

Exchange Server

Contents

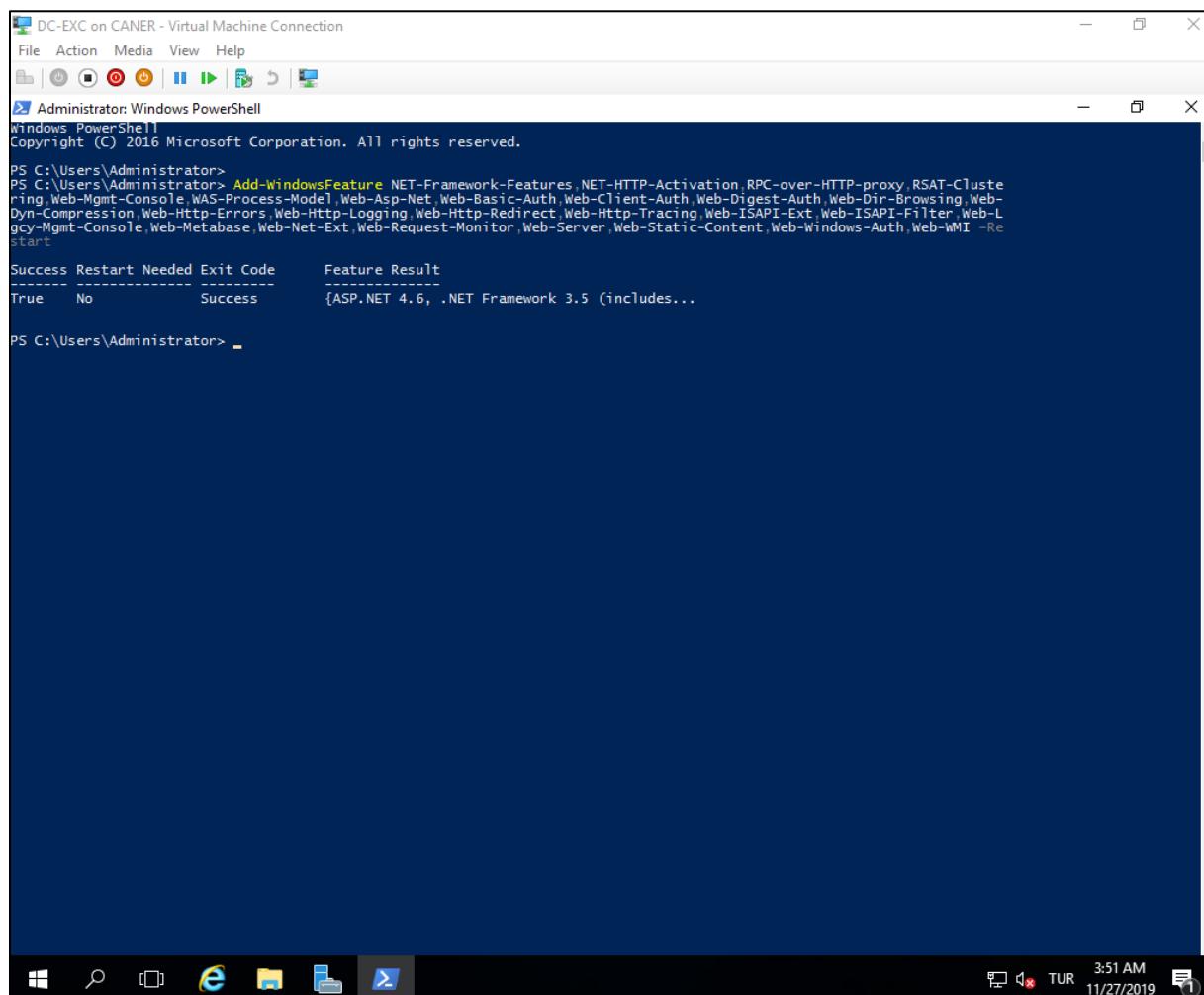
1. Purpose.....	1
2. Procedure	2
3. Conclusion.....	135
4. Evaluation	135

1. Purpose

The purpose of this project is to establish and administer an Exchange Server 2016. This is a hefty task since the minimum RAM required for an Exchange Server is 8 GB and it requires around 40 GB of hard disk to even set up the server. These constraints are quite hard for our physical machines and hence it takes a long while to set up, run and use the Exchange Server 2016. We also deployed Exchange 2010 and Exchange 2013 to demonstrate migration.

2. Procedure

The very first thing we need to do before we set up Exchange Server 2016 is to download the updates necessary for it. We had been given certain files by our instructor that has some of these files and we also use a command on PowerShell to acquire the newest NET Framework updates that we need. Note that this should happen before setting active directory so that we are connected to the internet without issue.



DC-EXC on CANER - Virtual Machine Connection

Administrator: Windows PowerShell

```
Windows PowerShell
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PS C:\Users\Administrator> Add-WindowsFeature NET-Framework-Features,NET-HTTP-Activation,RPC-over-HTTP-proxy,RSAT-Clustering,Web-Mgmt-Console,WAS-Process-Model,Web-Asp-Net,Web-Basic-Auth,Web-Client-Auth,Web-Digest-Auth,Web-Dir-Browsing,Web-Dyn-Compression,Web-Http-Errors,Web-Http-Logging,Web-Http-Redirect,Web-Http-Tracing,Web-ISAPI-Ext,Web-ISAPI-Filter,Web-Legacy-Mgmt-Console,Web-Metabase,Web-Net-Ext,Web-Request-Monitor,Web-Server,Web-Static-Content,Web-Windows-Auth,Web-wMI -Reboot
Success Restart Needed Exit Code      Feature Result
----- ----- ----- -----
True    No        Success          {ASP.NET 4.6, .NET Framework 3.5 (includes...}

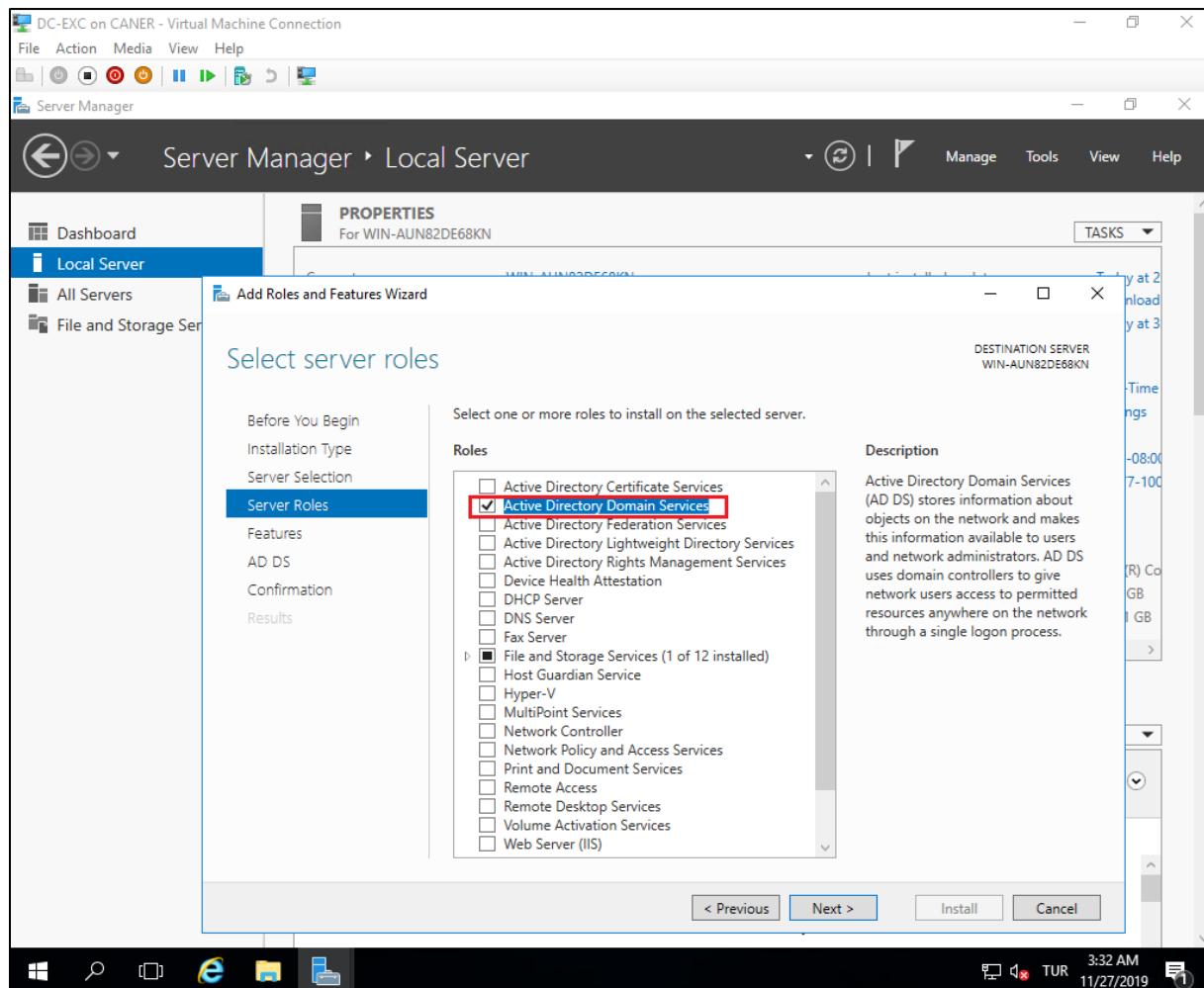
PS C:\Users\Administrator>
```

3:51 AM 11/27/2019

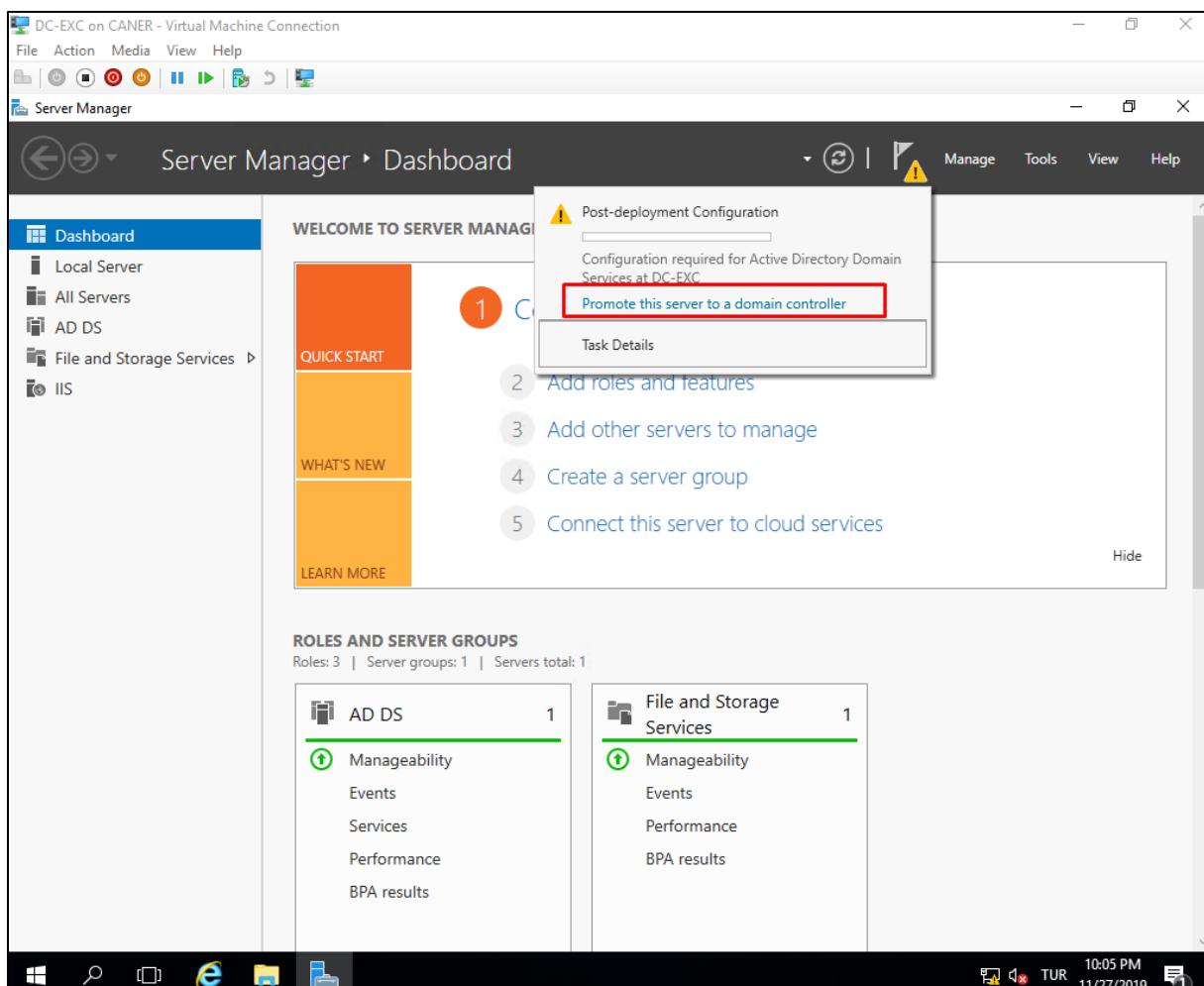
Then we need to establish an Active Directory on the PC for our Exchange Server 2016.

While it is recommended that the Domain Controller (DC) and the Exchange Server are on separate machines, unfortunately with the Exchange Server's constraints we had to have the DC of our domain and the Exchange Server on the same virtual machine. Regardless, we always need an Active Directory for the mail server to work properly and match to the users.

Hence, we create a new Active Directory domain on our PC.

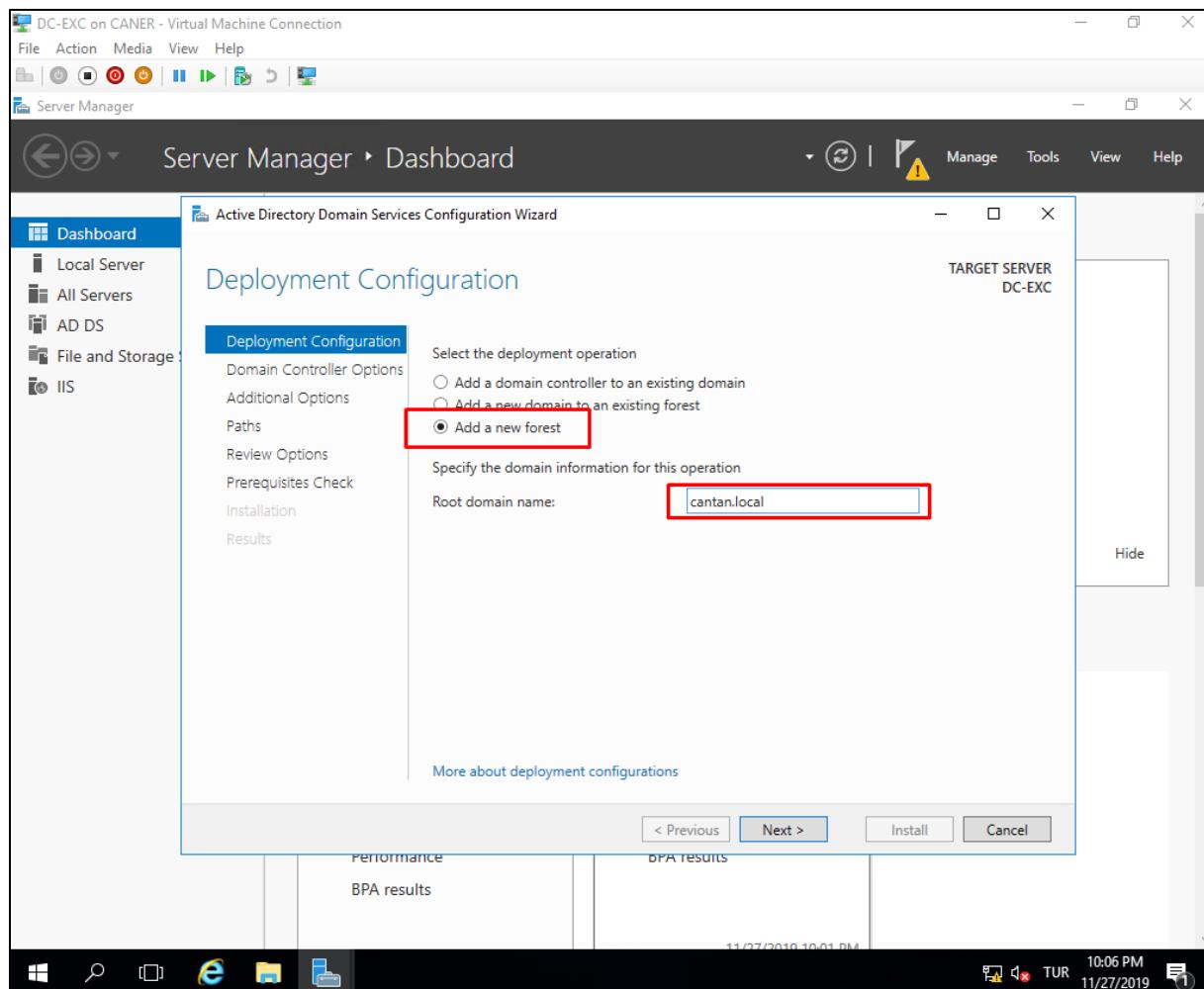


We promote the PC to the domain controller ...

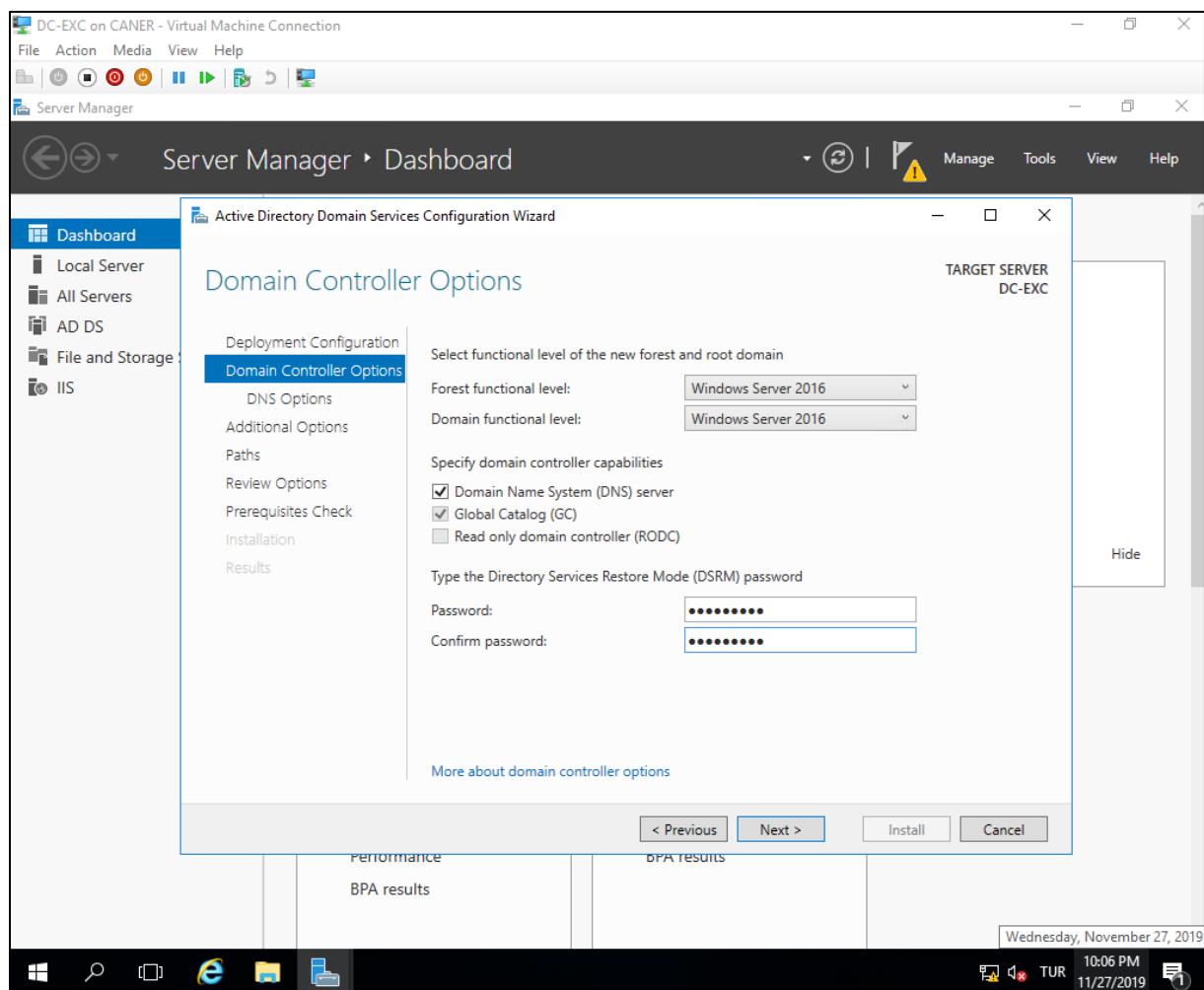


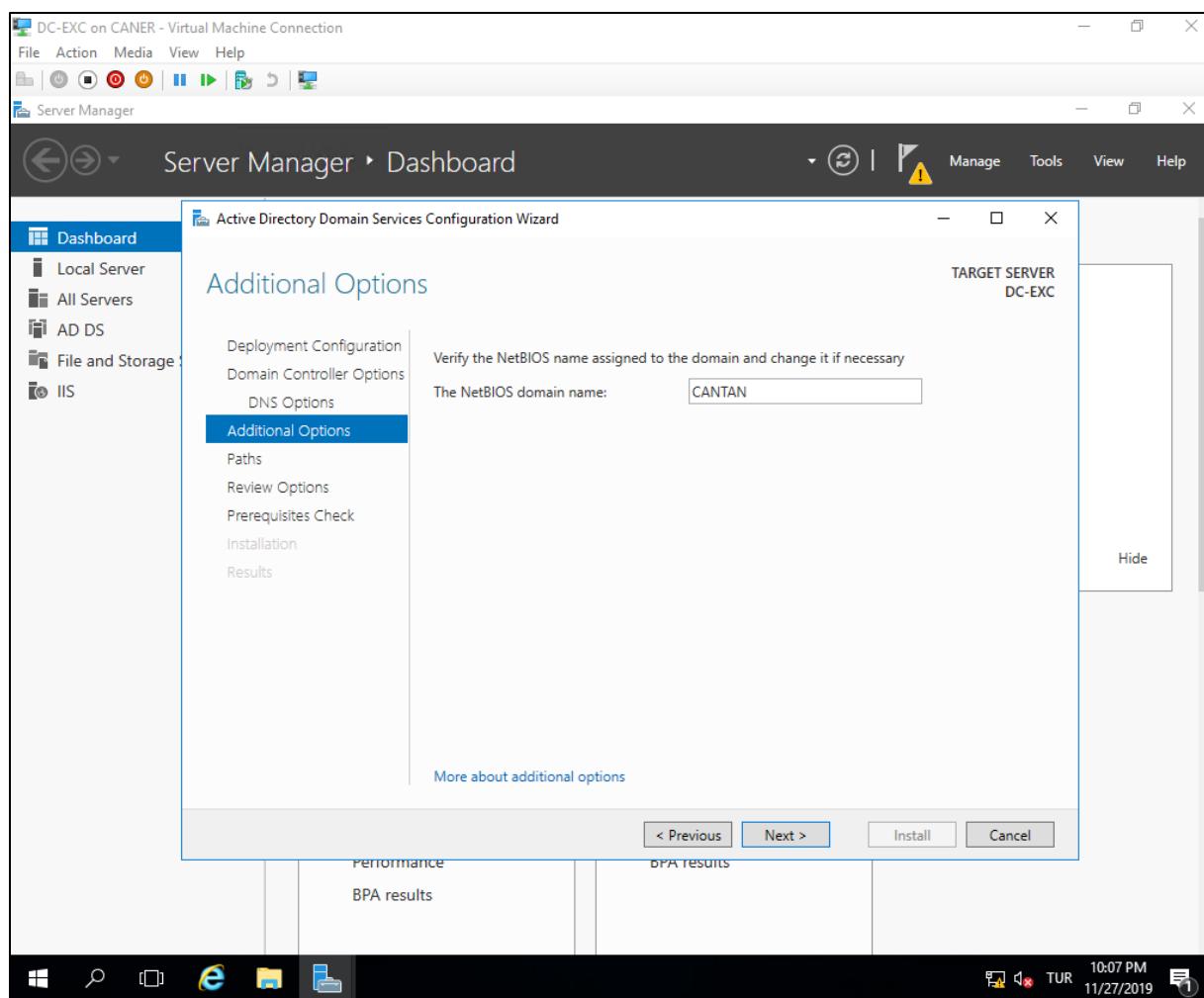
29.11.2019

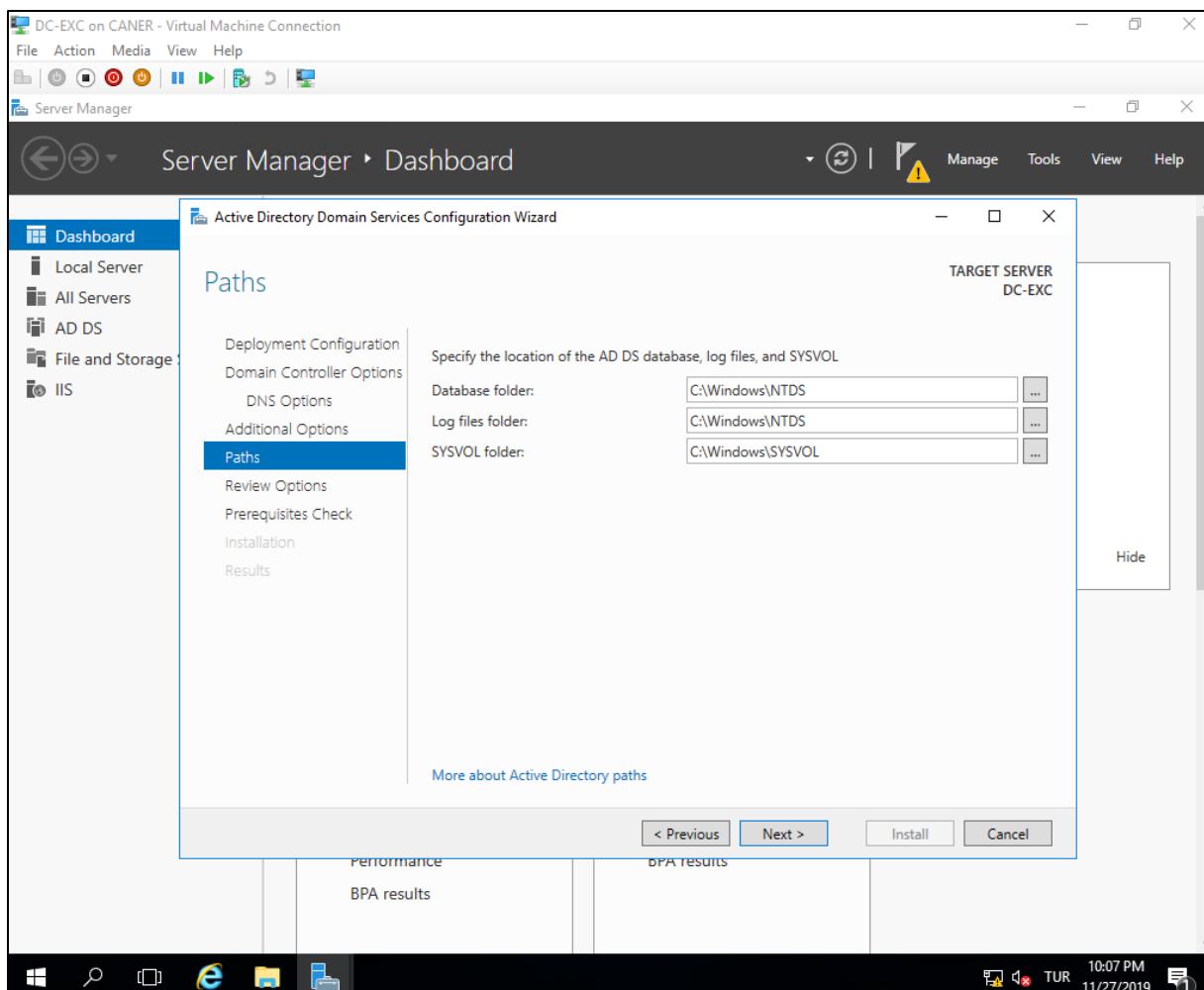
... by creating our new domain: cantan.local

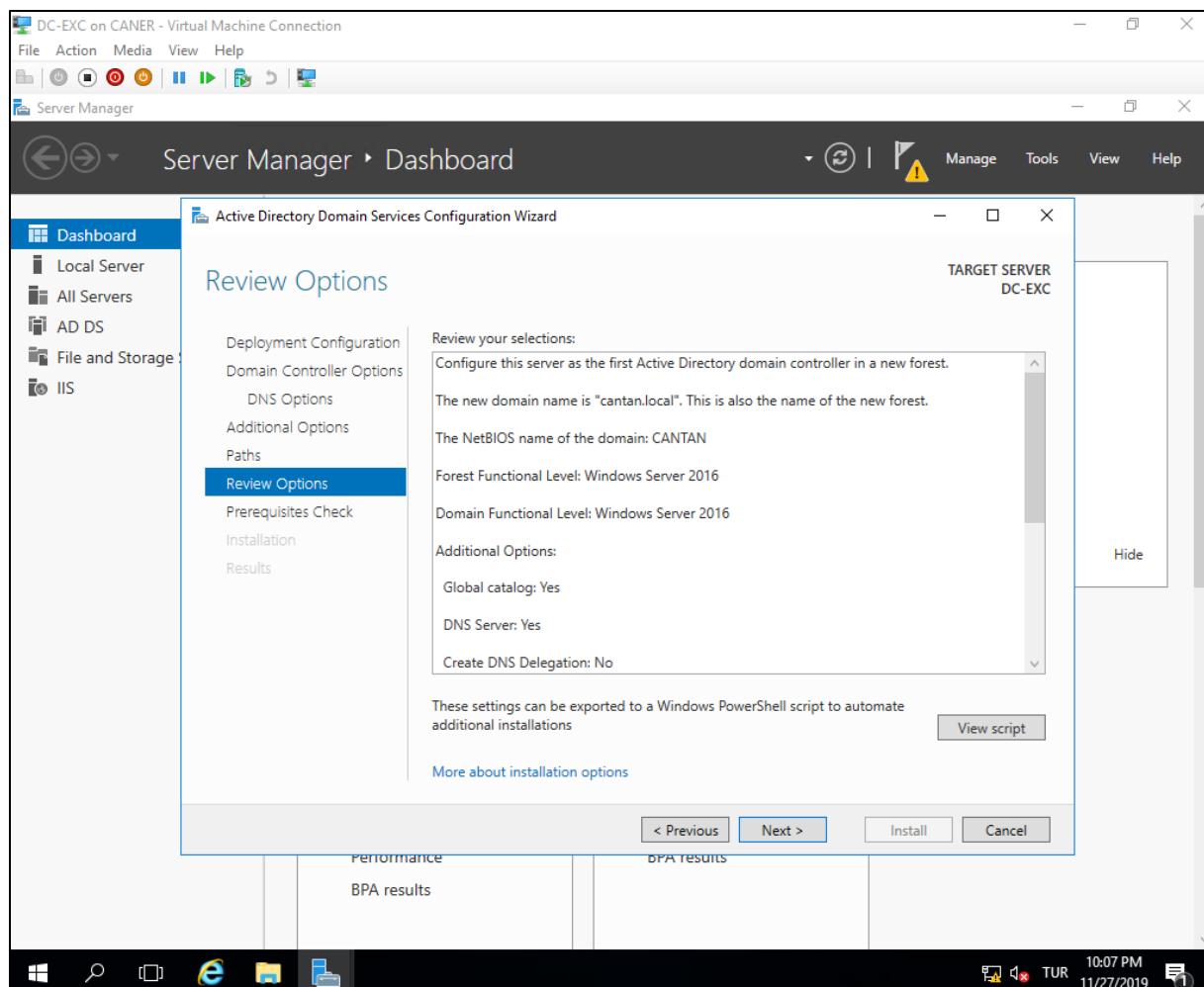


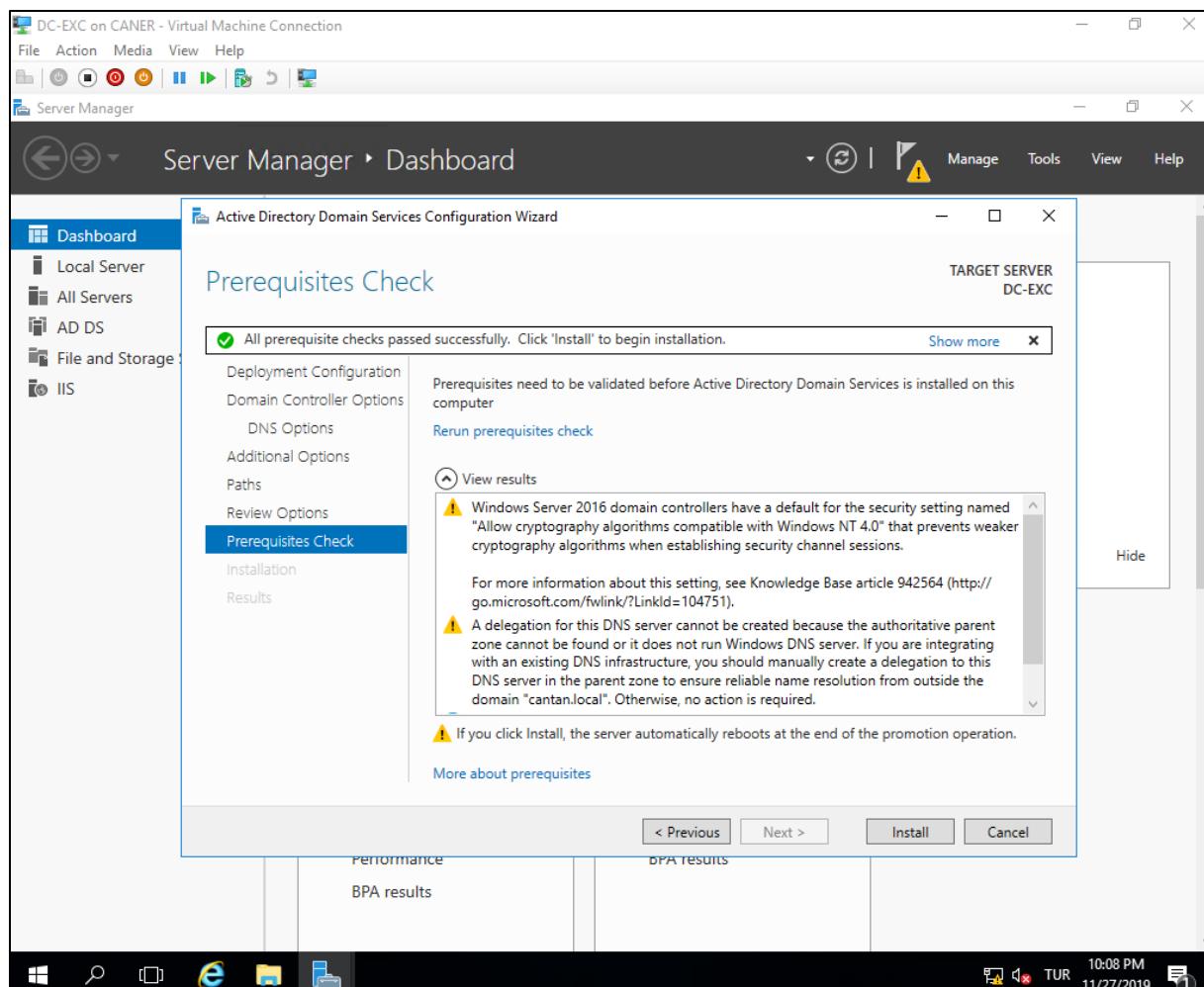
Then, we follow the usual settings for creating a new domain.





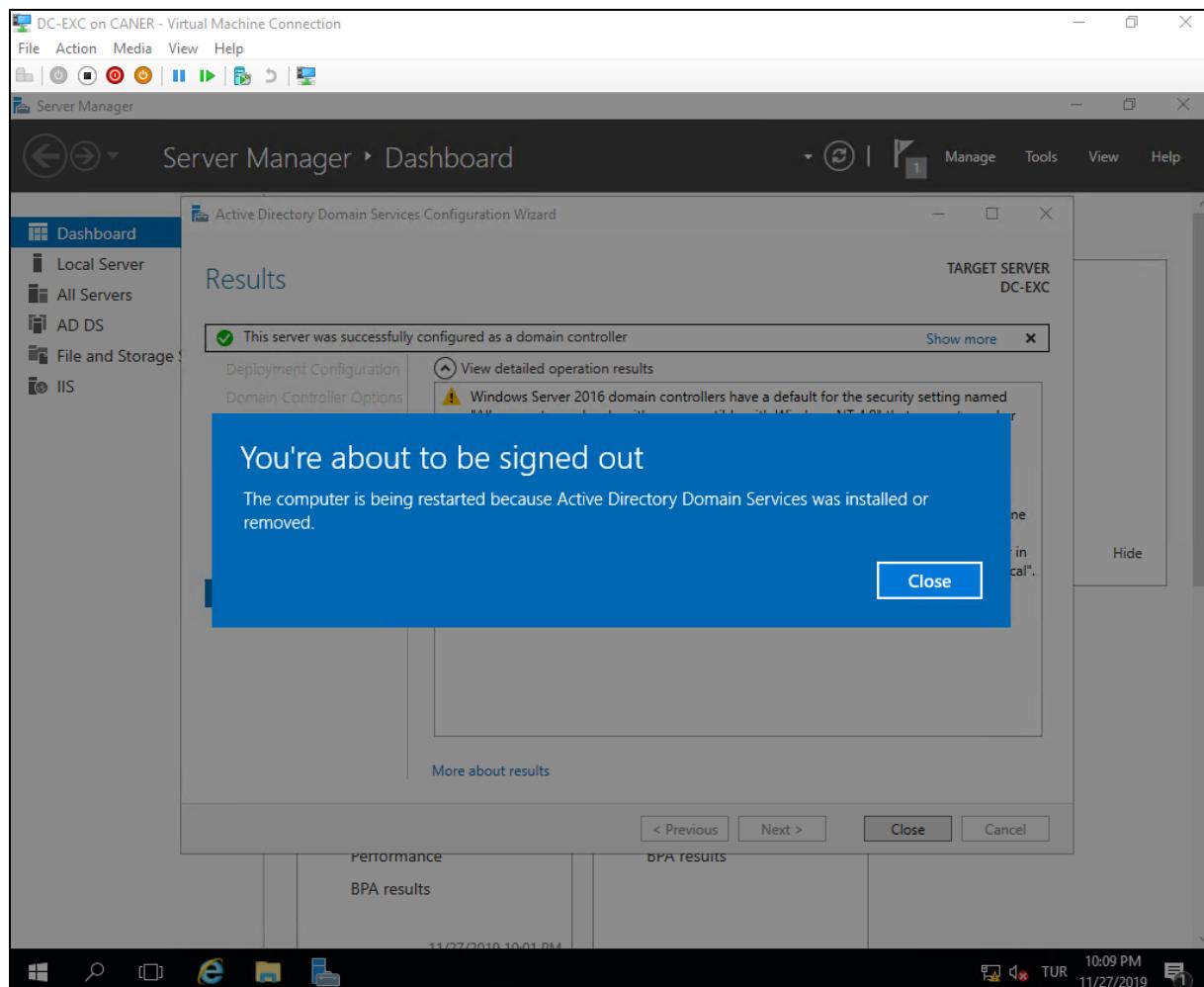




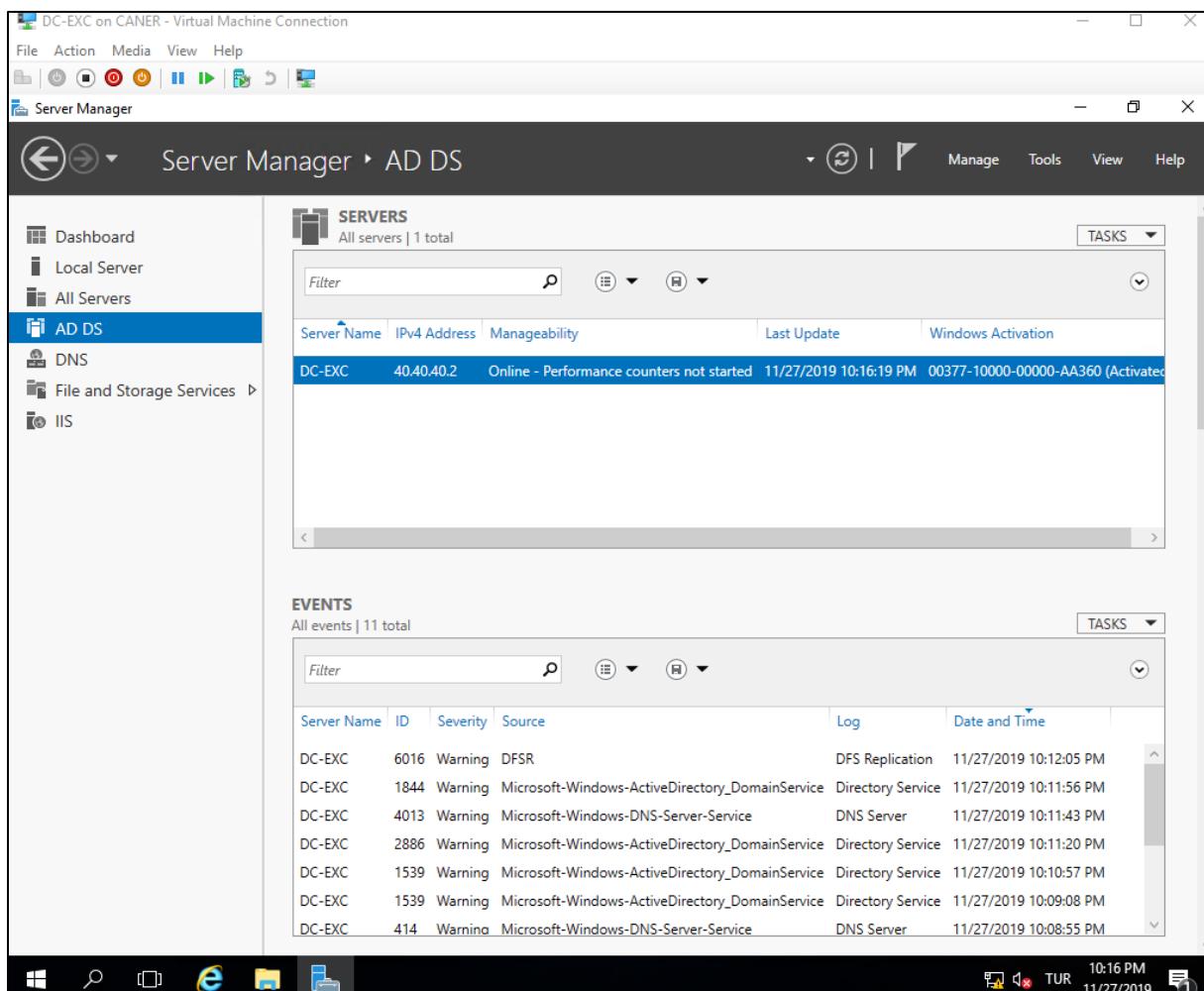


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After the installation, the PC restarts automatically.

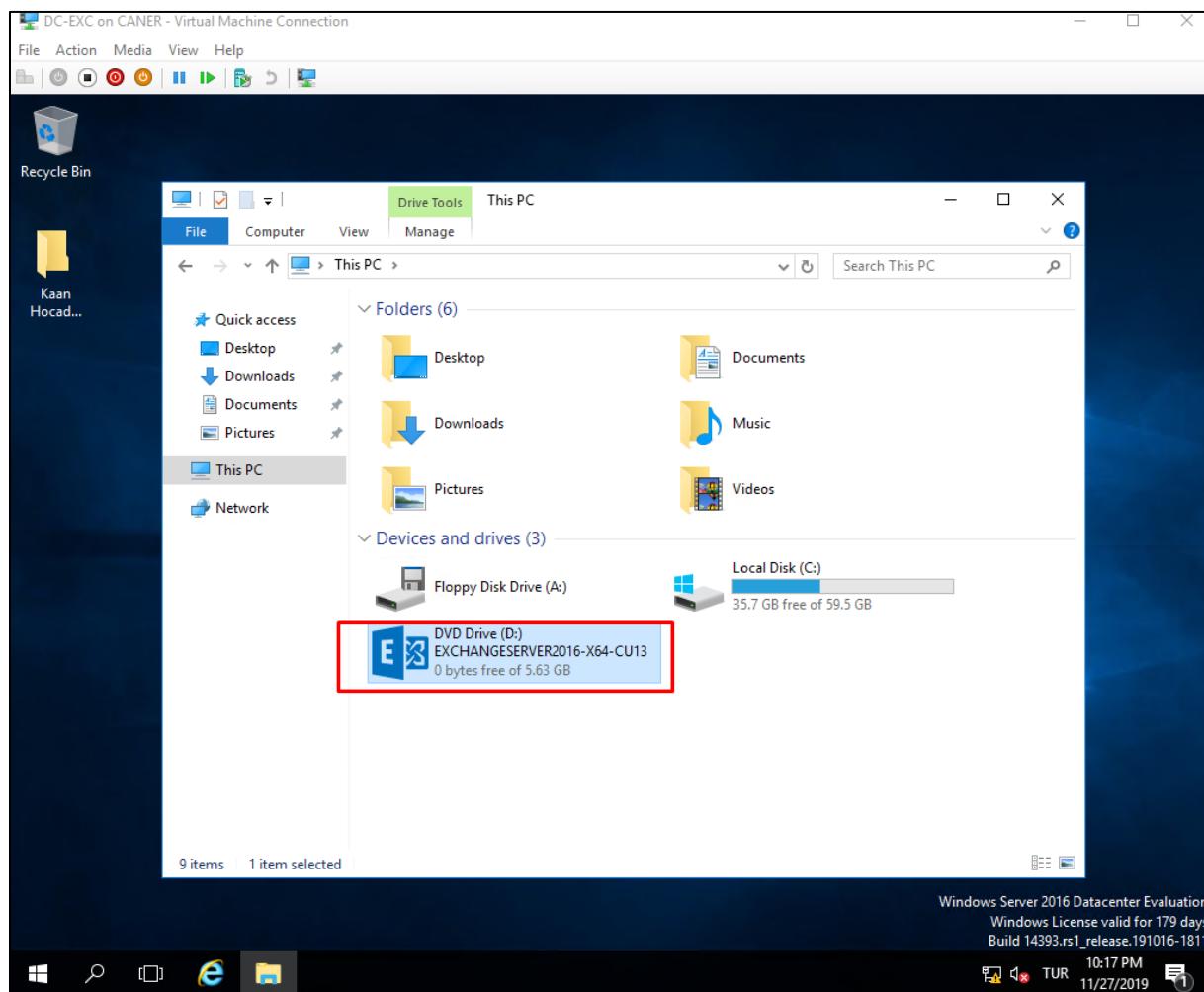


And the new Active Directory is all set.

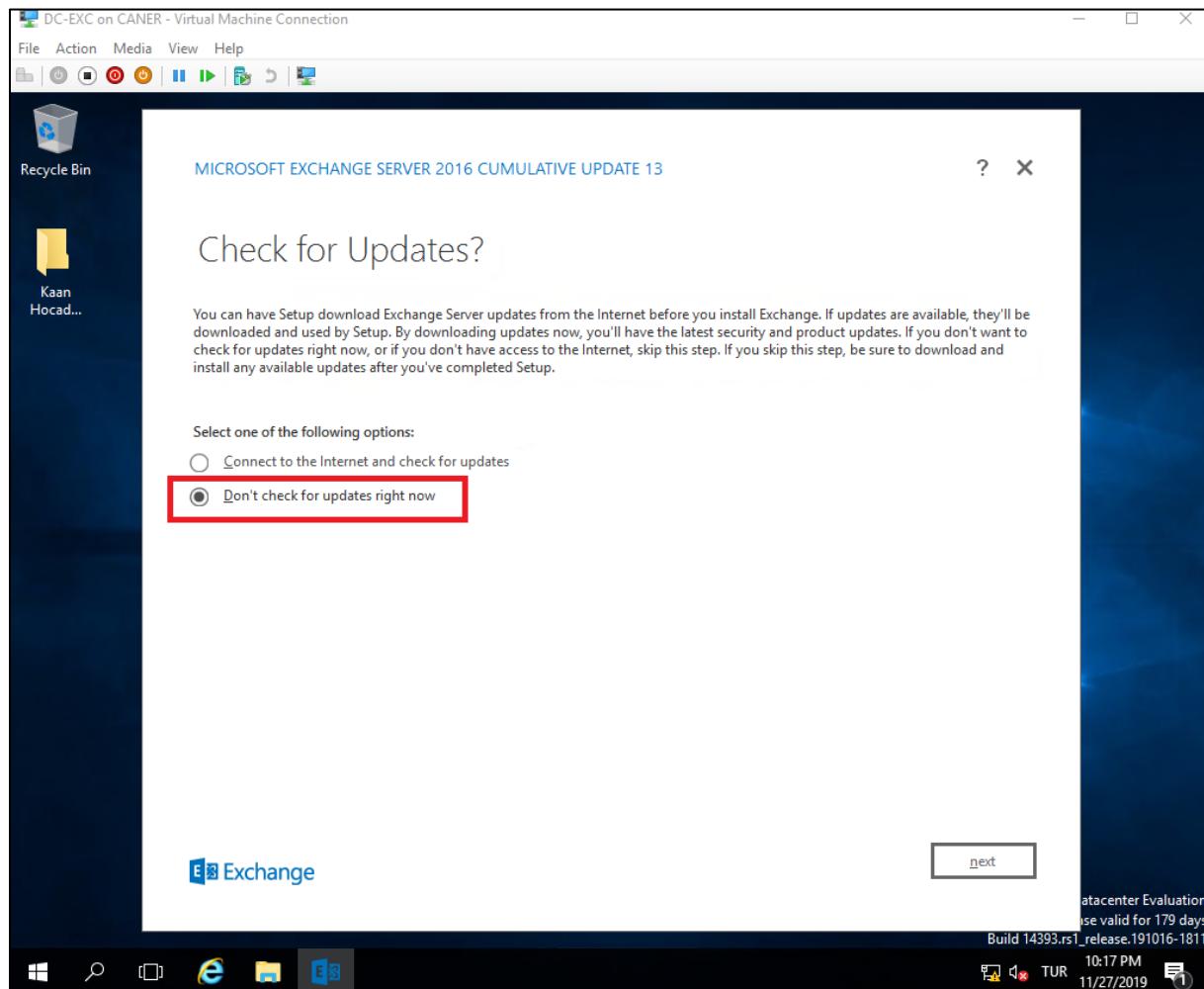


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We mount the Exchange Server 2016 iso file as if it's a mounted disk and run it.

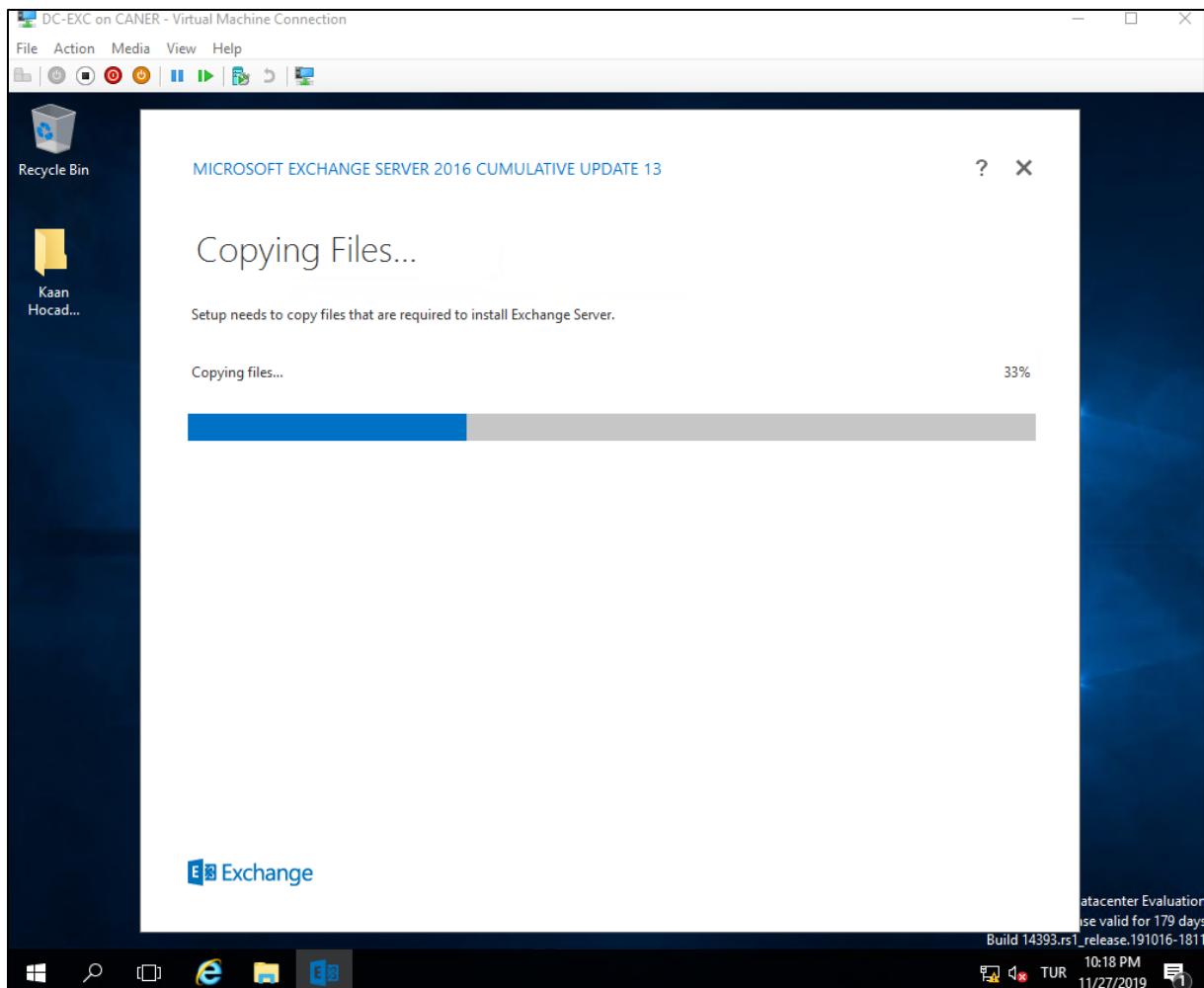


We choose “Don’t check for updates” since currently our server is not connected to the internet.

