorization, 25
Autodiscover
authentication settings, 478
description of, 63
understanding, 503–505, 597–598
virtual directories, 469
AutoDiscoverAndConnect, 104
automatic failover, 28
automatic replies, 629
autotagging, 270
availability, 570–572. See also database availability groups (DAG)
Availability service, Client Access server, 33

B
back pressure, 435–436
background jobs, 113
backup utilities for Windows Server 2008, 583
backups
alternate services, mounting mailboxes on, 593–594
backup options, choosing, 577–578
basics of, 572–573
cloning Edge Transport server configurations, 592–593
destination type, 583
disaster recovery plan, creating, 574–577
manual backup, 582–583
off-site storage, 577
on Windows Server 2008, 580–583
operations, 31, 281
Outlook 2003 clients, 594
personal folders, 576, 615
recovery server mode, 574
scheduling, 576, 579, 581–582
storage location for, 580–581, 583
streaming Extensible Storage Engine-based backup programs, 577
types of backups, 579–580
VSS-based backups, 577
baseline configuration checks, 533
basic authentication, 109, 477
Best Practices Analyzer, 20, 533
binary files, 6
bindings, 472, 490–492
blind and low-vision users, 624, 629–630
Blind Carbon Copy (Bcc) The Message To Addresses (transport rules), 426
block lists. See IP block lists
Block setting, 630
Bluetooth functionality, 514
booking resources, 12
bridgehead servers, 16, 236, 407
browsers, 596, 625
built-in accounts, 149
built-in groups, 197

CA (certificate authority), 121, 474–475
CAL (Client Access License), 6
calendar
   retrieval settings (POP3 and IMAP4), 496
   segmentation, 470
   settings, 629
   updates, 12
Categorizer, 60, 119–120
CCR (Cluster Continuous Replication), 2, 30, 282
certificate authentication, 109
certificates, public, 128
certification authority (CA), 121, 474–475
Change Password permission, 241
Change Password segmentation, 470
checkpoint file, 77, 81, 279
Checkpoint-Computer cmdlet, 97
CheckServicesStarted, 105
circular transaction logging, 573
Clean-MailboxDatabase cmdlets, 284
Clear cmdlets
   Clear-ActiveSyncDevice, 519
   Clear-EventLog, 98
   Clear-Host, 99
   Clear-Variable, 99
Client Access License (CAL), 6
Client Access Server (CAS) array cmdlets, 34–35
description of, 9
failover support, 34
features, 47
load balancing, 34, 40, 51
related services, 34

Client Access server role
   about, 9, 26, 28
   configuration, 28
   deploying, 45, 50
   Exchange Server and, 45
   forest organization, 49
   high availability, achieving, 51
   IIS and, 467
   installation of, 35, 54
   migrating, 46
   multiple servers and, 51
   Organization Configuration node and, 67
   security and, 50
   Server Configuration node, 69
   transitioning, 48
Client Access server, Web and mobile access
   configuring, 472–473, 484–488
   controlling access to the HTTP server, 477–481
   enabling SSL on Web sites, 473–475
   redirecting users to alternate URLs, 476–477
   restricting incoming connections, 475–476
   segmentation, 470–472
   setting time-out values, 475–476
   starting, stopping, and restarting Web sites, 483–484
   throttling Client Access, 481–483
   virtual directories, 469–470, 478
   Web applications, 469–472
Client Access servers
   Active Directory and, 40
   arrays, 34–35
   Availability service, 33
   deploying, 33–35, 55
   deploying Outlook Anywhere, 497–502
   disaster recovery plan for, 575
   Exchange ActiveSync, 55, 468–469, 486–487
   Exchange Server and, 34
   Forefront Protection and, 10
   I/O operations, 33
   IIS (Internet Information Services), 468–469
   installing, 468
   multiple servers and, 51
   Outlook Web App (OWA), 468–469
   site-based routing, 60
Client Access servers protocol (POP3 and IMAP4)
   authentication, 33, 492–493
   bindings, 490–492
   connection settings, 494–495
   enabling services, 488–490
   message retrieval settings, 495–497
   client permissions, 362, 373–376
   clients
      address lists, configuring to use, 222
      offline address lists, configuring to use, 228–229
      Outlook 2003 and, 278
      public folder data, accessing, 345
      public folders, accessing, 358
   cloud service. See Exchange Online
cluster

- Cluster Continuous Replication (CCR), 2, 30, 282
- clustered Mailbox servers, 1–2, 29

Cmdlet Extension Agents role, 245

cmdlets
- aliases, 101–103
- commonly used, 97–99
- errors, types of, 101
- Exchange Management Shell, 115–116

- overview, 22–23
- parameters, list of, 100–101
- public folders, list of, 362–363
- redirect output, 116
- verb names for, 95
- Windows PowerShell, 95–103

command logging, 103–104

command-line administration tools, 22. See also Windows PowerShell

company-specific filters
- creating e-mail address policies, 444
- for address lists, 220
- for dynamic groups, 207, 209

Compare-Object cmdlets, 98

compliance, message retention, 270–276

compression, 300

custom attributes for mailboxes, 173

custom referrals, 346–347

custom roles
- creating, 260–262
- role entries, 264–268
- role scopes, 262–264

custom recipients. See mail-enabled accounts

custom referrals, 346–347

data availability, 570–572

Data Collector Sets, 556
data protection, 4
data replication, 2
data storage
- Active Directory and, 74–75
- Exchange Information Store and, 75–78
- Exchange Server message queues and, 78–81
- type of, 17

database availability group networks
- adding/removing, 296–299
- changing settings, 299–300
databases

database availability groups (DAG)
commands, 284
creating, 287–295
creating copies, 284–285
mailbox databases, 1
mailbox role, 50, 245
mailbox servers, 2, 30
membership, managing, 292–295
networks, managing, 296–298
properties, configuring, 301–303
public folders databases, 31
removing, 304
SANs and, 281
servers, removing from, 303
shared storage, 31
switching over servers/databases, 304–307
using, 282–285
database copies, 570
Database Copies role, 248
database copy strategies, 572
database structures, 279–281
database.edb, 77
DatabaseName.edb, 279
databases
availability, improving, 282–285
Exchange Information Store and, 75–76
Exchange Server and, 30–31
files, 279–281
performance, 31–32
portability, 414
recoverability, 280
recovering, 578
requirements for, 30–31
size recommendation, 280
storage groups and, 1, 279
using, 278
Databases role, 248
data-center coordinator mode, 302
data-retention. See also retention
policies, 141
rules, 2
tags, 271–274
dedicated expansion server, 75
Default Global Address List, 217
Default Offline Address Book, 217
default public folders, 357–358
Default Role Assignment Policy, 249
delayed fan-out, 62
department-specific filters
creating e-mail address policies, 444
for address lists, 220
for dynamic groups, 207, 209
Details Templates Editor, 20
diagnostics service, 12
dial-in responsiveness, 50
dial-tone database, 578
dial-up connections, 634–637
differential backups, 580
digest authentication, 478
direct file access, 521–526
Direct Push feature, 505–506
directory layer, 25
Disable cmdlets
Disable-DistributionGroup, 197–198
Disable-Mailbox, 118, 148, 167
Disable-MailContact, 118, 155
Disable-MailPublicFolder, 362, 369
Disable-MailUser, 118, 134
Disable-OutlookAnywhere, 502
disaster recovery, 2, 570
disaster recovery plan, 574–577
Disaster Recovery role, 245
Discover-ExchangeServer, 104–105
discovery mailboxes, 158, 168
Discovery Management Group, 16, 235
Discovery Management role, 270
disk drives, 4
disk usage tracking, 560–561
Dismount-Database cmdlets, 284, 351
display names
about, 117–118
alternate, in multilanguage environments, 172
for forwarding mailboxes, 165
for room and equipment mailboxes, 158
for user accounts, 143–144
setting and changing, 142–144
distribution groups
address lists, hiding from, 214
delivery reports options, 216
dynamic groups. See dynamic distribution
groups
e-mail address management, 213
group name information, changing, 212–213
groups, creating, 195–200
groups, deleting, 216–217
groups, viewing, 126–127
managers, adding/removing, 202–203
membership, assigning/removing, 200–201
membership, configuring, 203–205
message size restrictions, 215–216
moderated groups, 167
out-of-office messages, 216
permissions, 234–235
scope of, 71, 192
types of, 167
usage restrictions, 214–215
Distribution Groups role

distribution groups, continued
user accounts, 123–124
users, adding, 14
when to use, 193–194
Distribution Groups role, 245
DNS, 7, 21, 51–52
DNS Lookup servers, 394–395
Do Not Permanently Delete Mailboxes And Items Until The Database Has Been Backed Up, 320
domain controllers
  global catalog and, 9
  global catalog servers, 74–75
  multimaster replication, 74
  Organization Configuration node, 67–68
  Server Configuration node, 70
writeable, 39
domain data, 17, 74
Domain partition storage, 18
downgrade editions, 58
dual-core CPUs, 4
DVDs for storing backups, 581
dynamic distribution groups
cmdlets, modifying using, 210–212
described, 70
expansion servers, designating, 210
filter conditions, changing, 209
groups, creating, 205–208
LDAP queries and, 75
membership, previewing, 212
permissions, assigning, 234–235
query filters, 209
scope of, 192
when to use, 194

