



# EXCHANGE SERVER UPGRADE AND MIGRATION

Read this Guide to get a ready reference on key aspects of upgrading and migrating an Exchange Server, including planning, prerequisites, Exchange deployment steps, and migration of mailboxes.

---



## CONTENTS

|  |    |
|--|----|
| EXECUTIVE SUMMARY                            | 01 |
| PLANNING EXCHANGE SERVER DEPLOYMENT          | 02 |
| DEPLOYING EXCHANGE SERVER                    | 06 |
| MIGRATING EXCHANGE SERVER MAILBOXES          | 14 |
| A NOTE ON THIRD-PARTY MAILBOX MIGRATION TOOL | 16 |
| CLOSURE                                      | 17 |
| REFERENCES                                   | 17 |



## EXECUTIVE SUMMARY

Exchange Server upgrades conventionally mean upgrading the on-premises Exchange organization through migration of services and databases from the legacy servers to new servers. Upgrading Exchange Server could also mean installing a cumulative update or service pack over an existing version. However, this Guide focuses on upgrades and migrations in the context of upgrading an entire on-premises Exchange environment or organization.

**Upgrading an Exchange Server organization is broadly a two-step process, involving Exchange deployment on a new server & mailbox database migration to the new environment.**

This process is largely straightforward and standard based on the Microsoft documentation for upgrading Exchange Server. However, due diligence in determining the parameters such as current architecture, server configuration, hardware specifications, etc., is crucial for planning a smooth deployment and migration to the upgraded environment. Notably, the changes in Exchange Server architecture and other functional aspects may change considerably after major releases. So, accounting for these minute details can have a vast impact on the migration activity's overall efficacy and success rate.

This Guide provides an insight into the planning and execution aspects of the on-premises Exchange Server upgrade & migration process. The purpose is to provide easy-to-follow guidance on the subject to help administrators upgrade their organizations' Exchange Mail server environment.

We illustrate the upgrade and migration process for **on-premises Exchange organization on a single AD site, largely keeping Exchange Server 2019 and 2016** in focus.

## PLANNING EXCHANGE SERVER DEPLOYMENT

Upgrading Exchange environment is a multi-stage process starting with Exchange Server deployment planning through the following steps:

### STEP 1 – DETERMINE THE SYSTEM REQUIREMENTS

This step focuses on understanding the specific requirements, including network, hardware, software, etc., for deploying Exchange Server 2019 or Exchange Server 2016. In step 1, we summarize the coexistence scenarios, supported operating systems, & hardware specifications to support the deployment of Exchange 2019 or 2016.

#### a) Supported coexistence scenarios

The “supported coexistence scenario” is the minimum Exchange Server version with applicable cumulative updates and service packs necessary to support the deployment of the upgraded Exchange Server version. The following tables summarize the coexistence scenarios for Exchange Server 2019 and 2016.

#### Exchange Server 2019 »

| Version              | Supported Coexistence  |
|----------------------|--|
| Exchange Server 2010 | Not supported  |
| Exchange Server 2013 | Exchange Server 2013 Cumulative Update 21 or later on all Exchange Server 2013 servers, including Edge Transport servers |
| Exchange Server 2016 | Exchange Server 2016 Cumulative Update 11 or later on all Exchange Server 2013 servers, including Edge Transport servers |

#### Exchange Server 2016 »

| Version              | Supported Coexistence   |
|----------------------|---|
| Exchange Server 2010 | Exchange Server 2010 Service Pack 3 with Update Rollup 11 or later on all Exchange 2010 servers, including Edge Transport servers |
| Exchange Server 2013 | Exchange Server 2013 Cumulative Update 10 or later on all Exchange Server 2013 servers, including Edge Transport servers          |

## b) Hardware requirements for Exchange Server deployment

Exchange deployment necessitates meeting specific hardware requirements concerning the processor, memory, storage disk capacity, etc. The following tables summarize the hardware specifications for Exchange Server 2019 and 2016.