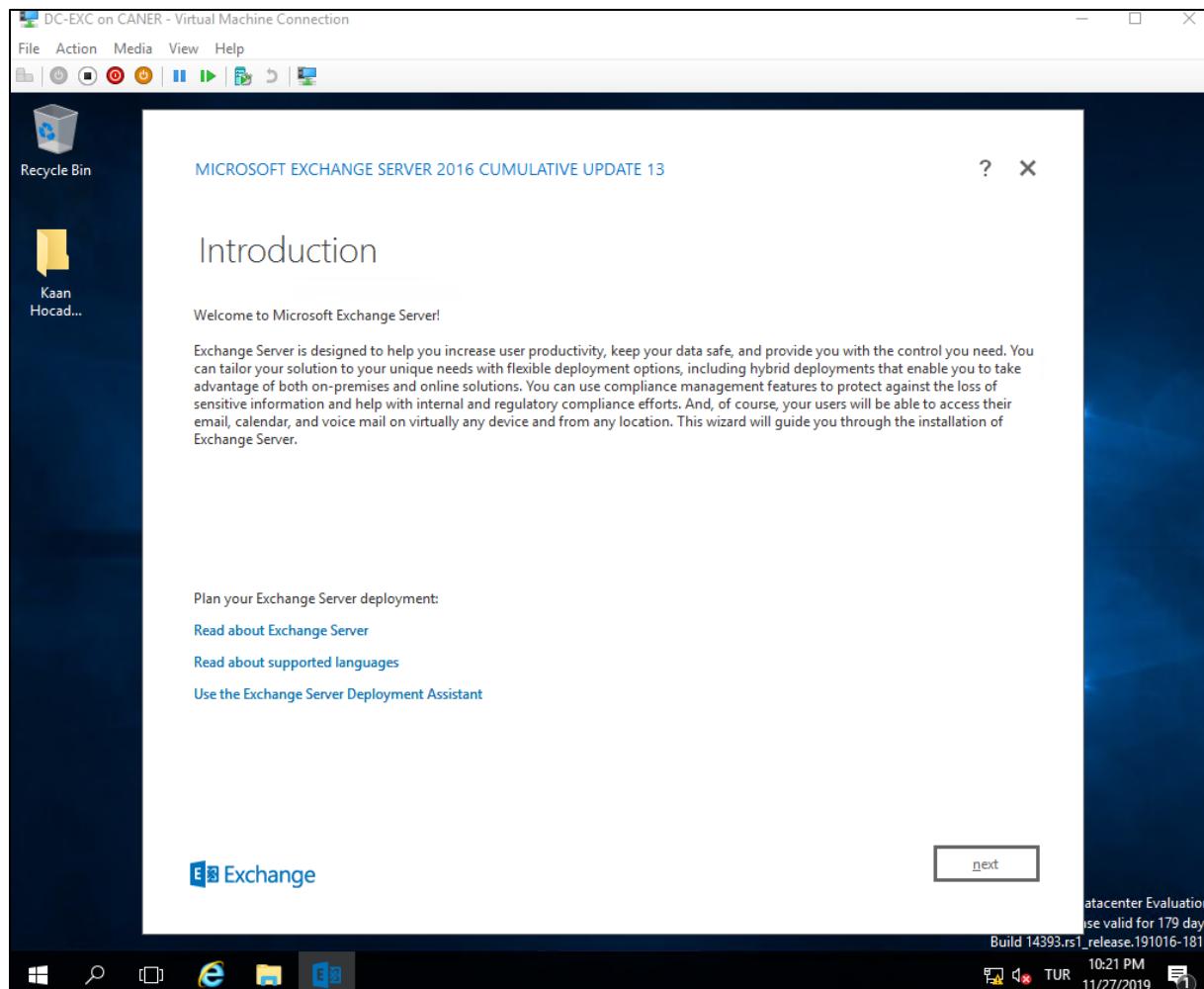


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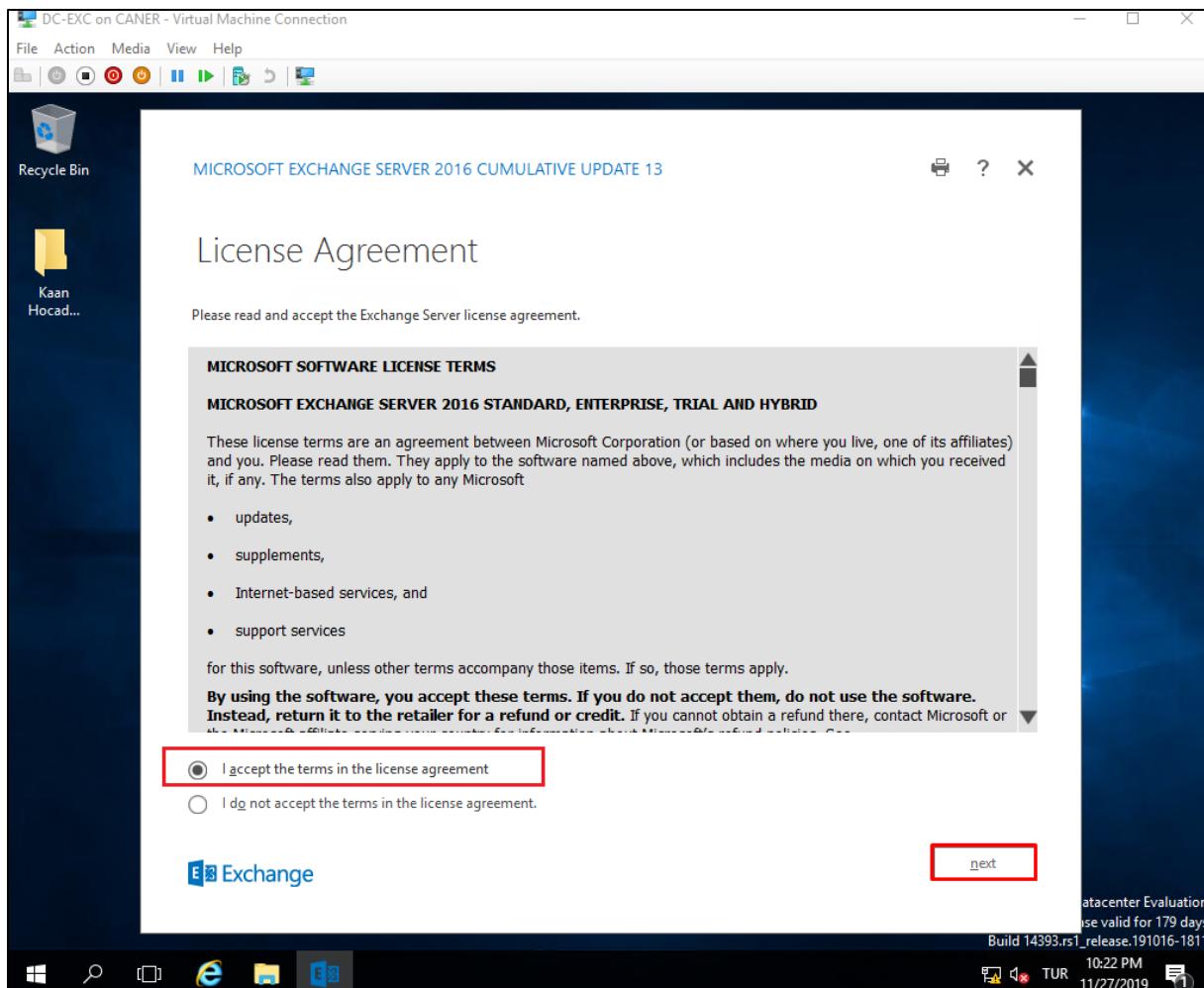
It starts to run...



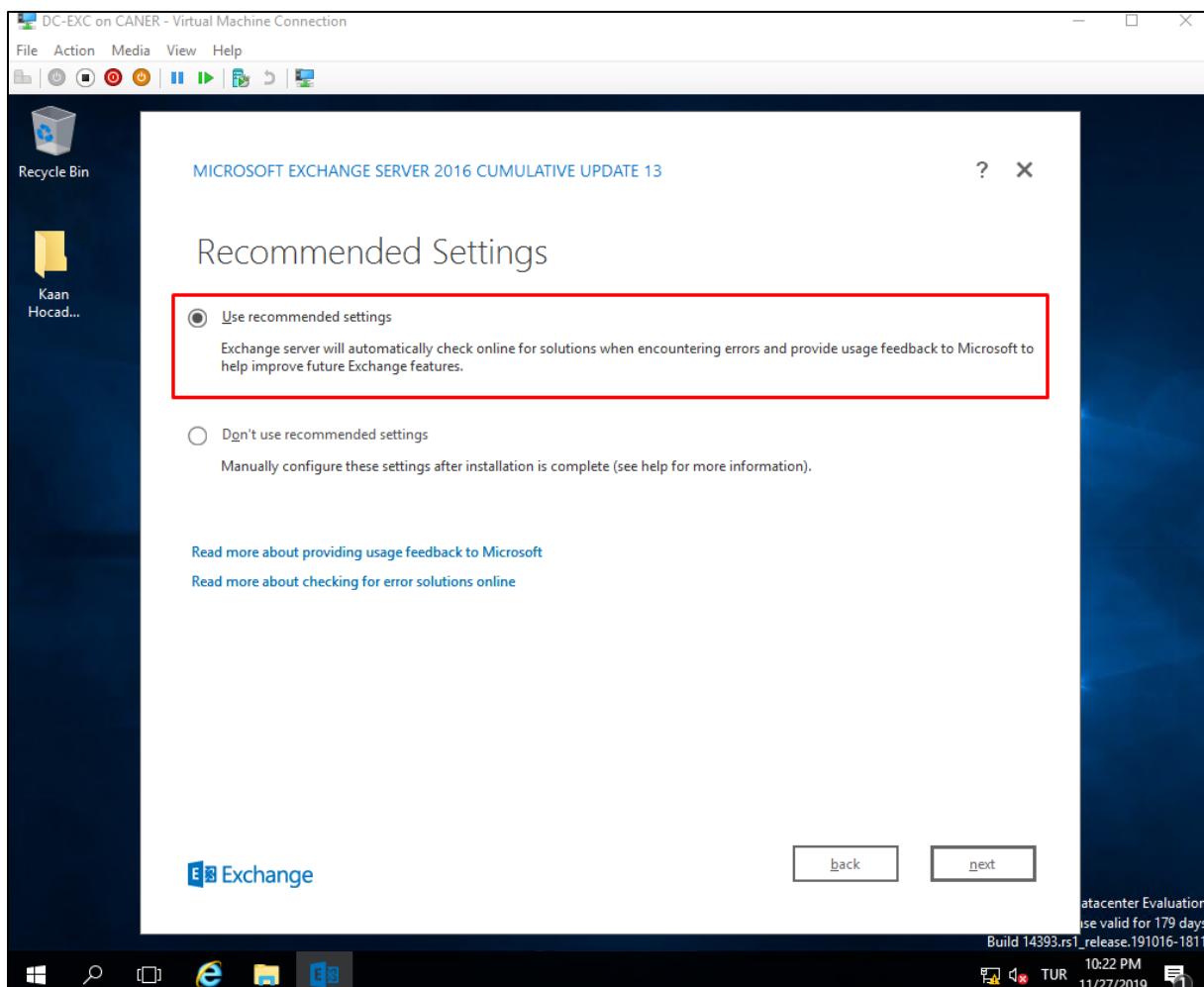
... and the Exchange Server is getting ready to set up.



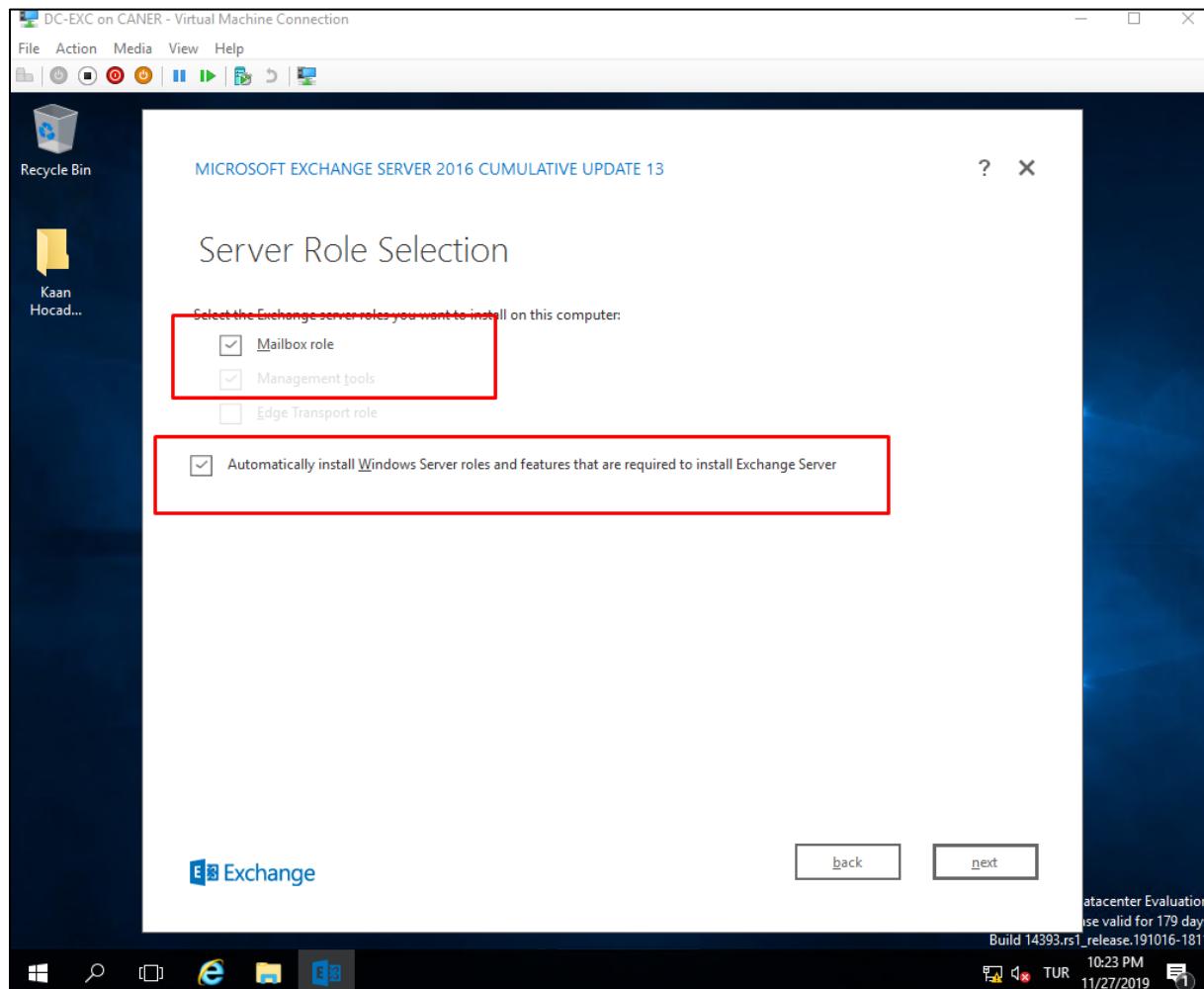
We agree the license agreement of course.



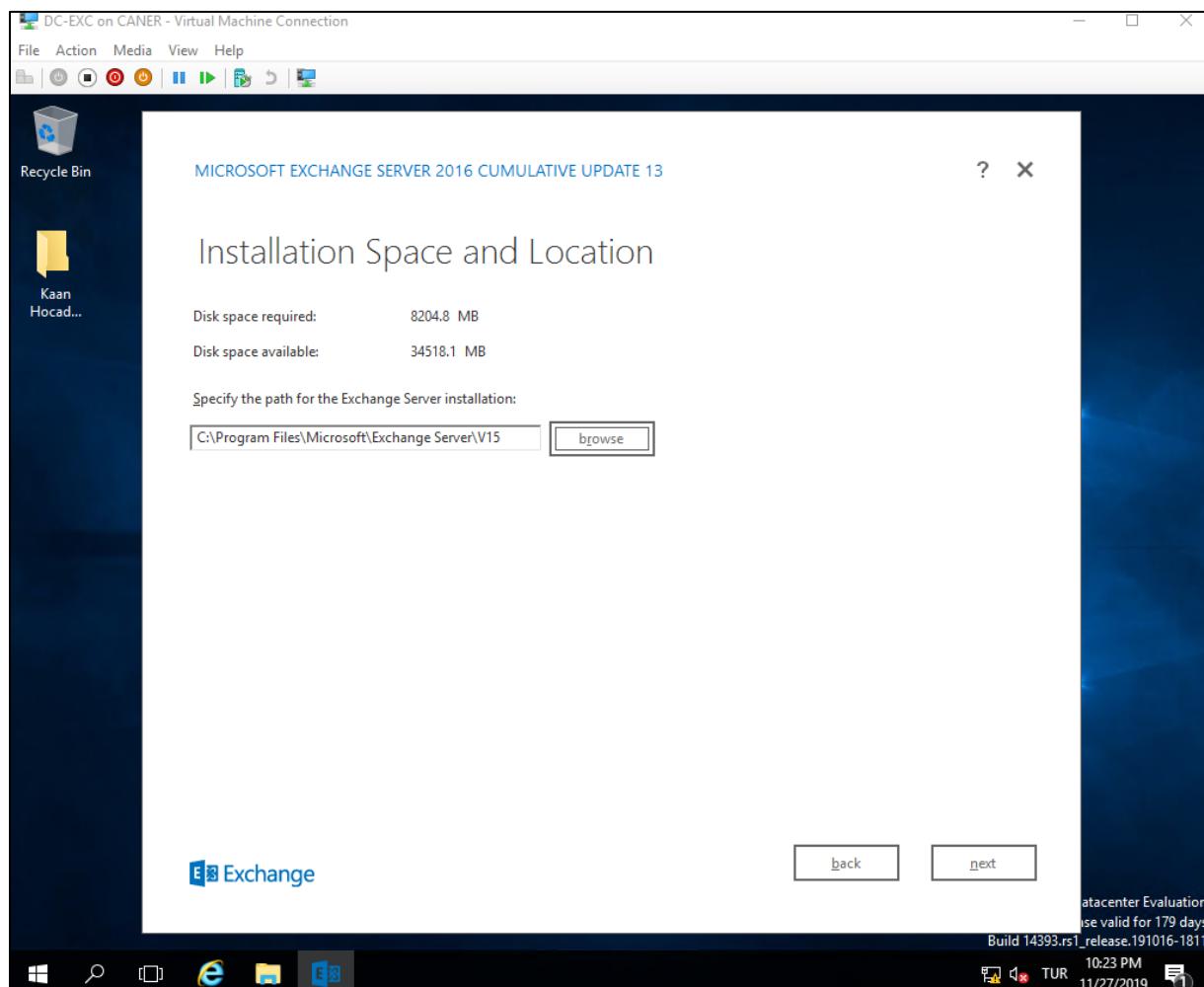
We use the recommended settings for the ease it provides.



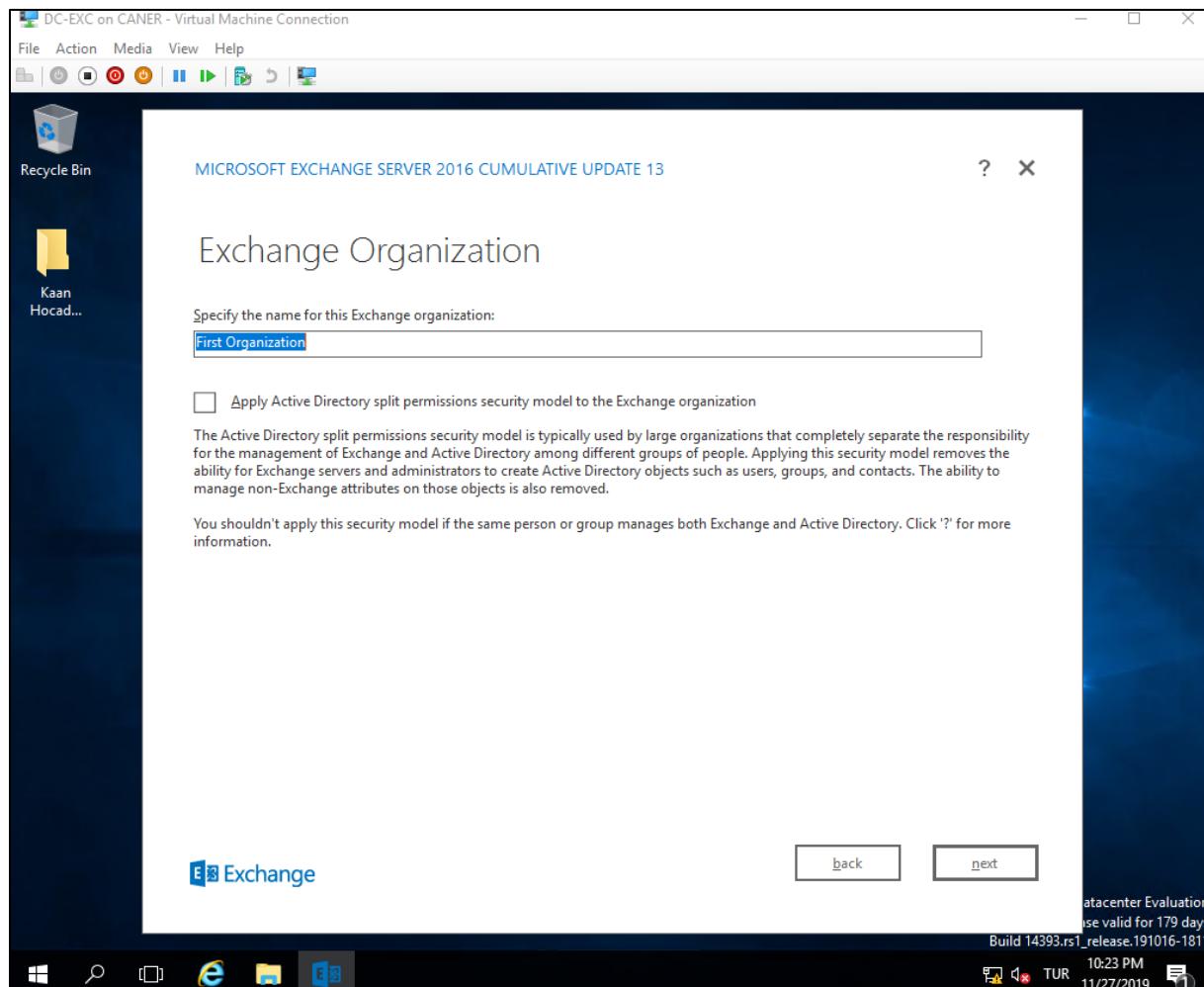
We choose the Mailbox Role and request it to automatically download roles and features it might need from Server 2016.



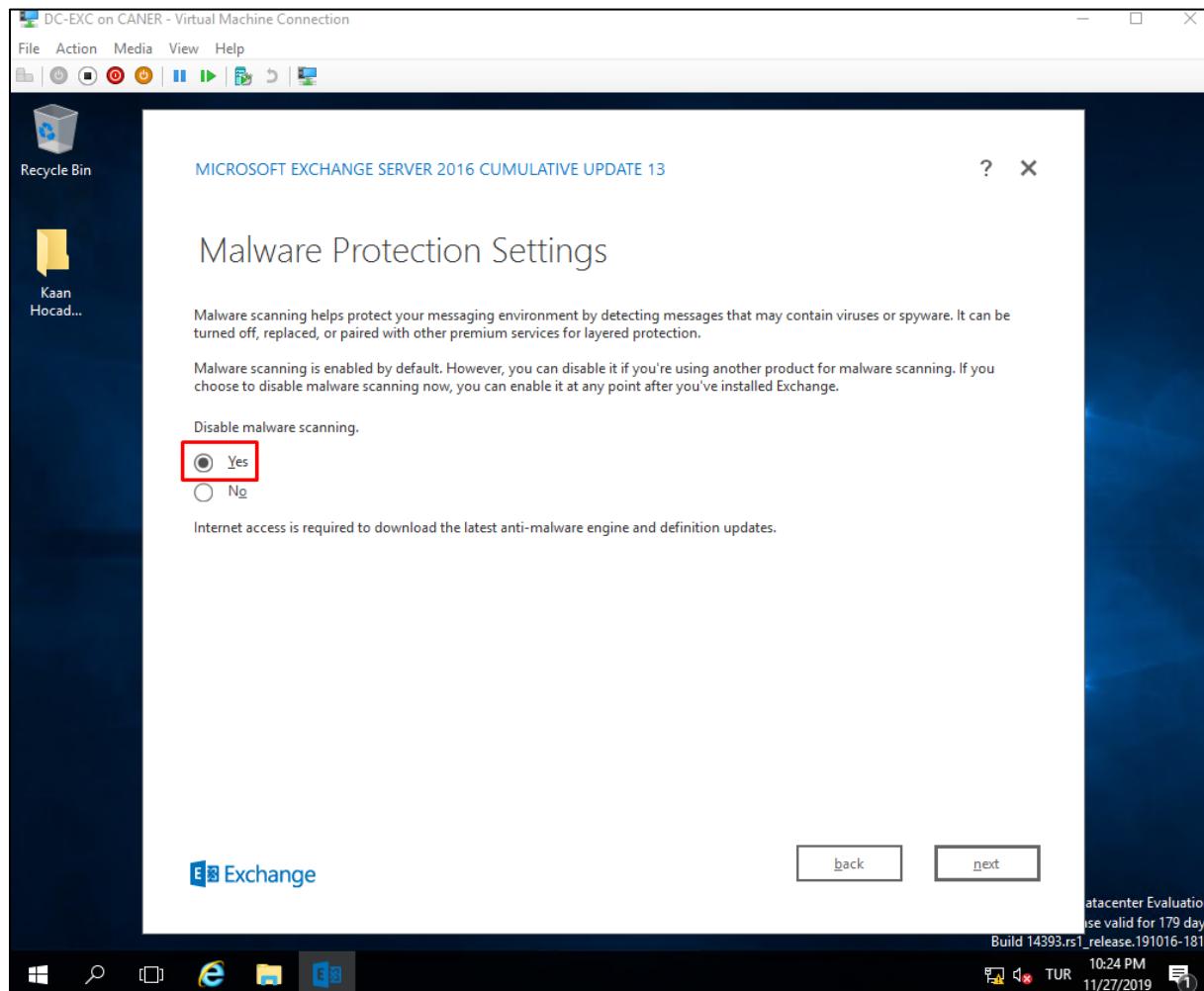
The default location has enough space, so we simply proceed.



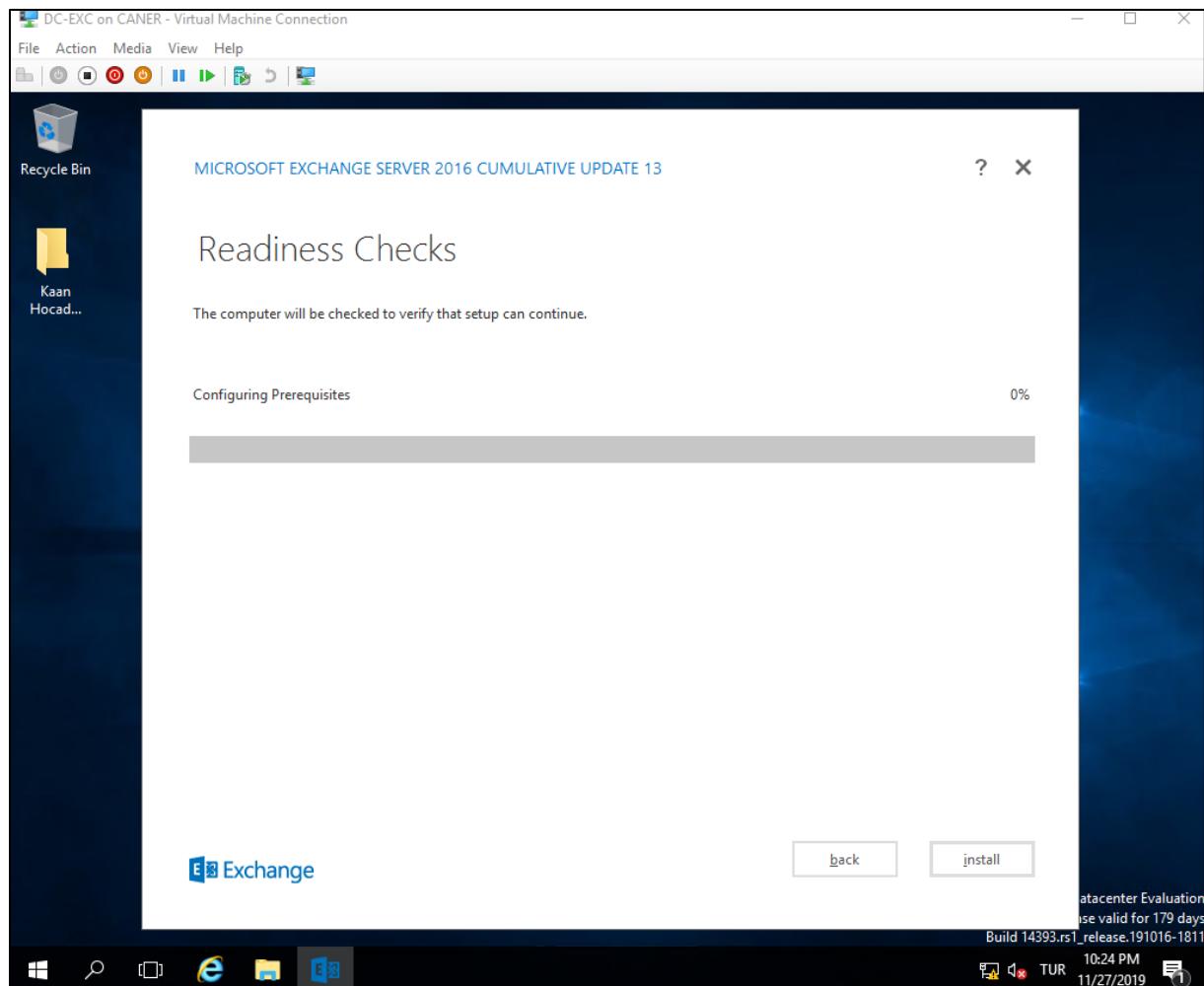
We didn't change any setting on this page.



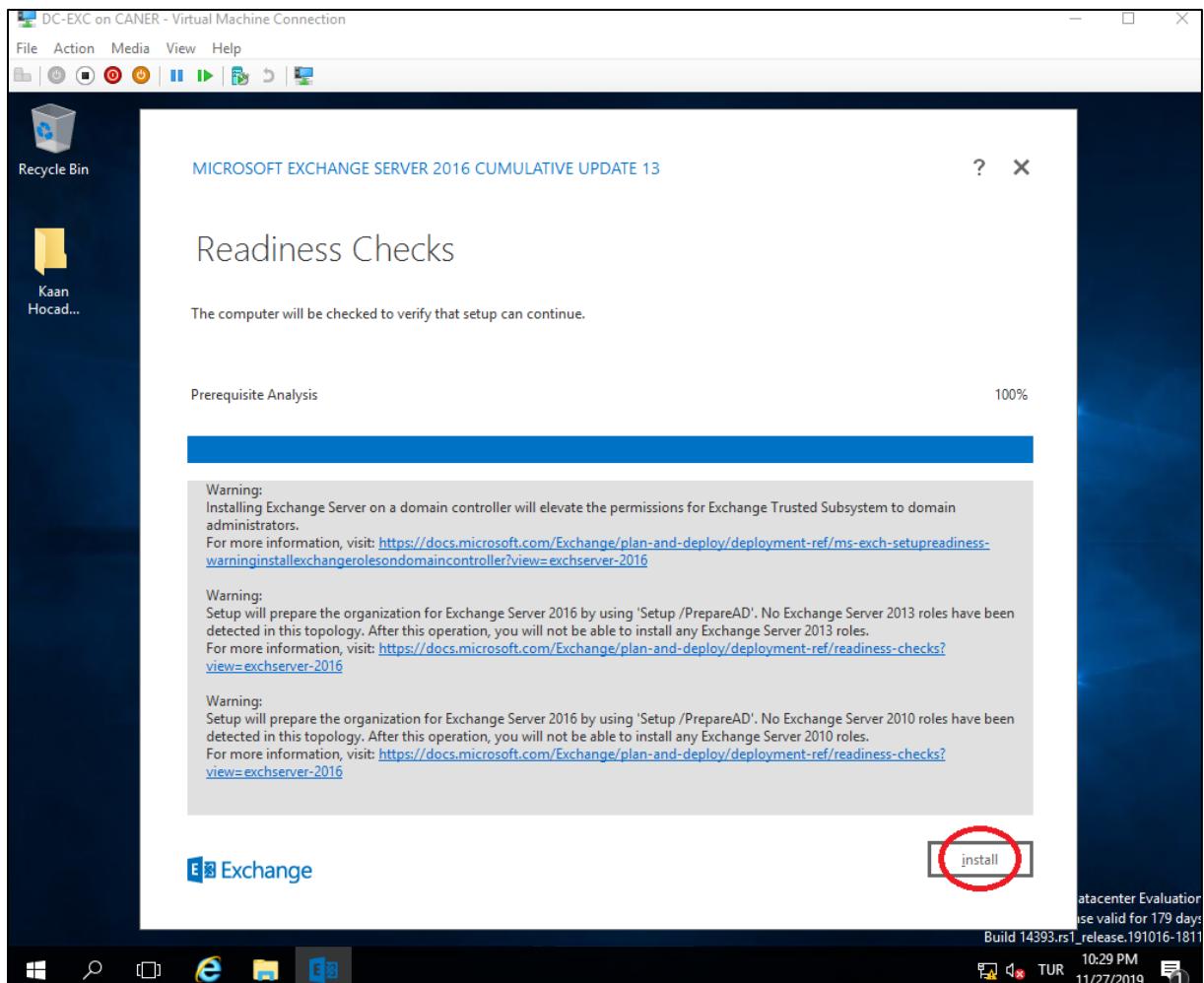
We want to disable malware scanning because it would prohibit our own internal e-mails as well.



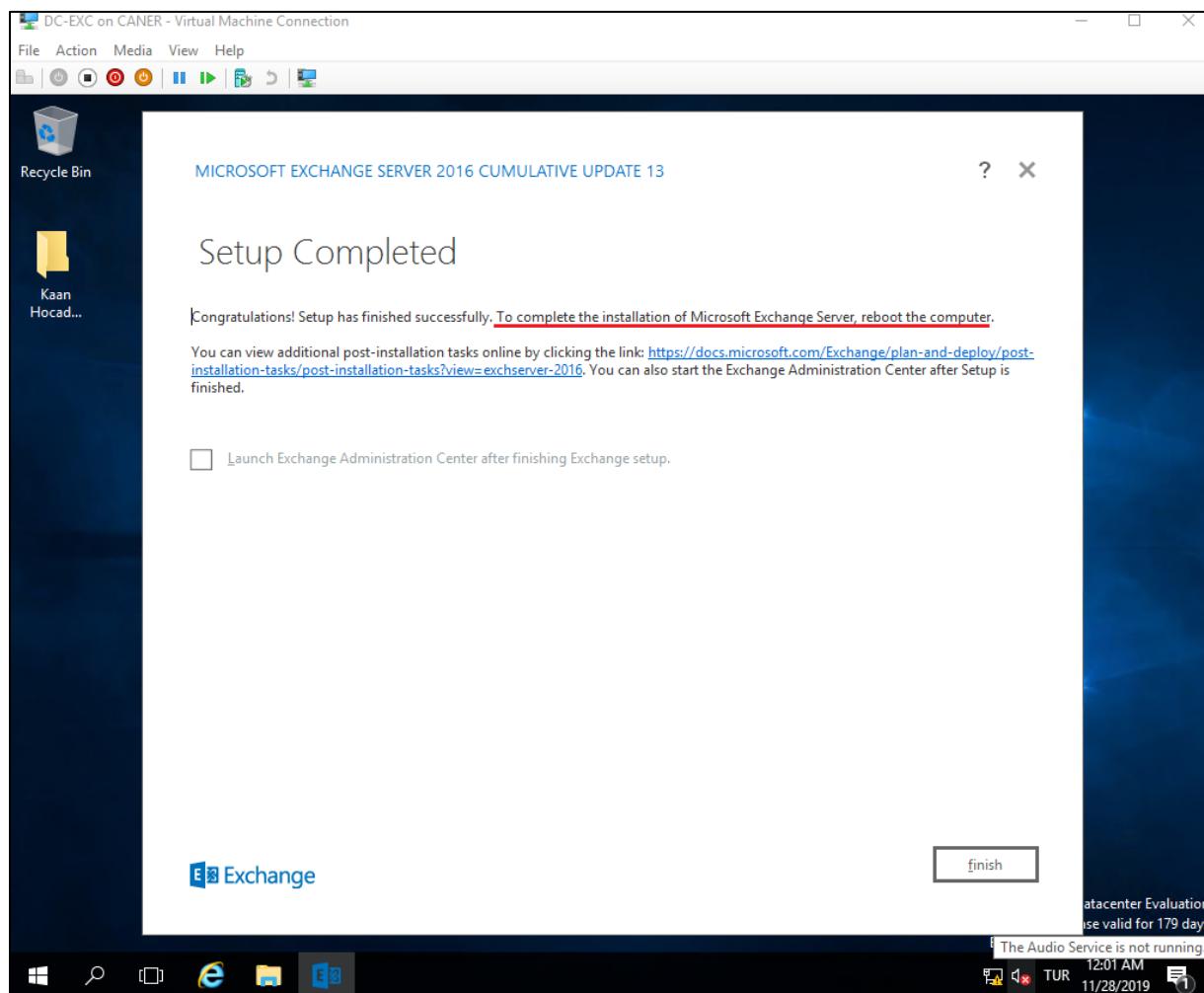
Then, the server does a Readiness Check.



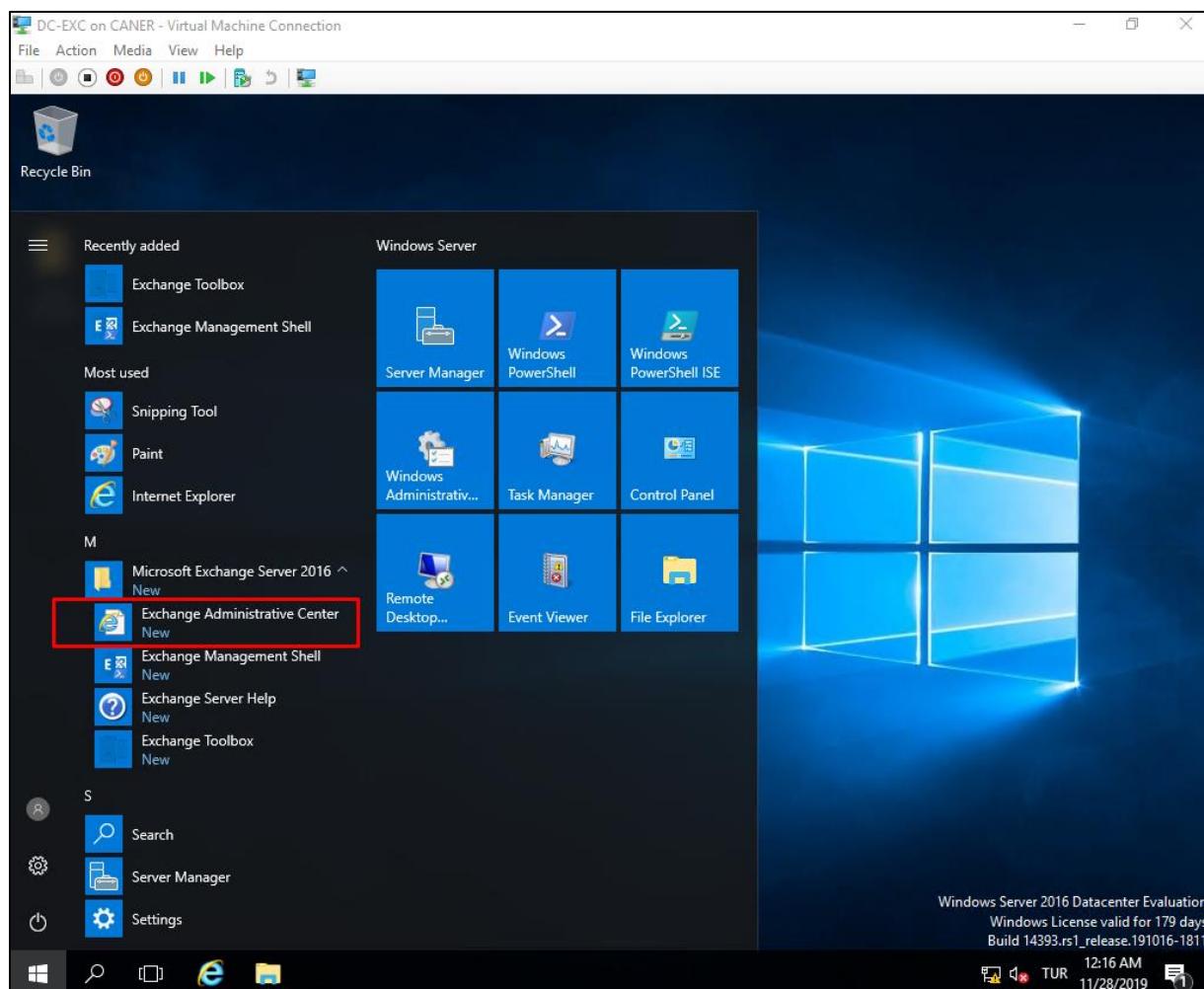
After the check is over, then we start the installation. The installation takes a very long while.



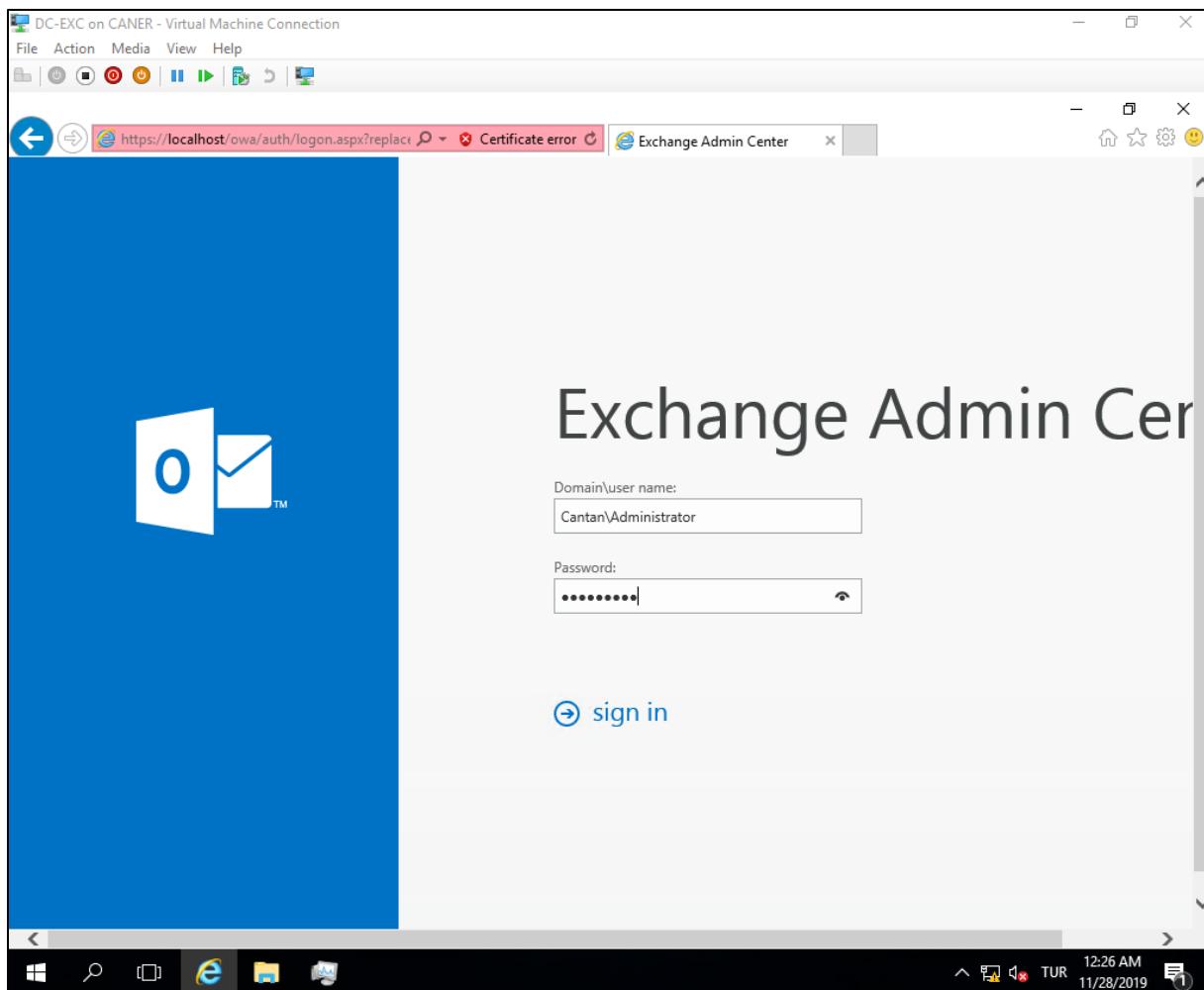
Once it ends, we need to reboot the server.



Then, we can start the Exchange Server 2016.



Then, we log in to the Administrator using the password from Active Directory.



This is the opening page of Exchange 2016 Admin Center.

The screenshot shows the Exchange Admin Center interface. The left sidebar has a 'recipients' section with links to permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers, and hybrid. The main area is titled 'Exchange admin center' and shows the 'mailboxes' page. A navigation bar at the top includes 'File', 'Action', 'Media', 'View', 'Help', and links for 'Enterprise' and 'Office 365'. A certificate error message is displayed in the address bar. The 'mailboxes' tab is selected, showing a table with columns: DISPLAY NAME, MAILBOX TYPE, and EMAIL ADDRESS. One row is selected for 'Administrator', which is a 'User' type with the email 'Administrator@cantan.local'. To the right, detailed information for the selected mailbox is shown, including fields for Title, Office, Work phone, and sections for Phone and Voice Features, Unified Messaging (disabled), and Mobile Devices (with options to enable ActiveSync or OWA for devices). The status bar at the bottom shows '1 selected of 1 total' and the system tray indicates it's 3:36 AM on 11/21/2019.

DISPLAY NAME	MAILBOX TYPE	EMAIL ADDRESS
Administrator	User	Administrator@cantan.local

Administrator

User mailbox
Administrator@cantan.local

Title:
Office:
Work phone:

Phone and Voice Features

Unified Messaging: Disabled

[Enable](#)

Mobile Devices

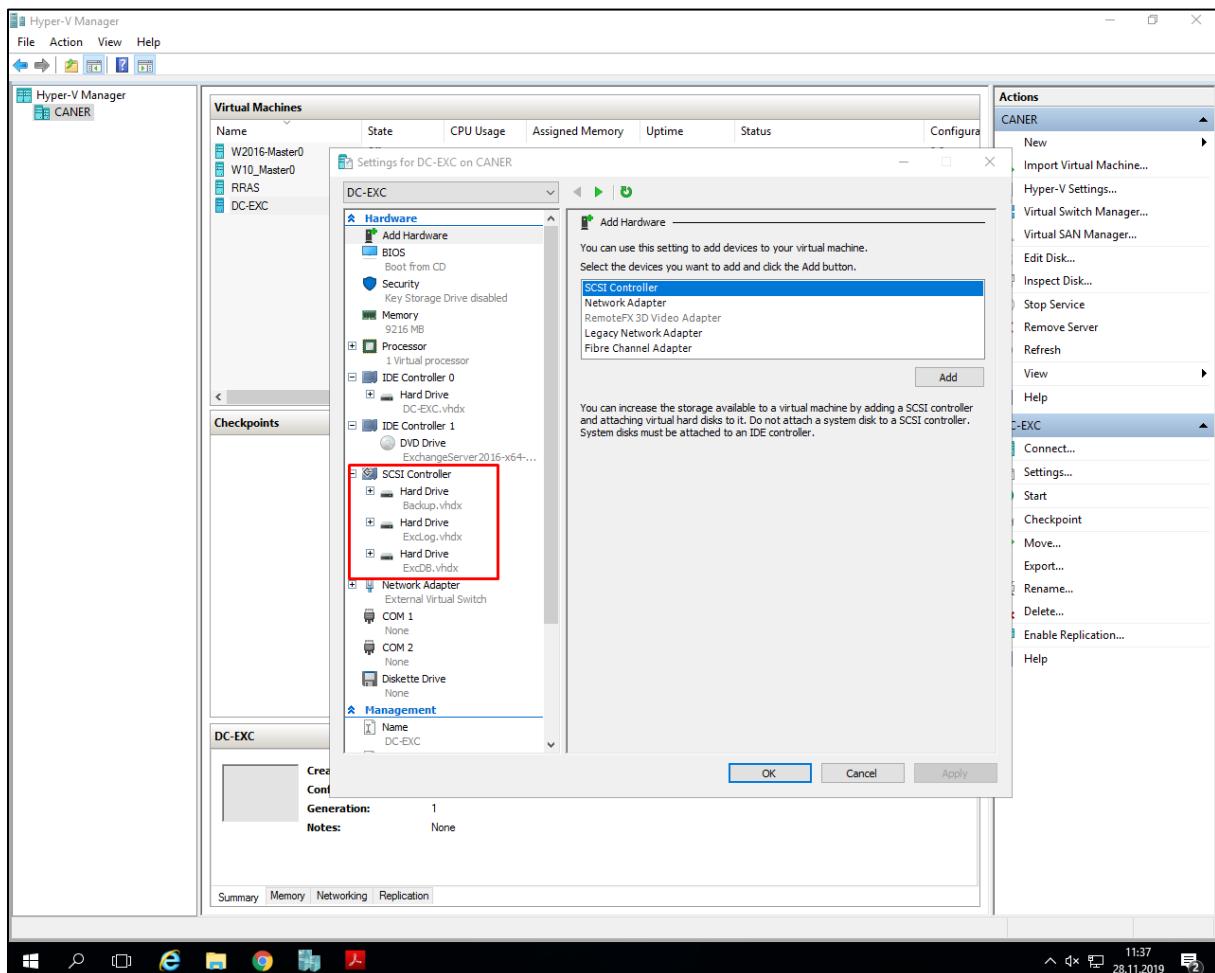
[Disable Exchange ActiveSync](#)

[Disable OWA for Devices](#)

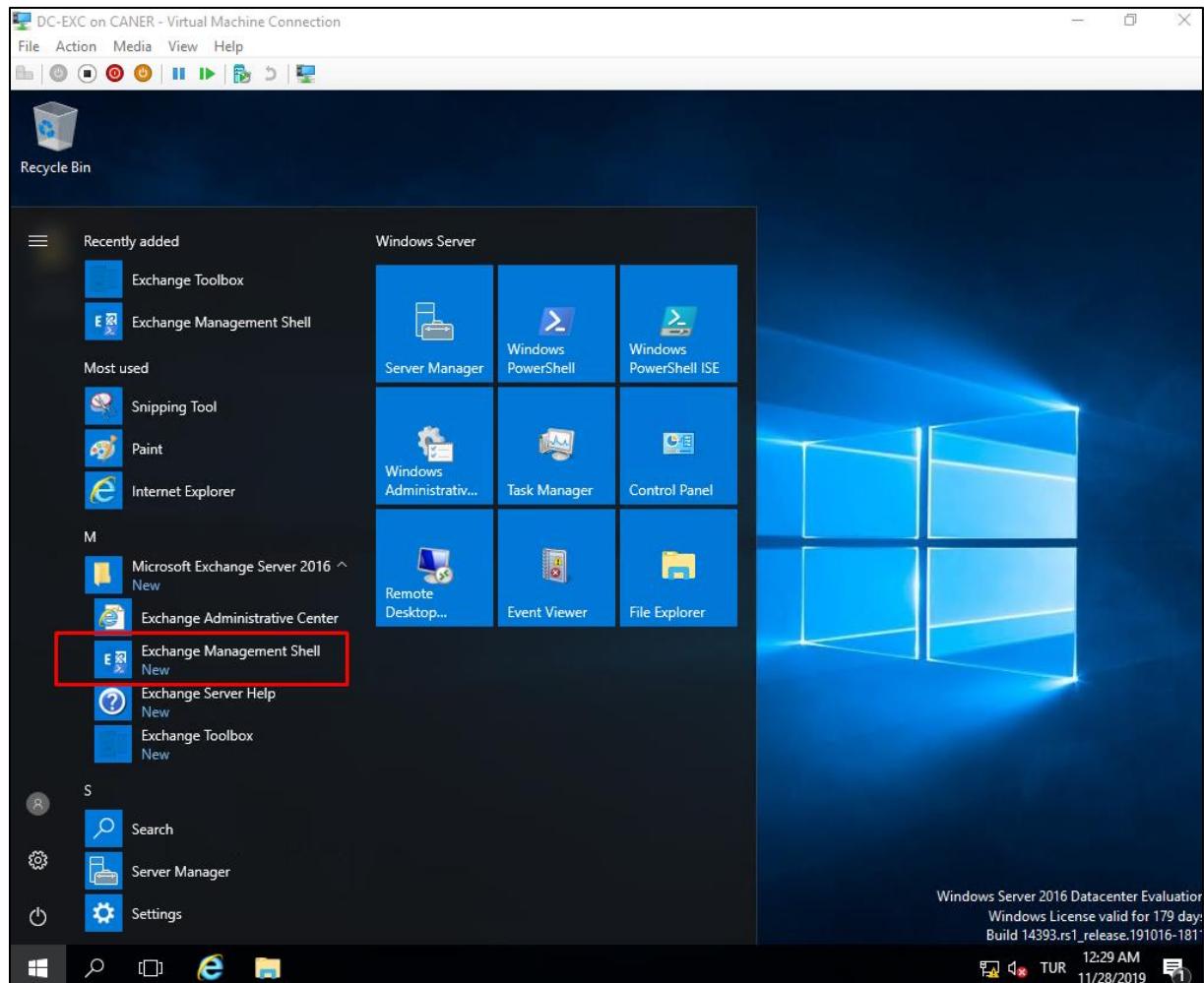
[View details](#)

1 selected of 1 total

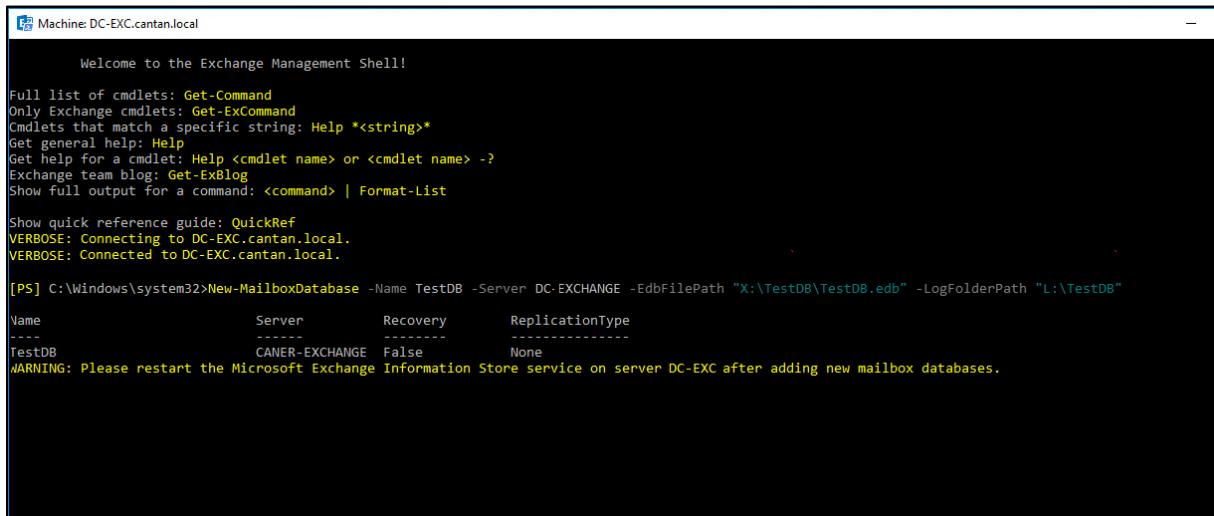
We want to change where our mailboxes are to specific physical drives. So, we add new hard drives to the virtual machine. The disks are named Backup, ExcLog and ExcDB.



We want to change some settings, so we get to the Exchange Management Shell for ease.



We type the following command to create a new mailbox database on the new drive we added: ExcDB. The database is called TestDB.



The screenshot shows a terminal window titled "Machine: DC-EXC.cantan.local" running the Exchange Management Shell. The command entered is:

```
[PS] C:\Windows\system32>New-MailboxDatabase -Name TestDB -Server DC-EXCHANGE -EdbFilePath "X:\TestDB\TestDB.edb" -LogFolderPath "L:\TestDB"
```

The output shows the creation of a new database:

Name	Server	Recovery	ReplicationType
TestDB	CANER-EXCHANGE	False	None

A yellow warning message at the bottom states: "WARNING: Please restart the Microsoft Exchange Information Store service on server DC-EXC after adding new mailbox databases."