E
E##.chk, 77, 279
E##.log, 77, 279
E##00000001.log, 77, 280
E##Res00001.jrs, 77, 280
ECMA (European Computer Manufacturers Association) script, 625
Edge Subscriptions role, 245
Edge Transport servers role
configuration, 27
deploying, 28, 37, 39, 45, 50
description of, 9–10, 27
installing, 362
migrating, 47
Edge Transport servers
about, 37–38
accepted domains, 436–441
Active Directory and, 41–42
deploying, 19, 37–39, 51, 55
disaster recovery plan, 574
file location, 81
Forefront Protection and, 10
mail connectors, 119
managing, 381–382
product key and, 6, 58
queues
recovering, 592–593
Edge Transport servers, anti-spam and message filtering
by recipient, 455–456
by sender, 453–455
internal servers, 464–465
with IP block lists, 456–460
Edge Transport servers, e-mail address policies
creating, 443–446
deployment and applying, 446–447
removing, 448
viewing, 416–443
Edge Transport servers, filtering connections with IP block lists
applying, 457–459
block list provider priority, 459
custom error messages, 460
exceptions, 460–461
global allowed list, 461–464
status codes, 457–458
Edge Transport servers, Pickup and Replay directories
back pressure, 435–436
configuring and moving, 431–432
limits, configuring, 433–434
processing speed, 432–433
throttling, configuring, 434–435
understanding, 430–431
Edge Transport servers, remote domains
creating, 449–451
messaging options, 451–452
removing, 453
viewing, 448–449
Edge Transport servers, setup after installation
anti-spam features, 414–416
journal rules, 423–425
postmaster address and mailbox, 409–410
shadow redundancy, 413–414
transport dumpster, 411–413
transport limits, 410–411
transport rules, 425–429
Edge Transport servers, subscribing
creating, 417–419
details, 419–420
removing, 422–423
synchronizing, 420–421
verifying, 421–422
EdgeSync service, 12, 41–42, 416, 551
editions, Exchange Server, 5–11, 57–58
Editor permission, 374, 620
e-mail
  off-site users, 214
  organization options, 629
  policies, 47, 70
  routing, 119–120
  settings, 629
E-mail Address Policies role, 245
Exchange Organizations

Exchange Organizations
Administrators Group and, 28, 44, 52
Exchange Server and, 44–45
Exchange Public Folder Administrators Group, 44
Exchange Recipient Administrators Group, 44
Exchange Routing Group, 44–45
Exchange Search, 168, 307
Exchange Security Groups, 44, 234, 238, 252
Exchange Self-Service Administrators Group, 44

Exchange Server 2003
administrative groups, 15
integrating into Exchange Server, 42–44
migrating to Exchange Server, 46–48
moving mailboxes to Exchange Server, 45
moving to Exchange Server, 46
native mode, changing to, 43
organizations and Exchange Server, 44–45
removing, 48–49
routing groups, 407–408
security groups, 235
transitioning from, 48–49

Exchange Server 2007
integrating into Exchange Server, 42–44
mailbox servers, deploying, 29
migrating from, 46–48
moving mailboxes to Exchange Server, 45
moving to Exchange Server, 46
organizations and Exchange Server, 44–45
security groups, 235
transitioning from, 48–49

Exchange Server 2010
Active Directory and, 39–44
administrative groups, 15
Client Access server role, 45
cross-premises routing, 63
Exchange Management Shell and, 7, 22–23
Exchange Organizations and, 44–45
Exchange Server 2010 configuration
first time, 600–601
for existing Exchange organizations, 44–45
managing, 50
Outlook, first time connection, 600–601
Outlook, later connections, 605
Exchange Server 2010 management
backup and restore operations, 31
connecting, 598
deploying, 55–56
group control settings, 193
installing, 52–56
installing new servers, 50–52, 82
integrating into existing Exchange organizations, 42–43
migrating to, 46–48
roles, add/remove, 56
roles, installing/deploying, 50–55
setup, 34, 50
transitioning to, 48–49
troubleshooting basics, 531–535
Exchange Server 2010 security
advanced permissions management, 259–268
auditing server usage, 268–270
cross-premises routing, 63
collaboration and messaging retention, 270–276
role-based permissions, 244–259
standard permissions, 233–244
universal security group, 44
Exchange Server Certificates role, 248
Exchange Server Services
automatic recovery, 86
disabled option, 84
graphical administration tools, 19–21
management groups, 235–238
message queues, 78–81
multiple servers, 51
.NET Framework and, 7, 52
organizations, 30–31, 59
personal folders and, 619
previous editions, changes from, 1–2
recipient resolution, 119–120
server mailboxes, 612
Setup Wizard, 43
site membership, 29
storage groups, 1
transaction logs, 31
WS-Management protocol and, 7

648
expansion servers, 194, 210
Export cmdlets
  Export-Alias, 98
  Export-Counter, 99
  Export-Mailbox, 118
Extended SMTP (ESMTP), 398
Extensible Storage Engine (ESE), 1, 31, 76, 282, 551
External DNS Lookup servers, 394–395
external hard disk for storing backups, 581

F
failover, 2, 30, 283, 304
Failover Cluster Manager, 285–288
failover support, 34
faxes, 27, 119
FDS, MSExchange, 552
Federated Sharing role, 246
federation trusts, 66
file compare command, 533
File Distribution, Microsoft Exchange, 12
files, databases, 76–78, 80–81
filter conditions, dynamic distribution groups, 209
Filter Pack, Microsoft, 32
firewalls, 125
Forefront Management Shell, 23, 113
Forefront Protection, 10–11, 13–14, 551
Forefront Protection for Exchange Server
  ADO/EWS Navigator, 13
  Controller, 13
  Eventing Service, 14
  Exchange Registration Service, 14
  Mail Pickup, 14
  Monitor, 14
forests
  linked mailboxes across, 162–163
  moving mailboxes across, 173–174
  transitioning to resource forest organization, 49
Format cmdlets
  Format-List, 171
  Format-List output, 116
  Format-Table, 171
Forms authentication, 478
Forms Based Authentication, Microsoft
  Exchange, 12
forwarding
  mail to new address, 186–187
  mailboxes, 157, 165
free disk space, 560
free/busy system folders, 48
full backups, 579
Full Control permission, 241
full server recovery, 583–585
full-text indexing
  about, 307–308
  files, 280
  script, 309
G
GAL (global address list), 222
GAL Synchronization, 49
general management cmdlets, 362
Get cmdlets
  Get-AcceptedDomain, 438
  Get-ActiveSyncDeviceStatistics, 521
  Get-ActiveSyncMailboxPolicy, 138, 506–507
  Get-ADPermission, 362
  Get-AdSite, 384–386
  Get-Alias, 98
  Get-AuthenticodeSignature, 98
  Get-AutodiscoverVirtualDirectory, 503–504
  Get-ClientAccessArray, 34
  Get-ClientAccessServer, 532
  Get-Command, 22–23, 97–98
  Get-Command "fse", 23
  Get-Contact, 127
  Get-Couter, 98
  Get-Credential, 98, 106
  Get-DistributionGroup, 204
  Get-DistributionGroupMember, 200–201
  Get-DynamicDistributionGroup, 210–211
  Get-ECVirtualDirectory, 125–126
  Get-EdgeSubscription, 420
  Get-EmailAddressPolicy, 442–443
  Get-EventLog, 98
  Get-ExchangeServer, 54, 532
  Get-Excommand, 22
  Get-ExecutionPolicy, 93, 98
  Get-Group, 127
  Get-Help, 97
  Get-Host, 98
  Get-HotFix, 98
  Get-IMAPSettings, 490
  Get-IPAllowListEntry, 462
  Get-IPBlockListEntry, 463–464
  Get-Location, 98
  Get-Mailbox, 118, 482–483
  Get-MailboxDatabase, 284, 349–350, 593
  Get-MailboxDatabaseCopyStatus, 284, 336–337
  Get-MailboxServer, 532
  Get-MailboxStatistics, 171
  Get-MailContact, 118
  Get-MailPublicFolder, 362
  Get-MailUser, 118, 131–132
  Get-MessagingTrackingLog, 538–539
  Get-MobileDeviceStatistics, 519–520
  Get-MoveRequest, 176, 178, 181
  Get-OrganizationalConfig, 534
  Get-OutlookAnywhere, 498
  Get-OWAVirtualDirectory, 469, 526, 528, 530
  Get-POPSettings, 490
get functions

