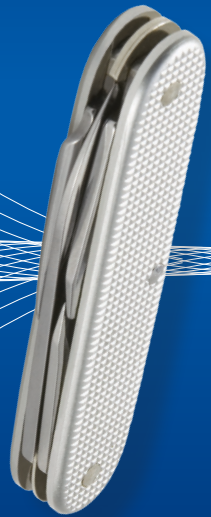




Microsoft Exchange Server 2013 Configuration & Clients

William R. Stanek
Author and Series Editor



Pocket Consultant

PUBLISHED BY
Microsoft Press
A Division of Microsoft Corporation
One Microsoft Way
Redmond, Washington 98052-6399

Copyright © 2013 by William R. Stanek

All rights reserved. No part of the contents of this book may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Library of Congress Control Number: 2013946283
ISBN: 978-0-7356-8168-2

Printed and bound in the United States of America.

First Printing

Microsoft Press books are available through booksellers and distributors worldwide. If you need support related to this book, email Microsoft Press Book Support at mspinput@microsoft.com. Please tell us what you think of this book at <http://www.microsoft.com/learning/booksurvey>.

Microsoft and the trademarks listed at <http://www.microsoft.com/en-us/legal/intellectualproperty/Trademarks/EN-US.aspx> are trademarks of the Microsoft group of companies. All other marks are property of their respective owners.

The example companies, organizations, products, domain names, email addresses, logos, people, places, and events depicted herein are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

This book expresses the author's views and opinions. The information contained in this book is provided without any express, statutory, or implied warranties. Neither the authors, Microsoft Corporation, nor its resellers, or distributors will be held liable for any damages caused or alleged to be caused either directly or indirectly by this book.

Acquisitions Editor: Anne Hamilton

Developmental Editor: Karen Szall

Project Editor: Karen Szall

Editorial Production: Megan Smith-Creed

Technical Reviewer: Todd Meister; Technical Review services provided by Content Master, a member of CM Group, Ltd.

Copyeditor: Megan Smith-Creed

Indexer: Perri Weinberg Schenker

Cover: Best & Company Design

To my readers—Microsoft Exchange Server 2013 Pocket Consultant: Configuration & Clients is my 41st book for Microsoft Press. Thank you for being there with me through many books and many years.

To my wife—For many years, through many books, many millions of words, and many thousands of pages, she's been there, providing support and encouragement and making every place we've lived a home.

To my kids—For helping me see the world in new ways, for having exceptional patience and boundless love, and for making every day an adventure.

To Anne, Karen, Martin, Lucinda, Juliana, and many others who've helped out in ways both large and small.

—WILLIAM R. STANEK

Contents at a Glance

CHAPTER 1	Exchange Server 2013 administration overview	1
CHAPTER 2	Deploying Exchange Server 2013	27
CHAPTER 3	Exchange administration essentials	71
CHAPTER 4	Using Exchange Management Shell	97
CHAPTER 5	Managing Exchange Server 2013 clients	127
CHAPTER 6	User and contact administration	151
CHAPTER 7	Mailbox administration	197
CHAPTER 8	Working with distribution groups and address lists	251
CHAPTER 9	Implementing Exchange security	295

Contents

	<i>Introduction</i>	xv
Chapter 1	Exchange Server 2013 administration overview	1
	Getting started with Exchange 2013 and Exchange Online	2
	Exchange Server 2013 and your hardware	4
	Exchange Server 2013 editions	7
	Exchange Server and Windows	13
	Services for Exchange Server	13
	Exchange Server authentication and security	15
	Exchange Server security groups	16
	Exchange Server and Active Directory	17
	Understanding how Exchange stores information	17
	Understanding how Exchange routes messages	18
	Exchange Online and Office 365	19
	Using the graphical administration tools	20
	Using Exchange Management Shell	23
Chapter 2	Deploying Exchange Server 2013	27
	Exchange Server messaging roles	29
	Understanding Exchange Server messaging roles	29
	Deploying Mailbox servers: The essentials	32
	Deploying Client Access servers: The essentials	34
	Deploying Transport services: The essentials	37
	Deploying unified messaging: The essentials	39
	Integrating Exchange server roles with Active Directory	39
	Using Mailbox servers with Active Directory	39
	Using Client Access servers with Active Directory	40

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:

microsoft.com/learning/booksurvey

Using Unified Messaging with Active Directory	41
Using Edge Transport servers with Active Directory	41
Integrating Exchange Server 2013 into existing Exchange organizations	42
Coexistence and Active Directory	42
Configuring Exchange Server 2013 for use with existing Exchange organizations	45
Setting the default Offline Address Book	46
Moving to Exchange Server 2013	47
Running and modifying Exchange Server 2013 Setup	48
Installing new Exchange servers	48
Installing Exchange Server	50
Verifying and completing the installation	57
Adding, modifying, or uninstalling server roles	60
Understanding cumulative updates and service packs	60
Working with cumulative updates and service packs	61
Applying cumulative updates and service packs	62
Tracking Exchange Server version numbers	62
Using security updates with cumulative updates and service packs	63
Installing cumulative updates and service packs	64
Preparing to install a cumulative update or service pack	64
Installing a cumulative update or service pack	66
Chapter 3 Exchange administration essentials	71
Accessing and using Exchange Admin Center	71
Accessing Exchange Admin Center	72
Authenticating and proxying connections	74
Working with Exchange Server certificates	75
Configuring Exchange Admin Center	78
Bypassing Exchange Admin Center and troubleshooting	81
Understanding remote execution in Exchange Admin Center	81
Bypassing Exchange Admin Center and Exchange Management Shell	82
Troubleshooting Outlook Web App, ECP, PowerShell, and More	83
Resolving SSL certificate issues	85

Resolving Outlook Web App, ECP, or other virtual directory issues	86
Validating Exchange Server licensing	87
Using and managing Exchange services	89
Working with Exchange services	89
Checking required services	90
Starting, stopping, and pausing Exchange Server services	91
Configuring service startup	91
Configuring service recovery	92
Customizing Remote Management services	92
Chapter 4 Using Exchange Management Shell	97
Using Windows PowerShell	97
Introducing Windows PowerShell	97
Running and using Windows PowerShell	98
Running and using cmdlets	101
Running and using other commands and utilities	102
Working with cmdlets	103
Using Windows PowerShell cmdlets	103
Using cmdlet parameters	105
Understanding cmdlet errors	107
Using cmdlet aliases	107
Working with Exchange Management Shell	108
Running and using Exchange Management Shell	109
Working with Exchange cmdlets	120
Working with object sets and redirecting output	121
Using a manual remote shell to work with Exchange	122
Preparing to use the remote shell	122
Connecting manually to Exchange 2013 servers	124
Connecting manually to Exchange Online	125
Managing remote sessions	126
Chapter 5 Managing Exchange Server 2013 clients	127
Configuring mail support for Outlook	128
Understanding address lists, offline address books, and autodiscover	128

Configuring Outlook for the first time	130
Configuring Outlook for Exchange	134
Adding Internet mail accounts to Outlook	135
Repairing and changing Outlook mail accounts	135
Leaving mail on the server with POP3	138
Checking private and public folders with IMAP4 and UNIX mail servers	139
Managing the Exchange configuration in Outlook	140
Managing delivery and processing email messages	140
Repairing .pst data files	143
Repairing .ost data files	144
Accessing multiple Exchange mailboxes	145
Granting permission to access folders without delegating access	147
Using mail profiles to customize the mail environment	148
Creating, copying, and removing mail profiles	149
Selecting a specific profile to use on startup	149
Chapter 6 User and contact administration	151
Understanding users and contacts	151
Understanding the basics of email routing	153
Understanding on-premises and online recipient management	154
Managing user accounts and mail features	158
Finding existing mailboxes, contacts, and groups	158
Finding synced, unlicensed, inactive, and blocked users	161
Creating mailbox-enabled and mail-enabled user accounts	162
Adding mailboxes to existing domain user accounts	177
Setting or changing the common name and logon name for domain user accounts	181
Setting or changing contact information for user accounts	182
Changing logon ID or logon domain for online users	182
Changing a user's Exchange Server alias and display name	183
Adding, changing, and removing email and other addresses	183

Setting a default reply address for a user account	185
Changing a user's web, wireless service, and protocol options	185
Requiring domain user accounts to change passwords	187
Deleting mailboxes from user accounts	187
Deleting user accounts and their mailboxes	188
Managing contacts	190
Creating mail-enabled contacts	190
Setting or changing a contact's name and alias	192
Setting additional directory information for contacts	193
Changing email addresses associated with contacts	194
Disabling contacts and removing Exchange attributes	195
Deleting contacts	196
Chapter 7 Mailbox administration	197
Creating special-purpose mailboxes	197
Using room and equipment mailboxes	198
Creating room mailboxes	202
Creating equipment mailboxes	204
Creating linked mailboxes	206
Creating forwarding mailboxes	208
Creating and using archive mailboxes	209
Creating arbitration mailboxes	213
Creating Discovery mailboxes	214
Creating shared mailboxes	215
Creating public folder mailboxes	217
Managing mailboxes: The essentials	219
Viewing current mailbox size, message count, and last logon	220
Configuring apps for mailboxes	222
Hiding mailboxes from address lists	224
Defining custom mailbox attributes for address lists	224
Restoring on-premises users and mailboxes	224
Restoring online users and mailboxes	227
Repairing mailboxes	229
Moving mailboxes	229
Importing and exporting mail data	230

Performing on-premises mailbox moves and migrations	231
Performing on-premises mailbox moves	234
Configuring mailbox delivery restrictions, permissions, and storage limits	241
Setting message size restrictions for contacts	242
Setting message size restrictions on delivery to and from individual mailboxes	242
Setting send and receive restrictions for contacts	243
Setting message send and receive restrictions on individual mailboxes	244
Permitting others to access a mailbox	245
Forwarding email to a new address	247
Setting storage restrictions on mailbox and archives	247
Setting deleted item retention time on individual mailboxes	249

Chapter 8 Working with distribution groups and address lists 251

Using security and distribution groups	251
Group types, scope, and identifiers	251
When to use security and standard distribution groups	253
When to use dynamic distribution groups	254
Working with security and standard distribution groups.	255
Group naming policy	255
Creating security and standard distribution groups	258
Assigning and removing membership for individual users, groups, and contacts	262
Adding and removing managers	263
Configuring member restrictions and moderation	264
Working with dynamic distribution groups.	266
Creating dynamic distribution groups	266
Changing query filters and filter conditions	269
Designating an expansion server	270
Modifying dynamic distribution groups using cmdlets	271
Previewing dynamic distribution group membership	273
Other essential tasks for managing groups.	273
Changing a group's name information	273
Changing, adding, or deleting a group's email addresses	274

Hiding groups from Exchange address lists	275
Setting usage restrictions on groups	276
Creating moderated groups	277
Deleting groups	278
Managing online address lists	278
Using default address lists	279
Using address book policies	280
Creating and applying new address lists	282
Configuring clients to use address lists	285
Updating address list configuration and membership throughout the domain	286
Previewing and editing address lists	286
Renaming and deleting address lists	288
Managing offline address books	288
Creating offline address books	289
Configuring clients to use an offline address book	290
Designating OAB generation servers and schedules	291
Rebuilding the OAB manually	292
Setting the default offline address book	293
Changing offline address book properties	293
Deleting offline address books	294
Chapter 9 Implementing Exchange security	295
Configuring standard permissions for Exchange	296
Assigning Exchange Server and Exchange Online permissions	296
Understanding the Exchange management groups	297
Assigning management permissions to users and groups	301
Understanding advanced Exchange Server permissions	304
Assigning advanced Exchange Server permissions	306
Configuring role-based permissions for Exchange	307
Understanding role-based permissions	307
Creating and managing role groups	313
Viewing, adding, or removing role group members	317
Assigning roles directly or via policy	319
Configuring account management permissions	324

Performing advanced permissions management	325
Creating custom roles	326
Creating custom role scopes	328
Creating custom role entries	330
Using shared and split permissions.....	333
Shared permissions	333
Split permissions	334
<i>Index</i>	339

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:

microsoft.com/learning/booksurvey

Introduction

Microsoft Exchange Server 2013 Pocket Consultant: Configuration & Clients is designed to be a concise and compulsively usable resource for Microsoft Exchange Server 2013 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 configuring Exchange Server 2013 and setting up Exchange clients, whether your servers are running on Windows Server 2012 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 about configuring Exchange Server 2013 and setting up Exchange clients. To this end, the book zeroes in on daily administrative procedures, frequently performed tasks, documented examples, and options that are representative although not necessarily exhaustive. 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 it is packed with as much information as possible. 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 and solve problems.

Although you might not install Exchange Server 2013 on touch-enabled computers, you can use these devices to manage your installation. If you do manage the software this way, understanding the touch UI as well as the revised interface options will be crucial to your success. For this reason, I reference both the touch UI and the traditional mouse and keyboard techniques throughout this book.

Touch-enabled computers allow you to manipulate onscreen elements in ways that weren't possible previously. In addition to entering text by using an onscreen keyboard, you can also use the following actions to interact with the UI:

- **Tap** Tap an item by touching it with your finger. A tap or double-tap of elements on the screen generally is the equivalent of a mouse click or double-click.
- **Press and hold** Press your finger on the screen and leave it there for a few seconds. Pressing and holding elements on the screen generally is the equivalent of a right-click.
- **Swipe to select** Slide an item a short distance in the opposite direction compared to how the page scrolls. This selects the item and also reveals any related commands. If pressing and holding doesn't display commands and options for an item, try using swipe to select instead.
- **Swipe from edge (slide in from edge)** Starting from the edge of the screen, swipe or slide in. Sliding in from the right edge opens the charms panel. Sliding in from the left edge shows open apps and allows you to easily

switch between them. Sliding in from the top or bottom edge shows commands for the active element.

- **Pinch** Touch an item with two or more fingers and then move the fingers toward each other. Pinching zooms in or shows less information.
- **Stretch** Touch an item with two or more fingers and then move the fingers away from each other. Stretching zooms out or shows more information.

As you've probably noticed, a great deal of information about Exchange Server 2013 is available on the web and in other printed books. You can find tutorials, reference sites, discussion groups, and more to make using Exchange Server 2013 easier. However, the advantage of reading this book is that much of the information you need to learn about Exchange Server 2013 is organized in one place and presented in a straightforward and orderly fashion. This book has everything you need to master Exchange Server 2013 configurations and clients.

