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Configuring Microsoft® Exchange Server 2010

Ian McLean

Rapid Review

MCTS EXAM

70-662

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Rapid Review 70-662

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- Installing and Configuring Exchange Servers
- Configuring Exchange Recipients and Public Folders
- Configuring Client Access
- Configuring Message Transport
- Monitoring and Reporting
- Implementing High Availability and Recovery
- Configuring Message Compliance and Security



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Exchange Server 2010

Ian McLean

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This book is dedicated to my new and beautiful granddaughter, Isla Martha McLean, born on the twenty-third of September, 2011. Darling, you're too little as yet to know how much Grandpa loves you, but you'll find out.
—Ian McLean

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Introduction

This *Rapid Review* is designed to help you assess—and complete—your readiness for MCTS exam 70-662: Microsoft Exchange Server 2010, Configuring. The *Rapid Review* series is intended for exam candidates who already have a solid grasp on the exam objectives through a combination of experience, skills, and study, and could use a concise review guide to help with the final stages of preparation.

The 70-662 exam is aimed at messaging generalists responsible for the maintenance and administration of the Exchange servers in an enterprise environment. Day to day, the candidate typically installs and manages Exchange Server 2010 SP2 and manages users, mailboxes, security, servers, and databases by using Exchange Server 2010. The candidate might also monitor and troubleshoot Exchange Server 2010 SP2 servers. Although this experience focuses on the Exchange Server 2010 messaging solution, you might have real world experience with other Microsoft messaging solutions such as Exchange Server 2007 or Exchange Server 2003 that you can build on and apply. Most candidates who take this exam work in an environment in which Exchange Server 2010 either has been deployed or is about to be deployed. It is important to note that you should have real-world experience with Exchange Server 2010 prior to taking the 70-662 exam; having practical knowledge is a key component to achieving a passing mark.

This book will review every concept described in the following exam objective domains:

- Installing and Configuring Exchange Servers
- Configuring Exchange Recipients and Public Folders
- Configuring Client Access
- Configuring Message Transport
- Monitoring and Reporting
- Implementing High Availability and Recovery
- Configuring Message Compliance and Security

This is a Rapid Review and not a comprehensive exam prep or skills training resource such as the Microsoft Press *Self-Paced Training Kit*. The book covers every exam objective for the 70-662 exam as presented in the objective domain. The exam team does not give anyone access to the exam questions and regularly adds new questions to the exam, which makes complete coverage a real challenge. The coverage in this book is as complete as possible based on the information available. This book should be an excellent supplement to your existing independent study and real-world experience with the product.

If you encounter a topic in this book with which you do not feel completely comfortable, you can visit the links described in the text, research the topic further by using Microsoft TechNet, and consult support forums. If you review a topic and find that you don't understand it, you should consider consulting books such as the *MCTS Self-Paced Training Kit (Exam 70-662): Configuring Microsoft® Exchange Server*

2010 and the Microsoft® Exchange Server 2010 Administrator's Pocket Consultant from Microsoft Press. You can also purchase practice tests, or use the one available with the Training Kit, to determine if you need further study on particular topics.

NOTE *MCTS Self-Paced Training Kit (Exam 70-662): Configuring Microsoft® Exchange Server 2010* provides comprehensive coverage of each 70-662 exam objective, along with exercises, review questions, and practice tests. The Training Kit also includes a discount voucher for the exam.

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I'm delighted that my writing colleague and good friend, Orin Thomas, is the Series Editor for the Rapid Review books. There could not be a better person for the job. Orin's technical knowledge and writing skills are very highly regarded, and there is no way that he's going to let anything past him that does not adhere to his high standards (I'm glad to say).

I'm very grateful for the invaluable technical help given to me by Craig Brown. I'd also like to thank Randy Muller, the Technical Reviewer; Holly Bauer, the Production Editor; Christie Rears, the Vendor Coordinator; and Bob Russell, the Copyeditor. Without your assistance and professionalism, the book wouldn't have come together as well as it has!

As always I'd like to thank Anne, my lovely wife of 36 years, for her patience with me during the writing of this book. She hasn't been well herself recently, and I know this time it's been particularly hard for her. I'm infinitely grateful.

I'd also like to thank you, the reader, for picking up this book. If you have any questions about anything and would like to get in touch with me, you can email me at ianmclean84@gmail.com. If, however, you spot any errors (let's hope not), please go through the process described in the Errata section that follows. This keeps it official.

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Installing and Configuring Exchange Servers

Roughly 15 percent of the 70-662 exam focuses on the topic “Installing and Configuring Exchange Servers.” You need to have a good grasp of how to prepare the Active Directory infrastructure for Microsoft Exchange Server 2010 RTM and Microsoft Exchange Server 2010 SP1 or SP2 installation, the software and hardware requirements, and how to install the various Exchange server roles. You also need to know how to create and configure Exchange databases and address lists.

This chapter covers the following objectives:

- Objective 1.1: Prepare the infrastructure for Exchange.
- Objective 1.2: Install Exchange prerequisites.
- Objective 1.3: Install Exchange roles.
- Objective 1.4: Create and configure databases.
- Objective 1.5: Create and configure address lists.

Objective 1.1: Prepare the infrastructure for Exchange

In this exam objective, you might be tested on how to prepare the schema, Active Directory, and domains for Exchange installation. You might be asked about domain and forest functionality levels, domain controller service packs, and the Exchange readiness check. You need to know about configuring coexistence with Exchange Server 2003 or 2007; when to disable LinkState; Exchange Server Service Pack level; and unsupported legacy components that you need to remove.

Exam need to know

- Prepare the schema
For example: Do you know the *Setup* command that prepares the schema, and what role groups you need to be a member of to run this command?
- Prepare Active Directory
For example: Do you know the *Setup* command that prepares Active Directory Domain Services (AD DS), and what role groups you need to be a member of to run this command?

- Prepare the domain
For example: Do you know how to prepare individual domains for Exchange Server 2010 SP1 and SP2 installation?
- Ensure that the domain functionality level is correct
For example: Do you know what minimum domain and forest functional levels are required for the installation?
- Domain controller service packs
For example: Do you know whether you can install Exchange Server 2010 in an organization that has Windows 2000 Server domain controllers?
- Exchange readiness check
For example: Do you know which EMC wizard performs an Exchange readiness check?
- Coexistence
For example: Do you know where you should deploy the first Exchange Server 2010 server in a coexistence scenario?
- Migration from 2003 or 2007
For example: Where should you deploy the first Exchange Server 2010 servers?
- Disable LinkState
For example: Do you know what tool to use to suppress link state upgrades?
- Exchange Server service pack level
For example: Do you know what level of service pack must be installed on Exchange Server 2003 and Exchange Server 2007 servers before you can configure coexistence?
- Remove unsupported legacy components
For example: Do you know what domain controllers you need to remove or upgrade?
- Configuring DNS to support the Exchange deployment
For example: Do you know which tool installs the DNS server role and which tool you use to configure DNS?

Prepare the schema

The exam might test that you know what steps you need to take to set up an Exchange 2010 organization, even though the Installation Wizard is available to automate the process. You should know that unless you need to change the default permissions in an existing Exchange 2003 (only) deployment, the first step that you take to prepare Active Directory for Exchange Server 2010 installation is to prepare the schema.

True or false? You use a *Setup* command to prepare the schema.

Answer: *True.* The command *Setup /PrepareSchema* prepares the schema. You can run this command separately or it can run automatically as part of the installation of the first Exchange Server 2010 server in the organization. Prior to running the *Setup /PrepareSchema* command, you must ensure that you are logged in with a

user account that is a member of both the Schema Admins group and the Enterprise Admins group. Also, you must execute this command on a 64-bit computer in the same Active Directory domain and same Active Directory site as the computer that holds the Schema Master role.

True or false? As soon as you have run the *Setup /PrepareSchema* command from an elevated command prompt, you can go on to the next step and prepare AD DS.

Answer: *False.* If you run the *Setup* command from the command prompt, you need to wait for the subsequent changes that result from running this command to replicate across your organization prior to performing the next step of preparing Active Directory. (Note that if you perform a GUI install, replication occurs before the next step is implemented.)

Prepare Active Directory

You should be aware that when the changes implemented by running *Setup /PrepareSchema* have propagated throughout the organization, your next step is to use the *Setup /PrepareAD* command to prepare Active Directory. Unless an Exchange organization already exists in your forest, you need to specify the name of your new Exchange Server organization.

True or false? To successfully run the *Setup /PrepareAD* command, you must be logged in with a user account that is a member of the Schema Admins group.

Answer: *False.* You must be logged in with a user account that is a member of the Enterprise Admins group. Note that the user account does not need to be a member of the Schema Admins group.

MORE INFO To learn more about preparing Active Directory and domains, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125224.aspx>.

True or false? You must run the *Setup /PrepareAD* command on a computer that is in the same domain and Active Directory site as the computer that holds the schema master role.

Answer: *True.* You should also ensure that the changes introduced by running this command are able to propagate across your organization before preparing domains.

Prepare the domain

You are expected to know that to prepare Active Directory for the introduction of Exchange Server 2010, you need to run the *Setup /PrepareDomain* or the *Setup /PrepareAllDomains* command.

True or false? The account used to run the *Setup /PrepareDomain* command must be a member of the Enterprise Admins group.

Answer: *True.* It should also be a member of the Domain Admins group in the domain against which the command is being run. If the domain is created after the execution of the *Setup /PrepareAD* command, the account used must also be a member of the Exchange Organization Administrators group.

True or false? Running *Setup /PrepareDomain* configures permissions for various groups but does not create any new groups.

Answer: *False*. Running the command also creates a domain global group called Exchange Install Domain Servers. Note that it is not necessary to run this command in the domain in which you ran the *Setup /PrepareAD* command.

EXAM TIP You first prepare the schema, then prepare AD DS, and then prepare the domains.

MORE INFO To learn more about preparing Active Directory and domains, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125224.aspx>.

Ensure that the domain functionality level is correct

The exam might test that you know what steps to take to introduce Exchange 2010 into an Active Directory environment. You should be aware that the forest functional level must be configured at Windows Server 2003 or higher. Therefore, all domains within your forest must have a domain functional level of at least Windows Server 2003.

True or false? The forest functional level of Contoso.com is currently Windows Server 2003. The forest has three domains. Two of these are set at the Windows Server 2003 domain functional level, but you have raised the domain functional level of the third to Windows Server 2008. This enables you to raise the forest functional level of Contoso.com to Windows Server 2008.

Answer: *False*. To raise the forest functional level to Windows Server 2008, you first need to raise the domain functional level of all three domains to at least Windows Server 2008.

True or false? You can view the domain and forest functional level by using the Active Directory Domains and Trusts console. You can also raise the domain and forest functional levels by using this console.

Answer: *True*. You can use the Active Directory Domains and Trusts console to view and to raise both domain and forest functional levels.

MORE INFO To learn more about domain and forest functional levels, consult the TechNet document at [http://technet.microsoft.com/en-us/library/cc787290\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc787290(WS.10).aspx).

Domain controller service packs

You should know the basic infrastructure requirements for Exchange installation, such as the levels of operating system required on computers that have key roles in the AD DS infrastructure.

True or false? The computer that holds the Schema Master role in the forest and the computer that functions as a Global Catalog server in the site on which Exchange Server 2010 SP1 or SP2 is being installed must both be running the Windows Server 2003 SP2 operating system or later.

Answer: *True*. Windows Server 2003 SP2 is the minimum level of operating system in either case. (Note that if you are installing Exchange Server 2010 RTM, Windows Server 2003 SP1 is the minimum level of operating system for both schema master and global catalog servers.)

True or false? The only method of discovering which domain controller in the forest holds the schema master role is by using the Active Directory Schema snap-in, which is available by default for custom MMCs.

Answer: *False*. You can determine which computer in your environment holds the schema master role by using the Active Directory Schema snap-in and selecting Operations Master from the File menu. This snap-in is not available by default but becomes so for custom MMCs when you run the *regsvr32 schmmgmt.dll* command. You can also determine which computer holds the Schema Master role by running the command *dsquery server -hasfsmo schema* from an elevated command prompt. Alternatively, you can issue a PowerShell command. By using the PowerShell *Get-ADForest* cmdlet, you can find the schema and domain naming masters. With the PowerShell *Get-ADDomain* cmdlet, you can find the PDC Emulator, Infrastructure master, and RID master.

MORE INFO To learn more about the *dsquery server* command, consult the TechNet document at [http://technet.microsoft.com/en-us/library/cc732885\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc732885(WS.10).aspx).

Exchange readiness check

You should be aware that if you perform a GUI-based installation, prerequisite and system readiness checks are performed before installation starts. The results of these checks are written to the setup log file, which you can use to verify the installation.

True or false? The Exchange Server 2010 Installation Wizard automatically performs an Exchange readiness check.

Answer: *True*. When you install Exchange Server 2010 SP2 by using the Exchange Server 2010 Installation Wizard, the installation program performs an Exchange readiness check and informs you if any installation prerequisites have not been met.

Coexistence

You should know that Exchange 2010 supports coexistence with Exchange 2003, Exchange 2007, and mixed Exchange 2003 and Exchange 2007 environments. The exam might check that you are aware that it is not possible to directly upgrade a server running Exchange Server 2003 or Exchange Server 2007 to Exchange Server 2010. You should know what steps to take to configure a period of coexistence that allows the migration of organizational resources from servers running previous versions of Exchange to Exchange Server 2010.

True or false? If it is necessary to run the *Setup /PrepareLegacyExchangePermissions* command, you must run it before the *Setup /PrepareSchema* command.

Answer: *True*. If your organization has an existing Exchange 2003 deployment (but not a coexisting Exchange 2003 and Exchange 2007 organization), you must run the *Setup /PrepareLegacyExchangePermissions* command prior to running the *Setup /PrepareSchema* command. This ensures that the Exchange 2003 Recipient Update Service will function correctly after you update the schema.

EXAM TIP If an Exchange Server 2007 already exists in your messaging environment, the Exchange Server 2003 legacy permissions must already have been configured in order to support Exchange Server 2007 coexistence.

True or false? You can run the *Setup /PrepareLegacyExchangePermissions* command only against all domains in the forest, not against a single domain. Because of this, you cannot run this command unless your logged-in account is a member of the Enterprise Admins group.

Answer: *False*. If you run the command without additional options, all domains in the forest are prepared for Exchange Server 2010 SP2, and you need to be a member of the Enterprise Admins group to do this. However, you can run the command in individual domains, provided that you first run it in the domain that contains the server that holds the Schema Master role. If the command is being run for a specific domain, the account used to run the command must be a member of the Domain Admins group and must have been delegated the Exchange Full Administrator permissions.

MORE INFO To learn more about preparing legacy exchange permissions in an Exchange Server 2003 organization prior to the deployment of Exchange Server 2010, consult the TechNet document at: <http://technet.microsoft.com/en-us/library/aa997914.aspx>.

True or false? You should deploy the first Exchange Server 2010 SP2 servers in Internet-facing Active Directory sites when preparing for coexistence with Exchange Server 2007.

Answer: *True*. You should deploy the first Exchange Server 2010 SP2 server in Internet-facing Active Directory sites. This is because Client Access proxying works from Exchange Server 2010 SP2 Client Access servers to Exchange Server 2007 Client Access servers, but it does not work in the opposite direction.

MORE INFO To learn more about deploying Exchange Server 2010 in an environment that has an existing Exchange Server 2007 deployment, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638158.aspx>.

Migration from 2003 or 2007

You are expected to know that migration from both Exchange 2003 and Exchange 2007 to Exchange 2010 is supported. You should know what steps to take to implement a transition to Exchange 2010 from an Exchange 2007 messaging system or a combined Exchange 2003 and Exchange 2007 messaging system.

True or false? Migration is the process by which you upgrade to Exchange 2010 by migrating data from an Exchange 2003 or 2007 organization to Exchange 2010.

Answer: *True*. In the migration scenario, you migrate the data without retaining any of the Exchange configuration from the first organization. The migration process includes installing a completely new Exchange 2010 organization, and then migrating mailboxes from the old messaging system to the new Exchange 2010 messaging system.

True or false? When transitioning to Exchange 2010, you can perform an in-place server upgrade on an existing Exchange server.

Answer: *False*. You must instead install a new Exchange 2010 server into the existing organization, and then move data to the new Exchange 2010 server.

MORE INFO To learn more about upgrading to Exchange 2010, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998604.aspx>.

Disable LinkState

You should be aware that because Exchange 2010 does not use a link state routing table and does not support the relay of link state information, you need to suppress link state updates in Exchange Server 2003; otherwise, routing loops can occur. You need to know what steps to take to suppress these updates.

MORE INFO To learn more about deploying Exchange Server 2010 in an environment that has an existing Exchange Server 2003 deployment, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998186.aspx>.

True or false? You use the Registry Editor on each Exchange Server 2003 server in the organization to suppress link state updates.

Answer: *True*. If the existing Exchange 2003 organization contains more than one routing group, and you are intending to configure more than one routing group connector between Exchange 2003 routing groups and Exchange 2010, you need to suppress link state update by using the Registry Editor to modify the registry on each Exchange Server 2003 server.

MORE INFO To learn more about configuring suppression of link state updates, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996728.aspx>.

Exchange Server service pack level

If you are configuring coexistence with and migration from Exchange Server and Exchange 2003 organizations to an Exchange Server 2010 server, you need to be aware that SP2 must be installed on the Exchange Server 2003 and 2007 servers.

True or false? When preparing for coexistence between Exchange Server 2003 and Exchange Server 2010, you must ensure that the Exchange Server 2003 organization is configured to use Native mode and that all Exchange Server 2003 servers have SP2 installed.

Answer: *True*. If the Exchange Server 2003 organization is running in Mixed mode, you must configure it to use Native mode. All Exchange Server 2003 servers should have Service Pack 2 installed. In addition, you should introduce Exchange Server 2010 servers in Internet-facing sites first, and you should deploy Exchange Server 2010 roles in the following order: Client Access, Hub Transport, Mailbox, and Unified Messaging.

Remove unsupported legacy components

The exam might test that you know which operating systems or Exchange Server versions need to be upgraded or removed before you can install Exchange Server 2010 or configure coexistence. For example, because you need to raise forest and domain functional levels to Windows Server 2003, you need to remove or upgrade any Windows 2000 Server domain controllers in your environment. One or more domain controllers in each of your domains should be running at least Windows Server 2003 SP1 to configure coexistence.

Exchange 2010 does not support coexistence with Exchange 2000 Server organizations. To migrate from Exchange 2000 to Exchange Server 2010, you must first migrate Exchange 2000 Server to either an Exchange Server 2003 or an Exchange Server 2007 organization.

Configuring DNS to support the Exchange deployment

The exam might test that you know that when you are installing the DNS server role by using the Active Directory Domain Services Installation Wizard, and you want to set up DNS to support Exchange Server 2010 deployment, you should choose Active Directory integrated DNS with dynamic updates enabled. This setting provides a number of advantages, such as fail-over protection and AD DS replication. If necessary, you can use the DNS Management console to reconfigure DNS.

True or false? You cannot install Exchange Server 2010 in a forest that uses third-party name resolution servers. Active Directory integrated DNS is essential.

Answer: *False*. Exchange Server 2010 will work with most name resolution systems—even foreign systems such as BIND—but Microsoft recommends Active Directory integrated DNS.

True or false? Active Directory integrated DNS is typically used to meet the name resolution needs of Exchange servers that hold the Edge Transport role.

Answer: *False*. There are additional DNS requirements for Exchange servers that hold the Edge Transport role. These are discussed later in this chapter. Servers that hold the Edge Transport role are typically standalone servers on a peripheral network. It is possible to configure Active Directory integrated DNS to meet the name resolution needs of Edge Transport servers, but this is neither a typical nor a recommended solution.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. TreyResearch.com is a single-domain forest. It contains domain controllers running Windows 2000 Server and Windows Server 2003 SP2. The domain functional level is Windows 2000 native. The forest functional level is Windows 2000. You have installed Windows Server 2008 R2 on a new 64-bit member server in the domain. You want to install Exchange Server 2010 SP2 on this server. What is the first task that you need to perform?
2. You have configured all the prerequisites for the installation of Exchange server 2010 SP2. Your single-domain forest contains member servers running Windows Server 2003 R2 (x64) Enterprise edition, Windows Server 2008 Enterprise edition with SP2 (x86), and Windows Server 2008 Standard edition with SP2 (x64). On which of these servers can you install Exchange Server 2010 SP2?
3. The MargiesTravel.com forest has a Windows Server 2003 forest functional level. The forest contains two domains and all domain controllers are running Windows Server 2003 R2. MargiesTravel.com has an existing Exchange Server 2003 deployment with Exchange servers in each domain. What command must you run first when configuring Active Directory for the introduction of Exchange Server 2010 SP2?
4. Adatum.com is a single-domain forest. Both domain and forest functional levels are set to Windows Server 2008. The Adatum.com forest currently uses Exchange Server 2003 SP2 as its messaging solution. What *Setup* commands do you need to issue to configure permissions and Active Directory so that you can install Exchange Server 2010 SP2 in a coexistence scenario, and in what order should you issue them?
5. What command can you issue from an elevated command prompt to determine which domain controller in your organization holds the schema master role?

Objective 1.2: Install Exchange prerequisites

In this exam objective, you might be tested on the installation of MMC 3.0; Windows PowerShell 2.0; Microsoft .NET 3.5; WinRM 2.0; IIS, and Windows roles and features. The exam might test that you know how to use ServerManagerCMD and Exchange prerequisite scripts.

Exam need to know

- Install MMC 3.0

For example: Do you know what version of Windows Server 2008 requires that you install MMC 3.0 before installing Exchange Server 2010?

- Windows PowerShell 2.0

For example: Do you know whether Windows PowerShell 2.0 is a prerequisite for Exchange 2010 installation on a computer running Windows Server 2008 R2?

- Microsoft .NET 3.5

For example: Do you know under what circumstances you need to install .NET 3.5?

- WinRM 2.0

For example: Do you know when WinRM 2.0 installation is required?

- IIS

For example: Do you know what exchange server roles require the installation of IIS 6.0?

- Windows roles and features

For example: Do you know what roles, role services, and features you need to install to support the Exchange Server 2010 SP2 Edge Transport server role?

- Use Exchange prerequisite scripts

For example: Do you know what XML script specifically supports the Client Access server role?

- Use ServerManagerCMD

For example: Do you know how to use the ServerManagerCMD utility to apply an XML prerequisite script?

Install MMC 3.0

You need to know the software installation prerequisites to prepare either a server running the x64 version of Windows Server 2008 with SP2 (or later) or a server running Windows Server 2008 R2 to support an Exchange Server 2010 RTM or Exchange Server 2010 SP1 or SP2 deployment.

True or false? You need to check that a server running Windows Server 2008 R2 is a 64-bit computer before you install Exchange Server 2010.

Answer: False. Windows Server 2008 R2 only comes in an x64 version, so you do not need to check the processor architecture.

True or false? If you do not intend to deploy the Hub Transport or Mailbox server roles on a computer running Windows Server 2008 R2 and Exchange Server 2010, no software prerequisites are required.

Answer: False. If you are going to deploy the Hub Transport or Mailbox server roles on a computer running Windows Server 2008 R2 and Exchange Server 2010, you need to obtain and install the 2007 Office System Converter: Microsoft Filter Pack. If you do not intend to deploy these Exchange server roles, then you can configure the required roles, role services, and features on a computer running Windows Server 2008 R2, and then install Exchange.

True or false? Before you can install Exchange Server 2010 SP2 on a computer running the x64 version of the Windows Server 2008 operating system with SP2 or later, you need to install MMC 3.0

Answer: *True*. The installation wizard identifies this requirement and guides you through the installation. If you are not using the wizard, you download and install the software from a Microsoft download site.

EXAM TIP If you are asked about installation prerequisites, read the question carefully to determine which operating system is specified. Remember also that Exchange Server 2010 is 64-bit software; you cannot install it on a 32-bit computer, no matter which version of Windows Server is installed.

Windows PowerShell 2.0

You should know the steps you need to take before you can install Exchange Server 2010 on a computer running the x64 version of the Windows Server 2008 operating system with SP2 or later. You should be aware that you need to install Windows PowerShell 2.0. As with MMC 3.0, you do not need to install this on a computer running Windows Server 2008 R2.

Microsoft .NET 3.5

As with the previous two software requirements, you should know that you need to install Microsoft .NET Framework 3.5 Service Pack 1 and Microsoft .NET Framework 3.5 Family Update for Windows Vista x64, and Windows Server 2008 x64 on a computer running the x64 version of the Windows Server 2008 operating system with SP2 or later before you install Exchange Server 2010.

WinRM 2.0

You need to know that before you can install Exchange Server 2010 on a computer running the x64 version of the Windows Server 2008 operating system with SP2 or later, you need to install WinRM 2.0

True or false? You also need to install Filter Packs, but only if the Exchange Server SP1 computer is to be configured with the Hub Transport or Mailbox server role.

Answer: *True*. You need to install the Office 2010 Filter Packs. This applies to computers running either the x64 version of the Windows Server 2008 operating system with SP2 or later, or to computers running Windows Server 2008 R2. Note that if you are installing Exchange Server 2010 RTM, you can use the 2007 Office System Converter Microsoft Filter Pack.

IIS

The exam might test that you know when you need to install IIS 6.0 (or later) before installing Exchange Server 2010.

True or false? You need to install IIS 6 Metabase Compatibility and IIS 6 Management Console if you intend to deploy the Edge Transport role.

Answer: *False*. You need to install this software if you intend to deploy one or more of the Mailbox, Hub Transport, or Client Access roles. Note that this is a requirement that applies to Windows Server 2008 SP2 and Windows Server 2008 R2.

Windows roles and features

You should be aware that each Exchange Server 2010 role is dependent upon roles, role services, and features on either Windows Server 2008 x64 version SP2 or Windows Server 2008 R2 servers. You need to know that the roles, role services, and features that you install depend on the Exchange server role or roles that you intend to deploy on the server platform. You need to be logged in using an account that is a member of the local Administrators group on the computer you are configuring in order to install the roles, role services, and features required.

True or false? You need to install remote server administration tools (RSAT) to support every one of the Exchange Server 2010 server roles.

Answer: *True*. The roles, role services, and features that you need to install to support each of the Exchange Server 2010 server roles are as follows:

- **Hub Transport** RSAT, .NET Framework 3.5.1, Web Server, Web Server Basic Authentication, Web Server Windows Authentication, IIS 6 Metabase Compatibility, Web Server .NET Extensibility, IIS 6 Management Console, and Windows Process Activation Service Process Model.
- **Mailbox** This role has the same requirements as those for the Hub Transport server role.
- **Client Access** RSAT, .NET Framework 3.5.1, Web Server, Web Server Basic Authentication, Web Server Windows Authentication, Web Server Digest Authentication, IIS 6 Metabase Compatibility, Web Server .NET Extensibility, IIS 6 Management Console, Windows Process Activation Service Process Model, Web Server ISAPI Extensions, Web Server Dynamic Content Compression, .NET Framework HTTP Activation, and RPC over HTTP Proxy.
- **Edge Transport** RSAT, Active Directory Lightweight Directory Services, and .NET Framework 3.5.1.

True or false? You need to configure the Net.TCP Port Sharing Service if you want to deploy the Client Access server role.

Answer: *True*. If the server you are configuring is going to host the Client Access server role, you need to configure the Net.TCP Port Sharing Service so that it starts automatically. You can do this through the Services console or by issuing the command `sc config NetTcpPortSharing start=auto` from an elevated command prompt.

True or false? You can use the Server Manager console to add the required components.

Answer: *True*. Using the Server Manager console is relatively straightforward. The disadvantage is that it requires that you know precisely which roles, role services, and features must be deployed to support specific Exchange Server 2010 server roles.

Use Exchange prerequisite scripts

You need to know how you can use prepared XML-formatted answer files located in the Scripts folder of the Exchange Server 2010 installation media to support the prerequisites required for the various Exchange Server 2010 server roles. The answer files that are relevant to the Exchange server roles are as follows:

- **Exchange-All.xml** Supports the Client Access, Hub Transport, Mailbox, and Unified Messaging server roles.
- **Exchange-Typical.xml** Supports the Client Access, Hub Transport, and Mailbox server roles.
- **Exchange-CAS.xml** Supports the Client Access server role.
- **Exchange-Edge.xml** Supports the Edge Transport server role.
- **Exchange-Hub.xml** Supports the Hub Transport server role.
- **Exchange-MBX.xml** Supports the Mailbox server role.

Use ServerManagerCMD

The exam might test that you know how to use the ServerManagerCMD.exe command-line tool to apply a prerequisite script that adds the required components. For example, if you want to configure a server running Windows Server 2008 version x64 SP2 or Windows Server 2008 R2 so that you can install Exchange Server 2010 SP2 and support the Client Access, Hub Transport, Mailbox, and Unified Messaging server roles, you would issue the following command on the target server (note that the restart parameter is optional if you plan to restart the computer manually after the command runs):

```
ServerManagerCmd.exe -ip Exchange-All.xml -restart
```

MORE INFO To learn more about the ServerManagerCMD tool, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd184077.aspx>.

True or false? You can use PowerShell 2.0 commands directly to install the required roles, role services, and features. You do not require the PowerShell ServerManager module.

Answer: *False*. You can use PowerShell 2.0 commands for this purpose, provided the PowerShell ServerManager module is available. You can load the ServerManager module into an elevated PowerShell 2.0 window by issuing the following command:

```
Import-Module ServerManager
```

You can then use the PowerShell *Add-WindowsFeature* cmdlet to install the appropriate roles, role services, and features. For example the Edge Transport server role has the lowest number of prerequisites, and the command you need to issue on the server on which you intend to deploy this role is as follows:

```
Add-WindowsFeature NET-Framework,RSAT-ADDS,ADLDS
```

MORE INFO To learn more about the *Add-WindowsFeature* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee662309.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You want to install Windows Server 2010 SP2 on a server running Windows Server 2008 R2. You need to support the deployment of the Mailbox, Hub Transport, and Client Access roles. What `ServerManagerCMD` command should you issue before restarting the server and installing Exchange?
2. You are installing roles, role services, and features on a computer running Windows Server 2008 R2, on which you intend to install Exchange Server 2010 SP2 and deploy the Edge Transport server role. You issue the PowerShell `Add-WindowsFeature NET-Framework,RSAT-ADDS,AD LDS` command. What roles and features does this add?
3. You have been tasked with installing Exchange Server 2010 SP2 on a computer running Windows Server 2008 R2, and you intend to deploy the Mailbox server role. What additional component do you need to obtain and install before configuring the required server roles, role services, and features, and installing Exchange?
4. Which Exchange Server 2010 server role requires that you install Web Server ISAPI Extensions before installing Exchange?
5. You intend to install Exchange Server 2010 SP2 on a server running Windows Server 2008 x64 version with SP2 installed. What additional components do you need to obtain and install? (A multiple choice exam question would probably give you a list of components and ask you to select those that are required.)

Objective 1.3: Install Exchange roles

In this exam objective, you might be tested on adding and modifying roles, adding server roles to existing Exchange 2003 or 2007 organizations, and verifying Exchange installation. You need to know when to use the Security Configuration Wizard (SCW), the port requirements for Windows Firewall, and how to install Exchange Server by using standard and custom installation. You should also know how to install Exchange Server by using the command line; provision an Exchange Server; delegate server installation; troubleshoot a failed installation; and add Exchange Server roles after an initial installation.

Exam need to know

- Adding and modifying roles from the command line and the GUI
For example: Do you know what the prerequisites are for installing Exchange Management tools on a workstation running Windows 7?
- Add server roles to existing Exchange 2003 or 2007 organizations
For example: What do you first need to configure before you add the Exchange Server 2010 Edge Transport server role to an existing Exchange Server 2003 organization?

- Verify Exchange installation
For example: How do you access the setup log?
- Security Configuration Wizard
For example: Which tool can you use to roll back a security policy?
- Windows firewall, including port requirements
For example: Which TCP port is used for Mailbox server MAPI access?
- Installing Exchange Server by using standard and custom installation
For example: Which Exchange server roles do you deploy on a single server during a standard installation?
- Installing Exchange Server by using the command line
For example: Which command do you use to start the installation of an Exchange Server 2010 server and deploy the Mailbox server role?
- Provisioning an Exchange Server and delegating server installation
For example: Which command would you issue to provision a server?
- Troubleshooting a failed installation
For example: Which tools are available to troubleshoot a failed installation?
- Adding Exchange Server roles after an initial installation
For example: Which command would you use to add the Client Access server role?

Adding and modifying roles from the command line and the GUI

You should know what permissions are required to install Exchange Server 2010 by running *setup.exe* (which implements the Exchange Installation Wizard GUI) from within an appropriately configured server. You should be aware that you can also run *setup.exe* automatically when you insert the Exchange Server 2010 installation media. You should know that another option is to run *setup.com* from an elevated command prompt. Commands such as *Setup /PrepareSchema* and *Setup /PrepareAD* were discussed earlier in this chapter. Installing Exchange Server 2010 from the command prompt and managing server roles after installation are described later in this Objective.

In a production network, application servers such as messaging servers are often administered from administrative workstations, and you need to know how to install Exchange Administrator tools on such a workstation.

True or false? The Exchange Installation Wizard lets you perform only a typical installation.

Answer: *False.* When you run the Exchange Installation Wizard you are given the choice between performing a typical (or standard) Exchange Server installation and performing a custom Exchange Server installation. When you perform a typical installation, the Hub Transport, Client Access, and Mailbox server roles are deployed on the host server.

True or false? You can administer Exchange from a client workstation.

Answer: *True*. You can install only the Exchange Management tools but not Exchange itself. Typically, you would do this on an administrative workstation running Windows Vista SP2 (or later) or Windows 7. The prerequisites for installing Exchange Management tools on a workstation running Windows 7 are IIS6 Management Console and Microsoft .NET Framework 3.5.1. On a Windows Vista workstation, you need these prerequisites plus Microsoft .NET Framework 3.5 Family Update for Windows Vista x64 and Windows Server 2008 x64, WinRM 2.0, and PowerShell 2.0.

True or false? You can create a public folder database and configure Internet-facing addresses during installation.

Answer: *True*. If you choose to deploy the Mailbox server role, you are asked whether there are any client computers that are running Outlook 2003 or Entourage. If such computers are present, setup creates a public folder database. You can also create a public folder database retrospectively if the need arises.

True or false? If you run *setup.exe*, the wizard performs a readiness check.

Answer: *True*. The Exchange Installation Wizard performs a set of readiness checks based on the roles that you have chosen to install on the server. If these readiness checks complete successfully, then you can proceed with the installation. Otherwise, you must address the specified issues.

MORE INFO To see a more detailed overview of the process of installing Exchange Server 2010, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125143.aspx>.

Add server roles to existing Exchange 2003 or 2007 organizations

You should be aware that you can deploy the Exchange Server 2010 Edge Transport server role in an Existing Exchange 2003 organization before upgrading to Exchange 2010. Keep in mind that by doing this, you can provide anti-spam, antivirus, and transport rules processing for your Exchange organization. You are expected to know what steps to take to deploy and configure an Edge Transport server to act as a smart host in the perimeter network before you start upgrading your existing Exchange 2003 servers to Exchange Server 2010. When you install the first instance of Exchange Server 2010 into an existing Exchange Server 2007 organization, you should install the Client Access server role first, followed by the Hub Transport server role, followed by the Unified Messaging server role, and last, the Mailbox server role.

True or false? If you want to create an Edge Subscription, you must deploy at least one Exchange 2010 Hub Transport server in the Exchange organization and configure the organization for coexistence.

Answer: *True*. Because no computers running Microsoft Exchange Server 2010 are currently deployed in the Exchange organization before you introduce the Edge Transport server role, you cannot use features that rely on Edge Subscription, for example, recipient lookup and safelist aggregation.

True or false? To deploy the Exchange Server 2010 Edge Transport server role, you must first create a Send connector from the Edge Transport server to the Internet.

Answer: *True*. You can use the New Send Connector Wizard in the EMC on the Edge Transport server to create this Send connector. You select Internet as the intended use and specify all (an asterisk) in the SMTP Address Space dialog box. You can also use the EMS *New-SendConnector* cmdlet. For example, the following command creates a Send connector named Internet that uses DNS to route messages:

```
New-SendConnector -Name "Internet" -AddressSpaces * -Usage Internet  
-DNSRoutingEnabled $true
```

MORE INFO To learn more about deploying the Exchange Server 2010 Edge Transport server role in an Existing Exchange 2003 Organization, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124011.aspx>.

EXAM TIP Remember that if you use a smart host to route messages to the Internet, you need to configure the Send connector to use the smart host at its specified IP address instead of DNS to route messages.

True or false? When you introduce the Exchange Server 2010 Client Access server role into an Exchange Server 2007 organization, you need to perform additional configuration steps on your Client Access server.

Answer: *True*. Because the Client Access server role is the first Windows Server 2010 role introduced into the Exchange Server 2007 organization, you need to enable Outlook Anywhere (if used), configure the virtual directories for the Offline Address Book (OAB), Exchange Web Services, Microsoft Exchange ActiveSync, OWA, and Exchange Control Panel (ECP). You also need to configure OWA settings and Exchange ActiveSync authentication settings.

EXAM TIP Remember that Client Access is the first Exchange 2010 server role installed into an Exchange Server 2007 organization, and you need to enable Outlook Anywhere, configure various virtual directories, and configure OWA settings and Exchange ActiveSync authentication settings.

MORE INFO To learn more about installing Exchange 2010 in an existing Exchange 2007 organization, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124350.aspx>.

Verify Exchange installation

You should be aware that when you run the Exchange Installation Wizard, the completion summary indicates whether each step of the setup process has completed successfully. You need to know that you can view the setup log when setup completes by clicking View Setup Log on the Completion page. The exam might test that you know how to view this file directly by using a text editor such as Notepad. The log is stored at *C:\ExchangeSetupLogs\ExchangeSetup.log*.

True or false? You can use EMS commands to verify installation.

Answer: *True*. You can verify that Exchange Server 2010 has been deployed successfully by using the EMS *Get-ExchangeServer* cmdlet. For example, the following command displays information about Exchange Server VAN-EX1:

```
Get-ExchangeServer -Identity VAN-EX1 | Format-List
```

The output of this command will inform you of which roles have been deployed, the path where Exchange files have been installed, the network name of the Exchange server, and the location of the Exchange Server's Active Directory object.

MORE INFO To learn more about verifying an Exchange Server 2010 installation, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125254.aspx>.

Security Configuration Wizard

You should know that the Security Configuration Wizard (SCW) guides you through the process of creating, editing, applying, or rolling back a security policy. You should know what steps to take to create or modify a security policy for a server, based on its role.

True or false? You can use the SCW to minimize the attack surface of a computer.

Answer: *True*. By using the SCW, you can minimize the attack surface of a computer by disabling functionality that is not required by the server in performance of its roles.

MORE INFO For more information about the SCW, consult the TechNet document at [http://technet.microsoft.com/en-us/library/cc771492\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc771492(WS.10).aspx).

Windows firewall, including port requirements

The Exchange Server 2010 setup process configures Windows Firewall with Advanced Security so that all necessary ports required to support the roles that you deploy are open for server and client communication. You should be aware that because this process occurs automatically, it is not necessary to use the SCW tool to configure these settings.

True or false? If an additional hardware firewall is installed, you might need to configure its ports.

Answer: *True*. In some cases, it will be necessary to configure the ports on a separate hardware-based firewall—for example, if you have a hardware firewall separating subnets on your organization's internal network. The most commonly used ports for each role are as follows:

- **25** Hub Transport, Edge Transport server SMTP traffic
- **135** Mailbox server MAPI access
- **80** Client Access server Autodiscover, availability, OWA, Outlook Anywhere, Exchange ActiveSync

- **443** Client Access server secure (SSL) Autodiscover, availability, OWA, Outlook Anywhere, Exchange ActiveSync

MORE INFO To learn more about the network ports that are used by Exchange Server 2010, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb331973.aspx>.

Installing Exchange Server by using standard and custom installation

You should know that typically you install Exchange Server 2010 and deploy the Hub Transport, Client Access, and Mailbox server roles on a single server. However, you should also know what steps you need to take to customize your Exchange deployment and, for example, deploy only one server role. You might want to automate the process and perform unattended installations of Exchange Server 2010. You also might want to delegate installation tasks to your team members without giving them unnecessary privileges in your Exchange organization.

True or false? You must prepare the environment before you install Exchange Server 2010.

Answer: *False*. In general, it is preferable to perform environmental preparation steps separately so that you can ensure that changes replicate successfully before attempting to deploy the first Exchange server in your organization. You can, however, choose to prepare Active Directory as a part of the setup process on the first Exchange Server 2010 server deployed in the forest. If you take this approach, the user account used to deploy Exchange Server 2010 must be a member of the Enterprise Admins, Schema Admins, and Domain Admins groups, as well as a member of the local Administrators group on the server that will host Exchange. When you perform this type of deployment, you also need to install Exchange in the same site and domain as the computer that hosts the Schema Master.

True or false? You must deploy Mailbox and Hub Transport roles in each Active Directory site. You must deploy the Client Access role in each site that has a Mailbox server.

Answer: *True*. For email messages to flow correctly, you need at least one Hub Transport server and one Mailbox server at each site. You need at least one Client Access server in each site that has a Mailbox server.

True or false? You can deploy the Unified Messaging and Edge Transport roles on a single Exchange server.

Answer: *False*. You cannot deploy the Edge Transport role on the same server as other roles.

Installing Exchange Server by using the command line

You should know how to start installation and optionally specify an answer file with a command such as *Setup.com /Mode:Install /Roles:Mailbox*.

True or false? You can use *setup.com* in an unattended installation script.

Answer: *True*. You can use *setup.com* to specify the location of a local directory that hosts updates, install language packs, and specify installation options such as whether Exchange supports legacy Outlook clients. You can include the *setup.com* command with all required options in an unattended installation script. The user account used to uninstall or modify Exchange must be a member of the Organization Management role as well as a member of the local Administrators group on the host server.

EXAM TIP Performing an unattended installation of Exchange Server 2010 is not specifically mentioned in the 70-662 exam objectives and is unlikely to be tested in depth. It is probably sufficient to know that you need to include a *setup.com* command in the installation script. Be careful to distinguish between *setup.com*, which you use to install or remove Exchange roles from the command line, and *setup.exe*, which runs the Exchange Server 2010 installation routine from Windows Explorer.

MORE INFO You can find a list of *setup.com* options and more about performing unattended installations in the TechNet document at <http://technet.microsoft.com/en-us/library/aa997281.aspx>.

Provisioning an Exchange Server and delegating server installation

The exam might test that you know what steps to take to delegate the Organization Management role to enable another user to deploy Exchange Server 2010 in an existing Exchange 2010 organization. If, however, you want someone at a remote branch office to install Exchange Server 2010 and do not want to add this user to this role group, you should be aware that you can configure a Delegated Setup role group so that an account in that group is permitted to install a single, specified Exchange server in the domain. This allows the local administrator to complete the designated task without conferring unnecessary administrative privileges.

True or false? Members of the Delegated Setup role group can provision servers.

Answer: *False*. Local administrators who are members of the Delegated Setup role group are able to deploy Exchange Server 2010, provided the host server has been provisioned by a member of the Organization Management role group. Members of the Organization Management role group can provision servers by using the following command:

```
Setup.com /NewProvisionedServer:ServerName
```

The first server in the domain must be installed by using a user account that is a member of the Organization Management role group as well as the local Administrators group. Members of the Delegated Setup role are also unable to uninstall an Exchange Server. It is only possible to uninstall or remove Exchange Server 2010 by using an account that is a member of the Organization Management role as well as the local Administrators group on the host server.

MORE INFO To learn more about delegated setup, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201741.aspx>.

Troubleshooting a failed installation

You should be aware that if you carry out a GUI-based installation, the Exchange Installation Wizard indicates whether each task you perform completes successfully, and why a task failed. You should know how to troubleshoot a failed installation by using the same procedures that you employ to verify a successful one, namely, running the *Get-ExchangeServer* cmdlet or viewing the setup log.

Adding Exchange Server roles after an initial installation

The exam might test that you know how to use *setup.com* to deploy and remove Exchange Server 2010 roles. The *setup.com* options that you are most likely to be tested on in the 70-662 exam involve installing, adding, or removing roles. You should know that you can also use the Programs And Features item in Control Panel to add or remove roles from a computer running Exchange Server 2010 after setup has completed.

True or false? You cannot use abbreviations in a *setup.com* command.

Answer: *False*. *Setup.com* commands for installing roles can use abbreviations. For example, you can specify roles by using the following terms:

- HubTransport, HT, or H
- Mailbox, MB, or M
- ClientAccess, CA, or C
- EdgeTransport, ET, or E
- UnifiedMessaging, UM, or U

You can also abbreviate the option */mode:install* to */M:Install*.

For example, the command

```
Setup.com /mode:install /role:Mailbox,HubTransport
```

accomplishes the same thing as the command:

```
Setup.com /mode:install /r:M,H
```

This can be further abbreviated as follows:

```
Setup.com /M:Install /r:M,H
```

In all its formats, this command installs the Mailbox and Hub Transport server roles.

True or false? You can use the *setup.com* command to remove roles.

Answer: *True*. The */mode:uninstall* option removes a role. If no specific roles are selected, this option removes the Exchange installation. For example, the following command removes the Hub Transport server role:

```
Setup.com /M:Uninstall /r:HT
```

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What command do you issue from an elevated command prompt to add the Hub Transport server role on a computer running Exchange Server 2010 SP2?
2. You have just completed the installation of Exchange Server 2010 SP2 on a server running Windows Server 2008 R2, and you want to view the setup log by using Notepad. By default, where is this file stored?
3. What are the prerequisites for installing Exchange Management tools on a workstation running Windows 7?
4. You are a member of the Organization Management role group and you want another user who is a member of the Delegated Setup role group to deploy Exchange Server 2010 SP2 on the server VAN-SRV1. What command do you issue to provision this server?
5. You want to deploy the Exchange Server 2010 Edge Transport server role in an Exchange Server 2003 organization that currently has no servers running Exchange Server 2010 configured. What is the first step you should take?

Objective 1.4: Create and Configure databases

In this exam objective, you might be tested on setting database limits and retention limits. You need to know what role-based access control (RBAC) permissions are required for database creation, and how to create new mailbox databases, move the mailbox database and transaction log locations, and configure mailbox database settings. You also need to know how to create and manage public folder databases, set the default public folder database, and configure public folder database settings. You need to be able to maintain, mount, and dismount databases.

Exam need to know

- Set database limits
For example: Do you know how to configure a size limit for a mailbox database?
- Set retention limits
For example: Do you know how to configure deleted item retention times?
- Set RBAC permissions for database creation
For example: Do you know what RBAC role membership you need to create a mailbox database?
- Naming conventions
For example: Do you know how to specify the default database name that is created when you install the Mailbox server role?
- Create and use GUI and Windows PowerShell
For example: Do you know how to create a new mailbox database by using the appropriate EMC wizard?

- Create and manage public folder databases
For example: Do you know how to create a new public folder database?
- Set Default Public Folder Database
For example: Do you know how to specify a default public folder database for a mailbox database?
- Maintenance
For example: Do you know how to configure a database maintenance schedule?
- Mount and dismount databases
For example: Do you know how to dismount a database?
- Create new mailbox databases
For example: Do you know how to use the EMS to create a mailbox database?
- Configure mailbox database settings
For example: Do you know how to configure the warning quota for a mailbox database?
- Move the mailbox database and transaction log locations
For example: Do you know how to specify a new path to the database file and move the file to the new location?
- Configure public folder database settings
For example: Do you know how to configure the quota notification schedule for all public folders in a public folder database?

Set database limits

You should be aware that Exchange Server 2010 stores mailboxes and public folders in Exchange databases and that Mailbox servers can contain both public folder and mailbox databases. Each database is stored in a single Extensible Storage Engine database (.edb) file.

True or false? You can use the EMC to configure database size limits.

Answer: *False*. You can configure options by using the database Properties dialog box in the EMC. The Limits tab lets you specify the limits at which warning messages are sent, Send is prohibited, and Send and Receive are prohibited. It does not, however, let you specify the size limit for the mailbox database.

True or false? You can use the EMS to configure database size limits.