### Exchange Server 2019 »

| Component Name    | Requirement  |
|-------------------|--|
| Processor         | Intel® or AMD® 64-bit processor  |
| Memory            | <ul style="list-style-type: none"><li>▪ Minimum 128 GB for Mailbox</li><li>▪ Minimum 64 GB for Edge Transport</li></ul>  |
| Paging file size  | Minimum & Maximum paging file values should be 25% of the memory   |
| Disk Space        | Minimum 30 GB of drive space for installation, Maintain a min. 200 MB free space on the system drive and 500 MB of free space on the drive used for storing the message queue database |
| Screen Resolution | Min. 1024 x 768 pixels XGA   |
| File System       | Resilient File System (ReFS) on partitions containing the mailbox databases and transaction logs<br><br>NTFS on other partitions   |

## Exchange Server 2016 »

| Component Name    | Requirement  |
|-------------------|--|
| Processor         | Intel® or AMD® 64-bit processor  |
| Memory            | <ul style="list-style-type: none"><li>▪ Minimum 8 GB for Mailbox</li><li>▪ Minimum 4 GB for Edge Transport</li></ul>   |
| Paging file size  | < 32 GB RAM: Physical RAM + 10 MB to a maximum of 32 GB<br>>32 GB RAM: 32 RAM  |
| Disk Space        | Minimum 30 GB of drive space for installation and additional 500 MB for installing each Unified Messaging language page<br><br>Maintain a min. 200 MB free space on the system drive and 500 MB of free space on the drive used for storing the message queue database |
| Screen Resolution | Min. 1024 x 768 pixels XGA   |
| File System       | Resilient File System (ReFS) on partitions containing the mailbox databases, transaction logs, and content indexing files.<br><br>NTFS on other partitions   |

### c) Network and OS requirements for deploying Exchange Server

Microsoft Exchange Server documentation specifies the network & directory server requirements to support on-premises Exchange deployment. It defines the domain controllers' specifications, Active Directory forest and site, DNS namespace, IPv6, and Windows Server versions.

Please read our [Exchange Server Fundamentals Guide](#) to know about these specifications.

## STEP 2 – UNDERSTAND THE PREREQUISITES FOR INSTALLING EXCHANGE

This step determines the key preparatory actions to deploy Exchange by preparing Active Directory, meeting Windows Server prerequisites, and installing mailbox servers and Edge Transport servers, as follows:

- 
- a) Install .NET Framework 4.8
  - b) Install Visual C++ Redistributable Package for Visual Studio 2012
  - c) Install Remote Tools Administration Pack

Run the PowerShell command to install the Remote Tools Administration Pack

```
Install-WindowsFeature RSAT-ADDS
```

- d) Add Lync Server or Skype for Business Server components
  - Install the Server Media Foundation using the following PowerShell command

```
Install-WindowsFeature Server-Media-Foundation
```

- e) Install the Unified Communications Managed API 4.0.

Download link:

<https://www.microsoft.com/en-us/download/details.aspx?id=34992>

- f) Install the December 13, 2016 (KB3206632) security update if you are using Windows Server 2016 ver.14393.576 or earlier.

Learn more:

<https://support.microsoft.com/en-us/help/4004227/windows-10-update-kb3206632>

### STEP 3 – USE EXCHANGE DEPLOYMENT ASSISTANT

Exchange Deployment Assistant is a web-based utility that provides valuable checklist guidance for Exchange Server deployment based on the current setup. It covers on-premises Exchange deployment or upgrade scenarios and Exchange to Office 365 migration scenarios, including hybrid, cutover, and staged migrations.

### STEP 4 – SET UP A TEST ENVIRONMENT

Microsoft recommends establishing an isolated “test environment” for deploying Exchange Server. Test deployment can drastically reduce the downtime risks due to human errors and technical glitches & provide valuable learnings early on to support rollbacks and ramp-ups before installing Exchange Server on the production environment. Organizations looking to optimize the cost of setting up a test lab can do so by using technologies such as hypervisor and deploy virtualized test servers on the physical machine.

Please read Microsoft [Exchange Server virtualization](#) documentation to learn about deploying Exchange Server 2019 and 2016 in a virtualized environment.