In this book, I teach you how features work, why they work the way they do, and how to customize them to meet your needs. I also offer specific examples of how certain features can meet your needs and how you can use other features to troubleshoot and resolve issues you might have. In addition, this book provides tips, best practices, and examples of how to optimize Exchange Server 2013. This book won't just teach you how to configure Exchange Server 2013; it will teach you how to squeeze every last bit of power out of it and make the most from the features and options it includes.

Unlike many other books about administering Exchange Server 2013, this book doesn't focus on a specific user level. This isn't a lightweight beginner book. Regardless of whether you are a beginning administrator or a seasoned professional, many of the concepts in this book will be valuable to you, and you can apply them to your Exchange Server 2013 installations.

Who is this book for?

Microsoft Exchange Server 2013 Pocket Consultant: Configuration & Clients covers the Standard and Enterprise editions of Exchange Server 2013. The book is designed for the following readers:

- Current Exchange Server 2013 administrators
- Current Windows administrators who want to learn Exchange Server 2013
- Administrators upgrading to Exchange Server 2013 from Exchange 2007 or Exchange 2010
- Administrators transitioning to Exchange Server 2013 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 2013

To pack in as much information as possible, I had to assume that you have basic networking skills and a basic understanding of email and messaging servers. With this in mind, I don't devote entire chapters to explaining why email systems are needed or how they work. I don't devote entire chapters to installing Exchange

Server 2013 either. I do, however, provide complete details on the components of Exchange organizations and how you can use these components. You will also find complete details on essential Exchange configuration 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 2012 Pocket Consultant* (Microsoft Press, 2012) or *Windows Server 2012 Inside Out* (Microsoft Press, 2013).

How is this book organized?

Rome wasn't built in a day, and this book wasn't intended to be read in a day, in a week, or even in a month. Ideally, you'll read this book at your own pace, a little each day as you work your way through. This book is organized into nine chapters. The chapters are arranged in a logical order, taking you from planning and deployment tasks to configuration tasks.

Ease of reference is an essential part of this hands-on guide. This 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 to the book as well, including quick step-by-step procedures, lists, tables with fast facts, and extensive cross references.

As with all titles in the Pocket Consultant series, *Microsoft Exchange Server 2013 Pocket Consultant: Configuration & Clients* is designed to be a concise and easy-to-use resource. This is the readable resource guide that you'll want on your desktop at all times. The book covers everything you need to perform the core configuration tasks for Exchange servers and Exchange clients. Specifically, this book focuses on:

- Deploying Exchange Server 2013
- Exchange administration essentials
- Managing Exchange clients
- Administration of users, contacts, and mailboxes
- Configuring distribution groups and address lists
- Implementing Exchange Server security and permissions

Although designed and written to stand on its own, this book also can be used with *Microsoft Exchange Server 2013 Pocket Consultant: Databases, Services & Management*, which focuses on:

- Managing availability groups and Exchange databases
- Managing mail flow and transport services
- Working with Client Access servers
- Managing mobile messaging users
- Maintaining and monitoring Exchange servers
- Backing up and restoring Exchange servers

Because the focus 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, and you'll find it quickly.

In short, the book is designed to be the one resource you turn to whenever you have questions regarding core configuration tasks for Exchange servers and Exchange clients. To this end, the book zeroes in on daily administration procedures, frequently performed tasks, documented examples, and options that are representative while not necessarily inclusive. One of my goals is to keep the content so concise that the book remains compact and easy to navigate while at the same time ensuring that it is packed with as much information as 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:

- **Caution** To warn you of potential problems you should look out for.
- **Important** To highlight important concepts and issues
- **More Info** To provide more information on the subject.
- **Note** To provide details on a point that needs emphasis.
- **Real World** To provide real-world advice when discussing advanced topics.
- **Tip** To offer helpful hints or additional information.

I truly hope you find that *Microsoft Exchange Server 2013 Pocket Consultant: Configuration & Clients* provides everything you need to perform essential administrative tasks as quickly and efficiently as possible. You are welcome to send your thoughts to me at williamstaneke@aol.com. Follow me on Twitter at WilliamStaneke and on Facebook at www.facebook.com/William.Staneke.Author.

Other resources

No single resource for learning everything you'll ever need to know about Exchange Server 2013 exists. While some books are offered as all-in-one guides, there's simply no way one book can do it all. With this in mind, I hope you use this book as it is intended to be used—as a concise and easy-to-use resource. It covers everything you need to perform core configuration tasks for Exchange servers and Exchange clients, but it is by no means exhaustive.

Your current knowledge will largely determine your success with this or any other Exchange resource or book. As you encounter new topics, take the time to practice what you've learned and read about. Seek out further information as necessary to get the practical hands-on knowledge and experience you need.

For topics this book doesn't cover, you may want to look to *Microsoft Exchange Server 2013 Pocket Consultant: Databases, Services & Management*. I also recommend that you regularly visit the Microsoft website for Exchange Server (microsoft.com/exchangeserver/) and support.microsoft.com to stay current with the

latest changes. To help you get the most out of this book, you can visit my corresponding website at *pocket-consultant.com*. This site contains information about Exchange Server 2013 and updates to the book.

Errata & book support

We've made every effort to ensure the accuracy of this book and its companion content. Any errors that have been reported since this book was published are listed on our Microsoft Press site:

<http://aka.ms/ExPC2013CC/errata>

If you find an error that is not already listed, you can report it to us through the same page.

If you need additional support, email Microsoft Press Book Support at *mspinput@microsoft.com*.

Please note that product support for Microsoft software is not offered through the addresses above.

We want to hear from you

At Microsoft Press, your satisfaction is our top priority, and your feedback our most valuable asset. Please tell us what you think of this book at:

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

The survey is short, and we read every one of your comments and ideas. Thanks in advance for your input!

Stay in touch

Let's keep the conversation going! We're on Twitter: *<http://twitter.com/MicrosoftPress>*.

Exchange administration essentials

- Accessing and using Exchange Admin Center **71**
- Bypassing Exchange Admin Center and troubleshooting **81**
- Validating Exchange Server licensing **87**
- Using and managing Exchange services **89**

Whether you're using Microsoft Exchange Server 2013 and Exchange Online for the first time or honing your skills, you'll need to master many key concepts to work effectively. You'll need to know the following:

- How to access and work with Exchange Admin Center
- How connections are authenticated and proxied
- How Exchange uses virtual directories
- Why Exchange requires SSL certificates
- Which Windows processes are used with Exchange Server

You also need to know how to bypass Exchange Admin Center and Exchange Management Shell so that you can work directly with Exchange Server. These topics are all covered in this chapter.

Accessing and using Exchange Admin Center

Exchange Admin Center is a browser-based application designed for managing on-premises, online, and hybrid Exchange organizations. You access Exchange Admin Center through the Client Access servers deployed in your Exchange organization. Although the application can be configured with an internal access URL and an external access URL, only an internal access URL is configured by default. This means that by default you can access Exchange Admin Center only when you are on the corporate network.

Accessing Exchange Admin Center

Exchange Admin Center is designed to be used with many operating systems and browsers. However, to ensure all features are available you should use Exchange Admin Center only with the following browser and operating system combinations:

- For Windows 7 and Windows Server 2008 R2 use Internet Explorer 9 or later, Firefox 17 or later, or Chrome 24 or later.
- For Windows 8 or later and Windows Server 2012 RTM or R2 use Internet Explorer 10 or later, Firefox 17 or later, or Chrome 24 or later.
- For Mac OS X 10.5 or later use Firefox 17 or later, Safari 6 or later, or Chrome 24 or later.
- For Linux use Firefox 17 or later, or Chrome 24 or later.

Although Exchange Admin Center replaces Exchange Management Console and Exchange Control Panel (ECP), ECP continues to be the name for the related virtual directory. You access Exchange Admin Center by following these steps:

1. Open your web browser and enter the secure URL for Exchange Admin Center. If you are outside the corporate network, enter the external URL, such as *https://mail.cpandl.com/ecp*. If you are inside the corporate network, enter the internal URL, such as *https://mailserver48/ecp*.

The version of Exchange Admin Center you see depends on the version of Exchange running on the Mailbox server hosting your personal mailbox. Exchange 2010 runs version 14, and you can specify this version explicitly by appending **?ExchClientVer=14** to the internal or external URL.

Exchange 2013 runs version 15, and you can specify this version explicitly by appending **?ExchClientVer=15** to the internal or external URL. For example, if your external URL is *https://mail.pocket-consultant.com*, you could enter **https://mail.pocket-consultant.com/ecp?ExchClientVer=15** as the URL.

NOTE By default, you must use HTTPS to connect. If you don't, you'll see an error stating "Access is denied." Using HTTPS ensures data transmitted between the client browser and the server is encrypted and secured.

2. If your browser displays a security alert stating there's a problem with the site's security certificate or that the connection is untrusted, proceed anyway. This alert is displayed because the browser does not trust the self-signed certificate that was automatically created when the Exchange server was installed.
 - With Internet Explorer, the error states "There's a problem with this website's security certificate." Proceed by selecting the Continue To This Web Site (Not Recommended) link.
 - With Google Chrome, the error states "The site's security certificate is not trusted." Continue by clicking Proceed Anyway.
 - With Mozilla Firefox, the error states "This connection is untrusted." Proceed by selecting I Understand The Risks and then selecting Add Exception. Finally, in the Add Security Exception dialog box, select Confirm Security Exception.

3. You'll see the logon page for Exchange Admin Center. Enter your user name and password, and then tap or click Sign In.
Be sure to specify your user name in DOMAIN\username format. The domain can either be the DNS domain, such as pocket-consultant.com, or the Net-BIOS domain name, such as pocket-consulta. For example, the user AnneW could specify her logon name as pocket-consultant.com\annew or pocket-consulta\annew.
4. If you are logging on for the first time, select your preferred display language and time zone, and then tap or click Save.

After you log on to Exchange Admin Center, you'll see the list view with manageable features listed in the feature pane (see Figure 3-1). When you select a feature in the feature pane, you'll then see the related topics or "tabs" for that feature. The manageable items for a selected topic or tab are displayed in the main area of the browser window. For example, when you select Recipients in the feature pane, the topics or tabs that you can work with are: Mailboxes, Groups, Resources, Contacts, Shared, and Migration.

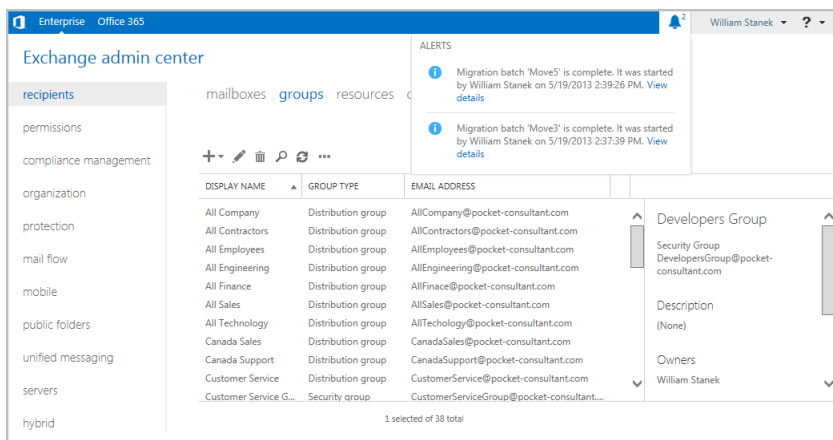


FIGURE 3-1 Exchange Admin Center uses a list view with manageable features listed on the left.

The navigation bar at the top of the window has several important options. You use the Enterprise and Office 365 options for cross-premises navigation. If there are notifications, tapping or clicking the Notification icon displays the notifications as shown in Figure 3-1. The User button shows the currently logged on user. Tapping or clicking the User button allows you to log out or sign in as another user.

Although ECP for Exchange 2010 would return only 500 recipients at a time, Exchange Admin Center doesn't have this limitation since results are paged so that you can go through results one page at a time. Up to 20,000 recipients can be returned in the result set. When working with recipients, you can tap or click More to display options to:

- Add or remove columns
- Export data for the listed recipients to a .csv file
- Perform advanced searches

If you customize the view by adding or removing columns, the settings are saved for the computer that you are using to access Exchange Admin Center. However, because the settings are saved as browser cookies, clearing the browser history will remove the custom settings.

When working with recipients, you typically can select multiple items and perform bulk editing as long as you select like items, such as mailbox users or mail-enabled contacts. Select multiple items using the Shift or Ctrl key and then use bulk editing options in the details pane to bulk edit the selected items.

Authenticating and proxying connections

When you access Exchange Admin Center in a browser, a lot is happening in the background that you don't see. Although you access the application using a specific Client Access server in your organization, Client Access servers themselves only act as front-end proxies. They authenticate and proxy connections for Mailbox servers, and the Mailbox servers perform the actual back-end processing. To understand this process better, consider the following scenario:

You're an administrator for Pocket-consultant.com, which has three Client Access servers (CAServer11, CAServer23, and CAServer42) and two Mailbox servers (MailServer18 and MailServer26). Your mailbox is located on MailServer26. When you log on to Exchange Admin Center using `https://casserver23.pocket-consultant.com/ecp` as the access URL, CAServer23 authenticates your request and proxies the connection to MailServer26. Any administration tasks you perform are processed on MailServer26 and the results are passed back to you via CAServer23.

As shown in Figure 3-2, you can examine the configuration settings for Exchange Admin Center and other applications using Internet Information Services (IIS) Manager. The Client Access server to which you connect processes your remote actions via the ECP application running on the default website. The physical directory for this application is `%ExchangeInstallPath%\ClientAccess\Ecp`. This application runs in the context of an application pool named `MSEExchangeECPAppPool`. In the `%ExchangeInstallPath%\ClientAccess\Ecp` directory on your server, you'll find a `web.config` file that defines the settings for the ECP application.

The Mailbox server where your mailbox resides performs its tasks and processing via the ECP application running on the Exchange Back End website. The physical directory for this application is `%ExchangeInstallPath%\ClientAccess\Ecp`. This application runs in the context of an application pool named `MSEExchangeECPAppPool`. In the `%ExchangeInstallPath%\ClientAccess\Ecp` directory on your server, you'll find a `web.config` file that defines the settings for the ECP application.

