Microsoft

Designing and Deploying Microsoft Exchange Server 2016

Exam Ref 70-345

Paul Cunningham
Brian Svidergol

FREE SAMPLE CHAPTER

SHARE WITH OTHERS

Microsoft

Exam Ref 70-345 Designing and Deploying Microsoft Exchange Server 2016

Paul Cunningham
Brian Svidergol

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

Copyright © 2016 by Paul Cunningham & Brian Svidergol

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: 2015956897
ISBN: 978-1-5093-0207-9

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 Support at mspinput@microsoft.com. Please tell us what you think of this book at http://aka.ms/tellpress.

This book is provided "as-is" and expresses the author's views and opinions. The views, opinions and information expressed in this book, including URL and other Internet website references, may change without notice.

Some examples depicted herein are provided for illustration only and are fictitious. No real association or connection is intended or should be inferred.

Microsoft and the trademarks listed at http://www.microsoft.com on the "Trademarks" webpage are trademarks of the Microsoft group of companies. All other marks are property of their respective owners.

Acquisitions Editor: Karen Szall
Developmental Editor: Karen Szall
Editorial Production: Troy Mott, Ellie Volckhausen
Technical Reviewer: Bob Dean : Technical Review services provided by Content Master, a member of CM Group, Ltd.
Copyeditor: Rachel Jozsa
Indexer: Julie Grady
Cover: Twist Creative • Seattle

Contents at a glance

	Introduction	*xv*
	Preparing for the exam	*xix*
CHAPTER 1	**Plan, deploy, manage, and troubleshoot mailbox databases**	**1**
CHAPTER 2	**Plan, deploy, manage, and troubleshoot client access services**	**67**
CHAPTER 3	**Plan, deploy, manage, and troubleshoot transport services**	**131**
CHAPTER 4	**Plan, deploy, and manage Exchange infrastructure, recipients, and security**	**187**
CHAPTER 5	**Plan, deploy, and manage compliance, archiving, eDiscovery, and auditing**	**245**
CHAPTER 6	**Implement and manage coexistence, hybrid scenarios, migration, and federation**	**295**
	Index	*347*

This page intentionally left blank

Contents

Introduction **xv**

Organization of this book xvi
Microsoft certifications xvi
Acknowledgments xvi
Free ebooks from Microsoft Press xvii
Microsoft Virtual Academy xvii
Quick access to online references xvii
Errata, updates, & book support xvii
We want to hear from you xviii
Stay in touch xviii
Important: How to use this book to study for the exam *xix*

Chapter 1 Plan, deploy, manage, and troubleshoot mailbox databases **1**

Skill 1.1: Plan, deploy, and manage mailbox databases 2
Plan for database size and storage performance requirements 2
Plan mailbox database capacity and placement 4
Plan archive mailboxes capacity and placement 5
Plan modern public folder capacity and placement 6
Plan for storage architecture (SAN, DAS, RAID, JBOD) 9
Plan file system requirements 10
Plan for auto reseed 12
Plan for virtualization requirements and scenarios 14
Validate storage design by running Jetstress 16

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:

www.microsoft.com/learning/booksurvey/

Create and configure mailbox databases 17
Manage mailbox databases 19
Configure transaction log properties 20
Summary 21

Skill 1.2: Plan, deploy, and manage high availability solutions for mailbox databases 22
Identify failure domains 23
Plan a solution that meets SLA requirements around scheduled downtime 24
Plan for software updates and server maintenance 25
Create, configure, and manage Database Availability Groups (DAG) 28
Create, configure, and manage DAG networks 29
Create, configure, and manage proper placement of a File Share Witness (FSW) 32
Create and configure mailbox database copies 35
Create, configure, and manage Azure DAG members 36
Summary 37

Skill 1.3: Plan, deploy, and manage a site-resilient Database Availability Group (DAG) 38
Plan, create, and configure cross-site DAG configuration 38
Plan, deploy, and configure Datacenter Activation Coordination (DAC) 40
Configure and manage proper placement of an alternate File Share Witness (FSW) 41
Test and perform site recovery 42
Summary 43