Get cmdlets, continued
Get-Process, 98, 112
Get-PSDrive, 98
Get-PublicFolder, 360–362, 370–371
Get-PublicFolderAdministrativePermission, 362
Get-PublicFolderClientPermission, 362, 375
Get-PublicFolderDatabase, 349–350
Get-PublicFolderItemStatistics, 363
Get-ReceiveConnector, 405
Get-RemoteDomain, 449
Get-RetentionPolicy, 138
Get-RoutingGroupConnector, 407
Get-SendConnector, 394
Get-Service, 98, 112
Get-ThrottlingPolicy, 478, 482
Get-TransportConfig, 409
Get-TransportServer, 532
Get-UMServer, 532
Get-User, 127
Get-Variable, 99

get functions
GetCASServers, 105
get-exbanner, 104
get-exblog, 104
GetExchangeServerInSite, 105
get-excommand, 104, 115
get-help, 115
GetHostFqdn, 105
GetHubMailboxUMServers, 105
get-mailbox, 116
GetMetabases, 105
get-pscommand, 104
GetServerFqdnFromNetworkAddress, 105
GetSiteAndForest, 105
get-tip, 104
GetURL, 105
OpenExchangeRunSpace, 105
PrintUsageAndQuit, 105
quickref, 104

global address list (GAL), 71, 217, 222
global allowed list, 461–464
global block list, 462–464

global Catalog servers
  Active Directory data store, 74–75
domain controllers, 9, 39
migrating servers, 46
global security group, 203, 235
global variables, 107
globally unique identifier (GUID), 2, 31
graphical administration tools, 19–21
group ownership control settings, 193–194
Group Policy, 89
Group-Object cmdlet, 98
groups. See also database availability groups (DAG);
distribution groups; dynamic distribution groups;
management groups; security groups
address lists and, 214

administrative groups, 15
creating, 629
domain server groups, 43
management groups, 235–238
role groups, 249–252
routing groups, 59
storage groups, 1–2, 30, 279

H

hardware
Exchange Server 2010 and, 3–5
guidelines for choosing, 3
scenario for, 28–29
help cmdletName, 23
Help Desk Group, 16, 237
helper functions, 105
high availability, 570
hold policy, 272
host services, 12–13
HTML (Hypertext Markup Language), 625
HTTP (Hypertext Transfer Protocol)
about, 33
Activation component, 35
advantages/disadvantages, 604
connecting, 599
controlling access to, 477–481
port settings, 490
Hub Transport role
configuration, 27
deploying, 37–38, 45
description of, 27
forest organization, 49
high availability, achieving, 50
installing, 9, 38, 50
migrating, 46
multiple servers and, 51
Organization Configuration node and, 67
Server Configuration node, 70
transitioning, 48
Hub Transport servers
about, 37–38
accepted domains, 436–441
Active Directory and, 39–42, 60
content conversion, 38
deploying, 19, 37–39, 55
description of, 18
disaster recovery plan, 574
Exchange Server 2003 and, 55
file location, 81
Forefront Protection and, 10
IP site links, 61–62
mail connectors, 119
managing, 381–382
messages service, 12
multiple servers and, 51
queues
site-based routing, 60
Hub Transport servers, anti-spam and message filtering
by recipient, 455–456
by sender, 453–455
internal servers, 464–465
with IP block lists, 456–460
Hub Transport servers, completing setup after installation
anti-spam features, 414–416
journal rules, 423–425
postmaster address and mailbox, 409–410
shadow redundancy, 413–414
transport dumpster, 411–413
transport limits, 410–411
transport rules, 425–429
Hub Transport servers, E-mail address policies
creating, 443–446
editing and applying, 446–447
removing, 448
viewing, 416–418
Hub Transport servers, filtering connections with IP block lists
applying, 457–459
block list provider priority, 459
custom error messages, 460
exceptions, 460–461
global allowed list, 461–464
status codes, 457–458
Hub Transport servers, Pickup and Replay directories
back pressure, 435–436
configuring and moving, 431–432
configuring limits, 433–434
configuring throttling, 434–435
processing speed, 432–433
understanding, 430–431
Hub Transport servers, remote domains
creating, 449–451
messaging options, 451–452
removing, 453
viewing, 448–449
Hygiene Management Group, 16, 237
Hypertext Markup Language (HTML), 625
Hypertext Transfer Protocol (HTTP).
See also HTTP (Hypertext Transfer Protocol)

I/O performance
about, 31
Client Access servers, 33
Exchange Server, 31–32
Mailbox servers, 31
Unified Messaging servers, 36
identity integration solution, 49
idle timeout value, 107
IIS (Internet Information Services). See also Outlook Web App (OWA)
changing Web site identity, 472–473
Internet Message Access Protocol version 4 (IMAP4)
components, 32, 35, 37–38
PowerShell and, 108–109
remote management and, 86
self-signed certificates, 121
IIS 6 (Internet Information Services), 52
IIS Admin, 11
IIS Manager, 21
IMAP4 (Internet Message Access Protocol version 4)
advantages/disadvantages, 602–603
Client Access servers and, 33
connecting, 599
description of, 12
global settings, 146
management role, 248
port settings, 490
public folders, 278, 610–611
self-signed certificates, 121
start up configuration, 82
IMAP4, configuration
authentication, 492–494
bindings, 490–492
connection settings, 494–495
enabling, 488–490
message retrieval settings, 495–497
IMCEA (Internet Mail Connector Encapsulated Addressing), 119
Import cmdlets
Import-Alias, 98
Import-Counter, 99
Import-Mailbox, 119
Index rules, 625, 629
incremental backups, 580
indexing, 307–309
InetOrgPerson objects, 117
Information Rights Management role, 246
information store. See Exchange Information Store
installable file system, 31
installation requirements, 6–7
Installation Wizard, 52
instant messaging, 625
Instant Messaging segmentation, 470
Intel Itanium, 4
Internal DNS Lookup servers, 394–395
internal hard disk for storing backups, 580
internal servers, IP address filter prevention, 464–465
Internet E-mail servers configuration, 601–603
Internet Information Services (IIS). See IIS (Internet Information Services)
Internet mail accounts
Outlook 2007 and, 606
Outlook 2010 and, 606
Windows Live Mail and, 606
Internet Mail Connector Encapsulated Addressing (IMCEA), 119
Internet Protocol/Voice over Internet Protocol (IP/VoIP), 36
Internet Receive Connector, 45
Internet Send Connector, 45
Internet-facing servers, 54
Inter-Organization Replication tool, 48–49
Invoke-Command cmdlets, 98, 112
IP (Internet protocol) address, 88–89
Reputation Service, 10
site links, 60–62
subnets, 60
IP addresses, 461–464
IP block lists
applying, 457–459
custom error messages, 460
exceptions, 460–461
global allowed list, 461–464
provider priority, set and enable, 459
status codes, 457–458
IP/VoIP (Internet Protocol/Voice over Internet Protocol), 36
IP-PBXs, 36
ISP mail, 609–610

JavaScript, 625
journal rules, 423–425
Journal segmentation, 470
journaling, 246
junk e-mail, 10

