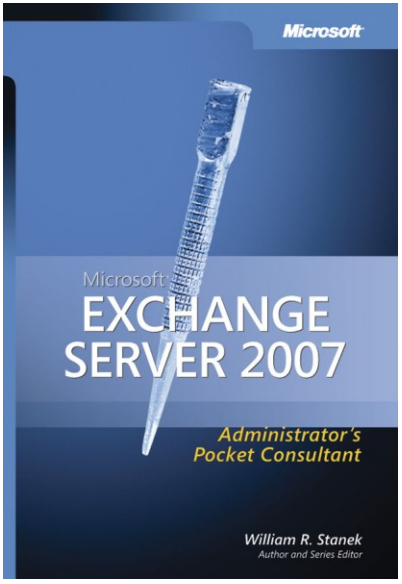

Microsoft® Exchange Server 2007 Administrator's Pocket Consultant

William R. Stanek

To learn more about this book, visit Microsoft Learning at http://www.microsoft.com/MSPress/books/9546.aspx

9780735623484

Microsoft Press

© 2007 William R. Stanek. All rights reserved.

Table of Contents

What do you think of this book?
We want to hear from you!

Microsoft is interested in hearing your feedback about this publication so we can continually improve our books and learning resources for you. To participate in a brief online survey, please visit: *www.microsoft.com/learning/booksurvey/*

What do you think of this book?
We want to hear from you!

Microsoft is interested in hearing your feedback about this publication so we can continually improve our books and learning resources for you. To participate in a brief online survey, please visit: *www.microsoft.com/learning/booksurvey/*

Chapter 2

Deploying Microsoft Exchange Server 2007

Before you deploy Exchange Server 2007, you should carefully plan the messaging architecture. As part of your implementation planning, you need to look closely at the roles your Exchange servers will perform and modify the hardware accordingly to meet the requirements of these roles on a per-server basis. Exchange Server is no longer the simple messaging server that it once was. It is now a complex messaging platform with many components that work together to provide a comprehensive solution for routing, delivering, and accessing e-mails, voice mails, faxes, contacts, and calendar information.

Exchange Server Messaging Roles

With Exchange Server Setup, you can deploy servers with specific roles throughout the enterprise. Prior to setup and configuration, you need to decide how you will use Exchange Server 2007, what roles you will deploy, and where you will locate those roles. Afterward, you can plan for your deployment and then roll out Exchange Server.

Understanding Exchange Server Messaging Roles

As discussed in Chapter 1, "Exchange Server Administration Overview," Exchange Server 2007 implementations have three layers in their architecture: a network layer, an Active Directory layer, and a messaging layer. The messaging layer is where you define and deploy the Exchange Server roles. The Exchange servers at the core of the messaging layer can operate in the following roles:

- **Mailbox Server** A back-end server that hosts mailboxes, public folders, and related messaging data, such as address lists, resource scheduling, and meeting items. Using Microsoft Outlook, as discussed in Chapter 3, "Managing Microsoft Exchange Server 2007 Clients," local users can connect directly to the Mailbox server and check their messages. The Mailbox Server role is the only role that you can cluster.
- **Client Access Server** A middle-tier server that accepts connections to Exchange Server from a variety of different clients. This server hosts the protocols used by clients when checking messages remotely or over the Internet. Using Outlook Anywhere, Outlook Web Access or Exchange ActiveSync, as discussed in Chapter 4, "Managing Mobile Messaging Users," remote users can connect to the Client Access server and check their messages.

- **Unified Messaging Server** A middle-tier server that integrates a private branch eXchange (PBX) system with Exchange Server 2007, allowing voice messages and faxes to be stored with e-mail in a user's mailbox. Unified messaging supports call answering with automated greetings and message recording, fax receiving, and dial-in access. With dial-in access, users can use Outlook Voice Access to check voice mail, e-mail, and calendar information; to review or dial contacts; and to configure preferences and personal options.
- **Hub Transport Server** Previously called a bridgehead server, this is a mail routing server that handles mail flow, routing, and delivery within the Exchange organization. This server processes all mail that is sent inside the organization before it is delivered to a mailbox in the organization or routed to users outside the organization. Processing ensures senders and recipients are resolved and filtered as appropriate, content is filtered and has its format converted if necessary, and attachments are screened. To meet any regulatory or organizational compliance requirements, the Hub Transport server can also record (journal) messages and add disclaimers to them.
- **Edge Transport Server** An additional mail routing server that routes mail into and out of the Exchange organization. This server is designed to be deployed in an organization's perimeter network and is used to establish a secure boundary between the organization and the Internet. This server accepts mail coming into the organization from the Internet and from trusted servers in external organizations, processes the mail to protect against some types of spam messages and viruses, and routes all accepted messages to a Hub Transport server inside the organization.

These five roles are the building blocks of Exchange organizations. In a nonclustered environment, you can combine all of the roles except the Edge Transport Server role on a single server. Because of this, one of the most basic Exchange organizations you can create is one that includes a single Exchange server that provides the Mailbox Server, Client Access Server, and Hub Transport Server roles. These three roles are the minimum required for routing and delivering messages to both local and remote messaging clients. For added security and protection, you can deploy the Edge Transport Server role in a perimeter network on one or more separate servers.