## DEPLOYING EXCHANGE SERVER

After planning for the necessary components such as coexistence, system requirements, prerequisites, etc., and performing the test deployment, you are now ready to deploy Exchange Server in the production environment. This stage describes the steps to deploy Exchange Server 2019 and 2016 in the production environment.

### STEP 1 – PREPARE ACTIVE DIRECTORY AND DOMAINS

Active Directory, also known as Active Directory Domain Services, is a service available with Windows Server. It stores the information about objects such as mailboxes, users, clients, etc., in a given Windows domain (or network). When installing Exchange Server 2016 or 2019 to upgrade the existing Exchange organization, the following are the typical steps:

#### 1. Prepare the Active Directory

Run the following command in Windows Command Prompt.

```
E:\Setup.exe /IAcceptExchangeServerLicenseTerms /PrepareAD  
/OrganizationName:"Stellar International"
```

This example uses the Exchange setup file on E: drive and names the Exchange organization as “Stellar International.”

#### Caution: ⚠

The above step replicates the changes to all the domain controllers in the Active Directory domain. **Please wait for complete replication before preparing the AD domains**, else you might encounter an error. You can check the AD replication progress using the [Active Directory Replication Status Tool](#).

**Tip:** 💡 Small to mid-sized Active Directory deployments are doable using Exchange Setup wizard without spending efforts on preparing the AD forest. To use the Setup wizard, the account used for installing Exchange mailbox servers should be a member of Schema Admins and Enterprise Admins security groups.

Learn more on [how to use Exchange Setup wizard](#)

## 2. Prepare Active Directory domains

This step involves preparing the domains in the Active Directory forest for installing Exchange Server. It creates the security groups & sets the permissions to govern the different access levels in Exchange.

**Note:** Skip this step if you have only one domain. The /PrepareAD command used in the previous step already prepares the domain for your organization.

**There are two options to prepare Active Directory domains, namely—**

- a) Prepare all domains
  - Run the command in Windows Command Prompt.

```
E:\Setup.exe /IAcceptExchangeServerLicenseTerms /PrepareAllDomains
```

- b) Prepare specific domains

You would need to meet the following prerequisites before preparing specific domains for installing Exchange Server:

- Prepare all the individual domains where you will deploy Exchange Mailbox servers
- Prepare the domain(s) containing only the mail-enabled users without Exchange Server
- The account used for preparing the domain should be a member of the Domain Admins group in the domain
- The account should also be a member of the Organization Management role if the domain being prepared is created after the AD was prepared.

Run the following command:

```
E:\Setup.exe /IAcceptExchangeServerLicenseTerms  
/PrepareDomain:international.stellarinfo.com
```

The above command uses Exchange setup files on E: drive to prepare a domain named international.stellarinfo.com. It mentions the Fully Qualified Domain Name (FQDN) with /PrepareDomain switch because the computer used for preparing the domain is not a member of the domain.

The following example shows the same command run from a member computer in the domain. It uses the /PrepareDomain switch without specifying the FQDN.

```
E:\Setup.exe /IAcceptExchangeServerLicenseTerms /PrepareDomain
```

### 3. Verify the outcomes of AD and domain preparation steps

After planning for the necessary components such as coexistence, system requirements, prerequisites, etc., and performing the test deployment, you are now ready to deploy Exchange Server in the production environment. This stage describes the steps to deploy Exchange Server 2019 and 2016 in the production environment.

In this step, you will check the Active Directory and domain preparation status after completing the previous steps, as follows:

a) Using ADSI Edit, a Lightweight Directory Access Protocol (LDAP) to query and view the objects and their attributes in the AD forest. Read the Microsoft Exchange documentation on how to install and use ADSI Edit.

**Caution:** ⚠

Do not change the values in ADSI Edit without explicit instructions from Microsoft Customer Support as this can cause irreparable damage to the Exchange organization and Active Directory.

b) Check the Exchange setup log to ascertain the status of Active Directory preparation. This method is based on using the Get-ExchangeServer cmdlet in the Exchange Management Shell. However, using the cmdlet is possible only after installing an Exchange Server in the Active Directory site.

