Making a smooth transition to Exchange Server 2016

Exchange Server 2016 migration guide

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Brought to you by CodeTwo

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Abstract

As announced on Microsoft's Support Blog, the extended support phase for Exchange Server 2007 ended on April 10, 2017. Since Microsoft stopped supporting Exchange Server 2007, its users are bound to face the same question companies running Exchange 2003 and older have been asking for several years now: Migrate to a new email platform, or wait and hope for the best?

Doing nothing and keeping an old email server, despite the fact that it is no longer supported by the manufacturer, can be risky. On the other hand, the migration from a legacy Exchange Server directly to Exchange 2016 is a complex and time-consuming project that requires a lot of research.


The main purpose of this paper is to give you a wider overview of things that need to be taken into consideration when moving to Exchange 2016. We did our best to include as much information as possible that could help gain a better understanding of what complications may await you and what should be done to avoid them. We have also described one of the ways of migrating from an older editions of Exchange to Exchange 2016 that includes using our migration tool, CodeTwo Exchange Migration. Following this path will help you avoid one of the biggest problems related to migrating to Exchange 2016 – the need for a "double-hop" migration.

About CodeTwo

CodeTwo is a Microsoft Partner (Gold Application Development competency) and the independent solutions provider for IT professionals dealing with Exchange Server, Office 365 and Outlook. CodeTwo products streamline email management in areas such as: content and flow control, email signature administration, Exchange folder syncing, mailbox migrations and mailbox backups. In 2013 CodeTwo launched two migration tools for Exchange Server and Office 365, which have been acclaimed by such portals as MSExchange.org and InfoWorld, and recommended by some of most recognized IT experts from all over the world.
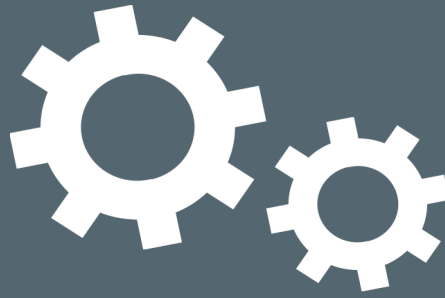
Exchange 2016 - system and hardware requirements

Regardless if you are migrating from an older version of Exchange or performing a completely fresh installation of Exchange 2016, your environment has to meet the following software and hardware requirements:

Exchange 2016 network and software requirements

Domain controllers (one of the below):

- Windows Server 2016 Standard or Datacenter
- Windows Server 2012 R2 Standard or Datacenter
- Windows Server 2012 Standard or Datacenter
- Windows Server 2008 R2 Standard or Enterprise
- Windows Server 2008 R2 Datacenter RTM or later
- Windows Server 2008 Standard, Enterprise, or Datacenter

Active Directory forest functionality level:

- Windows Server 2008 or higher

DNS namespace:

- Contiguous
- Noncontiguous
- Single label domains
- Disjoint

More information

IPv6:

- Supported only if IPv4 is also installed and enabled

Operating system:

- Windows Server 2016 (requires Exchange 2016 CU3 or later)
- Windows Server 2012 R2 Standard or Datacenter
- Windows Server 2012 Standard or Datacenter

Exchange 2016 Management tools (Exchange admin center and Exchange Management Shell) can be additionally used on 64-bit editions of Windows 10 and 8.1

NOTE: Exchange 2016 only supports the version of Windows Management Framework that is built in Windows you use for Exchange installation.

.NET Framework:

- 4.6.2

IMPORTANT (updated 2018-03-01): Exchange 2016 CU5 and later does not support .NET Framework 4.6.1 and 4.5.2.

Outlook versions:

- Outlook 2016
- Outlook 2013
- Outlook 2010 SP2 and updates KB2956191 and KB2965295
- Outlook for Mac for Office 365
- Outlook for Mac 2011

Exchange 2016 minimum hardware requirements

Processor:

- x64 architecture-based computer with Intel processor that supports Intel 64 architecture (formerly known as Intel EM64T)
- AMD processor that supports the AMD64 platform
- Intel Itanium IA64 processors not supported

Memory:

- Mailbox role: 8GB
- Edge Transport role: 4GB

Paging file size:

- The page file size minimum and maximum must be set to physical RAM plus 10MB, to a maximum size of 32,778MB if you're using more than 32GB of RAM.

Disk space:

- At least 30 GB on the drive on which you install Exchange
- An additional 500 MB of available disk space for each Unified Messaging (UM) language pack that you plan to install
- 200 MB of available disk space on the system drive
- A hard disk that stores the message queue database on with at least 500 MB of free space.