Deploying Mailbox Servers: The Essentials

For Mailbox servers, the underlying functionality is similar to that of a database server. Every mailbox-enabled recipient defined in the organization has a mailbox that is used to store messaging data. Groups of related mailboxes are organized using storage groups, and each storage group can have one or more storage databases associated with it.

To provide failure protection, you can configure the Mailbox server role as a cluster resource, allowing the messaging workload of a failed server to automatically shift to another server in a cluster. Exchange Server 2007 has several enhancements that may change the way you use clustering for messaging servers, including:

- **Continuous replication** With continuous replication, Exchange Server 2007 uses its built-in asynchronous replication technology to create copies of storage groups and then keep the copies up-to-date using transaction log shipping and replay. In a nonclustered environment, you can use local continuous replication to create local copies of storage groups. In a clustered environment, you can use cluster continuous replication to make sure logs on an active node are copied to a passive node.
- **Single-copy clusters** With single-copy clusters, all Mailbox servers in a cluster use shared storage, allowing multiple servers to manage a single copy of your storage groups. As Mailbox servers now have their own network identity, not the identity of the cluster node, failover is smoother than with previous versions of Exchange and allows a clustered mailbox to be logically disconnected from the failed node and placed under the control of a new host node.

For a successful deployment of a Mailbox server, the storage subsystem must meet the storage capacity requirements and must be able to perform the expected number of input/output (I/O) operations per second. Storage capacity requirements are determined by the number of mailboxes hosted on a server and the total storage size allowed per mailbox. For example, if a server hosts 1,000 mailboxes that you allow to store up to 2 GB each, you'll need to ensure there are at least 2 TB of storage capacity above and beyond the storage needs of the operating system and Exchange itself.

I/O performance of the storage subsystem is measured in relation to the latency (delay) for each read/write operation to be performed. The more mailboxes you store on a specific drive or drive array, the more read/write operations performed and the greater the potential delay. To improve performance, you can organize mailboxes into multiple storage groups and store the related database and transaction log files on separate disk drives.

I/O performance in Exchange Server 2007 running on 64-bit archtecture is improved substantially over Exhange Server 2003 running on 32-bit architecture. On Mailbox servers, 64-bit architecture enables a database cache size of up to approximately 90 percent of total random access memory (RAM). A larger cache increases the probability that data requested by a client will be serviced out of memory instead of by the storage substystem.

Real World Due to 64-bit architecture and new cache optimizations for the Extensible Storage Engine, Exchange Server 2007 can perform read and write operations with up to 1,024 kilobytes (KB) of data versus 64 KB of data previously. This increases the ability to read and write larger I/O and means fewer I/O operations are necessary to service requests for data.

To further improve database read and write performance during I/O operations, the streaming database file and installable file system have been removed and the database page size has been increased from 4 KB to 8 KB. Removing the streaming database file and installable file system reduces overhead associated with maintaining a database. Using 8-KB database pages increases the likelihood that messages can be stored in a single database page, which also reduces the overhead associated with maintaining a database. Further, each storage group has its own transaction log, making the database file and its associated transaction log the basic unit of backup and restore operations. See Chapter 5, "Exchange Administration Essentials," for more information on data storage. See Chapter 18, "Backing Up and Restoring Microsoft Exchange Server 2007," for information on backup and recovery.

Deploying Client Access Servers: The Essentials

Client Access servers handle many of the stateless messaging tasks in an Exchange implementation, and the underlying functionality is similar to that of an application server that makes extensive use of Web services. Unlike Mailbox servers, Client Access servers don't perform a great deal of I/O operations, and the primary potential bottlenecks for these servers are the processors, memory, and network. I/O operations on Client Access servers are primarily limited to protocol logging, content conversion, and paging operations. As content conversion is performed in the TMP folder, you can improve performance by ensuring this folder is not on the same physical disk as the paging file and operating system.

Note Client Access servers require three Internet Information services (IIS) 6.0 components: Enable Network Com+ Access, IIS Admin Service, and the world wide web service. You can install these IIS components through the Add Or Remove Programs utility in control panel.

Client Access servers provide access through the Internet Message Access Protocol 4 (IMAP4), Post Office Protocol version 3 (POP3), and Hypertext Transfer Protocol (HTTP) Internet protocols. Exchange Server 2007 allows remote access using Outlook Anywhere, Outlook Web Access, and Exchange ActiveSync. To allow full configuration for remote access, you must install the World Wide Web Service, ASP.NET, and the RPC over HTTP Proxy Windows networking component prior to installing Exchange Server 2007. For more information on remote access to Exchange Server 2007, see Chapter 4, "Managing Mobile Messaging Users."

Deploying Unified Messaging Servers: The Essentials

Unified Messaging allows you to integrate voice mail, fax, and e-mail functionality so that the related data can be stored in a user's Exchange mailbox. To implement Unified Messaging, your organization must have a PBX that is connected to the local area network (LAN), and you must deploy a Unified Messaging server running Exchange

Server 2007. Once deployed, the job of the Unified Messaging server is to provide call answering, fax receiving, subscriber access, and auto-attendant features that allow access to content over the telephone and storage of content received from the PBX.