Skill 1.4: Monitor and troubleshoot mailbox databases 44
Monitor mailbox database replication and content indexing 44
Troubleshoot mailbox database replication and replay 47
Troubleshoot mailbox database copy activation 48
Troubleshoot mailbox database performance 51
Troubleshoot database failures 51
Resolve quorum issues 53
Summary 54

Skill 1.5: Plan, deploy, and manage backup and recovery solutions for mailbox databases. 54
Plan most appropriate backup solution that meets SLA requirements of RPO/RTO 55
Recover an Exchange server 56
Recover a mailbox database 57
Recover a mailbox 58
Recover a mail item 59
Recover a public folder 60
Recover the public folder hierarchy 60
Perform a dial tone restore 61
Deploy, configure, and manage lagged mailbox database copies 61
Summary 64
Thought experiment. 64
Thought experiment answer. 65

Chapter 2 Plan, deploy, manage, and troubleshoot client access services 67

Skill 2.1: Plan, deploy, and manage Client Access services 67
Plan namespaces for client connectivity 68
Plan proxy and redirection requirements 69
Plan and deploy certificates 71
Plan and configure authentication 74
Plan, deploy, and configure Autodiscover, Outlook Anywhere, Outlook MAPI over HTTP, Exchange Web Services, Outlook on the web, Exchange Admin Center, Exchange ActiveSync, POP3, a nd IMAP4 75
Plan, deploy, and configure Office Online Servers 83
Plan, create, and configure Offline Address Book 84
Plan, create, and configure hierarchical address lists 84
Plan, deploy, and configure address book policies 85
Summary 86

Skill 2.2: Plan, deploy, and manage mobility solutions 86
Plan, deploy, and configure OWA for Devices, Outlook on the web policies, and mobile device mailbox policies 87
Plan, deploy, and configure ABQ 93
Plan, deploy, and configure Office Apps 94
Summary 94
Skill 2.3: Plan, deploy, and manage load balancing 95
Configure namespace load balancing 95
Plan for differences between layer seven and layer four load balancing methods 101
Summary 105
Skill 2.4: Monitor and troubleshoot client connectivity 106
Troubleshoot Outlook Anywhere connectivity 106
Troubleshoot Outlook MAPI over HTTP connectivity 108
Troubleshoot Exchange Web Services 110
Troubleshoot Outlook on the web 112
Troubleshoot POP3 and IMAP4 113
Troubleshoot authentication 115
Troubleshoot Autodiscover 116
Troubleshoot Exchange ActiveSync 117
Troubleshoot proxy and redirection issues 118
Summary 118
Skill 2.5: Plan, deploy, and manage a site-resilient client access services solution. 118
Plan site-resilient namespaces 119
Configure site-resilient namespace URLs 124
Perform and test steps for site failover and switchover 126
Plan certificate requirements for site failovers 127
Manage expected client behavior during a failover and switchover 127
Summary 127
Thought experiment. 128
Thought experiment answer. 129

Chapter 3 Plan, deploy, manage, and troubleshoot transport services 131

Skill 3.1: Plan, deploy, and manage transport services 131
Plan a solution that meets SLA requirements around message delivery 132
Plan inter-site mail flow 132
Plan inter-org mail flow 135
Plan, deploy, and configure redundancy for intra-site scenarios 138
Plan and configure for Safety Net 140
Plan and configure for shadow redundancy 141
Plan and configure for redundant MX records 143
Plan, create, and configure transport-related tasks 144
Summary 149

Skill 3.2: Troubleshoot and monitor transport services 150
Interpret message tracking logs and protocol logs 150
Troubleshoot a shared namespace environment 155
Troubleshoot SMTP mail flow 156
Given a failure scenario, predict mail flow and identify how to recover 159
Troubleshoot TLS 160
Troubleshoot the new transport architecture 161
Summary 163

Skill 3.3: Plan, deploy, and manage message hygiene 164
Plan and configure malware filtering 164
Plan and configure spam filtering 166
Plan and configure connection filtering 169
Plan and configure recipient filtering 171
Plan and configure Sender Policy Framework 172
Plan and configure Spam Confidence Level (SCL) thresholds 174
Summary 175