Drive:

- DVD-ROM drive, local or network accessible

Screen resolution:

- 1024 x 768 pixels or higher

File format:

Disk partitions formatted as NTFS file systems, which applies to the following partitions:

- System partition
- Partitions that store Exchange binary files or files generated by Exchange diagnostic logging
- Database files, such as mailbox and transport databases

Disk partitions containing the following types of files can be formatted as ReFS:

- Partitions containing transaction log files
- Partitions containing mailbox database files
- Partitions containing content indexing files

Tools in spotlight

- Microsoft Exchange Server Deployment Assistant
- Exchange Server Role Requirements Calculator
- Microsoft Exchange Server Jetstress Tool
- Microsoft Assessment and Planning Toolkit

Migration to Exchange 2016
- step by step walkthrough

Since Microsoft doesn't support the co-existence of Exchange 2003 or 2007 and Exchange 2016, mailbox migrations from these editions to the latest iteration of Exchange are quite complicated. It doesn't mean, however, that the administrator can't do something to make it more seamless and less time-consuming. There are basically two options that are possible in this scenario:

- Carrying out the double-hop migration, with Exchange 2010/2013 pre-installed first
- Moving users' mailboxes between forests (cross-forest migration) with a 3rd party migration tool

Because the first option requires additional work and resources, we are going to focus on the second scenario, which makes it far easier.
The 3rd party tool used in our example will be CodeTwo Exchange Migration.

CodeTwo Exchange Migration

The program is designed to enable easy inter- and cross-forest migrations of Exchange Server mailboxes. It copies all mailbox data between Exchange Server installations using EWS (Exchange Web Services). Owing to its graphical user's interface, no PowerShell commands need to be executed during the migration.

CodeTwo Exchange Migration also comes with additional tools, such as the mailbox Automatch feature, migration Scheduler, mailbox data filters and EX-to-SMTP email address converter, that make the entire migration process even more seamless.

More information, together with full pricing details can be found on the program's official website: www.codetwo.com/exchange-migration/

I

Pre-migration activities

Before you install and configure CodeTwo Exchange Migration make sure that your environment (both Source and Target server) is prepared for migration.

Below you will find the list of key points to be considered:

STEP 1   **Prepare a clean target Exchange environment in a new Active Directory forest**

The following points need to be revised:

- Accepted Domains
- Send/receive Connectors
- Servers' Certificates
- Default Email Address Policy
- Internal/External URL's

Learn more

STEP 2   **(Optional) Enable a two-way trust relationship between the forests**

Learn more about creating a forest trust on Windows Server 2008

This step is not necessary but recommended. Trust setup process will most likely reveal any issues you would otherwise find only during the actual migration and of course, it is better to address those before starting the migration. Secondly, setting up a trust makes it easier to configure CodeTwo software (see II Migration Process, step 2).

* Please note that setting the trust relationship doesn't apply to SBS based environments.

STEP 3   **Configure mailflow between the source and the target server**

- Configure SMTP Connector on Exchange 2007
- Configure Send and Receive Connectors on Exchange 2016 (default Receive Connector is typically created during Exchange Server installation process).

STEP 4   **Prepare domain accounts on the Target server**

- Migrate domain accounts between the Active Directory forests. You may do it automatically using Active Directory Migration Tool (ADMT) or create the accounts manually in the target forest.
- During the mailboxes matching step, you can also set the program to create the mailboxes and the corresponding users automatically.

Important: Please be aware that prior to migration you have to prepare (in the target environment) a mailbox-enabled user account for each user included in the migration.
What is more, if you choose either to manually create the mailboxes or allow the program to prepare them for you, be advised that the account data (such as permissions) will not be migrated.

STEP 5 **Make sure that the account used to connect to the source server belongs to the appropriate AD group and has its mailbox configured correctly.**

- Check if the selected account belongs to the **Exchange Organization Administrators** group.

- Ensure that this account has a valid, non-hidden mailbox on the source Exchange Server.

STEP 6 **Verify the configuration and rights of the admin account that will be used to connect to the target Exchange Server.**

Make sure that the target admin account is assigned the necessary management roles and that this account is mailbox-enabled.