Although some current PBXs, referred to as IP-PBXs, are Internet Protocol-capable, all other PBXs require a separate Internet Protocol/Voice over Internet Protocol (IP/VoIP) gateway to connect to the LAN. After you connect a PBX to the LAN, you can link it to Exchange by deploying and appropriately configuring the Unified Messaging Server role. Prior to installing the Unified Messaging Server role, you must install Microsoft Speech service, Microsoft Windows Media Encoder, and Microsoft Windows Media Audio Voice Code.

> **Note** Unified messaging servers require Microsoft Core XML Services (MSXML) 6.0 or later. MSXML 6.0 supports the XML 1.0 and XML Schema 1.0 W3C Recommendations, and compatibility with System XML 2.0. The MSXML 6.0 SDK is available as a free download from the Microsoft Web site.

Similar to Client Access servers, Unified Messaging servers don't perform a great deal of I/O operations, and the primary potential bottlenecks for these servers are the processors, memory, and network. I/O operations on Unified Messaging servers are primarily limited to access routing details and dial plans, which include auto-attendant and mail policy settings.

Deploying Transport Servers: The Essentials

The Hub Transport and Edge Transport roles are similar. You use both for messaging routing, and both have a similar set of filters to protect the organization from spam and viruses. The key difference is in the placement of servers with these roles. You place a server with the Hub Transport role in the internal network and configure it as a member of the organizational domain. If used, you place a server with the Edge Transport role in the organization's perimeter network and you do not configure it as a member of the organizational domain.

For computers with the Hub Transport or Edge Transport role, the server cannot have the Simple Mail Transfer Protocol (SMTP) or Network News Transfer Protocol (NNTP) service installed. Although you install Edge Transport servers outside the Active Directory forest, you must have a domain name system (DNS) suffix configured, and you must be able to perform name resolution from the Edge Transport server to any Hub Transport servers.

> **Tip** Transport servers store all incoming mail in a database file, called mail.que, until it is routed. This database has an associated transaction log in which changes are first committed. For optimal performance, you should place the database and the transaction log on separate disks.

Transport servers perform protocol logging, message tracking, and content conversion. Protocol logging allows you to verify whether a protocol is performing as expected and whether there are any issues that need attention. Message tracking creates logs that track messages sent and received. Incoming mail from the Internet is converted to Messaging Application Programming Interface (MAPI) prior to being delivered. As content conversion is performed in the TMP folder, you can improve performance by ensuring that the TMP folder is not on the same physical disk as the paging file and operating system.

Integrating Exchange Server Roles with Active Directory

Exchange Server 2007 makes extensive use of Active Directory. Each Exchange Server 2007 role must access Active Directory to retrieve information about recipients and other Exchange Server roles. Each Exchange Server role uses Active Directory in other ways as well, as discussed in the sections that follow.

Using Hub Transport Servers with Active Directory

Hub Transport servers contact Active Directory when they perform message categorization. The Categorizer queries Active Directory to perform recipient lookup, retrieves the information needed to locate a recipient's mailbox (according to the mailbox store in which it is created), and determines any restrictions or permissions that may apply to the recipient. The Categorizer also queries Active Directory to expand the membership of distribution lists and to perform the Lightweight Directory Access Protocol (LDAP) query processing when mail is sent to a dynamic distribution list.

After the Categorizer determines the location of a mailbox, the Hub Transport server uses Active Directory site configuration information to determine the routing topology and locate the site in which the mailbox is located. If the mailbox is in the same Active Directory site as the Hub Transport server, the Hub Transport server delivers the message directly to the user's mailbox. If the mailbox is in a different Active Directory site from the Hub Transport server, the Hub Transport server delivers the message to a Hub Transport server in the remote Active Directory site.

Hub Transport servers store all configuration information in Active Directory. This configuration information includes the details of any transport or journaling rules and connectors. When this information is needed, a Hub Transport server accesses it in Active Directory.

Using Client Access Servers with Active Directory

Client Access servers receive connections from the Internet for users who access their mailbox using Outlook Web Access, POP3, IMAP4, or Exchange ActiveSync. When a user connection is received, the Client Access server contacts Active Direc-

tory to authenticate the user and to determine the location of the user's mailbox. If the user's mailbox is in the same Active Directory site as the Client Access server, the user is connected to his or her mailbox. If the user's mailbox is in an Active Directory site other than the one in which the Client Access server is located, the connection is redirected to a Client Access server in the same Active Directory site as the user's mailbox.

Using Unified Messaging Servers with Active Directory

Unified Messaging servers access Active Directory to retrieve global configuration information, such as dial plans and IP gateway details. When a message is received by the Unified Messaging server, the server searches for Active Directory recipients to match the telephone number to a recipient address. When the server has resolved this information, it can determine the location of the recipient's mailbox and then submit the message to the appropriate Hub Transport server for submission to the mailbox.

Using Mailbox Servers with Active Directory

Mailbox servers are service locations for e-mails, voice mails, and faxes. For outgoing mail, Mailbox servers can access Active Directory to retrieve information about the location of Hub Transport servers in their site. Then they can use this information to forward messages for routing. Mailbox servers also store configuration information about mailbox users, mailbox stores, agents, address lists, and policies in Active Directory. Mailbox servers retrieve this information to enforce recipient policies, mailbox policies, system policies, and global settings.

