CLOUD MANAGEMENT

A PRACTICAL REPORT

ON

CLOUD MANAGEMENT

SUBMITTED BY
Mr. SAYYAD VIQAR AHMAD JAWAD HUSSAIN
Roll No:

UNDER THE GUIDANCE OF
PROF. MEHDI REZAEI

Submitted in fulfilment of the requirements for qualifying MSc. IT Part I Semester - II Examination 2023-2024

University of Mumbai Department of Information Technology

R.D. & S.H National College of Arts, Commerce & S.W.A. Science College Bandra (West), Mumbai – 400 050

R. D. & S. H. National & S. W. A. Science College

Bandra (W), Mumbai - 40050

Department of Information Technology
M.Sc. (IT – SEMESTER II)

Certificate

This is to certify that Cloud Management Practical's performed at R.D & S.H National & S.W.A. Science College by *Mr.Sayyad VigarAhmad Jawad Hussain* holding Seat No. _____ studying Master of Science in Information Technology Semester – II has been satisfactorily completed as prescribed by the University of Mumbai, during the year 2023 – 2024

Subject In-Charge **Coordinator In-Charge** **External Examiner**

College Stamp

INDEX

SR NO.	DATE	PRACTICAL	PG NO.	SIGNATURE
1	18/04/2024	Create and Manage Cloud using SCVMM 2019	1	
2	02/05/2024	Deploy and Manage SDN infrastructure using SCVMM 2019	119	
3	15/05/2024	Deploy Service Manager 2019 and install on 2 Computer Scenario andSetup SQL Server reporting Service using Service Manager 2019	172	
4	23/05/2024	Installing System Centre Orchestrator	233	
5	05/06/2024	Install and Deploy Data Protection Manager	259	
6	13/06/2024	Managing Orchestrator Servers	355	
7	20/06/2024	Protecting Workloads using Data Protection Manager	397	
8	27/06/2024	Managing Services with Configuration manager and Designing a Hierarchy of sites using Microsoft End Point Configuration Manager	451	

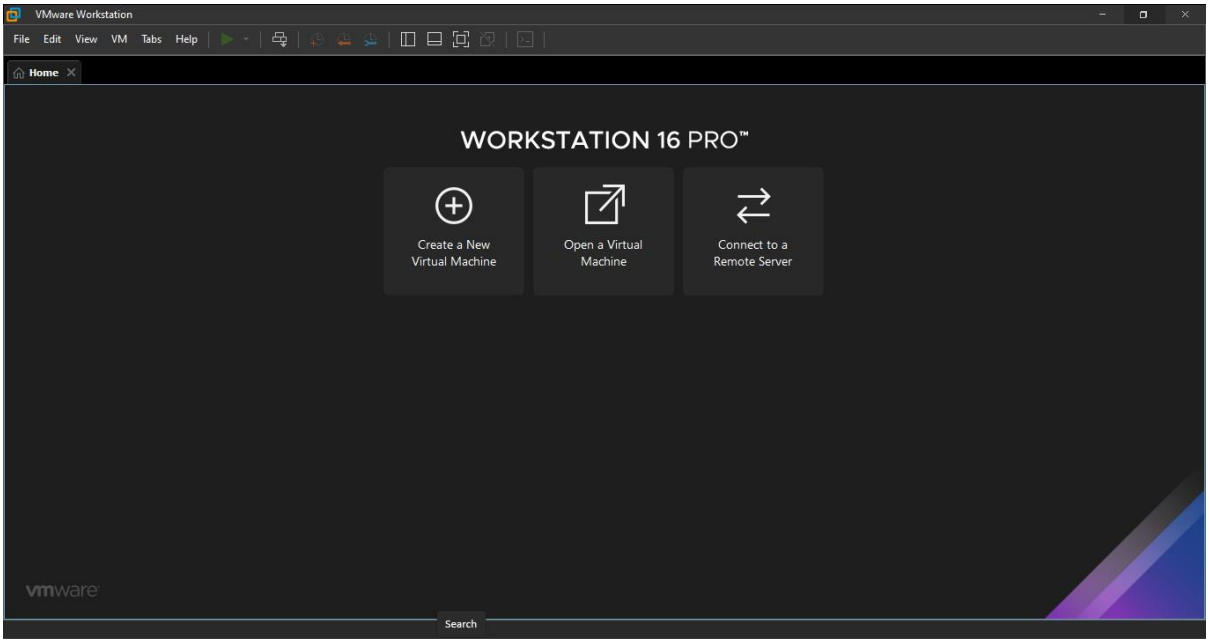
Practical 1

Practical 1-A:
Aim: Create and Manage Cloud using SCVMM 2019

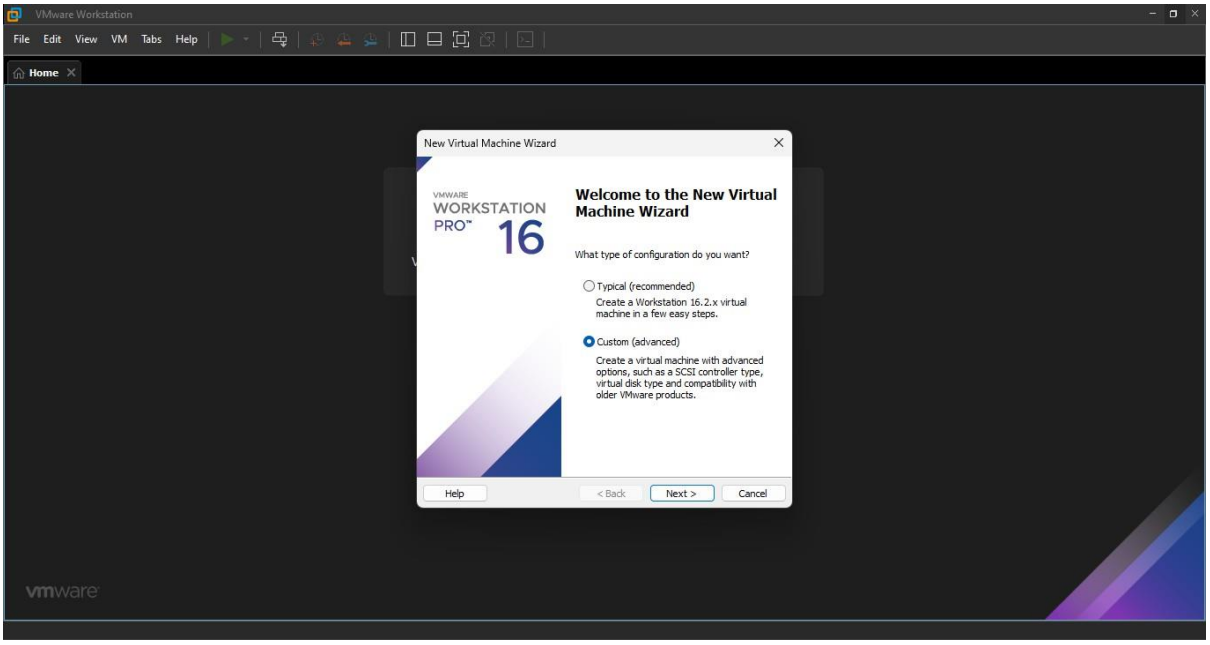
Writeup:

Step 1: Creation of Virtual Machine (Windows Server 2016)

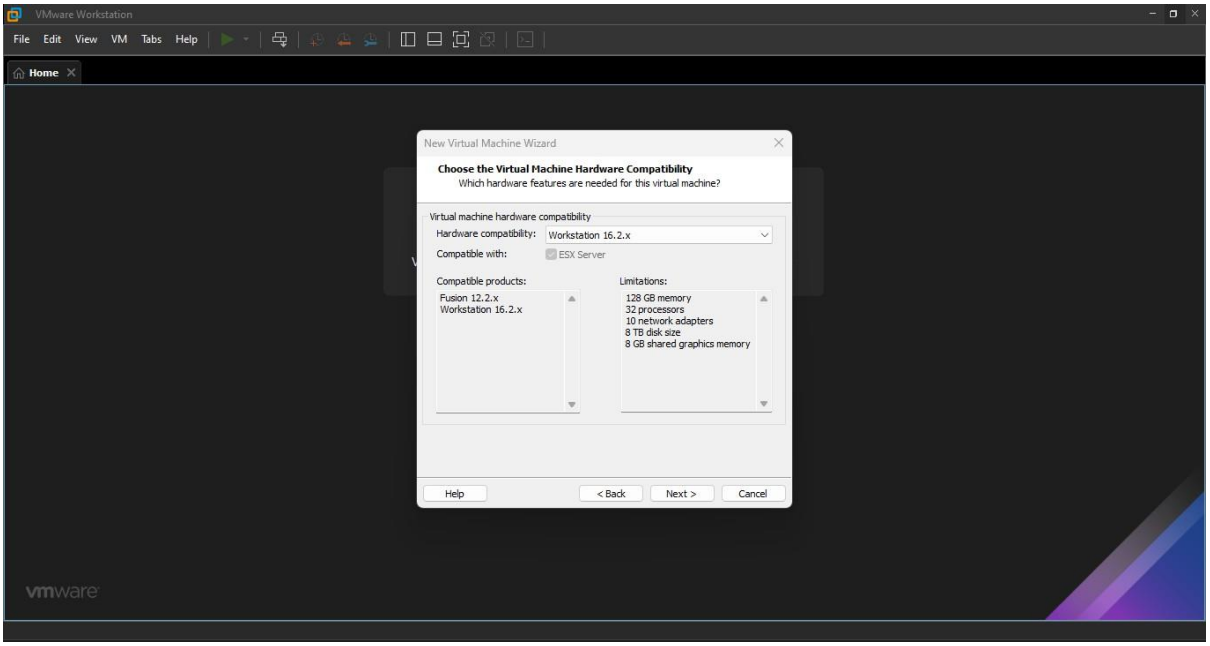
Open VMware Workstation Pro and Click on **Create a New Virtual Machine**.



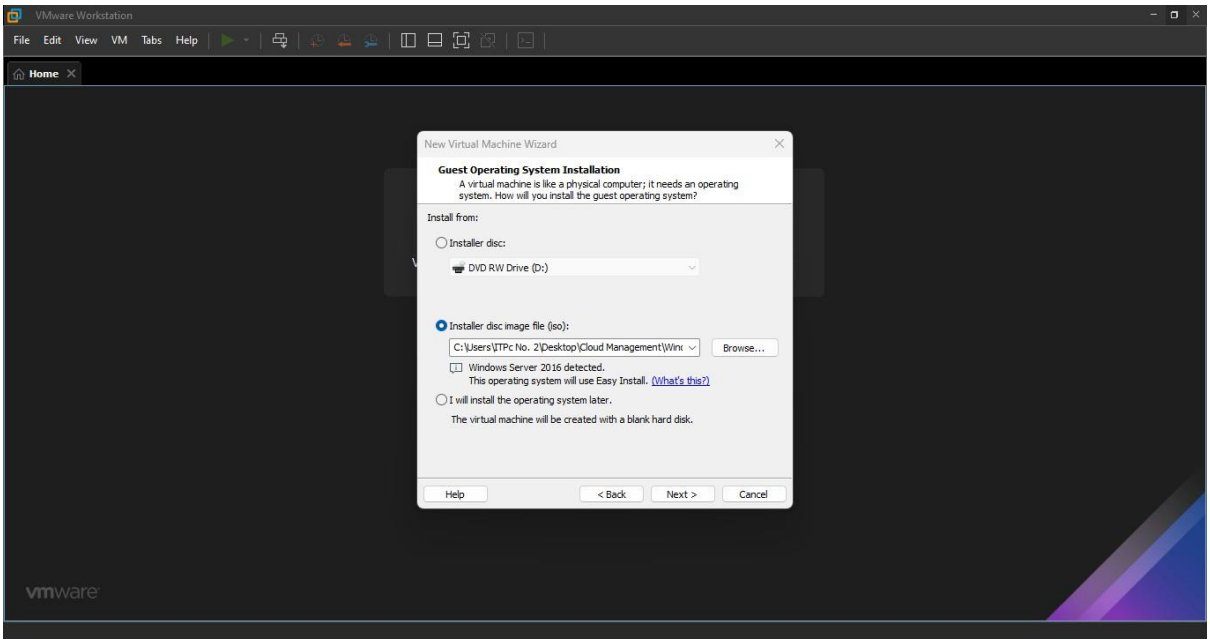
Step 2: Select Custom.



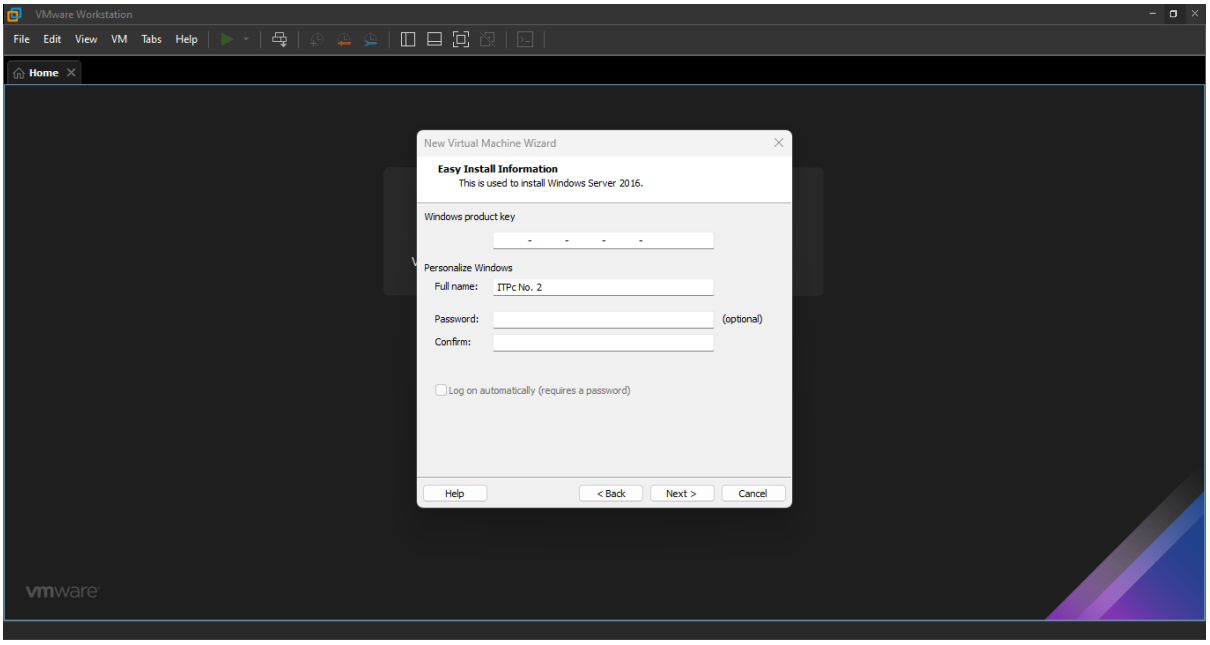
Step 3: Keep the Hardware Compatibility as default.



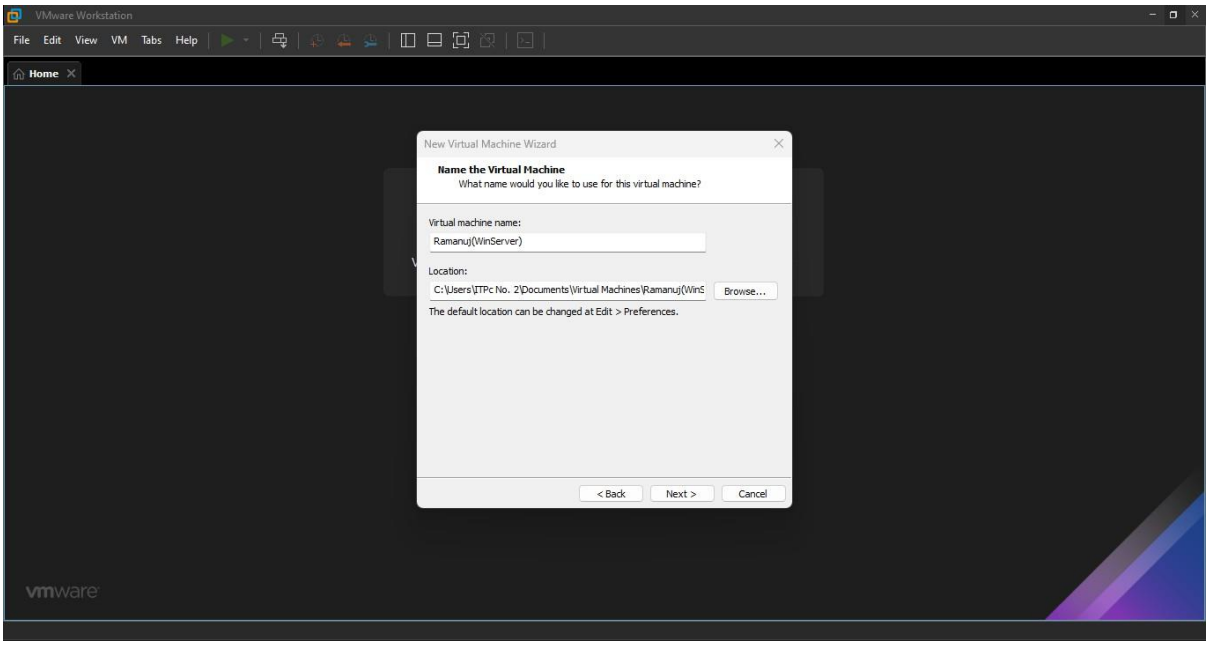
Step 4: Click on **Installer Disc Image File** and choose the Windows Server iso file from the directory.



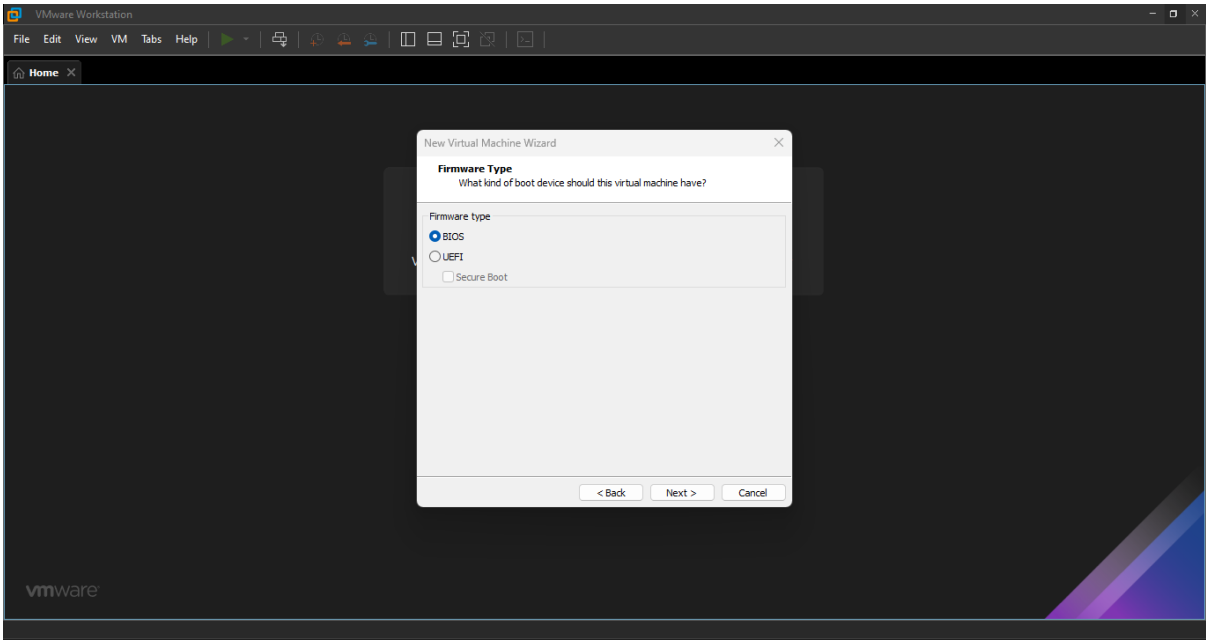
Step 5: Leave this Windows as default and Click **Next**. There will be a pop-up Click **Ok**.