## STEP 2 – INSTALL EXCHANGE MAILBOX SERVER & EDGE TRANSPORT ROLES

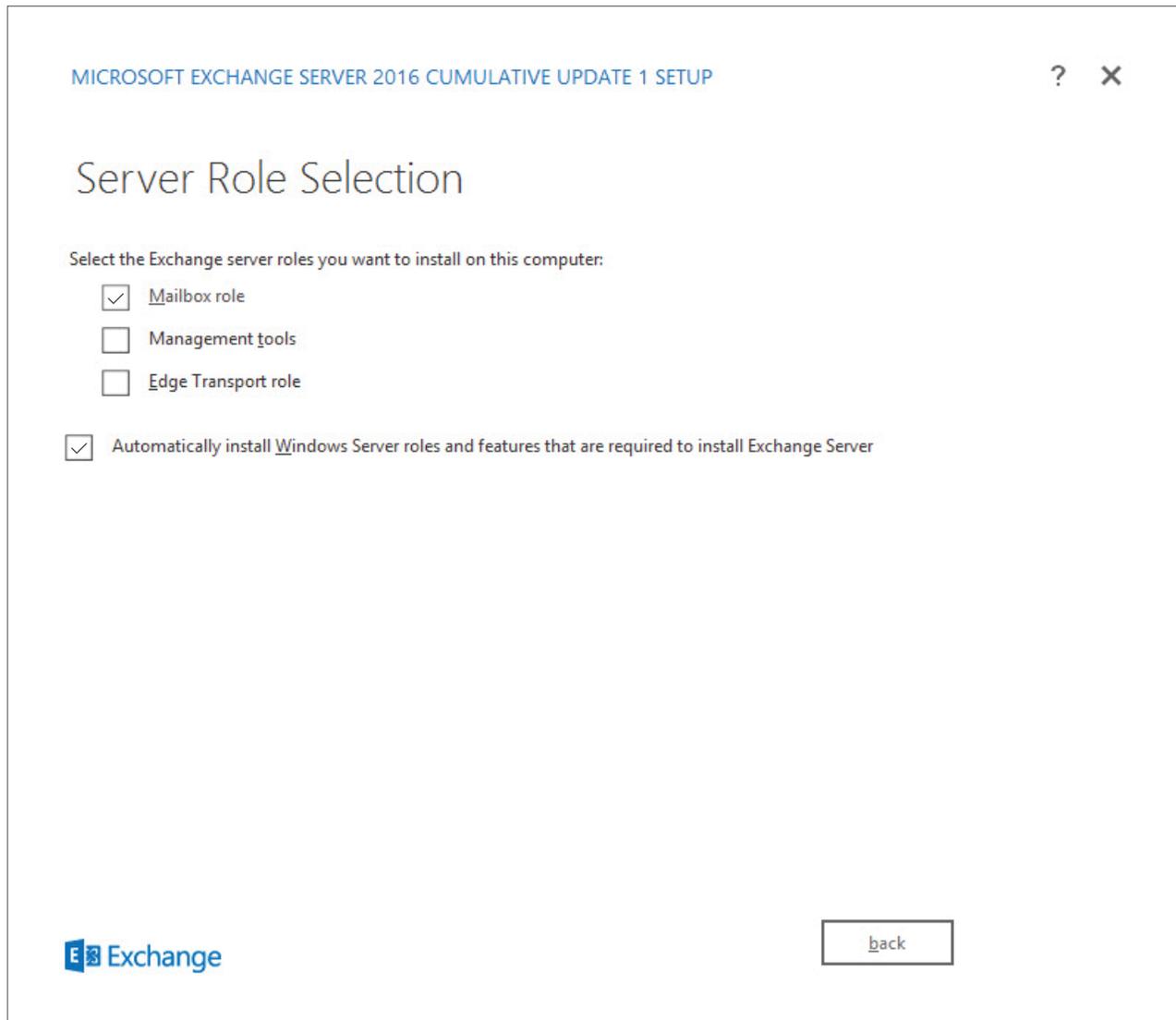
This step outlines the process for installing Exchange Mailbox server and Edge Transport roles using the Setup wizard.