Keep Deleted Items For (Days), 319
Keep Deleted Items setting, 175
Keep Deleted Mailboxes For (Days), 319

lagged database copy, 571
language. See also Exchange Language Option
dictionary language, 629
multilanguage environments, 172
scripting language, 92, 96, 625
last logon information (mailboxes), 170–172
LCR (Local Continuous Replication), 1, 30, 282
LDAP (Lightweight Directory Access Protocol), 39, 75, 117
Legacy Receive Connector, 45
Legacy Send Connector, 45
legacyDN, 55
Legal Hold role, 246
licensing, 6, 57–59
Light Outlook Web App, 624
Lightweight Directory Access Protocol (LDAP), 39, 75, 117
Limit-EventLog cmdlet, 99
limits, storage/size
mailbox databases, 317–320
mailboxes, 175
message size restrictions, 182
messaging limits, 372–373
public folders, 340–343, 372–373
linked mailboxes, 70, 157, 162–164
List Contents permission, 241
Live ID basic authentication, 109
load balancer, 313
load balancing, 28, 34–35, 40
Local Continuous Replication (LCR), 1, 30, 282
Local PowerShell, 22
Log An Event With Message (transport rules), 426
log files, 279
logical unit numbers (LUNs), 281
logon names
about, 128–129
setting and changing, 142–143
Lotus Notes, 119

mail
attachments, 76
connectors, 119
contacts, 71
gateways, 119
transport service, 13, 81
mail clients
accessing public folders, 358
create address list for, 218–221
Mail Enabled Public Folders role, 246
Mail Flow Troubleshooter, 20
mail forwarding to new address, 186–187
mail profiles, 620–622
Mail Recipient Creation role, 246
Mail Recipients role, 246
Mail Submission, Microsoft Exchange, 12
Mail Tips role, 246
mail.que, 37, 80
Mailbox Assistants, 12
Mailbox database copies
copy status values, 334–336
creating, 324–326
reasons for creating additional, 312
removing, 337–338
replication, 327–329, 333–336
status, determining, 349–350
updating, 329–333
values, setting, 327
working with, 323
Mailbox databases
copies. See Mailbox database copies
creating, 313–316
default public folder database, 316–317
defined, 311
deleted items, recovering, 322–324
deleted mailboxes, recovering, 321–322
deleted-item retention, 317–320
deleting, 355–356
maintenance interval, setting, 352–353
mounting and dismounting, 348–352
mounting on alternate server, 593–594
moving, 353–355
multiple, 570
OAB and, 316–317
renaming, 355
size limits, 317–320
status, determining, 312–313
using, 278
Mailbox delivery queue, 79, 562
Mailbox Import Export role, 246
Mailbox Replication Service (MRS), 12, 174, 180
Mailbox Search role, 246
Mailbox server role
automatic failover and, 28
description of, 26, 28
forest organization, 49
installation of, 9, 32, 45, 50, 54
migrating, 46
multiple servers and, 51
Organization Configuration node and, 66
removing, 56
Server Configuration node, 69
transitioning, 48
Mailbox servers
Active Directory and, 41
antispm/antivirus, 10
deploying, 29–32, 56
disaster recovery plan, 574
folders, access to, 618–620
I/O performance, 31
installing, 278
messages service, 12
migrating, 47
product key, 6, 58
records management, 275–276
recovering, 591–592
site-based routing, 60
transitioning, 48
using, 612
Mailbox servers, multiple servers
advantage of, 28
licensing, 58
logging on as mailbox owner, 616
mailbox access, delegating, 616–618
opening additional Exchange Mailboxes, 618
permissions, changing, 616
reasons for using, 616
roles, deploying, 51
mailbox-enabled
recipients, 70
user account, 117, 122–123, 128
mailboxes
adding to existing user accounts, 140–142
databases, 1
deleting, 148–149
disconnected, 71
forest organization, 49
managing, 71
migrating, 63
moving, 71
overview, 157
postmaster address, 409–410
properties, configuring, 169–189
search services, 14, 82
size requirements, 76
stores, 12
user accounts for, 135–140
viewing, 126–127
mailboxes, administration of
deleted retention time, setting, 189
management essentials, 169–173
message size restrictions, 182
moving mailboxes, 173–181
permitting others access, 184–186
properties, configuring, 182–189
send and receive restrictions, 183–184
special purpose mailboxes, 157–169
statistics, viewing, 170–172
storage restrictions, 187–188
mail-enabled accounts
contacts, 118, 150–152
managing, 134–135
recipients, 70
user accounts, 118, 122, 129–133
mail-enabled public folders, 379
mail-enabled security groups, 192, 195–198
mail-enabled user groups, 203
mail-enabling
cmdlets, 362
existing universal security groups, 195–198
existing user accounts, 133–134
public folders, 368–371
Mailflow Troubleshooter, 531
managed folders, 71, 137, 141
Management Console, IIS 6, 52
management groups, 235–238
management roles
organization scope, 245–248
server scope, 248
user scope, 249
MAP4, MSExchangeI, 552
MAPI (Messaging Application Programming Interface), 146
Measure-Command cmdlet, 98
Media Audio Voice Code, 36
Media Encoder, 36
membership approval control settings, 193–194
memory, 3
memory usage tracking, 557–559
message attachments, 625
classifications, 271
count (mailboxes), 170–172
format options (POP3 and IMAP4), 495
retention compliance, 270–276
sort order options (POP3 and IMAP4), 495
throttling, 13, 434–435
message tracking about, 38
configuring, 536–538
log fields, 539–540
tracking logs, 538–541
Message Tracking role, 246
Message Tracking tool, 20
messages categorization of, 39
management of, 10
managing delivery and processing, 612–615
messaging adapter, 292
layer, 26
limits, 372–373, 433–434
network, 295
roles, 26–29. See also roles
routing/delivery efficiency, 50
server, 9
Messaging Application Programming Interface (MAPI), 146
Messaging Policies, 552
messaging protocols. See IMAP4 (Internet Message Access Protocol version 4); POP3 (Post Office Protocol version 3)
Messaging Records Management, 270
Metabase Compatibility, IIS 6, 52
Microsoft .NET Framework. See .NET Framework
Microsoft 2007 Office System Converter, 32
Microsoft Exchange Active Directory Topology, 11
Microsoft Exchange Address Book, 11
Microsoft Exchange Anti-Spam Update, 12
Microsoft Exchange EdgeSync, 12
Microsoft Exchange File Distribution, 12
Microsoft Exchange Forms Based Authentication, 12
Microsoft Exchange IMAP4. See IMAP4 (Internet Message Access Protocol version 4)
Microsoft Exchange Information Store. See Exchange Information Store
Microsoft Exchange Mail Submission, 12
Microsoft Exchange Mailbox Assistants, 12
Microsoft Exchange Mailbox Replication, 12
Microsoft Exchange Monitoring, 12
Microsoft Exchange POP3. See POP3 (Post Office Protocol version 3)
Microsoft Exchange Protected Service Host, 12
Microsoft Exchange Replication Service, 12, 174, 180
Microsoft Exchange RPC Client Access, 12
Microsoft Exchange Search Indexer, 12
Microsoft Exchange Security Groups. See Exchange Security Groups
Microsoft Exchange Server. See Exchange Server 2010
Microsoft Exchange Server Extension for Windows Server Backup, 13
Microsoft Exchange Service Host, 13
Microsoft Exchange Speech Engine, 13
Microsoft Exchange System Attendant, 13
Microsoft Exchange Throttling. See throttling
Microsoft Exchange Transport Log search, 13
Microsoft Exchange Transport service, 13, 81
Microsoft Exchange Unified Messaging, 13
Microsoft Filter Pack, 32
Microsoft Forefront Protection, 10–11, 13–14, 551
Microsoft Forefront Server Security. See Forefront Protection for Exchange Server
Microsoft identity integration solution, 49
Microsoft Internet Information Services (IIS). See IIS (Internet Information Services)
Microsoft Management Console (MMC), 15. See also Exchange Management Console
Microsoft Management Console 3.0, 7
Microsoft Network Monitor tool, 21
Microsoft Office Excel spreadsheets, 528
Microsoft Office PowerPoint presentations, 528
Microsoft Office Word documents, 528
Microsoft Search (Exchange), 14, 82
Microsoft Speech service, 36
Microsoft Windows Media Audio Voice Code, 36
Microsoft Windows Media Encoder, 36
Microsoft-Server-ActiveSync, 34, 478. See also Exchange ActiveSync
Migration role, 248
mobile access, managing
HTTP server, controlling access to, 477–481
incoming connections, restricting, 475–476
throttling Client Access, 481–483
time-out values, setting, 475–476
URLs and authentication, configuring, 484–488
users, redirecting to alternate URLs, 476–477
virtual directories, 469–470, 478
Web applications, 469–472
mobile access, Web sites
configuring, 472–473
enabling SSL, 473–475
starting, stopping, and restarting, 483–484
mobile devices
ActiveSync Mailbox policy, 506–517, 633
ActiveSync, enabling/disabling, 632
managing, 629
mobile devices, features
Autodiscover, 503–505
direct file access, 521–526
Direct Push, 505–506, 632
password recovery, 520–521
Remote Device Wipe, 518–520
remote file access, 526–528
WebReady Document Viewing, 528–530
mobile messaging users, managing
device and wireless access, 146, 631–633
Outlook Web App, 623–631
remote mail and Outlook Anywhere, 633–639
/mod/recoverserver command, 574
moderated distribution groups, 167
Modify Owner permission, 241
Modify Permissions permission, 241
Monitoring role, 246
monitoring service, 12
Mount-Database cmdlet, 351, 594
Move cmdlets
Move-ActiveMailboxDatabase, 284, 306
Move-DatabasePath, 284, 354–355
Move-Mailbox, 119
Move-OfflineAddressBook, 232
Move Mailboxes role, 246
moving mailboxes
between forests, 180–181
efficiencies of, 173–181
online moves, 174–177
within a single forest, 177–180
MS Exchange OWA. See Outlook Web App (OWA)
MSExchange Anti-Spam Update, 551
MSExchange Assistants, 551
MSExchange Messaging Policies, 552
MSExchange OAB Maintenance, 552
MSExchange TransportService, 552
MSExchange Unified Messaging, 552
MSExchangeADAccess, 551
MSExchangeEdgeSync, 551
MSExchangeFDS, 552
MSExchangeIMAP4, 552
MSExchangeIS, 551
MSExchangeIS Mailbox Store, 551
MSExchangeIS Public Store, 551
MSExchangeMailboxAssistants, 551
MSExchangePOPS, 552
MsExchsTimeout variable, 108
msExhMDBAvailabilityGroup object, 288
multicore CPUs, 4
multihomed virtual servers, 472
multilanguage environments, display names in, 172
multimaster replication, 74
multiple mailbox databases, 570
multiple server roles, 28, 51
multiple servers
advantage of, 28
licensing, 58–59
logging on as mailbox owner, 616
mailbox access, delegating, 616–618
opening additional Exchange Mailboxes, 618
permissions, changing, 616
reasons for using, 616
roles, deploying, 51
multiple-label Domain Name System (DNS), 7
MyBaseOptions role, 249
MyContactInformation role, 249
MyDistributionGroupMembership role, 249
MyDistributionGroups role, 249
MyProfileInformation role, 249
MyRetentionPolicies role, 249
MyVoiceMail role, 249