Using Edge Transport Servers with Active Directory

You deploy Edge Transport servers in perimeter networks and they are not domain members. Because of this, Edge Transport servers do not have direct access to the organization's internal Active Directory servers for the purposes of recipient lookup or categorization. Thus, unlike Hub Transport servers, Edge Transport servers cannot contact an Active Directory server to help route messages.

To route messages into the organization, an administrator can configure a subscription from the Edge Transport server to the Active Directory site that allows it to store recipient and configuration information about the Exchange organization in its Active Directory Application Mode (ADAM) data store. After an Edge Transport server is subscribed to an Active Directory site, it is associated with the Hub Transport servers in that site for the purposes of message routing. Thereafter, Hub Transport servers in the organization route messages being delivered to the Internet to the site with which the Edge Transport server is associated, and Hub Transport servers in this site relay the messages to the Edge Transport server. The Edge Transport server, in turn, routes the messages to the Internet.

A one-way synchronization process that pushes information from Active Directory to the Edge Transport server is the EdgeSync service running on Hub Transport servers. Periodically, the EdgeSync service synchronizes the data to keep the Edge Transport server's data store up-to-date. The EdgeSync service also establishes the connectors needed to send and receive information that is being moved between the organization and the Edge Transport server and between the Edge Transport server and the Internet. The key data pushed to the Edge Transport server includes:

- Accepted domains
- Valid recipients
- Safe senders
- Send connectors
- Available Hub Transport servers

After the initial replication is performed, the EdgeSync service synchronizes the data periodically. Configuration information is synced once every hour. Recipient information is synced once every four hours. If necessary, administrators can initiate an immediate synchronization using the Start-EdgeSynchronization cmdlet in Exchange Management Shell.

> **Note** During synchronization, objects may be added to, deleted from, or modified in the Edge Transport server's ADAM data store. To protect the integrity and security of the organization, no information is ever pushed from the Edge Transport server's ADAM data store to Active Directory.

Integrating Exchange Server 2007 into Existing Exchange Organizations

Existing Exchange 2000 Server and Exchange Server 2003 installations can coexist with Exchange Server 2007 installations. Generally, you do this by integrating Exchange Server 2007 into your existing Exchange 2000 Server or Exchange Server 2003 organization. Integration requires:

- Preparing Active Directory and the domain for the extensive Active Directory changes that will occur when you install Exchange Server 2007.
- Configuring Exchange Server 2007 so that it can communicate with Exchange Server 2000 and Exchange Server 2003 servers.

You cannot upgrade existing Exchange 2000 Server and Exchange Server 2003 servers and organizations to Exchange Server 2007. You must install Exchange Server 2007 on new hardware, and then move the mailboxes from your existing installations to the new installation. See "Transitioning to Exchange Server 2007" in this chapter for more details.

Preparing Active Directory for Exchange Server 2007

Exchange Server 2007 can be integrated into Exchange 2000 Server and Exchange Server 2003 organizations. If you have any servers running Exchange 2000 Server or Exchange Server 2003, you need to prepare Active Directory and the domain for the extensive Active Directory changes that will occur when you install Exchange Server 2007. You do this by completing the following steps:

1. Run Setup with the /PrepareLegacyExchangePermissions option. To successfully run this command, you must be a member of the Exchange Admins groups and the domain in which you run this command must be able to contact all domains in the forest.
2. After all permissions have replicated across your entire Exchange organization, run Setup with the /PrepareSchema option to connect to the schema master and update the schema with attributes for Exchange Server 2007. To run this command, you must be a member of the Schema Admins group and the Exchange Admins group. You must run this command on a computer in the same Active Directory domain and same Active Directory site as the schema master. The schema master is located in the forest root domain.
3. After all schema changes have been made, run Setup with the /PrepareAD option to configure global Exchange objects in Active Directory, create Exchange Universal Security groups in the root domain, and prepare the current domain for Exchange Server 2007. To run this command, you must be a member of the Enterprise Admins group. When completed, the root domain should have a new organizational unit called Microsoft Exchange Security Groups, and this organizational unit should contain the following groups: Exchange Organization Administrators, Exchange Recipient Administrators, Exchange View-Only Administrators, Exchange Servers, and Exchange2003Interop.
4. Finalize security settings for Exchange Server 2007 by preparing the local domain by running Setup with the /PrepareDomain option or by preparing all domains by running setup with the /PrepareAllDomains option. To run this command, you must be a member of the Domain Admins groups for the local domain or the Enterprise Admins group.

Configuring Exchange Server 2007 for Use with Existing Exchange Organizations

All the Exchange 2007 server roles are supported for coexistence with a native-mode Exchange organization. In the Exchange System Manager for Exchange 2000 Server and Exchange Server 2003, all Exchange servers are displayed as members of the Exchange Administrative Group. Exchange Server 2007 servers are also displayed as members of the Exchange Routing Group. These groups are created only for purposes of coexistence with Exchange 2000 Server and Exchange Server 2003.

When managing Exchange servers, you should use the administrative tools for that Exchange Server version. Exchange Server 2007 doesn't use Active Directory Users And Computers for recipient management and instead uses only the Exchange Management Console and the Exchange Management Shell for this purpose. Exchange Management Console and the Exchange Management Shell are the primary management tools for Exchange Server 2007.

