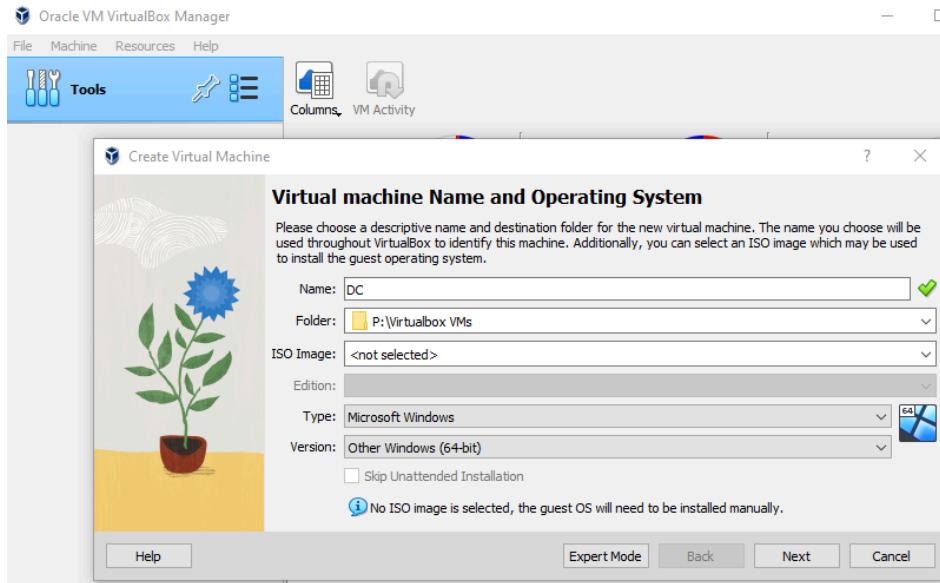


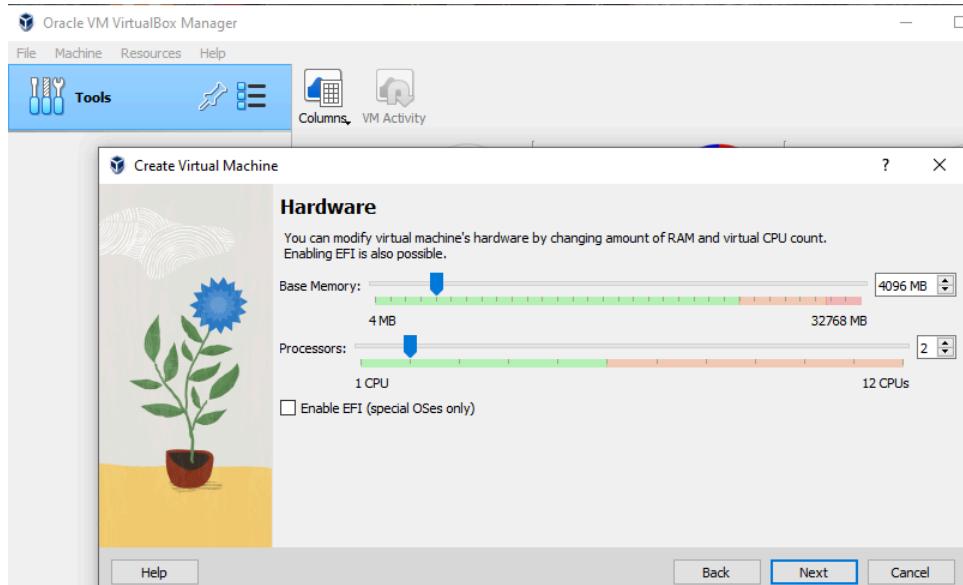
Documentation of AD Lab

Section 1

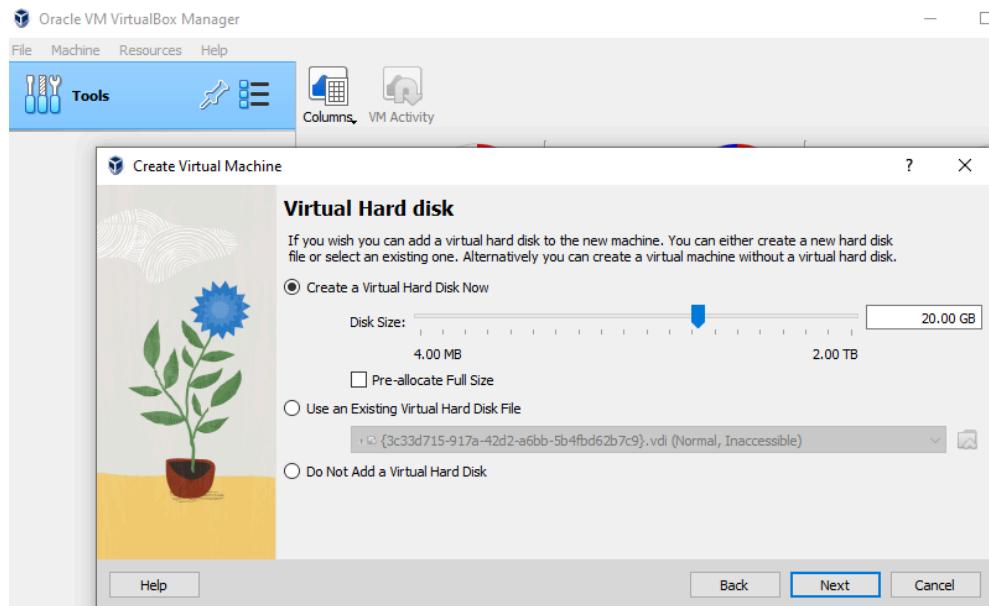
Using Oracle VM VirtualBox Manager, create a machine named as DC (Domain Controller) this VM is the Server 2019 computer. Version to be selected “Other Windows (64-bit).



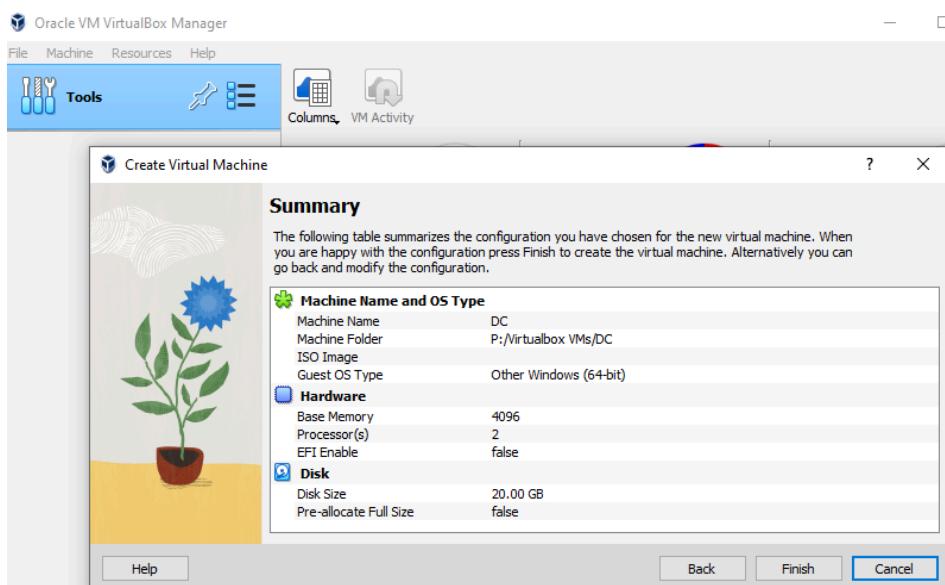
Adjusting hardware, base memory and processors used for the VM server.



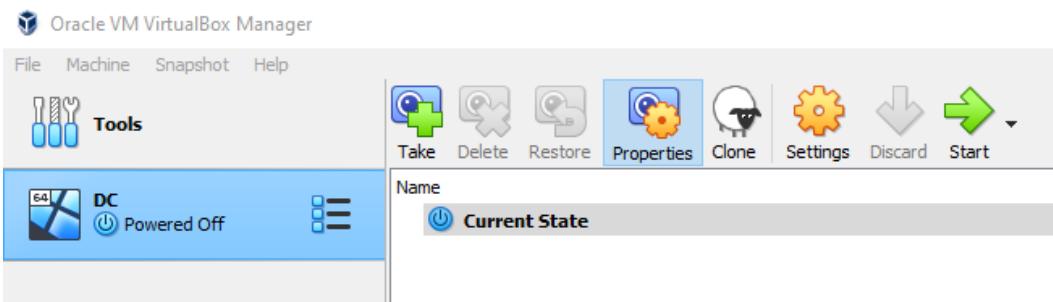
Allocate the disk size amount for the server VM (DC).



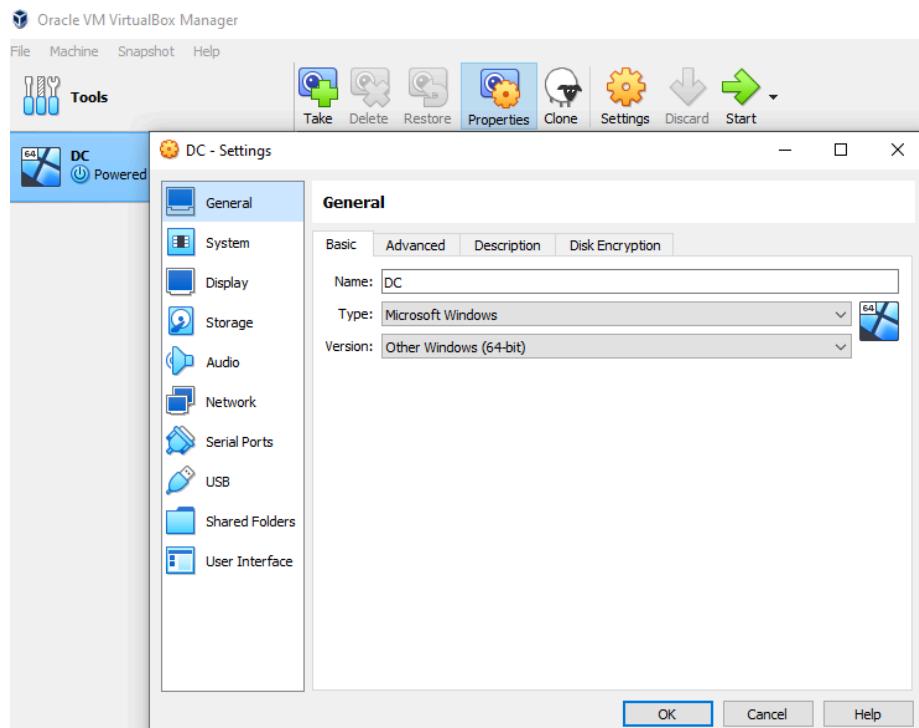
Finalise the VM.



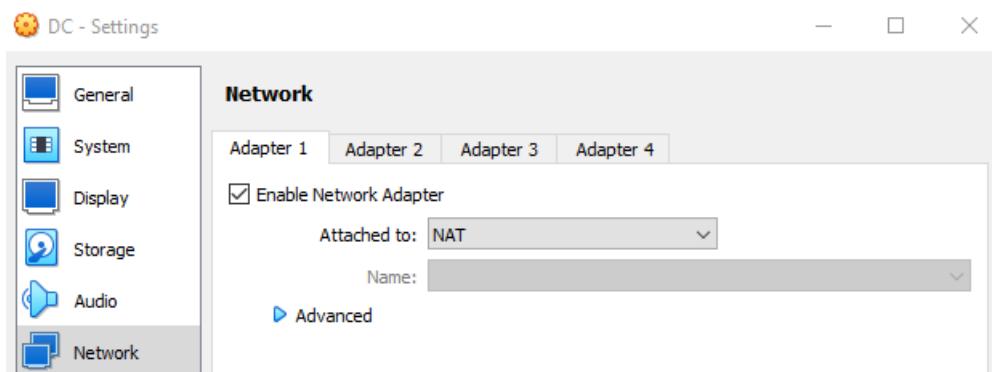
Server 2019 image has not been loaded into the DC VM as of yet.



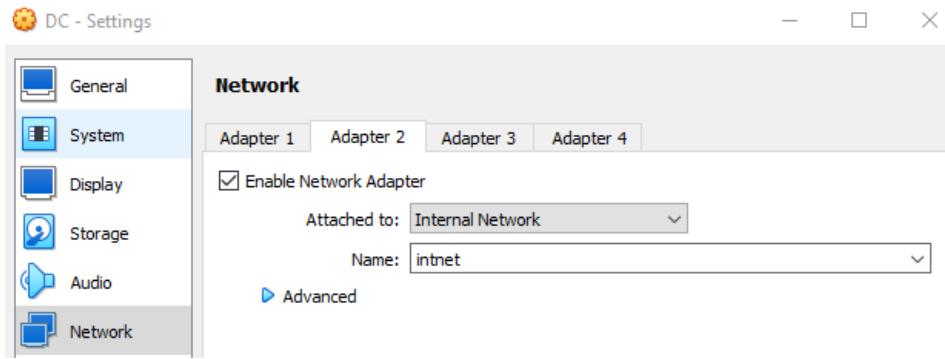
Before accessing the VM and loading the server 2019 image. Setup the network connection for the Server VM, 2 network adapters must be created, one for the Internet and the other one is Internal.



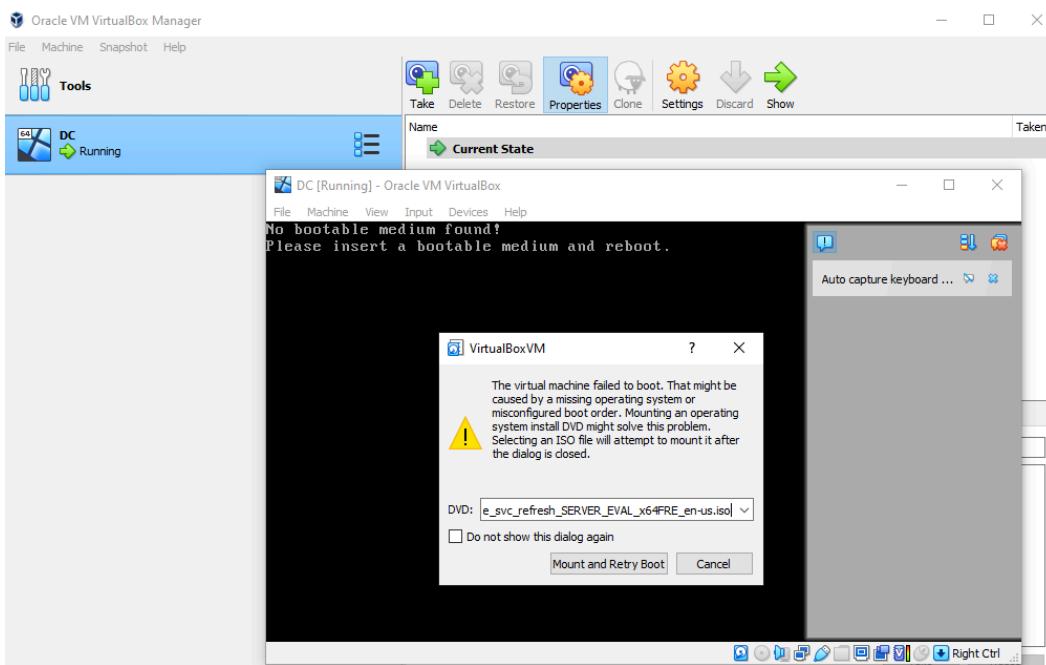
Adapter 1 (Internet).



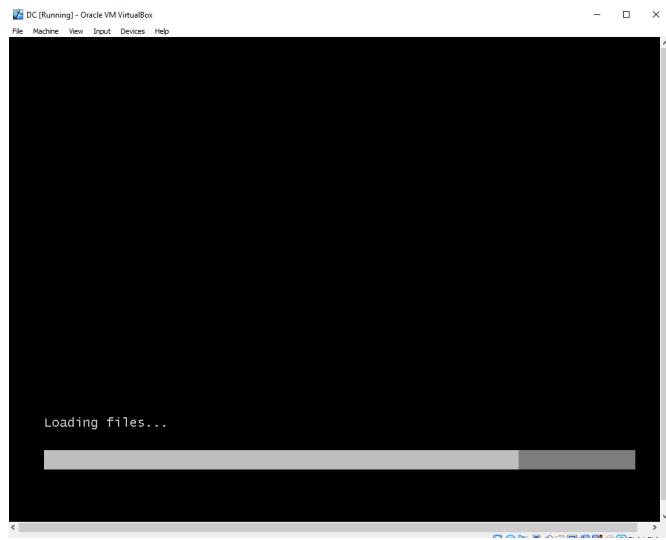
Adapter 2 (Internal).



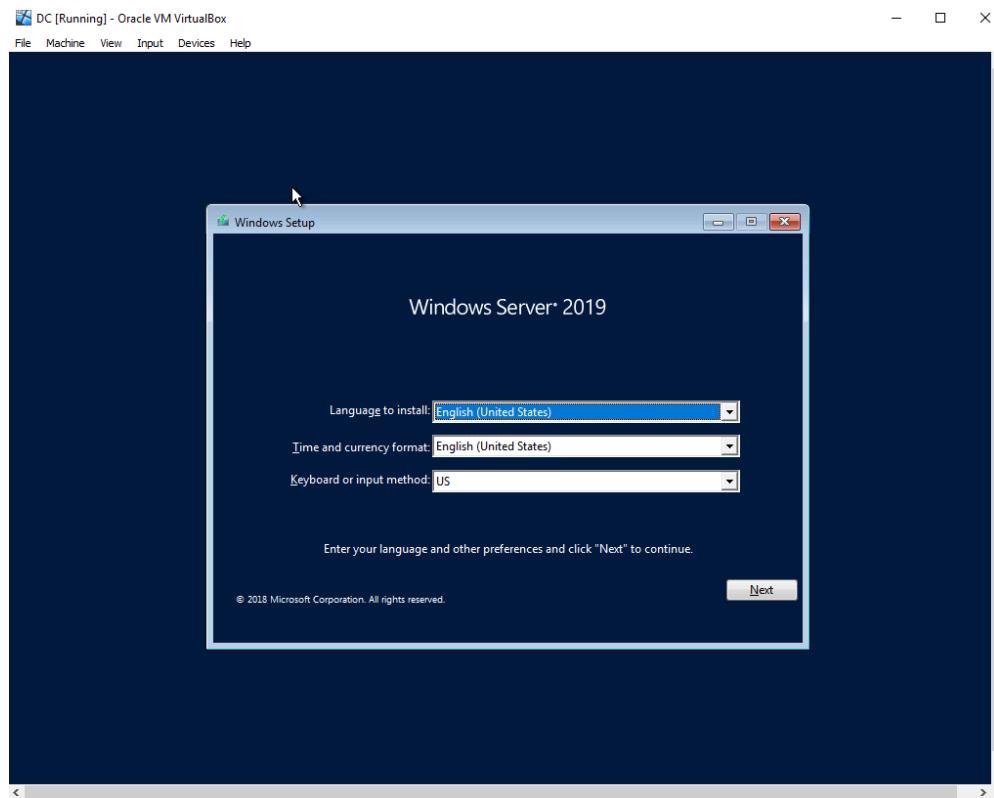
Starting up the DC VM, the following alert shows an upload prompt insert the ISO image of server 2019.



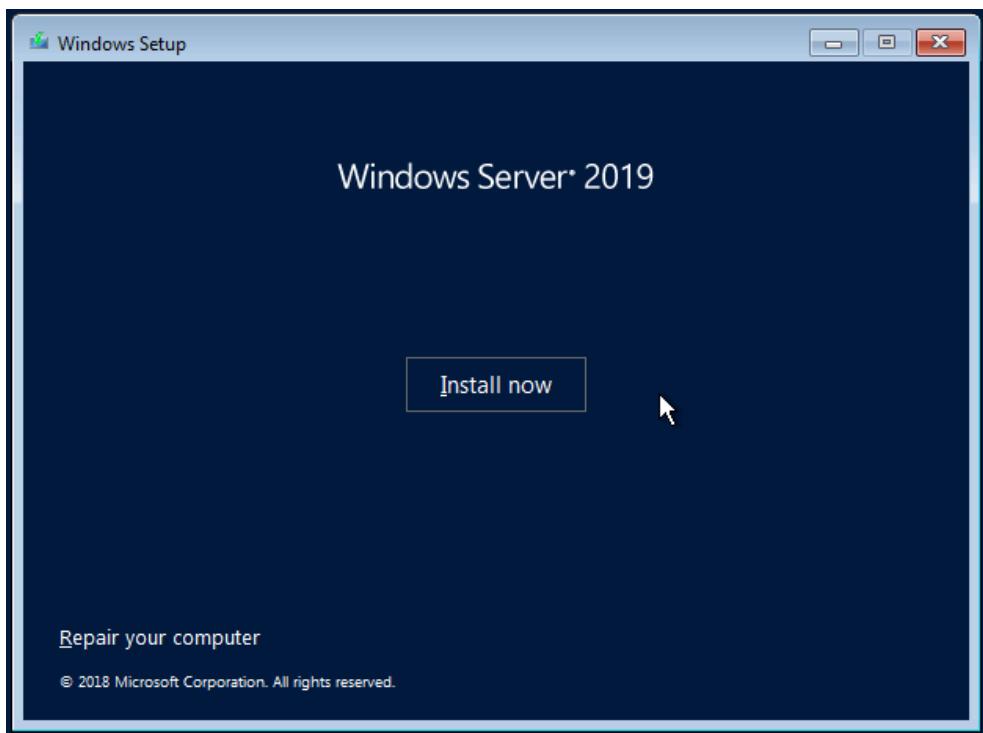
The image takes time to boot up.



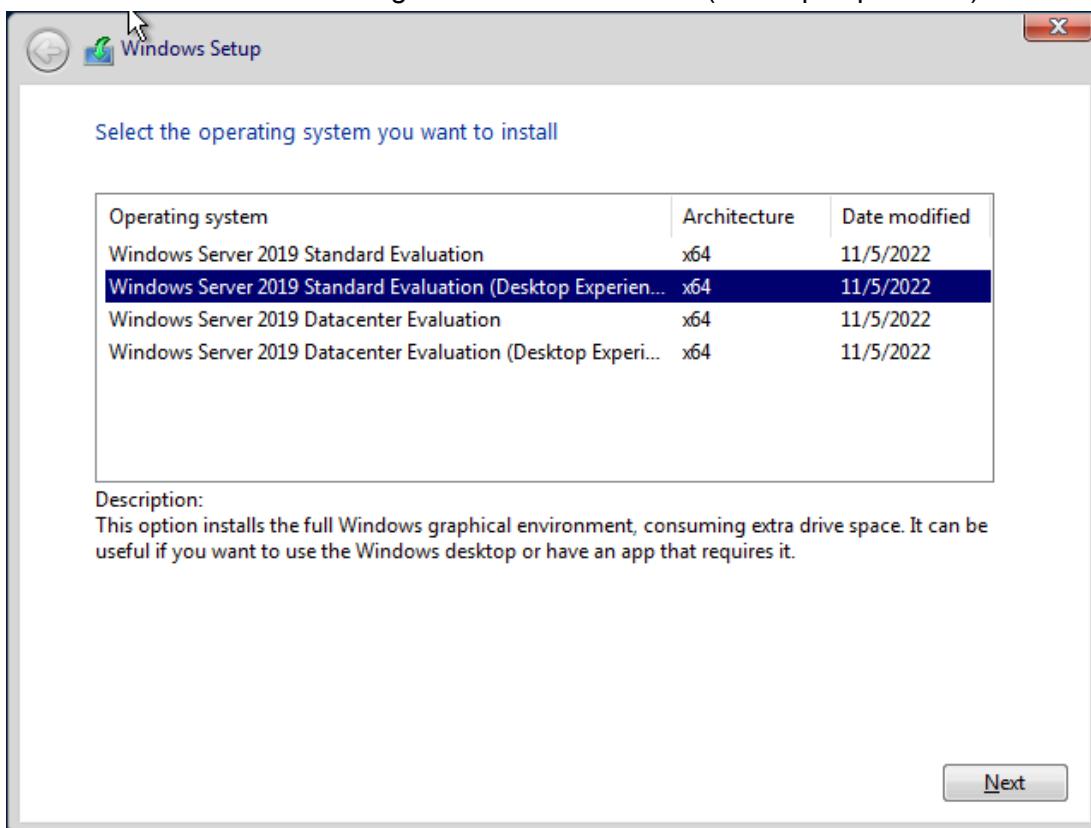
DC VM - Windows setup.



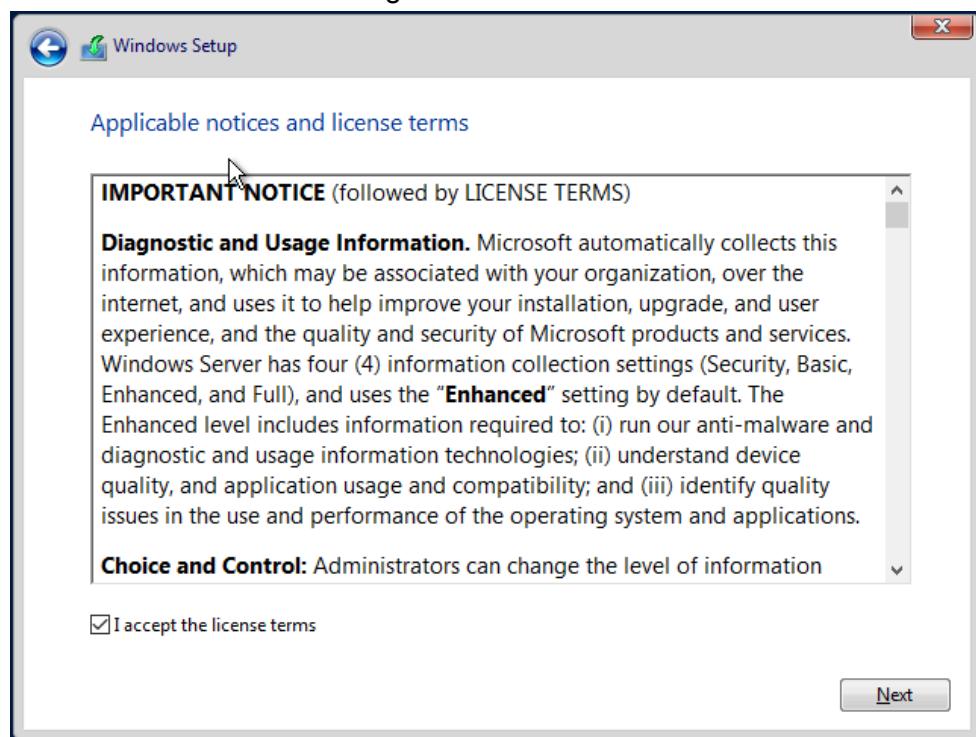
DC VM - Windows setup Install Now.



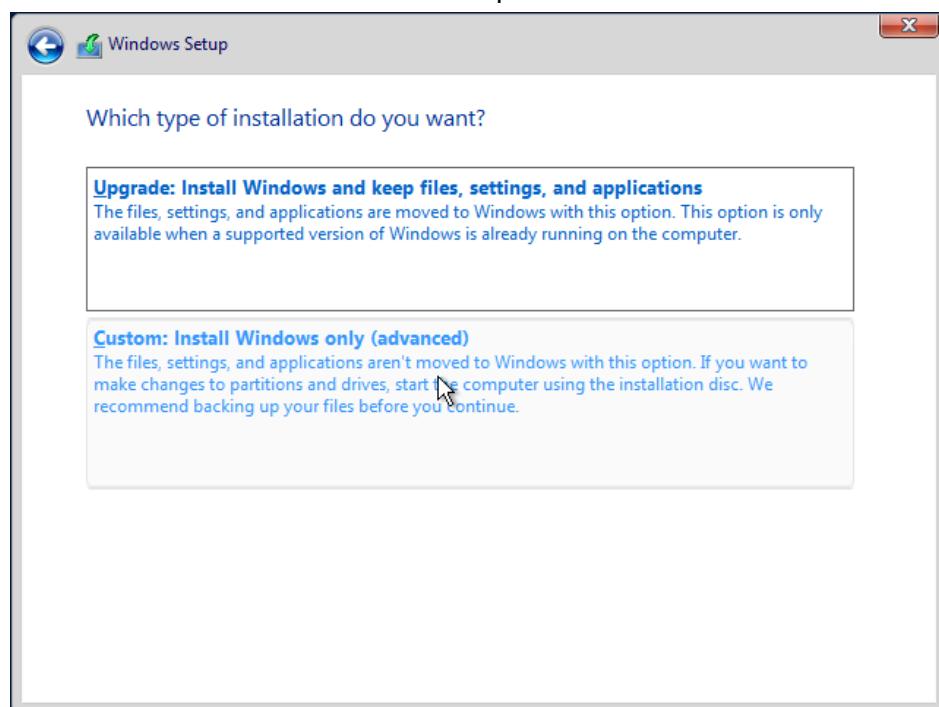
Selected the following Windows server 2019 (desktop experience).



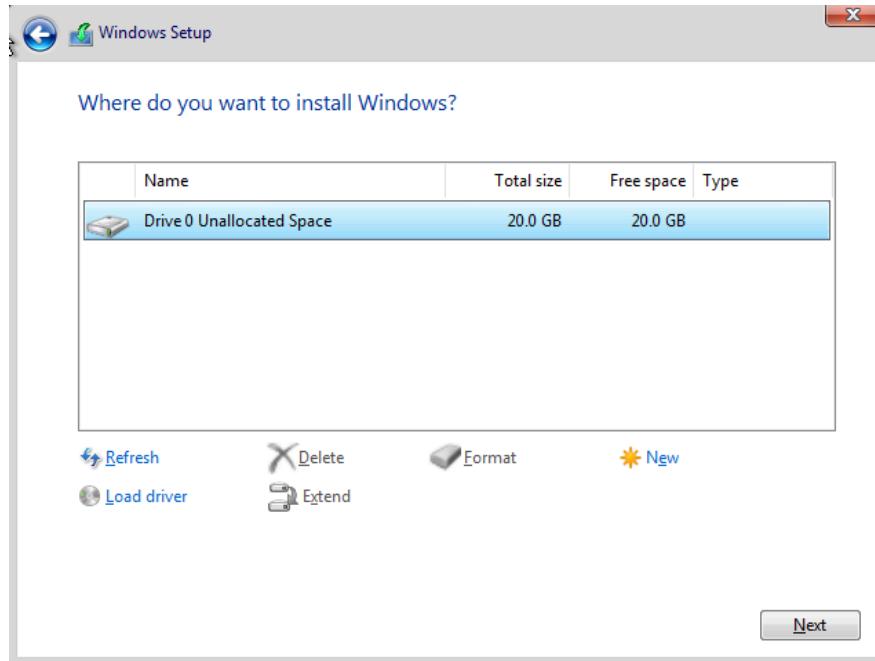
Agree with the T&C.



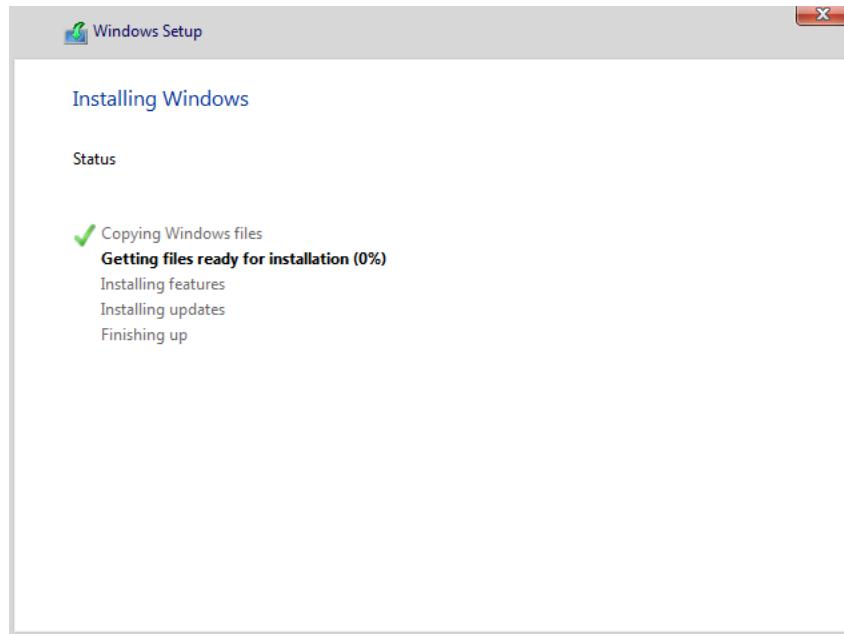
Windows server setup select “Custom”.



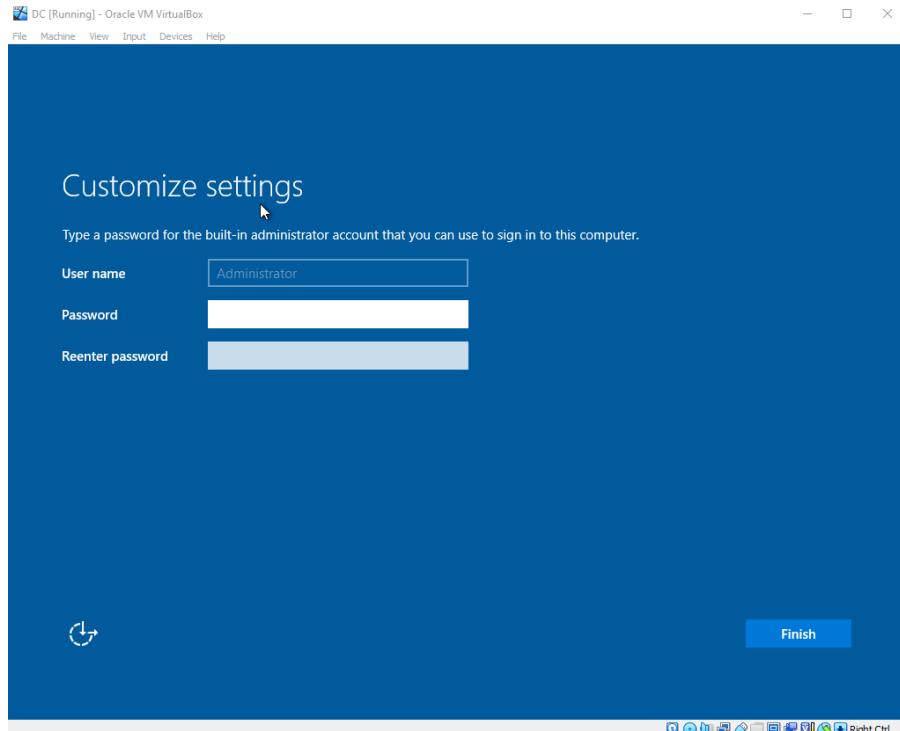
Proceed with the following install.



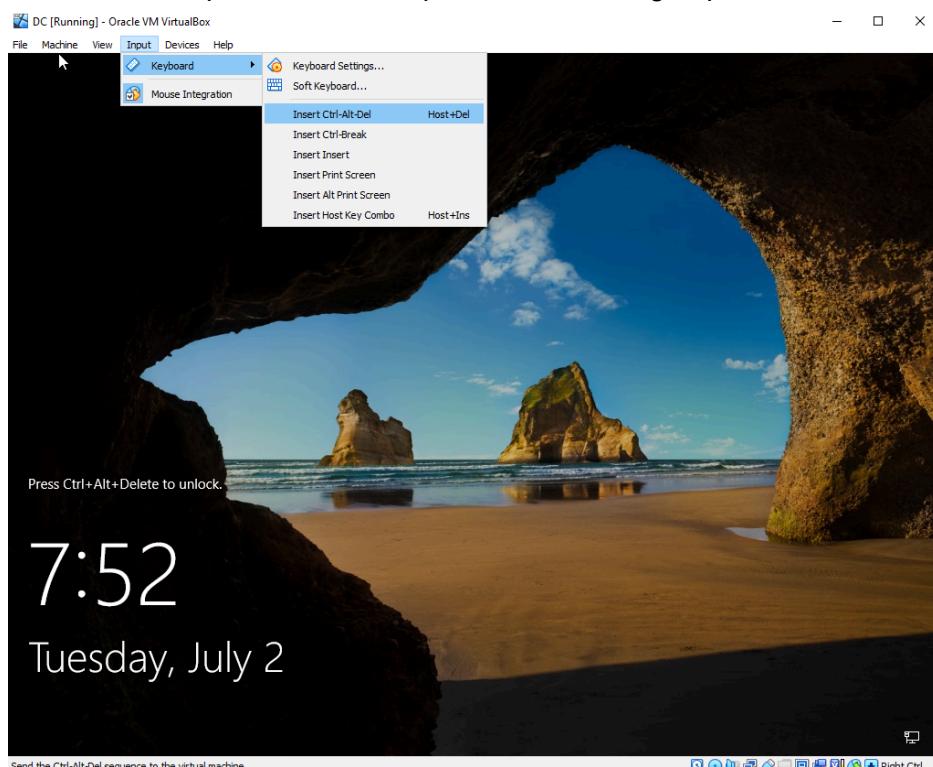
May take a while for the setup, it'll restart several times “*Don't press anything until it boots into Windows*”.



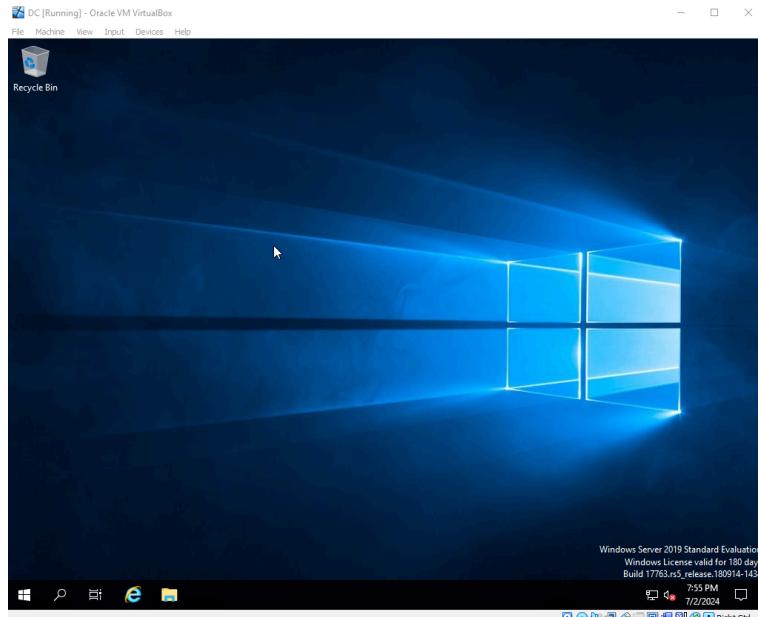
Server 2019 has been installed, creating a password for the administrator account.



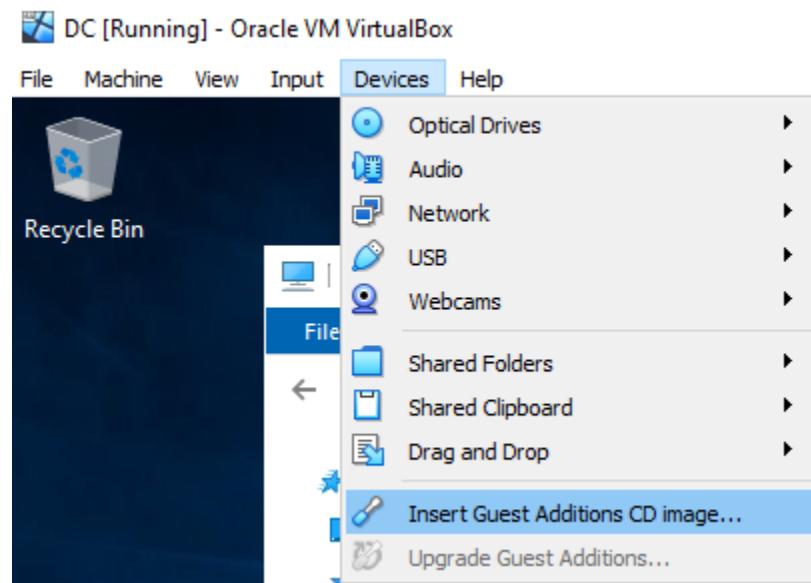
Opening server 2019, **Ctrl+Alt+Del** won't work with the keyboard input, you'll have to use the VM Input function and press the following to proceed.



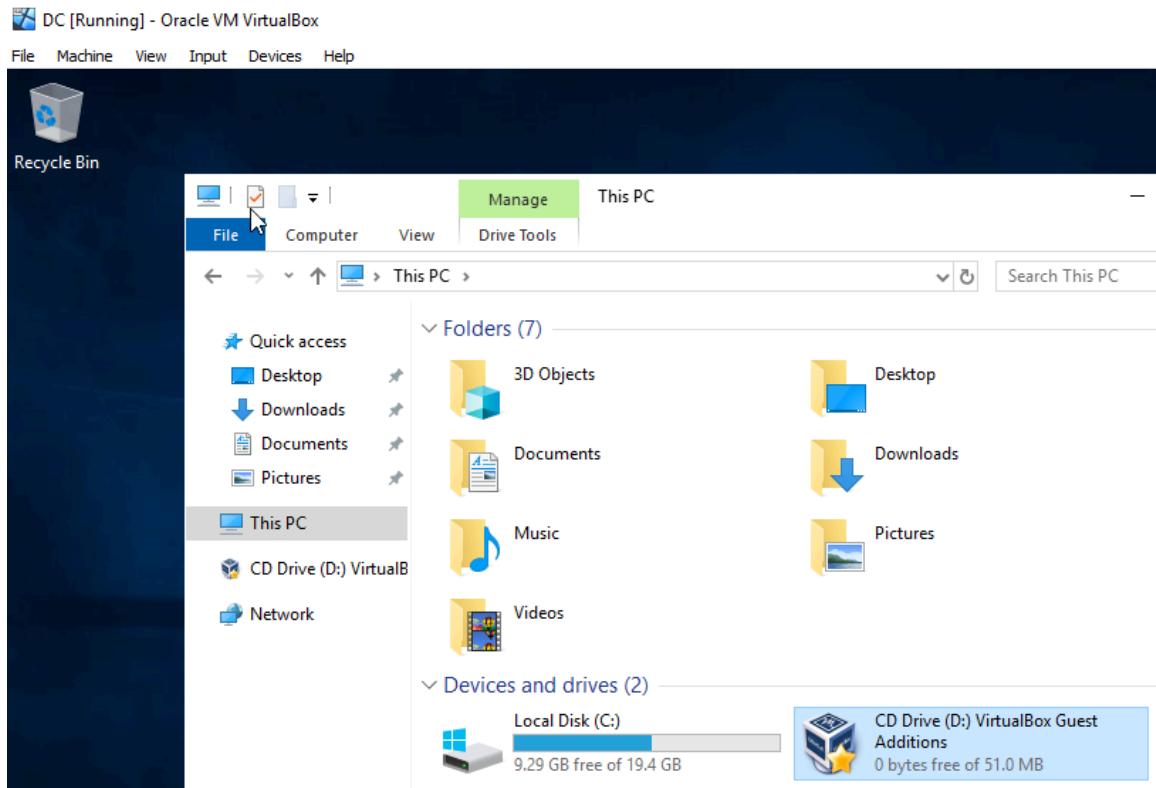
DC VM - Loaded.



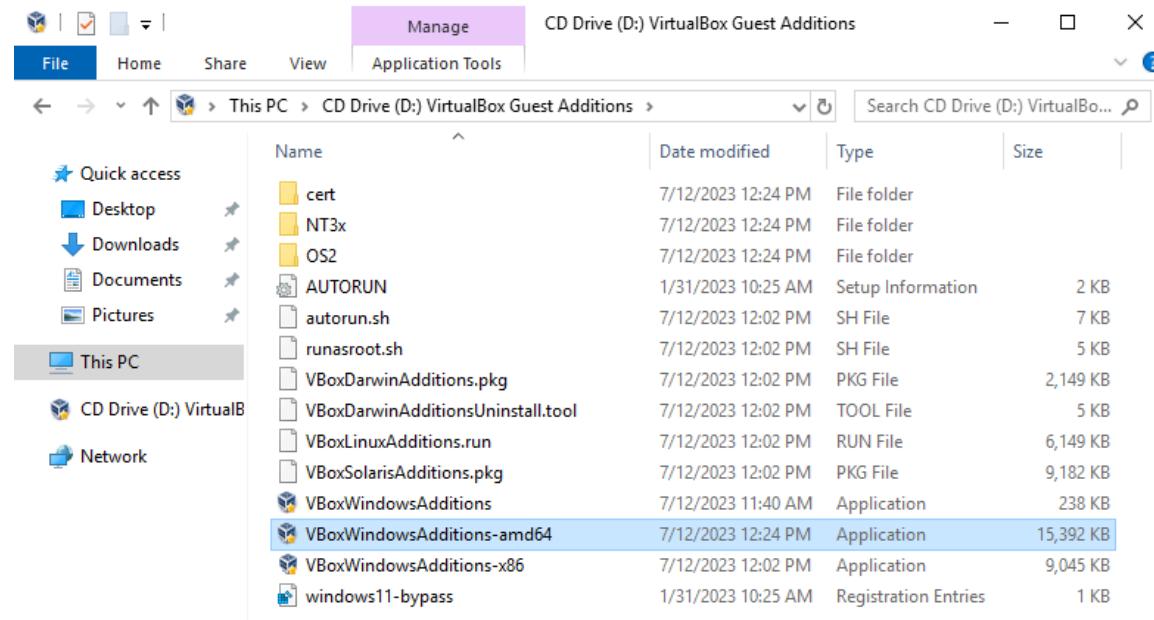
Additional Process: This improves the working environment for the user - *Insert Guest Additions CD image*.



Additional Process: Proceed into *CD Drive (D:) VirtualBox Guest Additions*.



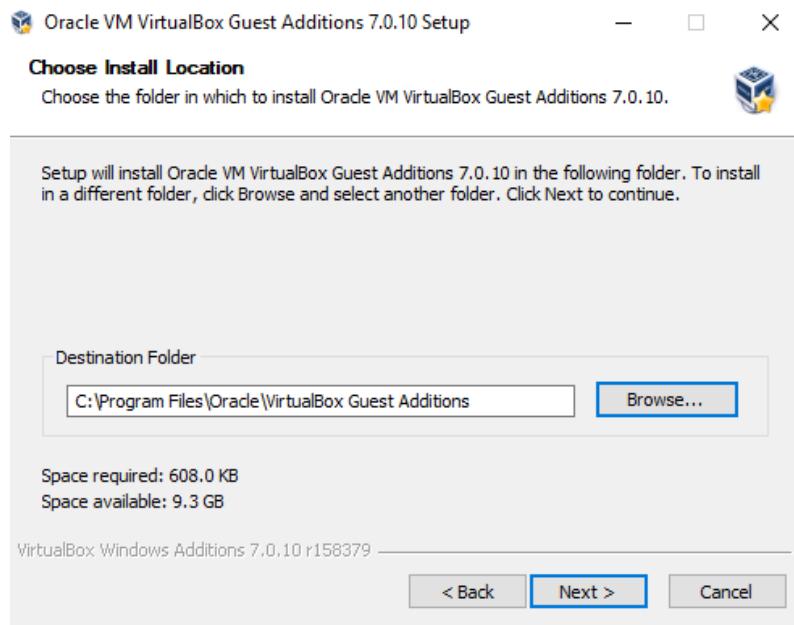
Additional Process: Run the *VboxWindowsAdditions-amd64* Application.