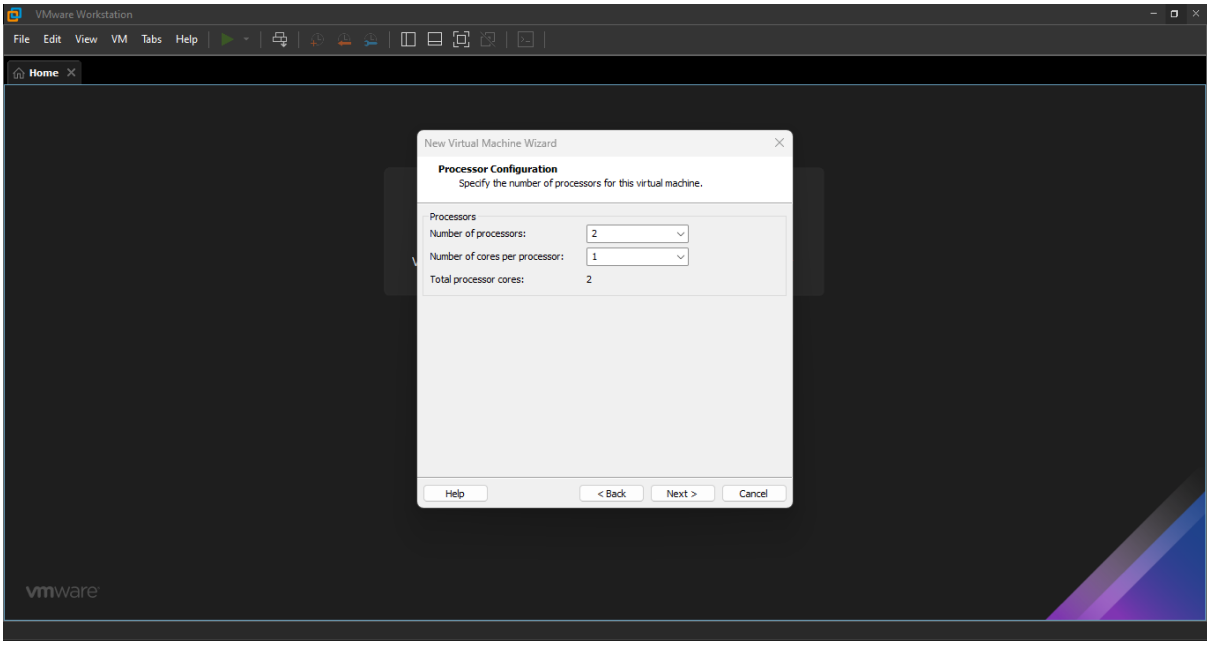
Step 6: Name your Virtual Machine, in this case its **VIQAR(WinServer).**



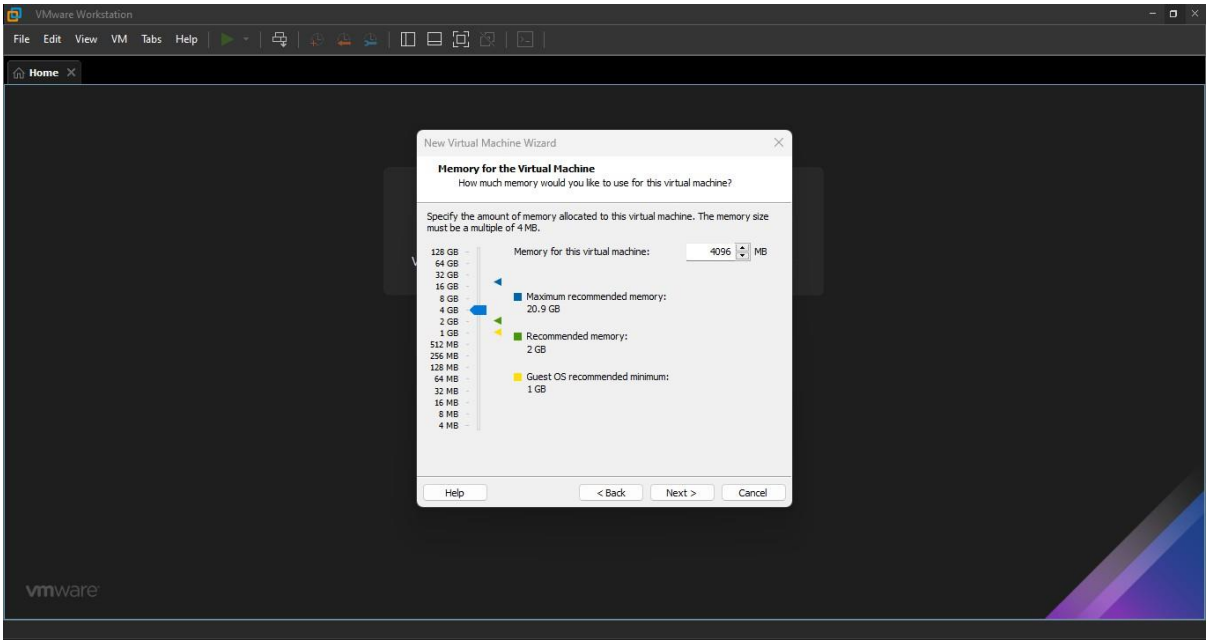
Step 7: Click on **BIOS** and Click **Next.**



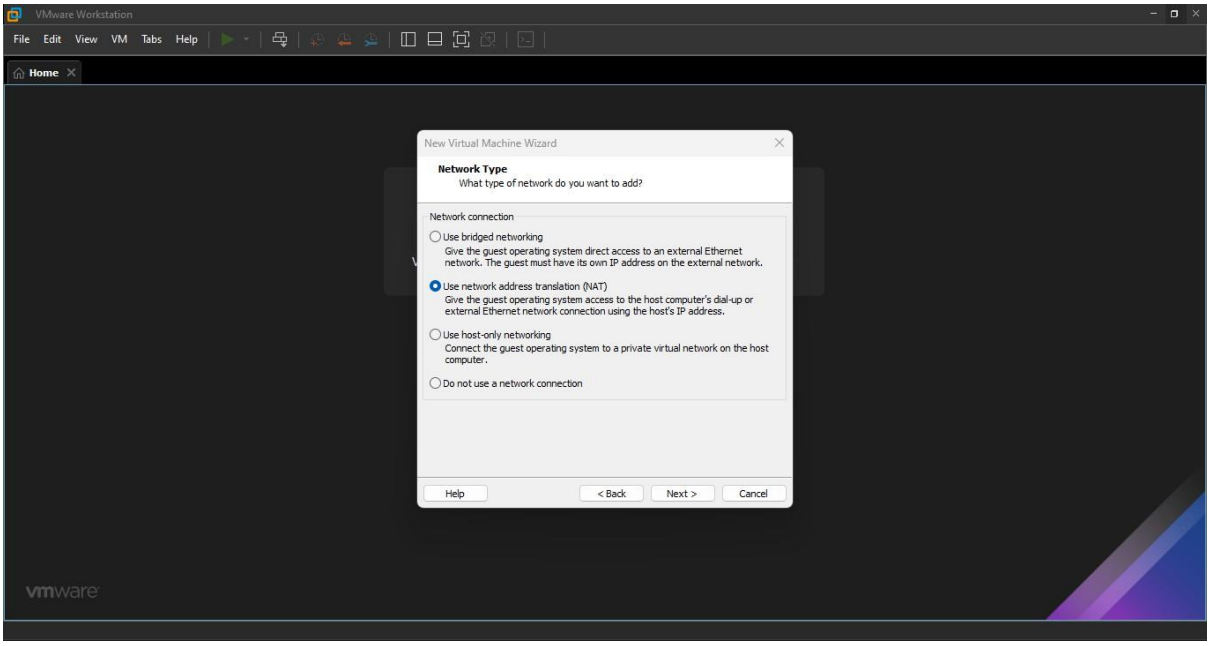
Step 8: Keep Default Values and Click **Next**.



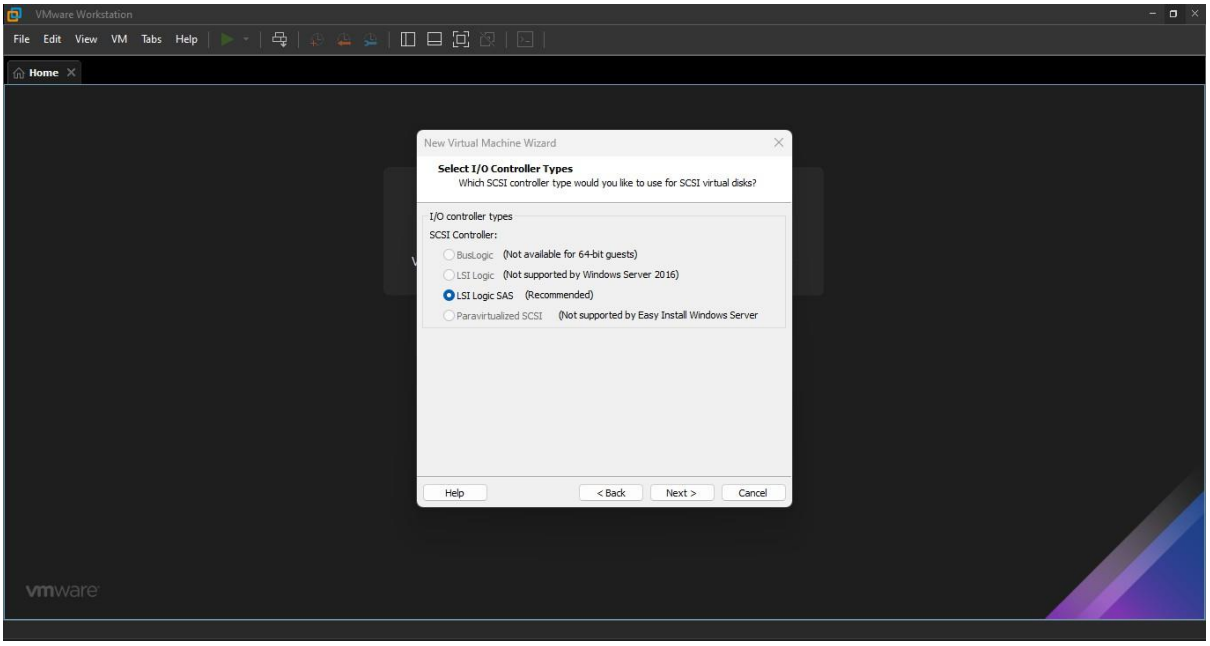
Step 9: Change the RAM to **4096 MB** and Click **Next**.



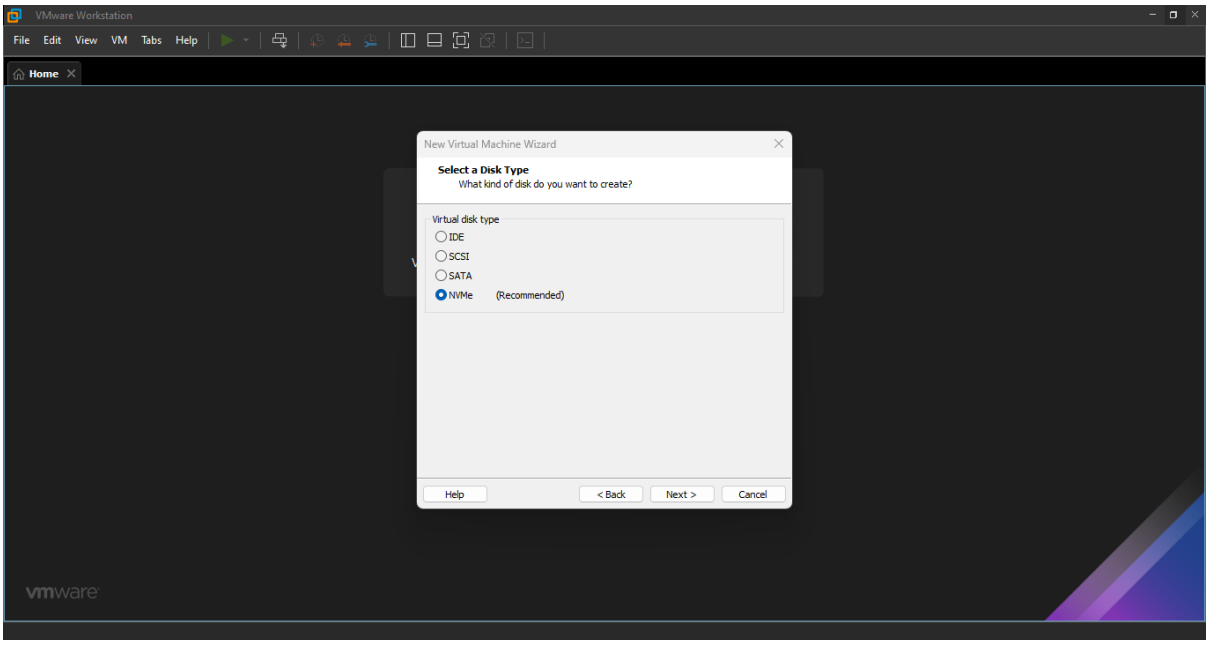
Step 10: Select **Network Address Translation (NAT)** and Click **Next**.



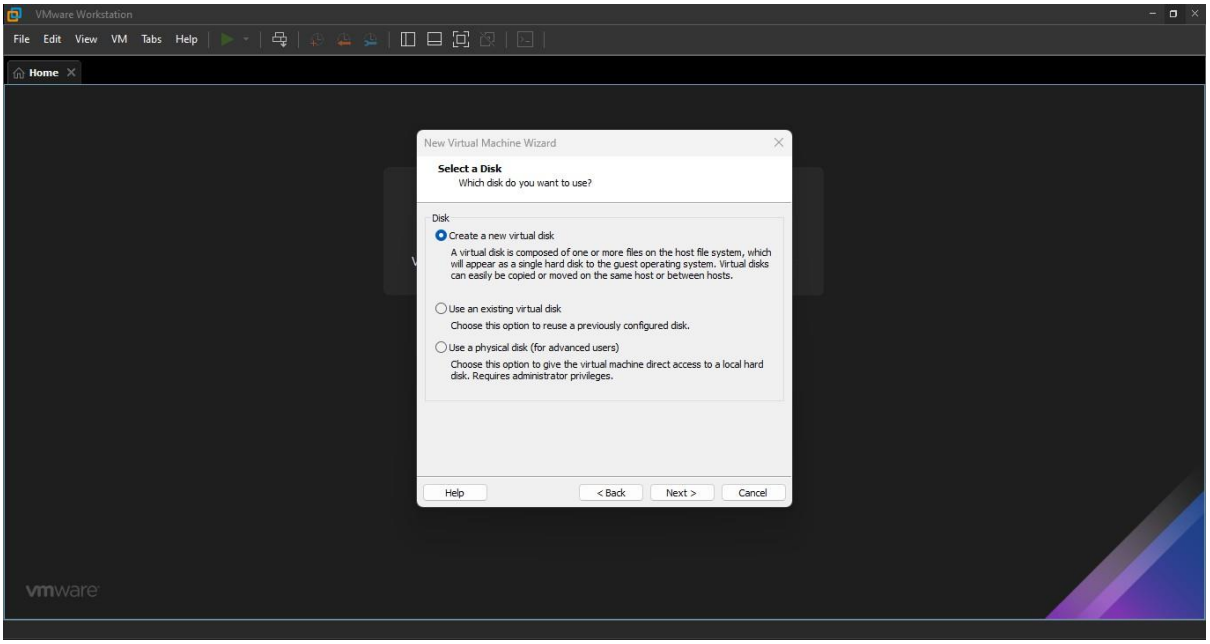
Step 11: Select **LSI Logic SAS** and Click **Next**.



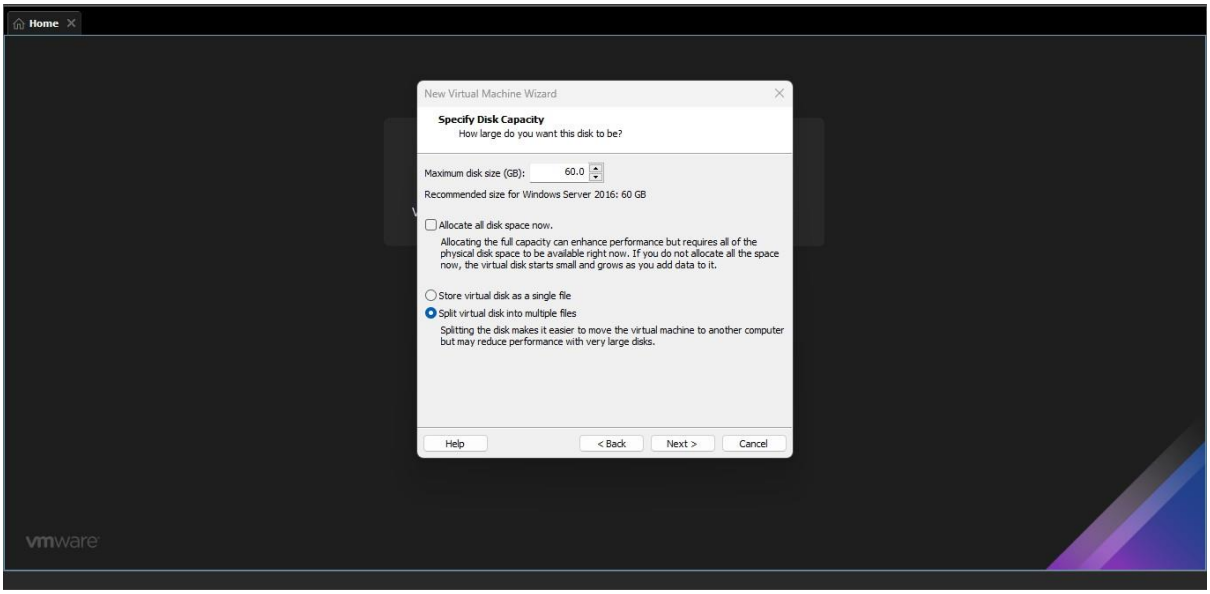
Step 12: Keep the Default **NVMe** and Click **Next**.