Mailboxes located on Exchange 2000 Server and Exchange Server 2003 servers are also displayed in the Exchange Management Console. You can manage the Exchange 2000 Server and Exchange Server 2003 mailbox properties using the Exchange Management Console or Exchange Management Shell. However, you can use only Exchange Management Shell to move mailbox recipients from Exchange 2000 Server and Exchange Server 2003 to Exchange 2007.

When deploying Exchange Server 2007 in an Exchange 2000 Server or Exchange Server 2003 organization, keep the following in mind:

- If you want to use the Exchange Server 2007 Client Access Server role, you must deploy a Client Access Server role in each Active Directory site that contains the Mailbox Server role. Clients will see the Microsoft Office Outlook Web Access or Exchange ActiveSync version that is on their mailbox store.
- If you want to use the Hub Transport Server role, you must configure a two-way routing group connector from the Exchange Routing Group to each Exchange Server 2003 routing group that communicates directly with Exchange Server 2007. You must also suppress link state updates for each Exchange Routing Group that communicates with Exchange Server 2007.
- If you want to use the Unified Messaging Server role, you must deploy the Exchange Server 2007 Hub Transport Server role in the same Active Directory site as the Unified Messaging Server role. Keep in mind that Exchange Server 2003 mailboxes cannot be unified messaging–enabled.
- If you want to use the Mailbox Server role, you must deploy the Exchange Server 2007 Hub Transport Server role in the same Active Directory site as the Mailbox Server role.
- If you want to use the Edge Transport Server role, you must configure SMTP connectors to accept mail from and send mail to the Internet. Four connector configurations are needed: Internet Send Connector, Internet Receive Connector, Legacy Send Connector, and Legacy Receive Connector. Other modifications are required to mail Exchange and smart host records. Further, you can synchronize the Edge Transport server's ADAM data with Active Directory only if the Exchange Server 2007 Active Directory preparation process has been performed.

Moving to Exchange Server 2007

Most organizations have existing Exchange installations. When moving those installations to Exchange Server 2007, you cannot perform an in-place upgrade. Instead, you must install new Exchange Server 2007 servers into the existing organization and then either migrate or transition to Exchange Server 2007.

- Migration from Exchange 2000 Server or Exchange Server 2003 to Exchange Server 2007 involves installing Exchange Server 2007 on new hardware and then moving the mailboxes from your existing installations to the new installation. In a migration, only mailbox data is moved and any Exchange configuration data is not maintained.
- Transitioning from Exchange 2000 Server or Exchange Server 2003 to Exchange Server 2007 is a multiple-phase process that allows for the retention of Exchange configuration and mailbox data. During these transitioning processes, the Exchange organization is considered to be operating in a coexistence mode.

Migrating to Exchange Server 2007

Migration from Exchange 2000 Server or Exchange Server 2003 to Exchange Server 2007 moves the mailboxes from your existing installations to your new Exchange Server 2007 installations. In a migration, only mailbox data is moved and any Exchange configuration data is not maintained.

The steps you perform to migrate from Exchange 2000 Server or Exchange Server 2003 to Exchange Server 2007 are as follows:

1. Install Exchange Server 2007 on new hardware, and make it a member of the appropriate domain in the forest. At a minimum, you should install the Client Access Server role, the Hub Transport Server role, and the Mailbox Server role. You can install these roles on a single server or on multiple servers. If you plan to have an Edge Transport server in your Exchange 2007 organization, you must install the Edge Transport Server role on a separate computer.
2. Move mailboxes from your existing Exchange Server 2003 or Exchange 2000 Server installations to the new Exchange Server 2007 Mailbox server or servers.
3. If you want to remove your Exchange 2000 Server or Exchange Server 2003 servers, you must first remove Exchange Server 2003 routing groups and all connectors to these routing groups. Also, keep the following in mind:
    - Exchange Server 2007 does not support the following Exchange 2000 Server features: Microsoft Mobile Information Server, Instant Messaging service, Exchange Chat service, Exchange 2000 Conferencing Server, Key Management service, cc:Mail connector, or MS Mail connector. If you require any of these features, you must retain at least one computer running Exchange 2000 Server in your organization.

- Exchange Server 2007 does not support the Novell GroupWise connector for Exchange Server 2003 or the use of the Inter-Organization Replication tool to share free/busy and public folder data across forests. If you require these features, you must keep at least one Exchange Server 2003 server in your organization.

4. Remove your old Exchange Server 2003 or Exchange 2000 Server server from the organization.

Transitioning to Exchange Server 2007

The steps you perform to transition from Exchange 2000 Server or Exchange Server 2003 to Exchange Server 2007 depend on the forest configuration. To transition from a single forest organization to a single forest organization or to deploy Exchange Server 2007 in an Exchange resource forest and then transition to Exchange Server 2007, follow these steps:

1. Install Exchange Server 2007 on new hardware, and make it a member of the appropriate domain in the forest. At a minimum, you should install the Client Access Server role, the Hub Transport Server role, and the Mailbox Server role. You can install these roles on a single server or on multiple servers. If you plan to have an Edge Transport server in your Exchange 2007 organization, you must install the Edge Transport Server role on a separate computer.
2. Move mailboxes from your existing Exchange Server 2003 or Exchange 2000 Server installations to the new Exchange Server 2007 Mailboxserver or servers.
3. For any public folders in your existing Exchange 2000 Server or Exchange Server 2003 organization that you want to maintain, create a replica on your Exchange Server 2007 Mailbox server or servers. You must create the replica using Exchange System Manager in the Exchange 2000 Server or Exchange Server 2003 organization. Exchange will then replicate the public folder data to the Exchange Server 2007 Mailbox server or servers.