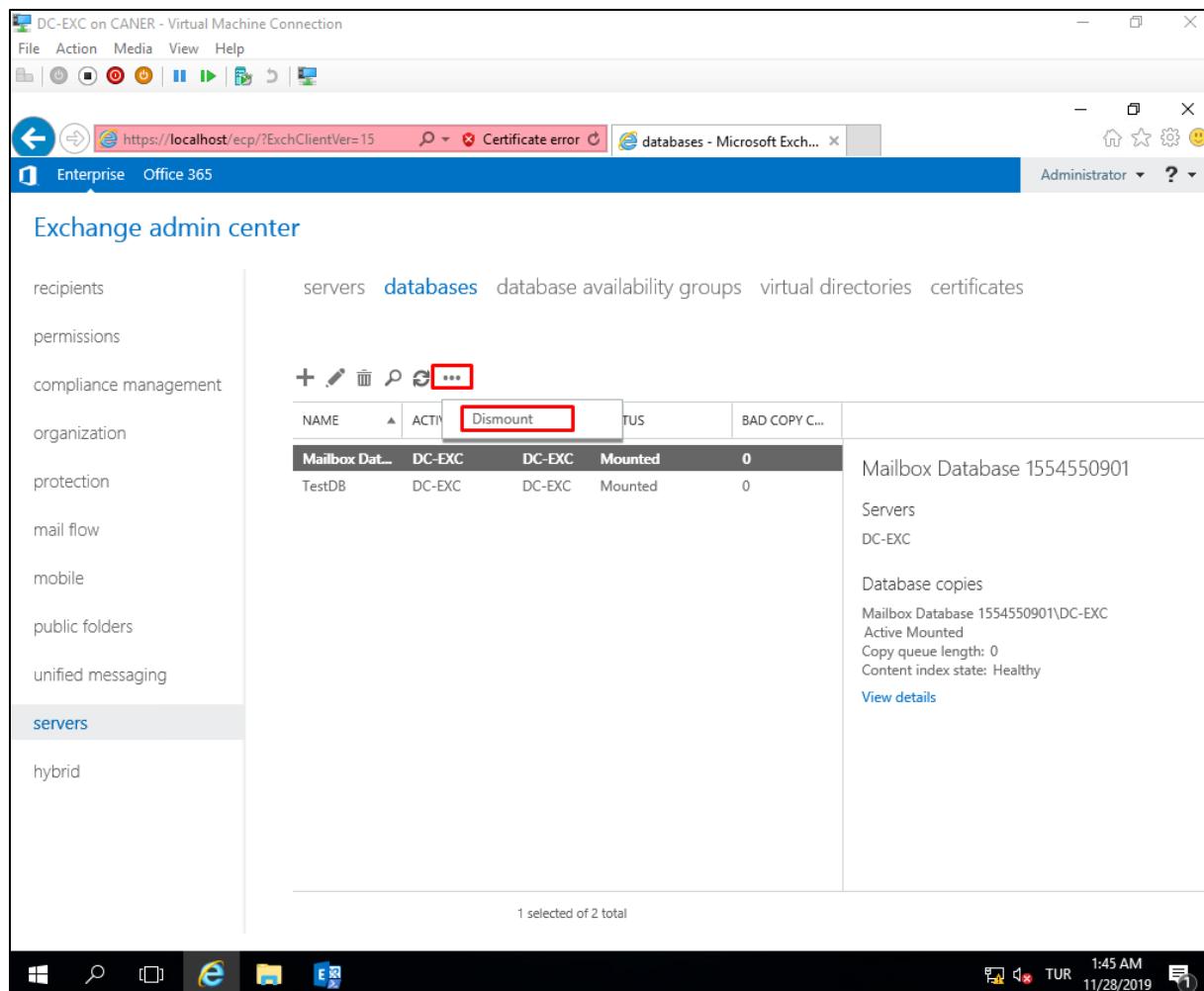
As you can see after creating the new mailbox database it is mandatory that we restart Microsoft Exchange Information Store service. However, it's probably a better idea to restart the entire server.

We need to mount the new mail database to be able to use it for our new users.

The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation pane with links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers (which is selected), and hybrid. The main area has tabs for servers, databases, database availability groups, virtual directories, and certificates. Below these tabs is a toolbar with icons for add, edit, delete, search, and more. A red box highlights the 'Mount' button in the toolbar. The main content area displays a table of databases. The columns are NAME, ACTIVATED, TUS, and BAD COPY C... (partially visible). One row is highlighted, showing TestDB, DC-EXC, DC-EXC, and Dismounted. To the right of the table, there's a summary for TestDB: Servers (DC-EXC), Database copies (TestDB\DC-EXC, Active Dismounted, Copy queue length: 0, Content index state: Failed), and a 'View details' link. At the bottom, a status bar shows 1 selected of 2 total, and the system tray shows the date and time as 11/28/2019 1:44 AM.

NAME	ACTIVATED	TUS	BAD COPY C...
TestDB	DC-EXC	DC-EXC	Dismounted

Then, we dismount the previously mounted default database since we no longer need it.



The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation menu with items like recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers (which is selected), and hybrid. The main area has tabs for databases, server availability groups, virtual directories, and certificates. Below these tabs is a toolbar with icons for add, edit, delete, search, and more. A red box highlights the 'Dismount' button in the toolbar. The main content area displays a table of databases. One row is selected, showing 'Mailbox Database 1554550901' on the server 'DC-EXC'. The 'Mounted' status is listed as '0'. A red box highlights the 'Dismount' button in the toolbar. The table has columns: NAME, ACTI, Dismount, TUS, and BAD COPY C... . The 'Dismount' column contains a button with three dots. The table shows one entry: Mailbox Database 1554550901, DC-EXC, DC-EXC, Mounted, 0. Below the table, it says '1 selected of 2 total'. At the bottom right, there's a taskbar with icons for Start, Search, Task View, Edge browser, File Explorer, and Exchange Admin Center. The date and time are shown as 11/28/2019 1:45 AM.

NAME	ACTI	Dismount	TUS	BAD COPY C...
Mailbox Database 1554550901	DC-EXC	DC-EXC	Mounted	0
TestDB	DC-EXC	DC-EXC	Mounted	0

The unnecessary database is dismounted.

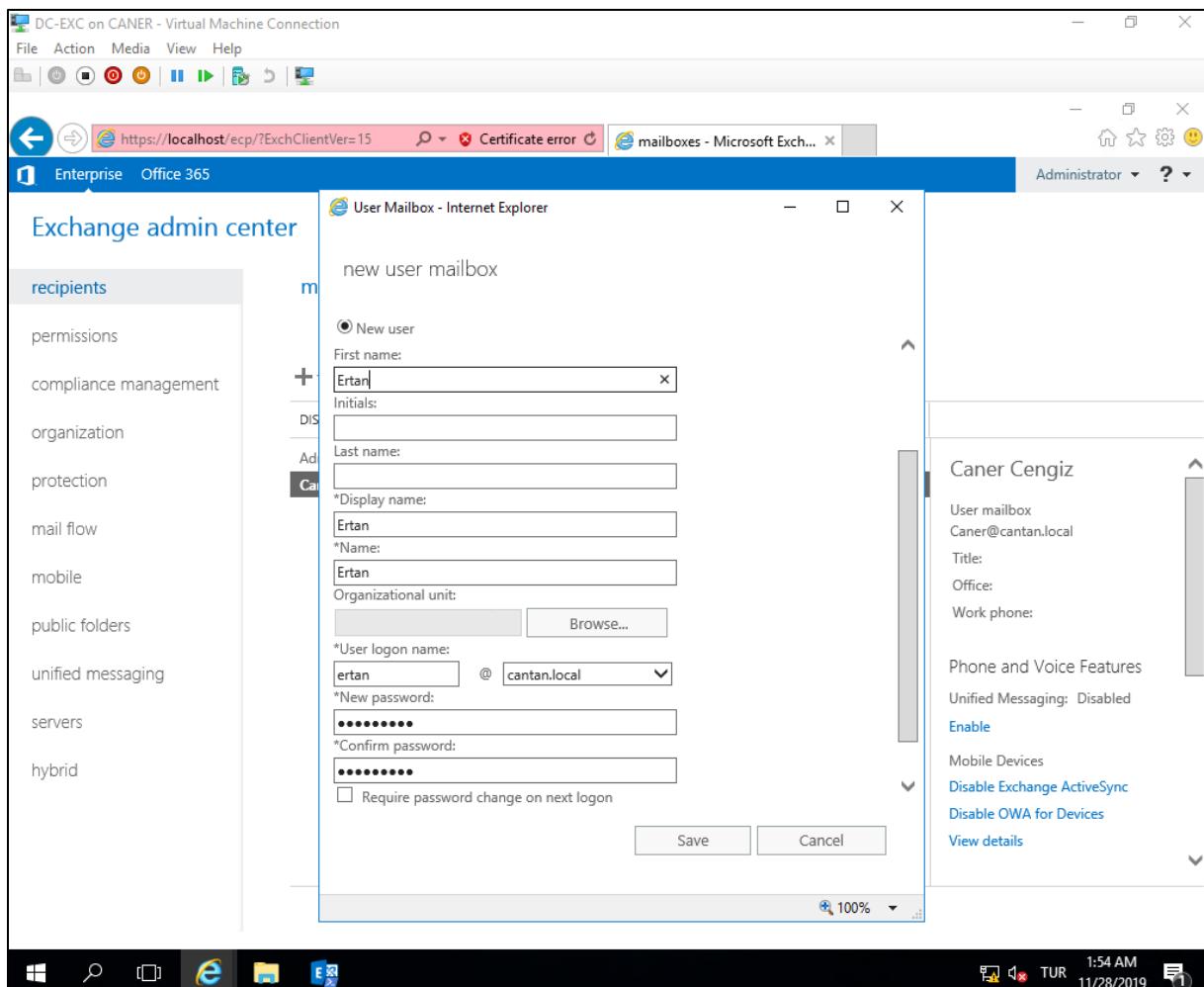
The screenshot shows the Exchange Admin Center interface. The left navigation pane lists various administrative categories: recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers, and hybrid. The 'servers' category is highlighted with a red box. The top navigation bar includes links for Enterprise and Office 365, and the status bar shows 'Administrator'. The main content area is titled 'Exchange admin center' and displays a table of databases. The table has columns for NAME, ACTIVE ON S..., SERVER..., STATUS, and BAD COPY C... . There are two entries: 'Mailbox Dat...' and 'TestDB'. The 'Mailbox Dat...' entry is listed as 'Dismounted'. The 'TestDB' entry is listed as 'Mounted'. A message at the bottom of the table states '0 selected of 2 total'.

NAME	ACTIVE ON S...	SERVER...	STATUS	BAD COPY C...
Mailbox Dat...	DC-EXC	DC-EXC	Dismounted	0
TestDB	DC-EXC	DC-EXC	Mounted	0

Then, we want to create new mailboxes for our users. Under recipients, mailboxes we click on the plus sign and select user mailbox.

The screenshot shows the Exchange admin center interface. On the left, there is a navigation menu with several items: permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers, and hybrid. The 'recipients' item is highlighted with a red box. On the right, there is a top navigation bar with 'Enterprise Office 365' and 'Administrator'. Below it, the title 'Exchange admin center' is displayed. Underneath the title, there is a navigation bar with 'mailboxes' highlighted with a red box, along with other options: groups, resources, contacts, shared, and migration. A table lists existing mailboxes: one entry for 'User mailbox' (Linked mailbox) with 'MAILBOX TYPE' set to 'User' and 'EMAIL ADDRESS' set to 'Administrator@cantan.local'. At the bottom of the main content area, it says '0 selected of 1 total'. The bottom of the screen shows the Windows taskbar with various icons and the system tray indicating the date and time as '11/28/2019 1:51 AM'.

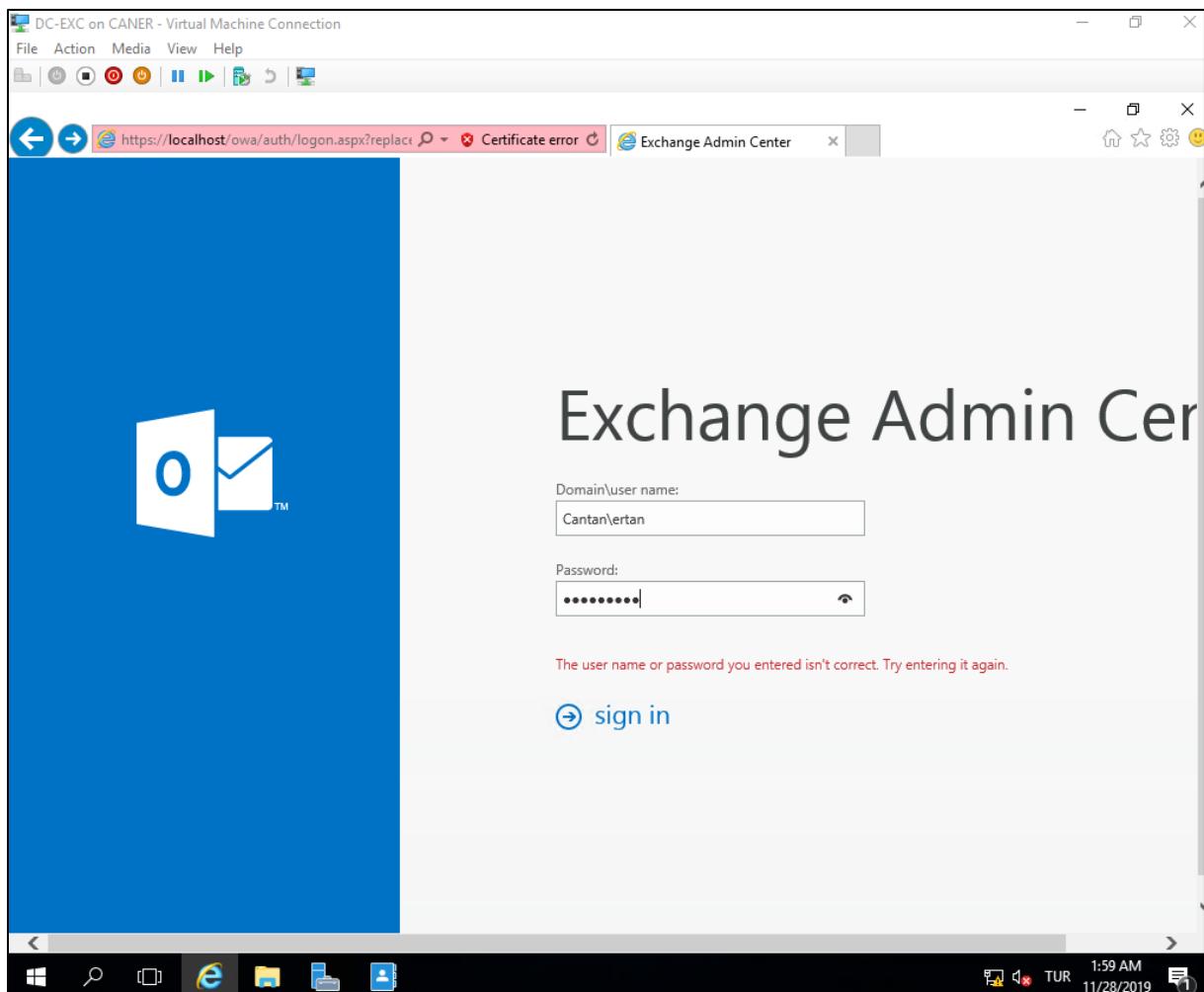
We enter the information of the new user. The logon name and password are crucial.



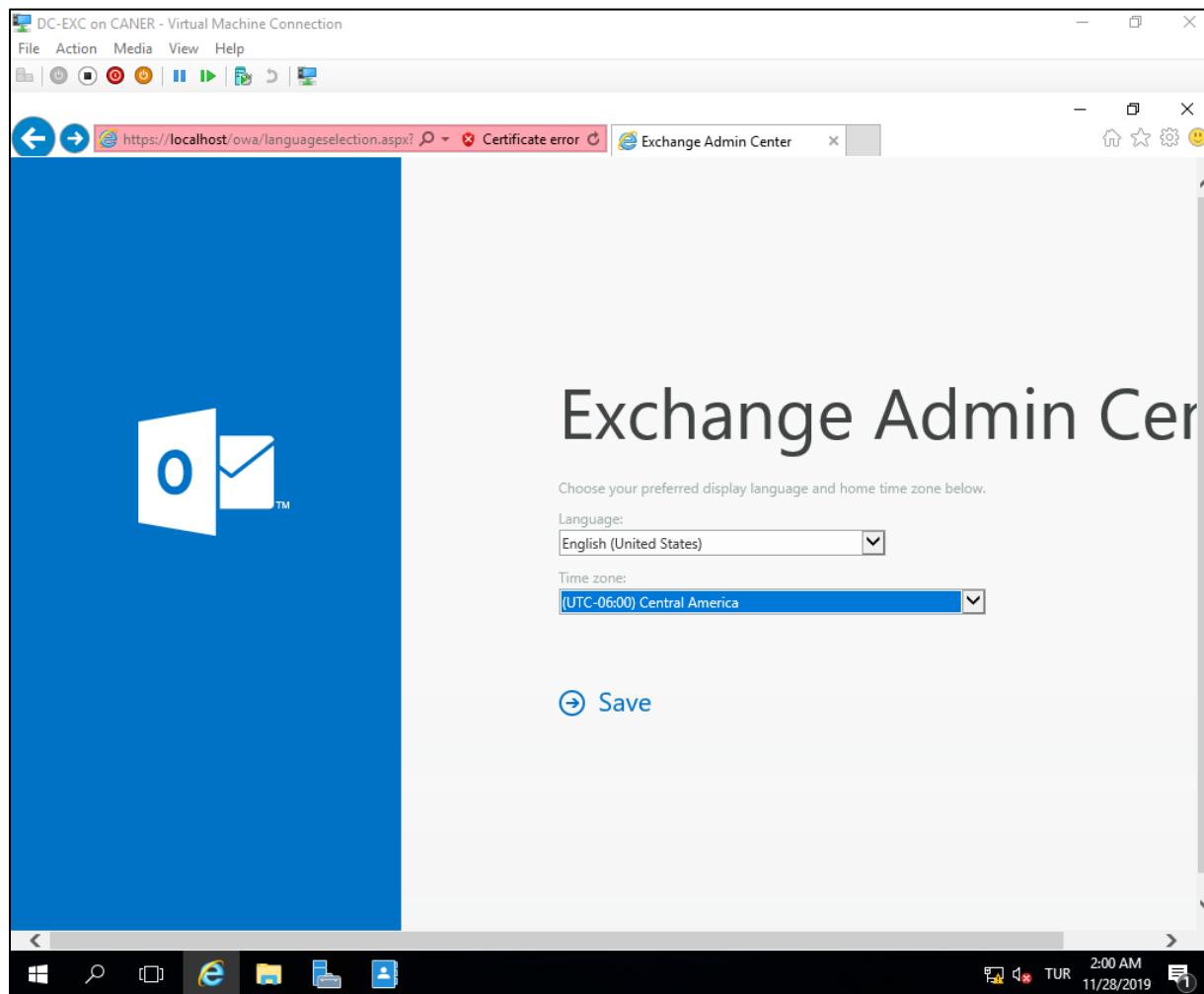
We can see that once we create a new mailbox on Exchange, the user account is automatically created on Active Directory. The vice versa is not true. For previously created users we'd have to link the mailbox to the AD account.

The screenshot shows the Active Directory Administrative Center interface. The left navigation pane shows the 'cantan (local)' domain with 'Users' selected. The main pane displays a list of users under the heading 'Users (36)'. A user named 'Ertan' is selected and highlighted in blue. The right pane shows the 'Tasks' and 'Users' sections for the selected user. The 'Tasks' section includes options like 'Reset password...', 'View resultant password settin...', 'Add to group...', 'Disable', 'Delete', 'Move...', and 'Properties'. The 'Users' section includes 'New', 'Delete', 'Search under this node', and 'Properties'. Below the tasks, there is a summary box for the selected user 'Ertan' with details such as User logon: ertan, E-mail: Ertan@cantan.local, Modified: 11/28/2019 1:54 AM, and Description:.

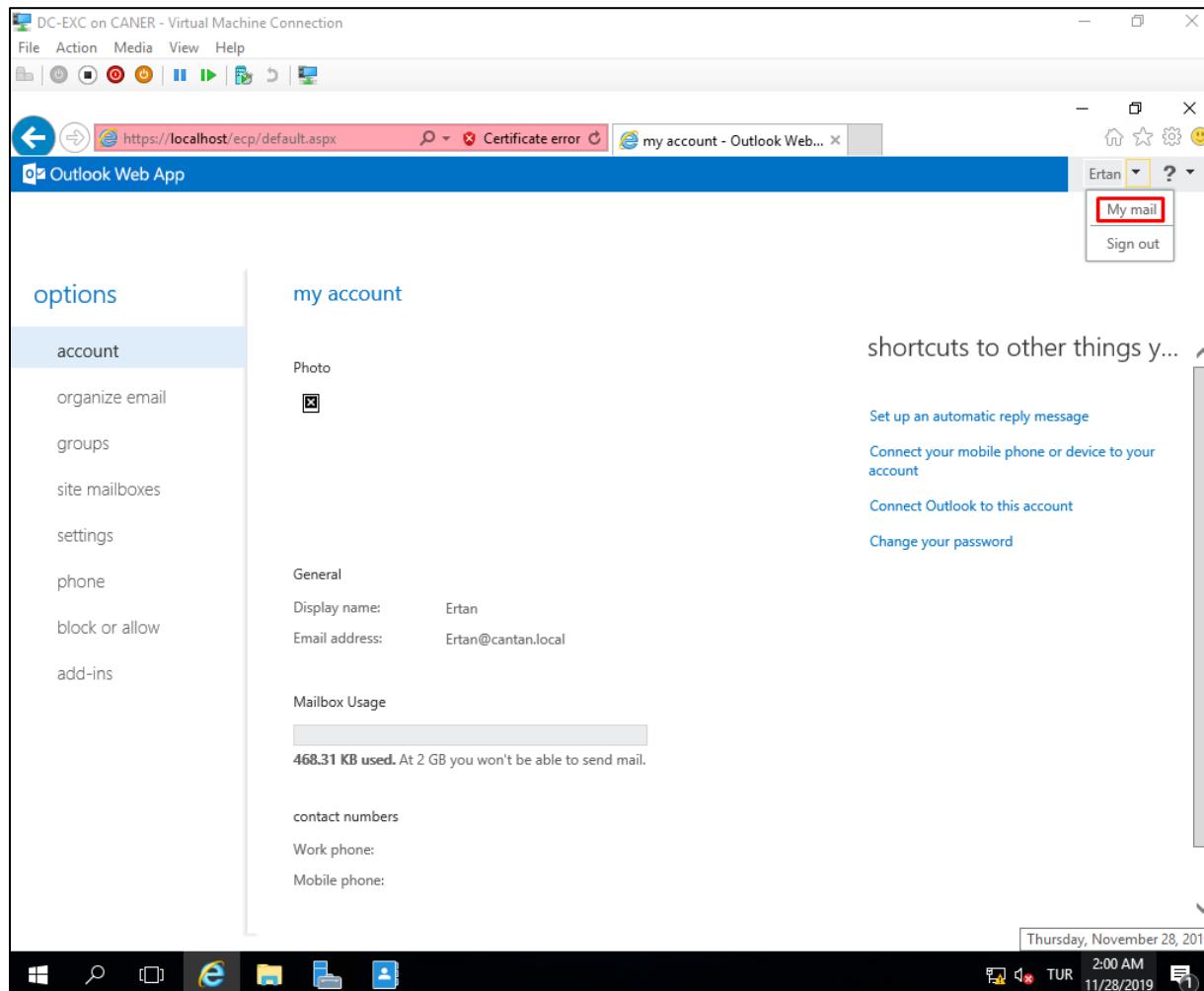
Now, let's log in with the new user's credentials and see its perspective.



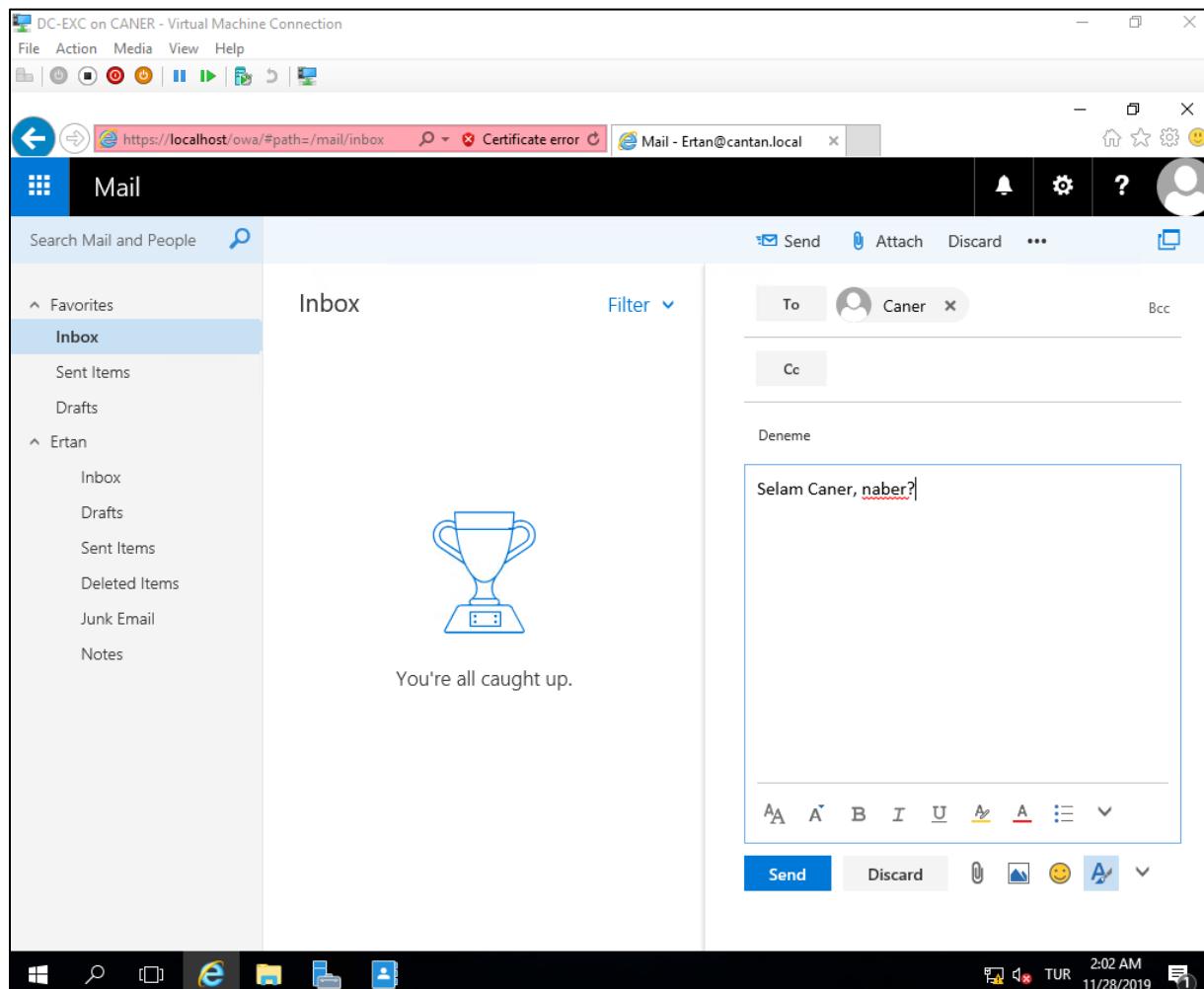
We set the time zone and language. I preferred the US because Exchange mails were less delayed due to how the host PC's were set up.



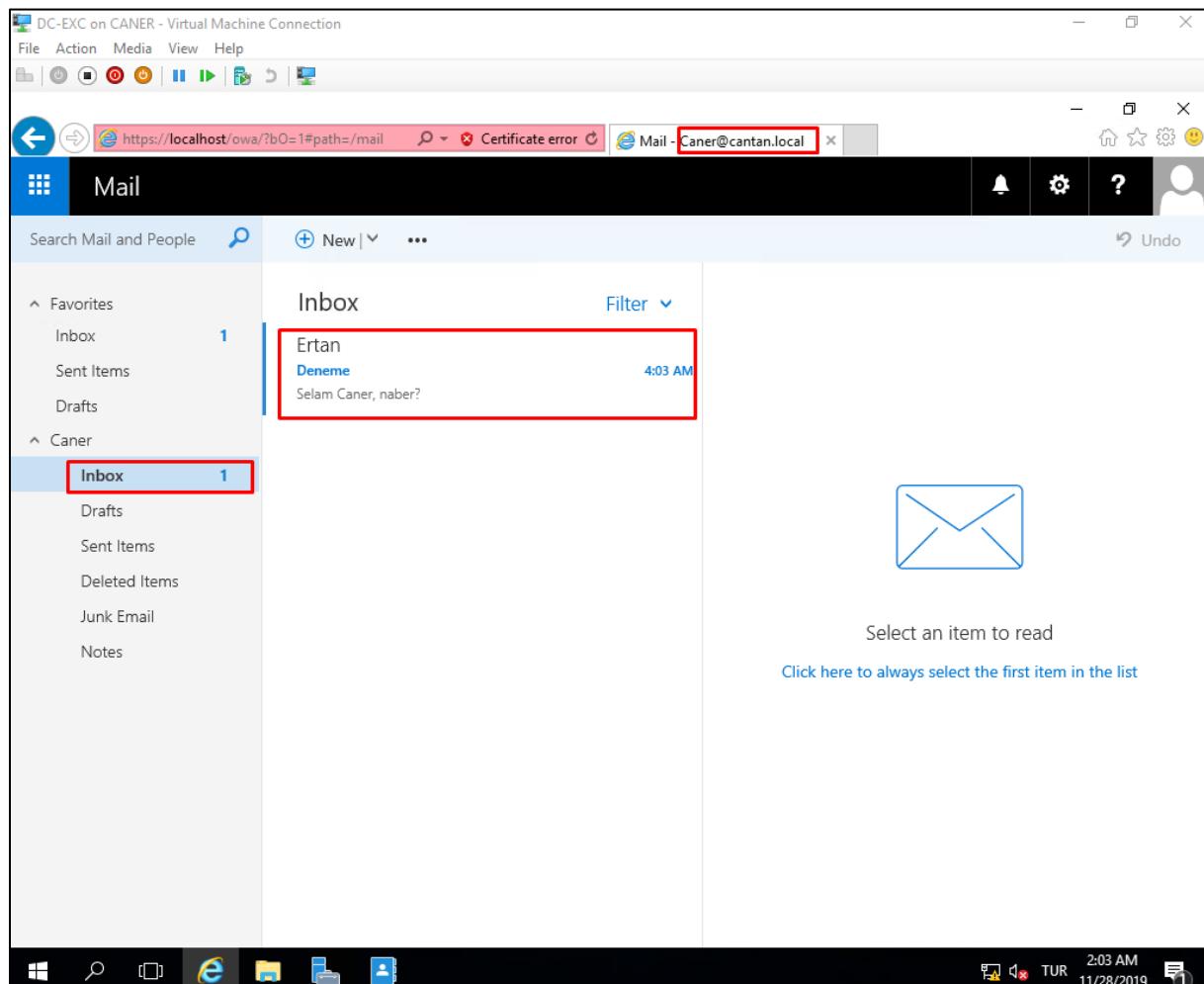
We can see the limited, because this user is not an admin, Exchange Control Panel but let's proceed to sending and receiving e-mails. We choose my mail from top right click down menu.



This brings us to a mail manager screen that is easy to navigate. Let's test sending an e-mail to a previously created mailbox.

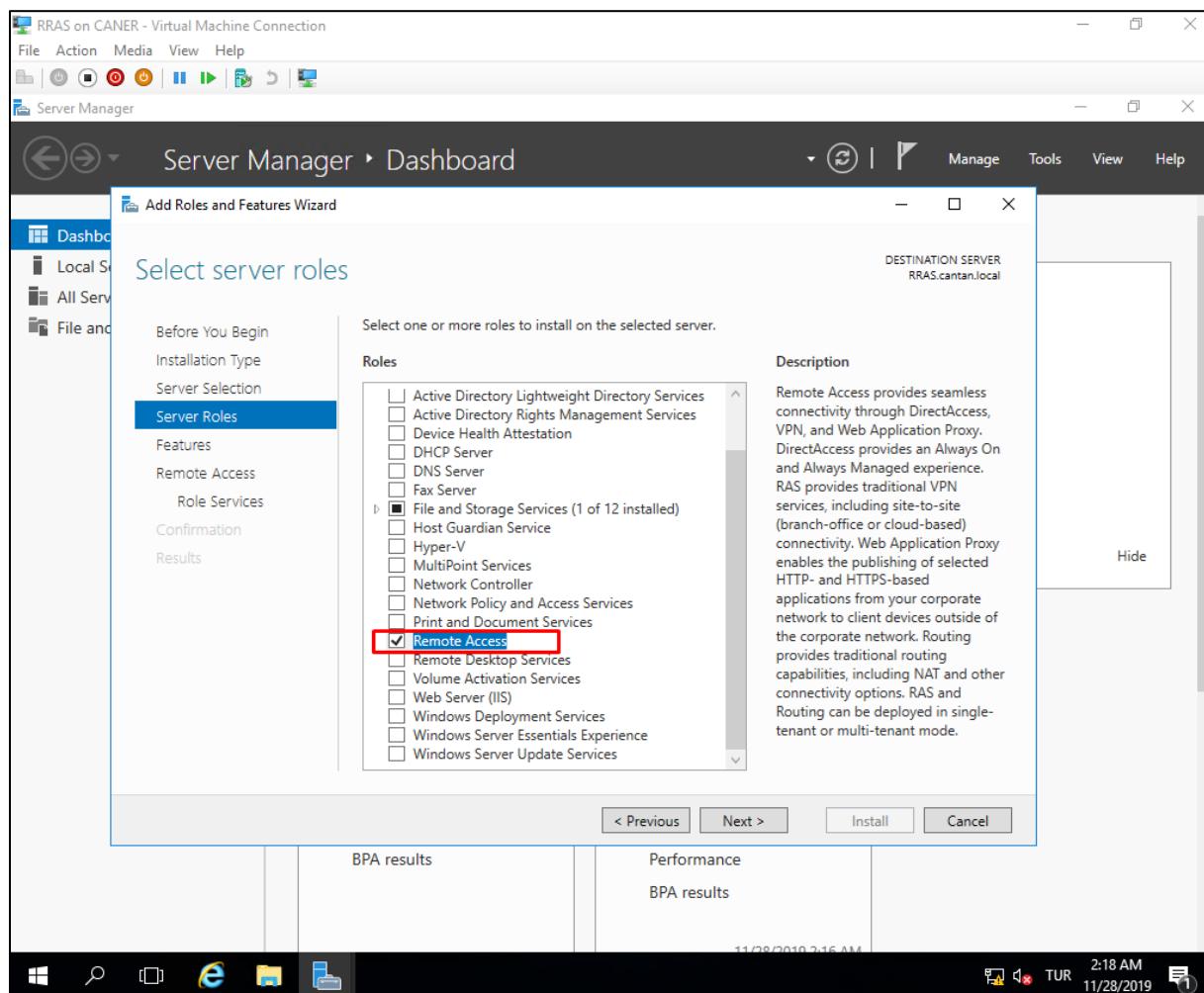


When we get to the recipient's mailbox, we can see user Ertan's e-mail. The Exchange Server is working properly!

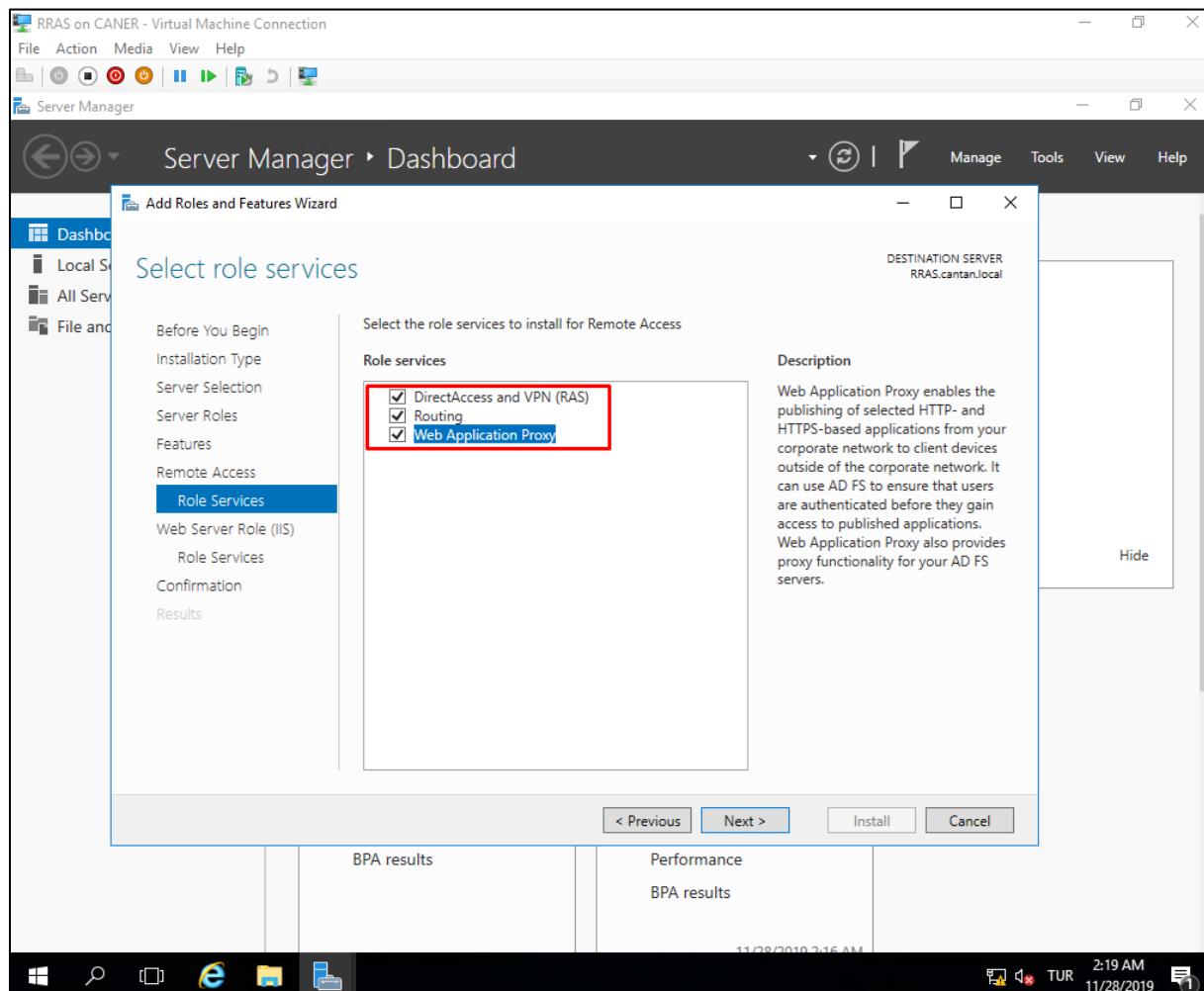


Now we have a server that's not connected to the internet by itself because and it can send and receive e-mails, at least on its own domain, so far. What do we do if we want to send e-mails to other domains or our gmail e-mail addresses? Getting a specific static Public IP is an option but getting the server directly to the internet is a huge security breach. We could use a firewall or a RRAS server. Since firewalls are the subject of another report, for variety I shall demonstrate the establishment of a Routing and Remote Access Service on another server.

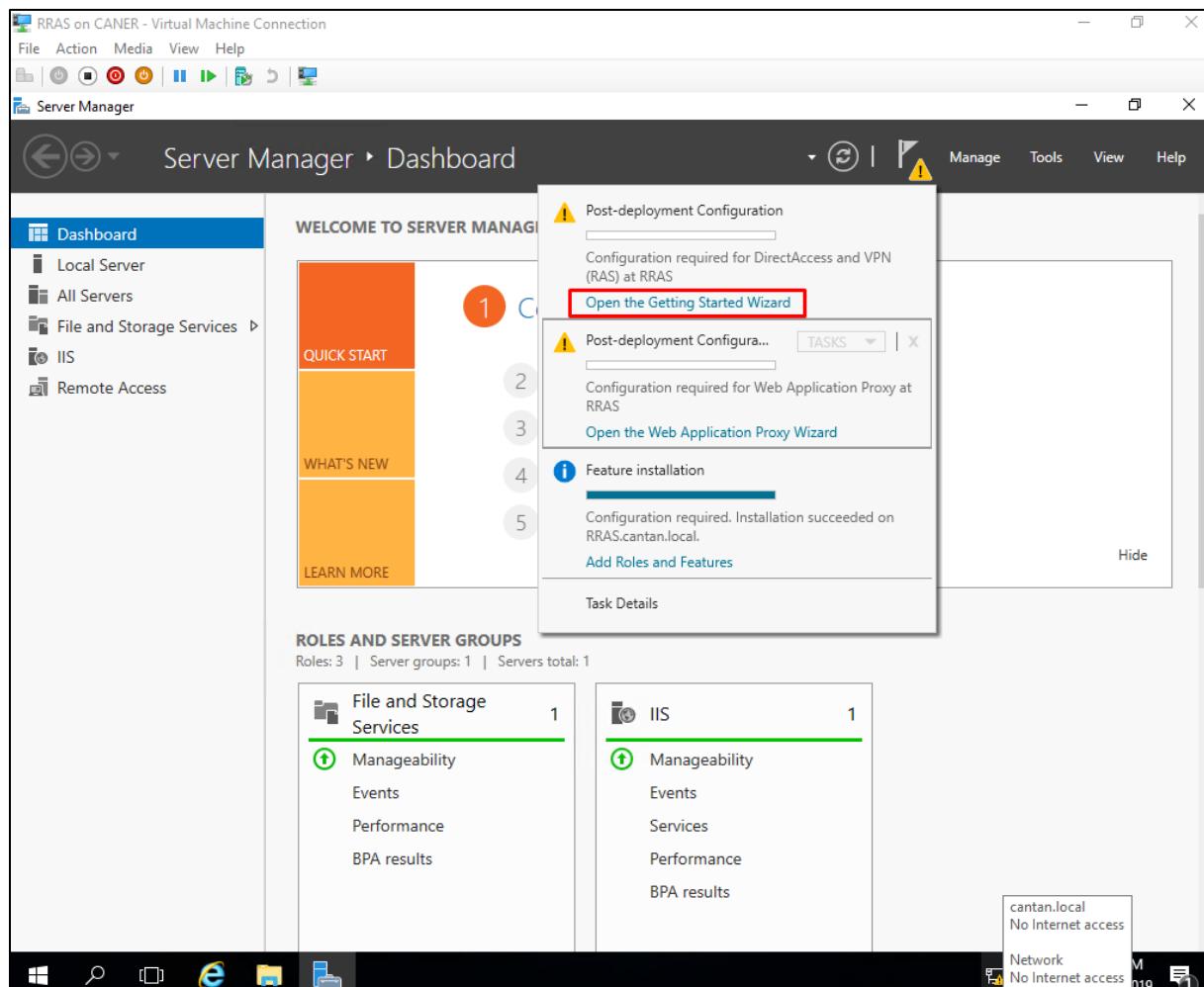
On another Server 2016 PC we add the role of Remote Access. Note that this PC is also in the domain cantan.local and has at least 2 NICs; one for communicating with our local domain and one for connecting to the internet.



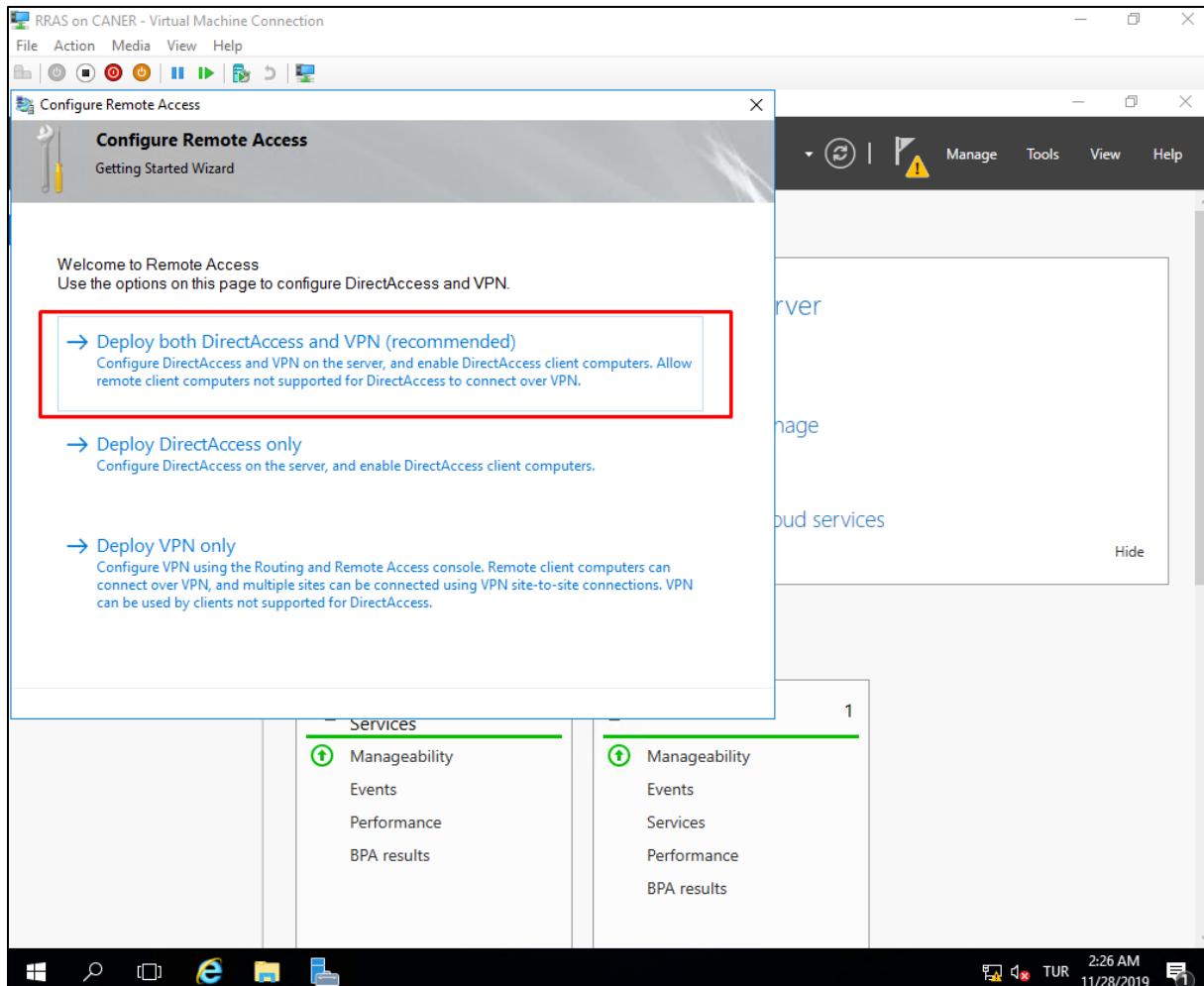
We will be mainly using routing property; however, it's possible to use a RRAS Server for VPN or Web Application Proxies.



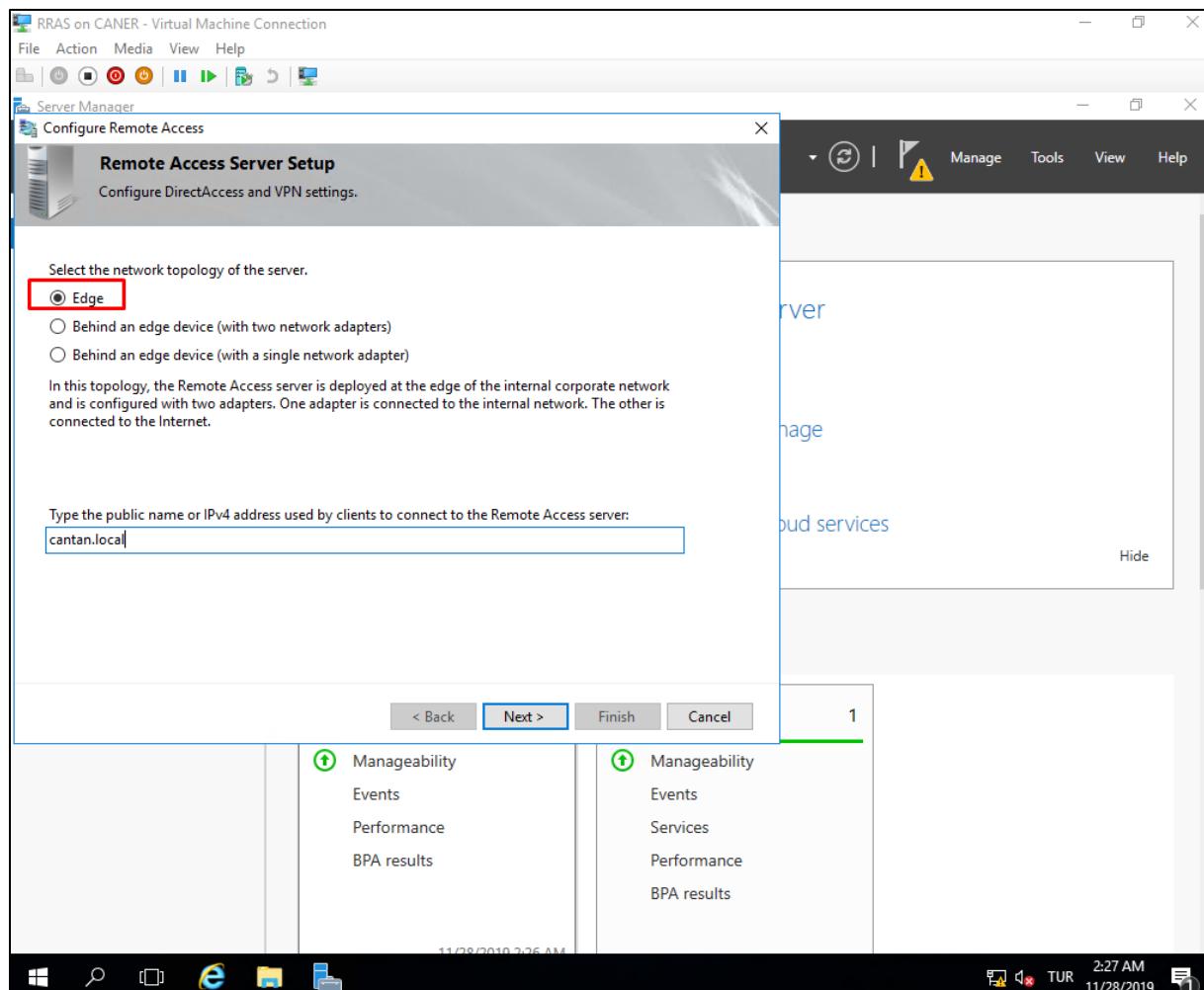
We use the Wizard to do the configuration easily.



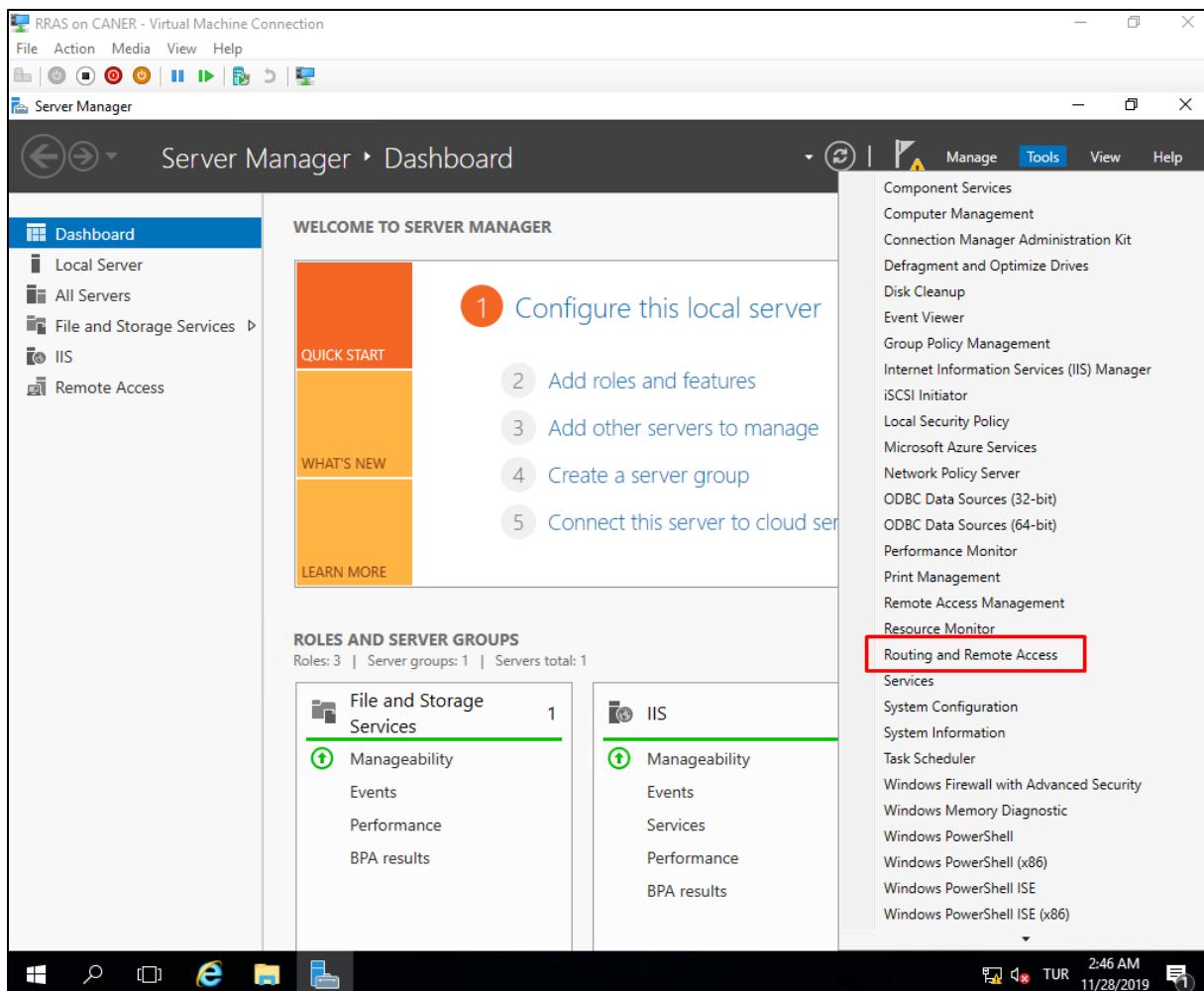
We continue with the recommended setting even though we will only be using Direct Access.