Because the Client Access role and the Mailbox role can be installed on the same server, the Client Access server to which you connect and the Mailbox server where your mailbox resides can actually be the same physical server. In this case, the proxying between front-end and back-end services uses the same technique but involves only a single server.

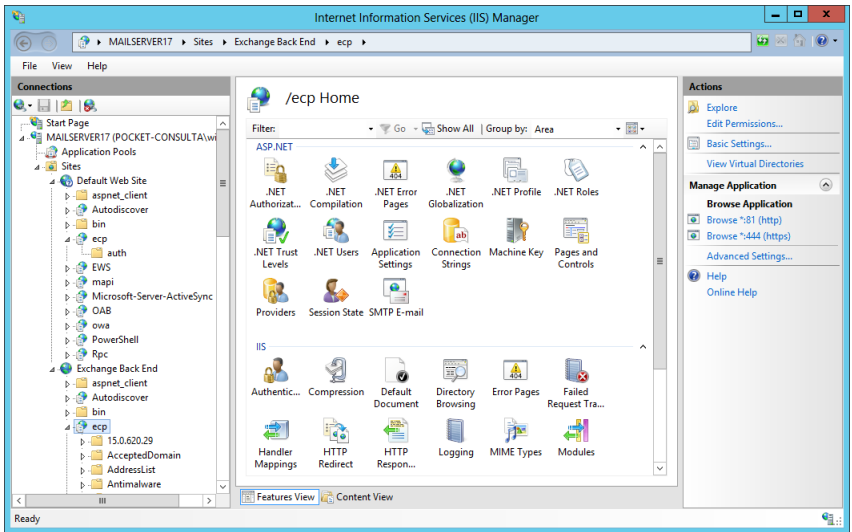


FIGURE 3-2 Viewing the applications that handle Exchange processing.

Working with Exchange Server certificates

When you install an Exchange server, the setup process creates several self-signed security certificates that are used for authentication. The default certificates available depend on whether the server has the Mailbox Server role, the Client Access Server role, or both installed and can include:

- **Microsoft Exchange** A self-signed certificate used by IMAP, POP, IIS, and SMTP. If Autodiscover is configured, this certificate is also used for Autodiscover. This is the primary certificate used by Exchange.
- **Microsoft Server Auth Certificate** A self-signed certificate for authenticating SMTP connections.
- **Exchange Delegation Federation** A self-signed certificate used when federated sharing is configured in the Exchange organization.
- **WMSVC** A self-signed certificate used by the Windows Management service.

As Figure 3-3 shows, you can view these certificates in Exchange Admin Center by selecting Servers in the feature pane and then selecting Certificates. Because the default certificates are not issued by a trusted authority, you see a related error message whenever you use HTTPS to access services hosted by your Client Access servers, including Exchange Admin Center, the PowerShell application, and Microsoft Outlook Web App.

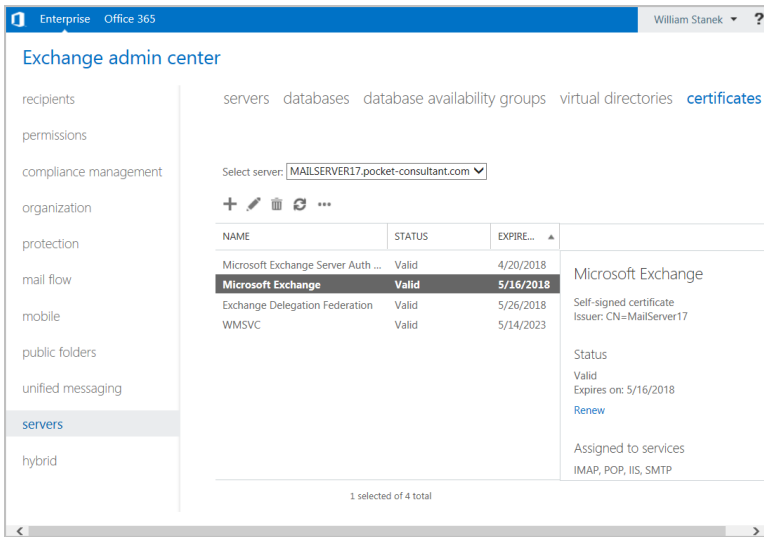


FIGURE 3-3 Viewing the SSL certificates installed on Exchange servers.

The best way to eliminate this error message is to install a certificate from a trusted authority on your Client Access servers. Web browsers should already be configured to trust certificates issued by your organization's certification authority (CA) or by a trusted third-party authority. Typically, browsers need additional configuration only when you use your own CA with non-domain-joined machines.

The services a certificate can be used with include Internet Message Access Protocol (IMAP), Post Office Protocol (POP), SMTP, Internet Information Services (IIS), and Unified Messaging (UM). The default self-signed certificates are assigned services automatically during setup based on the roles installed on the Exchange server.

When you work with certificates, it's critical that you ensure the certificate is used for the right subject name and alternative names. As an example, the Microsoft Exchange certificate created by default has the Subject set as `cn=ServerName`, where *ServerName* is the name of the server, such as `cn=MailServer21`, and the Subject Alternative Names is set as `DNS Name=ServerName`, `DNS NAME=FullyQualifiedServerName`, and `DNS Name=DomainName`. If Autodiscover is configured, there's also a Subject Alternative Name entry for `DNS Name=Autodiscover.DomainName`. For example, MailServer21 in the Pocket-consultant.com domain means the subject name is set as:

```
cn=MailServer21
```

and the Subject Alternative Name entries typically are:

```
DNS Name = MailServer21
DNS Name = MailServer21.pocket-consultant.com
DNS Name = pocket-consultant.com
DNS Name = Autodiscover.pocket-consultant.com
```

REAL WORLD I caution against using Exchange Admin Center and Exchange Management Shell to work with Exchange certificates. You may prefer instead to access Exchange directly using the technique discussed in “Bypassing Exchange Admin Center and troubleshooting” later in this chapter. Anyone who has experienced problems after remotely managing Exchange certificates may agree—and I also have experienced related issues firsthand on multiple occasions. Specifically, if you modify certificates using either tool, you might find that Outlook Web App (OWA) and Exchange Admin Center are inaccessible as a result of a required SSL certificate becoming corrupted or being invalidated. If this happens, you will need to access Exchange directly and re-create the required certificate or certificates.

One way to safeguard yourself against this problem is to create copies of the original certificates using the Certificates snap-in. When you add this snap-in to a Microsoft Management Console, specify that you want to manage certificates for a computer account. You’ll then find the certificates under the Personal node. Export each certificate in turn using the Certificate Export Wizard. To start this wizard, press and hold or right-click a certificate, select All Tasks, and then select Export.

If your organization has a CA, have your security administrator issue a certificate. Generate the certificate by completing the following steps.

1. In a web browser, open Certificate Services by entering the appropriate URL, such as **https://CertServer03/certsrv**.
2. Specify that you want to create a new request and then choose the advanced creation option.
3. Submit a certificate request by using a base 64 encoded PKS #7 or PKS #12 file.
4. Once the certificate request file is generated, open the file in a text editor.
5. While you are working with Certificate Services in your browser, access the request. Copy the contents of the certificate request file and paste them into the request.
6. Select web server as the server type, and leave all other attributes blank.
7. Save the certificate.

After you create the certificate, you must make it available on the designated Exchange server. To do this, access the Exchange server and then import the certificate using Import-ExchangeCertificate. Next, use Enable-ExchangeCertificate to enable the certificate for specific Exchange services.

If you can purchase a certificate from a trusted third-party authority, you also must make the certificate available on the designated Exchange server. To do this, access the Exchange server and then import the certificate using Import-ExchangeCertificate. Next, use Enable-ExchangeCertificate to enable the certificate for specific Exchange services. Finally, ensure that the new certificate is in use and test web services by using Test-OutlookWebServices as shown in the following example:

```
test-outlookwebservices | fl
```

By default Test-OutlookWebServices verifies the Availability service, Autodiscover, Offline Address Book, and Exchange Web Services. You can test Outlook client connectivity and Outlook Anywhere using Test-OutlookConnectivity. You can test connectivity to the Outlook Web App and ECP virtual directories using Test-OwaConnectivity and Test-EcpConnectivity, respectively. However, before you can use any of the Test cmdlets, you must create a test account by running the Scripts\New-TestCasConnectivityUser.ps1 script. You'll find this script in the %ExchangeInstallPath%, which by default is C:\Program Files\Microsoft\Exchange Server\V15\. The password you set for the test account is temporary and will be automatically changed every seven days.

Once you've imported and enabled the certificate, you can then view the certificate in Exchange Admin Center or by using Get-ExchangeCertificate to confirm it is configured as expected. You'll want to ensure the status is valid, the expiration date is appropriate, the subject name is correct, the subject alternative names are correct, and that the assigned services are appropriate.

Configuring Exchange Admin Center

You can configure Exchange Admin Center for single-server and multiserver environments. In a single-server environment, you use one Client Access server for all of your remote management needs. In a multiple-server environment, you can instruct administrators to use different URLs to access different Client Access servers, or you can use Client Access arrays with multiple, load-balanced servers and give all administrators the same access URL.

REAL WORLD If you have multiple Client Access servers in the same Active Directory site, you put them all in the same single CAS array, and then you point to the CAS array. Note that the load balancing performed by the array is automatically for RPC Client Access only. You need to use some other means to load balance the HTTPS requests against the array.

NOTE You can use Exchange Admin Center with firewalls. You configure your network to use a perimeter network with firewalls in front of the designated Client Access servers and then open port 443 to the IP addresses of your Client Access servers. If Secure Sockets Layer (SSL) is enabled and you want to use SSL exclusively, you only need port 443, and you don't need to open port 80.

You can manage the Exchange Admin Center application using Internet Information Services (IIS) Manager or Exchange Management Shell. The related commands for Exchange Management Shell are as follows:

- **Get-ECPVirtualDirectory** Displays information about the ECP application running on the Web server providing services for Exchange. By default only front-end virtual directories are listed. Add -ShowMailboxVirtualDirectories to also display the back-end virtual directories.

```
Get-ECPVirtualDirectory [-Identity AppName]  
[-ADPropertiesOnly <$true | $false>]  
[-ShowMailboxVirtualDirectories <$true | $false>]
```

```
[-DomainController DomainControllerName]
```

```
Get-ECPVirtualDirectory -Server ExchangeServerName
```

```
[-ADPropertiesOnly <$true | $false>]
```

```
[-ShowMailboxVirtualDirectories <$true | $false>]
```

```
[-DomainController DomainControllerName]
```

- **New-ECPVirtualDirectory** Creates a new ECP application running on the Web server providing services for Exchange. You should use this command only for troubleshooting scenarios where you are required to remove and re-create the ECP virtual directory.

```
New-ECPVirtualDirectory [-AppPoolId AppPoolName]
```

```
[-DomainController DomainControllerName] [-ExternalUrl URL]
```

```
[-InternalUrl URL] [-WebSiteName SiteName]
```

- **Remove-ECPVirtualDirectory** Use the Remove-ECPVirtualDirectory cmdlet to remove a specified ECP application providing services for Exchange.

```
Remove-ECPVirtualDirectory -Identity AppName
```

```
[-DomainController DomainControllerName]
```

- **Set-ECPVirtualDirectory** Modifies the configuration settings for a specified ECP application providing services for Exchange. Set -AdminEnabled to \$false to turn off Internet access to the Exchange Admin Center.

```
Set-ECPVirtualDirectory -Identity AppName
```

```
[-AdminEnabled <$true | $false>]
```

```
[-BasicAuthentication <$true | $false>] [-DomainController
```

```
DomainControllerName] [-ExternalAuthenticationMethods Methods]
```

```
[-DigestAuthentication <$true | $false>]
```

```
[-FormsAuthentication <$true | $false>]
```

```
[-ExternalUrl URL] [-GzipLevel <Off | Low | High | Error>]
```

```
[-InternalUrl URL] [-LiveIdAuthentication <$true | $false>]
```

```
[-WindowsAuthentication <$true | $false>]
```

- **Test-ECPCConnectivity** Displays information about the ECP application running on the Web server providing services for Exchange.

```
Test-ECPCConnectivity [-ClientAccessServer ServerName]
```

```
[-MailboxServer ServerName] [-DomainController DomainControllerName]
```

```
[-RTSEndPoint EndPointID] [-TestType <Internal | External>]
```

```
[-MonitoringContext <$true | $false>]
```

```
[-ResetTestAccountCredentials <$true | $false>]
```

```
[-Timeout NumSeconds] [-TrustAnySSLCertificate <$true | $false>]
```

```
[-VirtualDirectoryName DirectoryName]
```

At the Exchange Management Shell prompt, you can confirm the location of the Exchange Admin Center application by typing **get-ecpvirtualdirectory**.

Get-ECPVirtualDirectory lists the name of the application, the associated web site, and the server on which the application is running, as shown in the following example:

Name	Server
-----	-----
ecp (Default Web Site)	MailServer18

In this example, a standard configuration is being used, on which the application named ECP is running on the Default Web Site on MailServer18. You can use Set-ECPVirtualDirectory to specify the internal and external URL to use as well as the permitted authentication types. Authentication types you can enable or disable include basic authentication, Windows authentication, and Live ID basic authentication. You can use New-ECPVirtualDirectory to create or re-create an ECP application on a Web server providing services for Exchange and Remove-ECPVirtualDirectory to remove an ECP application. You can verify that Exchange Admin Center is working properly using Test-ECPCConnectivity.

The PowerShell application has a similar set of commands. In Exchange Management Shell, the related commands are New-PowerShellVirtualDirectory, Get-PowerShellVirtualDirectory, Set-PowerShellVirtualDirectory, and Test-PowerShellConnectivity. If you enter **Get-PowerShellVirtualDirectory | Format-List**, you'll get configuration details for each Client Access server in the Exchange organization. You can use SetPowerShellVirtualDirectory to enable or disable authentication mechanisms, including basic authentication, certificate authentication, Live ID basic authentication, Live ID NTLM negotiate authentication, and Windows authentication. You can also specify the internal and external URLs for the PowerShell virtual directory on a per-server basis. By default, servers have only internal URLs for PowerShell. For troubleshooting issues related to the PowerShell virtual directory, enter **Test-PowerShellConnectivity** followed by the URL to test, such as *https://mailer1.cpanidl.com/powershell*.