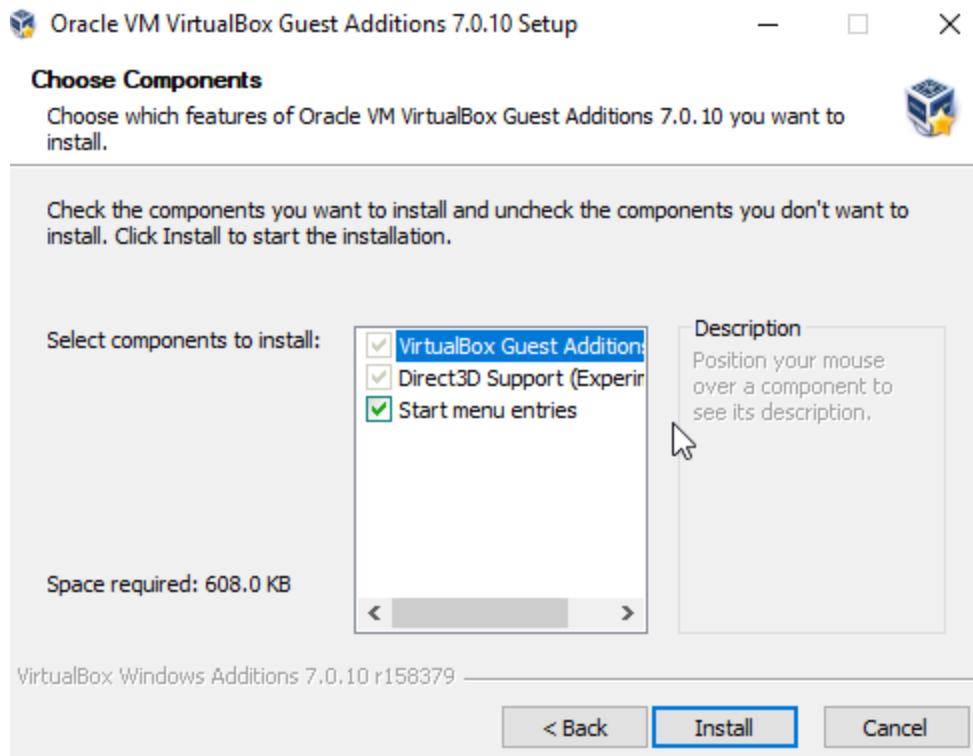
Additional Process: Proceed through the setup.



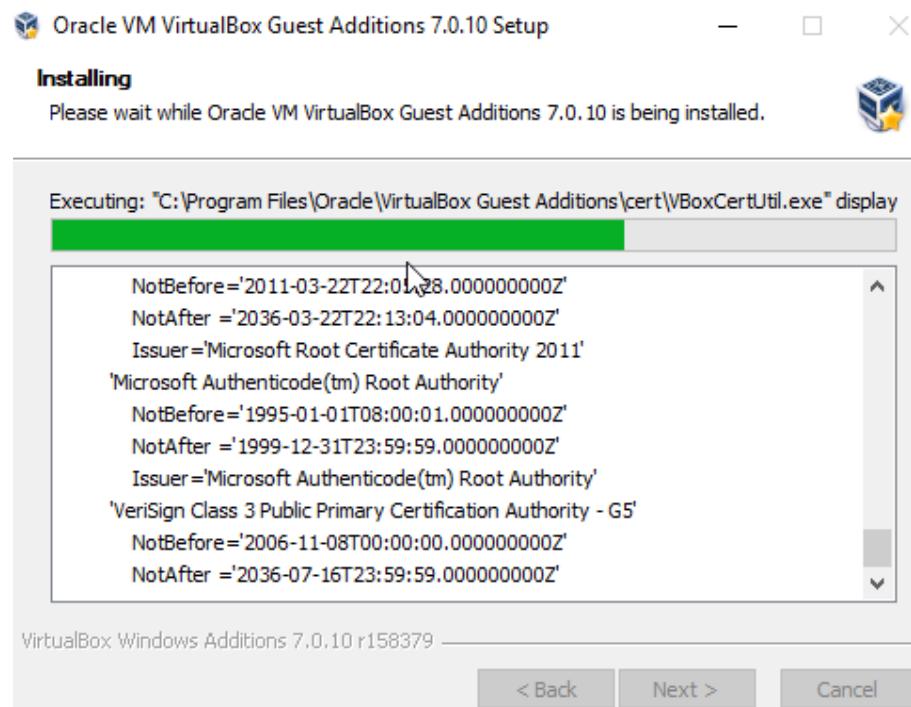
Additional Process: Proceed through next.



Additional Process: Proceed to Install.



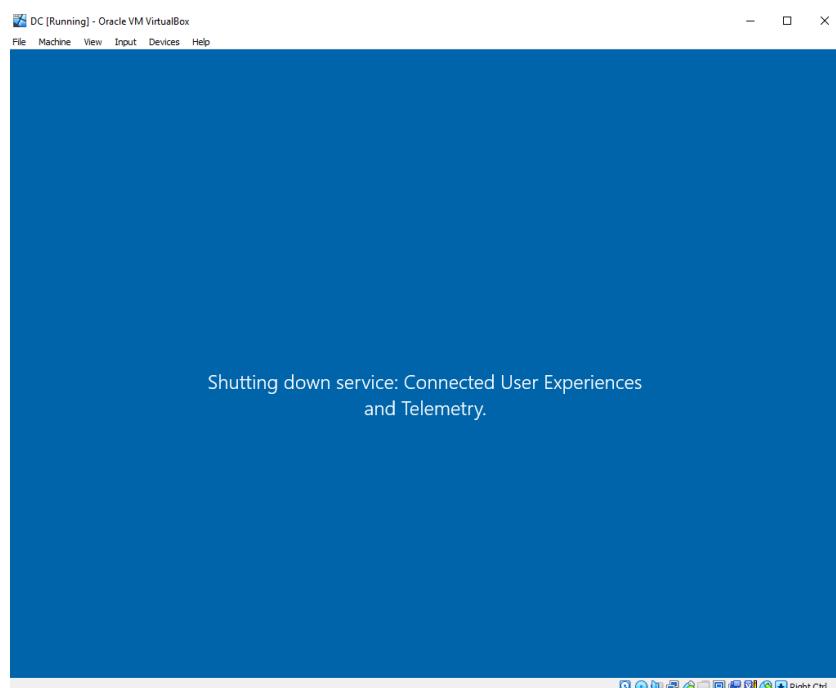
Additional Process: Installation.



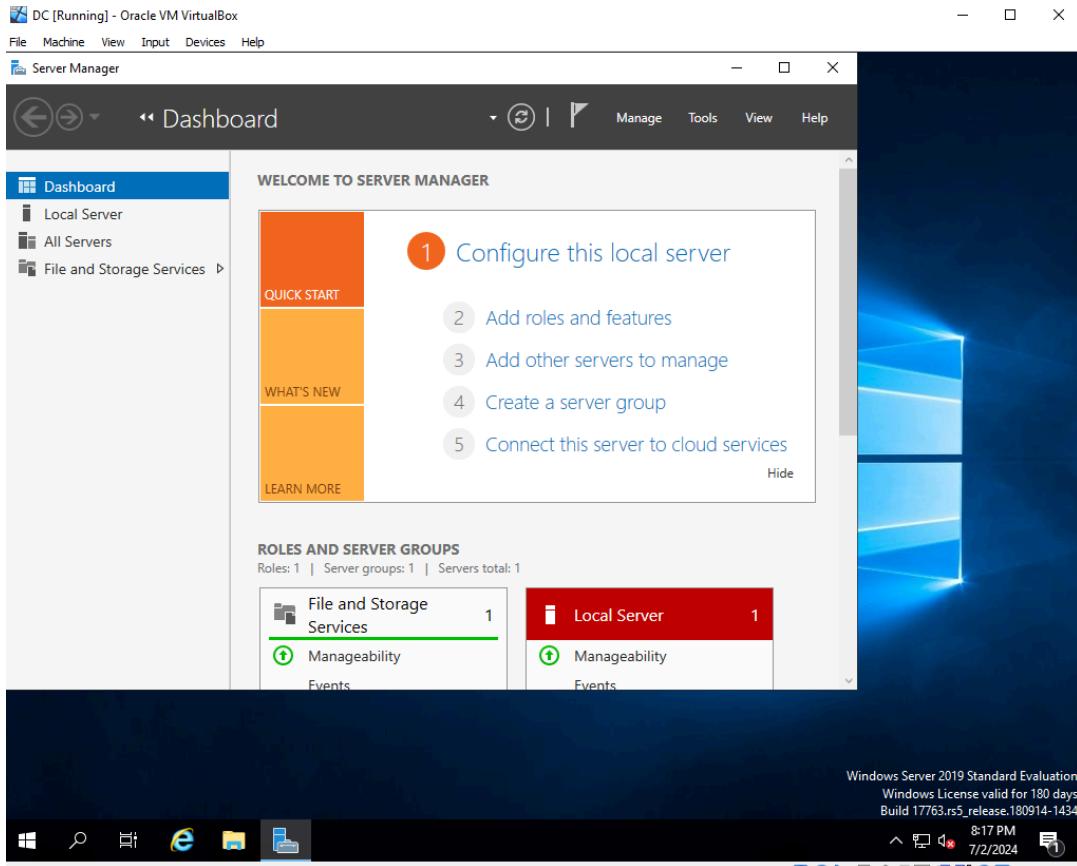
Additional Process: Select manual reboot.



Additional Process: Shutdown the server 2019 VM.

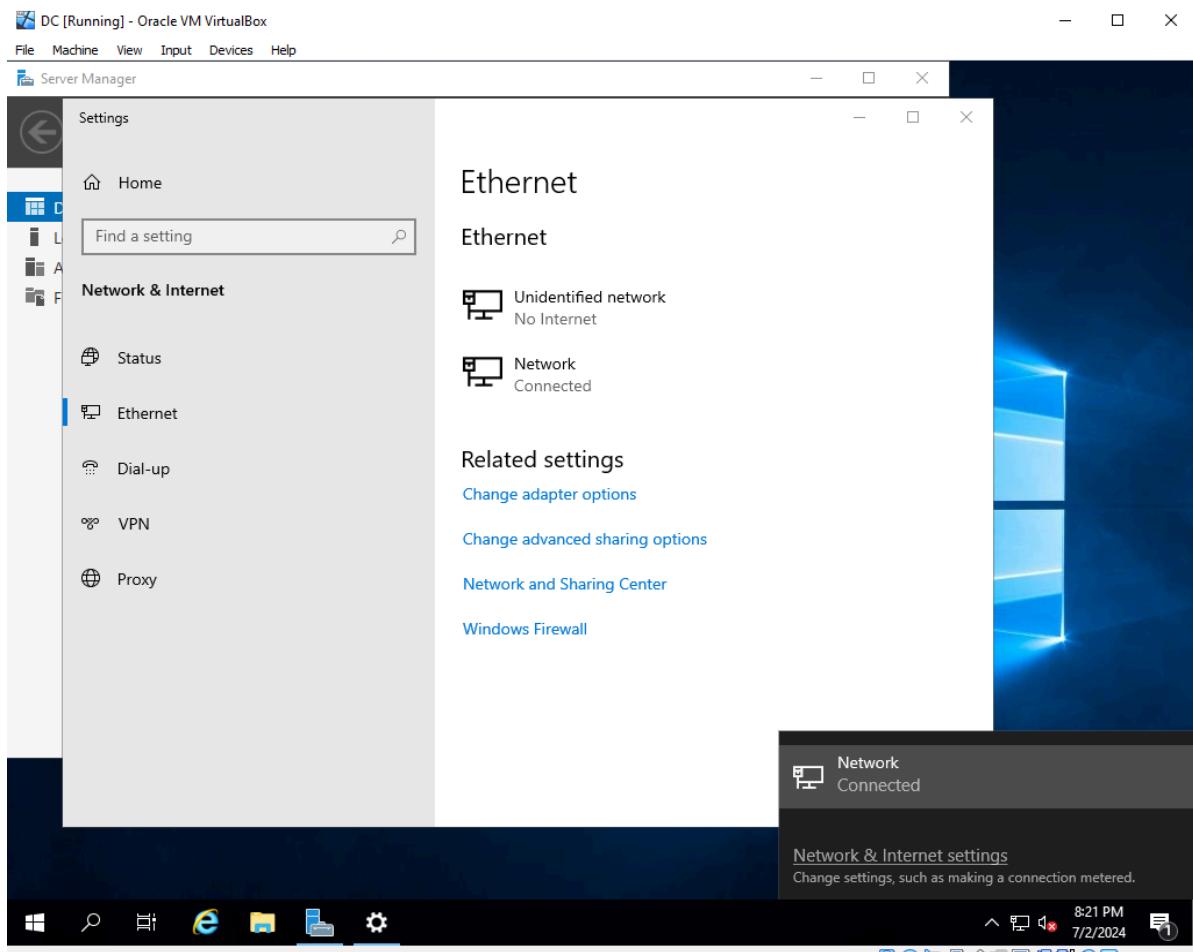


Additional Process: After Installing *VboxWindowsAdditions-amd64* on Server 2019 VM will enhance overall performance, resulting in smoother mouse movements and better screen resolutions.

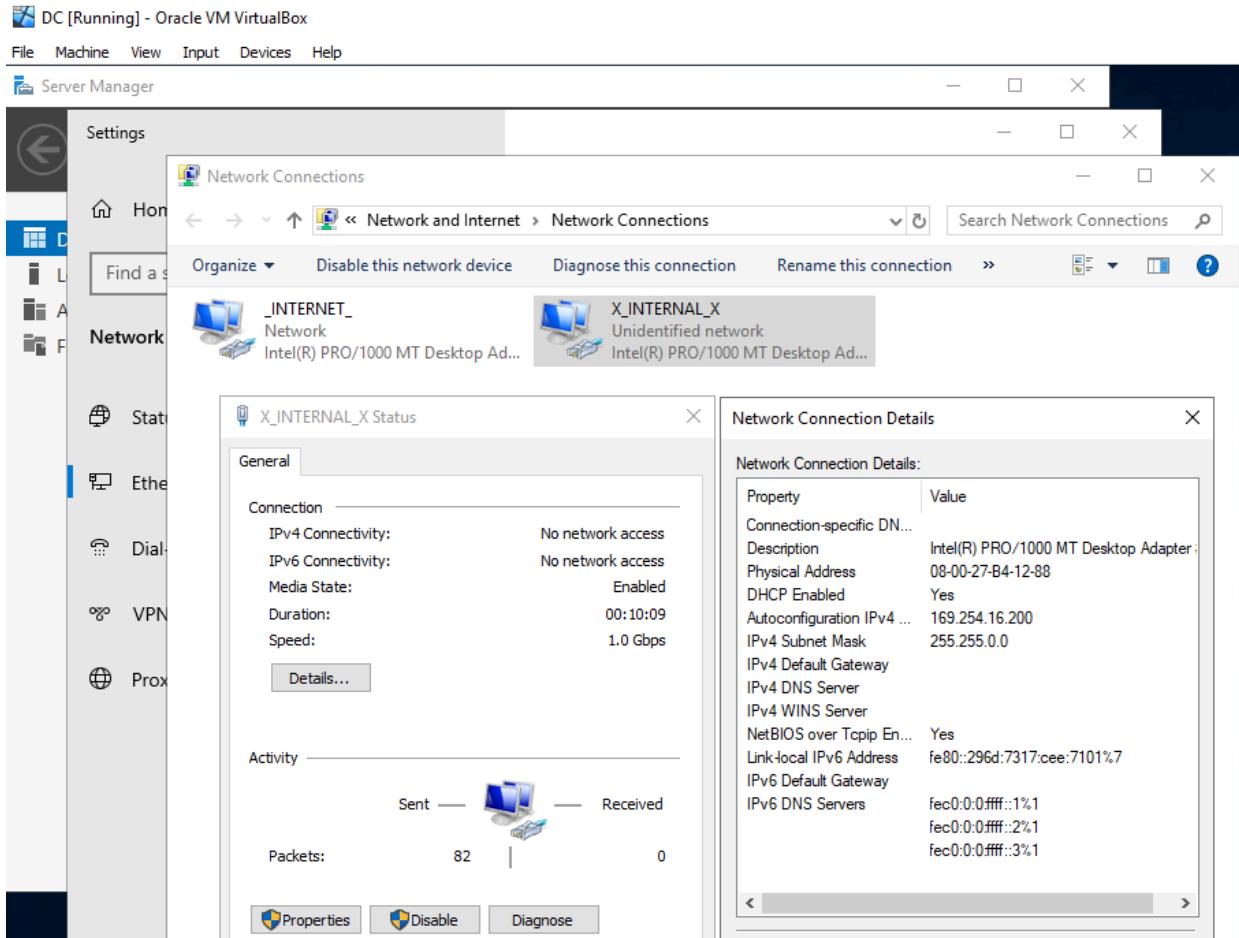


Section 2

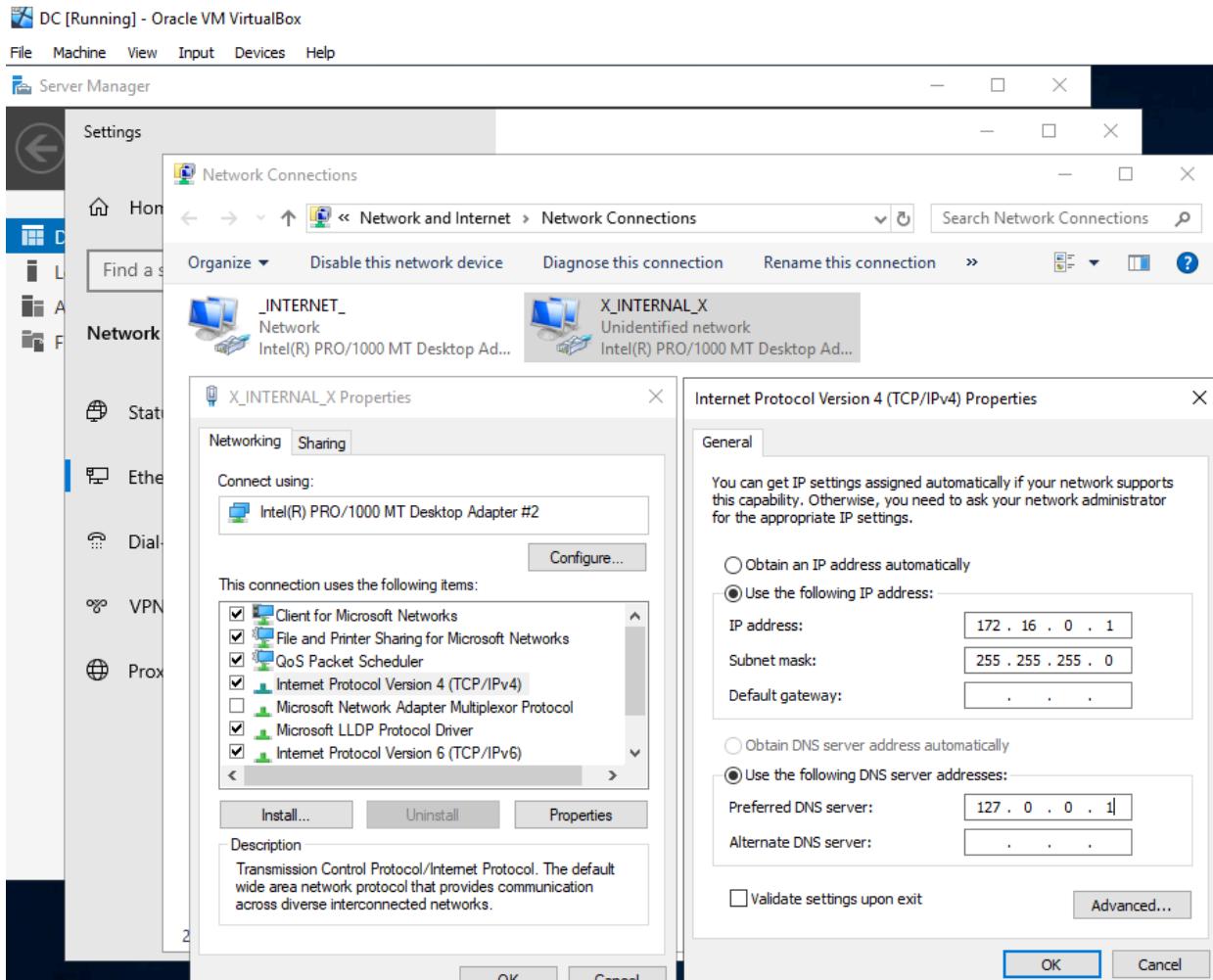
Proceed into Settings > Network & Internet > Setup the NIC **Internal** (Adapter 2), proceed into **“Change adapter options”**.



Once inside “*Change adapter options*” we need to find which network is the internet and the internal adapter. By looking at the selected one IPv4 was automatically looking for a DHCP but couldn't find anything so it was given a automated IP of 169.254.16.200



Setup the NIC **Internal** IP address. Proceed into the **Internal** network properties then moving into IPv4, and changing the following IP address manually entering the IP shown on the project diagram.



We need to change the PC name from its current random one. Right-click the Start menu and navigate to System to proceed.



Once System is open you can click "*Rename this PC*".

The screenshot shows the Windows Settings application window. The left sidebar has a 'System' category selected, with 'Display' highlighted. Other options include Home, Find a setting, System, Display, Sound, Notifications & actions, Focus assist, Power & sleep, Storage, Tablet mode, Multitasking, Remote Desktop, and About.

About

Your PC is monitored and protected.

- Virus & Threat Protection
- Firewall & Network Protection
- App & browser control
- Device security

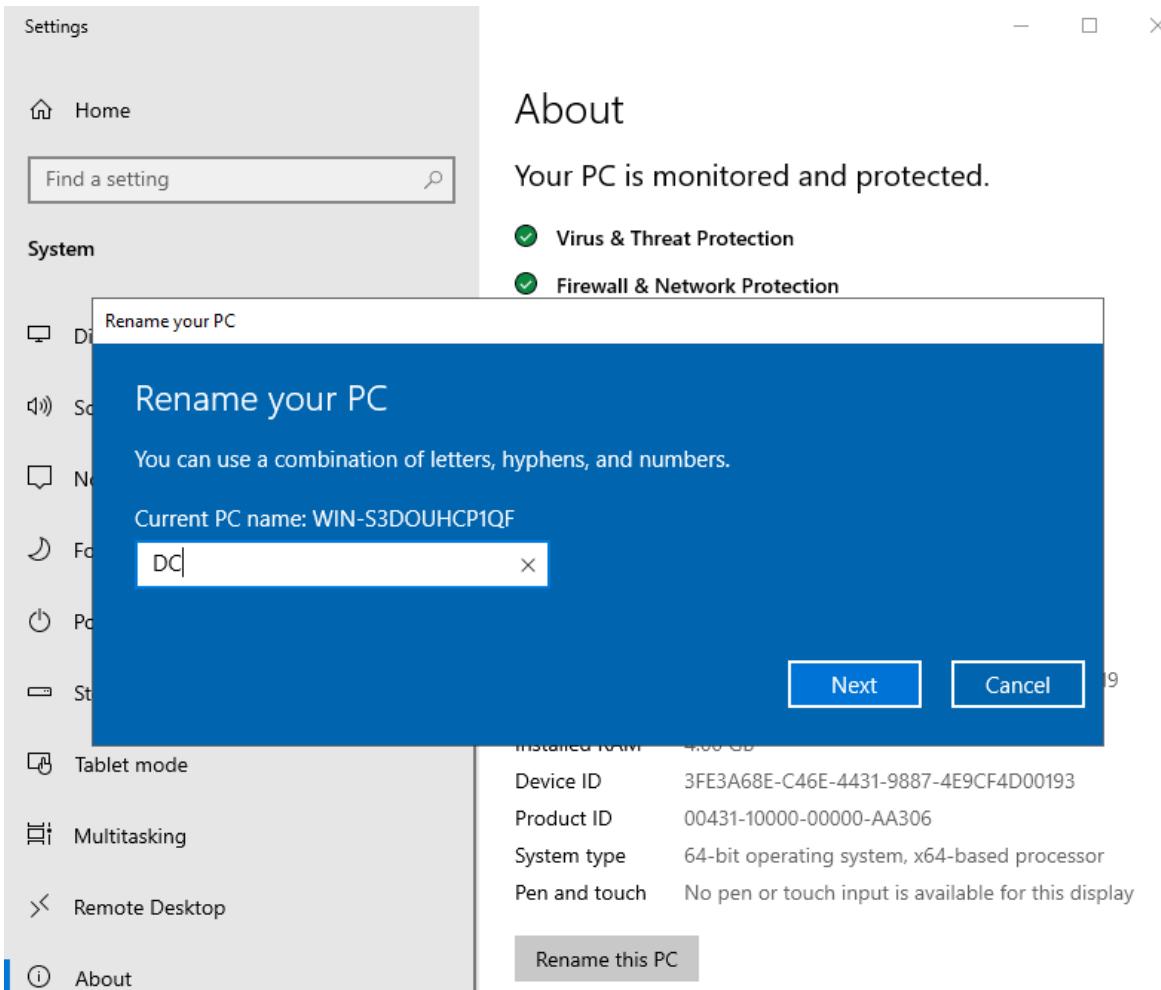
[See details in Windows Security](#)

Device specifications

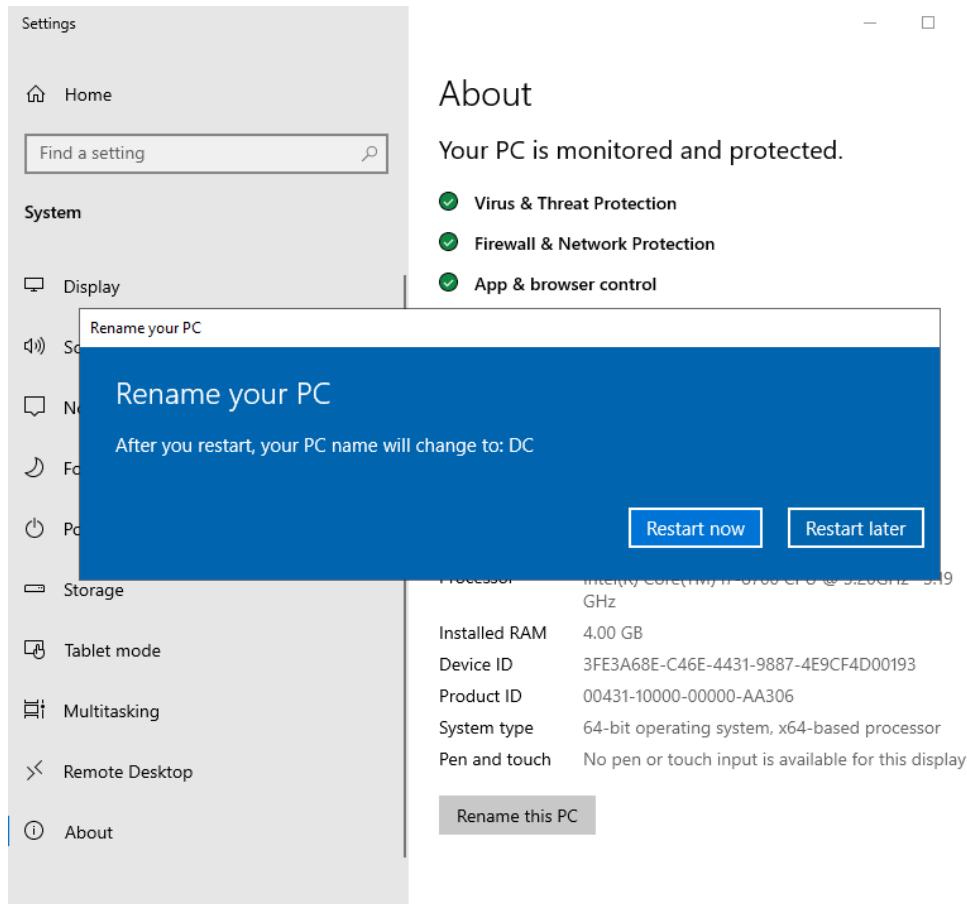
Device name	WIN-S3DOUHCP1QF
Processor	Intel(R) Core(TM) i7-8700 CPU @ 3.20GHz 3.19 GHz
Installed RAM	4.00 GB
Device ID	3FE3A68E-C46E-4431-9887-4E9CF4D00193
Product ID	00431-10000-00000-AA306
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

[Rename this PC](#)

This Server 2019 VM/PC will be named **DC** (Domain Controller).

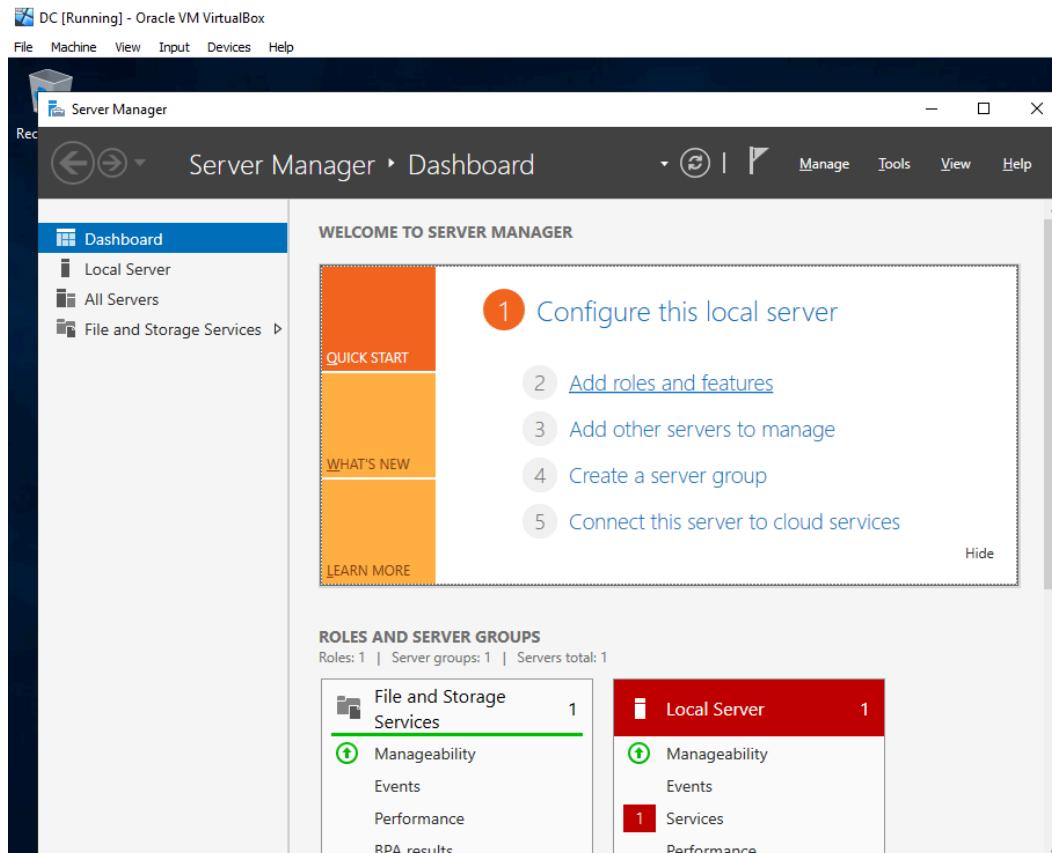


Proceed to “*Restart now*”.

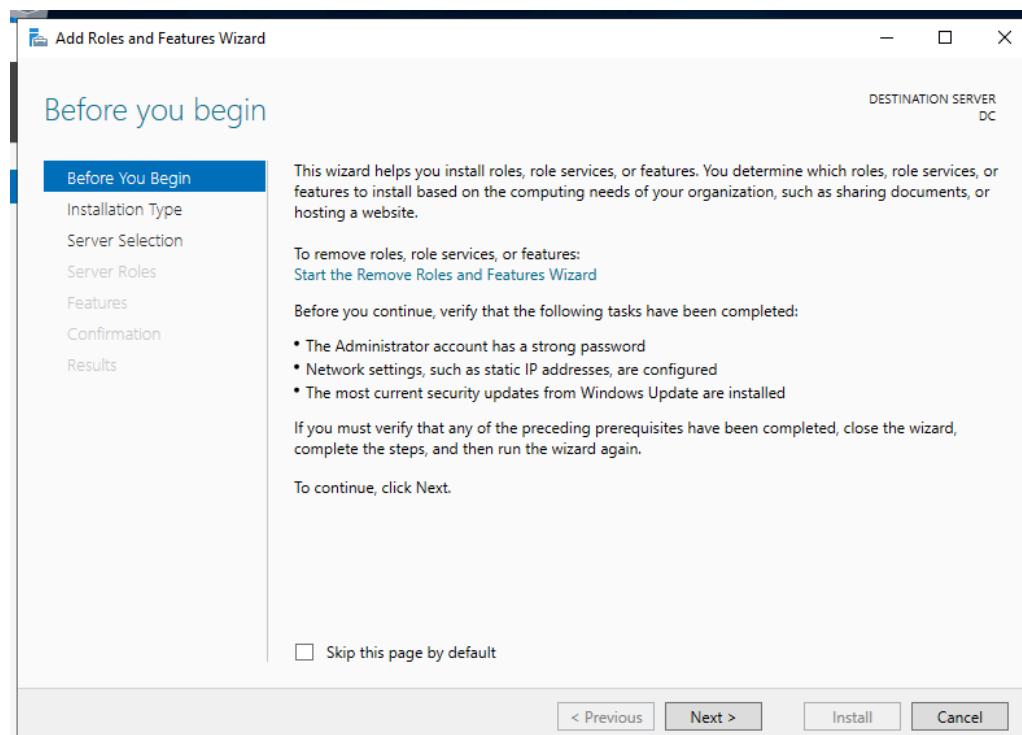


Section 3

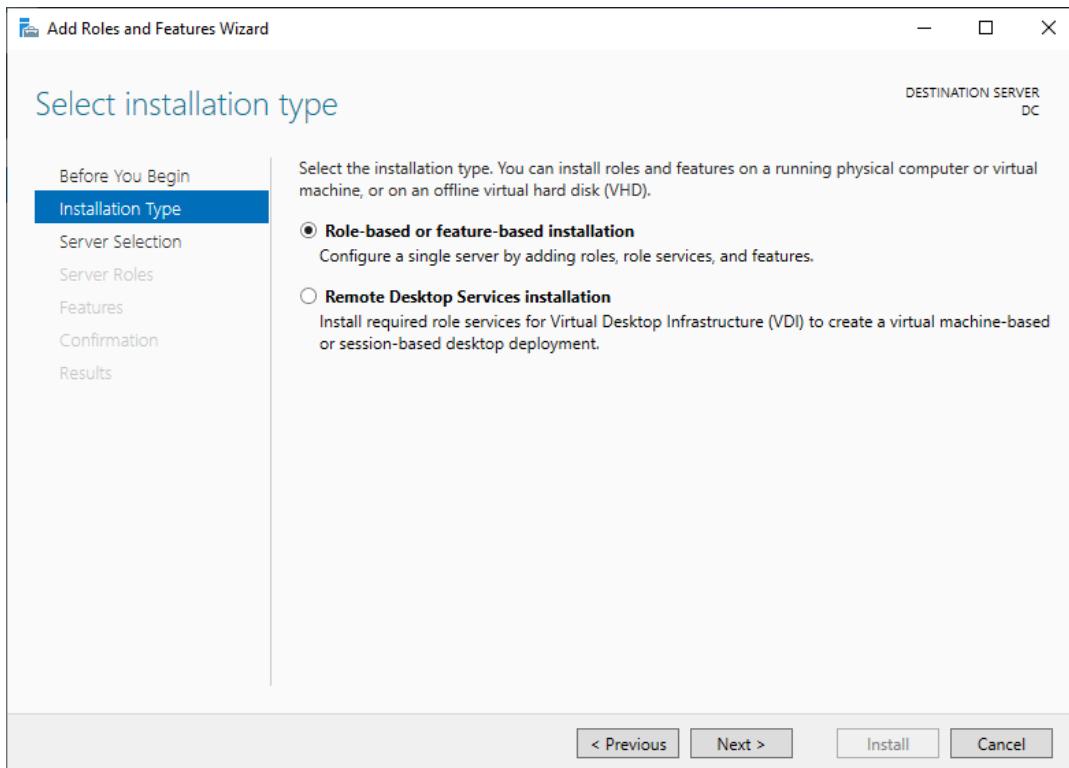
After restart the VM should be online, proceed to install “*Active Directory Domain Services*” and create a domain. Go into the **Server Manager** and proceed to “*Add roles and features*”.



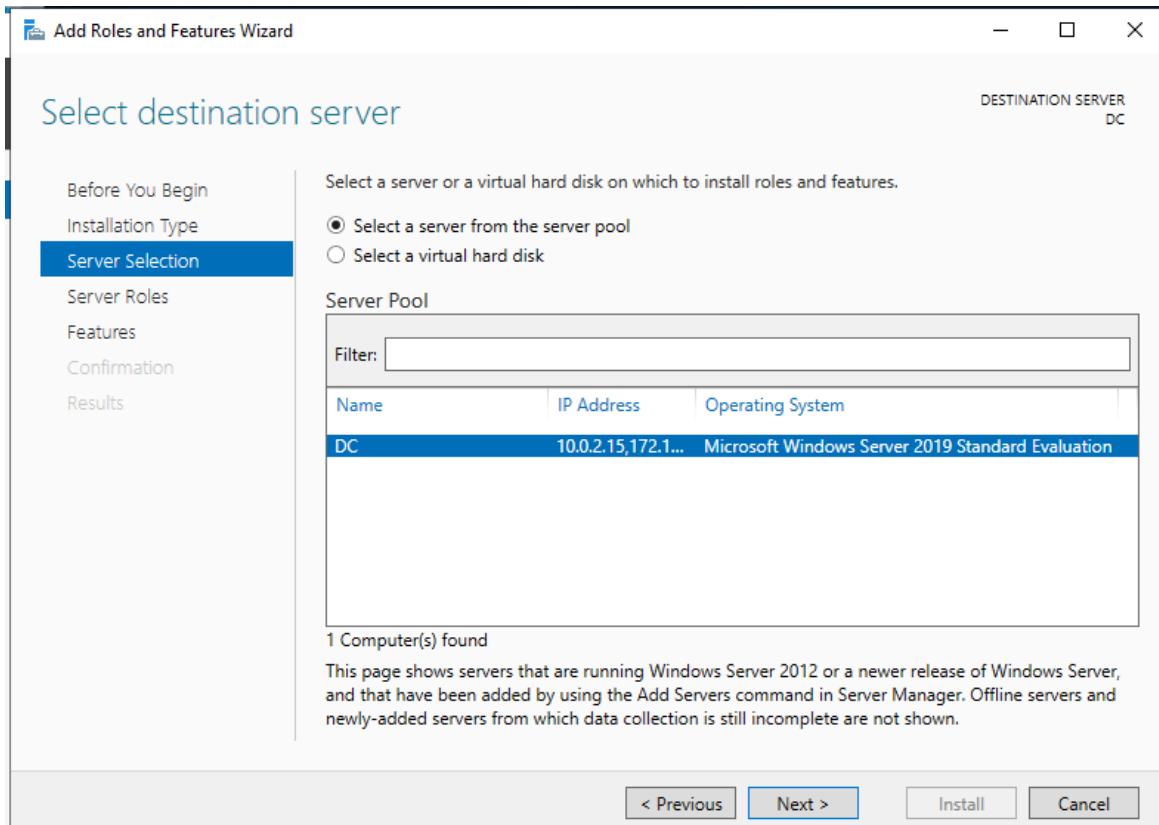
Proceed next.



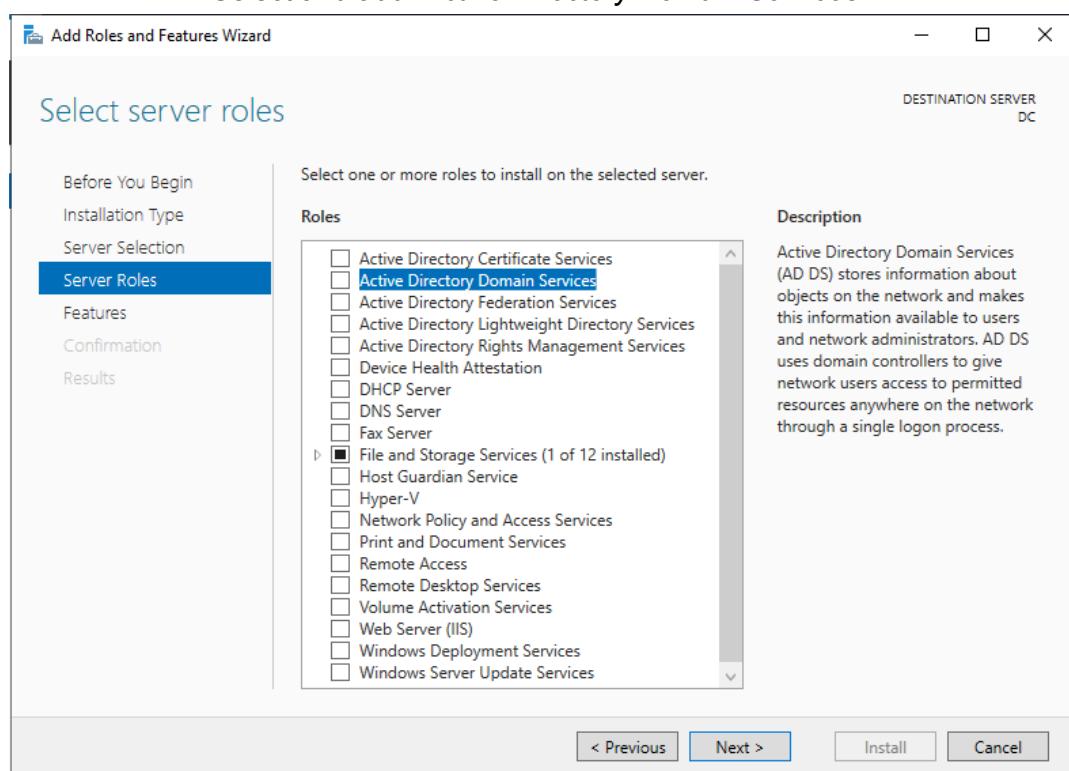
Proceed next.



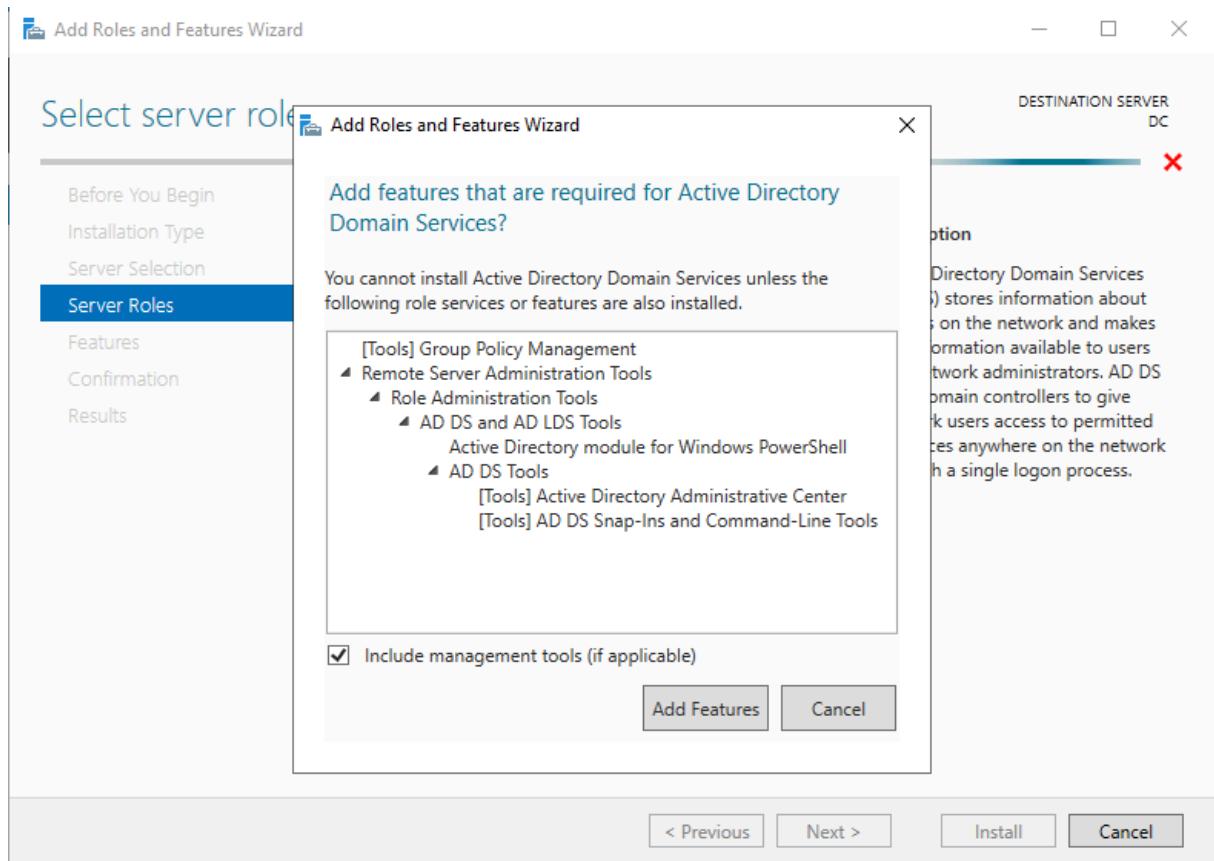
Select the server where the install of the Active Directory Domain Services will be.



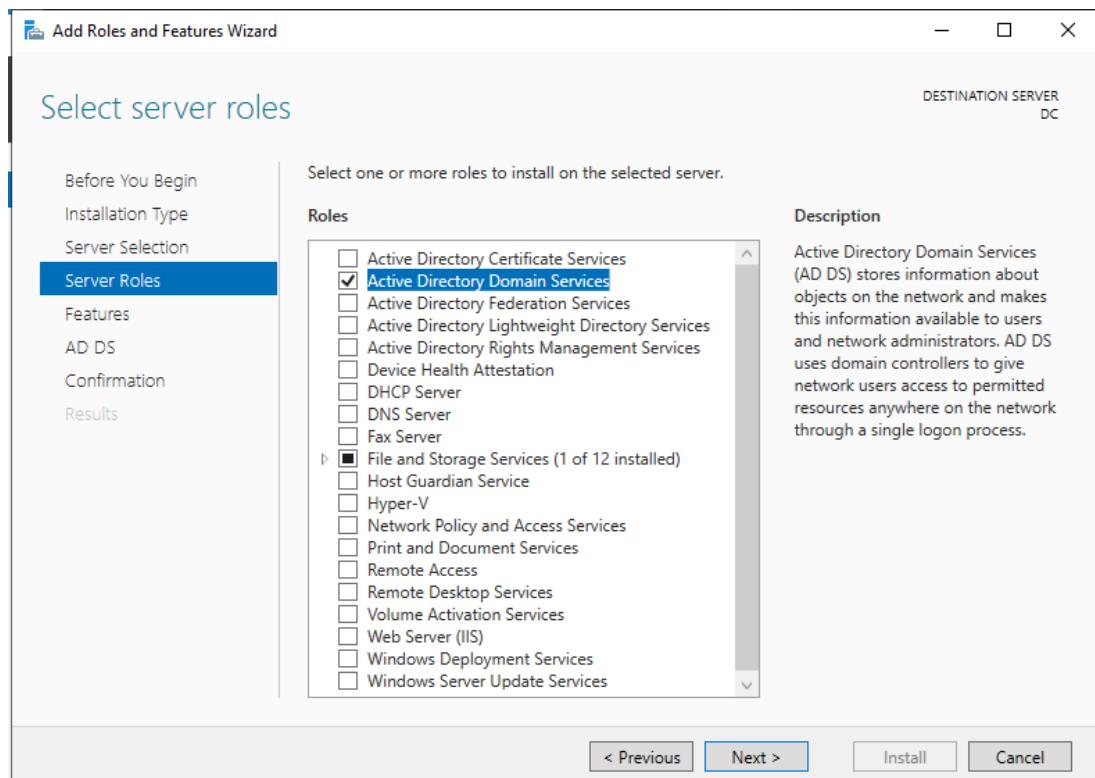
Select and add “Active Directory Domain Services”.