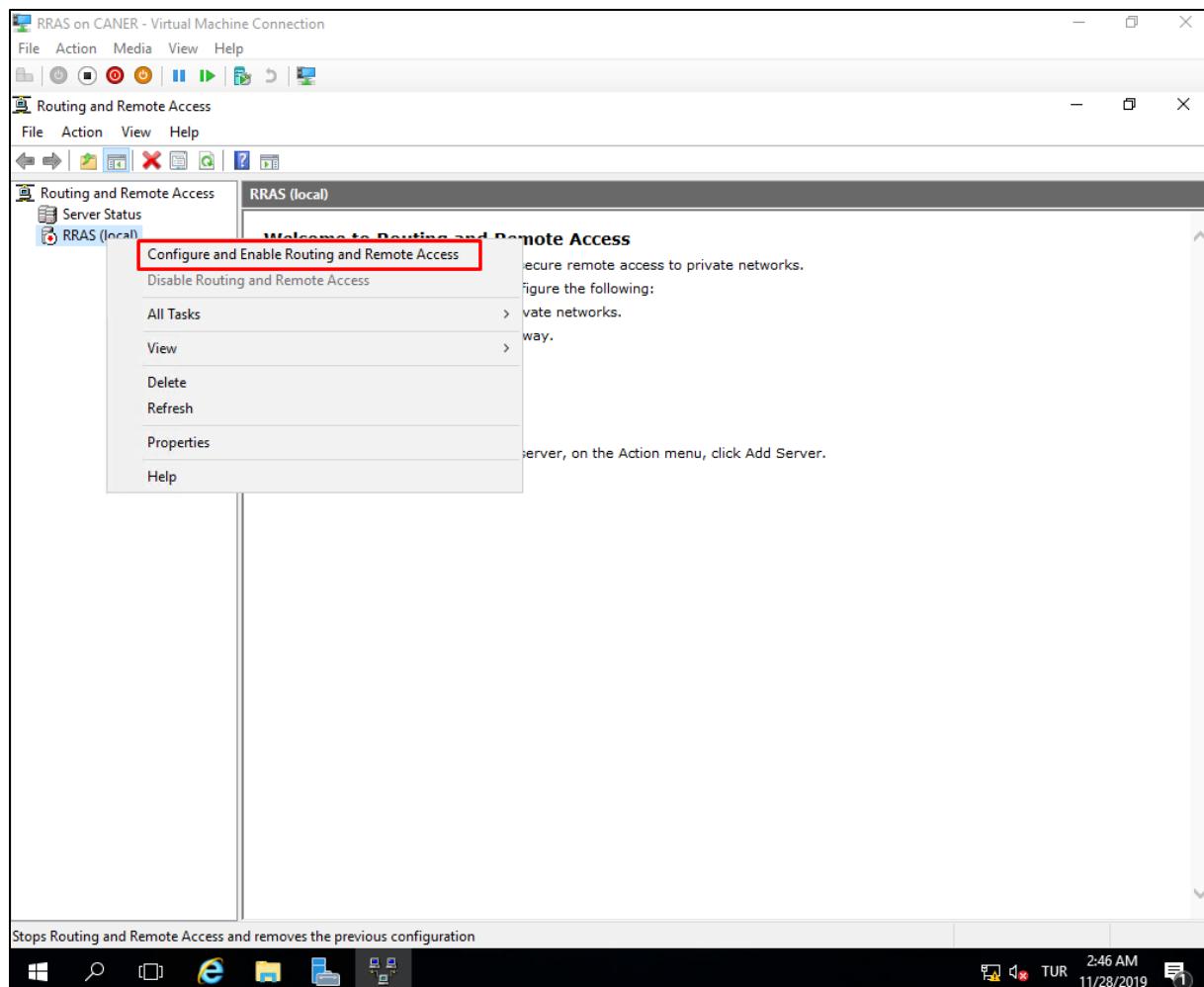
Since this Server will be directly connected to the internet, we must select edge.



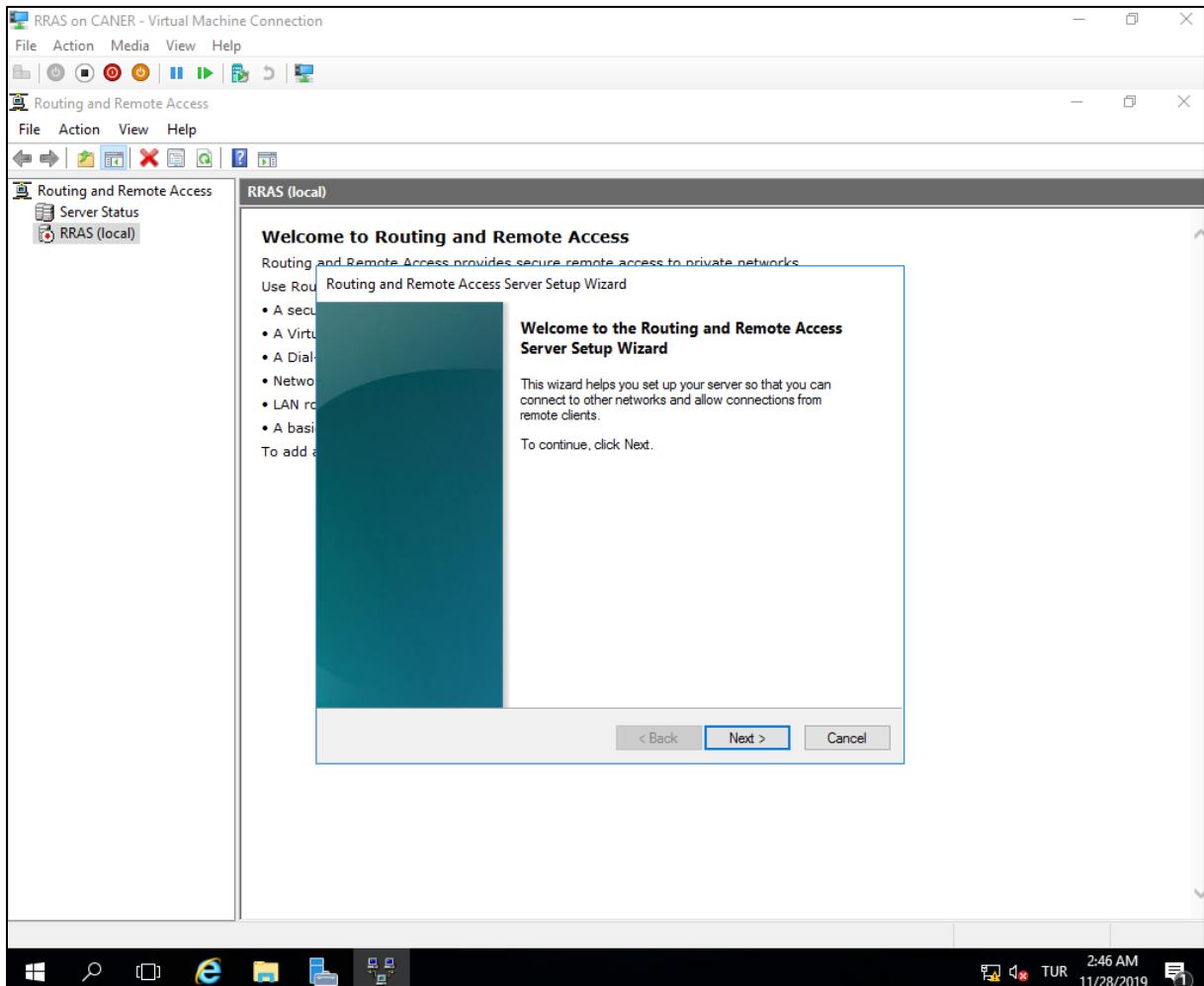
Then we open the Routing and Remote Access tool.



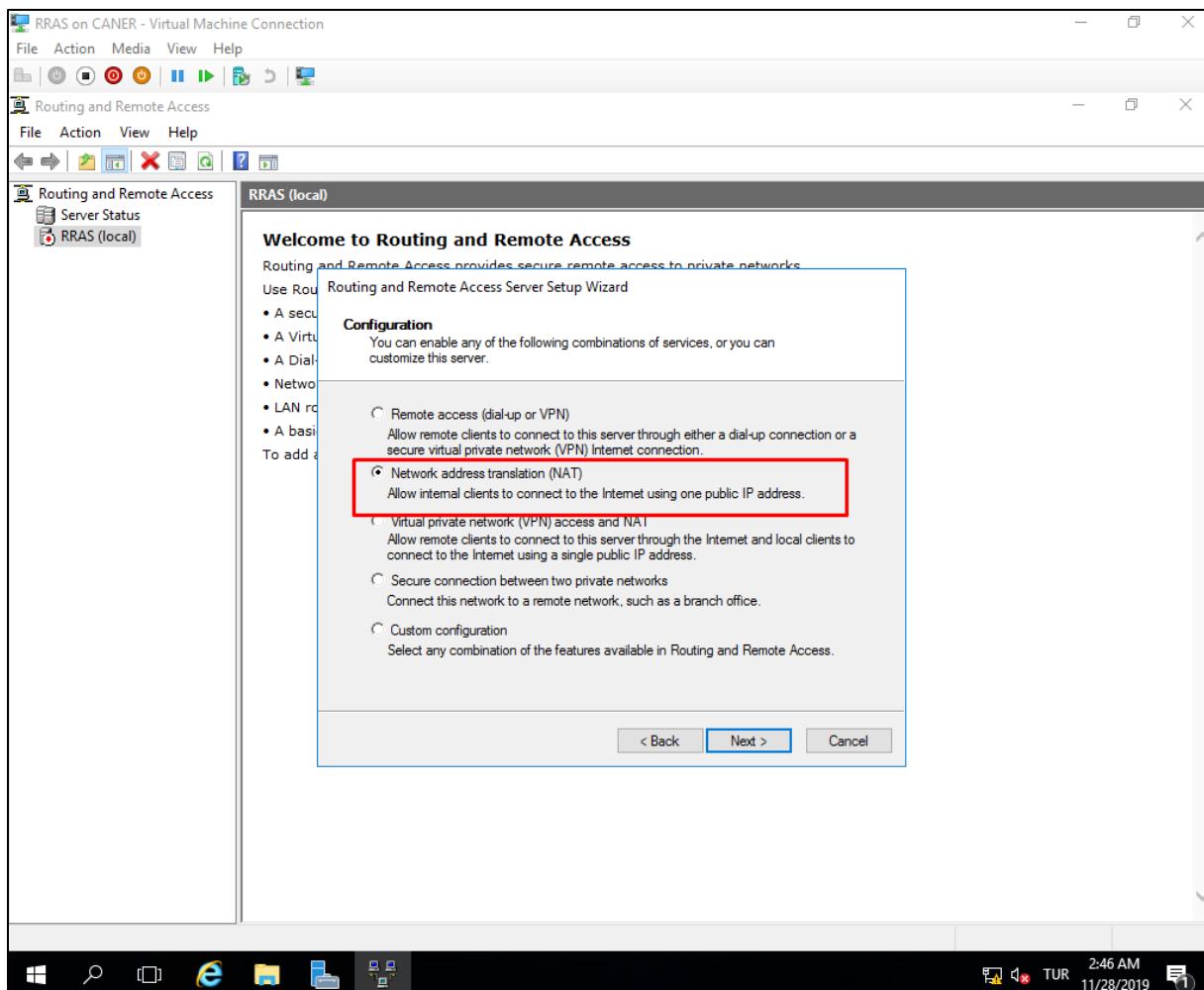
We select Configure and Enable Routing and Remote Access.



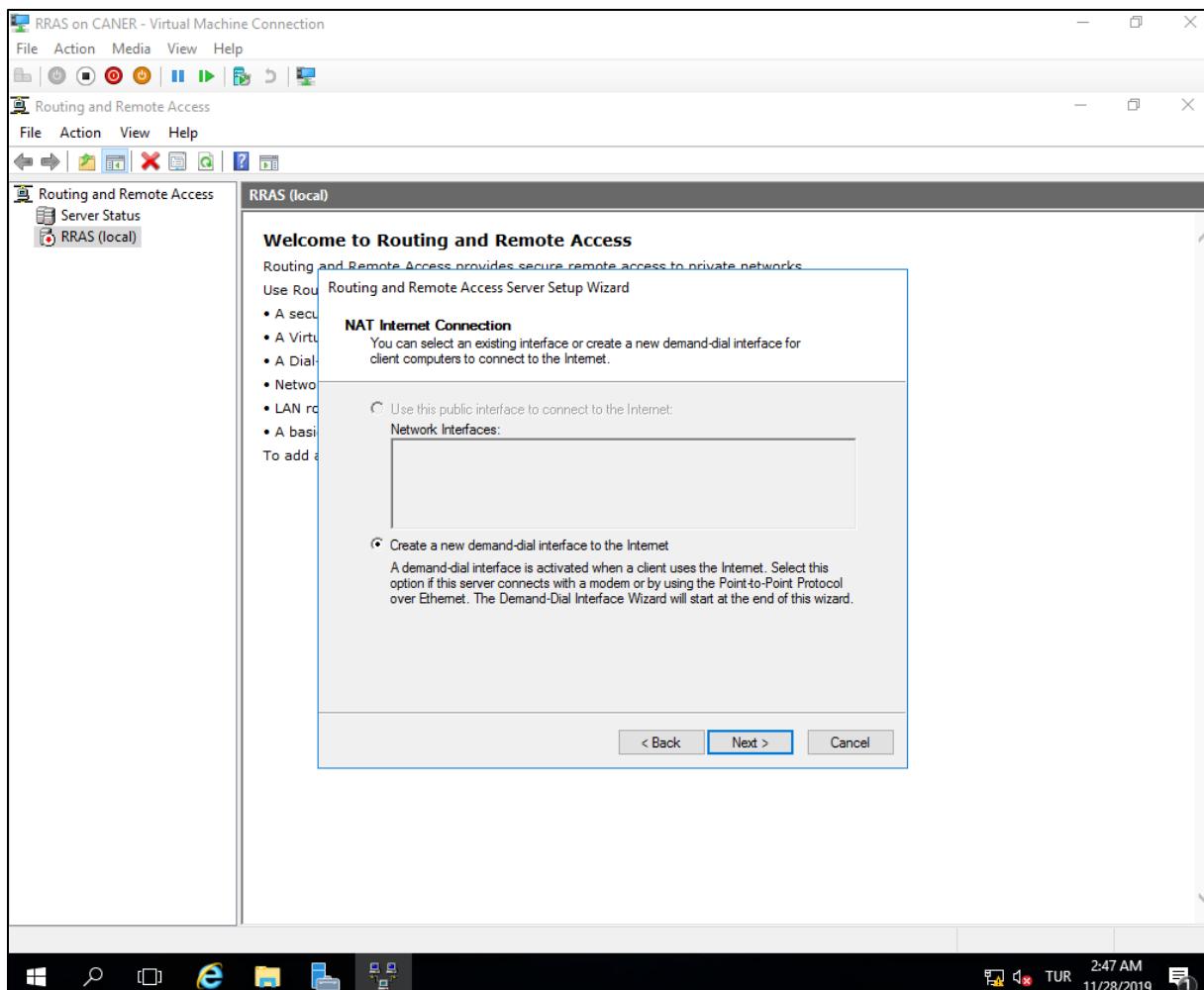
Another setup Wizard pops up.



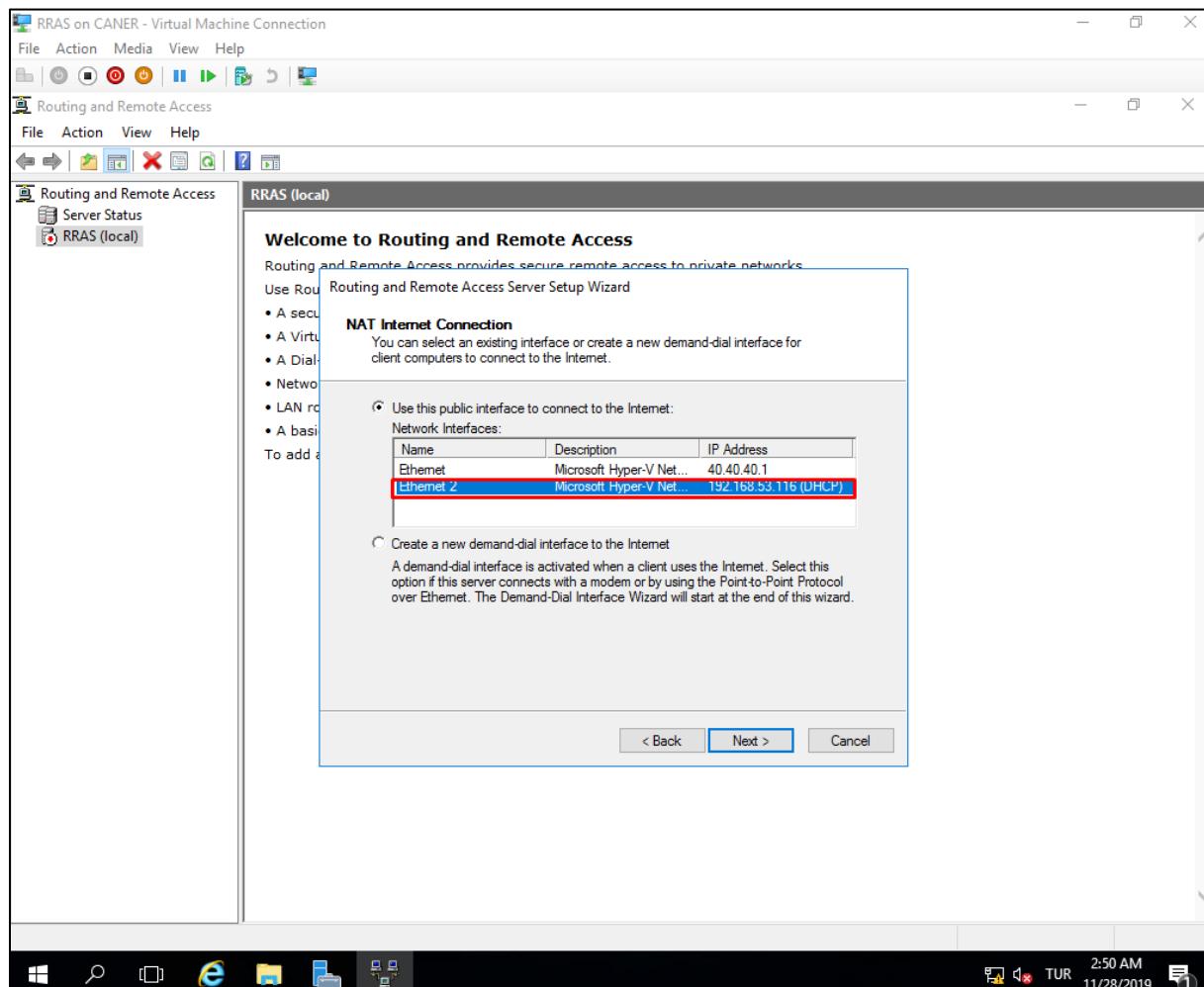
We want the RRAS Server to do NAT.



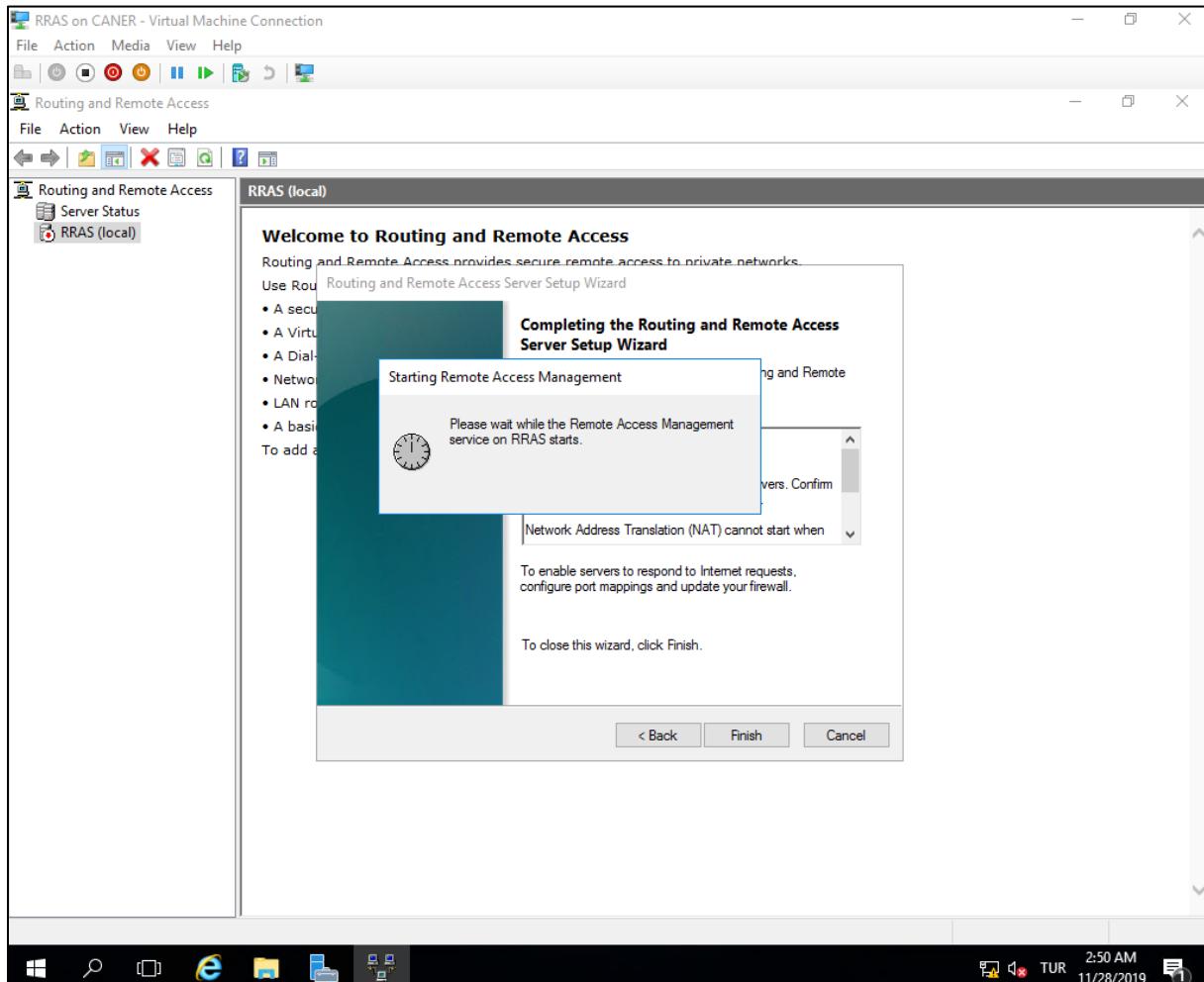
As this is the first time we're establishing it, we must create a new interface.



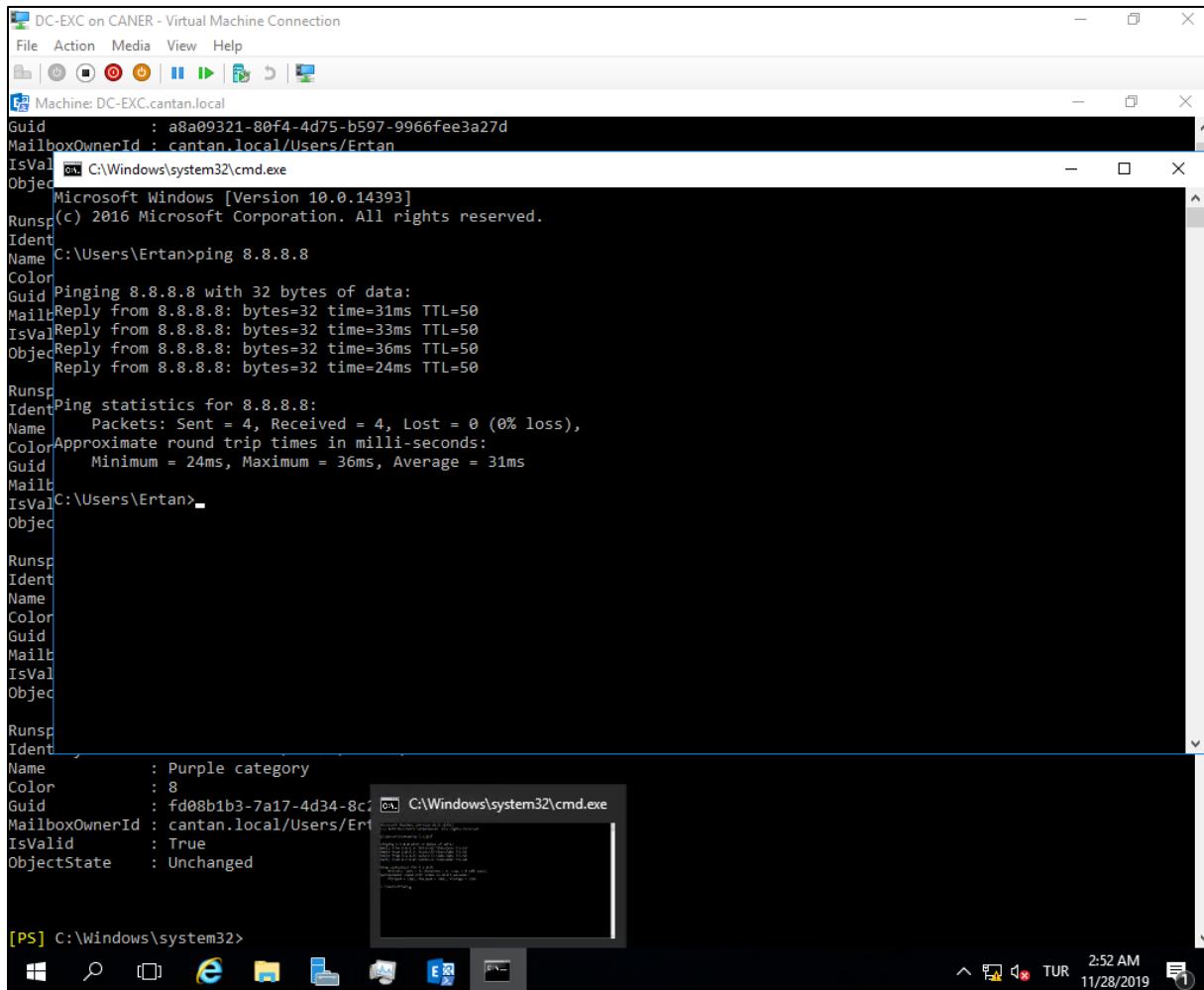
We choose the correct interface necessary for connecting to the internet. In this case, this is the interface where BAU distributes IPs via DHCP as we use its internet.



Then, it starts to establish the connection. Once the red down arrow next to RRAS(local) turns to a green up arrow we're set.

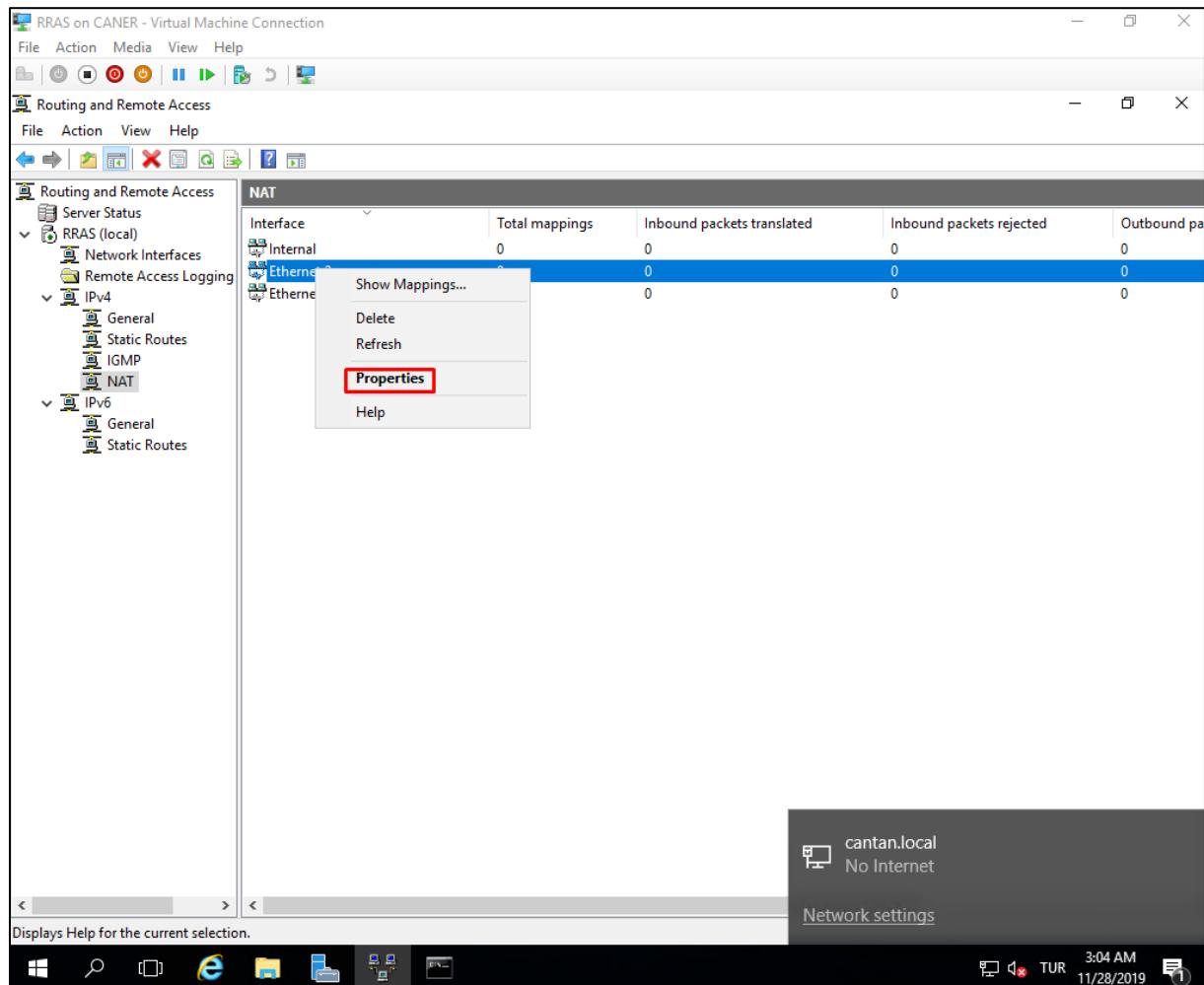


Now, we test if it worked by going back to our Exchange Server and pinging Google's DNS.



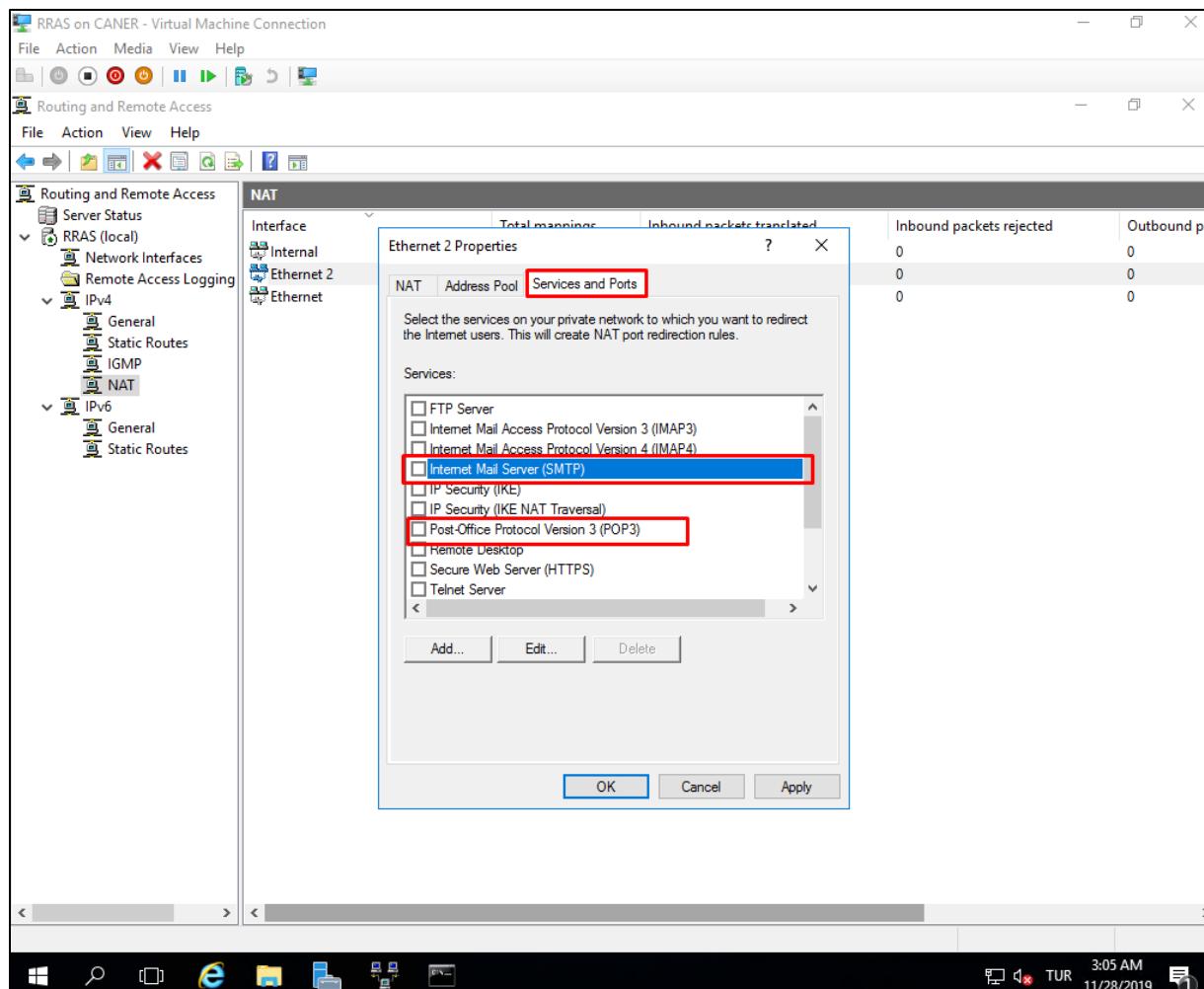
We can see that it worked. The Exchange Server can access the internet while it still has a private static IP.

Now we want to send and receive e-mails over internet. Firstly, we must configure RRAS Server's properties to allow SMTP and POP3 protocols. We do so by right clicking the interface that's connected to the internet.

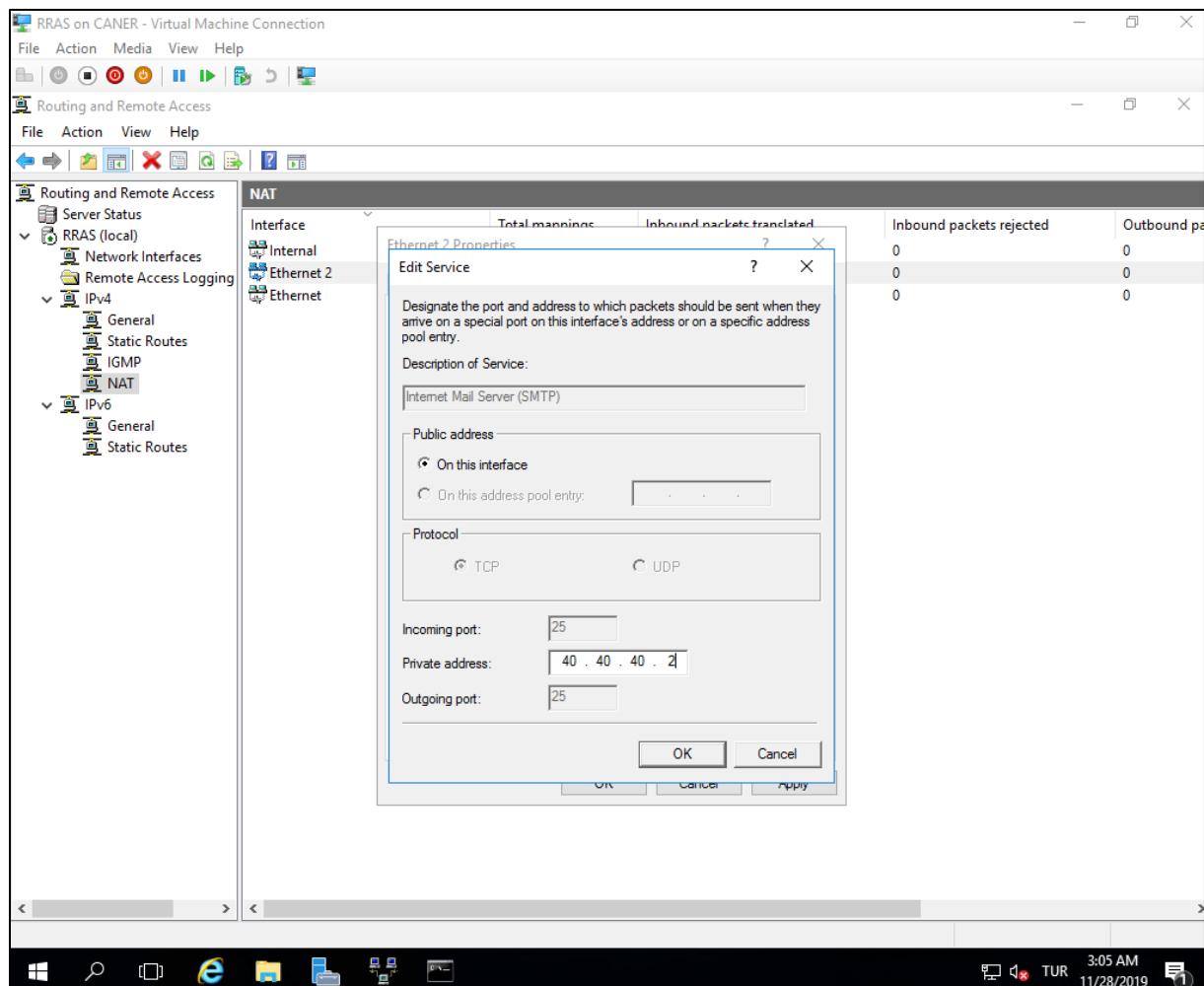


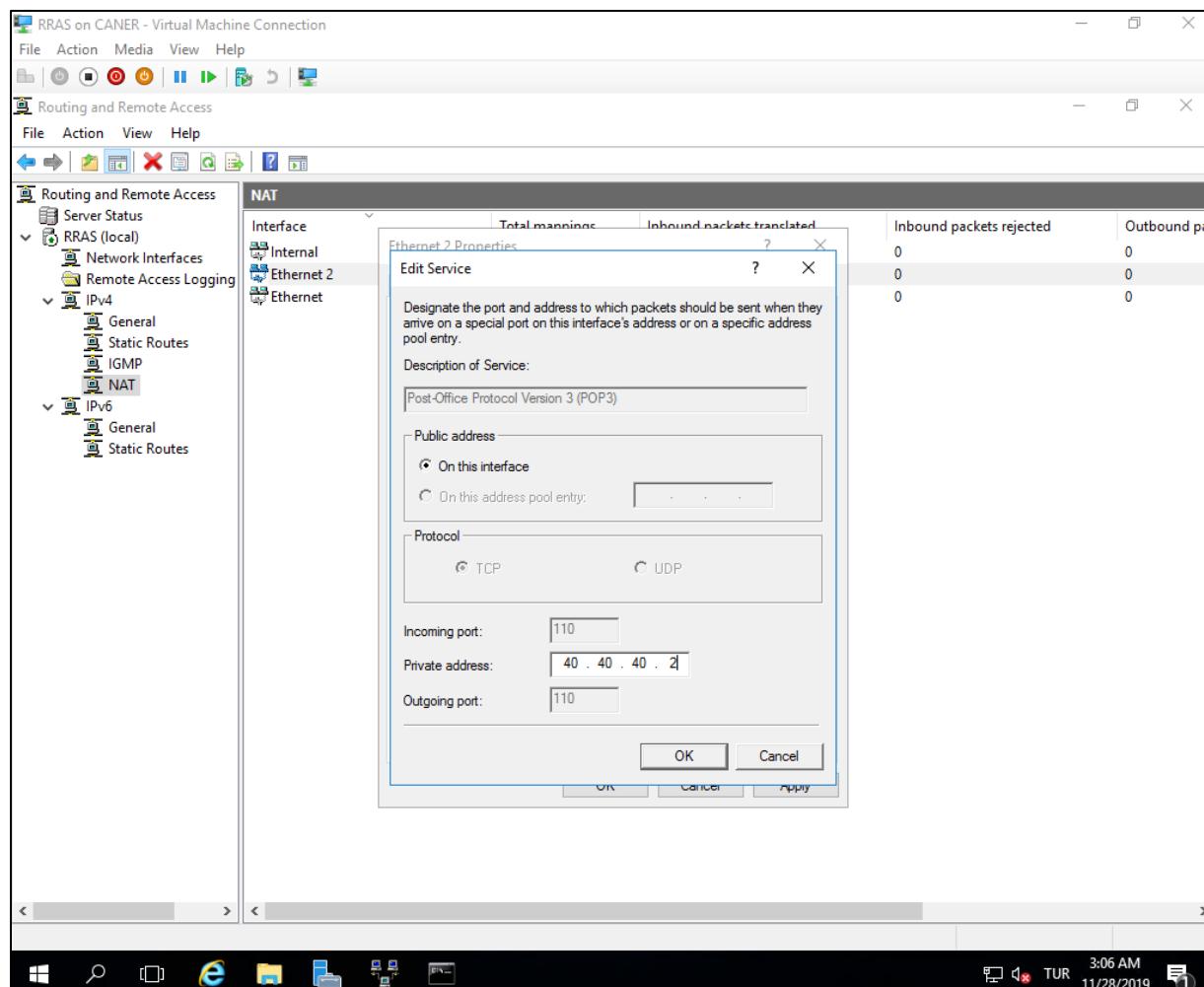
(Also, note that the arrow is green and up.)

Under Services and Ports we enable SMTP and POP3 protocols.

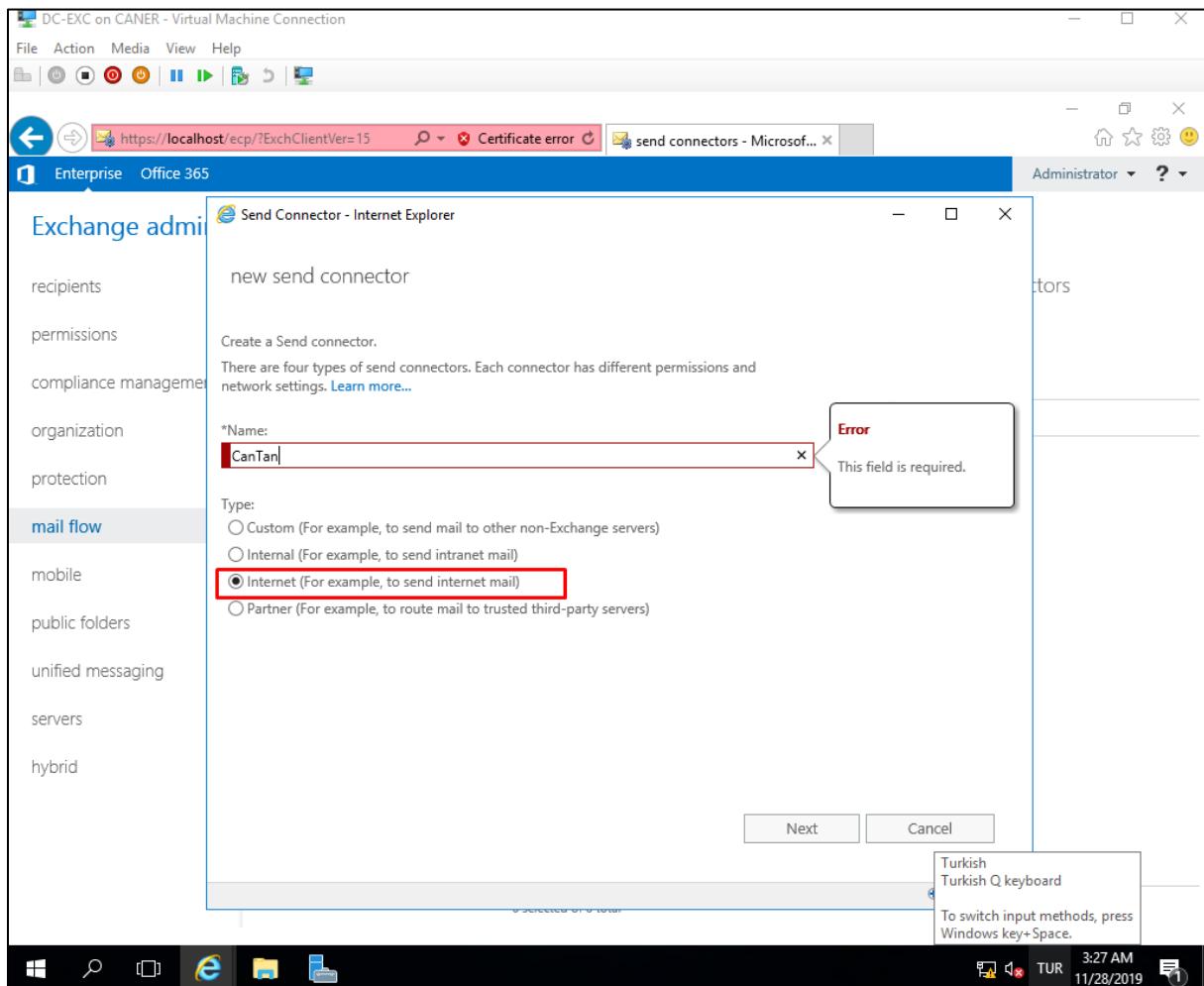


For both we enter the Exchange Server's IP to forward the SMTP and POP3 protocols.

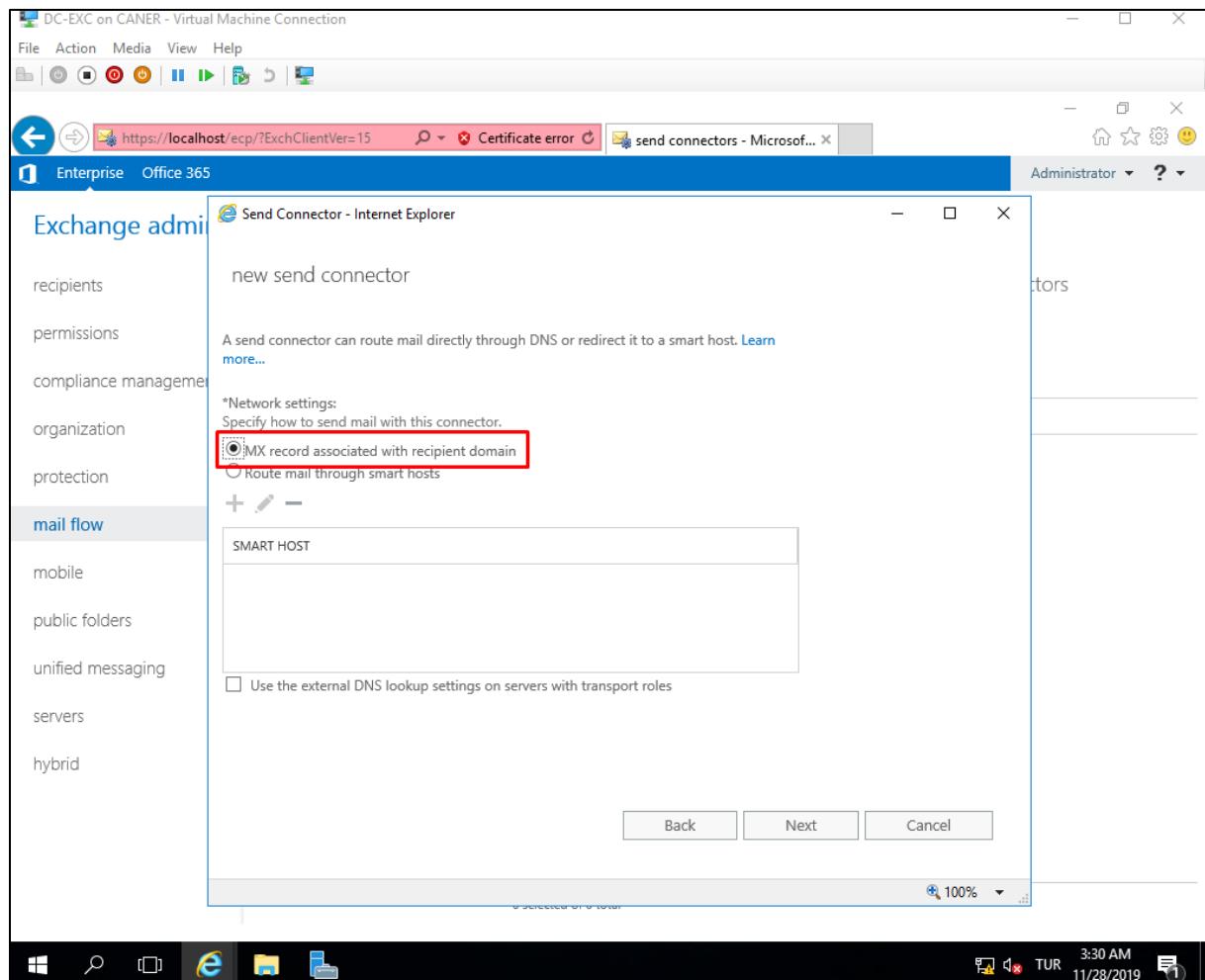




We also need to allow these on the Exchange Server. Using the administrator account's ECP we get to Send Connectors under Mail Flow and add a new one. We obviously select Internet.



We use the MX record associated with the recipient domain instead of a smart host.



The “*” under domain for the SMTP rule means it can send to any domain.

The screenshot shows the Exchange Admin Center interface. On the left, a navigation pane lists various administrative categories like recipients, permissions, compliance management, organization, protection, and mail flow. The 'mail flow' category is currently selected. The main content area is titled 'Send Connector - Internet Explorer' and displays a table for configuring a send connector. The table has columns for 'TYPE', 'DOMAIN', and 'COST'. One row in the table is highlighted with a red box, showing 'SMTP' in the 'TYPE' column, '*' in the 'DOMAIN' column, and '1' in the 'COST' column. Below the table, there is a checkbox labeled 'Scoped send connector'. At the bottom of the page are 'Back', 'Next', and 'Cancel' buttons. The status bar at the bottom right shows the date and time as 11/28/2019 3:33 AM.

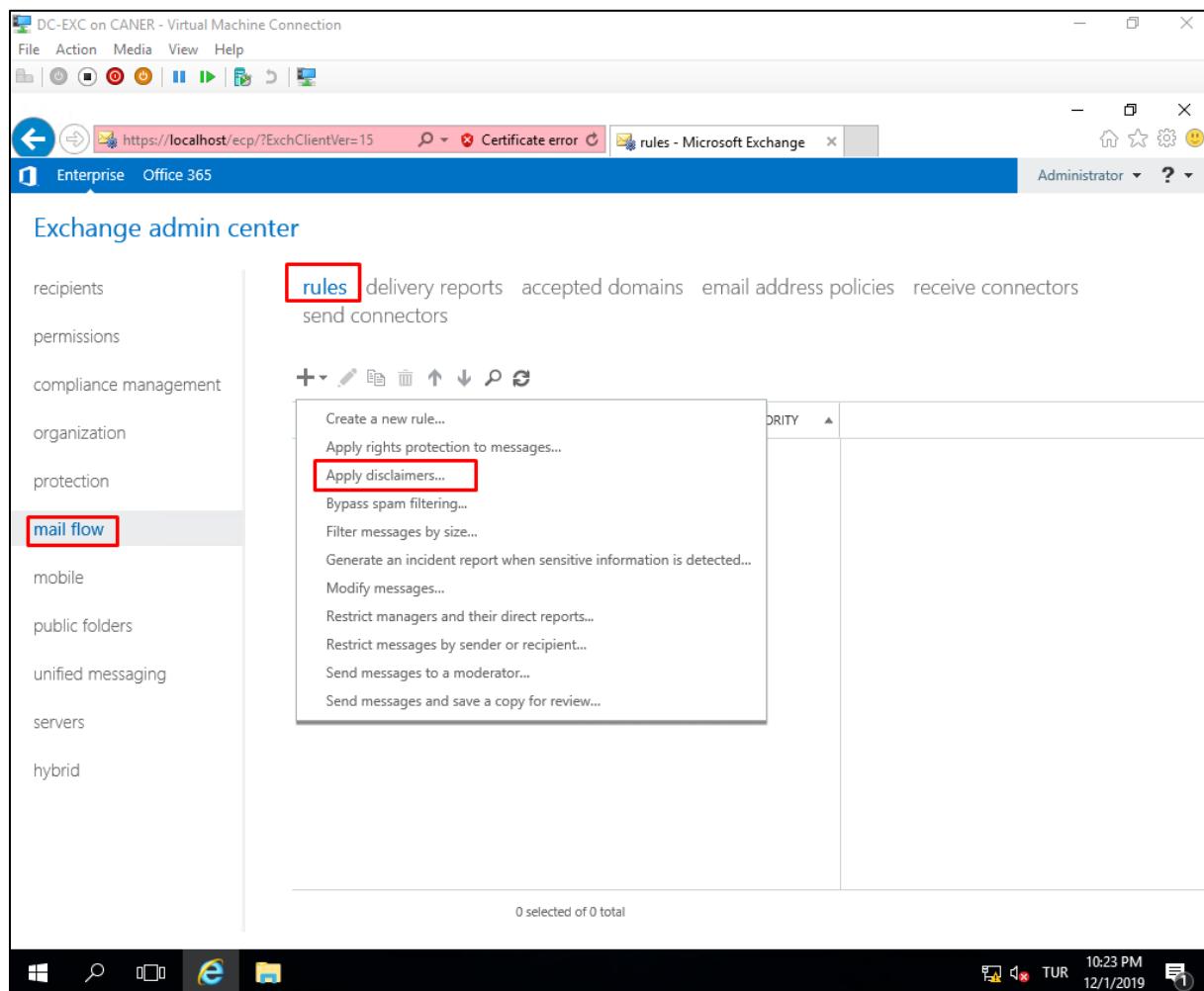
TYPE	DOMAIN	COST
SMTP	*	1

The source server is itself.

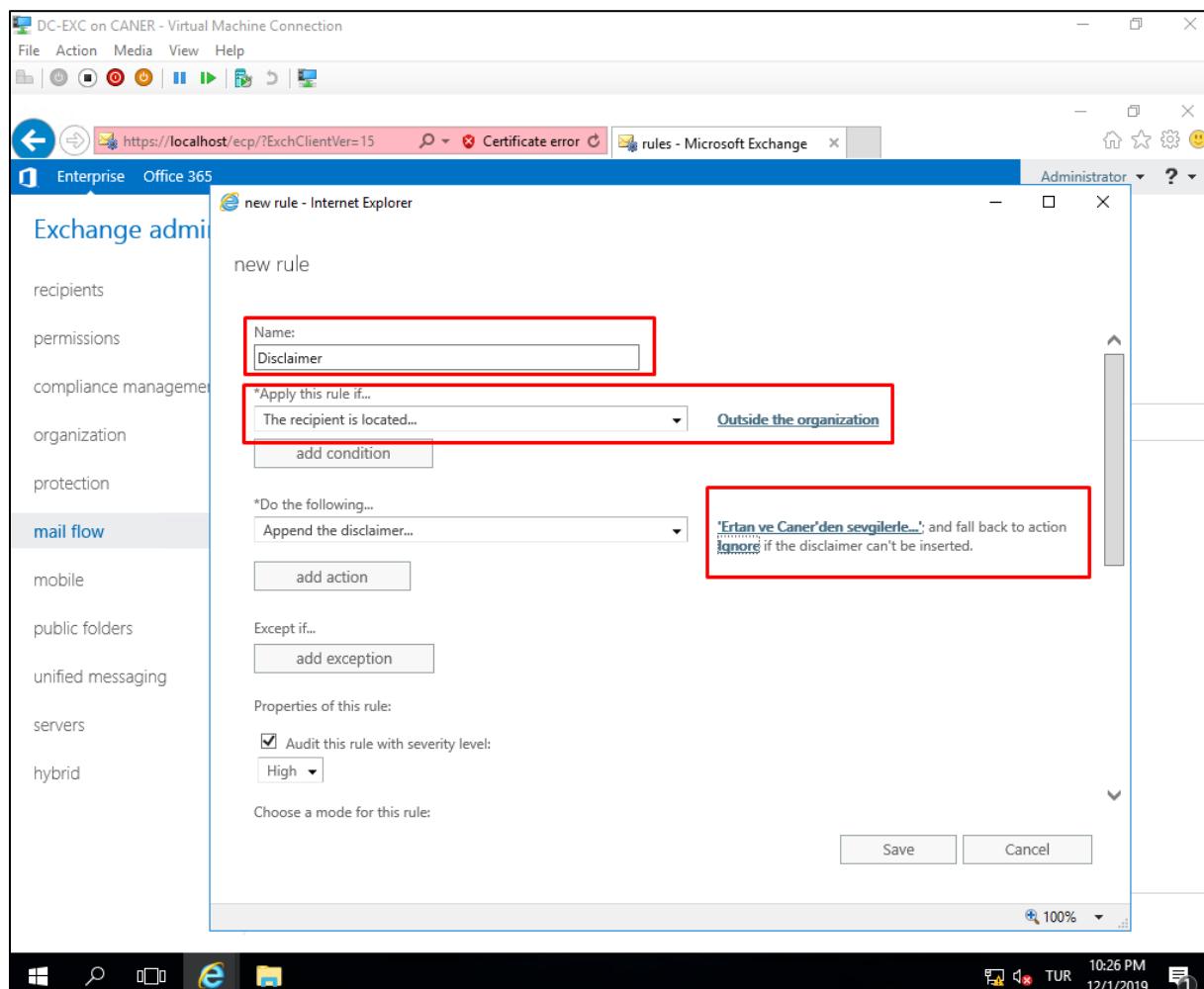
The screenshot shows the Exchange Admin Center interface. On the left, a navigation pane lists categories like recipients, permissions, compliance management, organization, protection, and mail flow. The mail flow category is selected. In the center, a sub-page titled 'Send Connector - Internet Explorer' displays the 'new send connector' configuration. It includes a description of what a send connector does and a note about associating it with servers containing transport roles. A table lists the association between a server and a site. The row for 'DC-EXC' is highlighted with a red box. The table has columns for SERVER, SITE, and ROLE. The SERVER column contains 'DC-EXC', the SITE column contains 'cantan.local/Configuration/Sites/Default-First-Site...', and the ROLE column contains 'Mailbox'. At the bottom of the sub-page are 'Back', 'Finish', and 'Cancel' buttons. The status bar at the bottom right shows the date and time: 11/28/2019, 3:34 AM.