You'll also find commands for working with virtual directories related to:

- Outlook Web Access, including New-OwaVirtualDirectory, Get-OwaVirtualDirectory, Set-OwaVirtualDirectory, and Remove-OwaVirtualDirectory
- Offline Address Books, including New-OabVirtualDirectory, Get-OabVirtualDirectory, Set-OabVirtualDirectory, and Remove-OabVirtualDirectory
- Autodiscover, including New-AutodiscoverVirtualDirectory, Get-AutodiscoverVirtualDirectory, Set-AutodiscoverVirtualDirectory, and Remove-AutodiscoverVirtualDirectory

Keep in mind that there are separate but interconnected virtual directories on both Client Access servers and Mailbox servers. Typically, front-end virtual directories are used for authentication and proxying while back-end virtual directories are used for actual processing. Although the front-end and back-end virtual directories have different components and configurations, the Exchange cmdlets for creating these virtual directories are designed to configure the appropriate settings and components for either front-end or back-end use as appropriate.

When an Exchange server has both the Client Access server and the Mailbox server role, you should specify explicitly whether you want to work with the front-

end or back-end components. You do this by specifying the related website name. The Default Web Site is used by the front-end components and the Exchange Back End website is used by back-end components.

Bypassing Exchange Admin Center and troubleshooting

Exchange makes extensive use of IIS. Client Access servers use IIS for front-end services, such as authentication and proxying, while Mailbox servers use IIS for back-end processing. On Client Access servers, front-end apps for Outlook Web App, ECP, PowerShell, OAB, and Autodiscover apps are configured on the Default Web Site. On Mailbox servers, back-end apps for Outlook Web App, ECP, PowerShell, OAB, and Autodiscover are configured on the Exchange Back End website.

Understanding remote execution in Exchange Admin Center

When you access Outlook Web App in a web browser, you are performing remote operations via the PowerShell application running on the Web server providing Exchange services whether you are logged on locally to an Exchange server or working remotely. The same is true for ECP, but the process is a little more complex, as shown in the following high-level view of the login and workflow process:

1. Generally, Outlook Web App handles the initial login for ECP. Thus, when you access ECP using a URL such as `https://mailserver17/ecp`, the browser actually is redirected to Outlook Web App with a URL such as `https://mailserver17/owa/auth/logon.aspx?replaceCurrent=1&url=https%3a%2f%2fmailserver17%2fecp%2f`.
2. Once you log on to Exchange, you are connected to the designated Client Access server using the ECP app running on the Default Web Site.
3. ECP performs authentication checks that validate your access to the Exchange 2013 server and determine the Exchange role groups and roles your account is a member of. You must be a member of at least one management role.
4. ECP creates a remote session with the Exchange 2013 server. A remote session is a runspace that establishes a common working environment for executing commands on remote computers.
5. The ECP app on the Client Access server acts as proxy for the ECP app on the Mailbox server. By default, you are connected to the Mailbox server on which your user mailbox resides.
6. As you perform tasks, these tasks are executed via the PowerShell app, which also has front-end and back-end components.

IMPORTANT Every step of the login and workflow process relies on properly configured SSL certificates. HTTPS uses SSL certificates to establish and encrypt connections. SSL certificates are also used to initialize and validate remote sessions. Although you could disable the requirement for HTTPS and allow HTTP to be used for connections, the remote sessions themselves would still rely on properly configured SSL certificates.

Thus, many interconnected components must be functioning correctly for you to connect to and work with Exchange Server.

Bypassing Exchange Admin Center and Exchange Management Shell

As discussed in Chapter 4, “Using Exchange Management Shell,” the Exchange Management Shell uses remote sessions that run via the PowerShell application running on IIS. Because of this, you often need a way to work directly with Exchange Server, especially when you are trying to diagnose and resolve problems. Intuitively, you might think that you should do this in the same way you establish a remote session with Exchange Online. For example, if you want to connect to MailServer18, you might want to use the following code:

```
$Session = New-PSSession -ConfigurationName Microsoft.Exchange  
-ConnectionUri https://mailserver18/powershell/ -Authentication Basic  
-Credential wrstaneke@pocket-consultant.com -AllowRedirection
```

```
Import-PSSession $Session
```

However, if there are any configuration problems, including issues with SSL certificates, you won’t be able to connect to or work with Exchange Server in this way. Instead, you’ll have to bypass the web-based management interfaces and connect directly to an Exchange server using the following technique:

1. Log on to the Client Access server or Mailbox server you want to work with—either at the console or using a remote desktop connection.
2. Open an administrative PowerShell window by pressing and holding or right-clicking Windows PowerShell and then tapping or clicking Run As Administrator.
3. Import all Exchange-related snapins for Windows PowerShell by entering **Add-PSSnapin *exchange***. You’ll then be able to work directly with Exchange and any related cmdlets.

Because Exchange has a two-tier architecture, you’ll often need to perform troubleshooting tasks on both the front-end Client Access servers and back-end Mailbox servers. Rather than log on locally to each server, you may want to work remotely. You can invoke commands, establish direct remote sessions, or execute commands remotely using the `-ComputerName` parameter available with certain cmdlets. (For more information, see Chapter 4, “Using Sessions, Jobs, and Remoting” in *Windows PowerShell 2.0 Administrator’s Pocket Consultant* [Microsoft Press, 2009]).

To invoke commands on remote servers or establish a direct remote session, use the following technique:

1. Log on to any workstation or server where you’ve installed the Exchange management tools. (Doing so ensures the Exchange related snap-ins are available.)
2. Open an administrative PowerShell window by pressing and holding or right-clicking Windows PowerShell, and then tapping or clicking Run As Administrator.
3. Import all Exchange-related snapins for Windows PowerShell by entering **Add-PSSnapin *exchange***.

4. Either invoke commands on the remote Exchange server or establish a remote session with the remote Exchange server. In your remote sessions, be sure to connect directly, as shown in the following example:

```
$Session = New-PSSession -computername mailserver18  
-Credential pocket-consulta\williams  
  
Import-PSSession $Session
```

IMPORTANT When you work with Exchange in this way, you establish connections via the Windows Remote Management (WinRM) service. On an Exchange server, WinRM and related services are set up automatically. On your management computer, you need to install the required components and configure WinRM as discussed previously in “Using Exchange Management Shell” in Chapter 1, “Exchange Server 2013 administration overview.” See also “Customizing remote management services” later in this chapter.

Troubleshooting Outlook Web App, ECP, PowerShell, and More

Sometimes users and administrators see a blank page or an error when they try to log on to Outlook Web App or ECP. This problem and other connection issues, such as those related to OAB, Autodiscover, and PowerShell, can occur because of a wide variety of configuration issues, including:

- Invalid or missing TCP/IP settings
- Corrupted or improperly configured virtual directories
- Missing, expired, invalid, or improperly configured SSL certificates

However, before you look at specific issues, ensure required services are running as discussed in “Checking required services” later in this chapter. Be sure to examine the running services on both the front-end and back-end servers.

Typically, the next logical step is to validate the TCP/IP settings of the front-end and back-end servers. Not only do front-end and back-end servers need to communicate with each other, they also need to communicate with domain controllers.

If Exchange Server can't communicate properly with a domain controller, you may see an error similar to the following when you open Exchange Admin Center or Exchange Management Shell:

The LDAP server is unavailable.

Description: An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originated in the code.

Exception Details: System.DirectoryServices.Protocols.LdapException: The LDAP server is unavailable.

Source Error:

An unhandled exception was generated during the execution of the current web request. Information regarding the origin and location of the exception can be identified using the exception stack trace below.

Stack Trace:

```
[LdapException: The LDAP server is unavailable.]
  System.DirectoryServices.Protocols.LdapConnection.Connect() +160015
  System.DirectoryServices.Protocols.LdapConnection.BindHelper
(NetworkCredential newCredential, Boolean needSetCredential) +264
  Microsoft.Exchange.Data.Directory.PooledLdapConnection.BindWithRetry
(Int32 maxRetries) +702
```

Resolve the problem by doing the following:

- Ensure the server has the proper TCP/IP settings and is connected to the network.
- Ensure a domain controller is available for the server to communicate with.

Users or administrators may see a blank page when they try to log on to Outlook Web App or ECP as a result of a configuration or certificate problem. If you've determined that required services are running and that the TCP/IP settings are correct, next try to isolate and identify the specific issue.

Try to log on to Outlook Web App or ECP in a browser. Sometimes when you log on to Outlook Web App or ECP, you'll see a runtime error that indicates an improperly configured virtual directory or an application error due to misconfiguration in IIS (see Figure 3-4). Other times, the browser window may simply be empty or blank as mentioned previously.

Server Error in '/ecp' Application.

Runtime Error

Description: An application error occurred on the server. The current custom error settings for this application prevent the details of the application error from being viewed remotely (for security reasons). It could, however, be viewed by browsers running on the local server machine.

Details: To enable the details of this specific error message to be viewable on remote machines, please create a <customErrors> tag within a "web.config" configuration file located in the root directory of the current web application. This <customErrors> tag should then have its "mode" attribute set to "Off".

```
<!-- Web.Config Configuration File -->
<configuration>
  <system.web>
    <customErrors mode="Off"/>
  </system.web>
</configuration>
```

Notes: The current error page you are seeing can be replaced by a custom error page by modifying the "defaultRedirect" attribute of the application's <customErrors> configuration tag to point to a custom error page URL.

```
<!-- Web.Config Configuration File -->
<configuration>
  <system.web>
    <customErrors mode="RemoteOnly" defaultRedirect="mycustompage.htm"/>
  </system.web>
</configuration>
```

FIGURE 3-4 A runtime or application error can indicate an improperly configured virtual directory or a misconfiguration in IIS.

For deeper troubleshooting, log on to the Client Access server where the problem is occurring and open Exchange Management Shell. Next, try to log on to the Mailbox server hosting the mailbox for the users or administrators experiencing the problem and open Exchange Management Shell. If there's a problem with SSL certificates rather than virtual directory configuration, you'll see an error similar to the following:

```
New-PSSession : [mailserver17] Connecting to remote server mailserver17
failed with the following error message : The server certificate on the
destination computer (mailserver17:443) has the following errors:
The SSL certificate is signed by an unknown certificate authority. For more
information, see the about_Remote_Troubleshooting Help topic.
At line:1 char:12
+ $Session = New-PSSession -ConfigurationName Microsoft.Exchange
-ConnectionUri ht ...
+ ~~~~~
+ CategoryInfo          : OpenError
  (System.Manageme....RemoteRunspace:RemoteRunspace) [New-PSSession],
  PSRemotingTransportException
+ FullyQualifiedErrorId : 12175, PSSessionOpenFailed
```

If there's a problem with virtual directory configuration, you may see another type of error, such as:

```
New-PSSession : [mailserver17.pocket-consultant.com] Processing data from
remote server mailserver17.pocket-consultant.com failed with the following
error message: The WinRM Shell client cannot process the request. The shell
handle passed to the WSMAN Shell function is not valid. The shell handle is
valid only when WSMANCreateShell function completes successfully. Change
the request including a valid shell handle and try again. For more
information, see the about_Remote_Troubleshooting Help topic.
At line:1 char:1
+ New-PSSession -ConnectionURI "$connectionUri" -ConfigurationName
Microsoft.Excha ... + ~~~~~
+ CategoryInfo          : OpenError:
  (System.Manageme....RemoteRunspace:RemoteRunspace) [New-PSSession],
  PSRemotingTransportException
+ FullyQualifiedErrorId : -2144108212, PSSessionOpenFailed
```

To help diagnose the problem, you can test services using Test-OutlookWebServices. By default, Test-OutlookWebServices verifies the Availability service, Outlook Anywhere, Offline Address Book, and Unified Messaging. You can test Outlook Web App, ECP, and PowerShell using Test-OwaConnectivity, Test-EcpConnectivity, and Test-PowerShellConnectivity respectively.

Resolving SSL certificate issues

To resolve a certificate issue, you'll need to restore or re-create the primary SSL certificate on the Client Access server, the Mailbox server, or both. By default, the self-signed certificate named Microsoft Exchange is the certificate used for authentication and encrypting communications whenever you use Outlook Web App, ECP,

or the management tools to work with Exchange. If you backed up the certificates on the server or exported the certificates as discussed previously in this chapter in "Working with Exchange Server certificates," you can restore the original certificate to restore services.

If you don't have a backup or an export of the primary SSL certificate, you'll need to re-create the certificate. You can create a new self-signed certificate using `New-ExchangeCertificate`. The following example shows how to configure services, the subject name, and subject alternative names for MailServer21 in the Pocket-Consultant.com domain:

```
New-ExchangeCertificate -SubjectName "cn=MailServer21"  
-DomainName pocket-consultant.com -IncludeServerFQDN  
-Services IIS, IMAP, POP, SMTP
```

IMPORTANT If there's a problem preventing you from using Exchange Admin Center and Exchange Management Shell, you'll need to bypass the web-based management interfaces and connect directly to Exchange Server using the technique discussed earlier in the chapter.

With certificates issued by a local CA or a third-party CA, you can use the original certificate file. Import the certificate using `Import-ExchangeCertificate` and then use `Enable-ExchangeCertificate` to enable the certificate for IIS, IMAP, POP, and SMTP services. You can ensure that the certificate is in use and test services as discussed previously.

Resolving Outlook Web App, ECP, or other virtual directory issues

To resolve a virtual directory issue, you can remove and then re-create the virtual directory. You won't always know whether the problem exists in the front-end configuration, the back-end configuration, or both, so you may need to remove and re-create the virtual directory on the related Client Access server and the related Mailbox server. I recommend removing and re-creating the front-end virtual directory first and then checking to see if this resolves the problem before removing and re-creating the back-end virtual directory.

As an example, if you've determined the Outlook Web App virtual directory is misconfigured, you can remove it using `Remove-OwaVirtualDirectory` and then re-create it using `New-OwaVirtualDirectory`. For example, the following commands remove and then re-create the Outlook Web App virtual directory from the Default Web Site on MailServer17:

```
remove-owavirtualdirectory -identity "mailserver17\owa (Default Web Site)"  
  
new-owavirtualdirectory -server mailserver17  
-websitename "Default Web Site"
```

IMPORTANT Keep in mind that if there's a problem preventing you from using Exchange Admin Center and Exchange Management Shell, you'll need to bypass the web-based management interfaces and connect directly to Exchange Server using the technique discussed earlier in the chapter. You'll then be able to remove the virtual directory and then re-create it. When you are logged on to the server you are configuring, you don't need to use the `-Server` parameter with `New-OwaVirtualDirectory`.

By default, the `New-OwaVirtualDirectory` and `New-EcpVirtualDirectory` commands enable basic authentication and forms authentication but do not enable Windows authentication. Because Windows authentication is required for Outlook Web App and ECP, you must use the commands `Set-OwaVirtualDirectory` and `Set-EcpVirtualDirectory` to modify the default authentication settings. The following example enables Windows authentication and disables basic and forms authentication:

```
set-owavirtualdirectory -identity "mailserver17\owa (Default Web Site)"  
-WindowsAuthentication $True -BasicAuthentication $false  
-FormsAuthentication $false
```

After you re-create a virtual directory you should restart IIS services. You can do this in IIS Manager or by entering the following command at an elevated command prompt or shell:

```
iisreset
```

You can then test the service using `Test-OwaConnectivity`, or you can try to log on to Outlook Web App. If this doesn't resolve the problem, you can remove, re-create, and configure the Outlook Web App virtual directory on the back-end server, as shown in this example:

```
remove-owavirtualdirectory -identity "mailserver21\owa (Exchange Back End)"  
  
new-owavirtualdirectory -server mailserver21  
-websitename "Exchange Back End"  
  
set-owavirtualdirectory -identity "mailserver21\owa (Exchange Back End)"  
-WindowsAuthentication $True -BasicAuthentication $false  
-FormsAuthentication $false
```

Complete the process by restarting IIS services and then check to ensure the problem is resolved. If the problem isn't resolved, look to related services. For example, remote PowerShell must be properly configured for Outlook Web App and ECP to work. If you suspect the PowerShell virtual directory is misconfigured, you can remove and re-create it as well.

Validating Exchange Server licensing

With Exchange Server 2013, you do not enter a product key during initial setup. Instead, you provide the product key after installation using Exchange Admin Center. Until you enter a product key, Exchange Server 2013 runs in trial mode.

The product key you provide determines which edition is established on an Exchange server. You can use a valid product key to go from a trial edition to Standard Edition or Enterprise Edition of Exchange Server 2013 without having to reinstall the program.

To determine the established edition and licensing for an Exchange server complete the following steps:

1. In Exchange Admin Center, select Servers in the feature pane.
2. In the main pane, select the server you want to work with.
3. Look in the details pane to see the server roles, version, established edition, and license details.

To enter a product key complete the following steps:

1. In Exchange Admin Center, select Servers in the feature pane.
2. In the main pane, select the server you want to work with.
3. In the details pane, select Enter Product Key. This opens the Exchange Server dialog box.
4. Enter the product key for the Exchange Server 2013 edition you want to establish, either Standard or Enterprise, and then tap or click Save.

NOTE The product key is a 25-character alphanumeric string, grouped in sets of five characters separated by hyphens. You can find the product key on the Exchange Server 2013 media or license.

5. You should see a dialog box stating the product key has been validated and the product ID has been created. If there's a problem with the product key, you'll see an invalid key warning. Tap or click OK. Re-enter or correct the product key and then tap or click Save again. Keep the following in mind:
 - Whenever you set or change the product key on a Mailbox server, you must restart the Microsoft Exchange Information Store service to apply the change.
 - While you can upgrade from Standard to Enterprise edition simply by entering a key for Enterprise edition, you cannot use product keys to downgrade editions. To downgrade editions, you must uninstall Exchange Server and then reinstall the older version.

Using Exchange Management Shell, you can enter a server's product key using the Set-ExchangeServer cmdlet. Sample 3-1 shows the syntax and usage. For the identity parameter, use the server's name, such as MailServer25.

SAMPLE 3-1 Setting the Exchange product key syntax and usage

Syntax

```
Set-ExchangeServer -Identity 'ServerName'  
-ProductKey 'ProductKey'
```

Usage

```
Set-ExchangeServer -Identity 'MailServer25'  
-ProductKey 'AAAAA-BBBBB-CCCCC-DDDDD-EEEE'
```

TIP By using a valid product key, you can change from the Standard to the Enterprise edition. You also can 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. The best way to do this is to enter the product key using the `Set-ExchangeServer` cmdlet.

Using and managing Exchange services

Each Exchange server in the organization relies on a set of services for routing messages, processing transactions, replicating data, and much more. Table 1-1 in Chapter 1, “Exchange Server 2013 administration overview” lists these services.

TIP Of all the Exchange services, the one service that relies on having a network connection at startup is the Microsoft Exchange Information Store service. If you start an Exchange server and the server doesn’t have a network connection, the Microsoft Exchange Information Store service might fail to start. As a result, you might have to manually start the service. Sometimes, you’ll find the service has a Stopping state. In this case, you have to wait until the server completely stops the service before you restart it.

Working with Exchange services

To manage Exchange services, use the Services node in the Computer Management console, which you start by completing the following steps:

1. Type **compmgmt** in the Apps Search box, and then select Computer Management. Or, on the Tools menu in Server Manager, select Computer Management.
2. To connect to a remote Exchange server, press and hold or right-click the Computer Management entry in the console tree, and then select Connect To Another Computer from the shortcut menu. You can now choose the Exchange server for which you want to manage services.
3. Expand the Services And Applications node, and then select Services.

Figure 3-5 shows the Services view in the Computer Management console. The key fields of this window are as follows:

- **Name** The name of the service.
- **Description** A short description of the service and its purpose.
- **Status** The status of the service as started, paused, or stopped. (Stopped is indicated by a blank entry.)
- **Startup Type** The startup setting for the service.

NOTE Automatic services are started when the computer is started. Manual services are started by users or other services. Disabled services are turned off and can’t be started. To start a disabled service, you must first enable it and then start it.

- **Log On As** The account the service logs on as. The default, in most cases, is the local system account.

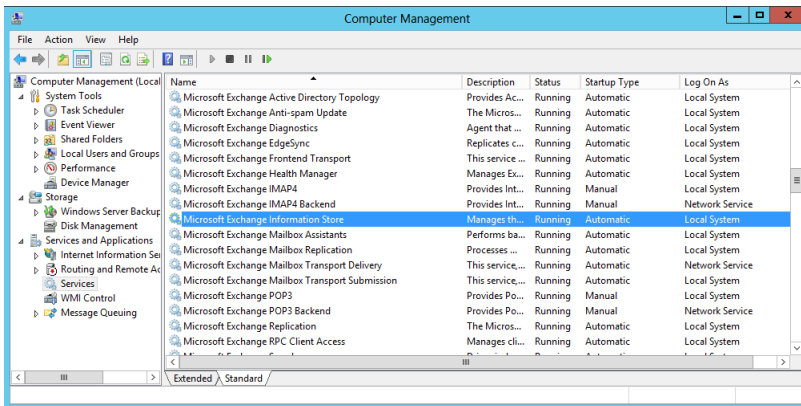


FIGURE 3-5 Using the Services node of the Computer Management console to manage Exchange Server services.

Checking required services

You can use `Test-ServiceHealth` to determine whether all Windows services that Exchange requires are running. As shown in the following example and sample output, the command output lists required services that are running as well as required services that aren't running for each configured Exchange role:

test-servicehealth

```
Role : Mailbox Server Role
RequiredServicesRunning : True
ServicesRunning : {IISAdmin, MSExchangeADTopology,
MSExchangeDelivery, MSExchangeIS, MSExchangeMailboxAssistants,
MSExchangeRep1, MSExchangeRPC, MSExchangeServiceHost,
MSExchangeSubmission, MSExchangeThrottling, MSExchangeTransportLogSearch,
W3Svc, WinRM}
ServicesNotRunning : {}
```

```
Role : Client Access Server Role
RequiredServicesRunning : True
ServicesRunning : {IISAdmin, MSExchangeADTopology, MSExchangeIMAP4,
MSExchangeMailboxReplication, MSExchangePOP3, MSExchangeRPC,
MSExchangeServiceHost, W3Svc, WinRM}
ServicesNotRunning : {}
```

```
Role : Unified Messaging Server Role
RequiredServicesRunning : True
ServicesRunning : {IISAdmin, MSExchangeADTopology,
MSExchangeServiceHost, MSExchangeUM, W3Svc, WinRM}
ServicesNotRunning : {}
```

```
Role : Hub Transport Server Role
RequiredServicesRunning : True
ServicesRunning : {IISAdmin, MExchangeADTopology,
MExchangeEdgeSync, MExchangeServiceHost,
MExchangeTransport, MExchangeTransportLogSearch, W3Svc, WinRM}
ServicesNotRunning : {}
```

NOTE If there's a problem preventing you from using Exchange Admin Center and Exchange Management Shell, you'll need to bypass the web-based management interfaces and connect directly to Exchange Server using the technique discussed earlier in the chapter.

Starting, stopping, and pausing Exchange Server services

As an administrator, you'll often have to start, stop, or pause Exchange services. You manage Exchange services through the Computer Management console or through the Services console.

To start, stop, or pause services in the Computer Management console, follow these steps:

1. If necessary, connect to the remote Exchange server for which you want to manage services, as discussed earlier in this section.
2. Expand the Services And Applications node, and then select Services.
3. Press and hold or right-click the service you want to manipulate, and then select Start, Stop, or Pause, as appropriate. You can also choose Restart to have Windows stop and then start the service after a brief pause. Also, if you pause a service, use the Resume option to resume normal operation.

TIP When services that are set to start automatically fail, the status is listed as blank, and you usually receive notification in a pop-up window. Service failures can also be logged to the system's event logs. You can configure recovery actions to handle service failure automatically. For example, you can have Windows attempt to restart the service for you. See the section of this chapter titled "Configuring service recovery" for details.

Configuring service startup

Essential Exchange services are configured to start automatically and normally shouldn't be configured with another startup option. That said, if you're troubleshooting a problem, you might want a service to start manually or you might want to temporarily disable a service.

Configure service startup by completing the following steps:

1. In the Computer Management console, connect to the Exchange server for which you want to manage services.
2. Expand the Services And Applications node, and then select Services.
3. Press and hold or right-click the service you want to configure, and then select Properties.

4. On the General tab, use the Startup Type drop-down list to choose a startup option. Select Automatic to start a service when the computer starts. Select Manual to allow services to be started manually. Select Disabled to disable the service. Tap or click OK.

NOTE The Disabled option doesn't stop the service if it's currently running. It just prevents the service from starting the next time you start the server. To stop the service, you must tap or click Stop.

Configuring service recovery

You can configure Windows services to take specific actions when a service fails. For example, you can attempt to restart the service or reboot the server. To configure recovery options for a service, follow these steps:

1. In the Computer Management console, connect to the computer for which you want to manage services.
2. Expand the Services And Applications node, and then select Services.
3. Press and hold or right-click the service you want to configure, and then select Properties.
4. On the Recovery tab, you can configure recovery options for the first, second, and subsequent recovery attempts. The available options are as follows:
 - Take No Action
 - Restart The Service
 - Run A Program
 - Restart The Computer
5. Configure other options based on your previously selected recovery options. If you elected to restart the service, you need to specify the restart delay. After stopping the service, Windows Server waits for the specified delay period before trying to start the service. In most cases, a delay of one to two minutes should be sufficient. Tap or click OK.

When you configure recovery options for critical services, you might try to restart the service on the first and second attempts and then reboot the server on the third attempt. If you notice that a service keeps failing, do some troubleshooting to diagnose and resolve the underlying issue causing the failure.

Customizing Remote Management services

The Exchange management tools use the Microsoft .NET Framework, Windows Remote Management (WinRM), and Windows PowerShell for remote management. WinRM is implemented in the Windows Remote Management service, which is also referred to as the WS-Management Service or simply the Management Service. To remotely manage Exchange, your management computer must run this service and be configured to use the transports, ports, and authentication methods that your Exchange servers use. The Exchange server you want to connect to must also run this service. If this service isn't running on your management computer and on the

server, remote connections will fail. For remote management, you normally connect to the PowerShell virtual directory configured in IIS on a Client Access server.

By default, the Management Service connects to and listens on TCP port 80 for HTTP connections and on TCP port 443 for secure HTTP connections. Because firewalls and proxy servers might affect your ability to connect to remote locations over these ports, talk with your company's network or security administrator to determine what steps need to be taken to allow administration over these ports. Typically, the network/security administrator will have to open these TCP ports to allow remote communication between your computer or network and the remote server or network.

The Management Service is preconfigured to share ports with IIS when it runs on the same computer, but it does not depend on IIS. To support remote management, you need to install basic authentication and Windows authentication for IIS on your Exchange servers. These authentication techniques are used when you work remotely.

When you are working with an elevated, administrator command prompt, you can use the WinRM command-line utility to view and manage the remote management configuration. Type **winrm get winrm/config** to display detailed information about the remote management configuration. As Listing 3-1 shows, this lists the configuration details for every aspect of WinRM.

LISTING 3-1 Sample configuration for WinRM

```
Config
  MaxEnvelopeSizekb = 150
  MaxTimeoutms = 60000
  MaxBatchItems = 32000
  MaxProviderRequests = 4294967295
Client
  NetworkDelaysms = 5000
  URLPrefix = wsman
  AllowUnencrypted = false
Auth
  Basic = true
  Digest = true
  Kerberos = true
  Negotiate = true
  Certificate = true
  CredSSP = false
DefaultPorts
  HTTP = 80
  HTTPS = 443
TrustedHosts = CorpServer65
Service
  RootSDDL = O:NSG:BAD:P(A;;GA;;;BA)S:P(AU;FA;GA;;;WD)(AU;SA;GWGX)
  MaxConcurrentOperations = 4294967295
  EnumerationTimeoutms = 60000
  MaxConnections = 25
  MaxPacketRetrievalTimeSeconds = 120
  AllowUnencrypted = false
```