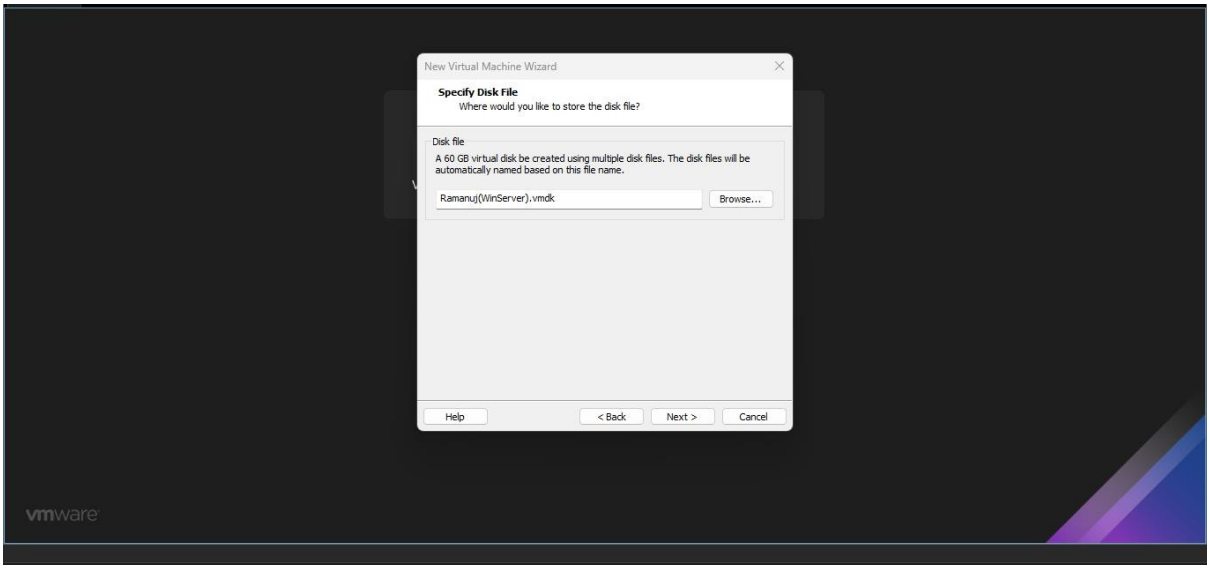
Step 13: Click on **Create new virtual disk** and Click **Next**



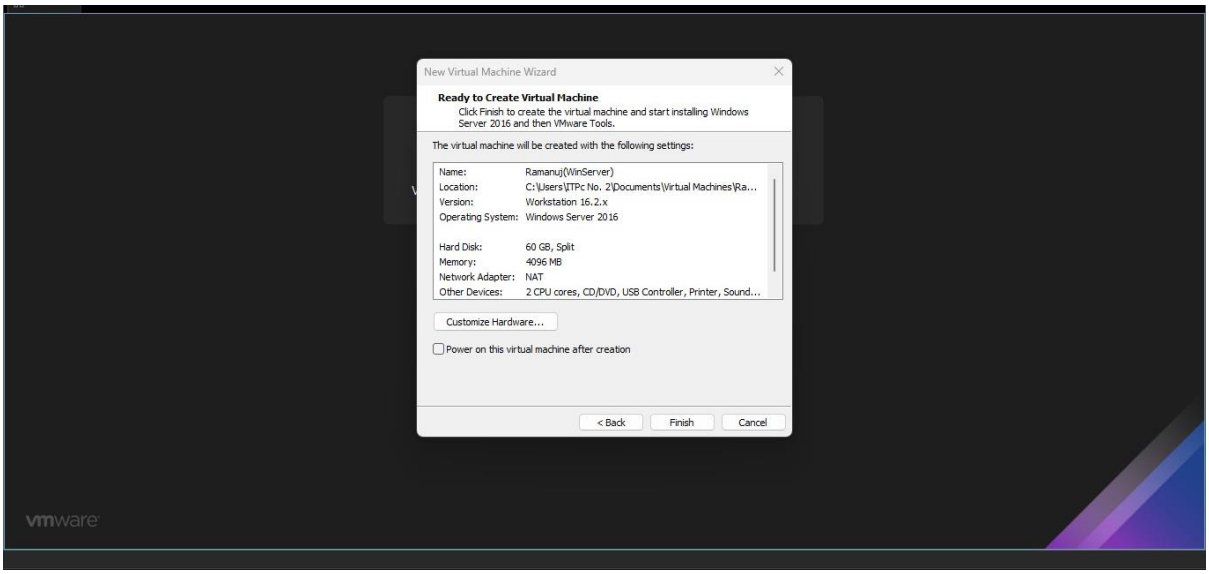
Step 14: Keep the default value of **60GB** and Select **Split Virtual Disk into Multiple Files** and Click **Next**.



Step 15: Leave it as Default and Click **Next**

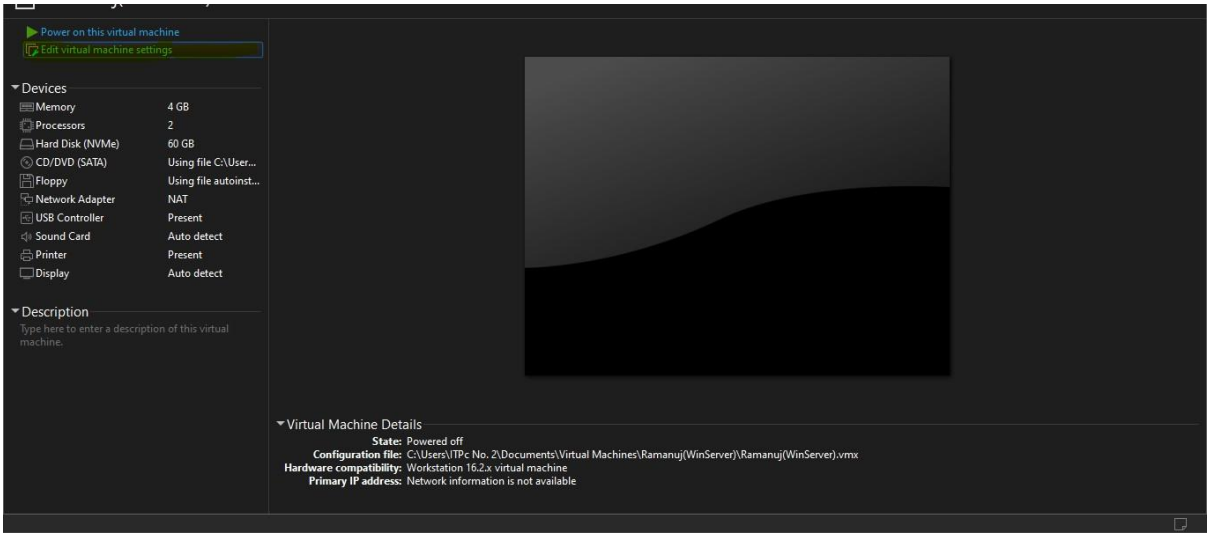


Step 16: Click on **Finish**

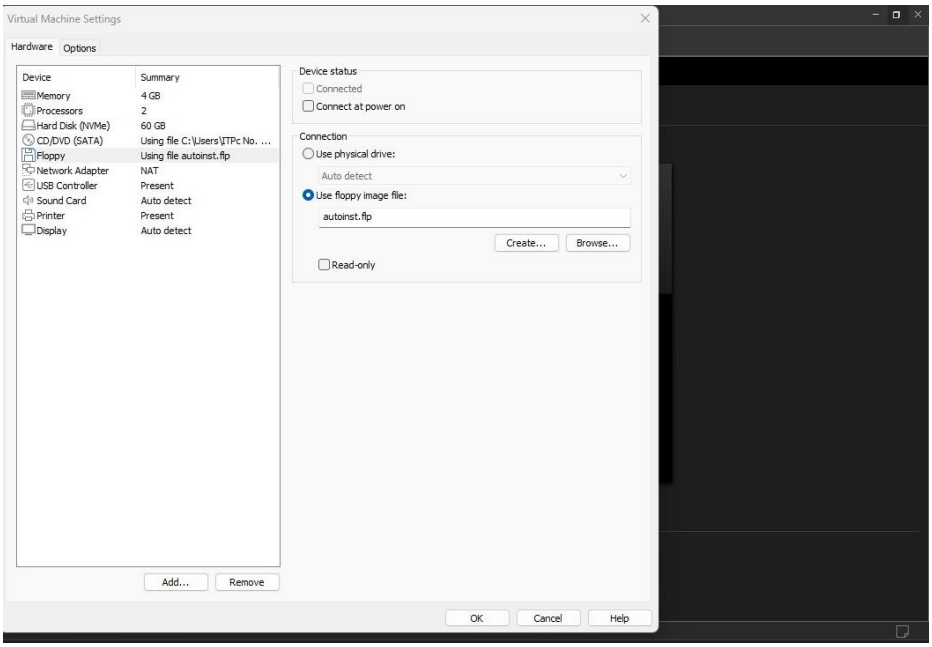


Step 17: Before Powering ON the Virtual Machine we have to complete a few pre-requisites:-

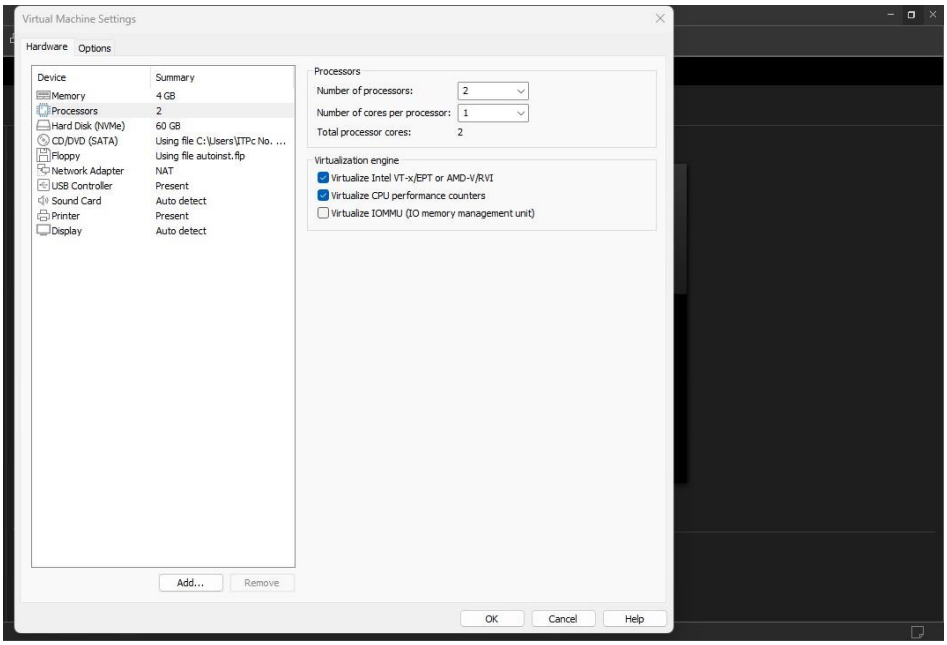
- Click on **Edit Virtual Machine Settings**



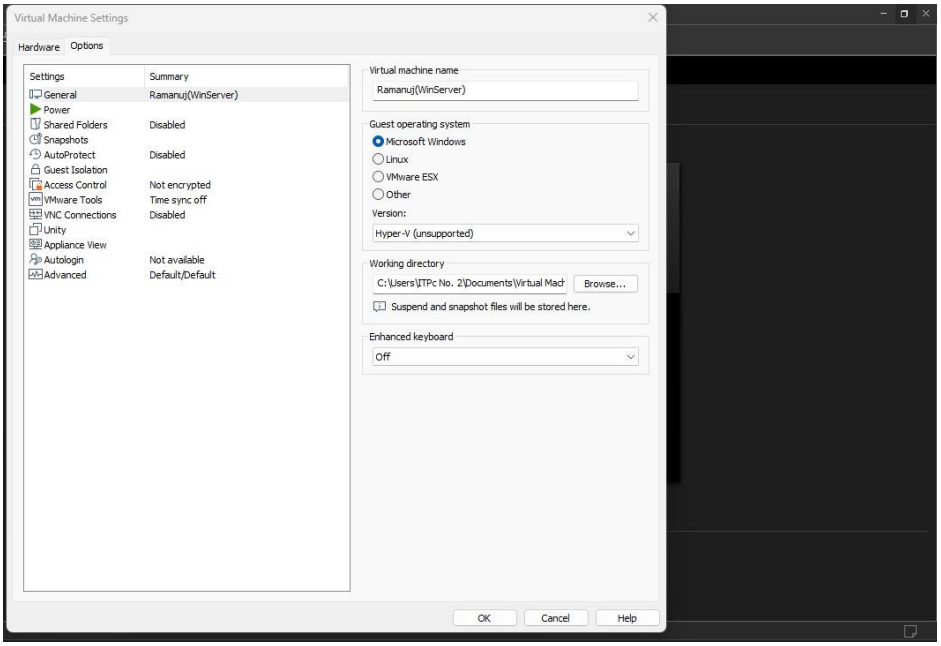
- In Virtual Machine Settings, in Hardware Click on **Floppy** and UnClick the **Connect at Power On** option.



- In Hardware now Click on **Processors**
- Within Processors enable **Virtualize Intel VT-x/EPT or AMD-V/RVI**
- Also enable **Virtualize CPU Performance Counters**

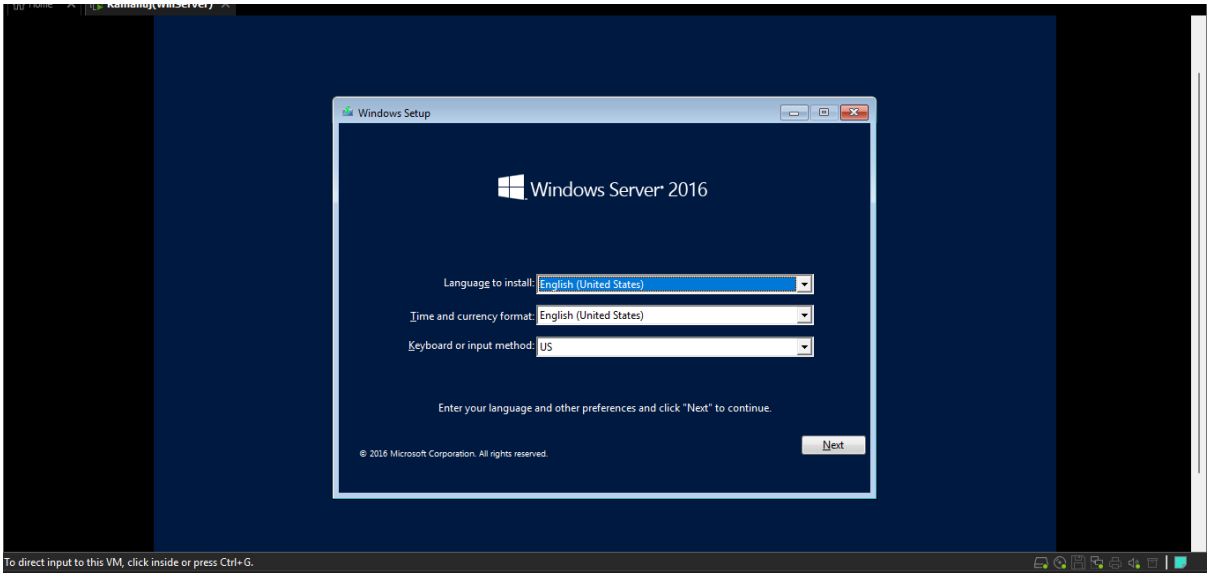


- In Virtual Machine Settings Click on **Options**
- Within Options Click on **General**
- In General Click on **Version** and change it to **Hyper-V Unsupported**

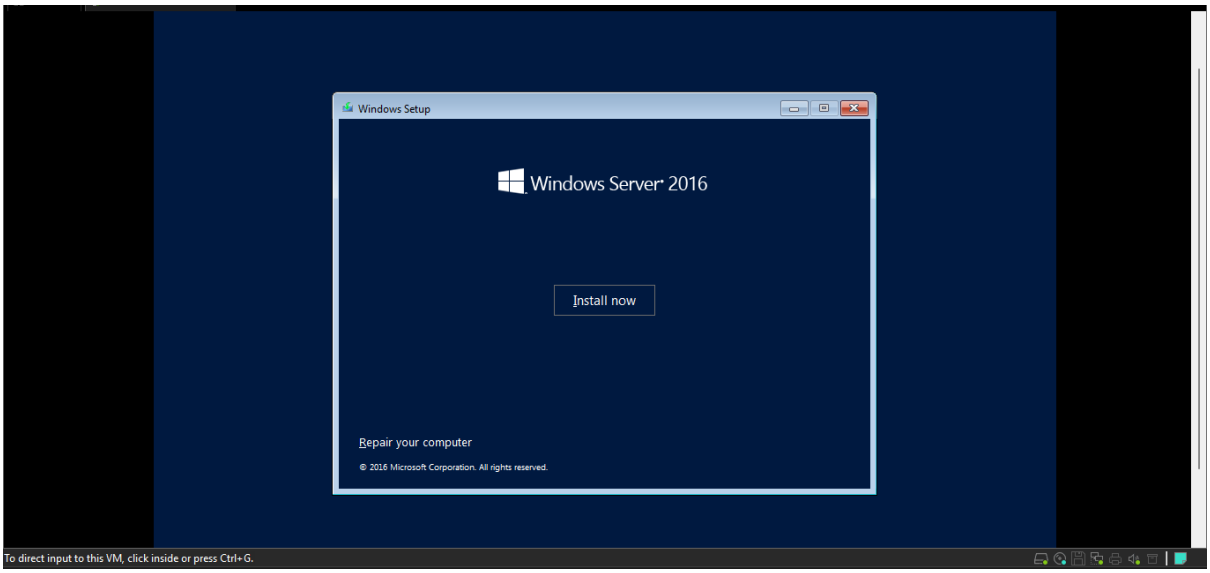


Step 18: Once all the pre-requisites are met, we can turn on the virtual machine.

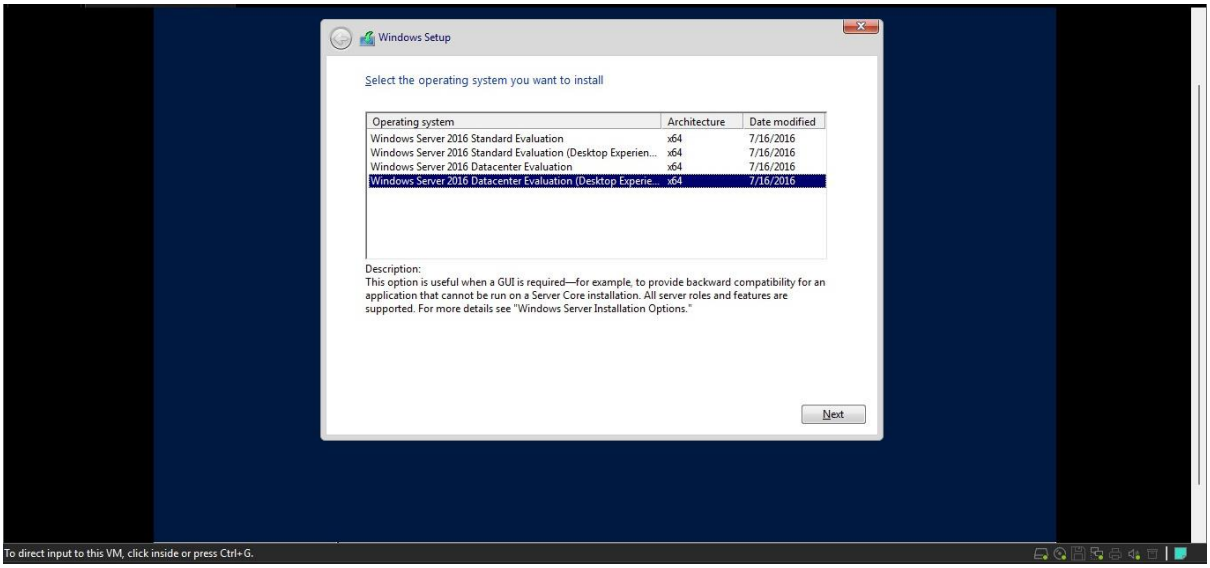
Step 19: VM Powers On and Windows starts to boot up, Click on **Next.**