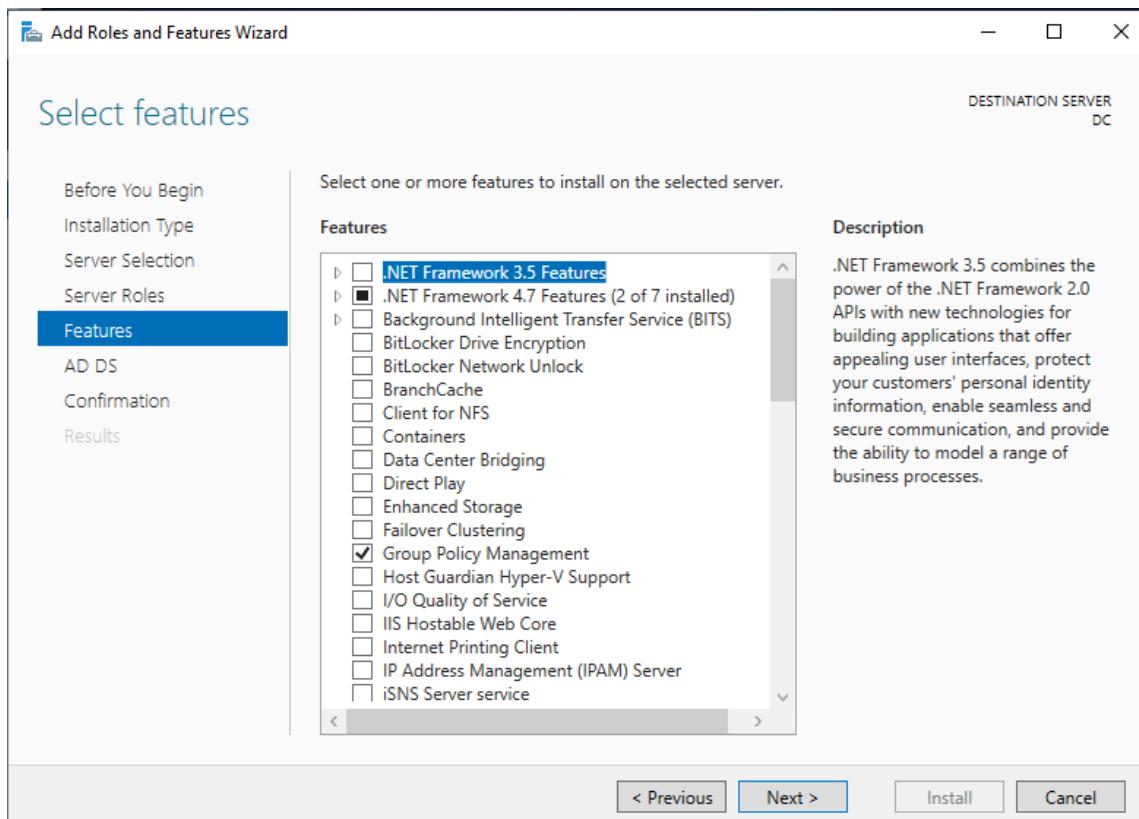
Add Features.



Proceed next.



Proceed next.



Proceed next.

Add Roles and Features Wizard

Active Directory Domain Services

DESTINATION SERVER
DC

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD DS

Confirmation

Results

Active Directory Domain Services (AD DS) stores information about users, computers, and other devices on the network. AD DS helps administrators securely manage this information and facilitates resource sharing and collaboration between users.

Things to note:

- To help ensure that users can still log on to the network in the case of a server outage, install a minimum of two domain controllers for a domain.
- AD DS requires a DNS server to be installed on the network. If you do not have a DNS server installed, you will be prompted to install the DNS Server role on this machine.

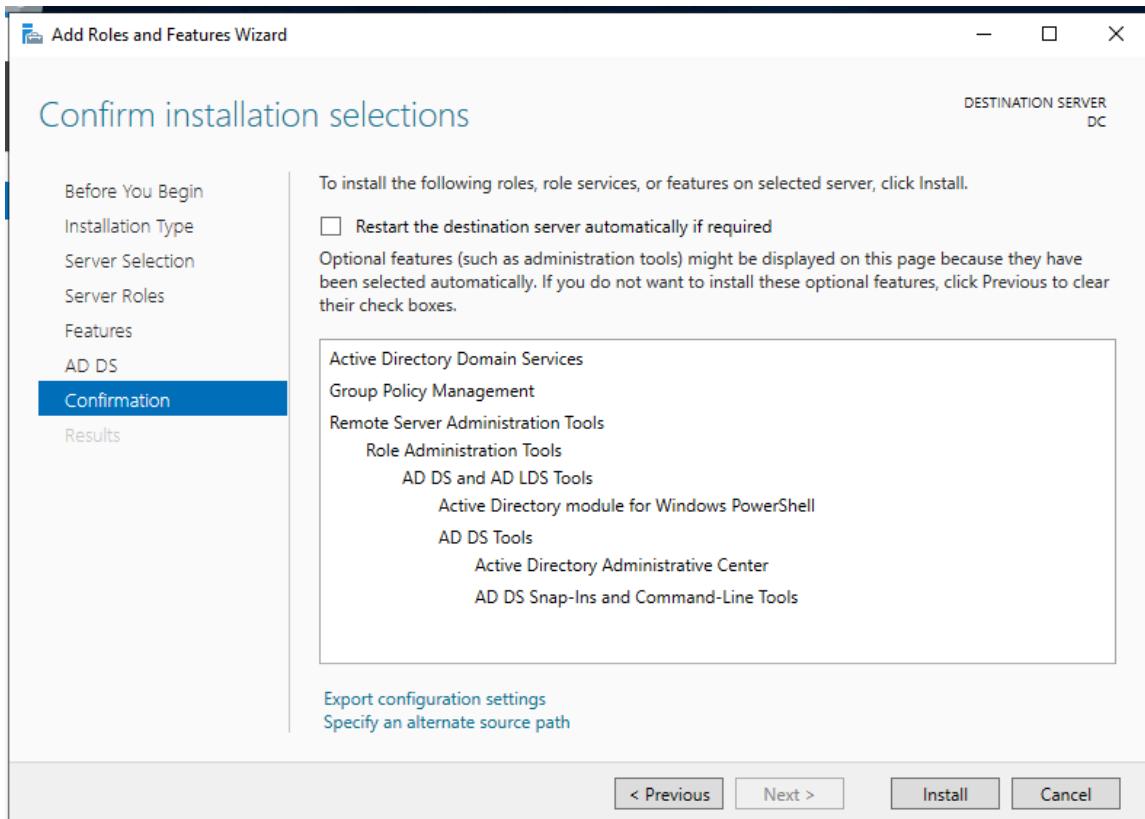
Azure Active Directory, a separate online service, can provide simplified identity and access management, security reporting, single sign-on to cloud and on-premises web apps.

[Learn more about Azure Active Directory](#)

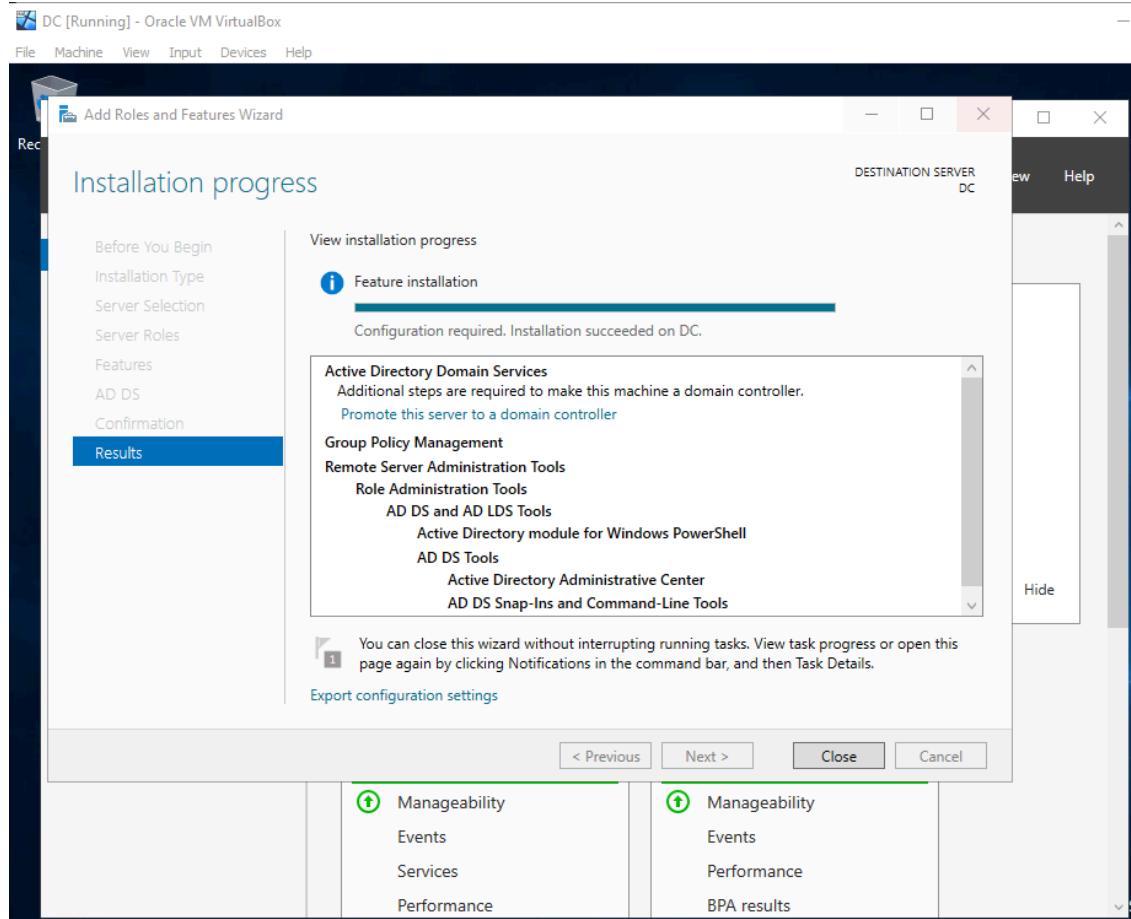
[Configure Office 365 with Azure Active Directory Connect](#)

< Previous Next > Install Cancel

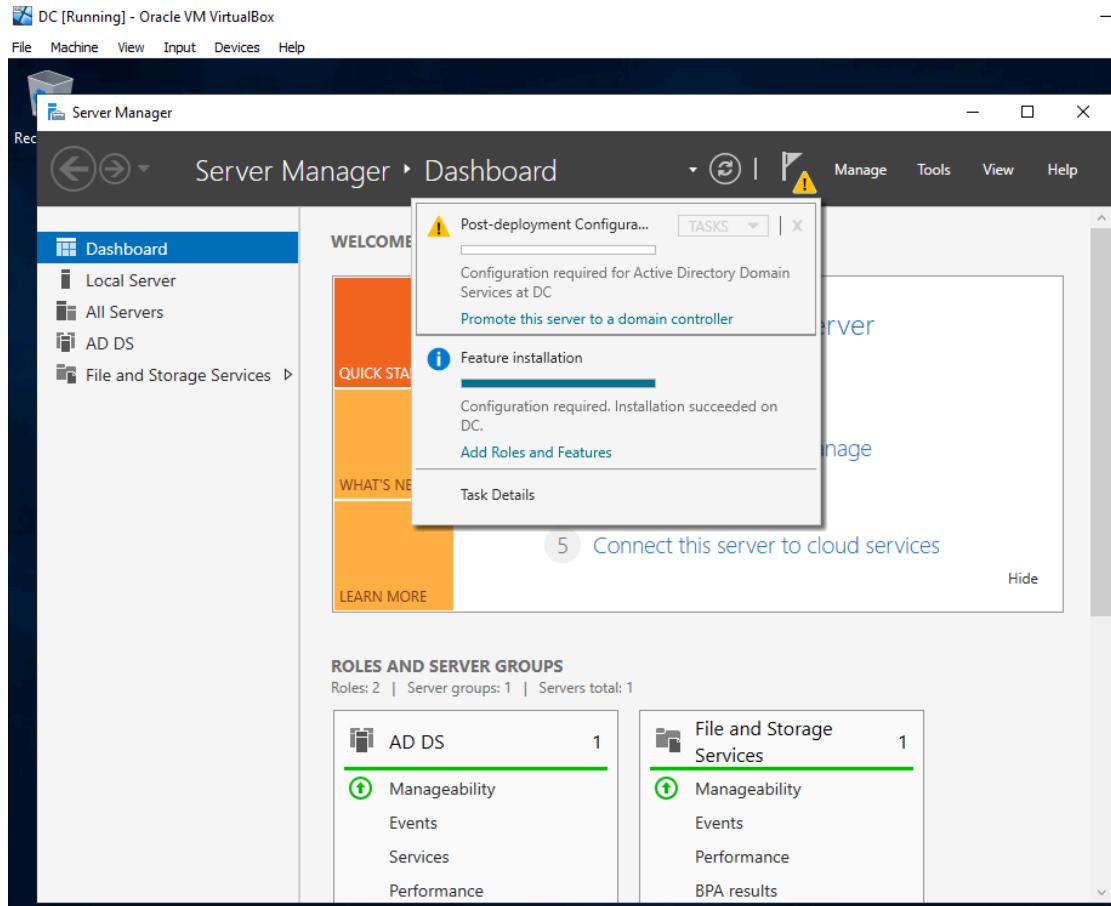
Install.



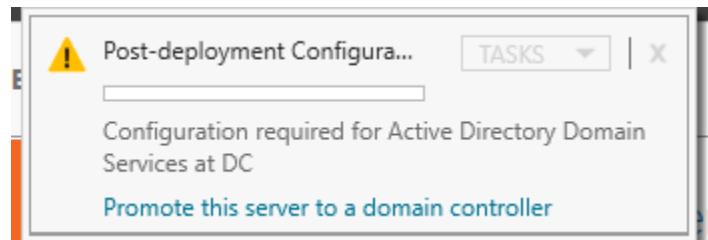
The Roles and Features have now been installed and this can be closed.



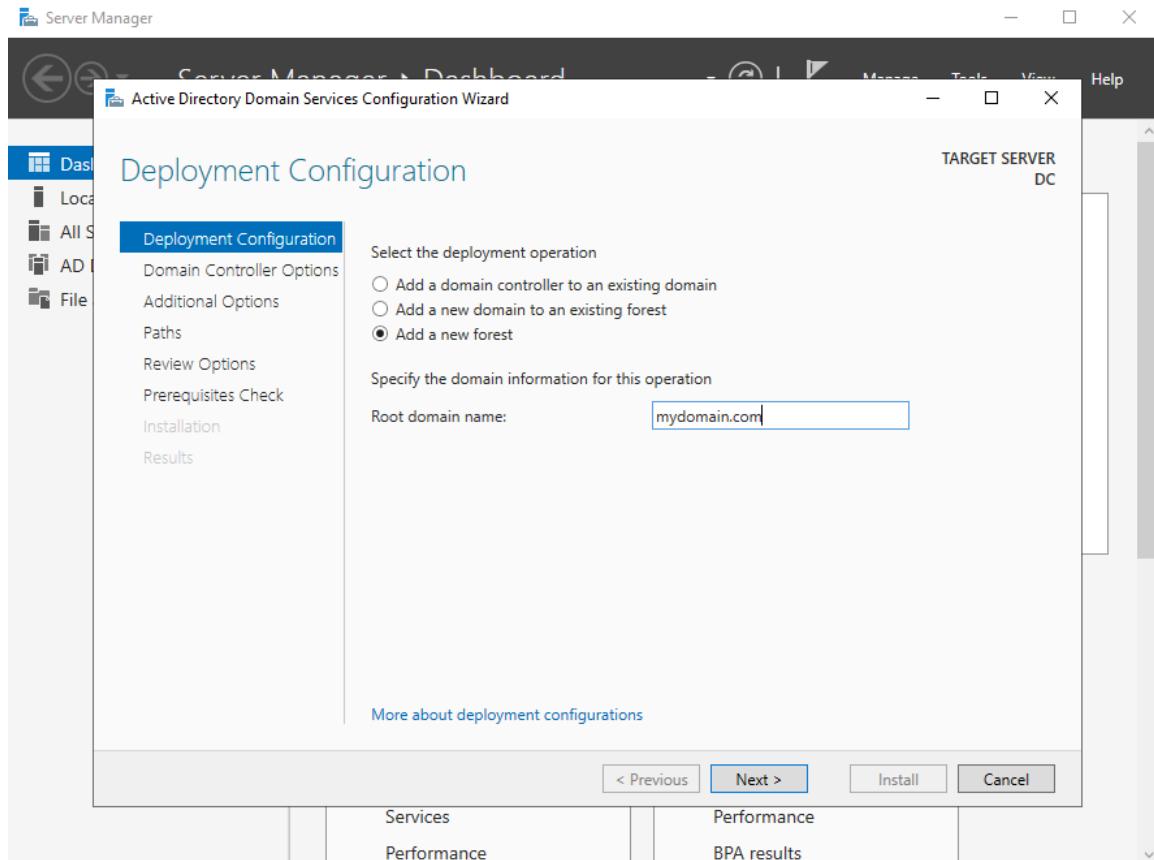
Notice the flag with the yellow sign prompt at the top. We need to complete our post-deployment configuration. While we have installed the software for **Active Directory Domain Services (AD DS)**, we haven't created the domain yet.



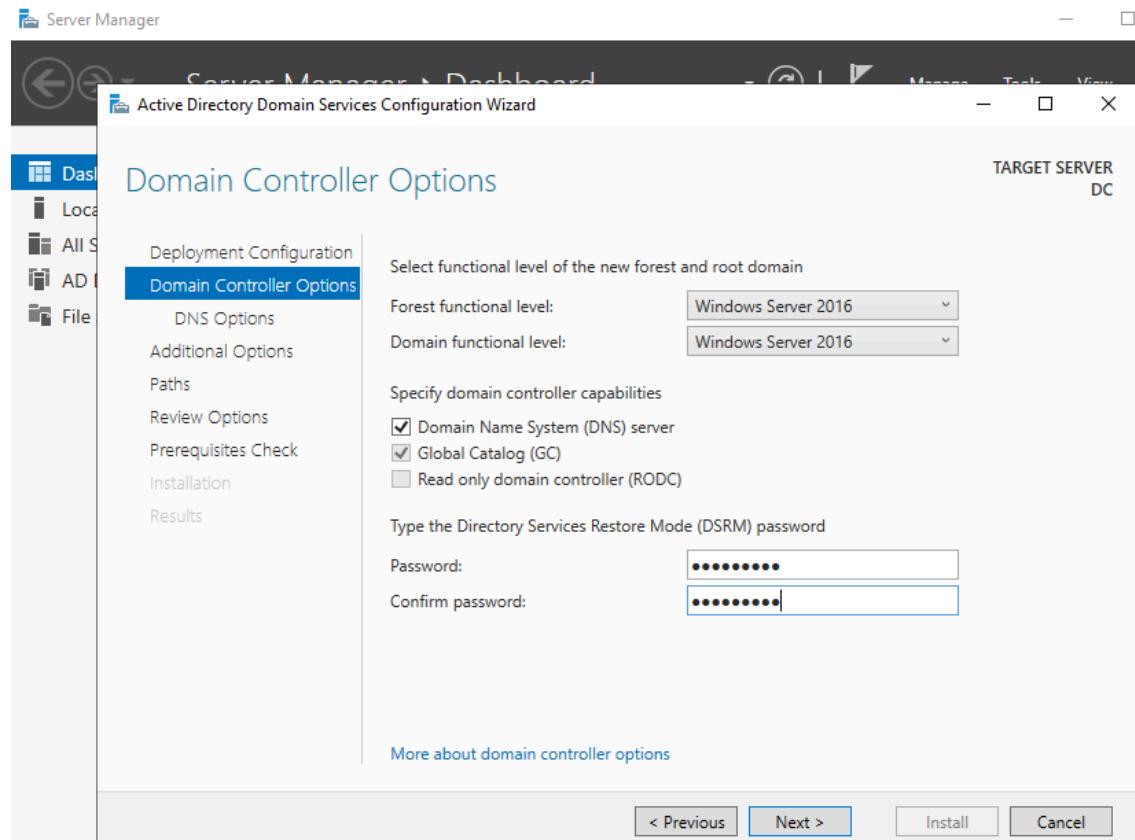
Proceed through to “*Promote this server to a domain controller*”.



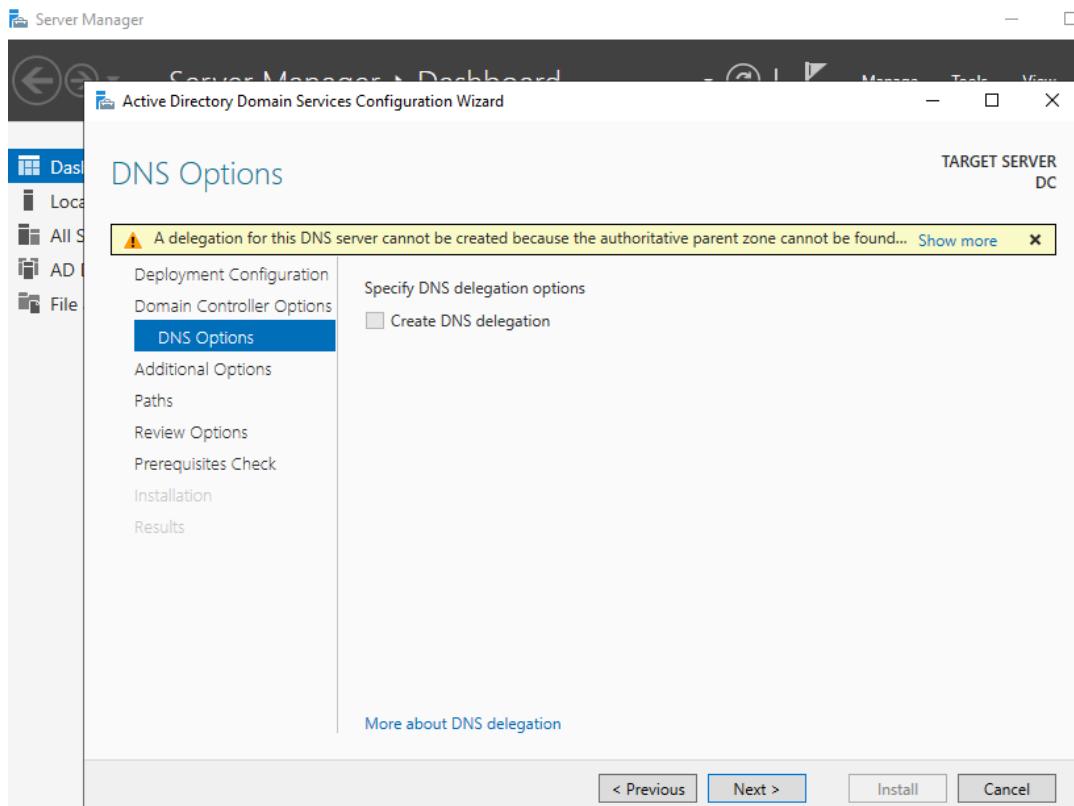
Promote this computer to a domain controller. To do this, “*add a new forest*” and name the domain “*mydomain.com*”, then proceed to the next steps.



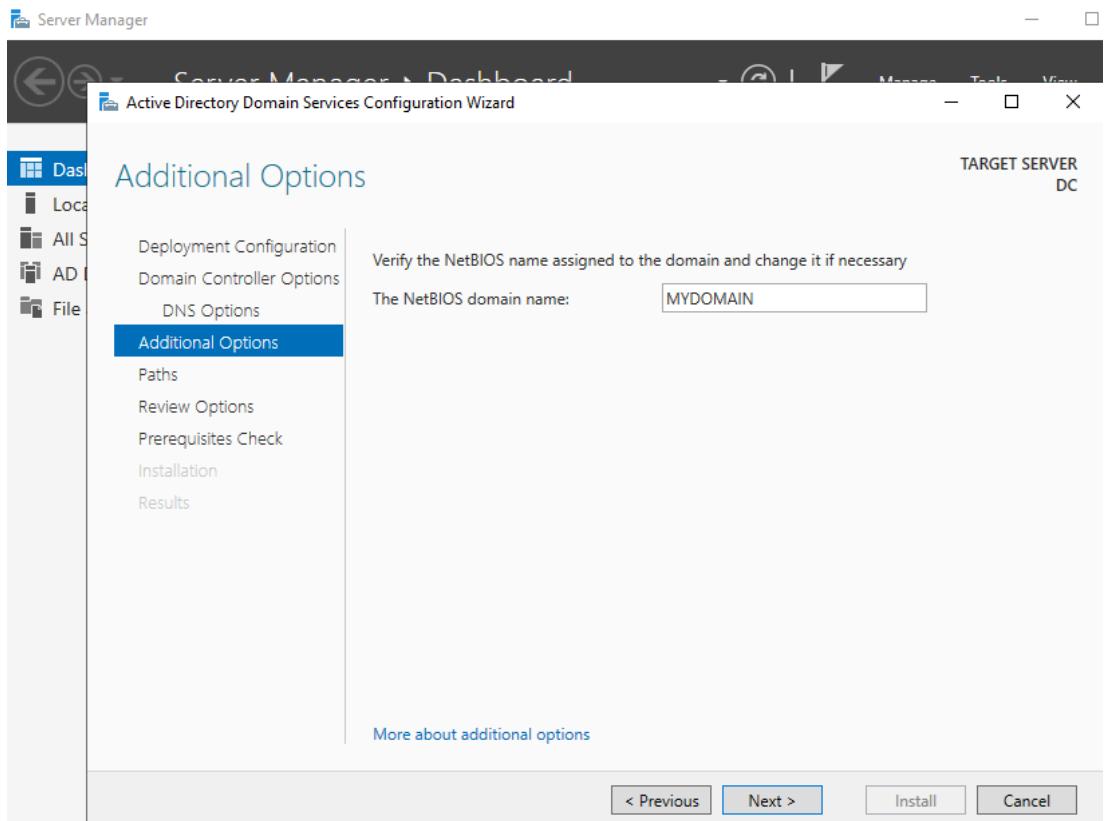
Set a password for the Domain Controller and proceed next.



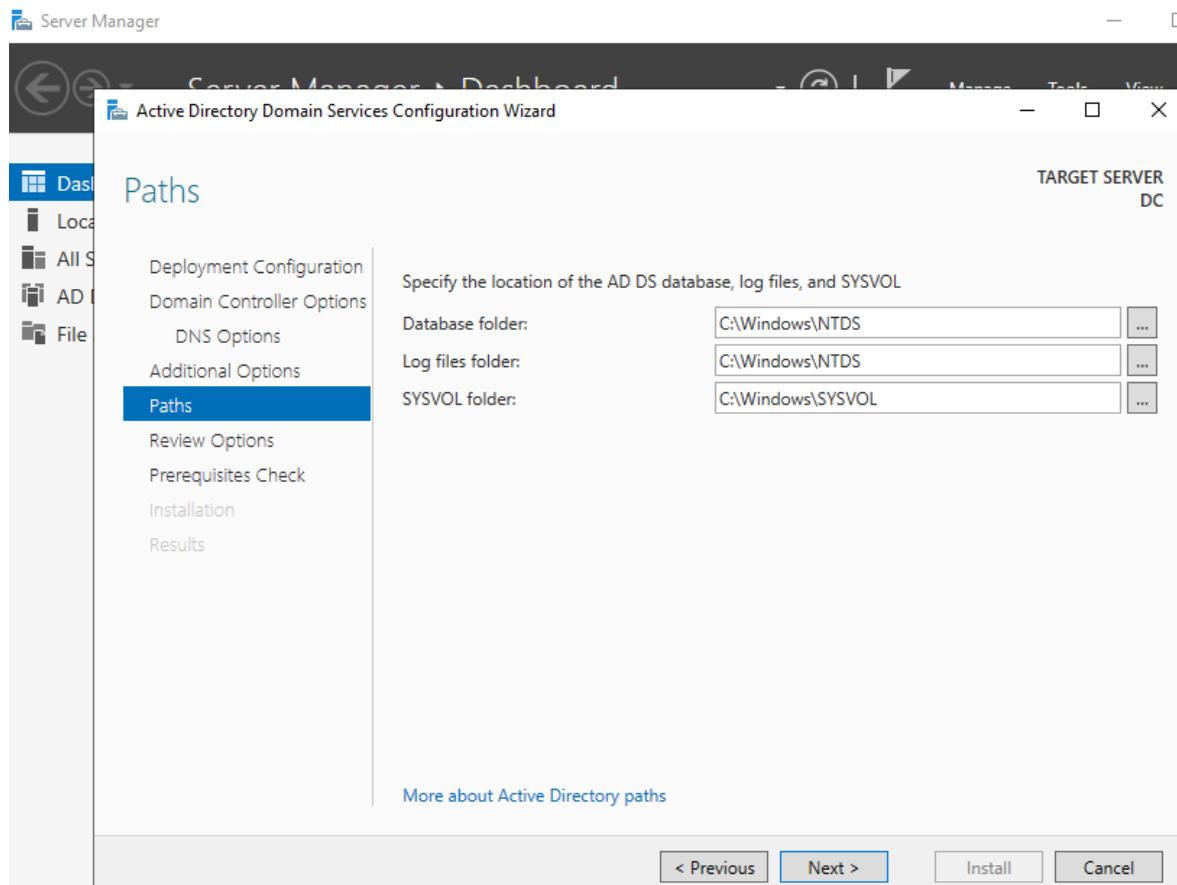
Proceed next.



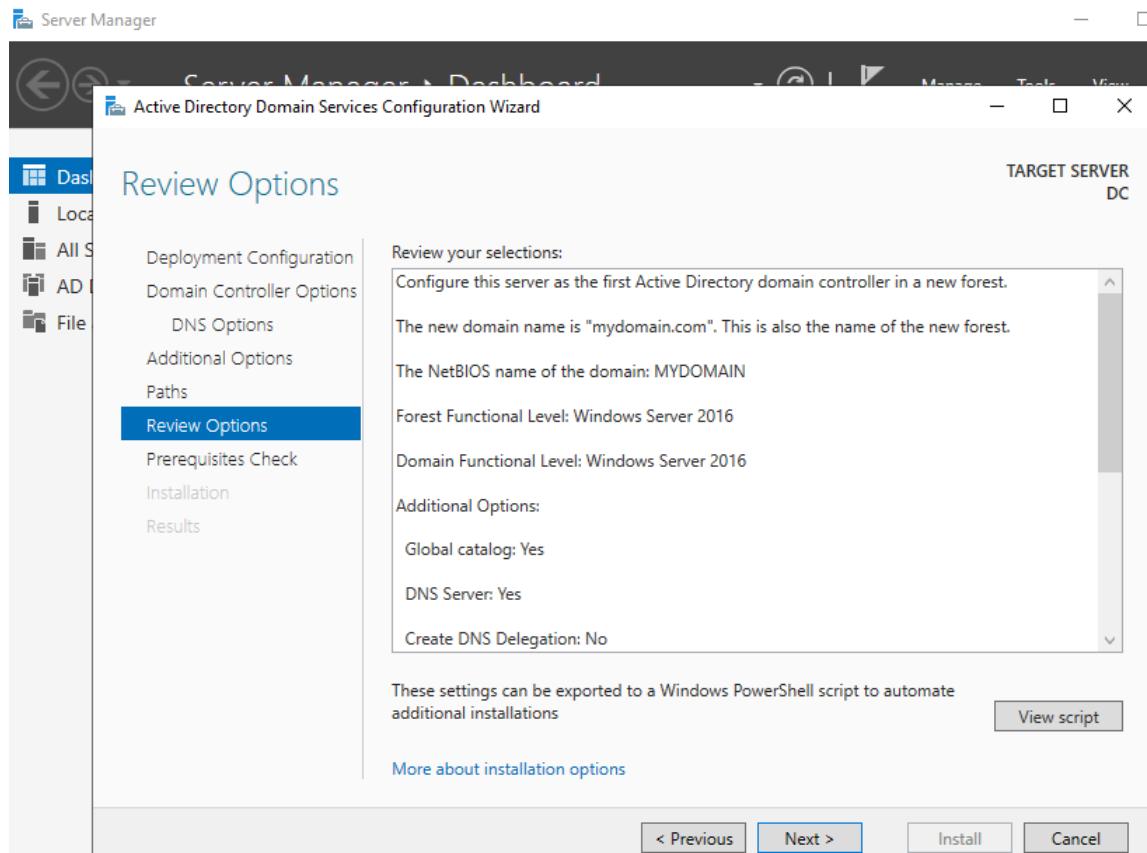
Proceed next.



Proceed next.



Proceed next.



Install.

Server Manager

Active Directory Domain Services Configuration Wizard

Prerequisites Check

TARGET SERVER
DC

All prerequisite checks passed successfully. Click 'Install' to begin installation. [Show more](#)

Deployment Configuration
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer
[Rerun prerequisites check](#)

View results

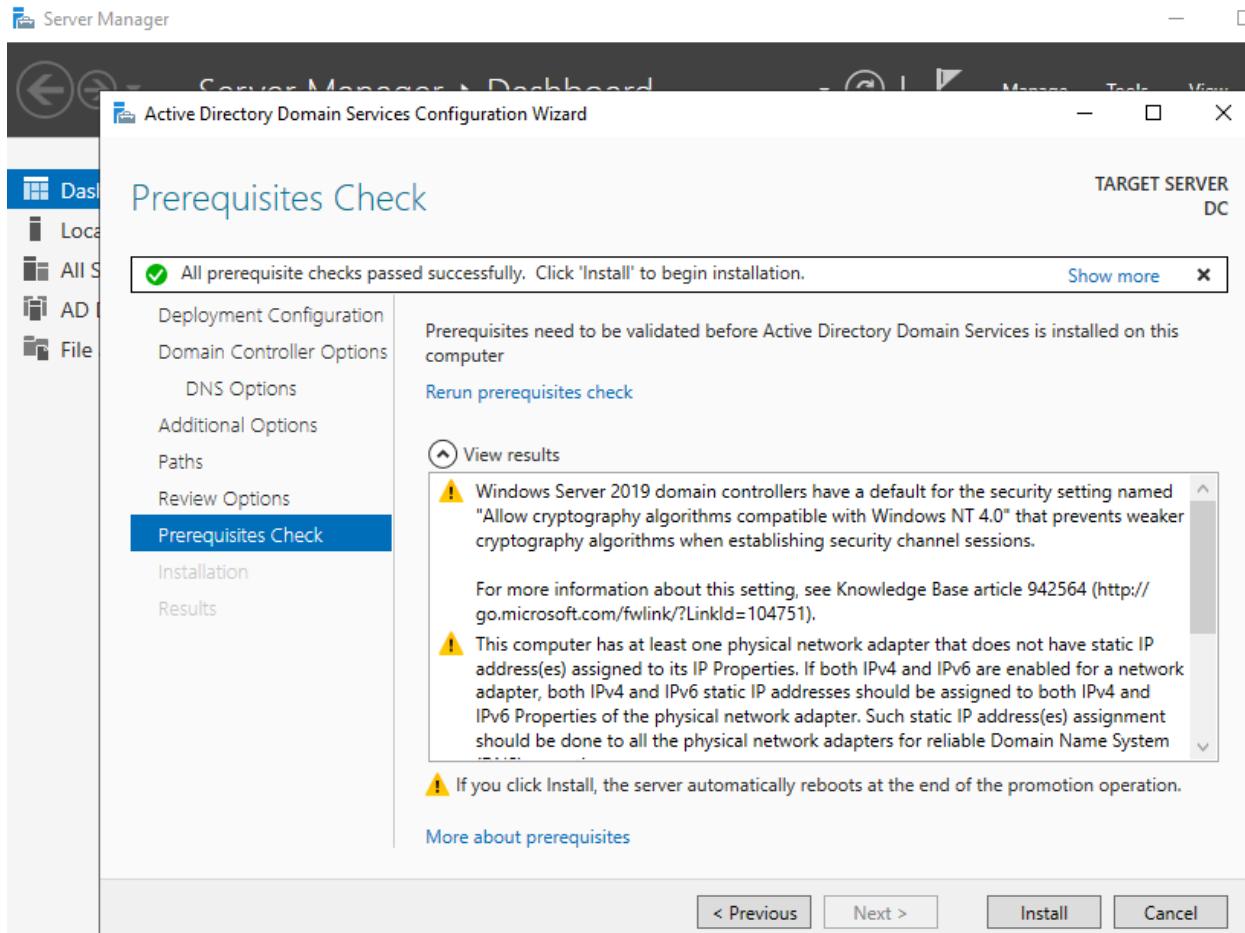
Windows Server 2019 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.
For more information about this setting, see Knowledge Base article 942564 (<http://go.microsoft.com/fwlink/?LinkId=104751>).

This computer has at least one physical network adapter that does not have static IP address(es) assigned to its IP Properties. If both IPv4 and IPv6 are enabled for a network adapter, both IPv4 and IPv6 static IP addresses should be assigned to both IPv4 and IPv6 Properties of the physical network adapter. Such static IP address(es) assignment should be done to all the physical network adapters for reliable Domain Name System

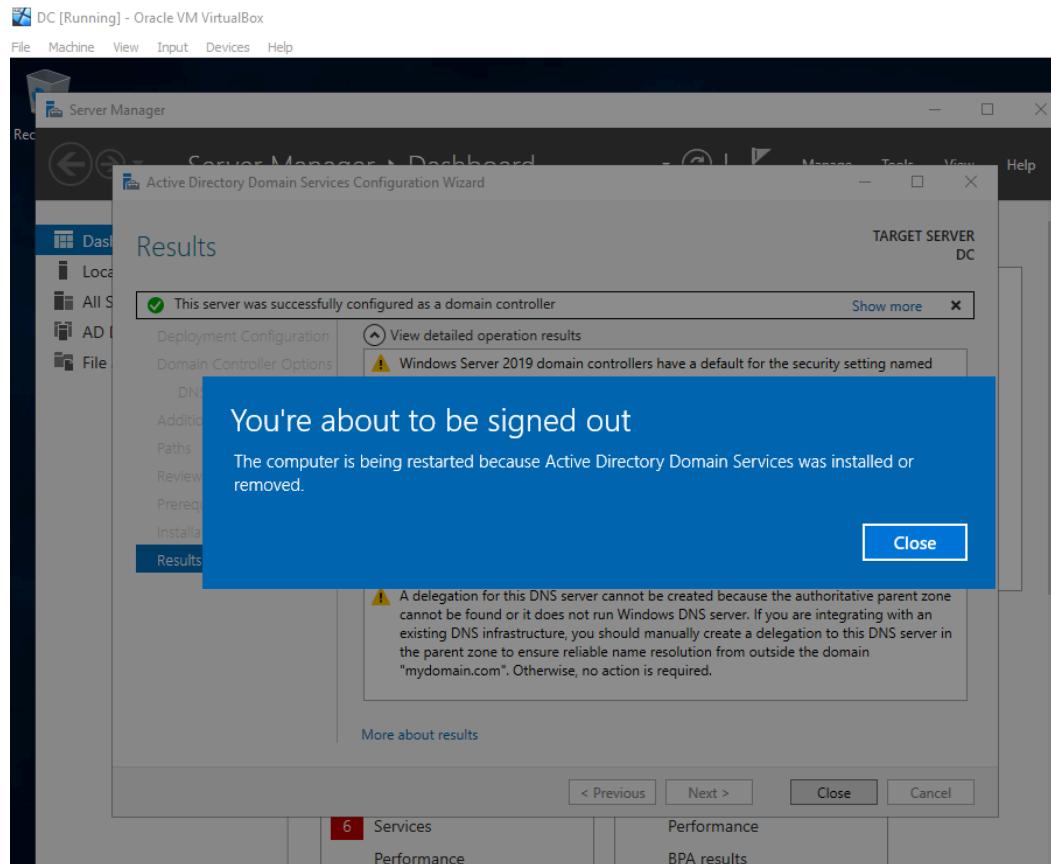
If you click Install, the server automatically reboots at the end of the promotion operation.

[More about prerequisites](#)

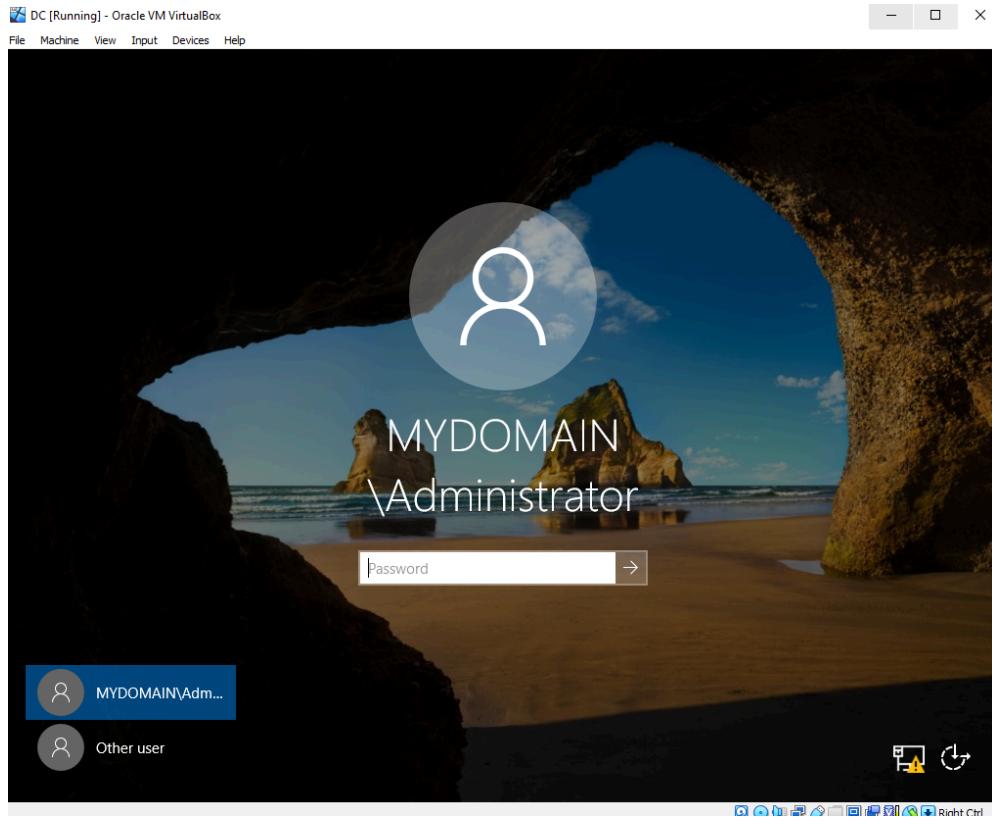
< Previous | Next > | **Install** | Cancel



Installation will force a restart.

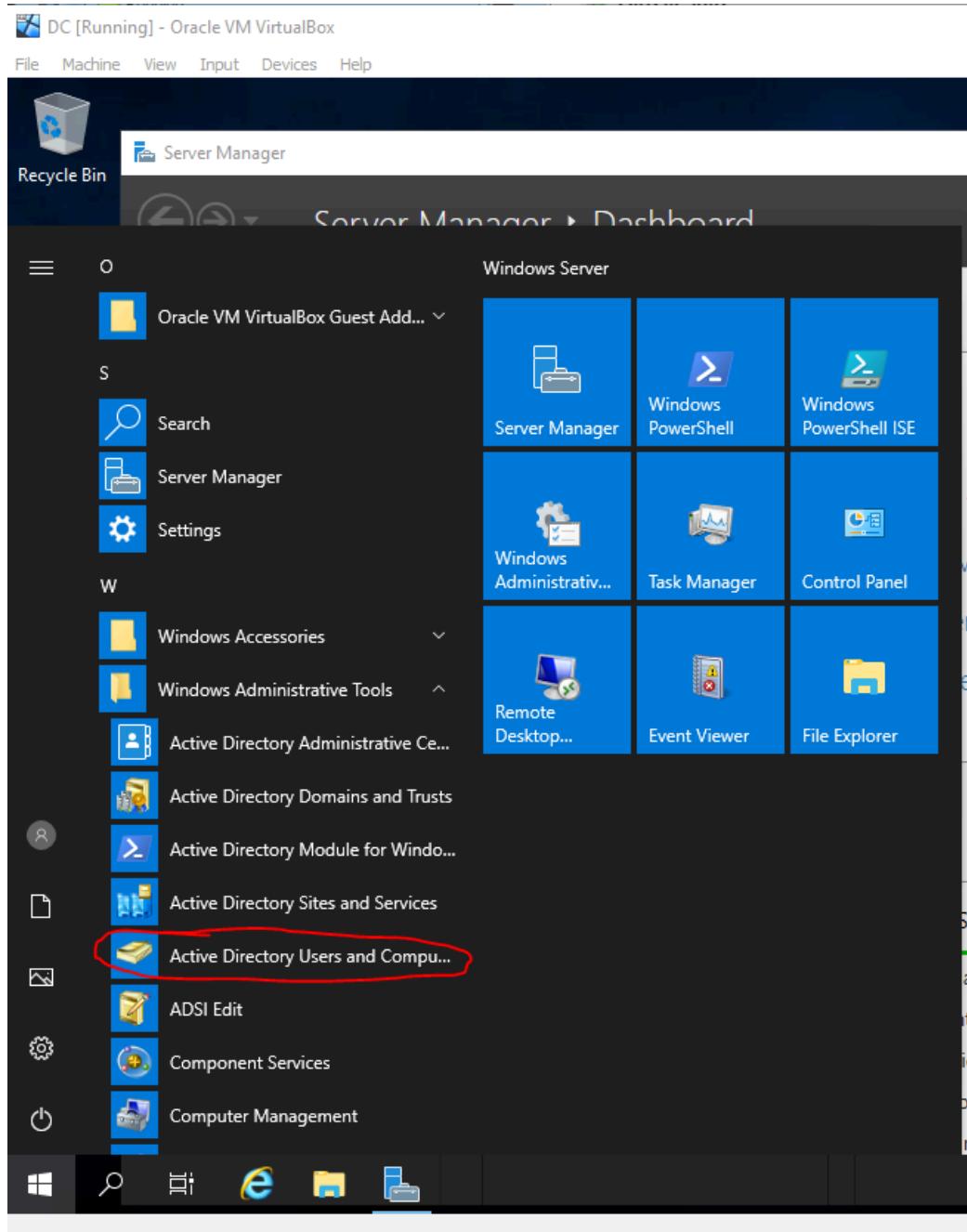


Notice the MYDOMAIN/Administrator login page.

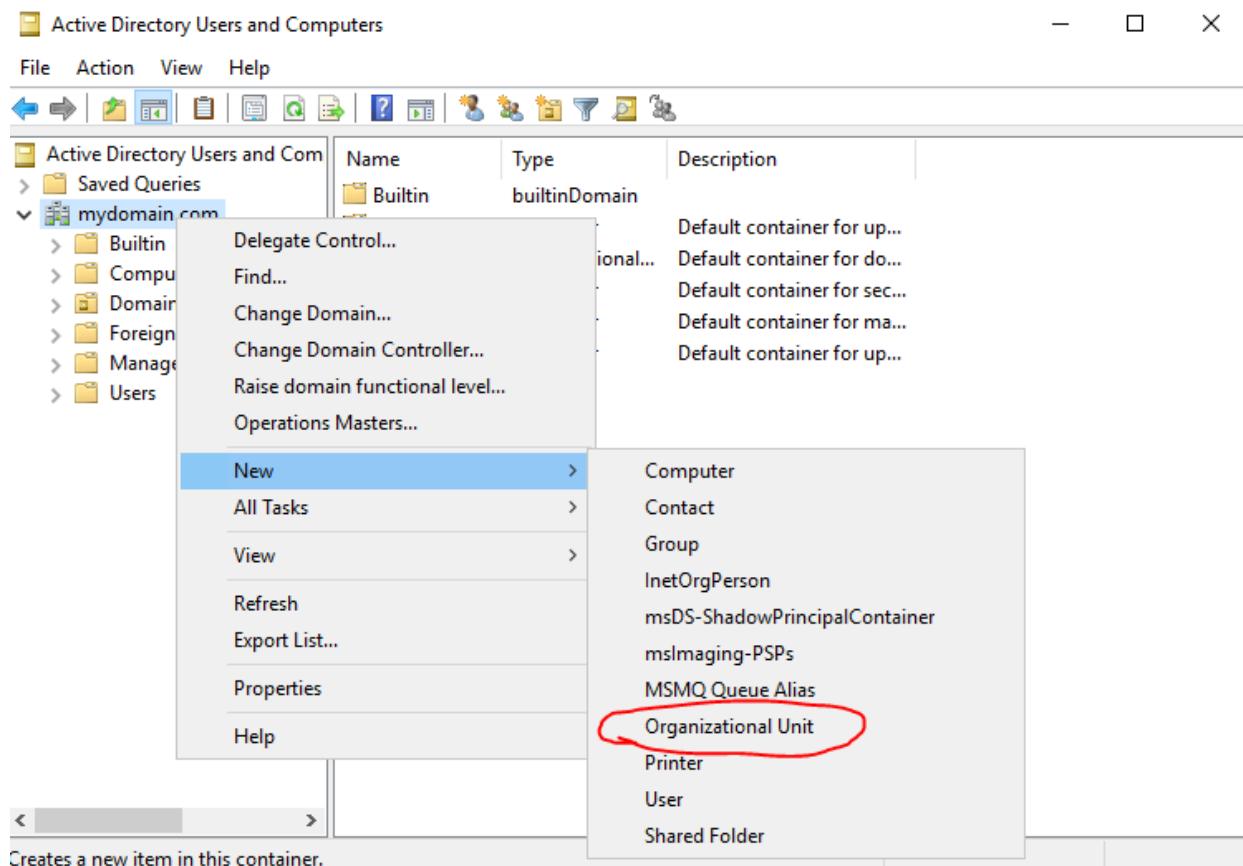


Section 4

Reopen the DC VM to proceed and create a domain Admin account instead of using the built-in admin account. To do this, go to “*Active Directory Users and Computers*”.