SERVER	SITE	ROLE
DC-EXC	cantan.local/Configuration/Sites/Default-First-Site...	Mailbox

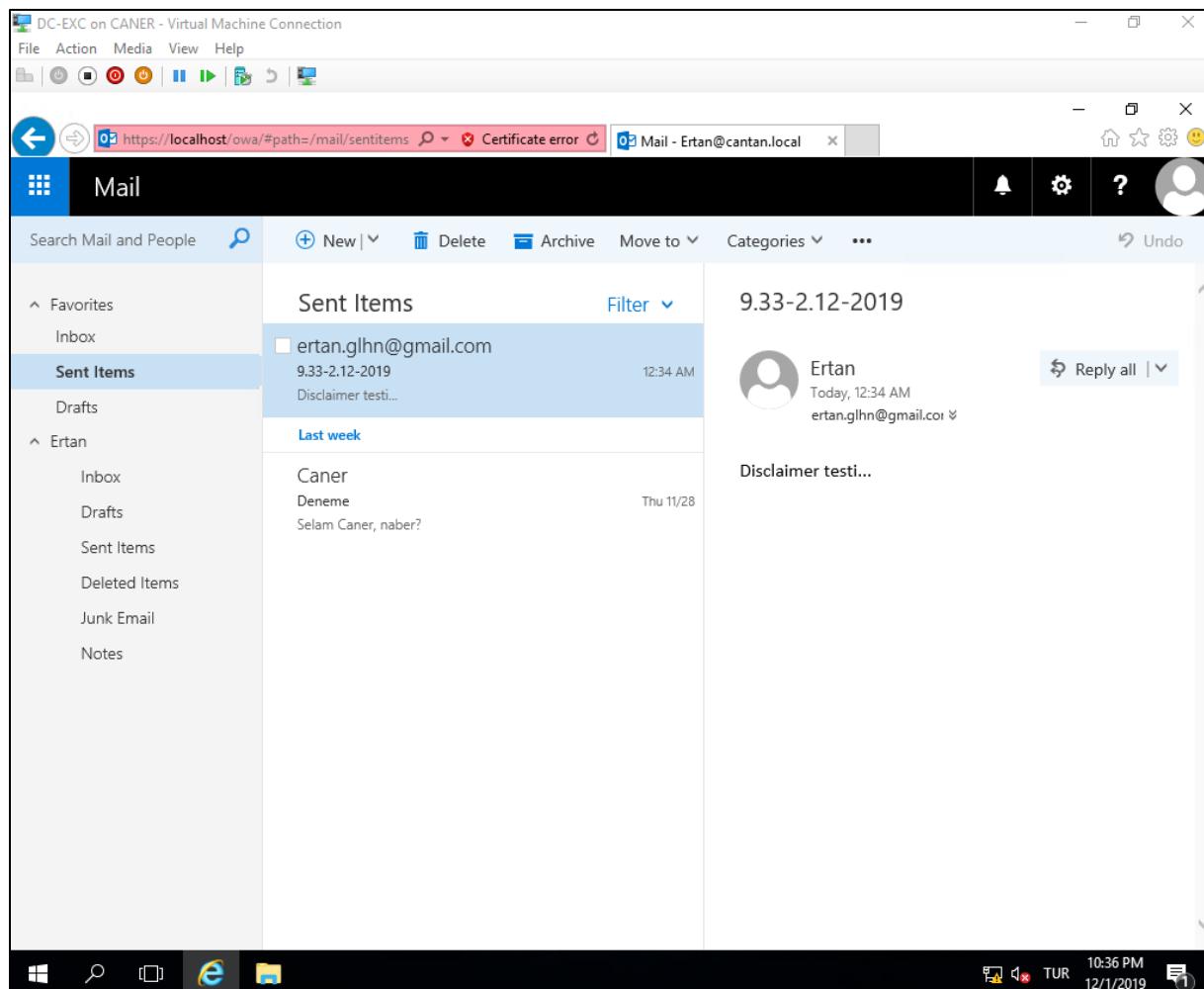
After this is done it can send e-mails to any e-mail address that can be resolved by a DNS such as a gmail address. However, before we send an e-mail let's also add a disclaimer to all of our e-mails from this domain as extra flair. To do this, we click on the plus sign and select apply disclaimers under Rules which is under Mail Flow.



We set the rule so that anytime we send an e-mail outside of this domain, the mail says a little greeting from this domain. Many corporations use disclaimers to mention their addresses and other contact information along with a greeting to officiate the e-mails.

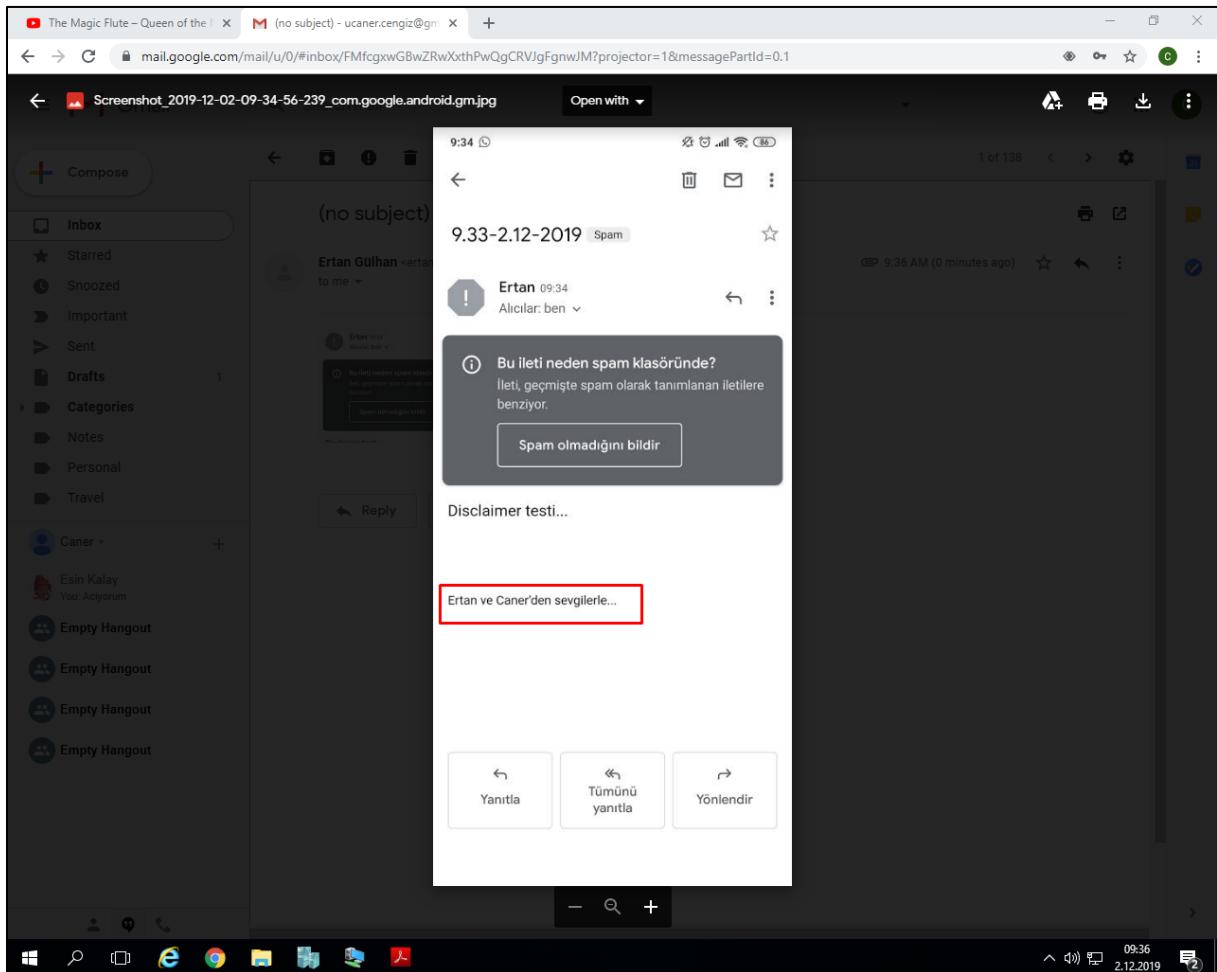


Then, we send an e-mail to a gmail account.



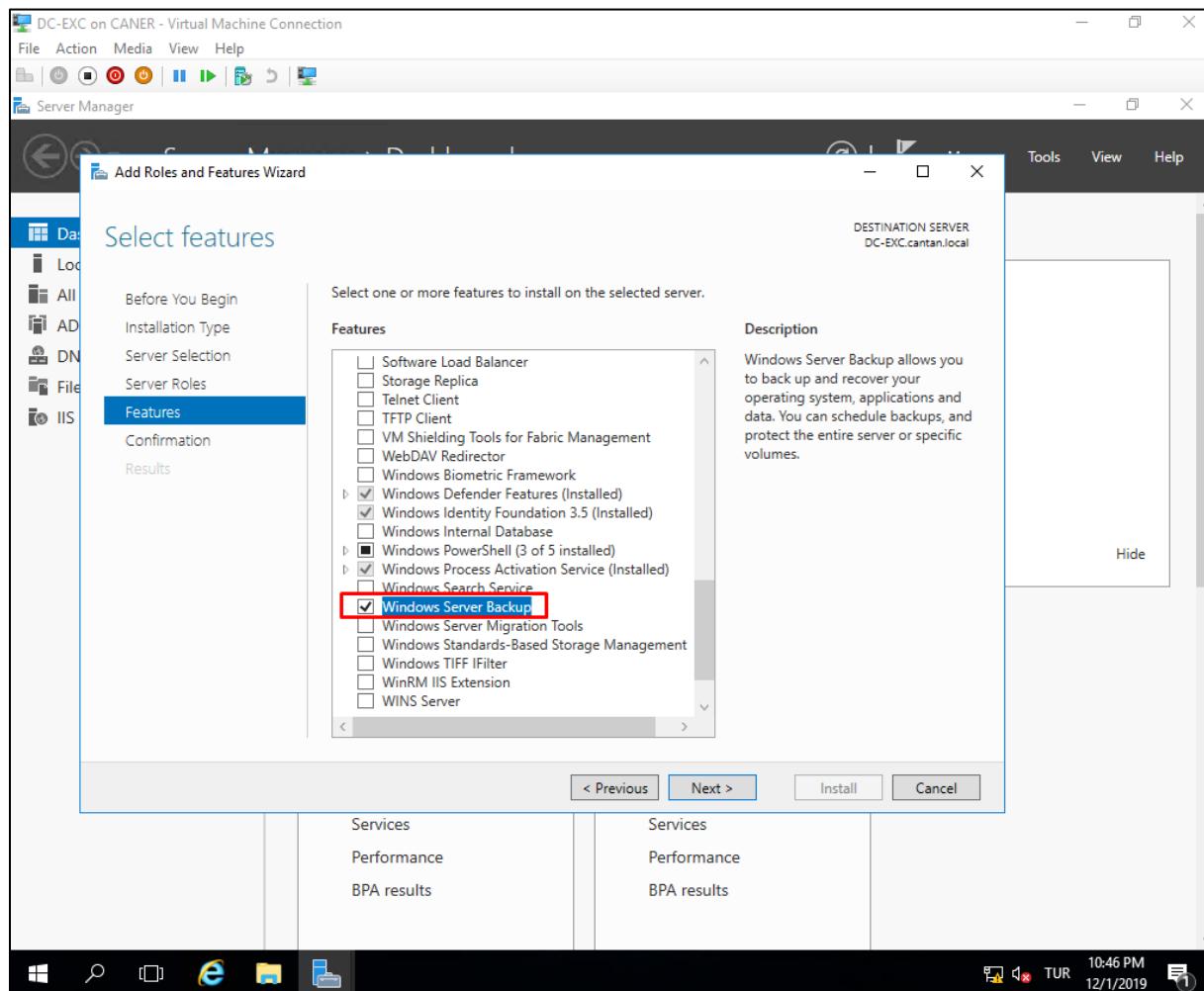
29.11.2019

As you can see not only did we receive this e-mail, but also we've got to see the disclaimer.

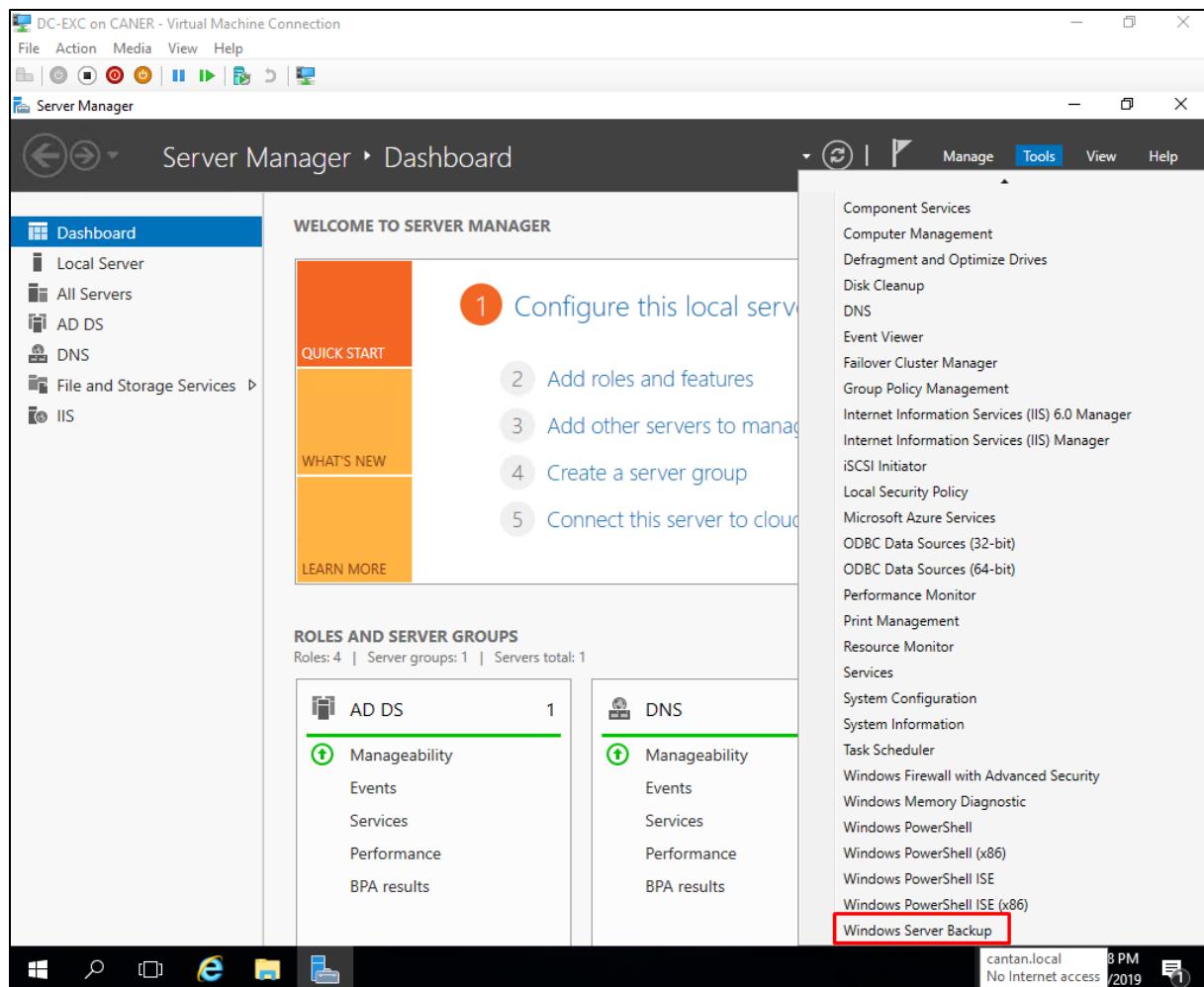


Now we can send an e-mail to any known mail address on the internet. Sadly, to be able to receive an e-mail from anyone we'd have to buy or rent an internet domain address so that our server can be found by a DNS. Currently, we can only send e-mails outside of our domain.

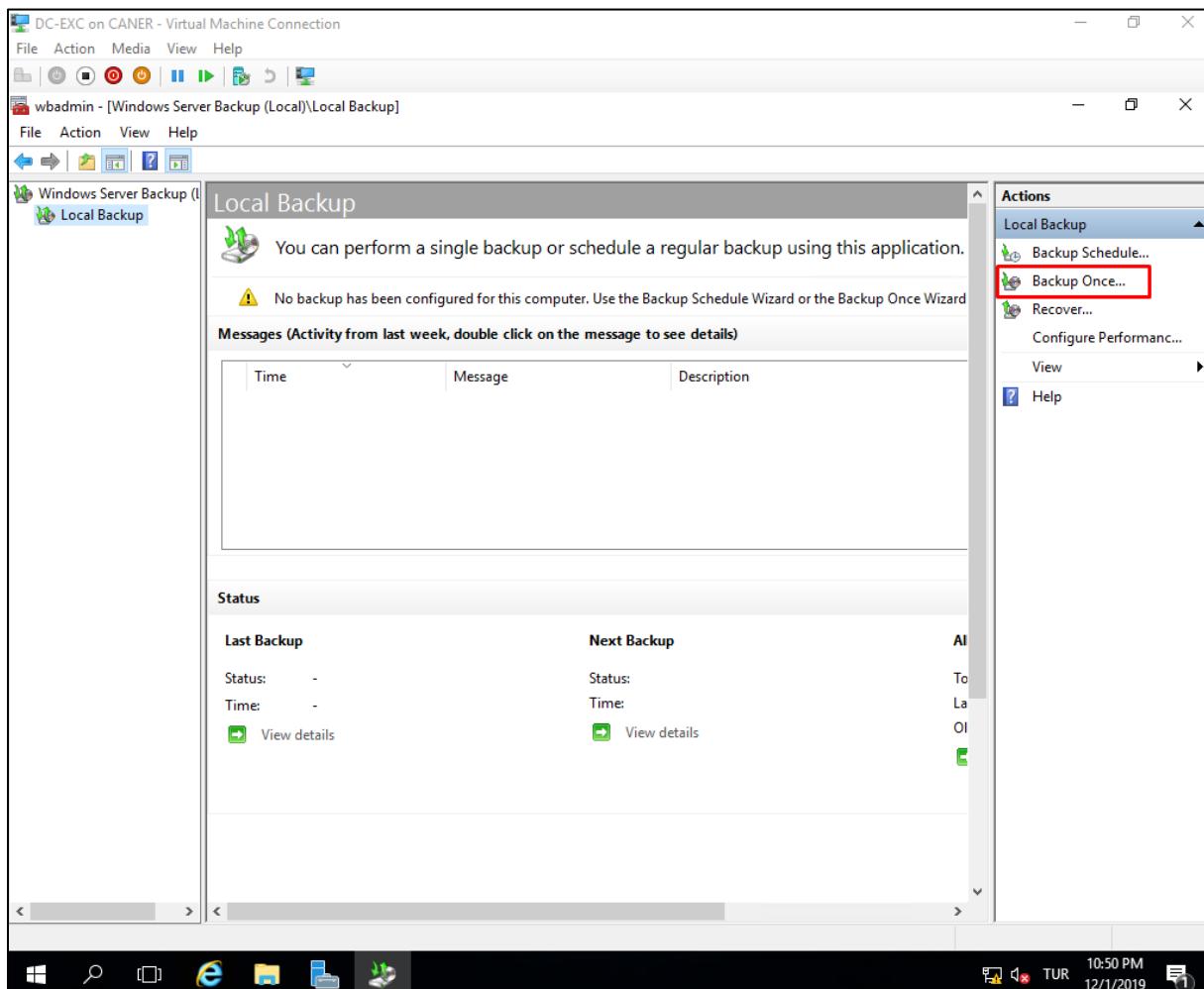
Now that we have sent and received some e-mails. Let's back them up for safe keeping. We'll use the Windows Server Backup feature for this.



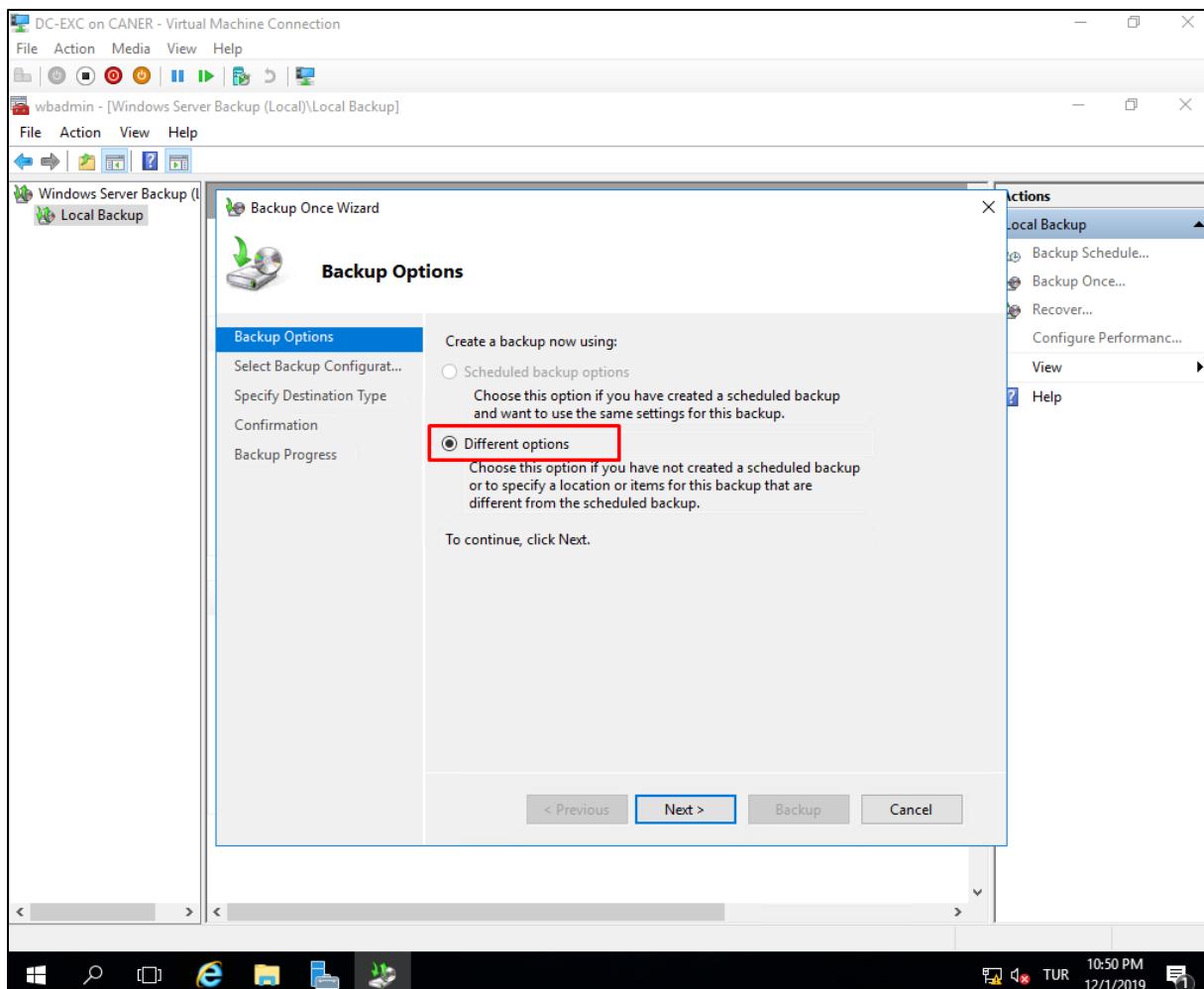
We start the backup tool.



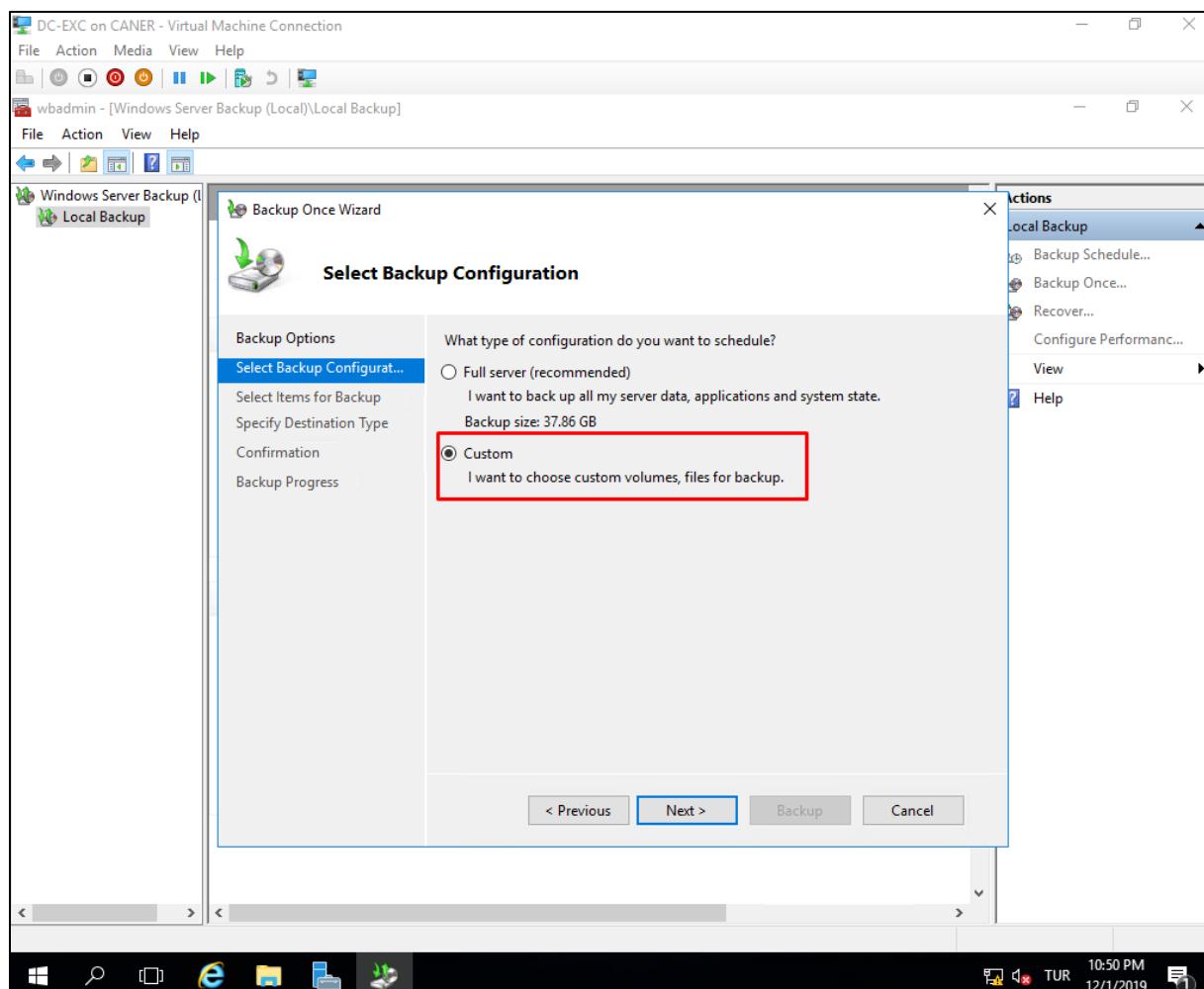
We'll select Backup Once here to demonstrate but we could have periodically backed up our data via scheduling.



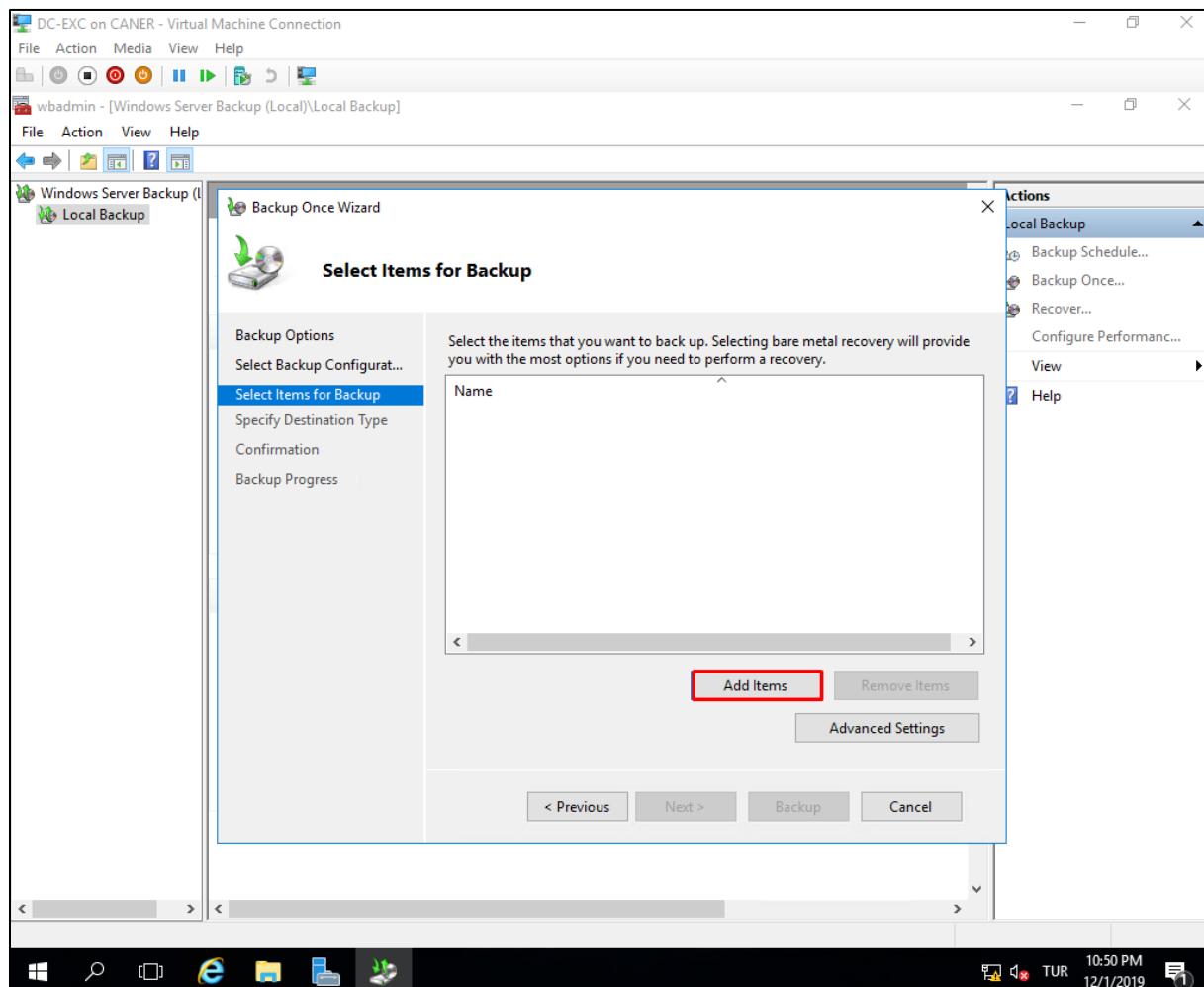
Since we don't have a schedule, we cannot select it here.



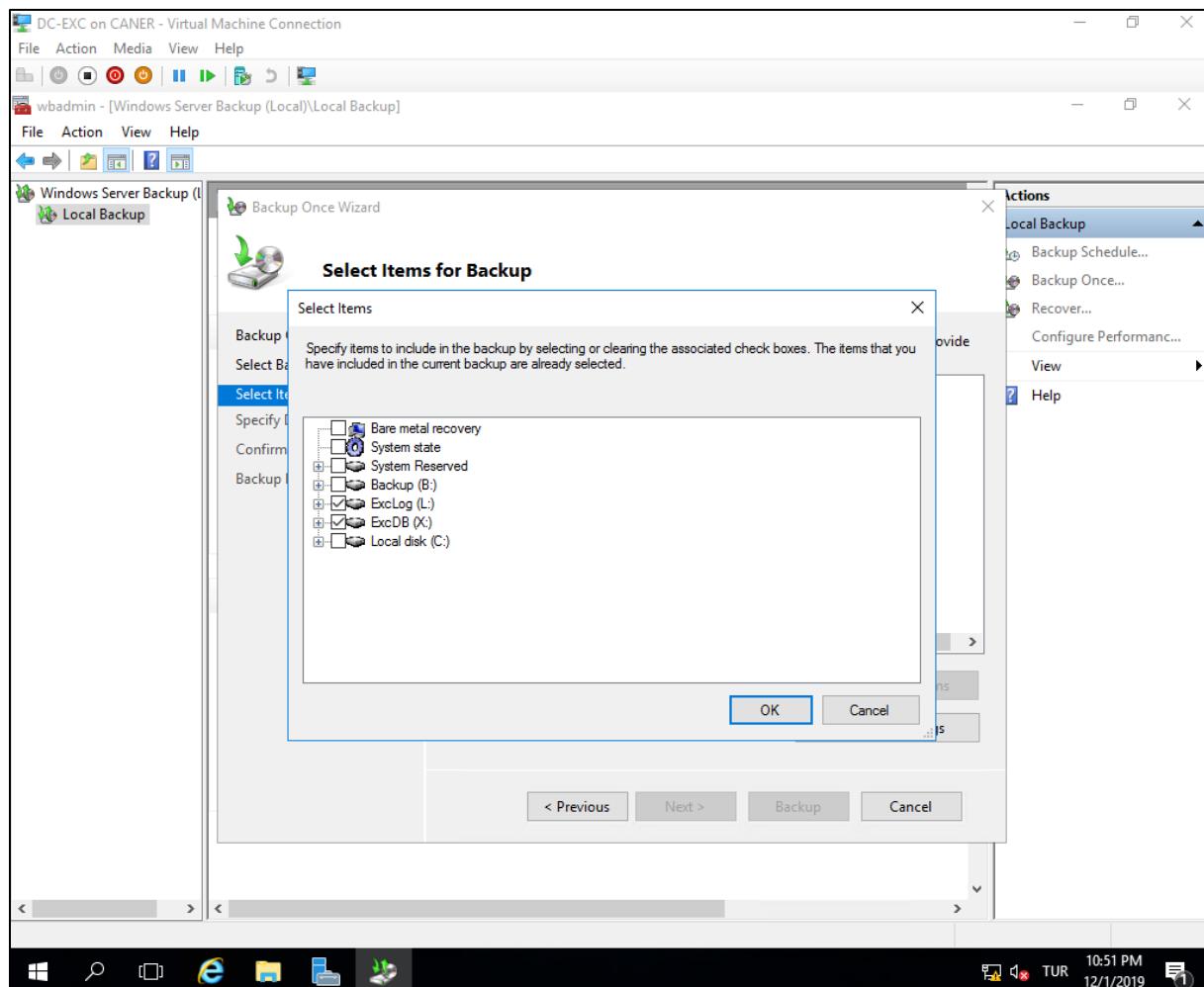
To save time we select a custom backup instead of a full backup.



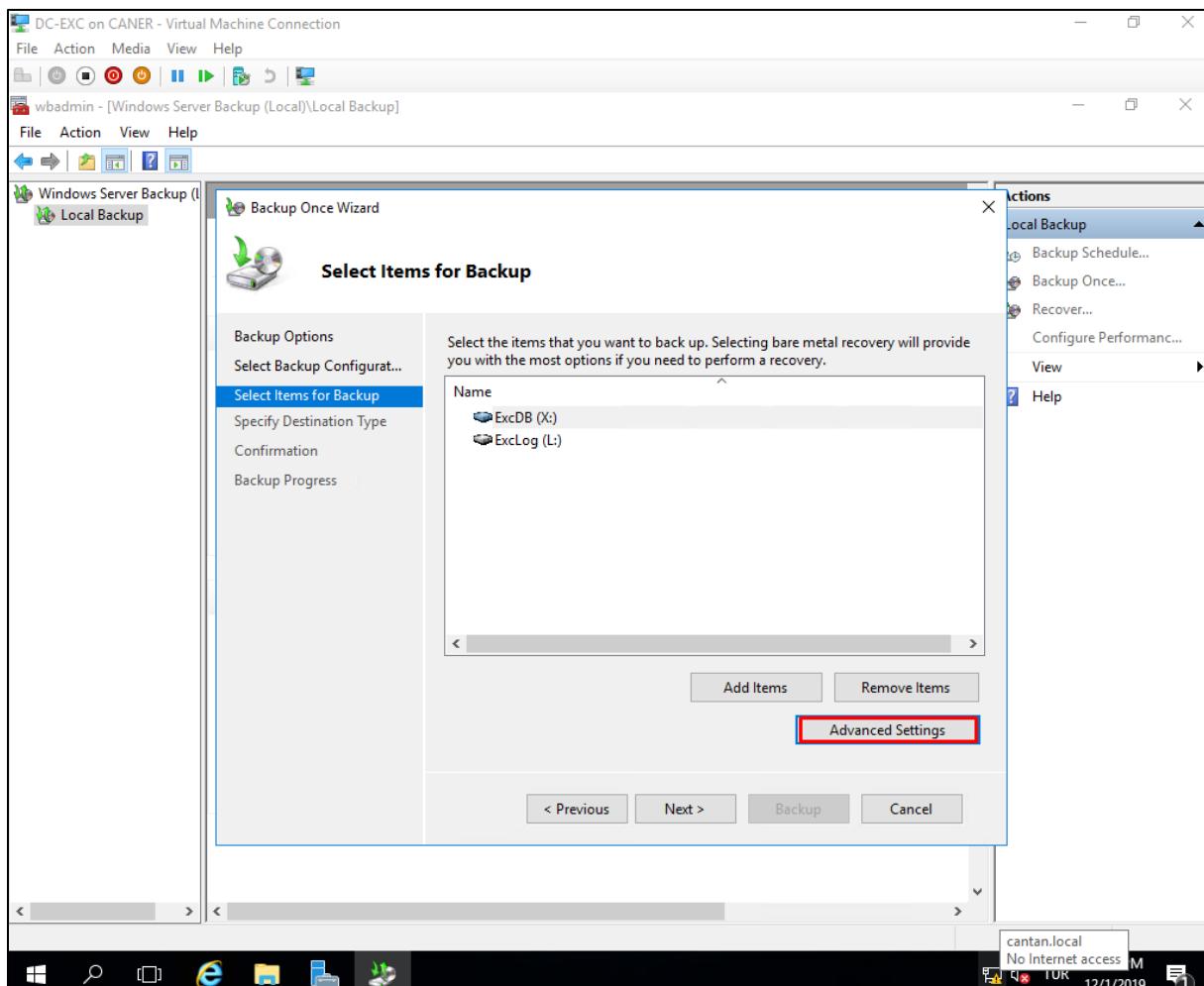
Because this is a custom backup, we select what to back up.



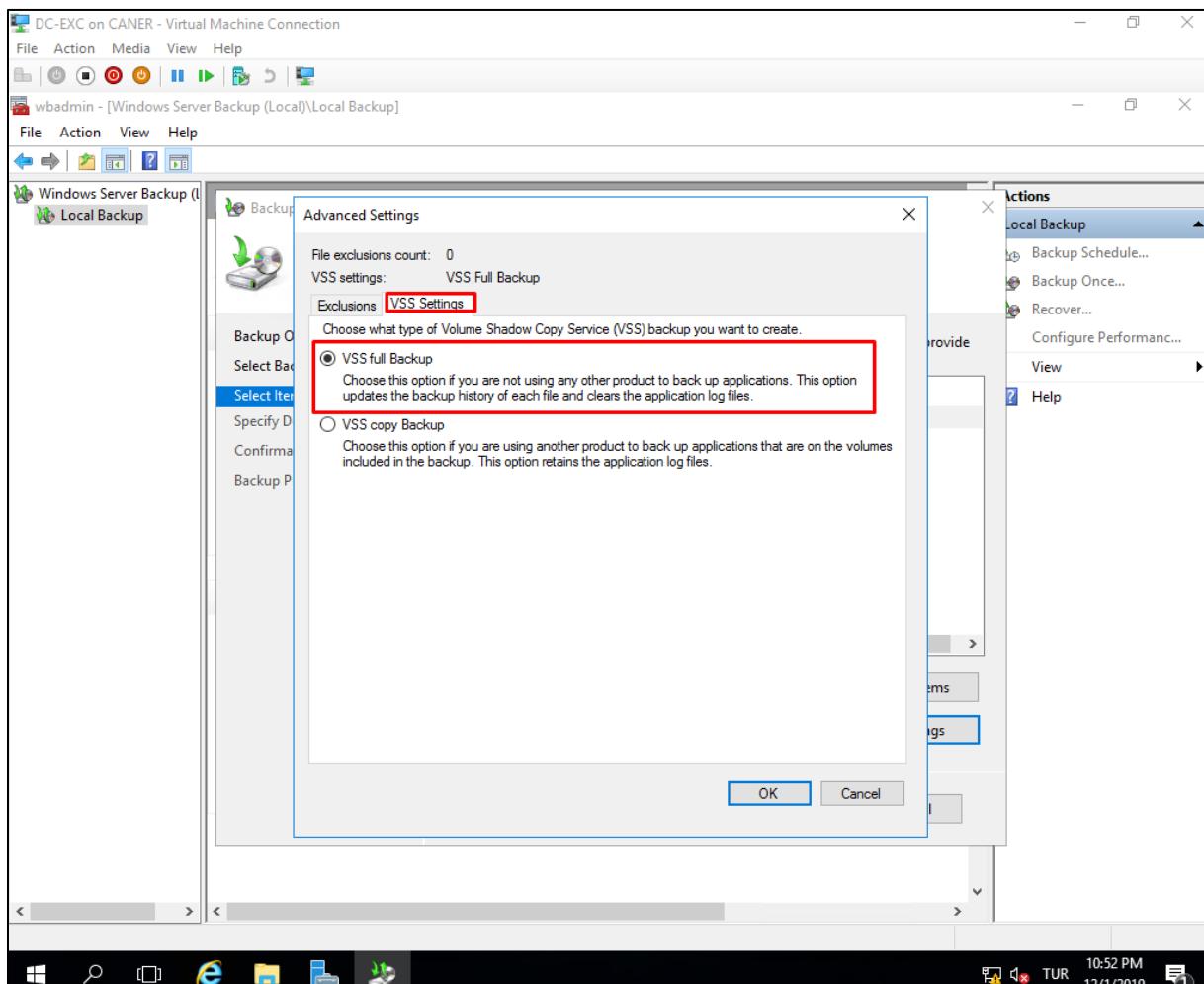
And we select only the drives we used for Exchange Server.



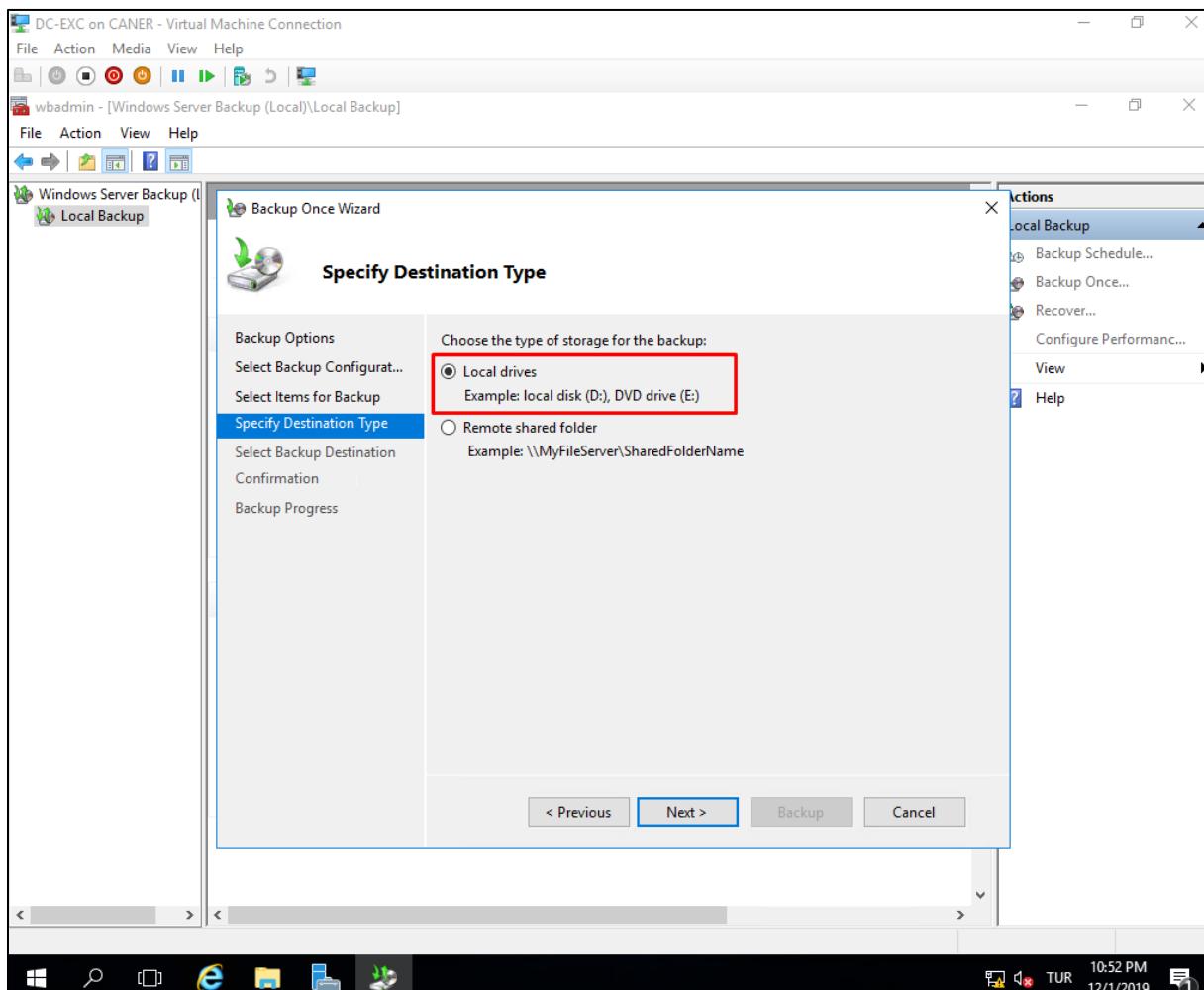
Once we add these items, we use the Advanced Settings.



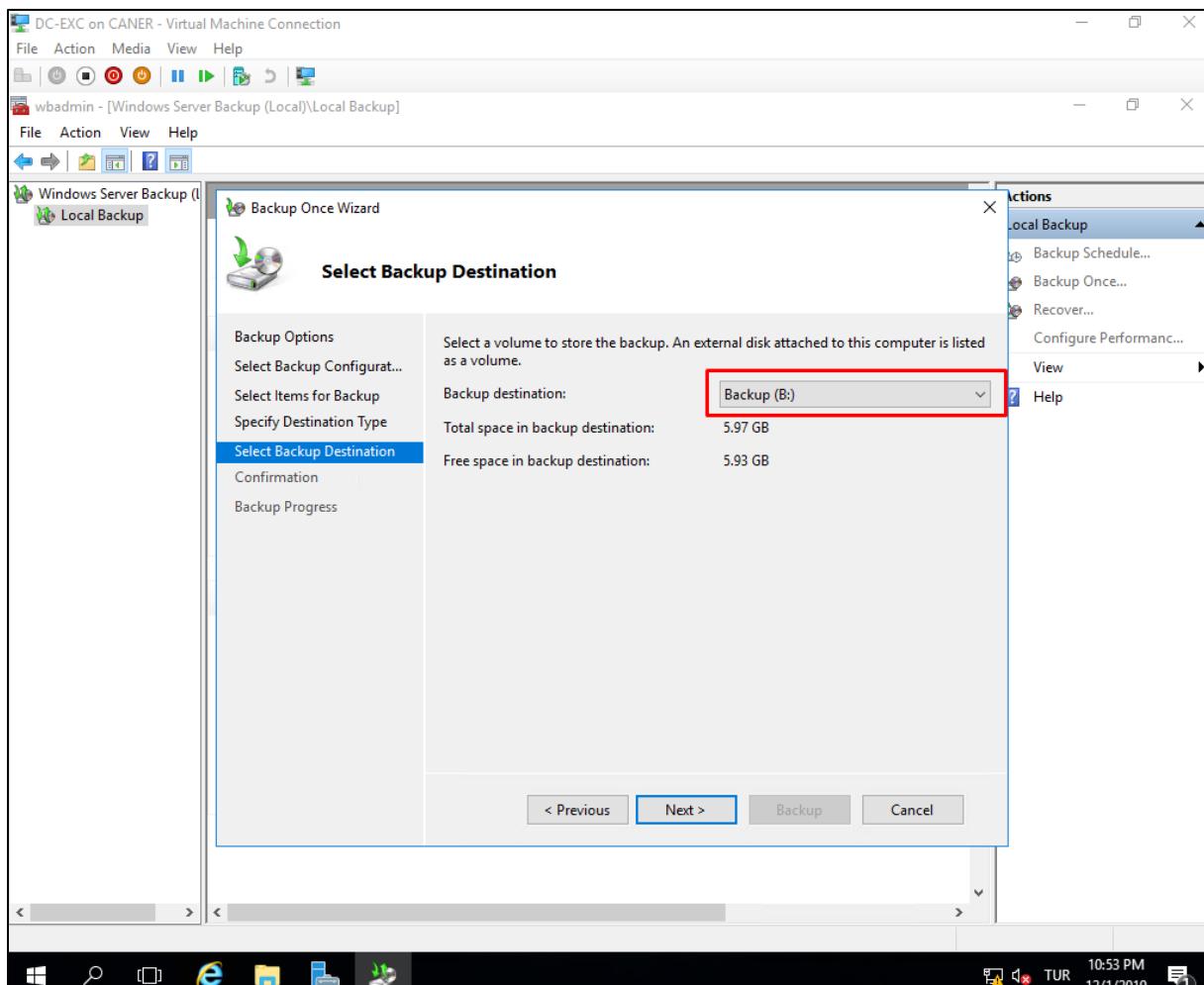
We choose VSS full backup since we don't use any other product to back up applications.



We choose the location of the backup...

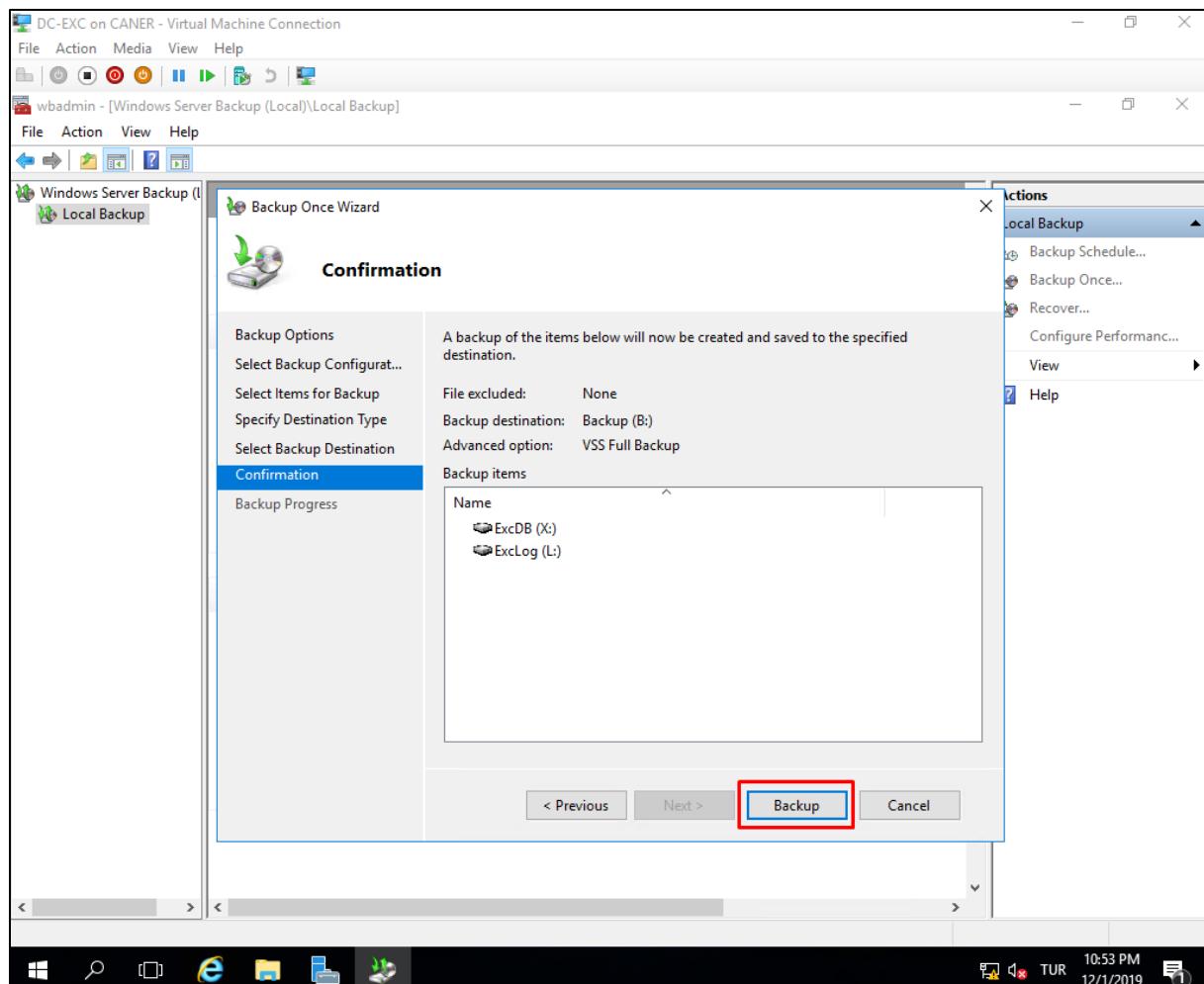


and since we added a drive named Backup(B:), let's back up our server there.