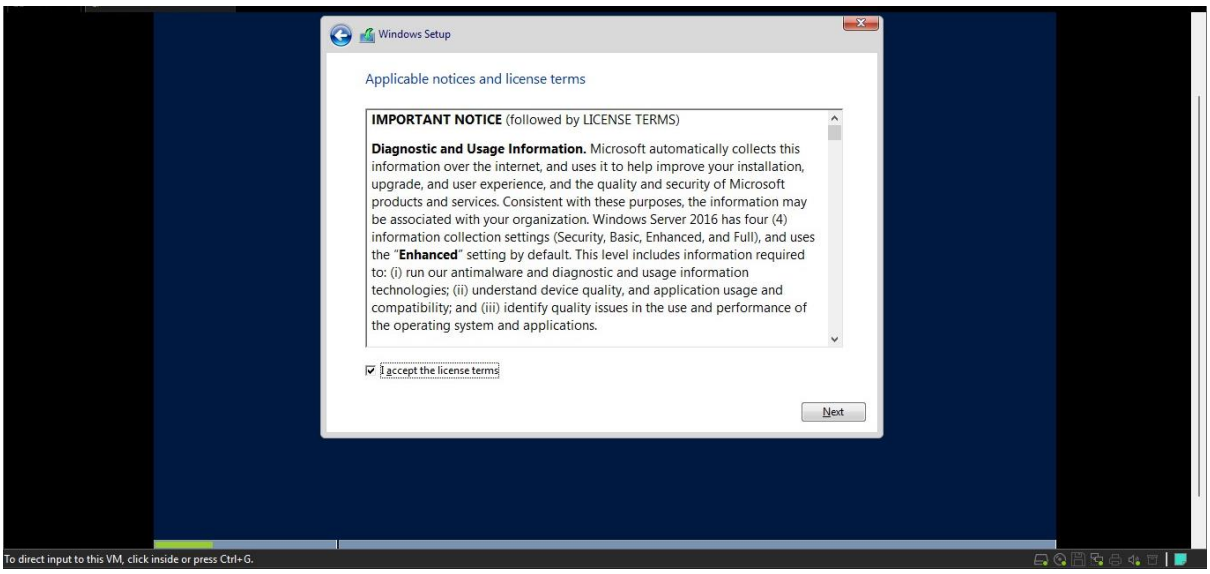
Step 20: Click on **Install Now**



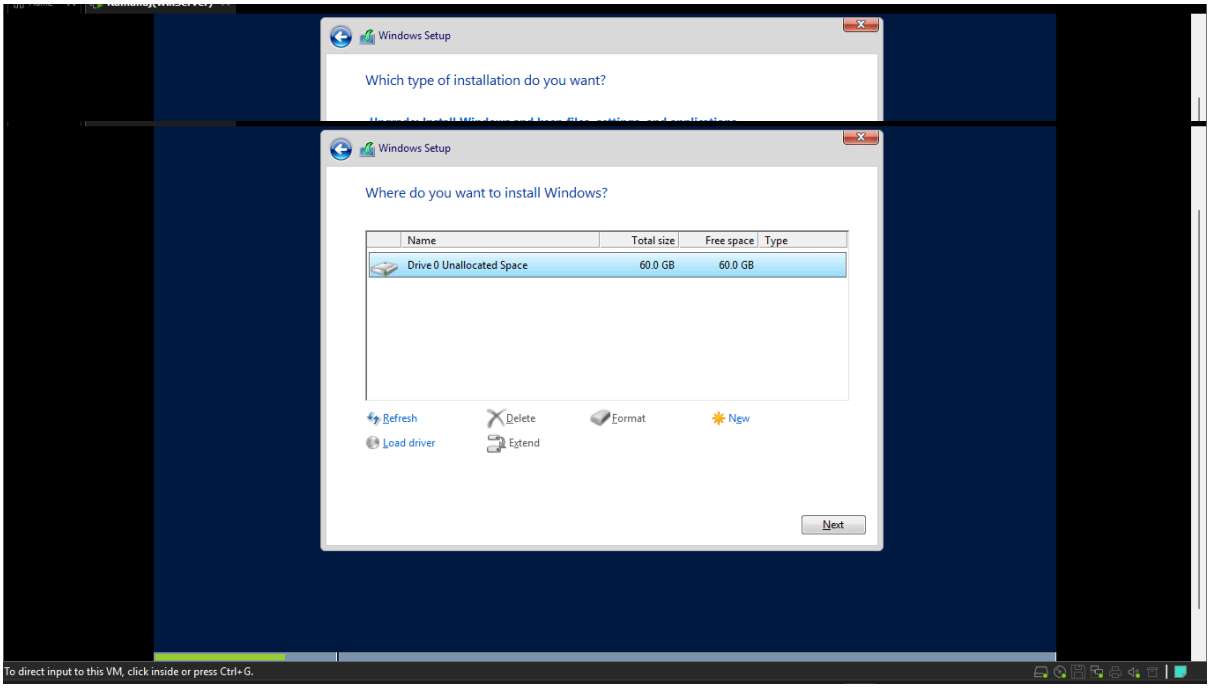
Step 21: Select **Windows Server 2016 Datacenter Evaluation (Desktop Experience x64)**



Step 22: Click on **I Accept the license terms**

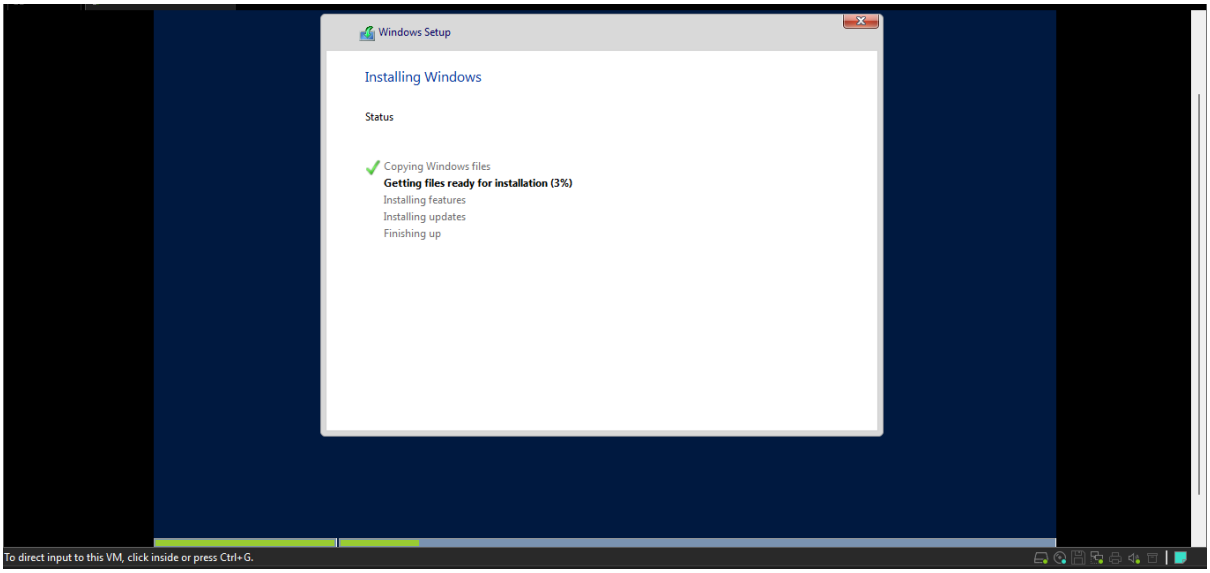


Step 23: On type on installation Click **Custom**

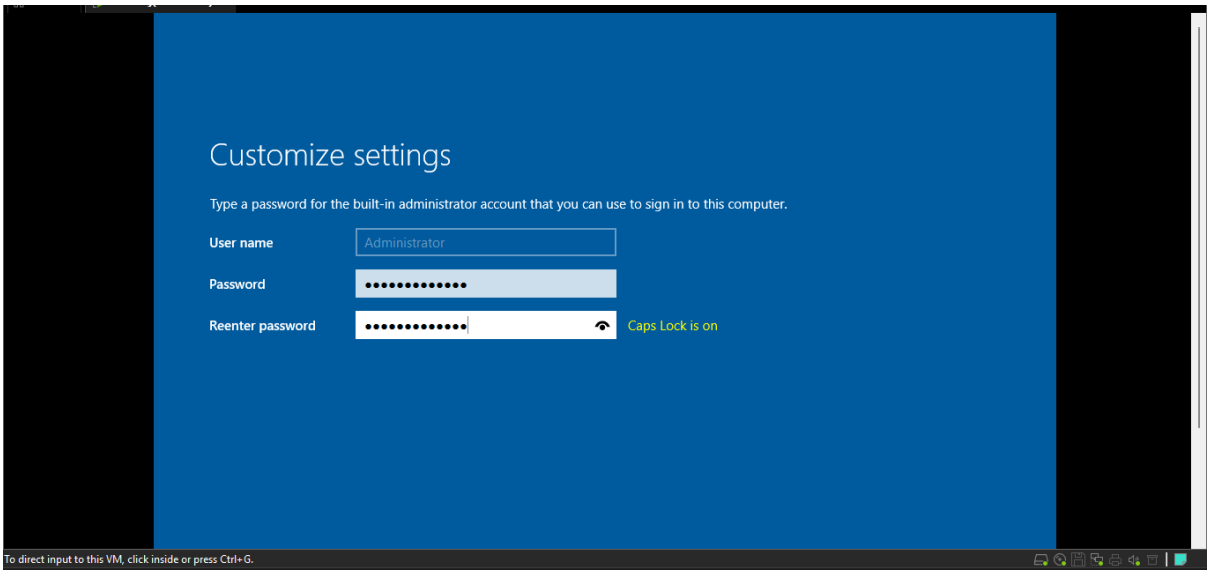


Step 24: Leave storage as default and Click **Next**

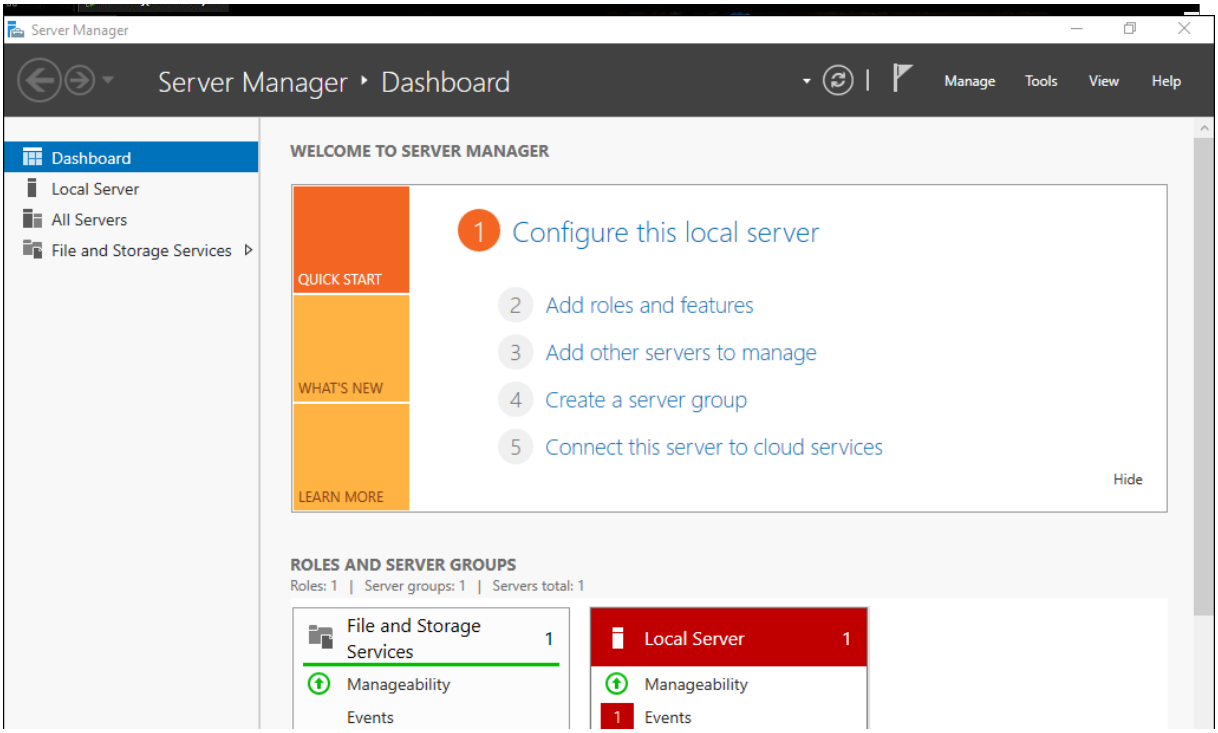
Step 25: It will start installing, when finished it will auto-restart.



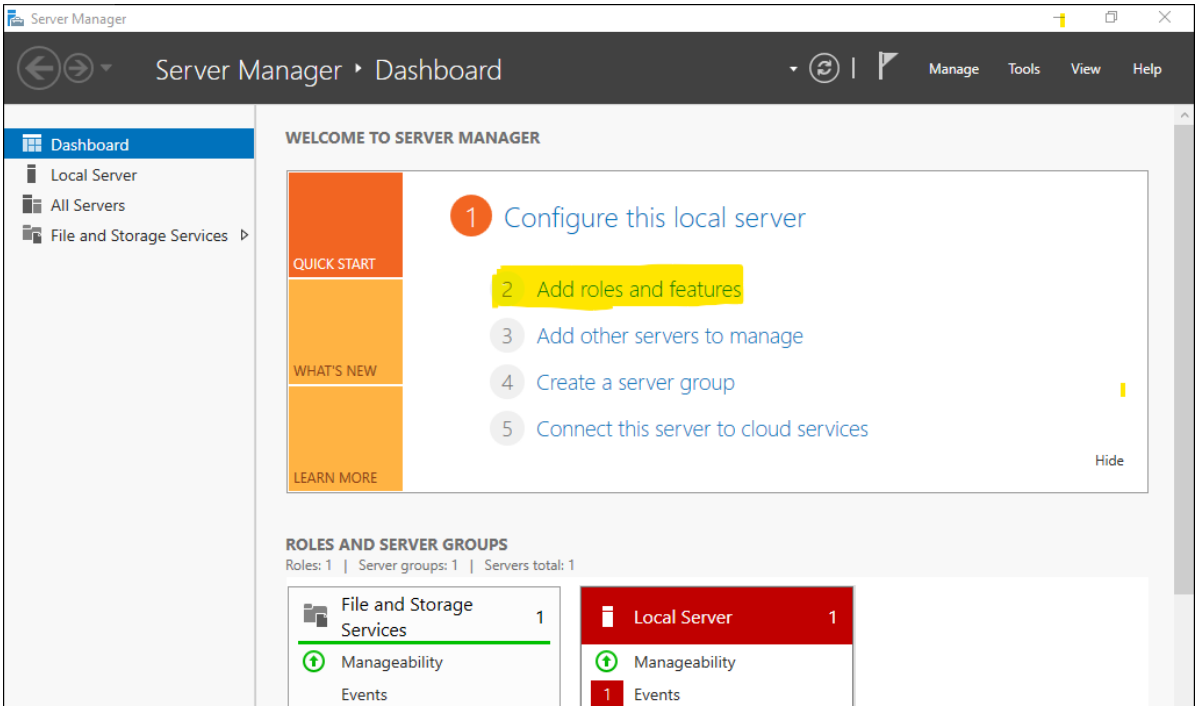
Step 26: After the restart set your password (alphanumeric) and Click on **Finish**



Step 27: Windows Server has been successfully created

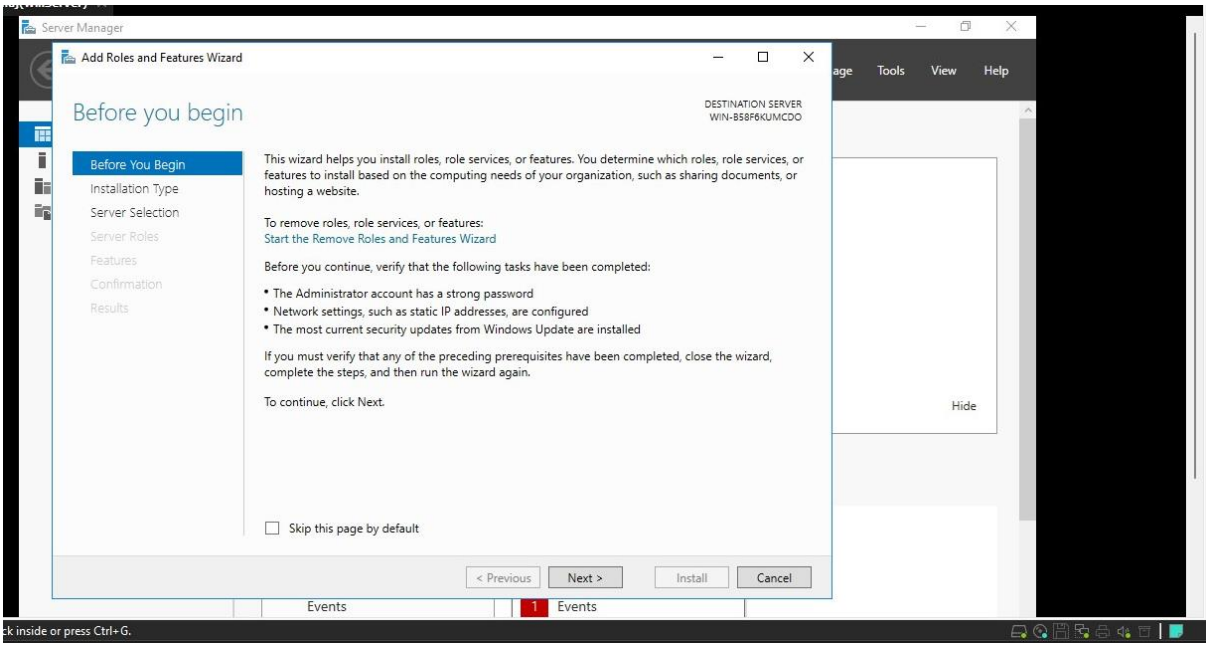


Step 28: Within Windows Open **Server Manager**



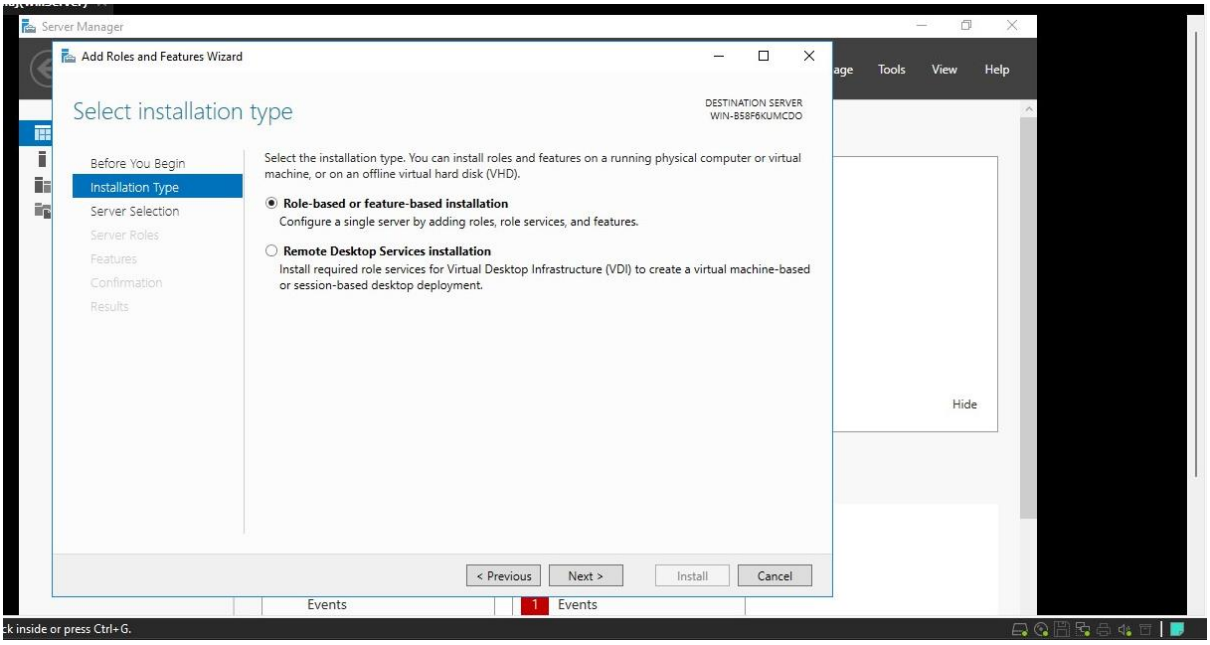
Step 29: Enabling Hyper-V

- Within Server Manager Click on **Add Roles and Features**

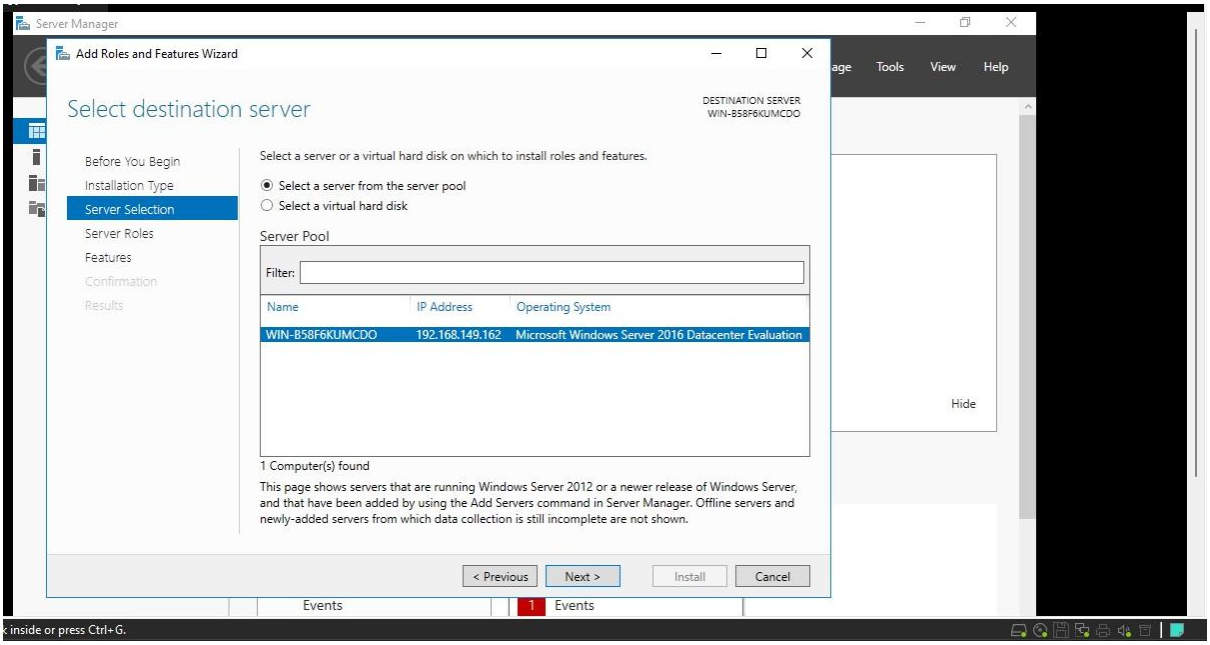


- Make sure **Role-based or Feature-based installation** is selected and Click **Next**