After selecting the “*Active Directory Users and Computers*” application, proceed to “*mydomain.com*” and right-click to create a new “*Organisational Unit*”.



Name and Create the folder.

New Object - Organizational Unit

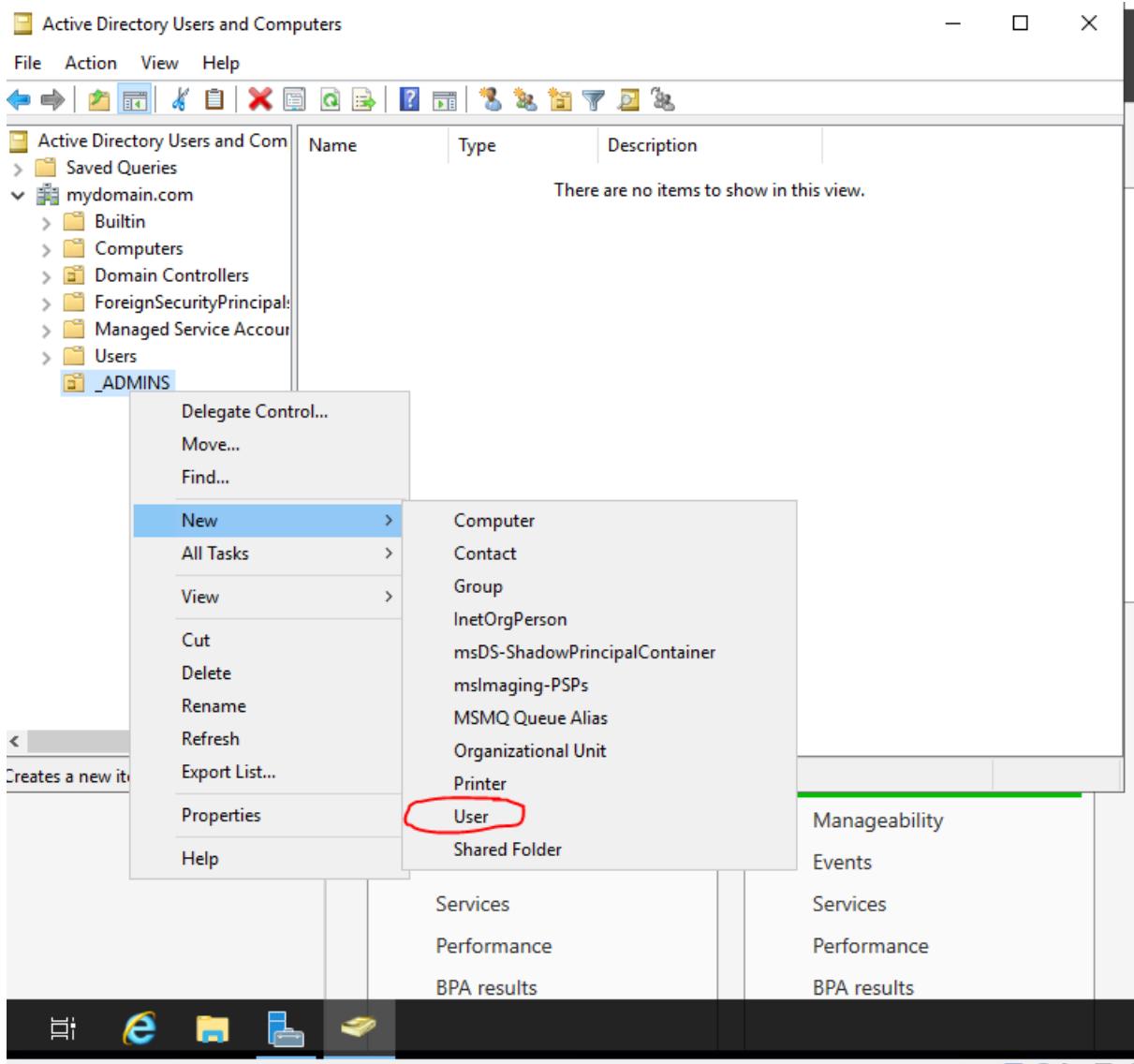
Create in: mydomain.com/

Name:

Protect container from accidental deletion

OK Cancel Help

Create a "User" as shown below.



Creating the new Admin account.

New Object - User X

Create in: mydomain.com/_ADMINS

First name: Peter Initials:
Last name: Q
Full name: Peter Q

User logon name:
 @mydomain.com

User logon name (pre-Windows 2000):
MYDOMAIN\

< Back Next > Cancel

Set the password for the newly created Admin account and proceed to “Next”.

New Object - User X

Create in: mydomain.com/_ADMINS

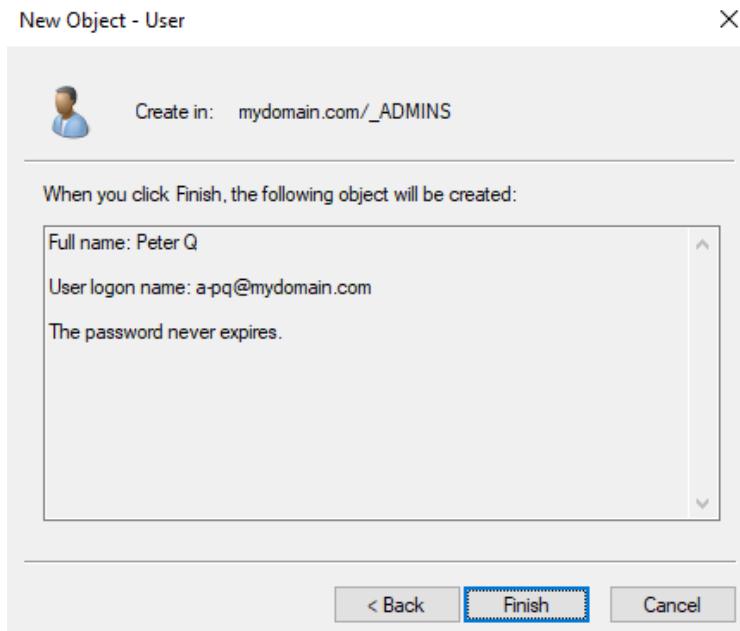
Password:

Confirm password:

User must change password at next logon
 User cannot change password
 Password never expires
 Account is disabled

< Back Next > Cancel

Complete by “Finish”.



Account should now show on the folder as a “User”.

Active Directory Users and Computers

File Action View Help

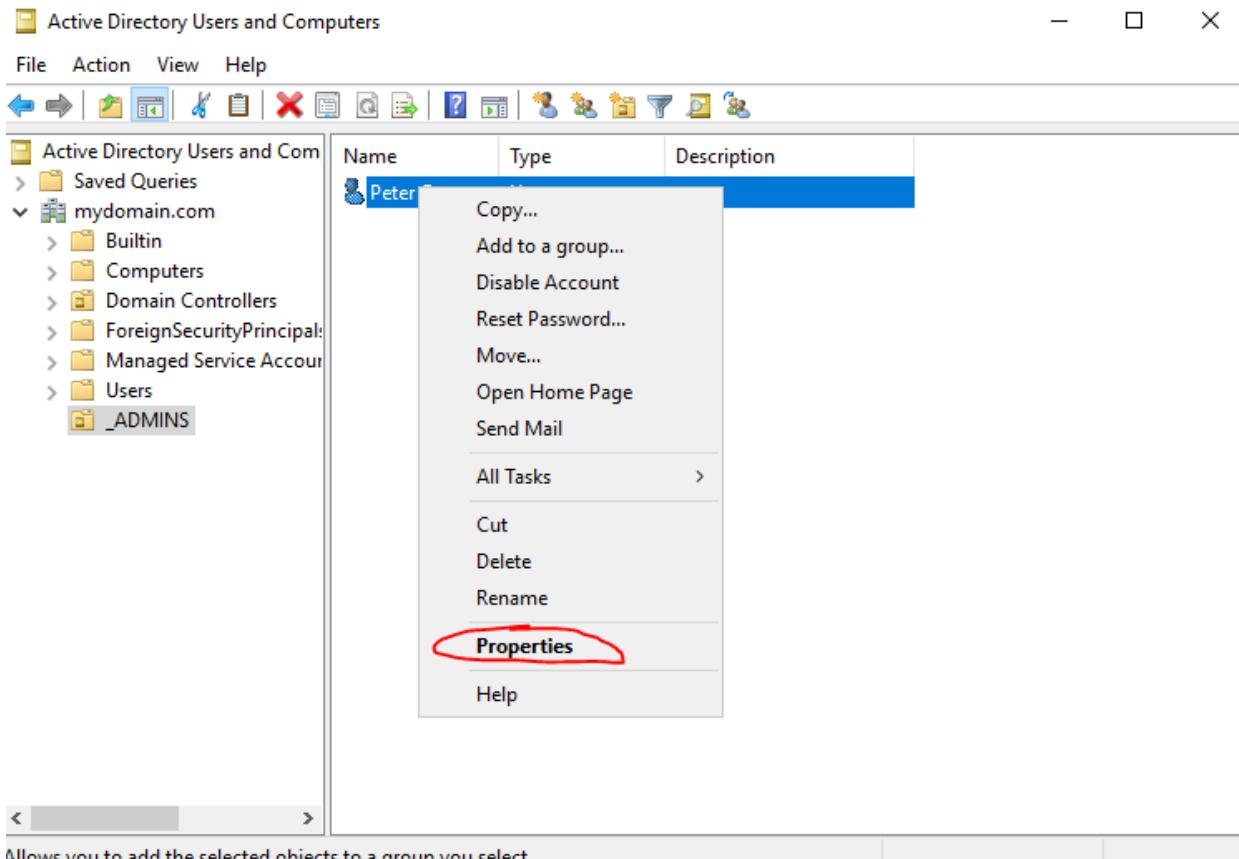
Back Forward Find Save Print Help User Group Filter

Name	Type	Description
Peter Q	User	

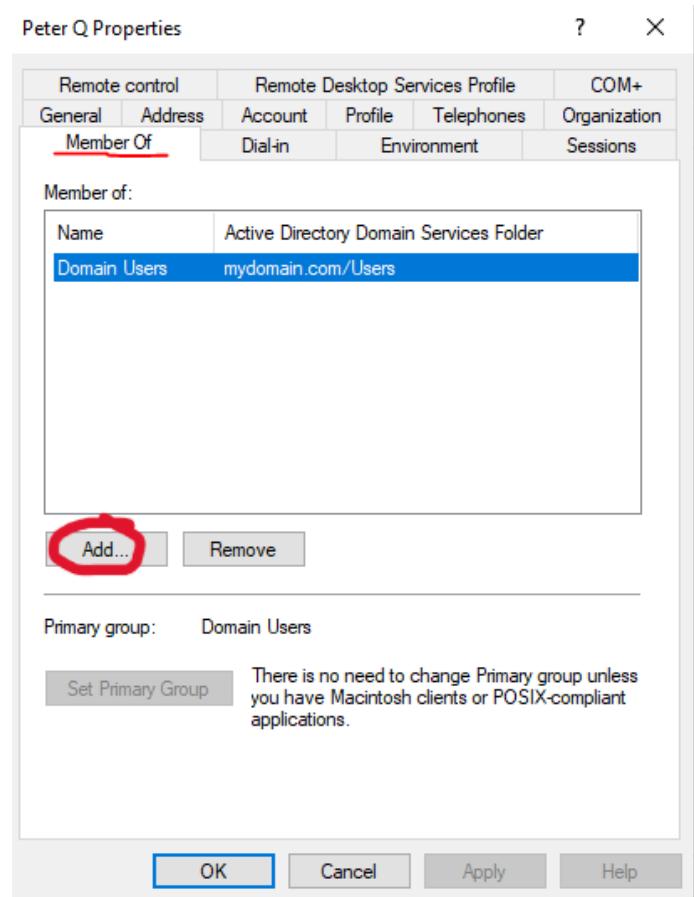
Active Directory Users and Com
> Saved Queries
mydomain.com
> Builtin
> Computers
> Domain Controllers
> ForeignSecurityPrincipal
> Managed Service Account
> Users
 ADMINS

This screenshot shows the 'Active Directory Users and Computers' window. The left pane shows a tree view of the directory structure under 'mydomain.com', including 'BuiltIn', 'Computers', 'Domain Controllers', 'ForeignSecurityPrincipal', 'Managed Service Account', 'Users', and the selected 'ADMINS' group. The right pane displays a table with one row for the user 'Peter Q', which is highlighted. The table has columns for 'Name', 'Type', and 'Description'. The 'Type' column shows 'User'.

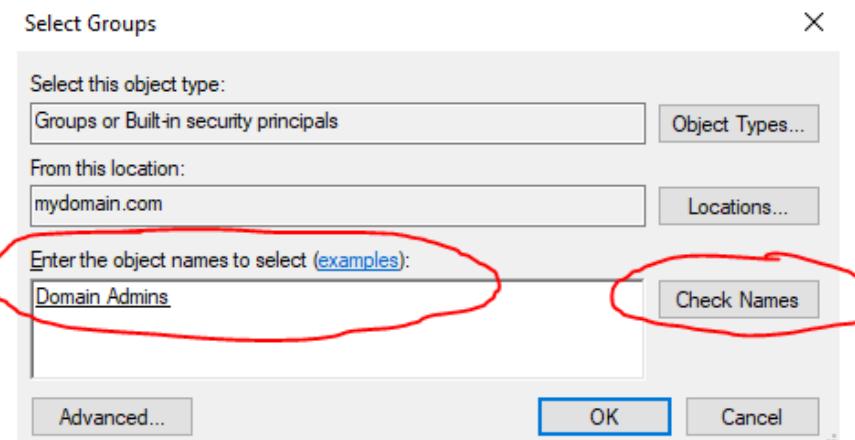
Proceed to the properties of the newly created user and change the account type to an administrator.



Proceed into “Member Of” and “Add”.



Enter “*Domain admins*” into the object names field and “*Check Names*”.



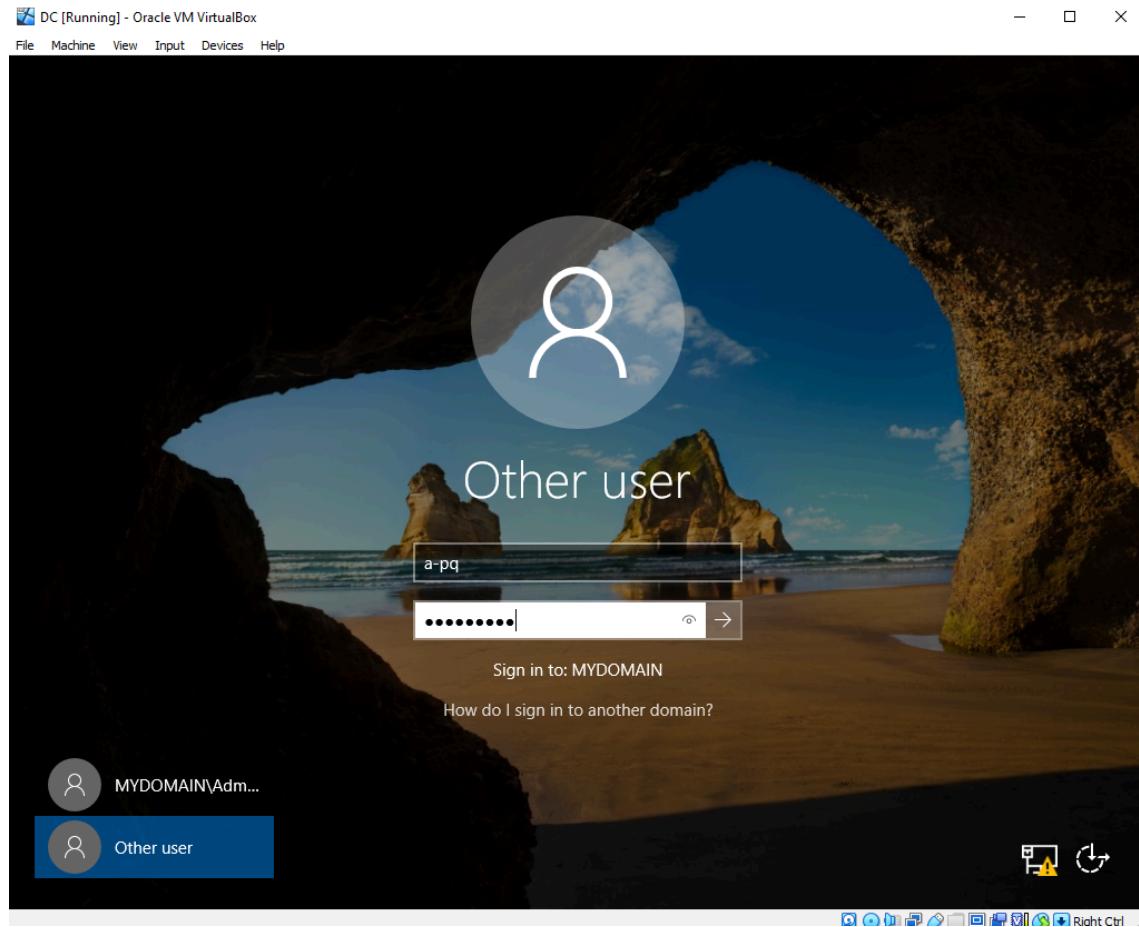
“*Apply*” and then “*OK*”.

Peter Q Properties

? X

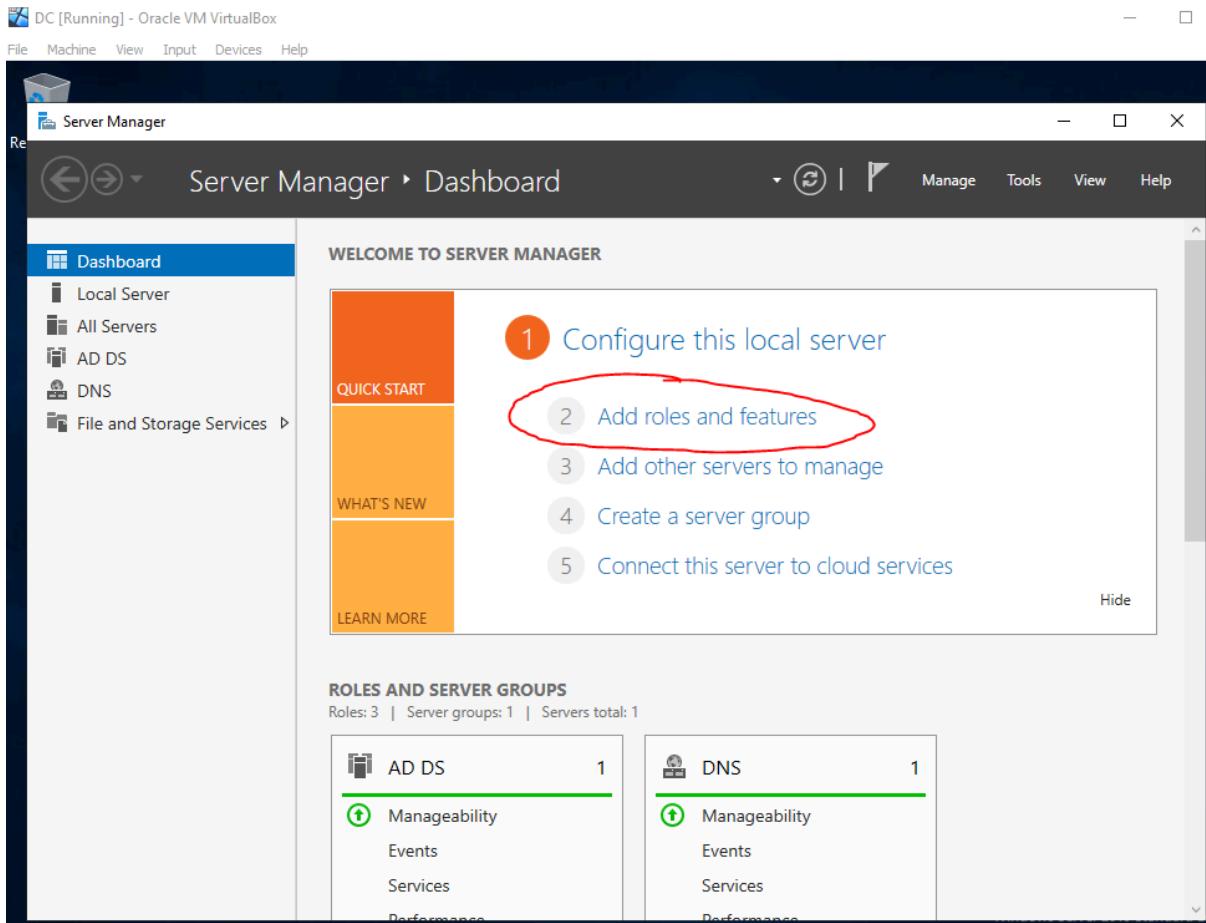
Remote control	Remote Desktop Services Profile			COM+	
General	Address	Account	Profile	Telephones	Organization
Member Of	Dial-in	Environment		Sessions	
Member of:					
Name	Active Directory Domain Services Folder				
Domain Admins	mydomain.com/Users				
Domain Users	mydomain.com/Users				
Add... Remove					
Primary group: Domain Users					
Set Primary Group		There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.			
OK Cancel Apply Help					

Login as the new domain Admin account.



Section 5

To add **Remote Access Service (RAS)** with **Network Address Translation (NAT)**, go back to Server Manager and select "*Add Roles and Features*".



"Next"

Before you begin

DESTINATION SERVER
DC.mydomain.com

Before You Begin

- Installation Type
- Server Selection
- Server Roles
- Features
- Confirmation
- Results

This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.

To remove roles, role services, or features:
[Start the Remove Roles and Features Wizard](#)

Before you continue, verify that the following tasks have been completed:

- The Administrator account has a strong password
- Network settings, such as static IP addresses, are configured
- The most current security updates from Windows Update are installed

If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.

To continue, click Next.

Skip this page by default

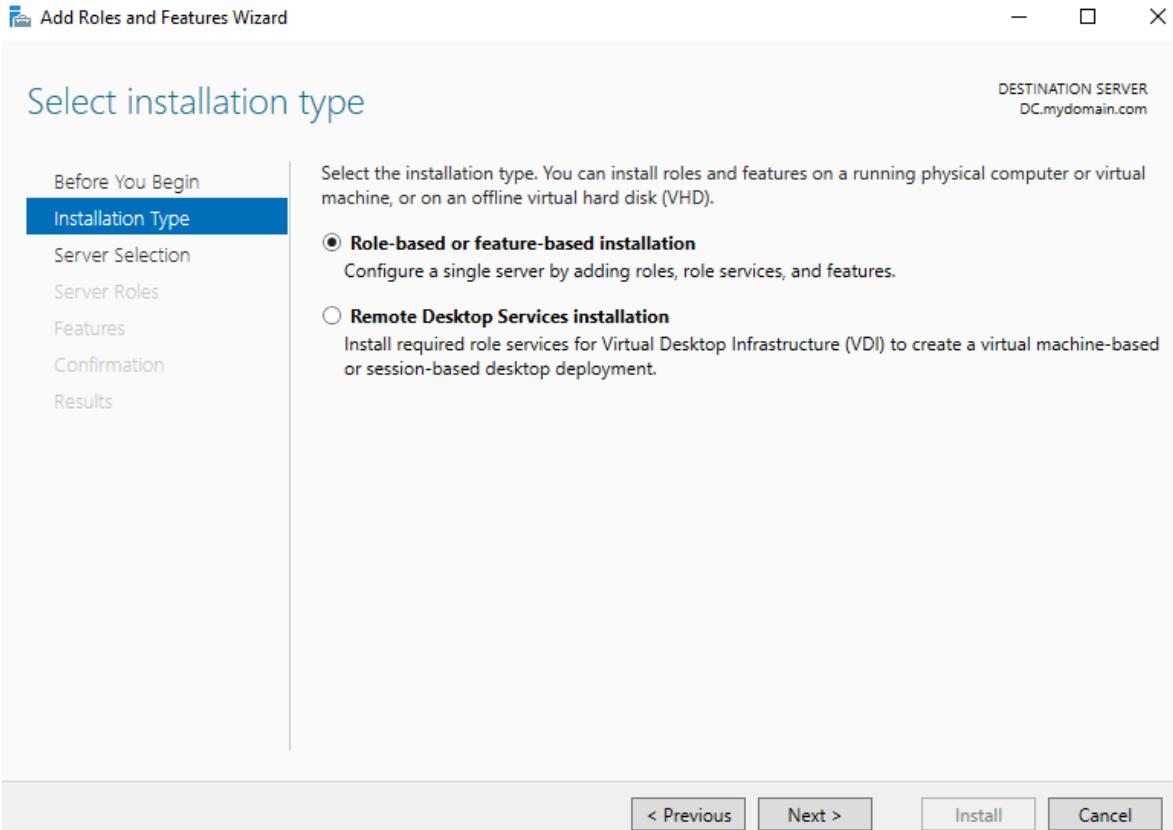
< Previous

Next >

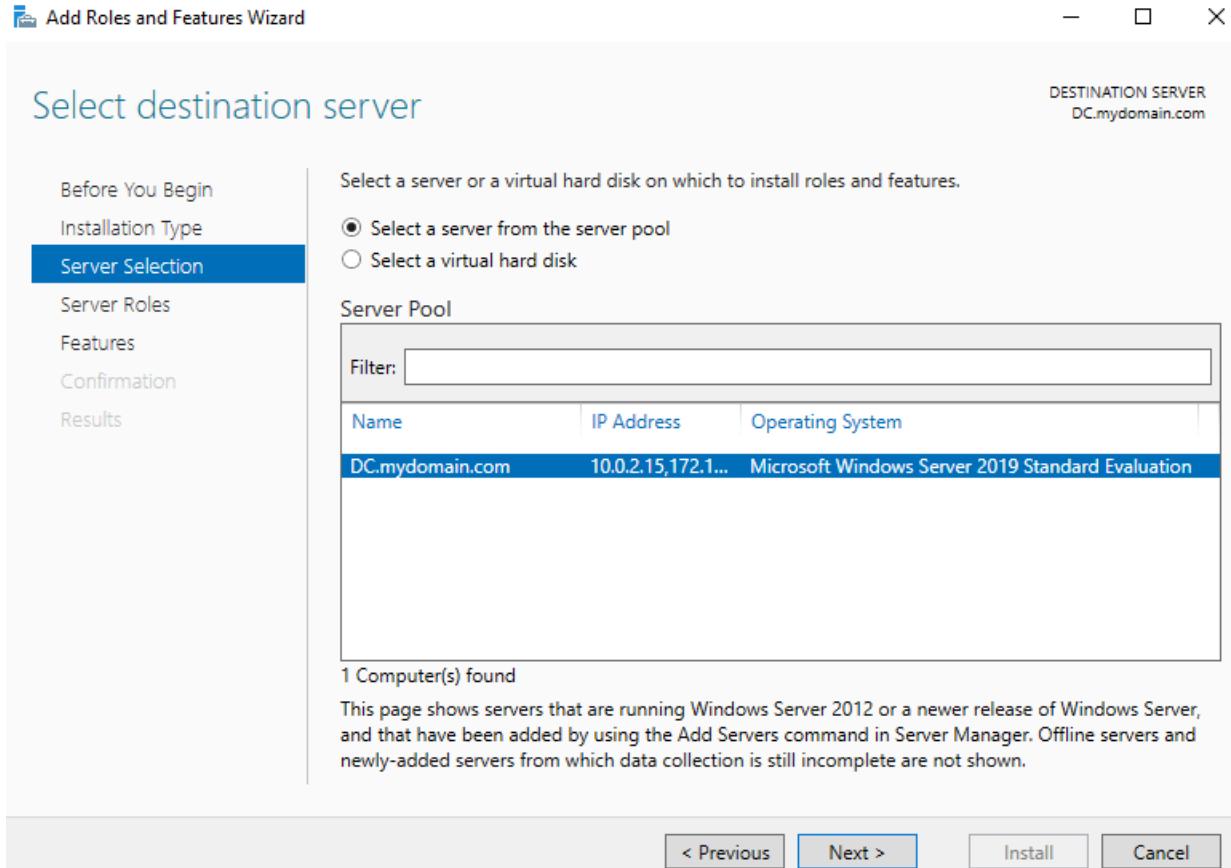
Install

Cancel

“*Next*”



Select the “DC.mydomain.com” server and “Next”.



Select “Remote Access” and “Next”.

Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
DC.mydomain.com

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Remote Access
Role Services
Confirmation
Results

Select one or more roles to install on the selected server.

Roles	Description
<input type="checkbox"/> Active Directory Certificate Services	Remote Access provides seamless connectivity through DirectAccess, VPN, and Web Application Proxy. DirectAccess provides an Always On and Always Managed experience.
<input checked="" type="checkbox"/> Active Directory Domain Services (Installed)	RAS provides traditional VPN services, including site-to-site (branch-office or cloud-based) connectivity. Web Application Proxy enables the publishing of selected HTTP- and HTTPS-based applications from your corporate network to client devices outside of the corporate network. Routing provides traditional routing capabilities, including NAT and other connectivity options. RAS and Routing can be deployed in single-tenant or multi-tenant mode.
<input type="checkbox"/> Active Directory Federation Services	
<input type="checkbox"/> Active Directory Lightweight Directory Services	
<input type="checkbox"/> Active Directory Rights Management Services	
<input type="checkbox"/> Device Health Attestation	
<input type="checkbox"/> DHCP Server	
<input checked="" type="checkbox"/> DNS Server (Installed)	
<input type="checkbox"/> Fax Server	
<input checked="" type="checkbox"/> File and Storage Services (2 of 12 installed)	
<input type="checkbox"/> Host Guardian Service	
<input type="checkbox"/> Hyper-V	
<input type="checkbox"/> Network Policy and Access Services	
<input type="checkbox"/> Print and Document Services	
<input checked="" type="checkbox"/> Remote Access	
<input type="checkbox"/> Remote Desktop Services	
<input type="checkbox"/> Volume Activation Services	
<input type="checkbox"/> Web Server (IIS)	
<input type="checkbox"/> Windows Deployment Services	
<input type="checkbox"/> Windows Server Update Services	

< Previous Next > Install Cancel

“Next”

Select features

DESTINATION SERVER
DC.mydomain.com

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Remote Access

Role Services

Confirmation

Results

Select one or more features to install on the selected server.

Features

- ▷ .NET Framework 3.5 Features
- ▷ .NET Framework 4.7 Features (2 of 7 installed)
- ▷ Background Intelligent Transfer Service (BITS)
- BitLocker Drive Encryption
- BitLocker Network Unlock
- BranchCache
- Client for NFS
- Containers
- Data Center Bridging
- Direct Play
- Enhanced Storage
- Failover Clustering
- Group Policy Management (Installed)
- Host Guardian Hyper-V Support
- I/O Quality of Service
- IIS Hostable Web Core
- Internet Printing Client
- IP Address Management (IPAM) Server
- iSNS Server service

Description

.NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.

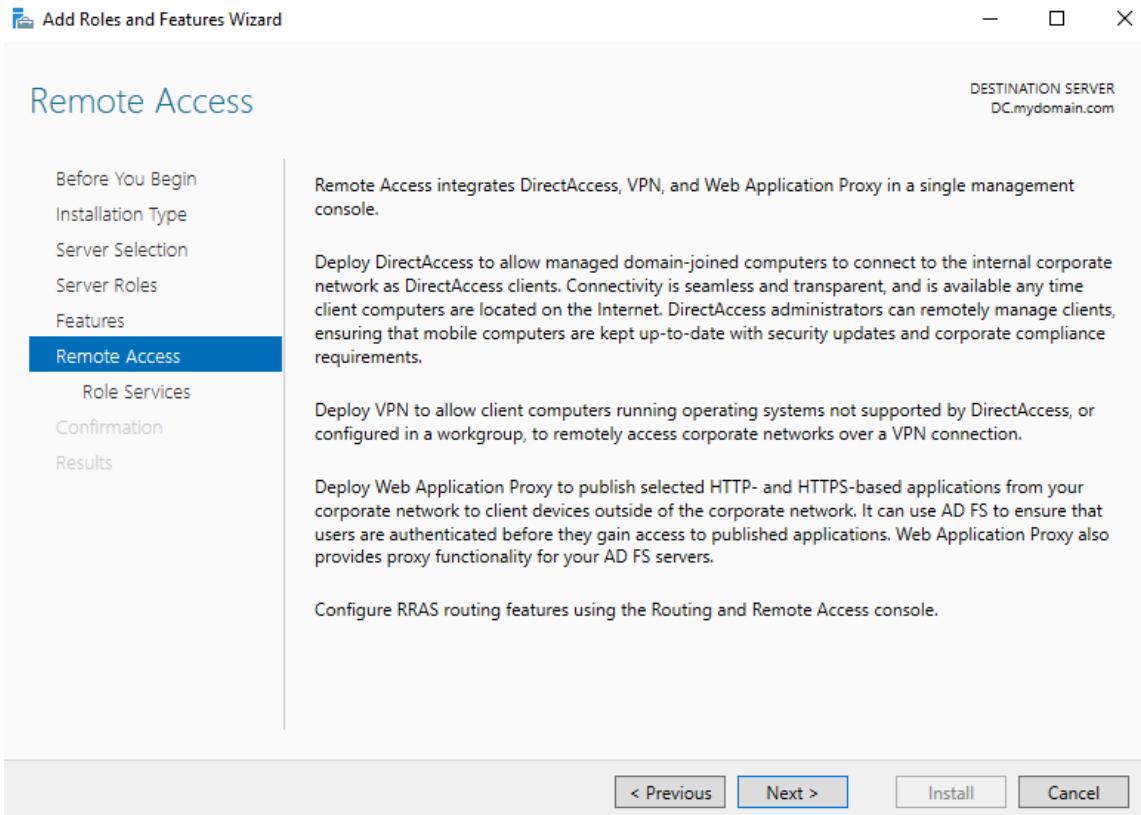
< Previous

Next >

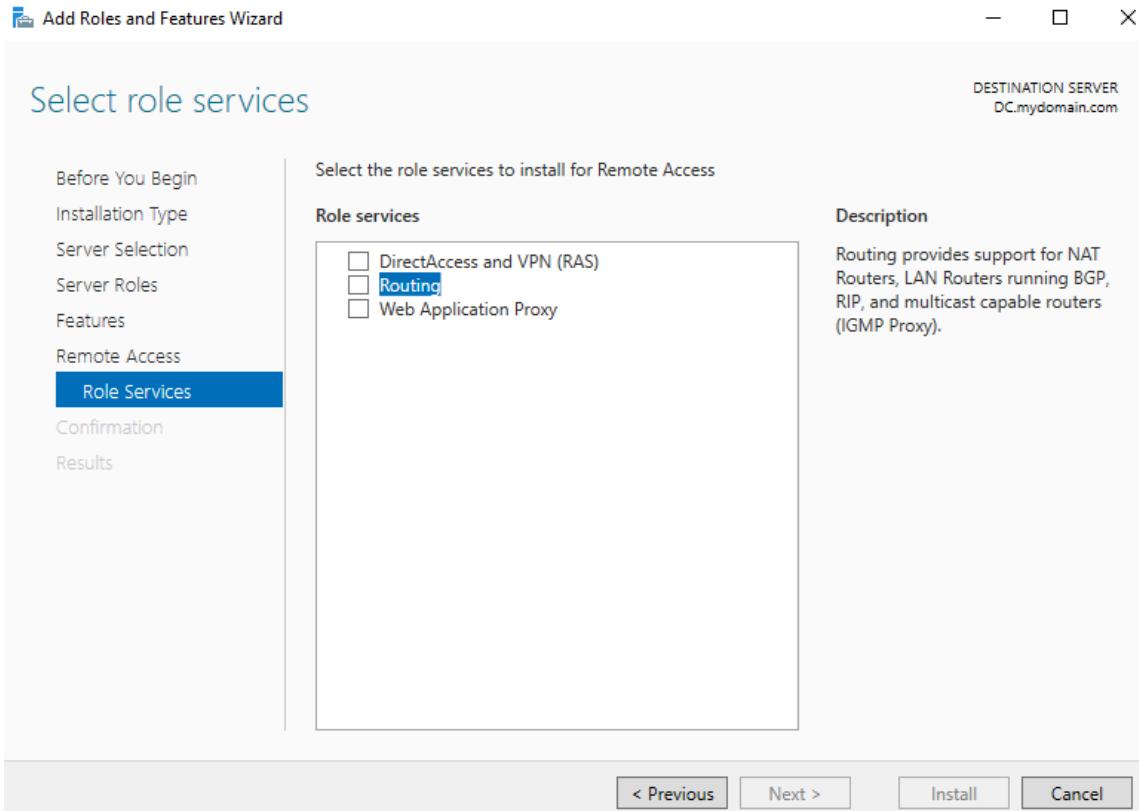
Install

Cancel

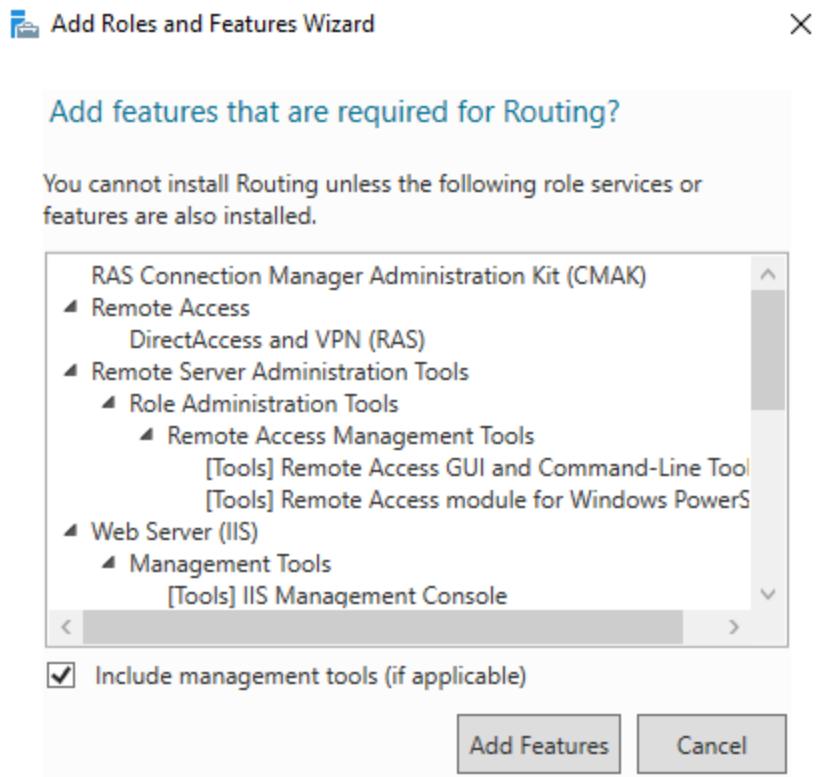
“Next”



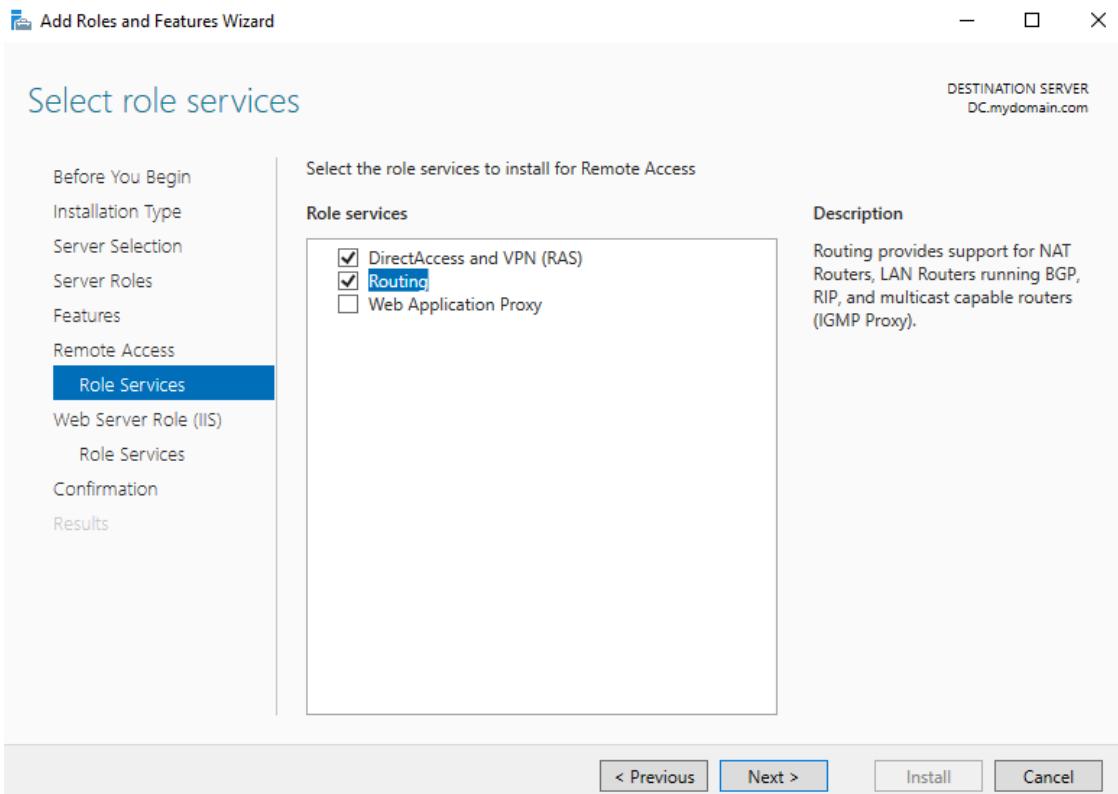
Select “*Routing*”



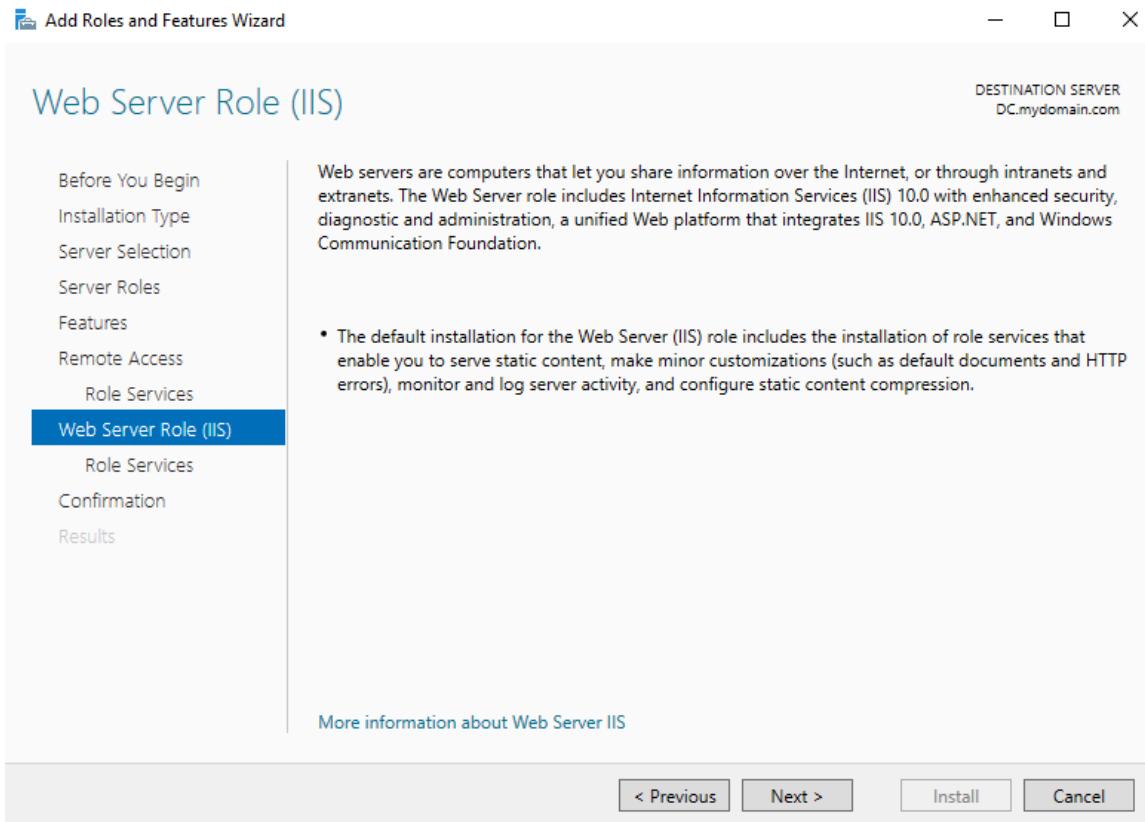
Routing - “Add Features”.