The prerequisites for running this process include –

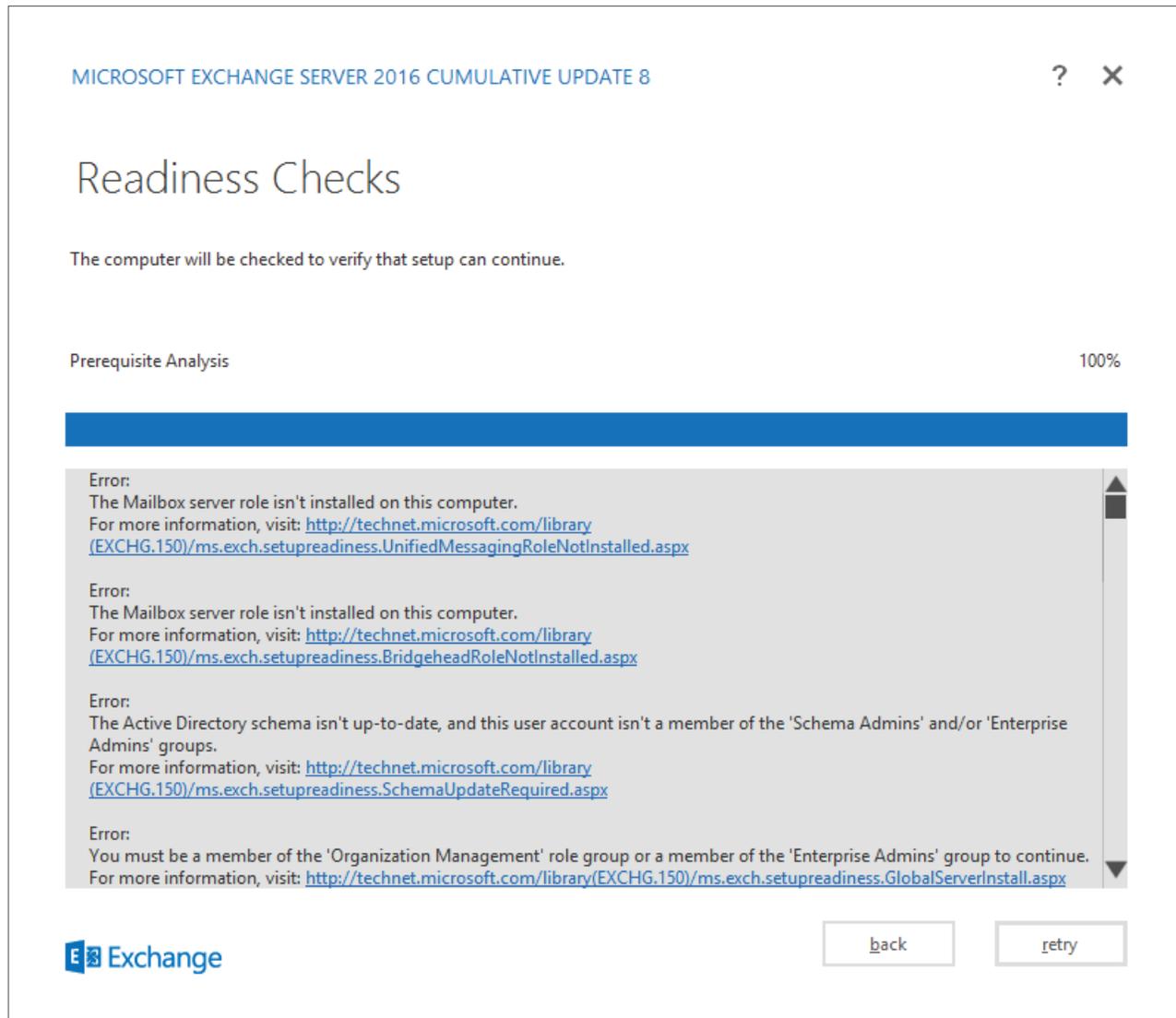
- The target server must be a member of an Active Directory domain.
- For installing the first Exchange Server in the organization, the account should be a member of the Enterprise Admins group
- The account should be a member of the Schema Admins group when installing Exchange without extending the Active Directory schema or preparing the Active Directory.
- The account needs membership of the Exchange Organization Management role group if the AD domain is prepared.