   Note You do not need to create replicas for the offline address book (OAB) or free/busy system folders. When you install the first Exchange Server 2007 server, Exchange creates these replicas.

4. If you want to remove your Exchange 2000 Server or Exchange 2003 Server servers, you must first remove Exchange Server 2003 routing groups and all connectors to these routing groups. Also, keep the following in mind:

   - Exchange Server 2007 does not support the following Exchange 2000 Server features: Microsoft Mobile Information Server, Instant Messaging service, Exchange Chat service, Exchange 2000 Conferencing Server, Key Management service, cc:Mail connector, or MS Mail connector. If you

require any of these features, you must retain at least one computer running Exchange 2000 Server in your organization.

- Exchange Server 2007 does not support the Novell GroupWise connector for Exchange Server 2003 or the use of the Inter-Organization Replication tool to share free/busy and public folder data across forests. If you require these features, you must keep at least one Exchange Server 2003 server in your organization.

5. Remove your old Exchange Server 2003 or Exchange 2000 Server server from the organization.

In some cases, you may want to have one or more forests that contain accounts and a separate resource forest for your Exchange organization. Although configuring a separate resource forest provides clear separation between accounts and your Exchange organization, it requires a great deal of predeployment planning and additional work to maintain. In the Exchange forest, you must disable any user accounts with mailboxes and then associate these disabled user accounts, and all other user accounts, with the user accounts in your other forests. To do this, you must install Microsoft Integration Identity Server 2003 or later, or the Identity Integration Feature Pack 1a or later for Microsoft Windows Server Active Directory and then use its GAL Synchronization feature to create mail-enabled contacts that represent recipients from other forests.

To transition from a single forest organization to a resource forest organization, follow these steps:

1. Create a new Active Directory forest, and then create a one-way, outgoing forest trust from this forest to your existing forest. This ensures that the Exchange Server 2007 resource forest trusts the existing forest. You will need the trust so that you can move mailboxes from servers in the existing forest to servers in the Exchange Server 2007 forest.
2. In the Exchange Server 2007 forest, install Exchange Server 2007 on new hardware, and make it a member of the appropriate domain in this forest. At a minimum, you should install the Client Access Server role, the Hub Transport Server role, and the Mailbox Server role. You can install these roles on a single server or on multiple servers. If you plan to have an Edge Transport server in your Exchange Server 2007 organization, you must install the Edge Transport Server role on a separate computer.
3. Move all mailboxes from the existing forest to the Exchange Server 2007 forest. You must move all mailboxes. If you do not move all mailboxes, you will be in an unsupported hybrid forest scenario.
4. Follow steps 3 through 5 from the procedure previously described under "Transitioning to Exchange Server 2007."

Running and Modifying Exchanger Server 2007 Setup

Exchange Server 2007 Setup is the program you use to perform installation tasks for Exchange Server 2007. You use Exchange Server 2007 Setup to install Exchange Server roles and the Exchange management tools. When you want to manage the Exchange server configuration, you use Add Or Remove Programs in Control Panel. Tasks you can perform with these utilities include:

- Installing Exchange Server roles and management tools
- Adding server roles or management tools
- Maintaining existing components
- Uninstalling Exchange Server

Installing New Exchange Servers

You can install multiple Exchange Server roles on a single computer. For servers deployed within the organization, you can deploy any combination of the Mailbox, Client Access, Hub Transport, and Unified Messaging roles on a single computer. You cannot combine the Edge Transport role with other roles, however, as this is an optional role for the organization's perimeter network and you must install it separately from other roles.

In clustered environments, you use one of the modified cluster Mailbox Server roles rather than the standard Mailbox Server role. For clustered servers, you must use either the active clustered Mailbox role or the passive clustered Mailbox role, depending on whether you are configuring an active node or a passive node in the cluster as a Mailbox server. You cannot install a clustered Mailbox server on a server with any other roles.

> **Tip** To reduce network traffic between Exchange servers, domain controllers, and global catalog servers, you'll typically want to deploy the Mailbox, Client Access, Hub Transport and Unified Messaging roles on a computer acting as a domain controller with a global catalog. This is not a requirement, but it is a recommended best practice for most Exchange Server implementations. Edge Transport servers are not members of the Active Directory forest and are not configured as domain controllers or as global catalog servers.

Often, small and medium organizations can deploy a single Exchange server per Active Directory site that hosts the Mailbox, Client Access, Hub Transport, and Unified Messaging roles and may not need to have an Edge Transport server in a perimeter zone. As the size and needs of the organization increase, however, it becomes more and more beneficial to host some roles on separate servers. Keep the following in mind:

- You can achieve increased efficiency for message routing and delivery by combining the Mailbox and Hub Transport roles on a single server.
- You can achieve increased security by isolating the Client Access role and deploying it on a server other than one that also hosts the Mailbox and Hub Transport roles.
- You can improve responsiveness for dial-in and voice access by isolating the Unified Messaging role and deploying it on a server other than one that also hosts the Mailbox and Hub Transport roles.