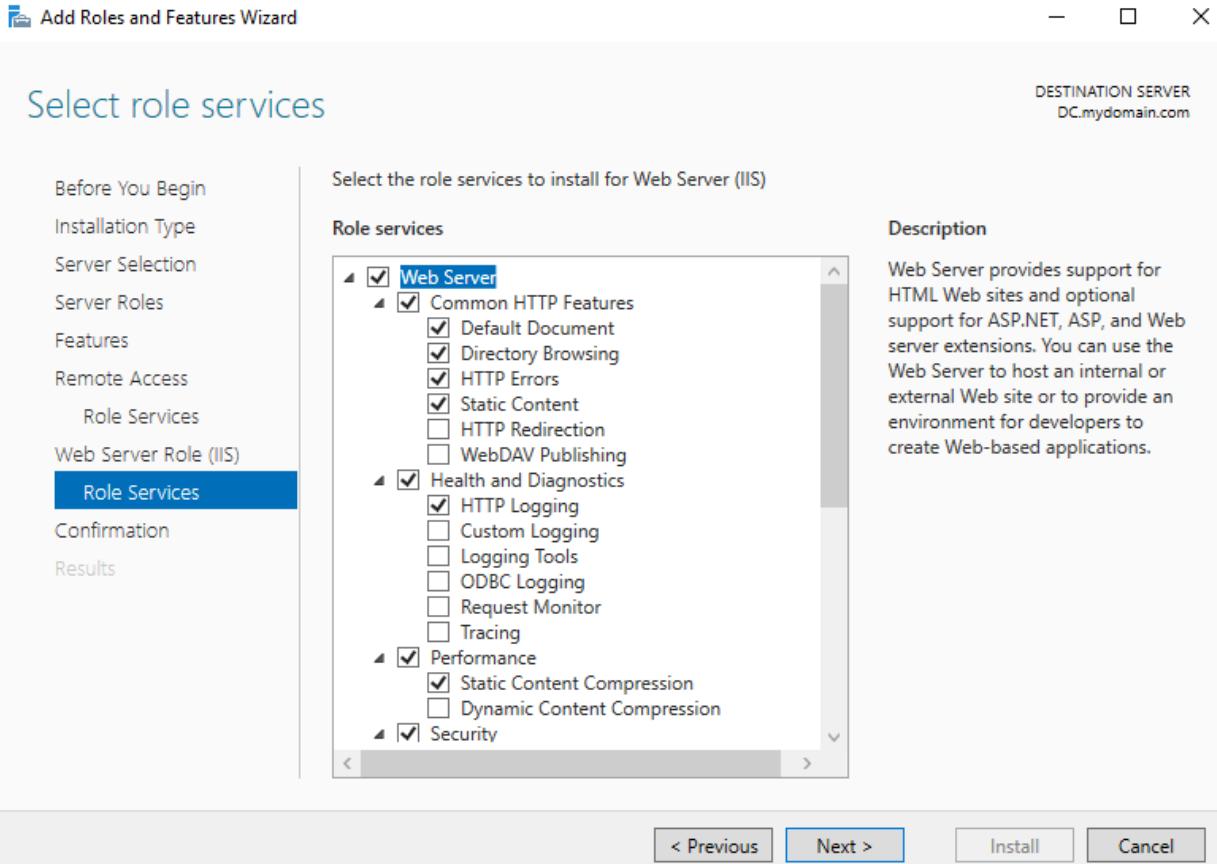
"Next"



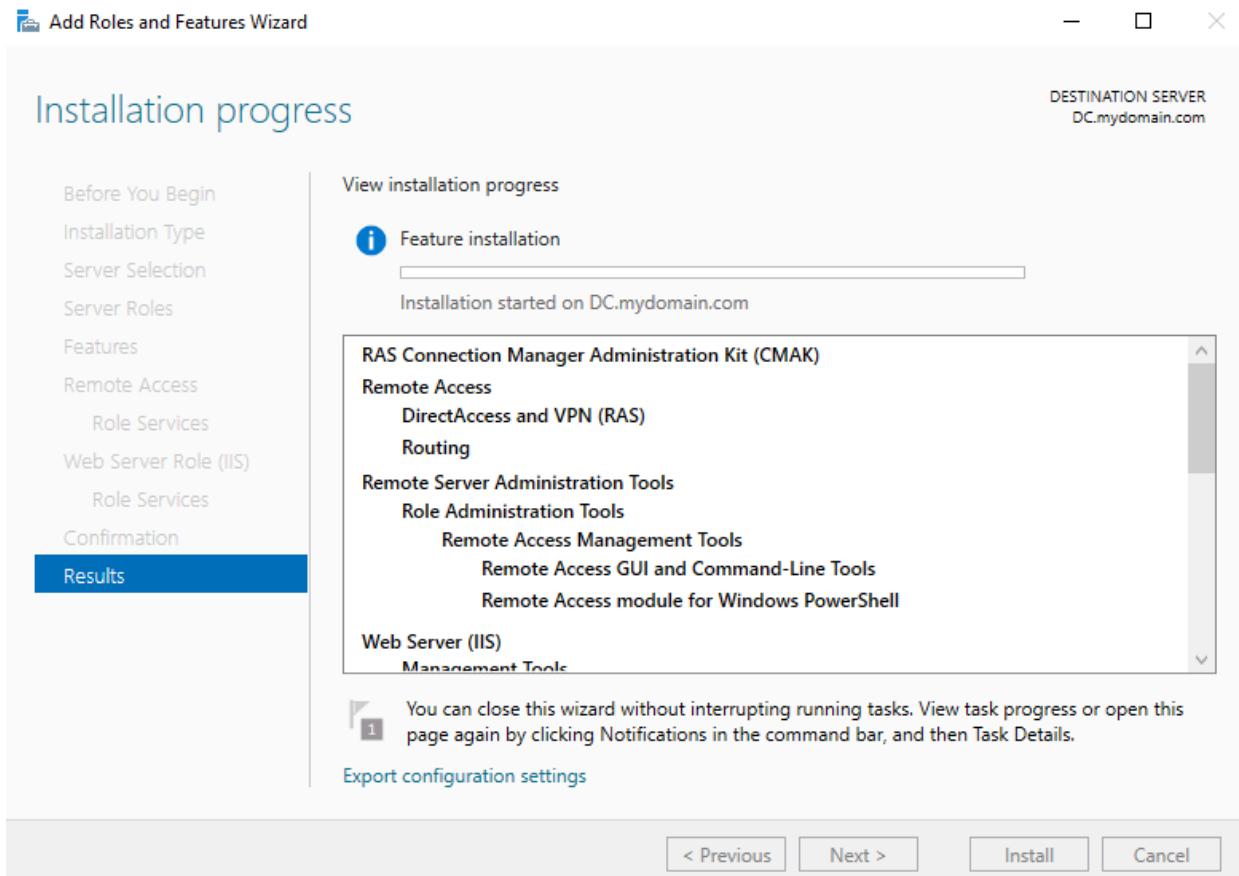
"Next"



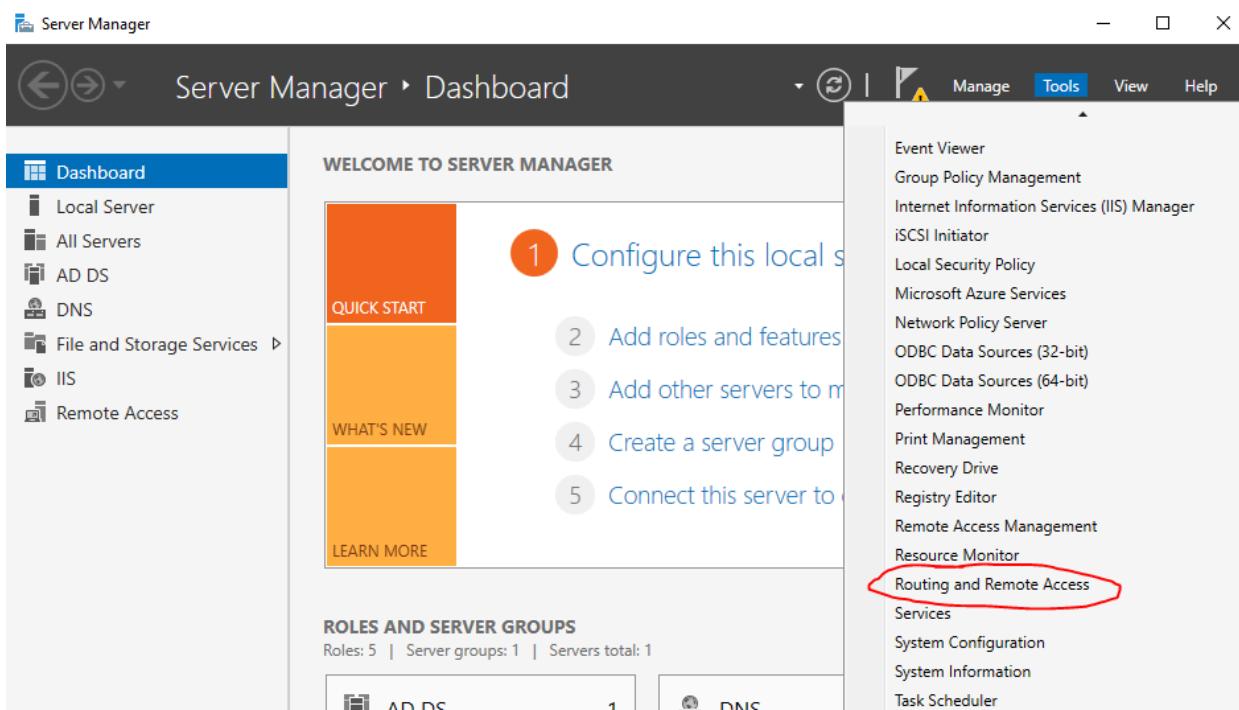
"Next"



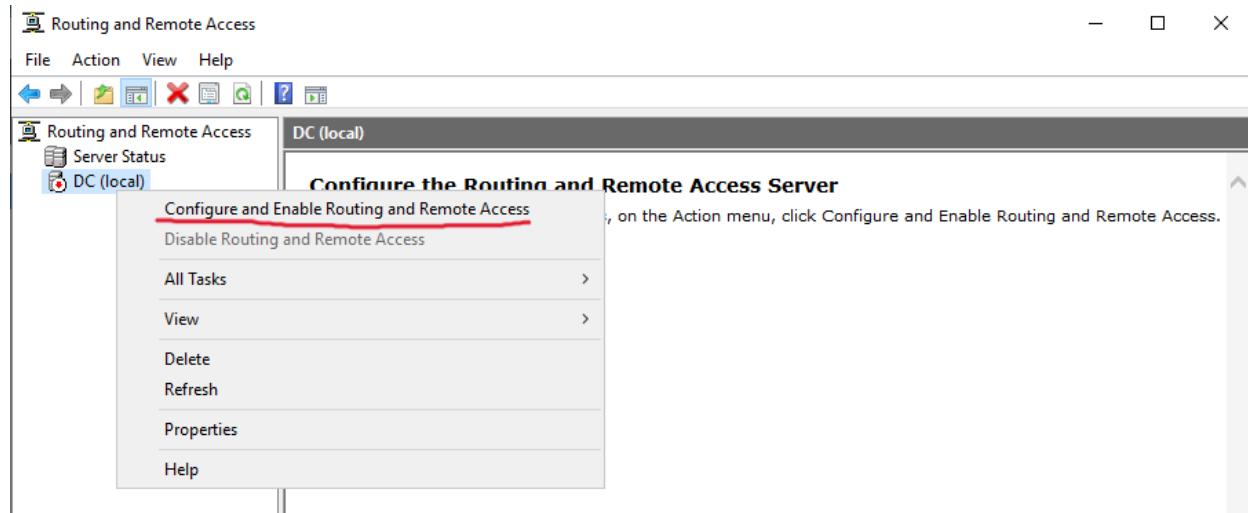
Proceed to Install and once installation is complete this can be closed.



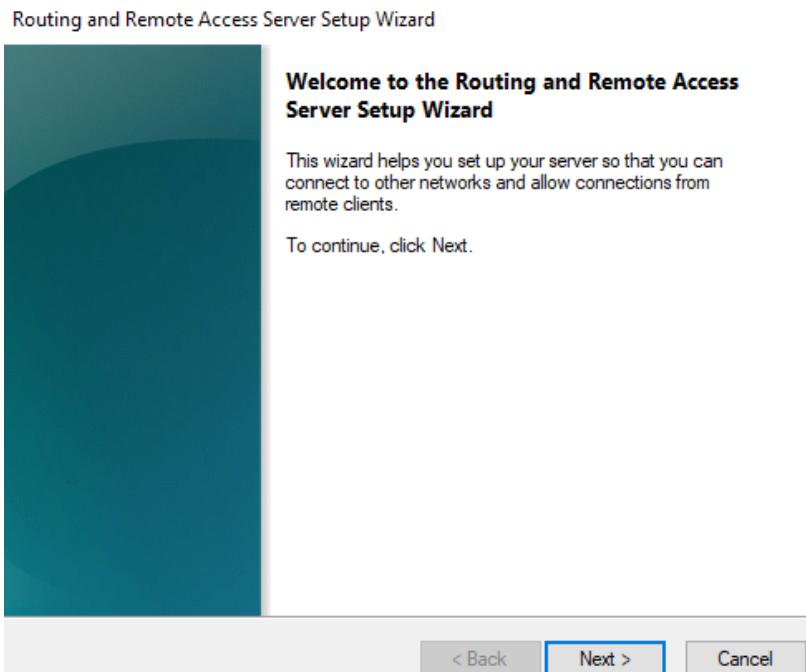
Proceed back to **Server Manager > Tools > Routing and Remote Access**.



Once opened proceed to “DC (local)” and “Configure and Enable Routing and Remote Access”.



“Next”



Select Network address translation (NAT) and “Next”

Routing and Remote Access Server Setup Wizard

Configuration

You can enable any of the following combinations of services, or you can customize this server.

- Remote access (dial-up or VPN)
Allow remote clients to connect to this server through either a dial-up connection or a secure virtual private network (VPN) Internet connection.
- Network address translation (NAT)
Allow internal clients to connect to the Internet using one public IP address.
- Virtual private network (VPN) access and NAT
Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.
- Secure connection between two private networks
Connect this network to a remote network, such as a branch office.
- Custom configuration
Select any combination of the features available in Routing and Remote Access.

< Back Next > Cancel

Select "Use this public interface to connect to the internet" and choose the **Internet** network. If this option is unavailable, retry from the "Tools" selection and go through the process again.

Routing and Remote Access Server Setup Wizard

NAT Internet Connection

You can select an existing interface or create a new demand-dial interface for client computers to connect to the Internet.

- Use this public interface to connect to the Internet:

Network Interfaces:

Name	Description	IP Address
INTERNET	Intel(R) PRO/1000 MT...	10.0.2.15 (DHCP)
X_INTERNAL_X	Intel(R) PRO/1000 MT...	172.16.0.1

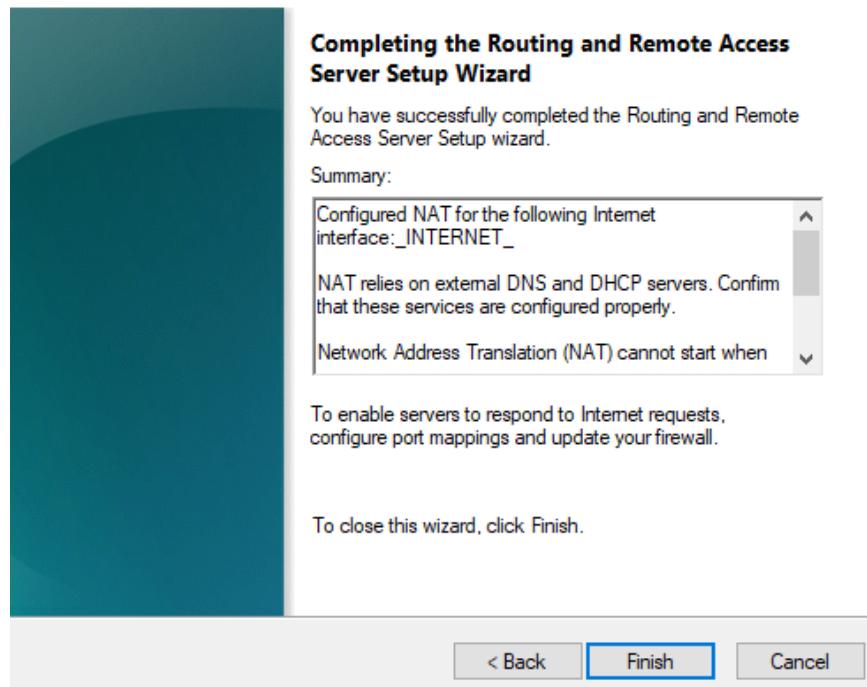
- Create a new demand-dial interface to the Internet

A demand-dial interface is activated when a client uses the Internet. Select this option if this server connects with a modem or by using the Point-to-Point Protocol over Ethernet. The Demand-Dial Interface Wizard will start at the end of this wizard.

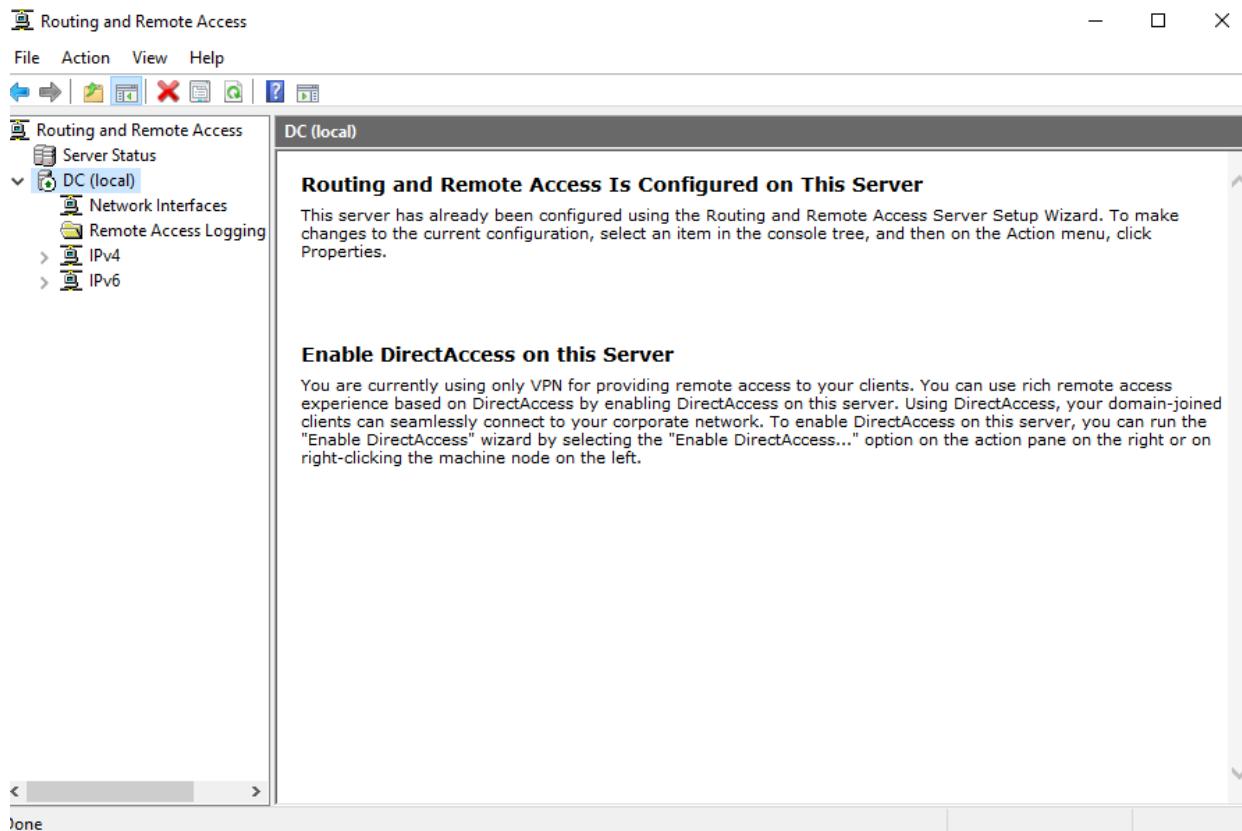
< Back Next > Cancel

"Finish"

Routing and Remote Access Server Setup Wizard



"DC (local)" should now be up and running.



These are the current groups active.

The screenshot shows the Windows Server Manager Dashboard. On the left, a navigation pane lists 'Dashboard', 'Local Server', 'All Servers', 'AD DS', 'DNS', 'File and Storage Services' (with a dropdown arrow), 'IIS', and 'Remote Access'. The main area is titled 'ROLES AND SERVER GROUPS' and displays the following information:

- AD DS**: 1 item, Manageability (green)
- DNS**: 1 item, Manageability (green)
- File and Storage Services**: 1 item, Manageability (green)
- IIS**: 1 item, Manageability (green)
- Remote Access**: 1 item, Manageability (green)
- Local Server**: 1 item, Manageability (green), Services (red)
- All Servers**: 1 item, Manageability (green), Events

At the bottom right, the date and time are shown as 7/4/2024 4:18 AM.

Section 6

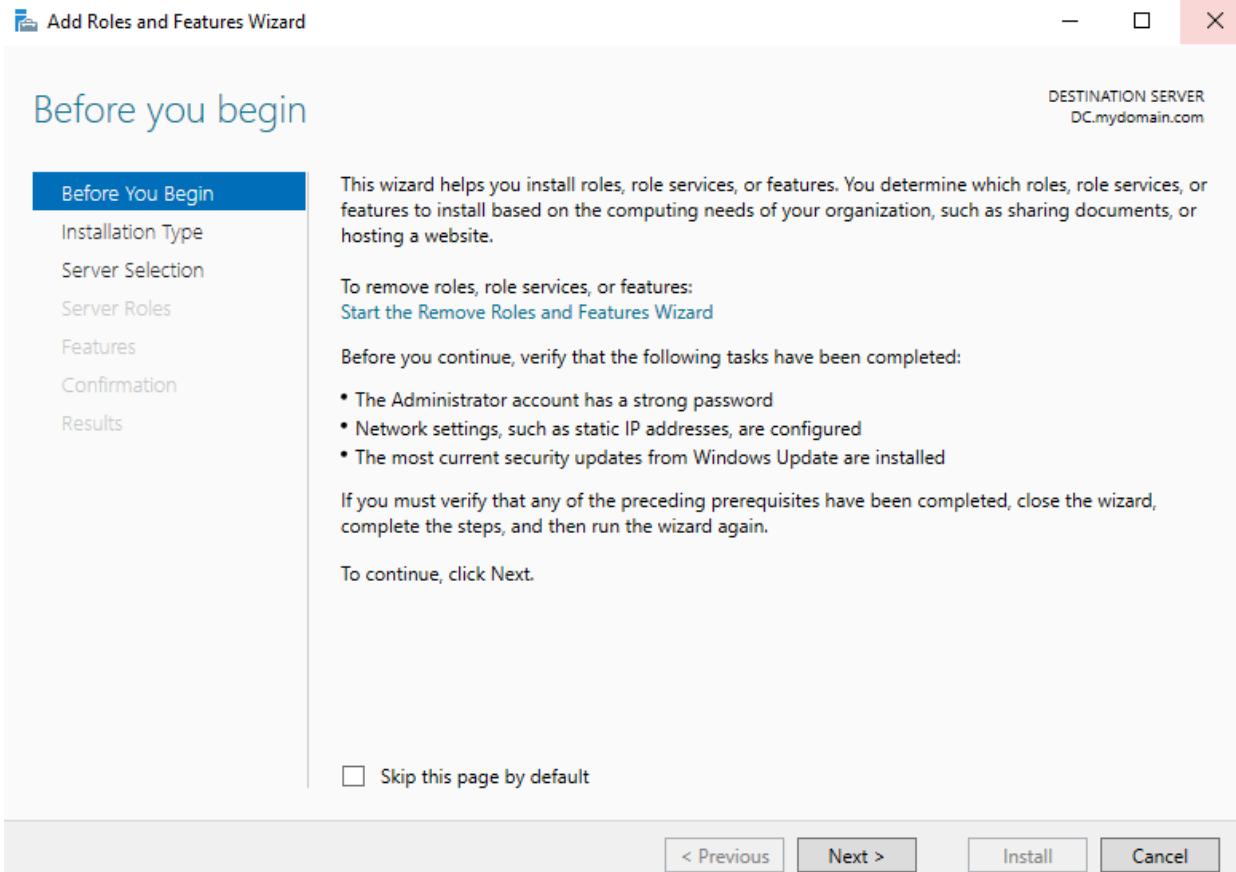
Setup Dynamic Host Configuration Protocol (DHCP) - “Add roles and features”.

The screenshot shows the Windows Server Manager Dashboard. The left navigation pane is identical to the previous one. The main area is titled 'WELCOME TO SERVER MANAGER' and contains the following steps:

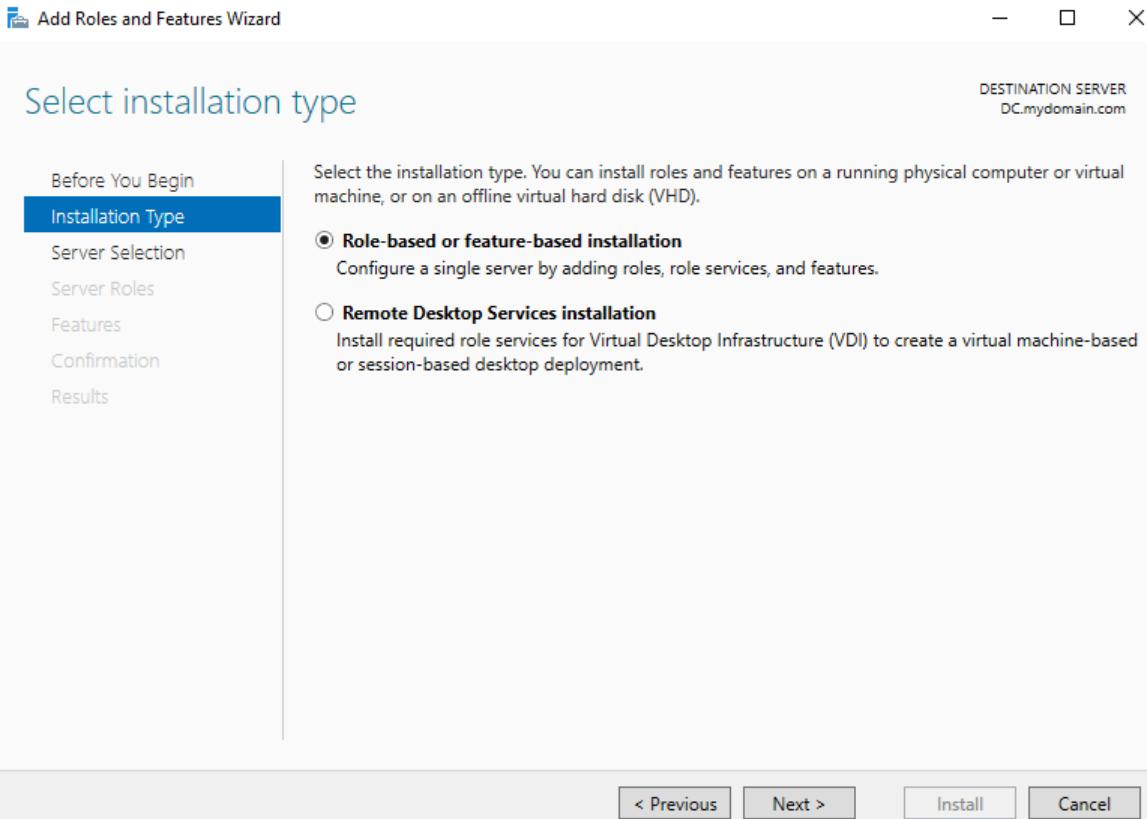
- 1 Configure this local server
- 2 Add roles and features
- 3 Add other servers to manage
- 4 Create a server group
- 5 Connect this server to cloud services

A red oval highlights the second step, 'Add roles and features'. At the bottom right of the welcome panel, there is a 'Hide' link.

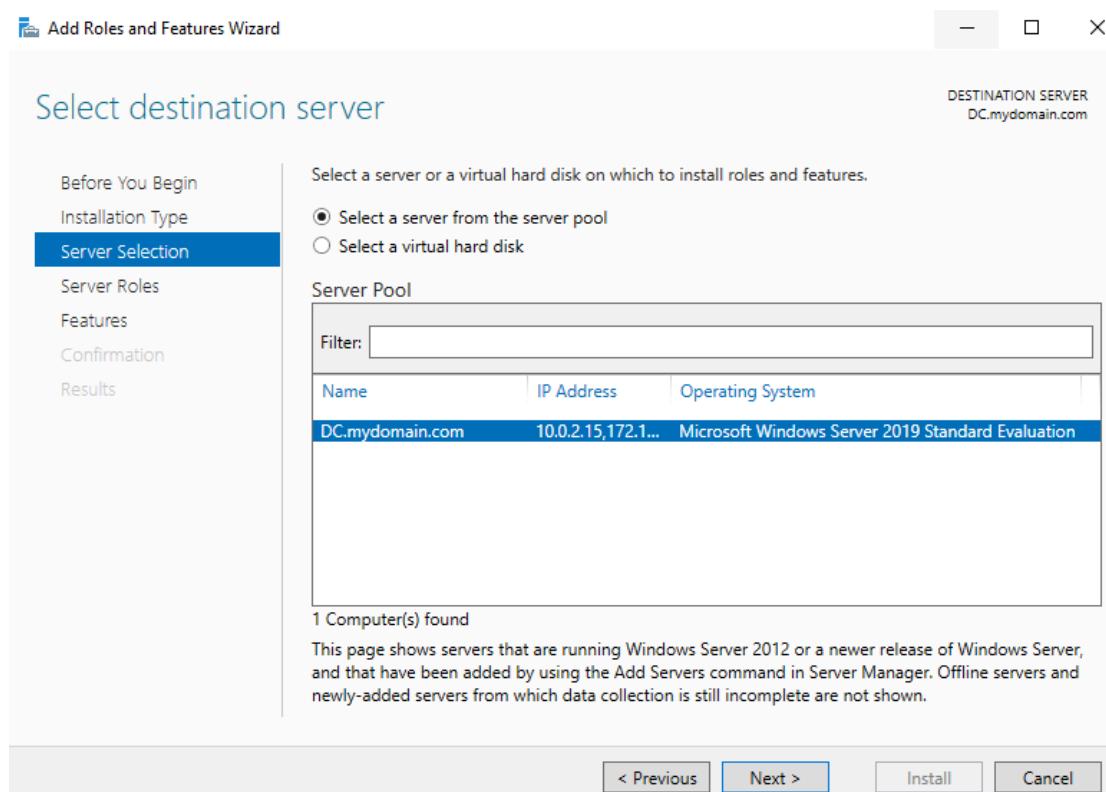
“Next”



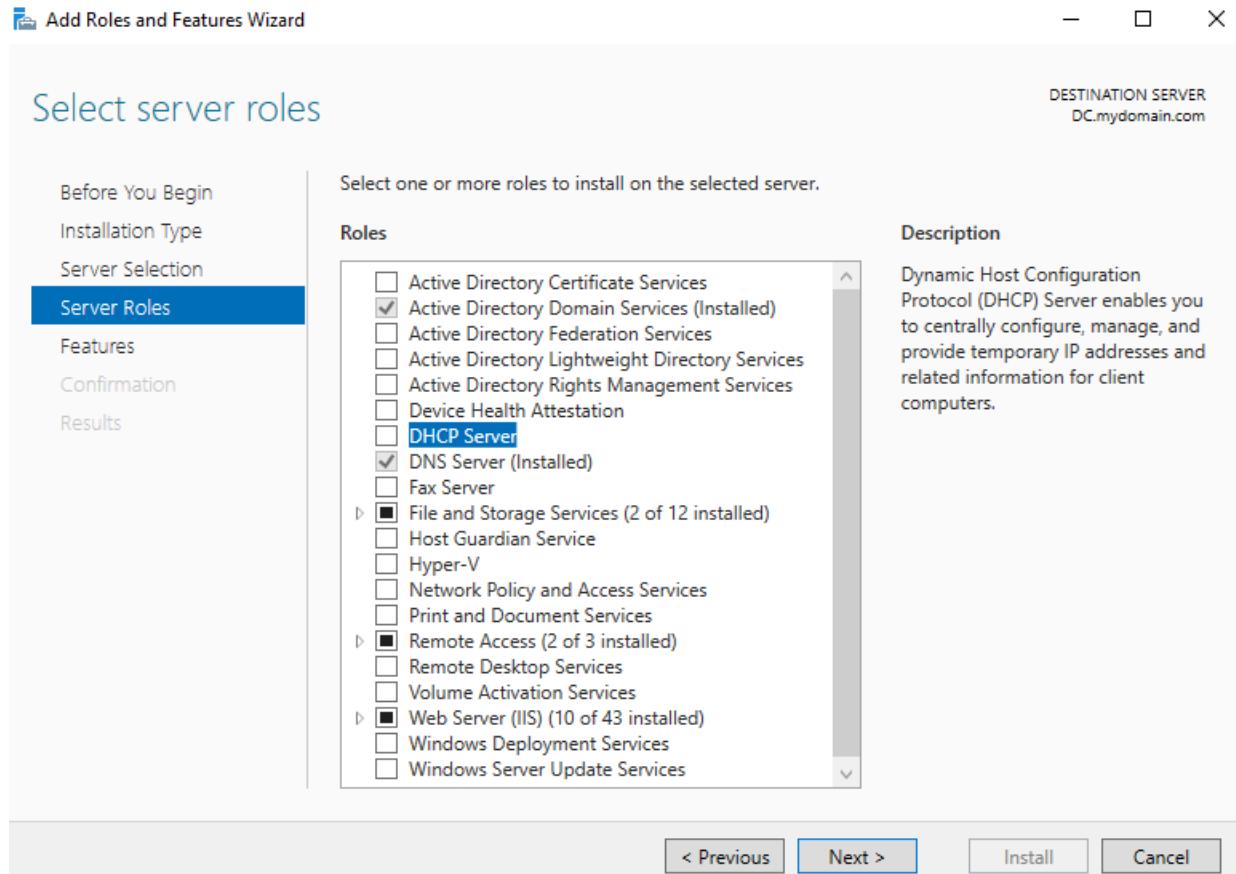
“Next”



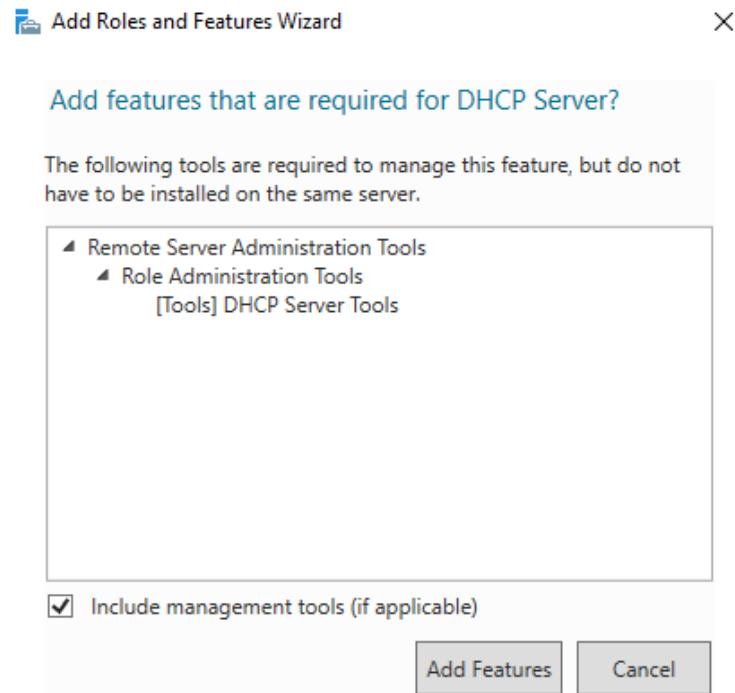
"Next"



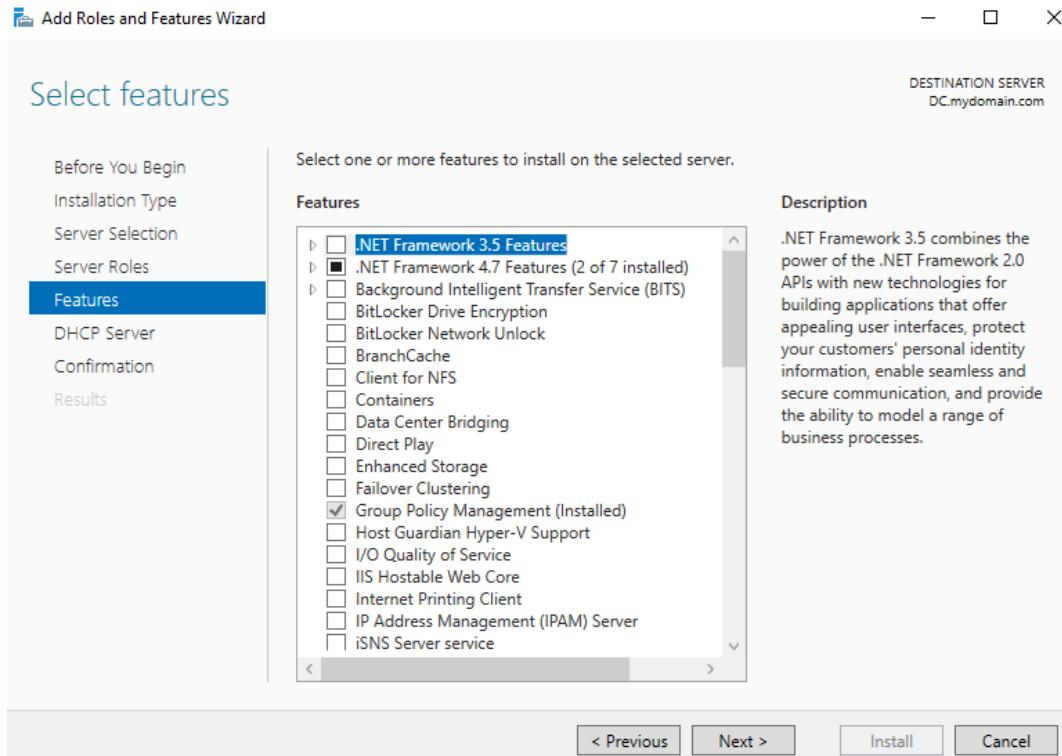
Select “DHCP Server” and add the feature.



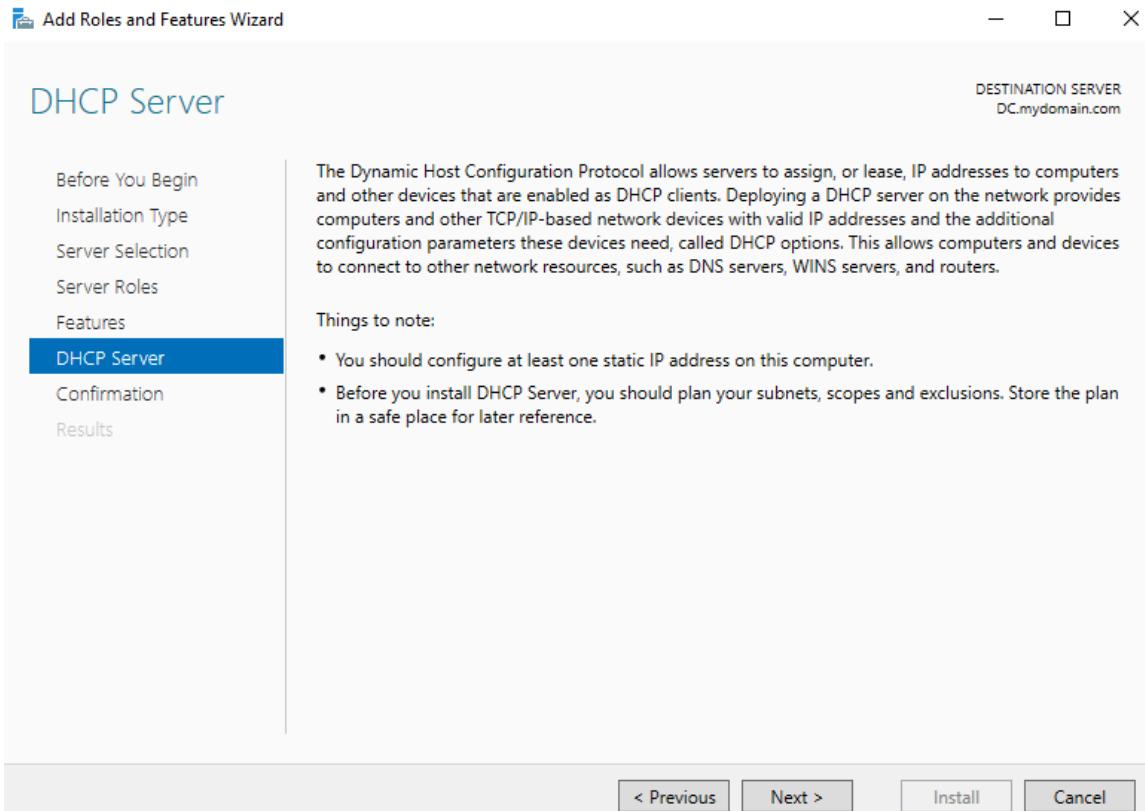
DHCP Server - “Add Features”



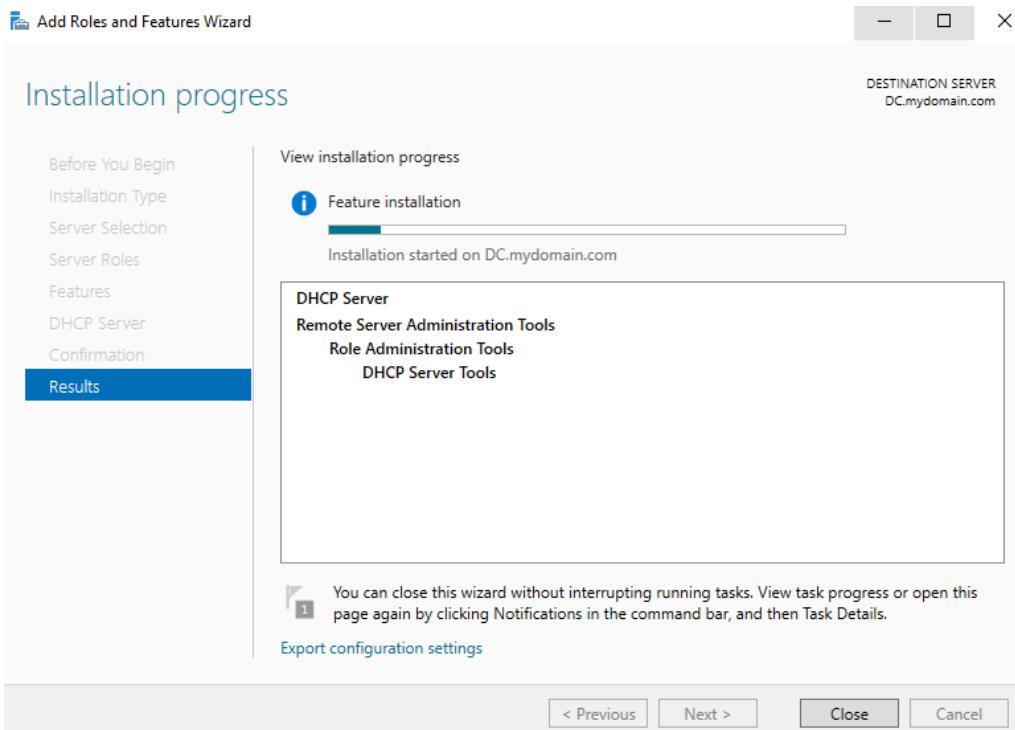
"Next"



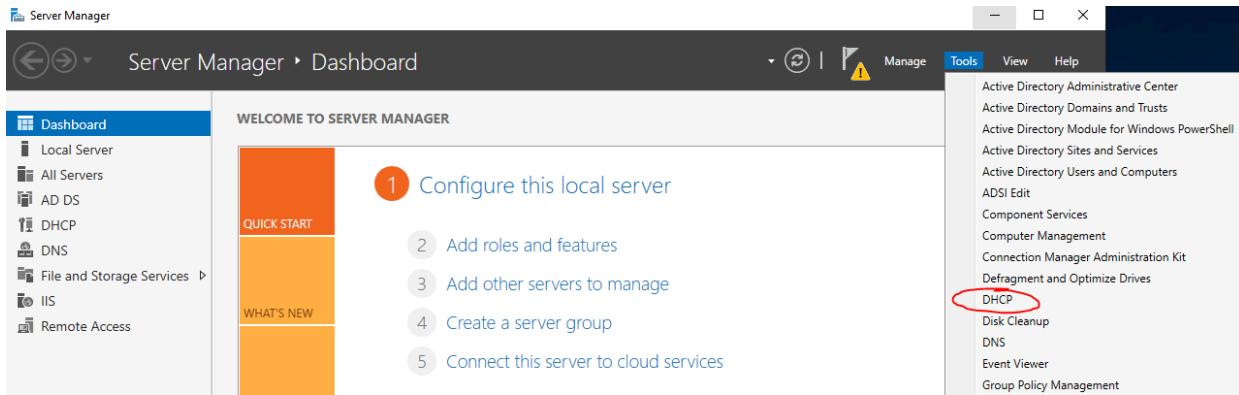
"Next"



Proceed to Install and once installation is complete this can be closed.



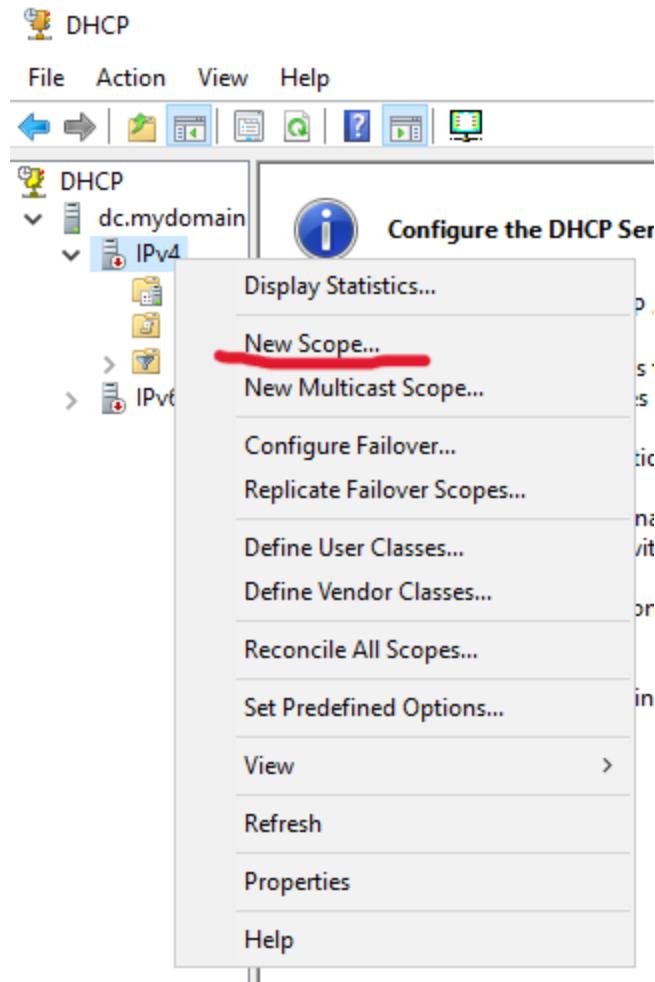
Proceed to **Tools > DHCP** to further finalise the setup.



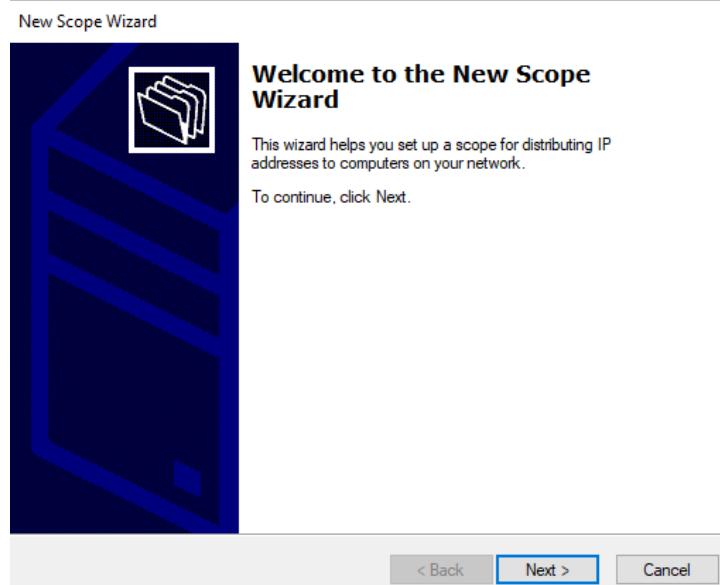
The **DHCP** application is used to automatically assign IP addresses within a specified range. In this case, the scope is configured to provide IP addresses from **172.16.0.100 to 172.16.0.200**. This ensures that devices on the network receive an IP address within this range, simplifying network management and reducing the risk of IP address conflicts.

A screenshot of the Microsoft Management Console (MMC) for the DHCP service. The title bar says "DHCP". The left navigation pane shows "DHCP" and "dc.mydomain". The main pane displays "Contents of DHCP" with a single entry "dc.mydomain.com". The right pane is titled "Actions" and shows "DHCP" selected. A "More Actions" button is also present.

Right-Click onto “*IPv4*” this is currently offline to turn it online firstly we must go into “*New Scope...*”



"Next"



Scope will be named after the range of IP addresses.

New Scope Wizard

Scope Name

You have to provide an identifying scope name. You also have the option of providing a description.



Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

< Back

Next >

Cancel

Insert the **Start IP address 172.16.0.100** and the **End IP address 172.16.0.200** and then leave the length of the subnet mask at **24**.

New Scope Wizard

IP Address Range

You define the scope address range by identifying a set of consecutive IP addresses.



Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

No exclusions need to be added so proceed to “Next”.

New Scope Wizard

Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.



Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address: End IP address:

<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>
----------------------	----------------------	------------------------------------

Excluded address range:

<input type="text"/>	<input type="button" value="Remove"/>
----------------------	---------------------------------------

Subnet delay in milli second:

<input type="text" value="0"/>

< Back **Next >** Cancel

Lease Duration - How long a computer/VM can have the IP address before it needs to be refreshed.

New Scope Wizard

Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.



Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days: Hours: Minutes:

<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
--------------------------------	--------------------------------	--------------------------------

< Back **Next >** Cancel

Configuring **DHCP** options involves specifying which **DNS server** and gateway clients should use, ensuring they can connect to the [Internet](#).

New Scope Wizard

Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.



When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

- Yes, I want to configure these options now
 No, I will configure these options later

< Back

Next >

Cancel

This is connected to the **Internal NIC** IP address, proceed to “Add” and “Next”.