## Steps for installing Exchange Mailbox server role:

1. Download the latest version of Exchange.
2. Mount the ISO image file and run the Setup.exe.
3. Copy the setup files on a local hard drive.
4. Accept the License Agreement terms and click Next
5. On the next screen, select the recommended settings option and click Next
6. On the Server Role Selection page, select the Mailbox role and Edge Transport role.
  - Selecting the Mailbox role will automatically install the Management tools.
  - At this stage, you can also choose automatic installation of Windows Server roles and features



7. Click Next to reach the Installation Space and Location page.
8. Accept the default installation location or Browse to choose a new location. Click Next.
9. Check the default settings on the Malware Protection Settings page and click Next.
10. Verify the readiness checks on the next screen & click Install after meeting all the prerequisites.



11. Click Finish after the installation process is completed. Restart the computer.



### STEP 3 – VERIFY EXCHANGE SERVER INSTALLATIONS

Verification is an important step in the overall Exchange upgrade and migration process, as it provides the assurance of system readiness before you initiate the mailbox database migration from the legacy servers to the new organization.

You can verify an Exchange Server installation using the `Get-ExchangeServer` cmdlet, as follows:

```
Get-ExchangeServer | Format-List
```

The above example lists the names, AD sites, Exchange server roles, editions, and other details of all Exchange Mailbox servers in the organization.

```
Get-ExchangeServer -Identity StellarIB | Format-List
```

The above example displays the information for Exchange server named StellarIB.

### STEP 4 – IMPORT A CERTIFICATE ON EXCHANGE SERVER

Importing or installing a certificate is a crucial step in the Exchange deployment process, necessary to establish trust between the clients, applications, servers, services, etc., in the Exchange organization. The certificate establishes trust by encrypting the network traffic, i.e., communication routed using protocols like HTTPS, SMTP, IMAP, etc., to secure it against unauthorized interception or attack.

Primarily, there are two types of certificates, namely —

- a) **Public Key Cryptography Standards (PKCS) #12:** An archived file for storing cryptography objects. These include self-signed certificates exported from other Exchange servers & certificates issued by a certification authority (CA).
- b) **PKCS #7:** Text certificate files additionally issued by a CA.

There are **two methods to import (install) a certificate on Exchange Server**, based on using the Exchange Admin Center (EAC) or Exchange Management Shell (EMS). The following are the steps for these methods:

## Method 1: Importing a certificate in Exchange Server using EAC

1. Open the EAC and go to **Servers > Certificates**.
2. Select the Exchange Server (for example, StellarIB) on which you need to install the certificate.
3. Click **More options** and select **Import Exchange certificate**.
4. On the **Import Exchange certificate** wizard enter the path & certificate file name. For example, [\\FileServer29\Data\Stellar.cer](#)

**Note:** At this stage, you would need to enter the password if the certificate contains a private key.

5. Click **Next**, and then click Add to select and specify the server(s) where you need to install the certificate.
6. Click **OK** after selecting all the servers, and then click **Finish**.

## Method 2: Using EMS to import a certificate in Exchange Server

The EMS method uses the **Import-ExchangeCertificate** cmdlet for importing and installing a certificate on Exchange Server. The following examples illustrate the cmdlet:

**Example 1:** Imports a certificate from a PKCS #12 file located at \\FileServer29\Data\Stellar.pfx to the Exchange Mailbox server named StellarIB.

```
Import-ExchangeCertificate -Server StellarIB -FileName  
"\\FileServer29\Data\Stellar.pfx" -Password (ConvertTo-SecureString -  
String 'P@ssw0rd1' -AsPlainText -Force)
```

**Example 1:** Imports a text certificate file named "Chain of Certificates.p7b" on the Exchange Server.

```
Import-ExchangeCertificate -FileData ([Byte[]](Get-Content -Encoding Byte -Path  
"\\FileServer29\Data\Chain of Certificates.p7b" -ReadCount 0))
```

After importing (installing) a certificate, you can **verify the process outcome using the Get-ExchangeCertificate** cmdlet, as follows:

```
Get-ExchangeCertificate | where {$_.Status -eq "Valid"} | Format-List  
FriendlyName,Subject,CertificateDomains,Thumbprint,NotBefore,NotAfter
```