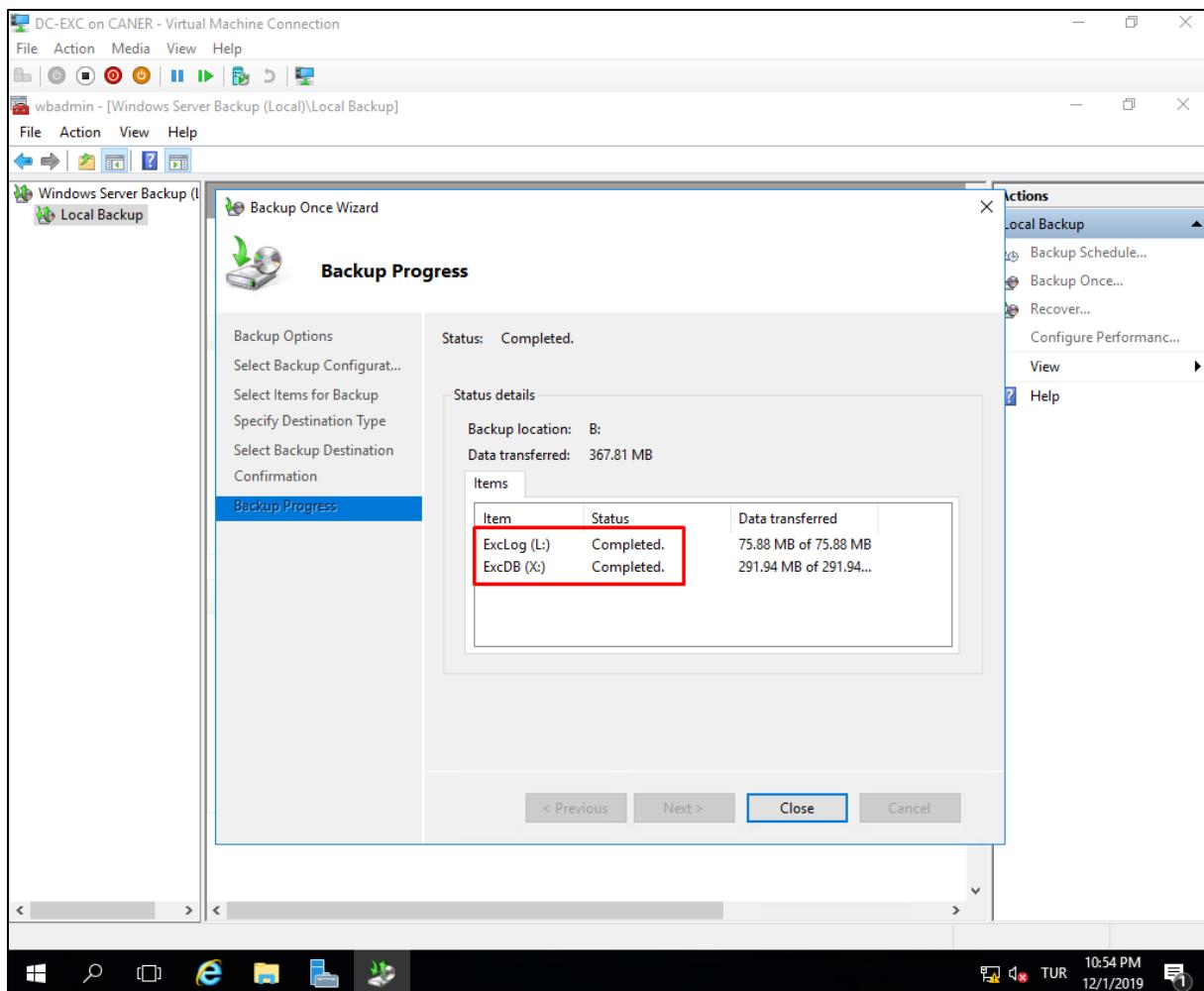


29.11.2019

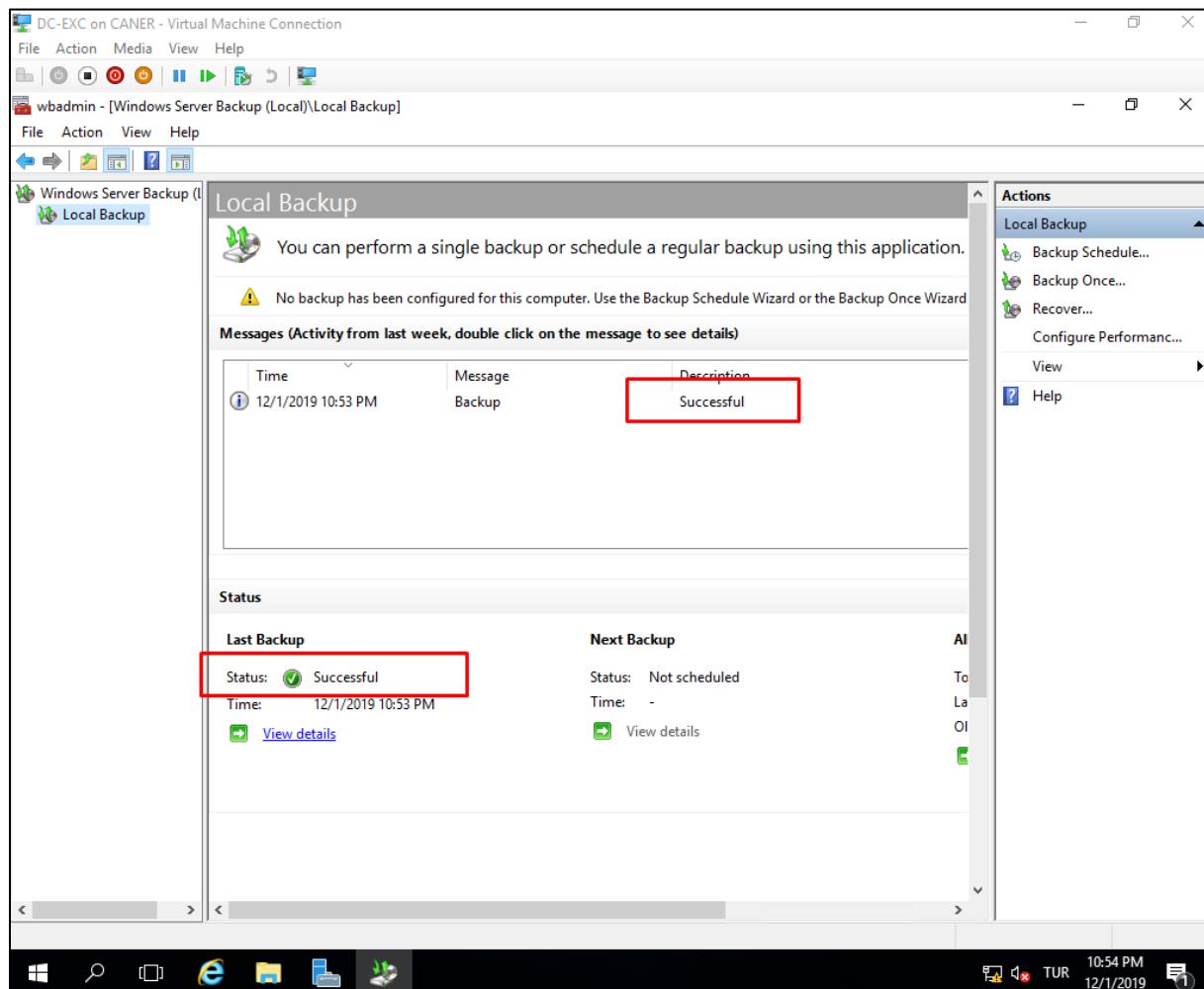
Then, we simply start the process.



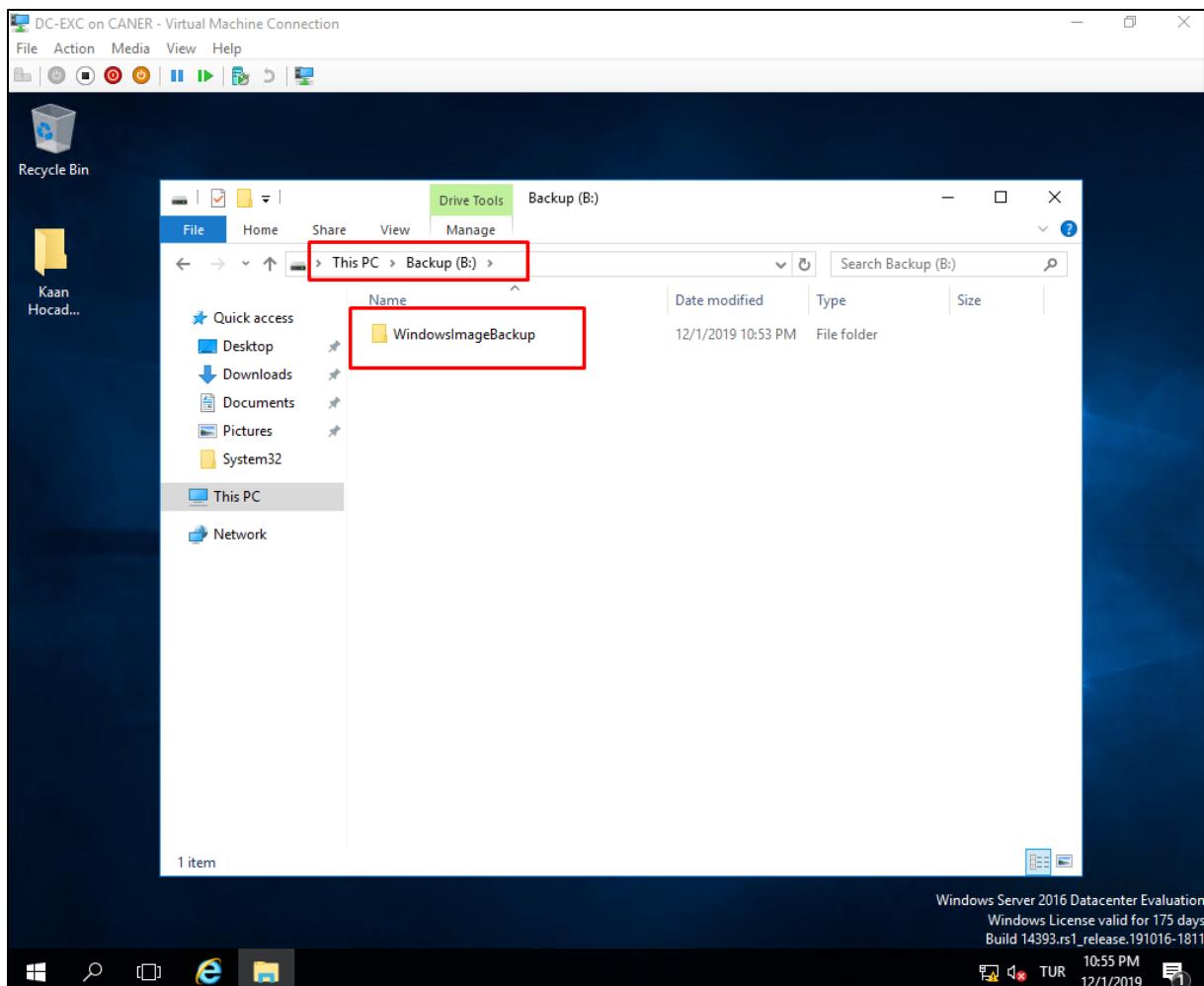
In a few minutes it's done.



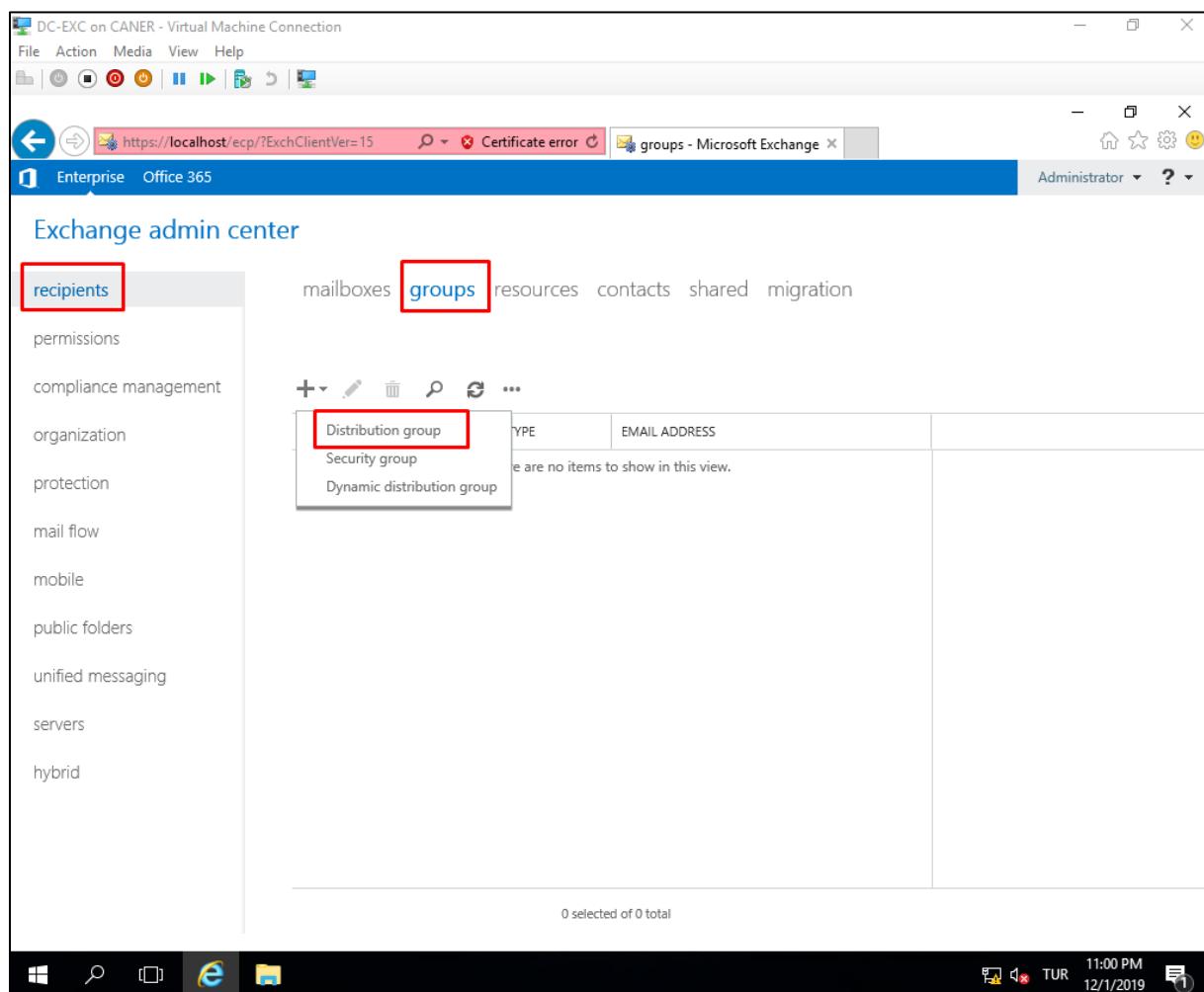
We can see the successful backup here and we could use it to recover our lost data in the case of a disaster.



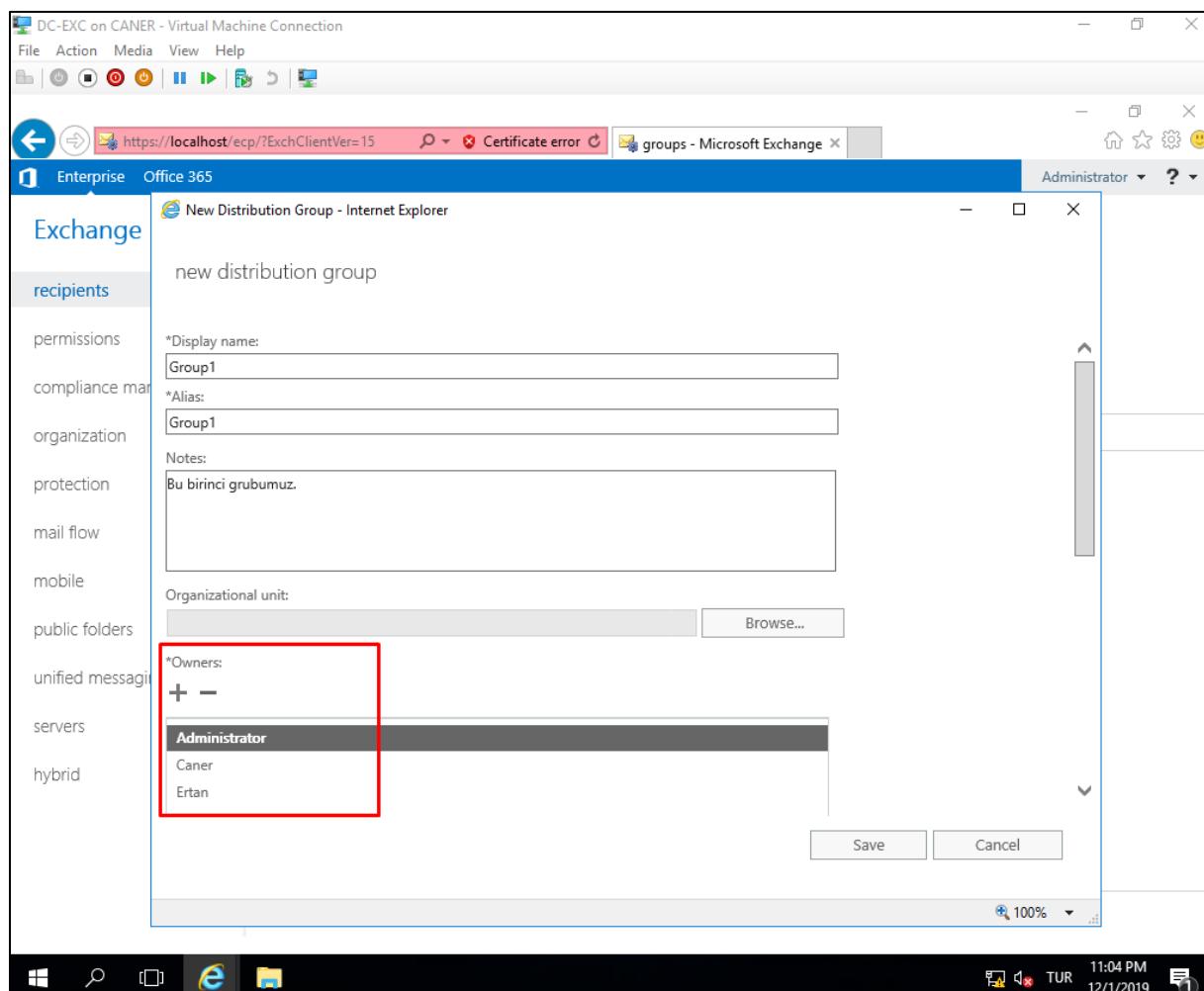
If we check the Backup(B:) drive we can see the backup image.



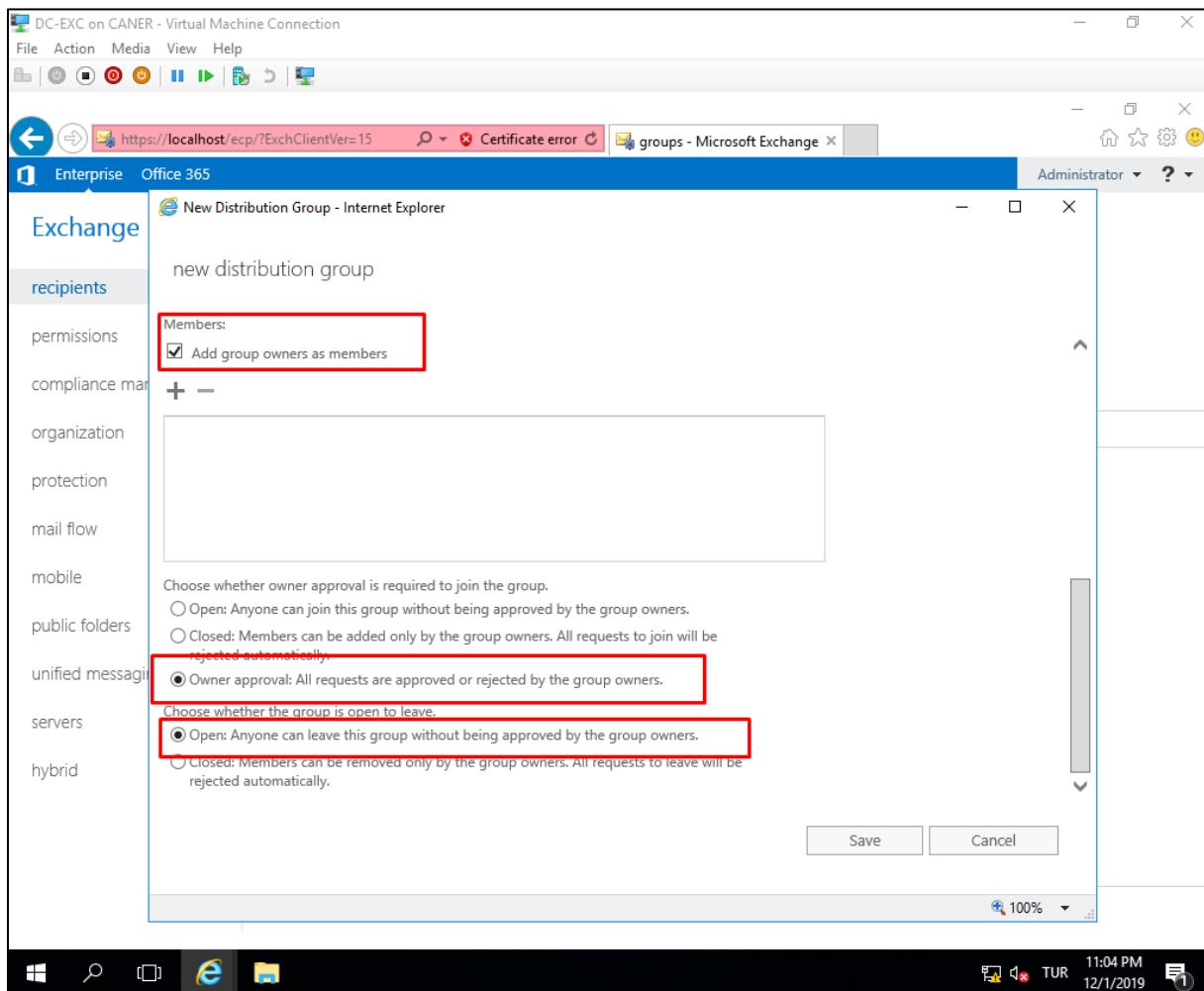
Now that we set up sending and receiving e-mails part of the Exchange Server, we can take a look at the organizational features. The first one is Distribution Groups. Distribution Groups (DGs) are useful to send mass e-mails without sifting through our entire list of users. This is especially useful for big companies. To create a new DG, we go to recipients and choose groups.



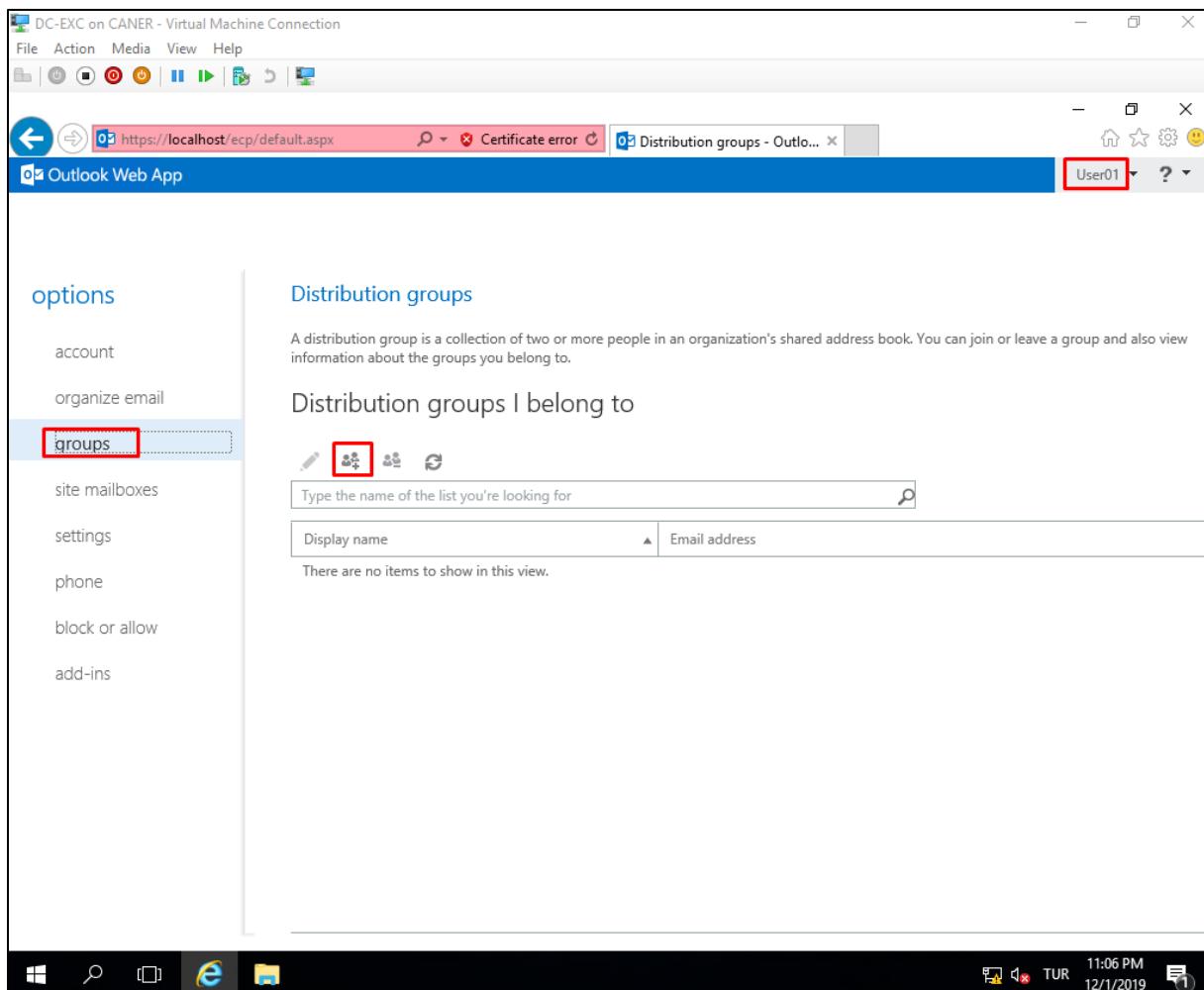
We name the group and designate owners of it along with writing a descriptive note.



Since we selected add group owners as members, if we send an e-mail to the group's address it goes to every owner. We can also add non-owner members if we are the owner of the group. Note that with the specified security rules below, anyone can leave the group without asking for permission; however, when someone new wants to join the group, the owners are sent an e-mail to confirm the new user as eligible for joining.



A user can join or request to join a DG via the groups tab and selecting the sign with a plus.



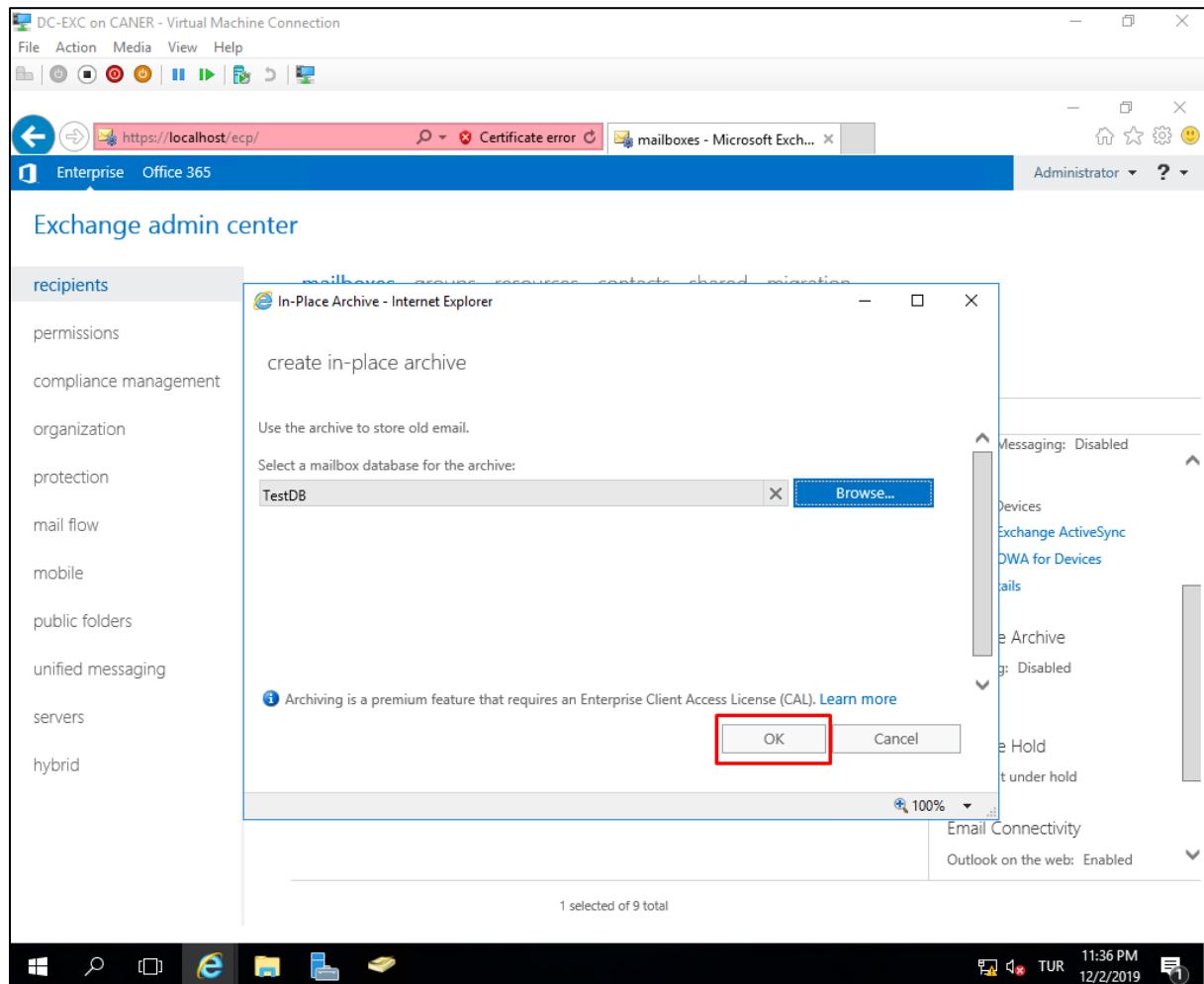
As an admin we can also enable archiving the e-mails which is user specific.

The screenshot shows the Exchange Admin Center interface. On the left, there's a sidebar with various navigation links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers, and hybrid. The main area is titled 'Exchange admin center' and shows a table of mailboxes. One row for 'Ertan' is selected, and its details are shown on the right. The 'In-Place Archive' section is highlighted with a red box, and the 'Enable' link within it is also highlighted with a red box. The status shows 'Archiving: Disabled'.

DISPLAY NAME	MAILBOX TYPE	EMAIL ADDRESS	
Administrator	User	Administrator@cantan.local	Unified Messaging: Disabled Enable
Caner	User	Caner@cantan.local	Mobile Devices Disable Exchange ActiveSync Disable OWA for Devices View details
Ertan	User	Ertan@cantan.local	In-Place Archive Archiving: Disabled Enable
User01	User	User01@cantan.local	In-Place Hold User isn't under hold
User02	User	User02@cantan.local	Email Connectivity Outlook on the web: Enabled
User03	User	User03@cantan.local	
User04	User	User04@cantan.local	
User05	User	User05@cantan.local	
User06	User	User06@cantan.local	

1 selected of 9 total

Once we enable archiving, the server requests a database to keep the archived e-mails. We selected the same database as the mailboxes but it's possible to create a distinct database for archives. Use the browse button to select one of the databases.



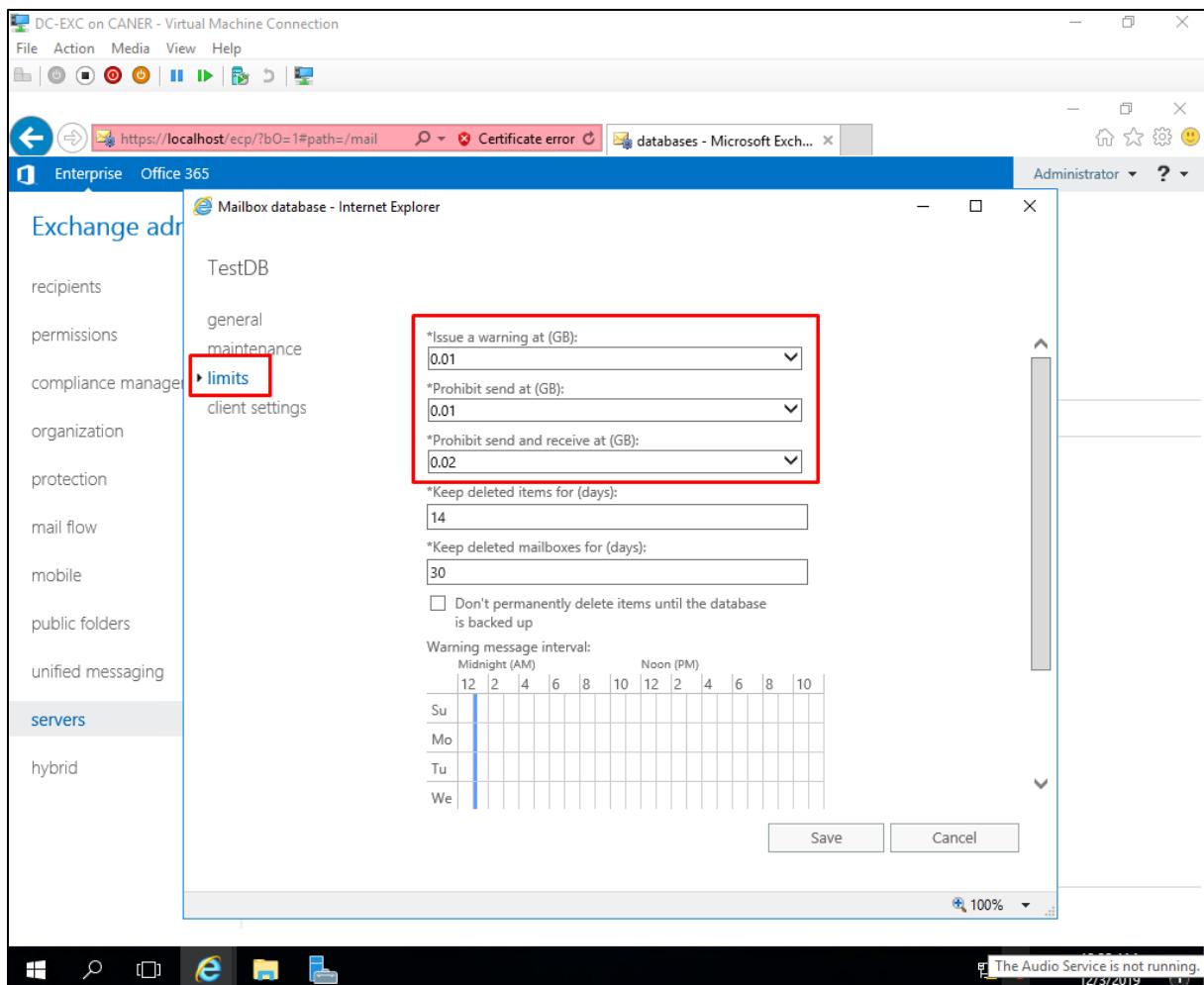
Another thing we can do as an Exchange Server admin is to limit how much space a user can utilize in the database. We select the database that we want to enforce quotas under servers, databases and click on the pencil sign indicating edit.

The screenshot shows the Exchange Admin Center interface. The left sidebar has a 'servers' link highlighted with a red box. The main content area shows the 'databases' tab selected. A toolbar above the table has an 'Edit' icon (pencil) highlighted with a red box. The table lists databases with columns: NAME, ACTIVE ON S..., SERVERS WITH COPIES, STA..., and BAD COPY C... . One row is selected, showing 'TestDB' in the NAME column and 'DC-EXC' in the SERVERS WITH COPIES column. The status column shows '0'. The right side of the screen displays details for the selected database, including 'Servers DC-EXC', 'Database copies TestDB\DC-EXC Active Mounted Copy queue length: 0 Content index state: Healthy', and a 'View details' link.

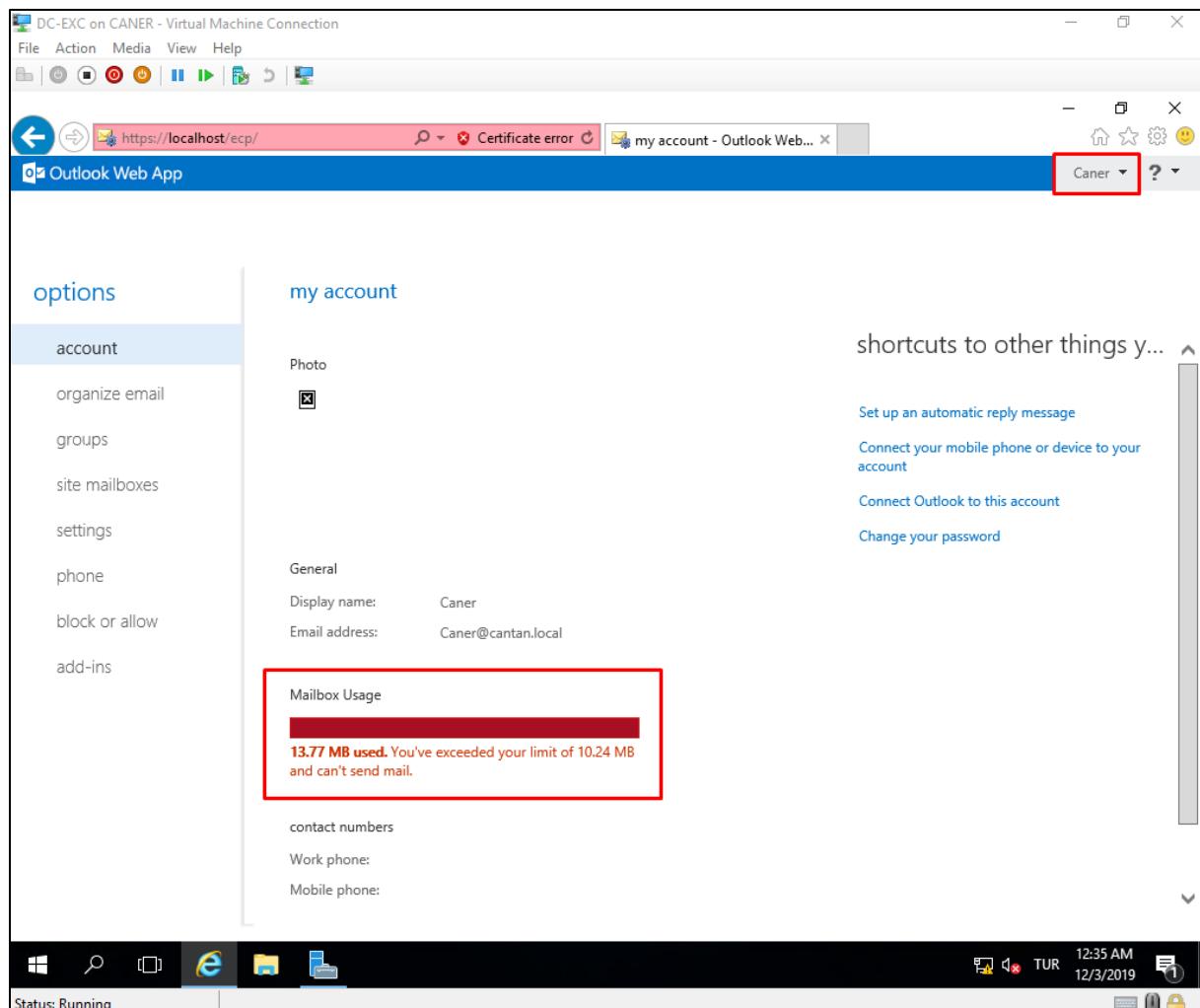
NAME	ACTIVE ON S...	SERVERS WITH COPIES	STA...	BAD COPY C...
Mailbox Dat...	DC-EXC	DC-EXC	Dis...	0
TestDB	DC-EXC	DC-EXC	Ma...	0

1 selected of 2 total

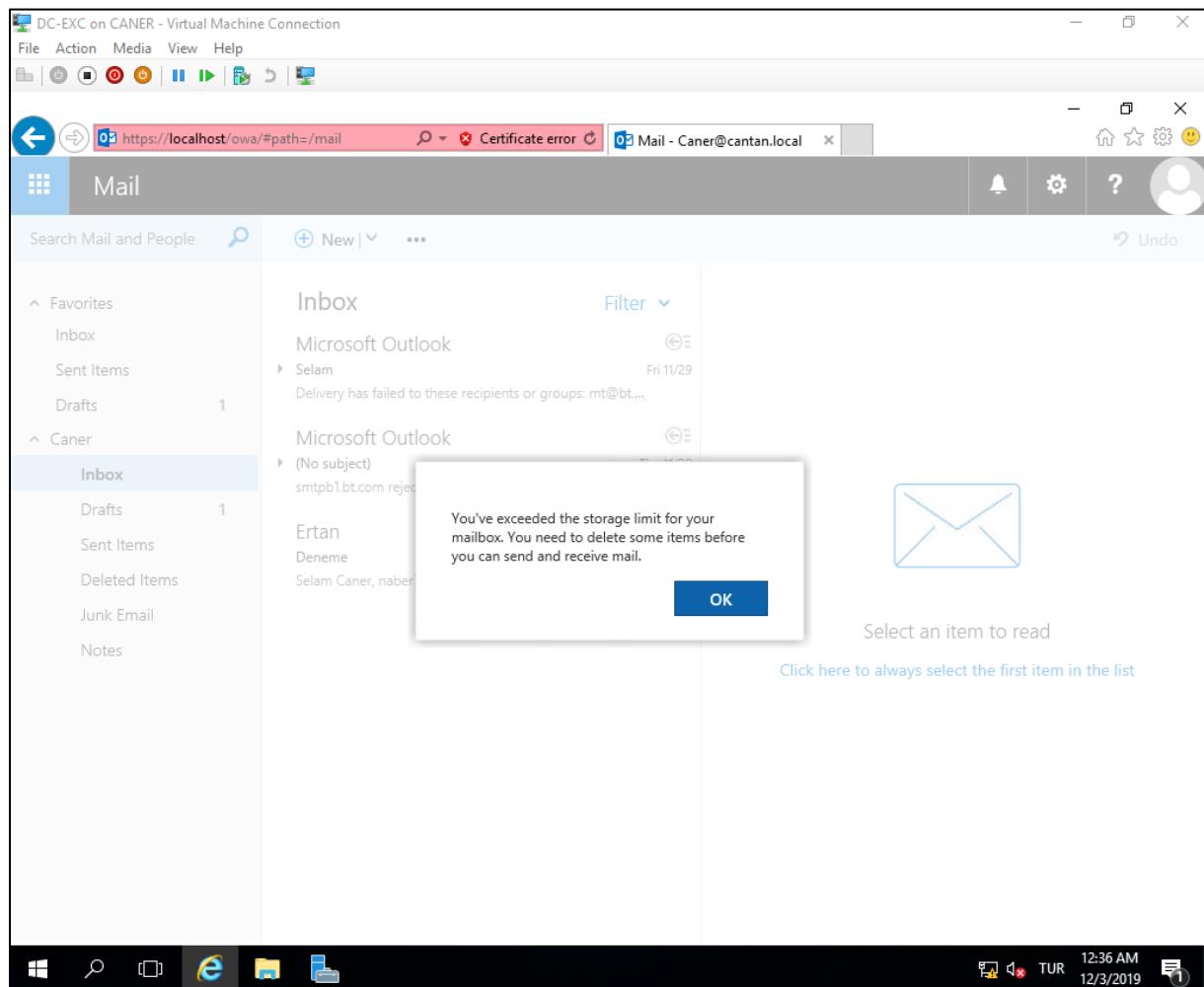
Under limits we designate the space limiting parameters.



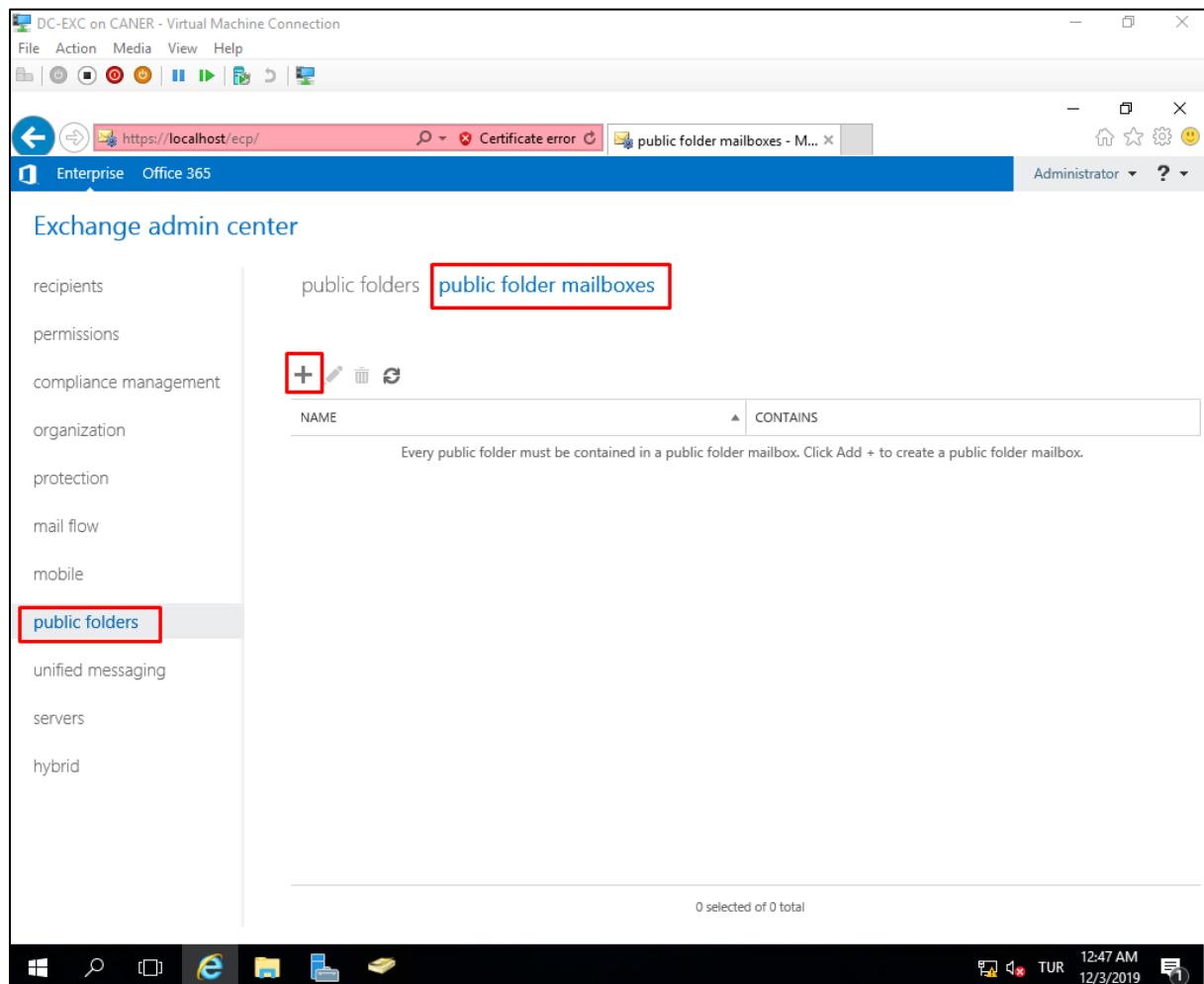
After we set up the rules for the quotas, we can see them enforced.



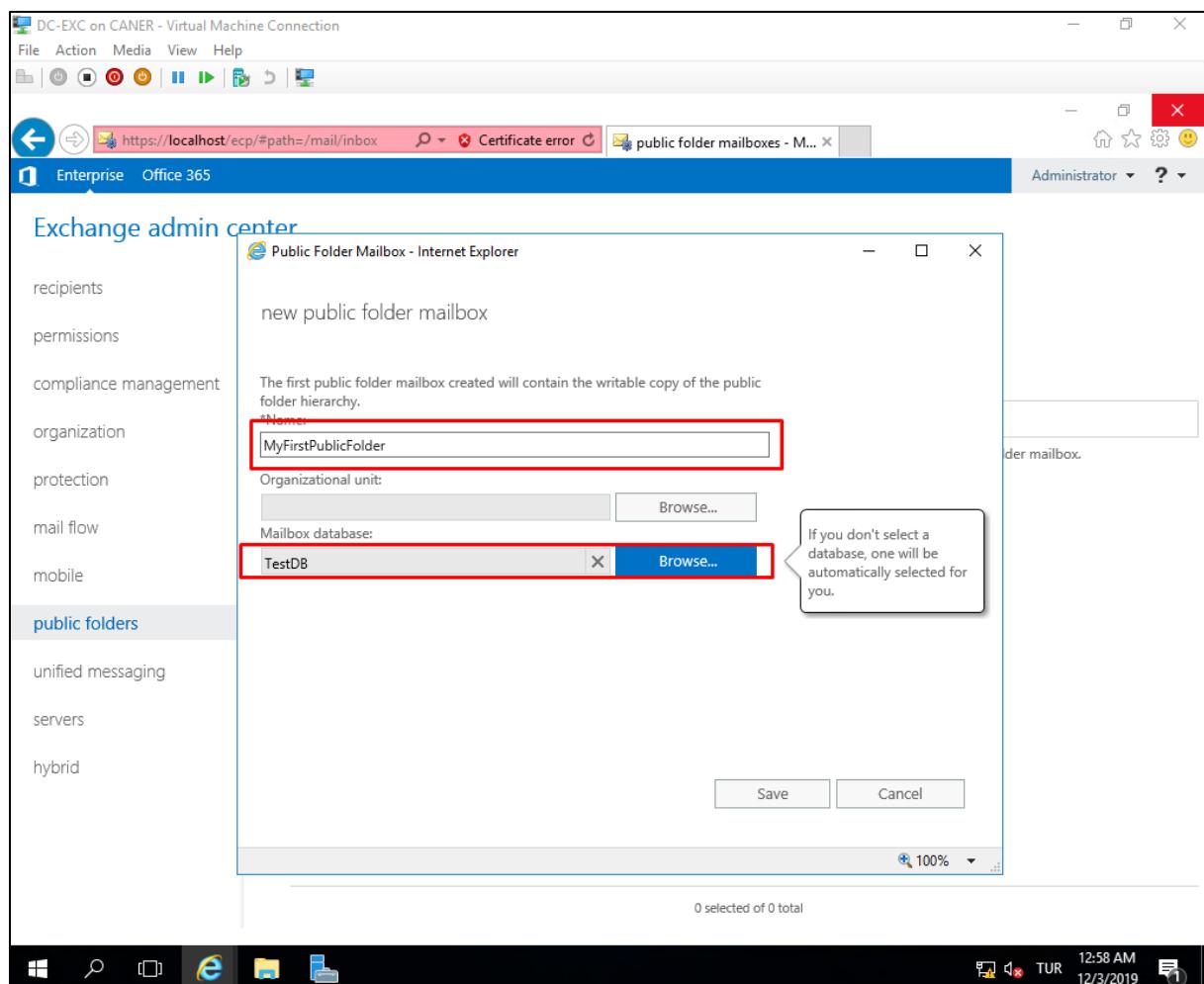
If a user reaches the quota that we determined, they cannot send or receive e-mails before deleting some e-mails.



We can also set up public folders for further organizational structure. The first thing to set them up is to go under public folders and create a new mailbox for it.



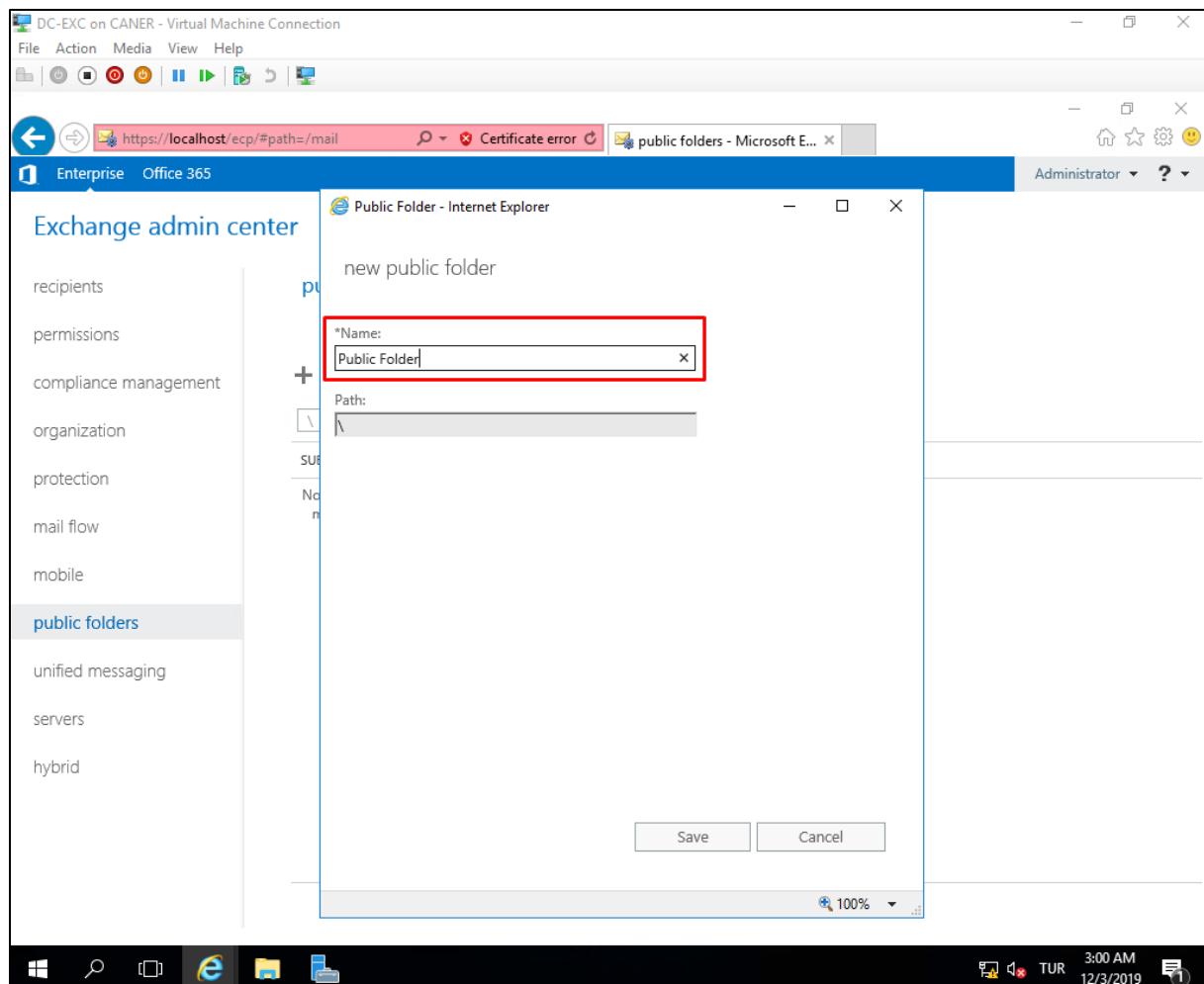
We name it and select which database we want to keep it at.



Then, under regular public folder tab we click on the plus sign to create a new one.

The screenshot shows the Exchange admin center interface. On the left, there's a navigation menu with items like recipients, permissions, compliance management, organization, protection, mail flow, mobile, and public folders. The 'public folders' item is highlighted with a red box. In the main content area, the title is 'Exchange admin center'. A sub-section titled 'public folders' is also highlighted with a red box. Below it, a table header for 'public folder mailboxes' is shown with columns: SUBFOLDER NAME, HAS SUBFOLDERS, MAIL ENABLED, and MAILBOX. A large red box highlights the '+' button in the toolbar above the table. A message below the table states: 'No public folders exist in this organization. Before you create a public folder, please make sure that you created at least one public folder mailbox. To create a public folder, click 'Add' +. After you create the public folder, you'll need to assign permissions so users can access it and create subfolders.' At the bottom of the page, it says '0 selected of 0 total'. The status bar at the bottom right shows the date and time: '12/3/2019 2:58 AM TUR'.

We name the folder as well.