New Scope Wizard

Router (Default Gateway)

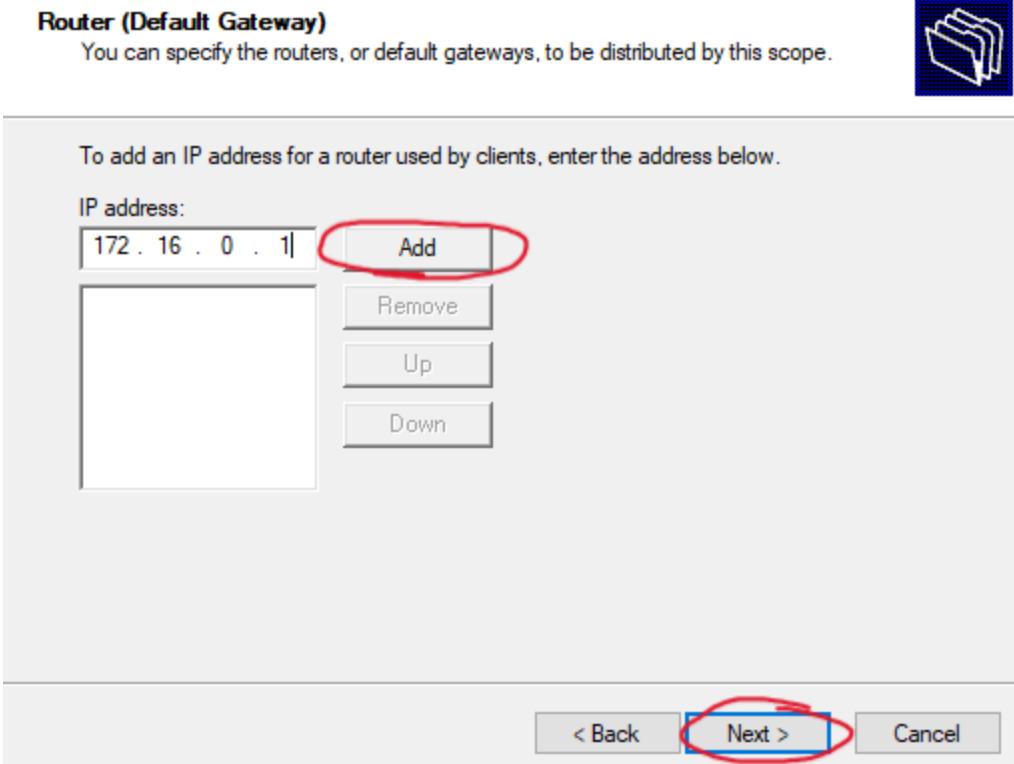
You can specify the routers, or default gateways, to be distributed by this scope.

To add an IP address for a router used by clients, enter the address below.

IP address:

172 . 16 . 0 . 1	Add
	Remove
	Up
	Down

< Back **Next >** Cancel



When **Active Directory (AD)** is installed, the **Domain Controller (DC)** automatically installs **DNS**. Therefore, we will use the **DC** as the **DNS server**.

New Scope Wizard

Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.

You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain:

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:

IP address:

< Back Cancel



Leave blank proceed “Next”.

New Scope Wizard

WINS Servers

Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.



Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.

Server name:

Resolve

IP address:

 . . .

Add

Remove

Up

Down

To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

< Back

Next >

Cancel

“Yes, I want to activate this scope now” and proceed “Next”.

New Scope Wizard

Activate Scope

Clients can obtain address leases only if a scope is activated.



Do you want to activate this scope now?

- Yes, I want to activate this scope now.
 No, I will activate this scope later

< Back

Next >

Cancel

“Finish”

New Scope Wizard

Completing the New Scope Wizard

You have successfully completed the New Scope wizard.

To provide high availability for this scope, configure failover for the newly added scope by right clicking on the scope and clicking on configure failover.

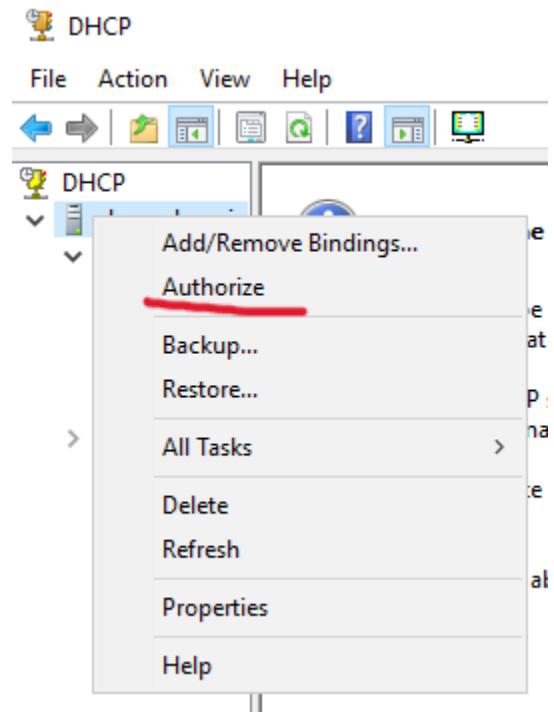
To close this wizard, click Finish.

< Back

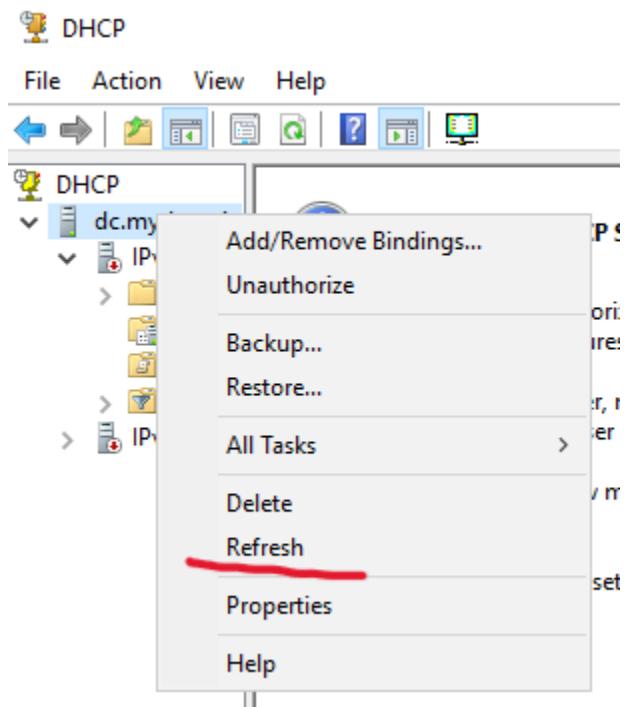
Finish

Cancel

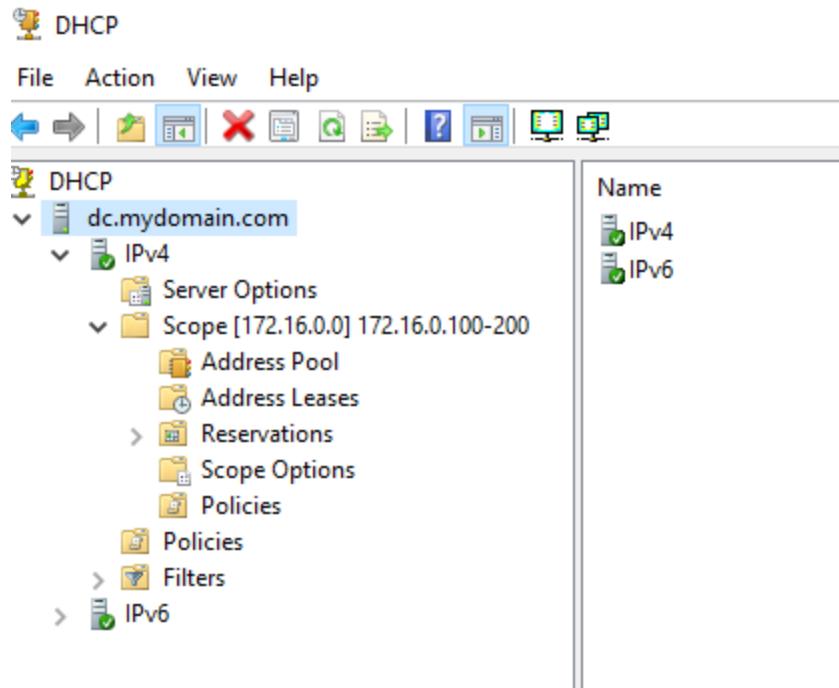
Back to "DHCP" Right-Click the "dc.mydomain.com" and "Authorise".



Right-Click one more time and "Refresh".

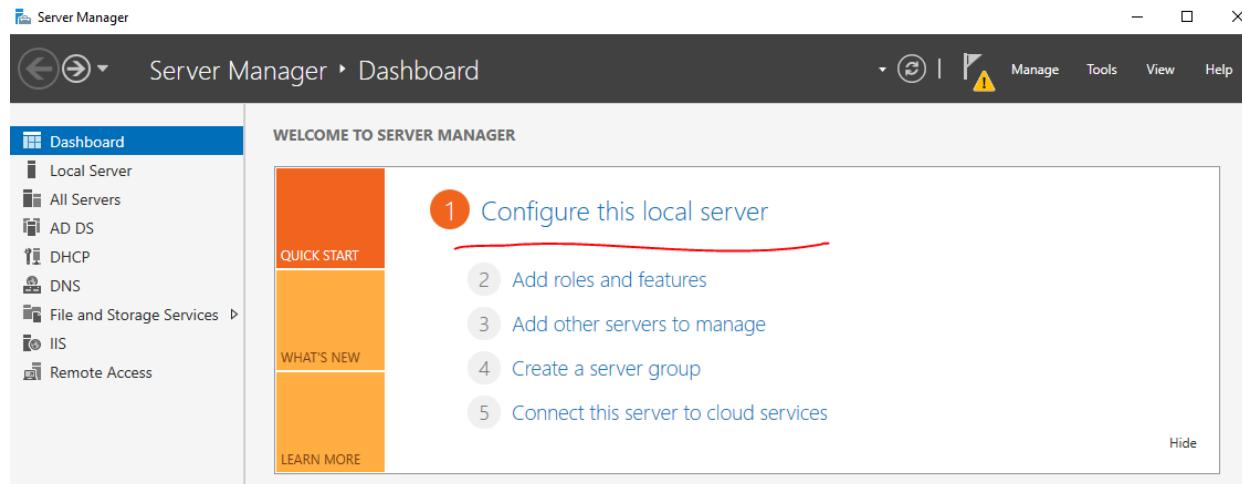


As shown below **IPv4** and **IPv6** are online.

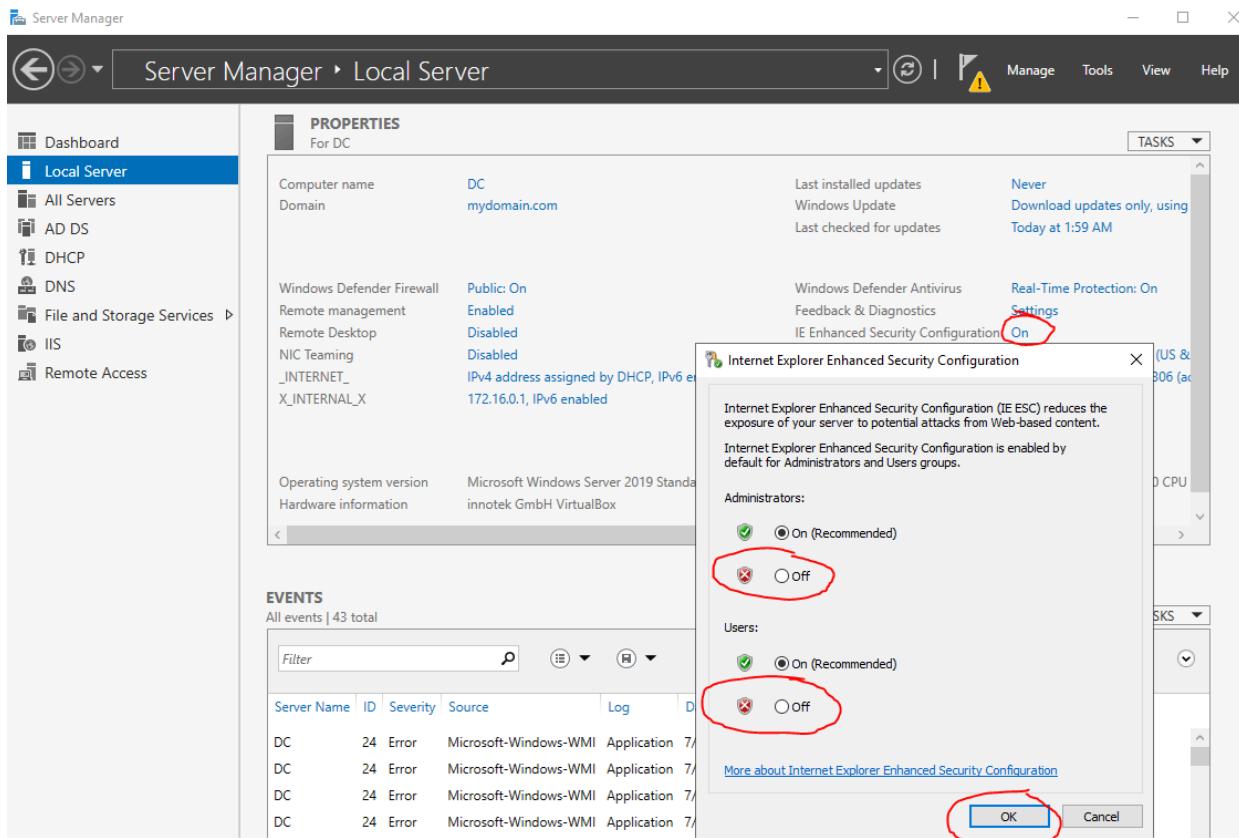


Section 6.5

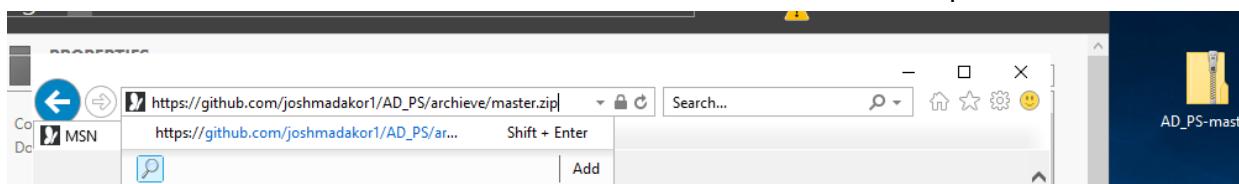
Download PowerShell scripts from Josh Madakor's GitHub for this homelab setup: https://github.com/joshmadakor1/AD_PS. Please note, this method is appropriate for a homelab environment but should not be used in a real-world production setting. Proceed to “Configure this local server”.



As shown below turn **OFF** the following “(*Internet Explorer*) IE Enhanced Security Configuration”.

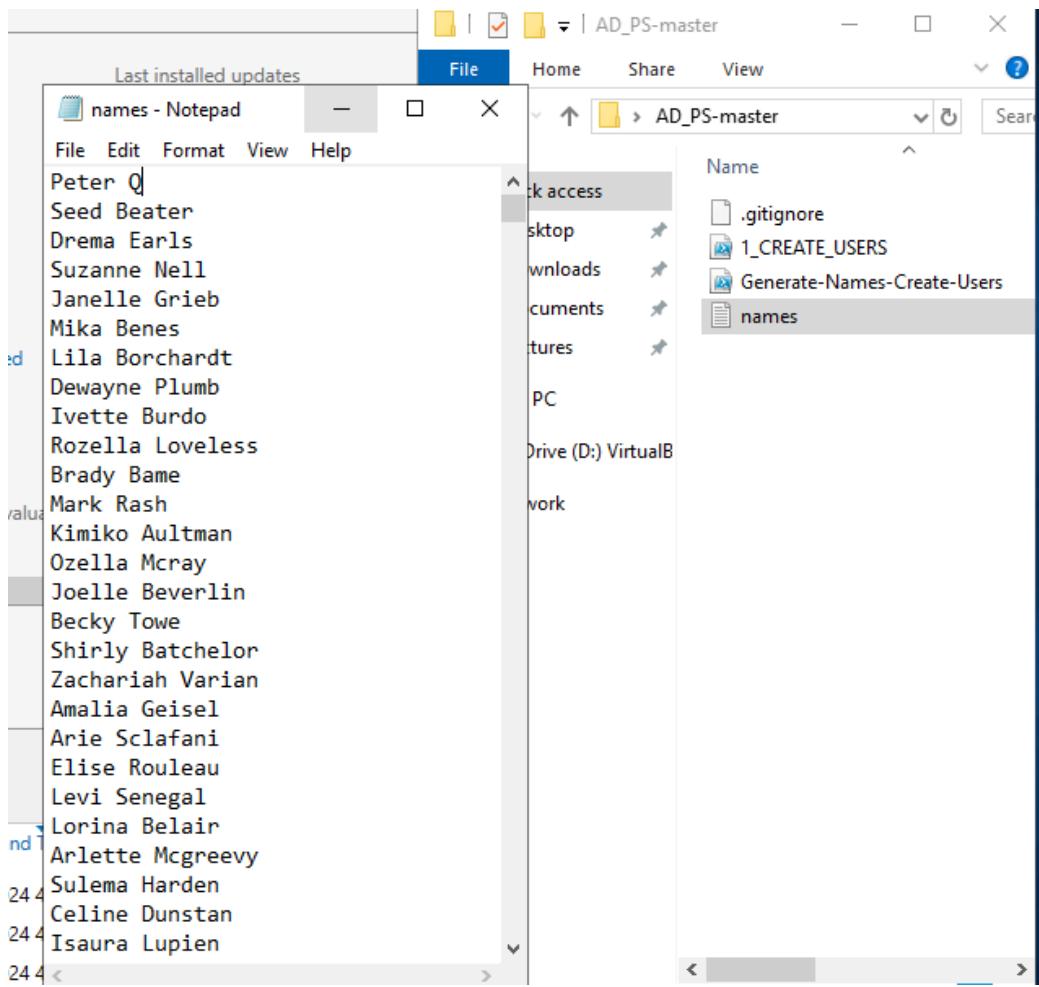


Proceed to the link and download the PowerShell scripts.

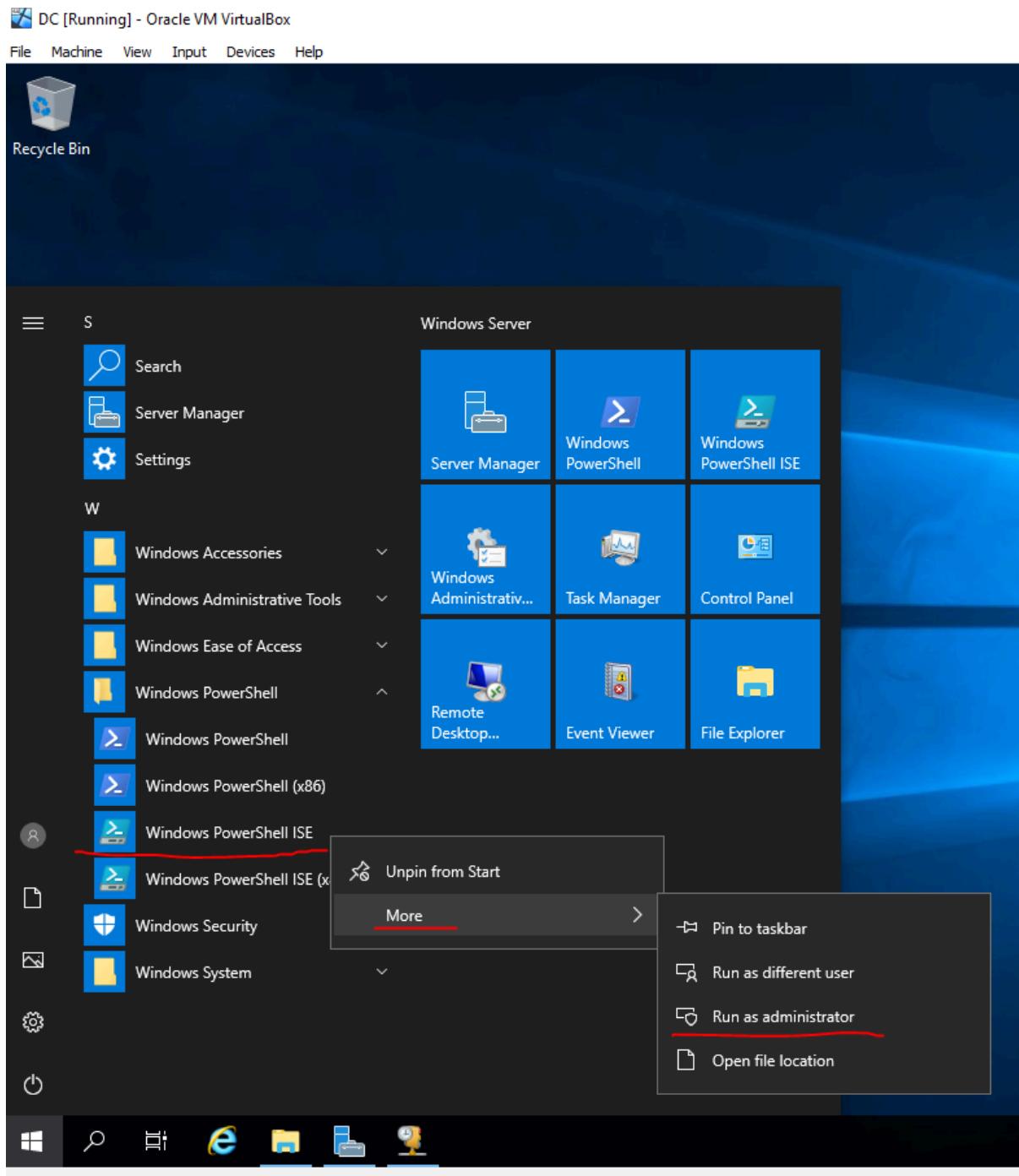


Section 7

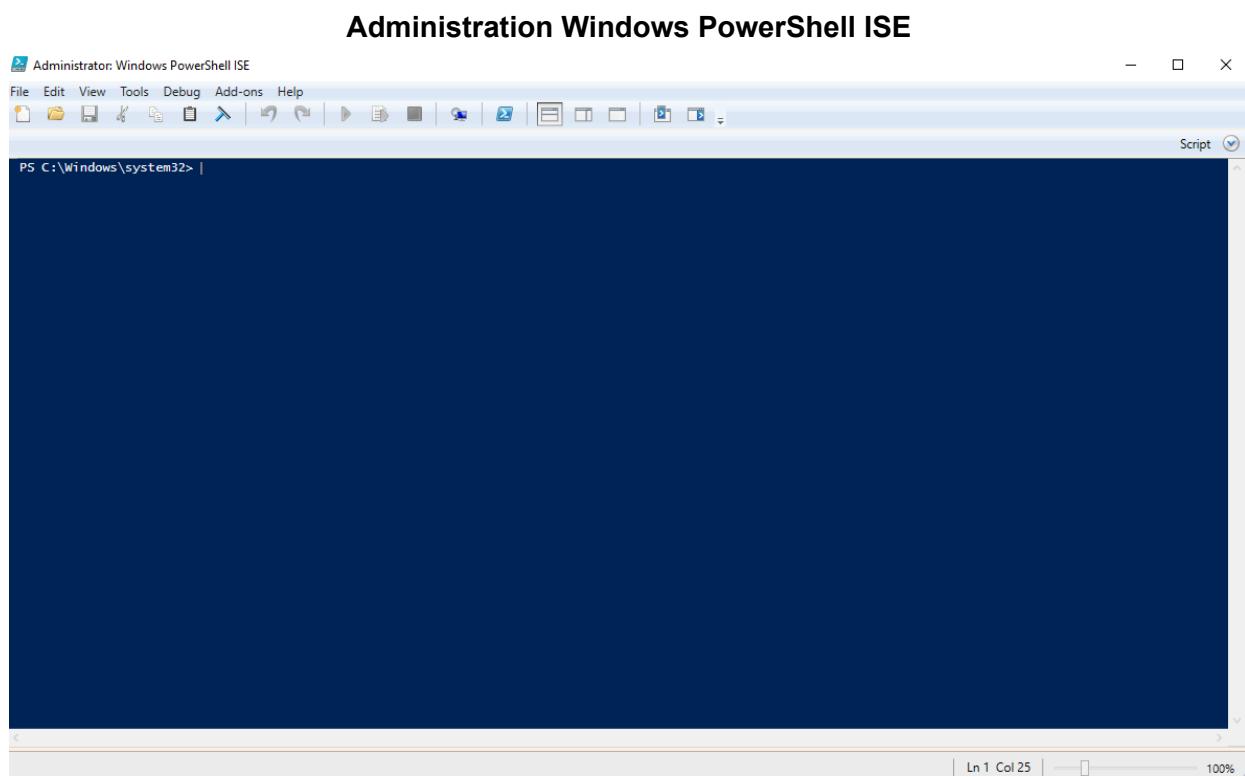
Extract the ZIP file, copy the contents to the Server 2019 DC, open the relevant file, and update it with the specified names, including your own. Save the changes.



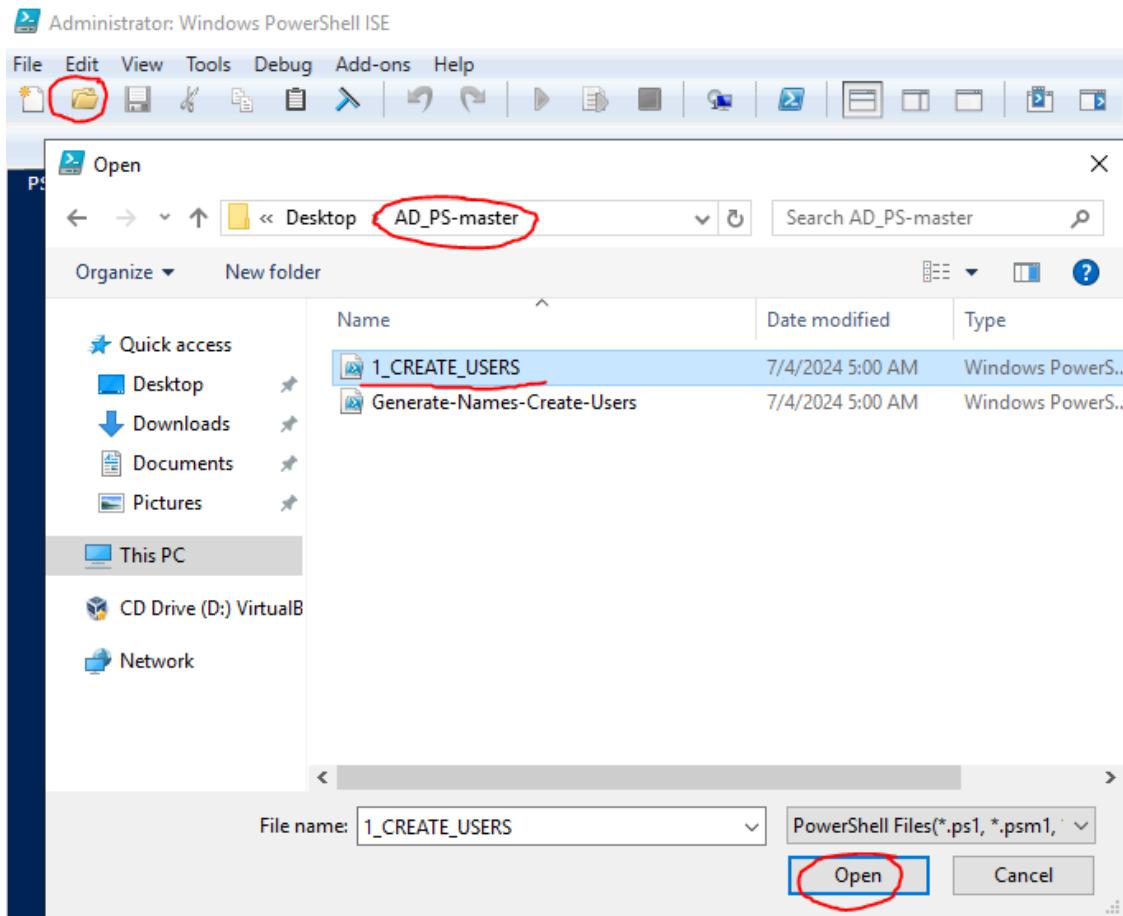
Right-Click on **Windows PowerShell ISE** and “Run as administrator”.



Prompt will pop-up hit "Yes".



Locate the folder, then open and run the following **1_CREATE_USERS** script using Administrator Windows PowerShell ISE.



This is how it should appear.

The screenshot shows the Windows PowerShell ISE interface. The title bar says "Administrator: Windows PowerShell ISE". The menu bar includes File, Edit, View, Tools, Debug, Add-ons, Help. The toolbar has standard icons for file operations. The code editor window contains a script named "1_CREATE_USERS.ps1" with the following content:

```
1 # ----- Edit these Variables for your own Use Case ----- #
2 $PASSWORD_FOR_USERS = "Password1"
3 $USER_FIRST_LAST_LIST = Get-Content .\names.txt
4 #
5
6 $password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
7 New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false
8
9 foreach ($n in $USER_FIRST_LAST_LIST) {
10     $first = $n.Split(" ")[0].ToLower()
11     $last = $n.Split(" ")[1].ToLower()
12     $username = $($first.Substring(0,1))$($last).ToLower()
13     Write-Host "Creating user: $username" -BackgroundColor Black -ForegroundColor Cyan
14
15     New-ADUser -AccountPassword $password `
16                 -GivenName $first `
17                 -Surname $last `
18                 -DisplayName $username `
19                 -Name $username
20 }
```

The output pane below the editor shows the command PS C:\Windows\system32> followed by the script's content. The status bar at the bottom right indicates "Ln 1 Col 1" and "100%".

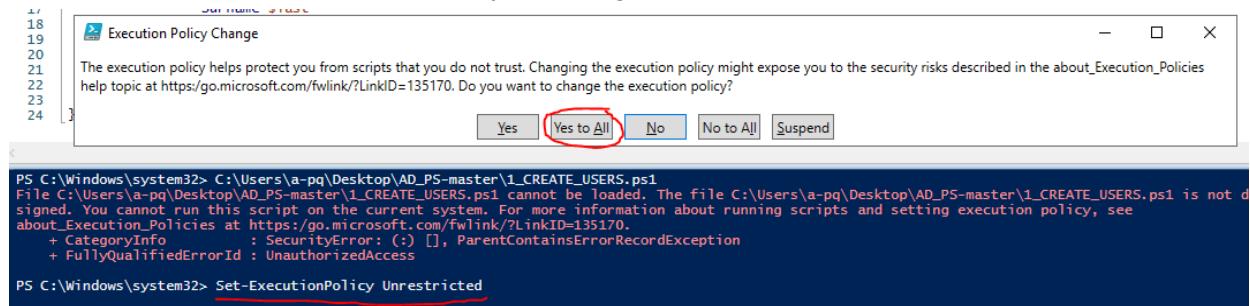
As shown below, the script was not allowed to run because we have not enabled the execution of all scripts on this server.

The screenshot shows the Windows PowerShell ISE interface. The title bar says "Administrator: Windows PowerShell ISE". The menu bar includes File, Edit, View, Tools, Debug, Add-ons, Help. The toolbar has standard icons for file operations. The code editor window contains the same "1_CREATE_USERS.ps1" script as the previous screenshot. The output pane shows the command PS C:\Windows\system32> C:\Users\...\1_CREATE_USERS.ps1. A red error message follows:

```
File C:\Users\...\1_CREATE_USERS.ps1 cannot be loaded. The file C:\Users\...\1_CREATE_USERS.ps1 is not digitally signed. You cannot run this script on the current system. For more information about running scripts and setting execution policy, see about_Execution_Policies at https://go.microsoft.com/fwlink/?LinkID=135170.
+ CategoryInfo          : SecurityError: (...) [], ParentContainsErrorRecordException
+ FullyQualifiedErrorId : UnauthorizedAccess
```

The status bar at the bottom right indicates "Ln 8 Col 25" and "100%".

To enable script execution, use the command **Set-ExecutionPolicy Unrestricted** and confirm by selecting "Yes to all".



The Script

The screenshot shows the Windows PowerShell ISE with the following content:

```
File Edit View Tools Debug Add-ons Help
```

```
1_CREATE_USERS.ps1 X
```

```
1 # ----- Edit these Variables for your own Use Case ----- #
2 $PASSWORD_FOR_USERS = "Password1"
3 $USER_FIRST_LAST_LIST = Get-Content .\names.txt
4 # -----
5
6 $password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
7 New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false
8
9 foreach ($n in $USER_FIRST_LAST_LIST) {
10     $first = $n.Split(" ")[0].ToLower()
11     $last = $n.Split(" ")[1].ToLower()
12     $username = $($first.Substring(0,1))$($last).ToLower()
13     Write-Host "Creating user: $($username)" -BackgroundColor Black -ForegroundColor Cyan
14
15     New-AdUser -AccountPassword $password `
16                 -GivenName $first `
17                 -Surname $last `
18                 -DisplayName $username `
19                 -Name $username `
20                 -EmployeeID $username `
21                 -PasswordNeverExpires $true `
22                 -Path "ou=_USERS,$([ADSI]'').distinguishedName" `
23                 -Enabled $true
24 }
```

Use the following command to navigate through the directory and locate the scripts to be executed.

```
PS C:\Windows\system32> cd C:\users\{username}\Desktop\AD_PS-master
PS C:\users\{username}\Desktop\AD_PS-master> |
```

Type **ls** to display the folders we are currently in.

```
PS C:\Windows\system32> cd C:\users\apq\Desktop\AD_PS-master
PS C:\users\apq\Desktop\AD_PS-master> LS

Directory: C:\users\apq\Desktop\AD_PS-master

Mode                LastWriteTime         Length Name
----                -----         -----
-a----  7/4/2024 5:00 AM           1811 .gitignore
-a----  7/4/2024 5:00 AM           1025 1_CREATE_USERS.ps1
-a----  7/4/2024 5:00 AM          1532 Generate-Names-Create-Users.ps1
-a----  7/4/2024 5:02 AM        15577 names.txt

PS C:\users\apq\Desktop\AD_PS-master>
```

Now that we're in the folder, we can proceed to run the script.

Administrator: Windows PowerShell ISE

File Edit View Tools Debug Add-ons Help



```

1 # ----- Edit these Variables for your own Use Case ----- #
2 $PASSWORD_FOR_USERS = "Password1"
3 $USER_FIRST_LAST_LIST = Get-Content .\names.txt
4 # -----
5
6 $password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
7 New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false
8
9 foreach ($n in $USER_FIRST_LAST_LIST) {
10     $first = $n.Split(" ")[0].ToLower()
11     $last = $n.Split(" ")[1].ToLower()
12     $username = $($first.Substring(0,1))$($last).ToLower()
13     Write-Host "Creating user: $($username)" -BackgroundColor Black -ForegroundColor Cyan
14
15     New-AdUser -AccountPassword $password ` 
16             -GivenName $first ` 
17             -Surname $last ` 
18             -DisplayName $username ` 
19             -Name $username ` 
20             -EmployeeID $username ` 
21             -PasswordNeverExpires $true ` 
22             -Path "ou=_USERS,$([ADSI]::Get("").distinguishedName)" ` 
23             -Enabled $true
24 }

```

PS C:\Windows\system32> Set-ExecutionPolicy Unrestricted

PS C:\Windows\system32> cd C:\users\a-pq\Desktop\AD_PS-master

PS C:\users\a-pq\Desktop\AD_PS-master> LS

Directory: C:\users\a-pq\Desktop\AD_PS-master

Mode	LastWriteTime	Length	Name
-a---	7/4/2024 5:00 AM	1811	.gitignore
-a---	7/4/2024 5:00 AM	1025	1_CREATE_USERS.ps1
-a---	7/4/2024 5:00 AM	1532	Generate-Names-Create-Users.ps1

“Run once”

 Security warning

Run only scripts that you trust. While scripts from the internet can be useful, this script can potentially harm your computer. If you trust this script, use the Unblock-File cmdlet to allow the script to run without this warning message. Do you want to run C:\Users\a-pq\Desktop\AD_PS-master\1_CREATE_USERS.ps1?

After the script has completed, reopen “AD Users & Computers” and navigate to “_USERS” to verify all the new users created by the script.

Administrator: Windows PowerShell ISE

File Edit View Tools Debug Add-ons Help

1.CREATE_USERS.ps1 X

```

1 # ----- Edit these Variables for your own Use Case ----- #
2 $PASSWORD_FOR_USERS = "Password1"
3 $USER_FIRST_LAST_LIST = Get-Content ..\names.txt
4 # -----
5
6 $password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
7 New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false

```

Creating user: fbrokaw
 Creating user: aburgener
 Creating user: aevens
 Creating user: isoliman
 Creating user: jkardham
 Creating user: usargent
 Creating user: vgrube
 Creating user: smicastro
 Creating user: rrector
 Creating user: dmowrey
 Creating user: tdelpriore
 Creating user: ehowey
 Creating user: dfrausto
 Creating user: msingh
 Creating user: godarville
 Creating user: lmcciver
 Creating user: kbutcher
 Creating user: mchestnut
 Creating user: nlefevre
 Creating user: cwestover
 Creating user: vezzell
 Creating user: dannunziata
 Creating user: smitsche
 Creating user: kmarden
 Creating user: mraper
 Creating user: dwilmore
 Creating user: tbustillo
 Creating user: boller
 Creating user: cconboy
 Creating user: mhakes
 Creating user: aretting

PS C:\users\apq\Desktop\AD_PS-master>

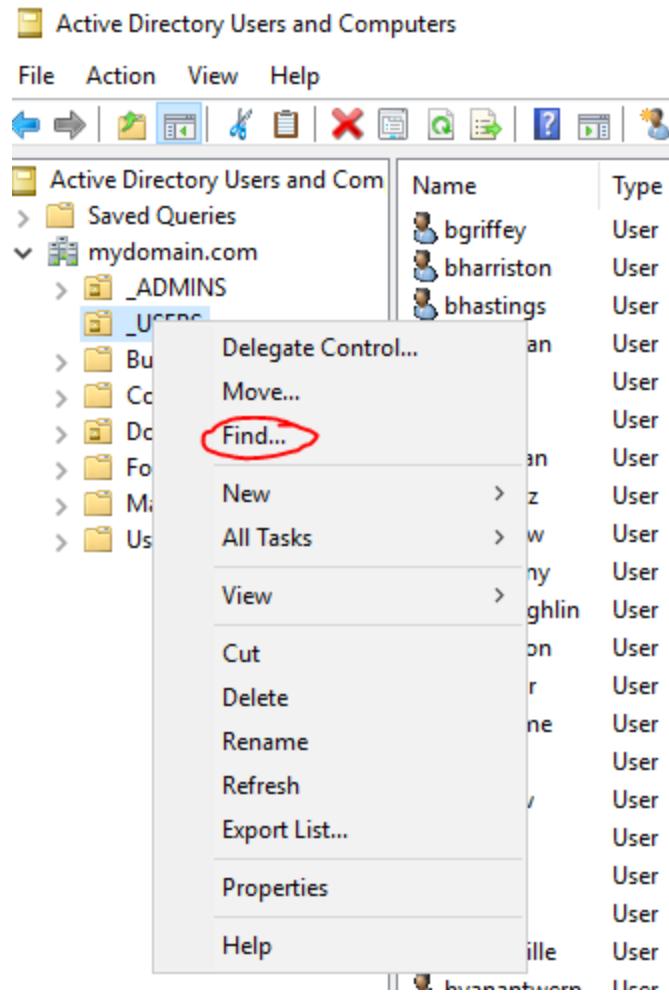
Completed

Active Directory Users and Computers

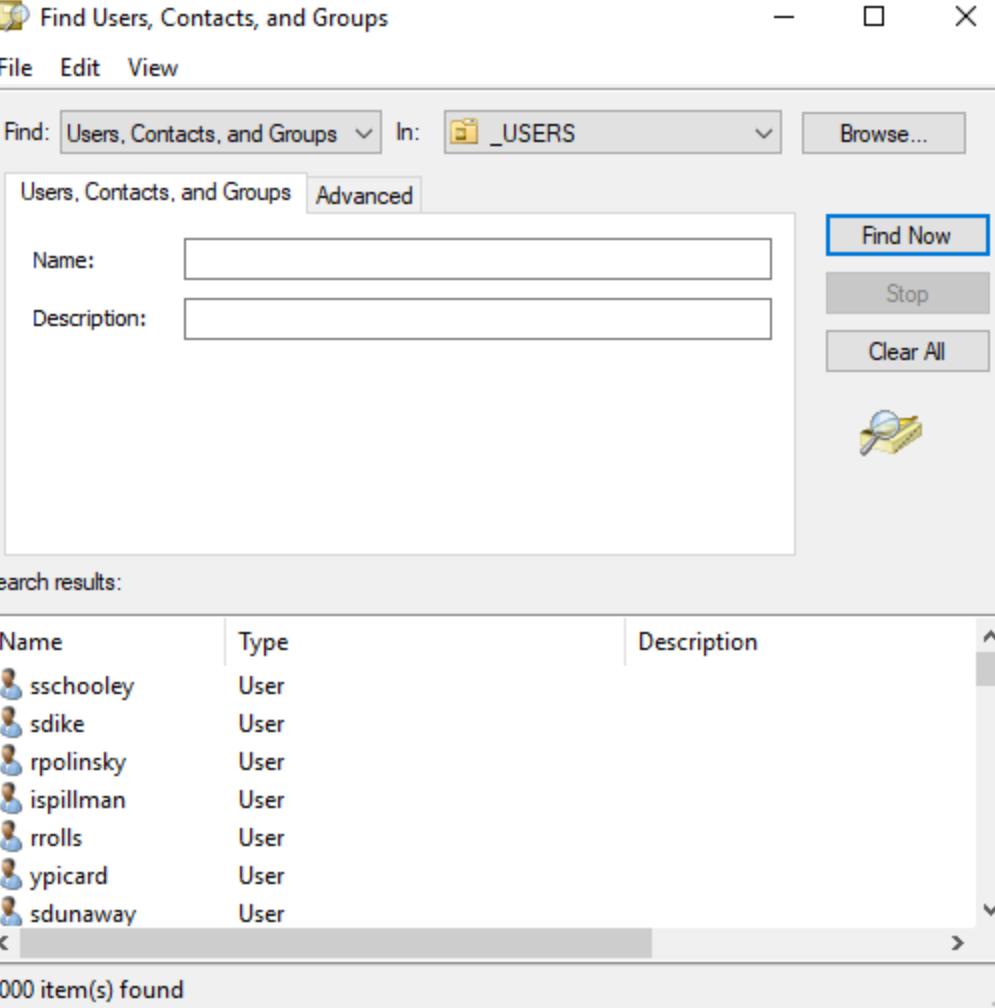
Name Type Description

bgriffey	User	
bharriston	User	
bhastings	User	
bhorsman	User	
blent	User	
blepley	User	
bmaclean	User	
bmaziarz	User	
bmcgrew	User	
bmckinny	User	
bmcloughlin	User	
bmershon	User	
bmetzler	User	
brheume	User	
bsmalls	User	
bstrelow	User	
bsuber	User	
btang	User	

Using Right-Click on _USERS select “Find”.



Search for "blank" to display all the 1,000 users created under the domain, which client1 can use for logging in.

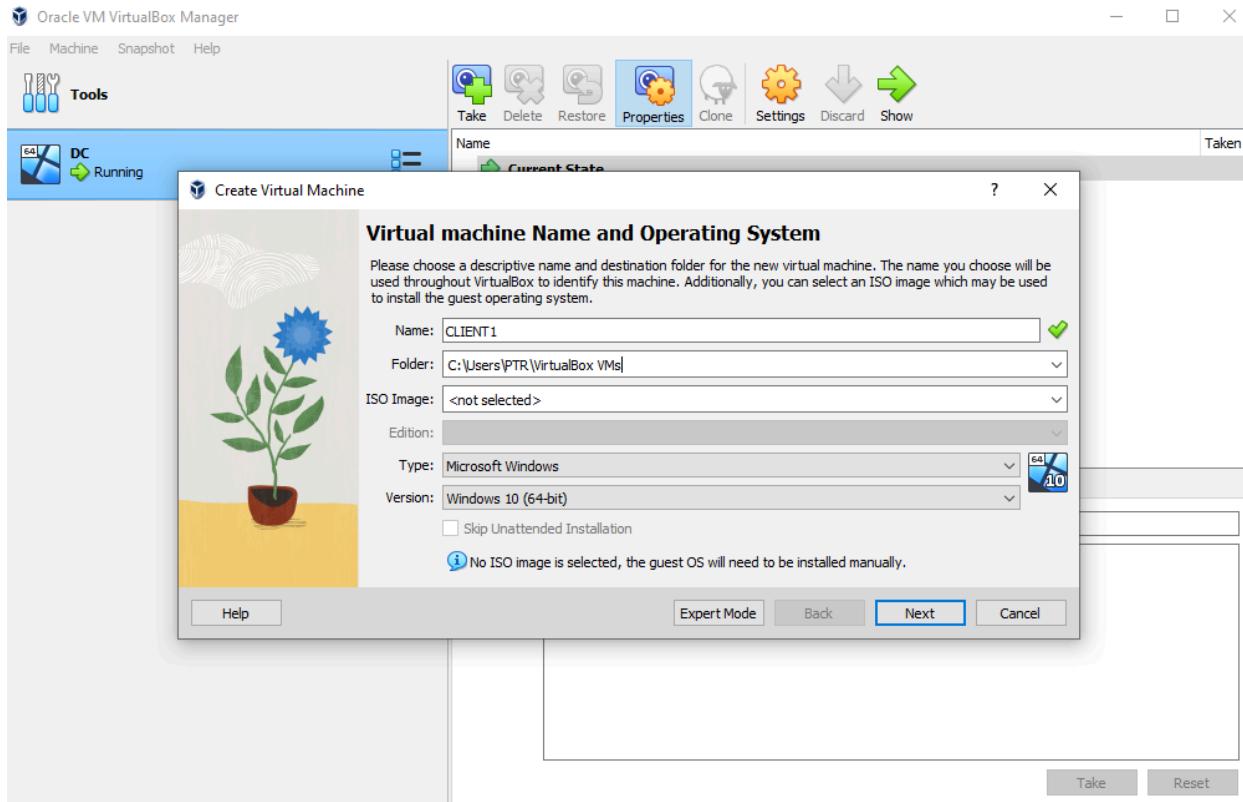
A screenshot of the "Find Users, Contacts, and Groups" application window. The window has a title bar with the title "Find Users, Contacts, and Groups". Below the title bar is a menu bar with "File", "Edit", and "View" options. The main interface consists of several input fields and buttons. At the top left is a "Find:" dropdown set to "Users, Contacts, and Groups" and an "In:" dropdown set to "_USERS". To the right of these are "Browse..." and "Find Now" buttons. Below these are two input fields: "Name:" and "Description:", both with empty text boxes. To the right of these fields are "Stop" and "Clear All" buttons, and a magnifying glass icon. A large search results grid follows, with columns for "Name", "Type", and "Description". The "Name" column contains user icons and names: sschooley, sdike, rpolinsky, ispillman, rrolls, ypicard, and sdunaway. The "Type" column shows all as "User". The "Description" column is empty. At the bottom of the grid, it says "1000 item(s) found".