Answer: *False*. To do this, you need to configure the registry of the server running Exchange Server 2010 that hosts the database. You need to know the database GUID, which you can obtain by using the EMS *Get-MailboxDatabase* cmdlet. You then use the Registry Editor (regedit.exe) to locate and edit the following registry subkey:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\MSExchangeIS
\<server name> \Private-<database GUID>
```

MORE INFO To learn more about modifying database size limits, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb232092.aspx>.

Set retention limits

The exam might test that you know how to set retention limits such as the deleted items and deleted mailboxes retention limits. You should also know what steps to take to configure a database so that items are not deleted until the database has been backed up. You can configure these settings by accessing the Limits tab of the database Properties dialog box.

True or false? You can use the EMS to configure database properties.

Answer: *True*. For example, the following command configures a deleted item retention time of 14 days for the mailbox database MyMailboxDatabase:

```
Set-MailboxDatabase -Identity "MyMailboxDatabase"  
-DeletedItemRetention 14.00:00:00
```

Set RBAC permissions for database creation

You should be aware that to create mailbox or public folder databases, you need to be (at least) a member of the Organizational Management RBAC role group. Members of this role group have administrative access to the entire Exchange 2010 organization and can perform any task against any Exchange 2010 object, except for mailbox searches and management of top-level management roles. You also need to be a member of the Server Management RBAC role group on the Mailbox server on which you are creating the database. Members of this role group can configure server-specific mailbox features, such as database copies, certificates, transport queues, Send connectors, virtual directories, and client access protocols.

MORE INFO To learn more about mailbox permissions, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638132.aspx>.

Naming conventions

You should be aware that you can use the *MdbName* parameter with the *setup.com* command to enter the default database name that is created when you install the Mailbox server role. This name must be unique within the organization. It is good practice to ensure that database names meet your organization's naming convention. Naming conventions make it easier to identify objects in your organization.

For example, to specify the default database name *MailboxDatabase01*, you would use the following command:

```
Setup.com /mode: Install /roles: Mailbox /MdbName:. MailboxDatabase01
```

Create and use GUI and Windows PowerShell

The exam might test that you can use the EMC New Mailbox Database Wizard or New Public Folder Database Wizard to create a mailbox database and a public folder database, respectively. Similarly, you should know how to use the EMS *New-MailboxDatabase* and *New-PublicFolderDatabase* cmdlets to perform the same tasks. Creating mailbox and public folder databases are discussed later in this Objective. You can edit the properties of mailbox or public folder databases by accessing the Properties dialog box for the relevant database or by using the EMS *Set-MailboxDatabase* and *Set-PublicFolderDatabase* cmdlets. With the Move Database Path Wizard, you can change a database location, as you can with the EMS *Move-DatabasePath* cmdlet.

Create and manage public folder databases

You should know that a public folder database is an Exchange database that stores public folders and system folders, and assists in the replication of the folders with other Exchange servers. A Mailbox server can host a maximum of one public folder database. Exchange Server 2010 supports public folder functionality. You need to configure public folders if your clients are using IMAP4 or WebDAV clients such as Entourage or Microsoft Outlook 2003 SP1 (or earlier). You need to be granted the Exchange Organization Administrator role and be a member of the Local Administrators group on the target server to create and manage a public folder database.

True or false? You can use the *New-PublicFolderDatabase* cmdlet to create a public folder database.

Answer: *True*. You can use either the New Public Folder Database Wizard in the EMC or the EMS *New-PublicFolderDatabase* cmdlet to create a public folder database. For example, the following command creates a public folder database named My Public Folder Database and specifies its file path and log file path:

```
New-PublicFolderDatabase -Name "My Public Folder Database"
-EdbFilePath "C:\Program Files\Microsoft\Exchange Server\Mailbox\
PublicDatabase.edb" -LogFolderPath "D:\ExchangeDatabases\Public\Log\
PublicDatabase"
```

MORE INFO To learn more about using public folder scripts, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997966.aspx>.

True or false? Removing user or system public folders from a public folder database by using the EMS is a two-stage procedure.

Answer: *True*. You first need to identify the public folder by using the EMS *Get-PublicFolder* cmdlet and pipe the result into the EMS *Remove-PublicFolder* cmdlet. The following command removes all user public folders from the public folder database on the mailbox server VAN-EX1:

```
Get-PublicFolder -Server VAN-EX1 "\" -Recurse -ResultSize:Unlimited |
Remove-PublicFolder -Server VAN-EX1 -Recurse -ErrorAction:SilentlyContinue
```

The following command removes all system public folders from the public folder database on the mailbox server VAN-EX1:

```
Get-PublicFolder -Server VAN-EX1 "\\Non_Ipm_Subtree" -Recurse  
-ResultSize:Unlimited | Remove-PublicFolder -Server VAN-EX1 -Recurse  
-ErrorAction:SilentlyContinue
```

MORE INFO To learn more about the *Get-PublicFolder* and *Remove-PublicFolder* cmdlets, including a description of the parameters used in the previous two commands, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa997615.aspx> and <http://technet.microsoft.com/en-us/library/bb124894.aspx>.

Set default public folder database

You should be aware that each mailbox database is configured with a default public folder database. MAPI client applications such as Outlook 2010 open a connection to the default public folder database and perform operations that include viewing, creating, and deleting public folders against the server that contains that database. You need to know when it is necessary or advisable to change the default public folder database for a mailbox database. For example, in a coexistence scenario, you might need to change the default public folder database if your public folder database and your mailbox database are associated with different versions of Exchange.

True or false? You can use the *New-MailboxDatabase* command to change the default public folder database associated with a mailbox database.

Answer: *False*. You can specify a default public folder database on the Client Settings tab of the mailbox database Properties dialog box. You can also use the *Set-MailboxDatabase* (not the *New-MailboxDatabase*) cmdlet. For example, the following command specifies the public folder database PFDB01 as the default public folder database for mailbox database MailDatabase01:

```
Set-MailboxDatabase -Identity "MailDatabase01"  
-PublicFolderDatabase "PBDB01"
```

MORE INFO To learn more about specifying a default public folder database, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb629522.aspx>.

Maintenance

To ensure that your databases continue to operate efficiently, Microsoft recommends that you perform nightly maintenance on mailbox databases and public folder databases. Exchange Mailbox servers automate the maintenance tasks, such as the removal of items that have passed their retention period, the removal of unused indexes, and other cleanup tasks, but the exam might test that you know how to set the maintenance schedule.

True or false? There is no Maintenance tab in the Properties dialog box for a public folder database.

Answer: *True*. You set the maintenance schedule for a public folder database on the General tab. For a mailbox database, you use the Maintenance tab. You can also

use the *Set-MailboxDatabase* or *Set-PublicFolderDatabase* cmdlet as appropriate. For example, the following command sets the database schedule for the mailbox database MailDatabase01 on Server MBX01 to run between 02:00 and 04:00 hours on Sundays and Wednesdays:

```
Set-MailboxDatabase -Identity "MBX01\MailDatabase01"  
-MaintenanceSchedule "Sun.2:00-Sun.4:00","Wed.2:00-Wed.4:00"
```

MORE INFO To learn more about specifying a maintenance schedule for a mailbox database, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb691410.aspx>.

Mount and dismount databases

The exam might test that you know how to mount and dismount a mailbox database. You should be aware that mounting a mailbox database enables it to be used to provision new mailboxes.

True or false? When you use the EMS to create a new mailbox database, you can specify that it is mounted when it is created.

Answer: *False*. When you use the EMC to create a mailbox database, you would typically specify that it is mounted when it is created. However, if you use the *New-MailboxDatabase* cmdlet to create a mailbox database, you need to mount it after it is created. You can use the EMS *Mount-Database* cmdlet to do this. For example, the following command mounts the mailbox database *MyMailboxDatabase*:

```
Mount-Database -Identity MyMailboxDatabase.
```

The following command dismounts the mailbox database *MyMailboxDatabase*:

```
Dismount-Database -Identity MyMailboxDatabase
```

EXAM TIP Remember that the *New-MailboxDatabase* cmdlet syntax requires the *Name* parameter, whereas the syntax of cmdlets to configure, mount, dismount, or remove a database requires the *Identity* parameter.

MORE INFO To learn more about the *Remove-MailboxDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997931.aspx>.

Create new mailbox databases

You should know how to create a mailbox database by running the New Mailbox Database Wizard from the EMC and specifying the database name, the server on which it resides, the location of the database file path, the location of the log folder path, and whether the database should be mounted when it is created. Mounting puts the database online so that its contents are available to users

True or false? You can create a mailbox database by using the EMS.

Answer: *True*. You can create a mailbox database by using the *New-MailboxDatabase* cmdlet. For example, the following command creates the mailbox database *MyMailboxDatabase* on server *VAN-EX1* and specifies the *.edb* database file path and the log folder path:

```
New-MailboxDatabase -Name "MyMailboxDatabase" -Server VAN-EX1  
-EdbFilePath C:\MyDatabaseFiles\MyMailboxDatabase.edb  
-LogFolderPath D:\MyDatabaseFiles\LogFolder
```

MORE INFO To learn more about the *New-MailboxDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997976.aspx>.

True or false? You can use either the EMC or the EMS to remove a mailbox database.

Answer: *True*. To use the EMC, you click Mailbox under Organization Configuration. In the Work pane, click the mailbox database that you want to remove, and then in the Actions pane, click Remove. In the EMS, you use the *Remove-MailboxDatabase* cmdlet. For example, the following command removes the mailbox database *MyMailboxDatabase*:

```
Remove-MailboxDatabase -Identity MyMailboxDatabase
```

Configure mailbox database settings

The exam might check that you know how to set the following storage limits: Issue warning at (MB); Prohibit send at (MB); and Prohibit send and receive at (MB). You also need to know what steps you need to take to customize the Warning message interval, which is the time at which mailboxes are scanned for compliance with their storage limits. Other settings such as deleted item retention time and default public folder database are discussed elsewhere in this Objective.

True or false? You can use the *Set-MailboxDatabase* cmdlet to configure mailbox database settings.

Answer: *True*. You can use the EMC to access the database Properties dialog box or use the EMS *Set-MailboxDatabase* cmdlet. For example, the following command sets the warning quota to 600 MB, the prohibit send quota to 750 MB, and the prohibit send and receive quota to 950 MB on the mailbox database *My MailboxDatabase*:

```
Set-MailboxDatabase -Identity "My MailboxDatabase" -IssueWarningQuota 600MB  
-ProhibitSendQuota 750MB -ProhibitSendReceiveQuota 950MB
```

MORE INFO To learn more about configuring mailbox database properties, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297937.aspx>.

Move the mailbox database and transaction log locations

You need to know that each mailbox database has a single set of transaction logs that record changes. Their primary function is to ensure that Exchange Server 2010 follows the Atomicity, Consistency, Isolation, and Durability model for databases.

Each individual database and its transaction logs are by default stored in the same folder—but in a different folder from all other databases. By default, the folders that hold the databases are stored in the folder path `C:\Program Files\Microsoft\Exchange\Server\v14\Mailbox`.

EXAM TIP In Exchange Server 2010, each database must have its own set of transaction logs. If you see an answer in the 70-622 examination that proposes shared transaction logs or a storage group, then you can reject this answer.

True or false? You can use the *Set-MailboxDatabase* cmdlet to configure the database and transaction logs location.

Answer: *False*. In the EMC, you can right-click the database, and then click Move Database Path. You can also use the EMS *Move-DatabasePath* (not the *Set-MailboxDatabase*) cmdlet. For example, the following command configures a new path for the location of the mailbox database `MyMailDatabase01` and moves the related files to that location:

```
Move-DatabasePath -Identity MyMailDatabase01  
-EdbFilePath C:\MyFolder\ MyMailDatabase01.edb
```

MORE INFO To learn more about moving the mailbox database path, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351168.aspx>.

Configure public folder database settings

You should be aware that you can access the Properties dialog box for a public folder database through the EMC. This provides access to the General, Replication, Limits, and Public Folder Referral tabs. You should also know how to use the EMS to obtain and modify public folder database settings.

True or false? You can use the EMS to obtain but not to modify public folder database settings

Answer: *False*. You can use the EMC or the EMS to configure public folder database settings. The EMS *Get-PublicFolderDatabase* cmdlet can obtain the settings for all public folder databases in an Exchange 2010 organization or for a specified public folder database. For example, the following command lists the settings for all public folder databases in an Exchange organization:

```
Get-PublicFolderDatabase | fl
```

The following command lists the properties of the public folder database `MyPublicFolderDatabase` on the server `ServerA`:

```
Get-PublicFolderDatabase -Identity "ServerA\MyPublicFolderDatabase"
```

With the EMS *Set-PublicFolderDatabase* cmdlet, you can configure public server database settings. For example, the following command sets the issue warning quota to 2,000 MB and configures the quota notification schedule for all public folders in the public folder database named `MyPublicFolderDatabase`:

```
Set-PublicFolderDatabase -Identity MyPublicFolderDatabase  
-IssueWarningQuota 2000MB -QuotaNotificationSchedule "Mon.3:00 AM-Mon.3:20  
AM, Wed.3:00 AM-Wed.3:20 AM, Fri.3:00 AM-Fri.3:20 AM"
```

MORE INFO To learn more about the *Get-PublicFolderDatabase* and *Set-PublicFolderDatabase* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa998827.aspx> and <http://technet.microsoft.com/en-us/library/aa997225.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have used the *New-MailboxDatabase* cmdlet to create a mailbox database called Finance on the server DEN-EX2. You want to enable this mailbox database to be used to provision new mailboxes. What EMS command do you issue?
2. You want to ensure that mailboxes in a mailbox database are retained for six weeks after deletion. What EMS cmdlet and parameter should you use to do this?
3. You want to set the default public folder database for the mailbox database named HRD Mail to the database HRD-DB on server GLAS-MBX1. What EMS command do you issue?
4. You want to ensure that the mailbox database named Manufacturing undergoes the removal of items that have passed their retention period, the removal of unused indexes, and other cleanup tasks. You want to schedule these operations so that they occur every Saturday between 10:15 and 11:45 PM. What EMS command do you issue?
5. You need to move the transaction log files for a specified mailbox. What EMS cmdlet do you use to carry this out?

Objective 1.5: Create and configure address lists

In this exam objective, you might be tested on creating and configuring email address policies, address lists, and OABs. You need to know how to publish address lists and use filterable properties.

Exam need to know

- Update legacy address lists
For example: Do you know how to upgrade default recipient filters on a legacy address list?
- Configure Offline Address lists
For example: Do you know what distribution method Outlook 2007 and Outlook 2010 clients typically use to access an OAB?

- Publish address lists
For example: Do you know how to add or remove address lists from an OAB?
- Filterable properties
For example: Do you know in what situations filterable policies are typically used?
- Creating and configuring email address policies
For example: Do you know how to edit an existing email address policy?
- Creating and configuring address lists
For example: Do you know how to create an address list that uses recipient filters to determine its membership?
- Creating and configuring OABs
For example: Do you know how to move OAB generation to another server?

Update legacy address lists

In a coexistence or migration scenario, you need to be aware that LDAP filtering syntax was used when customizing default Exchange 2003 address lists created during an Exchange installation. In Exchange 2010, the OPATH filtering syntax (used by PowerShell) replaces the LDAP filtering syntax. You need to know how to update the filtering syntax for any legacy default address lists from LDAP to OPATH. The following default address lists might need to be upgraded:

- All Users
- All Groups
- All Contacts
- Public Folders
- Default Global Address List

True or false? You use the EMS *Set-AddressList* cmdlet to upgrade default recipient filters. You cannot use the EMC for this purpose.

Answer: *True*. For example, the following command updates the All Groups default legacy address list:

```
Set-AddressList "All Groups" -IncludedRecipients MailGroups
```

MORE INFO To learn more about upgrading default address lists, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335105.aspx>.

Configure Offline Address lists

You should know that an OAB is a copy of a collection of offline address lists, generated on an Exchange server and then downloaded to a client computer so that a Microsoft Outlook user can access the information it contains while disconnected from the Exchange organization. You should be aware that Exchange Server 2010 generates OAB files, compresses them, and then places them on a local share. You should know what steps to take to choose the address lists that are available to

offline users, and how to configure the distribution method. An OAB can be distributed to client computers by using web-based or public folder distribution (or both).

True or false? Outlook 2007 and Outlook 2010 clients can access the OAB by using the web-based distribution method.

Answer: *True*. Web-based distribution does not require public folders. When the OAB is generated, the Client Access server replicates the files. In web-based distribution, the HTTPS web address is the distribution point from which client computers can download the OAB.

True or false? Outlook 2003 SP1 or earlier clients access the OAB through public folder distribution.

Answer: *True*. Outlook 2003 SP1 (or earlier) clients that are working offline or through a dial-up connection access the OAB through public folder distribution. The OAB generation process places files directly in a public folder, and Exchange public folder replication copies the data to other public folder distribution points. OABs that use the public folder distribution method are sometimes termed *Legacy OABs*.

Publish address lists

You should know what steps to take to publish an address list by adding it to an OAB that is distributed to email clients. You should be aware that you can use the New Online Address Book Wizard in the EMC to create an OAB and specify either web-based or public folder distribution. If you use the EMS *New-OfflineAddressBook* cmdlet, an OAB with web-based distribution is created by default, unless you specify public folder distribution by using the *PublicFolderDistributionEnabled* parameter. For example, the following command creates the OAB MyOAB on DEN-EX1. This OAB uses the web-based distribution method and the default virtual directory:

```
New-OfflineAddressBook -Name "MyOAB" -AddressLists "\My Address List"  
-Server DEN-EX1 -VirtualDirectories "DEN-EX1\OAB (Default Web Site)"
```

The following command creates an OAB named Other-OAB on server VAN-EX2 that uses the public folder distribution method and uses the public folder database MyPublicDatabase:

```
New-OfflineAddressBook -Name "Other-OAB" -AddressLists "My Address List"  
-Server VAN-EX2 -PublicFolderDatabase "MyPublicDatabase"  
-PublicFolderDistributionEnabled $true -Versions Version3,Version4
```

MORE INFO To learn more about the *New-OfflineAddressBook* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123692.aspx>.

True or false? You can use only the EMS *Set-OfflineAddressBook* cmdlet to add or remove address lists from an OAB.

Answer: *False*. You can use the EMC to add or remove an address list from an OAB by accessing the OAB Properties dialog box. You can also use the EMS *Set-OfflineAddressBook* cmdlet to add or remove address lists from an OAB. For example, if you have an OAB named MyOAB that contains address lists MyAddressList01 and

MyAddressList02, you would issue the following command to add the address list MyAddressList03:

```
Set-OfflineAddressBook -Identity "MyOAB"  
-AddressLists MyAddressList01,MyAddressList02,MyAddressList03
```

If you subsequently wanted to remove MyAddressList01 from the OAB, you would issue the following command:

```
Set-OfflineAddressBook -Identity "MyOAB"  
-AddressLists MyAddressList02,MyAddressList03
```

MORE INFO To learn more about the *Set-OfflineAddressBook* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996330.aspx>.

True or false? You can use the *Set-OfflineAddressBook* cmdlet to select the server on which the OAB is generated.

Answer: *False*. You can perform this task in the EMC by using the Move Offline Address Book Wizard. In the EMS you use the *Move-OfflineAddressBook* cmdlet. For example, the following command moves the generation task for a custom OAB named MarketingOAB to the server VAN-EX2:

```
Move-OfflineAddressBook -Identity "MarketingOAB" -Server VAN-EX2
```

MORE INFO To learn more about the *Move-OfflineAddressBook* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998191.aspx>.

Filterable properties

You should know how to configure filterable properties in (for example) email policies, for which you might specify that a recipient is in a State or Province, a Department, or a Company. How you would use these filterable properties is discussed in the next section. Also, if you are using the *RecipientFilter* parameter to create an address list and want the address list to include recipients that are mailbox users and have *StateOrProvince* set to (for example) New York, you can again specify filterable properties to define this condition. These settings are discussed in the relevant sections later in this Objective.

Creating and configuring email address policies

You should be aware that a recipient must have an email address to receive or send email messages, and that email address policies generate the primary and secondary email addresses for your recipients. You should know how to use the EMC or the EMS to create and configure email address policies. You need to be a member of the Server Management and Organization Management role groups to create and configure email address policies.

True or false? You can use the EMS *New-EmailAddressPolicy* cmdlet to create an email address policy.

Answer: *True*. You can use the New E-Mail Address Policy Wizard in the EMC to create an email address policy. You can also use the EMS *New-EmailAddressPolicy* cmdlet. For example, the following command creates an email address policy that includes mailbox users in the Southeast Australia Adatum offices who will have email addresses that include their last name combined with the first two letters of their first name:

```
New-EmailAddressPolicy -Name "Southeast Australia"  
-IncludedRecipients MailboxUsers  
-ConditionalStateorProvince "Victoria","New South Wales"  
-EnabledEmailAddressTemplates "SMTP:%s%2g@southeast.adatum.com"
```

MORE INFO To learn more about creating an email address policy, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125137.aspx>.

True or false? You should always use the EMC to edit an address policy.

Answer: *False*. You can use the EMC or the EMS to edit an email address policy. However, if you created the policy by using the EMS, some email address policy settings that you can set cannot be managed in the EMC. Microsoft recommends that if you used the EMS to create a policy, you should use the same tool to edit it.

You can use the Edit E-mail Address Policy Wizard in the EMC or the EMS *Set-EmailAddressPolicy* cmdlet to edit an email address policy. For example, the following command edits the email address policy Southeast Australia that currently includes recipients in Victoria and New South Wales to also include recipients in South Australia.

```
Set-EmailAddressPolicy -Identity "Southeast Australia"  
-ConditionalStateorProvince "Victoria","New South Wales","South Australia"
```

You should then issue the following EMS command to apply the policy to all existing users within the policy scope:

```
Update-EmailAddressPolicy -Identity "Southeast Australia"
```

MORE INFO To learn more about editing email address policies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124580.aspx>.

Creating and configuring address lists

You should be aware that an address list is a collection of recipient and other AD DS objects. The exam might ask you what object types an address list can contain, such as users, contacts, groups, public folders, conferencing, and other resources. You need to be assigned to the Organization Management role group to create an address list.

True or false? You can create an address list by using the *Set-AddressList* cmdlet.

Answer: *False*. You can use the EMC New Address List Wizard to create an address list. You can also use the EMS *New-AddressList* (not the *Set-AddressList*) cmdlet. For example, the following command creates the address list PennsylvaniaAddressList

by using the *RecipientFilter* parameter, and includes recipients that are mailbox users and have *StateOrProvince* set to Pennsylvania:

```
New-AddressList -Name PennsylvaniaAddressList  
-RecipientFilter {((RecipientType -eq 'UserMailbox')  
-and (StateOrProvince -eq 'Pennsylvania'))}
```

If you create an address list in the EMS, you need to apply it by using the EMS *Update-AddressList* cmdlet or the Apply Address List Wizard in the EMC.

MORE INFO To learn more about the *New-AddressList* and *Update-AddressList* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa996912.aspx> and <http://technet.microsoft.com/en-us/library/aa997982.aspx>.

True or false? When you are creating an address list, you can define recipient filters.

Answer: *True*. You use recipient filters to determine what recipients are included in the list. For example, suppose that you want to create the address list *ColoradoStaff* that includes recipients who are mailbox users and have *StateOrProvince* set to Colorado. You then want to create the child address list *DenverStaff* in the *ColoradoStaff* parent container.

To create the address *ColoradoStaff* parent you would issue the following EMS command:

```
New-AddressList -Name "ColoradoStaff"  
-RecipientFilter {((RecipientType -eq 'UserMailbox')  
-and (StateOrProvince -eq 'Colorado'))}
```

To create the child address list *DenverStaff* in the *ColoradoStaff* parent container, you would issue the following EMS command:

```
New-AddressList -Name "DenverStaff" -Container "\ColoradoStaff"  
-ConditionalCustomAttribute1 "Denver"
```

MORE INFO To learn more about managing address lists, access the TechNet document at <http://technet.microsoft.com/en-us/library/aa997686.aspx> and follow the links.

True or false? You can use the EMS *Set-AddressList* cmdlet to configure an address list.

Answer: *True*. For example, the following command configures the address list *Adatum Delaware Branch* to include recipients that work in Adatum's Delaware office:

```
Set-AddressList -Identity "Adatum Delaware Branch"  
-ConditionalCompany Adatum -ConditionalStateOrProvince Delaware
```

EXAM TIP You can use the EMS *Get-AddressList* cmdlet to obtain the distinguished name (DN) of an address list and the EMS *Get-Recipient* cmdlet to list address list members.

MORE INFO To learn more about the *Set-AddressList* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998847.aspx>.

True or false? You can use the *Update-AddressList* cmdlet to update an address list, based on conditional attributes.

Answer: *True*. The following command updates the address list Room3A under the container All Users\Administration to include all users who have this custom attribute:

```
Update-AddressList -Identity "All Users\Administration\Room3A"
```

MORE INFO For more information about the *Update-AddressList* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997982.aspx>.

True or false? You use the EMS *New-GlobalAddressList* cmdlet to create a Global Address List (GAL).

Answer: *True*. For example, the following command creates a GAL named Contoso Global for recipients who are mailbox users and have their company listed as Contoso:

```
New-GlobalAddressList -Name "Contoso Global"  
-IncludedRecipients MailboxUsers -ConditionalCompany Contoso
```

EXAM TIP Exchange 2010 SP2 introduces the Address Book Policy (ABP) object. This can be assigned to a mailbox user and determines the GAL, OAB, room list, and address lists that are visible to that mailbox user. This enhancement helps to accomplish GAL separation for an on-premises organization that needs to run disparate GALs.

MORE INFO To learn more about the enhancements introduced by Exchange Server 2010 SP2, consult the TechNet document at <http://technet.microsoft.com/en-us/library/hh529924.aspx>.

For more information about the *New-GlobalAddressList* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123785.aspx>.

Creating and configuring OABs

As mentioned earlier in this Objective, you can use the EMC New Online Address Book Wizard or the EMS *New-OfflineAddressBook* cmdlet to create an OAB. The exam might test that you know how to configure OAB properties and move the generation task for an OAB to another server. You should know how to edit the OAB Properties dialog box in the EMC or use the EMS *Set-OfflineAddressBook* cmdlet to configure OAB properties. For example, the following command modifies the time and date at which OAB generation occurs for MyOAB:

```
Set-OfflineAddressBook -Identity "MyOAB" -Schedule "Sat.2:00 AM-Sat.2:15 AM"
```

True or false? You can use the EMC Move Offline Address Book Wizard to move an OAB generation server.

Answer: *True*. You can also use the EMS *Move-OfflineAddressBook* cmdlet. For example, the following command moves the generation task for a custom OAB named MarketingOAB to the server VAN-EX2:

```
Move-OfflineAddressBook -Identity "MarketingOAB" -Server VAN-EX2
```

MORE INFO To learn more about the *Move-OfflineAddressBook* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998191.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of the chapter.

1. You have created a custom OAB named WingTipToysGlasow. You want to move the generation task for this OAB from the server GLA-EX1 to the server GLA-EX2. What EMS command do you issue?
2. You want to create a GAL named Fabrikam – All Employees to include all mailbox users employed by Fabrikam. What EMS command do you issue?
3. You want to create an OAB named Offline-Contoso-Managers based on the Contoso-Managers address list. This OAB should be generated on the server named GlasgowMBX1 and should be available to Outlook 2003 and other MAPI clients. What EMS command should you issue?
4. What EMS cmdlet can you use to add or remove address lists from an OAB?
5. You want to create an email address policy for adatum.com that configures email addresses so that a recipient's last name is combined with the first two letters of his given name. For example: Don Hall would be halldo@adatum.com. What setting would you specify for the *EnabledEmailAddressTemplates* parameter of the *New-EmailAddressPolicy* cmdlet?

Answers

This section contains the answers to the "Can you answer these questions?" sections in this chapter.

Objective 1.1: Prepare the infrastructure for Exchange

1. You need to update the Windows 2000 Server domain controllers to Windows Server 2003 SP2. If the hardware specifications of these servers do not support this, then you need to demote them to member servers or remove them from the network. You can then raise the domain functional level to Windows Server 2003. By doing this, you in turn raise the forest functional level to Windows Server 2003.
2. The server running Windows Server 2008 Standard edition with SP2 (x64).
3. The *Setup /PrepareLegacyExchangePermissions* command.

4. *Setup /PrepareLegacyExchangePermissions, Setup /PrepareLegacyExchangePermissions, Setup /PrepareSchema, Setup /PrepareAD, and Setup /PrepareDomain*, in that order.
5. You issue the *dsquery server -hasfsmo* schema command.

Objective 1.2: Install Exchange prerequisites

1. *Servermanagercmd.exe -ip exchangetypical.xml*
2. RSAT, Active Directory Lightweight Directory Services, and .NET Framework 3.5.1
3. The 2007 Office System Converter: Microsoft Filter Pack
4. Client Access
5. The required additional components include the following:
 - Microsoft .NET Framework 3.5 SP1.
 - Microsoft .NET Framework 3.5 Family Update for Windows Vista x64, and Windows Server 2008 x64.
 - Microsoft Management Console (MMC) 3.0.
 - Windows Remote Management (WinRM) 2.0.
 - Windows PowerShell V2.
 - 2007 Office System Converter: Microsoft Filter Pack. This is only necessary if you intend to deploy the Hub Transport or Mailbox server role on the computer.

Objective 1.3: Install Exchange roles

1. You issue the command *setup.com /mode:install /role:HubTransport*. This can also be entered as *setup.com /M:Install /R:HT* or *setup.com /M:Install /R:H*. Note that the command is not case-sensitive.
2. It is stored at *C:\ExchangeSetupLogs\ExchangeSetup.log*.
3. The prerequisites are IIS6 Management Console and Microsoft .NET Framework 3.5.1.
4. You issue the *Setup.com /NewProvisionedServer VAN-SRV1* command.
5. You should first create a Send connector from the Edge Transport server to the Internet.

Objective 1.4: Create and configure databases

1. The *Mount-Database -Identity Finance* command.
2. You use the *Set-MailboxDatabase* cmdlet with the *DeletedItemRetention* parameter.
3. The *Set-MailboxDatabase -Identity "HRD Mail" -PublicFolderDatabase "GLAS-MBX1\HRD-DB"* command.
4. The *Set-MailboxDatabase -Identity Production -MaintenanceSchedule 6.22:15-6.23:45* command.
5. The *Move-DatabasePath* cmdlet.

Objective 1.5 Create and configure address lists

1. You issue the *Move-OfflineAddressBook -Identity " WingTipToysGlasow " -Server GLA-EX2* command.
2. You issue the *New-GlobalAddressList -Name "Fabrikam - All Employees" -IncludedRecipients MailboxUsers -ConditionalCompany "Fabrikam"* command.
3. You should issue the *New-OfflineAddressBook -name "Offline-Contoso-Managers" -Server GlasgowMBX1 -AddressLists Contoso-Managers -PublicFolderDistributionEnabled \$true* command.
4. You can use the *Set-OfflineAddressBook* cmdlet.
5. You would specify *"SMTP:%s%2g@adatum.com"* for this parameter.

Configuring Exchange Recipients and Public Folders

Roughly 14 percent of the 70-662 exam focuses on the topic of configuring Microsoft Exchange recipients and public folders. You need to have a good grasp of how you provision new and existing users with mailboxes, modify the quotas applied to those mailboxes, move mailboxes to new servers, and configure mailboxes so that other users are able to send messages on the original mailbox owner's behalf. You need to know how to create and maintain room and equipment mailboxes.

You also need to know how to create and manage distribution groups, including dynamic distribution groups and resource mailbox booking policies. You should be able to manage public folder settings and assign different permissions to public folders by using role-based access control (RBAC).

This chapter covers the following objectives:

- Objective 2.1: Create and configure mailboxes.
- Objective 2.2: Configure RBAC.
- Objective 2.3: Create and configure resource mailboxes and shared mailboxes.
- Objective 2.4: Create and configure recipients and distribution groups.
- Objective 2.5: Create and configure public folders.

Objective 2.1: Create and configure mailboxes

In this exam objective, you might be tested on how to create mailboxes and linked mailboxes; configure client access protocols; and configure spam confidence level (SCL) and phishing confidence level (PCL) settings. You need to know how to configure settings for deleted items and deleted mailboxes. You should be able to configure mailbox quotas, message size, and warning thresholds. In addition, you should be able to move mailboxes from and to previous Exchange versions by using both online and offline moves. You need to know how to configure proxy addresses, Send-As permissions, delegation, forwarding, and mailbox permissions.

Exam need to know

- Deleted items
For example: Do you know how to configure deleted item retention time for an individual mailbox?
- Deleted mailbox
For example: Do you know how to reconnect a disconnected mailbox to an Active Directory account?
- Mailbox quota
For example: Do you know how to specify warning, prohibit send, and prohibit send and receive quota limits on individual mailboxes?
- Message size
For example: Do you know how to configure message size limits for a public folder?
- Warning thresholds
For example: Do you know how to configure a message size warning threshold?
- Move from and to previous versions of Exchange
For example: Do you know how to move a mailbox from a mailbox server running Exchange Server 2007 SP2 to a mailbox server running Exchange Server 2010 SP1?
- Online and offline moves
For example: Do you know what mailbox moves occur online?
- Intra-orgs and cross-orgs
For example: Do you know what EMS cmdlet to use to move mailboxes between forests?
- Create proxy addresses
For example: Do you know how to configure Exchange mailboxes to accept incoming messages on a variety of email addresses?
- Create mailboxes
For example: Do you know how to use the EMS to create a mailbox?
- Configure client access protocols
For example: Do you know how to disable POP3 access to a mailbox?
- Configure spam confidence level (SCL) and phishing confidence level (PCL)
For example: Do you know how to configure a mailbox to delete suspected junk mail?
- Send-As permissions
For example: Do you know how to grant Send-As and Full Access permissions?
- Delegation
For example: Do you know how to create a delegate for a resource mailbox?

- Forwarding

For example: Do you know how to configure forwarding so a message is sent to the original mailbox in addition to being forwarded to another email address?

- Mailbox permissions

For example: Do you know how to grant Read permission to a mailbox?

- Create and configure linked mailboxes

For example: Do you know how to create a mailbox in your Exchange organization for a user who has an email address in another organization?

Deleted items

You should be aware that when a user deletes items from the Deleted Items default folder on an email client, items are moved to the Recoverable Items\Deletions folder, and that the duration for which deleted items remain in this folder is based on the deleted item retention settings.

True or false? Mailboxes inherit deleted item retention settings from the mailbox database that hosts them.

Answer: True. Mailboxes inherit default settings from the mailbox database. However, you can use the EMC or the EMS to configure deleted item retention settings on a per-mailbox basis. You can set the deleted items retention period and specify whether items are not permanently deleted until the database is backed up.

You can configure mailbox settings by accessing the mailbox Properties dialog box in the EMC, or you can use the EMS *Set-Mailbox* cmdlet. For example, the following command configures Jay Hamlin's mailbox so that it has a deleted item retention time of 20 days:

```
Set-mailbox jay_Hamlin -RetainDeletedItemsFor 20.00:00:00
-UseDatabaseRetentionDefaults $false
```

MORE INFO To learn more about configuring deleted item retention and recoverable items quotas, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee364752.aspx>.

True or false? To recover a deleted message, you first search for it in the source mailbox, and then copy it to a discovery mailbox. You can restore it to the user's mailbox by using the EMS *Search-Mailbox* cmdlet.

Answer: True. For example, the following command searches for a message (or messages) in Kim Akers' mailbox that have been sent by Jeff Hay and contain the keyword Chicago:

```
Search-Mailbox "Kim Akers" -SearchQuery "from:'Jeff Hay' AND chicago"
-TargetMailbox "Discovery Search Mailbox"
-TargetFolder "Kim Akers Recovery" -LogLevel Full
```

The following command restores the message (or messages) to Kim Akers' mailbox and deletes them from the Discovery Search Mailbox:

```
Search-Mailbox "Discovery Search Mailbox" -SearchQuery "from:'Jeff Hay' AND  
"chicago"  
-TargetMailbox "Kim Akers" -TargetFolder "Recovered Messages" -LogLevel  
Full  
-DeleteContent
```

MORE INFO To learn more about single-item recovery, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ff660637.aspx>.

Deleted mailbox

The exam might test that you know how to delete (or disconnect) a mailbox, how to connect a disconnected mailbox to a user account, and how to configure the mailbox retention period for a specific mailbox. You should be aware that disabling a mailbox disconnects the mailbox from the user account, but the user account remains in Active Directory. Removing a mailbox disconnects that mailbox from its associated user account and removes this user account from Active Directory. You can disable or disconnect a mailbox by selecting the mailbox in the Recipient Configuration\Mailbox node of EMC, and then in the Actions pane, clicking Disable or Disconnect. You can also use the EMS *Disable-Mailbox* cmdlet to disable a mailbox and the EMS *Remove-Mailbox* cmdlet to remove a mailbox.

MORE INFO To learn more about locating missing disconnected mailboxes and the *Clean-MailboxDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124076.aspx>.

True or false? You cannot connect a disconnected mailbox to an existing Active Directory user account.

Answer: *False*. You can use the EMS *Connect-Mailbox* cmdlet to connect a disconnected mailbox to an existing Active Directory account. For example, the following command connects the disconnected mailbox named Jeff_Hay, which was originally located in mailbox database GLA-DB01, to the Jeff_Hay user account:

```
Connect-Mailbox -Identity "Jeff_Hay" -Database "GLA-DB01" -User "Jeff_Hay"
```

MORE INFO To learn more about connecting disconnected mailboxes to Active Directory user objects, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123490.aspx>.

Mailbox quota

You are expected to know that mailboxes inherit default quota settings from the mailbox database. The exam might test that you know how to use the EMC or the EMS to configure quota settings on a per-mailbox basis. You should know how to specify warning, prohibit send, and prohibit send and receive quota limits.

True or false? You can configure individual mailbox quotas on the Mailbox Settings tab of the mailbox Properties dialog box.

Answer: *True*. You can also use the *Set-Mailbox* cmdlet. For example, the following command configures Jay Hamlin's mailbox so that it has a prohibit send quota of 250 MB and a prohibit send and receive quota of 280 MB:

```
Set-mailbox jay_Hamlin -ProhibitSendQuota 262144000  
-ProhibitSendReceiveQuota 293601280 -UseDatabaseQuotaDefaults $false
```

MORE INFO To learn more about configuring mailbox quotas, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998353.aspx>

Message size

The exam might test to see if you know how to configure the maximum message size for a mailbox. Remember that user-level (or specific mailbox) limits take precedence over other message size restrictions.

MORE INFO To learn more about the message size restrictions in Microsoft Exchange Server 2010, including their scope and the order of precedence, see <http://technet.microsoft.com/en-us/library/bb124345.aspx>.

True or false? You cannot configure message size restrictions at the mailbox level.

Answer: *False*. You can configure message size restrictions on an individual mailbox by using the EMC to edit the mailbox Properties dialog box. You can also use the *Set-Mailbox* cmdlet. For example, the following command configures Jim Hance's mailbox so that he can send messages that are a maximum of 20 MB in size and receive messages that are no more than 15 MB in size:

```
Set-Mailbox -Identity "Jim_Hance" -MaxSendSize 20mb -MaxReceiveSize 15mb
```

True or false? You can use the *Set-Mailbox* cmdlet to set message size limits on a mailbox.

Answer: *True*. For example, the following command sets both the send message and the receive message sizes for Don Hall's mailbox to 20 MB.

```
Set-Mailbox -Identity "Don Hall" -MaxSendSize 20MB -MaxReceiveSize 20MB
```

MORE INFO To learn more about configuring message size limits for an individual mailbox or public folder, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124708.aspx>.

Warning thresholds

This exam topic is likely to require that you know how to configure a mailbox size warning quota. For example, the following command configures Jay Hamlin's mailbox so that it has a warning quota of 200 MB:

```
Set-mailbox jay_Hamlin -IssueWarningQuota 209715200  
-UseDatabaseQuotaDefaults $false
```

Move from and to previous versions of Exchange

The exam might test whether you know when you can move mailboxes online to minimize disruption to users. You should know how to use the EMS *New-MoveRequest* cmdlet or the EMC move mailbox functionality. Specifically, you might be tested on moving mailboxes to and from Exchange 2003 and Exchange 2007 organizations.

True or false? You can use the *Move-Mailbox* cmdlet on a server running Exchange Server 2007 SP1 to move a mailbox to an Exchange Server 2010 SP1 Mailbox server.

Answer: *False*. You cannot use Exchange Server 2003 or Exchange Server 2007 tools to move a mailbox to Exchange Server 2010 SP1.

True or false? When using the EMS to move mailboxes, you need to issue EMS commands against the target server.

Answer: *True*. If you are using the EMS, you perform a move request by using the *New-MoveRequest* cmdlet on the target server. In addition, if you are performing a cross forest move, the target Exchange 2010 forest must contain a valid mail-enabled user account that has been prepared for the move.

EXAM TIP Remember that you use the *New-MoveRequest* cmdlet (not the *Move-Mailbox* cmdlet) on the target server (not the source server).

True or false? You cannot use the EMC to create remote legacy move requests.

Answer: *True*. If you are moving mailboxes between an Exchange 2010 forest and a remote Exchange 2003 or 2007 forest, you must use EMS commands on the Exchange 2010 server.

EXAM TIP Remember that if you are moving mailboxes to an organization that consists of (for example) a single Exchange Server 2010 SP2 Mailbox server, this computer must also have the Hub Transport and Client Access roles installed.

MORE INFO To learn more about the *New-MoveRequest* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351123.aspx>.

Online and offline moves

You are expected to know that end users can access their email accounts during an online mailbox move. The user is locked out of the account only for a brief time at the end of the process. You should be aware that online moves are possible only between Exchange 2010 databases, and between Exchange Server 2007 SP2 and Exchange 2010 databases.

True or False? When you move a mailbox from an Exchange 2003 back-end server to an Exchange 2010 mailbox server, the user can access the mailbox during the move.

Answer: *False*. This mailbox move will be offline. During the move, the user will not be able to access the mailbox. The following command (run on the target Exchange 2010 Mailbox server) moves a mailbox from the Exchange 2003 forest contoso.com to the Exchange 2010 forest adatum.com:

```
New-MoveRequest -Identity 'DonHall@contoso.com' -RemoteLegacy  
-TargetDatabase DB02 -RemoteGlobalCatalog 'GC01.contoso.com'  
-RemoteCredential $Cred -TargetDeliveryDomain 'mail.adatum.com'
```

MORE INFO To learn more about move requests, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298174.aspx>.

Intra-orgs and cross-orgs

You should know that intra-org (or intra-forest) moves occur when a mailbox is moved between databases or servers within a single Exchange Organization. Cross-org (or cross-forest) moves occur when a mailbox is moved from one Exchange Organization to another.

True or False? For both intra-org and cross-org moves, you use the EMS *New-MoveRequest* cmdlet or the EMC move mailbox functionality on the target server (assuming you are moving to an Exchange 2010 Mailbox server).

Answer: *True*. Also, whether the move is online or offline depends on the Exchange version on the source and target server rather than whether the move is intra-org or cross-org.

MORE INFO To learn more about the preparation steps required to perform a cross-forest mailbox move, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee633491.aspx>.

Create proxy addresses

You should be aware that a mailbox can have more than one address. For example, Kim_Akers@contoso.com could also be allocated at the email address Administrator@contoso.com. You should know that addresses added to a mailbox are known as proxy addresses.

True or false? An Exchange mailbox can accept incoming messages on only one email address.

Answer: *False*. You can configure Exchange mailboxes to accept incoming messages on a variety of email addresses. You can configure proxy addresses by editing the mailbox Properties dialog box or by using the *Set-Mailbox* cmdlet. When you use this

cmdlet to add an address, the existing address will be removed unless an email address policy is in place. For example, the following commands add the sales@adatum.com proxy address to Brian Perry's mailbox:

```
$Temp = Get-Mailbox -Identity "Brian Perry"
```

```
$Temp.EmailAddresses += ("smtp:sales@adatum.com")
```

```
Set-Mailbox -Identity "Brian Perry" -EmailAddresses $Temp.EmailAddresses
```

MORE INFO To learn more about adding email addresses to existing user mailboxes, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123794.aspx>.

Create mailboxes

The exam is likely to ask you to identify the Exchange management tools that allow a holder of the Organization Management or Recipient Management role to create a new Exchange mailbox for an existing Active Directory user account, or to create both a new Active Directory user account and an associated mailbox.

True or false? You can use the EMS *New-Mailbox* cmdlet with the *Name* parameter to create a mailbox.

Answer: *True*. For example, the following command creates a new user account and mailbox for a user named Don Hall in the contoso.com forest:

```
New-Mailbox -Name 'Don Hall' -Alias 'Don_Hall' -UserPrincipalName  
'Don_Hall@contoso.com' -SamAccountName Don_Hall' -FirstName 'Don'  
-LastName 'Hall'
```

When you issue this command, you will be prompted to enter a password for the user account.

MORE INFO To learn more about creating new user mailboxes by using the EMC or the EMS, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123809.aspx>.

True or false? You use the *New-Mailbox* cmdlet with the *Identity* parameter to add an Exchange mailbox to an existing user account.

Answer: *False*. The EMS *Enable-Mailbox* cmdlet lets you add an Exchange mailbox to an existing user account. For example, the following command adds a new Exchange mailbox to a user named Kim Akers, whose existing user account resides in the Users container of the fabrikam.com domain:

```
Enable-Mailbox 'Fabrikam.com/Users/Kim Akers'
```

MORE INFO To learn more about creating Exchange mailboxes for existing users, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998319.aspx>.

Configure client access protocols

The exam might test that you can enable or disable (for example) IMAP4 on an entire server or on an individual mailbox. Chapter 3, “Configuring Client Access,” discusses client access protocols in more detail.

True or false? You can enable or disable mailbox features, such as Microsoft Office Outlook Web Access, Exchange ActiveSync, POP3, IMAP4, and MAPI Access by using the `EMS Set-CASMailbox` cmdlet.

Answer: *True*. For example, the following command disables POP3, IMAP4, and Outlook Web Access to Claus Hansen’s mailbox:

```
Set-CASMailbox "Claus Hansen" -POPEnabled $false -ImapEnabled $false  
-OWAEnabled $false
```

MORE INFO To learn more about enabling or disabling client access features on a per-mailbox basis, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125264.aspx>.

Configure spam confidence level (SCL) and phishing confidence level (PCL)

You should know how to use the value of the SCL (from 0 through 9) to identify suspected junk mail messages and how to specify whether such messages are deleted, moved to the junk email folder, or quarantined. You should also be aware of how anti-spam stamps help you to diagnose spam-related problems. There are three anti-spam stamps: the PCL stamp, the SCL stamp, and the Sender ID stamp.

MORE INFO To learn more about anti-spam stamps, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996878.aspx>.

True or false? You can use the EMS but not the EMC to configure anti-spam functionality for a mailbox.

Answer: *True*. For example, the following command disables anti-spam processing on Don Hall’s mailbox:

```
Set-Mailbox -Identity "Don Hall" -Anti-spamBypassEnabled $true
```

MORE INFO To learn more about configuring Exchange 2010 anti-spam features at the mailbox level, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123559.aspx>.

Send-As permissions

The exam might test that you know how to configure permissions so that it is possible for one user to send email messages on behalf of another user but not to view the mailbox contents (Send-As permission), or so that one user can view the contents of another user’s mailbox (Full-Access permission). You should know that

you use the EMC to configure Send-As or Full-Access permission on a mailbox by selecting the mailbox, and then in the Actions pane, clicking the Manage Send As Permission or Manage Full Access Permission.

True or false? You can also use the EMS *Add-ADPermission* cmdlet with the *Extendedrights* parameter to configure Send-As permission.

Answer: *True*. For example, the following command configures Don Hall's mailbox so that Kim Akers has the Send-As permission:

```
Add-ADPermission "Don Hall" -User "adatum\kim_akers" -Extendedrights "Send As"
```

You can configure Full-Access permission on a mailbox by using the EMS *Add-MailboxPermission* cmdlet with the *AccessRights* parameter. For example, the following command grants Kim Akers Full-Access permission on Oleg Anashkin's mailbox:

```
Add-MailboxPermission -Identity "Oleg Anashkin" -User "adatum\Kim_Akers"  
-AccessRights Fullaccess -InheritanceType all
```

MORE INFO To learn more about Full-Access and Send-As permissions for mailboxes, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997244.aspx>.

Delegation

You should be aware that Send-As and Full-Access permissions (discussed in the previous section) can be described as delegating permissions because they permit one user limited rights to another user's mailbox. You can also configure a delegate to control the scheduling options for that resource mailbox and to have all requests forwarded to that delegate. Resource mailboxes are discussed later in this chapter.

Forwarding

The exam might test that you know how to configure forwarding and specify whether to have forwarded messages delivered to the original mailbox. You can configure forwarding by accessing a mailbox Properties dialog box through the EMC or by using the *Set-Mailbox* cmdlet. For example, the following command forwards all mail for Don Hall's mailbox to kim_akers@adatum.com:

```
Set-Mailbox -Identity "Don Hall" -ForwardingAddress "kim_akers@adatum.com"
```

True or false? You can specify whether to have forwarded messages delivered to the original mailbox.

Answer: *True*. For example, the following command configures Don Hall's mailbox so that all messages sent to it are both forwarded to Kim Aker's mailbox and delivered to Don Hall's mailbox:

```
Set-Mailbox -Identity "Don Hall" -ForwardingAddress "kim_akers@adatum.com"  
-DeliverToMailboxAndForward $true
```


MORE INFO For more information about configuring mail forwarding for a mailbox, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351134.aspx>.

Mailbox permissions

You should be aware that the Send-As and Full-Access mailbox permissions are typically the most commonly configured. However, you can use the *Add-Mailbox* cmdlet with the *AccessRights* parameter to specify other rights. The parameter can take the following values:

- *FullAccess*
- *SendAs*
- *ExternalAccount*
- *DeleteItem*
- *ReadPermission*
- *ChangePermission*
- *ChangeOwner*

For example, the following command grants Jeff Hay read permission to Kim Akers' mailbox:

```
Add-MailboxPermission -Identity "Kim Akers" -User "Don Hall"  
-AccessRights ReadPermission
```

Create and configure linked mailboxes

You should know that when you link to mailboxes that are associated with external accounts, such as those located in a different forest from the one where you deployed Exchange, a disabled user account in the local forest is used as a proxy for the foreign account.

True or false? You can create linked mailboxes that are associated with external accounts and use a disabled local user account as a proxy by using the *New-Mailbox* cmdlet.

Answer: *True*. For example, the following command creates a linked mailbox on database GLA-DB-1 for Jeff Hay in the contoso.com domain, when his actual account resides in the trusted Fabrikam forest:

```
New-Mailbox -Database "GLA-DB-1" -Name "Jeff Hay" -LinkedDomain Controller  
"DC01fabrikam.fabrikam.com" -LinkedMasterAccount Fabrikam\josh_pollock  
-OrganizationalUnit Users -UserPrincipalName josh_pollock@adatum.com
```

MORE INFO To learn more about creating linked mailboxes, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123524.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. Adatum's HR Manager, Kim Akers, is taking a month's leave. During her absence, you want to forward all of her mail to her PA, Nancy Anderson. When Kim returns from leave, she should be able to see all the messages that were forwarded to Nancy's email address, andersonn@adatum.com. What EMS command do you issue?
2. Which EMS cmdlet is used to connect disconnected Exchange Mailboxes to Active Directory user accounts?
3. Don Hall's mailbox is in a mailbox database that has a warning quota of 150 MB, a prohibit send quota of 200 MB, and a prohibit send and receive quota of 230 MB. You do not want these quotas to apply to Don's mailbox, but you do want them to apply to all other mailboxes in the database. What EMS command do you issue to configure Don Hall's mailbox so that it has a warning quota of 200 MB, a prohibit send quota of 250 MB, and a prohibit send and receive quota of 280 MB?
4. You want to move a mailbox from Mailbox server MBX01, which is running Exchange Server 2007 SP2, to Mailbox server MBX02, which is running Exchange Server 2010 SP2 installed in a typical configuration. What EMS cmdlet do you use, and on which server do you use it?
5. You have configured the first server running Windows Server 2010 SP2 in your Windows Exchange Server 2003 SP2 organization. You have deployed the Client Access and Mailbox server roles on the new server. You want to transfer a mailbox from an Exchange 2003 back-end server to the new server and ensure that the mailbox owner has an email service when the transfer is complete. What additional configuration is required on the new server before you transfer the mailbox?

Objective 2.2: Configure RBAC

In this exam objective, you might be tested on how to create and assign RBAC roles, define RBAC scopes, and configure RBAC for specific roles, such as help desk and address list administrator.

Exam need to know

- Create and assign RBAC roles

For example: Do you know what entities control the server configuration or recipients the role holder can manage?

- Define RBAC scopes

For example: When you assign a role with a management role scope to a role group, do you know how the scope defines the objects that the assignment is permitted to manage?

- Configure RBAC for specific roles

For example: Do you know how to configure the help desk and address list administrator roles?

Create and assign RBAC roles

The exam might ask about role-based permissions, and you will be expected to know the difference between the various RBAC components, such as roles, role assignments, and management role entries. You should know that RBAC assigns permissions to users in your organization depending on whether a user is an administrator or an end user, and uses management role groups and management role assignment policies to associate users with the permissions they need to perform their jobs.

True or false? You use management role groups to assign administrator permissions.

Answer: True. Some administrators manage the entire Exchange Server 2010 organization, whereas others require limited permissions to manage specific features or specific recipients. Administrators with limited permissions are often termed *specialist users*. You use management role groups by adding users to a built-in management role group or to a custom management role group. You use management role assignment policies to assign end-user management roles. Role assignment policies consist of roles that control what users can do with their mailboxes or distribution groups.

True or false? Delegates of a specific management role who also hold the Role Management role can assign the role to other users.

Answer: True. Roles, role assignments, and role groups can be managed by administrators who have been assigned the management role named Role Management. Assignees of a specific management role that have delegating role assignments are known as delegates and can assign the role to other users.

True or false? A management role consists of a number of management entries that define the permissions granted to a holder of that role.

Answer: True. A management entry can be an EMS cmdlet (including parameters), script, or special permission that you can add to a management role.

MORE INFO To learn more about management role groups and management roles, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd638105.aspx> and <http://technet.microsoft.com/en-us/library/dd298116.aspx>, respectively.

True or false? A specialized user can be a member of only one role group.

Answer: False. One or more administrators or specialized users can be members of a role group, and an administrator or specialized user can be a member of more than one role group. A role group can be assigned one or more role assignments. These

link the role group with one or more administrative roles that define what tasks can be performed. Role assignments can contain management scopes that define where the users of the role group can perform actions.

MORE INFO To learn more about management role assignments and management role scopes, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd335131.aspx> and <http://technet.microsoft.com/en-us/library/dd335146.aspx>, respectively.

Define RBAC scopes

You need to know that if scopes are applied to any role assignment, those scopes control what server configuration or recipients the role holder can manage. You can create a role assignment with no scope, a predefined scope, a recipient filter-based scope, a configuration filter-based scope, or an organizational unit (OU) scope. The following command assigns the transport rules management role to the Glasgow Recipient Admins role group and scopes the assignment to the Marketing OU in the Adatum.com domain:

```
New-ManagementRoleAssignment -Name "Transport_Rules_Glasgow_Recipient_Admins"  
-SecurityGroup "Glasgow Recipient Admins" -Role "Transport Rules"  
-RecipientOrganizationalUnitScope Adatum.com/Marketing
```

MORE INFO To learn more about adding a role to a role group, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638202.aspx>.

True or false? You can use the EMS to create and configure a management scope.

Answer: *True*. For example, the following command creates a management scope that contains the Hub Transport servers HUB01, HUB02, and HUB03:

```
New-ManagementScope -Name "Hub Servers" -ServerList HUB01, HUB02, HUB03
```

The following command adds Hub Transport server HUB04 to the management scope:

```
Set-ManagementScope -Identity "Hub Servers" -ServerList HUB01, HUB02,  
HUB03, HUB04
```

True or false? You can define role members by specifying an OU.

Answer: *True*. For example, the following command assigns the Transport Rules role to the Brisbane Recipient Admins group but limits its use to accounts in the Marketing OU in the Brisbane.Adatum.com domain:

```
New-ManagementRoleAssignment -Name "Transport_Rules_Brisbane"  
-SecurityGroup "Brisbane Recipient Admins" -Role "Transport Rules"  
-DomainOrganizationUnitRestriction Brisbane.Adatum.com/Marketing
```

EXAM TIP Remember that if you want to delegate administrative rights—for example, the right to use a subset of EMS cmdlets—you create a new management role and then add it to a role group. Remember, also, that RBAC is a permissions model. There are no RBAC roles or role groups.

NOTE You can delegate or assign a role directly to a user. For example, if you wanted Don Hall to be able to manage public folders, you could assign the Public Folders management role directly to Don. If you wanted Don to be able to assign the role to other users, you could delegate the role to him. However, Microsoft recommends the use of role groups rather than direct assignment.

MORE INFO To learn more about the EMS *New-ManagementRoleAssignment* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335193.aspx>.

Configure RBAC for specific roles

The exam might ask you what rights are granted to members of a built-in management role group, such as Help Desk. You can add users to or remove them from any built-in role group. You also can add role assignments to or remove them from most of these role groups. All the built-in management role groups are located in the Microsoft Exchange Security Groups OU in Active Directory Domain Services (AD DS).

The exam objectives specifically identify the Help Desk management role group. By default, membership of this role group enables users to view and modify the Outlook Web Access options of any user in the organization. These options might include display name, address, phone number, and so on. They do not include options that are unavailable in Outlook Web Access.

True or false? Role holders in the Help Desk management role group can manage users' display names.

Answer: *True*. Role holders in the Help Desk management role group can perform limited recipient management, such as managing a user's display name and address.

MORE INFO To learn more about role groups—specifically built-in role groups—consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638105.aspx#Builtin>.

True or false? Members of the Help Desk management role group can modify only the Outlook Web Access options that the user can modify.

Answer: *True*. If, for example, a user can modify her display name, a member of the Help Desk role group can also modify that display name.

True or false? You cannot add additional management roles to the Help Desk role group.

Answer: *False*. For example, if you want members of the Help Desk role group to manage mailboxes, mail contacts, and mail-enabled users, you can assign the Mail Recipients management role to this role group.

MORE INFO To learn more about the Help Desk management role group, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876949.aspx>.

True or false? You can use the EMS *New-RoleGroup* cmdlet to create a role group.

Answer: *True*. The command that follows creates a role group called Transport Role Group that is assigned to the Transport Rules management role. The role group is assigned to Kim Akers and Don Hall and can be managed by Kim Akers. The role group (which is also a universal security group) is created in the Exchange Security Groups AD DS container.

```
New-RoleGroup -Name "Transport Role Group" -Roles "Transport Rules"
-Members "Kim Akers", "Don Hall" -ManagedBy "Kim Akers"
```

True or false? You can create an Address Lists management role group.

Answer: *True*. An Address Lists Management role enables its members to create, modify, view, and remove address lists, global address lists, and offline address books. There is no built-in management role group for address list management, but it is a good idea to create a custom role group whose members can perform this function. To do this, you would issue an EMS command similar to the following:

```
New-RoleGroup -Name "Address Lists Management" -Roles "Address Lists"
-Members "Kim Akers", "Don Hall", "Charlie Herb", "Mor Hezi",
"Patrick Hines" -ManagedBy "Kim Akers"
```

MORE INFO To learn more about the *New-RoleGroup* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638181.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have created a scope named Mailbox Scope that includes only the Mailbox servers MBX01, MBX02, and MBX03. Users who are assigned management roles with this scope can perform only tasks allowed by the role against these servers. You configure a new Mailbox server called MBX04 and want to add it to the scope. What EMS command do you issue?
2. Members of the Assistant Admins security group have been assigned as role holders to a role management group that allows them to carry out a limited series of administrative tasks. You also want them to be able to run some specified EMS cmdlets. What action must you take?
3. You want Don Hall to be able to configure antivirus and anti-spam features in your Exchange organization. What action do you take?

4. Brian Perry is a delegate of the built-in Help Desk role group. Only the default roles are associated with this role group. What does delegate membership of this role group enable Brian to do?
5. You want to assign the management role SalesRecipientAdmin to the SalesAdmins universal security group. You want to ensure that members of the SalesAdmins group can manage only those recipients whose accounts are located in the SalesUsers OU in the Adatum.com domain. What EMS command can you use to do this?

Objective 2.3: Create and configure resource mailboxes and shared mailboxes

In this objective, you might be asked about Equipment mailboxes, Room mailboxes, mailbox permissions, mailbox calendaring options, autoaccept, and custom resource types.

Exam need to know

- Equipment
For example: Do you know how to convert a shared mailbox to an equipment mailbox?
- Room
For example: Do you know how to create a room mailbox?
- Permissions
For example: Do you know how to grant a user Full-Access permission to a resource mailbox calendar?
- Set mailbox calendaring options
For example: Do you know how to specify a maximum booking window?
- Autoaccept
For example: Do you know how to configure a resource mailbox to automatically accept bookings?
- Custom resource types
For example: Do you know how to specify a custom resource type?

Equipment

You should be aware that Exchange Server 2010 supports two types of resource mailboxes. Room mailboxes represent locations such as conference rooms or lecture theatres. Equipment mailboxes represent specific items, such as scientific instruments, scanners, or video projectors. The exam might test whether you know how to create and configure an equipment resource mailbox. You are expected to know how to convert a resource mailbox type, and also how to convert a shared mailbox to a resource mailbox.

True or false? You can use the EMC New Mailbox Wizard or the *New-Mailbox* cmdlet to create an equipment mailbox.

Answer: *True*. For example, the following command creates a new Equipment mailbox named ElectronMicroscope that is hosted on mailbox database MBX-DB01:

```
New-Mailbox -UserPrincipalName electronmicroscope@adatum.com  
-Alias "electron microscope" -Name ElectronMicroscope -Database MBX-DB01  
-OrganizationalUnit Users -Equipment
```

True or false? You can convert a room mailbox to an equipment mailbox and the other way round.

Answer: *True*. You can convert a mailbox by using the *Set-Mailbox* cmdlet. For example, the following command converts the DeepFreeze mailbox (currently a room mailbox) to an equipment mailbox and retains all the messages currently in the mailbox:

```
Set-Mailbox DeepFreeze -Type Equipment
```

True or false? You are likely to encounter shared mailboxes when transitioning from an Exchange 2003 environment to an Exchange 2010 environment.

Answer: *True*. Exchange 2003 can use shared mailboxes to represent resources. If you migrate these mailboxes to Exchange 2010, they retain their mailbox type, and you typically need to convert them to resource mailboxes. You can use the *Set-Mailbox* cmdlet to convert one type of mailbox to another type. For example, the following command converts the shared mailbox ElectronMicroscope to an equipment mailbox:

```
Set-Mailbox ElectronMicroscope -Type Equipment
```

EXAM TIP Understand the difference between a user mailbox, a shared mailbox, a resource mailbox, and a linked mailbox, and remember that you can use the EMS but not the EMC to convert a mailbox.

MORE INFO To learn more about converting mailboxes, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201749.aspx>.

Room

The exam might test whether you know how to create and configure a room resource mailbox. You should be aware that room mailboxes allow users to book resources such as conference rooms by using Exchange's calendaring functionality.

True or false? You can use the *New-Mailbox* cmdlet to create a room mailbox.

Answer: *True*. For example, the following command creates a new room mailbox named MeetingRoomA that is hosted on mailbox database MBX-DB-01 in the Adatum.com forest:


```
New-Mailbox -UserPrincipalName MeetingRoomA@adatum.com  
-Alias "Meeting Room A" -Name MeetingRoomA -Database MBX-DB-01  
-OrganizationalUnit Users -Room
```

True or false? You can configure all resource mailbox properties by using the EMS *Set-Mailbox* cmdlet.

Answer: *False*. Some properties, such as Resource Capacity, can be configured in the resource mailbox Properties dialog box or by using the *Set-Mailbox* cmdlet. For example, the following command sets the resource capacity of Room mailbox MeetingRoomA to 30:

```
Set-Mailbox MeetingRoomA -ResourceCapacity 30
```

True or false? Most resource mailbox configuration tasks are performed by using the EMS *Set-CalendarProcessing* cmdlet.

Answer: *True*. You can use the EMC or the EMS *Set-CalendarProcessing* cmdlet with the *AllBookInPolicy*, *AllRequestInPolicy*, *AllRequestOutOfPolicy*, *BookInPolicy*, *RequestInPolicy*, and *RequestOutOfPolicy* parameters to configure In-Policy request and Out-of-Policy request settings. For example, using the following command, all users can submit In-Policy requests for MeetingRoomA. The request is still subject to approval by a delegate.