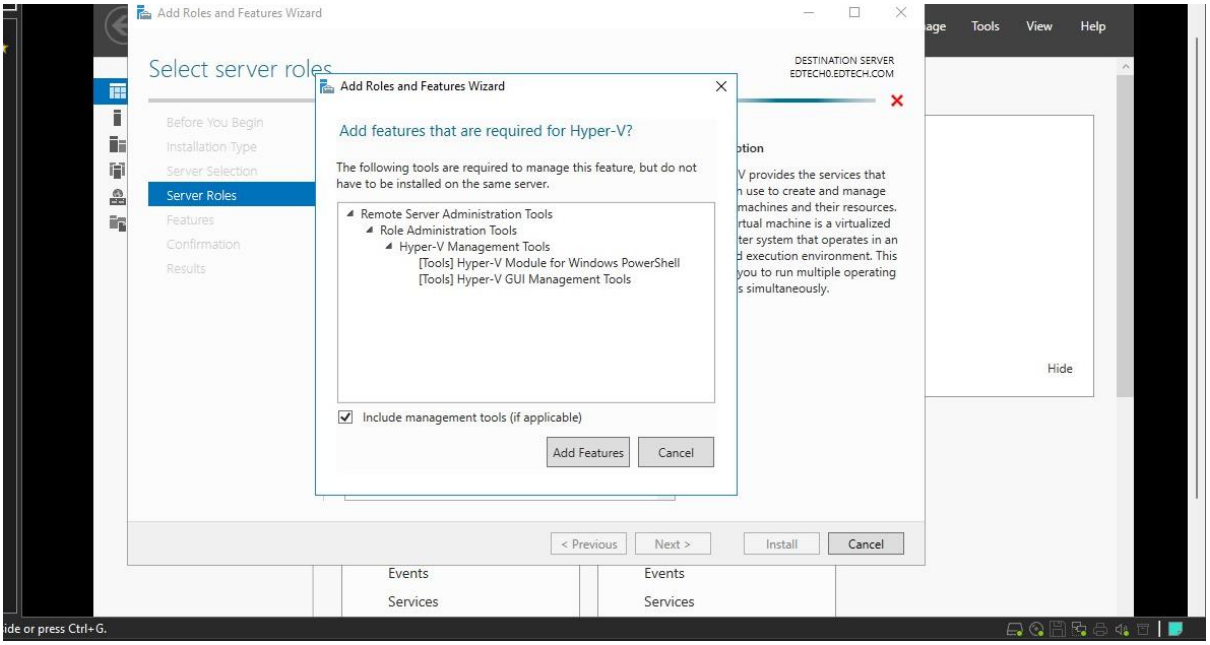
    - Click **Next**



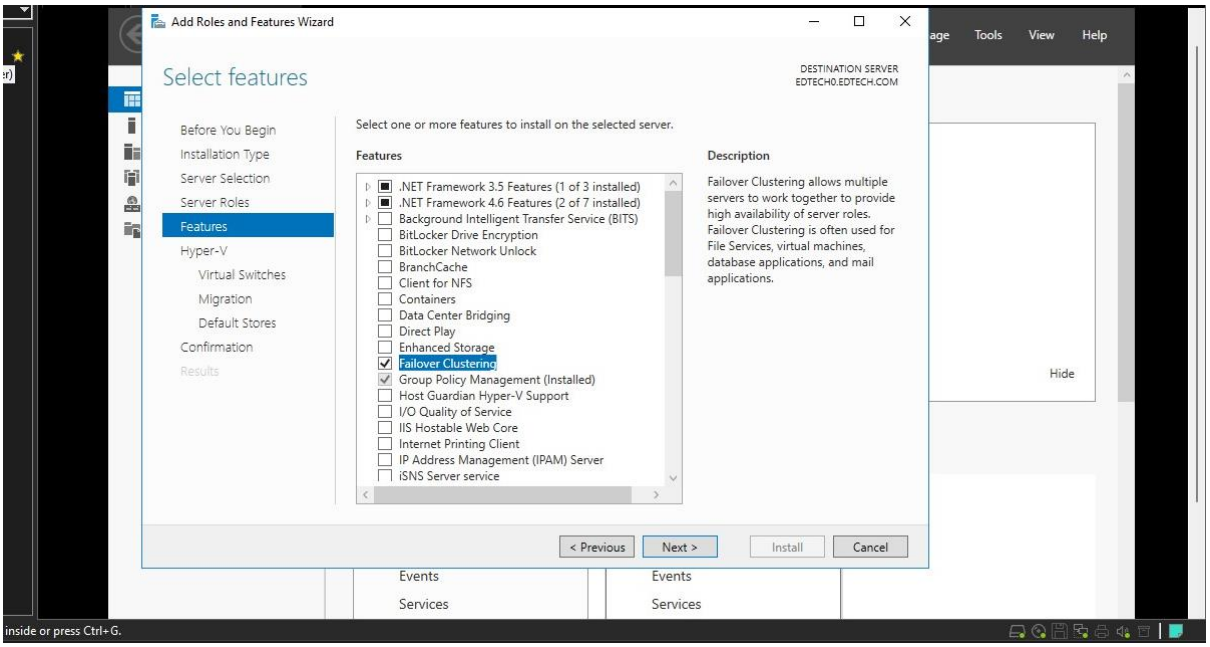
- Keep default settings and Click **Next**



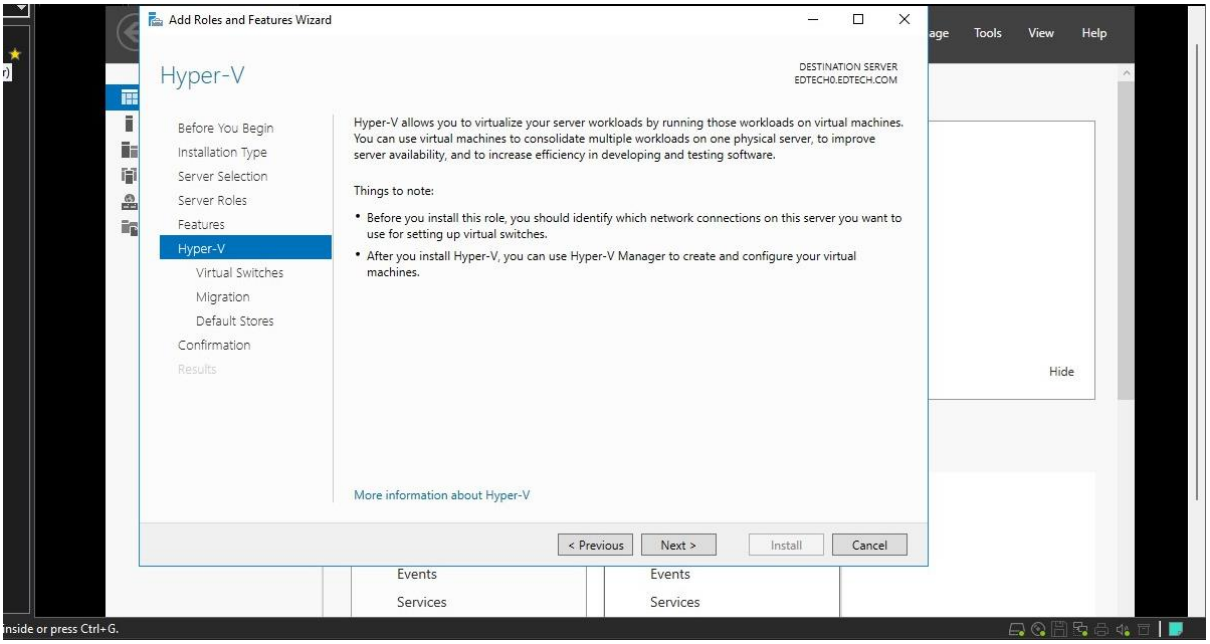
- Select **Hyper-V** and Click **Add Features** and Click **Next**



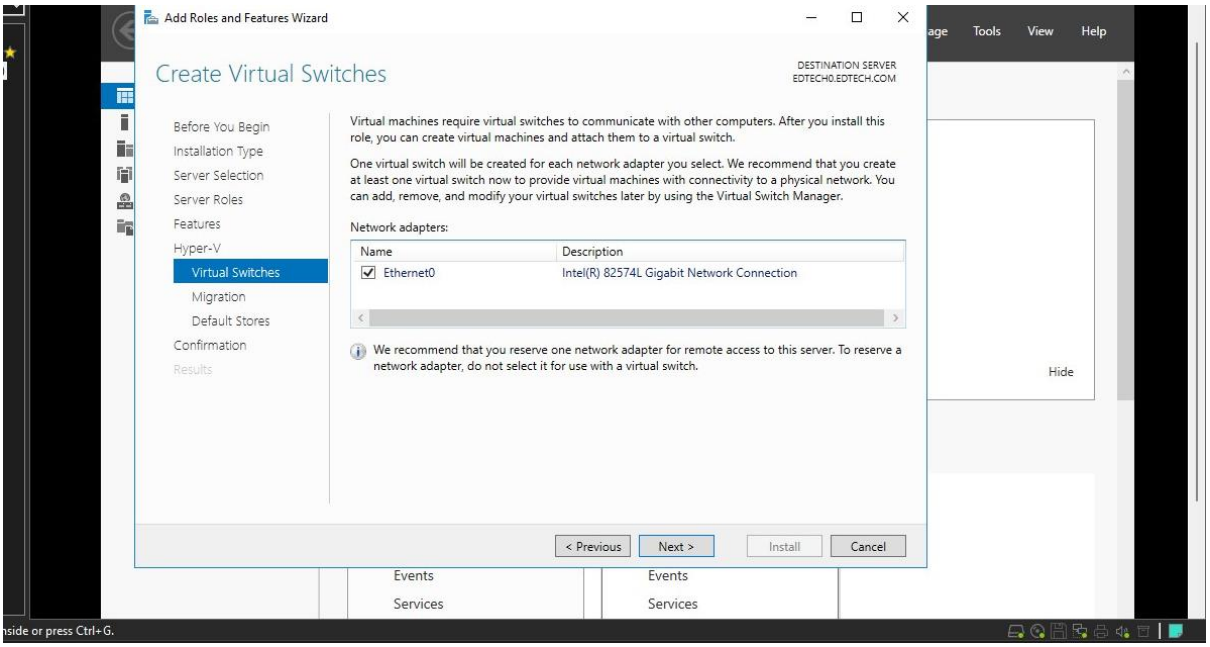
- Select **Failover Clustering** and Click **Add Features** and Click **Next**
- Note: Make sure **Group policy management** is also selected



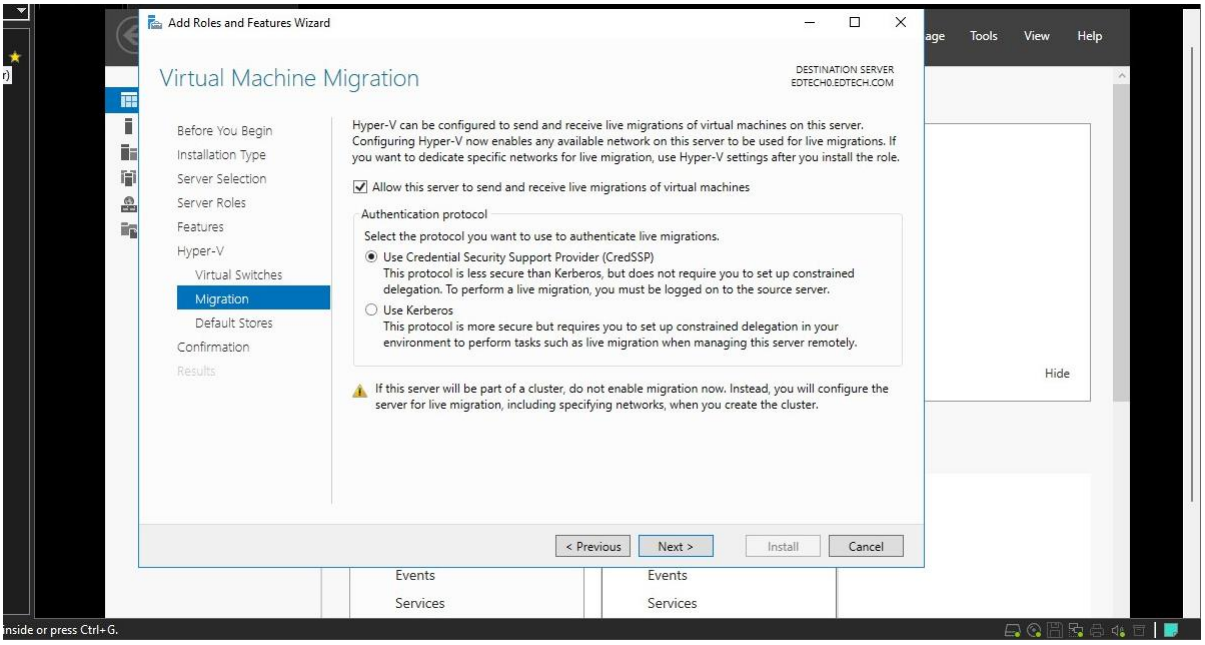
- Keep default settings and Click **Next**



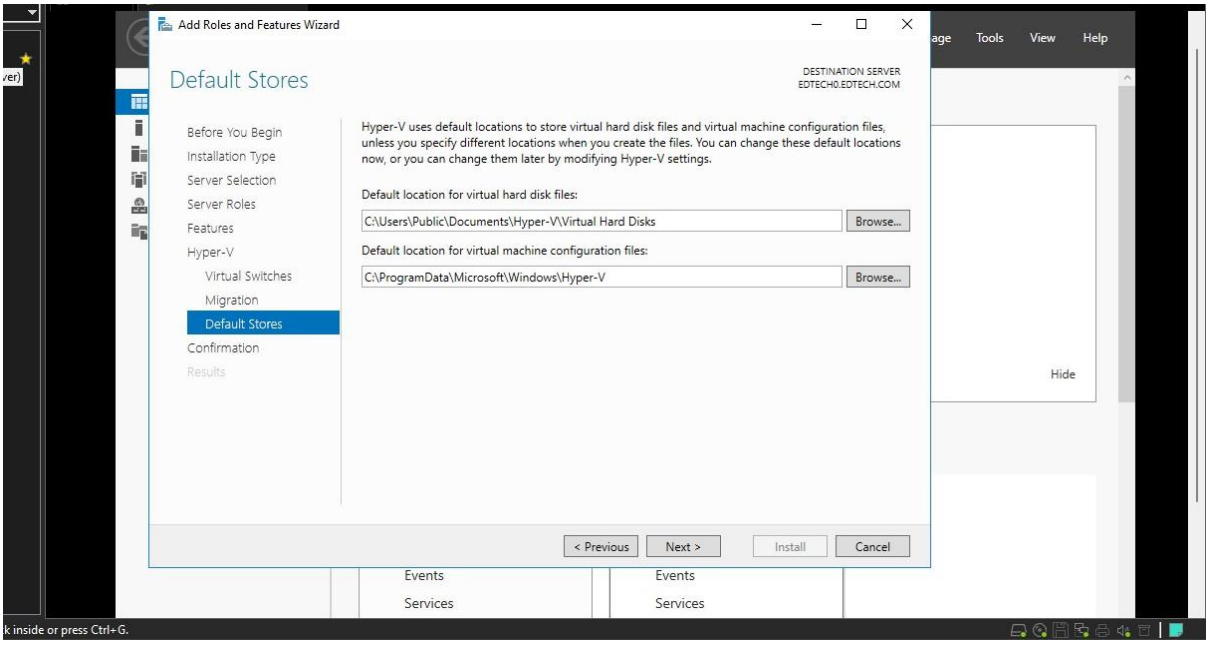
- Select **Ethernet0** and Click **Next**



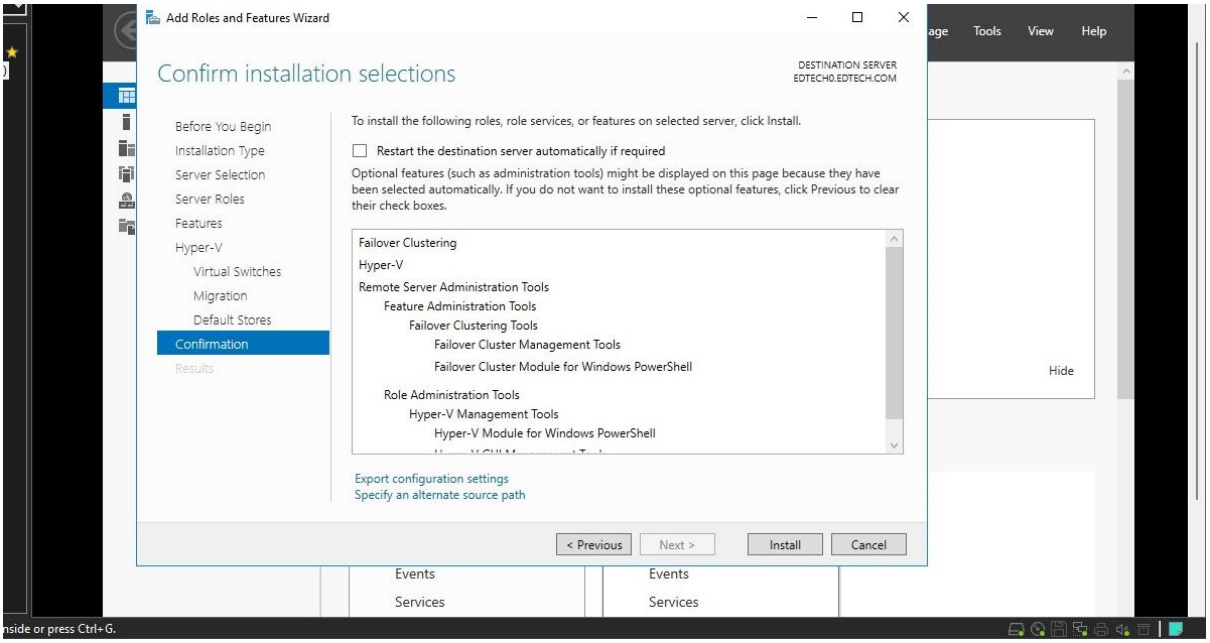
- Select **Allow to server to send and receive Live Migration of virtual machines**