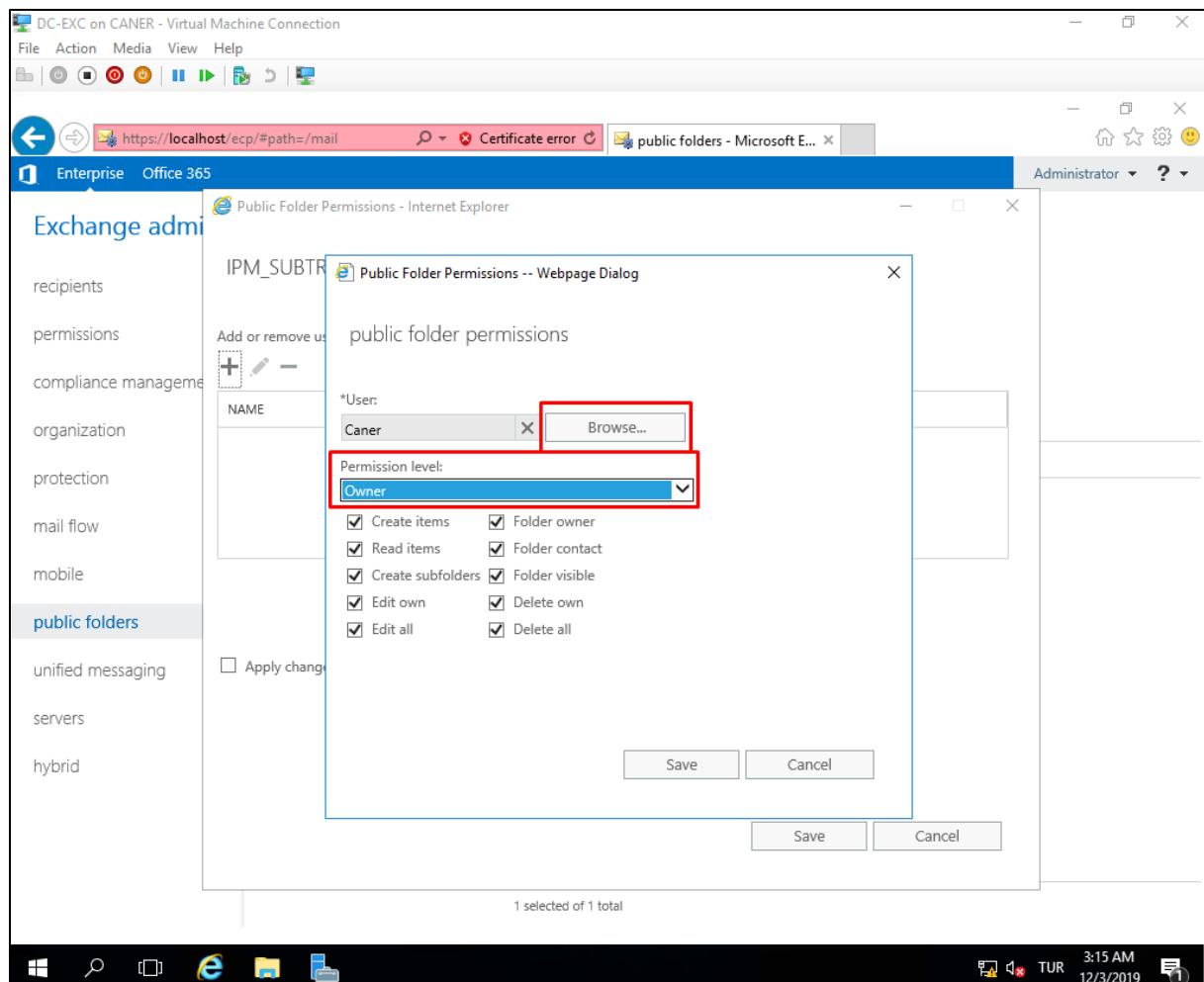
We need to select Root Permissions...

The screenshot shows the Exchange admin center interface. On the left, there's a sidebar with various links: recipients, permissions, compliance management, organization, protection, mail flow, mobile, **public folders** (which is highlighted with a red box), unified messaging, servers, and hybrid. In the main content area, under the **public folders** heading, it says "public folder mailboxes". Below this is a toolbar with icons for add, edit, delete, up, down, and a three-dot menu, with the three-dot menu highlighted by a red box. The breadcrumb navigation bar shows "\ Root permissions", with "Root permissions" also highlighted by a red box. A table follows, with columns: SUBFOLDER NAME, HAS SUBFOLD..., MAIL ENABLED, and MAILBOX. One row is visible: **Public Folder** (highlighted with a red box), No, No, MyFirstPublicFol... Under this row, there's a summary: Path: \Public Folder, Total items: 1, Modified: 12/3/2019 3:13 AM, Size (MB): 0, Mail settings - Disabled, with an **Enable** link. There are also "Folder permissions" and "Manage" links. At the bottom of the page, it says "1 selected of 1 total". The system tray at the bottom right shows the date and time as 12/3/2019 3:14 AM.

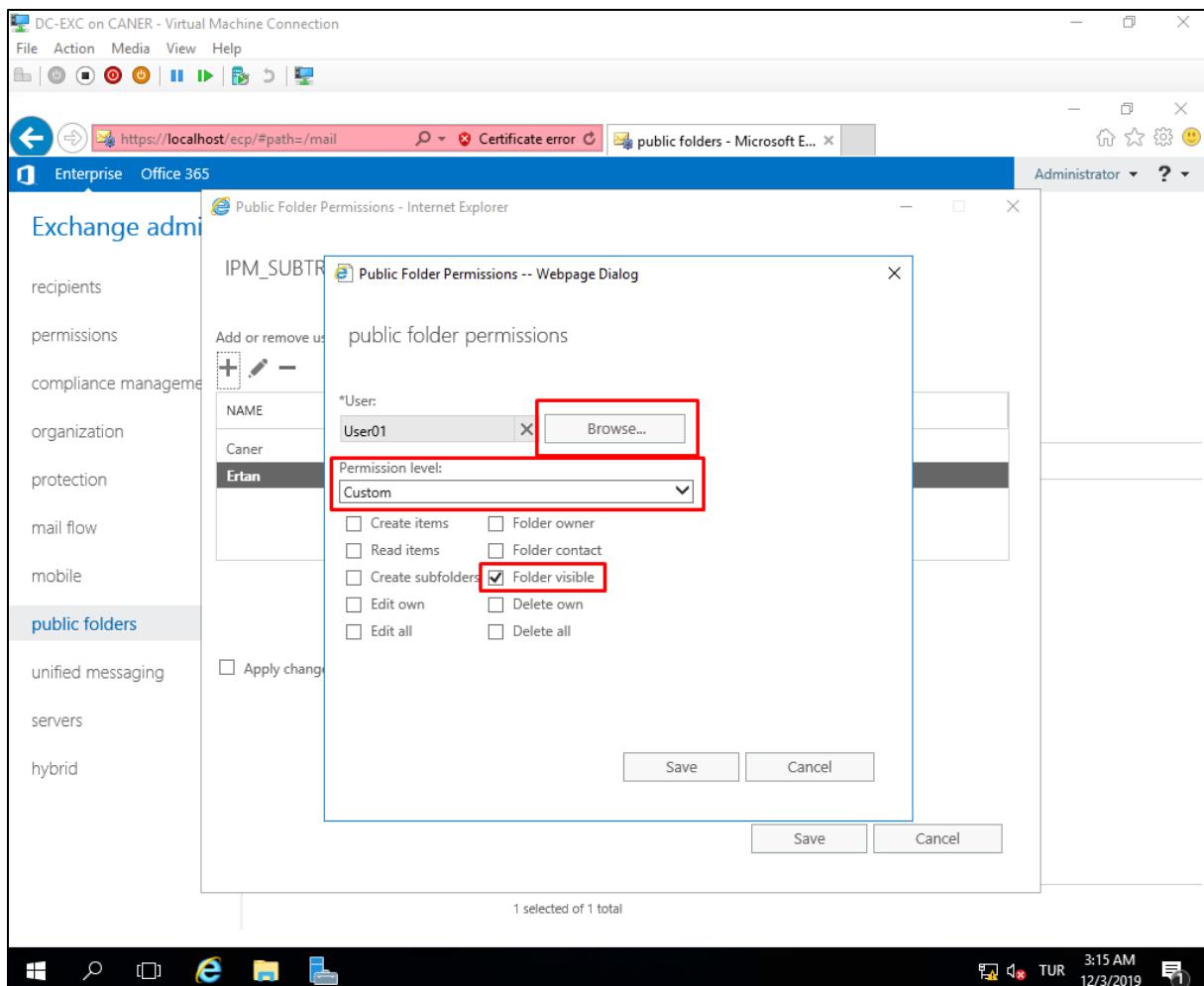
... to add new users for access to the folder.

The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation pane with various links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, and public folders. The 'public folders' link is currently selected. The main content area is titled 'Public Folder Permissions - Internet Explorer' and shows the 'IPM_SUBTREE' folder. It displays a table with columns for NAME, PERMISSION LEVEL, and SID. A red box highlights the '+' button used for adding new users. Below the table is a checkbox for applying changes to all subfolders. At the bottom right are 'Save' and 'Cancel' buttons. The status bar at the bottom shows '1 selected of 1 total'. The taskbar at the bottom includes icons for File Explorer, Task View, Start, and Edge, along with system status indicators like battery level and network connection.

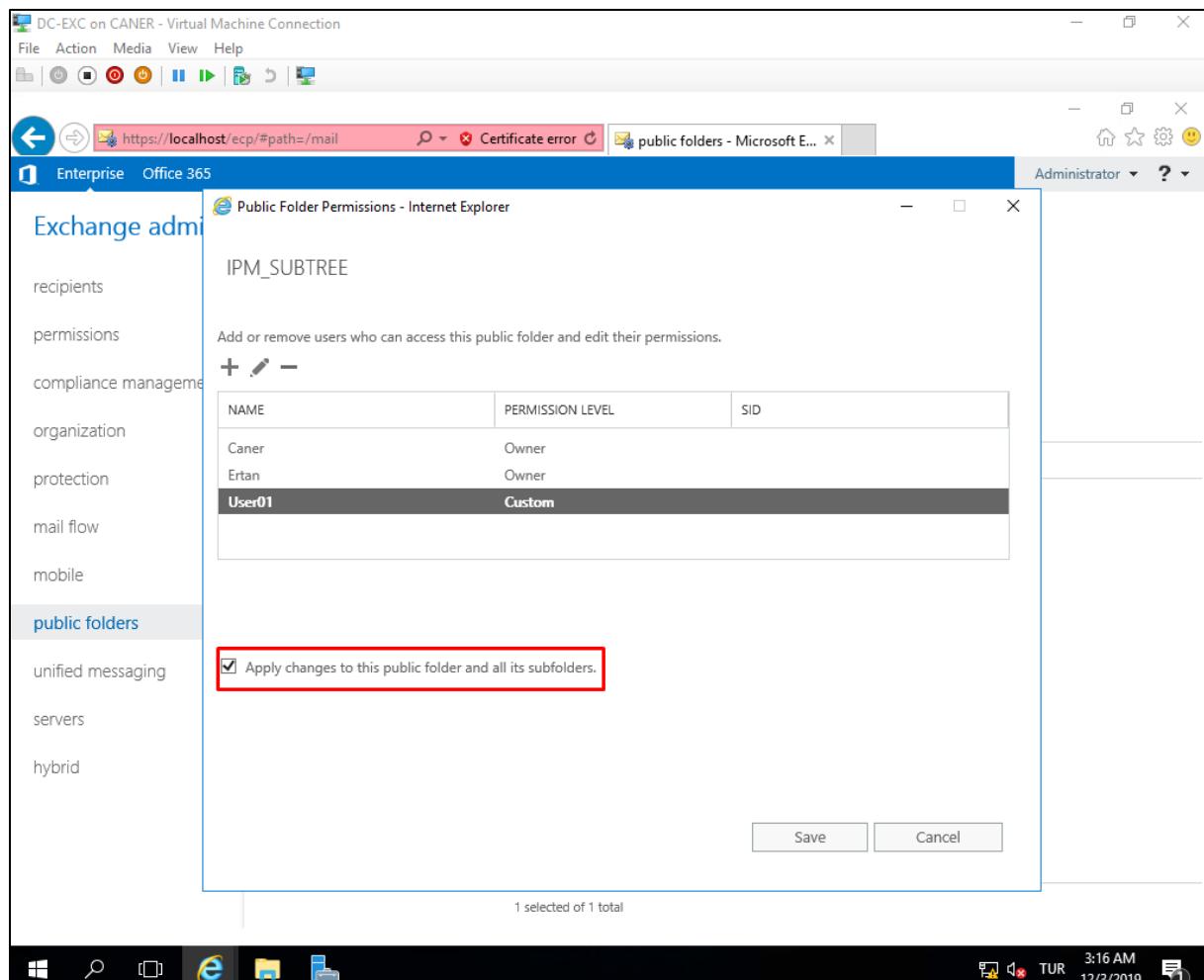
Access to the folder has distinct permission levels such as the owner which has full access:



Or the custom user whose permissions we can designate.



Then, we save these changes for the folder and all the subfolders.



Note that Caner and Ertan are owners whereas User01 can only see the folder and nothing inside.

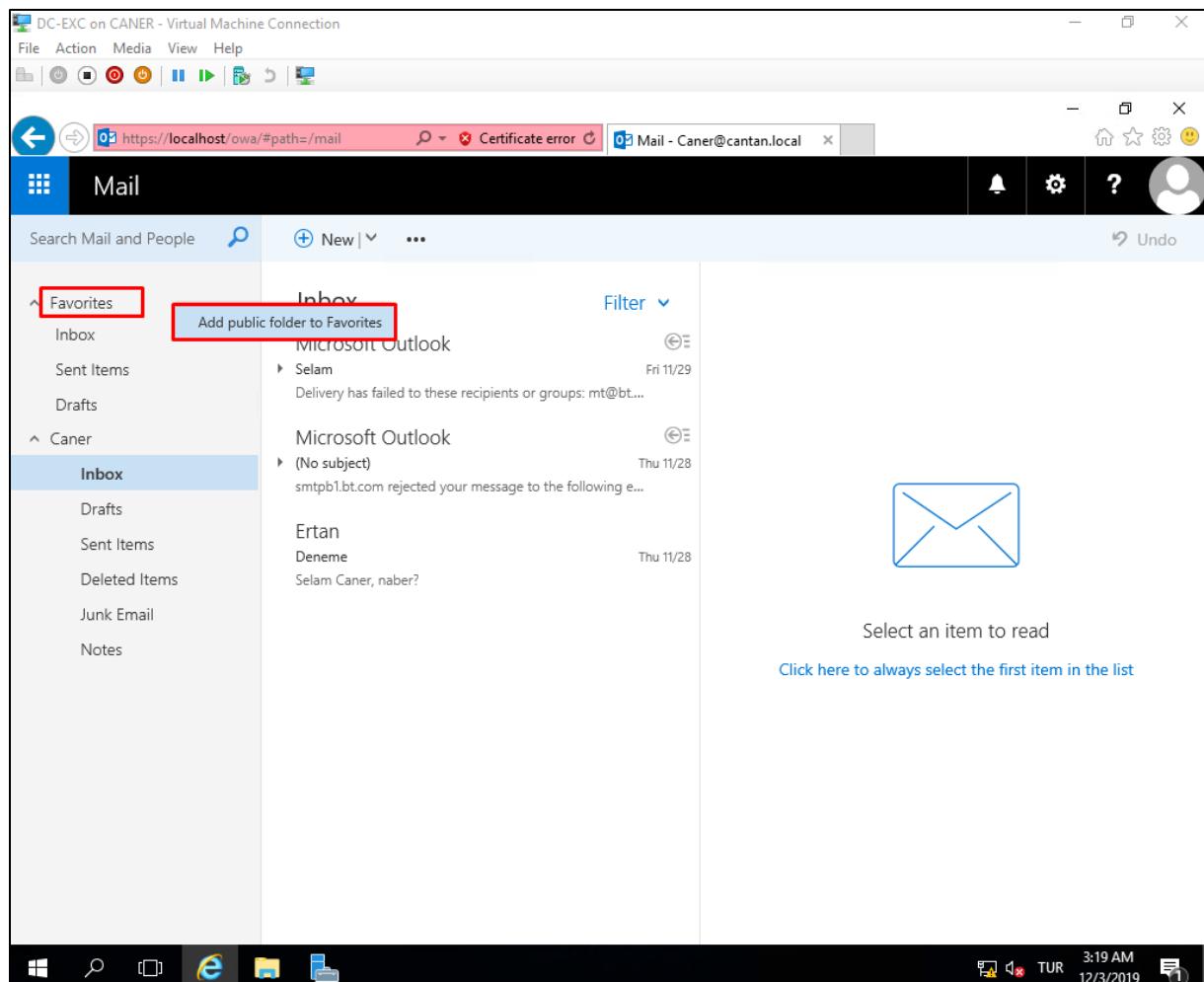
Then, we simply need to enable the folder.

The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation menu with various links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, and public folders. The 'public folders' link is currently selected and highlighted in blue. The main content area is titled 'public folders' and shows 'public folder mailboxes'. Below this is a table with columns: SUBFOLDER NAME, HAS SUBFOLDERS, MAIL ENABLED, and MAILBOX. A single row is visible, labeled 'Public Folder' with values 'No', 'No', and 'MyFirstPublicFol...'. To the right of the table, there's a summary for the 'Public Folder': Path: \Public Folder, Total items: 1, Modified: 12/3/2019 3:13 AM, Size (MB): 0. It also shows 'Mail settings - Disabled' and a red box highlights the 'Enable' button. Below the table, it says '1 selected of 1 total'. At the bottom, there's a taskbar with icons for Start, Search, Task View, Internet Explorer, File Explorer, and File History, along with system status icons for battery, signal, and time (3:17 AM, 12/3/2019).

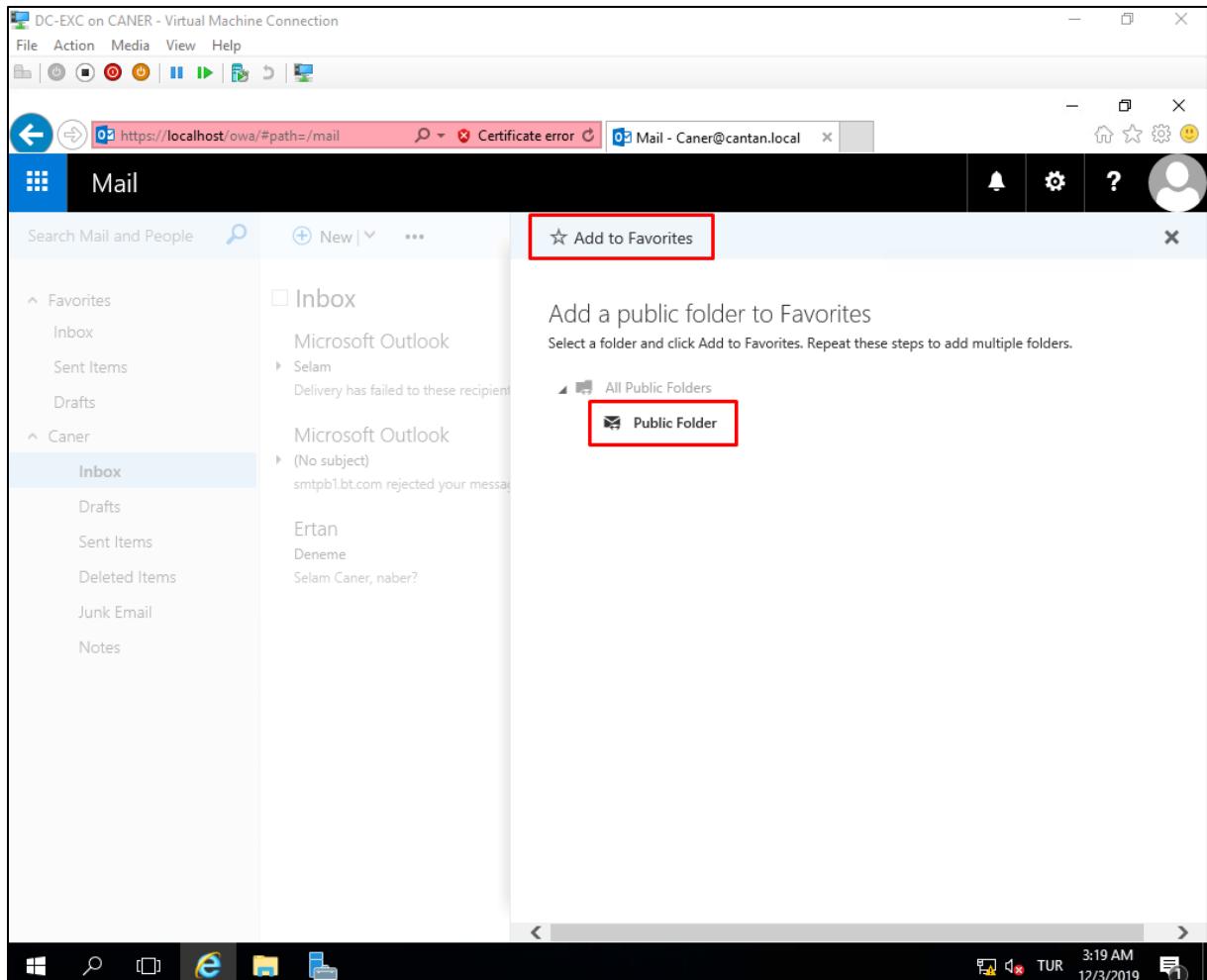
SUBFOLDER NAME	HAS SUBFOLDERS	MAIL ENABLED	MAILBOX
Public Folder	No	No	MyFirstPublicFol...

Public Folder
Path: \Public Folder
Total items: 1
Modified: 12/3/2019 3:13 AM
Size (MB): 0
Mail settings - Disabled
Enable
Folder permissions
Manage

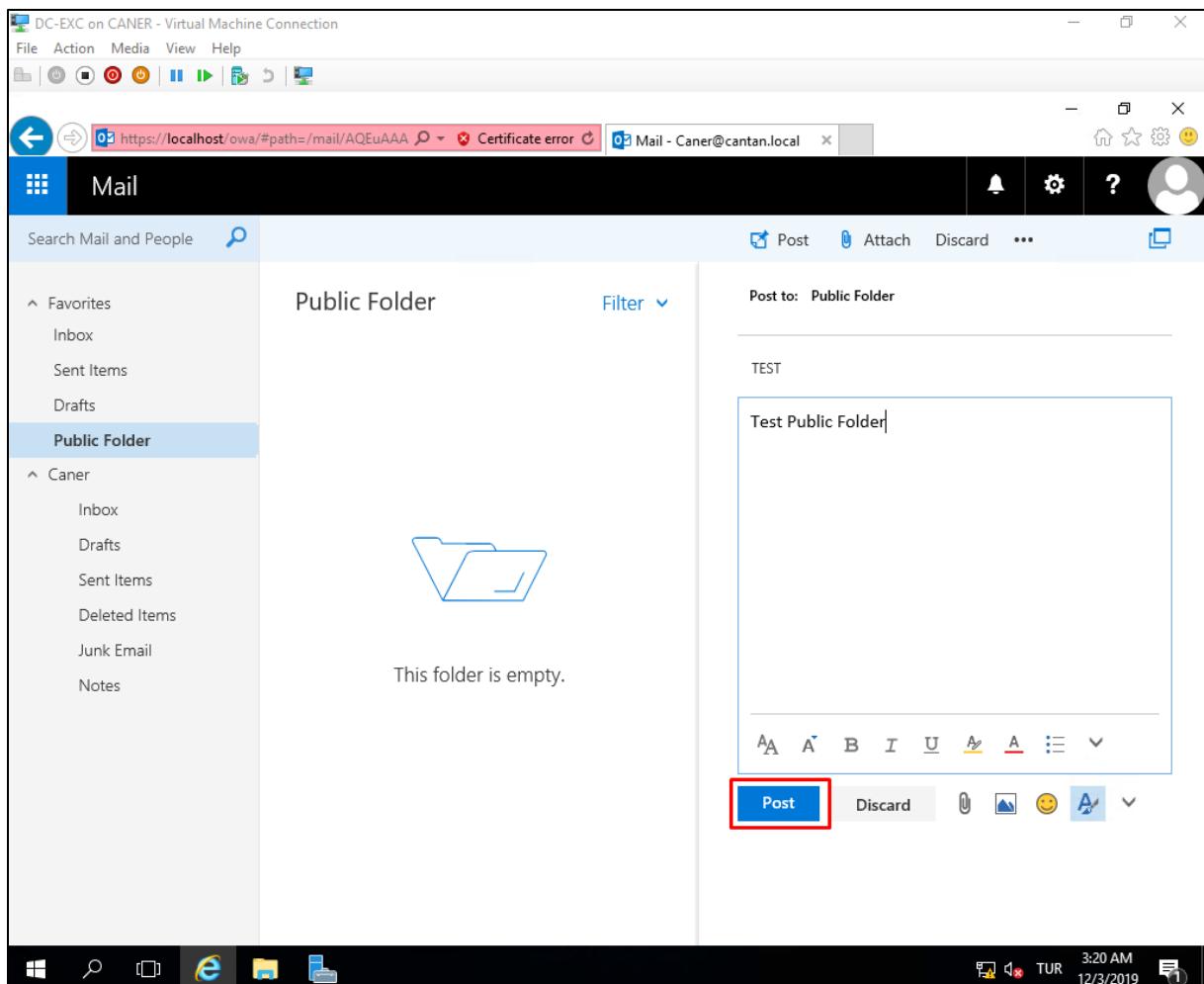
When we try to add a folder to favorites...



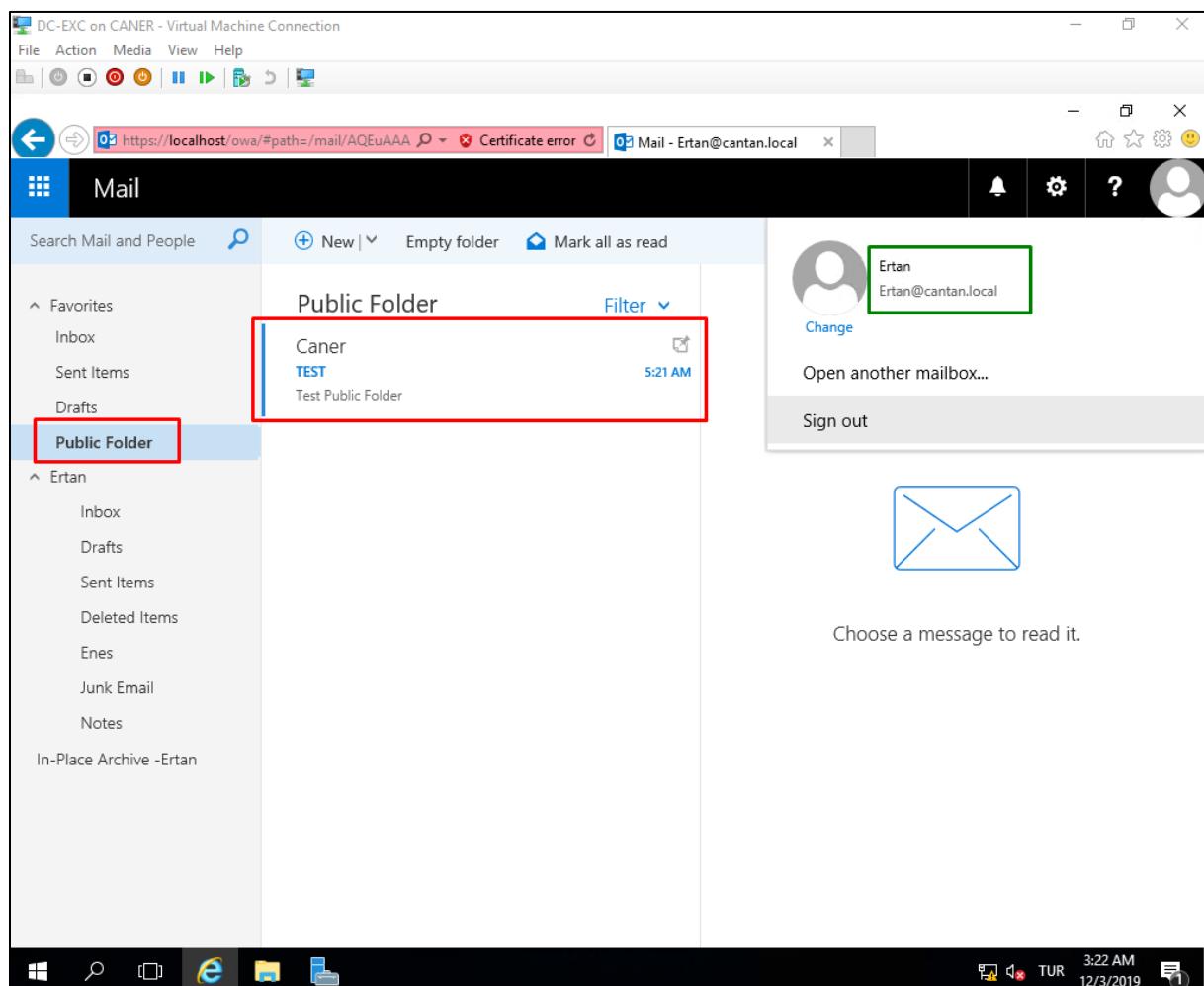
... the new public folder automatically appears for selection.



We can test the permissions by sending a public post.

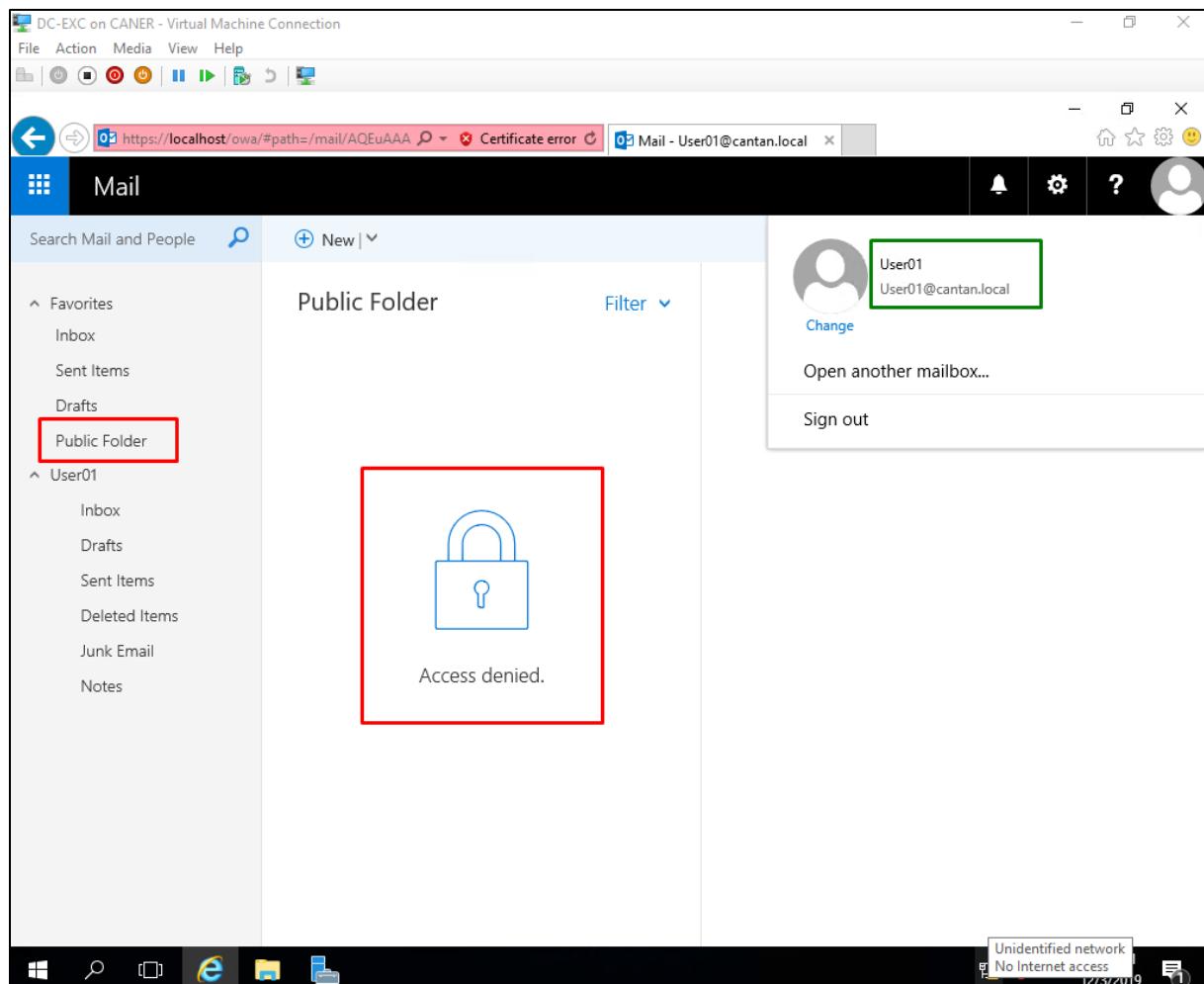


The owners have no issue seeing it.

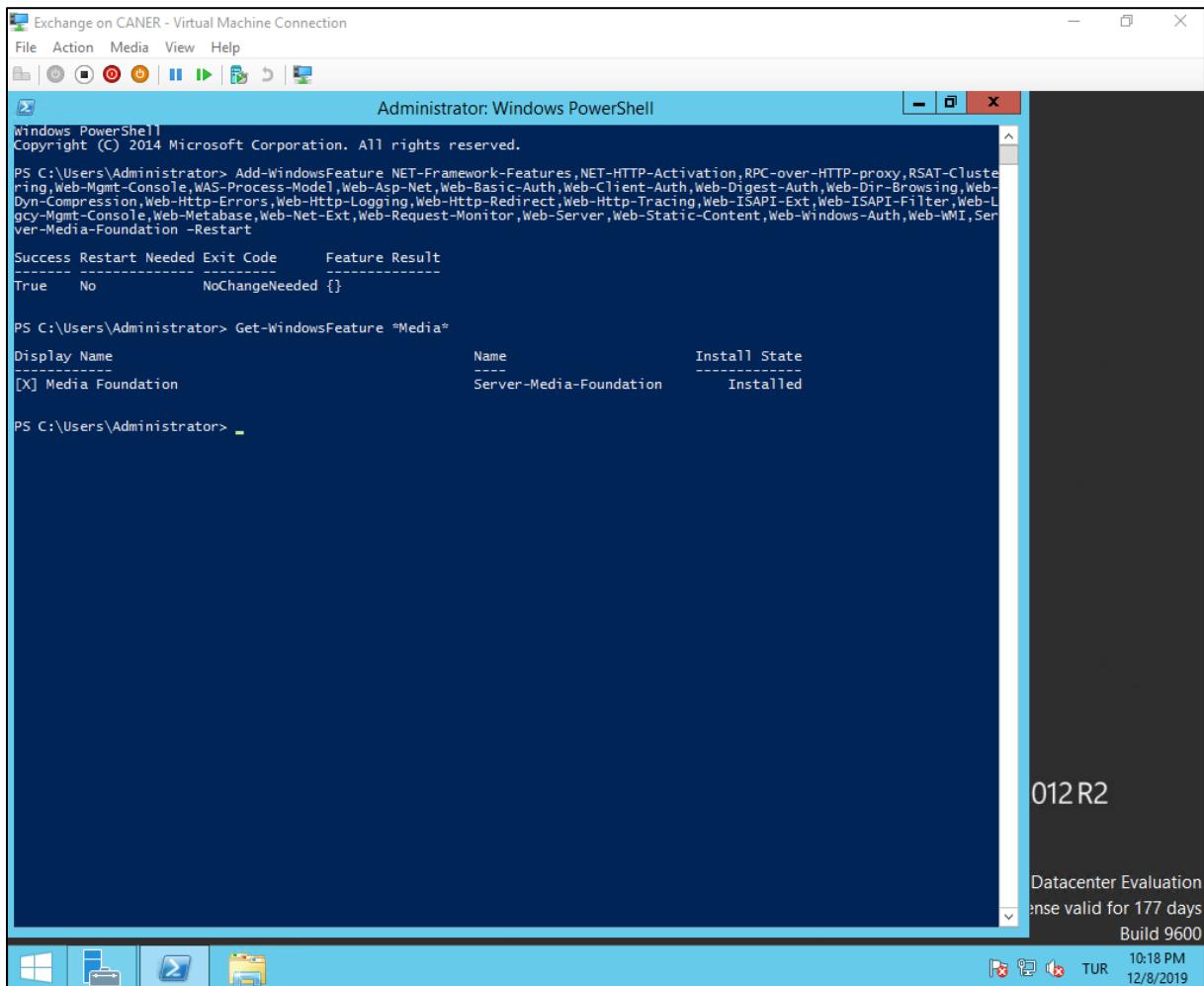


29.11.2019

However, User01 cannot see the post.



Now, let's take a look at how Exchange 2010 works as well. First thing we need to do on our new virtual server for it is to download the necessary tools and applications before starting the setup process. We use the following commands on PowerShell:



The screenshot shows a Windows PowerShell window titled "Administrator: Windows PowerShell". The command `Add-WindowsFeature` is run to install the "Media Foundation" feature. The output shows that the operation was successful and no restart is required. Then, the command `Get-WindowsFeature` is run to verify the installation, showing that "Server-Media-Foundation" is installed.

```
PS C:\Users\Administrator> Add-WindowsFeature NET-Framework-Features,NET-HTTP-Activation,RPC-over-HTTP-proxy,RSAT-Clustering,Web-Mgmt-Console,WAS-Process-Model,Web-Asp-Net,Web-Basic-Auth,Web-Client-Auth,Web-Digest-Auth,Web-Dir-Browsing,Web-Dyn-Compression,Web-Http-Errors,Web-Http-Logging,Web-Http-Redirect,Web-Http-Tracing,Web-ISAPI-Ext,Web-ISAPI-Filter,Web-Licensing-Console,Web-Metabase,Web-Net-Ext,Web-Request-Monitor,Web-Server,Web-Static-Content,Web-Windows-Auth,Web-wMI,Server-Media-Foundation -Restart
Success Restart Needed Exit Code      Feature Result
----- ----- ----- -----
True   No          NoChangeNeeded {}

PS C:\Users\Administrator> Get-WindowsFeature *Media*
Display Name           Name           Install State
----- ----- -----
[X] Media Foundation    Server-Media-Foundation     Installed

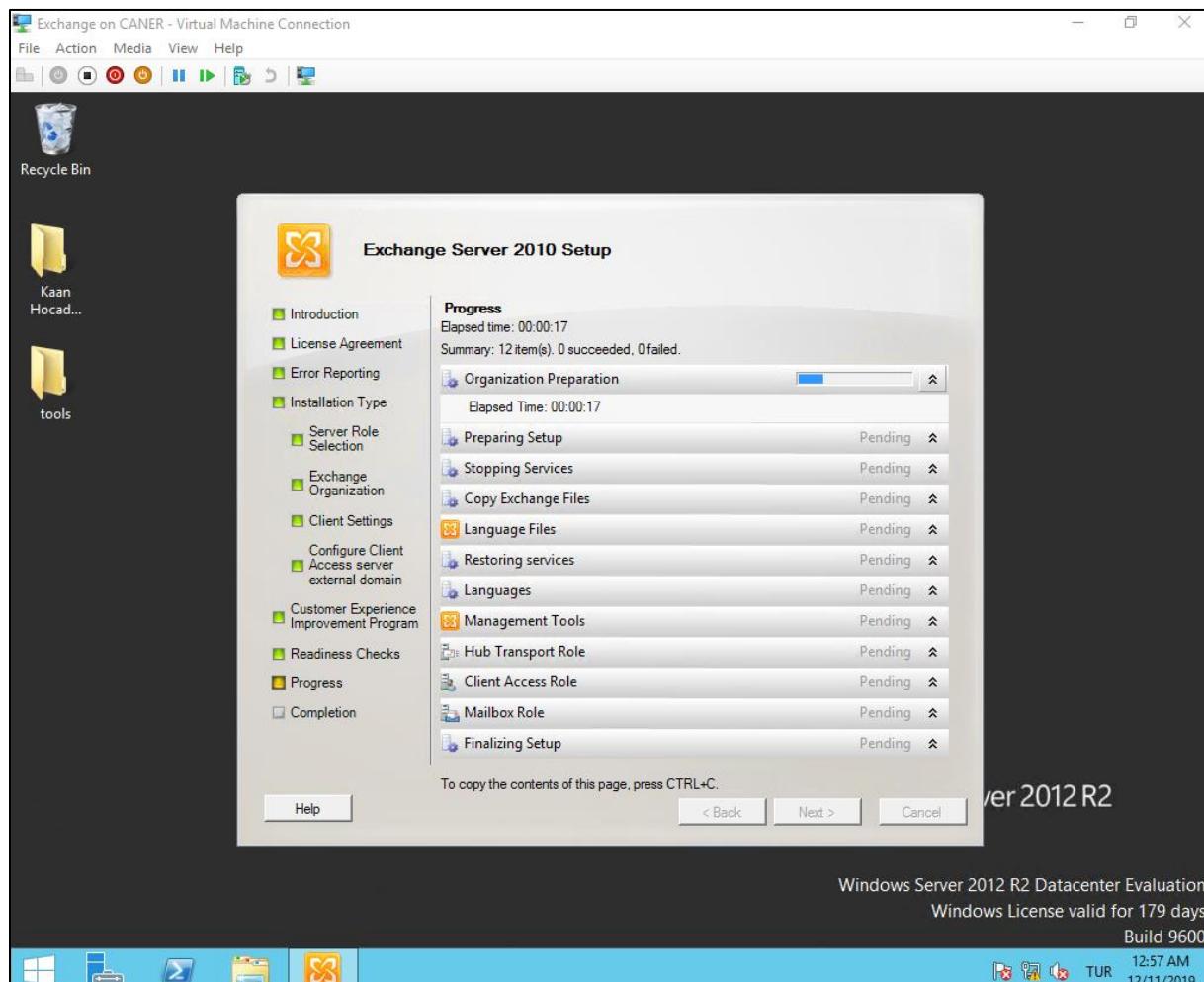
PS C:\Users\Administrator>
```

The status bar at the bottom right indicates the system is a "Datacenter Evaluation" license valid for 177 days, Build 9600, and the time is 10:18 PM on 12/8/2019.

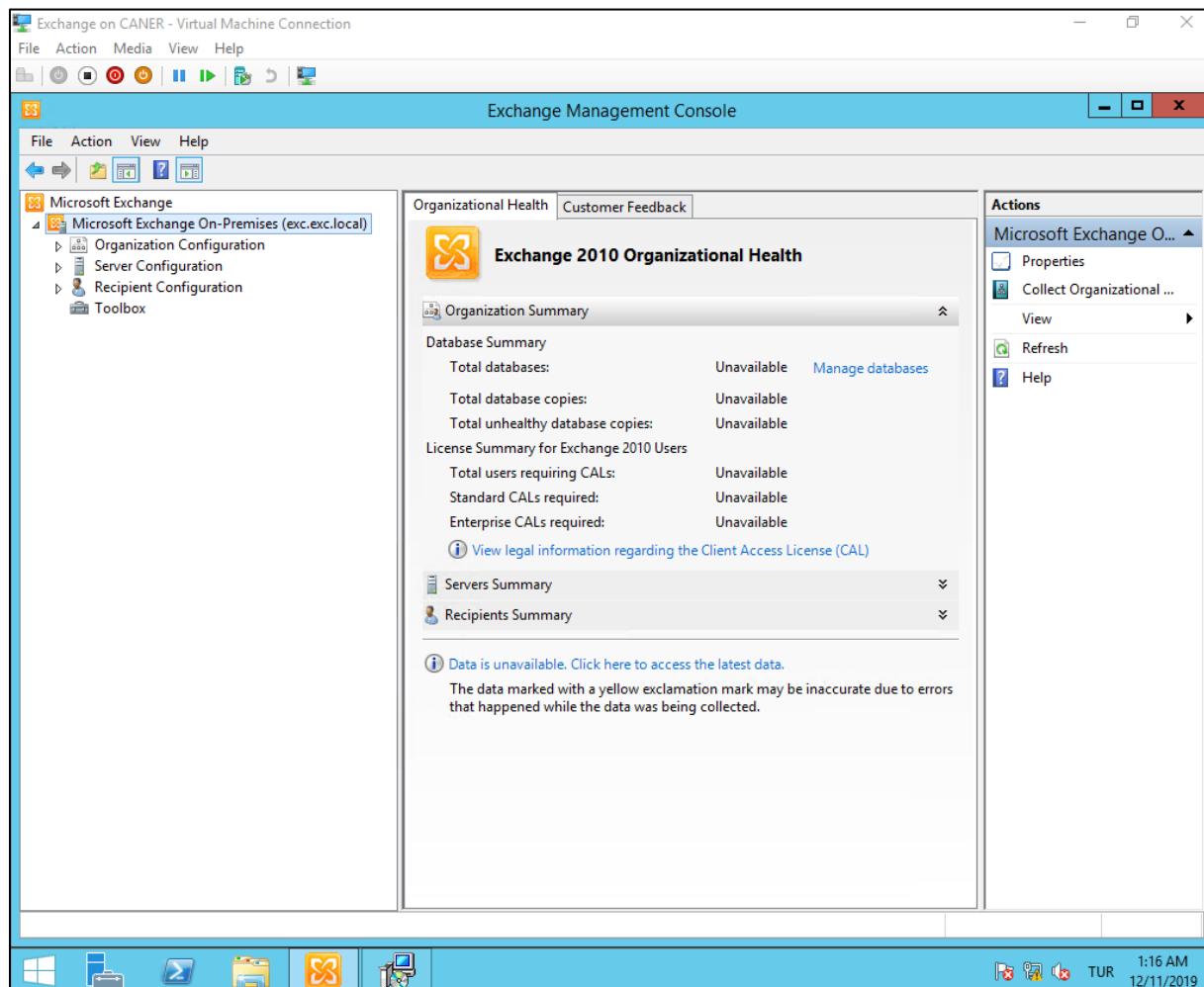
Note that we're working on a Windows Server 2012 R2 machine now rather than Server 2016 as Exchange 2010 is not supported on it.

29.11.2019

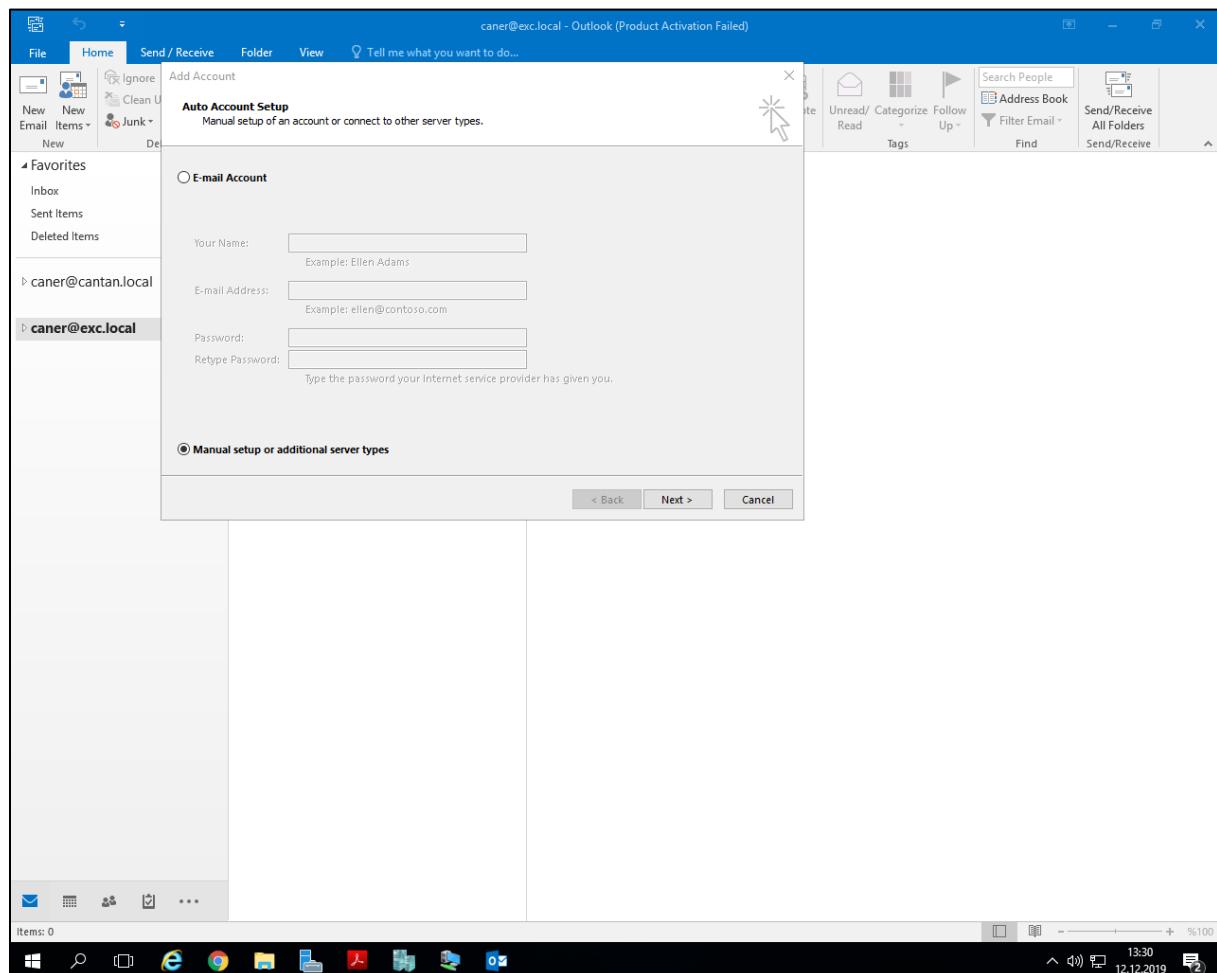
We start the setup process.



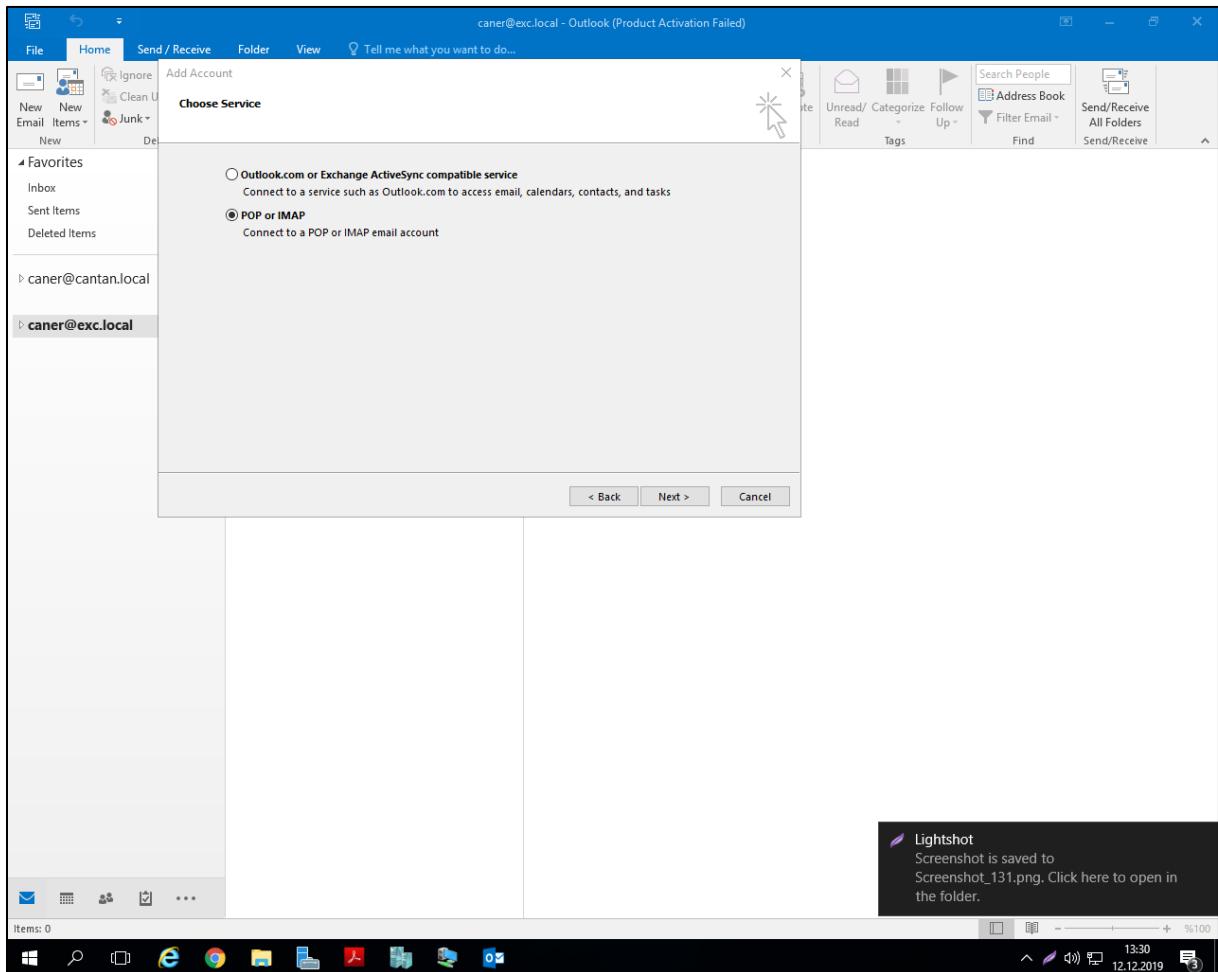
This is the Exchange Management Console of Exchange 2010, it looks quite different from 2016.



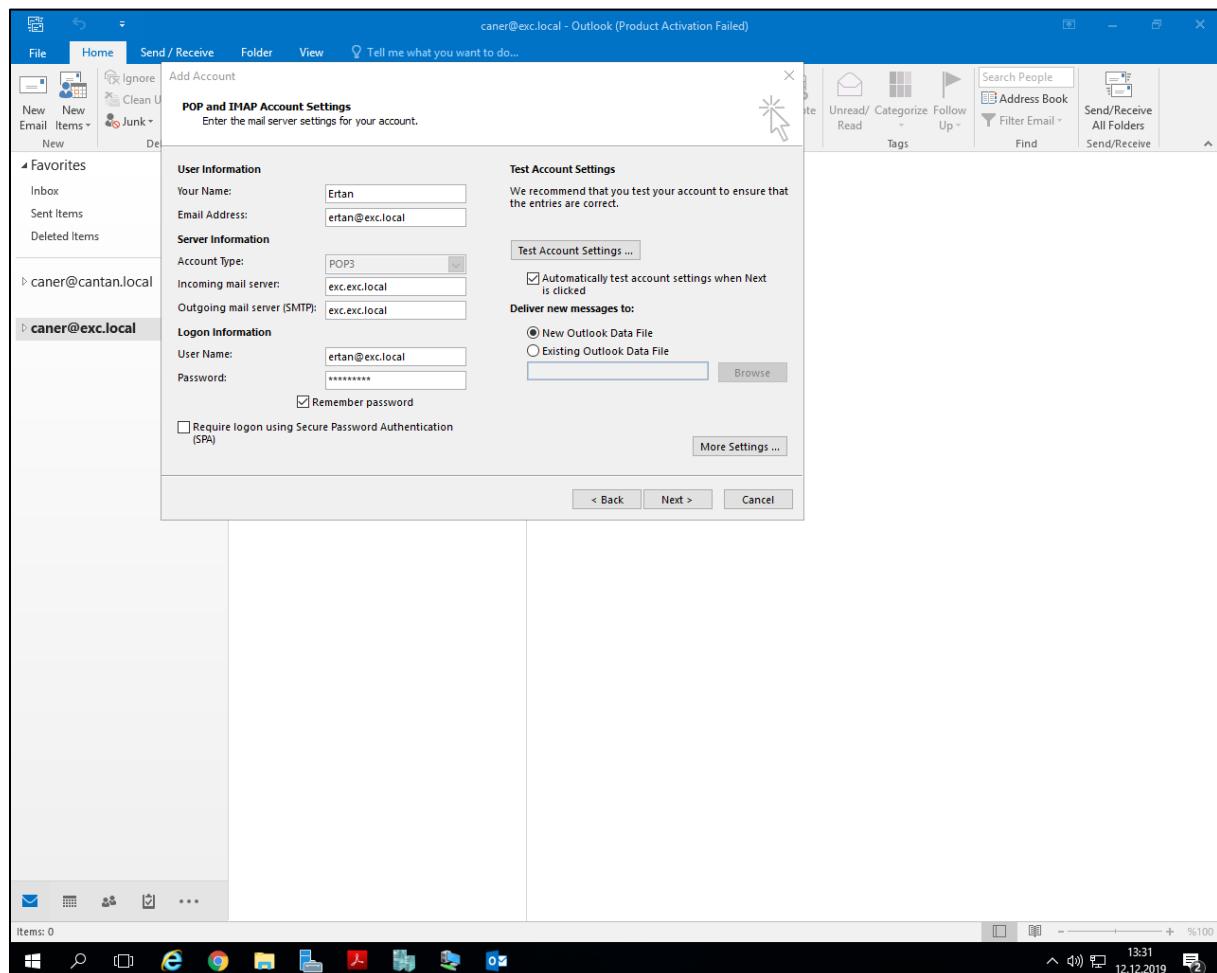
Now, let's use Microsoft Outlook to connect to our Exchange Server 2010 to manage our e-mails. We want to select Add Account and then choose manual setup.