When you use multiple Exchange servers, you should deploy the roles in the following order:

1. Client Access server
2. Hub Transport server
3. Mailbox server
4. Unified Messaging server

For client access to work correctly, install at least one Client Access server in each Active Directory site that has a Mailbox server. For Hub Transport, Mailbox, and Unified Messaging servers, install at least one of each server role for each group of Active Directory sites that are well connected on a common LAN. For example, if the organization consists of Sites A and B, which are well connected on a common LAN, and Sites C and D, which are well connected on a common LAN, with wide area network (WAN) links connecting Sites A and B to Sites C and D, a minimal recommended implementation would be to have Hub Transport, Mailbox, and Unified Messaging servers only in Site A and Site C.

Because you install Edge Transport servers outside the Active Directory forest, you can deploy them at any time. By configuring multiple Edge Transport servers, you can ensure that if one server fails, Edge Transport services continue. If you also configure your Edge Transport servers with round-robin DNS, you can load-balance between them.

Installing Exchange Server

The Exchange Server 2007 installation process has changed considerably since Exchange Server 2003. The installation process now requires .NET Framework version 2.0 or later, Microsoft Management Console version 3.0 or later, and Microsoft Command Shell version 1.0 or later. In Setup, links are provided so that you can download and install the most recent versions of these applications. The installation process also requires Windows Installer 3.0 or later, which is included in Windows Server 2003 Release 2, Windows Server 2003 Service Pack 1, and later releases of Windows Server. Some Exchange server roles also require IIS components, as discussed previously.

Using Windows Installer helps to streamline and stabilize the installation process and it makes modification of install components easier. You can:

- Install additional roles or components by rerunning the Installation Wizard.
- Maintain installed components using Add Or Remove Programs in Control Panel.
- Resume a failed installation or modification using Add Or Remove Programs in Control Panel.

For administration purposes, you can install the Exchange management tools on a workstation computer running Windows XP Service Pack 2 or later. This workstation must also have the Microsoft Command Shell installed.

To install Exchange Server roles on a server, complete the following steps:

1. Log on to the server using an administrator account. When installing the Mailbox, Hub Transport, Client Access, and Unified Messaging roles, you must use a domain account that is a member of the Enterprise Administrators group. If you've already prepared Active Directory, this account must also be a member of the Exchange Organization Administrators group.
2. Insert the Exchange Server 2007 DVD into the DVD-ROM drive. If Autorun is enabled, Exchange Server 2007 Setup should start automatically. Otherwise, double-click Setup.exe on the root folder of the DVD.
3. On the Start page, click the links for steps 1, 2, and 3, each in turn. This helps you download and install .NET Framework version 2.0 or later, Microsoft Management Console version 3.0 or later, and Microsoft Command Shell version 1.0 or later.
4. On the Start page, click Step 4: Install Microsoft Exchange. In the Exchange Server 2007 Installation Wizard, read the introductory text, and then click Next.
5. On the License Agreement page, select I Accept The Terms In The License Agreement, and then click Next.
6. On the Error Reporting page, choose Yes if you'd like to send error repors automatically to Microsoft or No if you would like to turn off automatic error reporting. Click Next.
7. On the Installation Type page, click Custom Exchange Server Installation and then click Next.
8. On the Server Role Selection Page, select the server roles that you want to install on the computer. Select Management Tools to install the Exchange management tools. The default installation location for Exchange Server and all its components is %SystemDrive%\Program Files\Microsoft\Exchange Server. If you want to change the path for the Exchange Server 2007 installation, click Browse, locate the relevant folder in the folder tree, and then click OK. Click Next.

9. If you selected Mailbox Role, Client Access Role, Hub Transport Role, or Unified Messaging Role, and if this is the first Exchange 2007 server in your organization, on the Exchange Organization page, type a name for your Exchange organization or accept the default value of First-Organization. Click Next.
10. If you selected Mailbox Role, and if this is the first Exchange 2007 server in your organization, you'll next see the Client Settings page. If you have client computers that are running Outlook 2003 or earlier, select the Yes option so that Exchange will create a public folder database on the mailbox server. If all of your client computers are running Outlook 2007, public folders are optional, as the OAB and free/busy information are maintained separately. If you select the No option, Exchange will not create a public folder database on the mailbox server. You can add a public folder database later if desired. Click Next.
11. On the Readiness Checks page, Setup then checks to see whether Exchange is ready to be installed with the roles you selected. Review the status to determine if the organization and server role prerequisite checks completed successfully. You must complete any required prerequisites before continuing. Once checks are completed successfully, click Install to install Exchange Server 2007.
12. On the Completion page, click Finish. When the installation completes, you should verify the installation by doing the following on the server:
    - ❑ Start the Exchange Management Shell, and type **get-ExchangeServer** to display a list of all Exchange roles installed on that server.
    - ❑ Review the application logs for events from Exchange Setup. These events have event IDs 1003 and 1004, with the source as MSExchangeSetup.
    - ❑ Review the Exchange Setup logs in the %SystemRoot%\ExchangeSetupLogs folder. As these logs contain standard text, you can perform a search using the keyword "error" to find any setup errors that occurred.