## STEP 5 – ASSIGN CERTIFICATES TO EXCHANGE SERVER SERVICES

Assigning certificates to Exchange services enables the Mail Server to encrypt the communication. Like the previous step, you can use the EAC or EMS to assign certificates to Exchange services such as IIS, IMAP, POP, SMTP, and Unified Messaging. Following are the steps:

### Method 1: Using EAC for assigning a certificate to Exchange services

1. Open the EAC, and go to **Servers > Certificates**.
2. In the **Select server** list, choose the Exchange Server installed with the certificate(s).
3. Select the certificate you wish to configure, and click **Edit**.
4. On the **Services** tab, select the services you want to assign the certificate, & then click **Save**.

### Method 2: Using EMS for assigning a certificate

You can use the `Enable-ExchangeCertificate` cmdlet to assign a certificate to Exchange services, as follows:

```
Enable-ExchangeCertificate -Thumbprint  
434AC224C8459924B26521298CE8834C514856AB -Services IMAP,IIS,SMTP
```

The above example assigns a certificate with given thumbprint value to IMAP, IIS, and SMTP services. Next, you can verify the services that are assigned with the certificate using the `Get-ExchangeCertificate` cmdlet.

```
Get-ExchangeCertificate | Format-List  
FriendlyName,Subject,CertificateDomains,Thumbprint,Services
```

## STEP 6 – CONFIGURE MAIL FLOW AND CLIENT ACCESS

This step outlines the components associated with configuring mail flow and client access in Exchange Server 2016 and 2019. These components include—

- a) Creating an Internet send connector
- b) Adding additional accepted domains
- c) Setting up the default email address policy
- d) Configuring external and internal URLs
- e) Configuring an SSL certificate

Please read Microsoft documentation for detailed instructions on configuring mail flow and client access.



## MIGRATING EXCHANGE SERVER MAILBOXES

Exchange mailbox migration involves three different scenarios, namely –

- a) Local migration:** Migrating the mailboxes from one Exchange database (or EDB file) to another mailbox database on on-premises Exchange Servers in the same Active Directory forest.
- b) Cross-forest migration:** Moving the mailboxes from Exchange databases in one Active Directory forest to another AD forest.
- c) Remote mailbox moves:** Migrating the mailboxes from an on-premises Exchange Server to Microsoft 365 or Office 365. This could also be a reverse migration from Microsoft 365 or Office 365 to an on-premises Exchange organization.

This section explains the procedure for migrating on-premises mailboxes within the same Active Directory forest (i.e., local migration) by creating local move requests. Essentially, you can use the EAC or EMS to migrate the mailboxes from the legacy Exchange Server to the upgraded Exchange organization, as follows:

### Method 1: Using EAC to create a local mailbox migration request

1. Open EAC and navigate to **Recipients > Migration** > click **Add** & then select Move to a different database.
2. In the **New local mailbox move** window, select the user(s) you want to migrate.
3. Alternatively, you can [use a CSV file](#) to specify multiple users' mailboxes.
4. Click Next after specifying the mailboxes.
5. Navigate to the **Move configuration page** and enter the migration batch name.
6. In the **Archive** section, select the primary mailbox and archive mailbox if available.
7. For migrating the primary mailboxes, click **Browse** to specify the target EDB file in the newly deployed Exchange Server.
8. Next, click **Browse** and specify the target database for archive database.
9. Specify the maximum corrupted items allowed in the mailbox move request. The recommended count is <50.

Read Microsoft documentation for more detailed [instructions on creating local mailbox move requests in Exchange Server using EAC](#).