```
Set-CalendarProcessing -Identity "MeetingRoomA"  
-AutomateProcessing AutoAccept -AllRequestInPolicy $true
```

With the following command, the Calendar Attendant can accept Out-of-Policy requests from Brian Perry in the contoso.com organization. The request is still subject to approval by a delegate.

```
Set-CalendarProcessing -Identity "MeetingRoomA"  
-AutomateProcessing AutoAccept -RequestOutOfPolicy BrianPerry@contoso.com
```

MORE INFO To learn more about managing resource mailboxes and scheduling, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124374.aspx>.

Permissions

You should be aware that the user account associated with a resource mailbox is disabled. You need to know how you can specify a user as a resource mailbox delegate and how you can grant or remove Full-Access permission to a mailbox schedule.

True or false? A resource mailbox delegate controls the scheduling options for that resource mailbox and all requests are forwarded to the delegate.

Answer: *True*. You can add one or more delegates by editing the mailbox properties in the EMC or by using the EMS *Set-CalendarProcessing* cmdlet. For example, the following command sets DonHall as the delegate for the resource mailbox LectureRoomA:

```
Set-CalendarProcessing -Identity "LectureRoomA"  
-ResourceDelegates "DonHall@adatum.com"
```

True or false? You can use the EMC to set Full-Access permissions to a resource mailbox schedule.

Answer: *False*. You need to use the EMS *Add-MailboxPermission* cmdlet. For example, the following command grants Kim Akers Full-Access permissions to the schedule for the ElectronMicroscope equipment mailbox:

```
Add-MailboxPermission -AccessRights FullAccess -Identity ElectronMicroscope  
-User "Kim Akers"
```

MORE INFO To learn more about the *Add-MailboxPermission* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124097.aspx>.

Set mailbox calendaring options

You could be tested on the use of resource policies and how to configure calendaring options, such as how far in advance a resource can be booked, the maximum amount of time the resource can be booked for, and which users are configured as delegates for the resource.

EXAM TIP To allow users to access a resource mailbox and control the scheduling options, you configure the mailbox properties and add the users as delegates.

True or false? You can use the EMS *Set-CalendarProcessing* cmdlet to configure resource mailbox properties.

Answer: *True*. For example, you can use the *Set-CalendarProcessing* cmdlet to modify calendar-related processing configuration properties for the target mailbox, which include Calendar Attendant, Resource Booking Assistant, and calendar configuration. The following command sets a maximum booking window of 50 days and a maximum booking duration of 2 hours for the Auditorium resource mailbox:

```
Set-CalendarProcessing Auditorium -BookingWindowsInDays 50  
-MaximumDurationInMinutes 120
```

MORE INFO To learn more about using the EMC to view and configure resource mailbox properties and more about enabling or disabling the Calendar Attendant function to process meeting messages, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb124255.aspx> and <http://technet.microsoft.com/en-us/library/bb123874.aspx>, respectively.

Autoaccept

The exam might ask you how to enable the Resource Booking Attendant by setting the *AutomateProcessing* parameter in the *Set-CalendarProcessing* cmdlet to Auto Accept or by editing the resource mailbox Properties dialog box. If the Resource

Booking Attendant is not enabled, the resource mailbox delegate must approve or decline all booking requests.

MORE INFO To learn more about configuring automatic booking policies and more about the *Set-CalendarProcessing* cmdlet, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb124542.aspx> and <http://technet.microsoft.com/en-us/library/dd335046.aspx>, respectively.

True or false? Specifying *AutoAccept* enables both the Calendar Attendant and Resource Booking Attendant on the mailbox.

Answer: *True*. The Calendar Attendant updates the calendar, and then the Resource Booking Assistant accepts the meeting, based upon the policies. The *Delete Attachments*, *DeleteComments*, and *DeleteSubject* parameters of the *Set-CalendarProcessing* cmdlet are ignored unless the *AutomateProcessing* parameter is set to *AutoAccept*. For example, the following command enables automatic booking on the MeetingRoomA room mailbox:

```
Set-CalendarProcessing MeetingRoomA -AutomateProcessing AutoAccept
```

MORE INFO To learn more about enabling automatic booking on a resource mailbox, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123495.aspx>.

Custom resource types

The exam might test that you know how to configure a custom resource to differentiate one type of room or set of equipment from another. Suppose, for example, some meeting rooms contain audio-visual equipment and others do not. You can add the custom resource AV to a Room mailbox to indicate that this facility is permanently set up in the room.

True or false? You can use the *Set-Mailbox* cmdlet to configure custom resource properties on a resource mailbox.

Answer: *True*. You can use either the EMC or the EMS for this task. The following command adds the resource property AV to the Room mailbox MeetingRoomA:

```
Set-Mailbox -Identity "MeetingRoomA" -ResourceCustom ("AV")
```

This command overwrites any existing custom resource properties already on the mailbox. If you want to add a custom resource to a resource mailbox that already has existing custom resources, the command needs to specify all custom resources, both new and existing.

MORE INFO To learn more about configuring custom resources, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201697.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. A member of your administrative team created a resource mailbox named CloudChamber some time ago. You discover he has created it as a Room mailbox rather than an Equipment mailbox. The mailbox has been in use and you do not want to lose the data it contains. What EMS command would you use to convert the mailbox to an Equipment mailbox?
2. You have deployed the first Exchange Server 2010 SP2 server in your Exchange 2003 organization and have migrated all the mailboxes on an Exchange Server 2003 SP2 back-end server to the new Mailbox server. After the mailbox migration completes, you notice that the mailboxes used as resource mailboxes in the Exchange Server 2003 organization are shared mailboxes and not resource mailboxes. What EMS cmdlet do you use to convert them?
3. You want to permit Kim Akers to access the ConferencingRoomA room mailbox and book the room for meetings. How do you do this?
4. What EMS command would you use to enable the Resource Booking Attendant and hence set up the MeetingRoomA room mailbox to take automatic bookings?
5. You need to enable the astronomers working at the Trey Research observatory to automatically schedule the use of the main telescope. What action should you take?

Objective 2.4: Create and configure recipients and distribution groups

In this exam objective, you might be asked about creating mail-enabled users and contacts, assigning Send-As permissions, and configuring forwarding. You need to know how to create and modify distribution groups, how to use security-enabled groups, and how to configure moderation by using tools such as the ECP. You need to be able to configure dynamic distribution groups and create proxy addresses.

Exam need to know

- Create and modify a distribution group
For example: Do you know how to create a distribution group that is not security-enabled or dynamic?
- Security-enabled distribution groups
For example: Do you know how to mail-enable a universal security group?
- Configure moderation
For example: Do you know how to use the ECP, the EMC, or the EMS to configure moderation?

- Dynamic distribution groups
For example: Do you know how members are added to or removed from a dynamic distribution group?
- Create proxy addresses
For example: Do you know how to ensure that messages sent to a number of email addresses are all delivered to the same address?
- Configure mail-enabled users
For example: Do you know when you should create a mail-enabled user?
- Contacts
For example: Do you know the difference between a contact and a mail-enabled user?
- Send-As permissions
For example: Do you know how to configure Send-As permission for a dynamic distribution group?
- Forwarding
For example: Do you know how to forward messages sent to a mail-enabled security group to another email address?

Create and modify a distribution group

You should be aware that distribution groups are collections of recipients. When a user sends a message to the distribution group address, Exchange forwards that message to all members of the distribution group. You are expected to know that Exchange supports three types of distribution groups: distribution groups, mail-enabled security groups (sometimes known as security-enabled distribution groups), and dynamic distribution groups. You need to know how to create and configure each type of group.

True or false? You add members to a distribution group manually.

Answer: *True.* You manage the membership of distribution groups and mail-enabled security groups manually by using the EMC or the EMS. Exchange adds members to dynamic distribution groups automatically.

MORE INFO To learn more about managing distribution groups, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125256.aspx>.

True or false? You can use the EMC New Distribution Group Wizard to create an ordinary distribution group that is not security-enabled and where the group membership is not generated dynamically.

Answer: *True.* You can use the EMC New Distribution Group Wizard or the EMS *New-DistributionGroup* cmdlet to create such a group. For example, the following command creates a distribution group named Research:

```
New-DistributionGroup -Name 'Research' -Type 'Distribution'
-SamAccountName 'Research' -Alias 'Research'
```

EXAM TIP You sometimes need to configure a distribution group so that it does not appear on address lists. In this case, you can use the EMS *Set-DistributionGroup* cmdlet with the *HiddenFromAddressListsEnabled \$true* parameter.

MORE INFO To learn more about creating groups, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124513.aspx>.

Security-enabled distribution groups

You need to know how to mail-enable an existing security group and how to create a new security-enabled distribution group. The exam might test that you know the scope of the security group used by the distribution group.

True or false? Mail-enabling a security group allows Exchange users to send email to security group members.

Answer: *True*. For example, if a resource is moved, you can send a single email message that goes to all members of the security group that has permission to access that resource.

True or false? Exchange security-enabled distribution groups use the Universal scope.

Answer: *True*. A group must be a Universal security group before you can mail-enable it. If you want to mail-enable a group that is not universal, you need to convert its scope.

True or false? To create a mail-enabled security group, you either mail-enable an existing security group or create a new mail-enabled security group from scratch.

Answer: *True*: You can mail-enable a security group or create a new mail-enabled security group by using the EMC New Distribution Group Wizard. You can use the EMS *Enable-DistributionGroup* cmdlet to mail-enable an existing security group and the *New-DistributionGroup* cmdlet to create a new security-enabled distribution group. For example, the following command creates a new security-enabled distribution group named SecDistGroup in the Users container of the Adatum.com domain:

```
New-DistributionGroup -Name SecDistGroup -OrganizationalUnit  
"adatum.com/Users" -SAMAccountName SecDistGroup -Type Security
```

The following command mail-enables the existing Universal security group SecGroup:

```
Enable-DistributionGroup -Identity SecGroup
```

EXAM TIP If you want to ensure that a mail-enabled distribution group does not receive email, but you do not want to permanently delete the group, you can disable it.

MORE INFO To learn more about mail enabling a security group, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123805.aspx>.

Configure moderation

A distribution group moderator can approve or block messages sent to the distribution group. You need to know how to specify a moderator and configure moderation settings so that specific authorized users are able to bypass the moderation process and send messages directly to the group. Moderators perform moderation by using Outlook or OWA.

You can grant an ordinary user the ability to moderate a distribution group by adding that user to the group moderator role. This role does not permit the user to manage group membership.

True or false? You can use the *Set-DistributionGroup* cmdlet to specify a distribution group moderator.

Answer: *True*. In the EMC, you can edit the distribution group Properties dialog box. In the ECP, you can configure moderation on the Moderated DG page. You can also configure message moderation by using the EMS *Set-DistributionGroup* cmdlet. For example, the following command configures moderation for the Enquiries distribution group, where Mike Ray is the moderator and where only senders within the organization receive a non-approval notification:

```
Set-DistributionGroup -Identity "Enquiries" -ModeratedBy "Mike Ray"  
-ModerationEnabled $true -SendModerationNotifications 'Internal'
```

True or false? You can use the *Set-DistributionGroup* cmdlet with the *ManagedBy* parameter set to configure group ownership.

Answer: *True*. If you leave the list of moderators blank, the group owners will receive all the approval requests. The following EMS command configures the Contoso_Sales group so that Andy Jacobs is the group owner:

```
Set-DistributionGroup -Identity Contoso_Sales -ManagedBy "Andy Jacobs"
```

MORE INFO To learn more about distribution group permissions, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638201.aspx>.

Dynamic distribution groups

The exam might ask how you create a dynamic distribution group whose membership is updated automatically. For example, you could create a group for which group membership is defined through a recipient filter that queries Active Directory for mailboxes, contacts, and mail users related to a specific property.

True or false? You add members to a dynamic distribution group manually.

Answer: *False*. Exchange adds members to dynamic distribution groups automatically. For example, you might define a dynamic distribution group membership as all users with an Exchange mailbox whose Active Directory properties lists them as members of the Sales department. The membership of this group is then updated automatically on a scheduled basis.

True or false? You can use the EMS *New-DynamicDistributionGroup* cmdlet to create a dynamic distribution group.

Answer: *True*. You can use the EMC New Dynamic Distribution Group Wizard for this purpose. You can also use the EMS *New-DynamicDistributionGroup* cmdlet. For example, the following command creates a new dynamic distribution group for all mailbox users who have accounts associated with a Sales Department called SalesDDG:

```
New-DynamicDistributionGroup -IncludedRecipients MailboxUsers  
-Name 'SalesDDG' -ConditionalDepartment 'Sales' -Alias 'SalesDDG'
```

MORE INFO To learn more about creating filters in recipient commands, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124268.aspx>.

EXAM TIP If you want a user to be able to add and remove members of a distribution list, you add that user to the group's Managed By list.

Create proxy addresses

Proxy addresses enable a mail-enabled security group to be accessed by using additional addresses. For example, Contoso has merged with Adatum, and you want email messages sent to the Contoso_Marketing distribution group to be delivered to the Adatum_Marketing distribution group. In this case, you would create a proxy address (or alias) for the Adatum_Marketing group.

True or false? You can use the *Set-DistributionGroup* cmdlet to configure proxy addresses for both distribution groups and dynamic distribution groups.

Answer: *False*. You can configure proxy addresses for both distribution groups and dynamic distribution groups in the distribution group Properties dialog box. You can also use the *Set-DistributionGroup* cmdlet with the *EmailAddresses* parameter to configure proxy addresses for distribution groups. However, you would use the *Set-DynamicDistributionGroup* cmdlet with the same parameter to configure proxy addresses for a dynamic distribution group.

MORE INFO To learn more about the *Set-DistributionGroup* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124955.aspx>.

Configure mail-enabled users

You need to know how to create a mail-enabled user (or mail user) that has a user account in the Active Directory forest that hosts Exchange, but has a mailbox hosted by an external organization. You also need to know the differences between a mail-enabled user and a mail contact. A mail-enabled user can appear in Exchange address books, contact lists, and distribution groups, even though she does not have a mailbox hosted on one of the organization's Exchange Mailbox servers.

True or false? You can use the EMS *New-MailUser* cmdlet with the *ExternalEmailAddress* parameter to create a mail-enabled user.

Answer: *True*. You can use the EMC New Mail User functionality to create a mail-enabled user when no user account already exists. You can also create a mail-enabled user by using the EMS *New-MailUser* cmdlet. For example, the following command creates a mail-enabled user named Christian Hess with the email address HessC@contoso.com and with an account hosted in the Users container of the adatum.com domain:

```
New-MailUser -Name "Christian Hess" -ExternalEmailAddress HessC@contoso.com  
-UserPrincipalName HessC@adatum.com
```

When you issue this command, EMS prompts you for a password for the new user account. You can also mail-enable an existing user account that is not associated with an Exchange mailbox by using the EMC or the EMS *Enable-MailUser* cmdlet.

MORE INFO To learn more about creating a mail-enabled user, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124381.aspx>.

Contacts

You need to know how you can create a mail contact that permits an external user's email address to be present in Exchange address books without giving the user logon rights in the organizational forest. For example, several users at Adatum might send regular emails to Kim Akers, who is a user in the contoso.com organization and who never needs to log on to the Adatum network. You should know how to configure Kim as a mail contact, allowing users at Adatum to locate her address details automatically in Exchange address books or add her to distribution groups.

True or false? You can use the EMC New Mail Contact Wizard to create a mail contact.

Answer: *True*. In the EMC New Mail Contact Wizard, you can email-enable an existing contact or create a new contact. You can also create a mail contact by using the EMS *New-MailContact* cmdlet. For example, the following command creates a new mail contact for Julian Price with the address Julian.price@tailspintoys.com that is stored in the Users container in the adatum.com domain:

```
New-MailContact -Name "Julian Price" -ExternalEmailAddress julian.price@  
tailspintoys.com -OrganizationalUnit adatum.com/users
```

MORE INFO To learn more about mail contacts, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998858.aspx>.

Send-As permissions

You should be aware that you can configure Send-As permissions so that members such as a security-enabled distribution group can send as a specified user, or so a user can send as the mail-enabled group.

True or false? You can configure Send-As permission by using the EMS *Add-ADPermission* cmdlet with the *Extendedrights* parameter.

Answer: *True*. You can configure the Send-As permission through the EMC Manage Send As Permission Wizard, or you can use the EMS *Add-ADPermission* cmdlet with the *Extendedrights* parameter. For example, the following command grants the SecurityDistribution group Send-As permission on Amy Rusko's mailbox:

```
Add-ADPermission "Amy Rusko" -User "SecurityDistribution"  
-Extendedrights "Send As"
```

MORE INFO To learn more about managing Send-As permission for a mailbox, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb676368.aspx>.

Forwarding

The exam might test that you know how to configure forwarding to allow all messages that are sent to a distribution group to be forwarded to another address, and specify whether or not to have forwarded messages delivered to the original distribution group mailbox. You can configure forwarding by accessing a mailbox Properties dialog box through the EMC or by using the EMS *Set-Mailbox* cmdlet. Forwarding was discussed in Objective 2.1: Create and configure mailboxes, earlier in this chapter.

You can also configure forwarding from a distribution group by using Transport Rules to copy any messages with a destination of a specific mailbox to the forward-in address. Transport rules are discussed in Chapter 4, "Configuring Message Transport."

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You want all messages received by the Suggestions distribution group to be checked by Kim Akers before they are sent to group members. However, Kim should not be able to change group membership. You also want any message sent by Don Hall to bypass the checking process and be distributed to members immediately. What configuration tasks do you perform?
2. How do you determine which users become members of a dynamic distribution group?
3. You have successfully mail-enabled the Contoso-Accountants security group by using the *Enable-DistributionGroup* cmdlet. What is the scope of that group?
4. You want to configure the dynamic distribution group named Contoso-Sales so that messages sent to the group are forwarded to members only if they are first approved by Don Hall. The UPN of Don Hall's account is don_hall@contoso.internal. What EMS command do you issue to accomplish this goal?

5. You want to hide the Senior-Managers distribution list from Exchange address lists. What EMS cmdlet can you use for this purpose?

Objective 2.5: Create and configure public folders

In this objective, you might be asked about creating public folders and configuring public folder permissions and properties. You need to know how to change public folder settings, such as deleted items retention, message size limit, item age limits, and public folder size. You should be able to create public folders in Microsoft Outlook and OWA. You need to know how to mail-enable public folders.

Exam need to know

- Mail-enabled public folders
For example: Do you know how to mail-enable a public folder?
- Deleted items
For example: Do you know how to configure deleted item retention time by using either the EMC or the EMS?
- Message size
For example: Do you know how to configure message size limits for a specific public folder?
- Item age
For example: Do you know how to configure message age limits for a specific public folder?
- Public folder size
For example: Do you know how to set warning and prohibit-post quotas?
- Create public folders in Enterprise Content Management, Outlook, and OWA
For example: Do you know how to create a public folder in Outlook 2010?
- Configure public folder permissions
For example: Do you know what the pre-defined public folder roles are and can you list their associated rights?
- Configure public folder limits
For example: Do you know how to specify that the default limits specified for the public folder database do not apply to a specific public folder?

Mail-enabled public folders

You need to know the various methods by which you can create public folders and the levels of folders each method can create. You should know that you can create public folders only if there is an existing public folder database. Exchange provides the Default Public Folders tree (IPM_Subtree) and the System Public Folders tree (Non_IPM_Subtree). You should be aware that mail-enabling a public folder allows users (including external users) to post content to that folder by sending an email message to a configured address.

True or false? You can use the EMS *New-PublicFolder* cmdlet to create a public folder.

Answer: *True*. For example, the following command creates a new public folder named Child-Folder under the existing public folder Parent-Folder on server gla-ex1.contoso.com:

```
New-PublicFolder -Name 'Child-Folder' -Path '\Parent-Folder'  
-Server 'gla-ex1.contoso.com'
```

MORE INFO To learn more about creating public folders, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb691104.aspx>.

True or false? In the EMC, you can mail-enable a public folder by using the New Public Folder Wizard.

Answer: *False*. You use the Public Folder Management Console from the EMC Toolbox node for this task. You can also use the EMS *Enable-MailPublicFolder* cmdlet. For example, the following command mail-enables the Sales public folder:

```
Enable-MailPublicFolder -Identity "\Sales"
```

MORE INFO To learn more about mail-enabling a public folder, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997560.aspx>.

Deleted items

The exam might test that you know how to configure public folder settings to specify deleted item retention time.

True or false? You can configure deleted item retention time by using the public folder Properties dialog box.

Answer: *True*. You can configure deleted item retention time in the public folder Properties dialog box, which you can access from the Public Folder Management Console. You can also use the EMS *Set-PublicFolder* cmdlet for this purpose. For example, the following command sets the deleted item retention time to 20 days on the public folder MyPublicFolder:

```
Set-PublicFolder -Identity "MyPublicFolder"  
-RetainDeletedItemsFor 20.00:00:00 -UseDatabaseRetentionDefaults $false.
```

MORE INFO To learn more about the *Set-PublicFolder* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998596.aspx>.

Message size

The exam might test that you know how to configure the message size restrictions for messages posted to a public folder. You should be aware that you can configure the maximum receive size for a mail-enabled public folder by editing the Receiving Message Size setting in Message Size Restrictions on the Mail Flow tab.

True or false? You can use the *Set-PublicFolder* cmdlet to configure public folder message size limits.

Answer: *True*. For example, the following command sets a 1 MB item size limit on the public folder Sales, as shown in the following:

```
Set-PublicFolder -Identity '\Sales' -MaxItemSize 1MB  
-UseDatabaseQuotaDefaults $false
```

True or false? You can use the *Set-MailPublicFolder* cmdlet to configure the maximum receive size for a mail-enabled public folder.

Answer: *True*. For example, the following command configures the Sales public folder with a maximum receive size of 1 MB for items sent to the folder through email:

```
Set-MailPublicFolder -Identity '\Sales' -MaxReceiveSize 1MB
```

EXAM TIP Remember which public folder options can be configured by using *Set-PublicFolder* and which ones can be set by using *Set-MailPublicFolder*.

MORE INFO To learn more about configuring public folder limits by using the *Set-PublicFolder* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998596.aspx>.

Item age

You should be aware that you can configure item age limits on the Limits tab of a public folder Properties dialog box or by using the EMS.

True or false? You can use the EMS *Get-PublicFolder* cmdlet to configure item age limits.

Answer: *False*. To configure age limits, you use the *Set-PublicFolder* cmdlet (not the *Get-PublicFolder* cmdlet). For example, the following command sets the age limit for the Sales public folder to 28 days:

```
Set-PublicFolder -Identity 'Sales' -AgeLimit 28  
-UseDatabaseAgeDefaults $false
```

Public folder size

You should know how to configure public folder quotas that determine when a warning is sent to senders of public folder messages stating that the folder is almost full, and when the public folder will no longer accept messages.

True or false? You can use the EMS *Get-PublicFolderItemStatistics* cmdlet to view the size of items and attachments in a public folder.

Answer: *True*. For example, the following command displays the statistics for the public folder Sales:

```
Get-PublicFolderItemStatistics -Identity "/Sales"
```

True or false? You can use the *Get-PublicFolderItemStatistics* cmdlet to configure warning and maximum size quotas for a public folder.

Answer: *False*. You use the EMS *Set-PublicFolderItemStatistics* (not the *Get-PublicFolderItemStatistics*) cmdlet for this purpose. You can use this cmdlet to configure the *IssueWarningQuota* and *ProhibitPostQuota* parameters.

Create public folders in Enterprise Content Management, Outlook, and OWA

You should be aware of the several methods of creating public folders. You can use the EMS as previously described in this Objective. You should know how to use the Public Folder Management Console in the Toolbox node of the EMC to create public folders. You should be able to create public folders (but not top-level public folders) from an email client. Enterprise Content Management is a Microsoft Office SharePoint Server 2010 feature that provides a number of powerful tools for managing organizational information. You should be aware that Enterprise Content Management does not create public folders but provides alternative methods of information management that might eventually replace them.

True or false? You can create public folders by using the Outlook or OWA email client.

Answer: *True*. In Outlook and OWA, you use the New Folder command on the context menu for the Public Folder node (in Outlook, this is named All Public Folders) and all folders below that node. After the folder has been created, you can mail-enable it and configure other folder properties.

Configure public folder permissions

You should know how to assign permissions to public folders by assigning roles. You might be asked what roles are available by default and what rights each role grants to its role holders. The Exchange 2010 pre-defined public folder roles and associated rights are as follows:

- **Owner** Can read the folder contents, view and move the folder, read items, create edit and delete items and subfolders, and configure permissions. The Owner is the contact for the public folder.
- **PublishingEditor** Can view the folder, read items, create items, edit and delete all items, and create subfolders.
- **Editor** Can view the folder, create items, read items, and edit and delete any item.
- **PublishingAuthor** Can view the folder, create subfolders, create items, read items, and delete all items, but edit only her own items.
- **Author** Can view the folder, create items, and read items, but delete and edit only his own items.
- **Non-EditingAuthor** Can view the folder, create items, and read items.
- **Reviewer** Can view the folder and read items.

- **Contributor** Can view the folder and create items.

A user who is not assigned any roles can view the public folder but has no other rights.

True or false? You can use EMC to view information about public folder permissions.

Answer: *False*. To view administrative permissions settings, you use the EMS *Get-PublicFolderAdministrativePermission* cmdlet. To view client permissions settings, you use the EMS *Get-PublicFolderClientPermission* cmdlet. For example, the following command displays administrative access rights for the Company-Policy public folder:

```
Get-PublicFolderAdministrativePermission -Identity "\Company-Policy" | FL
```

The following command displays client access permissions to the Company-Policy public folder:

```
Get-PublicFolderClientPermission -Identity "\Company-Policy" | FL
```

True or false? You use the EMS *Add-PublicFolderClientPermission* cmdlet to assign client permissions to a public folder.

Answer: *True*. For example, the following command grants Andy Jacobs the PublishingEditor permission to the Company-Policy public folder:

```
Add-PublicFolderClientPermission -Identity "\Company-Policy"  
-AccessRights PublishingEditor -User "Andy Jacobs"
```

True or false? There are two methods by which you can grant users administrative permissions to public folder.

Answer: *True*. You can add the user to the Public Folder Management role group or you can use the EMS *Add-PublicFolderAdministrativePermission* cmdlet. For example, the following command adds Julian Isla to the Public Folder Management role group:

```
Add-RoleGroupMember -Identity "Public Folder Management"  
-Member "Julian Isla"
```

MORE INFO To learn more about configuring permissions for public folders, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb310789.aspx>.

True or false? Client users can configure public folder permissions in Outlook.

Answer: *True*. Client users with the appropriate permissions can create child public folders (but not top-level public folders) by using Outlook. A user who creates a public folder is the owner of that folder and can set folder permissions for other users. The owner can also mail-enable the folder.

MORE INFO To learn more about managing public folders from Outlook 2007 or Outlook 2010, consult the document at <http://office.microsoft.com/en-us/outlook-help/create-and-share-a-public-folder-HA010148803.aspx>.

True or false? You can use the ECP to add members to a management role group.

Answer: *True*. To use the ECP, navigate to Toolbox in the EMC console, and then double-click Role Based Access Control (RBAC) User Editor. This opens the User Editor in the ECP. You can also use the EMS *Add-RoleGroupMember* cmdlet for this purpose. For example, the following command adds the Kim Akers mailbox to the Chicago Administrators role group.

```
Add-RoleGroupMember "Chicago Administrators" -Member "Kim Akers"
```

EXAM TIP If you need to give a user permission to carry out public folder tasks throughout your organization, for example, configuring replication by using the *Set-PublicFolder* cmdlet, add that user to the Public Folder Management role group.

Configure public folder limits

Earlier in this Objective, the configuration of deleted item retention limits, message size limits, public folder quota limits, and item age limits was discussed. You can accept the defaults for all of these limits as specified for the public folder database. Public folder databases are discussed in Chapter 1, "Installing and Configuring Exchange Servers." *Set-PublicDatabase* cmdlet parameters such as *UseDatabaseAgeDefaults*, *UseDatabaseQuotaDefaults*, and *UseDatabaseRetentionDefaults* specify whether to use the database limits.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You create a public folder named Company-Policy on a Mailbox server in your Exchange 2010 organization. You want to delegate the task of configuring this public folder to replicate to all Mailbox servers in your organization to Don Hall. Don needs to be able to run the *Set-PublicFolder* cmdlet to configure the replication schedule. What action should you take?
2. Kim Akers has the right to create a new public folder that is a child of the Sales public folder. Kim is an ordinary user with no Exchange administrative privileges. What tool can Kim use to create and manage this public folder?
3. What EMC tool can you use to configure the maximum item size of a single public folder?
4. You want to assign the PublishingAuthor role for the Sales public folder to the members of a security group in an OU. What EMS cmdlet can you use?
5. You want to enable Kim Akers to view the Company-Policy public folder, create items, read items, and edit and delete any item. You do not want to grant Kim any excessive privileges. To what public folder role do you add her account?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 2.1: Create and configure mailboxes

1. You issue the following command:

```
Set-Mailbox -Identity "Kim Akers" -ForwardingAddress  
"andersonn@adadum.com" -DeliverToMailboxAndForward $true
```

2. The *Connect-Mailbox* cmdlet.
3. You issue the following command:

```
Set-mailbox -Identity "Don Hall" -IssueWarningQuota 209715200  
-ProhibitSendQuota 262144000 -ProhibitSendReceiveQuota 293601280  
-RetainDeletedItemsFor 21.00:00:00 -UseDatabaseQuotaDefaults $false  
-UseDatabaseRetentionDefaults $false
```

4. You use the *New-MoveRequest* cmdlet on MBX02.
5. You need to deploy the Hub Transport server role.

Objective 2.2: Configure RBAC

1. You issue the following command:

```
Set-ManagementScope -Identity "Mailbox Scope"  
-ServerList MBX01,MBX02,MBX03,MBX04
```

2. You create a new management role and add it to the role group.
3. Add Don as a role holder in the built-in Hygiene Management role group.
4. Brian can view and modify the Outlook Web Access options of any user in the organization, provided that user can also view and modify them. He can also manage membership of the role group
5. You use the following command:

```
New-ManagementRoleAssignment -Name "Sales_Recipient_Assignment"  
-Role "SalesRecipientAdmin" -User "SalesAdmin"  
-DomainOrganizationUnitRestriction Adatum.com/SalesUsers
```

Objective 2.3: Create and configure resource mailboxes and shared mailboxes

1. You would use the following EMS command:

```
Set-Mailbox CloudChamber -Type Equipment
```

2. You use the *Set-Mailbox* cmdlet.
3. You configure the Room mailbox properties to add Kim as a delegate.

4. You would issue the following command:

```
Set-CalendarProcessing MeetingRoomA -AutomateProcessing AutoAccept
```

5. You should create an Equipment mailbox for the telescope and enable automatic booking on this mailbox.

Objective 2.4: Create and configure recipients and distribution groups

1. You configure the distribution group to specify that messages sent to the group must be approved by a moderator. You assign Kim Akers the group moderator role. You add Don Hall's account as a sender that does not require message approval.
2. You configure a recipient filter when you create the group and determine which recipient types you should include on the filter settings.
3. The group must be configured with the Universal scope, because otherwise you could not mail-enable it.
4. You issue the following EMS command:

```
Set-DynamicDistributionGroup -Identity Contoso-Sales  
-ModerationEnabled $true -ModeratedBy don_hall@contoso.internal
```

5. You can use the *Set-DistributionGroup* cmdlet.

Objective 2.5: Create and configure public folders

1. Add Don Hall to the Exchange Public Folder Administrators management role.
2. Kim can use an email client, for example, Outlook or OWA.
3. You can use the Limits tab of the public folder Properties dialog box, which you can access from the Public Folder Management Console.
4. You can use the *Add-PublicFolderClientPermission* cmdlet.
5. Editor.

Configuring Client Access

Roughly 15 percent of the 70-662 exam focuses on the topic “Configuring Client Access.” In this objective, the exam might test your knowledge of managing a certificate services environment and a Client Access server environment. You need to be able to configure POP, IMAP and ActiveSync, request and install an SSL certificate, configure Microsoft Outlook Anywhere and remote procedure call (RPC) client access, and configure federated sharing and Microsoft Office OWA.

This chapter covers the following objectives:

- Objective 3.1: Configure POP, IMAP, and Microsoft ActiveSync.
- Objective 3.2: Configure Outlook Anywhere and RPC Client Access.
- Objective 3.3: Configure federated sharing.
- Objective 3.4: Configure Outlook Web App (OWA).

Objective 3.1: Configure POP, IMAP, and Microsoft ActiveSync

In this exam option, you might be tested on how to create a certificate request file and obtain and install an SSL certificate. You should know when you can use a certificate signed by a local CA and when you need to use a certificate signed by a trusted third-party CA, and the function of a subject alternative name (SAN). You need to know how to enable, configure, and secure POP3 and IMAP4, and configure Microsoft Exchange ActiveSync to work with mobile devices. You should know how to configure the ActiveSync virtual directory, ActiveSync mailbox policies, Direct Push, and Autodiscover.

Exam need to know

- Enable, configure, and secure POP and IMAP
For example: Do you know how to configure the startup type for the POP3 service so that your users can access email by using Microsoft Outlook Express?
- Manage certificates
For example: Do you know what a SAN does?

- Configure mobile device policies

For example: Do you know what EMS cmdlet you use to configure ActiveSync device policies?

- Autodiscover

For example: Do you know how to verify that the Autodiscover service settings are working properly for Outlook 2007 and 2010 clients?

- Authentication

For example: Do you know how to configure ActiveSync authentication?

- Configure the Exchange ActiveSync virtual directory

For example: Do you know how to configure ActiveSync settings by configuring the ActiveSync virtual directory?

- Configure the external name for Exchange ActiveSync

For example: Do you know how to set the external client access domain for ActiveSync on the default Exchange ActiveSync virtual directory on a specified Client Access server?

- Configure Client Access settings for Exchange ActiveSync

For example: Do you know how to specify the remote servers that are blocked or allowed for remote document access?

- Direct Push

For example: Do you know what versions of EAS support Direct Push?

- Configure Exchange ActiveSync mailbox policies

For example: Do you know how to configure a mailbox policy?

- Configure Autodiscover for Exchange ActiveSync

For example: Do you know how to enable the Autodiscover service in ActiveSync?

Enable, configure, and secure POP and IMAP

You need to know how to enable, configure, and secure the POP3 and IMAP4 services to support a variety of email clients. You should be aware that Outlook defaults to RPC when interacting with Exchange Server 2010 SP1 or SP2. To support POP3 and IMAP4 traffic, you need to enable both these services on the Client Access server and ensure that you configure the mailbox user's settings to allow access to their mailbox by using the appropriate protocol.

True or false? You can use the EMC to start and stop the POP3 and IMAP4 services.

Answer: False. You use the Services Console to start and stop these services on a Client Access server. Typically you would set the service startup type to Automatic.

True or false? Unencrypted POP3 traffic uses TCP port 110.

Answer: True. Unencrypted POP3 traffic uses TCP port 110, POP3 traffic encrypted with SSL uses port 995. Unencrypted IMAP4 traffic uses TCP port 143, IMAP4 traffic encrypted with SSL uses port 993.

EXAM TIP You can enable IMAP4 or POP3 for a specific user mailbox by editing the user's mailbox Properties dialog box.

True or false? You can secure POP3 and IMAP4 by using TLS or SSL.

Answer: *True*. You can use the EMC to access the Properties dialog box for POP3 or IMAP4 and specify an X.509 certificate name on the Authentication tab. You can also use the EMS *Set-PopSettings* or *Set-ImapSettings* cmdlet, as appropriate. The following command configures the POP3 service on server VAN-EX1 to use TLS or SSL security, and specifies that a certificate named MyCert01 is used for that purpose:

```
Set-PopSettings -server VAN-EX1 -X509CertificateName MyCert01
```

EXAM TIP Outlook Express and Windows Live Mail use POP3 to access user mailboxes. To ensure email availability to recipients who are using these clients, you need to configure the POP3 service to start automatically.

MORE INFO To learn more about configuring POP3 and IMAP4 to use SSL or TLS certificates, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa997290.aspx> and <http://technet.microsoft.com/en-us/library/aa996052.aspx>.

Manage certificates

The exam might ask you about the function of SSL certificates (also called server certificates) and how you obtain such a certificate from a trusted external CA. Clients can use these certificates to establish an encrypted connection to a Client Access server and verify the identity of that server to the client.

Note that certificates for TLS and MTLS are discussed further in Chapter 4, "Configuring Message Transport."

MORE INFO To learn more about using digital certificates and SSL with Client Access servers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351044.aspx>.

True or false? When you install Exchange Server 2010 SP1 OR SP2 on a computer, this installs a default self-signed certificate.

Answer: *True*. However, this self-signed certificate will be trusted only by other Exchange servers in the same organization. You need to take additional steps to get clients to trust installed certificates. If you want your messaging organization to be trusted externally (typically you do), then you can purchase a certificate signed and issued by a trusted third-party CA.

True or false? A SAN permits a public key certificate to identify more than one entity or device.

Answer: *True*. In Exchange 2010, SANs allow an SSL certificate to be mapped to multiple FQDNs. The Exchange self-signed certificate will have SANs that correspond to the name of the Exchange server, including the server name and the server's FQDN.

MORE INFO To learn more about digital certificates and SSL, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351044.aspx>.

True or false? When generating a certificate request file, you can specify that you want to apply this certificate to all subdomains by using wildcards.

Answer: *True*. Using this option, you can add subdomains at a later stage without having to update an existing certificate. You can use wildcard certificates (for example) with Outlook Anywhere. This is discussed later in this chapter.

MORE INFO To learn more about creating a certificate for use with Exchange, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351057.aspx>.

True or false? You can use the EMS *Enable-ExchangeCertificate* cmdlet to assign services to a certificate.

Answer: *True*. After you have obtained and installed an SSL certificate, you can assign Exchange services to the certificate so that these services can use the certificate for identification and secure communication. You can use the *Enable-ExchangeCertificate* cmdlet with the *Server*, *Services*, and *Thumbprint* parameters or the EMC Assign Services to Certificate Wizard.

MORE INFO To learn more about assigning services to a certificate, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351257.aspx>.

Configure mobile device policies

You need to know how to use Exchange ActiveSync mailbox policies to allow administrators to specify settings that apply to mobile devices. You should be able to use the New Exchange ActiveSync Mailbox Policy Wizard from the EMC or the EMS *New-ActiveSyncMailboxPolicy* cmdlet to create a new ActiveSync Mailbox Policy. Exchange ActiveSync (EAS) 14.1 comes as part of Exchange Server 2010 SP2, and mobile devices should be able to support this protocol.

MORE INFO To learn more about ActiveSync and the features it supports, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998357.aspx>.

True or false? You can use the EMS *Set-ActiveSyncMailboxPolicy* cmdlet to configure ActiveSync device policies.

Answer: *True*. When you have created the policy, you can configure additional settings by accessing the policy Properties dialog box in the EMC or by using the *Set-ActiveSyncMailboxPolicy* cmdlet. You can specify which calendar and email items can be synchronized, whether Direct Push is enabled, whether HTML-formatted email can be sent to the device, and whether there is a limit on the size of attachments that can be sent to the device.

True or false? You can manage mobile devices by using EMS, including performing a remote wipe of the device.

Answer: *True*. The following four EMS cmdlets are available to manage mobile devices:

- **Get-ActiveSyncDevice** Lists all the mobile phones that have been paired with mailboxes.
- **Get-ActiveSyncDeviceStatistics** Provides information about mobile devices that are paired with specific mailboxes.
- **Clear-ActiveSyncDevice** Wipes a mobile device.
- **Remove-ActiveSyncDevice** Removes the relationship between a specific mailbox and a mobile device.

When OWA policies are configured appropriately, users can perform a remote wipe on a mobile device from OWA. Note that administrator privileges are required to use EMS cmdlets to wipe mobile devices, but ordinary users can wipe their own mobile devices remotely by using OWA.

EXAM TIP Remember that Client Access servers do not have the POP3 and IMAP4 services enabled by default.

MORE INFO To learn more about configuring ActiveSync mailbox policies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123484.aspx>.

Autodiscover

You need to know what the Autodiscover service is, what it does, and how to verify it is working correctly. You should be aware that the Autodiscover service provides clients running Outlook 2007 and Outlook 2010 and mobile phones running Windows Mobile 6.1 or later with user profile configuration settings. Autodiscover uses client email addresses and passwords to automatically configure user mail profiles. For example, if Autodiscover is configured correctly, Kim Akers can log on to a new PC in the Contoso domain that has Office 2010 installed, open Outlook 2010, and interact with her Exchange mailbox.

True or false? You can use the EMS *Test-OutlookWebServices* cmdlet to verify that the Autodiscover service settings are working properly for Outlook 2007 and 2010 clients.

Answer: *True*. For example, the following command checks that Autodiscover is functioning properly on server CAS02:

```
Test-OutlookWebServices -ClientAccessServer CAS02
```

MORE INFO To learn more about Autodiscover, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124251.aspx>.

EXAM TIP Remember that to enable the Autodiscover service and ActiveSync for Internet users, you need to assign an external name to the Client Access server. You can do this, for example, by adding an A record in DNS.

Authentication

The exam might check that you know how to configure ActiveSync to use SSL encryption and authentication for communications between the Exchange server and the mobile phone client. You should be aware that certificate-based authentication works with a self-signed certificate, a certificate from an existing public key infrastructure, or a third-party commercial certificate.

True or false? You can use the EMS *Set-ActiveSyncVirtualDirectory* cmdlet to configure ActiveSync authentication.

Answer: *True*. You can use this cmdlet with (for example) the *BasicAuthEnabled*, *ClientCertAuth*, *ExternalAuthenticationMethods*, *InternalAuthenticationMethods*, and *MobileClientCertificateProvisioningEnabled* parameters.

True or false? Certificate-based authentication is the only security feature available for ActiveSync.

Answer: *False*. You can use certificate-based authentication together with other security features, such as local device wipe and a device password. The private key and certificate for client authentication are stored in memory on the mobile phone. If an unauthorized user tries to bypass the mobile phone password, all user data is purged, including the certificate and private key.

MORE INFO To learn more about the *Set-ActiveSyncVirtualDirectory* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123679.aspx>.

Configure the Exchange ActiveSync virtual directory

The exam might test that you know how to configure ActiveSync settings by configuring the ActiveSync virtual directory. You should be aware that ActiveSync allows users to synchronize any device that supports ActiveSync (for example, Windows Phone, iPhones, and so on) with their Exchange mailboxes. ActiveSync is enabled automatically when you install the Client Access server role.

True or false? The only way to configure ActiveSync settings is by editing the ActiveSync virtual directory properties using the EMC.

Answer: *False*. You can also configure the ActiveSync virtual directory by using the *Set-ActiveSyncVirtualDirectory* cmdlet. For example, the following command enables bad item reporting on the server VAN-EX1.

```
Set-ActiveSyncVirtualDirectory -Identity "VAN-EX1\Microsoft-Server-ActiveSync" -BadItemReportingEnabled:$true
```

True or false? The EMS *Test-ActiveSyncConnectivity* cmdlet allows you to test to verify that ActiveSync is functioning properly.

Answer: *True*. For example, the following command tests ActiveSync connectivity for the mailbox Kim_Akers on Client Access server GLA_CAS02:


```
Test-ActiveSyncConnectivity -ClientAccessServer GLA_CAS02  
-URL http://adatum.com/mail -MailboxCredential "Kim_Akers"
```

EXAM TIP You can reconfigure the URL of the ActiveSync virtual directory by using the *Set-ActiveSyncVirtualDirectory* cmdlet. This might be necessary if you want users to be able to access a mailbox server through the Internet by using ActiveSync.

MORE INFO To learn more about ActiveSync, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998357.aspx>.

Configure the external name for Exchange ActiveSync

You need to know why it is typically necessary to assign an alternative name (or names) to a Client Access server, and how to do this. You should be aware that such servers are often accessed by using different names, depending on whether the client is on the organization's internal or external network. It therefore might be necessary to reconfigure the URL of the ActiveSync virtual directory if you want users to be able to access their mailboxes through the Internet by using ActiveSync. You can use the Configure External Client Access Domain Wizard from the EMC to configure the external name associated with OWA, ActiveSync, and Exchange Control Panel (ECP).

True or false? You can also use the *Set-ActiveSyncVirtualDirectory* cmdlet to configure the external client access domain name for ActiveSync.

Answer: *True*. For example, the following command sets the external client access domain for ActiveSync on the default Exchange ActiveSync virtual directory on the Client Access server CAS01 to <http://adatum.com/sync>:

```
Set-ActiveSyncVirtualDirectory -Identity "CAS01\Microsoft-Server-  
ActiveSync" -ExternalUrl "http://contoso.com/sync"
```

MORE INFO To learn more about configuring an external namespace for a Client Access server, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351198.aspx>.

Configure Client Access settings for Exchange ActiveSync

You should be aware that when a Microsoft Windows SharePoint Services (WSS) or Microsoft Windows file share request is received via ActiveSync, the tool looks for the requested host name in the Allow and Block lists. If, however, the host name is not found in either list, you should know how to specify the default action as Block or Allow.

True or false? You use the *Set-ActiveSyncVirtualDirectory* cmdlet to specify this action.

Answer: *True*. You use this cmdlet with the *RemoteDocumentsActionForUnknownServers* parameter, which you set to Block or Allow.

True or false? You can specify the remote servers that are blocked or allowed for remote document access.

Answer: *True*. The *RemoteDocumentsAllowedServers* parameter lists all the allowed servers for remote document access. The *RemoteDocumentsBlockedServers* parameter lists all the blocked servers for remote document access. You set either or both of these parameters by using the *Set-ActiveSyncVirtualDirectory* cmdlet.

EXAM TIP Typically, the most common configuration setting you implement for ActiveSync client access is specifying the URL of the ActiveSync virtual directory for external users. However, this was described in the previous section, and is therefore not repeated here.

Direct Push

You should be aware that Direct Push (or DirectPush) is a real-time push email solution that allows the server to instruct the client device that a new item is available and then instructs the client device to perform a synchronization. You should know that Direct Push keeps a mobile phone current over a cellular network connection. It provides notification to the mobile phone when new content is ready to be synchronized.

True or false? ActiveSync supports Direct Push.

Answer: *True*. Direct Push was introduced with Exchange ActiveSync 2.5 and is supported in all subsequent versions.

Configure Exchange ActiveSync mailbox policies

You should know that you can use ActiveSync mailbox policies to apply policy and security settings to a user or group of users. You should be aware that mailbox policy lets you apply a common set of policy or security settings to a user or group of users. You can specify a considerable number of settings by using Exchange ActiveSync mailbox policies.

Mailbox policies can be configured by using the *Set-ActiveSyncMailboxPolicy* cmdlet, and you have already seen how you configure mobile device policies earlier in this Objective.

MORE INFO To learn more about ActiveSync mailbox policies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123484.aspx>.

Configure Autodiscover for Exchange ActiveSync

You should be aware that you can use the *Set-ActiveSyncVirtualDirectory* cmdlet to enable the Autodiscover service in ActiveSync. You cannot configure the Autodiscover service for Exchange ActiveSync by using the EMC. Remember that the ability to use

Autodiscover depends on the operating system of the mobile phone. Not all mobile phone operating systems that support synchronization with Exchange 2010 support Autodiscover.

The following command configures Autodiscover for ActiveSync on the VAN-EX1 server:

```
Set-ActiveSyncVirtualDirectory -Identity "VAN-EX1\Microsoft-Server-ActiveSync (Default Web Site)"
```

MORE INFO To learn more about configuring Autodiscover for ActiveSync, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996339.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have installed an Exchange Server 2010 SP1 server in the contoso.com forest as a typical installation. Some Contoso employees use older workstations with Outlook Express email clients. How can you ensure that these employees can access mailboxes on the new server?
2. You want to ensure that external users can trust your organization's OWA server. To what type of CA should you send your certificate request?
3. What EMS cmdlet can you use to test the IMAP4 functionality for a specified Client Access server for all mailboxes on servers running Microsoft Exchange Server 2010 SP1 or SP2 in the same Active Directory site?
4. What EMS cmdlet could you use to limit the size of attachments that a user can download to a mobile device using ActiveSync?
5. What EMS cmdlet can you use to remotely wipe a mobile phone?

Objective 3.2: Configure Outlook Anywhere and RPC client access

In this exam objective, you might be tested on how to enable and configure Outlook Anywhere and RPC client access, how to troubleshoot Outlook Anywhere connectivity, and how to create and configure client access arrays and client throttling policies. You need to know how to enable and disable MAPI, POP3, and IMAP4 access to a mailbox.

Exam need to know

- Autodiscover

For example: Do you know what service can automatically detect which Client Access server is closest to a user's mailbox?

- MAPI

For example: Do you know how to enable or disable MAPI access to a specific mailbox?

- Create client access arrays

For example: Do you know how to configure the Outlook 2003 client to use RPC encryption?

- Certificates

For example: Do you know how to configure certificate use in Outlook Anywhere?

- SAN

For example: Do you know when you would use a SAN and when you would use a wildcard certificate?

- Configure virtual directories

For example: Do you know how to configure SSL on the /rpc virtual directory?

- Enable and configure Outlook Anywhere on the CAS

For example: Do you know how to enable Outlook Anywhere and specify the external host name of the Client Access server and the authentication method?

- Troubleshoot Outlook Anywhere connectivity

For example: Do you know to test whether clients can access a specific mailbox using Outlook Anywhere?

Autodiscover

You should be aware that in addition to its use with ActiveSync (described earlier in this chapter), the Autodiscover service can be used with Outlook Anywhere. You should also know that Autodiscover can be used to determine the parameters for the EMS *Test-OutlookConnectivity* cmdlet.

True or false? The Autodiscover service can automatically detect which Client Access server is closest to a user's mailbox.

Answer: True. If you have multiple Active Directory sites separated by low-bandwidth network connectivity links, you can enable a Client Access server in each site and use the Autodiscover service to locate the Client Access server closest to a user's mailbox, whether that mailbox exists on an Exchange 2003 back-end server enabled for RPC over HTTP or on an Exchange 2007 or Exchange 2010 Mailbox server.

MAPI

You need to know that the RPC Client Access service allows incoming Outlook and Outlook Anywhere client access to Exchange mailboxes through MAPI connections to the Client Access server, with the exception of public folder requests, which are made directly to the Mailbox server.

True or false? You can enable or disable MAPI access to a specific mailbox.

Answer: True. You can enable or disable the MAPI protocols by accessing the mailbox Properties dialog box from the EMC, or by using the EMS *Set-CASMailbox* cmdlet with the *MAPIEnabled* parameter set to *\$False*.

True or false? You can use the EMS *Get-CASMailbox* cmdlet to specify whether clients can connect to Outlook by using Outlook Anywhere.

Answer: *False*. You use the *Set-CASMailbox* (not the *Get-CASMailbox*) cmdlet with the *MAPIBlockOutlookRpcHttp* parameter.

MORE INFO To learn more about the *Set-CASMailbox* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125264.aspx>.

Create client access arrays

The exam might ask you how to create a client access array and how you assign this array to a mailbox database. You should be aware that a client access array is a collection of load-balanced Client Access servers, that there can be only one client access array per active directory site, and that a single client access array cannot span multiple sites. You can create a client access array by using the EMS *New-ClientAccessArray* cmdlet. For example, the following command creates a new client access array named *myclientarray.contoso.com* in the Aberdeen site:

```
New-ClientAccessArray -FQDN myclientarray.contoso.com -Site Aberdeen  
-Name "myclientarray.contoso.com"
```

True or false? You can use the *New-ClientAccessArray* cmdlet to assign a client access array to a mailbox database.

Answer: *False*. You use the EMS *Set-MailboxDatabase* cmdlet with the *RpcClientAccess* parameter for this purpose. For example, the following command configures mailbox database *MyMailboxDatabase* to use client access array *myclientarray.contoso.com*:

```
Set-MailboxDatabase MyMailboxDatabase -RpcClientAccess myclientarray.  
contoso.com
```

MORE INFO To learn more about creating client access arrays, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351149.aspx>.

Certificates

You need to know how to obtain a certificate and what certificates enable a Client Access server to support Outlook Anywhere. Certificates are discussed earlier in this chapter and also in Chapter 4.

True or false? To prepare a Client Access server to support Outlook Anywhere, you must obtain a valid SSL certificate.

Answer: *True*. You need to obtain a valid SSL certificate from a CA that is trusted by Outlook Anywhere.

True or false? You can configure certificate use in Outlook Anywhere by modifying the EXPR Outlook Provider.

Answer: *True*. Outlook Providers are specifically related to the client type. When the Client Access server role is installed, by default three providers are created: EXCH (internal), EXPR (Outlook Anywhere), and WEB (external). You can configure (for example) certificate usage such as enabling Outlook Anywhere to use wildcard certificates by configuring the appropriate Outlook Provider by using the *EMS Set-OutlookProvider* cmdlet.

MORE INFO To learn more about the *Set-OutlookProvider* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123683.aspx>.

SAN

SANs were discussed earlier in this chapter, and you should know that the Subject Alternative Name certificate property permits you to have a single certificate for more than one URL or FQDN.

True or false? A SAN permits a public key certificate to identify more than one entity or device.

Answer: *True*. The Exchange self-signed certificate contains SANs that correspond to the name of the Exchange server, including the server name and the server's FQDN.

True or false? You can also apply a certificate to all subdomains by using wildcards.

Answer: *True*. Using this option, you can add subdomains at a later stage without having to update an existing certificate. Outlook Anywhere can use wildcard certificates, but note that they are specifically designed for subdomains and do not specify FQDNs or server names.

Configure virtual directories

The exam might test that you know how to configure the /rpc virtual directory to use SSL for Outlook Anywhere. You should be aware that when you install the Microsoft Exchange 2010 Client Access server role, a virtual directory named /rpc is created on the default IIS website on the Exchange server.

True or false? You use IIS to configure SSL on the /rpc virtual directory.

Answer: *True*. In IIS, you access the /rpc virtual directory Properties dialog box. On the Security tab, you click Edit in Secure Communications, and then select Require Secure Channel (SSL).

EXAM TIP If you perform the same procedure in the Default Web Site Properties dialog box, you enable SSL for the entire website, not just for the /rpc virtual directory.

MORE INFO To learn more about configuring SSL for Outlook Anywhere, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa995982.aspx>.

Enable and configure Outlook Anywhere on the CAS

You should be aware that Internet clients use Outlook Anywhere to access internal Exchange resources without having to use a VPN. You need to ensure that the Client Access server hosting Outlook Anywhere is accessible to clients on the Internet. You therefore need to know how to prepare a Client Access server to support Outlook Anywhere. The RPC over HTTP feature must be present on the Windows Server 2008 or Windows Server 2008 R2 host. Also, the external name used with Outlook Anywhere must be resolvable by a client on the Internet.

When you have met these prerequisites, to enable Outlook Anywhere, navigate to the Server Configuration\Client Access node in EMC, and then in the Actions pane, click Enable Outlook Anywhere.

EXAM TIP Remember the prerequisites for Outlook Anywhere.

True or false? Outlook Anywhere supports only NT LAN Manager (NTLM) authentication.

Answer: *False*. Outlook Anywhere supports both NTLM and basic authentication. You can switch between authentication types by using the EMS *Set-OutlookAnywhere* cmdlet. For example, the following command sets the client authentication method to NTLM for the /rpc virtual directory on the Client Access server GLA-CAS01:

```
Set-OutlookAnywhere -Identity:GLA-CAS01\Rpc (Default Web Site)  
-ClientAuthenticationMethod Ntlm
```

MORE INFO To learn more about the *Set-OutlookAnywhere* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123545.aspx>.

True or false? You can modify Outlook Anywhere properties by using the *Set-OutlookAnywhere* cmdlet.

Answer: *True*. Once you have enabled Outlook Anywhere, you can modify its properties either by using the *Set-OutlookAnywhere* cmdlet or by accessing the Properties dialog box of the Client Access server in the EMC. You can reconfigure the external host name and authentication method and whether the Client Access server supports SSL offloading.

EXAM TIP Remember that the RPC over HTTP feature must be present on the Windows Server 2008 or Windows Server 2008 R2 host before you can deploy Outlook Anywhere.

MORE INFO To learn more about managing Outlook Anywhere, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123513.aspx>.

True or false? For clients running Outlook 2007 and Outlook 2010, the transition from Exchange 2007 to Exchange 2010 is seamless.

Answer: *True*. This is because these clients automatically support RPC encryption. However, Outlook 2003 clients need to be configured to use RPC encryption, which is not enabled by default.

True or false? You can disable RPC encryption on the Client Access server.

Answer: *True*. You can carry out this procedure as an alternative to reconfiguring older clients. You disable RPC encryption by using the EMS *Set-RpcClientAccess* cmdlet with the *EncryptionRequired* parameter set to *\$False*.

MORE INFO To learn more about RPC client access, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee332317.aspx>.

True or false? You can block email clients that use IMAP4 to connect to a specific server.

Answer: *True*. External users may connect to mailboxes on an Exchange Server 2010 SP1 or SP2 server by using IMAP4. If required, you can block IMAP4 access to mailboxes on the server by disabling the IMAP4 feature in the server Properties dialog box.

True or false? You can enable or disable POP3 or IMAP4 access to a specific mailbox.

Answer: *True*. You can enable or disable either or both of these protocols by accessing the mailbox Properties dialog box from the EMC, or by using the EMS *Set-CASMailbox* cmdlet with the *PopEnabled* or *ImapEnabled* parameter.

EXAM TIP Remember that you can disable POP3 and IMAP4 for a specified mailbox or for an entire server.

Troubleshoot Outlook Anywhere connectivity

Once you have set up Outlook Anywhere, you can verify that it is functioning by using the *Test-OutlookConnectivity* cmdlet with the *Protocol* parameter set to *HTTP*. You can use the Autodiscover service to determine the parameters for the *Test-OutlookConnectivity* cmdlet or enter these manually.

True or false? A typical end-to-end Outlook connectivity test scenario for Outlook Anywhere includes testing for connectivity through the Autodiscover service, creating a user profile, and logging on to the user mailbox.

Answer: *True*. The following command adheres to this scenario and tests TCP/IP connectivity by setting the *Protocol* parameter to *HTTP*:

```
Test-OutlookConnectivity -Protocol HTTP -GetDefaultsFromAutoDiscover $true
```

MORE INFO To learn more about the *Test-OutlookConnectivity* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638082.aspx>.

True or false? You can test whether clients can access a specific mailbox using Outlook Anywhere by using the Remote Connectivity Analyzer.

Answer: *True*. You can access this tool at <http://www.testexchangeconnectivity.com> site. The Outlook Anywhere (RPC over HTTP) test validates Outlook Anywhere connectivity for a specified mailbox.

MORE INFO To learn more about the Remote Connectivity Analyzer, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ff701693.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You do not want remote users to access the mailboxes on the Mailbox server GLA-MBX01 using IMAP4 clients. How do you block access to these users?
2. Which EMS cmdlet can you use to verify Outlook Anywhere connectivity through the Autodiscover service?
3. Which EMS cmdlet would you use to set the Outlook Anywhere client authentication method to NTLM?
4. What EMS cmdlet and parameter enable you to specify whether clients can connect to Outlook by using Outlook Anywhere?
5. What EMS cmdlet and parameter do you use to assign a client access array to a mailbox database?

Objective 3.3: Configure federated sharing

This exam objective might test to confirm that you know how federated sharing works and how to set it up. You need to know the certificate requirements for implementing federated sharing; how you create and configure a federated trust; and how you create and configure a federated organization identifier, an organizational relationship, and a sharing policy. You might be asked about DNS configuration and configuring mailboxes to use sharing policies. You need to know how to assign and remove the federated sharing role.

Exam need to know

- Certificates

For example: Do you know how to obtain an X.509 certificate from an external, trusted CA or a commercial CA?

- Enrollment

For example: Do you know how to create a federation trust by using the EMS *New-FederationTrust* cmdlet?

- DNS

For example: Do you know in what type of DNS record you store the application identifier?

- Calendar and free/busy

For example: Do you know how to create an organization relationship with a partner organization and enable free/busy information?

- SAN

For example: Do you know why it is preferable to list each required domain as a SAN in a trusted X.509 certificate, rather than to use a wildcard certificate?

- Assign policies

For example: Do you know how to assign a sharing policy?

- Create and configure a federated trust

For example: Do you know how to add a specified domain to an existing federation trust?

- Create and configure a federated organization identifier

For example: Do you know how to create a federated organizational identifier?

- Create and configure a sharing relationship

For example: Do you know whether you need to configure a sharing relationship before you configure a federation trust?

- Create and configure a sharing policy

For example: Do you know how to enable users to participate in federated sharing?

- Assign sharing policies to user accounts

For example: Do you know what rights membership of the role-based access control (RBAC) federated sharing management role grants to user accounts that are its role assignees?

Certificates

Certificates were discussed earlier in this chapter, and you should know how to obtain an X.509 certificate from an external, trusted CA or a commercial CA. You need to know how to submit a valid X.509 certificate issued by an external CA trusted by Windows Live Domain Services to the Microsoft Federation Gateway and how to download the Microsoft Federation Gateway public key and certificate.

True or false? You can use the EMS *Set-FederationTrust* cmdlet to change the certificate that verifies a trust.

Answer: True. If you want to change this certificate (possibly because the current certificate is due to expire), you need first to discover the thumbprint of the new certificate. You deploy the certificate on all Hub Transport servers and Client Access servers in your Exchange organization, identify the certificate as the next certificate, and then use the *Set-FederationTrust* cmdlet with the *PublishFederationCertificate* switch to configure the trust to use this certificate as the current certificate.

For example, the following two commands configure the federation trust named Microsoft Federation Gateway to use the certificate with the thumbprint AC00F-12CBA8358253F412FD0984B5CCAF2AF4F27 as the next certificate and then deploy it as the current certificate:

```
Set-FederationTrust -Identity "Microsoft Federation Gateway"
-Thumbprint AC00F12CBA8358253F412FD0984B5CCAF2AF4F27
```

```
Set-FederationTrust -Identity "Microsoft Federation Gateway"  
-PublishFederationCertificate
```

MORE INFO To learn more about the *Set-FederationTrust* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298034.aspx>.

True or false? When you create a federation trust, you need to obtain the thumbprint of a trusted third-party CA that can validate the trust.

Answer: *True*. For example, the following command creates a federation trust named Microsoft Federation Gateway using the thumbprint of an exportable certificate:

```
New-FederationTrust -Name "Microsoft Federation Gateway"  
-Thumbprint AC00F12CBA8358253F412FD0984B5CCAF2AF4F27
```

MORE INFO To learn more about the EMS *New-FederationTrust* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351047.aspx>.

True or false? You can use the thumbprint of a certificate obtained from a local CA.

Answer: *False*. The domain used for establishing a federation trust must be resolvable from the Internet. A locally generated self-signed certificate cannot be used for this purpose.

EXAM TIP Remember that you need to obtain an X.509 certificate from a trusted external CA before you can create a federation trust.

Enrollment

You should be aware that in order to use the Microsoft Federation Gateway, you must enroll your Active Directory Rights Management Services (AD RMS) cluster.

True or false? You can enroll by using the default AD RMS cluster certificate only.

Answer: *False*. You can also enroll with a valid trusted certificate, provided you know the thumbprint of that certificate. For example, the following command enrolls by using the default AD RMS cluster certificate:

```
Install-RmsMfgEnrollment
```

The following command enrolls by using a certificate with the thumbprint AC00F12CBA8358253F412FD0984B5CCAF2AF4F27:

```
Install-RmsMfgEnrollment -CertificateThumbprint  
AC00F12CBA8358253F412FD0984B5CCAF2AF4F27
```

MORE INFO To learn more about enrolling with the Microsoft Federation Gateway, consult the TechNet document at [http://technet.microsoft.com/en-us/library/gg636971\(ws.10\).aspx](http://technet.microsoft.com/en-us/library/gg636971(ws.10).aspx).

DNS

The exam might test that you know of the need to store the application identifier (or proof-of-ownership) used for a federated trust in a DNS record, and the type of DNS record you need to configure. You also need to know how to obtain the application identifier when you have configured a federation trust for your organization.

True or false? You need to configure DNS with a pointer (PTR) resource record.

Answer: *False*. You need to configure DNS with a TXT resource record that provides proof-of-ownership for your domain name.

True or false? You can obtain the application identifier by using the EMS *Get-FederationTrust* cmdlet.

Answer: *True*. For example, the following command retrieves properties (including identifiers) of federation trusts configured for the organization:

```
Get-FederationTrust | FL
```

EXAM TIP Remember that the proof-of-ownership (or application identifier) is stored in DNS as a TXT resource record.

MORE INFO To learn more about the *Get-FederationTrust* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351262.aspx>.

Calendar and free/busy

The exam might test that you know how to create and configure an organizational relationship. You can use the New Organizational Relationship Wizard in the EMC for this task. If instead you choose to use the EMS, you must access the Federated Organization Identifier (OrgID) by using the EMS *Get-FederationInformation* cmdlet. You then pipe the output from this cmdlet into the *New-OrganizationRelationship* cmdlet.

For example, the following command creates an organization relationship with the Contoso organization, enabling free/busy information and specifying that the requesting organization receives free/busy, subject, and location information from the target organization:

```
Get-FederationInformation -DomainName Contoso.com |  
New-OrganizationRelationship -Name "Contoso" -FreeBusyAccessEnabled $true  
-FreeBusyAccessLevel -LimitedDetails
```

MORE INFO To learn more about the *Get-FederationInformation* and *New-OrganizationRelationship* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd351221.aspx> and <http://technet.microsoft.com/en-us/library/ee332357.aspx>.

True or false? If you enable the sharing of free/busy information, you can configure one of three levels of access.

Answer: *True*. You can configure the following levels of access:

- No Calendar sharing
- Calendar sharing with free or busy information only
- Calendar sharing with free or busy information, plus subject and location

True or false? You can use the *Set-OrganizationRelationship* cmdlet to change settings of an organizational relationship.

Answer: *True*. For example, the following command disables the organization relationship with Contoso:

```
Set-OrganizationRelationship -Identity "Contoso" -Enabled $false
```

MORE INFO To learn more about the *Set-OrganizationRelationship* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee332326.aspx>.

True or false? You can use the EMS *Set-FederatedOrganizationIdentifier* cmdlet to configure federated organization identifiers.

Answer: *True*. You configure a federated organization identifier to create an account namespace for your Exchange organization with the Microsoft Federation Gateway and enable federation so that you can make use of the facilities that federation provides. For example, the following command configures and enables a federated organization identifier for the Adatum.com Exchange organization:

```
Set-FederatedOrganizationIdentifier -DelegationFederationTrust "Microsoft Federation Gateway" -AccountNamespace "Contoso.com" -Enabled $true
```

MORE INFO To learn more about the *Set-FederatedOrganizationIdentifier* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351037.aspx>.

SAN

SANs were discussed in the previous Objective, and you should know that they can specify multiple identities in a single certificate. You might need to register multiple domain names in your Active Directory forest with Microsoft Federation Gateway. Although you can use a wildcard certificate, such as *.adatum.com, there are security implications in doing this. A more secure alternative is to list each of the required domains as SANs in the trusted X.509 certificate.

Assign policies

The exam might test whether you know how to assign a sharing policy—either one that you have created or the default policy—by configuring mailboxes to use it. You use the EMS *Get-Mailbox* cmdlet to obtain the mailbox or mailboxes to which you want to apply the sharing policy and the EMS *Set-Mailbox* cmdlet to apply the policy. For example, the following command configures all mailboxes associated with the Marketing department to use the Adatum Marketing federated sharing policy:

```
Get-Mailbox -Filter {Department -eq "Marketing"} | Set-Mailbox  
-SharingPolicy "Adatum Marketing"
```

MORE INFO To learn more about the *Get-Mailbox* and *Set-Mailbox* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb123685.aspx> and <http://technet.microsoft.com/en-us/library/bb123981.aspx>.

Create and configure a federated trust

The exam might test that you know how to use Microsoft Federation Gateway as a trust broker, how each participating organization establishes and manages its trust, and how federated sharing is supported for all messaging clients.

True or false? To enable federated sharing, you need to register your organization with the Microsoft Federation Gateway.

Answer: *True*. You then configure a federated sharing relationship with another organization that also registers with the Microsoft Federation Gateway, which acts as a hub for all connections that the organizations make with each other.

True or false? Federated sharing works with the Outlook 2010 client only.

Answer: *False*. When you enable federation sharing, all interorganizational communication is sent through your organization's Exchange 2010 servers so that federated sharing works with any client that can connect to Exchange 2010, including OWA, Outlook 2003, Outlook 2007, and Outlook 2010.

MORE INFO For more information about the Microsoft Federation Gateway, consult the TechNet document at <http://technet.microsoft.com/en-us/library/gg638824.aspx>.

True or false? To implement federated sharing, you need to establish and configure only a federation trust.

Answer: *False*. You need to establish the following components in Exchange 2010:

- A federation trust
- An organization identifier
- A sharing relationship with the organizations with which your organization shares data

True or false? You can use the EMC New Federation Trust Wizard to create a federation trust.

Answer: *True*. In this case, the trust receives the name "Microsoft Federation Gateway" by default.

True or false? You can use the EMS *Add-FederatedDomain* cmdlet to add a specified domain to an existing federation trust.

Answer: *True*. For example, the following command adds the domain mail.adatum.com:

Add-FederatedDomain -DomainName mail.adatum.com

MORE INFO To learn more about the *Add-FederatedDomain* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351208.aspx>.

True or false? You use the *New-FederationTrust* cmdlet to modify trust properties.

Answer: *False*. You configure the properties of a trust by using the *Set-FederationTrust* cmdlet (not the *New-FederationTrust* cmdlet).

Create and configure a federated organization identifier

You should know that a federated organization defines what authoritative domains in an Exchange organization are available for federation. You should be aware that the first domain you specify with the organization identifier is known as the account namespace. Microsoft Federation Gateway creates federated user identifiers within this.

True or false? You can use the EMS *Set-FederatedOrganizationIdentifier* cmdlet and configure the *DelegationFederationTrust* parameter to create a federated organizational identifier and specify the federated domain to be used.

Answer: *False*. An organization's federated organization identifier is generally created by using the organization's primary domain name and configuring the *AccountNamespace* parameter of the *Set-FederatedOrganizationIdentifier* cmdlet with this value.

MORE INFO To learn more about the *Set-FederatedOrganizationIdentifier* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351037.aspx>.

Create and configure a sharing relationship

The exam might test to verify that you know how to create sharing relationships with the organizations with which your organization shares data. You need to know how to specify the target domains configured as the organization identifier in the external Exchange organization so that you can then define what information your users are permitted to share with external users and which users can participate in the relationship.

True or false? You configure a sharing relationship before you configure a federation trust.

Answer: *False*. Before you can configure a sharing relationship with another organization, both organizations must configure a federation trust with the Microsoft Federation Gateway.

True or false? You can use the EMS *New-OrganizationRelationship* cmdlet to create a relationship with an external Microsoft Exchange Server 2010 organization.

Answer: *True*. For example, the following command creates an organization relationship with the Adatum.com forest; free/busy access is enabled and the requesting organization receives time, subject, and location information from the target organization.

```
Get-FederationInformation -DomainName Adatum.com |  
New-OrganizationRelationship -Name "Adatum" -FreeBusyAccessEnabled $true  
-FreeBusyAccessLevel -LimitedDetails.
```

MORE INFO To learn more about the *New-FederatedOrganizationIdentifier* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee332357.aspx>.

Create and configure a sharing policy

You need to know how to create and configure sharing policies that define which users in your organization can use the organizational relationships to share information with other organizations and what types of information those users can share. You should be aware that the default sharing policy is created when you install Exchange Server 2010 SP1 OR SP2.

True or false? The default sharing policy is not assigned to any mailboxes by default.

Answer: *True*. If you want to enable users to participate in federated sharing, you can add their mailboxes to the default sharing policy or create a new sharing policy.

True or false? Creating or configuring a sharing policy requires that the federated organization identifier is configured.

Answer: *True*. Creating or configuring a sharing policy requires that a federation trust has been created between your Exchange 2010 organization and the Microsoft Federation Gateway and the federated organization identifier is configured.

True or false? You can use the EMS *New-SharingPolicy* cmdlet to create a sharing policy and the *Set-SharingPolicy* cmdlet to modify a policy.

Answer: *True*. For example, the following command creates a sharing policy called Blue Sky Airlines for the mail.BlueSkyAirlines.com domain, which is external to your organization. This policy allows users in the mail.BlueYonderAirlines.com domain to see detailed free/busy information and contacts. By default, the policy is enabled.

```
New-SharingPolicy -Name "Blue Sky Airlines" -Domains 'mail.  
BlueYonderAirlines.com: CalendarSharingFreeBusyDetail, ContactsSharing'
```

The following command modifies a sharing policy named Contoso for the contoso.com domain, which is external to your organization. Users in the Contoso domain can see your users' availability (free/busy) information:

```
Set-SharingPolicy -Identity Contoso -Domains 'contoso.com:  
CalendarSharingFreeBusySimple, Contacts'
```


MORE INFO To learn more about the *New-SharingPolicy* and *Set-SharingPolicy* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd298186.aspx> and <http://technet.microsoft.com/en-us/library/dd297931.aspx>.

True or false? You can use the *Set-SharingPolicy* cmdlet to get details about a sharing policy.

Answer: *False*. You use the EMS *Get-SharingPolicy* cmdlet, not the *Set-SharingPolicy* cmdlet. For example, the following command displays all the available information for the sharing policy for Blue Yonder Airlines:

```
Get-SharingPolicy "Blue Yonder Airlines" | FL
```

MORE INFO To learn more about the *Get-SharingPolicy* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335081.aspx>.

True or false? You can remove a sharing policy that has mailboxes assigned to it.

Answer: *False*. If you no longer require a sharing policy, you can remove it by using the EMS *Remove-SharingPolicy* cmdlet. However, you cannot remove a sharing policy that has mailboxes assigned to it, and you first need to assign them to another policy.

MORE INFO To learn more about the *Remove-SharingPolicy* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351071.aspx>.

Assign sharing policies to user accounts

You are expected to know the rights that membership of the RBAC federated sharing management role grants to user accounts that are its role assignees. You should be aware that Role members can manage cross-forest and cross-organization sharing and that a role assignee can be a role group, user, or universal security group. You can use the EMS *Get-ManagementRoleAssignment* cmdlet to list role assignees. The following command lists details of the federated sharing management role, including a list of groups, users, or universal security groups assigned to the role:

```
Get-ManagementRoleAssignment -Role "Federated Sharing" | FL
```

True or false? You can add assignees, both users and groups, to the federated sharing management role.

Answer: *True*. For example, the following command assigns the federated sharing role to the Adatum Federation role group and applies the Organization predefined scope:

```
New-ManagementRoleAssignment -Name "Federated Sharing Adatum Federation"  
-SecurityGroup "Adatum Federation" -Role "Federated Sharing"  
-RecipientRelativeWriteScope Organization
```

True or false? There must always be at least one delegating role assignment for the federated sharing management role.

Answer: *True*. You can remove role groups, users, and universal security groups from this management role. However, there must always be at least one delegating role assignment for this role granted to a role group or universal security group.

True or false? If you want to remove the permissions from only one member of a management role in the federated sharing management role group, you need to remove that member from the management role rather than remove the role group from the management role.

Answer: *True*. If you remove the role assignment between the management role group and the federated sharing management role, all members of the role group lose the ability to manage federated sharing. If you want to remove the permissions from one member only, you need instead to remove that member from the management role group.

The following command removes the management role assignment named Federated Sharing Adatum Federation from the federated sharing role group:

```
Remove-ManagementRoleAssignment "Federated Sharing Adatum Federation"
```

MORE INFO To learn more about the *Remove-ManagementRoleAssignment* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351205.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You are configuring federation for the contoso.com domain. You have stored the application identifier (or proof-of-ownership) used for the federated trust in a DNS record. What type of DNS record do you use?
2. What EMS command do you issue to create an organizational relationship with the Adatum organization, enabling free or busy information and specifying that the requesting organization receives free/busy, subject, and location information from the target organization?
3. What type of certificate do you need to establish a federation trust?
4. What EMS command do you issue to list details of the federated sharing management role, including a list of groups, users, and universal security groups assigned to the role?
5. What EMS cmdlet can you use to create a sharing policy, and what EMS cmdlet lets you modify such a policy?

Objective 3.4 Configure Outlook Web App (OWA)

This exam objective might test you on configuring OWA on a Client Access server and customizing the OWA interface. You need to know how to create and configure an OWA mailbox policy and how to configure OWA properties at the OWA virtual directory level. You could be asked about Windows file share and Microsoft

SharePoint access, how you allow OWA users to access public folders, the authentication methods that you can specify, how you use the ECP tool, and the options available in segmentation settings.

Exam need to know

- Customize the OWA interface
For example: Do you know how many themes are available in OWA 2010?
- Certificates
For example: Do you know how to obtain a certificate that is trusted by all external users?
- File share and SharePoint Access
For example: Do you know how to configure file share access on a basis of each OWA mailbox policy basis?
- Public folders
For example: Do you know what you need to do to make Exchange 2003 public folders visible in OWA 2010?
- Verify multibrowser support
For example: Do you know the settings you should verify on your Internet browser?
- ECP
For example: Do you know what Exchange configuration settings you can manage by using the ECP?
- SAN
For example: Do you know that SANs store multiple identities in a single certificate?
- Configure virtual directories
For example: Do you know what settings you can configure at the virtual directory level?
- Coexistence scenarios
For example: Do you know how to upgrade OWA to Exchange 2010?
- Authentication
For example: Do you know how to specify forms-based authentication?
- Configure the external name for OWA
For example: Do you know what EMS cmdlet you use to configure the OWA external name?
- Configure Client Access settings for OWA
For example: Do you know how to configure OWA to use WebReady document viewing?
- Segmentation settings
For example: Do you know how to configure segmentation settings at the OWA mailbox level?

- Configure OWA mailbox policies

For example: Do you know how to create OWA mailbox policies?

Customize the OWA interface

You should be aware that you can “skin” OWA to reflect your organization’s logo, color scheme, and other design elements. You can also customize the logon page.

True or false? Like OWA 2007, OWA 2010 has multiple themes.

Answer: False. OWA 2010 has a single theme that is stored in `\\Client Access\OWA\version\themes`. You can modify the graphic elements, colors, and so on in the theme, but users cannot switch between themes.

True or false? You can customize the OWA logon page to change colors and styles.

Answer: True. To do this, you edit the `logon.css` file and then replace the default logos with your own choices. However, Microsoft does not support changing the logon page content.

MORE INFO To learn more about customizing the OWA sign-in and sign-out pages, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee633483.aspx>.

Certificates

Certificates were discussed earlier in this chapter. If you want to use certificate-based encryption and authentication for OWA traffic, you need to create a certificate request file (CSR) by using either the EMC New Exchange Certificate Wizard or the `EMS New-ExchangeCertificate` cmdlet and send this file to a CA. Typically, OWA access is used by external users, and you would use a trusted external or commercial CA. Alternatively, you can use an existing certificate by obtaining its thumbprint. You then need to install the certificate in the `/owa` default website.

File share and SharePoint Access

The exam might test if you know how to configure OWA to allow or deny users access to email attachments hosted within SharePoint libraries that use Windows Sharepoint Services (WSS) or on Windows file shares.

True or false? File access can be configured by amending the properties settings of the OWA virtual directory.

Answer: True. File access can be configured on a basis of each OWA mailbox policy or by configuring the properties of the OWA virtual directory. You can use the EMC for both of these tasks. You can use the `EMS Set-OwaMailboxPolicy` cmdlet to perform this configuration on the same basis. You can use the `EMS Set-OwaVirtualDirectory` cmdlet to configure the properties of the OWA virtual directory.

True or false? File type entries on the allow list override entries on the block list.

Answer: *True*. You can specify a list of files the user can always open by populating the allow list; you can specify those files the user can open after saving locally by populating the force save list; and you can populate the list of file types that the user is unable to open by populating the block list. The block list overrides the force save list, and the allow list overrides both the other lists.

MORE INFO To learn more about managing file and data access for OWA, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124731.aspx>.

Public folders

Chapter 2, “Configuring Exchange Recipients and Public Folders,” discusses public folders in detail. You should know how to create an Exchange 2010 public folder database and configure public folder replication. You need to be aware that Exchange 2003 and Exchange 2007 public folders cannot be accessed by Exchange 2010 OWA (although they can by Outlook 2010), unless they have been replicated to an Exchange 2010 public folder database.

Verify multibrowser support

You should be aware that you can use OWA and the ECP with almost any web browser. This includes Internet Explorer, Mozilla Firefox, Apple Safari, Google Chrome, and most other web browsers on computers running UNIX, Apple Macintosh, or Windows. If, however, you need to use S/MIME for digital signatures or message encryption, you must use Internet Explorer 7 or later. You should know that if you use a web browser that does not support its full feature set, OWA will open in its light version.

True or false? To have the best experience of using OWA, you need to verify that JavaScript is enabled.

Answer: *True*. You should check your web browser’s options to verify the following settings:

- Enable session cookies
- Enable JavaScript
- Pop-up blocker settings

MORE INFO To learn more about multibrowser support for OWA, consult the Outlook Help document at <http://help.outlook.com/en-us/140/bb899685.aspx>.

ECP

You need to know what Exchange configuration settings you can manage by using the Exchange Control Panel (ECP). You should be aware that the ECP provides a web-based interface with which you can manage Exchange configuration settings such as mailboxes, public groups, external contacts, administrator roles, and user roles. You can also use the reporting functionality available through the ECP to perform searches for specific messages and view delivery reports.

True or false? You can edit configuration settings by accessing the ECP through the EMC.

Answer: *True*. To access ECP, select the EMC Client Access node under Server Configuration, select Exchange Control Panel, and then right-click the ECP website and select Properties.

True or false? You can use the *EMS Set-EcpVirtualDirectory* cmdlet to configure ECP options.

Answer: *True*. For example, the following command disables basic authentication for ECP on server CAS01:

```
Set-EcpVirtualDirectory -Identity "CAS01\ecp (default web site)"  
-BasicAuthentication: $false
```

EXAM TIP Remember which OWA configuration settings can be configured through OWA mailbox policies, and which must be configured through OWA virtual directory settings.

MORE INFO To learn more about managing ECP, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876904.aspx>.

SAN

As discussed previously in this chapter, SANs permit multiple identities such as server names and FQDNs to be included in the same certificate. You should be aware that if you are implementing certificate-based (or forms-based) authentication and encryption on the OWA website, the certificate you install should have this facility.

Configure virtual directories

The exam might test to verify that you know what OWA settings you can configure only at the OWA virtual directory level. You can configure public and private computer file access and segmentation settings both at the OWA Virtual Directory level and through individual OWA mailbox policies. You can configure the OWA authentication and remote file server's settings only by configuring the OWA Virtual Directory.

True or false? You can configure segmentation settings at the virtual directory level.

Answer: *True*. You can access the OWA virtual directory Properties dialog box through the EMC and configure (for example) segmentation settings.

True or false? You can use the *Set-OwaVirtualDirectory* cmdlet to configure the same settings as those available in the OWA virtual directory Properties dialog box.

Answer: *True*. For example, the following command configures the left-click options on attachments for OWA on server CAS01 when the user has chosen to log on by using the Private option so that the Open option is available:

```
Set-OwaVirtualDirectory -Identity "CAS-01\owa (default Web site)"  
-DirectFileAccessOnPrivateComputersEnabled $true
```

MORE INFO To learn more about configuring the OWA virtual directory, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298140.aspx>.

Coexistence scenarios

You should know that during the installation of a Client Access server, Setup creates /exchange and /public virtual directories that are configured to redirect users to /owa. This enables users to enter the same URLs that they used to access the /exchange and /public virtual directories in Exchange 2003 and to access the /owa virtual directory used by Exchange 2007 and 2010.

EXAM TIP Remember that the /exchange and /public virtual directories are created in IIS. They are not created as Exchange OWA virtual directories and are not listed by the EMS *Get-OwaVirtualDirectory* cmdlet.

MORE INFO To learn more about upgrading OWA to Exchange 2010, consult the Exchange Team Blog article at <http://blogs.technet.com/b/exchange/archive/2009/12/02/3408921.aspx>.

Authentication

You should know what steps to take to configure forms-based or standard authentication in OWA. You should be aware that when the client access request is received, the Client Access server first uses form-based authentication to authenticate the user and then redirects the request to the appropriate virtual directory.

True or false? You can select only forms-based authentication when configuring OWA properties at the virtual directory level.

Answer: *False*. Standard authentication is also available. You can access the OWA virtual directory Properties dialog box through the EMC. In this dialog box, you can configure OWA authentication properties and select standard authentication or forms-based authentication.

True or false? You can use the *Set-OwaVirtualDirectory* cmdlet to configure the same settings as those available in the OWA virtual directory Properties dialog box.

Answer: *True*. For example, the following command sets forms-based authentication for OWA on server CAS01:

```
Set-OwaVirtualDirectory -Identity "CAS01\owa (default web site)"  
-FormsAuthentication $true
```

Configure the external name for OWA

You need to know why it is typically necessary to assign an alternative name (or names) to a Client Access server, and how to do this. You can use the Configure External Client Access Domain Wizard from the EMC to configure the external name associated with OWA.

True or false? You can also use the EMS *Set-OwaVirtualDirectory* cmdlet for this task.

Answer: *True*. For example, the following command sets the external client access domain for OWA on Client Access server CAS01 to mail.adatum.com, where OWA is hosted in the default location:

```
Set-OwaVirtualDirectory -Identity 'CAS01\owa (Default Web Site)'  
-ExternalUrl 'https://mail.adatum.com/owa'
```

MORE INFO To learn more about configuring an external namespace for a Client Access server, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351198.aspx>.

Configure Client Access settings for OWA

Earlier in this Objective, there is a discussion on configuring OWA to allow or deny users access to email attachments hosted within SharePoint libraries. You also need to know how to configure OWA to use WebReady document viewing, which allows users to view documents in their web browser rather than in the associated application.

True or false? WebReady document viewing can be configured by modifying the properties settings of the OWA virtual directory.

Answer: *True*. WebReady document viewing can be configured on the basis of each OWA mailbox policy or by configuring the properties of the OWA virtual directory. You can use the EMC for both of these tasks. You can also use the *Set-OwaMailboxPolicy* cmdlet to perform this configuration on the same basis. You can use the *Set-OwaVirtualDirectory* cmdlet to configure the properties of the OWA virtual directory.

True or false? If a client computer does not have the application version installed that is required to view a file, WebReady document viewing permits a user to open the file in the browser.

Answer: *True*. With WebReady document viewing, OWA users can view file attachments in their browser. This can be very useful when the OWA user is using a computer that does not have the latest application software installed. You can configure WebReady document viewing so that a user must view documents by using WebReady if a converter is available.

MORE INFO To learn more about configuring WebReady document viewing, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa995967.aspx>.

Segmentation settings

The exam might require you to know how to specify which features are available to users when they connect to OWA. For example, you could use segmentation settings in an OWA mailbox policy to block access to the Calendar or to restrict users from being able to change their password when connected through OWA.

True or false? You can use the *Set-OwaMailboxPolicy* cmdlet but not the *Set-OwaVirtualDirectory* cmdlet to configure segmentation settings.

Answer: *False*. Segmentation settings are configured on the Segmentation tab of an OWA mailbox policy Properties dialog box, or by using the *Set-OwaMailboxPolicy* cmdlet. You can also configure these settings by using the *Set-OwaVirtualDirectory* cmdlet or by configuring the Segmentation tab on the OWA virtual directory (or OWA default website) Properties dialog box.

True or false? You can configure segmentation settings to allow or prevent users from changing their passwords in OWA.

Answer: *True*. You can enable or disable a number of OWA features through segmentation settings. These include the Change Password setting.

MORE INFO For more information about configuring segmentation in OWA, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123962.aspx>.

EXAM TIP Most OWA properties can be configured at both the OWA mailbox policy and the OWA virtual directory level. If the exam asks you about such a setting, read the question carefully to discover whether the setting should be applied to all OWA users or to specific mailbox users.

Configure OWA mailbox policies

A Microsoft examiner will expect you to know when you should configure OWA at its virtual directory level and when you should configure an OWA mailbox policy. Settings configured at the virtual directory level apply to the entire Client Access server, and some settings can be configured only at that level. Settings configured in an OWA mailbox policy apply to users who have mailboxes added to that policy.

True or false? There is only one OWA mailbox policy, which is the default one. You cannot create additional OWA mailbox policies.

Answer: *False*. The default OWA mailbox policy exists by default and can be configured. However, you can create and configure additional policies that can be applied to different groups of user mailboxes. You can create a new OWA mailbox policy in the EMC and you can use the EMS *New-OwaMailboxPolicy* cmdlet to create one. This cmdlet supports the same parameters as the *New-MailboxPolicy* cmdlet. For example, the following command creates a mailbox policy named MyOWAPolicy1:

```
New-OwaMailboxPolicy -Name MyOWAPolicy
```

MORE INFO To learn more about creating an OWA mailbox policy, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335191.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You are the Exchange administrator for Contoso, Inc. Contoso has a three-domain forest and uses Exchange 2010 as its messaging solution. How do you prevent the users in the Australia.contoso.com domain from changing their passwords when using OWA?
2. What EMS command would you issue to configure forms-based authentication?
3. You are an administrator at Blue Yonder Airlines. An employee, Don Hall, reports that he cannot access his mailbox by using OWA. Other users do not have this problem. How can you permit access for Don?
4. How do you disable notifications by text messages to mobile devices for a specific group of mailbox users?
5. You are checking the configurations for file access and WebReady document viewing. You find that the same file type is specified on the allow list, the force save list, and the block list. Will files of this type be allowed or blocked?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 3.1: Configure POP, IMAP, and Microsoft ActiveSync

1. Start the POP3 service and configure it to start automatically.
2. You should request and install an SSL certificate from a trusted third-party CA.
3. You use the *Test-ImapConnectivity* cmdlet.
4. You could use the *Set-ActiveSyncMailboxPolicy* cmdlet to set a device access rule that defines the maximum size of attachments that can be downloaded.
5. You use the *Clear-ActiveSyncDevice* cmdlet. (Note that there is also a setting for allowing a user to wipe a mobile phone through OWA.)

Objective 3.2: Configure Outlook Anywhere and RPC client access

1. You deselect the IMAP4 mailbox feature on GLA-MBX01.
2. You use the *Test-OutlookConnectivity* cmdlet.
3. You use the *Set-OutlookAnywhere* cmdlet.
4. The *Set-CASMailbox* cmdlet with the *MAPIBlockOutlookRpcHttp* parameter.
5. You use the *Set-MailboxDatabase* cmdlet with the *RpcClientAccess* parameter.

Objective 3.3: Configure federated sharing

1. A DNS TXT resource record.
2. You issue the following command:

```
Get-FederationInformation -DomainName Adatum.com |  
New-OrganizationRelationship -Name "Adatum"  
-FreeBusyAccessEnabled $true -FreeBusyAccessLevel -LimitedDetails
```
3. You need to submit a valid X.509 certificate issued by an external CA trusted by Windows Live Domain Services.
4. You issue the following command:

```
Get-ManagementRoleAssignment -Role "Federated Sharing" | FL
```
5. You use the *New-SharingPolicy* cmdlet in the EMS to create a sharing policy and the *Set-SharingPolicy* cmdlet to modify a policy.

Objective 3.4: Configure Outlook Web App (OWA)

1. You configure an OWA mailbox policy and disable Change Password in the segmentation settings.
2. You would issue the following command:

```
Set-OwaVirtualDirectory -Identity "CAS01\owa (default web site)"  
-FormsAuthentication $true
```
3. You inspect the properties of Don Hall's mailbox and reconfigure as necessary.
4. You create an OWA mailbox policy and configure Text Messages in the segmentation settings. You add the user mailboxes to the policy.
5. The files will be allowed. The block list overrides the force save list and the allow list overrides both the other lists.

Configuring Message Transport

Roughly 15 percent of the 70-662 exam focuses on the topic “Configuring Message Transport.” You are expected to know how to apply and manage transport rules and enforce messaging policies. You should be aware of the functions performed by Hub Transport and Edge Transport servers and the configurations specific to these server roles. You are likely to be tested on how to configure message routing by using the various connector types and how to ensure routed messages are protected through encryption.

This chapter covers the following objectives:

- Objective 4.1: Create and configure transport rules.
- Objective 4.2: Configure Hub transport.
- Objective 4.3: Configure Edge transport.
- Objective 4.4: Configure message routing.

Objective 4.1: Create and configure transport rules

In this objective, the exam might test that you know how to create, enable, and configure a transport rule, configure disclaimers and moderated transport, and install the Windows Rights Management Services (RMS) pre-licensing agent.

Exam need to know

- Enable and configure transport rules
For example: Do you know how to use transport rule conditions, exceptions, and actions?
- Disclaimers
For example: Do you know how to create a transport rule that appends a disclaimer to all messages sent from your organization to external recipients?
- Moderated transport
For example: Do you know how to configure moderation for email messages sent to a distribution group?

- Install the Windows RMS pre-licensing agent
For example: Do you know the function of the RMS pre-licensing agent?
- Configure rights protection by using transport rules
For example: Do you know how to create an Outlook protection rule?

Enable and configure transport rules

You need to know how to enable and configure transport rules to apply messaging policies on both Hub Transport and Edge Transport servers. You should be aware that Active Directory stores transport rules that are configured on Hub Transport servers so that these transport rules are accessible to all Hub Transport servers in the organization. Thus, you can apply a single set of rules across an entire organization.

True or false? You create a transport rule by specifying an action, typically one or more conditions, and optionally one or more exceptions.

Answer: True. You need to limit interactions inside the organization and prevent inappropriate content from entering or leaving the organization. The mechanism that enables you to accomplish these aims is the transport rule. You create a transport rule by specifying rule conditions, exceptions, and actions.

True or false? You use transport rule conditions to identify messages to which a transport rule action is applied.

Answer: True. A condition consists of one or more predicates that specify which parts of a message should be examined. If appropriate, you can specify a comparison operator and a matching value. You can obtain a list of transport rule predicates by using the following EMS cmdlet:

```
Get-TransportRulePredicate | FT
```

EXAM TIP If you come across a transport rule predicate in the examination, the name is likely to be self-explanatory, such as *AttachmentNameMatches*.

MORE INFO To learn more about transport rule predicates, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638183.aspx>.

True or false? Exceptions identify messages to which transport rule actions should be applied.

Answer: False. If an exception is met, this prevents the actions specified in the transport rule from being applied to an email message, even if that message matches all configured conditions.

MORE INFO You can obtain a list of transport rule exceptions by examining the syntax of the EMS *New-TransportRule* cmdlet. Consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125138.aspx>.

True or false? If an email message matches the transport rule conditions and does not match any exceptions, the transport rule action is applied.

Answer: *True*. You can use the transport rule to reject, delete, or redirect a message; to add recipients; to add prefixes in the message subject; to insert disclaimers and personalized signatures in the message body; and to apply a message classification. You can obtain a list of transport rule actions by issuing the following EMS command:

Get-TransportRuleAction | FL

MORE INFO To learn more about transport rule actions, including lists of the actions that you can specify on Hub Transport and on Edge Transport servers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998315.aspx>.

True or false? The scope of a transport rule applied on a Hub Transport server is the domain to which that server belongs.

Answer: *False*. The scope of a transport rule applied to a Hub Transport server is the entire Exchange organization. Transport rules can expand distribution group membership and access Active Directory attributes, and they can inspect or modify Information Rights Management (IRM)-protected message content.

EXAM TIP Remember that a transport rule can block delivery of email messages to a Microsoft Exchange Server 2010 organization. However, it cannot prevent users from communicating through networked file shares, newsgroups, and forums.

True or false? The edge rules agent can block objectionable messages.

Answer: *True*. This agent can also remove or block messages that contain harmful or objectionable content and can help block messages that contain viruses, worms, and other types of malicious code. This is particularly important during the interval between the creation of malicious code and updates to your organization's antivirus software.

EXAM TIP If you want to prevent internal users from including objectionable words or phrases in their email messages, you create a transport rule.

True or false? Edge Transport servers in a single Exchange 2010 organization must all run the same transport rules.

Answer: *False*. You can configure different transport rules on each of your Edge Transport servers. The scope of a transport rule configured on an Edge Transport server is the local server. Edge Transport server transport rules apply to all types of messages, cannot expand distribution group membership, cannot access Active Directory attributes, and cannot inspect or modify IRM-protected message content.

MORE INFO To learn more about how transport rules are applied, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124703.aspx>.

True or false? You can use the *New-TransportRule* cmdlet to create a transport rule.

Answer: *True*. You can create transport rules on Hub Transport or Edge Transport servers by using the EMC New Transport Rule Wizard or the EMS *New-TransportRule* cmdlet. For example, the following command creates the transport rule *TransportRuleExample*, which adds Kim Akers to the recipients of any email messages sent to Mark Harrington, except for messages that are sent by the external user DonalMace@contoso.com:

```
New-TransportRule -Name TransportRuleExample -SentTo "Mark Harrington"
-AddToRecipients "Kim Akers" -ExceptIfFrom DonalMace@contoso.com
```

MORE INFO To learn more about creating a transport rule, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124737.aspx>.

True or false? You can use the *New-TransportRule* cmdlet to modify a transport rule.

Answer: *False*. You can use the EMC Edit Transport Rule Wizard to modify an existing transport rule. You can also use the EMS *Set-TransportRule* cmdlet (not the *New-TransportRule* cmdlet) to modify a transport rule. The following command modifies the transport rule *TransportRuleExample* so that messages sent to Mark Harrington are sent to both Kim Akers and Don Hall, unless they come from DonalMace@contoso.com:

```
Set-TransportRule -Identity TransportRuleExample
-AddToRecipients "Kim Akers","Don Hall" -ExceptIfFrom DonalMace@contoso.com
```

MORE INFO To learn more about modifying a transport rule and about the *Set-TransportRule* cmdlet, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa998262.aspx> and <http://technet.microsoft.com/en-us/library/bb123534.aspx>.

True or false? All Hub Transport servers in an Exchange 2010 organization have the same set of transport rules.

Answer: *True*. You can use the EMC to obtain a list of transport rules on all Hub Transport servers or on an individual Edge Transport server. To see the properties of a single rule, click the rule, and then in the Actions pane, click Edit Rule. You can use the EMS to view a summary list of all transport rules configured on all Hub Transport servers or an Edge Transport server by issuing the following command:

```
Get-TransportRule
```

You can obtain a list of the properties of a specific transport rule by issuing an EMS command similar to the following:

```
Get-TransportRule TransportRuleExample | FL
```


EXAM TIP You use the *New-TransportRule* cmdlet to create a new transport rule. You use the *Set-TransportRule* cmdlet to modify a transport rule. This includes adding conditions, exceptions, or actions to the rule. You use the EMS *Get-TransportRule* cmdlet to display the properties of an existing rule. Using the EMS *Get-TransportRuleAction* cmdlet, you can view the actions that the transport rule performs.

MORE INFO To find out more about viewing transport rules and the *Get-TransportRule* cmdlet, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa998187.aspx> and <http://technet.microsoft.com/en-us/library/aa998585.aspx>.

True or false? Before a transport rule can be applied, the appropriate rule agent must be enabled.

Answer: *True*. The transport rule agent must be enabled before you can apply transport rules to email messages that pass through a Hub Transport server, and the edge rule agent must be enabled before you can apply transport rules to messages that pass through an Edge Transport server. These agents are enabled by default, but if an agent becomes disabled, all transport rules are disabled. The following EMS command checks the status of the appropriate transport agent on either a Hub Transport or an Edge Transport server:

```
Get-TransportAgent
```

True or false? You can disable an individual transport rule.

Answer: *True*. To use the EMC to disable a transport rule, right-click the transport rule, and then click Disable Rule. If a rule is already disabled and you want to enable it, right-click it, and then click Enable Rule. If you want to remove a rule, right-click it, and then click Remove Rule. You can also use the EMS to disable, enable, and remove a transport rule. For example, the following EMS command disables the transport rule *TransportRuleExample*:

```
Disable-TransportRule TransportRuleExample
```

The following command enables the transport rule that was previously disabled:

```
Enable-TransportRule TransportRuleExample
```

The following command removes the transport rule:

```
Remove-TransportRule TransportRuleExample
```

MORE INFO To learn more about enabling and disabling transport rules as well as removing transport rules, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb267004.aspx> and <http://technet.microsoft.com/en-us/library/aa996918.aspx>.

True or false? The only situation for which you would export and import a transport rule is when you want to replicate it to another Edge Transport server.

Answer: *False*. You can export a rule on one Edge Transport server and import it on another, and any transport rules exported to an Exchange 2010 Edge Transport server exist only on that server and not on every Edge Transport server in the same organization. However, you also use export and import in a coexistence scenario. Any transport rules that exist in the Exchange 2007 container need to be converted and stored in the Exchange 2010 container. You export Exchange 2007 rules so that you can import them into Exchange 2010 by using the EMS *Export-TransportRuleCollection* cmdlet with the *ExportLegacyRules* parameter on an Exchange 2010 Hub Transport server.

EXAM TIP You can export Exchange 2007 transport rules and then import them into Exchange 2010. However, you cannot export Exchange 2010 transport rules and import them into Exchange 2007.

MORE INFO To learn more about exporting and importing transport rules, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb629570.aspx>.

Disclaimers

You need to know how to create a disclaimer by creating or modifying a transport rule. If you use the EMS for this purpose, you configure the *ApplyHtmlDisclaimerLocation* and *ApplyHtmlDisclaimerText* parameters. If the disclaimer applies to all email messages sent by your organization, you do not configure any conditions or exceptions.

True or false? You can use the *New-TransportRule* cmdlet to create a transport rule that applies a disclaimer.

Answer: *True*. In the EMC you can configure a disclaimer by using the New Transport Rule Wizard or the Edit Transport Rule Wizard. You can use the EMS *New-TransportRule* or *Set-TransportRule* cmdlet to create a transport rule that applies a disclaimer or modifies an existing transport rule to apply a disclaimer. The following command applies the disclaimer "This e-mail and any attachments are confidential and may also be privileged or exempt from disclosure under applicable law" to all messages sent outside the Adatum organization and sets the fallback action to wrap:

```
New-TransportRule -Name ExternalDisclaimer -Enabled $true
-SentToScope 'NotInOrganization' -ApplyHtmlDisclaimerLocation 'Append'
-AppliedHtmlDisclaimerText "This e-mail and any attachments are confidential
and may also be privileged or exempt from disclosure under applicable
law</p>" -ApplyHtmlDisclaimerFallbackAction Wrap
```

MORE INFO To learn more about configuring disclaimers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124352.aspx>.

Implementing moderated transport

You are expected to know that you can use the moderated transport feature to specify all email messages sent to or received from specific recipients are approved by moderators. You can configure any type of recipient as a moderated recipient and that all messages sent to those recipients go through an approval process. Moderated transport makes use of the Exchange 2010 approval framework, which uses a special mailbox called the arbitration mailbox. This mailbox stores the original message and the decision state during the approval process.

MORE INFO To learn more about moderated transport, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297936.aspx>.

True or false? You typically moderate email messages sent to a distribution group.

Answer: *True*. When you configure a recipient for moderation, all messages sent to that recipient are subject to approval by the designated moderator or moderators. You typically moderate email messages sent to a distribution group, although you can moderate email sent to an individual user. In the EMC, you access the Properties dialog box of the target distribution group or user, and then configure the Message Moderation properties on the Mail Flow Settings tab.

The following EMS command enables moderation for the distribution group *SecondDistributionGroup*, designates Kim Akers as the moderator, permits the members of the distribution group *ThirdDistributionGroup* to bypass moderation, and notifies internal senders if their message to the distribution group is rejected—but does not send any notifications to senders external to the organization:

```
Set-DistributionGroup SecondDistributionGroup -ModerationEnabled $true  
-ModeratedBy "Kim Akers" -ByPassModerationFromSendersOrMembers  
ThirdDistributionGroup -SendModerationNotifications Internal
```

MORE INFO To learn more about the EMS *Set-DistributionGroup* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124955.aspx>.

Install the Windows RMS pre-licensing agent

The exam might test that you are aware that IRM agents, including the RMS pre-licensing agent, are installed by Exchange 2010 Setup on a Hub Transport server. It might also test that you know how to configure IRM to apply persistent protection to messages so that access is restricted to authorized users and permitted actions. You should know that RMS includes all the server and client technologies that are required to support IRM in an organization. You should also be aware that Exchange Server 2010 ships with the Do Not Forward RMS template. When this template is applied to a message, only the recipients addressed in the message can decrypt the message. Recipients cannot forward the message to anyone else, copy content from the message, or print the message. Finally, you are expected to know how to configure IRM features such as transport decryption, journal report decryption, IRM for Exchange Search, and IRM in OWA.

True or false? Enabling IRM enables the RMS pre-licensing agent by default.

Answer: *True*. For example, the following EMS command enables IRM features and the RMS pre-licensing agent for messages sent to internal recipients:

```
Set-IRMConfiguration -InternalLicensingEnabled $true
```

IRM-protected messages sent to external recipients require that a federated trust exist between your Active Directory forest and that of the recipient organization. The following command enables IRM features and the RMS pre-licensing agent for messages sent to external recipients:

```
Set-IRMConfiguration -ExternalLicensingEnabled $true
```

True or false? The pre-licensing agent checks whether the use license attached to a protected message by AD RMS is valid.

Answer: *False*. Exchange 2010 IRM uses the Windows Server 2008 and Windows Server 2008 R2 information protection technology AD RMS. When content is protected by using AD RMS, a use license containing the rights that authorized users have to the content is attached. To access IRM-protected content, AD RMS-enabled applications must procure a use license for the authorized user from the AD RMS cluster. In Exchange 2010, the pre-licensing agent attaches a use license to protected messages without the need to access an AD RMS server. The pre-licensing agent, however, does not check if use licenses issued by AD RMS are valid.

MORE INFO To learn more about AD RMS, consult the TechNet document at <http://technet.microsoft.com/en-us/library/cc772403.aspx>.

True or false? You should install AD RMS on an Exchange 2010 Hub Transport server.

Answer: *False*. AD RMS is installed as a server role on one or more Windows Server 2008 or Windows Server 2008 R2 computers in an organization. However, Microsoft does not support installing AD RMS and Exchange Server 2010 on the same computer in a production environment.

True or false? Outlook users can apply IRM protection to messages manually.

Answer: *True*. In Outlook 2010, you can create Outlook protection rules that automatically IRM-protect messages. OWA users can protect messages they send, and view IRM-protected messages they receive. You can also create transport rules on Hub Transport servers that automatically IRM-protect messages. Note that if a user IRM-protects a message in Outlook, you cannot then apply IRM protection by using a transport rule.

MORE INFO To learn more about Outlook protection rules, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638178.aspx>.

True or false? You can use the EMS *Set-IRMConfiguration* cmdlet to enable or disable IRM and to configure IRM features.

Answer: *True*. For example, the following command disables IRM features in OWA:

```
Set-IRMConfiguration -OWAEnabled $false
```

True or false? Three settings are available for transport decryption.

Answer: *True*. If transport decryption is mandatory, any message that cannot be decrypted is rejected and nNDR is returned to the sender. If transport decryption is disabled, no attempt is made to decrypt internal or external messages before delivery. Setting transport decryption to *optional* provides a best-effort approach to decryption. Messages are decrypted if possible but are delivered even if decryption fails. The following EMS command sets transport decryption to optional:

```
Set-IRMConfiguration -TransportDecryptionSetting optional
```

MORE INFO To learn more about the EMS *Set-IRMConfiguration* cmdlet, including the parameters that apply only to the Outlook Live service, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979792.aspx>.

True or false? End-to-end tests verify IRM functionality but can be used only directly after initial configuration.

Answer: *False*. These tests verify IRM functionality immediately after initial IRM configuration and on an ongoing basis. You can use the EMS *Test-IRMConfiguration* cmdlet to perform end-to-end tests of your IRM deployment. For example, the following command tests the IRM configuration for messages that Kim Akers sends to Don Hall:

```
Test-IRMConfiguration -Sender KimAkers@adatum.com  
-Recipient DonHall@adatum.com
```

MORE INFO To learn more about the *Test-IRMConfiguration* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979798.aspx>.

Configure rights protection by using transport rules

The exam might test that you know how to use transport rules to apply persistent rights protection to messages based on message properties, such as sender, recipient, message subject, and content. Transport protection rules implement messaging policies by inspecting message content, encrypting sensitive email content, and using rights management to control access. You can use the EMC New Transport Rule Wizard or the EMS *New-TransportRule* cmdlet to create a transport protection rule. The following command creates the transport protection rule *Protect-Confidential* that uses the Do Not Forward template to IRM-protect messages that contain the word "Confidential" in the Subject field:

```
New-TransportRule -Name "Protect-Confidential"  
-SubjectContainsWords "Confidential"  
-ApplyRightsProtectionTemplate "Do Not Forward"
```

MORE INFO To learn more about the *New-TransportRule* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125138.aspx>.

True or false? Outlook protection rules help an organization to protect against the risk of information leakage by automatically applying IRM protection to messages.

Answer: *True*. In Outlook 2010, messages are IRM-protected before they leave the Outlook client. This protection is also applied to any attachments that use supported file formats. When you create Outlook protection rules on an Exchange 2010 server, these rules are automatically distributed to Outlook 2010 by Exchange Web services. Outlook 2010 can then apply the rule, provided that the AD RMS rights policy template is available on client computers.

True or false? You can use the EMS *New-OutlookProtectionRule* cmdlet to create an Outlook protection rule.

Answer: *True*. For example, the following command creates the Outlook protection rule *MyProject*. This rule protects messages sent to the TechnicalAuthors distribution group with the AD RMS template Do Not Forward:

```
New-OutlookProtectionRule -Name "MyProject" -SentTo "TechnicalAuthors"  
-ApplyRightsProtectionTemplate "Do Not Forward"
```

MORE INFO To learn more about the *New-OutlookProtectionRule* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298182.aspx>.

True or false? You can use the EMS *Get-OutlookProtectionRule* cmdlet to change configuration of an existing Outlook protection rule.

Answer: *False*. You use the *Get-OutlookProtectionRule* cmdlet to obtain the configuration of an existing Outlook protection rule and the EMS *Set-OutlookProtectionRule* cmdlet to change that configuration. You can also use the EMS *Remove-OutlookProtectionRule* cmdlet to remove an Outlook protection rule. For example, the following command removes the *MyProject* Outlook protection rule:

```
Remove-OutlookProtectionRule -Identity "MyProject"
```

MORE INFO To learn more about the *Get-OutlookProtectionRule* and *Set-OutlookProtectionRule* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd298004.aspx> and <http://technet.microsoft.com/en-us/library/dd297994.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You want Kim Akers to read all messages sent to the Marketing distribution group and approve them before they are distributed to group members. However, Kim should not be able to change group membership. How do you accomplish this?

2. You are the Exchange administrator at Trey Research. You want to prevent Trey Research users from including objectionable words or phrases in their email messages. What action do you take?
3. What EMS cmdlet can you use to change configuration of an existing Outlook protection rule?
4. What EMS command enables IRM features and the RMS pre-licensing agent for messages sent to internal recipients?
5. A transport rule is configured with three rule conditions, two exceptions, and an action. A message meets all three conditions and one of the exceptions. Is the action applied?

Objective 4.2: Configure Hub transport

This exam objective might test that you know how to create and configure accepted domains, including authoritative, internal relay, and external relay domains. You need to know how to create and configure remote domains and email address policies. You should be familiar with configuring transport settings and the transport dumpster.

The exam might also test your knowledge of deploying Hub Transport servers, and how you should configure these servers if your organization does not use Edge Transport servers. You should know that you must deploy one or more Hub Transport server in each Active Directory site that hosts an Exchange server with the Mailbox server role.

Exam need to know

- Configure transport dumpster
For example: Do you know how to configure the duration for which a message is retained by a Hub Transport server dumpster?
- Accepted domains
For example: Do you know what the three types of accepted domains are and how each handles incoming mail from external users?
- Remote domains
For example: Do you know how to block out-of-office messages from being sent to a remote domain?
- Authoritative domains
For example: Do you know how the default authoritative domain for an organization is defined?
- Email address policies
For example: Do you know how to reconfigure the properties of an existing policy and apply the new settings to all recipients within the scope of the policy?

Configure transport dumpster

You are expected to know how to configure the transport dumpster, which holds copies of messages that are replicating to other mailbox databases in a DAG. You should be able to configure properties such as the duration for which a message is retained by a Hub Transport server dumpster by using transport settings. You should also know how to use transport settings to specify the maximum receive size, send size, and maximum number of recipients that transport servers will allow for messages that they route in your Exchange organization.

True or false? You can use the EMS *Set-TransportConfig* cmdlet to configure transport dumpster properties.

Answer: *True*. You can access and modify transport settings through the EMC. You can also configure transport settings by using the EMS *Set-TransportConfig* cmdlet with the *MaxReceiveSize*, *MaxRecipientEnvelopeLimit*, and *MaxSendSize* parameters. You can use the same cmdlet with the *MaxDumpsterSizePerDatabase* and *MaxDumpsterTime* parameters to configure transport dumpster properties. For example, if you want to ensure that messages are not lost in transit by increasing the length of time for which a message is retained by a Hub Transport server dumpster to 10 days (the default is 7 days), you would issue the following command:

```
Set-TransportConfig -MaxDumpsterTime 10.00:00:00
```

EXAM TIP Remember that the format for the *MaxDumpsterTime* parameter is dd.hh:mm:ss. Values such as 10.00.00.00 or 12:12:00:00 are incorrect.

MORE INFO To learn more about the transport settings dumpster, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb676532.aspx>.

Accepted domains

You are expected to know why you need to configure accepted domains and how you can do this. You should be aware that an Exchange organization can only accept messages from and send messages to an accepted domain, and that you can configure an email address policy only for domains that are on the list of accepted domains. Typically, the domain name associated with the forest in which you install Exchange is the default accepted domain for your Exchange organization.

True or false? An accepted domain can be an authoritative, an internal relay, or an external relay domain.

Answer: *True*. When you create an accepted domain by using the EMS *New-AcceptedDomain* cmdlet or the New Accepted Domains Wizard in the EMC, you specify the domain type as one of the following:

- **Authoritative** Domains for which the Exchange organization accepts and stores email messages from external locations. The default authoritative domain for an organization is the FQDN of the forest root domain.

- **Internal relay** Domains for which the Exchange organization accepts email messages from external locations but forwards them to another internal mail system.
- **External relay** Domains for which the Exchange organization accepts email messages from external locations but does not process them locally and forwards them to an external mail server.

True or false? After you have created an accepted domain, you cannot modify its properties.

Answer: *False*. You can, for example, use the EMS *Set-AcceptedDomain* cmdlet to modify the properties of an existing accepted domain. You can also use the EMS *Get-AcceptedDomain* and *Remove-AcceptedDomain* cmdlets to display an accepted domain's properties and remove an accepted domain, respectively. For example, the following command configures the accepted domain Fabrikam as the default accepted domain:

```
Set-AcceptedDomain -Identity Fabrikam -MakeDefault $true
```

EXAM TIP You can configure accepted domains only on a server that has been configured with the Hub Transport role.

MORE INFO To learn more about accepted domains, consult the TechNet document at: <http://technet.microsoft.com/en-us/library/bb124423.aspx>.

Remote domains

The exam might test your knowledge of a remote domain's function and how to create and configure such a domain. You should be aware that you can use remote domains to control the types of messages and message formats sent from your organization to a specific external domain. You are expected to know that when you install Exchange, a default remote domain is created that is responsible for the settings applied to all outgoing messages except those configured for specific remote domains. You can create a new remote domain by using the New Remote Domain Wizard in the EMC. You can also use the EMC to edit that remote domain's properties. You can specify whether all subdomains of that domain will be included and configure items such as MIME character sets and out-of-office message settings.

True or false? Configuring remote domain message format options allows you to determine whether automatic replies, automatic forward, delivery reports, and the sender's name are forwarded to a remote domain.

Answer: *True*. It also allows you to specify whether Exchange rich text format is used and which MIME and non-MIME character set is used.

True or false? You can reconfigure a remote domain by using the EMS *Get-RemoteDomain* cmdlet.

Answer: *False*: There are four EMS cmdlets with which you can create, configure, view the properties of, and remove remote domains:

- **New-RemoteDomain** Creates a new remote domain entry
- **Set-RemoteDomain** Reconfigures an existing remote domain entry
- **Get-RemoteDomain** Views the properties of an existing remote domain entry
- **Remove-RemoteDomain** Removes an existing remote domain entry

For example, your organization has acquired the Adatum Corporation, which has its own Active Directory domain named `adatum.com`, and you have added this as a remote domain. The following command prevents your users from sending out-of-office messages to this domain:

```
Set-RemoteDomain -Identity adatum.com -AllowedOOFType None
```

MORE INFO To learn more about remote domains, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996309.aspx>.

Authoritative domains

You should be aware that the authoritative domain is a type of accepted domain, as previously described. The default authoritative domain for an organization is the FQDN of the forest root domain.

True or false? If an organization changes its company name, and hence its domain name, you need to add the new domain name to the accepted domains as an external relay domain so that external users can send email to it.

Answer: *False*. For the new domain to accept and store messages from external users, it must be added to the accepted domains as an authoritative domain.

Email address policies

You need to know the elements that make up an email address policy and how to create and configure such a policy on a Hub Transport server. You should be aware that email address policies, also discussed in Chapter 1, “Installing and Configuring Exchange Servers,” generate the primary and secondary email addresses for recipients in an Exchange organization. A policy consists of a combination of first name, last name, middle initial, and accepted domain. The default email address policy for an organization involves the user’s alias, the “at” sign (@), and the default accepted domain, which is the FQDN of the forest root domain.

True or false? You create an email address policy by using the New E-Mail Address Policy Wizard in the EMC or the EMS *Get-EmailAddressPolicy* cmdlet.

Answer: *False*. You use the EMC New E-Mail Address Policy Wizard or the EMS *New-EmailAddressPolicy* (not the *Get-EmailAddressPolicy*) cmdlet. You can specify recipient types and container, policy conditions, and the format of the email address. You can also specify whether the policy applies immediately upon creation.

True or false? A recipient can have only one email address.

Answer: *False*. Each recipient can have multiple email addresses applied either through a single policy or through multiple policies. The reply-to address set in the policy with the highest priority becomes the user's default reply-to address.

True or false? You can use the EMS *Set-EmailAddressPolicy* cmdlet to configure email address policy priority.

Answer: *True*. You use this cmdlet with the *Priority* parameter. The policy that has priority 1 overrides other policies. When you set a policy to priority 1, all other policies increment their priority so that no conflicts occur. You can also select a policy in the EMC and then click Change Priority.

True or false? A policy change made by using the *Set-EmailAddressPolicy* cmdlet is applied immediately to all recipients within the scope of the policy.

Answer: *False*. After you have reconfigured a policy by using the *Set-EmailAddressPolicy* cmdlet, you need to use the EMS *Update-EmailAddressPolicy* cmdlet to update the email address policy and apply any changes made to all recipients within the scope of the policy. In addition, you can use the *Get-EmailAddressPolicy* cmdlet to view the properties of an existing policy or list existing policies and their priorities, and the EMS *Remove-EmailAddressPolicy* cmdlet to remove an existing policy.

EXAM TIP Removing a policy does not remove email addresses that have been applied to users by means of that policy.

MORE INFO To Learn more about email address policies, consult the TechNet document at: <http://technet.microsoft.com/en-us/library/bb232171.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. Your company name has recently been changed, resulting in a change of domain name. Users in your partner organizations report that they can no longer send email messages to your employees. What action should you take?
2. You have configured treyresearch.com as a remote domain, but you do not want your users to send out-of-office messages to that domain. What EMS command do you issue?
3. What EMS cmdlet do you use to update an email address policy and apply any changes made to all recipients within the scope of the policy?
4. What EMS cmdlet do you use to change the priority of an email address policy?
5. What EMS command would you issue to ensure messages are retained in the transport dumpster for 14 days before deletion?

Objective 4.3: Configure Edge transport

This exam objective might test that you know how to install the Edge Transport server role and configure Edge Transport server settings; how to configure EdgeSync synchronization and create, configure, and test Edge subscriptions; and how to clone Edge Transport server configuration.

Exam need to know

- Create, configure, and test Edge Sync
For example: Do you know what you need to do to ensure that Edge Sync works properly after you add another Hub Transport server to a site?
- Configure Edge Transport server cloning
For example: Do you know whether you run the *ExportEdgeConfig.ps1* script on the source or the target server?
- Install the Edge Transport server role
For example: Do you know what operating system features you need to install before you can deploy the Edge Transport server role?
- Configure Edge Transport server settings
For example: Do you know how to configure an Edge Transport server to use a list of specified DNS servers for external DNS lookups?
- Configure Edge synchronization
For example: Do you know how to modify the properties of an existing Edge synchronization schedule?

Create, configure, and test Edge Sync

You need to know that Edge Sync (or EdgeSync) replicates transport server configuration information, such as transport rules, from Hub Transport servers on protected networks to Edge Transport servers on perimeter networks. Because Edge Sync is unidirectional, it is not possible for an attacker to replicate information back to the internal network, should the Edge Transport server become compromised.

True or false? With the EMS *Test-EdgeSynchronization* cmdlet, you can diagnose the synchronization status of currently subscribed Edge Transport servers.

Answer: *True.* You will learn more about the EMS cmdlets used to manage Edge subscriptions in the Edge Synchronization section, later in this Objective.

True or false? You must re-subscribe existing Edge Transport servers to an Active Directory site if you add new Hub Transport servers to the site.

Answer: *True.* If you add additional Hub Transport servers to a site that has an existing subscription, the new Hub Transport servers will not participate in the synchronization process. To allow the new Hub Transport servers to participate in Edge Sync, you must re-subscribe each Edge Transport server to the Active Directory site. When you deploy a new Edge Transport server on the perimeter network, you must subscribe that Edge Transport server to the Active Directory site, but it is not necessary to re-subscribe the existing Edge Transport servers.

MORE INFO To learn more about EdgeSync, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997438.aspx>.

Configure Edge Transport server cloning

If you have configured settings on one Edge Transport server, the exam might test that you know how to clone these settings on other servers on your organization's perimeter holding the Edge Transport role by using scripts. You should know that these scripts import and export a server's configuration and you can use them to clone Edge Transport servers. You should be aware that a server needs to already be configured with the Edge Transport server role before you can clone the settings from another server on it.

True or false? You can clone Edge subscription settings.

Answer: *False*. Cloning the configuration of an Edge Transport server does not replicate Edge subscription settings or server certificates. You need to create a new Edge Sync subscription for the new Edge Transport server. The following settings are replicated to the new server when you clone the configuration:

- Send and Receive connectors
- Accepted domains
- Remote domains
- IP allow list
- IP block list
- Anti-spam configuration settings

True or false? You use the *ExportEdgeConfig.ps1* and *ImportEdgeConfig.ps1* EMS scripts to clone an Edge Transport server.

Answer: *True*. The target server needs to have the Edge Transport server role installed. You run the *ExportEdgeConfig.ps1* script on the source server and then transfer the XML file this generates to the target server. You edit this file on the target server and add the following information:

- Data and log file paths
- Source IP addresses for Send connectors
- Network bindings for each Receive connector

Finally, you run the *ImportEdgeConfig.ps1* script on the target server to verify and apply the configuration.

EXAM TIP Remember that you run the export script on the source server and the import script on the target server.

MORE INFO To learn more about Edge Transport server cloned configuration, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998622.aspx>.

Install the Edge Transport server role

You need to know how the Edge Transport role differs from other Exchange server roles and the function of Edge Transport servers in your organization. You might be tested on the prerequisites for installing this role. You typically install the role on a computer that is not a member of a domain, and no other Exchange roles can be installed on a server that holds the Edge Transport role. Edge Transport servers are typically deployed in perimeter networks, forming a bridge between Internet mail servers and Hub Transport servers on your internal network.

EXAM TIP Remember that if you choose not to deploy any Edge Transport servers in your organization, you can configure one or more of your Hub Transport servers to be Internet-facing.

True or false? You need to install Microsoft .NET Framework, RSAT, and AD LDS before deploying the Edge Transport server role.

Answer: *True*. Prior to deploying the Edge Transport server role, you need to install the following operating system features:

- .NET Framework 3.5.1 (or later)
- RSAT for AD DS
- AD LDS

You also need to ensure that the server's FQDN is set correctly and the DNS suffix of the computer is specified.

MORE INFO To learn more about the Edge Transport server role, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124701.aspx>.

Configure Edge Transport server settings

You should be aware that when the Edge Transport server role has been deployed on a server, you can access the Properties dialog box for that server via the EMC. In that dialog box, you can view and, if appropriate, change the Edge Transport server properties. For example, if the product ID for the Exchange server is displayed as Unlicensed, you need to enter the product key. You need to know how to configure internal and external DNS settings and set limits such as transient failure retry attempts or maximum concurrent outbound connections. You should be able to configure log settings, such as enable message tracking log and message tracking log path.

True or false? You can use the EMS *Set-TransportServer* cmdlet to configure Edge Transport server settings.

Answer: *True*. For example, the following command configures the Edge Transport server VAN-EDGE02 to use a list of specified DNS servers for external DNS lookups instead of the DNS servers configured on the adapters installed on that server.

```
Set-TransportServer VAN-EDGE02 -ExternalDNSAdapterEnabled $false  
-ExternalDNSServers {10.10.10.1, 10.10.10.2}
```

MORE INFO To learn more about configuring Edge Transport server properties, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123492.aspx>.

Configure Edge synchronization

You should be aware that Edge (or Edge Sync) subscriptions replicate information from the Hub Transport server to the Edge Transport server, and thus enable Edge Transport servers to be configured centrally. The exam might test that you know how to create an Edge subscription, test Edge synchronization, and amend an Edge synchronization schedule.

True or false? When you are creating an Edge subscription, you first need to ensure that the Hub Transport and Edge Transport servers in your organization are able to resolve each other's DNS names.

Answer: *True*. Your next step is to use the EMS to run the *New-EdgeSubscription* cmdlet on the Edge Transport server to generate an Edge subscription file. The same cmdlet run on a Hub Transport server imports this file to that Hub Transport server. You run the New Edge Subscription Wizard from the EMC and specify the location of the Edge Subscription file that you copied to the Hub Transport server, and then specify the Active Directory site to which the Edge Transport server will subscribe. Typically you set the wizard to automatically create a Send connector.

True or false? Using the EMS *Set-EdgeSyncServiceConfig* cmdlet, you can modify the properties of an existing Edge synchronization schedule.

Answer: *True*. You can use the following EMS cmdlets to manage Edge subscriptions:

- **New-EdgeSubscription** Creates a subscription file. On a Hub Transport server this cmdlet imports a subscription file.
- **Get-EdgeSubscription** Retrieves information about existing Edge subscriptions.
- **Remove-EdgeSubscription** Deletes an existing Edge subscription.
- **Start-EdgeSynchronization** Forces the Edge synchronization process.
- **Test-EdgeSynchronization** Used to diagnose the synchronization status of currently subscribed Edge Transport servers.
- **New-EdgeSyncServiceConfig** Creates a new edge synchronization schedule.
- **Get-EdgeSyncServiceConfig** Displays the properties of an existing Edge synchronization schedule.
- **Set-EdgeSyncServiceConfig** Modifies the properties of an existing Edge synchronization schedule.

MORE INFO To learn more about Edge subscriptions, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124096.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have installed AD LDS and RSAT for AD DS on a computer running Windows Server 2008 R2. What other software component do you need to install before deploying the Edge Transport server role?
2. What EMS cmdlet can you use to diagnose the synchronization status of currently subscribed Edge Transport servers?
3. Your Exchange 2010 organization has an Active Directory site in Aberdeen. The site contains two Hub Transport and two Edge Transport servers. You add a third Hub Transport server. What action do you need to take to ensure that EdgeSync synchronization works correctly?
4. Which EMS cmdlet modifies the properties of an existing Edge synchronization schedule?
5. You are cloning Edge Transport server configuration. What EMS script do you run on your source server to generate an XML configuration file?

Objective 4.4: Configure message routing

This exam objective might test your knowledge of DNS, how to configure routing based on sites and site link costs, and how to configure Send and Receive connectors. You could be asked about certificates, relay connectors, authentication, message size limits, Mutual TLS (MTLS), and routing group connectors. You should know how to configure accepted and remote domains, SMTP send and receive connectors, and message delivery limits. You need to know how to configure TLS security for message delivery.

Exam need to know

- Internal and external DNS
For example: Do you know how to configure internal DNS to use a list of specified servers?
- Configure routing based on sites and costs
For example: Do you know how to configure an Exchange cost on a site link?
- Enable, configure, and secure Send and Receive connectors
For example: Do you know when you must select the Anonymous users permission group for the default Receive connector on a server?
- Certificates
For example: Do you know how to generate TLS keys?
- Relay connectors
For example: Do you know how an external relay domain works?
- Authentication
For example: Do you know how to configure Send and Receive connectors to require TLS authentication?

- Message size limits
For example: Do you know the default value for the maximum size of a message sent by a Send connector?
- MTLS
For example: Do you know how certificates are authenticated when traffic between Edge Transport servers and Hub Transport servers is authenticated and encrypted by using MTLS?
- Routing group connector for coexistence
For example: Do you know how to create a routing connector between the default routing group in Exchange 2010 and Exchange 2003 routing groups?
- Configure accepted and remote domain
For example: Do you know the function of a remote domain?
- Configure SMTP Send and Receive connectors
For example: Do you know what the Send connector address space type must be on an Edge Transport server?
- Configure message delivery limits
For example: Do you know what message types are exempted from all message size limits?
- Configure TLS security for message delivery
For example: Do you know whether TLS always permits servers to authenticate clients?

Internal and external DNS

The exam might test that you know how to configure internal and external DNS settings on Hub Transport and Edge Transport servers. You should be aware that you can configure an Edge Transport server or an Internet-facing Hub Transport server to use a list of specified DNS servers for external DNS lookups—instead of the DNS servers configured on the adapters installed on that server—by using the *ExternalDNSAdapterEnabled* and *ExternalDNSServers* parameters of the *Set-TransportServer* cmdlet.

True or false? You can use the *InternalDNSAdapterEnabled* and *InternalDNSServers* parameters with the same cmdlet to use a list of specified DNS servers for internal DNS lookups on a Hub Transport server.

Answer: *True*. For example, the following command configures the Hub Transport server VAN-HUB01 to use a list of specified DNS servers for internal DNS lookups instead of the DNS servers configured on the adapters installed on that server.

```
Set-TransportServer VAN-HUB01 -InternalDNSAdapterEnabled $false
InternalDNSServers {192.168.10.1, 192.168.10.2}
```

MORE INFO To learn more about the *Set-TransportServer* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124238.aspx>.

True or false? A Hub Transport server running Exchange Server 2010 SP1 uses DNS to determine site membership associations.

Answer: *True*. An Exchange 2010 Hub Transport server uses a series of DNS queries to compare the local IP address to defined subnets and thus determine the appropriate site membership association. To reduce the overhead associated with DNS queries, Exchange 2010 adds the *msExchServerSite* attribute to the Active Directory schema. The value of this attribute is the distinguished name of the Active Directory site of the Exchange server. Exchange 2010 uses the Microsoft Exchange Active Directory Topology service to retrieve configuration and recipient data from Active Directory. Sites and site links are discussed later in this Objective.

True or false? A Send connector can be configured to use DNS Mail Exchange (MX) resource records to route mail automatically.

Answer: *True*. In this configuration, the DNS client on the source server must be able to resolve public DNS records. In this case, the Send connector uses the external DNS list that you specify by using the *ExternalDNSServers* parameter. For example, the following two commands specify an external DNS list and configure Send Connector01 to use this list:

```
Set-TransportServer -Identity VAN-EX1 -ExternalDNSServers  
192.168.30.2,10.10.50.10
```

```
Set-SendConnector -Identity SendConnector01  
-UseExternalDNSServersEnabled $true
```

Send connector configuration is discussed later in this Objective.

Configure routing based on sites and costs

You are expected to know how messages are categorized and routed, where they are queued, and how routing paths can be configured by using site link costs. You should be clear on the distinction between Exchange costs and IP site link costs. You should know how to configure a subnet-to-site association, and how to configure Exchange site link costs.

True or false? The Categorizer determines what to do with a message, based on sender information in the message header.

Answer: *False*. The Categorizer in a Hub Transport server determines what to do with each message based on recipient information in the message header. It expands distribution lists, identifies alternative recipients, processes recipient forwarding addresses, applies policies, routes messages, and converts content. Hub Transport servers use Send and Receive connectors to transmit messages to other locations.

True or false? The Categorizer receives messages from the submission queue.

Answer: *True*. After a message is received by an Exchange 2010 Hub Transport or Edge Transport server, it undergoes preliminary processing and is delivered to the submission queue. Messages then move from the submission queue through the Categorizer.

MORE INFO To learn more about the Categorizer and other components of the Transport Pipeline, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996349.aspx>.

True or false? If a route to a recipient cannot be found, the messages are queued to the submission queue.

Answer: *False*. When they have been categorized, messages are queued in delivery queues. If a route to a recipient cannot be found, the messages are queued in the unreachable queue, not the submission queue. For example, if you want to resubmit messages queued on the server EX-03 after a routing problem has been solved, you would issue the following EMS command:

```
Retry-Queue -Identity "EX-03\Unreachable" -Resubmit $true
```

MORE INFO To learn more about transport queues, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125022.aspx>.

True or false? On an Edge Transport server, configuration information is stored in and accessed from AD DS.

Answer: *False*. Exchange 2010 accesses configuration information stored in AD DS to make routing decisions on a Hub Transport server. However, on an Edge Transport server, configuration information is stored in and accessed from AD LDS on the local server.

True or false? A Hub Transport server can relay messages directly to hosts on the Internet.

Answer: *True*. If your organization does not use an Edge Transport server, you can configure the Hub Transport server to be Internet-facing. You can enable anti-spam agents on a Hub Transport server and deploy antivirus protection.

MORE INFO To learn more about Hub Transport servers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123494.aspx>.

True or false? Site links always correspond to the actual paths that network packets follow on the physical network.

Answer: *False*. A site-link object represents a set of sites that can communicate at a uniform cost through a specified intersite transport. Site links do not necessarily correspond to the actual paths that network packets follow on the physical network, but the cost that you assign to a site link typically relates to the reliability, speed, and available bandwidth of the underlying network—for example, a high-speed network connection would be assigned a lower cost than a slower connection.

True or false? Exchange 2010 uses SMTP site links to determine its routing topology.

Answer: *False*. You can configure a site link to use either IP or SMTP. An SMTP site link provides a store and forward mechanism for replication between Active Directory sites that do not have a reliable network link. All types of data can be replicated

across an IP site link, and Exchange 2010 uses IP site links to determine its routing topology. The routing component of Exchange 2010 takes into account the cost assigned to an IP site link when calculating a routing table.

True or false? You can assign Exchange costs to site links.

Answer: *True*. Exchange 2010 always attempts to deliver messages directly to the destination Hub Transport server, but otherwise uses site links when determining the least-cost path. The default cost for a site link is 100. You can assign Exchange costs by using the EMS *Set-AdSiteLink* cmdlet. For example, the following command sets an Exchange cost of 900 on the IP site link LINK0304:

```
Set-AdSiteLink -Identity LINK0304 -ExchangeCost 900
```

Note that Exchange site link costs do not alter the link costs for other traffic, such as Active Directory replication.

MORE INFO For more information about the *Set-AdSiteLink* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123696.aspx>.

True or false? If a hub site exists along the least-cost routing path for message delivery, the messages queue is processed by the Hub Transport servers in the hub site before messages are relayed to their ultimate destination.

Answer: *True*. You can use this feature to ensure that all message delivery is relayed through a particular Active Directory site by designating it as a hub site. For example, the following command designates the Active Directory site MyADSite as a hub site:

```
Set-AdSite -Identity MyADSite -HubSiteEnabled $true
```

MORE INFO To learn more about the EMS *Set-AdSite* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124548.aspx>.

Enable, configure, and secure Send and Receive connectors

You need to know how to create a Send connector, specify a usage type, and configure an existing Send connector. You should be aware that explicit Send connectors are created by default when the Hub Transport or Edge Transport server role is installed. However, implicit and invisible Send connectors are automatically computed based on the site topology and are used to route messages internally between Hub Transport servers. You should know that Foreign connectors are used to send messages to gateway servers that do not use SMTP—for example, third-party FAX gateway servers.

You also need to know how to create and configure Receive connectors on Hub Transport and Edge Transport servers so that they can receive messages from the Internet, from email clients, and from other email servers. You should be aware that the Receive connectors you require on a Hub Transport server for internal mail flow are automatically created when the Hub Transport server role is installed. A Receive connector that can receive email from the Internet is automatically created when the Edge Transport server role is installed.

True or false? If your organization has an Internet-facing Hub Transport server, you need to manually configure Send connectors.

Answer: *True*. End-to-end mail flow requires that Edge Transport servers are subscribed to the Active Directory site by using the Edge subscription process. If your organization has an Internet-facing Hub Transport server or an unsubscribed Edge Transport server, you need to manually configure Send connectors to establish end-to-end mail flow.

True or false? If you use the EMS to create a Send connector, you need to specify the usage type.

Answer: *False*. The usage type (Custom, Internal, Internet, or Partner) determines the default permissions that are assigned on the connector and grants those permissions to trusted security principals. You can use the New Send Connector Wizard in the EMC or the EMS *New-SendConnector* cmdlet to create a Send connector. When you use the EMC, you need to specify a usage type for the connector. When you use the EMS, the default usage type is set to Custom.

MORE INFO To find out more about the *New-SendConnector* and EMS *Set-SendConnector* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa998936.aspx> and <http://technet.microsoft.com/en-us/library/aa998294.aspx>.

True or false? You can use the *Set-SendConnector* cmdlet to configure Send connector permissions; scope; whether the connector delivers email by using DNS address resolution or by routing messages to a smart host; maximum message size; and connection inactivity time-out.

Answer: *False*. Send connector permissions determine the types of header information that can be sent with the email message. You can use the EMS *Add-ADPermission* (not the *Set-SendConnector*) cmdlet to modify the default permissions for a Send connector. You can, however, use the *Set-SendConnector* cmdlet to limit the scope of any Send connector so that it is usable only by other Hub Transport servers in the same Active Directory site. You can also use this cmdlet to configure whether the connector delivers email by using DNS address resolution or by routing messages to a smart host, the maximum message size, and the connection inactivity time-out.

True or false? If you select the internal usage type for a Send connector, you must route mail through a smart host.

Answer: *True*. The smart host handles delivery to the next hop in the delivery destination. You can use an IP address or the FQDN of the smart host to specify the smart host identity. Smart hosts can be used with any usage type but are mandatory for the Internal type. The following EMS command creates a Send connector named Contoso that transmits messages through a smart host named smarthost.contoso.com to Contoso's mail domain mail.contoso.com:

```
New-SendConnector -Internet -Name Contoso  
-Addressspaces smtp:mail.contoso.com -Smarthosts smarthost.contoso.com
```

True or false? You can use the *New-SendConnector* or the *Set-SendConnector* cmdlets with the *ConnectionInactivityTimeout* parameter to create or configure a Send connector that specifies the maximum time that an idle connection can remain open.

Answer: *True*. For example, the following command configures the send connector *SendConnector01* with a maximum message size of 5 MB and a maximum time for which an idle connection can remain open of 20 minutes:

```
Set-SendConnector -Identity SendConnector01 -MaxMessageSize 5MB  
-ConnectionInactivityTimeout 00:20:00
```

True or false? The address space for a Foreign connector specifies the recipient domains to which this connector routes email.

Answer: *True*. You can specify either SMTP address spaces or non-SMTP address spaces. You can use the scope of a Foreign connector to control the visibility of that connector within your Exchange organization. You can create a Foreign connector on a Hub Transport server by using the EMS *New-ForeignConnector* cmdlet. You can configure an existing Foreign connector by using the EMS *Set-ForeignConnector* cmdlet. For example, the following EMS command creates a Foreign connector named *ForeignConnector01*. The address space type is *X.400*, and the *X.400* address space is *c=US;a=Adatum;P=Contoso*. The address space cost is 5, and the source Hub Transport server is *VAN-EX1*:

```
New-ForeignConnector -Name ForeignConnector01  
-AddressSpaces "X400:c=US;a=Adatum;P=Contoso;5"  
-SourceTransportServers VAN-EX1
```

MORE INFO To learn more about the *New-ForeignConnector* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996310.aspx>.

True or false? When you install the Hub Transport server role, two Receive connectors are created.

Answer: *True*. Typically, additional Receive connectors are not required, and the default Receive connectors do not require reconfiguration. If necessary, you can amend default Receive connector settings or create additional Receive connectors.

True or false? During installation of the Edge Transport server role, two Receive connectors are created.

Answer: *False*. In this case, only one Receive connector is created. This is configured to accept SMTP communications from all IP address ranges and is bound to all IP addresses of the local server. It is configured with the Internet usage type and accepts anonymous connections. Typically, no additional Receive connectors are required on an Edge Transport server.

True or false? You can specify Receive connector usage types, permissions, bindings, and message size for a new Receive connector or configure them for an existing connector.

Answer: *True*. As with Send connectors, you can configure the usage type of a Receive connector and determine the default security settings for that connector. You might also need to configure bindings by using the *RemoteIPRanges* parameter. For example, the following command creates the Receive connector ReceiveConnector01 with the Custom usage type. This connector listens for incoming SMTP connections on the IP address 10.10.10.1 and port 25 and accepts incoming SMTP connections only from the IP range 192.168.8.1 through 192.168.8.127:

```
New-ReceiveConnector -Name ReceiveConnector01 -Usage Custom  
-Bindings 10.10.10.1:25 -RemoteIPRanges 192.168.8.1-192.168.8.127
```

You might also need to configure permissions. For example, if you want a Hub Transport server to receive email from the Internet, you would select the Anonymous Users permission group for the default Receive connector on the server. You can also create and configure additional Receive connectors in order to specify a maximum message size, a connection time-out, or a connection activity time-out for traffic from specified IP addresses, where these settings are different from those specified by default Receive connectors. The following command specifies a maximum message size of 100 MB, a connection timeout of 20 minutes, and a connection inactivity timeout of 15 minutes for the ReceiveConnector01 Receive connector:

```
Set-ReceiveConnector -Identity ReceiveConnector01 -MaxMessageSize 100MB  
-ConnectionTimeout 00:20:00 -ConnectionInactivityTimeout 00:15:00
```

MORE INFO For more information about the EMS *New-ReceiveConnector* and *Set-ReceiveConnector* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb125139.aspx> and <http://technet.microsoft.com/en-us/library/bb125140.aspx>.

Certificates

You are expected to know how the MTLS and TLS protocols use certificates to provide encrypted communications and end-point authentication over network connections. You should be aware that the server originating a message and the server receiving it exchange certificates from a mutually trusted CA.

True or false? Exchange 2010 Setup creates a self-signed certificate and TLS is enabled by default.

Answer: *True*. You can clone this certificate to use it on additional servers. If necessary, you can replace it with certificates that are issued by a trusted third-party CA.

True or false? You can use the EMS *New-ExchangeCertificate* cmdlet to generate TLS keys.

Answer: *True*. These keys consist of the TLS certificate and related private keys. You can specify certificate metadata that enables different services to use the same certificate and private key. This metadata is stored in fields in the resulting certificate. You can also generate a certificate request that you can send to a third party or other public key infrastructure CA.

True or false? Running the *New-ExchangeCertificate* cmdlet without parameters generates a self-signed certificate with the FQDN of the server as the subject name.

Answer: *True*. You can use this certificate for direct trust authentication and encryption between Edge Transport servers and Hub Transport servers. The certificate is published to Active Directory so that Exchange direct trust can validate the authenticity of the server for MTLs. You can also specify subject name and whether the private key is exportable. For example, the following EMS command creates a certificate with an exportable private key and a subject name defined by Country/Region = US, Organization = Adatum.com, and Common Name = mail.adatum.com:

```
New-ExchangeCertificate -SubjectName "c=US, o=adatum.com,  
cn=mail.adatum.com" -PrivateKeyExportable $true
```

True or false? You can use the *New-ExchangeCertificate* cmdlet to generate a certificate request that you can send to a CA.

Answer: *True*. You can output the request to the command-line console; send the certificate request to a local, external, or commercial CA; or save the certificate request to a text file. The following EMS command generates a certificate request with a subject name c=UK, o=Blue Sky Airlines, cn=mail.blueskyairlines.co.uk, a subject alternate name blueskyairlines.co.uk, and an exportable private key:

```
New-ExchangeCertificate -GenerateRequest  
-SubjectName "c=UK,o=Blue Sky Airlines,cn=mail.blueskyairlines.co.uk"  
-DomainName blueskyairlines.co.uk -PrivateKeyExportable $true
```

MORE INFO To learn more about the *New-ExchangeCertificate* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998327.aspx>.

Relay connectors

As an Exchange professional, you know that anonymous relay on Internet SMTP can be a serious security deficiency. You should therefore be aware that In Exchange 2010, relaying is typically handled by using accepted domains. Accepted domains are discussed earlier in this chapter, in Option 4.2: Configuring Hub Transport. Accepted domains can be configured as internal relay domains or external relay domains.

True or false? An internal relay domain is a domain for which the Exchange organization accepts email messages from external locations but does not process them locally, and forwards them to an external mail server.

Answer: *False*. This is the definition of an external relay domain. An internal relay domain is a domain for which the Exchange organization accepts email messages from external locations but forwards them to another internal mail system.

MORE INFO To learn more about anonymous relay on a Receive connector, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb232021.aspx>.

Authentication

You should be aware that MTLS authenticates the sender for the recipient and the recipient for the server, and that some implementations of TLS (for example, SSL) do not. Exchange 2010 attempts to use TLS for all remote connections, and all traffic between Edge Transport servers and Hub Transport servers is authenticated and encrypted by using MTLS.

True or false? You can require TLS authentication on Send and Receive connectors.

Answer: *True*. For example, the following EMS command creates a Receive connector for incoming messages on port 25 from the IP address range 10.10.0.1 through 10.10.0.24 and specifies that all messages coming from this range must use TLS:

```
New-ReceiveConnector -Name Secure -Bindings 0.0.0.0:25  
-RemoteIPRanges 10.10.0.1-10.10.0.24 -RequireTLS $true
```

Message size limits

You should be aware that the maximum size of messages specified for an IP site link sent through a Send connector is not always the same as the maximum message size configured on a Send connector. By no means do all the messages that are sent through a Send connector pass over an IP site link.

EXAM TIP Remember that if a message is subject to both Send connector and site-link restrictions, the smaller of the two maximum message sizes applies.

True or false? You can use the EMS *Get-AdSiteLink* cmdlet to configure maximum message size on site links

Answer: *False*. You use the *Get-AdSiteLink* cmdlet to view configuration information about an Active Directory IP site link. You use the *Set-AdSiteLink* cmdlet to configure maximum message size. By default, Exchange 2010 does not limit the size of messages that are relayed between Hub Transport servers in different Active Directory sites, but it might become necessary to specify size limits because of traffic considerations. For example, the following command sets the maximum message size on the Active Directory IP site link LINKAB to 1 GB:

```
Set-AdSiteLink -Identity LINKAB -MaxMessageSize 1GB
```

True or false? The default value for the maximum size of a message sent by a Send connector is 10 MB.

Answer: *True*. You can use the *MaxMessageSize* parameter with the EMS *Set-SendConnector* or *New-SendConnector* cmdlet if you need to specify a maximum message size other than the default value. You can also configure the maximum message size on a Receive connector. The following command specifies a maximum message size of 100 MB for the Receive connector ReceiveConnector01:

```
Set-ReceiveConnector -Identity ReceiveConnector01 -MaxMessageSize 100MB
```

True or false? A Foreign connector has an unlimited maximum message size by default.

Answer: *True*. The following EMS command configures the maximum message size on ForeignConnector01 to be 50 MB:

```
Set-ForeignConnector -Identity ForeignConnector01 -MaxMessageSize 50MB
```

MORE INFO To learn more about the *Set-ForeignConnector* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123789.aspx>.

MTLS

You should know that all traffic between Edge Transport servers and Hub Transport servers is authenticated and encrypted by using MTLS. You should be aware that Exchange 2010 uses direct trust to authenticate the certificates and the presence of the certificate in Active Directory.

True or false? When you subscribe an Edge Transport server to the Exchange organization, the Edge Subscription publishes the Edge Transport server certificate in Active Directory for the Hub Transport servers to validate.

Answer: *True*. In turn, the Microsoft Exchange EdgeSync service updates AD LDS with the set of Hub Transport server certificates for the Edge Transport server to validate.

Routing group connector for coexistence

The exam is likely to test various areas of coexistence between Exchange 2010 and earlier Exchange versions. One such area is the use of routing group connectors between the default routing group in Exchange 2010 and Exchange 2003 routing groups. You should be aware that the first routing group connector between Exchange 2010 and Exchange 2003 is created and configured during installation of the first Hub Transport server role in an Exchange 2010 organization.

True or false? You use the EMS *Get-RoutingGroupConnector* cmdlet to create a new routing group connector.

Answer: *False*. You use the EMS *New-RoutingGroupConnector* not the *Get-RoutingGroupConnector* cmdlet for this purpose. For example, the following command creates a bidirectional routing group connector named MyRGC between the Exchange 2010 routing group on the EXCH2010-02 Exchange Server 2010 SP1 Hub Transport server and the routing group associated with the EXCH2003-07 Exchange 2003 back-end server in the adatum.com forest:

```
New-RoutingGroupConnector -Name "MyRGC"  
-SourceTransportServers " EXCH2010-02.adatum.com"  
-TargetTransportServers " EXCH2003-07.adatum.com" -Bidirectional $true
```

MORE INFO To learn more about routing group connectors, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997292.aspx>.

Configure accepted and remote domains

You should be aware that an Exchange organization can only accept messages from and send messages to an accepted domain, and remote domains let you control the types of messages and message formats sent from your organization to a specific external domain. Accepted and remote domains and their configuration with the *Set-AcceptedDomain* and *Set-RemoteDomain* cmdlets were discussed in Objective 4.2: Configure hub transport.

Configure SMTP Send and Receive connectors

You are expected to know that SMTP Send connectors are Send connectors with an SMTP address space type that create a logical connection to remote email systems, and are responsible for outbound transmission of email messages. If you use the Edge Sync process, it will configure the Send connectors required for mail flow to the Internet and to the Edge Transport servers in your Microsoft Exchange Server 2010 organization. SMTP Receive connectors provide a logical gateway through which all inbound messages are received.

True or false? The Send connector address space type must be SMTP on an Edge Transport server.

Answer: *True*. The Send connector address space specifies the names of domains to which the Send connector routes mail. You need to specify the address space, unless the Send connector is linked to a Receive connector. On an Edge Transport server, the address space type must be SMTP. On a Hub Transport server, it can be SMTP, X400, or another text string. If you omit the address space type, SMTP is assumed. The following EMS command creates a Send connector named SendConnector01 with a usage type of Internet that sends email to all .com Internet sites:

```
New-SendConnector -Internet -Name SendConnector01  
-AddressSpace "SMTP:*.com;1"
```

The following EMS command configures the Send connector SendConnector01 to send email to an address space of the adatum.com domain and all its subdomains:

```
Set-SendConnector -Identity SendConnector01 -AddressSpace *.adatum.com
```

True or false? If an SMTP server on the Internet rejects email messages sent from your domain, you should enable the *Verbose* setting in the protocol logging Properties of the Send connector.

Answer: *True*. You need to enable this setting, and then check the information in the protocol log files.

MORE INFO To learn more about creating an SMTP Send connector, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997285.aspx>.

True or false? SMTP Receive connectors are configured on a per-server basis.

Answer: *True*. They control how that server receives messages from the Internet, email clients, and other messaging servers.

MORE INFO To learn more about creating an SMTP Receive connector, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125159.aspx>.

Configure message delivery limits

You should be aware that message delivery limits do not consist solely of the size limits discussed earlier in this Objective. You should also know how to configure (for example) attachment size limits, header size limits, and recipient limits—that is, the maximum number of recipients to which a message can be sent.

True or false? You can configure user limits.

Answer: *True*. These limits apply to a specific user object, such as a mailbox, contact, distribution group, or public folder.

True or false? All messages must adhere to the limits settings.

Answer: *False*. The following message types generated by a Hub Transport server or an Edge Transport server are exempted from all message size limits:

- System messages
- Agent-generated message
- Delivery status notification (DSN) messages
- Journal report messages
- Quarantined messages

MORE INFO To learn more about configuring message delivery limits, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125159.aspx>.

Configure TLS security for message delivery

You should be aware that Exchange 2010 provides enhanced administrative features that improve the overall management of TLS. You should know that TLS is a standard protocol that is used to provide secure web communications on the Internet or on intranets. It enables clients to authenticate servers or, optionally, servers to authenticate clients. It also provides a secure channel by encrypting communications. TLS is the latest version of the SSL protocol. You should be familiar with obtaining and using certificates for TLS and MTLs and know what certificates are trusted outside your organization. This topic was discussed earlier in this Objective.

True or false? TLS always permits servers to authenticate clients.

Answer: *False*. The TLS protocol enables clients to authenticate servers and (optionally) servers to authenticate clients. When TLS is deployed, it typically provides only encryption. Sometimes no authentication occurs between the sender and the receiver, and only the receiving server is authenticated. For example, SSL authenticates only the receiving server.

MORE INFO To learn more about TLS functionality and terminology, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb430753.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS command do you issue to set an Exchange-specific cost of 1000 on the IP site link MYLINK01?
2. Email messages from your organization sent to an SMTP server on the Internet are rejected. How do you discover more about this problem?
3. You want to resubmit messages queued on the server EX-03 after a routing problem has been solved. What EMS command do you issue?
4. What EMS command creates a certificate with an exportable private key and a subject name defined by Country/Region = UK, Organization = Contoso.com, and Common Name = mail.contoso.com?
5. You are the Exchange administrator at Fabrikam. You want the Exchange Server 2010 SP1 server named FKM-HT01 that has the Hub Transport server role installed to receive email from the Internet. How should you configure permissions for the default Receive connector on this server?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 4.1: Create and configure transport rules

1. You configure the properties of the Marketing group to make Kim Akers the group moderator.
2. You create a transport rule.
3. You use the *Set-OutlookProtectionRule* cmdlet.
4. The *Set-IRMConfiguration -InternalLicensingEnabled \$true* command.
5. No. For a transport rule action to be applied, a message must meet all of the conditions and none of the exceptions.

Objective 4.2: Configure Hub transport

1. Add the new domain name as an authoritative accepted domain.
2. You issue the *Set-RemoteDomain -Identity treyresearch.com -AllowedOOFTYPE None* command.
3. The *Update-EmailAddressPolicy* cmdlet.
4. The *Set-EmailAddressPolicy* cmdlet.
5. You would issue the *Set-TransportConfig -MaxDumpsterTime 14.00:00:00* command.

Objective 4.3: Configure Edge transport

1. You need to install .NET Framework 3.51 (or later).
2. The *Test-EdgeSynchronization* cmdlet.
3. You need to resubscribe each Edge Transport server to the Active Directory site.
4. The *Set-EdgeSyncServiceConfig* cmdlet.
5. The *ExportEdgeConfig.ps1* script.

Objective 4.4: Configure message routing

1. You issue the *Set-AdSiteLink -Identity MYLINK01 -ExchangeCost 1000* command.
2. You enable the *Verbose* setting in the protocol logging properties of your Send connector, and then check the information in the protocol log files.
3. The *Retry-Queue -Identity "EX-03\Unreachable" -Resubmit \$true* command.
4. The *New-ExchangeCertificate -SubjectName "c=UK, o=contoso.com, cn=mail.contoso.com" -PrivateKeyExportable \$true* command.
5. You should select the Anonymous Users permission group.

Monitoring and Reporting

Approximately 13 percent of the 70-662 exam focuses on the topic “Monitoring and Reporting.” The exam is likely to test that you know how to monitor both mailbox and public folder Microsoft Exchange databases. You need to know how to monitor mail flow connectivity, both internal and external. You need to know how to generate and configure the many reports that are available to help you to identify current and future problems and check that your organization is currently operating satisfactorily.

This chapter covers the following objectives:

- Objective 5.1: Monitor databases.
- Objective 5.2: Monitor mail flow.
- Objective 5.3: Monitor connectivity.
- Objective 5.4: Generate reports.
- Objective 5.5: Configure logging.

Objective 5.1: Monitor databases

In this exam objective, you might be tested on how to monitor public folder and mailbox databases, check database status, and collect statistics for the databases and the mailboxes or public folders they contain. You are expected to know how to monitor DAG replication and view the status information about mailbox database copies.

Exam need to know

- Public folder statistics

For example: Do you know how to obtain statistics for each individual public folder within a public folder database?

- Mailbox databases statistics

For example: Do you know how to obtain general information about mailbox databases and statistics related to the mailboxes they contain?

- Database status

For example: Do you know how to view status information about mailbox databases that have been configured with one or more database copies?

- DAG replication

For example: Do you know how to monitor DAG replication by viewing the status information about mailbox database copies included in a DAG?

Public folder statistics

You need to know what steps to take to obtain information about public folder databases. You should be aware that you can use the EMC to access the public folder database Properties dialog box or use the EMS *Get-PublicFolderDatabase* cmdlet for this purpose. For example, the following command retrieves detailed information about the public folder database on the VAN-EX1 server:

```
Get-PublicFolderDatabase -Server VAN-EX1 | FL
```

MORE INFO To learn more about the *Get-PublicFolderDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998827.aspx>.

True or false? You can use the EMS *Get-PublicFolderStatistics* cmdlet to obtain statistics for each individual public folder within a public folder database.

Answer: *True*. For example, you can use this cmdlet to check replication by ensuring that the number and size of items in the public folder replica are the same as in the original public folder. The following command returns statistics for the public folder MyPublicFolder on the Mailbox server VAN-EX1:

```
Get-PublicFolderStatistics -Identity \MyPublicFolder -Server VAN-EX1 | FL
```

MORE INFO To learn more about the *Get-PublicFolderStatistics* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998663.aspx>.

True or false? You can use the *Get-PublicFolderStatistics* cmdlet to view information about items within a specified public folder.

Answer: *False*. You use the EMS *Get-PublicFolderItemStatistics* cmdlet for this purpose. This cmdlet returns information such as the subject, the attachments, the message size, the item type, the last modification time, the last access time, and the creation time. The following command obtains information about a public folder item with the path \Sales\Reports\2012Report on server VAN-EX1 and displays this information in table format:

```
Get-PublicFolderItemStatistics -Identity "\Sales\Reports\2012Report"
-Server VAN-EX1 | FT
```

MORE INFO To learn more about the *Get-PublicFolderItemStatistics* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee332344.aspx>.

Mailbox databases statistics

The exam might test that you know what steps to take to obtain general information about mailbox databases and statistics related to the mailboxes they contain. You need to know how to view the statistics for all the mailboxes on a server, for all the mailboxes in a mailbox database, or for a single mailbox. For example, the following command lists the statistics for all the mailboxes on the VAN-EX1 Mailbox server:

```
Get-MailboxStatistics -Server VAN-EX1 | FL
```

The following command lists the statistics for all the mailboxes in the mailbox database Mailbox Database 1363123687:

```
Get-MailboxStatistics -Database "Mailbox Database 1363123687" | FL
```

More examples of the use of the EMS *Get-MailboxStatistics* cmdlet are given in Objective 5.4: Generate reports.

True or false? You can use the EMC to determine the properties of a mailbox database.

Answer: *True*. By accessing the Properties dialog box of a mailbox database, you can obtain general, maintenance, limits, and client settings information.

MORE INFO To learn more the *Get-MailboxStatistics* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124612.aspx>.

True or false? You can use the EMS *Get-StoreUsageStatistics* cmdlet to generate a report on the 25 accounts that are using the greatest amount of resources within a mailbox database.

Answer: *True*. For example, the following command returns the 25 users with the largest mailboxes in the database Mailbox Database 1363123687:

```
Get-StoreUsageStatistics -Database "Mailbox Database 1363123687"
```

EXAM TIP You can use the *Get-StoreUsageStatistics* cmdlet to identify mailboxes that exceed a specified size, but only if all these mailboxes are in the top 25 mailboxes listed by size.

MORE INFO To learn more about the *Get-StoreUsageStatistics* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876852.aspx>.

Database status

You should know what steps you need to take to obtain database status information that can indicate that the database is in the process of being backed up, whether it is mounted, whether online maintenance is in progress, and the available free space in the database root. For example, in the following command, you use the EMS *Get-MailboxDatabase* cmdlet to retrieve information about MailDatabase01 on VAN-EX01, including status information, and display the information in list format:

```
Get-MailboxDatabase -Identity MailDatabase01 -Server VAN-EX01  
-Status | Format-List
```

MORE INFO To learn more about the *Get-MailboxDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124924.aspx>.

True or false? Checking the status of public folder databases is an important step in monitoring replication health.

Answer: *True*. You can use the EMS *Get-PublicFolderDatabase* cmdlet to obtain detailed information about the public folder database. The following command retrieves information on the VAN-EX1 server, including status information:

```
Get-PublicFolderDatabase -Server VAN-EX1 -Status | FL
```

MORE INFO To learn more about the *Get-PublicFolderDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998827.aspx>.

True or false? You can use the EMS *Get-MailboxDatabaseCopyStatus* cmdlet to view status information about mailbox databases that have been configured with one or more database copies.

Answer: *True*. For example, the following command returns status information for all copies of a mailbox database named MyDatabase and displays status results in list format:

```
Get-MailboxDatabaseCopyStatus -Identity MyDatabase | FL
```

MORE INFO To learn more about the *Get-MailboxDatabaseCopyStatus* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298044.aspx>.

DAG replication

The exam might test that you know what steps to take to monitor DAG replication by viewing the status information about mailbox database copies included in a DAG. You should be aware that Exchange 2010 also introduces a new event log stream that uses the operating system crimson channel capabilities and built-in scripts that can collect data from these event channels.

True or false? Typically you would use the Admin logs subtype of the Applications and Services logs category for crimson channel logging.

Answer: *True*. Logs in this category store events from a single application or component rather than events that have system-wide impact. Typically, you would use event log records in the Admin logs subtype to troubleshoot problems. Exchange Server 2010 has two crimson channels: HighAvailability and MailboxDatabaseFailureItems that you can check by using Event Viewer.

True or false? You can use the *Get-MailboxDatabaseCopyStatus* cmdlet to monitor continuous replication and the continuous replication pipeline.

Answer: *False*. You use the EMS *Test-ReplicationHealth* cmdlet for this purpose. This functionality implements proactive monitoring and indicates the availability of

Active Manager and the health and status of the underlying cluster service, quorum, and network components. You can run commands based on this cmdlet locally or remotely against any Mailbox server in a DAG. For example, the following command tests replication health for the Mailbox server VAN-EX1:

```
Test-ReplicationHealth -Identity VAN-EX1 | FL
```

True or false? When you are monitoring mailbox database copies, you have the option of monitoring when switchovers or failovers occur and how frequently this is happening.

Answer: *False*. The EMS *CollectOverMetrics.ps1* script collects information about switchover and failover-related statistics that have already been recorded. For example, the following command collects metrics for all databases whose names start with MyData in the DAG named MyDAG and generates and displays an HTML report after the metrics are collected:

```
CollectOverMetrics.ps1 -DatabaseAvailabilityGroup MyDAG -Database "MyData*" -GenerateHTMLReport -ShowHTMLReport
```

True or false? You can use the *CollectOverMetrics.ps1* script to collect and monitor metrics actively in real time.

Answer: *False*. You can use either the EMS *CollectReplicationMetrics.ps1* script or the EMS *CheckDatabaseRedundancy.ps1* script for this purpose. You specify the *Verbose* parameter to display the script output on the screen. For example, the following command collects metrics for all databases in the DAG named MyDAG and displays the collected data in an on-screen report:

```
CollectReplicationMetrics.ps1 -DagName MyDAG -Verbose
```

EXAM TIP The various tools you can use to monitor high availability, site resilience, and DAG replication sometimes collect the same statistics, but they are used for different functions. For example, the *CheckDatabaseRedundancy.ps1* script monitors the redundancy of replicated mailbox databases, whereas the *CollectReplicationMetrics.ps1* script collects counter data related to database replication from multiple Mailbox servers in real time. Ensure that you know what each tool does, when you would use them, and the differences between them.

MORE INFO To learn more about the *CollectOverMetrics.ps1*, *CheckDatabaseRedundancy.ps1*, and *CollectReplicationMetrics.ps1* scripts, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351258.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You want to display the statistics for all mailboxes in the mailbox database MyMailboxDatabase in list format. What EMS command do you issue?
2. You want to obtain information about a public folder item named DonHall Report in the public folder \Marketing\Reports on server GLA-EX1 and display this information in table format. What EMS command do you issue?

3. What EMS cmdlet do you use to list the sizes of all mailboxes in a mailbox database?
4. You want to list the top ten mailboxes in the mailbox database MBDB01 in descending order of total item size and display the mailbox name and size in table format. What EMS command do you issue?
5. What EMS script collects information about switchover and failover-related statistics that have already been recorded?

Objective 5.2: Monitor mail flow

In this exam objective, you might be tested on how to perform message tracking; how DNS should be configured and how you can confirm correct configuration; how to manage message queues; and how to view, retry, and delete a queue. You are expected to know about backpressure thresholds and how to resolve mail flow problems, such as when your users receive unexpected NDRs.

Exam need to know

- Perform message tracking
For example: Do you know how to configure the maximum size of message tracking log files?
- DNS
For example: Do you know how to verify mail exchange (MX) record configuration on an external or Internet DNS server?
- Manage message queues
For example: Do you know how to list all the queues on a Hub Transport server that contains more than 50 messages?
- View, retry, and delete
For example: Do you know how to retry a queue?
- Backpressure thresholds
For example: Do you know what file contains configuration options for backpressure thresholds?
- Resolve NDRs
For example: Do you know what tool to use to troubleshoot common mail flow problems and identify the root causes of symptoms, such as when users receive unexpected NDRs?

Perform message tracking

The exam might test that you know what steps to take to configure message tracking and use message tracking logs in mail flow analysis, reporting, and troubleshooting. You should know that, by default, message tracking is enabled on all Exchange 2010 Hub Transport, Edge Transport, and Mailbox servers.

True or false? You can use the EMC to configure the maximum size or age of message tracking log files.

Answer: *False*. You can use the EMC to configure some message tracking settings on a Hub Transport or Edge Transport server, such as the location of the message tracking log file. You do this by accessing the Properties dialog box for the Hub Transport or Edge Transport object. You cannot, however, use the EMC to configure the maximum size or age of message tracking log files or the maximum size of the message tracking log file directory. You cannot use the EMC to configure message subject logging in message tracking logs.

MORE INFO To learn more about configuring message tracking, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997984.aspx>.

True or false? You can use the EMS *Set-TransportServer* cmdlet to enable or disable message tracking and to change the path to the message tracking log on a Hub Transport or Edge Transport server.

Answer: *True*. For example, the following command disables message tracking on the Exchange 2010 Hub Transport server VAN-EX1:

```
Set-TransportServer -Identity VAN-EX1 -MessageTrackingLogEnabled:$false
```

The following command changes the path to the message tracking log on Hub Transport server VAN-EX1 to C:\Logfiles\MessageTracking:

```
Set-TransportServer -Identity VAN-EX1 -MessageTrackingLogPath  
C:\Logfiles\MessageTracking
```

True or false? You can use the *Set-TransportServer* cmdlet to change the maximum size of each message tracking log file, the maximum age of each message tracking log file, and the maximum size for the entire message tracking log directory on Hub Transport, Edge Transport, and Mailbox servers.

Answer: *True*: The following command changes the maximum size of each message tracking log file on the Hub Transport server VAN-EX1 to 15 MB (the same command would work on an Edge Transport server):

```
Set-TransportServer -Identity VAN-EX1 -MessageTrackingLogMaxFileSize 15MB
```

MORE INFO To learn more about the *Set-TransportServer* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124238.aspx>.

True or false? The commands to configure maximum log size and age and the maximum size of the message tracking log file directory on a Mailbox server are similar, except that the EMS *Set-MailboxServer* cmdlet is used.

Answer: *True*. The following command changes the maximum size of each message tracking log file on the Mailbox server VAN-EX2 to 20 MB:

```
Set-MailboxServer -Identity VAN-EX2 -MessageTrackingLogMaxFileSize 20MB
```

The following command changes the maximum age of each message tracking log on the Mailbox server VAN-EX2 to 40 days:

```
Set-MailboxServer -Identity VAN-EX2 -MessageTrackingLogMaxAge 40.00:00:00
```

The following command disables message subject logging in message tracking logs on the Mailbox server VAN-EX1:

```
Set-MailboxServer -Identity VAN-EX1  
-MessageTrackingLogSubjectLoggingEnabled $false
```

MORE INFO To learn more about the *Set-MailboxServer* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998651.aspx>.

DNS

As an administrator, you are expected to know how to use the Nslookup command-line tool to verify MX record configuration on an external or Internet DNS server. You should be aware that in order to receive incoming mail, an MX record for each of your Exchange servers that you have configured as Edge Transport servers or Internet facing Hub Transport servers must exist on your external DNS infrastructure. For external DNS servers to resolve any Exchange server's MX record, the Exchange server must be reachable from the Internet zone and must be configured to contact a DNS server to resolve DNS names.

True or false? To support outgoing mail, you can configure Exchange 2010 servers to use internal DNS servers that use forwarders to external DNS servers.

Answer: *True*. Typically, you configure computers running Exchange 2010 as DNS clients of your internal DNS infrastructure. On your internal DNS server, you can configure an external forwarder to point to a trusted external DNS server.

EXAM TIP If you do not want Internet-facing Hub Transport servers to use an internal DNS server, you can configure the properties of the Hub Transport object in the EMC.

Manage message queues

The exam might test that you know how to monitor message queues and access queue statistics. You should know what steps to take to discover whether a mailbox database is experiencing performance problems. You should be aware that this typically manifests itself in excessively long message queues (or transport queues) associated with the database. If a Hub Transport or Edge Transport server becomes overloaded, this can result in an excessive number of messages in the queues on that server.

True or false? You can access Queue Viewer from the EMC to monitor transport queues.

Answer: *True*. You can also use the EMS *Get-Queue* cmdlet to view message queues. This is discussed in the next section of this Objective.

MORE INFO To learn more about Queue Viewer, access the TechNet document at <http://technet.microsoft.com/en-us/library/bb124789.aspx> and follow the links.

True or false? You can use the *Get-Queue* cmdlet to filter queues.

Answer: *True*. You can use this cmdlet with the *Filter* parameter to filter queues. For example, the following command lists all the queues that contain more than 50 messages on the Hub Transport or Edge Transport server on which it is entered:

```
Get-Queue -Filter {MessageCount -gt 50}
```

The following command displays the number of messages in queues on the Hub Transport or Edge Transport server on which it is entered, for which the next-hop destination is the Contoso.com domain:

```
Get-Queue -Filter{NextHopDomain -eq "contoso.com"}
```

You can also use The EMC Queue Viewer tool to filter queues.

EXAM TIP You can manually suspend and resume queues. The delivery queue on a Hub Transport or Edge Transport server is automatically put in a Retry status when the server cannot connect to the next hop. You can use either the EMC or the EMS to retry a queue.

MORE INFO To learn more about the *Get-Queue* cmdlet and about using the EMS to manage queues, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb124904.aspx> and <http://technet.microsoft.com/en-us/library/aa998047.aspx>.

True or false? How a message is routed determines the type of queue in which it is stored.

Answer: *True*. The following types of queues are used in Exchange 2010:

- Submission queue
- Mailbox delivery queue
- Remote delivery queue
- Poison message queue
- Unreachable queue

For example, the poison message queue is used to isolate messages that are potentially harmful to Exchange Server 2010. The unreachable queue contains messages that cannot be routed to their destinations.

MORE INFO To learn more about transport queue types and managing queues, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125022.aspx>.

View, retry, and delete

The exam might test that you know how to stop queued messages from being sent and view the queue so that you can investigate problems, and how to resume normal operations. If a queue is experiencing problems sending messages, it will try

again at configured intervals. You need to know how to force an immediate retry. You also need to know how to delete a message queue.

True or false? You can use the *Get-Queue* cmdlet to view a queue.

Answer: *True*. For example, the following command lets you view all the queues on the Hub Transport or Edge Transport server on which it is entered:

```
Get-Queue | FL
```

The following command displays detailed information for a queue that exists on the server VAN-EX1:

```
Get-Queue -Server VAN-EX1 | FL
```

True or false? You can use the EMC Queue Viewer tool to suspend and view a queue.

Answer: *True*. Suspending a queue does not change the status of messages in that queue. Messages that are in the process of delivery will finish operations. You can also use the EMS *Suspend-Queue* and *Get-Queue* cmdlets. For example, the following command suspends all queues that have a message count equal to or greater than 500 and have a status of Active:

```
Suspend-Queue -Filter {MessageCount -ge 500 -and Status -eq "Active"}
```

The following command lists the queues that contain more than 100 messages on the server on which it is run.