Skill 3.4: Plan, deploy, and manage site resilient transport services 176
Plan, create and configure MX records for failover scenarios 176
Manage resubmission and reroute queues 177
Plan, create, and configure Send/Receive connectors for site resiliency 179
Test and perform steps for transport failover and switchover 181
Summary 183
Thought experiment. 184
Thought experiment answer. 185

Chapter 4 Plan, deploy, and manage Exchange infrastructure, recipients, and security 187

Skill 4.1: Plan and configure Active Directory Domain Services for Exchange and Organizational settings. 187
Plan the number of domain controllers 188
Plan placement of Global Catalog 190
Plan and configure DNS changes required for Exchange 191
Plan for schema changes required for Exchange 192
Prepare AD for Exchange 192
Prepare domains for Exchange 194
Plan and configure Active Directory site topology 194
Plan and configure throttling policies 197
Summary 198
Skill 4.2: Create and configure mail-enabled objects. 198
Create and configure mailboxes 199
Create and configure resource mailboxes and scheduling 201
Create and configure shared mailboxes 205
Create and configure mail-enabled users and contacts 206
Create and configure distribution lists 206
Configure moderation 208
Create and configure linked mailboxes 210
Create and configure modern public folders 210
Summary 211

Skill 4.3: Manage mail-enabled object permissions 212
Determine when to use Send As and Send On Behalf permissions 212
Configure mailbox folder permissions 213
Configure mailbox permissions 214
Set up room mailbox delegates 215
Configure auto-mapping 216
Create and configure public folder permissions 217
Summary 217
Skill 4.4: Plan, deploy, manage, and troubleshoot Role Based Access Control 218
Determine appropriate RBAC roles and cmdlets 219
Limit administration using existing role groups 220
Evaluate differences between RBAC and Active Directory split permissions plan and configure a custom-scoped role group 221
Plan and configure delegated setup 223
Plan and create unscoped top-level roles 224
Troubleshoot RBAC 225
Plan and configure user assignment policies 225
Summary 226
Skill 4.5: Plan an appropriate security strategy 227
Plan and configure BitLocker 227
Plan and configure S/MIME 231
Summary 235
Skill 4.6: Plan, deploy, manage, and troubleshoot IRM 235
Plan and configure Information Rights Management (IRM) in Exchange 235
Create an RMS template 237
Plan and create transport protection rules 238
Plan and create Outlook protection rule 238
Plan and configure journal report decryption 239
Plan and configure IRM for eDiscovery 240
Plan and configure pre-licensing for client access 240

Troubleshoot failed IRM protection 240
Summary 241
Thought experiment. 242
Thought experiment answer. 242

Chapter 5 Plan, deploy, and manage compliance, archiving, eDiscovery, and auditing 245

Skill 5.1: Plan and configure Data Loss Prevention (DLP) solutions 245
Plan a DLP solution to meet business requirements 247
Plan and configure pre-built rules 248
Plan and create custom rules 252
Plan and configure DLP fingerprinting 253
Plan and configure custom DLP policies 254
Summary 256

Skill 5.2: Plan, configure, and manage Archiving and Message Records Management (MRM) 256
Plan and configure archive and retention policies 257
Plan, create, and configure custom tags 259
Assign policies to users 262
Plan and configure the Managed Folder Assistant 262
Remove and delete tags 264
Plan and configure in-place archiving 265
Plan and configure online archiving (Office 365) 266
Summary 268

Skill 5.3: Plan, configure, and perform eDiscovery 268
Plan and delegate RBAC roles for eDiscovery 269
Perform multi-mailbox searches in Exchange admin center (EAC) and Exchange Management Shell 270
Perform a query-based in-place hold 275
Enable a legal/litigation hold 276
Integrate in-place federated search with Microsoft SharePoint Discovery center 277
Summary 277