Verify the following:

1. Check if the target admin account has the following roles assigned:

    - ApplicationImpersonation

    - View-Only Recipients

    - View-Only Configuration

    - Public Folders*

    - Mail Recipient Creation*

    - Mail Recipients*

Important: Please note that the **Public Folders** role is only required if you plan to migrate public folders. Moreover, the **Mail Recipient Creation** and **Mail Recipients** roles are required to create new users and mailboxes. Therefore, it's not required to assign them to the admin account if you are migrating data to the mailboxes that already exist on the target server.
The program will check if these roles are assigned to the admin account during the **Configuration** step of the **Target server connection wizard**. However, before you even start the program, you can manually:

- **check which roles are assigned to a specific user**. To do that, run the Exchange Management Shell on the target server and enter the following cmdlet: Get-ManagementRoleAssignment -RoleAssignee "UserName", where instead of **UserName** you need to enter a valid **Name** or **Alias** of your mailbox-enabled AD user; or

- **check which users are assigned a specific role**. To do that, run the Exchange Management Shell on the target server and enter the following cmdlet: Get-ManagementRoleAssignment –Role "RoleName", where instead of **RoleName** you need to enter a specific role, e.g. **ApplicationImpersonation**.

If any required roles are missing, you can either assign them manually, following the steps described in this KB article or let the program assign them for you in the **Configuration** step of the connection wizard.

2. Access to the target server's EWS service using IP or Domain Name, e.g. **https://[Exchange_IP]/EWS/Exchange.asmx** or **https://[Exchange_Name]/EWS/Exchange.asmx**

3. If a client connects to EWS from the outside of the local network he needs to have the external EWS URL correctly configured:

- Open the Exchange Management Shell on the target server and check if the ExternalUrl is defined: **Get-WebServicesVirtualDirectory | fl**

- If there's no address in the ExternalUrl line it needs to be defined. Execute the following script: **Get-WebServicesVirtualDirectory | Set-WebServicesVirtualDirectory -ExternalUrl https://[Target server's internet name]/EWS/Exchange.asmx**

STEP 7   **Adjust the EWS Throttling settings and change the maximum size limit of sent mail to decrease the time of migration processing**

1. To speed up the migration process, change Throttling settings on target Exchange by following these steps:

   - Open the Exchange Management Shell (EMS) on the target server.

   - Execute the following cmdlet to check your current throttling policies: **Get-ThrottlingPolicy | fl**

   - Create a new throttling policy: **New-ThrottlingPolicy CodeTwoPolicy**

   - Reconfigure the new policy settings the way it does not limit the migration: **Set-ThrottlingPolicy CodeTwoPolicy -RCAMaxConcurrency Unlimited -EWSMaxConcurrency Unlimited -EWSMaxSubscriptions Unlimited -CPAMaxConcurrency Unlimited -EwsCutoffBalance Unlimited -EwsMaxBurst Unlimited -EwsRechargeRate Unlimited**

     Read more about changing throttling policies in Exchange 2016 on Technet.

   - Change the **<mailbox name>** to the one used by CodeTwo software and execute the cmdlet to assign the newly created policy to it: **Set-Mailbox "<mailbox name>" -ThrottlingPolicy CodeTwoPolicy**

     However, if any software still reports errors related to inaccessibility of the Exchange, you may consider assigning the policy for all mailboxes in your organization **Set-ThrottlingPolicy "CodeTwoPolicy" -ThrottlingPolicyScope Organization**

     Throttling policies changes are applied immediately.

2. To allow migration of big items, change message size limits on target Exchange by following these steps:

   Be aware that here mentioned settings are applied globally - it is not possible to limit them to particular mailboxes or group of users.

   Applying the changes might affect some of your services that also rely on them, for example, EWS-based email clients can stop working. Consider those changes as temporary ones that you will revert at the end. We therefore, recommend to backup any files you are about to modify prior to actually changing them.

   In the instructions below we have used a value of 100MB (102400 KB and 104857600 Bytes) as an example. You can modify them to suit your needs:

   - Log on to your target MS Exchange Server CAS role machine.

   - Go to your EWS settings file path: **%ExchangeInstallPath%FrontEnd\HttpProxy\ews\web.config**

   - Open the file **Web.config** with notepad or other text editor.

- Locate the section <system.webserver> and in the subsection <security> you will find the key below whose <value> must be set to 104857600: <requestLimits maxAllowedContentLength="<value>" />

- Save and close the file.

- Log on to your target MS Exchange Server Mailbox role machine.

- Go to your EWS settings file path: **%ExchangeInstallPath%ClientAccess\exchweb\ews\web.config**

- Locate the section <system.webserver> and in the subsection <security> you will find the key below whose <value> must be set to 104857600:
  <requestLimits maxAllowedContentLength="<value>" />

- Locate all maxReceivedMessageSize occurrences in the file and change their values to 104857600. Be aware that you must not change the default values of maxReceivedMessageSize for UMLega cyMessageEncoderSoap11Element bindings, as described in this MS Technet article.