N
name resolution features, 25
names. See contact names; display names; logon
names; user names
naming conventions, 30, 158
native mode, changing, 43
NDR (nondelivery report), 319
.NET Framework
Exchange Server 2010 and, 7, 52
installing on 2008 Windows Server, 32, 35–36, 38–39
network
compression, 300
collection, 81
database availability group, 296–298
identifier, 296
layer, 25
Network Load Balancing service, 35
Network Monitor tool, 21
Network News Transfer Protocol (NNTP), 37, 278
network, filtering
global allowed list, 461–462
global block list, 462–464
preventing, 464–465
New cmdlets
New-AcceptedDomain, 439–440
New-ActiveSyncMailboxPolicy, 510–512
New-AddressList, 220–221
New-Alias, 98
New-AutodiscoverVirtualDirectory, 504–505
New-ClientAccessArray, 34
New-DatabaseAvailabilityGroup, 284, 291
New-DatabaseAvailabilityGroupNetwork, 284, 298
New-DistributionGroup, 199–200
New-DynamicDistributionGroup, 208
New-ECVPVirtualDirectory, 125
New-EdgeSubscription, 417, 419
New-EmailAddressPolicy, 445–446
New-EventLog, 99
New-Mailbox, 119, 139–140, 164, 168–169, 482
New-MailDatabase, 284, 316, 578, 587
New-MailContact, 118, 151–152
New-MailUser, 118, 132–133
New-MoveRequest, 176–178, 180–181
New-Object, 98
New-OfflineAddressBook, 227–228
New-OWAVirtualDirectory, 469
New-PowerShellVirtualDirectory command, 108

655
New cmdlets, continued
New-PSDrive, 98
New-PSSession, 107
New-PSSessionOption, 107
New-PublicFolder, 362, 365
New-PublicFolderDatabase, 340
New-ReceiveConnector, 401–403
New-RemoteDomain, 450–451
New-RoutingGroupConnector, 407–408
New-Service, 98
New-ThrottlingPolicy, 478, 482
New-Variable, 99

New Mailbox Database Wizard, 313
nondelivery report (NDR), 319
Nonediting Author permission, 374, 620
nonmoderated distribution groups, 167
nonpersistent message queues, 79
Notes segmentation, 470
Novell GroupWise connector, 48–49
Ntds.dit file, 74

O

OAB (offline address book)
authentication, configuring, 484, 598
clients, configuring, 228–229
creating, 225–228
default for mailbox databases, setting, 316–317
default OAB address list, 217
default, setting, 230
deleting, 232
distribution point, 225
overview, 225
properties, changing, 230–231
rebuilding manually, 229–230
rebuilding, assigning times for, 229
replicas, 48
server, changing, 231–232
synchronizing, 552
understanding, 597–598
URLs, configuring, 484, 598
using, 313
virtual directory, 469, 478
object-based storage, 78
Office 2007, System Converter, 32
offline address book (OAB). See OAB (offline address book)
Outlook EmailUsers, 214
one-to-many remote management, 112–113
online address lists. See address lists, managing
online implementations, 6
online vs. on-premises mailboxes, 62–63. See also
Edge Transport servers
online/on-premises configuration, 63–65
on-premises implementations, 6
open session timeout value, 107
OpenExchangeRunSpace, 107
operation timeout value, 107
Organization Client Access role, 246
Organization Configuration node
about, 16, 65
Client Access server role subnode, 67
domain Access server role subnode, 67
domain controller, specifying, 67–68
federation trusts, 66
Hub Transport role subnode, 67
Mailbox server role subnode, 66
organizational relationships, 66
Unified Messaging servers role subnode, 67
Organization Configuration role, 246
Organization Management Group, 17, 237
organization scope, 245–248
Organization Transport Settings role, 247
organizational health check, 533
organizational relationships, 66
OrganizationName option, 44
ost files, 612
Outlook 2003
databases, using, 278
Mailbox Role, 54
new server, redirecting to, 593
offline address books, 225
public folders, 313, 338, 368
Outlook 2007
advantages/disadvantages, 595–596
Autodiscover. See Autodiscover
folders, checking, 610–611
Internet mail accounts, 606
mail, leaving on server, 608–609
public folders, 54
repairing, 606–608
server mailboxes, 612
user configuration, changing, 608
Outlook 2010
advantages/disadvantages, 595–596
Autodiscover. See Autodiscover
folders, checking, 610–611
Internet mail accounts, 606
mail profiles, 620–622
mail, leaving on server, 608–609
repairing, 606–608
server mailboxes, 612
Windows Live Mail and, 599
Outlook 2010, configuration
change user, 608
Exchange, first time connection, 600–601
Exchange, later connection, 605
first time connection, 598–599
Outlook Anywhere
Autodiscover, 597
disable, 502
enabling and modifying, 500–502
external host name, configuring, 598
Outlook profiles for dial-up connections, 634–637
Outlook profiles, configuring, 637–639
protocols, 33
status, determining, 498–499
using, 633–634
Outlook Junk E-mail Filter, 10
Outlook MAPI, 26, 33
Outlook Mobile Text Messaging, 599
Outlook Startup Wizard, 599
Outlook Voice Access, 27
Outlook Web App (OWA)
about, 552
accessibility options, 624–625, 629–630
advantages/disadvantages, 596
archive mailboxes, 166–167
cmdlets, 469
configuring, 472–473, 484–488
deleted items, recovering, 323
enabling/disabling, 630–631
features, 625, 627–628
going started with, 624–625
global settings, 145
HTTP server, access to, 477–481
incoming connections, restricting, 475–476
mailboxes, 47, 625–626
migrating servers, 46
options, 628–630
password recovery, 620
protocols, 33
public folder data, 625–626
public folders, 358, 368
segmentation, 470–472
throttling client access, 481–483
time-out values, setting, 475–476
toolbar, 470
troubleshooting, 628
user options, 146, 471–472
users, managing, 472–473, 476–477
virtual directories, 469–470, 478
Web applications, managing, 469–472
Web sites, 473–475, 483–484
working with, 626–630
Owner permission, 374