## Method 2: Using EMS to create a local move request for Exchange mailboxes

You can use the **New-MailboxMove** cmdlet to move individual or multiple mailboxes from one Exchange database or EDB file to another Exchange database. The general syntax of the New-MailboxMove cmdlet is as follows:

```
New-MoveRequest "<DescriptiveName>" -Identity <MailboxIdentity> [(<-ArchiveOnly | -PrimaryOnly>)] [-TargetDatabase <DatabaseIdentity>] [-ArchiveTargetDatabase<DatabaseIdentity>] [-Priority <PriorityValue>] [-BadItemLimit <Value>] [-AcceptLargeDataLoss]
```

The following examples illustrate the use of New-MailboxMove cmdlet:

**Example 1:** Moves the primary mailbox of Corey Harris to a target Exchange mailbox database named MBX 02. Also moves the user's archive mailbox to the EDB named MBX 03. Specifies the bad items limit as 10.

```
New-MoveRequest -Identity coryharris@stellar.com -TargetDatabase "MBX 02" -ArchiveTargetDatabase "MBX 03" -BadItemLimit 10
```

**Example 2:** Moves only the user's primary mailbox to the database named MBX 02.

```
New-MoveRequest -Identity coryharris@stellar.com -TargetDatabase "MBX 02" -BadItemLimit 10
```

**Example 3:** Demonstrates a batch migration request for moving all the mailboxes from the EDB file name MBX DB01 to MBX DB02.

```
Get-Mailbox -Database "MBX DB01" | New-MoveRequest -BatchName "MBX DB01 to MBX DB02" -TargetDatabase "MBX DB02" -Priority High -BadItemLimit 51 -AcceptLargeDataLoss
```

Notice that the bad item limit is set to 51, which is more than the maximum recommended value. So, the **AcceptLargeDataLoss** switch is used.



**Example 4:** Creates a batch migration request for moving a mailbox batch named LocalMove 01 using a CSV file to a target Exchange database named MBX DB02. Use of the AutoStart switch initiates the mailbox migration process immediately after running the cmdlet. The bad item limit is set to 10, so you don't need to use the AcceptLargeDataLoss switch.

```
New-MigrationBatch -Local -AutoStart -AutoComplete -Name "LocalMove 01" -
CSVData
([System.IO.File]::ReadAllBytes("C:\Users\Administrator\Desktop\LocalMove
01.csv")) -TargetDatabases "MBX DB02" -BadItemLimit 10
```

**Note:** The CSV-based batch migration process will migrate all mailboxes specified in the CSV file, even if they are not in the scope of Role-Based Access Control (RBAC).

## A NOTE ON THIRD-PARTY MAILBOX MIGRATION TOOL

While EAC and PowerShell commands can migrate Exchange mailboxes, there are situations where having third-party software can provide immense support to the Exchange upgrade and migration project. For example, migrating the mailboxes from archived EDB files of a legacy server would require recommissioning the old server and AD with the original configuration. This might not be practical, considering the costs and efforts, particularly when you need to migrate only a few mailboxes.

Exchange database conversion software such as Stellar Converter for EDB solves this problem by converting and extracting the EDB mailboxes into a PST file. Alternatively, the tool can open an EDB file and directly migrate the mailboxes, including the Public folder, to a live Exchange Server with an automated mapping between the mailboxes and user accounts. The software offers to speed up the Exchange mailbox migration process by exporting up to 4 mailboxes simultaneously from the EDB file to the upgraded Exchange Server.



## CLOSURE

The complexity of Exchange Server upgrades and migrations can vary based on the existing configuration, amount of preparation required, & scenarios. For example, a cross-forest migration requires substantially higher preparation than moving mailboxes within the same AD forest. Similarly, mailbox migration in a hybrid environment will need a broader consideration for on-premises and cloud setups. Of course, the deployment stage has its complexities due to a multi-step process, requiring meticulous planning and execution. This Guide attempted outlining the key procedures in a step-wise manner with examples. Nonetheless, we recommend referring to Microsoft documentation where required to get a more detailed insight for delivering a smooth Exchange Server upgrade and migration project.

## REFERENCES

[Exchange Server planning and deployment](#)

[Exchange Server prerequisites](#)

[Exchange Deployment Assistant](#)

[Prepare Active Directory and domains](#)



## Stellar Converter for EDB

DOWNLOAD FROM:

<https://www.stellarinfo.com/email-repair/edb-pst-converter.php>



+1-877-778-6087 (Tollfree)



support@stellarinfo.com



www.stellarinfo.com