- Keep default setting and Click **Next**

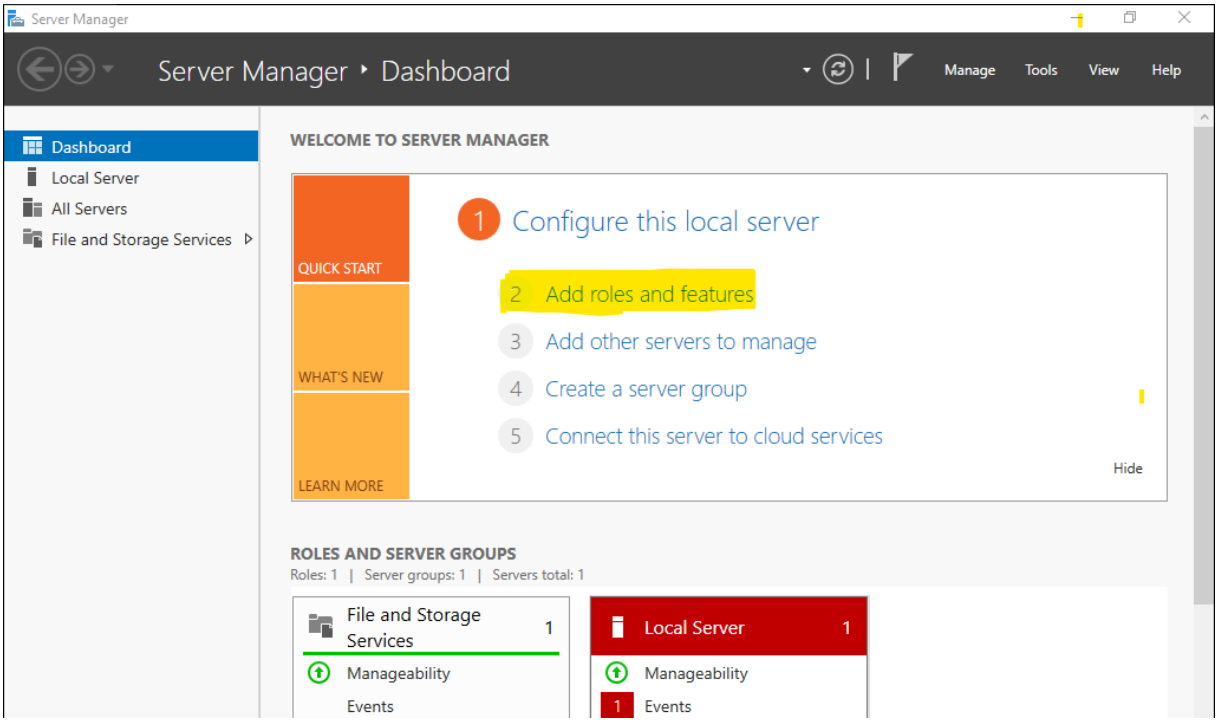


- Click on **Install,** After installation is complete restart the machine for the changes to be taken place.

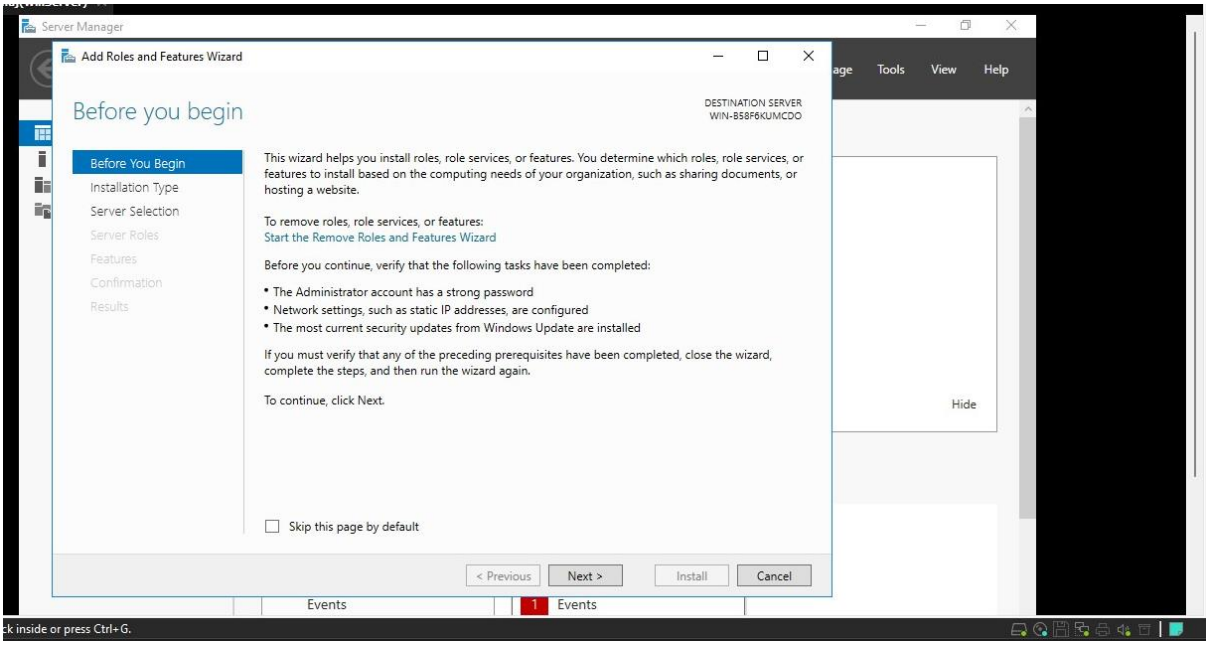


Step 30: Adding Active Domain Directory Services

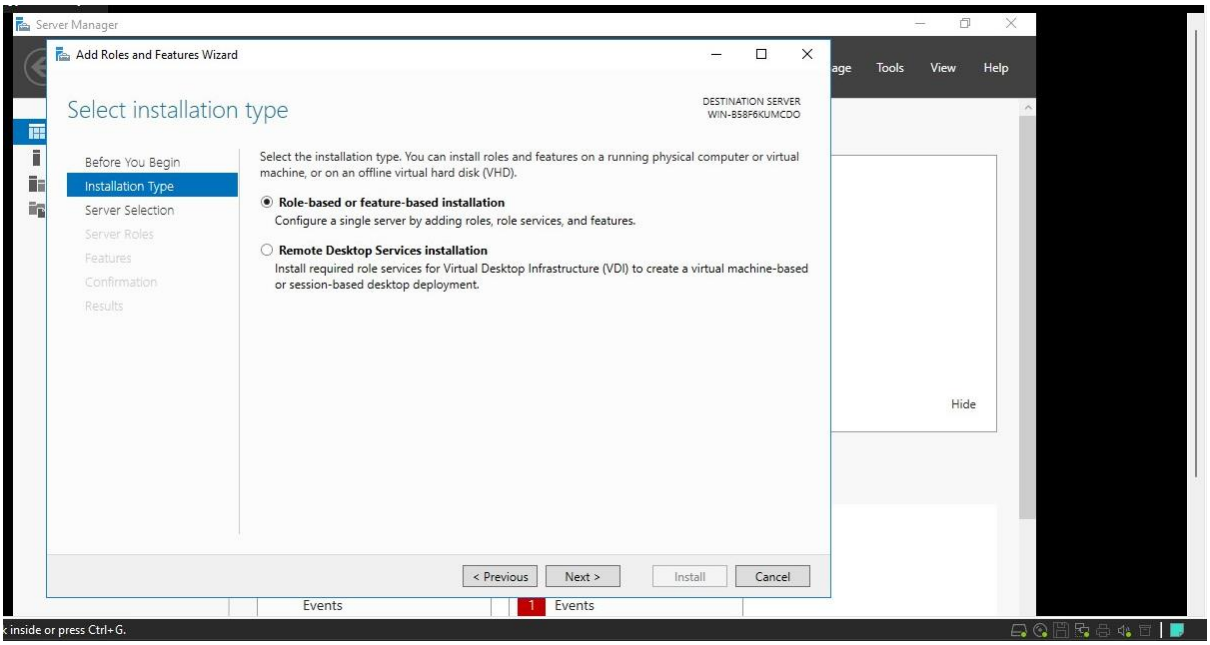
- Within Server Manager Click on **Add Roles and Features**



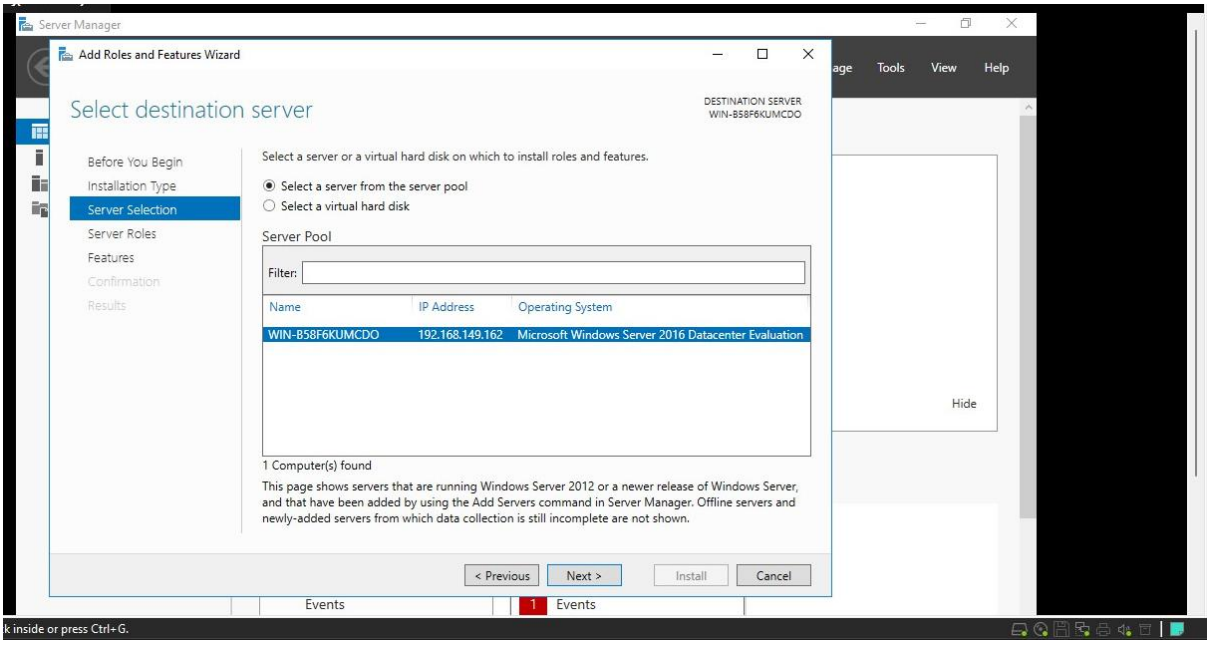
- Click **Next**



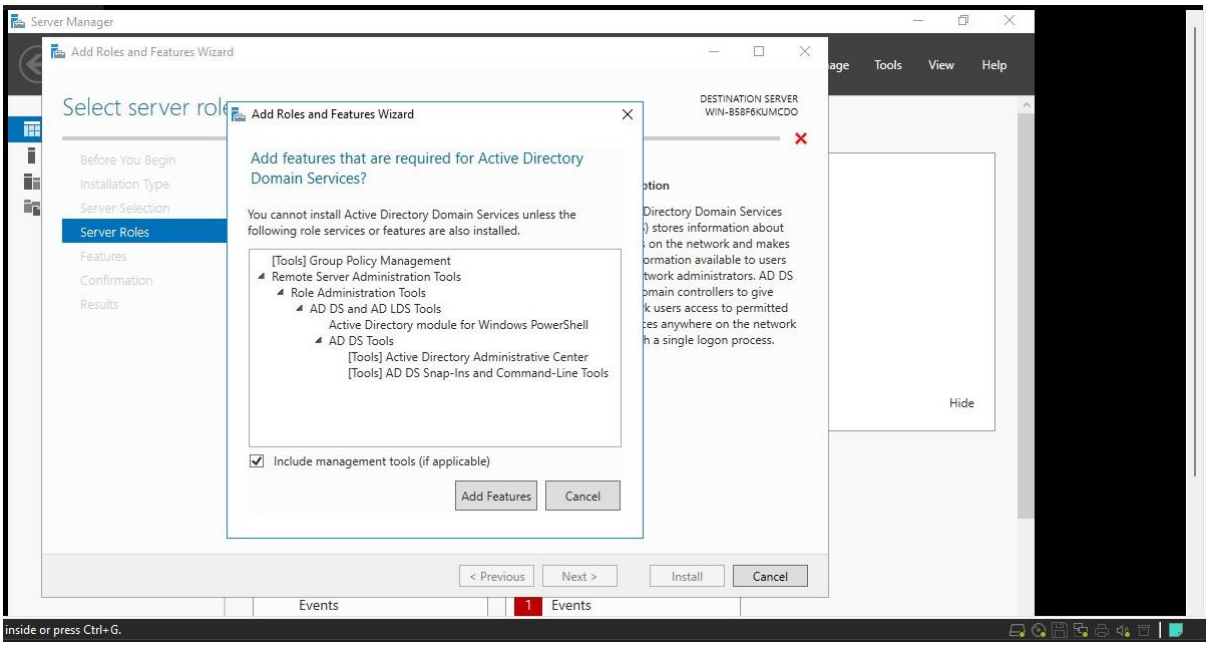
- Make sure **Role-based or Feature-based installation** is selected and Click **Next**



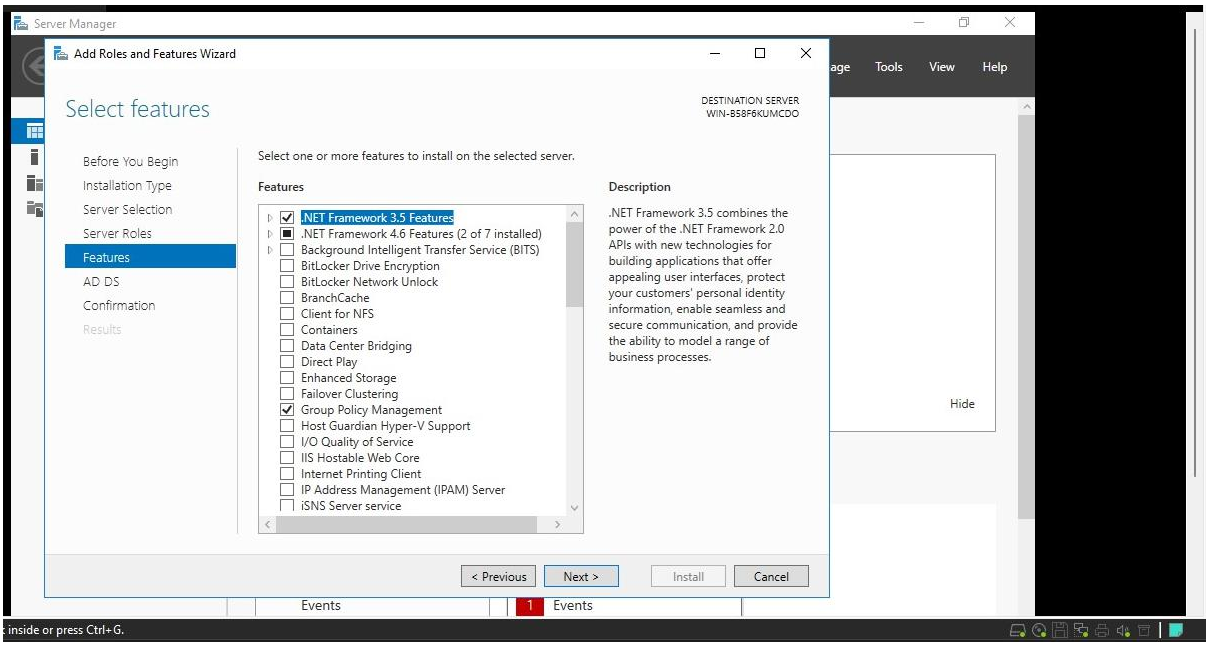
- Keep default settings and Click **Next**



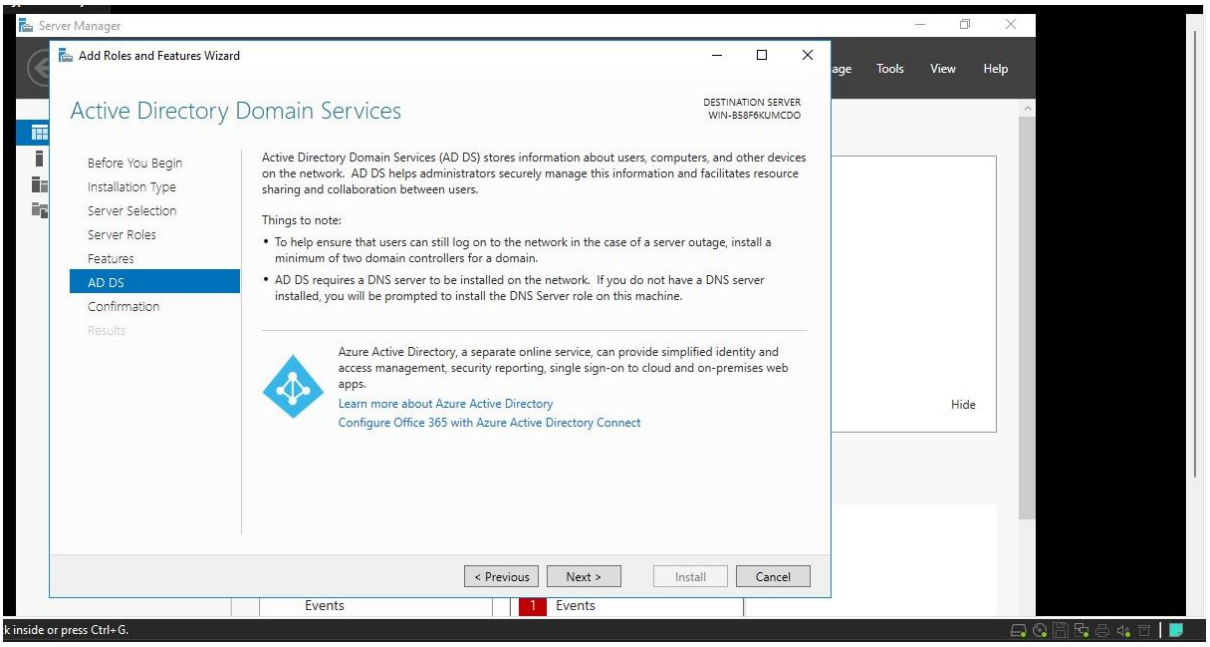
- In Server Roles Click on **Active Directory Domain Services**, a pop-up will appear Click **Add Features**