parameters, cmdlet, 100–101
passive copies of databases, 311. See also Mailbox
database copies
passive copy replay functionality, 283
passwords
about, 128
recovery of, 520–521
recovery utility for .pst files, 614
settings, 630
PBX (private branch exchange) systems, 27, 36
performance alerting
CPU utilization tracking, 559–560
disk usage tracking, 560–561
memory usage tracking, 557–559
Performance Monitor, 20, 554–556
Performance Troubleshooter, 21, 531
PermanentlyDelete, 273
permissions
advanced management, 259–268
assigning, 234–235
client permissions, 362, 373–376
distribution groups, 234–235
mailboxes server folders, 618–620
management permissions, 45
predefined security groups, 234–238
role-based permissions, 244–259
roles list, 619–620
security groups, 15–17, 234–235
Send As permissions, 376–377
standard permissions, 233–244
user accounts, 234–235
permissions check, 533
persistent message queues, 78
personal folders
backed-up data, restoring, 615
backing up, 615
creating, 613–614
deliver mail to, 614–615
description of, 612–613
determine the presence of, 613
Exchange Server 2010 and, 619
folders, checking, 610–611
personal groups, 625
phone features, 629
Pickup directory
back pressure, 435–436
configuring and moving, 431–432
described, 430
limits, configuring, 433–434
processing speed, 432–433
throttling, configuring, 434–435
understanding, 430–431
pipe (|) symbol, 116
plain-text authentication logon, 492
Poison message queue, 79, 562
POP3 (Post Office Protocol version 3)
advantages/disadvantages, 602–603
Client Access servers and, 33
connecting, 598
description of, 12
global settings, 146
mail, leaving on server, 608–610
management role, 248
port settings, 490
self-signed certificates, 121
start up configuration, 82
POP3 configuration
authentication, 492–494
bindings, 490–492
connection settings, 494–495
enabling, 488–490
message retrieval settings, 495–497
POP3, MSExchange, 552
postmaster address and mailbox, 409–410
PowerPoint presentations, viewing, 528
PowerShell
commands and utilities, 96–97
console file, 17
Exchange Management Shell and, 22–23
Exchange Server set up and, 7–9, 52
execution policies, 94–95
functions, 17–21
managing, 108–109
one-to-many remote management, 112–113
overview, 91–92
plug-in, 113
profile file, 17
running and using, 92–95
ServerManager module, 32
virtual directory, 469, 478
PowerShell cmdlets
aliases, 101–103
errors, 101
parameters, using, 100–101
using, 95–99
predefined security groups, 234–238
preinstallation requirements, 7
Premium Client segmentation, 470
Prepare options
PrepareAD, 44
PrepareAllDomains, 44
PrepareDomain, 44
PrepareLegacyExchangePermissions, 43
PrepareSchema, 43–44
Prepend The Subject With String (transport rules), 426
primary
data file, 77, 80
log file. See current log file
mailbox database, 323
role holders, 286
Primary Active Manager, 286
private branch exchange (PBX) systems, 27, 36
private folders. See personal folders
process threads, 559
processor core configurations for roles, 27
product key, 6, 57–59
Programs and Features in Control Panel, 50
Protected Service Host, Microsoft Exchange, 12
protocol logging
configuring, 541–543
enabling for HTTP, 544–546
HTTP logs, 546–547
properties and fields, 543–544
transport servers, 38
provider priority, 459
.psc1 file, 105
.pst files, 612. See also personal folders
public certificates, 128
Public Folder Management Console, 21,
364–365
Public Folder Management Group, 17, 237
Public Folder Replication role, 247
Public Folder role, 247
public folders
adding items using OWA, 368
checking with IMAP4 and UNIX mail servers, 610–611
client permissions, 373–376
cmdlets for, 362–363
copying and moving, 379
creating, 363–365
default, 357–358
deleted item retention, 372–373
deleting, 379–380
mail-enabling, 368–371
messaging limits, 372–373
migrating, 47
Outlook 2007 and, 54
quotas, 372–373
recovering, 380
renaming, 379
replication, 372–373
Send As permissions, 376–377
settings and data, propagating, 377–378
settings management, 372–378
statistics on, 366–367
stores, 12
transitioning, 48
Web data access, 625–626
Public Folders address list, 218
public folders databases
creating, 76, 338–340
Database Availability Groups and, 31
defined, 311
deleted items, recovering, 347–348
deleting, 355–356
description of, 1
mounting and dismounting, 348–352
moving, 353–355
referrals, configuring, 345–347
removing, 56
renaming, 355
replication, configuring, 343–345
setting limits, 340–343
setting maintenance interval, 352–353
understanding, 338
using, 278
Public Folders segmentation, 470
public folders, accessing
about, 357–358
in information store, 359
in mail clients, 358
using shell prompts, 360–363
public groups, 625, 629
public virtual directory, 469, 478
Publishing Author permission, 374, 620
Publishing Editor permission, 374, 619
quarantine mailbox, 10
query filters, dynamic distribution groups, 209
query-based distribution, 75
queue at point of failure, 61
Queue Viewer
accessing, 563
deleting messages, 567–568
described, 21
enumerate messages, 565–566
filtering messages, 566–567
refreshing, 565–566
suspending and resuming, 567
queues. See also Queue Viewer
connections, forcing, 567
messages, deleting, 567–568
messages, managing, 565–567
summaries and states, 564–565
suspending and resuming, 567
types of, 559–563
queuing transactions, 81
quick reference administration tools table, 21
quotas, 372–373
RAID, 2, 4, 281
Read All Properties permission, 241
Read Permissions permission, 241
Read Value(s) permission, 241
Read-Host cmdlet, 99
Receive As permission, 241
Receive connectors
configuring, 45
creating, 397–403
types of, 119
viewing and managing, 403–407
Receive Connectors role, 248
Recipient Configuration node
about, 16, 65
Disconnected Mailbox subnode, 71
display maximum, changing, 73
Distribution Group subnode, 71
Mail Contact subnode, 71
Mailbox subnode, 71
Move Request, 71
scope, configuring, 72–73
working with, 70–73
Recipient filtering, 10
Recipient Management Group, 17, 237
Recipient Policies role, 247
recipients
administration settings, 71–73
moderated, 167
overview, 70–71
records management, 275–276
Records Management Group, 17, 237
Recover Deleted Items segmentation, 470
Recover Server Mode, 590–592
Recoverable Items folder, 272
RecoverServer mode, 574
recovery
automatic, 2
from alternate location, 587
from system image, 584–585
full server, 583–585
steps for, 585–586
recovery database, 578
Redirect The Message To Addresses (transport rules), 426
redirecting cmdlet output, 116
redirecting users to alternate URLs, 476–477
redundant arrays of inexpensive disks (RAID). See RAID
regional settings, 630
relay domains, 436–437
Reminders and Notifications segmentation, 470
$RemoteSession, 107
Remote Connectivity Analyzer, 21, 475
Remote delivery queue, 79, 562
Remote Device Wipe
remotely wiping, 518–519
reviewing status, 520
remote domains
creating, 449–451
message options, 451–452
removing, 453
viewing, 448–449
remote file access, 526–528
remote mail
Outlook profiles for dial-up connections, creating, 634–637
Outlook profiles, configuring, 637–639
using, 633–634
remote management
about, 7–9
one-to-many, 112–113
tools, 32, 35, 38
Remote Management service. See also Windows Remote Management (WinRM)
customizing, 86–89
description of, 14
Exchange Management Console and, 64, 86–89
remote procedure call (RPC), 12
remote shared folder for storing backups, 581, 583
RemoteExchange.ps1 profile file, 104–105
removable media for storing backups, 581
Remove cmdlets
Remove-AcceptedDomain, 441
Remove-ActiveSyncMailboxPolicy, 517
Remove-AddressList, 224–225
Remove-ADPermission, 362, 377
Remove-AutodiscoverVirtualDirectory, 504–505
Remove-ClientAccessArray, 35
Remotemanagement service.
Replay directory