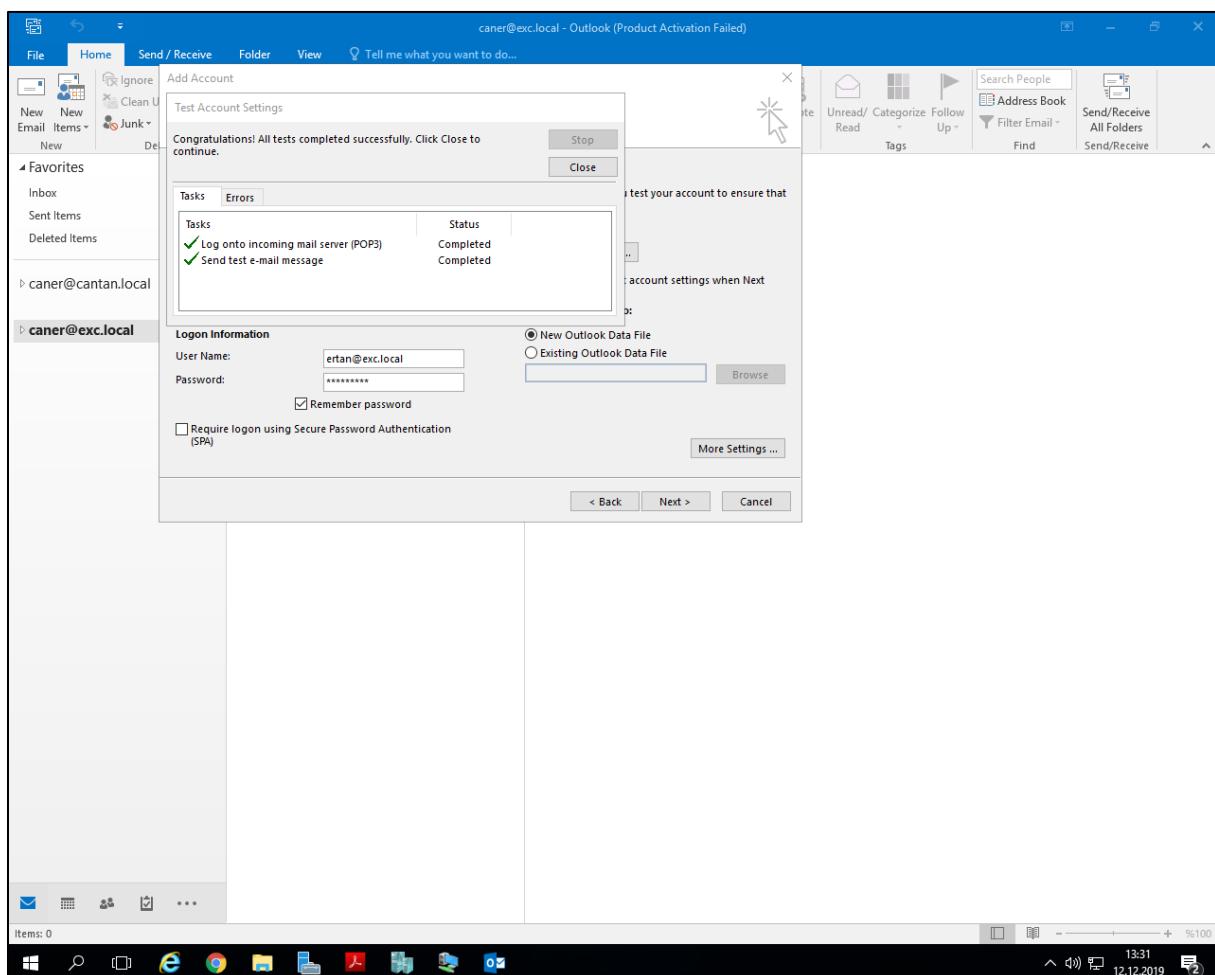
We, then, choose POP or IMAP.



We enter our user information, the Exchange Server information and use the e-mail address and its password that we use to login to Exchange.

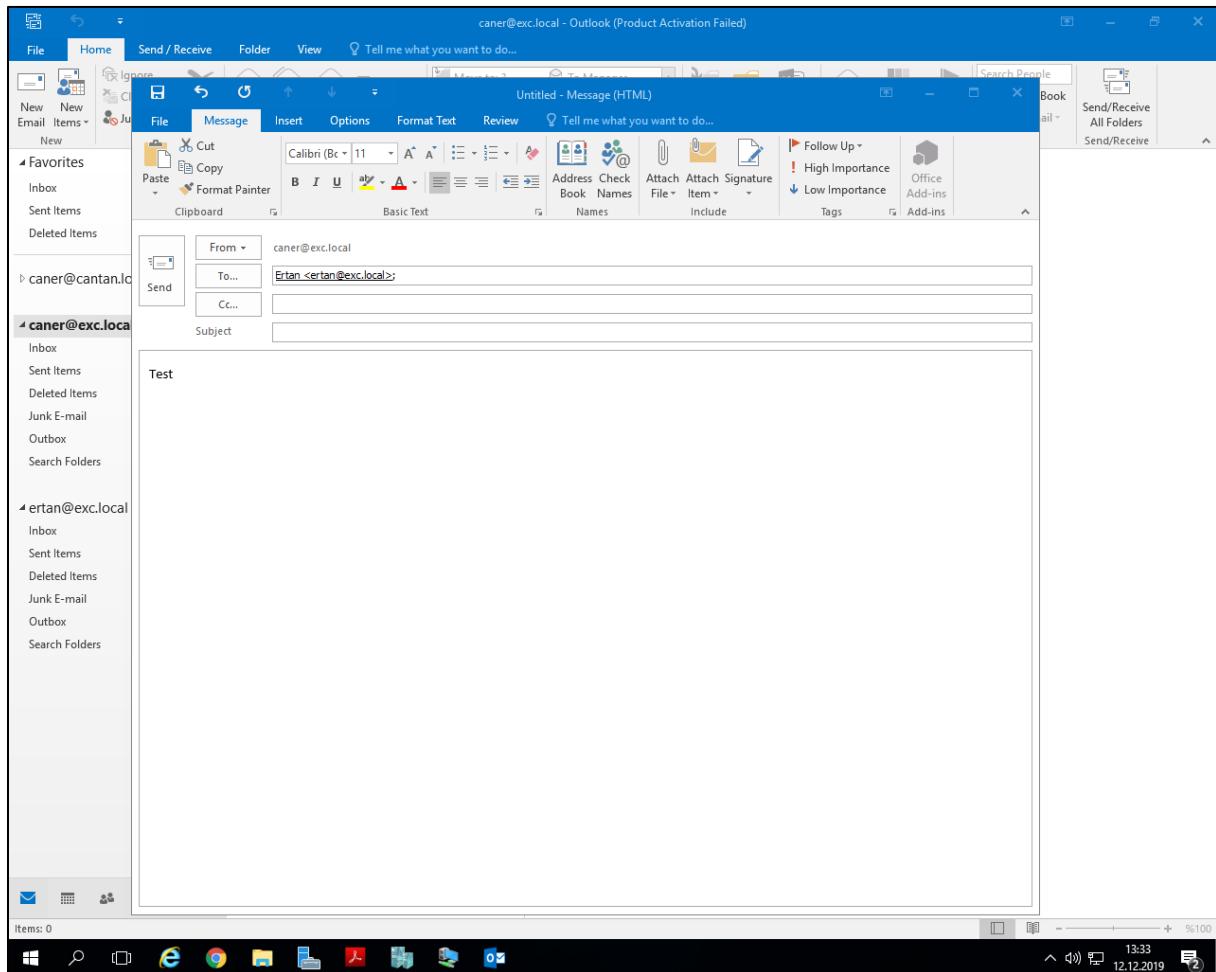


After doing a logon testing...

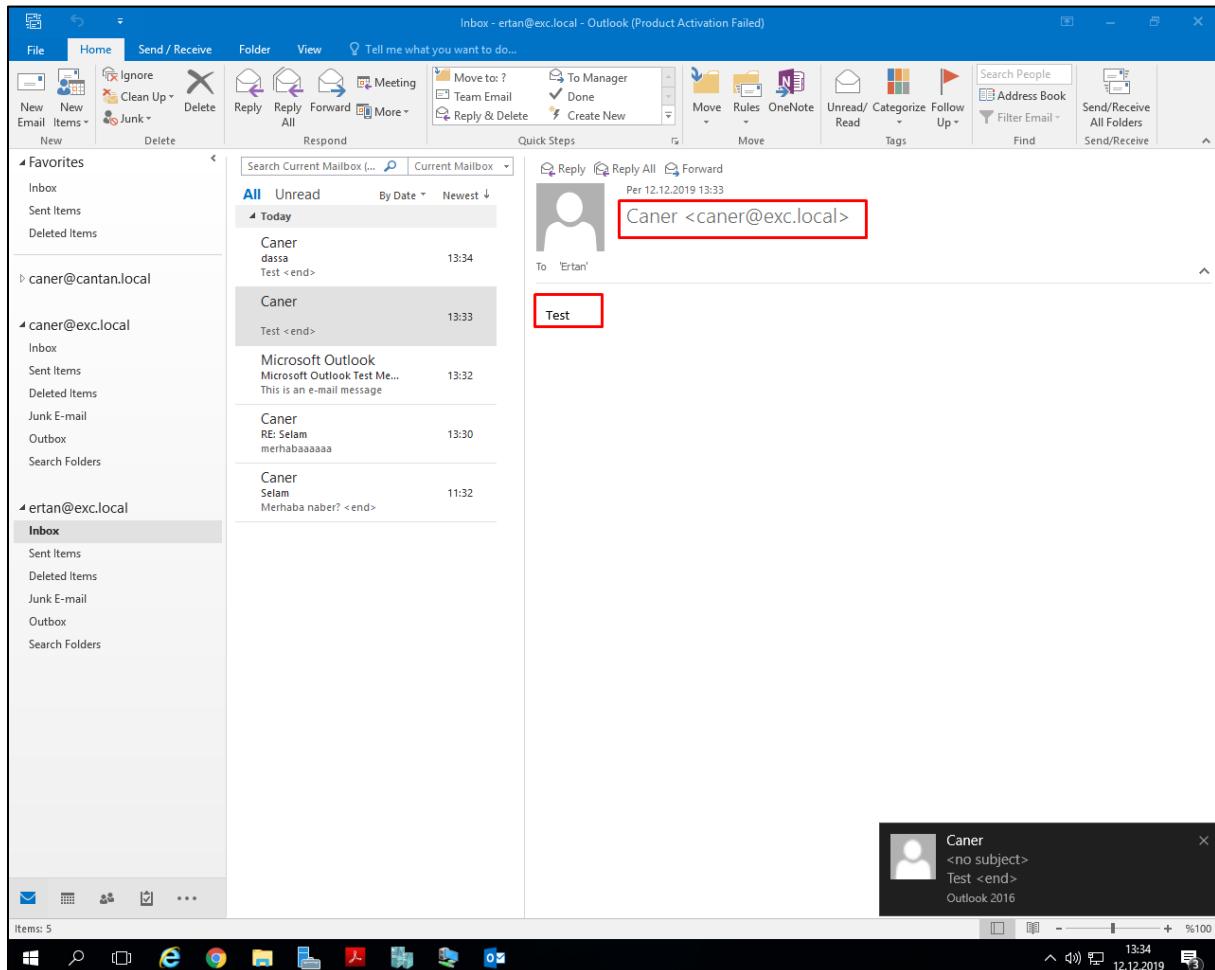


29.11.2019

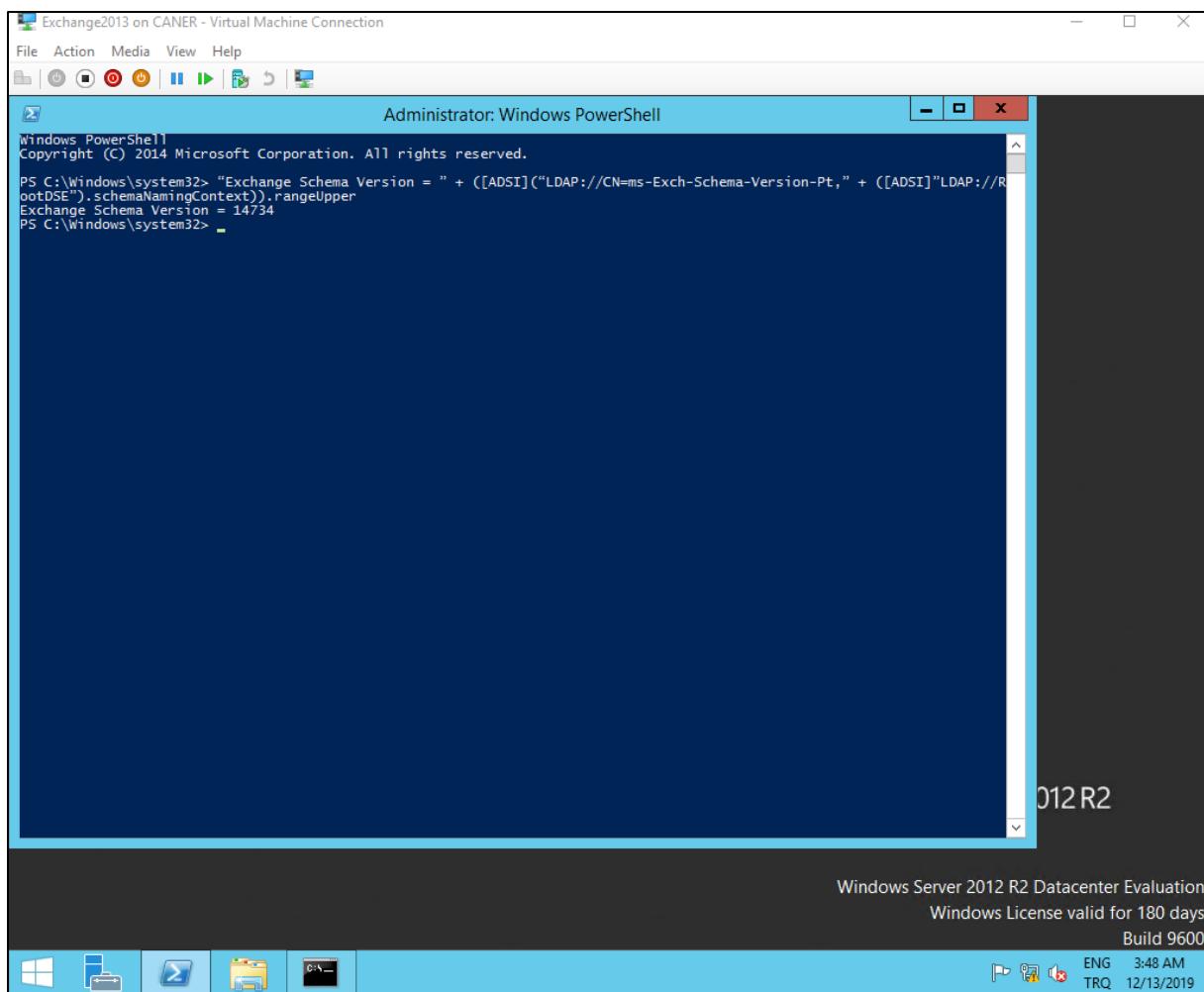
... it's connected and we can send a test e-mail.



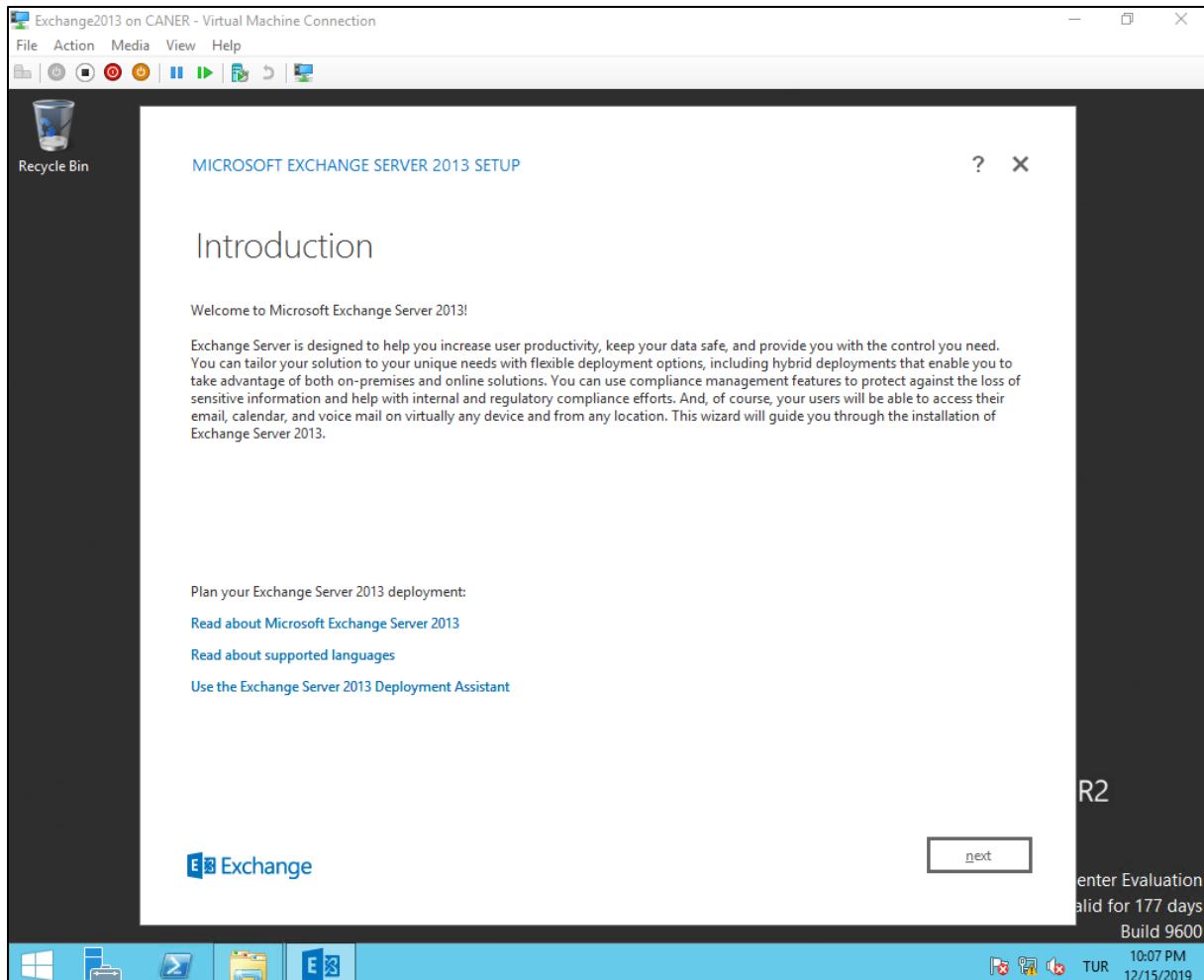
We can then easily see the test e-mail and all the previously sent and received e-mails still saved on the server.



Now, let's assume that for some reason we want to use Exchange 2013 but we already have been Exchange 2010 and don't want to lose all the previous e-mails and data. Then, we need to perform a migration from Exchange 2010 to Exchange 2013. On another virtual machine in the domain we start to set up A Windows Server 2012 R2 to support Exchange 2013 installation. In addition to the previous codes to download necessary tools we enter the following code on PowerShell:



When we start the installation of Exchange 2013 it looks quite familiar to 2016's process.



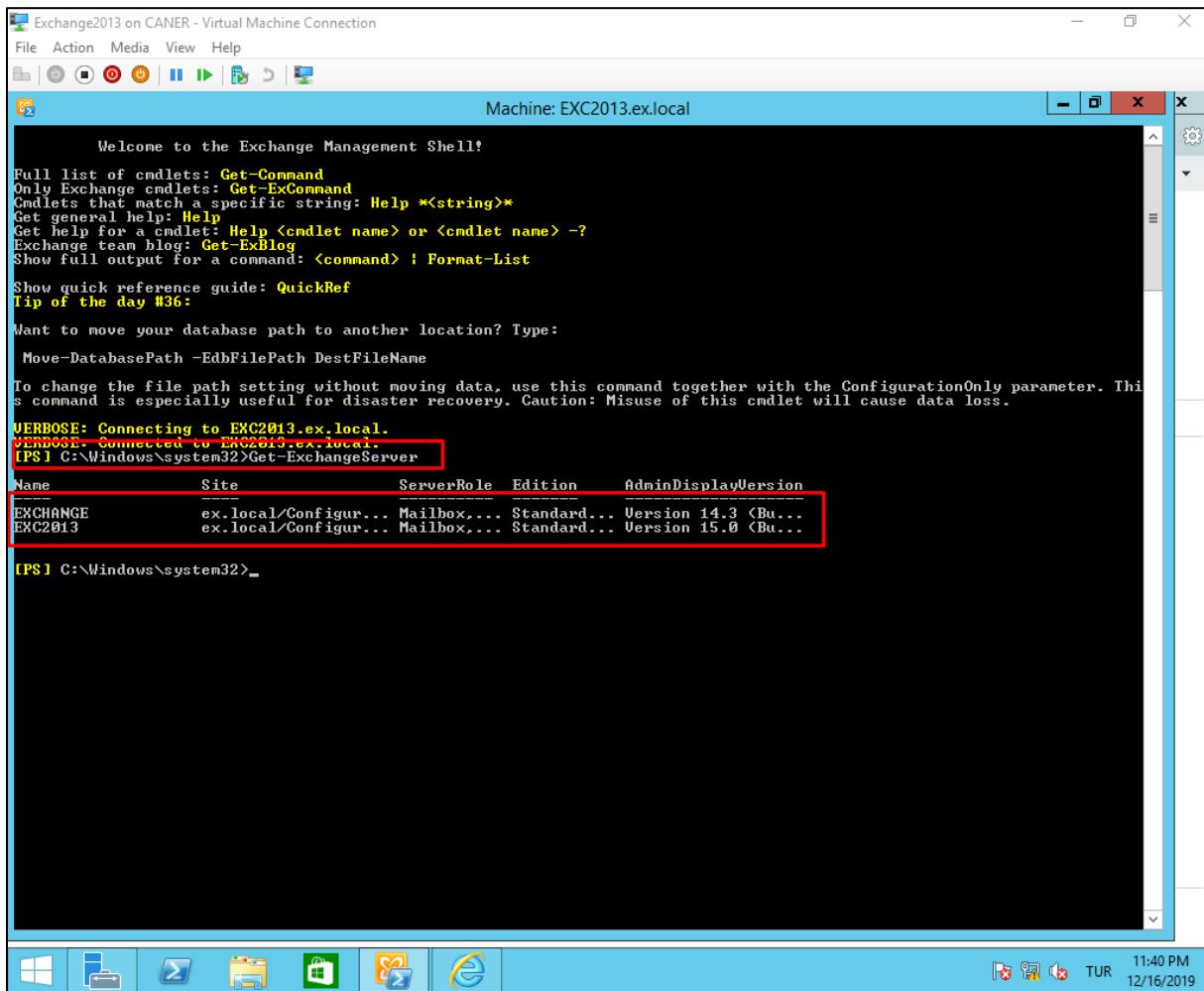
We do the set up with the exact options that we used for 2016 previously in this report.

When we start the Admin Center it looks very similar to Server 2016's. Also, under databases, servers we don't only see the new databases for this new server but also the databases of the Exchange 2010 machine since they are in the same domain and communication has been established.

The screenshot shows the Exchange Admin Center interface. On the left, there is a navigation pane with various links: recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers (which is currently selected), hybrid, and tools. The main content area is titled "Exchange admin center" and shows the "databases" section. At the top of this section, there are links for servers, databases (which is highlighted with a dashed border), database availability groups, virtual directories, and certificates. Below this is a toolbar with icons for add (+), edit (pencil), delete (trash), search (magnifying glass), and more options (ellipsis). A table follows, with columns: NAME, ACTIVE ON S..., SERVERS WITH COPIES, STA..., and BAD COPY C... . The first row in the table is highlighted with a dark background and shows "Mailbox Dat..." under NAME, "EXC2013" under ACTIVE ON S..., "EXC2013" under SERVERS WITH COPIES, and "Please wait.." under STA... and BAD COPY C... . The second row shows "TestDB" under NAME, "EXCHANGE" under ACTIVE ON S..., "EXCHANGE" under SERVERS WITH COPIES, and "Please wait.." under STA... and BAD COPY C... . The third row shows "YeniTaban1" under NAME, "EXC2013" under ACTIVE ON S..., "EXC2013" under SERVERS WITH COPIES, and "Please wait.." under STA... and BAD COPY C... . At the bottom of the table area, it says "1 selected of 4 total". The status bar at the bottom right shows "11:39 PM TUR 12/16/2019".

NAME	ACTIVE ON S...	SERVERS WITH COPIES	STA...	BAD COPY C...
Mailbox Dat...	EXC2013	EXC2013	Please wait..	Please wait..
TestDB	EXCHANGE	EXCHANGE	Please wait..	Please wait..
YeniTaban1	EXC2013	EXC2013	Please wait..	Please wait..

Furthermore, when we get to the Exchange Management Shell of 2013 and use the Get-ExchangeServer command it gets both servers' data and displays the different versions clearly.



The screenshot shows the Exchange Management Shell running in a Windows PowerShell window titled "Machine: EXC2013.ex.local". The window has a blue header bar with the title and standard window controls. Below the header is a toolbar with icons for file operations like Open, Save, Print, and Help. The main pane displays the output of the "Get-ExchangeServer" command. The output includes a welcome message, cmdlet help information, and the results of the command itself. The results table has columns: Name, Site, ServerRole, Edition, and AdminDisplayVersion. Two entries are shown: "EXCHANGE" and "EXC2013". Both entries have the same values: Site: ex.local/Configur..., ServerRole: Mailbox, Edition: Standard, and AdminDisplayVersion: Version 14.3 <Bu... for EXCHANGE, and Version 15.0 <Bu... for EXC2013. A red box highlights the "EXC2013" entry. The bottom of the window shows the Windows taskbar with icons for Start, File Explorer, Task View, File Explorer, Mail, and Edge, along with system status icons and the date/time (11:40 PM, 12/16/2019).

Name	Site	ServerRole	Edition	AdminDisplayVersion
EXCHANGE	ex.local/Configur...	Mailbox,...	Standard...	Version 14.3 <Bu...
EXC2013	ex.local/Configur...	Mailbox,...	Standard...	Version 15.0 <Bu...

To start a migration this is exactly what we need.

We compare the server names and the databases and note them. In this exercise, EXCHANGE is the name of the 2010 server and EXC2013 is the name of the 2013 server. TestDB is the only mounted database on 2010 and YeniTaban1 is the database that we mounted on 2013.

We want to perform the migration from TestDB database to YeniTaban1.

The screenshot shows the Exchange Admin Center interface. The left navigation pane is collapsed. The main area has a blue header bar with the title 'databases - Microsoft Exchange'. Below the header is a toolbar with icons for back, forward, search, and refresh. The main content area displays a table of databases. The table has columns: NAME, ACTIVE ON S..., SERVERS WITH COPIES, STA..., and BAD COPY C... . There are four rows in the table:

NAME	ACTIVE ON S...	SERVERS WITH COPIES	STA...	BAD COPY C...
Mailbox Dat...	EXC2013	EXC2013	Mo...	0
Mailbox Dat...	EXCHANGE	EXCHANGE	Dis...	0
TestDB	EXCHANGE	EXCHANGE	Mo...	0
YeniTaban1	EXC2013	EXC2013	Mo...	0

At the bottom of the table, it says '0 selected of 4 total'. The status bar at the bottom right shows the time as 11:40 PM and the date as 12/16/2019.

To start the process we go to Recipients, Migration.

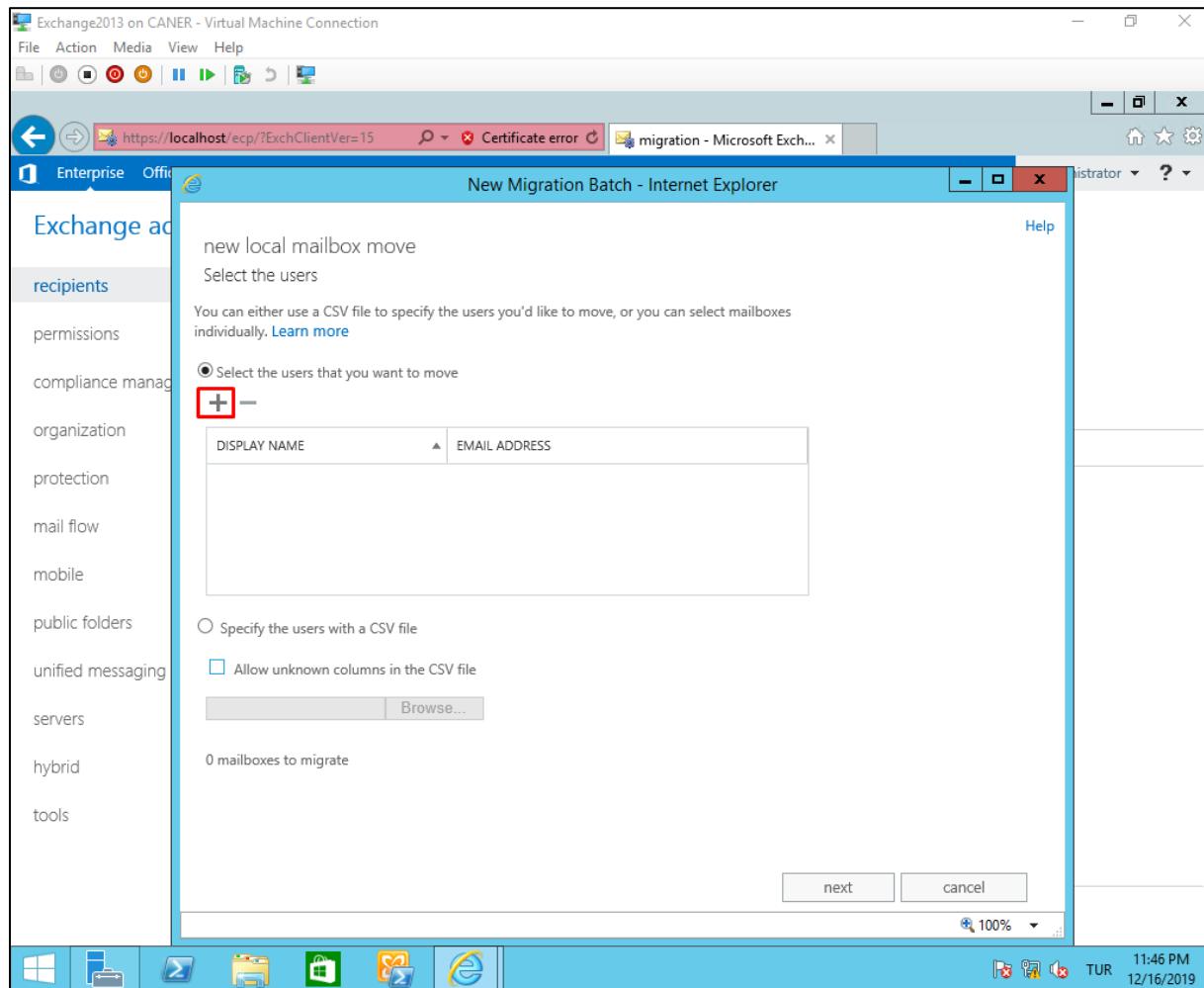
The screenshot shows the Exchange Admin Center interface. On the left, there is a navigation menu with various categories like recipients, permissions, compliance management, etc. The 'recipients' link is highlighted with a red box. On the right, there is a sub-menu for 'migration' which is also highlighted with a red box. Below these, there is a table titled 'migration' with columns for NAME, STATUS, TOTAL, SYNCED, FINALI..., and FAILED. A message indicates 'There are no items to show in this view.' At the bottom, there is a status bar showing system icons and the date/time '11:41 PM 12/16/2019'.

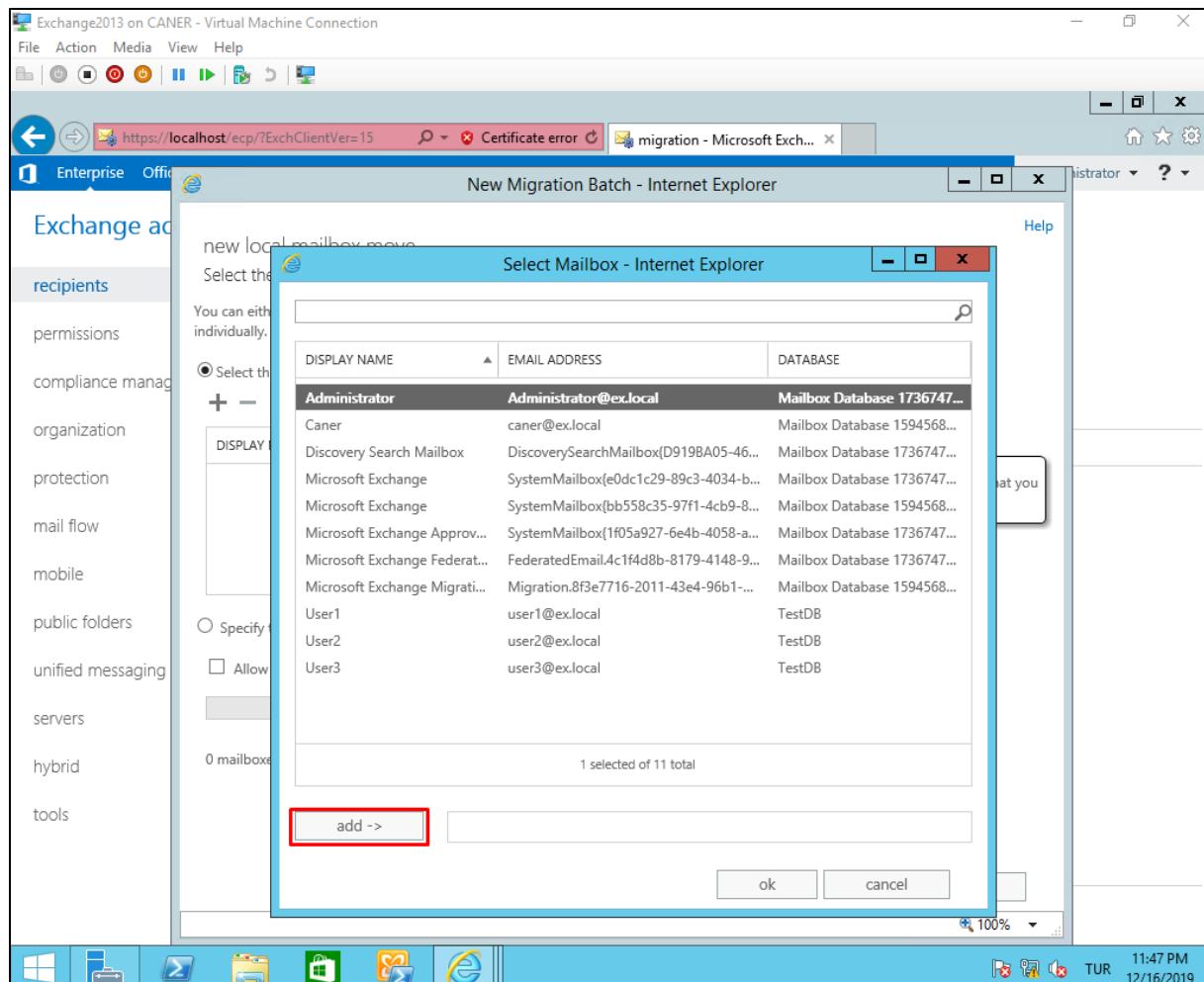
29.11.2019

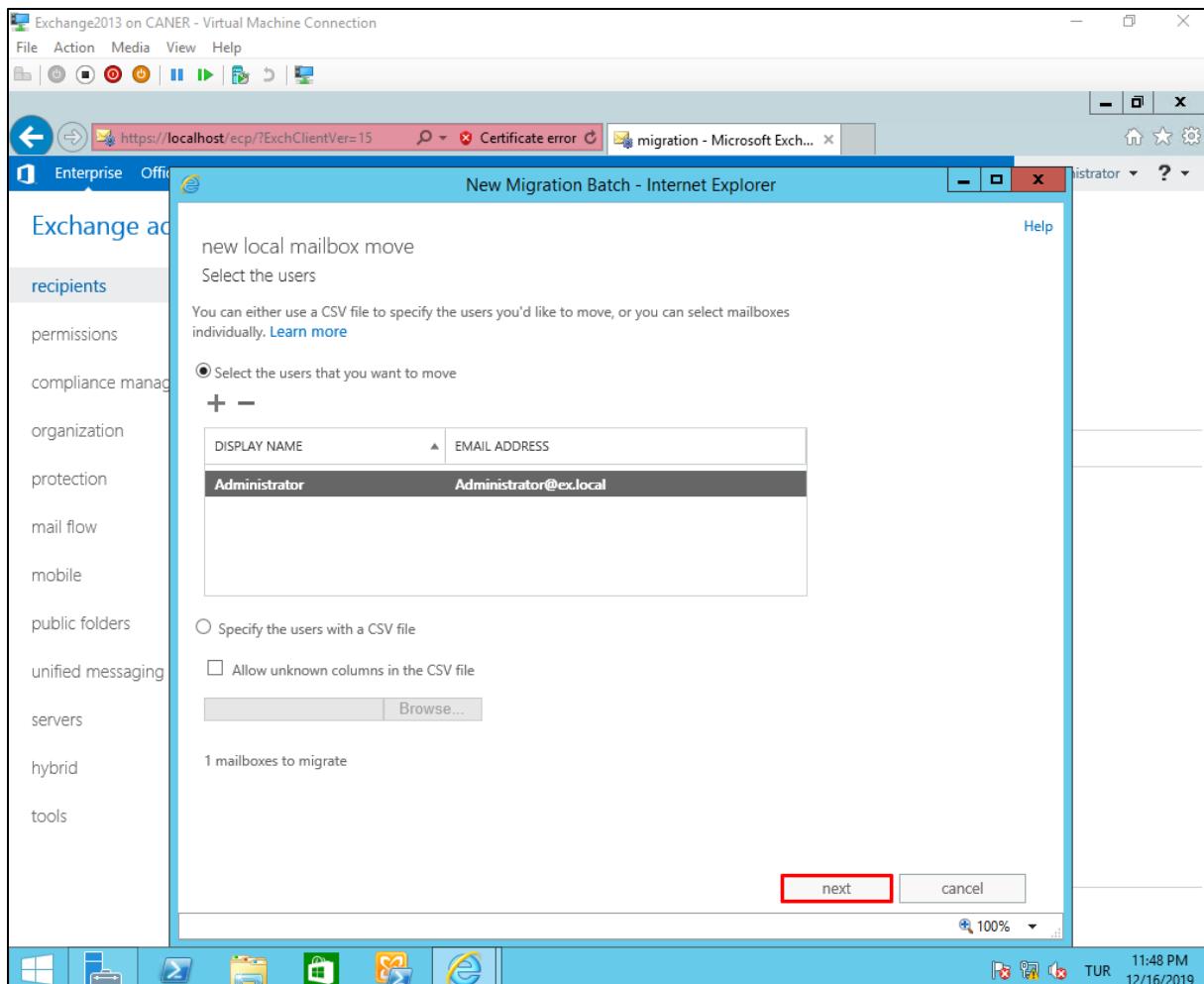
Under the plus sign we choose the option to move to a different database.

The screenshot shows the Exchange Admin Center interface. On the left, there's a sidebar with various categories like recipients, permissions, compliance management, etc. The main area is titled "migration" and contains a table with columns: TOTAL, SYNCED, FINALI..., FAILED. A tooltip is displayed over the "Move to a different database" button, which is highlighted with a red border. The tooltip text is "Move to this forest". At the bottom of the screen, there's a taskbar with several icons and the system tray showing the date and time as 12/16/2019 at 11:45 PM.

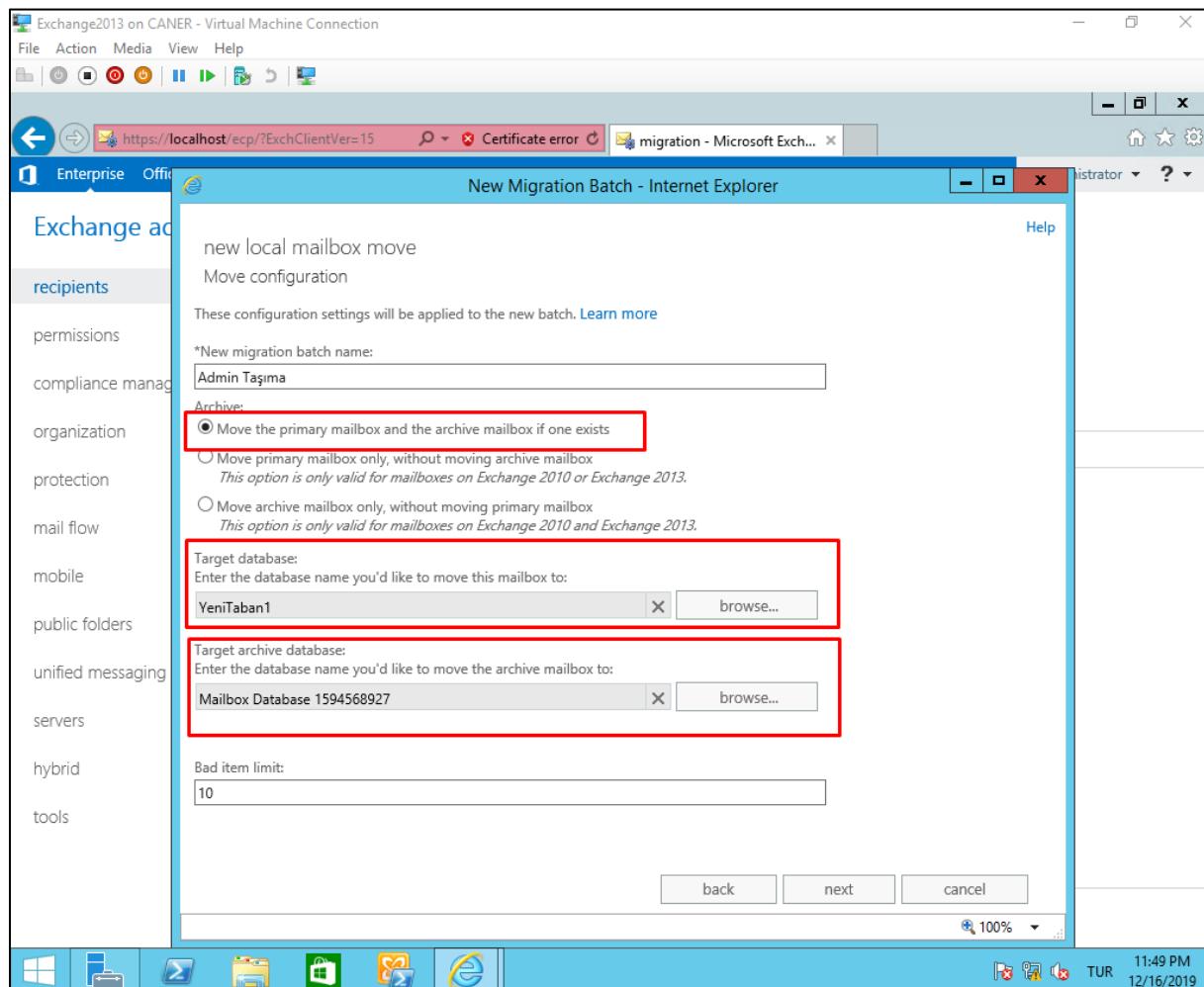
We then select which users we want to move. I'd recommend moving the administrator by itself and everything else as you see fit. I believe the administrator account is too crucial to be migrated along with other users.



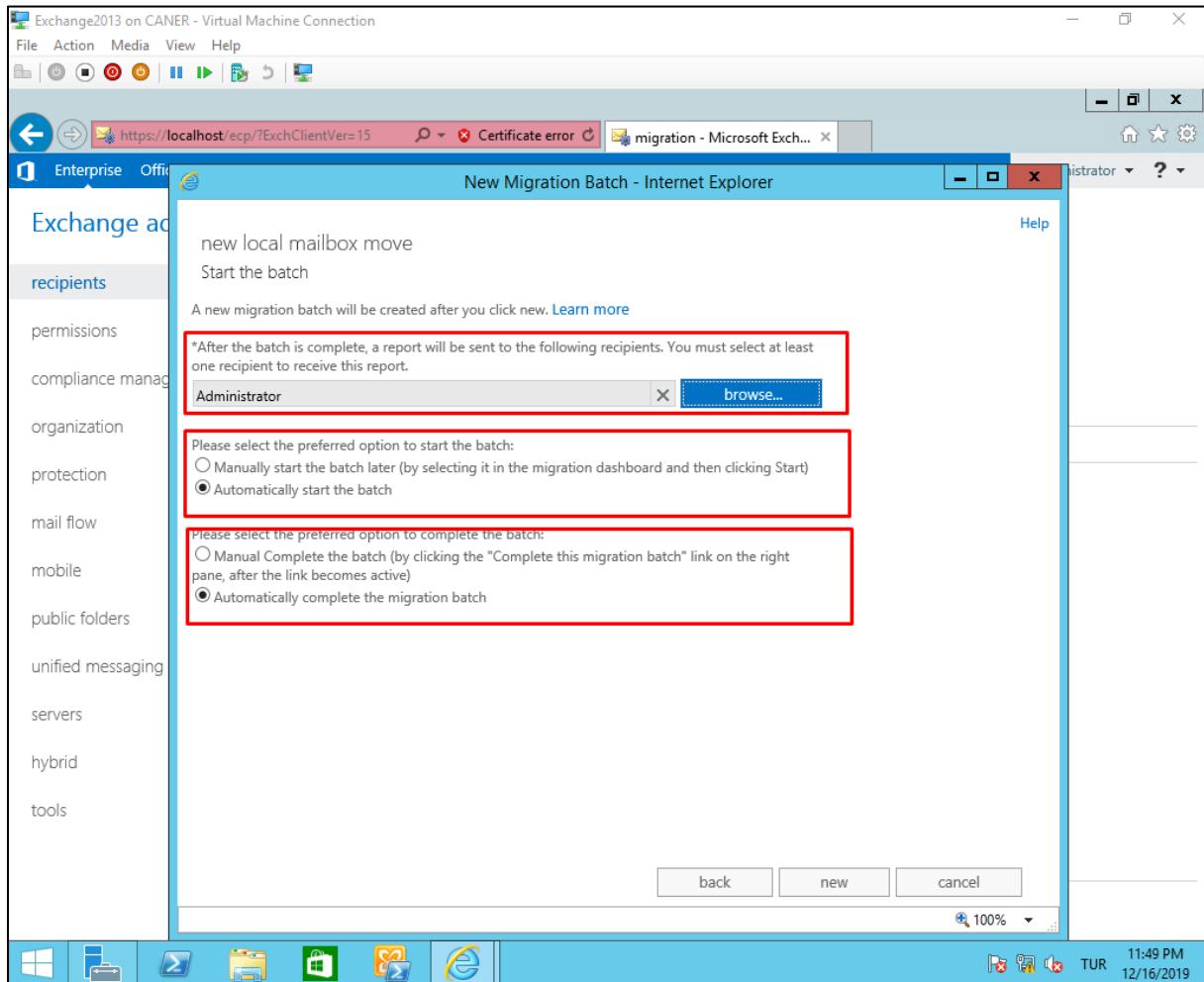




After choosing which users and groups to move, we select what to move; mailbox and/or archive. In this case, we're moving both. We select the target databases for each option.



We select who gets notified once the process starts and completes and when it starts and completes.



Then, the process starts and it says “Syncing”.

Exchange2013 on CANER - Virtual Machine Connection

File Action Media View Help

Enterprise Office 365 Administrator

Exchange admin center

recipients

- permissions
- compliance management
- organization
- protection
- mail flow
- mobile
- public folders
- unified messaging
- servers
- hybrid
- tools

mailboxes groups resources contacts shared **migration**

Click to view the status for all current migration batches. [Status for all batches](#)

NAME	▲ STATUS	TOTAL	SYNCED	FINALI...	FAILED
Admin Taşıma	Syncing	1	0	0	0

Admin Taşıma

Type: Exchange local move
Status: Syncing
Target database: YeniTaban1
Target archive database: Mailbox Database 159456 8927

Mailbox status

Synced mailboxes: 0 of 1
Finalized mailboxes: 0 of 1
Failed mailboxes: 0
[View details](#)

Statistics

Created by: Administrator@ex.local
Create time: 12/17/2019 7:50:07 AM
Start time: 12/17/2019 7:50:08 AM

1 selected of 1 total

11:50 PM TUR 12/16/2019

After a while it says it is completed.

The screenshot shows the Exchange Admin Center interface. On the left, there's a sidebar with various management categories like recipients, permissions, compliance management, etc. The main area is titled "Exchange admin center" and has tabs for mailboxes, groups, resources, contacts, shared, and migration. A message at the top says "Click to view the status for all current migration batches. [Status for all batches](#)". Below this is a table showing migration details:

NAME	STATUS	TOTAL	SYNCED	FINALIZED	F...
Admin Taşıma	Completed	1	0	1	0
Her şeyi Taşıma	Syncing	10	0	10	0

For the "Admin Taşıma" batch, the details are:

- Type: Exchange local move
- Status: Completed
- Target database: YeniTaban1
- Target archive database: Mailbox Database 1594568927

For the "Her şeyi Taşıma" batch, the details are:

- Synced mailboxes: 0 of 1
- Finalized mailboxes: 1 of 1
- Failed mailboxes: 0

A red box highlights the "View details" link under the "Her şeyi Taşıma" batch. At the bottom, it says "1 selected of 2 total". The taskbar at the bottom shows several icons and the system tray indicates the date and time as 12/17/2019 12:12 AM.

Note that we also started to move everything else meanwhile.

29.11.2019

As you can see everything has moved to the new database in Exchange 2013.

The screenshot shows the Exchange Admin Center interface. The left sidebar lists various administrative categories: recipients, mailboxes, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers, hybrid, and tools. The 'recipients' and 'mailboxes' links are highlighted with red boxes. The main content area displays a list of mailboxes. A specific row for the 'Administrator' account is selected and highlighted with a red box. This row shows the user details: Display Name (Administrator), Mailbox Type (User), Email Address (Administrator@ex.local), and Database (YeniTaban1). To the right of the table, detailed information for the selected administrator is shown, including their title, office, work phone, and various phone and voice features like Unified Messaging and mobile devices.

DISPLAY NAME	MAIL...	EMAIL ADDRESS	DATABASE
Administrator	User	Administrator...	YeniTaban1
User1	User	user1@ex.local	YeniTaban1
User2	User	user2@ex.local	YeniTaban1
User3	User	user3@ex.local	YeniTaban1
Caner	User	caner@ex.local	YeniTaban1

Administrator
User mailbox
Administrator@ex.local
Title:
Office:
Work phone:
Phone and Voice Features
Unified Messaging: Disabled
[Enable](#)
Mobile Devices
[Disable Exchange ActiveSync](#)
[Disable OWA for Devices](#)
[View details](#)

We can now dismount the unused databases...

Exchange2013 on CANER - Virtual Machine Connection

File Action Media View Help

Enterprise Office 365 Administrator

https://localhost/ecp/ Certificate error databases - Microsoft Exch...

Exchange admin center

recipients servers databases database availability groups virtual directories certificates

permissions

compliance management

organization

protection

mail flow

mobile

public folders

unified messaging

servers

hybrid

tools

Dismount

NAME	RS WI...	STATUS	BAD CO...
YeniTaban1	EXC2013	EXC2013	Mounted 0
TestDB	EXCHANGE	EXCHANGE	Mounted 0
Mailbox Database 1736...	EXCHANGE	EXCHANGE	Mounted 0
Mailbox Database 15945...	EXC2013	EXC2013	Mounted 0

TestDB
Servers
EXCHANGE
Database copies
TestDB\EXCHANGE
Active Mounted
Copy queue length: 0
Content index state: Healthy
[View details](#)

2 selected of 4 total

ENG 2:46 AM
TRQ 12/17/2019

29.11.2019

... and delete them.

The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation pane with various links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers (which is selected), hybrid, and tools. The main area has tabs for databases, database availability groups, virtual directories, and certificates. Below the tabs is a toolbar with icons for add, edit, delete, search, and more. A table lists databases with columns for NAME, ACTIVE ON..., SERVERS WI..., STATUS, and BAD... . Two rows are highlighted with a red border: 'TestDB' and 'Mailbox Database 1736...'. To the right of the table, there's a summary section for 'TestDB' under 'EXCHANGE' status, showing it's Dismounted with 0 errors. It also lists 'Servers' and 'Database copies' (TestDB\EXCHANGE). At the bottom, a status bar shows '2 selected of 4 total' and system information like ENG, 2:47 AM, TRO, 12/17/2019.

NAME	ACTIVE ON...	SERVERS WI...	STATUS	BAD...
YeniTaban1	EXC2013	EXC2013	Mounted	0
TestDB	EXCHANGE	EXCHANGE	Dismounted	0
Mailbox Database 1736...	EXCHANGE	EXCHANGE	Dismounted	0
Mailbox Database 15945...	EXC2013	EXC2013	Mounted	0

Migration is complete. We don't need Exchange 2010 anymore.

The screenshot shows the Exchange Admin Center interface. On the left, there's a navigation pane with various links like recipients, permissions, compliance management, organization, protection, mail flow, mobile, public folders, unified messaging, servers (which is currently selected), hybrid, and tools. The main area has tabs for servers, databases, database availability groups, virtual directories, and certificates. Below these tabs is a search bar and a toolbar with icons for add, edit, delete, search, and more. A table lists databases with columns for NAME, ACTIVE ON..., SERVERS WI..., STATUS, and BAD... . There are two entries: 'YeniTaban1' and 'Mailbox Database 15945...', both mounted on 'EXC2013'. At the bottom, it says '0 selected of 2 total'. The taskbar at the bottom shows several pinned icons and the system tray with network, battery, and volume icons, along with the date and time (12/17/2019, 2:47 AM).

NAME	ACTIVE ON...	SERVERS WI...	STATUS	BAD...
YeniTaban1	EXC2013	EXC2013	Mounted	0
Mailbox Database 15945...	EXC2013	EXC2013	Mounted	0

3. Conclusion

Exchange Server is a very useful and necessary part of any enterprise that wants to use an on-premise setup for e-mails. Using a public domain is absolutely necessary for being able to e-mail out of domain addresses which is most often the case. Note that it's taxing on physical hardware even with the bare minimum requirements; however, it's is easy to manage as an admin if the company requires a complex set of rules and organization.

4. Evaluation

Exchange 2016 Cumulative Update 13 has a bug about Distribution Groups, the requests to join one are never sent to the owners. Cumulative Updates 12 and 14 do not have this issue. Be careful about which version you use. Another problem with Cumulative Update 13 is that connecting to Outlook is troublesome. I'd recommend using Cumulative Update 14 for it; however, I have not tested Cumulative Update 12. In my understanding Exchange 2010 and 2013 are much more widely used than 2016 and these issues might be why. In case, you plan to use an on-premise Exchange Server and not Office 365 for e-mail management I'd recommend familiarizing yourself with all these versions enough to migrate if needed.