Name	Type	Description
sschooley	User	
sdike	User	
rpolinsky	User	
ispillman	User	
rrolls	User	
ypicard	User	
sdunaway	User	

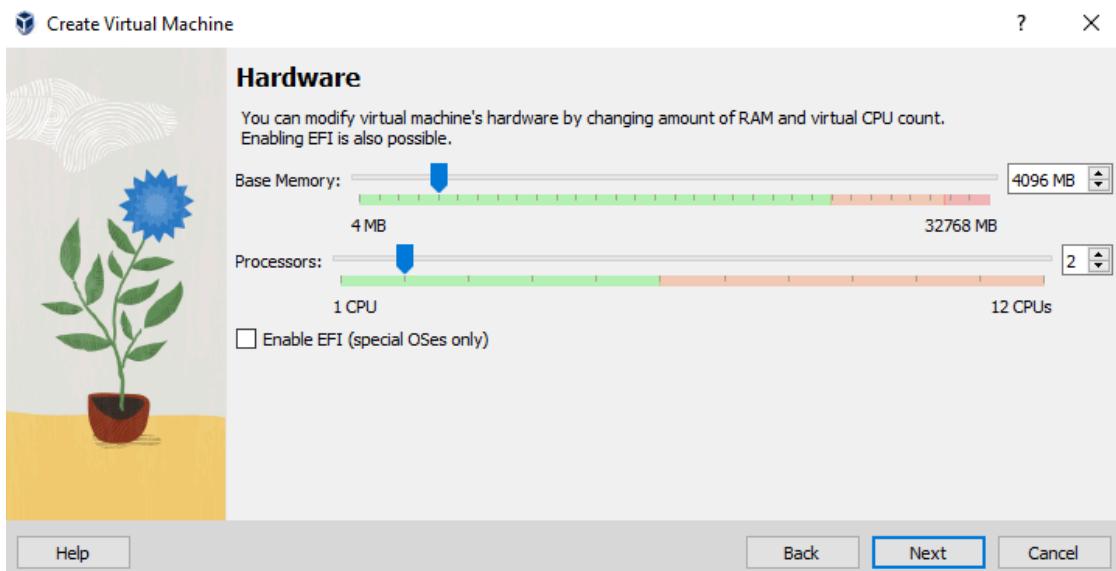
1000 item(s) found

Section 8

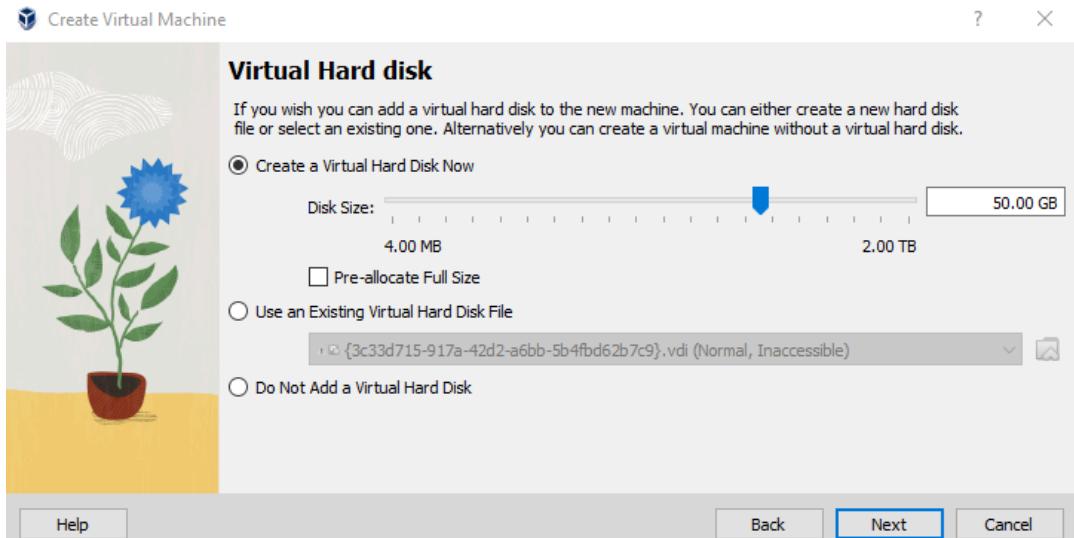
Finally, proceed to create the Windows 10 Pro VM **CLIENT1**.



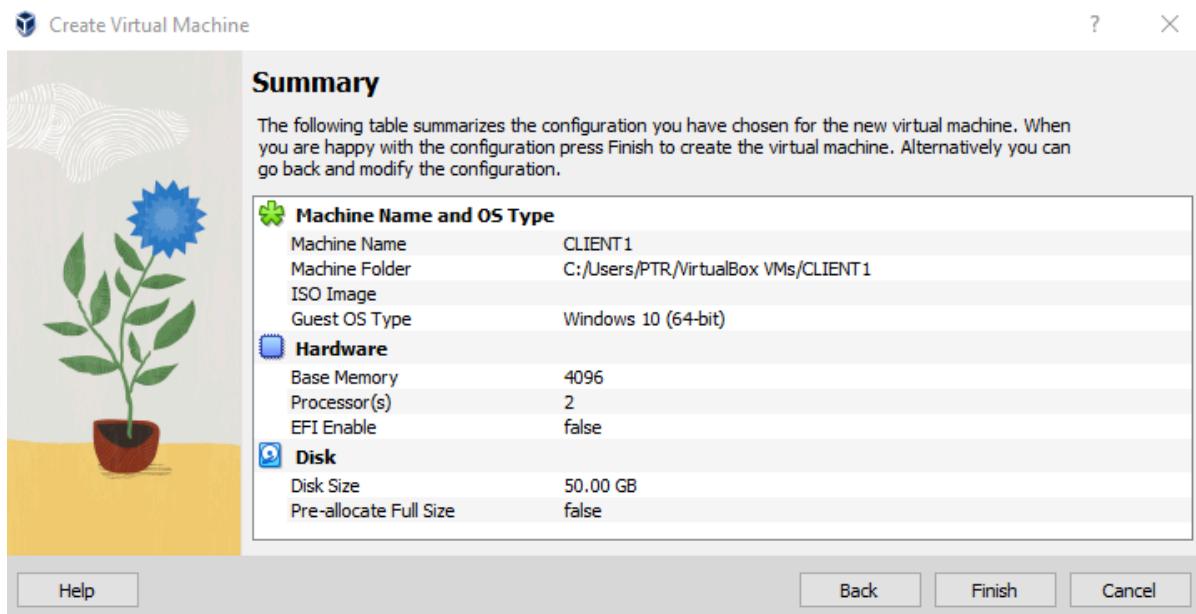
“Next”



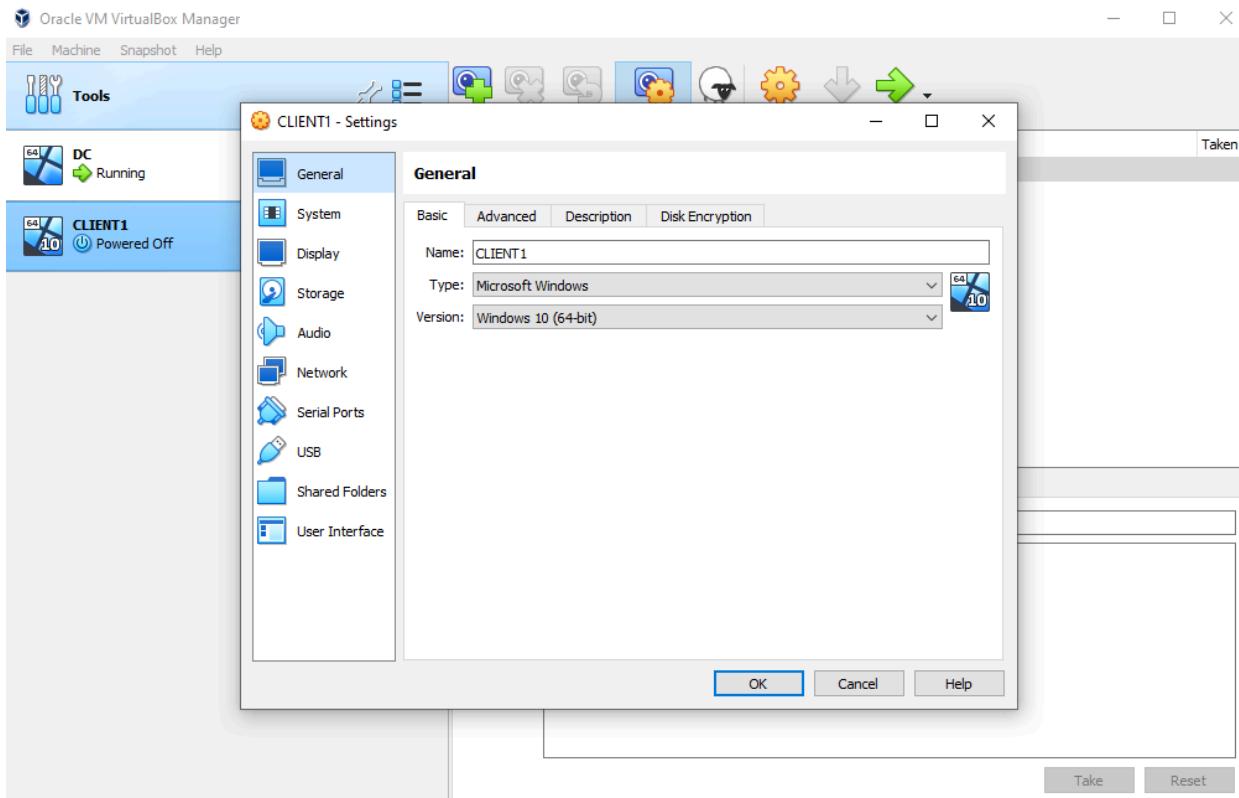
“Next”



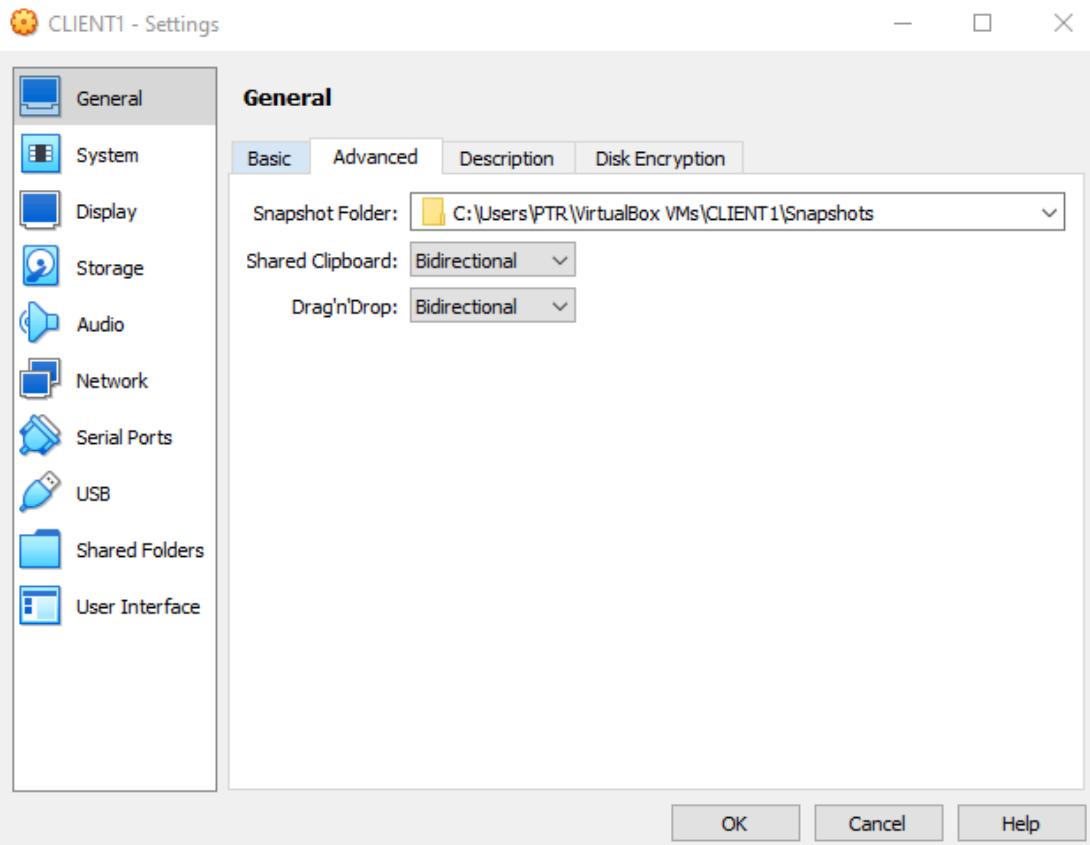
“Finish”



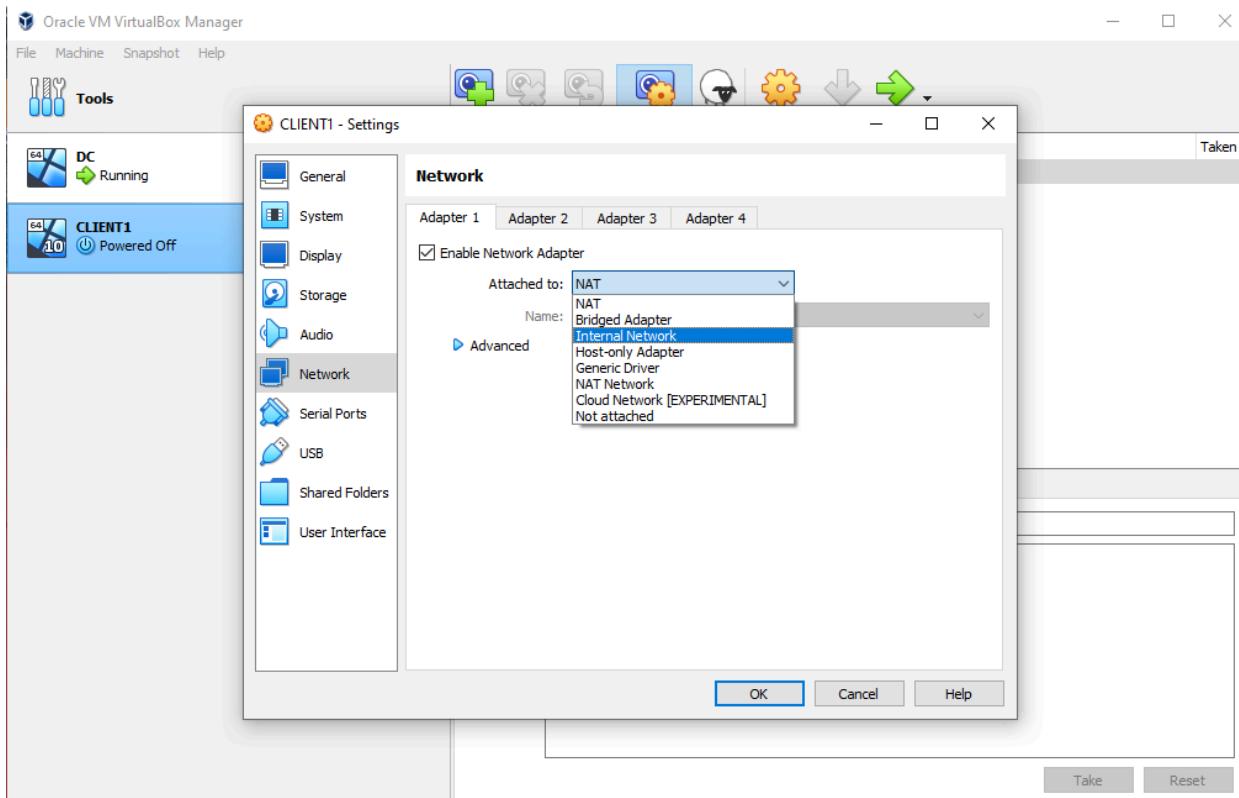
Prior to starting, we need to update the following settings.



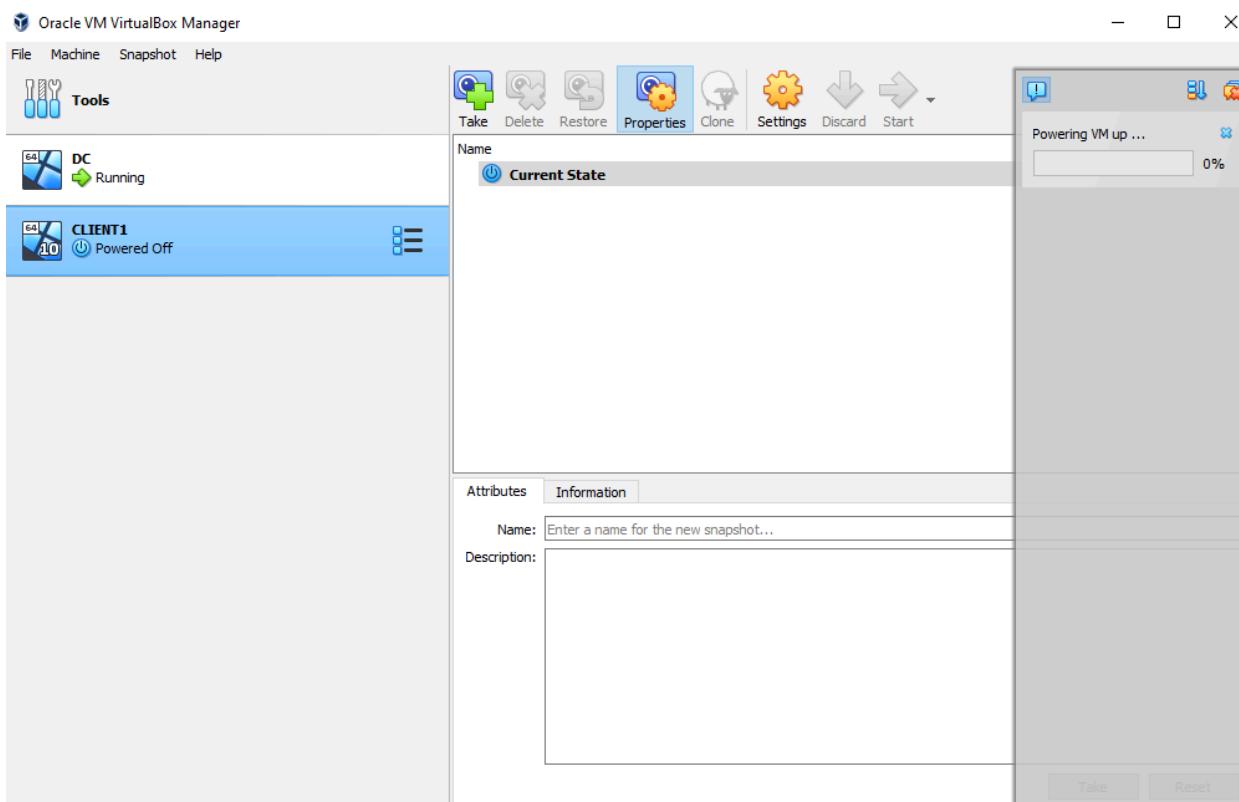
General > Advanced > “Bidirectional”



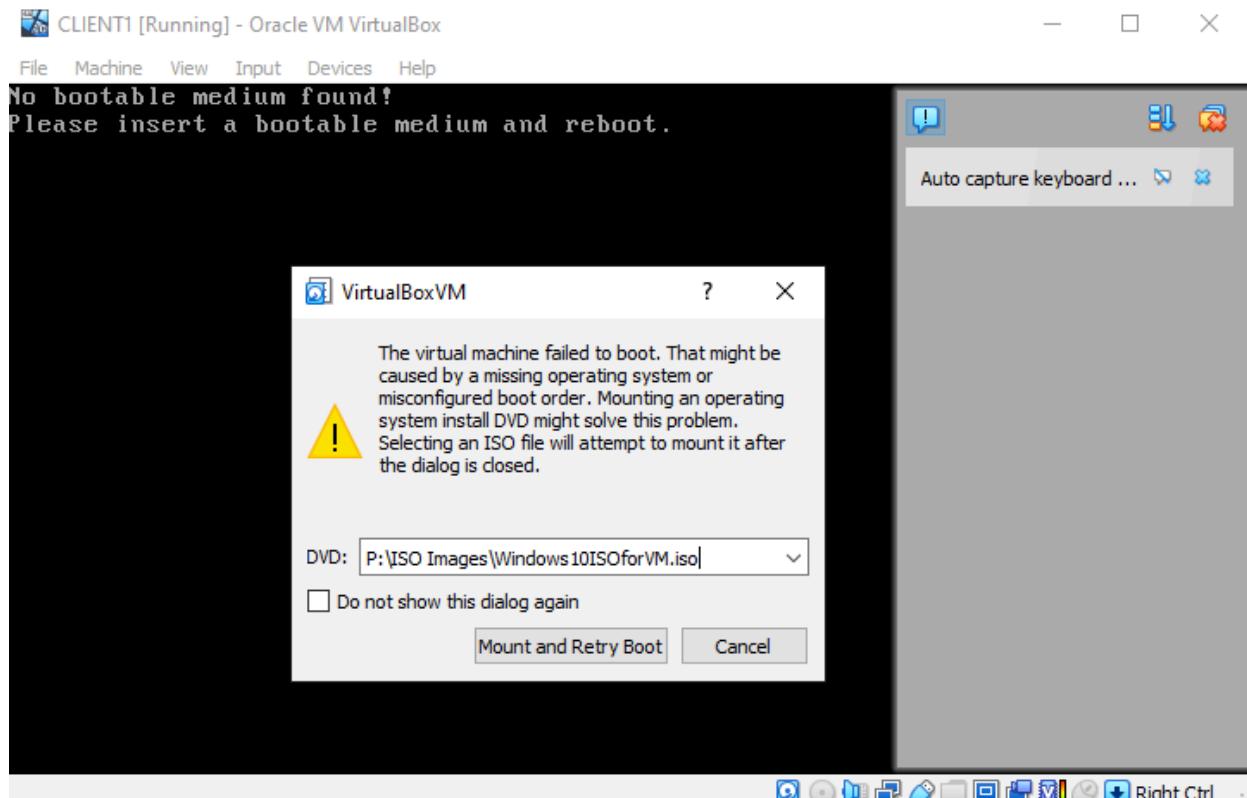
Instead of the preselected NAT, change the network to the **Internal** Network as shown in the diagram.



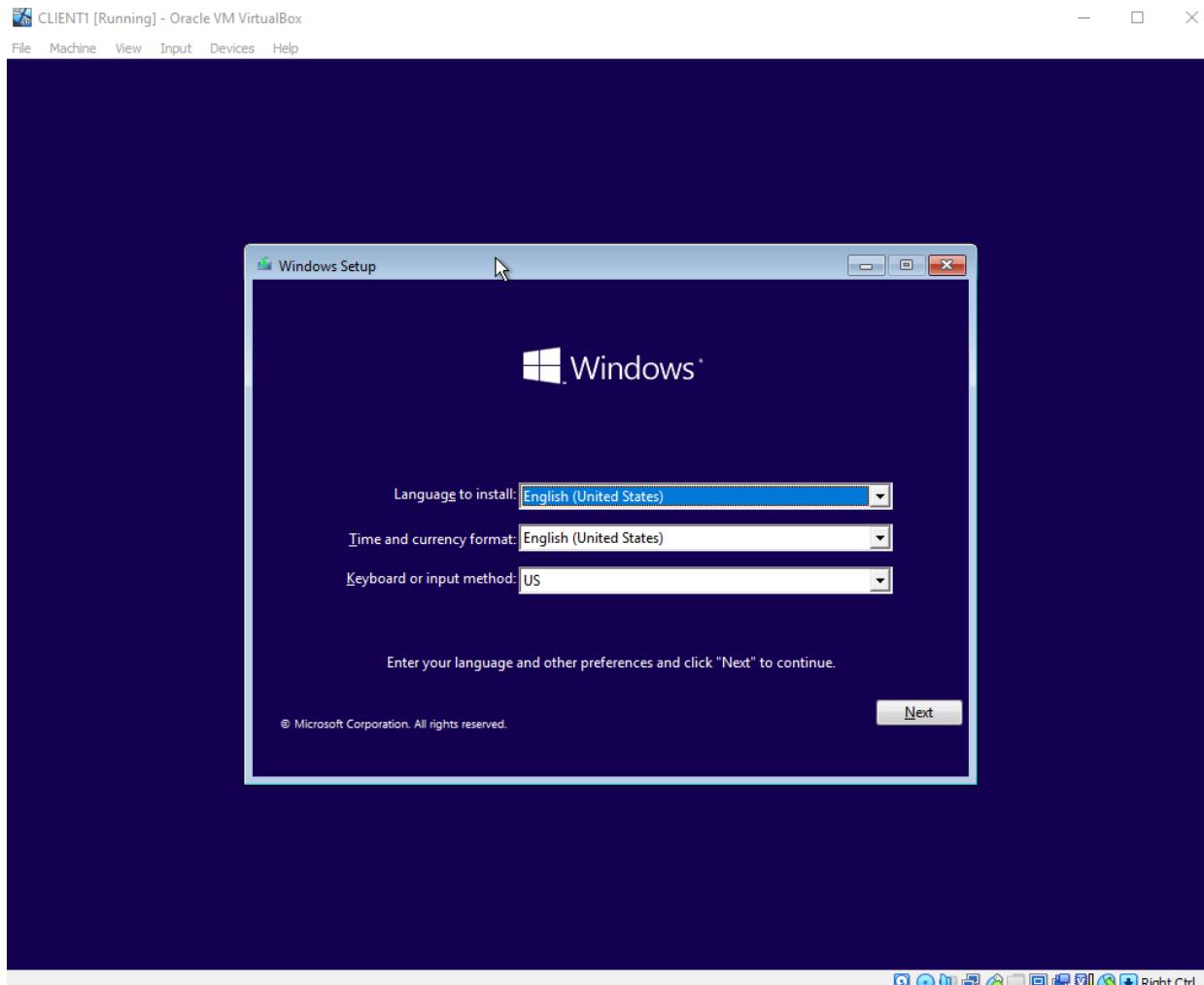
Start up CLIENT1



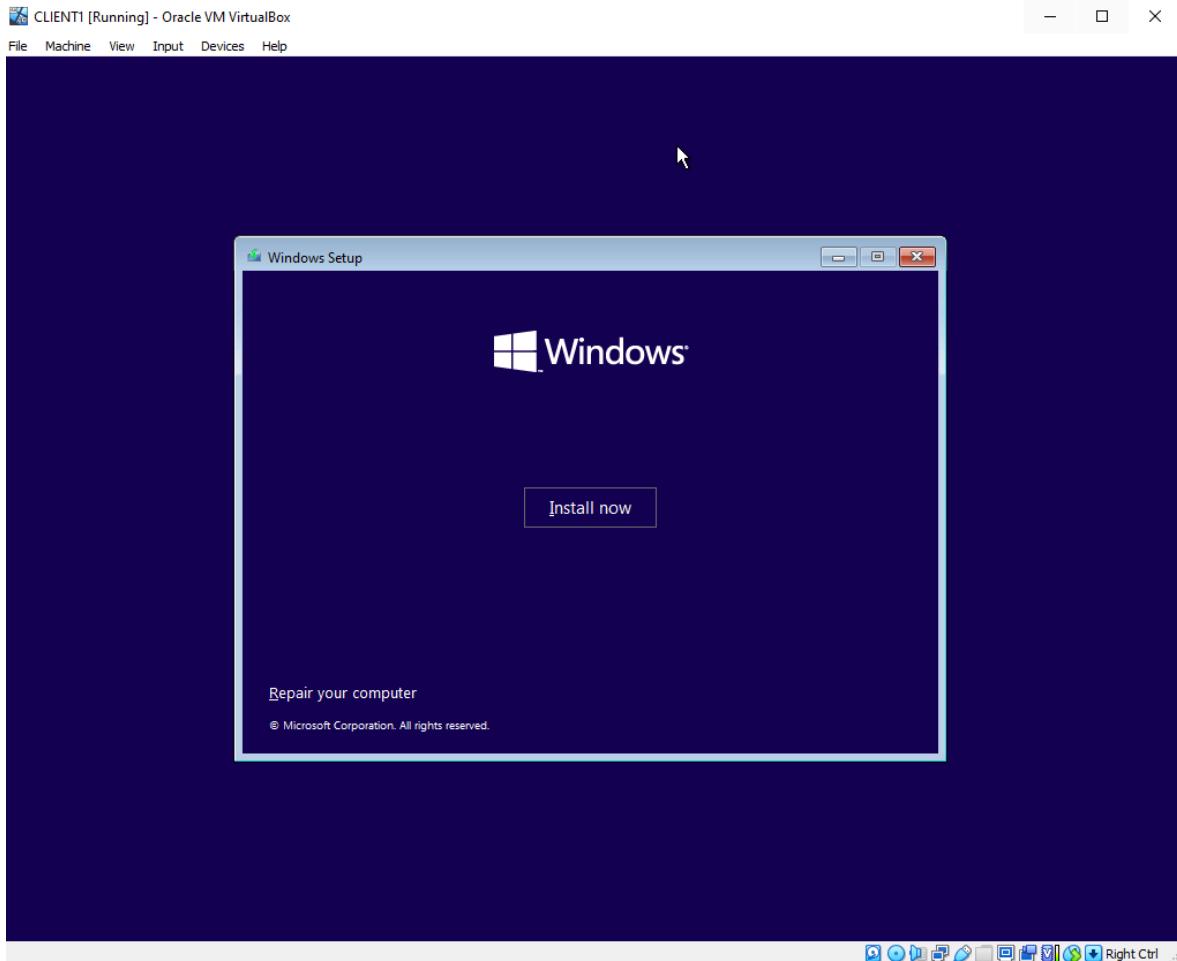
Find and select the Windows 10 ISO image that was installed earlier.



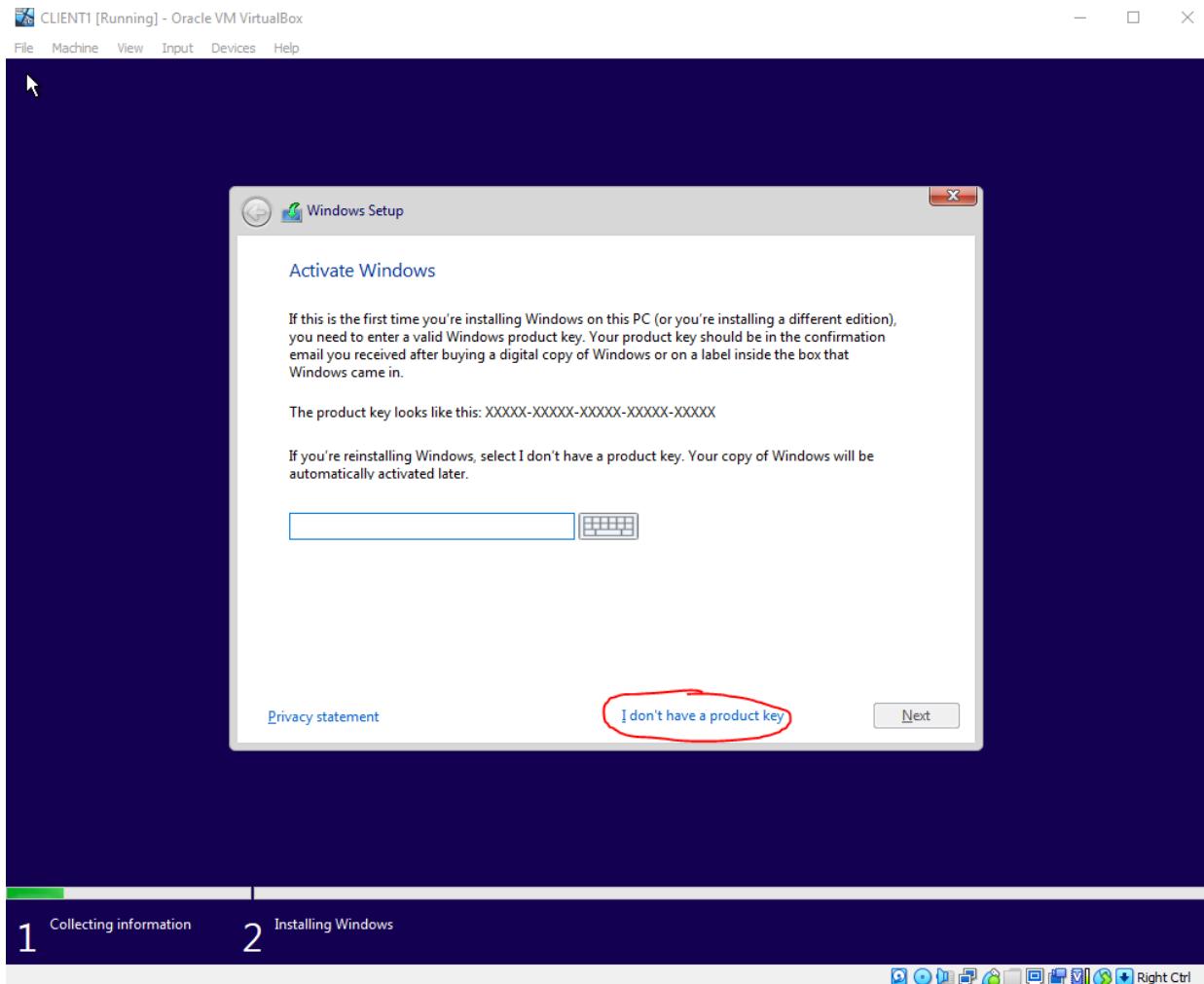
"Next"



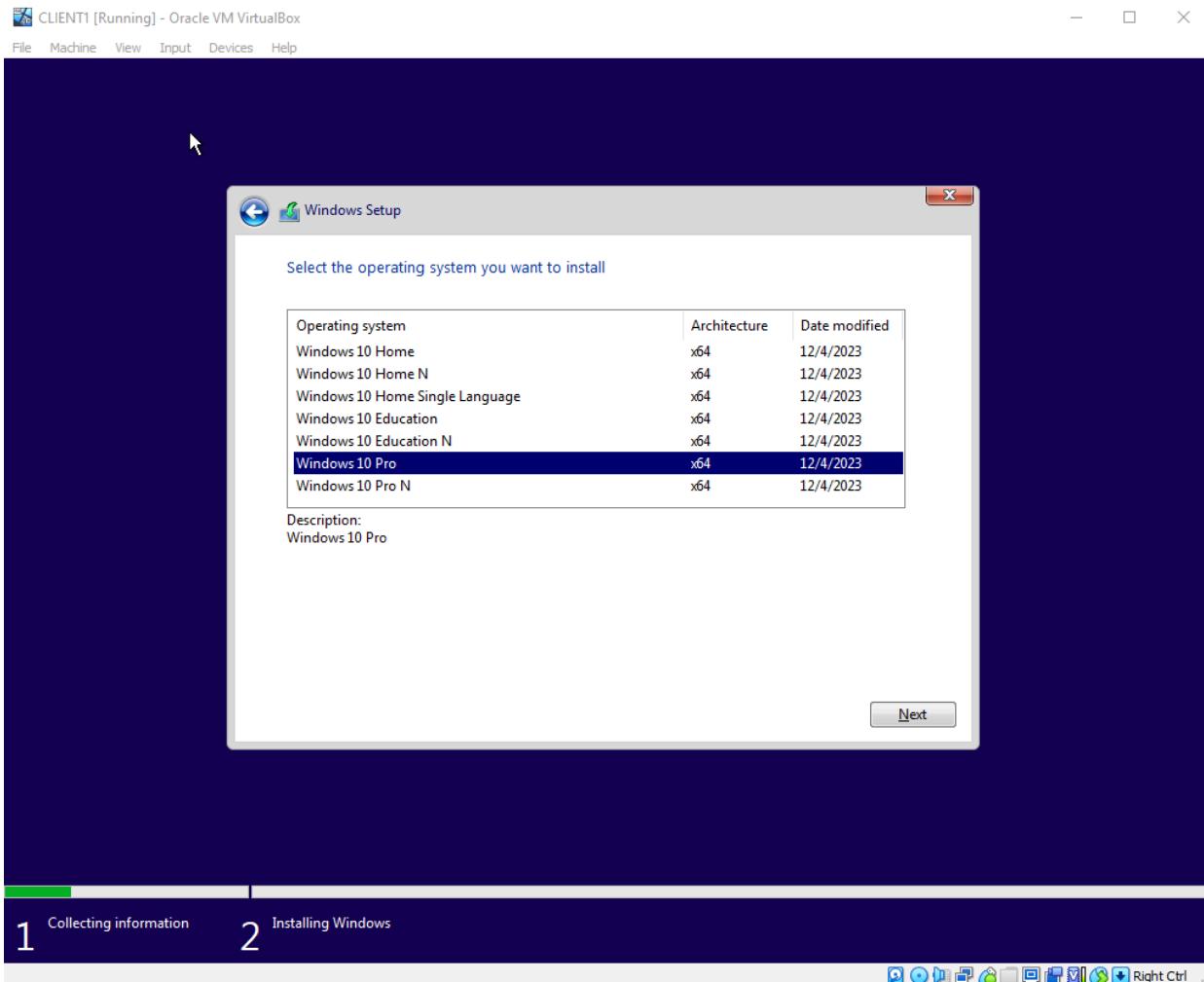
"Install now"



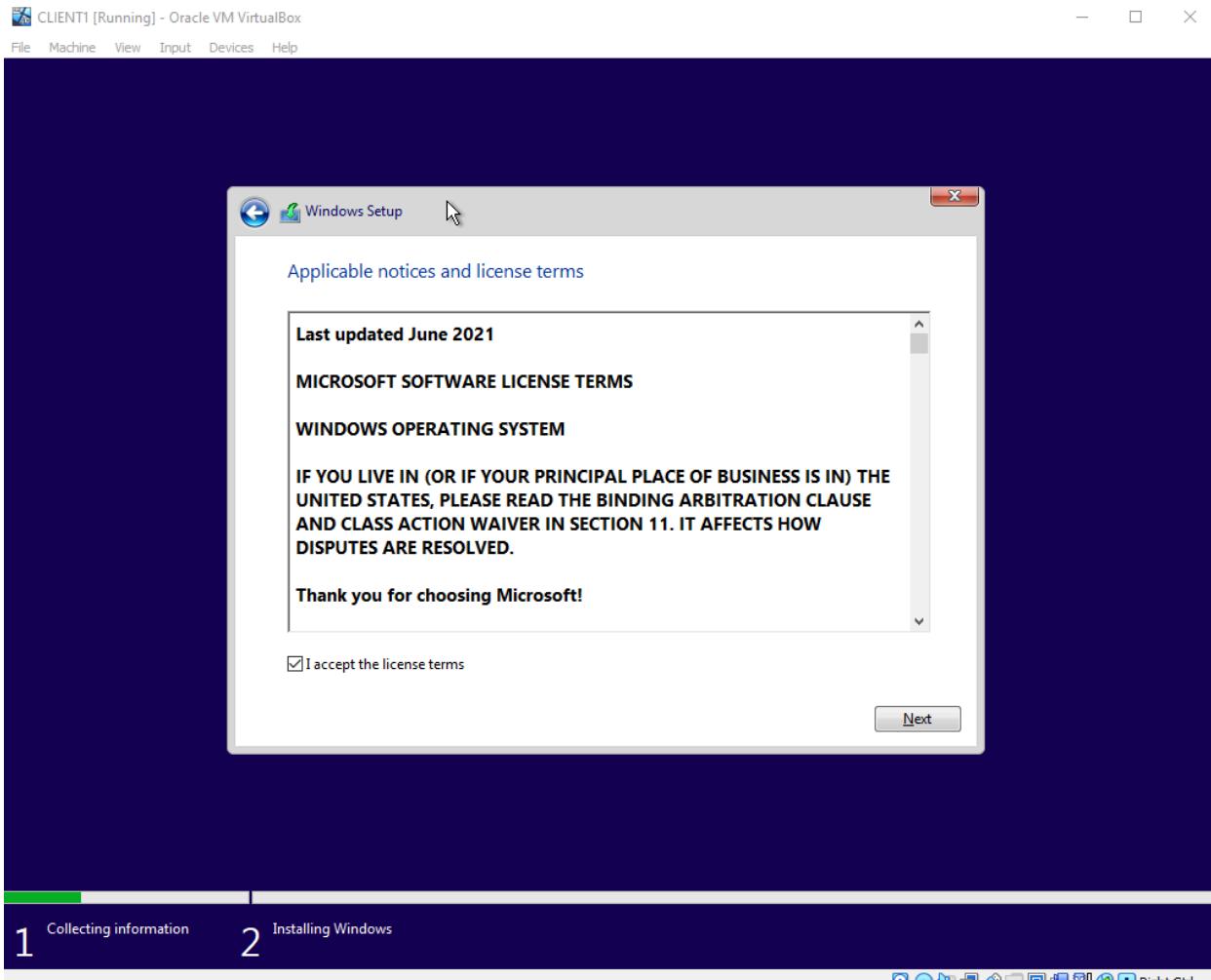
Select the following "*I don't have a product key*" and "Next".



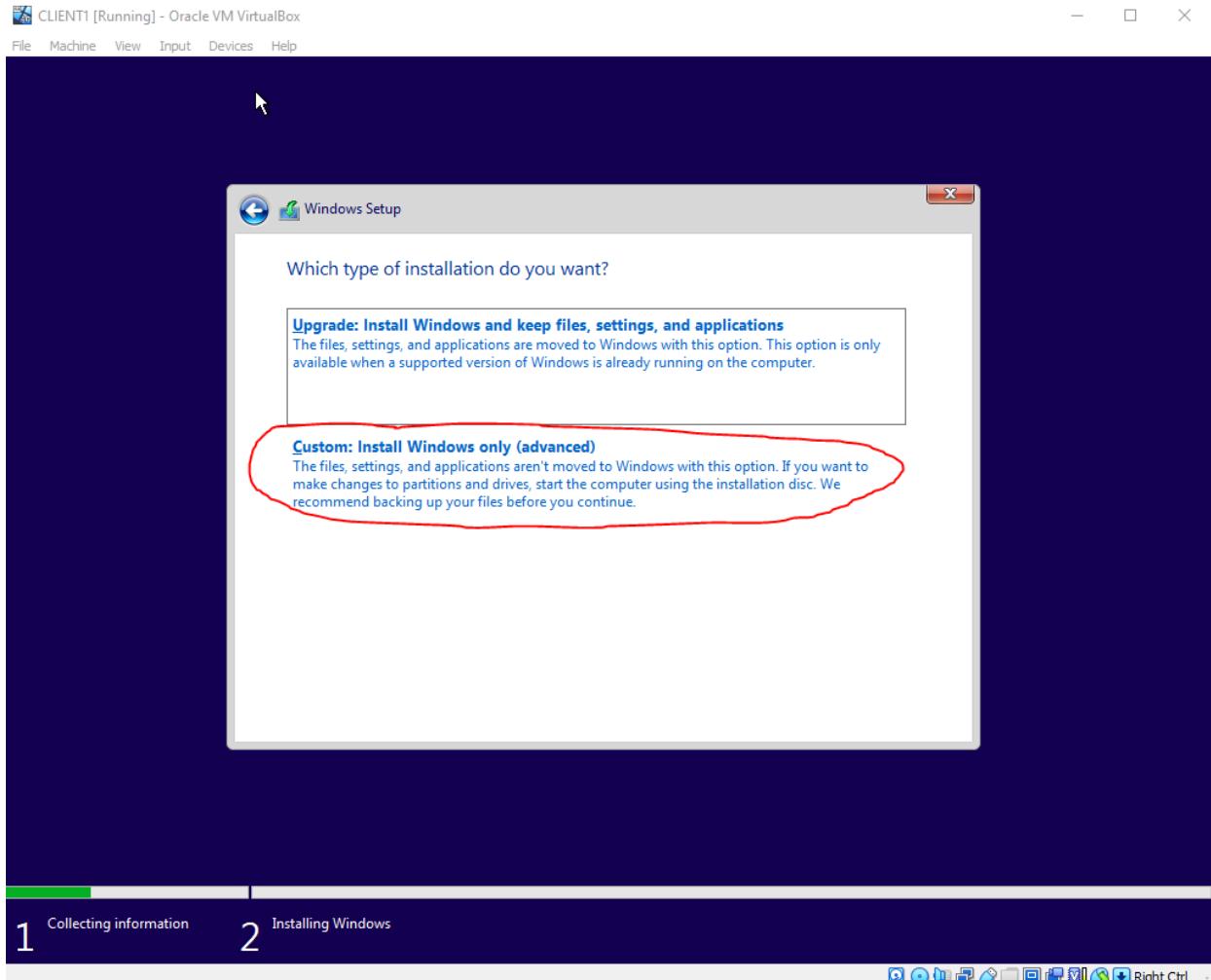
Proceed with **Windows 10 Pro**.



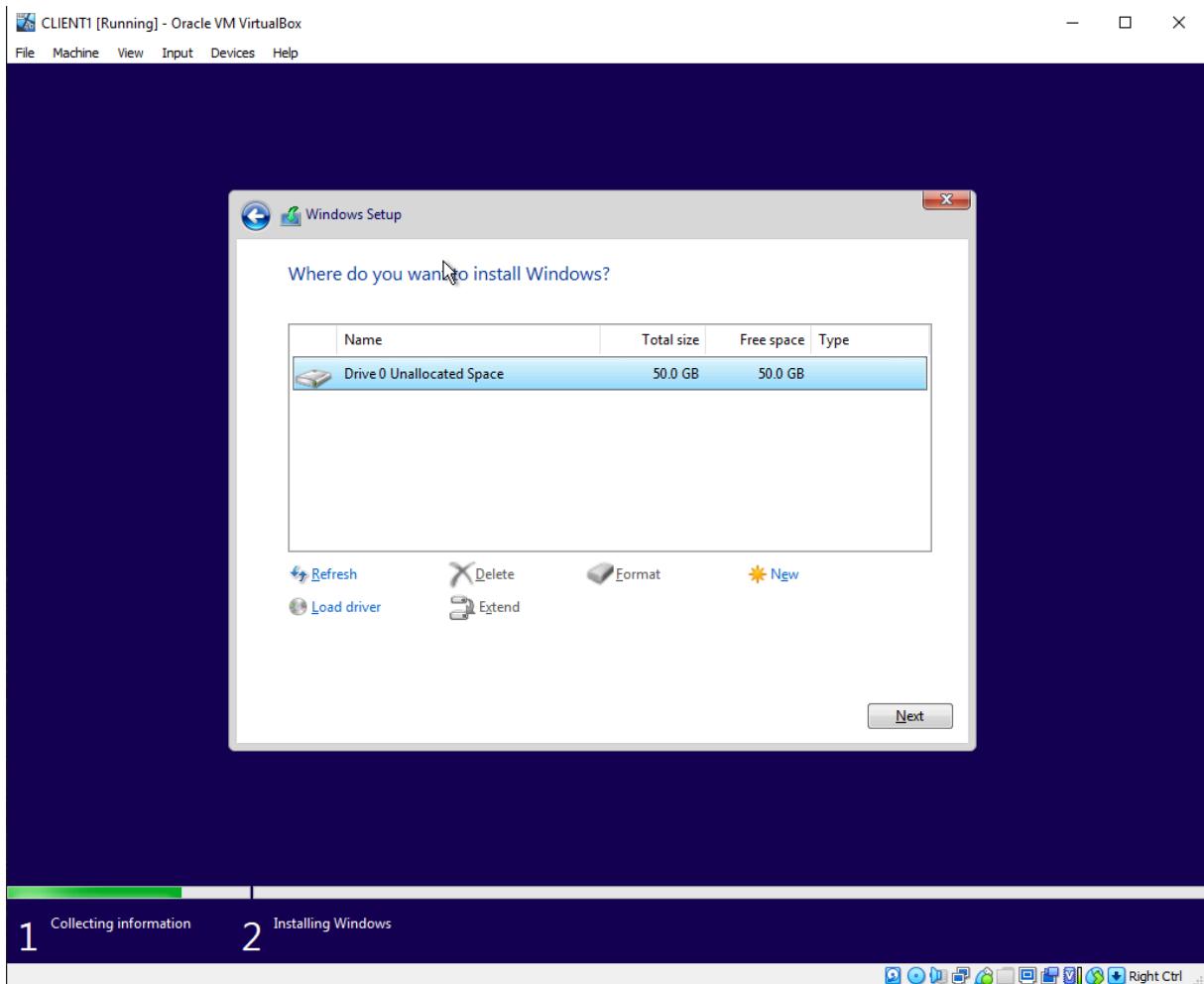
Accept terms & conditions and proceed “Next”.