Remove cmdlets, continued
Remove-Computer, 97, 99
Remove-DatabaseAvailabilityGroup, 284, 304
Remove-DatabaseAvailabilityGroupNetwork, 284, 298
Remove-DatabaseAvailabilityGroupServer, 284, 294–295, 592
Remove-DistributionGroup, 216–217
Remove-DistributionGroupMember, 201–203
Remove-DynamicDistributionGroup, 217
Remove-ECPVirtualDirectory, 125
Remove-EdgeSubscription, 423
Remove-EmailAddressPolicy, 448
Remove-EventLog, 99
Remove-IPAllowListEntry, 462
Remove-IPBlockListEntry, 463–464
Remove-Mailbox, 119, 149
Remove-MailboxDatabase, 284, 356
Remove-MailboxDatabaseCopy, 284, 591
Remove-MailContact, 118, 155
Remove-MailUser, 118, 134–135
Remove-MoveRequest, 177–178, 181
Remove-OfflineAddressBook, 232
Remove-OWAVirtualDirectory, 469
Remove-PowerShellVirtualDirectory, 109
Remove-PSDrive, 98
Remove-PublicFolder, 362
Remove-PublicFolderAdministrativePermission, 362
Remove-PublicFolderClientPermission, 362, 376
Remove-PublicFolderDatabase, 356
Remove-ReceiveConnector, 406–407
Remove-RemoteDomain, 453
Remove-RoutingGroupConnector, 407–408
Remove-SendConnector, 394
Remove-ThrottlingPolicy, 478, 483
Remove-Variable, 99
Replay directory
back pressure, 435–436
configuring and moving, 431–432
described, 430
limits, configuring, 433–434
processing speed, 432–433
throttling, configuring, 434–435
understanding, 430–431
replay lag time, 327
replication
adapter, 292
address lists, 222
cmdlets, 363
continuous, 1–2, 30
Directory layer and, 25
Exchange System Manager and, 48
multimaster, 74
network, 295
public folders, 372–373
Reputation Service, 10
Required Services, checking, 82
reserve log files, 77, 81, 280
Reset-ComputerMachinePassword cmdlet, 99
resource forest organization, 49
Restart cmdlets
Restart-Computer Remove, 99
Restart-Service, 99
Restore cmdlets
Restore-Computer, 97
Restore-DatabaseAvailabilityGroup, 284, 303
Restore-Mailbox, 119, 578, 587–590
restore operations, 31
Resume cmdlets
Resume-MailboxDatabaseCopy, 284, 328–329
Resume-MoveRequest, 177, 181
Resume-PublicFolderReplication, 363
Resume-Service command, 99
retention
deleted item, 189, 317–320
deleted retention time, setting, 189
message compliance, 270–276
policies, 138, 271–272
roles, 247, 249
rules, 2
tags, 271–274
Retention Management role, 247
retention policy, 570
reverse lookup zones, 52
Reviewer permission, 374, 620
Role Based Access Control (RBAC), 21
Role Management role, 247
role-based permissions, 244–259
roles. See also specific types
assigning, 254–259
custom role entries, 264–268
custom role scopes, 262–264
custom roles, 260–262
interacting with Active Directory, 39–42
messaging, 26–29
processor core configurations for, 27
recovering, 591
role group members, 253–254
role groups, 249–252
scenario for, 28–29
server, 9, 15
rolling back transaction, 573
room mailboxes, creating, 160–162
routing groups, 59
Routing Log Viewer, 21
routing messages, 18–19, 50
RPC Client Access, Microsoft Exchange, 12
RPC Over HTTP proxy, 35, 497
Rules segmentation, 470
S
S/MIME segmentation, 471, 625, 630
SANs, 281
schedules
for backups, 576, 579, 581
660
for IP site links, 60
for offline address books rebuilds, 215–229
scheduling with mailboxes, 158–160
schema data, 17, 74
scripting language, 92, 96
Search Folders segmentation, 471
Search Indexer, Microsoft Exchange, 12
searching, content indexing, 307–309
Search-Mailbox cmdlet, 119, 272
secondary
log files, 77, 280
mailbox database, 323
role holders, 286
secure host service, 12
Secure Socket Tunneling Protocol (SSTP) Service, 14
security
Client Access server role and, 50
Exchange Server and, 14–15
groups. See security groups
security certificate, 120–121
Security Group Creation and Membership role, 247
security groups. See also universal security group
creating, 195
default memberships in, 238
deleting, 216–217
delivery report options, 216
e-mail address management, 213
group name information, changing, 212–213
hiding from address lists, 214
mail-enabling, 192, 195–198
membership, configuring, 200–201
message size restrictions, 215–216
out-of-office options, 216
permissions, 15–17, 234–235
predefined groups, 15–17, 234–238
scopes of, 191, 203
usage restrictions, 214–215
when to use, 193–194
security identifiers (SIDs), 128, 193
seeding, 329–333
segmentation, 470–472
Select-Object cmdlet, 98
self-signed certificates, 120–121
Send As permissions, 241
Send Bounce Message (transport rules), 426
Send connectors
configuring, 45, 55
creating, 387–392
DNS lookups, configuring, 394–395
setting limits, 395–397
understanding, 119
viewing and managing, 392–394
Send Connectors role, 247
Send To permission, 241
Sender ID verification, 10
Sender reputation scoring, 10
Server Configuration node
about, 16, 65
Client Access server role subnode, 69
domain controller, specifying, 70
Hub Transport role subnode, 70
Mailbox server role subnode, 69
Unified Messaging server role subnode, 70
Server Management Group, 17, 237
Server Manager tool, 21
Server Message Block (SMB), 283
erver roles, 9, 15, 44
server scope, 248
ServerManager module, PowerShell, 32
Service Host, Microsoft Exchange, 13
services for Exchange Server, 11–14
Set cmdlets
Set-AcceptedDomain, 440–441
Set-ActiveSyncMailboxPolicy, 514–516
Set-ActiveSyncVirtualDirectory, 479
Set-AddressList, 223–224
Set-AdSite, 384–385
Set-AdSiteLink, 386–387
Set-Alias, 98
Set-AuthenticodeSignature, 98
Set-AutodiscoverVirtualDirectory, 479, 503–505
Set-CASMailbox, 517
Set-ClientAccessArray, 35
Set-DatabaseAvailabilityGroup, 284, 302
Set-DatabaseAvailabilityGroupNetwork, 284, 299–300
Set-Date, 98
Set-DistributionGroup, 202, 204
Set-DynamicDistributionGroup, 210–212
Set-EcpVirtualDirectory, 125, 479
Set-EmailAddressPolicy, 447
Set-ExchangeServer, 59
Set-ExecutionPolicy, 94–95, 98
Set-IMAPSettings, 490
Set-Location, 98
Set-Mailbox, 119, 166, 272, 482, 594
Set-MailboxDatabase, 284, 317, 320, 352–353, 355, 593
Set-MailboxDatabaseCopy, 284, 327, 571
Set-MailContact, 119
Set-MailPublicFolder, 362, 370–371
Set-MailUser, 119
Set-MoveRequest, 177
Set-OabVirtualDirectory, 479, 598
Set-OfflineAddressBook, 231
Set-OutlookAnywhere, 501–502
Set-OwaVirtualDirectory, 479, 525, 528, 530
Set-POPSettings, 490
Set-PowerShellVirtualDirectory, 109, 479
Set-PublicFolder, 362, 372–373
Set-PublicFolderDatabase, 342–345, 347, 352–353, 355
Set-ReceiveConnector, 405–406, 434–435
Set-RemoteDomain, 452
Set-RoutingGroupConnector, 407–408
Set-SendConnector, 393–394, 434
Set-Service, 98, 489
Set-TransportServer