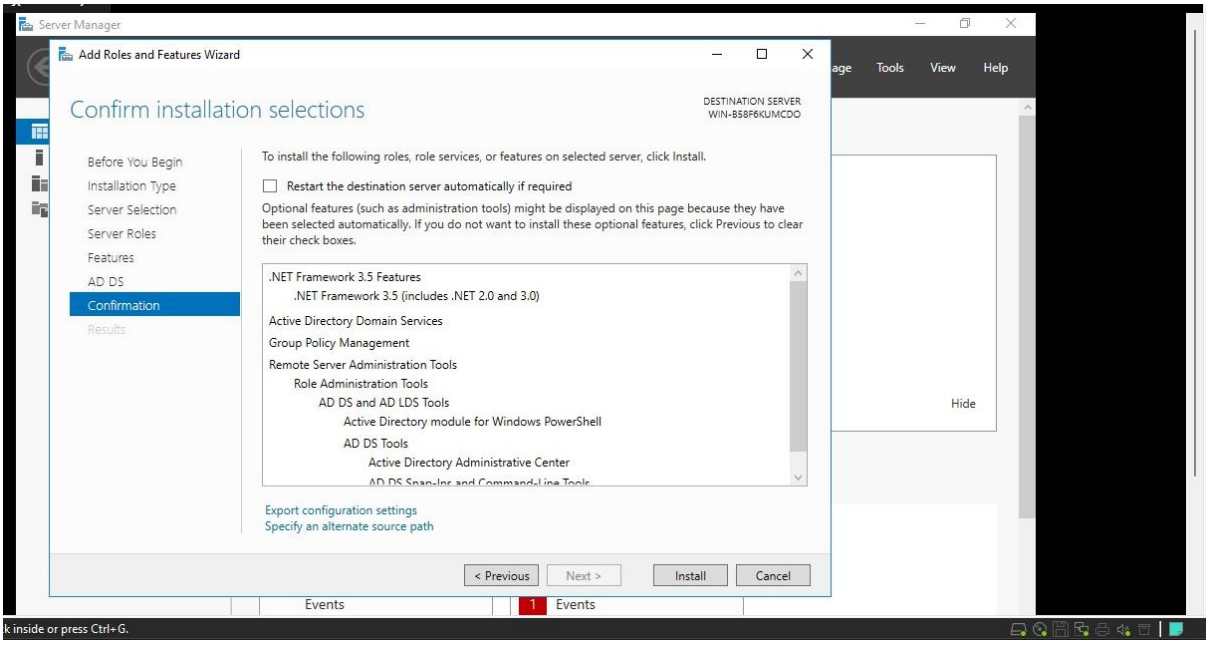
- In Features Select **.NET Framework 3.5 Features** and Click **Next**



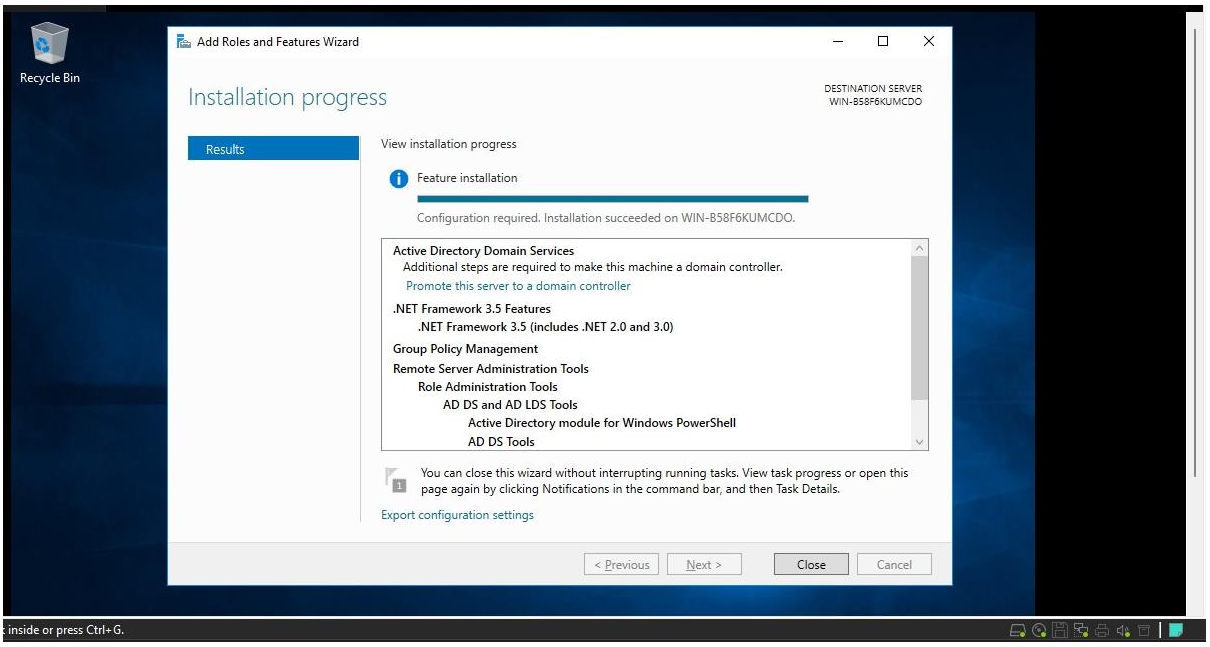
- Click **Next**



- Click on **Install**

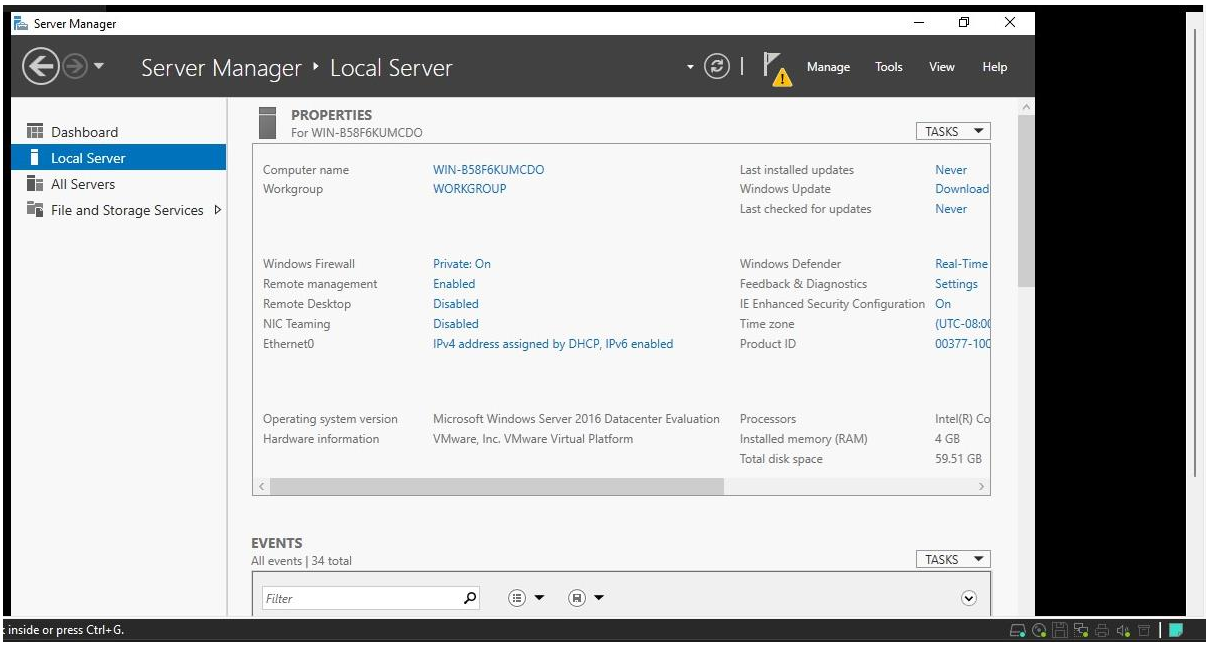


- Features will start installing, will have to restart in the middle to complete the installation

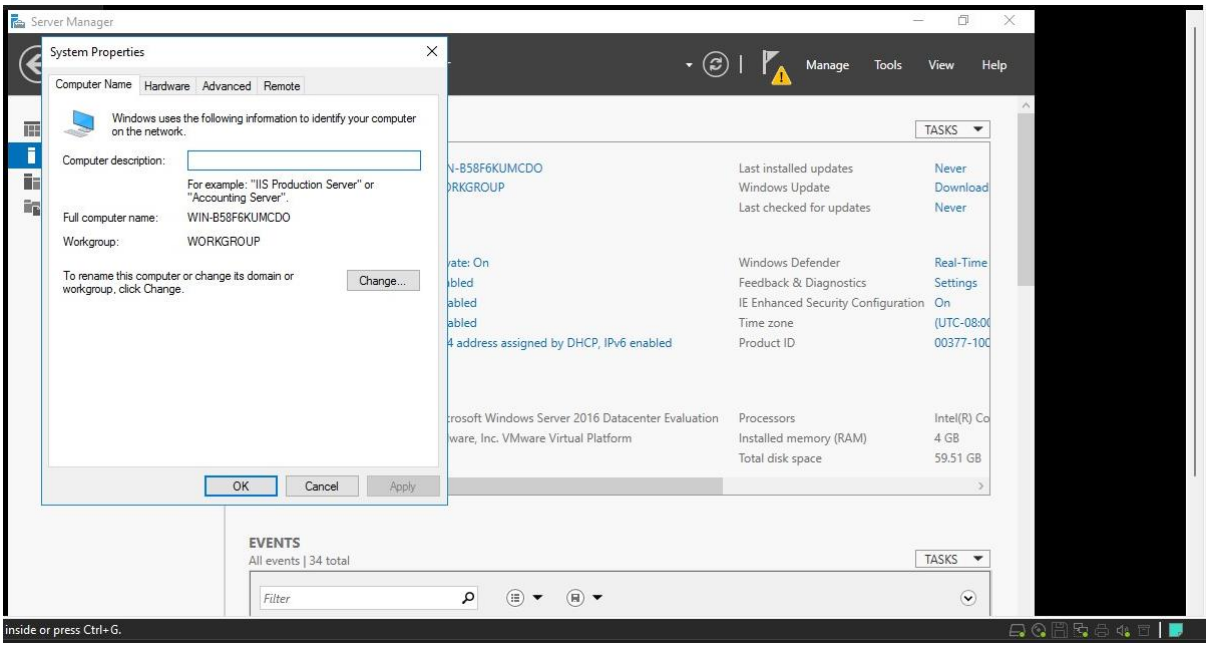


Step 31: Change Server Name

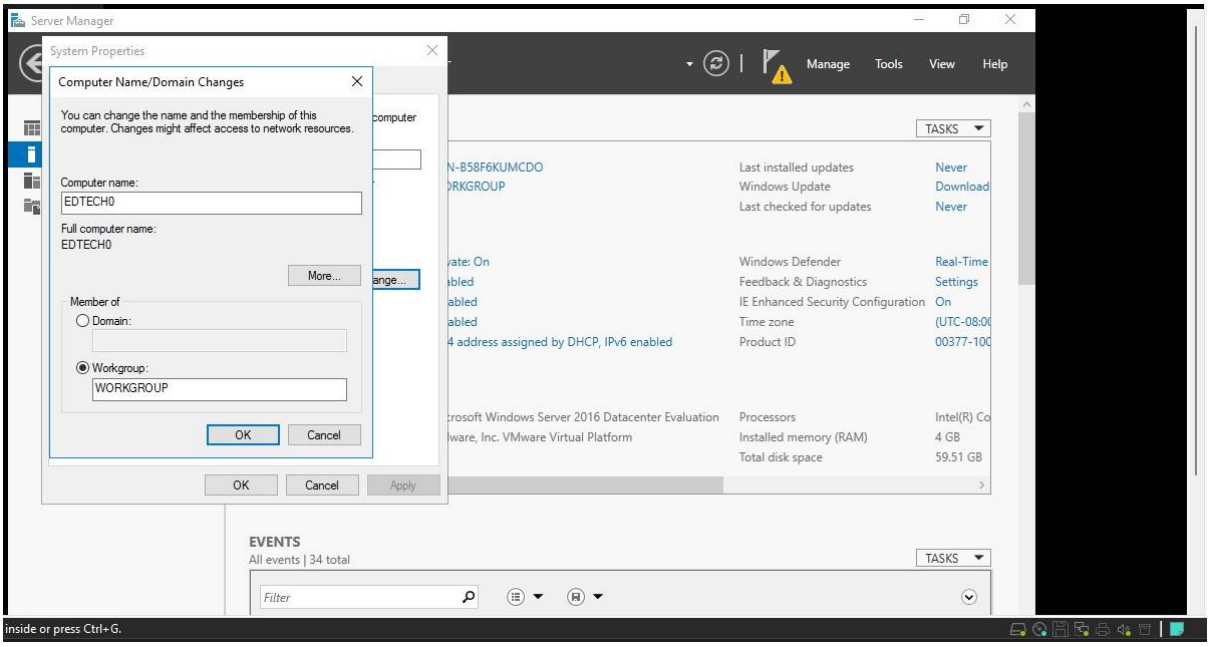
- Open Server Manager and click on **Local Server**



- Click on Computer name and Click **Change**

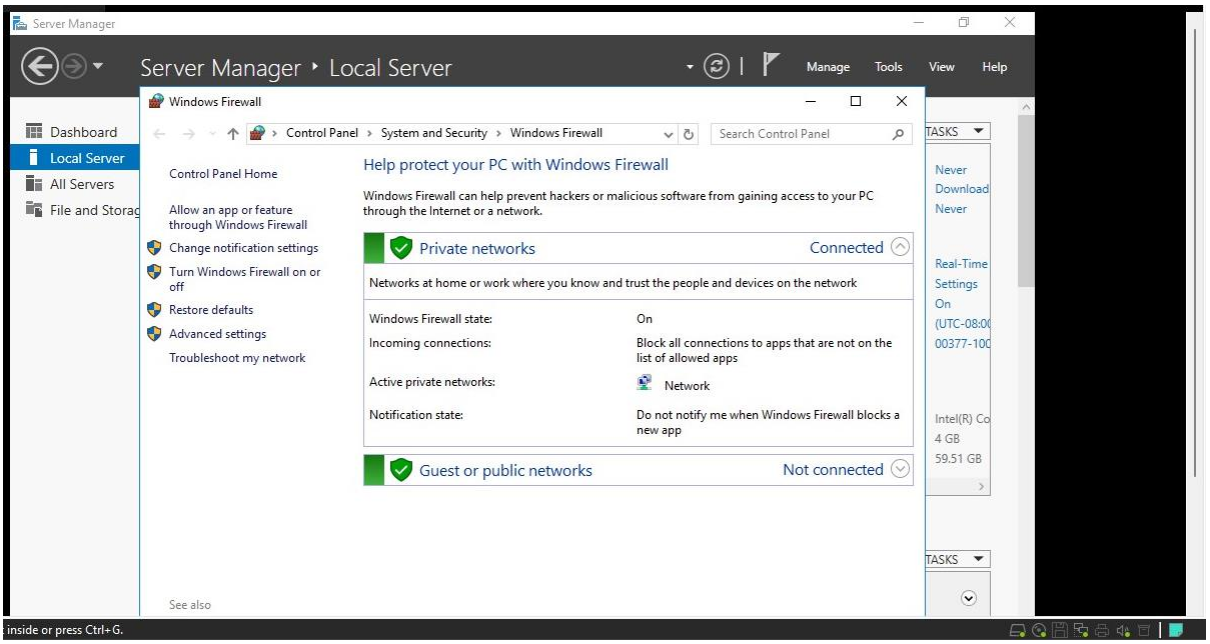


- Change the computer to name to any value (Here it is EDTECH0) and click **OK,** This change will require a restart.

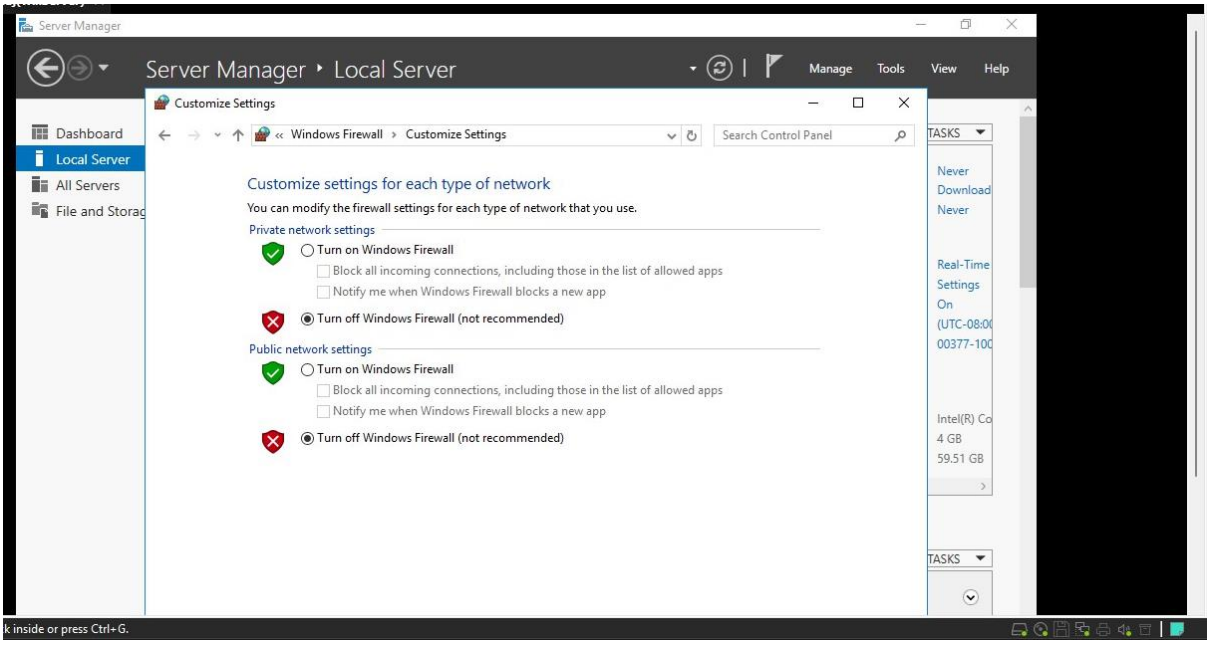


Step 32: Disable Firewall

- Within Server Manager Click on **Local Server** and Click on **Firewall**

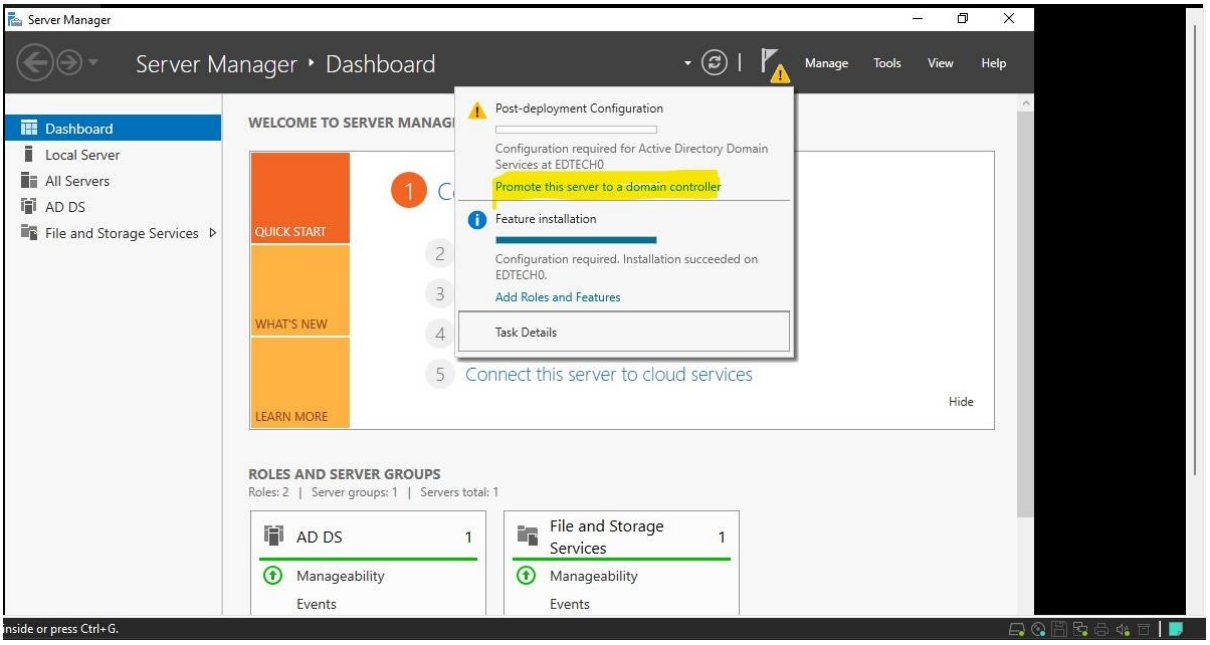


- Click **Turn Windows Firewall On or Off** and Select **Turn off windows Firewall** for both Public and Private. Then Click OK