Skill 5.4: Plan, configure, and manage a compliance solution 278
Plan and configure MailTips 278
Plan, create, configure, and deploy message classifications 279
Plan and configure transport rules to meet specified compliance requirements 282
Plan and configure journaling 283
Summary 285
Skill 5.5: Plan, manage, and use mailbox and administrative auditing . . 286
Plan and configure mailbox audit logging 286
Plan and configure administrative audit logging 290
Summary 293
Thought experiment. 294
Thought experiment answer. 294

Chapter 6 Implement and manage coexistence, hybrid scenarios, migration, and federation 295

Skill 6.1: Plan, deploy and troubleshoot coexistence with Office 365 (Exchange Online) 295
Plan, deploy, and manage hybrid configuration 296
Evaluate limitations of the Hybrid Configuration Wizard 305
Plan and manage hybrid deployment OAuth-based authentication 306
Troubleshoot transport with Exchange Online 307
Troubleshoot client access with Exchange Online 312
Troubleshoot directory synchronization 313
Summary 313
Skill 6.2: Plan, deploy, manage, and troubleshoot Exchange federation. . 314
Plan, create, and manage federation trusts with Microsoft federation gateways 314
Manage sharing policies 315
Manage organization relationships 316
Plan and create certificate and firewall requirements for federation 317

Troubleshoot Exchange federation trust and organization relationships 318
Troubleshoot cross-forest availability 319
Summary 320
Skill 6.3: Plan, deploy, and troubleshoot on-premises coexistence with earlier supported versions of Exchange 321
Plan, create, and configure namespaces for coexistence 321
Plan and configure proxy redirect 329
Plan firewall configurations for coexistence 331
Plan and configure for mail flow requirements 332
Plan for mailbox migrations 333
Troubleshoot transport in coexistence 335
Troubleshoot client access in coexistence 337
Summary 337
Skill 6.4: Migrate from earlier supported versions of Exchange 338
Determine transition paths to Exchange 339
Migrate mailboxes 339
Troubleshoot Mailbox Replication Services 343
Plan for discontinued features 344
Transition and decommission servers 344
Summary 345
Thought experiment 346
Thought experiment answer 346

Introduction

Many Exchange Server books take the approach of teaching you every detail about the product. Such books end up being huge and tough to read. Not to mention that remembering everything you read is incredibly challenging. That's why those books aren't the best choice for preparing for a certification exam such as the Microsoft Exam 70-345, "Designing and Deploying Microsoft Exchange Server 2016." For this book, we focus on your review of the Exchange Server skills that you need to maximize your chances of passing the exam. Our goal is to cover all of the skills measured on the exam, while bringing a real-world focus to the information. This book shouldn't be your only resource for exam preparation, but it can be your primary resource. We recommend combining the information in this book with some hands-on work in a lab environment (or as part of your job in a real-world environment).

The 70-345 exam is geared toward administrators that have a minimum of three years of experience working with Exchange Server. That doesn't mean you can't take and pass the exam with less experience, but it probably means that it will be harder. Of course, everyone is different. It is possible to get the knowledge and skills required to pass the 70-345 exam in fewer than three years. But whether you are a senior-level Exchange Server administrator or just a couple of years into your Exchange Server journey, we think you'll find the information in this book valuable as your primary exam prep resource.

This book covers every major topic area found on the exam, but it does not cover every exam question. Only the Microsoft exam team has access to the exam questions, and Microsoft regularly adds new questions to the exam, making it impossible to cover specific questions. You should consider this book a supplement to your relevant real-world experience and other study materials. If you encounter a topic in this book that you do not feel completely comfortable with, use the "Need more review?" links you'll find in the text to find more information and take the time to research and study the topic. Great information is available on MSDN, TechNet, and in blogs and forums.

Organization of this book

This book is organized by the "Skills measured" list published for the exam. The "Skills measured" list is available for each exam on the Microsoft Learning website: *http://aka.ms/examlist*. Each chapter in this book corresponds to a major topic area in the list, and the technical tasks in each topic area determine a chapter's organization. If an exam covers six major topic areas, for example, the book will contain six chapters.