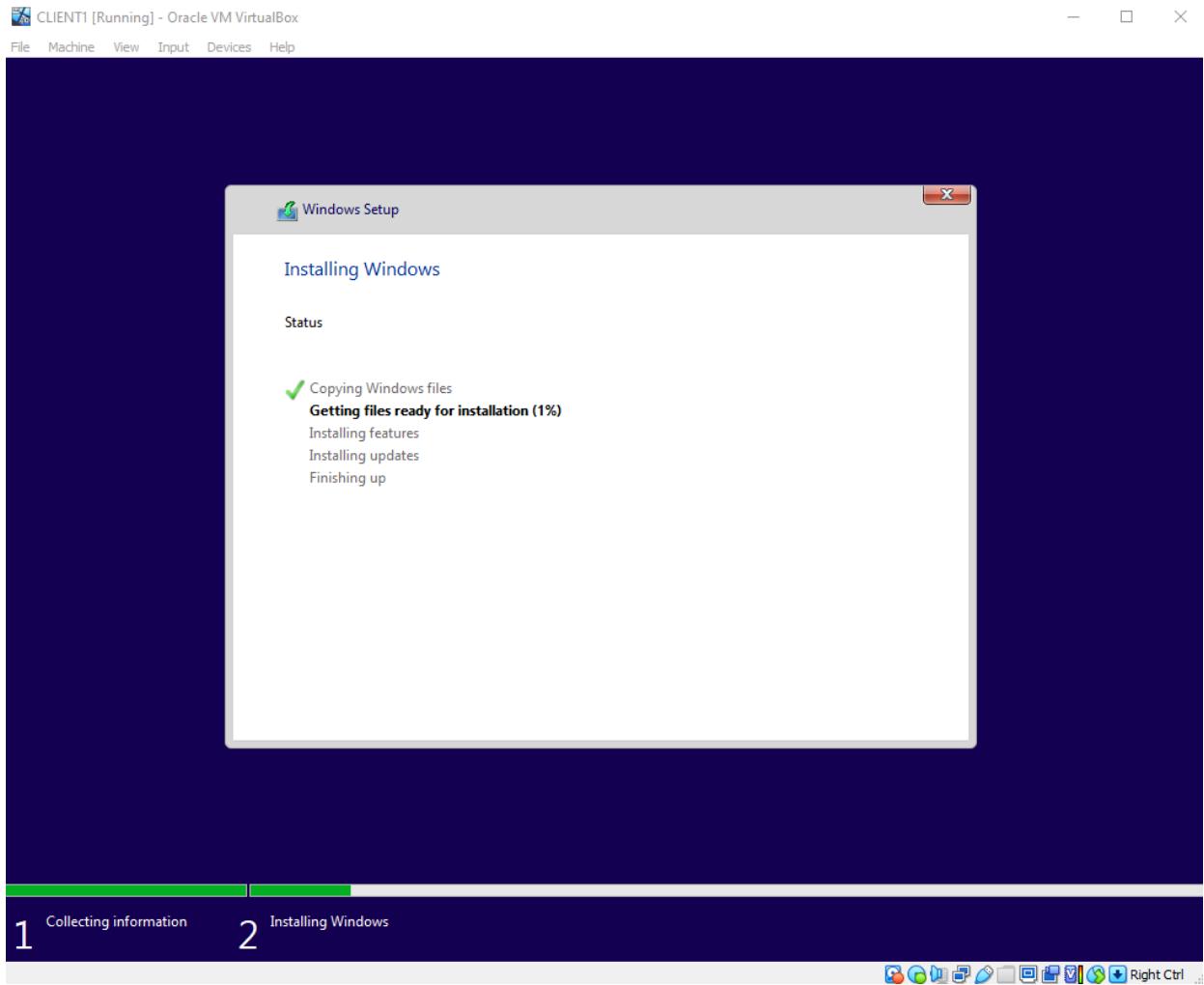
Select **Custom: Install Windows only (advanced)**.



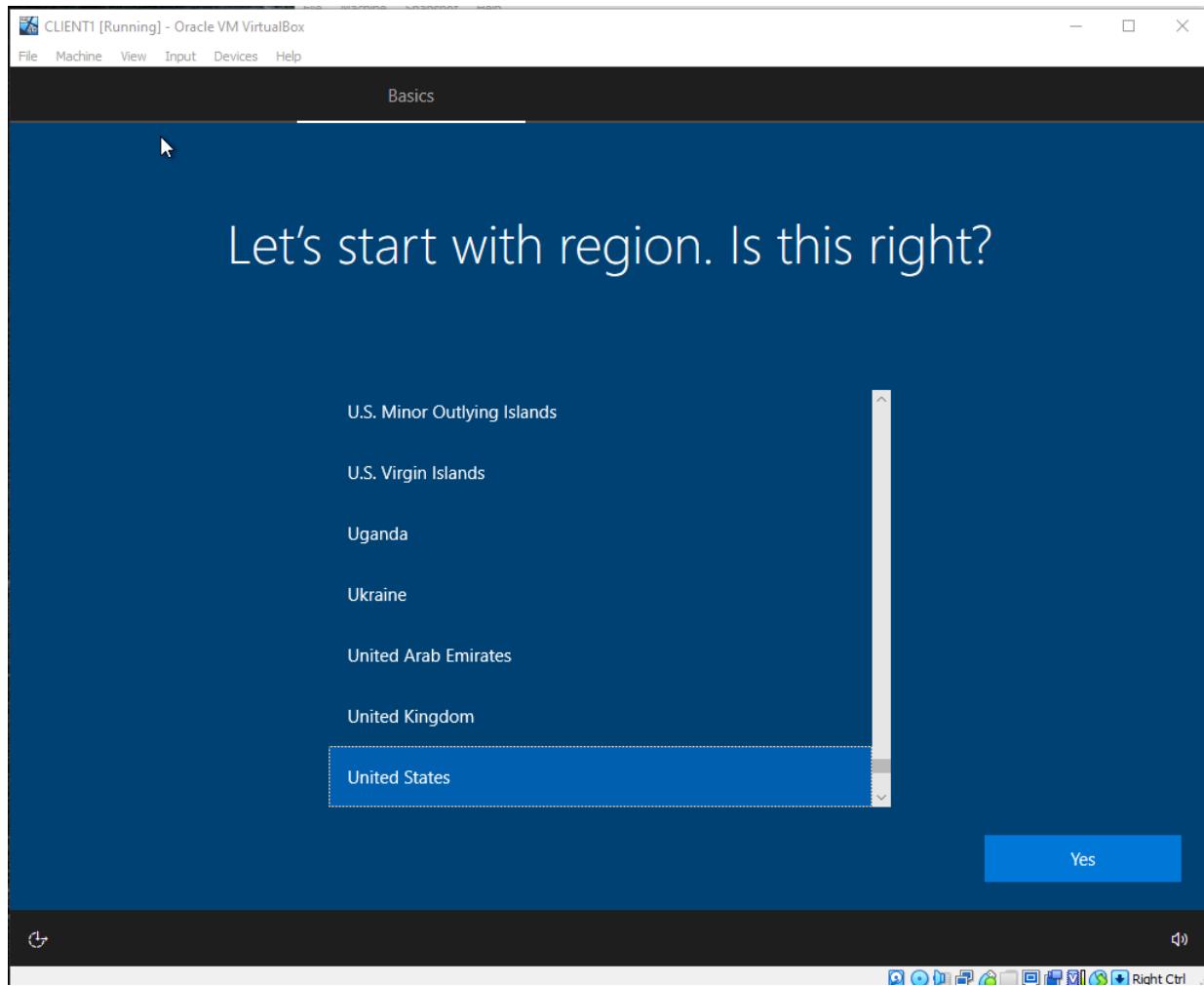
"Next"



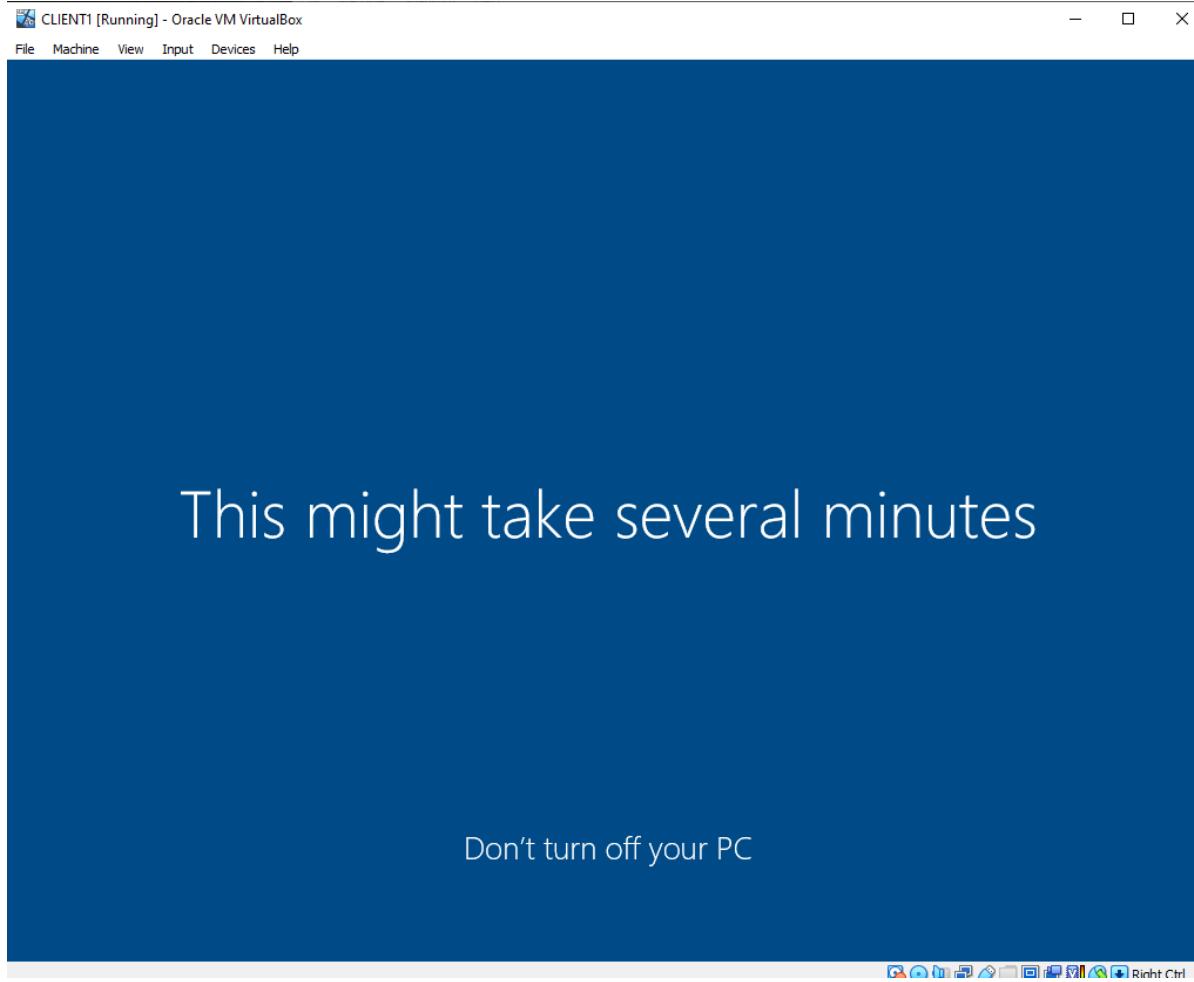
This download may take some time and the setup process may involve several restarts. Please do not interact with it until it opens on the setup screen.



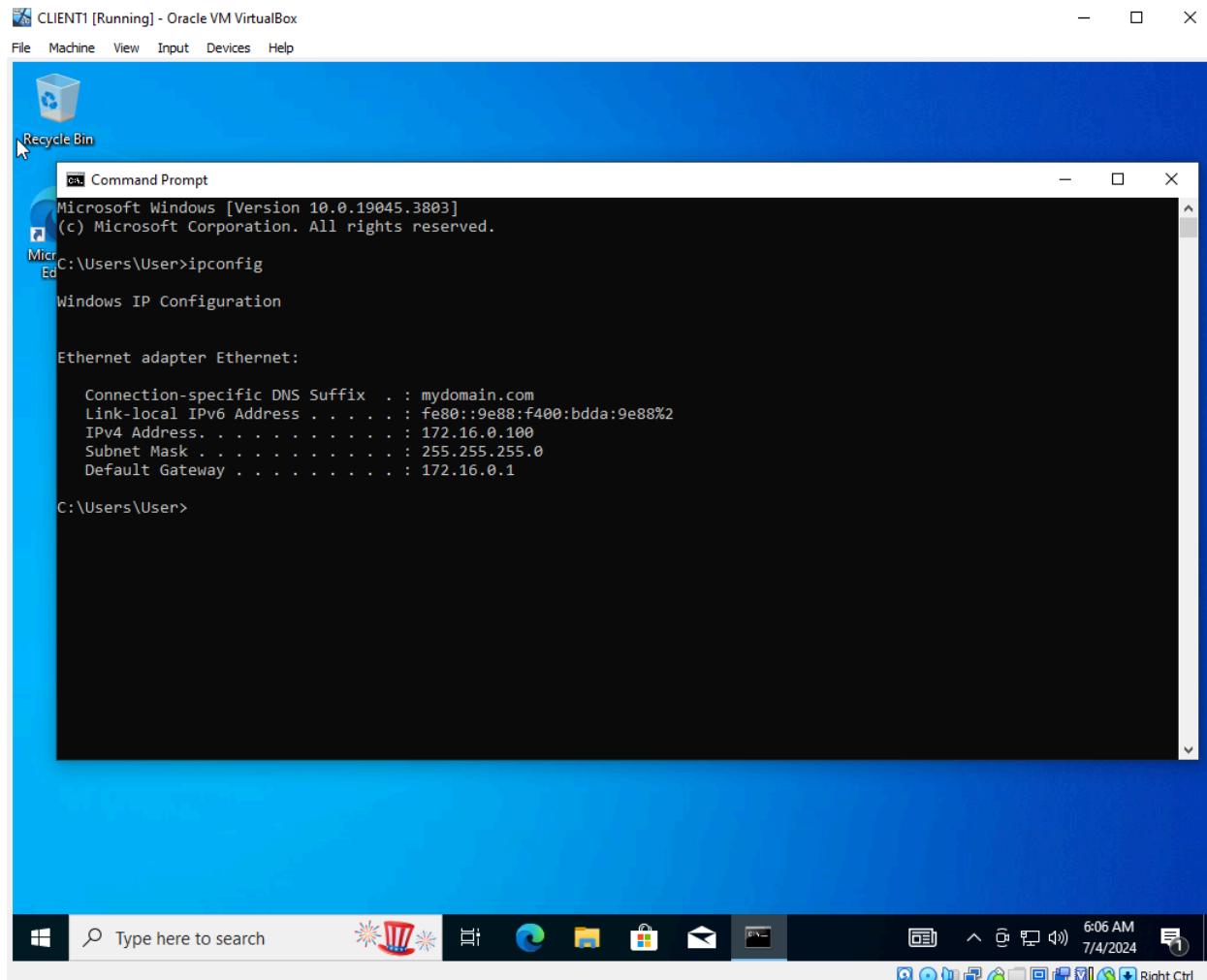
Proceed through the user configurations.



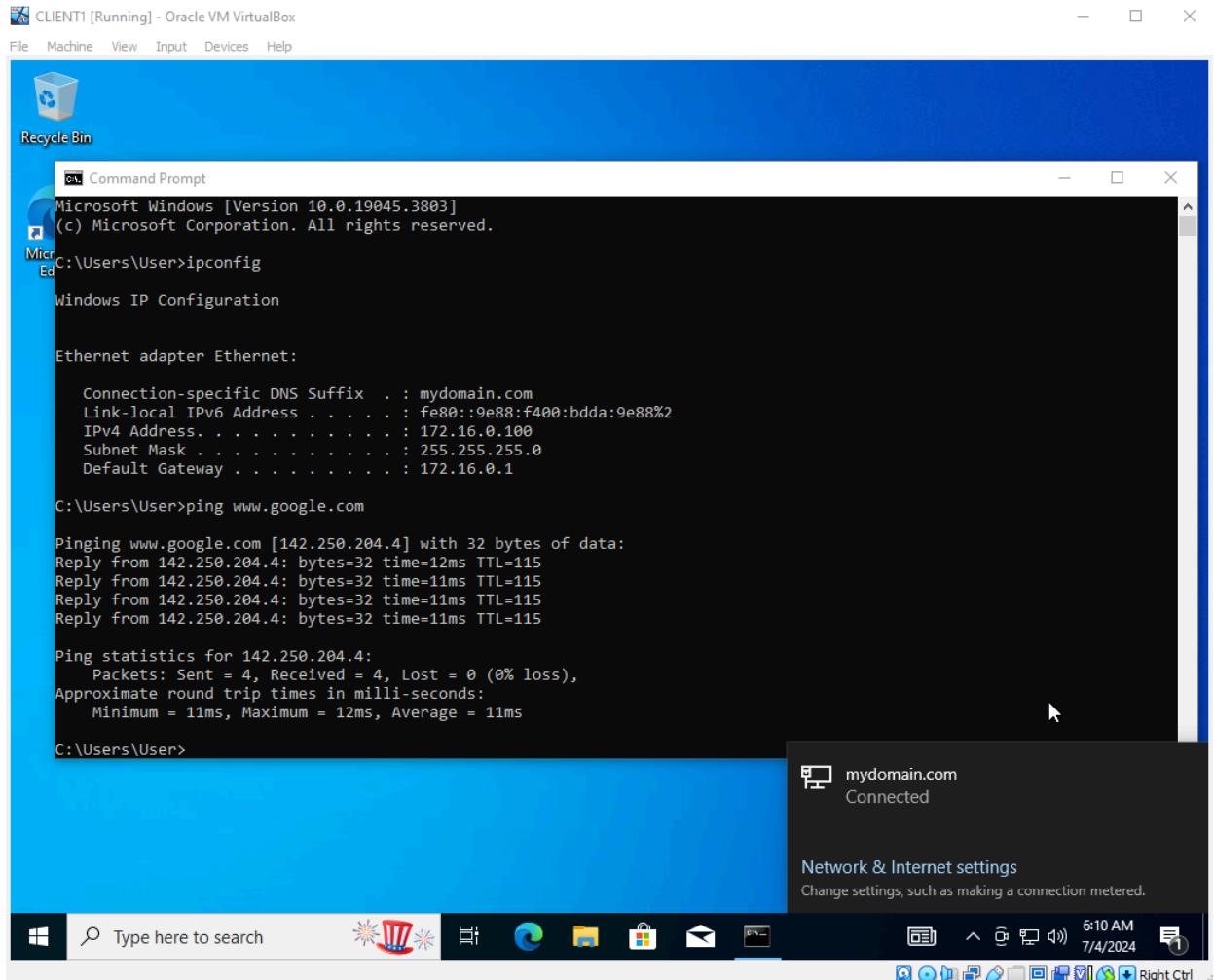
During the setup process, try to limit access and avoid signing in with Microsoft. If prompted to connect to the internet, indicate that you do not have internet access because this is an internal NIC setup.



Once CLIENT1 VM has loaded and is operational, open CMD (Command Prompt) on **CLIENT1** to verify that the IP address configuration is working correctly.



Ping Google to verify if our DNS server and infrastructure are functioning correctly.



Ping the DNS server to check for replies and ensure it is working properly. Afterwards, check the hostname using the command "*hostname*" on CMD and proceed to change the hostname.

```
ca Select Command Prompt
C:\Users\User>ping mydomain.com
Pinging mydomain.com [172.16.0.1] with 32 bytes of data:
Reply from 172.16.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 172.16.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\User>hostname
DESKTOP-HEA2LPI

C:\Users\User>
```

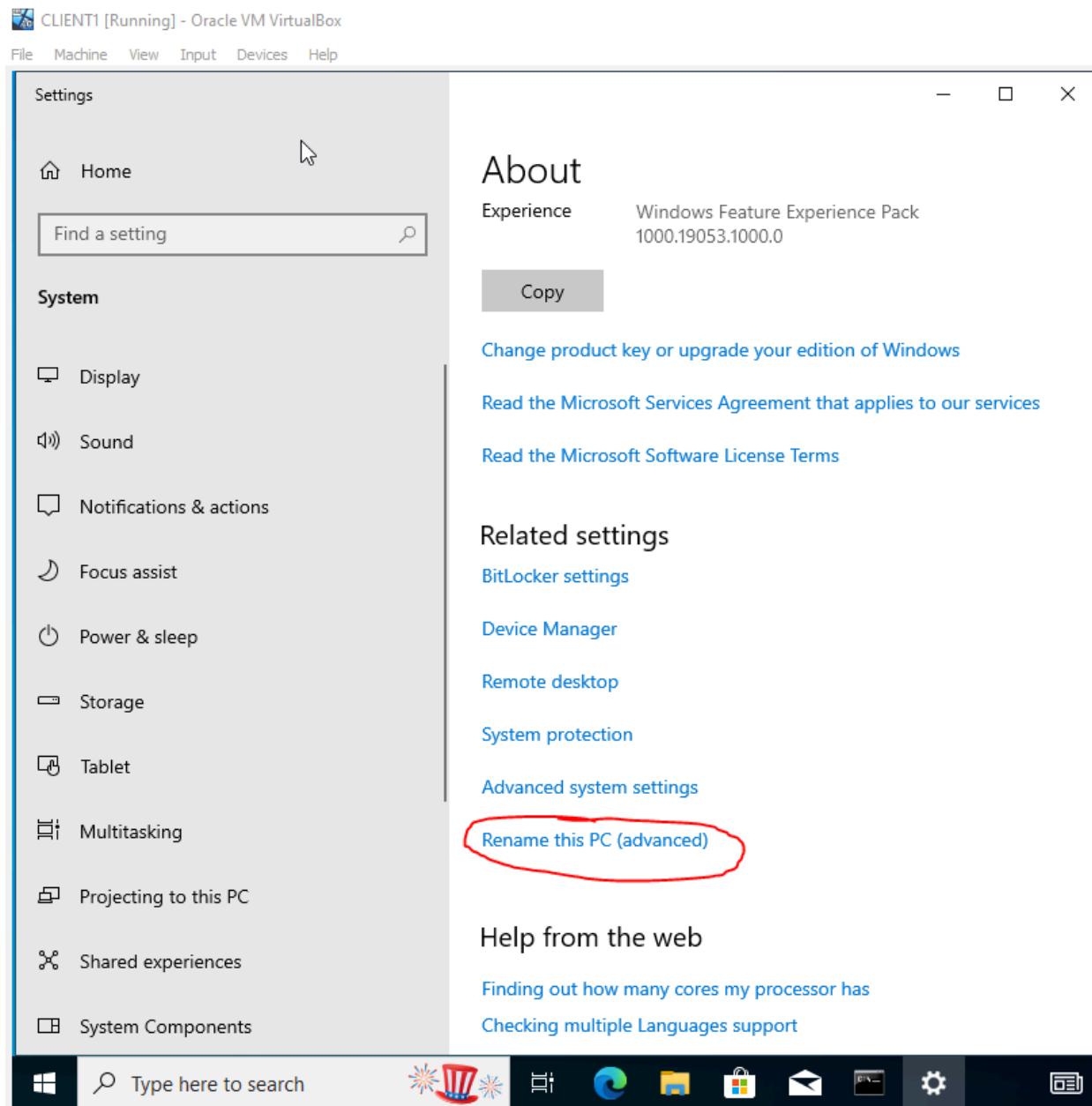
To rename the **CLIENT1** VM PC proceed into “*System*”.

CLIENT1 [Running] - Oracle VM VirtualBox

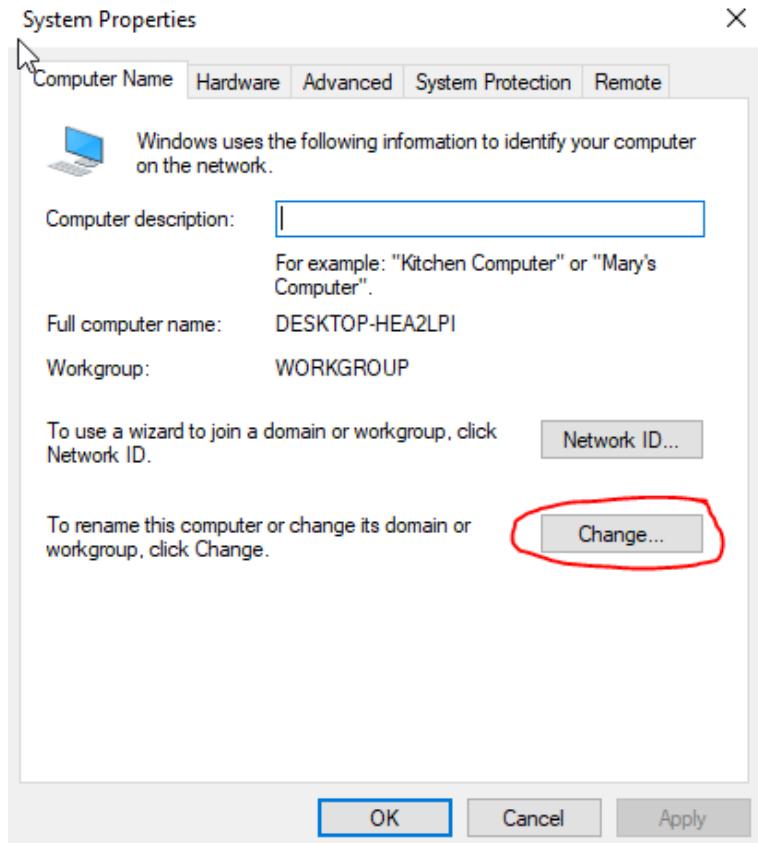
File Machine View Input Devices Help



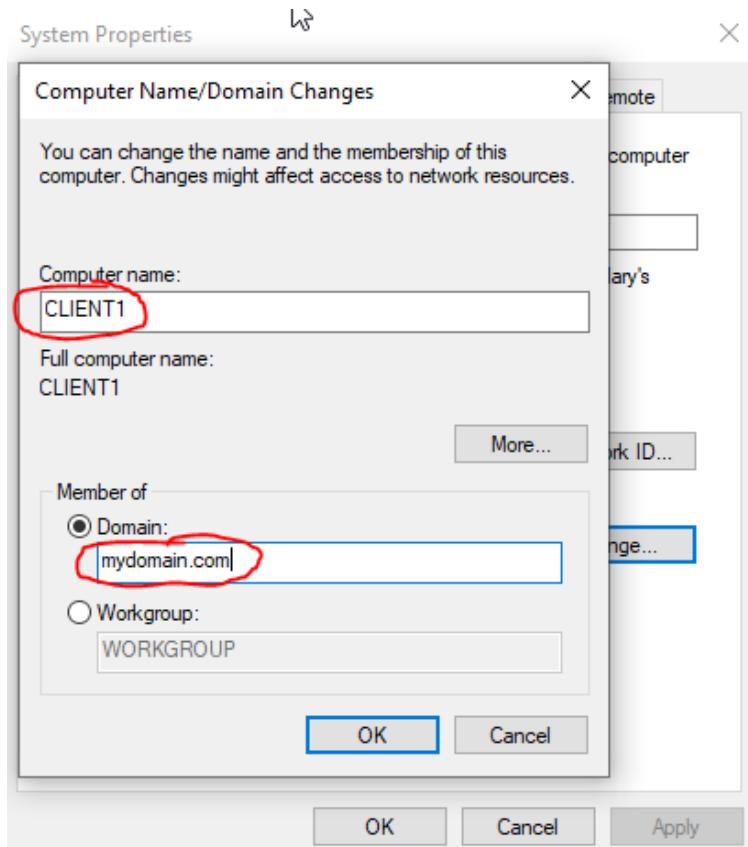
Scroll down from the setting to find “*Rename this PC (advanced)*”.



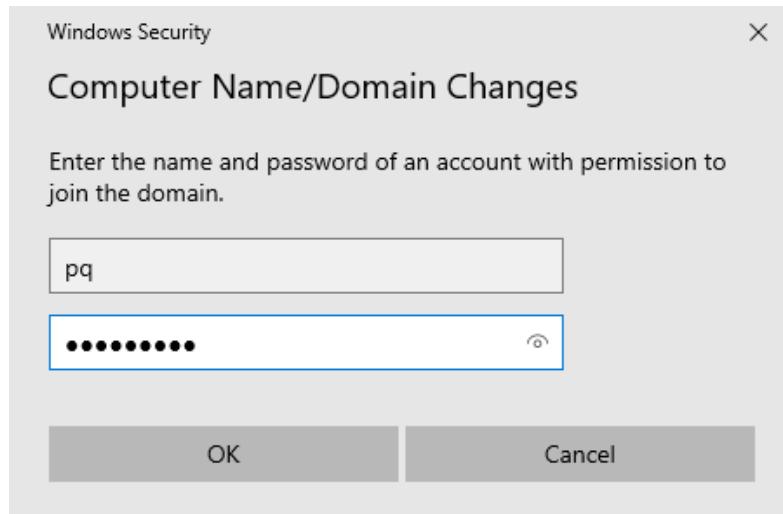
Proceed to “*Change...*”



Rename the computer to **CLIENT1** and add *Member of - Domain: mydomain.com* server as shown on the diagram.



After hitting “OK” on that change there it'll prompt you to login with an admin account to proceed.



After logon is completed it'll show the following prompt to notify that it has been connected.

Computer Name/Domain Changes X



Welcome to the mydomain.com domain.

OK

Then it'll force a restart.

Computer Name/Domain Changes

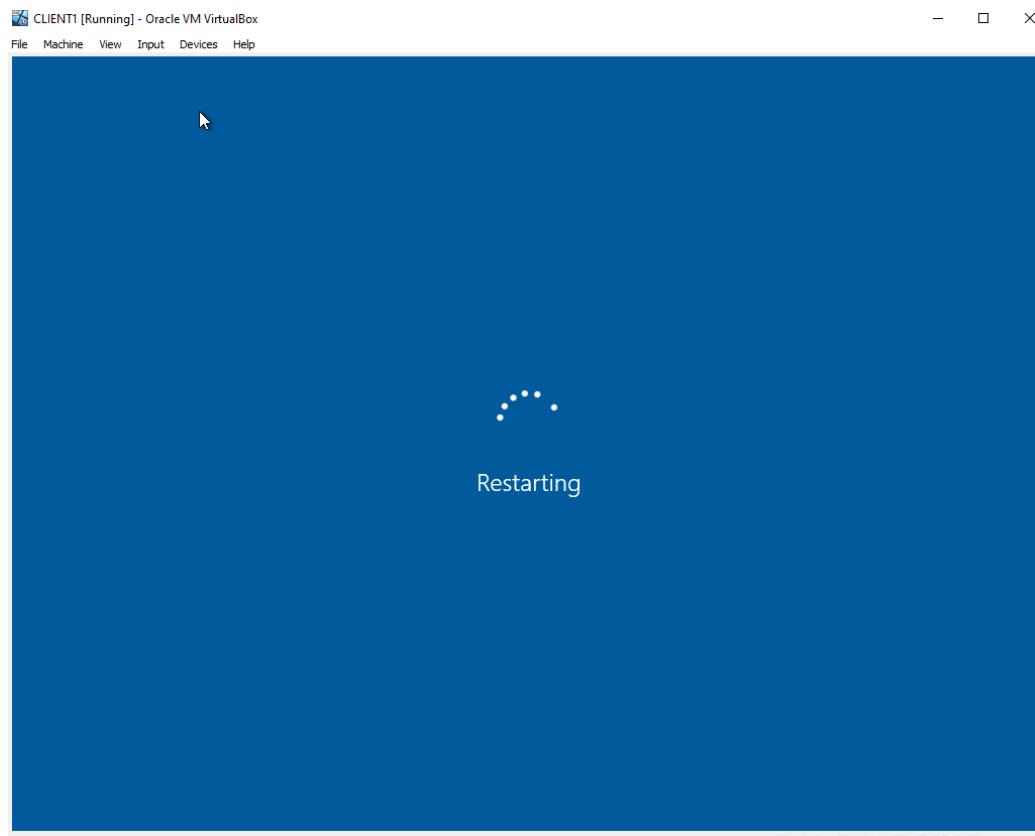


You must restart your computer to apply these changes

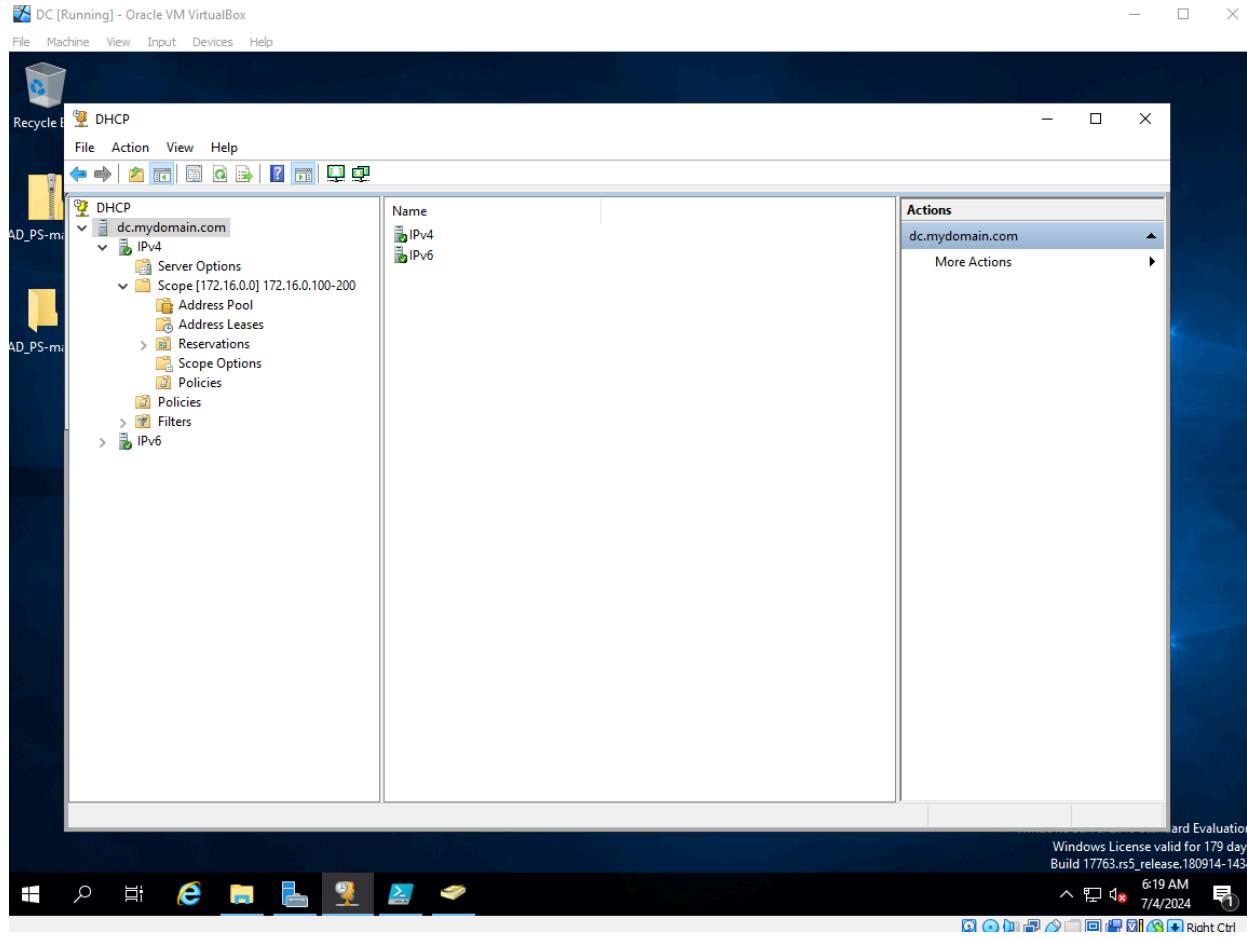
Before restarting, save any open files and close all programs.

OK

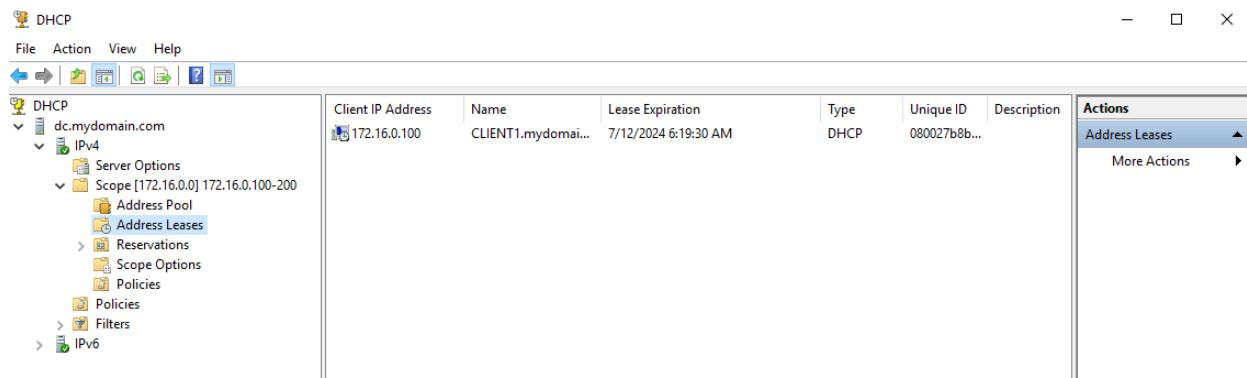
Restarting **CLIENT1**.



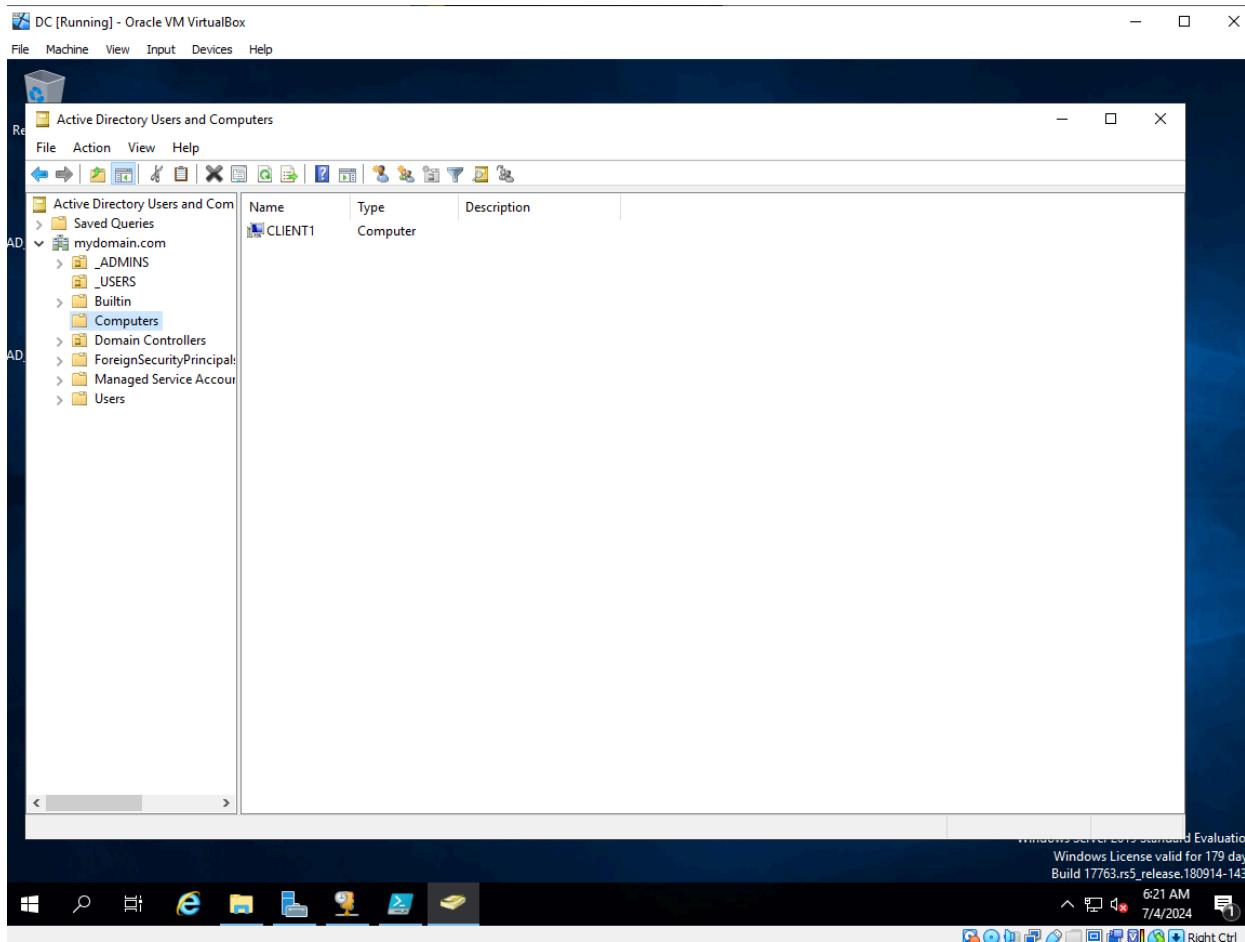
Back to **DHCP on Domain Controller (DC) VM Server 2019**.



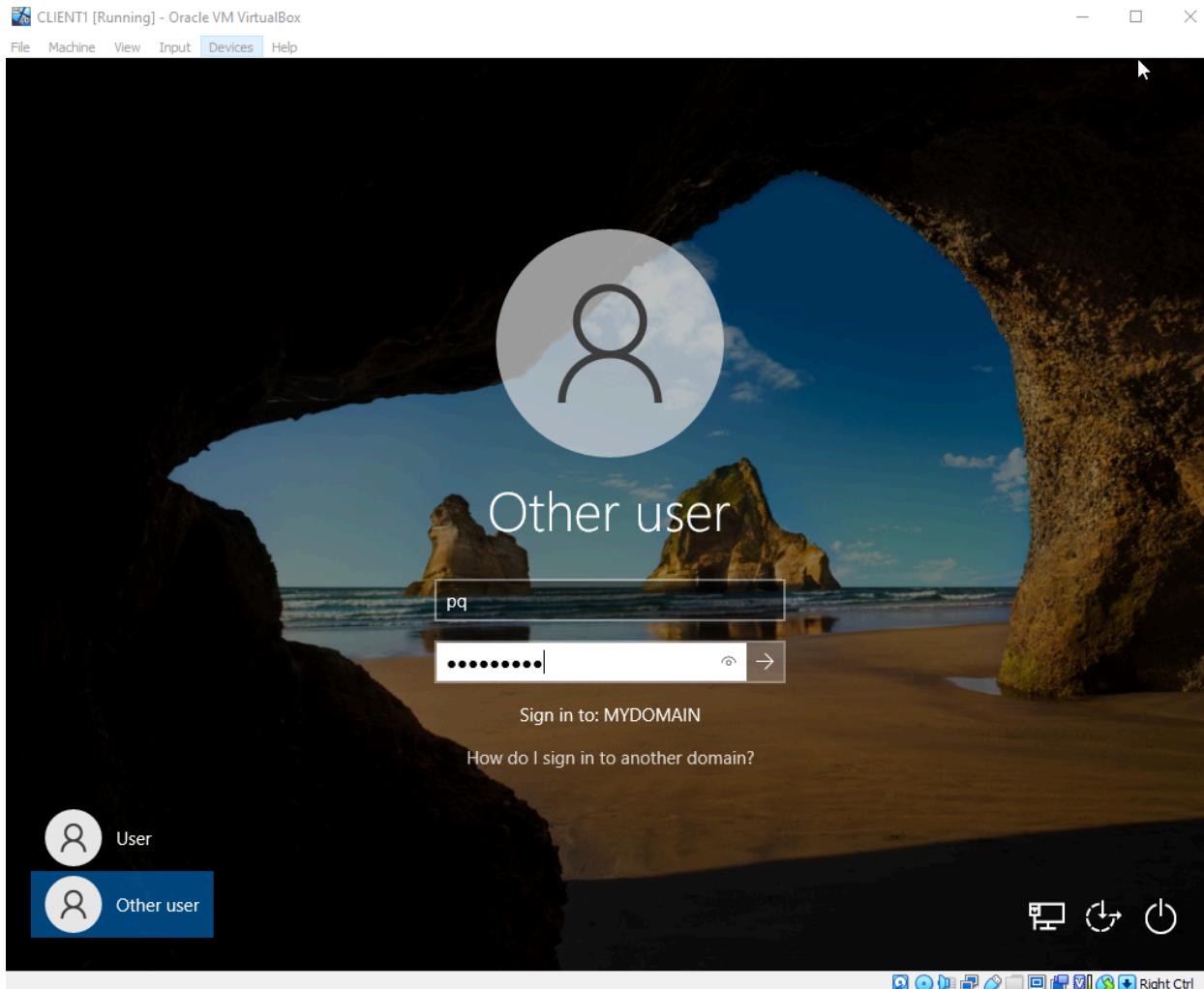
The **CLIENT1 VM** shows that address has been leased to it.



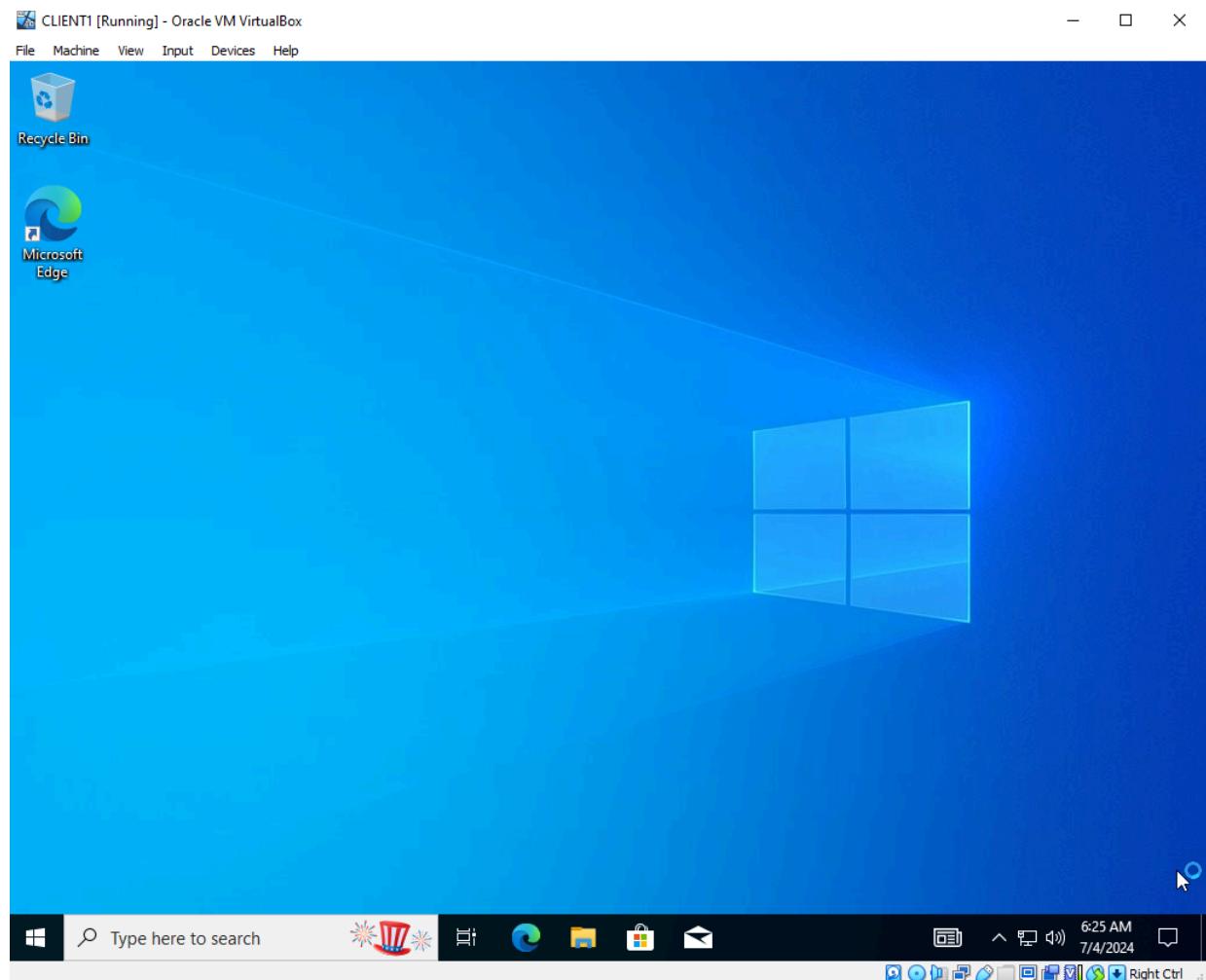
Back onto **Active Directory Users and Computers > Computers** shows that **CLIENT1** is a registered computer on the domain.



After restarting and returning to the login screen, you can now log in with any of the domain user accounts that were created on the **MYDOMAIN Domain Controller**.



Users can successfully log into the server with any of the distributed user accounts.



Use the “whoami” command in CMD to show that the user is part of the **MYDOMAIN** server.

```
cmd Command Prompt
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\pq>whoami
mydomain\pq

C:\Users\pq>
```