```
Get-Queue -Filter {MessageCount -gt 100}
```

True or false? When you resume a suspended queue, this is the same as retrying it.

Answer: *False*. Resuming a queue restarts the queue's outgoing activities. The queue must have a status of Suspended for this action to have any effect. Retrying a queue forces an immediate connection attempt and overrides the next scheduled retry time. The delivery queue must be in a status of Retry for this action to have any effect.

True or false? You can use the EMS *Resume-Queue* cmdlet to resume a queue.

Answer: *True*. You can also use Queue Viewer. The following command resumes all the suspended queues on the Hub Transport or Edge Transport server on which it is issued:

```
Resume-Queue -Filter {Status -eq "Suspended"}
```

True or false? When a Hub Transport or Edge Transport server cannot connect to the next hop, the delivery queue is put in a status of Suspended.

Answer: *False*. It is put in a status of Retry. You can retry a delivery queue by using the Queue Viewer or the EMS *Retry-Queue* cmdlet. This forces an immediate connection attempt and overrides the next scheduled retry time. For example, the following command retries all queues with the status of Retry on the Hub Transport or Edge Transport server on which it is entered:

```
Retry-Queue -Filter {status -eq "Retry"}
```


Typically, you might retry the Unreachable queue if your organization has been unable to send email to an external domain or forest due to connection problems (now resolved). In this case, you would set the *Resubmit* parameter of the *Retry-Queue* cmdlet to *\$true*.

True or false? You can remove one or more messages in a queue on a Hub Transport or Edge Transport server by using the EMC Queue Viewer tool.

Answer: *True*. You can select whether to send an NDR when you remove messages from a queue. You cannot remove a message from the Submission queue. You can also use the EMS *Remove-Message* cmdlet. For example, the following command removes messages that have a subject of "Prescription Drugs" and does not send an NDR.

```
Remove-Message -Filter {Subject -eq " Prescription Drugs "} -WithNDR $false
```

Backpressure thresholds

You should know what steps to take to access backpressure options. You should be aware that backpressure thresholds prevent the system resources from being completely overwhelmed and enable the server to deliver existing messages. When utilization of the system resource returns to a normal level, the Exchange server accepts new connections and messages.

True or false? For each monitored system resource on a Hub Transport or Edge Transport server, only two levels of resource utilization are applied.

Answer: *False*. The following three levels are applied:

- Normal
- Medium
- High

Configuration options for backpressure are available in the EdgeTransport.exe.config application configuration file that is located in the C:\Program Files\Microsoft\Exchange Server\V14\Bin directory.

MORE INFO To learn more about backpressure thresholds, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201658.aspx>.

Resolve NDRs

You should know how to use the Mail Flow Troubleshooter in the EMC Exchange Troubleshooting Assistant to help resolve mail flow problems and NDRs. This troubleshooter diagnoses retrieved data, presents an analysis of possible root causes of problems, and suggests corrective actions. You can use this tool to troubleshoot common mail flow problems and identify the root causes of symptoms, such as when users receive unexpected NDRs or when messages are remaining in the pending submission queue on a Mailbox server.

MORE INFO To learn more about the Mail Flow Troubleshooter, consult the Exchange Team Blog article at <http://blogs.technet.com/b/exchange/archive/2006/08/07/3394688.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You are responsible for managing the Exchange Server 2010 SP2 Hub Transport server named VAN-EX01, which supports message tracking. What must you configure in the EMC to change the location of the log file used for message tracking?
2. All messages sent to recipients in the external treyresearch.com forest are not being delivered. You discover an error in the routing path and repair it. You now want to resubmit all messages stored on the server VAN-EX1 that were not sent to the treyresearch.com forest. What EMS command do you issue?
3. What file do you need to access to configure backpressure thresholds on an Edge Transport server?
4. Which message queue is used to isolate messages that are deemed potentially harmful to Exchange 2010 because several attempts to deliver them have failed?
5. What EMS command removes messages that have a subject of "Prescription Drugs" and does not send an NDR?

Objective 5.3: Monitor connectivity

In this exam objective, you might be tested on how to monitor SMTP client-to-server and server-to-server connectivity by using the Telnet tool. You need to be able to monitor Outlook RPC/MAPI and Microsoft Outlook Anywhere connectivity. You need to know how to verify Exchange Web Services (EWS) functionality on an Exchange Server 2010 Client Access server. You need to know how to verify that the POP3 and IMAP4 services are running correctly and how to test ActiveSync connectivity.

Exam need to know

- SMTP client to server
For example: Do you know how to use the Telnet tool on client computers to test connectivity for protocols defined by their port numbers?
- SMTP server to server
For example: Do you know from what computer you should send a Telnet message to a remote messaging server if you cannot send it from a client?
- Outlook RPC/MAPI
For example: Do you know how to verify MAPI connectivity and server functionality?

- Outlook Anywhere

For example: Do you know how to deploy Outlook Anywhere and what prerequisites need to be met before you can use it?

- Outlook EWS

For example: Do you know how to verify EWS functionality on an Exchange Server 2010 Client Access server?

- POP

For example: Do you know how to verify that the POP3 service is running correctly on a Mailbox server?

- IMAP

For example: Do you know how to test IMAP4 connectivity to all mailboxes on a Mailbox server?

- ActiveSync

For example: Do you know how to test the configuration of ActiveSync by performing a full synchronization against a specified mailbox?

SMTP client to server

You should know how to use the Telnet tool (if installed) on client computers to test connectivity for protocols defined by their port numbers. The exam might test, for example, that you know how to open a Telnet session, test SMTP connectivity to port 25 on a server, and test that Extended SMTP (ESMTP) connections can be made to that server. For example, the following Telnet commands test SMTP connectivity and ESMTP connection to server VAN-EX1.contoso.com on port 25:

```
VAN-EX1.contoso.com 25
```

```
EHLO
```

True or false? You can use the Telnet tool to test whether an Edge Transport server is able to receive email sent from other SMTP servers on the Internet.

Answer: *True.* If you use Telnet to connect to and verify the functionality of the SMTP service on an Edge transport server, you can enter the SMTP commands that are used to connect to an SMTP server and send a message exactly as if your Telnet session were an SMTP messaging server. You can send messages from a client computer outside your organization to your Edge Transport servers and test Internet connectivity.

True or false? You can use Telnet to test connectivity to any Hub Transport server.

Answer: *False.* Message transfers between Hub Transport servers are encrypted and authenticated by default. You can use Telnet on port 25 to submit messages only to an internal Hub Transport server that has a Receive connector configured to allow anonymous access or basic authentication. Anonymous access is required for Internet-facing servers.

EXAM TIP Remember that Microsoft Windows Vista and Microsoft Windows 7 client computers do not have a Telnet client installed by default.

MORE INFO To learn more about using Telnet to test SMTP communication to computers running Exchange Server 2010 SP1 or SP2, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123686.aspx>.

SMTP server to server

You should know how to check that your Internet-facing SMTP messaging servers are configured to validate the source IP address, the corresponding DNS domain name, and the reverse-lookup IP address of any Internet host that tries to send a message to the server. You should understand that this means that if you connect a client computer to the Internet and try to send a test message to a remote messaging server by using Telnet on port 25, your message is likely to be rejected.

True or false? If you cannot send a Telnet message to a remote messaging server from a client, you should send it from an internal Hub Transport server.

Answer: *False*. In this case, you should connect to the remote messaging server from an Edge Transport server on your peripheral network. The accepted domains that are configured on the Edge Transport Server have the appropriate DNS MX records, A records, and PTR records that identify the Edge Transport server as a legitimate and traceable email message source.

True or false? To connect to a destination SMTP server, you must know the IP Address of the server.

Answer: *False*. To use Telnet on port 25 to connect to a destination SMTP server, you must discover either the FQDN or the IP address of the SMTP server. You can use the Nslookup command-line tool to find the MX record for the destination domain and hence, the address of the SMTP server, as described in Objective 5.2: Monitor mail flow, earlier in this chapter.

Outlook RPC/MAPI

The exam might test that you know how to use the EMS *Test-MapiConnectivity* cmdlet to verify MAPI connectivity and server functionality. You should be aware that MAPI is typically used with the Remote Procedure Call (RPC) protocol. Outlook uses RPC/MAPI to communicate with Exchange 2010, and this protocol is usually termed the MAPI protocol.

True or false? You use the *Identity* parameter of the *Test-MapiConnectivity* cmdlet to specify a logon mailbox.

Answer: *True*. The SystemMailbox is used if you do not include the *Identity* parameter. Logging on to a mailbox tests two protocols used when a client connects to a Mailbox server: MAPI and LDAP. During authentication, the *Test-MapiConnectivity* cmdlet verifies that the MAPI server, Exchange store, and DSAccess service are working. For example, the following command tests MAPI connectivity to the system mailboxes in each mailbox database on the Mailbox server VAN-EX1:

```
Test-MapiConnectivity -Server VAN-EX1 | FL
```

The following command tests MAPI connectivity to the Don Hall mailbox in the Adatum.com domain and returns detailed results:

Test-MapiConnectivity -Identity "adatum\Don Hall" | FL

True or false? The *Test-MapiConnectivity* cmdlet supports the *Database* parameter.

Answer: *True*. This parameter specifies a mailbox database identity so that the command can test whether it is possible to log on to the system mailbox on the specified database. For example, the following command tests MAPI connectivity to the system mailbox in the mailbox database Research:

Test-MapiConnectivity -Database Research | FL

MORE INFO To learn more about the *Test-MapiConnectivity* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123681.aspx>.

Outlook Anywhere

The exam might test that you how to deploy Outlook Anywhere, what prerequisites need to be met before you can use it, and how you would test Outlook Anywhere connectivity. You should be aware that by using Outlook Anywhere, Outlook clients can connect to their Exchange servers over the Internet by using the RPC-over-HTTP networking component, that it eliminates the need for mobile users to use a VPN to connect to Exchange servers, and that it allows email traffic to traverse network firewalls without requiring RPC ports to be opened.

True or false? You need to enable Outlook Anywhere on at least one Mailbox server in your Exchange organization.

Answer: *False*. You need to enable Outlook Anywhere on at least one Client Access server. You can use the EMC Enable Outlook Anywhere Wizard or the EMS *Enable-OutlookAnywhere* cmdlet. For example, the following command enables Client Access server VAN-CAS01 for Outlook Anywhere with its external host name set to site.adatum.org, and the default authentication set to Basic:

```
Enable-OutlookAnywhere -Server 'VAN-CAS01' -ExternalHostname  
'site.adatum.org' -DefaultAuthenticationMethod 'Basic'
```

MORE INFO To learn more about enabling Outlook Anywhere, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123542.aspx>.

True or false? Before you can use Outlook Anywhere, you need to install a valid SSL certificate.

Answer: *True*. This certificate needs to be from a certification authority trusted by the client—typically a self-signed certificate from your internal CA will not suffice. You also need to install the Microsoft Windows RPC-over-HTTP Proxy component if this is not already installed. You must allow port 443 through your firewall because Outlook Anywhere requests use HTTP-over-SSL. If you already use OWA with SSL or Exchange ActiveSync with SSL, you do not need to open any additional ports.

True or false? After you enable Outlook Anywhere, you can test for end-to-end client Outlook Anywhere connectivity from a web browser by using the *Exchange Remote Connectivity Analyzer* (ExRCA).

Answer: *True*. ExRCA can confirm that connectivity for your Exchange servers is configured correctly and diagnose any connectivity issues. Tests for Microsoft Exchange ActiveSync, EWS, Microsoft Office Outlook, and Internet email are available on the Remote Connectivity Analyzer website.

MORE INFO To learn more about the Exchange Remote Connectivity Analyzer, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ff701693.aspx>.

True or false? You can also test Outlook Anywhere connectivity by using the EMS *Test-OutlookConnectivity* cmdlet on the Exchange Client Access server on which Outlook Anywhere is enabled.

Answer: *True*. Before running the test, you must create a test user by using the EMS *New-TestCasConnectivityUser.ps1* script. The following command tests Outlook Anywhere connectivity by setting the *Protocol* parameter to HTTP:

```
Test-OutlookConnectivity -Protocol:Http  
-GetDefaultsFromAutoDiscover:$true -verbose
```

MORE INFO To learn more about testing Outlook Anywhere connectivity, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee633453.aspx>.

Outlook EWS

You should be aware that the EWS API communicates with an Exchange 2010 Client Access server by means of EWS Simple Object Access Protocol (SOAP) messages. SOAP XML messages provide the communication between a Client Access server running Exchange 2010 and web services client applications.

True or false? You can use the EMS *Test-WebServicesConnectivity* cmdlet to verify EWS functionality on an Exchange Server 2010 SP1 Client Access server.

Answer: *True*. This cmdlet tests the functionality of EWS and also performs basic operations that verify the functionality of Outlook Anywhere. For example, the following command uses a default test account to test EWS on the local Client Access server; it permits the test to use an unsecured connection:

```
Test-WebServicesConnectivity -AllowUnsecureAccess
```

MORE INFO To learn more about the *Test-WebServicesConnectivity* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998328.aspx>.

POP

You should know that the POP3 service provides email access to clients on port 110; SSL-protected POP3 uses port 995. POP3 is built in to, for example, Microsoft Outlook Express. It is also built in to the Microsoft Internet Explorer browser. The exam might test that you know how to use the EMS *Test-PopConnectivity* cmdlet to verify that the POP3 service is running correctly. For example, the following command prompts for the credentials for the Kim Akers mailbox user and tests POP3 connectivity to the Kim Akers mailbox on the VAN-EX1 Mailbox server:

```
Test-PopConnectivity -MailboxServer:VAN-EX1  
-MailboxCredential:(Get-Credential "adatum\Kim Akers") | FL
```

The following command tests POP3 connectivity between the Client Access server CAS01 and all mailboxes on all Mailbox servers in the same organization, and specifies the connection type as SSL:

```
Test-PopConnectivity -ClientAccessServer:CAS01 -ConnectionType:SSL
```

True or false? You need to create a test user before running the *Test-PopConnectivity* cmdlet.

Answer: *True*. As with the *Test-OutlookConnectivity* cmdlet that was just discussed, you must create a test user by using the *New-TestCasConnectivityUser.ps1* script before using the *Test-PopConnectivity* cmdlet.

MORE INFO To learn more about the *Test-PopConnectivity* cmdlet, access the TechNet document at <http://technet.microsoft.com/en-us/library/bb738143.aspx>.

IMAP

The exam might test that you know how to use the EMS *Test-ImapConnectivity* cmdlet to verify that the IMAP4 service is working. You should be able to test IMAP4 functionality on a specified Client Access server for all mailboxes in the same Active Directory site, for a specific Mailbox server, or for a specific mailbox identified by its credentials. You are expected to know that, by default, IMAP4 uses port 143 and SSL-protected IMAP4 uses port 993 to retrieve email through a Client Access server.

For example, the following command, run on a Client Access Server, tests connectivity to all mailboxes on the Mailbox server VAN-MBX01:

```
Test-ImapConnectivity -MailboxServer VAN-MBX01 | FL
```

The following command tests IMAP4 connectivity from the Client Access server VAN-CAS01 to all mailboxes on all Mailbox servers on the local site:

```
Test-ImapConnectivity -ClientAccessServer:VAN-CAS01 | FL
```

MORE INFO To learn more about the *Test-ImapConnectivity* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb738126.aspx>.

ActiveSync

The exam might check that you know what steps to take to test ActiveSync connectivity. You should be aware that Exchange ActiveSync lets you synchronize a mobile phone with your Exchange 2010 mailbox, and that by default, you enable ActiveSync when you install the Client Access server role on a computer running Microsoft Exchange Server 2010 RTM, SP1, or SP2.

True or false? You can use the EMS *Test-ActiveSyncConnectivity* cmdlet to test the configuration of Microsoft Exchange ActiveSync by performing a full synchronization against a specified mailbox.

Answer: *True*. For example, the following command tests Exchange ActiveSync connectivity for the mailbox Don-Hall on the Client Access server CAS01 in the contoso.com forest:

```
Test-ActiveSyncConnectivity -ClientAccessServer contoso\CAS01  
-URL "http://contoso.com/mail" -MailboxCredential "Don-Hall"
```

True or false? You can configure the test to use the Autodiscover service to locate the Client Access server.

Answer: *True*. You can use the *UseAutodiscoverForClientAccessServer* parameter of the *Test-ActiveSyncConnectivity* cmdlet to specify whether the test uses the Autodiscover service to locate the Client Access server. The Autodiscover service configures client computers that are running Outlook 2007 or Outlook 2010. It can also configure supported mobile devices. Using the service, clients can automatically connect to features, such as the OAB, the Availability service, and Unified Messaging (UM).

EXAM TIP If you need to ensure that your users can access the mailboxes on a newly installed and configured server running Exchange Server 2010 by using ActiveSync, you should use the anonymous setting in the authentication type for the Microsoft-Server-ActiveSync virtual directory.

MORE INFO To learn more about the *Test-ActiveSyncConnectivity* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123540.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have just installed the first computer running Exchange Server 2010 SP2 into an Exchange 2007 organization as a Client Access server. You want to ensure that all the mailboxes on Exchange Server 2007 Mailbox servers remain available when users utilize ActiveSync. What authentication type must you specify for the Microsoft-Server-ActiveSync virtual directory on the new server?
2. What web-based tool can you use to test whether recipients can utilize Outlook Anywhere to access a server running Exchange Server 2010 SP2?
3. Your users utilize Outlook 2010 to access to your company's Exchange 2010 environment. What EMS cmdlet can you use to determine the amount of lag for connections to a messaging server in your organization?
4. You administer the Exchange 2010 organization in the contoso.com forest. What EMS cmdlet can you use to determine if your users can utilize Outlook Anywhere to access an Exchange server in that forest?
5. What EMS command do you issue to test IMAP4 connectivity from the Client Access server VAN-CAS01 in your Exchange 2010 organization to all mailboxes on all Mailbox servers on the local site and display the output in list format?

Objective 5.4: Generate reports

In this exam objective, you might be tested on how to generate reports based on mailbox folder statistics, mailbox statistics, and mail flow statistics. You should know how to present statistics formatted as lists or tables, and how to use the ExBPA tool.

Exam need to know

- Mailbox folder statistics
For example: Do you know how to generate a report that presents information about the folders in a specific mailbox?
- Mailbox statistics
For example: Do you know how to display the value of a specific statistic in a specific mailbox?
- Mail flow statistics
For example: Do you know how to verify that the system mailbox on one Mailbox server can successfully send a message to the system mailbox on another Mailbox server?
- Formatted list and formatted table
For example: Do you know how to display statistics generated by an EMS command in ascending or descending order of the value in a specified variable?
- ExBPA
For example: Do you know how to determine the overall health of your Exchange 2010 servers and check their topology?

Mailbox folder statistics

The exam might test that you know what steps to take to generate a report that presents information about the folders in a specific mailbox, including the number and size of items in the folder, the folder name and identity, and other information. You should know that you can use the EMS *Get-MailboxFolderStatistics* cmdlet for this task. For example, the following command returns mailbox folder statistics for the Kim Akers mailbox:

```
Get-MailboxFolderStatistics -Identity "Kim Akers"
```

True or false? You can use the PowerShell *Format-List* or *Format-Table* cmdlets to refine the information and put it in a format more suited to a report.

Answer: *True*. For example, the following command lists in table format the name of each folder in the Kim Akers mailbox and the number of items in each folder:

```
Get-MailboxFolderStatistics -Identity "Kim Akers" | FT Name,NumberOfItems
```

You can redirect the output from this and similar commands into .txt or .csv files for analysis by other software packages. You can use the PowerShell *Sort-Object* and *Select-Object* cmdlets to list folders in order of size or item count and to list, for example, the five largest or smallest folders.

True or false? You can use the *FolderScope* parameter of the EMS *Get-Mailbox FolderStatistics* cmdlet to define the folders in which you are interested.

Answer: *True*. For example, the following command returns the folder statistics for the Calendar folder in the Don Hall mailbox:

```
Get-MailboxFolderStatistics -Identity "Don Hall" -FolderScope Calendar
```

True or false? You cannot easily determine the dates of the oldest and newest items in each folder by issuing an EMS command.

Answer: *False*. You can use the *IncludeOldestAndNewestItems* parameter with the *Get-MailboxFolderStatistics* cmdlet for this purpose.

MORE INFO To learn more about the *Get-MailboxFolderStatistics* EMS cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996762.aspx>.

Mailbox statistics

You need to know what steps to take to obtain information about a mailbox in a format suitable for a report. The exam might test that you can determine the mailbox size, the number of messages it contains, and the last time it was accessed. In addition, you should know how to obtain the move history or the move report of a completed move request. Earlier in this chapter, Objective 5.1: Monitor databases, discussed the *Get-MailboxStatistics* cmdlet. You can use this cmdlet to display mailbox information.

True or false? You can display the value of a specific statistic in a specific mailbox.

Answer: *True*. If a mailbox returns statistics, you can use the PowerShell *FL* cmdlet to display the value of one or more specified statistics. For example, the following command displays the last logon time for the Kim Akers mailbox:

```
Get-MailboxStatistics -Identity "Kim Akers" | FL LastLogonTime
```

True or false? You can use the *FL* cmdlet to display statistics in a specified order.

Answer: *False*. The PowerShell *Sort-Object* cmdlet is used for this purpose. For example, the following command lists the mailboxes in the Research mailbox database in descending order of item count:

```
Get-MailboxStatistics -Database Research | Sort-Object ItemCount  
-Descending | FT DisplayName,ItemCount
```

MORE INFO To learn more about the *Sort-Object* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd347688.aspx>.

True or false? If you do not want to list all the mailboxes in a mailbox database or on a Mailbox server, but instead you want to list, for example, the top five mailboxes in terms of total item size, you can pipe the results of your search into the PowerShell *Select-Object* cmdlet.

Answer: *True*. For example, the following command lists the top five mailboxes in the mailbox database Mailbox Database 1363123687 by total item size, in descending order:

```
Get-MailboxStatistics -Database "Mailbox Database 1363123687" |  
Sort-Object TotalItemSize -Descending | Select-Object -First 5 |  
FT DisplayName,TotalItemSize
```

EXAM TIP You can use the *Get-MailboxStatistics* cmdlet to check the last time that users logged on to a Mailbox server.

MORE INFO To learn more about the *Select-Object* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd315291.aspx>.

Mail flow statistics

You need to know what steps you can take to test mail flow and ensure that messages pass through the system without excessive delay (latency). You need to be able to determine the volume of messages passing through the system in a given time. The exam might test that you know how to use the EMS *Test-Mailflow* cmdlet to verify that each of your Mailbox servers can successfully send itself a message and to verify that the system mailbox on one Mailbox server can successfully send a message to the system mailbox on another Mailbox server. For example, the following command tests that the Mailbox server VAN-EX1 can send email to the mailbox with the SMTP address Administrator@adatum.com.

```
Test-Mailflow -Identity VAN-EX1 -TargetEmailAddress Administrator@adatum.com
```

The following command tests that the Mailbox server VAN-EX1 can send email to the Mailbox server VAN-EX2:

```
Test-Mailflow -Identity VAN-EX1 -TargetMailboxServer VAN-EX2
```

True or false? You can use the *Test-Mailflow* cmdlet to verify that email is sent between Mailbox servers within a defined latency threshold.

Answer: *True*. The *Test-Mailflow* cmdlet supports a number of parameters. For example, the *ActiveDirectoryTimeout* parameter specifies the number of seconds that elapse before the task provides an informational message about the delay. You can specify the display name of the mailbox to which test messages are sent by using the *TargetEmailAddressDisplayName* parameter. The following command sends a message to the Kim Akers mailbox if a test message from Mailbox server VAN-EX1 to Mailbox server VAN-EX2 experiences a delay greater than 100 seconds:

```
Test-Mailflow -Identity VAN-EX1 -TargetMailboxServer VAN-EX2  
-ActiveDirectoryTimeout 100 -TargetEmailAddressDisplayName "Kim Akers"
```

MORE INFO To learn more about the *Test-Mailflow* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa995894.aspx>.

True or false? You can access the Microsoft Exchange Server Mail Flow Troubleshooter from the EMC and use this tool to diagnose mail flow problems, such as users receiving unexpected NDRs, messages not being received or delivered, excessive queue lengths, and so on.

Answer: *True*. This tool is part of the Exchange Server 2010 Exchange Troubleshooting Assistant (ExTRA). You access the tool from the EMC by clicking Tools and then double-clicking Microsoft Mail Flow Troubleshooter.

EXAM TIP It is not unusual for an examination question to ask what tools perform a particular function and list both EMS commands and the EMC graphic tools in the answers. You should know, for example, that you can test mail flow by using both the *Test-Mailflow* cmdlet and the Mail Flow Troubleshooter.

MORE INFO To learn more about the Mail Flow Troubleshooter, consult the Exchange Team Blog article at <http://blogs.technet.com/b/exchange/archive/2006/08/07/3394688.aspx>.

Formatted list and formatted table

As an administrator, you will probably have used the *FL* and *FT* cmdlets and should know that you can pipe the output of an EMS cmdlet that returns statistics or other detailed information. This makes the information easier to read and analyze on the screen, and easier to process in report generation software when it is redirected into a .txt or .csv file. For example, the following command obtains all available logon statistics for the Kim Akers mailbox and displays them in list format:

```
Get-LogonStatistics -Identity "Kim Akers" | FL
```

True or false? You can use the *FL* or *FT* cmdlets to filter the output of an EMS command.

Answer: *True*. If an EMS command returns data about a number of variables, and you are interested in only some of these, you can list the values you want to display as parameters of an *FT* or *FL* command. For example, the following command (or script) lists the mailboxes in the mailbox database MyDatabase and displays the mailbox name and size in table format:

```
Get-MailboxStatistics -Database "MyDatabase" | FT DisplayName,TotalItemSize
```

True or false? You can use the *FT* cmdlet to display results in ascending or descending order of the value in a specified variable.

Answer: *False*. You use the *Sort-Object* cmdlet for this purpose, although you would typically use it with the *FL* or *FT* cmdlet. For example, the following command lists the mailboxes in the mailbox database MyDatabase in descending order of mailbox size and displays the mailbox name and size in table format:

```
Get-MailboxStatistics -Database "MyDatabase" | Sort-Object TotalItemSize  
-Descending | FT DisplayName,TotalItemSize
```

True or false? You can use the *FL* cmdlet to display the first ten (for example) results in ascending or descending order of the value in a specified variable.

Answer: *False*. You use the *Select-Object* cmdlet for this purpose, typically with the *FL* or *FT* and the *Sort-Object* cmdlet. For example, the following command lists the first ten mailboxes in the mailbox database MyDatabase in descending order of mailbox size and displays the mailbox name and size in table format:

```
Get-MailboxStatistics -Database "MBDB01" | Sort-Object TotalItemSize  
-Descending | Select-Object -First 10 | FT DisplayName,TotalItemSize
```

MORE INFO To learn more about the *Format-Table* and *Format-List* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd315255.aspx> and <http://technet.microsoft.com/en-us/library/dd347700.aspx>.

ExBPA

You need to know how to use the ExBPA EMC tool to help you to determine the overall health of your Exchange 2010 servers and check their topology. You should be aware that the tool scans Exchange 2010 servers and identifies items that do not conform to Microsoft best practices.

ExBPA can examine your Active Directory and Exchange Server 2010 servers and generate a list of issues, such as suboptimal configuration settings or unsupported or not-recommended options. You can also use it to report on the general health of a system. ExBPA carries out the following scans:

- Health check (with or without performance baseline)
- Permission check
- Connectivity test
- Baseline

True or false? You can run ExBPA against only one server at a time.

Answer: *False*. You can run ExBPA against an entire deployment, a set of servers, or against a specific server. You can choose to carry out a new scan or access an existing scan. If you access an existing scan, you can enable the ExBPA reporting features.

True or false? ExBPA lets you choose various types of report.

Answer: *True*. You can select List Reports, Tree Reports, and Other Reports, specify issues and settings that you want to include, and specify how the reports are displayed.

MORE INFO To learn more about ExBPA, consult the TechNet document at <http://technet.microsoft.com/en-us/exchange/bb288481.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You want to generate a report on the 25 accounts that are using the greatest amount of resources within a mailbox database, identifying those mailboxes that are over 1 GB in size. What EMS cmdlet do you use?
2. Your Exchange 2010 organization contains two Mailbox servers named DEN-EX01 and DEN-EX02. You want to determine the amount of time that it takes for messages from DEN-EX01 to be delivered to DEN-EX02. What EMS cmdlet would you use to do this?
3. What EMS cmdlet would you use to check the last time a user accessed a specific mailbox on an Exchange 2010 Mailbox server, or to determine the sizes of specific mailboxes?
4. Your users are receiving unexpected NDRs. What EMC tool could you use to diagnose this problem?
5. What tool can examine your Active Directory and Exchange Server 2010 servers and generate a list of issues, such as suboptimal configuration settings or unsupported options?

Objective 5.5: Configure logging

In this exam Objective, you might be tested on configuring protocol logging and store logging, and how to configure logging levels. You are expected to know about agent logs, message tracking logs, and event logs. You should know how to configure logging results.

Exam need to know

- Protocol logging
For example: Do you know how to enable and disable protocol logging on a per-connector basis?
- Store logging
For example: Do you know what the Exchange store typically contains?
- Configure logging levels
For example: Can you list the five logging levels with which agent logs can be configured?
- Agent logs
For example: Do you know how to configure agent logging?
- Message tracking logs
For example: Do you know how to enable or disable message tracking on Mailbox servers?
- Event logs
For example: Do you know how to display and configure event logging levels?

- Analysis of logging results

For example: Do you know how to collect, store, sort, and present information so that it can be used for analysis?

Protocol logging

You need to know how to use protocol logging to log the SMTP communication between email servers that occurs as part of message delivery. You should know that this traffic is called SMTP conversations and that it occurs on Send connectors and Receive connectors configured on Hub Transport or Edge Transport servers. The exam might test that you know that protocol logging is disabled by default and is enabled or disabled on a per-connector basis, and that the Receive connectors (and the Send connectors) on a Hub Transport or Edge Transport server share the same protocol log files and protocol log options.

True or false? You can use the *Set-TransportServer* cmdlet to configure the intra-organization Send connector.

Answer: *True*. The following EMS command enables protocol logging for the intra-organization Send connector:

```
Set-TransportServer -IntraOrgConnectorProtocolLoggingLevel Verbose
```

The following command disables protocol logging for the intra-organization Send connector, if this has previously been enabled:

```
Set-TransportServer -IntraOrgConnectorProtocolLoggingLevel None
```

Note that you cannot use the EMC to enable or disable protocol logging for the intra-organization Send connector.

True or false? You can use the EMS *Set-ReceiveConnector* or *Set-SendConnector* to enable or disable protocol logging on a Receive or Send connector, respectively.

Answer: *True*. You can also access the Properties dialog box for the relevant connector in the EMC to perform these tasks. If you use the EMS, then, for example, the following command enables protocol logging for the Default VAN-EX2 Receive connector:

```
Set-ReceiveConnector "Default VAN-EX2" -ProtocolLoggingLevel Verbose
```

The following command disables protocol logging for the Send connector *MySendConnector*:

```
Set-SendConnector MySendConnector -ProtocolLoggingLevel None
```

You can use the EMS but not the EMC to enable or disable protocol logging for the intra-organization Send connector. The following command enables protocol logging for the intra-organization Send connector on the Hub Transport server VAN-EX1:

```
Set-TransportServer -Identity VAN-EX1  
-IntraOrgConnectorProtocolLoggingLevel Verbose
```

MORE INFO To learn more about the *Set-ReceiveConnector* and *Set-SendConnector* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb125140.aspx> and <http://technet.microsoft.com/en-us/library/aa998294.aspx>.

True or false? You can access a connector's Properties dialog box in the EMC to change its location.

Answer: *True*. You can also use the *Set-TransportServer* cmdlet. For example, the following command moves the Receive connector protocol log directory to `C:\ProtocolLogs\Receive` on the Hub Transport server VAN-EX1:

```
Set-TransportServer -Identity VAN-EX1 -ReceiveProtocolLogPath C:\ProtocolLogs\Receive
```

The following command moves the Send connector protocol log directory to `C:\ProtocolLogs\Send` on the same server:

```
Set-TransportServer -Identity VAN-EX1 -SendProtocolLogPath C:\ProtocolLogs\Send
```

EXAM TIP Remember that the log files that the Receive connectors use are not the same as the log files that the Send connectors use.

True or false? You can use the connector Properties dialog box in the EMC to set the maximum size of Receive connector and Send connector protocol log files.

Answer: *False*. You use the *Set-TransportServer* cmdlet. For example, the following command sets the maximum size of Receive connector protocol log files to 15 MB on the Hub Transport server VAN-EX1:

```
Set-TransportServer -Identity VAN-EX1 -ReceiveProtocolLogMaxFileSize 15MB
```

To set the maximum size of Send connector protocol log files to 20 MB on the Edge Transport server DEN-EDGE1, you would enter the following command:

```
Set-TransportServer -Identity DEN-EDGE1 -SendProtocolLogMaxFileSize 20MB
```

You can use similar commands with (for example) the *ReceiveProtocolLogMaxDirectorySize* and *ReceiveProtocolLogMaxAge* parameters to configure the maximum size for a protocol log directory and the maximum age for a protocol log file.

MORE INFO To learn more about the *Set-TransportServer* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124238.aspx>.

Store logging

The exam might expect you to know that Exchange 2010 stores data in a specialized set of data files, such as EDB files, LOG files, and CHK files. You should be aware that the Exchange store provides a single repository for managing several types of information and is the core data storage repository for Exchange Server 2010. It contains mailbox databases and public folder databases that can reside on a single server or can be distributed across multiple servers.

True or false? Store logging provides a database recovery mechanism.

Answer: *True*. Exchange store logging, or transaction logging, is an Extensible Storage Engine (ESE) recovery mechanism designed to restore an Exchange database to a consistent state after any sudden stoppage. The logging mechanism is also used when creating and restoring online backups

Configure logging levels

The exam might expect you to know that diagnostic logs such as agent logs can be configured with one of five logging levels: Lowest (the default), Low, Medium, High, and Expert. You should, however, be aware that protocol logging, described earlier in this Objective, has only two logging levels: Verbose and None. Changing the diagnostic logging level for a given process can cause additional events to be written to the event log.

True or false? You can use the EMC Manage Diagnostic Logging Properties Wizard to configure logging levels.

Answer: *True*. You can also use the EMS *Set-EventLogLevel* cmdlet. For example, the following command changes the MSExchangeTransport\Agents logging level to High:

```
Set-EventLogLevel -Identity "MSExchangeTransport\Agents" -Level High
```

MORE INFO To learn more about the *Set-EventLogLevel* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998905.aspx>.

Agent logs

You need to know how you can use agent logs to record actions performed on a message by specified anti-spam agents that you have installed and configured on an Edge Transport or Hub Transport server. The exam might ask about the following agents that can write information to the agent log:

- The connection and content filter agents
- The edge rules agent
- The recipient and sender filter agents
- The sender identity (ID) agent

Information written to the agent log depends on the agent, the SMTP event, and the action performed on the message.

True or false? Transport agents act on messages at specific access points in the SMTP command sequence that transports messages through a Hub Transport server or Edge Transport server.

Answer: *True*. These access points are called *SMTP events*.

MORE INFO To learn more about transport agents, SMTP events, and agent priority, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125012.aspx>.

True or false? The anti-spam agent logs on a Hub Transport server are located in the folder C:\Program Files\Microsoft\Exchange Server\V14\TransportRoles\Logs\AgentLog.

Answer: *True*. However, if no agent logging has occurred on the server, this folder will not exist.

True or false? You can use commands based on the EMS *Set-AgentLog* cmdlet on an Edge or Hub Transport server to access the information in an agent log.

Answer: *False*. You use the EMS *Get-AgentLog* cmdlet. For example, the following command returns a report containing statistics collected between 09:00 (9:00 AM), October 4, 2011, and 18:00 (6:00 PM), November 5, 2011:

```
Get-AgentLog -StartDate "10/04/2011 9:00:00 AM"  
-EndDate "11/05/2011 6:00:00 PM"
```

True or false? You can use the EMS *Get-AntiSpamFilteringReport.ps1* script to search the agent logs and obtain anti-spam filtering statistics.

Answer: *True*. The script displays statistics for each agent.

True or false? You can enable or disable agent logging by modifying the *EdgeTransport.exe.config* file.

Answer: *True*. By default, agent logging is enabled on Hub Transport and Edge Transport servers. You can enable or disable agent logging by modifying the *AgentLogEnabled* key that is present in the *EdgeTransport.exe.config* file. It is possible to configure the maximum file size for individual logs, the maximum age of the agent log files, and the maximum size for the agent log directory, but to do this, you need to add additional keys to the configuration file.

EXAM TIP Remember that agent logging assists in spam filtering and is configured by modifying a configuration file rather than by using EMS commands.

MORE INFO To learn more about agent logging, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124795.aspx>.

Message tracking logs

You need to know how to use message tracking logs to analyze mail flow, generate reports, and locate problems. You should be aware that message tracking records the SMTP transport activity of all messages transferred to and from a Hub Transport, Edge Transport, or Mailbox server. The exam might test that you know what tools you can use to configure message tracking and on which server role. For example, message tracking is enabled by default on Hub Transport, Edge Transport, and Mailbox servers. You can use the EMC to disable or enable message tracking on Hub Transport and Edge Transport servers but not on Mailbox servers. You can use the EMS to disable or enable message tracking for all three server roles.

True or false? You can use the *Set-TransportServer* cmdlet to enable or disable message tracking on Mailbox servers.

Answer: *False*. You use this cmdlet on Edge Transport and Hub Transport servers. You use the *Set-MailboxServer* cmdlet on Mailbox servers. For example, the following command disables message tracking on the Hub Transport server VAN-EX2:

```
Set-TransportServer -Identity VAN-EX2 -MessageTrackingLogEnabled $false
```

The following command enables message tracking on the Mailbox server VAN-EX1 (assuming this has previously been disabled):

```
Set-MailboxServer -Identity VAN-EX1 -MessageTrackingLogEnabled $true
```

True or false? You can use the EMC to reconfigure the message tracking log location on Mailbox servers.

Answer: *False*. You can use the EMC to configure Hub Transport or Edge Transport object properties, but you cannot use this procedure on Mailbox servers. You can use EMS commands to reconfigure the message tracking log location for all three server roles. For example, the following command changes the message tracking log location on the Hub Transport server VAN-EX2 to *C:\Logfiles\MessageTracking*:

```
Set-TransportServer -Identity VAN-EX2 -MessageTrackingLogPath C:\Logfiles\MessageTracking
```

True or false? You can use the *MessageTrackingLogMaxFileSize*, *MessageTrackingLogMaxDirectorySize*, and *MessageTrackingLogMaxAge* parameters to change the maximum size of each message tracking log file, to specify the maximum size of the message tracking log directory, and to configure maximum age for an individual message tracking log, respectively.

Answer: *True*. However, the cmdlet you use to set these parameters for an Edge or Hub Transport server is *Set-TransportServer*. For a Mailbox server it is *Set-MailboxServer*. For example, the following command changes the maximum age of message tracking logs on the Mailbox server VAN-EX1 to 40 days:

```
Set-MailboxServer -Identity VAN-EX1 -MessageTrackingLogMaxAge 40.00:00:00
```

True or false? You can use the EMS but not the EMC to enable or disable message subject logging in message tracking logs on Edge Transport, Hub Transport, and Mailbox servers.

Answer: *True*. For example, the following command disables message subject logging in message tracking logs on the Hub Transport server VAN-EX2:

```
Set-TransportServer -Identity VAN-EX2  
-MessageTrackingLogSubjectLoggingEnabled $false
```

EXAM TIP It is important to know about message subject logging because it can be a contentious issue in a production organization.

True or false? You can use the Tracking Log Explorer to view message activity and track messages

Answer: *True*. The Tracking Log Explorer—one of the ExTRA tools in the EMS—provides details of all message activity as messages are transferred to and from an

Exchange server that has the Hub Transport server role, the Mailbox server role, or the Edge Transport server role installed. Exchange servers that have the Client Access server role or Unified Messaging server role installed (and none of the other three roles) do not have message tracking logs.

True or false? You can also use the EMS *Get-MessageTrackingLog* cmdlet to locate messages in a tracking log.

Answer: *True*. For example, the following command accesses all messages with a *RECEIVE* EventID between the times and dates specified:

```
Get-MessageTrackingLog -EventID RECEIVE -Start 3/18/2012 5:37:00 AM  
-End 3/18/2012 5:47:00 AM
```

MORE INFO For more information about the *Get-MessageTrackingLog* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997573.aspx>.

Event logs

You might be tested on the use of the *Set-EventLogLevel* cmdlet to change logging levels and the *Get-EventLogLevel* cmdlet to display them. You should know that Exchange 2010 records most of its events to the application log. However, some events are recorded in other event logs. The application log will not capture certain events unless the logging level is increased (as discussed earlier in this Objective).

True or false? Examining the events in event logs can help you to trace activity, respond to events, and keep your systems secure.

Answer: *True*. You can use Event Viewer from the EMC to view and manage event logs. Event logs contain information about hardware and software problems and about security events on your computer.

True or false? You can use Event viewer to change the size of event logs and alter the path where the logs are stored.

Answer: *True*. You can also use the Windows Server 2008 (and 2008 R2) *Wevtutil* command-line tool. For example, the following command, entered in an elevated command prompt, changes the size of the Exchange Auditing log file to 100 MB:

```
Wevtutil sl "Exchange Auditing" /ms:104857600
```

True or false? Exchange 2010 makes use of crimson channel logging.

Answer: *True*. Exchange 2010 logs events to crimson channels in the Applications and Services logs area. You can view these channels by using Event Viewer. Objective 5.1: Monitor databases, earlier in this chapter discussed crimson channel logging in more detail.

MORE INFO To learn more about crimson channels and other features that help you monitor Exchange availability and site resilience, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351258.aspx>.

Analysis of logging results

You should know how you can use the various EMS cmdlets listed in this chapter to display statistics and other information in list or table format. EMC tools such as Event Viewer provide reporting facilities. However, you should be aware that an EMS console is not the best device for presenting reports. You should know how to collect, sort, store, and present information so that is available to your staff for analysis and can support your case for any equipment or software enhancements that are required.

True or false? You can redirect EMS command output to a .txt or .csv file.

Answer: *True*. By doing so, you create a file that can be analyzed by (for example) Microsoft Office Excel or third-party reporting software. You can choose to redirect output that has been previously formatted as a list or table and filtered by the *FL* or *FT* cmdlets, or you can use the facilities provided by the reporting software. The following command script creates a file called DecemberStats.csv for future analysis:

```
Get-MailboxStatistics -Database "MBDB01" | Sort-Object TotalItemSize  
-Descending | FT > DecemberStats.csv
```

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS command changes the maximum size of each message tracking log file on the hub transport server VAN-HUB1 to 25 MB?
2. You are responsible for managing an Exchange Server 2010 SP2 Hub Transport server named VAN-EX01 that supports message tracking. What actions can you take to change the location of the message tracking log file on that server?
3. What EMS command returns a report containing statistics collected in an agent log between 08:00 hours on October 4, 2012, and 19:00 hours, November 5, 2012?
4. An SMTP server on the Internet has rejected some email messages sent from your Exchange 2010 organization. What steps should you take to troubleshoot the problem?
5. What EMS command do you issue to enable protocol logging for the intra-organization Send connector on an Edge Transport server?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 5.1: Monitor databases

1. You issue the *Get-MailboxStatistics -Database “MyMailboxDatabase” | FL* command.
2. You issue the *Get-PublicFolderItemStatistics -Identity \Marketing\Reports\DonHallReport -Server GLA-EX1 | FT* command.
3. The *Get-MailBoxStatistics* cmdlet.
4. You issue the *Get-MailboxStatistics -Database “MBDB01” | Sort-Object TotalItemSize -Descending | Select-Object -First 10 | FT DisplayName,TotalItemSize* command.
5. The *CollectOverMetrics.ps1* script.

Objective 5.2: Monitor mail flow

1. You need to edit the Hub Transport server object Properties dialog box.
2. You issue the *Retry-Queue -Identity “VAN-EX1\Unreachable” -Resubmit \$true* command.
3. The *EdgeTransport.exe.config* application configuration file that is located in the *C:\Program Files\Microsoft\Exchange Server\V14\Bin* directory.
4. The poison message queue.
5. The *Remove-Message -Filter {Subject -eq “Prescription Drugs”} -WithNDR \$false* command.

Objective 5.3: Monitor connectivity

1. You should specify the anonymous authentication type.
2. The Exchange Remote Connectivity Analyzer.
3. You use the *Test-OutlookConnectivity* cmdlet.
4. The *Test-ImapConnectivity* cmdlet.
5. You issue the *Test-ImapConnectivity -ClientAccessServer:VAN-CAS01 | FL* command.

Objective 5.4: Generate reports

1. The *Get-StoreUsageStatistics* cmdlet.
2. The *Test-Mailflow* cmdlet.
3. The *Get-MailboxStatistics* cmdlet.
4. The Microsoft Exchange Server Mail Flow Troubleshooter.
5. ExBPA.

Objective 5.5: Configure logging

1. The *Set-TransportServer -Identity HUB-EX2 -MessageTrackingLogMaxFileSize 25MB* command.
2. You can change the Hub Transport server object properties in the EMC or use the EMS *Set-TransportServer* cmdlet.
3. The *Get-AgentLog -StartDate "10/04/2012 8:00:00 AM" -EndDate "11/05/2012 7:00:00 PM"* command.
4. You should access your organization's Send connectors and enable protocol logging by setting the protocol logging level to *Verbose*. You should then check the protocol log files.
5. You issue the *Set-TransportServer -IntraOrgConnectorProtocolLoggingLevel Verbose* command.

Implementing High Availability and Recovery

Approximately 15 percent of the 70-662 exam focuses on the topic “Implementing High Availability and Recovery.” The exam is likely to test that you know how to create and manage a Database Availability Group, and add and remove server members and mailbox database copies. You are expected to know how to back up and restore all mailboxes on a server, a single mailbox, and messages within a mailbox. You should be able to configure both public folders and non-Mailbox servers for high availability. And finally, you should know how to back up and restore server roles.

This chapter covers the following objectives:

- Objective 6.1: Create and configure the Database Availability Group (DAG).
- Objective 6.2: Perform backup and restore of data.
- Objective 6.3: Configure public folders for high availability.
- Objective 6.4: Configure high availability for non-mailbox servers.
- Objective 6.5: Back up and recover server roles.

Objective 6.1: Create and configure the Database Availability Group (DAG)

In this exam Objective, you might be tested on how to create and configure a DAG and specify a witness server. You should know the maximum round-trip latency between any two servers in a DAG and how to configure lag on a lagged mailbox. You might be asked how to create and remove a mailbox database copy and configure failover priority. You should know how to add a server to or remove a server from a DAG, how to configure mailbox database copy properties, and how to disable and enable continuous replication.

Exam need to know

- Create and configure DAG

For example: Do you know how to create a DAG and specify the virtual IP address?

- File share witness (FSW)

For example: Do you know whether a witness server can be a member of a DAG?

- Replication latency

For example: Do you know the maximum round-trip network latency between one member of a DAG and any other member?

- Configure lag

For example: Do you know how to modify replay lag time and log truncation lag time on a lagged mailbox?

- Add or remove database copies

For example: Do you know how to create a mailbox database copy?

- Configure failover priority

For example: Do you know how to configure the activation preference number for a passive database copy?

- Add or remove server members

For example: Do you know how to add a Mailbox server to a DAG?

- Configure mailbox database copies

For example: Do you know how to activate a mailbox database copy?

- Manage continuous replication

For example: Do you know how to suspend and resume continuous replication for a passive database copy?

Create and configure DAG

You need to know what steps to take to change which servers are members of a DAG or which mailbox databases are being replicated, without having to re-create the DAG. The exam might expect you to know that a DAG is a collection of up to 16 Exchange 2010 Mailbox servers, for which there is less than a 500 ms round-trip delay between any two servers, and that DAGs provide automatic mailbox database failover in the event of database, server, or network failure. You should know that an Exchange 2010 organization can host multiple DAGs, but a server can be a member of only one DAG.

MORE INFO To learn more about DAGs, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979799.aspx>.

True or false? You can create a new DAG by accessing the New Database Availability Group dialog box in the EMC.

Answer: True. In this instance, an IPv4 or IPv6 address is assigned automatically to the DAG through DHCP. You can also use the EMS `New-DatabaseAvailabilityGroup` cmdlet and specify the virtual IP address. For example, the following command creates a new DAG named DAG-ALPHA with the virtual IP address 10.10.0.100, using the witness server ht.adatum.com and the directory c:\witness:

```
New-DatabaseAvailabilityGroup -Name DAG-ALPHA  
-DatabaseAvailabilityGroupIpAddresses 10.10.0.100  
-WitnessServer 'ht.adatum.com' -WitnessDirectory 'c:\witness'
```

MORE INFO To learn more about creating DAGs, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351172.aspx>.

True or false? You can use the EMC to configure the replication port for a DAG.

Answer: *False*. You use the EMS *Set-DatabaseAvailabilityGroup* cmdlet with the *ReplicationPort* parameter for this purpose. You can use the same cmdlet to configure, for example, the witness server, witness directory, IP address or addresses, and so on for the DAG.

EXAM TIP If you change the replication port for a DAG, you need to configure the Windows Firewall exceptions on the witness server and open the same port.

MORE INFO To learn more about configuring DAG properties, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297985.aspx>.

File share witness (FSW)

You need to know what steps to take to configure a server as a witness server. You should be aware that an FSW is a file share residing on a server outside the DAG that ensures quorum availability in the cluster. As described in the previous section, you can provide the file share witness directory and share name while creating the DAG. The exam might test that you know that the witness server should be a Hub Transport server that does not have the Mailbox role installed. Remember, however, that it is possible to configure other servers to function as DAG witnesses, although Microsoft does not recommend this configuration. Witness servers should have the following properties:

- The witness server cannot be a member of a DAG.
- The witness server must be a member of the same Active Directory forest as the DAG.
- Although a single server can function as a witness for multiple DAGs, each DAG must have a unique witness directory.
- If the witness server is not an Exchange 2010 server, it is necessary to add the Exchange Trusted Subsystem universal security group to the local Administrators group on the witness server.

True or false? If you do not specify a witness server during DAG creation, the DAG will not be created.

Answer: *False*. The DAG creation process will search for a Hub Transport server that does not have the Mailbox server role installed and automatically create the default directory and share, configuring it as the witness server.

True or false? You can use the EMS *Set-DatabaseAvailabilityGroup* cmdlet to reconfigure the witness server and witness directory for a DAG.

Answer: *True*. You can also use the EMC and edit the DAG Properties dialog box.

MORE INFO To learn more about File Share Witness and many other high-availability features, consult the Exchange Team Blog article at <http://blogs.technet.com/b/exchange/archive/2011/05/31/exchange-2010-high-availability-misconceptions-addressed.aspx>.

Replication latency

You need to know what steps to take to validate that the network infrastructure between all DAG members can meet the data protection and availability goals of the DAG deployment. You should be aware that, regardless of its geographic location, each member of a DAG must have round-trip network latency no greater than 500 ms between itself and any other member, and that as the round-trip latency between two Mailbox servers in a DAG increases, the potential for replication not being up to date also increases. The exam might test that you know that configurations with higher latency values can require special tuning of DAG replication and network parameters, such as increasing the number of databases or decreasing the number of mailboxes per database.

EXAM TIP In Microsoft Exchange Server 2010 RTM, the maximum replication latency is 250 ms. This increases to 500 ms for Exchange Server 2010 SP1 and SP2.

MORE INFO To learn more about high-availability planning issues, including replication latency, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638104.aspx>.

To learn more about the changes introduced by Exchange Server 2010 SP1 and SP2, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/ff459257.aspx> and <http://technet.microsoft.com/en-us/library/hh529924.aspx>.

Configure lag

You need to know what steps to take to configure replay lag time and truncation lag time. The exam might test that you are aware that a lagged mailbox database copy is a mailbox database copy that reflects the state of the active mailbox database copy up to 14 days previously. You should know how to take advantage of lagged mailbox database copies to recover corrupt data without having to restore from backup.

True or false? You use the EMS *Add-MailboxDatabaseCopy* cmdlet with the *ReplayLagTime* and *TruncationLagTime* parameters to create a lagged mailbox database copy.

Answer: *True*. For example, the following command adds a copy of a mailbox database named DB-MyMail to mailbox DAG member VAN-EX1 with a lag time of 14 days and a truncation lag time of 7 days:

```
Add-MailboxDatabaseCopy -Identity DB-MyMail -MailboxServer VAN-EX1  
-ReplayLagTime 14.00:00:00 -TruncationLagTime 7.00:00:00
```

True or false? You can use the EMS *Get-MailboxDatabaseCopy* cmdlet to modify replay lag time and log truncation lag time.

Answer: *False*. You use the EMS *Set-MailboxDatabaseCopy* cmdlet. For example, the following command reconfigures mailbox database DB-OtherMail, hosted on server VAN-EX2, with a replay lag time of 10 days and a log truncation lag time of 5 days:

```
Set-MailboxDatabaseCopy -Identity DB-OtherMail\VAN-EX2  
-ReplayLagTime 10.00:00:00 -TruncationLagTime 5.00:00:00
```

True or false? If you choose to activate a lagged database copy, you can replay all log files and make the lagged copy up to date.

Answer: *True*. You can also choose to replay log files up to a specific point in time. Microsoft suggests a minimum estimate of two logs per second, per database.

MORE INFO To learn more about activating lagged mailbox database copies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979786.aspx>.

Add or remove database copies

You need to know what steps to take to configure mailbox database copies. The exam might test that you are aware of the several conditions that must be met before you can do this. These conditions include the following:

- The original mailbox database must already exist on a server within the DAG and must be in the same DAG as the copy you are creating. It needs to be mounted.
- Circular logging must not be enabled for the source mailbox database during the copy process.
- The round-trip network latency between Mailbox servers must not exceed 500 ms. (Note that for Exchange Server 2010 RTM, the maximum round-trip latency is 250 ms.)

You should also know that a single Mailbox server cannot host more than one instance of a specific mailbox database copy and that all mailbox database copies must use the same path.

True or false? You use the Edit Mailbox Database Copy Wizard in the EMC to create a mailbox database copy.

Answer: *False*. You use the Add Mailbox Database Copy Wizard. You can also use the EMS *Add-MailboxDatabaseCopy* cmdlet. For example, the following command adds a mailbox database copy of an existing mailbox database named Wangaratta to DAG member MBX2, with an activation preference of 2:

```
Add-MailboxDatabaseCopy -Identity 'Wangaratta' -MailboxServer 'MBX2'  
-ActivationPreference '2'
```

True or false? You cannot use the EMC to remove a mailbox database copy.

Answer: *False*. You can select the database copy in the EMC, and then in the Actions pane, click Remove. You can also use the EMS *Remove-MailboxDatabaseCopy* cmdlet. You cannot, however, use the EMC to remove the last copy of a mailbox database.

EXAM TIP You cannot create a database copy of a public folder database. Instead, you use public folder replication to provide redundancy for public folders.

MORE INFO To learn more about mailbox database copies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335158.aspx>.

Configure failover priority

You need to know what steps to take to configure the activation preference number in the Properties dialog box of a passive database copy. The exam might test that you know that the activation preference number for a mailbox database copy indicates the order in which passive mailbox database copies will activate in the event that a failure occurs with the active mailbox database copy.

True or false? You can also use the EMS *Set-MailboxDatabaseCopy* cmdlet to configure failover priority.

Answer: *True*. You use this cmdlet with the *ActivationPreference* parameter.

Add or remove server members

You need to know what steps to take to add Mailbox servers to a DAG. The exam might test that you know that you can add a maximum of 16 Mailbox servers to a DAG, and that adding a server automatically installs the Windows Failover Clustering feature. You should be aware that you can add a server to a DAG only if the server's IPv4 address information includes a default gateway address and the server is running Windows Server 2008 SP2, or Windows Server 2008 R2, Enterprise or Datacenter edition. All servers in the DAG must be running the same operating system.

True or false? You can add or remove a Mailbox server to or from a DAG by editing the Manage Database Availability Group Membership dialog box in the EMC.

Answer: *True*. However, you can remove a server from a DAG only if there are no mailbox database copies hosted on the server. You can also use the EMS *Add-DatabaseAvailabilityGroupsServer* and *Remove-DatabaseAvailabilityGroupServer* cmdlets. For example, the following command adds the server VAN-EX1 to DAG DAG-01:

```
Add-DatabaseAvailabilityGroupServer -Identity DAG-01 -MailboxServer VAN-EX1
```

EXAM TIP One method of checking that continuous replication is working correctly in a DAG is to add a server to the DAG and check that mailbox database copies are replicated to that server.

MORE INFO To learn more about adding and removing servers from DAGs, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351278.aspx>.

Configure mailbox database copies

You need to know what steps to take to activate a passive database copy, to configure database copy parameters, and to seed a database copy. The exam might test that you are aware that you can make a passive database copy active by performing switchover, and that seeding is the process by which a copy of a mailbox database is added to a Mailbox server.

True or false? When you activate a passive copy, you have the option of using the override mount dial list.

Answer: *True*. Using the override mount dial settings, you can specify the conditions in which the new activation occurs. You can select from the following settings:

- None
- Lossless
- Good Availability
- Best Effort
- Best Availability

MORE INFO To learn more about switchovers and failovers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298067.aspx>.

True or false? You can use the *Set-MailboxDatabaseCopy* cmdlet to set the *SeedingPostponed* parameter.

Answer: *False*. In other sections of this Objective, you saw that you can use this cmdlet to set the *ActivationPreference*, *ReplayLagTime*, and *TruncationLagTime* parameters. However, the *SeedingPostponed* switch is used with the *Add-MailboxDatabaseCopy* cmdlet when you are creating a new mailbox database copy. If this switch is set, the cmdlet adds the copy but does not attempt the initial seeding operation. It also places replication in a suspended state.

True or false? You can activate a mailbox database copy by using the EMS *Move-ActiveMailboxDatabase* cmdlet.

Answer: *True*. You can also edit the Activate Database Copy dialog box in the EMC. If you use the cmdlet and do not specify a setting for the *MountDialOverride* parameter, the *Lossless* setting is applied. For example, the following command activates database GlasgowMBX on server VAN-EX1:

```
Move-ActiveMailboxDatabase GlasgowMBX -ActivateOnServer VAN-EX1
```

True or false? Automatic seeding usually occurs when you create a new mailbox database copy.

Answer: *True*. However, there can be reasons why you want to postpone automatic seeding and seed from a passive database copy instead. You can update or seed a mailbox database copy from a source other than the active database by configuring

the Update Database Copy dialog box in the EMC. You can also use the EMS *Update-MailboxDatabaseCopy* cmdlet. For example, the following command seeds a copy of a database named Sales hosted on server Glasgow-2 from a passive copy of the database hosted on server Glasgow-1:

```
Update-MailboxDatabaseCopy -Identity Sales\Glasgow-2  
-SourceServer Glasgow-1
```

MORE INFO To learn more about seeding/updating mailbox database copies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351100.aspx>.

Manage continuous replication

You need to know what steps to take to suspend and resume continuous replication for a passive database copy. The exam might test that you are aware that Exchange 2010 keeps a mailbox database copy up to date by means of continuous replication.

True or false? You can suspend continuous replication on an active mailbox database copy.

Answer: *False*. If you want to perform maintenance on the server hosting the active mailbox database copy, you need to activate a passive copy hosted on another server, and then suspend continuous replication on the now-passive mailbox database copy on the original server. You can select a passive database copy in the EMS and either suspend or resume continuous replication, as appropriate. You can also use the EMS *Suspend-MailboxDatabaseCopy* cmdlet. For example, the following command suspends continuous replication on the passive mailbox database named DB-01 on server VAN-EX1:

```
Suspend-MailboxDatabaseCopy -Identity DB-01\VAN-EX1
```

The following command resumes continuous replication on the suspended passive mailbox database named DB-01, hosted on server VAN-EX1:

```
Resume-MailboxDatabaseCopy -Identity DB-ALPHA\VAN-MBX
```

MORE INFO To learn more about suspending or resuming continuous replication on mailbox database copies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298159.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS command do you issue to create a new DAG named DAG-01, with the virtual IP address 10.10.1.50, using the witness server hub01.adatum.com and the directory c:\witness?
2. You need to change the replication port used by DAG-01. What two actions must you carry out?
3. What EMS cmdlet do you use to reconfigure the replay lag time and log truncation lag time for a lagged mailbox database?

4. You use the *Move-ActiveMailboxDatabase* cmdlet to activate mailbox database copy DB-01. You do not specify the *MountDialOverride* parameter. What mount dial setting is applied by default?
5. What EMS cmdlet and parameter do you use to configure failover priority for a mailbox database copy?

Objective 6.2: Perform backup and restore of data

In this exam objective, you might be tested on how to create and use a recovery database (RDB) to recover a mailbox database, a mailbox, or specified messages and how to perform a dialtone restore. You need to know what steps to take to configure deleted mailbox and deleted item retention settings. The exam might ask about merging an RDB into a recovered mailbox database, assigning a disconnected mailbox to a user account, backing up Exchange servers, and creating a backup schedule.

Exam need to know

- Recovery database
For example: Do you know how to recover data from a backup or copy of a database without disturbing user access to current data?
- Dialtone restores
For example: Do you know how to merge data in an RDB into a dialtone database?
- Deleted mailbox retention
For example: Do you know how to configure the deleted mailbox retention period?
- Deleted item retention
For example: Do you know how to configure single-item recovery settings on a mailbox?
- Mailbox merge
For example: Do you know how to locate messages in a mailbox that have a specific title or word in the message body?
- Disconnected mailbox
For example: Do you know how to list the deleted mailboxes in the Recoverable Items folder?
- Backing up Exchange servers
For example: Do you know what backup types are available?
- Creating a backup schedule
For example: Do you know how to specify a backup schedule from an elevated command prompt?

Recovery database

You need to know what steps to take to recover data from a backup or copy of a database without disturbing user access to current data. The exam might test that you know that an RDB is a mailbox database that you can use to mount a restored mailbox database and extract data from the restored database as part of a recovery operation. You are expected to know the various features and limits of an RDB. For example:

- All client protocol access to an RDB (including SMTP, POP3, and IMAP4) is blocked.
- RDB mailboxes cannot be connected to user accounts.
- MAPI access to an RDB is available only to recovery tools and applications.
- An RDB cannot be deleted by the system during the recovery process.
- You cannot use an RDB to recover public folder data.
- You can mount only one RDB on a Mailbox server at any time.
- An RDB can be used to recover Exchange Server mailbox databases only.

EXAM TIP The RDB replaces the recovery storage group found in previous versions of Exchange.

True or false? You can use the EMS *Restore-Mailbox* cmdlet to extract data from an RDB.

Answer: *True*. After extraction, the data can be exported to a folder or merged into an existing mailbox. By mounting recovered data as an RDB, you can restore individual mailboxes or individual items in a mailbox.

True or false? Before you can move a recovered or restored mailbox database into an RDB and then extract data from the recovered database, you first need to create an RDB for this purpose.

Answer: *True*. You use the EMS *New-MailboxDatabase* cmdlet to create an RDB. For example, the following command creates the RDB RecoverDB on the Mailbox server VAN-EX1:

```
New-MailboxDatabase -Recovery -Name RecoverDB -Server VAN-EX1
```

True or false? An RDB cannot be used to recover an individual mailbox.

Answer: *False*. You use an RDB in the following scenarios:

- Same-server dialtone recovery
- Alternate-server dialtone recovery
- Mailbox recovery
- Specific item recovery

You should not use an RDB when you are recovering public folder content, when you need to restore entire servers, when you need to restore multiple databases, or when you need to change or rebuild your Active Directory topology.

True or false? A database and log files can be restored to any disk location.

Answer: *True*. Exchange analyzes the restored data and replays the transaction logs to bring the databases up to date. You can then configure an RDB to point to the recovered database files.

True or false? If you restore a database to an alternate location, you can immediately copy the database and log files containing the recovered data into an RDB.

Answer: *False*. All databases restored to an alternate restore location are in a dirty shutdown state, by default; you need to use the Eseutil tool in recover mode (for example, `eseutil /r E00`, where `E00` is the log file prefix) to put the database in a clean shutdown state before moving the restored database data into an RDB.

EXAM TIP You use the Eseutil tool to put a mailbox database in a clean shutdown state. You use the Isinteg tool to repair a mailbox database but not to bring a mailbox database that is in a dirty shutdown state into a clean shutdown state. No EMS cmdlet can be used to put a mailbox database in a clean shutdown state.

MORE INFO To learn more about RDBs, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876954.aspx>.

Dialtone restores

You need to know what steps to take to merge a recovered mailbox and the mailbox in the dialtone database into a single, up-to-date mailbox after the original mailbox data has been restored. The exam might test that you know how portability enables a user to have a mailbox in a dialtone database for sending and receiving email while her original mailbox is being restored or repaired, and that during this time, clients that support Autodiscover, such as Outlook 2010, are automatically redirected to the new server without the need to manually update the user's desktop profile. You should be aware that the recovery process using dialtone portability is called a *dialtone recovery*.

True or false? A dialtone recovery involves creating an empty database (the dialtone database) on a Mailbox server to replace a failed database. Any mailboxes that are available in the database being recovered are copied into the dialtone database.

Answer: *True*. The dialtone database is now operating as the recovered production database. The following command creates a dialtone database named MyDialToneDB on the Mailbox server VAN-EX1:

```
New-MailboxDatabase -Name MyDialToneDB -Server VAN-EX1  
-EdbFilePath C:\DialTone\MyDialToneDB.edb
```

The following command transfers the user mailboxes hosted on the database being recovered (for example, MyOriginalDB) into the dialtone database:

```
Get-Mailbox -Database MyOriginalDB | Set-Mailbox -Database MyDialToneDB
```

True or false? After the failed database is recovered and moved into the RDB (for example, RecoverDB), the data from the RDB is merged into the dialtone database.

Answer: *True*. You would use a command similar to the following:

MORE INFO To learn more about dialtone recovery, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979810.aspx>.

Deleted mailbox retention

You need to know what steps to take to recover deleted or disconnected mailboxes within the retention period and how to configure this period (the default is 14 days). The exam might test that you know that by using deleted mailbox retention, you can recover mailboxes after they have been removed (or disconnected) without the need to restore them from backup.

True or false? You can use the EMC to configure the deleted mailbox retention period.

Answer: *False*. You use the EMS *Set-MailboxDatabase* cmdlet. For example, the following command changes the deleted mailbox retention time to 20 days for mailboxes in the database MyMailboxDatabase:

```
Set-MailboxDatabase -Identity "MyMailboxDatabase"  
-MailboxRetention 20.00:00:00
```

MORE INFO To learn more about the *Set-MailboxDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123971.aspx>.

Deleted item retention

You need to know what steps to take to configure single-item recovery settings on a mailbox. You should be aware that Exchange 2010 introduced single-item recovery functionality and the Recoverable Items folder, and that this helps you to ensure that deleted and modified items are retained and can be recovered. The exam might test that you know that the Recoverable Items folder is given a quota, and that all items in a user's Recoverable Items folder are indexed and are moved when a move request is implemented.

True or false? Items are retained when the single-item recovery feature is enabled for a mailbox, even if end users purge these items from their Recoverable Items folders.

Answer: *True*. The Recoverable Items folder contains the following subfolders:

- Purges
- Deletions
- Versions

True or false? Whether single-item recovery is disabled or enabled, Messaging Policy and Compliance automatically purges items from the Recoverable Items folder after 28 days, by default.

Answer: *False*. The default is 14 days, except for calendar items, which are purged after 120 days.

MORE INFO To learn more about discovery searches, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd353189.aspx>.

True or false? You can use the EMS *Set-Mailbox* cmdlet to configure single-item recovery settings on a mailbox and the *Set-MailboxDatabase* cmdlet to configure single-item recovery settings on a mailbox database.

Answer: *True*. For example, the following command sets the Recovery Items folder quota limit to 10 GB for the Don Hall Mailbox, at which point, a warning event is entered in Event Viewer:

```
Set-Mailbox -Identity "Don Hall" -RecoverableItemsWarningQuota 10GB
```

The following command sets the hard limit for the Recovery Items folder in the Don Hall Mailbox to 20 GB:

```
Set-Mailbox -Identity "Don Hall" -RecoverableItemsQuota 20GB
```

The following command sets the hard limit quota for the Recovery Items folder for all mailboxes that reside on the Research mailbox database to 25 GB:

```
Set-MailboxDatabase -Identity Research -RecoverableItemsQuota 25GB
```

MORE INFO To learn more about how retention age is calculated, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb430780.aspx>.

Mailbox merge

You need to know what steps to take to mount an RDB and merge its contents into the database that you want to restore once you have moved restored data into the RDB. The exam might test that you know you can merge the databases by exporting the data from the RDB and importing it into the original database, one mailbox at a time, by using the EMS *Restore-Mailbox* cmdlet. For example, the following command merges the contents of the RDB RecoverDB into the mailbox database MyDatabase:

```
Get-Mailbox -Database MyDatabase | Restore-Mailbox  
-RecoveryDatabase RecoverDB
```

True or false? You can select the information that you want to merge.

Answer: *True*. For example, the following command merges messages into the Don Hall mailbox that have the subject Conference, with the message body containing the word Exchange, and with the message location either in the Inbox or Calendar folder:

```
Restore-Mailbox -Identity "Don Hall" -RecoveryDatabase RecoverDB  
-SubjectKeywords "Conference" -ContentKeywords "Exchange"  
-IncludeFolders \Inbox,\Calendar
```

The following command recovers all messages located in the Inbox folder of the DonHall mailbox that contain the word Marketing in the subject and places them in the DonMarketing folder of the KimAkers mailbox:

```
Restore-Mailbox -Identity DonHall -RecoveryDatabase RecoverDB  
-SubjectKeywords "Marketing" -IncludeFolders \Inbox  
-RecoveryMailbox KimAkers -TargetFolder DonMarketing
```

MORE INFO To learn more about the *Restore-Mailbox* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125218.aspx>.

Disconnected mailbox

You need to know what steps to take to restore a disconnected mailbox within its mailbox retention time. The exam might expect you to know how to list the deleted mailboxes in the Recoverable Items folder (previously known as the dumpster) on a Mailbox server and the dates on which they were deleted. For example, to do this on Mailbox server VAN-EX1, you would issue the following EMS command:

```
Get-MailboxStatistics -Server VAN-EX1 | where {$ _DisconnectDate  
-ne $null} | select DisplayName,DisconnectDate
```

True or false? A mailbox can be disconnected but not yet marked as disconnected.

Answer: *True*. You can use the EMS *Clean-MailboxDatabase* cmdlet to scan Active Directory for such mailboxes in a mailbox database and update the status of those mailboxes in the Exchange mailbox store.

MORE INFO For more information about the *Get-MailboxStatistics* cmdlet and the *Clean-MailboxDatabase* cmdlet, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/bb124612.aspx> and <http://technet.microsoft.com/en-us/library/bb124076.aspx>.

True or false? You recover a disconnected mailbox by editing its properties.

Answer: *False*. You recover a disconnected mailbox by connecting it to a user account that already exists in AD DS but does not have an associated mailbox. The following command reconnects a disconnected mailbox in the Research mailbox database to user Paul West:

```
Connect-Mailbox -Database "Research" -Identity "Paul West"  
-User "Paul West"
```

EXAM TIP You can also use the EMC Connect Mailbox Wizard to connect a disconnected mailbox.

MORE INFO To learn more about the EMS *Connect-Mailbox* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997878.aspx>.

Backing up Exchange servers

You need to know what steps to take to perform backups with Exchange services running (online backups) or with Exchange services stopped (offline backups). The exam might test that you know you can perform the following types of backup of

a server with a Windows Server 2008 SP2 or Windows Server 2008 R2 operating system that is running Exchange 2010:

- Normal/full backup
- Copy backup
- Differential backup
- Incremental backups

True or false? Windows Server 2008 R2 backup, by default, creates incremental backups.

Answer: *True*. These backups function like full backups, from which you can recover any item from a single backup, although the backup only occupies space needed for an incremental backup. All file/folder backups (except the first one, which is a full backup) are incremental backups for which only the changed files are read and transferred to the backup storage location. In addition, Windows Server Backup does not require user intervention to periodically delete older backups to free disk space for newer backups—older backups are deleted automatically.

MORE INFO To learn more about Windows Server 2008 R2 SP1 backup, consult the TechNet document at [http://technet.microsoft.com/en-us/library/ee344835\(Ws.10\).aspx](http://technet.microsoft.com/en-us/library/ee344835(Ws.10).aspx).

Creating a backup schedule

You need to know what steps to take to create a backup plan by scheduling backups. The exam might test that you are aware that Windows Server Backup lets you schedule full or incremental backups (typically incremental) so that they occur one or more times per day. You should know how to configure backup jobs that perform manual backups and schedule these jobs by using Windows Task Scheduler.

True or false? You can run a one-time backup or schedule backups by using the *wbadmin* command from an elevated command prompt.

Answer: *True*. With this command, you can back up and restore your operating system, volumes, files, folders, and applications. To configure a regularly scheduled backup, you must be a member of the Administrators group. To perform all other tasks with this command, you must be a member of the Backup Operators or the Administrators group, or you must have been delegated the appropriate permissions.

True or false? You can run the *wbadmin enable backup* subcommand to configure or modify a daily backup schedule.

Answer: *True*. For example, the following command schedules backups of hard disk drive C:, saves the files to the disk DiskID, and runs backups daily at 9:00 A.M. and 6:00 P.M.

```
wbadmin enable backup -addtarget:DiskID -schedule:09:00,18:00 -include:c:
```

True or false? You can use the *wbadmin start systemstatebackup* subcommand to run a one-time backup.

Answer: *False*. This command runs a System State backup. You use the *wbadmin start backup* subcommand to run a one-time backup. If used with no parameters, this subcommand uses the settings from the daily backup schedule.

MORE INFO To learn more about the *wbadmin* command, consult the TechNet document at [http://technet.microsoft.com/en-us/library/cc754015\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc754015(WS.10).aspx).

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have restored a mailbox database to an alternate restore location and need to move the restored database data into an RDB. What action must you take before you can do this?
2. You need to retrieve all messages from the Kim Akers mailbox that have "Research" as a subject and contain the word "confidential" in the message body. The message can be either in the Calendar or Inbox folders. What two actions do you need to take, and what EMS cmdlets do you use?
3. What EMS command do you issue to merge the contents of the RDB RecoverDB into the mailbox database MyDatabase?
4. What command do you use in an elevated command prompt to schedule backups?
5. What EMS command reconnects a disconnected mailbox in the Sales mailbox database to user Don Hall?

Objective 6.3: Configure public folders for high availability

In this exam objective, you might be tested on how to use public folder replicas to provide high availability and how to configure a schedule for public folder database replication. You might be asked about message tracking and what parameters you can specify to track public folder messages. You need to know how to recover an accidentally deleted public folder.

Exam need to know

- Add or remove replicas
For example: Do you know how to add a public folder replica and specify on which public folder databases the replica should reside?
- Schedules
For example: Do you know how to configure a public folder database replication schedule?
- Message tracking
For example: Do you know what parameters you can use to track messages?

- Backup and restore public folder database and data

For example: Do you know how to recover a public folder?

Add or remove replicas

You need to know what steps to take to use the EMC Public Folder Management Console to access the Properties dialog box of the parent node of a public folder that you wish to replicate. The exam might test that you are aware that a content replica is a copy of a public folder that includes that folder's content and replicates only to the public folder databases that you choose. You should be aware that a public folder replica replicates according to a configured schedule that is typically set at the public folder database level.

True or false? You can use the EMS *Get-PublicFolder* cmdlet with the *Replicas* parameter to add a public folder replica and specify on which public folder databases the replica should reside.

Answer: *False*. You use the *Set-PublicFolder* cmdlet for this purpose. For example, the following command configures the public folder MyPF, already present on database MyPublicFolderDB-1, to have a new replica on MyPublicFolderDB-2:

```
Set-PublicFolder -Identity '\MyPF' -Replicas 'MyPublicFolderDB-1',  
'MyPublicFolderDB-2'
```

True or false? To remove a public folder replica, you change the list of public folder databases after the *Replicas* parameter in the preceding command.

Answer: *True*. For example, the following command removes the replica from database MyPublicFolderDB-1, where public folder MyPF has replicas on public folder databases MyPublicFolderDB-1 and PublicFolderDB-2:

```
Set-PublicFolder -Identity '\MyPF' -Replicas 'MyPublicFolderDB-2'
```

True or false? You can use the EMS *Suspend-PublicFolderReplication* cmdlet to suspend public folder hierarchy replication.

Answer: *False*. Suspending public folder replication applies to content replication, and public folder hierarchy data will continue to replicate.

True or false? You can resume public folder replication by using the EMS *Resume-PublicFolderReplication* cmdlet and trigger an update of the public folder hierarchy by using the EMS *Update-PublicFolderHierarchy* cmdlet.

Answer: *True*. For example, the following command updates the public folder hierarchy on server VAN-EX1:

```
Update-PublicFolderHierarchy -Server 'VAN-EX1'
```

True or false? You can trigger the update of a particular replica by using the *Update-PublicFolder* cmdlet.

Answer: *True*. You can also right-click the replica in Public Folder Management Console, and then click Update Content.

MORE INFO To learn more about public folder replication, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb629523.aspx>.

Schedules

You need to know what steps to take to configure replication schedules on the level of the public folder database or on the level of the individual public folder. You should be aware that replication schedules determine how often Exchange updates a specific public folder replica, because Exchange 2010 public folders do not support continuous replication and replicate on a periodic basis. The exam might test that you know that, by default, content replication occurs every 15 minutes. If you are using the EMC, you can configure the replication period by editing the public folder database Properties dialog box. The replication periods that you can set are as follows:

- Always Run
- Never Run
- Run Every Hour
- Run Every 2 Hours
- Run Every 4 Hours
- Use Custom Schedule

True or false? You can configure a public folder database replication schedule by using the EMS *Get-PublicFolderDatabase* cmdlet with the *ReplicationPeriod* and *ReplicationSchedule* parameters.

Answer: *False*. You use the EMS *Set-PublicFolderDatabase* cmdlet for this purpose. When using the *ReplicationSchedule* parameter, you can configure specific times or choose the Always option, in which case, replication occurs according to the set period. For example, the following command sets replication to occur every 20 minutes on a public folder database named MY-PF-DB:

```
Set-PublicFolderDatabase -ReplicationPeriod '20'  
-ReplicationSchedule 'Always' -Identity 'MY-PF-DB'
```

True or false? Public folder replication schedules can be set only at the database level. You cannot have different replication schedules for individual public folders.

Answer: *False*. Configuring a replication schedule at the public folder level overrides the replication schedule configured at the public folder database level. You can configure a replication schedule at the public folder level by editing the settings in the Properties dialog box of a specific public folder replica. You can configure the same replication intervals that are available for public folder database replication.

True or false? You can configure individual public folder replication by using the *Set-PublicFolder* cmdlet with the *ReplicationSchedule* and *UseDatabaseReplicationSchedule* parameters.

Answer: *True*. The following command configures the public folder named MyReplica hosted on server van-ex1.adatum.com to Always Replicate:

```
Set-PublicFolder -Identity '\MyReplica' -Server 'van-ex1.adatum.com'  
-UseDatabaseReplicationSchedule $false -ReplicationSchedule 'Always'
```

MORE INFO To learn more about public folder replication, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb691120.aspx>.

Message tracking

You need to know what steps to take to enable and disable message tracking; change the path to a message tracking log file; configure the maximum size of each message tracking log file and the maximum size of the message tracking log directory; configure the age of message tracking logs; and specify whether subject logging is enabled. The exam might test that you know that message tracking records the SMTP transport activity of all messages transferred to and from a computer running Exchange 2010 that has the Hub Transport, Edge Transport, or Mailbox server role installed. Chapter 5, “Monitoring and Reporting,” discussed Message Tracking in Objective 5.2: Monitor mail flow, and message tracking logs in Objective 5.5: Configure logging.

True or false? You cannot track messages sent to or from public folders.

Answer: *False*. Public folders are held on Mailbox servers, and you can configure message tracking on messages sent to and from such servers. You can track messages by, for example: recipients; sender; server; eventId; messageId; internalmessageId; subject; reference; start date and time; and end date and time.

MORE INFO To learn more about message tracking, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997984.aspx>.

Backup and restore public folder database and data

You need to know what steps to take to recover a public folder by using recovery mode to mount the folder, extracting items from the mounted recovery database, and merging them back into the appropriate mailbox database. The exam might test that you know that you can back up public folders as a part of the normal Windows Server Backup process, but that performing public folder database recovery is different from performing mailbox database recovery.

True or false? You can mount public folder databases as RDBs.

Answer: *False*. You need to overwrite the existing database with the contents of the public folder database that you are recovering from backup. You accomplish this by enabling the This Database Can Be Overwritten By A Restore option for the public folder database prior to overwriting it with the restored files. You can configure this option by editing the database Properties dialog box. You can also use the *Set-PublicFolderDatabase* cmdlet with the *AllowFileRestore* parameter set to *\$true*.

True or false? You can recover specific deleted public folders by using Outlook.

Answer: *True*. You can do this as long as the deleted public folder is within its retention period. You can configure the retention period for a public folder database by using the *Set-PublicFolderDatabase* cmdlet or through the EMC. The default deleted item retention period for public folder databases is 14 days.

EXAM TIP Remember that you cannot use DAGs to ensure that public folders are highly available.

MORE INFO To learn more about the *Set-PublicFolderDatabase* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997225.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. The public folder PF-01 already exists on database PFDB-01. What EMS command do you issue to create a new replica of this public folder on public folder database PFDB-02?
2. What EMS cmdlet and parameter can you use to configure the replication period for a public folder database?
3. You want to configure the public folder MyReplica hosted on server van-ex1.adatum.com so that it does not use the default replication schedule specified by its public folder database but instead always replicates. What EMS command do you issue?
4. You need to overwrite an existing database with the contents of the public folder database that you are recovering from backup. What two methods can you use to accomplish this?
5. Your Technical Director knows a little about Exchange and suggests that you create a DAG to ensure the high availability of your organization's public folders. What do you tell her?

Objective 6.4: Configure high availability for non-mailbox servers

In this exam objective, you might be tested on how to use various high-availability features such as DNS round robin with multiple MX records and Network Load Balancing (NLB) to implement high availability. You should know how to configure high availability for Hub Transport, Edge Transport and Client Access servers and how you create and manage a client access array.

Exam need to know

- DNS round robin
For example: Do you know how to distribute incoming messages from the Internet?
- MX records
For example: Do you know how an external SMTP server obtains an IP address when it needs to send a message to a specific mail domain?
- NLB
For example: Do you know how to add and remove nodes to and from NLB clusters?

- Configuring high availability for Client Access servers
For example: Do you know how to create a client access array?
- Configuring high availability for Hub Transport servers
For example: Do you know how to ensure that Hub Transport servers are highly available?
- Configuring high availability for Edge Transport servers
For example: Do you know the circumstances under which you might need to use an NLB solution?

DNS round robin

You need to know what steps to take to make use of the Healthy Server Selector, introduced in Exchange Server 2010 SP1, which maintains a list of servers that are unavailable. You should be aware that enhanced DNS uses this list to filter out any unavailable servers when applying round robin logic for load balancing. The exam might expect you to be aware that Exchange 2010 uses an enhanced DNS client to resolve the next hop selection to a list of target server names, and that enhanced DNS provides load-balancing functionality for Exchange 2010 transport servers by using round robin. You are expected to know that round robin distributes next hop traffic to one of a number of Exchange servers.

True or false? Round robin is typically used to distribute incoming messages from the Internet.

Answer: *True*. You can accomplish this by using DNS round robin and MX records that have the same preference value. In this way, you do not need to deploy a load-balancing solution to distribute the load across your Edge Transport servers, which can present problems—particularly with Windows NLB that requires Active Directory.

MORE INFO To learn more about SMTP failover and load balancing on Transport servers, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ff634392.aspx>.

MX records

You need to know what steps to take to configure multiple MX records in the external DNS zone. You should be aware that this procedure makes use of the SMTP protocol's natural high-availability features. The exam might test that you know that if an external SMTP server needs to send a message to a specific mail domain, it runs a query against the target domain's zone looking for MX records. If the SMTP server is unable to deliver mail to the first address returned by the MX record query, it then attempts delivery to other addresses returned by the query.

MORE INFO To learn more about managing DNS resource records, access the links in the TechNet document at <http://technet.microsoft.com/en-us/library/cc754308.aspx>.

NLB

You need to know what steps to take to configure NLB to send traffic proportionally to hosts within a cluster. The exam might test that you are aware that Client Access servers and Edge Transport servers can use Windows NLB as a part of their high-availability strategy, and that NLB distributes traffic between multiple hosts based on each host's current load. All editions of Windows Server 2008 SP2 and Windows Server 2008 R2 support NLB.

True or false? You can use the NLB Manager console to add and remove nodes to and from NLB clusters.

Answer: *True*. Also, a node is removed automatically if it fails. NLB clusters reconfigure themselves automatically when you add a new node or remove a node. Each node in an NLB cluster sends a *heartbeat message* to all other nodes after a second, informing them of its status. When a node fails to transmit five consecutive heartbeat messages, the other nodes in the cluster alter the configuration of the cluster, excluding the failed node. This is known as *convergence*.

True or false? You can take an existing node in an NLB cluster offline for maintenance and then return it to service without having to reconfigure the cluster manually.

Answer: *True*. The convergence process ensures that the removal and addition process occurs automatically.

True or false? You can configure the operation mode of an NLB cluster by editing the cluster properties in the NLB Manager.

Answer: *True*. The cluster operation mode determines how you configure the cluster's network address and how that address relates to the existing network adapter addresses. All nodes within a cluster must use the same cluster operations mode. You can configure one of the following cluster operations modes:

- Unicast Mode
- Multicast Mode
- IGMP Multicast Mode

True or false? By default, a cluster balances all traffic received on the cluster IP address across all nodes.

Answer: *True*. However, you can use port rules to control how network traffic is treated by an NLB cluster on a port-by-port basis. You can specify that only specific traffic, designated by port, received on the cluster IP address is balanced. The cluster drops any traffic that does not match a port rule.

True or false? You can configure the cluster to forward traffic to a specific node rather than to all nodes so that the cluster can balance some but not all traffic.

Answer: *True*. You accomplish this by configuring the port rule filtering mode. The options are multiple host or single host.

True or false? When you configure a rule to use the single-host filtering mode, you can also configure the rule affinity property.

Answer: *False*. You can configure the affinity property if the port rule filtering mode is multiple host. It is not necessary to configure the affinity for a single host rule because that rule already ties traffic to a single node in the cluster. The affinity property determines where the cluster sends subsequent client traffic after the initial client request.

True or false? If you set the affinity property to *Single*, the cluster ties all client traffic during a session to a single node.

Answer: *True*. Also, when you set a rule affinity property to *None*, the cluster does not bind a client session to any particular node. When you set a rule affinity property to *Network*, a client session is directed to cluster nodes located on a specific TCP/IP subnet.

True or false? When you need to perform maintenance on a node in an NLB cluster, you can use the Drain function to stop new connections to the node without disrupting existing connections.

Answer: *True*. To drain a node, you right-click it from within NLB Manager, click Control Ports, and then click Drain.

EXAM TIP Remember that Windows NLB cannot be used on the same server as Windows Failover Clustering.

MORE INFO To learn more about NLB on Windows Server 2008 R2, consult the TechNet document at <http://technet.microsoft.com/en-us/library/cc770558.aspx>.

Configuring high availability for Client Access servers

You need to know what steps to take to create client access arrays—sometimes called Client Access server arrays—which are collections of load-balanced Client Access servers. You should be aware that if one Client Access server in a client access array fails, client traffic is automatically redirected to other Client Access servers in the array. The exam might test that you know that client access arrays work on a per-site basis, and a single client access array cannot span multiple sites. You should also know that client access arrays can use Windows NLB or a hardware NLB solution. If you are using Windows NLB, you are limited to eight nodes in the array, and you cannot also configure the server hosting the Client Access server role as a part of a DAG.

True or false? You can use the EMS *New-ClientAccessArray* cmdlet to create a client access array.

Answer: *True*. You must first configure load balancing for your Client Access servers and configure a new DNS record that points to the virtual IP address that you intend to use for the client access array. For example, if you created a DNS record for *casarray.adatum.com*, and you configured load balancing for Client Access servers in the Aberdeen site, the following command creates a client access array named Aberdeen Array:

```
New-ClientAccessArray -Name 'Aberdeen Array' -Fqdn 'casarray.adatum.com'  
-Site Aberdeen
```

True or false? When you have created a new client access array, the existing mailbox databases in the site are automatically configured to use the new array

Answer: *False*. You need to use the *Set-MailboxDatabase* cmdlet and the *RpcClientAccessServer* parameter to configure the existing mailbox databases in the site. For example, the following command configures mailbox database MyDB-01 to use casarray.adatum.com:

```
Set-MailboxDatabase MyDB-01 -RpcClientAccessServer 'casarray.adatum.com'
```

MORE INFO To learn more about client access arrays, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351149.aspx>.

Configuring high availability for Hub Transport servers

You need to know what steps to take to deploy multiple Hub Transport servers in each site to ensure that Hub Transport servers are highly available. This provides server redundancy, because messages automatically reroute if a Hub Transport server fails. The exam might test that you are aware that when you deploy an extra Hub Transport server on a site, you do not need to perform any additional configuration, because configuration data automatically replicates through Active Directory.

EXAM TIP Remember that you need to add additional Hub Transport servers to a site to provide high availability; it is not necessary to configure NLB to do so.

Configuring high availability for Edge Transport servers

You need to know what steps to take to use either of the two methods through which you can make Edge Transport servers highly available—you can load-balance Edge Transport servers by using NLB, or you can configure multiple MX records in the external DNS namespace. The exam might test that you know that Windows NLB requires hosts to be members of the same Active Directory domain, and that because you deploy Edge Transport servers on perimeter networks, most Edge Transport server load-balancing solutions use perimeter NLB.

True or false? You might need to use an NLB solution if you have multiple Edge Transport servers but have only one public IPv4 address available for incoming SMTP traffic.

Answer: *True*. In this situation, you assign the public IPv4 address as the NLB virtual address. This allows requests to be spread across Edge Transport servers with private IP addresses on the perimeter network.

MORE INFO To learn more about high availability for non-Mailbox server roles, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638137.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. Typically, how would you distribute incoming messages from the Internet to your Edge Transport servers?
2. What GUI tool is used to configure NLB settings?
3. What NLB property determines where a cluster sends subsequent client traffic after the initial client request?
4. You have multiple Edge Transport servers but have only one public IPv4 address available for incoming SMTP traffic. How would you configure high availability for your Edge transport servers?
5. You have created a DNS record for clientarray.contoso.com, and you have configured load balancing for Client Access servers in the Glasgow site. What EMS command do you issue to create a client access array named Glasgow Array?

Objective 6.5: Back up and recover server roles

In this exam Objective, you might be tested on how to recover the Hub Transport, Client Access, Edge Transport, and Mailbox server roles. You might be asked about cloning Edge Transport server configuration and when you should use Exchange setup in recoverserver mode. You are expected to know how to recover Exchange servers after server failure and how you could reconfigure messaging services after this event. You should be aware of how you back up server roles.

Exam need to know

- Hub
For example: Do you know how to recover the Hub Transport server role?
- CAS IIS
For example: Do you know how to restore configuration settings held in the registry of a Client Access server?
- Edge
For example: Do you know why you cannot use Exchange setup in recover server mode to recover the Edge Transport server role?
- Edge server clone configuration
For example: Do you know how to clone the configuration of an Edge Transport server?
- Setup /m:recoverserver
For example: Do you know what additional steps you need to take when using Exchange setup in recoverserver mode to recover a server that is a member of a DAG?
- Setup /recoverCMS
For example: Do you know whether this setup option works with Exchange 2010?

- Mailbox server

For example: Do you know how to fully restore the Mailbox server role?

- Restoring Exchange Servers after server failure

For example: Do you know how to restore a server after a complete failure?

- Configuring messaging services during a server failure

For example: Do you know how to restore messaging services?

- Backup server roles

For example: Do you know how to back up all Exchange data on a server?

Hub

You need to know what steps to take to restore a server running the Hub Transport server role by running Exchange setup in recoverserver mode. You should know that Hub Transport servers store all essential configuration data in Active Directory. The exam might test that you know that some limited configuration data is stored in the registry, and that if necessary you can restore the registry with a System State data restore. You cannot restore queues and message tracking, protocol, and connectivity logs, but queues and logs are typically not essential to restoring Hub Transport server functionality.

True or false? If you want to recover a message, you can mount the message queue databases.

Answer: *True*. However, this is only if the message was not lost when the server failed. Message queue databases are located in the C:\Program Files\Microsoft\Exchange Server\TransportRoles\data\Queue directory on an alternate Hub Transport server.

MORE INFO To learn more about the Hub Transport server role, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123494.aspx>.

CAS IIS

You need to know what steps to take to restore a failed server running the Client Access server role to its initial default state by running Exchange setup in recover server mode. If no customization has been carried out on the server, this results in a complete restoration. However, the exam might test that you are aware that any changes you have made to HTTP virtual servers running on the Client Access server are not restored because changes to these virtual servers are stored in IIS configuration data.

True or false? It is possible to restore the IIS configuration data from backup to recover the custom settings.

Answer: *True*. However, Microsoft does not recommend this procedure because it can generate errors on the Client Access server. You can also restore some configuration settings held in the registry by performing a System State data restore. However, this configuration data is limited.

True or false? It is good practice to keep a note of the configuration changes you have made to a Client Access server and re-apply them after role recovery.

Answer: *True*. You should do the following:

- Keep a log of all customizations that you make to the original Client Access server.
- Take a note of the server's volume configuration.
- Ensure that you have a valid SSL certificate.
- Keep a record of your custom virtual directories.
- Apply customization changes after you have performed the recovery process.

MORE INFO To learn more about managing Client Access servers, follow the links in the TechNet document at <http://technet.microsoft.com/en-us/library/aa997850.aspx>.

Edge

You need to know what steps to take to create a backup of the configuration settings on an Edge Transport server through cloning. You should know that the Edge Transport server role is installed on a standalone server and that Edge transport servers store configuration data, queues, replicated data from Active Directory, and any logs, such as message tracking, protocol, and connectivity logs that have been enabled. These servers also store some configuration data in the registry. The exam might test that you are aware that replicated data, queues, and logs are not essential to restoring Edge Transport server functionality.

True or false? If you have applied custom settings to an Edge Transport server (for example, for content filtering), you can create a backup of the configuration by means of cloning.

Answer: *True*. If you clone configuration settings to another Edge Transport server and one of the servers fails, you can reinstall the Edge Transport server role and then clone the configuration settings from the other server.

MORE INFO To learn more about the Edge Transport server role, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124701.aspx>.

Edge server clone configuration

You need to know what steps to take to recover Edge Transport services. You should be aware that Edge Transport server settings are configured by information from the Web (for example, anti-spam updates) or are replicated from Active Directory by means of the EdgeSync process. The exam might test that you know that if you have not modified or customized these settings, you do not need to back up Edge Transport server data. In this case, you can fully recover Edge Transport services by setting up a new Edge Transport server.

True or false? If you customize settings, you can store your customization settings in Active Directory.

Answer: *False*. You need to clone the configuration to capture your changes. Two scripts exist in the C:\Program Files\Microsoft\Exchange Server\Scripts directory on an Edge Transport server. When you run the *ExportEdgeConfig.ps1* script, Exchange exports all user-configured settings and stores the data in an XML file. When you copy this file to a new Edge Transport server and run the *ImportEdgeConfig.ps1* script, Exchange imports the user-configured settings saved in the XML file.

MORE INFO To learn more about cloning Edge Transport server configurations, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998622.aspx>.

Setup /m:recoverserver

You need to know what steps to take to use Exchange setup in recoverserver mode to recover an Exchange 2010 server that has the Client Access, Hub Transport, Mailbox, or Unified Messaging server role installed. The exam might test that you know that for a completely failed server, you first need to reset the computer account for the lost server, reinstall Windows Server 2008 SP2 or R2, and then name the new server with the same name as the lost server. You need to join the server to the same domain and log in. You then install the necessary prerequisites and operating system components, navigate to the Exchange 2010 installation files, and enter the following command:

```
Setup /m:RecoverServer
```

True or false? If a member of a DAG fails, you can recover it in exactly the same way.

Answer: *False*. If you want to replace a DAG member, you need to remove any database copies that were held on the failed server from the DAG. You also remove the configuration of the failed server from the DAG. You then reset the failed server's computer account and use Exchange setup in recoverserver mode to perform the server recovery operation in the same way as you do for any failed Mailbox server. You add the recovered server to the DAG and reconfigure the mailbox database copies.

MORE INFO To learn more about recovering a server that is a member of a DAG, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd638206.aspx>.

Setup /recoverCMS

You should be aware that the *setup /recoverCMS* command is used to recover a clustered Mailbox server in a Cluster Continuous Replication (CCR) cluster. However, this applies to Exchange Server 2007 SP1, SP2, and SP3, and not to Exchange 2010, which uses DAGs and mailbox database copies to implement the same functionality. If this command appears in an answer in the exam, the answer is likely to be wrong.

MORE INFO To learn more about discontinued features in Exchange Server 2010 such as CCR, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998911.aspx>.

Mailbox server

You need to know what steps to take to fully restore the Mailbox server role by running Exchange setup in recoverserver mode and then restoring the Mailbox server from a backup that includes the necessary Exchange data and the System State data. The exam might test that you are aware that Mailbox servers store Exchange mailbox and public folder database files together with Exchange transaction log files specific to each database. You need to back up these files with an Exchange-aware backup application, such as Windows Server Backup.

True or false? You can rebuild replicated public folder data through the normal replication process.

Answer: *True*. This is contingent on whether available replicas exist. Mailbox servers also store full-text indexing information specific to each mailbox database, but you do not back up or restore full-text indexes, because you need instead to rebuild them. Other types of Exchange databases on Mailbox servers include free/busy information and the offline address book. This information is rebuilt through automated maintenance and then replicated.

True or false? The volume configuration of a replacement Mailbox server must be exactly the same as that of the failed server.

Answer: *True*. To recover the Mailbox server role, you first use Exchange Setup in Recoverserver mode to extract the original Mailbox server's configuration data from Active Directory. Mailbox servers are particularly sensitive to any configuration differences, and you need to document the exact configuration of the server's storage devices and volumes. If this configuration is not precisely reproduced, you are likely to encounter problems when attempting to restore mailbox and storage group data.

MORE INFO To learn more about the Mailbox server role, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124699.aspx>.

Restoring Exchange Servers after server failure

You need to know what steps to take to recover a full server because of corrupt or missing system files. You should be aware that you can use the Windows Server 2008 startup repair features. The startup repair process can also recover from certain types of boot failures that involve the boot manager. The exam might test that if the boot manager itself is corrupt, and you cannot start the server as a result, you know how to use the Windows Server 2008 SP2 or Windows Server 2008 R2 installation disc or a recovery partition to restore the boot manager and enable startup.

True or false? If startup repair fails and you are not able to start the server, you can attempt to recover the server from a backup by inserting the Windows operating system disc into the DVD drive and turning on the computer.

Answer: *True*. You specify the language settings in the Install Windows Wizard, and then click Repair Your Computer. You can select Windows Complete PC Restore to start the Windows Complete PC Restore Wizard. This lets you specify the backup from which you want to restore.

MORE INFO To learn more about backup, restore, and disaster recovery, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876874.aspx>.

Configuring messaging services during a server failure

You need to know what steps to take to reconfigure messaging services after a server failure. You should be aware that Unified Messaging combines voice messaging and email messaging into a single messaging infrastructure and puts all email and voice messages into one Exchange 2010 mailbox that can be accessed from many different devices. You are expected to know that the Unified Messaging server role stores its essential configuration data in Active Directory and some limited configuration data in the registry. This means that to reconfigure messaging services after a server failure, you need to restore the Unified Messaging role.

True or false? You can restore a Unified Messaging server to its initial default state by running Exchange setup in recoverserver mode.

Answer: *True*. If necessary, you can restore registry settings from a System State data backup. Queues and logs are not essential to restoring unified messaging server functionality, although you can mount message queues on a new server if you can recover them from a failed server. You can also restore custom audio files (used for prompts) automatically through replication if you have other Unified Messaging servers in your organization.

MORE INFO To learn more about the Unified Messaging server role, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125141.aspx>.

Backup server roles

You need to know what steps to take to restore Exchange server roles from backup, although you should be aware that this is typically not necessary. The exception is the Mailbox server role, which you cannot fully restore by running the Exchange setup program in recoverserver mode. In addition, you need to restore the Mailbox server from a backup that includes the necessary Exchange data and the System State data. The exam might test that you know that Exchange 2010 includes a plug-in for Windows Server Backup, with which you can make VSS-based backups of Exchange data, and that you can use Windows Server Backup to back up and restore your Exchange databases.

True or false? During the backup operation, a consistency check of the Exchange data files is run to ensure that the files are in a good state and can be used for recovery.

Answer: *True*. If the consistency check succeeds, Exchange data is available for recovery from that backup.

True or false? If a server hosting the data being backed up is a member of a DAG and hosts both active and passive database copies, you must enable the Microsoft Exchange Replication service VSS writer.

Answer: *False*. If this service is enabled, the backup operation will fail.

True or false? To back up Exchange data specifically, you need to select Different Options in the Backup Once Wizard.

Answer: *True*. This lets you specify various options such as what to back up and the backup destination. On the Specify Advanced Options page, you need to select VSS full backup.

MORE INFO To learn more about using Windows Server Backup to perform a backup of Exchange 2010, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd876854.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You have recovered the Hub Transport role on a server by running Exchange setup in recoverserver mode and restored the registry with a System State data restore. What information can you not restore?
2. You recover the Mailbox server role on a server Mailbox but discover that full-text indexing information specific to each mailbox database no longer exists. What action do you need to take?
3. Startup repair fails and you are not able to start a failed server. What action can you take?
4. What scripts can you run to clone Edge Transport server configuration?
5. You have made no configuration changes to the Client Access server in your Exchange 2010 organization. You need to recover the Client Access server role. What procedure results in a complete restoration?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 6.1: Create and configure the Database Availability Group (DAG)

1. You issue the *New-DatabaseAvailabilityGroup -Name DAG-01 -Database AvailabilityGroupIpAddresses 10.10.1.50 -WitnessServer 'hub01.adatum.com' -WitnessDirectory 'c:\witness'* command.
2. You use the *Set-DatabaseAvailabilityGroup* cmdlet with the *ReplicationPort* parameter to specify the new port number. You then configure the Windows Firewall exceptions on the witness server and open this port.

3. You use the *Set-MailboxDatabaseCopy* cmdlet.
4. The Lossless setting.
5. You use the *Set-MailboxDatabaseCopy* EMS cmdlet with the *ActivationPreference* parameter.

Objective 6.2: Perform backup and restore of data

1. You need to use the Eseutil tool in recover mode to put the database in a clean shutdown state.
2. You create an RDB by using the *New-MailboxDatabase* cmdlet. You then restore messages that have the subject of "Research" and the word "confidential" in the message body by using the *Restore-Mailbox* cmdlet.
3. You issue the *Get-Mailbox -Database MyDatabase | Restore-Mailbox -RecoveryDatabase RecoverDB* command.
4. You use the *wbadmin enable backup* command.
5. The *Connect-Mailbox -Database "Sales" -Identity "Don Hall" -User "Don Hall"* command.

Objective 6.3: Configure public folders for high availability

1. You issue the *Set-PublicFolder -Identity '\PF-01' -Replicas 'PFDB-01','PFDB-02'* command.
2. You can use the *Set-PublicFolderDatabase* cmdlet with the *ReplicationPeriod* parameter.
3. You issue the *Set-PublicFolder -Identity '\MyReplica' -Server 'van-ex1.adatum.com' -UseDatabaseReplicationSchedule \$false -ReplicationSchedule 'Always'* command.
4. You can edit the database Properties dialog box in the EMC or you can use the EMS *Set-PublicFolderDatabase* cmdlet with the *AllowFileRestore* parameter set to *\$true*.
5. You cannot use DAGs to ensure that public folders are highly available. Instead, you can configure public folder replicas.

Objective 6.4: Configure high availability for non-mailbox servers

1. You would employ DNS round robin and MX records that have the same preference value.
2. The NLB Manager console.
3. The affinity property.
4. You would assign the public IPv4 address as the NLB virtual address.
5. You issue the *New-ClientAccessArray -Name 'Glasgow Array' -Fqdn 'clientarray.adatum.com' -Site Glasgow* command.

Objective 6.5: Back up and recover server roles

1. You cannot restore queues and message tracking, protocol, and connectivity logs.
2. You need to rebuild the full-text indexes.
3. You can insert the Windows operating system disc into the DVD drive and turn on the computer.
4. The *ExportEdgeConfig.ps1* script and the *ImportEdgeConfig.ps1* script.
5. Run Exchange setup in recoverserver mode.

Configuring Message Compliance and Security

Approximately 13 percent of the 70-662 exam focuses on the topic “Configuring Message Compliance and Security.” The exam is likely to test that you know how to manage default security configurations provided by the Microsoft Exchange 2010 services environment and the interaction of the components with client-based settings. You need to be able to configure best practices with regard to records management and auditing. You need to be able to check the health of the server system and ensure the built-in antivirus and anti-spam facilities on your Edge Transport servers are adequate for your system.

This chapter covers the following objectives:

- Objective 7.1: Configure records management.
- Objective 7.2: Configure compliance.
- Objective 7.3: Configure message integrity.
- Objective 7.4: Configure anti-virus and anti-spam

Objective 7.1: Configure records management

In this exam Objective, you might be tested on how to create, configure, and manage default and custom folders. You need to be familiar with the folder hierarchy and know how to use retention policies to secure the managed folder infrastructure. You might be asked about retention policy tags (RPTs) and managed folders. You need to know how to configure content settings and managed folder mailbox policies.

Exam need to know

- Custom and default managed folders
For example: Do you know how to create managed folders that you can link to Message Records Management (MRM) policies?
- Retention policy
For example: Do you know how to create a retention policy that links to one or more specified RPTs?

- Configure and apply retention policies and retention policy tags
For example: Do you know how to assign a retention policy to a mailbox?
- Configure managed folders, including default and custom managed folders
For example: Do you know how to configure message retention settings for a managed folder?
- Configure content settings
For example: Do you know how to control message life span by controlling content retention?
- Configure managed folder mailbox policies
For example: Do you know how to create a managed folder mailbox policy?

Custom and default managed folders

You need to know what steps to take to create and configure custom and default managed folders and to link MRM policies to these folders. The exam might check that you are aware that a managed default folder is a mailbox folder (such as Inbox) that appears in Office Outlook 2007 and 2010 by default, to which MRM has been applied, and that a managed custom folder is a managed folder that you create and place in a user mailbox for MRM purposes.

True or false? You can use the EMS *New-ManagedFolder* cmdlet to create a managed default folder.

Answer: *True*. You can also use the EMC New Managed Default Folder Wizard. The following command creates a managed default folder named Management-Inbox with the comment "Messages are removed from the Inbox folder after 90 days":

```
New-ManagedFolder -Name "Management-Inbox" -DefaultFolderType Inbox
-Comment "Messages are removed from the Inbox folder after 90 days"
-MustDisplayComment $true
```

MORE INFO To learn more about the *New-ManagedFolder* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125245.aspx>.

True or false? You cannot create a managed custom folder by using the EMC. You must use the EMS.

Answer: *False*. You can use the EMC New Managed Custom Folder Wizard. You can also use the EMS *New-ManagedFolder* cmdlet. For example, the following command creates the managed custom folder Business-Critical with a folder quota of 1 GB and enables a folder comment:

```
New-ManagedFolder -Name "Business-Critical" -FolderName "Business-Critical"
-StorageQuota 1GB -Comment "This is a managed folder with a 1GB storage
limit." -MustDisplayComment $true
```

MORE INFO To learn more about managed folders, consult the TechNet document at <http://technet.microsoft.com/en-us/library/ee364744.aspx>.

Retention policy

You need to know what steps to take to group one or more managed folder RPTs and use them to create a retention policy that you can apply to one or more mailboxes.

True or false? You use the EMS *New-RetentionPolicy* cmdlet to create a retention policy.

Answer: *True*. For example, the following command creates a retention policy called *Sales_Policy* that uses the RPT *Tag-EXAMPLE-DeletedItems*:

```
New-RetentionPolicy -Name "Sales_Policy"  
-RetentionPolicyTagLinks "Tag-EXAMPLE-DeletedItems"
```

True or false? You can link only one RPT to a retention policy.

Answer: *False*. For example, the following command links the *Managers_RPT*, *Executives_RPT*, and *Directors_RPT* to the *Senior_Staff* retention policy.