Set cmdlets, continued
Set-ThrottlingPolicy, 478, 483
Set-TransportConfig, 411–414
Set-User, 147–148
Set-Variable, 99
Set-WebServicesVirtualDirectory, 479, 598
Set-TransportServer
anti-spam features, 414–415
connectivity logging, 547–548
message file processing, 430–431
message throttling options, 434
message tracking, 536–538
Pickup and Replay directories, 432
postmaster address, 409
processing rate, 433
$s session, 112
$SessionOptionsTimeout variable, 107
Setup Wizard, 43
shadow redundancy, 50, 79, 413–414
shadow redundancy queue, 563
shared mailboxes, 158, 169
shared storage. See database availability
groups (DAG)
Show cmdlets
Show-EventLog, 99
Show-Service, 99
SIDs (security identifiers), 128
Silently Drop The Message (transport rules), 426
Simple Mail Transfer Protocol (SMTP). See SMTP
(Simple Mail Transfer Protocol)
Single Copy Clusters (SCC), 1
single core CPUs, 4
single forest organization, 49
single-label DNS, 7
site links, 60–62
site membership, 29
site-based routing, 59–60
64-bit processors
description of, 3–4
I/O performance for Mailbox servers, 31
size limits, 182
size, mailbox, 170
SMTP (Simple Mail Transfer Protocol)
address, 145
online vs. on-premises mailboxes, 63
port settings, 490
recipient resolution, 119–120
service, 37
SMTP connectors
Active Directory site details, 383–385
Active Directory site link details, 385–387
configuring, 45
Exchange 2003 routing groups, connecting to,
407–408
receive connectors, creating, 397–403
receive connectors, viewing and managing,
403–407
send connectors, 387–397
source and destination servers, 382–383
understanding, 119
using, 382–383
Sort-Object cmdlet, 98
Speech Engine, Microsoft Exchange, 13
Speech service, 36
Spelling Checker segmentation, 471
spelling checker settings, 629
SSL (Secure Sockets Layer), 473–475
SSL certificate, installing, 497
SSTP (Secure Socket Tunneling Protocol) Service, 14
Standard CAL, 6
standard distribution groups. See distribution groups
Standard edition, 5–6
Standard indexing, 307
Standard Outlook Web App, 624
standard transaction logging, 573
Standby Active Managers, 286
Standby Continuous Replication (SCR), 2, 30, 282
Start cmdlets
Start-DatabaseAvailabilityGroup, 284, 302
Start-EdgeSynchronization, 42
Start-Process, 98
Start-Service, 99
Start-Sleep, 99
statistics cmdlets, 363
Stop cmdlets
Stop-Computer, 99
Stop-DatabaseAvailabilityGroup, 284, 303
Stop-Process, 98
Stop-Service, 99
storage
capacity, 31
groups, 30
limits, 175, 182, 187, 340–343
storage area network (SAN), 281
storage groups, 1–2
store schema, 32
storing information, 17–18
streaming database file, 31
streaming Extensible Storage Engine-based backup
programs, 577
streaming Internet content file, 76
Submission queue, 79, 562
Support Diagnostics role, 247
Suspend cmdlets
Suspend-MailboxDatabaseCopy, 284, 328
Suspend-MoveRequest, 177, 181
Suspend-PublicFolderReplication, 363
Suspend-Service command, 99
switchover, 283, 304–306
symmetric multiprocessors (SMP), 4
synchronization, 49, 632
System Attendant, Microsoft Exchange, 13
System Image Recovery, 584
system public folders, 358
system requests monitoring, 560
System State data backup, 579
Tasks segmentation, 471
TCP ports, 56
temporary data, 77, 81, 279
Test cmdlets
Test-ActiveSyncConnectivity, 534
Test-EcpConnectivity, 534
Test-EdgeSynchronization, 421–422, 534
Test-ExchangeSearch, 534
Test-FederationTrust, 534
Test-FederationTrustCertificate, 534
Test-ImapConnectivity, 490, 534
Test-IPAllowListProvider, 534
Test-IPBlockListProvider, 534
Test-IRMConfiguration, 534
Test-Mailflow, 534
Test-MapiConnectivity, 534
Test-MRSHealth, 535
Test-OutlookConnectivity, 535
Test-OutlookWebServices, 535, 598
Test-OwaConnectivity, 469, 535
Test-PopConnectivity, 490, 535
Test-PowerShellConnectivity, 535
Test-ReplProductionsHealth, 535
Test-SenderId, 535
Test-ServiceHealth, 82, 535
Test-SystemHealth, 535
Test-UMConnectivity, 535
Test-WebServicesConnectivity, 535
text documents, 528
text messaging, 165, 629
Text Messaging segmentation, 471
Theme Selection segmentation, 471
32-bit processors
description of, 4
I/O performance for Mailbox servers, 31
management tools for, 53
throttling, 13, 434–435, 481–483
timeout values, 107
TLS (Transport Layer Security), 492–493
tmp.edb, 77, 81, 279
Trace-Command cmdlet, 98
Tracking Log Explorer, 21
tracking logs, 535–541
transaction logs, 2, 31, 279, 573
transport dumpster queue, 79, 411–413, 563
Transport Layer Security (TLS), 492–493
transport limits, setting, 410–411
Transport Log search, 13
Transport Protection Rules, 270
transport roles
Transport Agents role, 247
Transport Hygiene role, 247
Transport Queues role, 248
Transport Rules role, 247
transport rules, 425–429
creating, 426–428
managing, 429
understanding, 425–426
transport servers. See Edge Transport servers; Hub Transport servers
Transport service, 13, 81
TransportService, MExchange, 552
tm.chk, 81
tm.log, 81
TRNRes00001.jrs, 81
troubleshooting
Exchange Management Shell, 113–115
Exchange Server, 531–535
Outlook Web App (OWA), 628
truncation lag time, 327

U
UM Mailboxes role, 247
UM Management Group, 17, 237
UM Prompts role, 247
Unified Messaging Integration segmentation, 471
Unified Messaging role, 248
Unified Messaging server role
Forefront Protection and, 10
installation of, 9, 36, 50
migrating, 46
multiple servers and, 51
Organization Configuration node and, 67
Server Configuration node, 70
Unified Messaging servers
Active Directory and, 41
deploying, 36–37, 56
description of, 27
disaster recovery plan, 575
global settings, 146
I/O operations, 36
multiple servers and, 51
role, configuration, 28
role, deploying, 45
self-signed certificates, 121
site-based routing, 60
Unified Messaging, Microsoft Exchange, 13
Unified Messaging, MSExchange, 552
uninterruptible power supply (UPS), 5
universal security group
mail-enabling, 195–198
predefined groups, 15–17, 235–238
preparing for Exchange Server, 44
scope of, 192
UNIX mail servers, 610–611
Unreachable queue, 79, 563
Unscoped Role Management role, 248
Update cmdlets
Update-AddressList, 221
Update-EmailAddressPolicy, 446
Update-MailboxDatabaseCopy, 284, 332–333
Update-OfflineAddressBook, 228
user accounts

Update cmdlets, continued
Update-PublicFolder, 363, 378
Update-PublicFolderHierarchy, 363, 377–378
user accounts
contact information, changing, 143
creating, 15, 120, 139–140
defined, 117
deleting account, 148–149
display names, 142–144
distribution groups, 123–124
Exchange alias, 117–118, 143–144
global settings, 145
logon names, 128–129, 142–143
mailbox-enabled, 117, 122–123, 128
mailboxes, adding, 140–142
mailboxes, deleting, 148–149
mail-enabled, 118, 122, 129–133
passwords, 128, 147–148
permissions, assigning, 234–235
reply-to address, 145
security certificates, 120–121
user names, 106–107, 128
User objects, 117
User Options role, 248
user scope, 249

V
viewing attachments, 528
View-Only Configuration role, 248
View-Only Organization Management Group, 17, 238
View-Only Recipients role, 248
virtual directories, 469–470, 478
virtual directory, 108–109
virtual servers, multihomed, 472
voice access responsiveness, 50
Volume Shadow Copy Service (VSS)-based backup program, 577

W
Wait-Process cmdlets, 99
Warning Message Interval, 319
Web access. See Outlook Web App (OWA)
Web applications, 108–109, 469–472
Web Management Service, 14
WebReady Document Viewing, 528–530
Windows authentication, 109, 477
Windows Installer, 9–10, 52
Windows Live Mail
advantages/disadvantages, 596
configuring, 603–605
folders, checking, 611
Internet mail accounts, 606
leaving mail on server, 610
Outlook and, 599
Windows Mail, 596
Windows Media Player, 37
Windows Memory Diagnostics, 584
Windows PowerShell. See PowerShell
Windows Remote Management (WinRM)
analyze and configure service, command, 9
description of, 14
Exchange Server set up and, 7–9, 52
listeners, 112
remote management services, customizing, 64, 86–89
requirements for, 7
trusted hosts, adding to, 8
verify the availability of, 7–8
Windows Server 2008
backing up Exchange Server, 580–583
full server recovery, 583–585
getting started with backup, 579–580
recovering Exchange server, 585–590
Windows Server 2008 operating system
Client Access role installation, 35
domain controllers, 39
Edge Transport role installation, 39
global catalog servers, 39
Hub Transport role installation, 38
mailbox role installation, 32
.NET Framework, installation of, 32, 35–36, 38–39
roles, add/remove, 56
unified messaging role installation, 36–37
Windows Server Backup
about, 577
application data, 579
backup options, 582
installing, 579
System State data, 579
Windows Vista, 52
Windows, Exchange Server and, 11–17
winrm quickconfig, 112
wireless access, 146, 631–633
witness server, 287–288
Word documents, viewing, 528
workgroups, 8
World Wide Web Publishing Services, 14
Write All Properties permission, 241
Write cmdlets
Write-EventLog, 98
Write-Host, 99
Write-Output, 99
Write-Warning, 99
Write Value(s) permission, 241
write-back caching controllers, 5
WS-Management protocol, 7

X
X.400, 119, 144, 154
X.500, 117
About the Author

William R. Stanek (http://www.williamstanek.com/) has more than 20 years of hands-on experience with advanced programming and development. He is a leading technology expert, an award-winning author, and a pretty-darn-good instructional trainer. Over the years, his practical advice has helped millions of programmers, developers, and network engineers all over the world. He has written more than 100 books. Current or forthcoming books include Active Directory Administrator’s Pocket Consultant, Windows Group Policy Administrator’s Pocket Consultant, Windows PowerShell 2.0 Administrator’s Pocket Consultant, and Windows Server 2008 Inside Out.

William has been involved in the commercial Internet community since 1991. His core business and technology experience comes from more than 11 years of military service. He has substantial experience in developing server technology, encryption, and Internet solutions. He has written many technical white papers and training courses on a wide variety of topics. He frequently serves as a subject matter expert and consultant.

William has a BS in computer science, magna cum laude, and an MS with distinction in information systems. He is proud to have served in the Persian Gulf War as a combat crewmember on an electronic warfare aircraft. He flew on numerous combat missions into Iraq and was awarded nine medals for his wartime service, including one of the United States of America’s highest flying honors, the Air Force Distinguished Flying Cross. Currently, he resides in the Pacific Northwest with his wife and children.

William recently rediscovered his love of the great outdoors. When he’s not writing, teaching, or making presentations, he can be found hiking, biking, backpacking, traveling, or trekking the great outdoors in search of adventure!

Follow William on Twitter at WilliamStanek.