```

Auth
  Basic = false
  Kerberos = true
  Negotiate = true
  Certificate = false
  CredSSP = false
  CbtHardeningLevel = Relaxed
DefaultPorts
  HTTP = 80
  HTTPS = 443
IPv4Filter = *
IPv6Filter = *
CertificateThumbprint
Winrs
  AllowRemoteShellAccess = true
  IdleTimeout = 180000
  MaxConcurrentUsers = 5
  MaxShellRunTime = 2147483647
  MaxProcessesPerShell = 15
  MaxMemoryPerShellMB = 150
  MaxShellsPerUser = 5

```

If you examine the listing, you'll notice there is a hierarchy of information. The base of this hierarchy, the Config level, is referenced with the path `winrm/config`. Then there are sublevels for client, service, and WinRS, referenced as `winrm/config/client`, `winrm/config/service`, and `winrm/config/winrs`, respectively. You can change the value of most configuration parameters by using the following command:

```
winrm set ConfigPath @{ParameterName="Value"}
```

where *ConfigPath* is the configuration path, *ParameterName* is the name of the parameter you want to work with, and *Value* sets the value for the parameter, such as:

```
winrm set winrm/config/winrs @{MaxShellsPerUser="4"}
```

In this example, the `MaxShellsPerUser` parameter is set under `WinRM/Config/WinRS`. Keep in mind that some parameters are read-only and cannot be set in this way.

WinRM requires at least one listener to indicate the transports and IP addresses on which management requests can be accepted. The transport must be HTTP, HTTPS, or both. With HTTP, messages can be encrypted only using NTLM or Kerberos encryption. With HTTPS, Secure Sockets Layer (SSL) is used for encryption. You can examine the configured listeners by typing **winrm enumerate winrm/config/listener**. As Listing 3-2 shows, this lists the configuration details for configured listeners.

LISTING 3-2 Sample configuration for listeners

```

Listener
  Address = *
  Transport = HTTP
  Port = 80
  Hostname

```

```
Enabled = true
URLPrefix = wsman
CertificateThumbprint
ListeningOn = 127.0.0.1, 192.168.1.225
```

By default, your computer is likely to be configured to listen on any IP address. If so, you won't see any output. To limit WinRM to specific IP addresses, the computer's local loopback address (127.0.0.1) and assigned IPv4 and IPv6 addresses can be explicitly configured for listening. You can configure a computer to listen for requests on HTTP on all configured IP addresses by typing:

```
winrm create winrm/config/listener?Address=*+Transport=HTTP
```

You can listen for requests on HTTPS on all IP addresses configured on the computer by typing:

```
winrm create winrm/config/listener?Address=*+Transport=HTTPS
```

In this case, the * indicates all configured IP addresses. Note that the CertificateThumbprint property must be empty for the SSL configuration to be shared with another service.

You can enable or disable a listener for a specific IP address by typing:

```
winrm set winrm/config/listener?Address=IP:192.168.1.225+Transport=HTTP @
{Enabled="true"}
```

or

```
winrm set winrm/config/listener?Address=IP:192.168.1.225+Transport=HTTP @
{Enabled="false"}
```

You can enable or disable basic authentication on the client by typing:

```
winrm set winrm/config/client/auth @{Basic="true"}
```

or

```
winrm set winrm/config/client/auth @{Basic="false"}
```

You can enable or disable Windows authentication using either NTLM or Kerberos (as appropriate) by typing:

```
winrm set winrm/config/client @{TrustedHosts="<local>"}
```

or

```
winrm set winrm/config/client @{TrustedHosts=""}
```

In addition to managing WinRM at the command line, you can manage the service by using Group Policy. Keep in mind that Group Policy settings might override any other settings you enter.

Index

A

- account management permissions, configuring, 324–325
 - accounts. *See* user accounts
 - Account Settings
 - and POP3, 138
 - repair operation, 136–137
 - Action Items app, 222
 - Action Items dialog box, 223
 - Active Directory, 15–19
 - and coexistence, 42–45
 - integrating server roles, 39–42
 - migrating sites, 47
 - split permissions, 335–336
 - updating prior to cumulative updates or service packs, 64–65
 - validation errors, 57–58
 - Active Directory Permissions management role, 308
 - Active Directory Users and Computers, and Exchange Security Groups, 296–297
 - ActiveSync, configuring Outlook, 131
 - Add commands and cmdlets, 101
 - Add-DistributionGroupMember, 262–263
 - Add-MailboxPermission, 246–247
 - Add-ManagementRoleEntry, 330–331, 333
 - Add-RoleGroupMember, 317–318
 - Add/Remove Columns dialog box, 160
 - address
 - alternative internal, 194
 - creating, editing, and deleting, 183–185
 - default reply, setting, 185
 - deleting, 194–195
 - editing, 194–195
 - new, forwarding email, 247
 - address, custom
 - creating, 195
 - and EUM, creating new, 184
 - address book, offline. *See* offline address book (OAB)
 - address book policies, 172, 280–282
 - assigning, 179
 - options, 203, 205, 217
 - address lists
 - configuring clients to use, 285–286
 - creating and applying new, 282–285
 - default, 279–280
 - defining custom mailbox attributes, 224
 - hiding groups from, 275
 - hiding mailboxes from, 224
 - online, managing, 278–288
 - previewing and editing, 286–287
 - renaming and deleting, 288
 - understanding, 128–130
 - updating configuration and membership throughout domain, 286
 - See also* contacts, equipment mailbox, groups, room mailbox, users
- Address Lists management role, 308
 - administration tools, graphical, 20–23
 - Admin Roles, 303
 - Advanced tab
 - to configure folders with IMAP4, 139
 - and POP3 mail accounts, 138

- alias, 151–152
 - changing, 183
 - cmdlet, 107–108
 - contact, setting or changing, 192–193
 - and domain suffix, for creating email address, 178
 - options, 203, 205, 217
- Alias text box, 164, 170
- AllSigned policy, 100
- anti-spam capabilities, 12–13
- apps
 - configuring for mailboxes, 222–223
 - front- and back-end, 81
- arbitration mailbox, 198, 213–214
- architecture
 - changes in Exchange Server 2013, 3–4
 - layers, 28
- archive
 - configuring, 186
 - in-place, 152
 - setting storage restrictions, 247–249
- archive mailbox, 179, 197, 209–213
 - creating, 171–172
 - disconnected, restoring, 226
 - in-place and online, 210–211
 - managing settings, 212–213
- archive options, 217
- arrays, Client Access, 36
- attributes
 - custom mailbox, for address lists, 224
 - removing, and disabling contacts, 195–196
- Audit Logs management role, 308
- authentication
 - and Client Access servers, 35
 - connecting to servers manually, 124

- default, 113
 - for manual remote shell, 123
 - and security, 15–16

- Author role, 148
- auto-configuration, 132–133
- Autodiscover service, 128–130, 132
- availability, high, 49
- availability groups, database, 2–3, 32–33, 62, 309

B

- batch migrations, 232, 235–236
- Billing Administrator role, 300
- Bing Maps app, 222
- blocked users, 162
- blocked words, in group naming policy, 257–258
- booking options. *See* equipment mailbox, room mailbox
- browsers, and Exchange Admin Center, 71–74
- Bulk Enable Archive dialog box, 210–211
- Bypass policy, 100

C

- C#. *See* Windows PowerShell
- CAL. *See* Client Access License (CAL)
- Categorizer, 153
- certificates, Exchange Server, 75–78. *See also* SSL certificates
- Certificates snap-in, 77
- Check for Updates page, 51–52
- ClearCache parameter, 112
- Clear cmdlet, 101
- Client Access License (CAL), 9
- Client Access servers, 2–4, 29–31
 - with Active Directory, 40–41
 - completing installation, 59
 - and cumulative updates or service packs, 62

- deployment essentials, 34–37
- requirements, 10
- separate from Mailbox server, 48–49
- upgrading in correct order, 65
- clients, configuring
 - to use address lists, 285–286
 - to use offline address book, 290
- cloud-based service. *See* Exchange Online
- cloud-only implementation. *See* online implementation
- Cmdlet Extension Agents management role, 308
- cmdlets
 - aliases, 107–108
 - commonly used, 103–104
 - for deleting groups, 278
 - errors, 107
 - Exchange-specific, 120–121
 - mailbox permissions, 246–247
 - managing mail-enabled accounts, 169
 - to modify dynamic distribution groups, 271–273
 - new mail users, 165–167
 - parameters, 105–106
 - redirecting output, 121–122
 - RemoteMailbox, 155–156
 - running and using, 101–102
 - working with, 103–108
 - See also* Windows Powershell; *individual cmdlets*
- cmdlet syntax and usage
 - Add-DistributionGroupMember, 262–263
 - Disable-DistributionGroup, 261
 - Disable-Mailbox, 188
 - Disable-MailContact, 196
 - Enable-Mailbox, 179–181
 - Enable-MailContact, 192
 - Enable-MailUser, 168
 - Get-DistributionGroupMember, 262
 - Get-MailboxStatistics, 220–221
 - New-AddressList, 285
 - New-DistributionGroup, 260–261
 - New-DynamicDistributionGroup, 268–269
 - New-Mailbox, 173–175, 203–204, 206, 208
 - New-MailContact, 192
 - for offline address books, 289–290, 293–294
 - Remove-AddressList, 288
 - Remove-Mailbox, 190
 - Remove-MailContact, 196
 - Set-AddressList, 287
- coexistence, and Active Directory, 42–45
- command line, and Exchange Management Shell, 23–26
- commands
 - prior to installation, 43–45
 - and utilities, running and using, 102–103
 - See also* cmdlets
- command shell. *See* Windows PowerShell
- common name, setting or changing, 181
- company condition, 268, 270, 283
- Complete-MigrationBatch, 235
- Compliance Management group, 16, 297
- Computer Management console, Services node, 89–90
- configuration data, 16, 18
- Confirm parameter, 106
- Connect A Mailbox dialog box, 225
- ConnectFunctions.ps1, functions, 110–111
- connections, authenticating and proxying, 74–75

- Connectivity Analyzer, 29
- connectors, Send and Receive, 153
- contact information
 - with room and equipment mailboxes, 199
 - setting or changing, 182
- contacts
 - assigning and removing membership, 262–263
 - changing email addresses associated with, 194–195
 - deleting, 196
 - disabling, and removing Exchange attributes, 195–196
 - finding existing, 158–161
 - mail-enabled, 152, 190–192
 - main commands, 154
 - managing, 190–196
 - setting additional directory information, 193
 - setting or changing name and alias, 192–193
 - setting message size restrictions, 242
 - setting send and receive restrictions, 243
 - understanding, 151–152
 - See also* address lists, offline address book (OAB)
- content filtering, 12
- continuous replication, 32
- Contributor role, 148
- copying mail profiles, 149
- CPU requirements, 5
- Create Or Open Outlook Data File dialog box, 142
- cross-forest migrations, 232–233
- cumulative updates
 - installing, 64–69
 - understanding, 60–64
- custom address, creating, 274–275

- custom roles
 - creating, 326–327
 - scopes, 328–330

D

- database
 - mailbox, 171, 179
 - soft deleted, 225
- database availability groups, 2–3, 32–33
 - cumulative updates or service packs, 62
 - management role, 309
- Database management roles, 311
- database options, mailbox, 203, 205, 217
- database policy, and migrations, 234
- database requirements, and Mailbox server, 32–34
- data files, repairing, .pst and .ost, 143–144
- Data Loss Prevention management role, 308
- data management, in Active Directory, 16–17
- data protection, 6
 - Debug parameter, 106
- default address lists, 279–280
- default membership for security groups, 301
- default reply address, setting, 185
- Delegated Setup group, 16, 297
- deleted item, setting retention time, 249–250
- Deleted Users dialog box, 227
- delivery
 - configuring restrictions, 241–245
 - managing, 140–143
- department condition, 267, 270, 283
- Deployment Assistant, 29
- deprecation, 7
- Details Templates Editor, 22

- directory information, contacts, 193
 - directory layer, 28
 - Disable commands and cmdlets, 101
 - Disable-DistributionGroup, 261
 - Disable-Mailbox, 188
 - Disable-MailContact, 196
 - Disable-MailUser, 169
 - Disable-RemoteMailbox, 156
 - Disaster Recovery management role, 309
 - disconnected mailboxes, restoring, 224–227
 - discovery, 109–110
 - Discovery mailbox, 198, 214–215
 - Discovery Management group, 16, 297
 - disk drive requirements, 6
 - disk striping, 6, 7
 - display name, changing, 183
 - Display Name entry, 190
 - Display Name property, vs. Name property, 164, 170
 - distribution groups
 - and arbitration mailbox, 213–214
 - dynamic. *See* dynamic distribution groups
 - management role, 309
 - and security groups, 251–255
 - standard, and security groups, 255–266
 - domain
 - creating before installing Exchange Server, 49
 - logon, changing for online users, 182
 - and permissions, 296
 - proper joining and configuration, 11
 - updating address list configuration and membership throughout, 286
 - domain controller, location error, 57–58
 - domain local scope, 252
 - domain suffix, and alias, 170, 178
 - domain user accounts
 - adding mailbox to existing, 177–181
 - creating with mailboxes, 169–175
 - existing, adding mailboxes to, 177–181
 - setting or changing common and logon names, 181
 - downloads, cumulative updates and service packs, 64
 - dynamic distribution groups, 252–253, 266–273
 - creating, 266–269
 - modifying using cmdlets, 271–273
 - previewing membership, 273
 - when to use, 254–255
 - working with, 266–273
- ## E
- ECP
 - and Outlook Web App, 81
 - troubleshooting, 83–85
 - Edge Subscriptions management role, 309
 - Edge Transport server, legacy, 19, 28
 - with Active Directory, 41–42
 - installing, 47, 49
 - vs. Transport service, placement, 37
 - Editor role, 148
 - email
 - adding accounts to Outlook, 135
 - configuring with Welcome Wizard, 131–133
 - connecting Outlook to servers, 133–134
 - delivering to personal folders, 142–143
 - forwarding to new address, 247

email, *continued*

- leaving on server with POP3, 138–139
- managing delivery and processing, 140–143
- repairing and changing accounts in Outlook, 135–137
- routing basics, 153–154
- See also mailboxes, messages, Outlook
- email address
 - adding, changing, and removing, 183–185
 - additional, 183
 - associated with contacts, changing, 194–195
 - group's, changing, adding, or deleting, 274–275
 - See also address, domain
- Email Address page, 184
- E-Mail Address Policies management role, 309
- email servers, Internet, connecting Outlook to, 133–134
- Enable commands and cmdlets, 101
 - Enable-Mail Contact, 192
 - Enable-Mailbox, 179–181
 - Enable-MailUser, 168
 - Enable-RemoteMailbox, 156
- encryption, and remote services, 94
- Enterprise edition, 8
- equipment mailbox, 197–202, 204–206
- Equipment parameter, 203
- ErrorAction parameter, 106
- errors
 - cmdlet, 107
 - creating new mail-enabled user, 165
 - during installation, examples, 57–59
 - runtime or application, 84
 - users with, finding, 162
 - See also troubleshooting
- ErrorVariable parameter, 106
- EUM address, creating new, 184
- Exchange ActiveSync, configuring, 185
- Exchange Admin Center, 20–21
 - accessing and using, 71–81
 - bypassing and troubleshooting, 81–87
 - for configuration with existing Exchange organizations, 45
 - configuring, 78–81
 - and Exchange certificates, 77
 - logging on, 73
 - opening, 57
 - remote execution, 81
- Exchange Connectors management role, 309
- Exchange Delegation Federation certificate, 75
- Exchange Install Domain Servers
 - default membership, 301
 - server group, 298
- Exchange Management Shell, 23–26
 - bypassing, 82–83
 - commands, 78–80
 - for configuration with existing Exchange organizations, 45
 - customizing, 116–117
 - customizing initialization, 111–112
 - and Exchange certificates, 77
 - and OAB, 46–47
 - Powershell commands, 114–115
 - running and using, 109–120
 - troubleshooting, 119–120
 - user and contact commands, 154
 - working with, 108–122
- Exchange Online
 - configuring Outlook, 130
 - connecting to manually, 125–126

- and Office 365, 19–20
 - See also* online implementation
 - Exchange Organization page, 53–54
 - Exchange Server
 - certificates, 75–78
 - default membership, 301
 - group, 16, 298
 - management roles, 311
 - See also* Client Access servers; Edge Transport server, legacy; Exchange Server 2013; Mailbox servers; servers
 - Exchange Server 2013
 - accessing multiple mailboxes, 145–147
 - and Active Directory, 15–19
 - advanced permissions, 304–306
 - assigning advanced permissions, 306–307
 - authentication and security, 15–16
 - configuring with existing Exchange organizations, 45–46
 - configuring Outlook, 130–133
 - editions, 7–13
 - and Exchange Online, 2–4
 - and hardware, 4–7
 - information storage, 17–18
 - installation, 8–11, 50–57
 - integrating into existing Exchange organizations, 42–48
 - introduction, 1–2
 - key services used, 13–15
 - and later configuration of Outlook, 134–135
 - list of services, 13–15
 - managing configuration in Outlook, 140–148
 - migrating from existing Exchange organizations, 47–48
 - security groups, 16–17
 - and 64-bit systems, 98
 - tracking version numbers, 62–63
 - using and managing services, 89–95
 - validating licensing, 87–89
 - vs. earlier versions, 2–4
 - and Windows, 13–15
 - See also* Client Access servers; Edge Transport server, legacy; Exchange Server; Mailbox servers; servers
 - Exchange Server Setup, 52, 67
 - Exchange Toolbox, 20, 22
 - Exchange Trusted Subsystem
 - default membership, 301
 - group, 16, 298
 - Exchange Windows Permissions
 - default membership, 301
 - group, 16, 298
 - ExchangeLegacyInterop group, 298
 - execution policies, 99–101
 - expansion server, designating, 270–271
 - explicit scopes, 328
 - export mailbox data commands, 230
 - External Email Address text box, 164
- ## F
- failover cluster, 32–33
 - Federated Sharing management role, 309
 - filter conditions, 267–270
 - filtering, 12
 - folders
 - granting access without delegating access, 147–148
 - personal, 141–143
 - public and private, checking with IMAP4 and UNIX mail servers, 139–140
 - Forest parameter, 112
 - forests, moving mailboxes within and between, 236–241

- forwarding email, to new address, 247
- forwarding mailbox, 197, 208–209
- FQDN, entering, 134
- Front End Transport service, 38
- full details option, 290
- functions, ConnectFunctions.ps1, 110–111

G

- General page, 181
- general policy, and migrations, 234
- generation server, 129
- Get commands and cmdlets, 24, 101
 - Get-Contact, 160
 - Get-DistributionGroupMember, 262
 - Get-DynamicDistributionGroup, 271–272
 - Get-ECPVirtualDirectory, 78–80
 - Get-Group, 161
 - Get-MailboxStatistics, 220–221
 - Get-MailUser, 165–166
 - Get-ManagementRole, 326
 - Get-ManagementRoleEntry, 331
 - Get-ManagementScope, 328–329
 - Get-MigrationBatch, 235
 - Get-MigrationUser, 236
 - Get-MoveRequest, 235
 - Get-PowerShellVirtualDirectory, 114–115
 - Get-RemoteMailbox, 161
 - Get-RoleGroup, 314
 - Get-RoleGroupMember, 318
 - Get-User, 160
- global address list, default, 279
- Global Administrator role, 300
- global scope, 252
- graphical administration tools, 20–23
- group name, changing information, 273–274
- group naming policy, 255–258

- group ownership setting, 253–254
- groups
 - assigning management permissions, 301–304
 - assigning and removing membership, 262–263
 - changing, adding, or deleting email addresses, 274–275
 - creating new, 258–261
 - deleting, 278
 - finding existing, 158–161
 - hiding from address lists, 275
 - managing essential tasks, 273–278
 - moderated, 264–266, 277
 - setting usage restrictions, 276–277
 - types, scope, and identifiers, 251–253
 - See also* distribution groups, management groups, role groups, security groups, *individual groups*

H

- hardware
 - guidelines, 4–7
 - new, and migration, 47
- help cmdletName, 24
- HelpDeskAdmins group, 300
- Help Desk group, 16, 298
- hybrid deployment, 153–154
 - recipient management, 154
 - implementation, 2, 27
- Hygiene Management group, 16, 298

I

- ID. *See* logon, passwords, user name
- Identity parameter, 121
- IMAP4
 - checking public and private folders, 139–140

- configuring, 186
- configuring Outlook with, 131
 - and Outlook initial configuration, 133–134
- implicit scopes, 328
- import mailbox data commands, 230
- inactive users, finding, 161–162
- Inbox Repair tool, 143–144
- InetOrgPerson, 151
- Information Rights Management
 - management role, 309
- information storage, 17–18
- in-place archive, 152, 210–211
- input/output (I/O) performance, and
 - Mailbox server, 33–34
- installation, 8–11
 - cumulative updates and service packs, 64–69
 - disc, 51
 - verifying and completing, 57–60
- Installation Space And Location page, 53
- Install mode, 50
- Internet email. *See* email
- Internet E-Mail Settings, 138
- Internet Information Services (IIS)
 - misconfiguration, 84
 - viewing management applications, 74–75
- Introduction page, 52
- Issue Warning At (GB) setting, 249

J

- Journaling management role, 309

K

- Kerberos authentication, 124–125

L

- layers, architecture, 28

- legacy servers, adding for Exchange Server 2013 integration, 42
- legacy servers, Edge Transport, 19, 28
 - with Active Directory, 41–42
 - installing prior to migration, 47
 - placement, 37
- Legal Hold management role, 309
- license
 - assigning, 176
 - validating, 87–89
- License Agreement page, 52, 67
- Licensing node, 156–157
- limited redirection, and Client Access servers, 35
- linked mailbox, 197, 206–208
- linked role groups, 316–317
- listeners, sample configuration, 94–95
- Litigation Hold, configuring, 186
- load balancing, 37
- login, and SSL certificates, 81
- logon
 - ID or logon domain, changing for online users, 182
 - as mailbox owner, 145
 - setting or changing name, 181
 - understanding names, 162–163
 - viewing last, 220–222

M

mail

- managing features and user accounts, 158–190
- profiles, 148–150
- See also* email, messages
- mailbox database
 - options, 203, 205, 217
 - specifying, 171, 179
- mailbox-enabled user account, 151–152
 - creating, 162–181
 - main commands, 154

- mailboxes
 - accessing multiple, 145–147
 - adding to existing domain user accounts, 177–181
 - applying appropriate policies, 172–173
 - archive, 171–172
 - configuring apps for, 222–223
 - configuring delivery restrictions, 241–245
 - creating archive, 179
 - creating domain accounts with, 169–175
 - creating online user accounts with, 175–177
 - defining custom attributes for address lists, 224
 - deleting, 187–188
 - delegating access, 145–146