```
New-RetentionPolicy -Name "Senior_Staff" -RetentionPolicyTagLinks  
"Managers_RPT", "Executives_RPT", "Directors_RPT"
```

MORE INFO To learn more about the *New-RetentionPolicy* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297970.aspx>.

True or false? The EMS *Set-RetentionPolicy* cmdlet reconfigures an existing retention policy.

Answer: *True*. For example, the following command modifies the policy *Sales_Policy* to link the retention policy tag *MyRetentionPolicyTag*:

```
Set-RetentionPolicy "Sales_Policy" -RetentionPolicyTagLinks  
"MyRetentionPolicyTag"
```

MORE INFO To learn more about the *Set-RetentionPolicy* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335196.aspx>.

True or false? To replace a current retention policy with a new retention policy, you need to use the EMS *Get-RetentionPolicy* cmdlet to obtain details of the current policy and store these in a variable.

Answer: *True*. You then filter by using this variable to obtain the mailboxes that have the current retention policy applied to them and apply the new policy to each of these mailboxes. The following command applies the new retention policy *New-Retention-Policy* to all mailboxes that currently have the policy *Old-Retention-Policy* applied to them:

```
$OldPolicy={Get-RetentionPolicy "Old-Retention-Policy"}.distinguishedName |  
Get-Mailbox -Filter {RetentionPolicy -eq $OldPolicy}  
-Resultsize Unlimited | Set-Mailbox -RetentionPolicy "New-Retention-Policy"
```

MORE INFO To learn more about the *Get-RetentionPolicy* and *Get-Mailbox* cmdlets, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/dd298086.aspx> and <http://technet.microsoft.com/en-us/library/bb123685.aspx>.

Configure and apply retention policies and retention policy tags

You need to know what steps to take to apply retention policies to user mailboxes. The exam might test that you know how to link or unlink RPTs from a custom retention policy, and that a mailbox cannot have more than one retention policy at a time.

EXAM TIP Remember that if you configure a retention policy with no RPTs linked to it, you can experience mailbox items that never expire.

True or false? You can use the EMS *Set-Mailbox* cmdlet but not the EMC to assign a retention policy to a mailbox.

Answer: *True*. For example, the following command assigns the retention policy Accounting to the Don Hall mailbox:

```
Set-Mailbox "Don Hall" -RetentionPolicy "Accounting"
```

MORE INFO To learn more about the *Set-Mailbox* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123981.aspx>.

True or false? Retention policies can be assigned to mailboxes or distribution groups.

Answer: *True*. If you assign a retention policy to a distribution group, the policy is assigned to all mailboxes in the group. If a mailbox already has a different policy assigned to it, the previous policy assignment is overwritten. The following command assigns the Retention policy Marketing_RPT to members of the distribution group Marketing:

```
Get-DistributionGroupMember -Identity "Marketing" | Set-Mailbox  
-RetentionPolicy "Marketing_RPT"
```

When users are added to or removed from a distribution group, their mailbox retention policy is not automatically updated. To ensure that a policy is applied to new distribution group members, you need to rerun the command that applies the policy.

MORE INFO To learn more about the *Get-DistributionGroupMember* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996367.aspx>.

True or false? A retention policy can support any number of personal tags but only one default policy tag (DPT).

Answer: *True*. An RPT is a retention tag applied to default folders, such as Inbox and Deleted Items. You can apply a DPT to mailboxes to manage the retention of items that do not already have a retention tag applied. You can apply only one DPT in a retention policy. A personal tag is a retention tag available to OWA and Outlook 2010 users for applying retention settings to custom folders and to individual items such as email messages.

EXAM TIP Exchange Server 2010 does not support the creation of RPTs for the Calendar, Contacts, Journal, Notes, and Tasks default folders. You can create RPTs for the Deleted Items, Drafts, Inbox, Junk E-mail, Outbox, Sent Items, RSS Feeds, Sync Issues, and Conversation History default folders.

MORE INFO To learn more about retention tags and policies, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297955.aspx>.

True or false? You can use the EMS *New-RetentionPolicyTag* cmdlet to create RTPs, DPTs, and personal tags.

Answer: *True*. You cannot use the EMC for this purpose. For example, the following command creates an RPT for the default folder Deleted Items. When the tag is applied to a mailbox, items in the Deleted Items folder are permanently deleted in 45 days:

```
New-RetentionPolicyTag "Tag-EXAMPLE-DeletedItems" -Type "DeletedItems"
-Comment "Deleted Items purged in 45 days" -RetentionEnabled $true
-AgeLimitForRetention 45 -RetentionAction PermanentlyDelete
```

The following command creates a DPT. When the tag is applied to a mailbox, items without an inherited or explicitly applied retention tag are moved to the Deleted Items folder after 180 days:

```
New-RetentionPolicyTag "Tag-EXAMPLE-Default" -Type All
-Comment "Items without a retention tag are deleted after 180 days."
-RetentionEnabled $true -AgeLimitForRetention 180
-RetentionAction MoveToDeletedItems
```

The following command creates a personal tag named Tag-PersonalArchive. Items to which the tag is applied are moved to the personal archive after 365 days:

```
New-RetentionPolicyTag "Tag-PersonalArchive" -Type Personal
-Comment "Tagged messages are moved to the archive after 365 days."
-RetentionEnabled $true -AgeLimitForRetention 365 -RetentionAction
MoveToArchive
```

EXAM TIP Remember that the *New-RetentionPolicyTag* cmdlet creates RTPs, DPTs and personal tags, and that DTPs have a *Type* setting of *All*.

MORE INFO To learn more about the *New-RetentionPolicyTag* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335226.aspx>.

True or false? You use the EMS *New-RetentionPolicyTag* cmdlet to modify an RPT, DPT, or personal tag.

Answer: *False*. You use the EMS *Set-RetentionPolicyTag* cmdlet for this purpose. For example, the following command modifies the RPT Tag-EXAMPLE-DeletedItems so that items in the Deleted Items folder are permanently deleted after 30 days:

```
Set-RetentionPolicyTag "Tag-EXAMPLE-DeletedItems" -AgeLimitForRetention 30
```

MORE INFO To learn more about the *Set-RetentionPolicyTag* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd298042.aspx>.

Configure managed folders, including default and custom managed folders

You need to know what steps to take to configure existing managed folders, including default and custom managed folders. The exam might test that you know (for example) how to configure storage quotas and how to specify whether the managed content settings should be applied only to the managed folder or to the folder and all its subfolders.

True or false? You can use the EMS *Set-ManagedFolder* cmdlet to configure an existing managed folder.

Answer: *True*. You can use this cmdlet to configure both default and custom managed folders. For example, the following command sets the storage quota for the managed folder Company-Inbox to 100 KB:

```
Set-ManagedFolder Company-Inbox -StorageQuota 100KB
```

MORE INFO To learn more about the *Set-ManagedFolder* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123591.aspx>.

Configure content settings

You need to know what steps to take to configure managed folder content settings. The exam might test that you know how to configure message retention settings and actions, control message life span, and configure journaling for managed folders.

True or false? Managed content settings are used to define message retention settings and retention action for managed folders.

Answer: *True*. For example, the managed content settings that you apply to a user's Inbox folder could specify that its contents are automatically deleted or moved to another folder after a specified number of days.

True or false? You can control message life span by controlling content retention and removing content that is no longer needed, and by automatically copying important content to a separate storage location outside the mailbox.

Answer: *True*. This process is known as journaling. The journaling storage location can be any location that has an SMTP email address. Journaling is covered in more detail in Objective 7.2: Configure compliance.

True or false? You can use the EMC New Managed Content Settings Wizard to create managed content settings.

Answer: *True*. You can also use the EMS *New-ManagedContentSettings* cmdlet. For example, the following command creates managed content settings for the managed default folder Calendar with the name MyCalendarContentSettings, the

message class `CalendarItems`, an age limit for retention of 30 days, and the retention action `MoveToDeletedItems`:

```
New-ManagedContentSettings -FolderName Calendar -MessageClass CalendarItems  
-Name MyCalendarContentSettings -RetentionEnabled $true  
-RetentionAction MoveToDeletedItems -AgeLimitForRetention 30
```

MORE INFO To learn more about the *New-ManagedContentSettings* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124565.aspx>.

True or false? You can use the EMS *Set-ManagedContentSettings* cmdlet to reconfigure existing managed content settings.

Answer: *True*. You can also use the EMC to edit the managed content settings in the managed default folders tab or the managed custom folders tab of the mailbox Properties dialog box. The following command configures the managed content setting Management-Inbox settings to apply a retention age of 100 days, delete messages on expiration, and allow recovery.

```
Set-ManagedContentSettings -Identity "Management-Inbox settings"  
-RetentionEnabled $true -AgeLimitForRetention 100  
-RetentionAction DeleteAndAllowRecovery
```

EXAM TIP Remember that EMS cmdlets that begin with *Get-* return current configuration settings and cmdlets that begin with *Set-* permit you to reconfigure these settings.

MORE INFO To learn more about Message Life Span, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297955.aspx>.

Configure managed folder mailbox policies

You need to know what steps to take to use managed folder mailbox policies to create linked groups of managed folders. The exam might check that you are aware that when a managed folder mailbox policy is applied to users' mailboxes, all the managed folders that linked to the policy are deployed in a single operation. You should know that you can create as many managed folder mailbox policies as you need and add as many managed folders to each policy as you want. However, each user mailbox can be linked to only one managed folder mailbox policy.

True or false? If your organization has existing managed folders, you can add them to the managed folder mailbox policy as you create it.

Answer: *True*. You can also add or remove managed folders from a managed folder mailbox policy any time after the policy is created. After you assign a managed folder mailbox policy to a mailbox user, the managed folders and settings are applied to the mailbox when the Managed Folder Assistant runs and processes the mailbox.

True or false? Managed content settings that are applied to the Entire Mailbox folder control every folder in the mailbox except managed custom folders and default folders and their subfolders.

Answer: *True*. If a default folder in a mailbox is not linked to a managed folder mailbox policy, then the Entire Mailbox policy will apply to that default folder.

True or false? You can use the EMC New Managed Folder Mailbox Policy Wizard to create a managed folder mailbox policy.

Answer: *True*. You can also use the EMS *New-ManagedFolderMailboxPolicy* cmdlet for this purpose. For example, the following command creates the managed folder mailbox policy *MyManagedFolderMailboxPolicy* and links the Inbox managed default folder and the Business-Critical managed custom folder to the policy:

```
New-ManagedFolderMailboxPolicy -Name "MyManagedFolderMailboxPolicy"  
-ManagedFolderLinks Inbox,"Business-Critical"
```

MORE INFO To learn more about creating a managed folder mailbox policy and specifically about the *New-ManagedFolderMailboxPolicy* cmdlet, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa996346.aspx> and <http://technet.microsoft.com/en-us/library/aa996035.aspx>.

True or false? When you have created a managed folder mailbox policy, you can modify it by using the *New-ManagedFolderMailboxPolicy* cmdlet.

Answer: *False*. You can edit the policy Properties dialog box in the EMC or use the EMS *Set-ManagedFolderMailboxPolicy* cmdlet. For example, the following command adds the Calendar managed default folder to the managed folder mailbox policy *MyMailboxPolicy*:

```
Set-ManagedFolderMailboxPolicy -Identity MyMailboxPolicy  
-ManagedFolderLinks Calendar
```

MORE INFO To learn more about the *Set-ManagedFolderMailboxPolicy* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124386.aspx>.

True or false? When you apply a managed folder mailbox policy to user mailboxes, all the managed folders linked to the policy are deployed in a single operation.

Answer: *True*. You can use the EMC to modify the Properties dialog box of the appropriate mailbox, or you can use the *Set-Mailbox* cmdlet. For example, the following command applies the *MyManagedFolderMailboxPolicy* to the Don Hall mailbox:

```
Set-Mailbox -Identity "Don Hall" -ManagedFolderMailboxPolicy  
MyManagedFolderMailboxPolicy
```

MORE INFO To learn more about applying a managed folder mailbox policy to users, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa996575.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. You are creating RPTs for default folders on a computer running Exchange Server 2008 SP2. For what default folders can you create an RTP?

2. What two methods can you use to create a new managed default folder?
3. What EMS cmdlet do you use to create managed content settings for a managed default folder?
4. What EMS cmdlet do you use to create a retention policy?
5. You want to apply the managed folder mailbox policy SalesPolicy to the Don Hall mailbox. What EMS command do you issue?

Objective 7.2: Configure compliance

In this exam objective, you might be tested on how to configure integration with the Active Directory Rights Management Services (AD RMS) system to protect the privacy of individuals and the confidentiality of communications. In addition, you need to know how to configure journaling to retain organizational communications, and to create an alternate journaling mailbox. You are expected to know how to enable and disable standard mail tips and create custom mail tips, how to configure audit logging and access audit logs, and how to use transport protection rules to protect confidential data.

Exam need to know

- Configure RMS
For example: Do you know how to use a managed custom folder in a user mailbox for MRM purposes?
- Configure journaling
For example: Do you know how to create a journaling rule?
- Configure alternate mailboxes
For example: Do you know how to convert an existing mailbox to an alternate journaling mailbox?
- Enable message classification
For example: Do you know what message classifications are enabled by default?
- Configure mail tips
For example: Do you know how to create a custom mail tip?
- Auditing
For example: Do you know how to configure audit logging and access the audit logs?
- Transport rules
For example: Do you know how to discover what rights management templates are available?

Configure RMS

You need to know what steps to take to protect the privacy of individuals and the confidentiality of communications by configuring Information Rights Management (IRM) so that access is restricted to authorized users and permitted actions. The exam might test that you are aware that Rights Management Services (RMS) includes all the server and client technologies that are required to support IRM in an organization. Chapter 4, "Configuring Message Transport," discussed IRM configuration; thus, only a brief summary is included in this section.

True or false? The EMS *Get-RMSTemplate* cmdlet issued without parameters retrieves a list of active rights policy templates.

Answer: *True*. This cmdlet retrieves the templates that are currently available to the Exchange 2010 server on which the command is run.

MORE INFO To learn more about the *Get-RMSTemplate* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297960.aspx>.

True or false? IRM protection can be applied to messages manually by Outlook users.

Answer: *True*. This process uses the IRM functionality in Outlook. You can use Exchange 2010 to take administrative actions that enforce your organization's messaging policy. OWA users can protect messages they send, and view IRM-protected messages they receive.

True or false? You can use the *Get-RMSTemplate* cmdlet to enable or disable IRM for internal messages and to enable or disable transport decryption, journal report decryption, IRM for Exchange Search, and IRM in OWA.

Answer: *False*. You use the EMS *Set-IRMConfiguration* cmdlet for these purposes. For example, the following command enables licensing and hence enables IRM features for messages sent to internal recipients:

```
Set-IRMConfiguration -InternalLicensingEnabled $true
```

The following command enables licensing, and hence, enables IRM features for messages sent to external recipients:

```
Set-IRMConfiguration -ExternalLicensingEnabled $true
```

The following command enables journal report decryption:

```
Set-IRMConfiguration -JournalReportDecryptionEnabled $true
```

The following command disables IRM features in OWA:

```
Set-IRMConfiguration -OWAEnabled $false
```

MORE INFO To learn more about the *Set-IRMConfiguration* cmdlet, including the parameters that apply only to the Outlook Live service, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd979792.aspx>.

True or false? You can use commands based on the EMS *Get-IRMConfiguration* cmdlet to enable or disable IRM in OWA for your entire Exchange 2010 organization.

Answer: *False*. You use the *Set-IRMConfiguration* cmdlet for this purpose. You can also enable or disable IRM for an OWA virtual directory by using the EMS *Set-OWAVirtualDirectory* cmdlet. Alternatively, you can enable or disable IRM for an OWA mailbox policy by using the EMS *Set-OWAMailboxPolicy* cmdlet. For example, the following command enables IRM in OWA for an entire Exchange Server 2010 organization:

```
Set-IRMConfiguration -OWAEnabled $true
```

The following command disables IRM in OWA for the virtual directory MyVirtualDirectory on Client Access Server VAN-EX2:

```
Set-OWAVirtualDirectory -Identity VAN-EX2\MyVirtualDirectory  
-IRMEEnabled $false
```

EXAM TIP Remember that the *Set-IRMConfiguration* cmdlet supports the *OWAEnabled* parameter, whereas the *Set-OWAVirtualDirectory* and *Set-OWAMailboxPolicy* cmdlets support the *IRMEEnabled* parameter.

Configure journaling

You need to know what steps to take to configure journaling to record organizational communications for use in an email retention strategy. The exam might test that you are aware that a journaling agent is a transport agent that processes messages on Hub Transport servers.

True or false? Exchange 2010 provides only the standard journaling option.

Answer: *False*. The premium journaling option is also available. This option uses journal rules.

True or false? Journal rule scope defines which messages are journaled by the journaling agent.

Answer: *True*. You can target the journal rule to Internal, External, or Global recipients. The recipient can be an Exchange mailbox, a distribution group, or a contact. Typically, recipients might be subject to regulatory requirements or might be involved in legal proceedings. If you do not specify a journaling recipient, all messages sent to or from recipients that match the journal rule scope are journaled.

True or false? You can specify only one journaling mailbox in your organization.

Answer: *False*. You can specify one or more mailboxes to be used for collecting journal reports.

True or false? You can use the EMS *New-Mailbox* cmdlet to create a mailbox to use as a journaling mailbox.

Answer: *True*. The following EMS commands create a journaling mailbox named Journal with the UPN journal@adatum.com in the mailbox database MyMailDatabase—note that you are prompted for a password after you issue the first command:

```
$password = Read-Host "Enter password" -AsSecureString
```

```
New-Mailbox -Name Journal -UserPrincipalName journal@adatum.com  
-Database "MyMailDatabase" -Password $password
```

EXAM TIP When you have created a mailbox to use as a journaling mailbox, Microsoft recommends that you configure this mailbox to accept messages only from the Microsoft Exchange recipient or from authenticated senders, and disable its storage quota limits.

MORE INFO To learn more about creating and configuring a Journaling mailbox, including how you can do this by using the EMC, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124985.aspx>.

True or false? When you have created a mailbox, you can then create a journaling rule by using the EMS *New-JournalRule* cmdlet to configure the mailbox as a journaling mailbox.

Answer: *True*. For example, the following command stores all messages sent to DonHall@adatum.com in the journaling mailbox Journal:

```
New-JournalRule -Name "Don-Hall-Compliance" -JournalEmailAddress "Journal"  
-Scope Global -Recipient DonHall@adatum.com -Enabled $True
```

The following command stores all messages sent to the distribution group BookAuthors@contoso.com to the journaling mailbox Authors Journal:

```
New-JournalRule -Name "Book-Authors-Journal" -JournalEmailAddress "Authors  
Journal" -Scope Global -Recipient BookAuthors@contoso.com -Enabled $True
```

MORE INFO To learn more about creating a journal rule, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa995915.aspx>.

True or false? You use the *New-JournalRule* cmdlet to modify an existing journaling rule.

Answer: *False*. You use the EMS *Set-JournalRule* cmdlet for this purpose. For example, the following command modifies the journal email address to which journal reports are sent by the existing journal rule Book-Authors-Journal.

```
Set-JournalRule "Book-Authors-Journal"  
-JournalEmailAddress Authors@contoso.com
```

EXAM TIP Remember that if you are asked to fulfill a new journaling requirement, you use the *New-JournalRule* cmdlet. If you are asked to modify an existing journaling configuration, you use the *Set-JournalRule* cmdlet.

MORE INFO To learn more about configuring journal rule properties, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124246.aspx>.

Configure alternate mailboxes

You need to know what steps to take to configure an alternative journaling mailbox so that rejected journal reports do not collect in an email queue on a Hub Transport server when its journaling mailbox is unavailable.

True or false? The alternate journaling mailbox receives the NDRs generated when the journaling mailbox or the server on which it is located refuses delivery of the journal report or becomes unavailable.

Answer: *True*. When the journaling mailbox becomes available, you can use the Send Again feature of Outlook to submit journal reports for delivery to the journaling mailbox.

True or false? Journal reports are redirected only after the alternate mailbox is configured.

Answer: *True*. Journal reports that have already failed delivery before the alternate journaling mailbox is configured are not redirected.

True or false? You can use the EMS *Get-TransportConfig* cmdlet to configure an existing mailbox as an alternate journaling mailbox.

Answer: *False*. You use the EMS *Set-TransportConfig* cmdlet for this purpose. For example, the following command configures the mailbox `sparemailbox@contoso.com` as an alternate journaling mailbox:

```
Set-TransportConfig -JournalingReportNdrTo sparemailbox@contoso.com
```

EXAM TIP You can use the *New-Mailbox* cmdlet to create a mailbox for and then use the *Set-TransportConfig* cmdlet to configure it as an alternate journaling mailbox. You should not attempt to configure a mailbox you have already configured as a journaling mailbox (using the *New-JournalRule* cmdlet) as an alternate journaling mailbox.

MORE INFO To learn more about configuring alternate mailboxes, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201717.aspx>.

Enable message classification

You need to know what steps to take to create and enable message classifications so that an Outlook or OWA client can display a user-friendly description of the classification to senders and receivers of a classified message. The exam might test that you know how to configure and display the message classification elements, such as Display name, Sender description, Recipient description, and Locale.

True or false? Some message classifications are enabled by default.

Answer: *True*. The following message classifications are enabled by default in Exchange 2010, and users cannot add these classifications to messages:

- Attachment Removed
- Originator Requested Alternate Recipient Mail
- Partner Mail

By default, all message classifications are informational only and are not associated with any transport protection rules.

True or false? You can use the EMS *New-MessageClassification* cmdlet to create a message classification.

Answer: *True*. For example, the following command creates a message classification named *SampleMessageClassification* with the display name *Sample Message Classification* and the sender description "This is a sample message classification":

```
New-MessageClassification -Name SampleMessageClassification  
-DisplayName "Sample Message Classification"  
-SenderDescription "This is a sample message classification."
```

True or false? After you create a new message classification, it is automatically specified as a transport rule predicate.

Answer: *False*. You need to specify it. Before Outlook and OWA users can apply the message classification to messages, you need to update the end-user systems with the message classification XML file created by the *Export-OutlookClassification.ps1* script file, which is located by default in the C:\Program Files\Microsoft\Exchange Server\Scripts directory.

EXAM TIP Remember that creating and applying a new message classification is a two-stage process. You need to use the *New-MessageClassification* cmdlet to create the classification, and then specify it as a transport rule predicate by running the *Export-OutlookClassification.ps1* script file.

True or false? You can add new locales of the message classification by using the *New-MessageClassification* cmdlet.

Answer: *True*. For example, the following command creates a locale-specific (Spanish) version of the existing message classification *SampleMessageClassification*:

```
New-MessageClassification -Identity SampleMessageClassification  
-Locale es-ES -DisplayName "En Espanol"  
-SenderDescription "Esta es una clasificacion de mensajes muestra."
```

True or false? The message classification with the lowest precedence is shown first.

Answer: *False*. The message classification with the highest precedence is shown first. You set precedence by using the *DisplayPrecedence* parameter of the EMS *Set-MessageClassification* cmdlet. Valid input for this parameter is *Highest*, *Higher*, *High*, *MediumHigh*, *Medium* (the default), *MediumLow*, *Low*, *Lower*, and *Lowest*. The following command changes the display precedence of the message classification *SampleMessageClassification* to *MediumLow* and specifies that the message classification should be retained if the message is forwarded or replied to:

```
Set-MessageClassification -Identity SampleMessageClassification  
-DisplayPrecedence MediumLow -RetainClassificationEnabled $true
```

MORE INFO To learn more about managing message classification, follow the links in the TechNet document at <http://technet.microsoft.com/en-us/library/ee861122.aspx>.

Configure mail tips

You need to know what steps to take to create and configure mail tips that give your Outlook 2010 and OWA users information about a message and its recipients before they send it. The exam might test, for example, if you know how to inform a sender when a recipient has enabled an out-of-office reply and might be on vacation for an extended period. A mail tip can also warn the sender if a recipient's mailbox is full, if the message that is about to be sent is large enough to fill it, or if a message exceeds organizational size limits.

True or false? You can configure custom mail tips.

Answer: *True*. These replace messages that might otherwise be sent as an automatic response, such as "This mailbox is not monitored" or "You will receive a response within 48 hours." Custom mail tips can be localized so that users can see them in their own language.

True or false? Mail tips are disabled by default.

Answer: *False*. The following command disables mail tips for an Exchange 2010 organization.

```
Set-OrganizationConfig -MailTipsAllTipsEnabled $false
```

True or false? When senders address messages to more recipients than the number you specify, they are shown the large audience size mail tip.

Answer: *True*. The large audience size is set to 25 by default. The following command configures the large audience size to 100:

```
Set-OrganizationConfig -MailTipsLargeAudienceThreshold 100
```

True or false? When the external recipients mail tip is enabled, senders are notified that the recipients of a message include one or more external recipients, but not if the message is addressed to a distribution group that contains external recipients.

Answer: *False*. Senders are notified if a distribution group contains external recipients. By default, the external recipients mail tip is disabled. The following command enables it:

```
Set-OrganizationConfig -MailTipsExternalRecipientsTipsEnabled $true
```

True or false? By default, mail tips that rely on mailbox data are enabled.

Answer: *True*. Mailbox data includes out-of-office and mailbox full information. The following command disables mail tips that rely on mailbox data:

```
Set-OrganizationConfig -MailTipsMailboxSourcedTipsEnabled $false
```

True or false? By default, mail tips that rely on group metrics data are disabled.

Answer: *False*. Group metrics data consists of the membership count and external members count for all distribution groups and dynamic distribution groups. Mail tips such as large audience size and external recipients rely on this data. By default, these mail tips are enabled. The following command disables mail tips that rely on group metrics data:

```
Set-OrganizationConfig -MailTipsGroupMetricsEnabled $false
```

MORE INFO To learn more about the EMS *Set-OrganizationConfig* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa997443.aspx>.

True or false? Custom mail tips can include HTML links.

Answer: *True*. However, scripts are not permitted. The length of a custom mail tip cannot exceed 250 characters.

True or false? You can configure custom mail tips for recipients, based on the following EMS cmdlets: *Set-Mailbox*; *Set-MailContact*; *Set-MailUser*; *Set-DistributionGroup*; *Set-DynamicDistributionGroup*; and *Set-MailPublicFolder*.

Answer: *True*. For example, the following command configures a custom mail tip for the CorporateAssistance mailbox to inform senders that they will receive a response within three hours:

```
Set-Mailbox -Identity "CorporateAssistance" -MailTip "A Corporate Assistance representative will contact you within 3 hours."
```

MORE INFO To learn more about mail tips, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297974.aspx>.

Auditing

You need to know what steps to take to obtain a log of message activity as messages are transferred to and from an Exchange server that has the Hub Transport server role, the Mailbox server role, or the Edge Transport server role installed. The exam might check that you are aware that message tracking logs can be used for message forensics, mail flow analysis, reporting, and troubleshooting.

True or false? You access the Tracking Log Explorer from the EMC Toolbox.

Answer: *True*. You can specify parameters such as Recipients, Sender, Server, and so on. If message subject logging is enabled, you can also specify Subject. The tool tracks messages defined by the parameters you specify. If your request highlights message tracking problems, you can select a symptom and obtain further information.

True or false? You can use the EMS *Set-MessageTrackingLog* cmdlet to locate messages with an *EventID* of *RECEIVE*.

Answer: *False*. You use the EMS *Get-MessageTrackingLog* cmdlet for this purpose. For example, the following command accesses messages with this *EventID* received between 5:37 AM and 5:47 AM on March 18, 2012:

```
Get-MessageTrackingLog -EventID RECEIVE -Start 3/18/2012 5:37:00 AM  
-End 3/18/2012 5:47:00 AM
```

MORE INFO To learn more about administrator audit logging, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd335052.aspx>.

Transport rules

You need to know what steps to take to configure transport rules that implement messaging policies by inspecting message content, encrypting sensitive email content, and using rights management to control access. Chapter 4 discussed transport rules in detail. This section looks specifically at transport protection rules that apply an AD RMS rights policy template to protect messages through IRM.

True or false? Before you create a transport protection rule, you need to discover what rights management templates are available.

Answer: *True*. The following EMS command generates a list of available templates:

Get-RMSTemplate | FL

MORE INFO To learn more about the *Get-RMSTemplate* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd297960.aspx>.

True or false? You can use the New Transport Rule Wizard in the EMC to create a transport protection rule.

Answer: *True*. You can also use the EMS *New-TransportRule* cmdlet. For example, the following command creates a rule named Protect-Confidential that IRM-protects messages that contain the word Confidential in the Subject field using the Do Not Forward template:

```
New-TransportRule -Name "Protect-Confidential" -SubjectContainsWords  
"Confidential" -ApplyRightsProtectionTemplate "Do Not Forward"
```

MORE INFO To learn more about the *New-TransportRule* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125138.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS cmdlet, issued without parameters, retrieves a list of active rights management services policy templates that are currently available to the Exchange 2010 server on which the command is run?
2. What EMS command do you issue to ensure that all email messages that contain at least one recipient who is a member of the management@adatum.com distribution list and that pass through the Hub Transport server in the adatum.com organization store a copy in the journaling mailbox Journal@adatum.com? The rule you create is to be called Management-Communications.
3. What EMS cmdlet can you use to configure an existing mailbox as an alternate journaling mailbox?
4. What EMC tool can you use to track messages defined by the parameters you specify?
5. What two methods can you use to create a transport protection rule?

Objective 7.3: Configure message integrity

In this Exam objective, you might be tested on how you can use Secure Multipurpose Internet Mail Extensions (S/MIME) for public key cryptography and how you enable or disable S/MIME in OWA, and steps you must take to implement Mutual Transport Layer Security (MTLS). You are expected to know how to create a certificate request file and obtain and install a certificate. You need to know what types of organization make up an RMS federation partnership and how to configure transport rules to protect message contents.

Exam need to know

- S/MIME
For example: Do you know how to create and install a certificate with which you can use S/MIME?
- MTLS
For example: Do you know how to use MTLS to send secure email between domains?
- Certificates
For example: Do you know how to test a certificate structure?
- Configure IRM and RMS Federation
For example: Do you know what role services are required to support identity federation?
- Transport rules
For example: Do you know what type of transport rule you use to IRM-protect email communications?

S/MIME

You need to know what steps you should take before you can use S/MIME for public key cryptography. The exam might check that you know how to configure S/MIME to encrypt emails and attachments so that only the intended recipient can open and read them.

True or false? Before you can use S/MIME for public key cryptography, you must obtain and install a certificate from a trusted third-party CA.

Answer: False. You can obtain a certificate either from your organization's internal CA or from a trusted third-party CA. An internal certificate can be used in-house only. Typically, S/MIME clients require the installation of a certificate before permitting users to send encrypted messages.

True or false? OWA users can use S/MIME to encrypt outgoing messages and attachments.

Answer: True. OWA users can digitally sign a message such that its recipients can verify the identity of the sender and that the message has not been tampered with. Users must have a digital ID and must install the S/MIME control for OWA before

they can send encrypted and digitally signed messages or read encrypted messages by using the OWA client.

True or false? You can use the EMS *Set-OWAVirtualDirectory* cmdlet to enable or disable S/MIME in OWA.

Answer: *True*. You must use Internet Explorer 7 or higher and ensure that SSL is used by the OWA directory. The following command enables S/MIME for OWA:

```
Set-OWAVirtualDirectory -Identity "owa (Default Web Site)"  
-SMimeEnabled $true
```

MORE INFO To learn more about the *Set-OWAVirtualDirectory* cmdlet, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb123515.aspx>.

True or false? You can enable or disable S/MIME for OWA by configuring the OWA (Default Web Site) Properties dialog box in the EMC.

Answer: *True*. By default, S/MIME is enabled. You can also use the EMS. The following command disables S/MIME on the OWA virtual directory, in the default IIS website, on the local server:

```
Set-OWAVirtualDirectory -Identity "owa (Default Web Site)"  
-SMimeEnabled $false
```

MORE INFO To learn more about using S/MIME with OWA, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb738140.aspx>.

MTLS

You need to know what steps you should take to test for the proper configuration of MTLS. You are expected to know that connections between SMTP servers on an organizational internetwork or the Internet rely on MTLS for mutual authentication. You should be aware that in an MTLS connection, the server originating a message and the server receiving it exchange certificates from a mutually trusted CA. Chapter 4 discussed MTLS; thus, only a short summary for review is provided in this chapter.

True or false? There are five steps required to implement MTLS.

Answer: *True*. You need to: generate a certificate request for the required certificates; import certificates to the Edge Transport servers; configure outbound domain security; configure inbound domain security; and test domain-secure mail flow.

True or false? You can test for the proper configuration of MTLS by enabling verbose logging on the connectors used to send and receive domain-secured emails.

Answer *True*. For example, the following command enables verbose logging on a Receive connector named Internet:

```
Set-ReceiveConnector Internet -ProtocolLoggingLevel Verbose
```

The following command enables verbose logging on a Send connector named InternetSend:

```
Set-SendConnector InternetSend -ProtocolLoggingLevel Verbose
```

MORE INFO To learn more about configuring TLS, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa998840.aspx> and <http://technet.microsoft.com/en-us/library/bb123543.aspx>.

EXAM TIP Remember the five steps required to implement MTLs.

Certificates

You need to know what steps you should take to ensure the availability of security certificates for use in TLS and MTLs. The exam might test that you are aware of the components of a Public Key Infrastructure (PKI) and how you should configure this. Chapter 3, "Configuring Client Access," and Chapter 4 discussed certificates; thus, only a brief summary is included here.

True or false? You can generate certificate requests by using the EMS *New-ExchangeCertificate* cmdlet.

Answer: *True*. You can configure the request so that other services can use the same certificate and key pair. Issuing the cmdlet without parameters generates a self-signed certificate. This certificate can be used for direct trust authentication and encryption between Edge Transport servers and Hub Transport servers.

True or false? You can use the MMC Certificates snap-in on a server running Exchange Server 2010 SP2 to import certificates for TLS and MTLs.

Answer: *False*. The MMC Certificates snap-in does not properly apply the certificate request to the certificate.

MORE INFO To learn more about certificates and domain security, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124392.aspx>.

True or false? You can use the Certutil tool to test the certificate structure.

Answer: *True*. For example, the following command issued at an elevated command prompt verifies a certificate chain:

```
Certutil -verify c:\<CertificateFileName>.cer
```

EXAM TIP Remember that the Certutil tool can also be used to verify a CRL.

MORE INFO To learn more about the Certutil tool, consult the TechNet document at [http://technet.microsoft.com/en-us/library/cc732443\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc732443(WS.10).aspx).

Configure IRM and RMS Federation

You need to know what steps to take to use Active Directory Federation Services (AD FS) and RMS Federation to form business-to-business (B2B) partnerships. In this arrangement, partners can be account or resource organizations (or both). The exam might test (for example) that you know the difference between an account and a resource organization. RMS configuration is discussed earlier in this chapter.

True or false? Account organizations manage the accounts used to access shared resources.

Answer: *True*. Resource organizations, on the other hand, form the partnerships in single-sign on (SSO) scenarios. An organization that has resources can use AD FS to simplify the authentication process to these resources by forming partnerships that account organizations then join.

True or false? A claim is a statement that the federation server makes about a user or client.

Answer: *True*. Claims can be based on several different values, such as user names, certificate keys, membership of security groups, and so on. They are included in the signed security token that AD FS sends to the web application and are used for authorization.

MORE INFO To learn more on AD FS claims, consult the TechNet document at <http://technet.microsoft.com/en-us/library/cc730612.aspx>.

True or false? AD FS communications must be encrypted at all times, and this requires several certificate types.

Answer: *True*. A federation server requires both a server authentication certificate and a token-signing certificate. In addition, the trust policy requires a verification certificate. The server authentication certificate is an SSL authentication certificate that is typically requested and installed through IIS Manager. Many AD FS roles are outward facing. Therefore, the certificates should be from a trusted CA.

EXAM TIP Remember the types of certificate that are required to encrypt AD FS communications.

True or false? Federated identity is the process of authenticating a computer's credentials across multiple information technology systems and organizations.

Answer: *False*. It is the process of authenticating a user's credentials. With identity federation, users in one domain can securely access data or systems of another domain by using SSO. AD FS relies on the following role services to support identity federation: Federation Service; Federation Service Proxy; and Windows Token-Based Agent.

MORE INFO To learn more about RMS federation, consult the TechNet document at [http://technet.microsoft.com/en-us/library/ee256071\(Ws.10\).aspx](http://technet.microsoft.com/en-us/library/ee256071(Ws.10).aspx).

Transport rules

You need to know what steps to take to configure transport rules to support the protection of Personally Identifiable Information (PII). You need to know that transport protection rules are used to inspect email content, encrypt certain emails, and use AD RMS XrML-based policies to control who or what has access to certain content. Chapter 4 discussed transport rules in detail, and the previous Objective in this chapter discussed transport protection rules.

True or false? AD RMS uses transport rules to protect content through the use of conditions and exceptions.

Answer: *True*. If an email message meets any condition and no exceptions, the message will be IRM protected.

True or false? If you delete an RMS template from the AD RMS server, then any transport protection rules that use this template will automatically be updated.

Answer: *False*. If you remove an AD RMS template, then you must manually modify any transport protection rules that use this template. If you do not, then the AD RMS will not properly license the content and an NDR will be delivered to the sender.

MORE INFO To learn more about configuring transport protection rules, consult the TechNet document at <http://technet.microsoft.com/en-us/library/dd351198.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS cmdlet can you use to request certificates that you can use for TLS or MTLS?
2. What utility can you use from an elevated command prompt to test the certificate structure?
3. You want to test for the proper configuration of MTLS. What EMS command do you issue to enable verbose logging on a Receive connector named Internet that's used to receive domain-secured email?
4. What certificate types are required for AD FS federation?
5. What EMS cmdlet do you issue to enable S/MIME for OWA?

Objective 7.4: Configure anti-virus and anti-spam

In this exam Objective, you might be tested on why file and process exclusions are typically required on file-level scanners. The exam might check that you know when and where to create transport rules and how to configure the Exchange environment to control spam through SCL levels, SPF records, SRL levels and RBLs. You need to know about anti-spam agents, managing the quarantine mailbox, and updating content filters.

Exam need to know

- File and process exclusions

For example: Do you know how to configure your file-level scanner to ensure that the appropriate exclusions are in place?

- Configuring transport rules

For example: Do you know how to IRM-protect email messages with certain words in the subject?

- SCL
For example: Do you know how to configure actions that are applied to emails, based on the SCL?
- PCL
For example: Do you know how the Sender ID Federation helps to counter spoofed domains?
- Sender ID
For example: Do you know how an Edge Transport server uses the Sender ID agent to test whether an incoming message comes from the sender it purports to?
- Safe sender/block sender
For example: Do you know how to configure lists of accepted senders and blocked senders, based on email addresses?
- Real-time block list (RBL)
For example: Do you know how to test connectivity to an IP Block list provider?
- Sender Policy Framework (SPF) records
For example: Do you know how an Edge Transport server determines whether the IP address from which a message is received is authorized to send email on behalf of the domain specified in the message?
- Sender reputation level (SRL)
For example: Do you know how to configure sender reputation to perform an open proxy test for determining sender confidence?
- Configuring anti-spam agents
For example: Do you know how to enable anti-spam agents on a Hub Transport server?
- Managing the quarantine mailbox
For example: Do you know how to configure a mailbox as a spam quarantine mailbox?
- Managing updates for content filters
For example: Do you know how to configure content filter updates on an Edge Transport server?

File and process exclusions

You need to know what steps to take to check that file and process exclusions are in place if you intend to use a file-level scanner on an Exchange 2010 server. The exam might expect you to know that you need to include directory, process, and file name extensions for both memory-resident and file-level scanning.

True or false? If you use a file-level scanner, this can impact the performance of your Exchange environment.

Answer: *True.* For example, a scanner might scan a file when the file is being used. This can cause the scanner to lock or quarantine the file. If the scanner locks an

Exchange log or a database file while Exchange tries to use it, this could result in a severe failure.

True or false? Exclusions help you to avoid many of the problems associated with file-level scanners.

Answer: *True*. You can configure your file-level scanner to ensure that the appropriate exclusions are in place for both memory-resident and file-level scanning.

True or false? If a Mailbox server is a member of a DAG, you should not exclude the quorum disk or the %Winnt%\Cluster folder.

Answer: *False*. You should exclude this disk and folder. Also on a witness server (typically a Hub Transport server), you should exclude the witness directory files.

MORE INFO To learn more about configuring file and process exclusion, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb332342.aspx>.

Configuring transport rules

You need to know what steps to take to use transport rules as a tool to identify email messages with inappropriate or suspicious words and phrases in the title or message body, and what actions you can configure to deal with such messages. Transport rules are discussed earlier in this chapter and in Chapter 4; thus, only a brief summary is given here. You need to know that transport rules are composed of conditions, exceptions, and actions.

True or false? You can create a transport rule to prevent emails from being sent that contain specific words in the subject field.

Answer: *True*. You can use the *New-TransportRule* cmdlet with the *SubjectContainsWords* parameter to create a transport rule that prevents email messages with qualifying words from being sent. Optionally, you can specify exceptions, such as if the sender is the company CEO.

True or false? You can use a transport protection rule to IRM-protect email messages with certain words in the subject.

Answer: *True*. For example, the following command creates a rule that applies the Do Not Forward template to messages with the word private in the subject field:

```
New-TransportRule -Name "Internal Private" -SubjectContainsWords "private"
-ApplyRightsProtectionTemplate "Do Not Forward"
```

SCL

You need to know what steps to take to configure Spam Confidence Level (SCL) and the actions taken when a message meets a SCL threshold. The exam might test that you are aware that SCL has a value range of 0–9, with 0 indicating a low probability of spam, and 9 a very high probability.

True or false? You can use the EMS *Get-ContentFilterConfig* cmdlet to determine the action taken at specified SCL thresholds.

Answer: *False*. You use the EMS *Set-ContentFilterConfig* cmdlet for this purpose. For example, the following EMS commands enable the delete action for an SCL threshold of 9 and the reject action for an SCL threshold of 7:

```
Set-ContentFilterConfig -SCLDeleteEnabled $true -SCLDeleteThreshold 9
```

```
Set-ContentFilterConfig -SCLRejectEnabled $true -SCLRejectThreshold 7
```

You can also enable the quarantine action for a specified SCL threshold. However, you first need to configure a mailbox as the quarantine mailbox. This is discussed later in this Objective.

MORE INFO To learn more about SCL, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa995744.aspx>.

PCL

You are expected to know that the phishing filter built in to Microsoft Internet Explorer (for example) uses PCL ratings to identify suspected phishing sites. You should be aware that a very large proportion of identity theft scams come from spoofed domains that have spoofed sender email addresses, and that The Sender ID Federation is an industry initiative to counter spoofed domains by publishing SPF records.

Sender ID

You should know that the Sender ID agent is an anti-spam agent that is enabled by default on Exchange 2010 servers that have the Edge Transport server role installed. The exam might check that you know that the Sender ID agent is designed to combat spoofing.

True or false? The Sender ID agent queries a sender's DNS server.

Answer: *True*. When an email message is received, the Edge Transport server queries the sender's DNS server to verify that the IP address from which the message was received is authorized to send messages for the domain that is specified in the message headers.

Safe sender/block sender

You should know that the Safe Senders option in Outlook permits a user to generate a list of senders from whom it is considered safe to receive email messages. The Blocked Senders (or Block Sender) list is also a client feature; it should not be confused with the real-time block list in Exchange.

True or false? Safelist aggregation is an Exchange feature and does not use Outlook safe and blocked lists.

Answer: *False*. Safelist aggregation is the combination of shared anti-spam functionality between Outlook and Exchange. It collects information from the anti-spam

Safe Recipients list, Blocked Senders lists, Contact Data, and Safe Senders list. The aggregated data is made available to the Edge Transport server.

MORE INFO To learn more about Safelist Aggregation, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb125168.aspx>.

Real-time block list (RBL)

You need to know what steps to take to configure an RBL by adding entries as the need arises, and to subscribe to IP block and allow list providers. You should be aware that third-party IP block list providers are typically used by Exchange 2010 organizations. The exam might check that you know that IP block and allow lists are also known as blacklists and whitelists, respectively, and that block lists are also known as RBLs because they are queried each time mail arrives from a new IP address.

True or false? You can test the IP Block list providers by using the EMS *Test-IPAllowListProvider* or the *Test-IPBlockListProvider* cmdlets.

Answer: *True*. For example, the following tests the connectivity to the fictitious IP Block list provider FictitiousProviderName, and then issues a lookup request to that provider by using the IP address 192.168.10.1:

```
Test-IPBlockListProvider -IPAddress 192.168.10.1 -Identity  
FictitiousProviderName
```

True or false? Messages received from SMTP servers on the block list will not be discarded if they also appear on the allow list.

Answer: *False*. They will be discarded. The only way to receive email from an SMTP server on a block list is to remove it from that block list. If the block list is obtained from a block list provider, you might need to intercede with that provider.

True or false? If you have more than one Edge Transport server in your organization, you need to load a new or updated RBL from a provider on to all your Edge Transport servers.

Answer: *True*. If you load the RBL on to only one of your Edge Transport servers, it is possible that your users will still receive mail from a blocked IP address.

EXAM TIP Remember that Edge Transport servers are standalone servers typically located in a perimeter zone. Any configuration changes required by an entire site must be made on all Edge Transport servers—either by manual configuration or by cloning.

True or false? You can add IP addresses, IP subnets, or IP address ranges to the IP allow list.

Answer: *True*. You can also specify a list of IP allow list providers. These providers supply IP addresses for your IP allow list. For example, the following EMS command adds the IP address 10.20.0.241 to the IP allow list:

```
Add-IPAllowListEntry -IPAddress 10.20.0.241
```

MORE INFO To learn more about connection filtering, IP block lists, and IP allow lists, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124320.aspx>.

Sender Policy Framework (SPF) records

You should be aware that domain administrators publish SPF records on their DNS servers and that SPF records identify authorized outbound email servers. If an SPF record is configured on the sender's DNS server, the Edge Transport server parses the SPF record and determines whether the IP address from which the message was received is authorized to send email on behalf of the domain specified in the message. As mentioned earlier in this Objective, the Sender ID Federation is an industry initiative to counter spoofed domains by publishing SPF records and assigning PCL ratings.

Sender reputation level (SRL)

You need to know what steps to take to configure an SRL. The exam might test that you know that an SRL is determined by analyzing HELO/EHLO SMTP commands, using reverse DNS Lookup, analyzing the SCL on messages from a specific sender, and performing a sender open proxy test. You should be aware that SRL uses a numeric value from 0–9. A value of 0 indicates that a sender is unlikely to be a spammer; a value of 9 means the sender most likely is a spammer. You should also know that you can configure a block threshold.

True or false? You can use the EMC to configure sender reputation Properties on an Edge Transport server.

Answer: *True*. You can also use the EMS *Set-SenderReputationConfig* cmdlet. For example, the following command sets the SRL block threshold to 7 and specifies that a sender remains on the block list for 48 hours:

```
Set-SenderReputationConfig -SrlBlockThreshold 7 -SenderBlockingPeriod 48
```

The following command configures sender reputation to perform an open proxy test for determining sender confidence:

```
Set-SenderReputationConfig -OpenProxyDetectionEnabled $true
```

MORE INFO To learn more about configuring an SRL threshold, consult the TechNet document at <http://technet.microsoft.com/en-us/library/aa998542.aspx>.

Configuring anti-spam agents

You are expected to know that anti-spam agents, such as the Sender ID agent, typically run on Edge Transport servers, because it is preferable to detect and delete or quarantine unsolicited email before it enters your internal network. You should, however, know what steps to take to configure anti-spam functionality on a Hub

Transport server. Small organizations that do not use Edge Transport servers need to run anti-spam functionality on their Hub Transport servers.

True or false? You need to run the *Install-AntiSpamAgents.ps1* script on a Hub Transport server to enable anti-spam functionality.

Answer: *True*. Anti-spam features are available on Edge Transport servers by default. To enable them on a Hub Transport server, you run the following command from the %system drive%\Program Files\Microsoft\Exchange Server\V14\Scripts folder on the relevant server:

```
./install-AntispamAgents.ps1
```

You then restart the Transport service by issuing the following EMS command:

```
Restart-Service MExchangeTransport
```

MORE INFO To learn more about configuring anti-spam agents for a Hub Transport server, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb201691.aspx>.

Managing the quarantine mailbox

You need to know what steps to take to configure an existing mailbox as a quarantine mailbox. You also need to know how to specify an SCL threshold so that messages that meet or exceed this threshold are sent to the quarantine mailbox. The messages are sent as NDRs to this mailbox.

True or false? You can use the EMC to configure a quarantine mailbox.

Answer: *False*. You can use the EMC New Mailbox Wizard or the EMS *New-Mailbox* cmdlet to create the mailbox you intend to configure as a quarantine mailbox. However, you need to use the EMS *Set-ContentFilterConfig* cmdlet to configure that mailbox to receive quarantined messages. For example, the following EMS command sets the mailbox spamquarantine@adatum.com as the quarantine mailbox:

```
Set-ContentFilterConfig -QuarantineMailbox spamquarantine@adatum.com
```

The following command specifies the quarantine action for an SCL threshold of 5:

```
Set-ContentFilterConfig -SCLQuarantineEnabled $true -SCLQuarantineThreshold 5
```

EXAM TIP Remember that you create a mailbox in the normal way. You then configure it as a spam quarantine mailbox.

MORE INFO To learn more about spam quarantine, consult the TechNet documents at <http://technet.microsoft.com/en-us/library/aa997692.aspx> and <http://technet.microsoft.com/en-us/library/bb123746.aspx>.

Managing updates for content filters

You need to know what steps to take to update the content filtering settings on Edge Transport servers. You need to know, for example, how to block messages that have specific words or phrases in the content line, but you also need to know how to allow messages whose Content fields contain words that are specific to your organization's business.

True or false? You can use the EMS *Set-ContentFilterConfig*, *Add-ContentFilterPhrase*, and *Remove-ContentFilterPhrase* cmdlets to modify your content filtering settings.

Answer: *True*. For example, the following EMS commands allow all messages that contain the word "hovercraft" and block all messages that contain the phrase "lose weight":

```
Add-ContentFilterPhrase -Phrase "hovercraft" -Influence GoodWord
```

```
Add-ContentFilterPhrase -Phrase "lose weight" -Influence BadWord
```

The following EMS command creates an exception for DonHall@adatum.com so that messages sent to this recipient are not checked by the content filter agent:

```
Set-ContentFilterConfig -BypassedRecipients DonHall@adatum.com
```

The following EMS command creates an exception for the senders PatrickHines@fabrikam.com and RussellKing@fabricam.com so that messages received from these senders are not checked by the content filter agent:

```
Set-ContentFilterConfig -BypassedSenders PatrickHines@fabrikam.com,  
RussellKing@fabricam.com
```

True or false? You can use the *Add-ContentFilterPhrase* cmdlet to bypass content filtering for all messages received from specific domains.

Answer: *False*. You use the *Set-ContentFilterConfig* cmdlet for this purpose. For example, the following command creates an exception for the domain contoso.com so that messages received from this domain are not checked by the content filter agent:

```
Set-ContentFilterConfig -BypassedSenderDomains contoso.com
```

The following command creates an exception for the domain fabricam.com and all its subdomains and for the domain treyresearch.com:

```
Set-ContentFilterConfig -BypassedSenderDomains *.fabrikam.com,  
treyresearch.com
```

True or false? You can ensure that attachments that have specified file types are filtered and do not enter user mailboxes.

Answer: *True*. You can use the *Add-AttachmentFilterEntry* cmdlet for this purpose. For example, the following command blocks all email attachments that have a file name with an .exe file type:

```
Add-AttachmentFilterEntry -Name *.exe -Type FileName
```

EXAM TIP Remember that to block attachments containing graphic files such as JPEG files, you need to set the *Name* parameter to *image/jpeg* and the *Type* parameter to *ContentType*.

True or false? If you have multiple Edge Transport servers, you only need to update the content filter rules on one server and it will replicate to the other Edge Transport servers.

Answer: *False*. You must manually update each and every Edge Transport server. You can use either the EMC or the EMS to do this. Alternatively, if all of your Edge Transport servers are to have the same settings, you can update one server and clone its settings to the rest.

MORE INFO To learn more about configuring the content filtering on Edge Transport server, consult the TechNet document at <http://technet.microsoft.com/en-us/library/bb124490.aspx>.

Can you answer these questions?

You can find the answers to these questions at the end of this chapter.

1. What EMS command creates a transport protection rule called Internal-Confidential that applies the Do Not Forward template to messages with the word "confidential" in the subject field?
2. What EMS cmdlet do you use to configure the action taken at specified SCL thresholds?
3. Your organization has two Edge Transport servers. The settings in these servers are not cloned. You add a list of IP addresses to the block list on one of these servers, but your users continue to receive email messages from these addresses. What do you need to do?
4. You want to filter out all JPEG attachments so that they do not appear in your users' mailboxes. What EMS command do you issue on your Edge Transport servers?
5. Your organization manufactures bicycles. You want all incoming email messages with the word "bicycle" in the content to be delivered. What command do you issue on your Edge Transport servers?

Answers

This section contains the answers to the “Can you answer these questions?” sections in this chapter.

Objective 7.1: Configure records management

1. You can create RPTs for the Deleted Items, Drafts, Inbox, Junk E-mail, Outbox, Sent Items, RSS Feeds, Sync Issues, and Conversation History default folders.
2. You can use the EMC New Managed Default Folder Wizard or the EMS *New-ManagedFolder* cmdlet.
3. You can use the *New-ManagedContentSettings* cmdlet.
4. The *New-RetentionPolicy* cmdlet.
5. You issue the *Set-Mailbox -Identity “Don Hall” -ManagedFolderMailboxPolicy SalesPolicy* command.

Objective 7.2: Configure compliance

1. The *Get-RMSTemplate* cmdlet.
2. You issue the *New-JournalRule -Name “Management-Communications” -JournalEmailAddress “Journal@adatum.com” -Scope Global -Recipient “management@adatum.com” -Enabled \$true* command.
3. The *Set-TransportConfig* cmdlet.
4. The Tracking Log Explorer.
5. You can use the EMC New Transport Rule Wizard or the EMS *New-Transport Rule* cmdlet.

Objective 7.3: Configure message integrity

1. The *New-ExchangeCertificate* cmdlet
2. You would use the Certutil.exe tool.
3. You issue the *Set-ReceiveConnector Internet -ProtocolLoggingLevel Verbose* command.
4. A federation server requires both a server authentication certificate and a token-signing certificate. In addition, the trust policy requires a verification certificate.
5. You issue the *Set-OWAVirtualDirectory -identity “owa (Default Web Site)” -SMimeEnabled \$true* command.

Objective 7.4: Configure anti-virus and anti-spam

1. The *New-TransportRule -Name "Internal-Confidential" -SubjectContainsWords "confidential" -ApplyRightsProtectionTemplate "Do Not Forward"* command.
2. The *Get-ContentFilterConfig* cmdlet.
3. You need to add the same IP addresses to the block list on the other Edge Transport server.
4. You issue the *Add-AttachmentFilterEntry -Name image/jpeg -Type ContentType* command.
5. You issue the *Add-ContentFilterPhrase -Phrase "bicycle" -Influence GoodWord* command.

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About the Author



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