Microsoft certifications

Microsoft certifications distinguish you by proving your command of a broad set of skills and experience with current Microsoft products and technologies. The exams and corresponding certifications are developed to validate your mastery of critical competencies as you design and develop, or implement and support, solutions with Microsoft products and technologies both on-premises and in the cloud. Certification brings a variety of benefits to the individual and to employers and organizations.

MORE INFO **ALL MICROSOFT CERTIFICATIONS**

For information about Microsoft certifications, including a full list of available certifications, go to *http://www.microsoft.com/learning*.

Acknowledgments

Paul Cunningham I would like to thank Hayley, William, and Abby for their patience and support during the writing of this book, and for making everything in my life possible. I would also like to thank Tony Redmond, Orin Thomas, and my other fellow Microsoft MVPs for their friendship, help, and advice over the last several years. Finally, thanks to all of you around the world who make it so enjoyable being a part of the Exchange and Office 365 communities.

Brian Svidergol I would like to thank my wife Lindsay, son Jack, and daughter Leah for their continued love and support throughout these projects—I couldn't do it without you guys! I would also like to thank my mom, Pam, who enabled me to develop a passion for computers back in the bulletin board system (BBS) days, spending massive amounts of time on the computer tying up the phone line. I remember routinely going to the book store with mom and coming out with new computer books every time. That always made my day.

Free ebooks from Microsoft Press

From technical overviews to in-depth information on special topics, the free ebooks from Microsoft Press cover a wide range of topics. These ebooks are available in PDF, EPUB, and Mobi for Kindle formats, ready for you to download at:

http://aka.ms/mspressfree

Check back often to see what is new!

Microsoft Virtual Academy

Build your knowledge of Microsoft technologies with free expert-led online training from Microsoft Virtual Academy (MVA). MVA offers a comprehensive library of videos, live events, and more to help you learn the latest technologies and prepare for certification exams. You'll find what you need here:

http://www.microsoftvirtualacademy.com

Quick access to online references

Throughout this book are addresses to webpages that the author has recommended you visit for more information. Some of these addresses (also known as URLs) can be painstaking to type into a web browser, so we've compiled all of them into a single list that readers of the print edition can refer to while they read.

Download the list at *http://aka.ms/ER345/downloads*.

The URLs are organized by chapter and heading. Every time you come across a URL in the book, find the hyperlink in the list to go directly to the webpage.

Errata, updates, & book support

We've made every effort to ensure the accuracy of this book and its companion content. You can access updates to this book—in the form of a list of submitted errata and their related corrections—at:

http://aka.ms/ER345/errata

If you discover an error that is not already listed, please submit it to us at 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 and hardware is not offered through the previous addresses. For help with Microsoft software or hardware, go to *http://support.microsoft.com*.

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://aka.ms/tellpress

We know you're busy, so we've kept it short with just a few questions. Your answers go directly to the editors at Microsoft Press. (No personal information will be requested.) Thanks in advance for your input!

Stay in touch

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

Important: How to use this book to study for the exam

Certification exams validate your on-the-job experience and product knowledge. To gauge your readiness to take an exam, use this Exam Ref to help you check your understanding of the skills tested by the exam. Determine the topics you know well and the areas in which you need more experience. To help you refresh your skills in specific areas, we have also provided "Need more review?" pointers, which direct you to more in-depth information outside the book.

The Exam Ref is not a substitute for hands-on experience. This book is not designed to teach you new skills.

We recommend that you round out your exam preparation by using a combination of available study materials and courses. Learn more about available classroom training at *http://www.microsoft.com/learning*. Microsoft Official Practice Tests are available for many exams at *http://aka.ms/practicetests*. You can also find free online courses and live events from Microsoft Virtual Academy at *http://www.microsoftvirtualacademy.com*.

This book is organized by the "Skills measured" list published for the exam. The "Skills measured" list for each exam is available on the Microsoft Learning website: *http://aka.ms/examlist*.

Note that this Exam Ref is based on this publicly available information and the author's experience. To safeguard the integrity of the exam, authors do not have access to the exam questions.

This page intentionally left blank