 - finding existing, 158–161
 - granting access without delegating access, 147–148
 - hiding from address list, 224
 - licensing in Office 365, 156–157
 - logging on as owner, 145
 - managing, 219–229
 - opening additional, 146–147
 - permitting others to access, 245–247
 - repairing, 229
 - server, 140
 - special-purpose, 197–219. *See also individual mailboxes*
 - viewing current size, message count, and last logon, 220–222
- mailboxes, moving, 229–241
 - between forests, 239–241
 - within single forest, 236–239
- mailboxes, online
 - move commands, 235
 - restoring, 227–229
- mailboxes, on-premises
 - moves, 234–241
 - moves and migrations, 231–234
 - restoring disconnected, 224–227
- Mailbox Features tab, 185–186
- Mailbox Import Export management role, 309
- Mailbox servers, 3–4, 29–31
 - with Active Directory, 39–40
 - completing installation, 59
 - deployment essentials, 32–34
 - requirements, 10
 - separate from Client Access server, 48–49
 - upgrading in correct order, 65
- mailbox settings
 - deleted item retention time, 249–250
 - message send and receive restrictions, 244–245
 - message size restrictions, 242–243
 - storage restrictions, 247–249
- Mailbox Transport Delivery service, 38
- Mailbox Transport servers, 19
- Mailbox Transport Submission service, 38
- Mailbox Usage page, 248
- mail data, importing and exporting, 230–231
- Mail dialog box, 149
- mail-enabled contact, 152, 190–192
- Mail Enabled Public Folders management role, 309
- mail-enabled user accounts
 - creating, 162–181
 - logon and passwords, 162–163
 - main commands, 154
 - managing, 169
- mail-enabling universal security groups, 261

- mail.que, 37
 - Mail Recipient management roles, 309
 - Mail Tips management role, 309
 - Mail utility, 149
 - Malware Protection Settings page, 54
 - malware scanning, 12–13
 - Managed Availability Servers default membership, 301
 - Managed Availability Servers group, 17, 299
 - management groups, 297–301
 - management permissions, assigning to users and groups, 301–304
 - management roles
 - advanced permissions, 325–333
 - creating custom, 330–333
 - individual servers, 311–312
 - organizational scope, 308–311
 - user scope, 312–313
 - Management Service, customizing remote, 92–95
 - management tools, 10, 12
 - managers, adding and removing, 263–264
 - manual remote shell, 122–126
 - MAPI, configuring, 186
 - Members tab, for group management, 302
 - membership
 - approval setting, 253
 - assigning and removing for users, contacts, and groups, 262–263
 - configuring restrictions and moderation, 264–266
 - previewing for dynamic distribution groups, 273
 - memory requirements, 5
 - Message management roles, 309
 - messages
 - routing, 18–19
 - setting acceptance restrictions, 244–245
 - size restrictions, 242–243
 - tracking, 38
 - viewing count, 220–222
 - See also* email
 - messaging layer, 28
 - messaging roles, 29–39
 - Microsoft cumulative updates, 61
 - Microsoft Download Center, cumulative updates and service packs, 64
 - Microsoft Exchange certificate, 75
 - Microsoft Exchange Server 2013. *See* Exchange Server 2013
 - Microsoft Office Outlook. *See* Outlook, Outlook Web App (OWA)
 - Microsoft Server Auth Certificate, 75
 - migration, 47–48
 - Migration management role, 312
 - on-premises mailboxes, 231–234
 - mirroring, 7
 - mobile device mailbox policy, 172
 - moderated groups, 264–266, 277
 - Monitoring management role, 310
 - move commands, online mailboxes, 235
 - Move Mailboxes management role, 310
- ## N
- name
 - changing group information, 273–274
 - common and logon, setting or changing, 181
 - contact, changing or setting, 192–193
 - group naming policy, 255–258
 - Name entry, 190
 - Name property, vs. Display Name property, 164, 170
 - naming conflicts, 228

- navigation bar options, Exchange
 - Admin Center, 73
- network layer, 28
- New commands and cmdlets, 101
 - New-AddressList, 285
 - New-DistributionGroup, 260–261
 - New-DynamicDistributionGroup, 268–269
 - New-ECPVirtualDirectory, 79
 - New-Mailbox ,173–175, 203–204, 206, 208
 - New-MailContact, 192
 - New-MailUser, 166–167
 - New-ManagementRole, 326
 - New-ManagementScope, 328–329
 - New-MigrationBatch, 235
 - New-MoveRequest, 235
 - New-OfflineAddressBook, 289
 - New-PowerShellVirtualDirectory, 115
 - New-RemoteMailbox, 155–156
 - New-RoleGroup, 315
- New Equipment dialog box, 204
- New Mail Contact dialog box, 190–191
- New Mail User dialog box, 163–164
- New Role Group dialog box, 313–314
- New Room Mailbox dialog box, 202
- New Shared Mailbox dialog box, 216
- New User Mailbox dialog box, 170, 178
- New User Wizard, 175–176
- no details option, 290
- Nonediting Author role, 148
- None role, 148
- nonterminating errors, 107

O

- OAB. *See* offline address book (OAB)
- objects, and permissions, 296
- object sets, working with, 121–122

- Office 365
 - and Exchange Online, 19–20
 - managing from Windows PowerShell, 157
- Office Admin Center, 20–22
- offline address book (OAB)
 - changing properties, 293–294
 - configuring clients to use, 290
 - creating, 289–290
 - default, 279
 - deleting, 294
 - distribution point, 288
 - generation servers and schedules, designating, 291–292
 - managing, 288–294
 - rebuilding manually, 292
 - setting default, 46–47, 293
 - understanding, 128–130
- one-to-many remote management, performing, 118–119
- online address lists, managing, 278–288
- online archives, creating, 211
- online deployment, recipient management, 154
- online implementation, 2, 27
- online-only deployment, 153
- online recipient management, 154–158
- online users and mailboxes, restoring, 227–229
- on-premises implementation, 2, 27, 29–31
- on-premises recipient management, 154–158
- on-premises users and mailboxes, restoring, 224–227
- On The Move Configuration page, 238
- organization, defining groups within, 258
- organization configuration data, 16

- Organization Management group, 17, 299
 - Organization Management role group, 334
 - Organization management roles, 310
 - organizational units (OUs), and permissions, 296
 - .ost files, repairing, 144
 - OutBuffer parameter, 106
 - Outlook
 - adding Internet mail accounts, 135
 - configuring for Exchange, 134–135
 - configuring mail support, 127–137
 - configuring POP3 to leave mail on server, 138–139
 - initial configuration, 130–134
 - as mail profile, 148
 - managing Exchange configuration, 140–148
 - repairing and changing mail accounts, 135–137
 - Outlook Anywhere, 128–130
 - Outlook Web App
 - configuring, 185
 - and ECP, 81
 - troubleshooting, 83–85
 - output, redirecting, 121–122
 - OutVariable parameter, 106
 - Owner role, 148
 - owners, security and standard distribution group, 259
- P**
- parameters
 - cmdlets, 105–106
 - for customizing initialization, 112
 - parent objects, 296
 - passwords
 - creating, 165
 - required changing, 187
 - understanding, 162–163
 - See also* logon, user name
 - Password Administrator role, 300
 - PATH variable, 102
 - permissions
 - account management, configuring, 324–325
 - advanced, 304–307, 325–333
 - allowing others to access mailbox, 245–247
 - assigning to Exchange Server and Exchange Online, 296–297
 - common, 304–305
 - Exchange-specific, 305
 - management, assigning to users and groups, 301–304
 - restrictions, and storage limits, configuring, 241–250
 - role-based, configuring, 307–325
 - shared and split, 54, 333–337
 - standard, configuring, 296–307
 - Permissions tab, 147
 - personal folders
 - creating and using, 141–142
 - delivering email to, 142–143
 - importing and exporting data, 230–231
 - plug-ins, Authorization and PowerShell, 119
 - policies
 - address book, 179
 - applying to mailbox, 172–173
 - execution, 66, 99–101
 - POP3
 - configuring, 186
 - configuring Outlook, 130–131
 - and IMAP4 Protocols management role, 312
 - leaving mail on server, 138–139
 - and Outlook initial configuration, 133–134
 - power supply, uninterruptible, 6

PowerShell. *See* Windows PowerShell
 Prepare commands, 43–45
 privacy issues, 182, 193
 product key, 8, 87–89
 Prohibit Send At (GB) setting, 249
 Prohibit Send And Receive At (GB) setting, 249
 -Prompt parameter, 112
 protocol logging, 38
 protocol options, changing, 185–187
 proxy services, and Client Access servers, 35
 .pst files, 141–144
 public certificates, 163
 public folder mailbox, 198, 217–219
 Public Folder Management group, 17, 299
 Public Folders management role, 310
 Publishing Author role, 148
 Publishing Editor role, 148

Q

query filters, and filter conditions, changing, 269–270
 Queue Viewer, 22

R

RAID 1, 6, 7
 RBAC split permissions, 335–336
 Readiness Checks page, 54–55, 68
 Receive connectors, 153
 Receive Connectors management role, 312
 recipient management
 configuration data, 16
 container condition, 267, 283
 filtering, 12
 on-premises and online, 154–158
 Recipient Management group, 17, 299
 Recipient Management role group, 334

Recipient Policies management role, 310
 Recipients node, 159
 Recommended Settings page, 52
 Records Management group, 17, 299
 recovery, configuring services, 92
 redundant storage, 6, 7
 Remote and Accepted Domains management role, 310
 Remote Connectivity Analyzer, 22
 RemoteExchange.ps1, 109–111
 remote execution, in Exchange Admin Center, 81
 remote management
 disconnecting sessions, 126
 one-to-many, 118–119
 remote migrations, 232–233
 remote services, 83, 92–95
 remote sessions
 and Exchange Management Shell, 109–111
 managing, 126
 remote shell
 manual, 122–126
 preparing to use, 122–124
 RemoteSigned policy, 100
 Remove commands and cmdlets, 101
 Remove-AddressList, 288
 Remove-ECPVirtualDirectory, 79
 Remove-Mailbox, 190
 Remove-MailboxPermission, 246–247
 Remove-MailContact, 196
 Remove-MailUser, 169
 Remove-ManagementRole, 326
 Remove-ManagementRoleEntry, 331
 Remove-ManagementScope, 329
 Remove-MigrationBatch, 235–236
 Remove-MigrationUser, 236
 Remove-MoveRequest, 235

- Remove-OfflineAddressBook, 294
 - Remove-PowerShellVirtualDirectory, 115
 - Remove-RemoteMailbox, 156
 - Remove-RoleGroup, 315
 - Remove-RoleGroupMember, 318
 - repair operation, 136–137
 - Reset Password management role, 310
 - Restricted policy, 100
 - restrictions
 - membership, 264–266
 - permissions, and storage limits, configuring, 241–250
 - storage, 247–249
 - usage, on groups, 276–277
 - Results page, 176–177
 - Resume-MoveRequest, 235
 - Retention Management role, 310
 - retention policy, 172–173
 - retention time, setting for deleted item, 249–250
 - Reviewer role, 148
 - role assignment policy, 173
 - role-based access control (RBAC), 295
 - role-based permissions
 - configuring, 307–325
 - understanding, 307–313
 - role entries, creating custom, 330–333
 - role groups
 - creating and managing, 313–317
 - using Exchange Admin Center with, 303
 - viewing, adding, or removing members, 317–319
 - Role Management role, 310
 - roles
 - assigning directly or via policy, 319–324
 - management, 308–313
 - Office 365, 303–304
 - room mailbox, 197–204
 - Room parameter, 203
 - routing configuration, additional, 18
- ## S
- schema updates, 64–65
 - scopes
 - group, 252
 - organizational, 308–311
 - role, creating custom, 328–330
 - user, 312–313
 - searches, Discovery mailboxes, 214–215
 - security
 - and authentication, 15–16
 - and connecting to Exchange Admin Center, 72
 - See also* encryption, and remote services; passwords; permissions
 - Secure Socket Layer. *See* SSL certificates
 - Security Group Creation and Membership management role, 310
 - security groups, 16–17
 - and administrative roles for Exchange Online and Office 365, 300
 - created for Exchange 2013, 297–299
 - creating, 258–261
 - default membership, 301
 - and distribution groups, 251–255
 - mail-enabling universal, 261
 - and permissions, 334
 - and standard distribution groups, 255–266
 - when to use, 253–254
 - Security tab, 306
 - security updates, and cumulative updates, 61, 63–64

- Select An Organizational Unit dialog box, 171
- Select Rooms dialog box, 200
- Select The Users page, 237
- Select User dialog box, 178–179
- Select Users, Contacts, Computers, Service Accounts, Or Groups dialog box, 302
- Send connectors, 153
- Send Connectors management role, 310
- sender filtering, 12
- sender ID verification, 12
- sender reputation scoring, 12
- server configuration data, 16
- ServerFqdn parameter, 112
- server mailboxes, 140, 230–231
- Server Management group, 17, 299
- server roles, adding, modifying, or uninstalling, 60
- Server Role Selection page, 53
- servers
 - configuring Outlook, 131
 - dedicated OAB generation, and schedules, 291–292
 - designating expansion, 270–271
 - Exchange 2013, connecting to manually, 124–125
 - leaving mail on with POP3, 138–139
 - OAB generation, 291–292
 - new, installing, 48–49
 - upgrading in correct order, 65
 - See also* Client Access servers; legacy servers, Edge Transport; Mailbox servers; Mailbox Transport Servers
- Service Administrator role, 300
- service packs
 - installing, 64–69
 - understanding, 60–64
- services
 - configuring recovery, 92
 - configuring startup, 91–92
 - key, 13–15
 - required, checking, 90–91
 - starting, stopping, and pausing, 91
 - working with, 89–90
- services list, 13–15
- Services node, 89–90
- Set commands and cmdlets, 101
 - Set-AddressList, 287
 - Set-DynamicDistributionGroup, 272–273
 - Set-ECPVirtualDirectory, 79
 - Set-ManagementRoleEntry, 331, 333
 - Set-ManagementScope, 329
 - Set-MigrationBatch, 235
 - Set-MoveRequest, 235
 - Set-OfflineAddressBook, 293
 - Set-PowerShellVirtualDirectory, 115
 - Set-RoleGroup, 315–316
- Setup, 10–11
 - applying cumulative updates and service packs with, 62
 - errors logged, 57–59
 - running, and installing updates, 66–67
 - running and modifying, 48–60
 - steps for installation, 51–57
- Setup Completed page, 56, 69
- Setup Progress page, 55–56, 68–69
- shared mailbox, 198, 215–217
- shared permissions, 333–334
- sharing policy, 173
- shell, managing address lists, 280
- Simple Mail Transfer Protocol (SMTP), 153
 - automatic address configuration, 172

- creating new address, 184, 195
 - creating new group addresses, 274
 - single forest, moving mailboxes
 - within, 236–239
 - SMP requirements, 5–6
 - snap-in, Certificates, 77
 - spam filtering, 12–13
 - special-purpose mailboxes, creating, 197–219
 - split permissions, 334–337
 - SSL certificates
 - properly configured, 81
 - resolving issues, 85–86
 - viewing on Exchange servers, 76
 - standard distribution groups, 252–253
 - and security groups, 255–266
 - when to use, 253–254
 - Standard edition, 7
 - standard permissions, configuring, 296–307
 - Start-MigrationBatch, 235
 - startup
 - configuring services, 91–92
 - selecting mail profile, 149–150
 - state or province condition, 267, 269–270, 283
 - Stop-MigrationBatch, 235
 - storage
 - data, 17–18
 - redundant, 6, 7
 - Storage Area Networks (SANs), 37
 - storage limits
 - and migrations, 234
 - permissions, and restrictions, configuring, 241–250
 - storage restrictions, setting on mailbox and archives, 247–249
 - Suggested Meetings app, 222
 - Support Diagnostics management role, 310
 - Suspend-MoveRequest, 235
 - symmetric multiprocessors (SMPs), requirements, 5–6
 - synced users
 - creating new, 154–155
 - finding, 161–162
- T**
- Team Mailboxes management role, 311
 - TenantAdmins group, 300
 - terminating errors, 107
 - Test Account Settings, for Outlook, 134
 - Test-ECPCConnectivity command, 79
 - Test-MigrationServerAbility, 236
 - timeout value, setting, 114
 - To text box, 199–200
 - Transport management roles, 311
 - Transport Queues management role, 312
 - Transport service, 30, 37–38
 - trial mode, 56. *See also* license, validating
 - troubleshooting
 - ClearCache, 112
 - Client Access and Mailbox servers, 82
 - Exchange Management Shell, 119–120
 - Outlook Web App, ECP, and PowerShell, 83–85
 - Setup and installation, 50
 - virtual directory issues, 86–87
- U**
- UM Management group, 17, 299
 - UM management roles, 311
 - Undefined policy, 100
 - Unified Messaging management role, 311

- Unified Messaging service, 29–30
 - with Active Directory, 41
 - completing installation, 59–60
 - configuring, 185–186
 - deployment essentials, 39
- uninstalling, 60
- Uninstall mode, 50
- universal scope, 252
- universal security groups, mail-enabling, 261
- UNIX mail servers, checking private and public folders, 139–140
- UNIX shells, 97–98
- unlicensed users, finding, 161–162
- Unrestricted policy, 100
- Unscoped Role Management management role, 311
- Unsubscribe app, 222
- Update commands and cmdlets
 - Update-AddressList, 285
 - Update-RoleGroupMember, 318
 - Update-ExchangeHelp, 24
 - Update-OfflineAddressBook, 289–290
- updates. *See* cumulative updates
- Upgrade mode, 50
- Upgrade page, 67
- URL, internal vs. external, for Exchange Admin Center, 72
- user accounts
 - creating mailboxes with, 175–177
 - deleting, and mailboxes, 188–190
 - deleting mailboxes from, 187–188
 - disabling, 189
 - existing, mail-enabling, 167–168
 - for linked mailboxes, 206
 - mailbox-enabled, 151–152
 - mailbox-enabled and mail-enabled, creating, 162–181
 - and mail features, managing, 158–190
 - managing mail-enabled, 169
 - online, restoring, 227–229

- on-premises, restoring, 224–227
- setting or changing contact information, 182
 - See also* domain user accounts
- user domain, 162
- User Management Administrator role, 300
- user name, 162
- Username parameter, 112
- User Options management role, 311
- User Principal Name, 228
- user roles, configuring settings, 324–325
- users
 - adding to mailbox, 146–147
 - assigning management permissions, 301–304
 - assigning and removing membership, 262–263
 - changing Exchange Server alias and display name, 183
 - changing logon ID or logon domain, 182
 - finding synced, unlicensed, inactive, and blocked, 161–162
 - synced, 154–155, 161–162
 - understanding, 151–152
- utilities, running and using, 102–103

V

- Verbose parameter, 106
- version numbers, tracking, 62–63
- View-Only management roles, 311
- View-Only Organization Management group, 17, 299
- virtual directory, 86–87. *See also* ECP, Outlook Web App

W

- WarningAction parameter, 106
- WarningVariable parameter, 106
- web options, changing, 185–187

- Welcome Wizard, for configuring email, 131–133
- WhatIf parameter, 106
- Windows, and Exchange Server 2013, 13–15
- Windows Azure Active Directory, 157
- Windows Installer. *See* installation
- Windows PowerShell, 23–24
 - commands for configuring Exchange Admin Center, 80
 - commonly used cmdlets, 103–104
 - execution policy, 66
 - introduction, 97–98
 - managing application, 114–116
 - one-to-many remote management, 118–119
 - running and using, 98–101
 - troubleshooting, 83–85
 - window, 99
- Windows Remote Management (WinRM) services, 25–26, 83
 - customizing, 92–95
 - and manual remote shell, 122–123
 - and remote management, 118
- wireless service options, changing, 185–187
- WMSVC certificate, 75