Real World With a new Exchange Server 2007 implementation, each new recipient object (such as a mailbox, contact, distribution list, mailbox-agent, or mail-enabled public folder) will have a special attribute called legacyDN that corresponds to the new administrative group for the Exchange Server 2007 server. Because of this legacyDN, Microsoft Outlook will request a full OAB download from the Exchange Server 2007 server for each user in this organization that logs on. In a large organization, this could mean there will be multiple simultaneous OAB downloads, which, in turn, could cause high network utilization.

To complete the installation for an initial deployment of Exchange into an organization, you'll need to perform the following tasks:

- For Client Access servers:
    - ❑ If you plan to use ActiveSync for mobile messaging clients, as discussed in Chapter 4, configure direct push, authentication, and mobile devices.

- Configure the Outlook Web Access URL, authentication, and display options.
- Enable the server for POP3 and IMAP4, as appropriate.

- For Edge Transport servers:
  - Export the Edge Transport server subscription file, and import it on Hub Transport servers, as discussed in Chapter 15, "Managing Hub Transport and Edge Transport Servers."
  - If you are using Edge Transport servers with Exchange 2000 Server or Exchange Server 2003 organizations, you must manually configure the necessary connectors, as discussed previously.
  - Configure a postmaster mailbox for each mail domain.
  - Configure DNS MX resource records for each accepted domain.
  - Configure antispam, junk e-mail, and safe sender features, as appropriate.
- For Hub Transport servers:
  - Configure domains for which you will accept e-mail. You will need an accepted domain entry for each SMTP domain for which you will accept e-mail, as discussed in Chapter 15, "Managing Hub Transport and Edge Transport Servers."
  - If you also deployed the Edge Transport Server role, you will need to subscribe to the Edge Transport server so that the EdgeSync service can establish one-way replication of recipient and configuration information from Active Directory to the Active Directory ADAM store on the Edge Transport server. See Chapter 15 for details.
  - Create a postmaster mailbox so that you can receive mail addresses to the postmaster address, as discussed in Chapter 15.
  - Configure DNS MX resource records for each accepted domain.
- For Mailbox servers:
  - Configure OAB distribution for Outlook 2007 clients, as discussed in Chapter 9, "Working with Distribution Groups and Address Lists."
  - Configure OAB distribution for Outlook 2003 or earlier clients, as discussed in Chapter 9.
  - Configure storage groups and databases, as discussed in Chapter 11, "Managing Microsoft Exchange Data and Storage Groups."
- For Unified Messaging servers:
  - Configure a unified messaging dial plan, and add the server to it.
  - Configure Unified Messaging hunt groups.

- Enable users for unified messaging, as appropriate.
- Configure your IP/VoIP gateways or IP-PBXs to work with Exchange server.
- Configure a Unified Messaging IP gateway in Exchange server.
- As desired, create auto-attendant and mailbox policies and configure additional dial plans, gateways, and hunt groups.

Adding, Modifying, or Uninstalling Server Roles

After you install an Exchange server with its initial role or roles, you can add new roles or remove existing roles using Add Or Remove Programs. In Control Panel, double-click Add Or Remove Programs. In Add Or Remove Programs, click the Microsoft Exchange Server 2007 entry to display the Change and Remove buttons.

To add roles or the management tools to an installation, click Change to start the Exchange Server 2007 Setup in update maintenance mode. You will then be able to use Setup to add roles to the server or to install the management tools, if they weren't previously installed. Simply select the check boxes for the roles you want to add, click Next, and then follow the prompts.

To remove roles from an installation, click Remove to start the Exchange Server 2007 Setup in modify maintenance mode. You will then be able to use Setup to remove roles from the server. Simply clear the check boxes for the roles you want to remove, click Next, and then follow the prompts.

Before you can remove the Mailbox role from a server, you must move or delete all mailboxes hosted in mailbox databases on the server and all offline address books hosted in public folder databases on the server. If the public folder database is the last one in the Exchange organization, such as may be the case if you are uninstalling Exchange on a test or development server, you will need to use Exchange Management Shell to delete the public folder database once you've emptied it.

To remove the last public folder database in the Exchange organization, type the following command at the Exchange Management Shell prompt:

```
get-publicfolderdatabase | remove-publicfolderdatabase
 -oktoremovelastpublicfolderdatabase
```

You'll see the following warning prompt:

```
Confirm
Are you sure you want to perform this action? Removing Public Folder
Database "CORPSVR127\Second Storage Group\Public Folder Database".
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S] Suspend  [?]  Help
(default is "Y"):
```

Carefully read the details regarding which public folder database you are removing. Press Y to proceed. You'll then see the following additional warning prompt:

```
Confirm
You are attempting to remove the last public folder database in the
organization. If you remove this database, all its contents will be lost
and only users running Outlook 2007 or later will be able to connect
to your Exchange organization. Are you sure that you want to delete
the last public folder database?
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S] Suspend  [?] Help
(default is "Y"):
```

Carefully read the details regarding which public folder database you are removing. Press Y to proceed. You'll then see the following additional warning prompt:

```
WARNING: The specified database has been removed. You must remove the
database file located in C:\Program Files\Microsoft\Exchange
Server\Mailbox\Second Storage Group\Public Folder Database.edb from your
computer manually if it exists.
```