- Save and close the file.

- Open the Exchange Management Shell (EMS).

- To change the maximum size of received messages in Transport Service, execute the following PowerShell cmdlet in EMS: **Set-TransportConfig -MaxReceiveSize 100MB**

- Restart the machine and you are good to go.

STEP 8   **Installation of components required to install CodeTwo Exchange Migration on the Source server (the installation wizard will guide you through this process)**

1. MAPI CDO (MAPI Client and Collaboration Data Objects, required on any system except systems with coexisting MS Outlook x86 older than version 2016)

2. .NET 4.0 (required on any system, might be already installed)
   Learn more

3. PowerShell 2.0 (or higher, must be installed on Windows Server 2008)

   - Download Windows Management Framework Core (WinRM 2.0 and Windows PowerShell 2.0) for Windows Server 2008

   - Newer Windows releases (Windows 7 or higher, Windows Server 2008 R2 or higher) already have PowerShell 2.0 (or higher) built-in.

   - Small Business Server 2008 (SBS2008) users might stumble upon a problem with installing PowerShell. See our Knowledge Base article on that.

STEP 9   **Installation and activation of CodeTwo Exchange Migration**

The program needs to be installed and activated on a machine within the Source server domain.

- Please note that it is recommended to install the migration tool directly on the Source server.

- Make sure you meet the system requirements prior to installing the software.

The steps below will guide through the correct configuration of CodeTwo Exchange Migration:

STEP 1

Connect to the Source server

When you start the program, you will see the **Dashboard** tab. Click **Create a new migration job** link on the **How to start card**. Select the source server type: **Exchange Server**. The **Create Exchange migration job** wizard will open. Set the name of the job and click **Next** to proceed to the **Source mailboxes step**. If this is your first migration job, you will need to configure a connection to the on-premises Exchange Server that will be used as the source of your migration. Click **Add new source connection** in the **Source server** drop-down menu and a wizard will open. You need to complete the steps below:

• **Protocol** – you need to select **MAPI protocol** if you connect to Exchange 2007.

• **Server connection** – there you can allow the program to automatically recognize the Exchange Server located within your network or select it manually from the picker.

• **Service account** – in this step, the program creates a service responsible for accessing mailboxes selected for migration. As the service works under the administrator's MAPI profile, enter the administrator's email address and password. By default, the currently logged administrator's email address is filled in automatically. However, you can change it by clicking Browse and selecting another user's email address from the picker.

• **Configuration** – this process configures your source server connection based on the entered settings.

If all data has been correctly entered, your source server mailboxes will be visible in the program.

If any errors appear, see Troubleshooting.

Important: Make sure that the software user who runs the migration is a local administrator.

STEP 2

Select mailboxes you want to migrate and define target connection

After successfully configuring the source connection, you will get back to the migration job wizard.

The **Source mailboxes** step now allows you to include or exclude mailboxes by using multiple filters. You may, for example, include all users' mailboxes from a particular Organizational Unit or Active Directory group. By default, the program includes all users along with the Public Folders, because it is a most common scenario. Choose the mailboxes you want to migrate and proceed to the next step (**Target mailboxes**).

Now, set up a new target server connection by choosing **Add new target connection** from the **Target server** drop-down menu. A simple wizard will open.

- In the **Server connection** step, choose either **Autodiscover Exchange Server** (default option) to automatically find the proper target server or **configure the connection manually**.

  Warning: If you decided to configure the target connection manually, be aware that using an IP address will make granting impersonation rights and creating mailboxes impossible unless you configure PowerShell Virtual Directory in IIS to allow basic authentication.

- **Admin account** – provide a valid UPN and password of the account that will access the target server (remember that the admin account must fulfill the requirements specified in I Pre-migration activities, Step 6). Click **Next** to move on to the **Configuration** step.

  UPN (User Principal Name) is the name of a system user in an email address format. Learn more.

- **Configuration** – this process configures the target Exchange server connection and checks whether the account provided in the previous step has the necessary roles assigned. If not, the program will attempt to assign them automatically. In such a case, you may be asked to provide the credentials of another account that belongs to the **Organization Management** role group. This account will not be used to connect to the target server, but only to assign the missing roles.

  Once the configuration ends successfully, you will see green check marks. If any errors appear, see Troubleshooting.

  After your connection is established, click **Finish** and proceed to the next step (**Match mailboxes**).

STEP 3   **Match source and target mailboxes**

Matching the source with the target mailbox can be done in two ways: automatically via the built-in Automatch feature or manually. Either way, click the **Match mailboxes** button.

To match manually a single mailbox, click on **Click to match target** link in the **Target user mailbox** column and choose the most appropriate option for this user. After selecting an option you may be asked to provide further details (e.g. password for newly created users). The available approaches are:

- **Create a new user** - to create both Active Directory user and corresponding mailbox, using the defaults values that you can also change.

- **Choose an existing user from the list** - to select an existing user in the target environment that does not have mailbox created yet

- **Manually specify the mailbox address** - this option should be used in the case you are unable to list the target environment

  However, when it comes to matching hundreds of mailboxes, the process may be extremely time-consuming. To automatically set the best available actions for desired users, simply select them on the list (you can use Ctrl+A shortcut to choose all entries) and eventually click **Automatch**. Select desired options and start the process.

  When you have matched all your mailboxes you can continue to configure additional options.

STEP 4   **Customize all necessary aspects of the migration job**

You may configure the following additional options:

- **Scheduler** - allows you to set the job to be automatically started in desired period of times, so you do not have to control it manually.

- **Time filter -** is used to exclude items that are older or newer than a particular date.

- **Folder filter** - may completely exclude specific folders from the migration process.

- **Advanced settings** - provides an option to define how many mailboxes should be migrated at the same time. This number should correspond to the number of logical processors. You can also define the maximum size of items to be migrated.

STEP 5   **Start the migration**

Move on to the **JOBS** tab and click **Start** on the toolbar to begin the migration.

The migration processing time depends on several different factors, e.g. the number of mailboxes and items, the speed of internet connection, EWS Throttling settings. We have published more details here.

STEP 6   **Check if the number of migrated items in the Target mailboxes matches the Source server mailboxes**

If you notice any missing items in the Target mailbox restart the migration using the Rescan feature.

Important: Please be aware that the program does not migrate some specific folders at all. Those are i.e. Sync Issues or ones created while putting a mailbox on a litigation hold.

If any problems appear during the migration process they will be indicated on the dashboard, pointed on the reports and logged in the log files. Check out the software's diagnostics.

STEP 7   **Check if there are any new items in the Source mailbox after migration**

Once the migration is finished and you have noticed that some new items appeared in the migrated Source mailbox, just restart the migration using the Rescan feature. Please keep in mind that the Rescan feature uploads only new items, not the changed ones.

III
Post-migration cleanup

Once the migration is completed please follow the steps below:

STEP 1

MX records

Change MX records with your domain registrar to enable mail flow to new servers instead of the old ones. Please note that this process may take several hours.

If any new items appear in a source mailbox while the MX records are being changed, it is possible to migrate them after the records' migration process is completed. It can be done using the Rescan feature.

STEP 2

The previous domain

Disconnect the previous domain and Exchange Servers.

If you have any problems with disconnecting your domain, please consult your Domain Provider.

Troubleshooting:

✔ For troubleshooting information,
   refer to our Knowledge Base.

✔ For additional resources,
   refer to Frequently Asked Questions or contact us.

Exchange 2016 migration checklist

Use the checklist below to carry out a cross-forest migration from Exchange 2007 to Exchange 2016, using a 3rd party migration tool, such as CodeTwo Exchange Migration.

Step	Activity	Check?
	Pre-migration activities	
1	Prepare a clean Exchange 2016 environment in a new Active Directory forest	
2	Enable the two-way trust relationship between the forests	
3	Configure mail flow between the Source and the Target server	
4	Prepare domain accounts on the Target Server	
5	Make sure that the account used to connect to the source server belongs to the appropriate AD group and has its mailbox configured correctly	
6	Verify the configuration and rights of the admin account that will be used to connect to the target Exchange Server	
7	Adjust the EWS Throttling settings and change the maximum size limit of sent mail to decrease the time of migration processing	
8	Install components required to install CodeTwo Exchange Migration on the Source server (the installation wizard will guide you through this process)	
9	Install and activate CodeTwo Exchange Migration	
	Migration process	
1	Connect to the Source server	
2	Select mailboxes you want to migrate and define target connection	
3	Match source and target mailboxes	
4	Customize all necessary aspects of the migration job	
5	Start migration	
6	Check if the number of migrated items in the Target mailboxes matches the Source server mailboxes	
7	Check if there are any new items in the Source mailbox after migration	
	Post-migration cleanup	
1	Change MX records to enable mail flow to new servers.	
2	Disconnect the previous domain and Exchange Servers.	