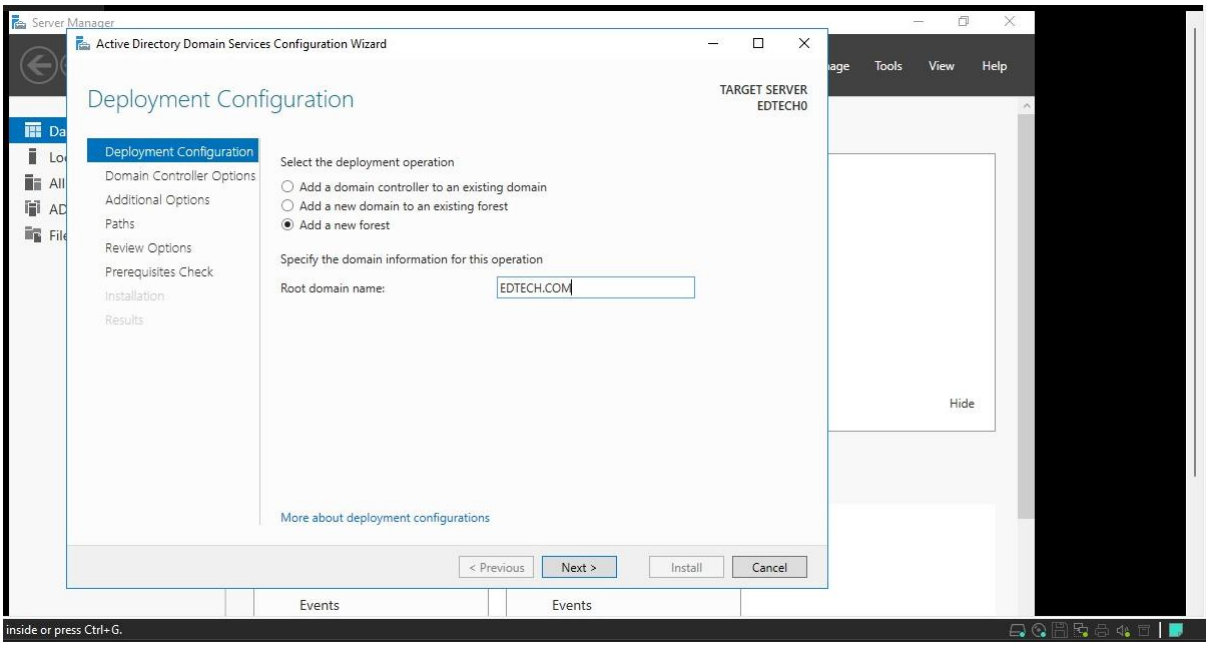


Step 33: Domain Controller Creation

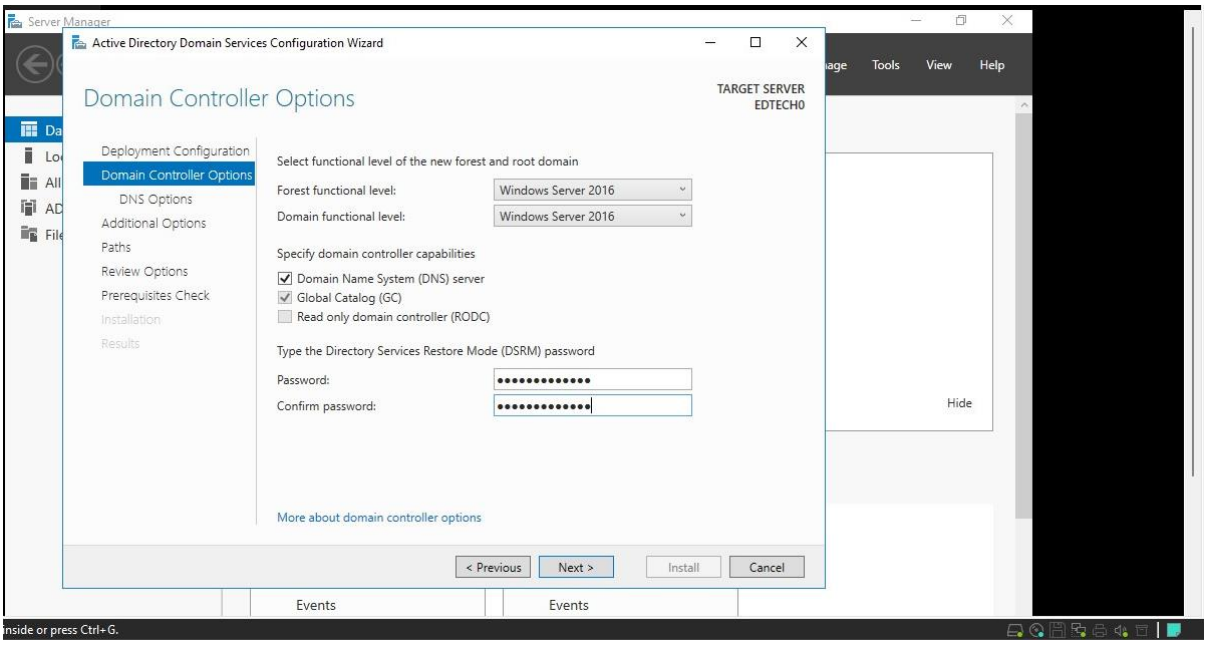
- On the Dashboard of the Server Manager Click on the **Warning Flag** on the top right and Click on **Promote this server to Domain controller**



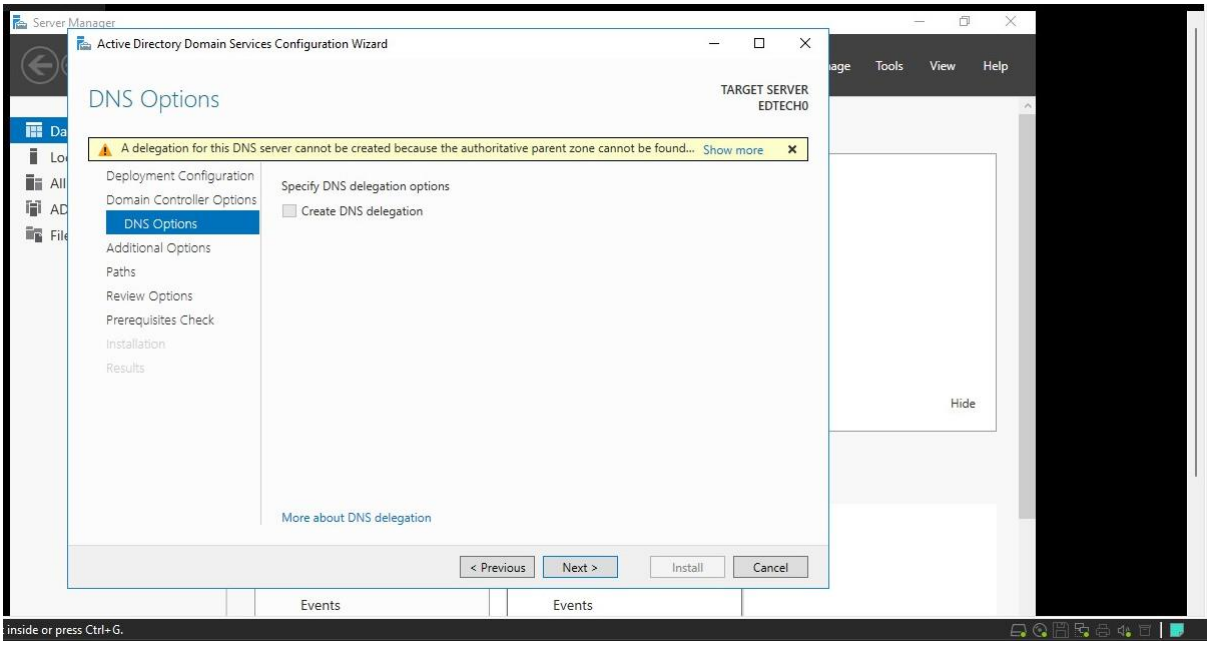
- This opens the Active Directory Domain Services Configuration Wizard, Select **Add a forest** option, enter a name for the new domain (here it is EDTECH.COM) and Click **Next**



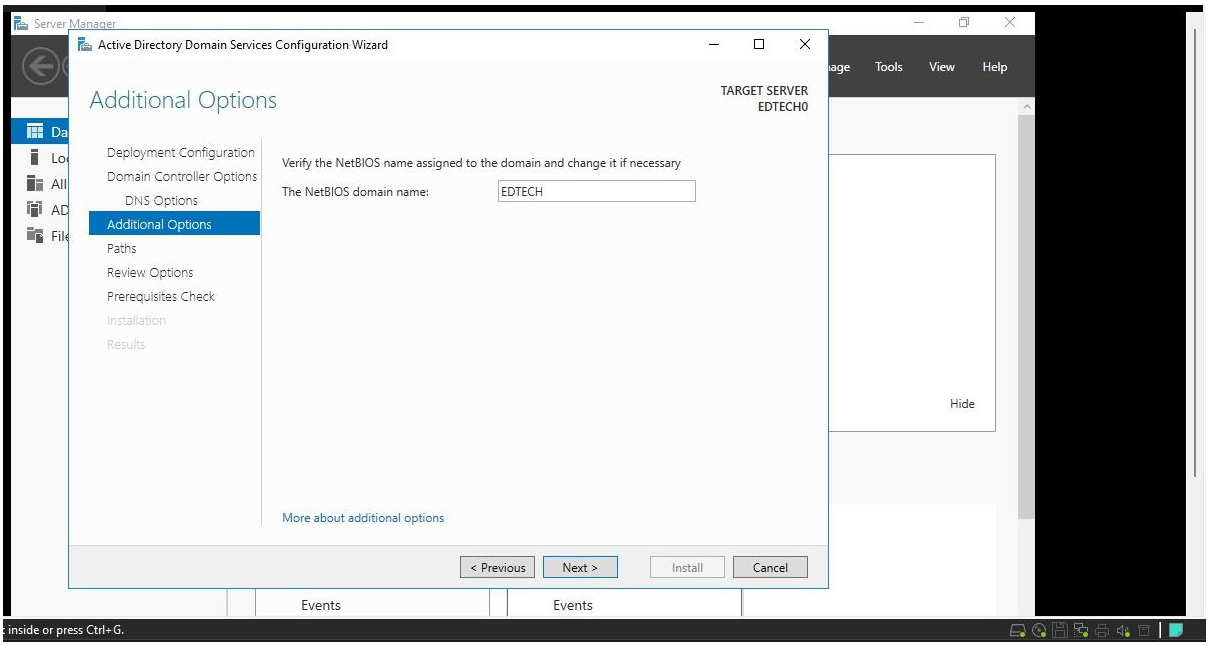
- Enter a password for the domain (keep it same as the administrator password). Click on **Nex**t



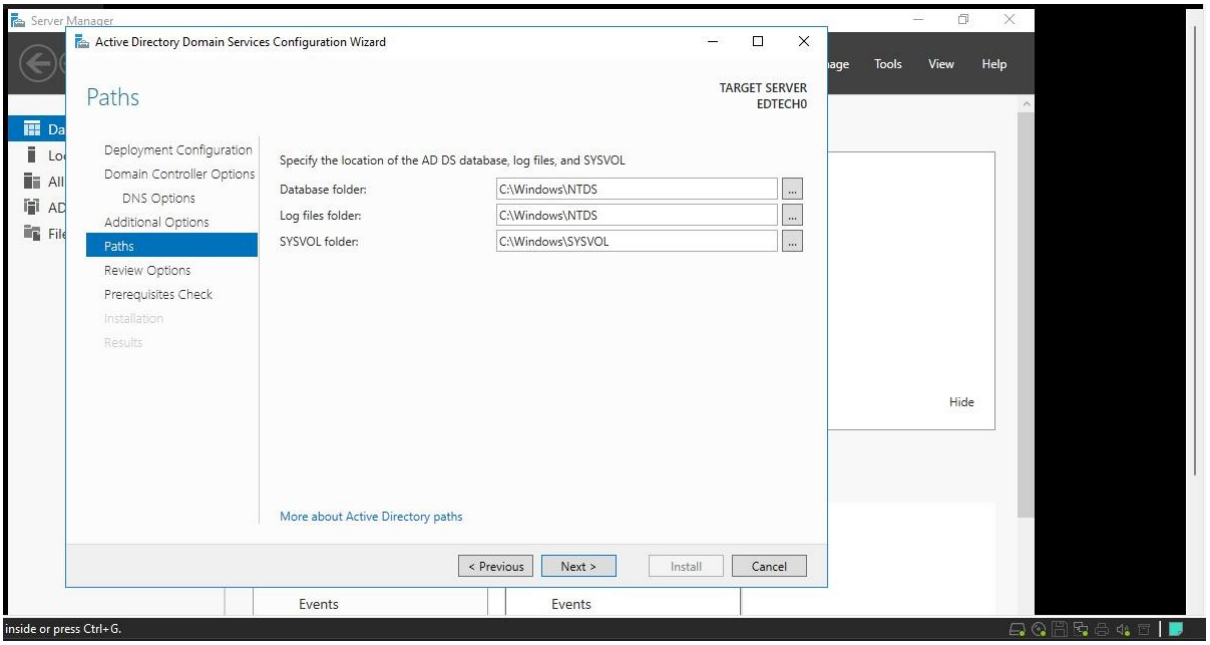
- Keep the default options and Click on **Next**



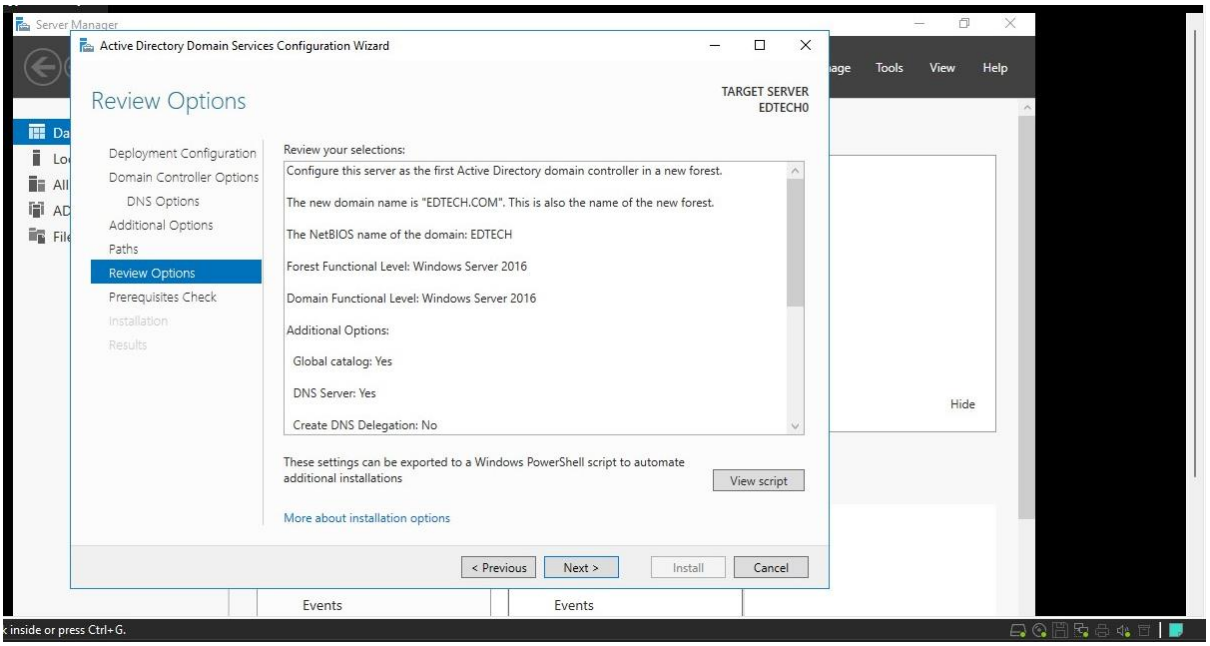
- Keep the default options and Click on **Next**



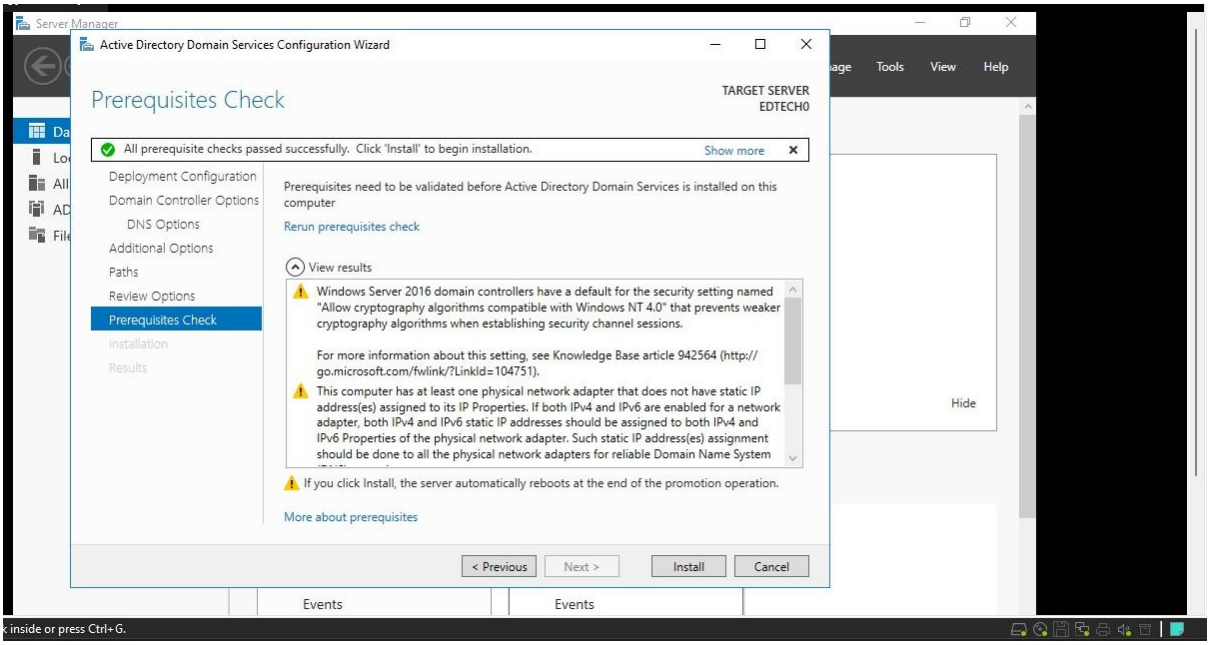
- Keep the default options and Click on **Next**



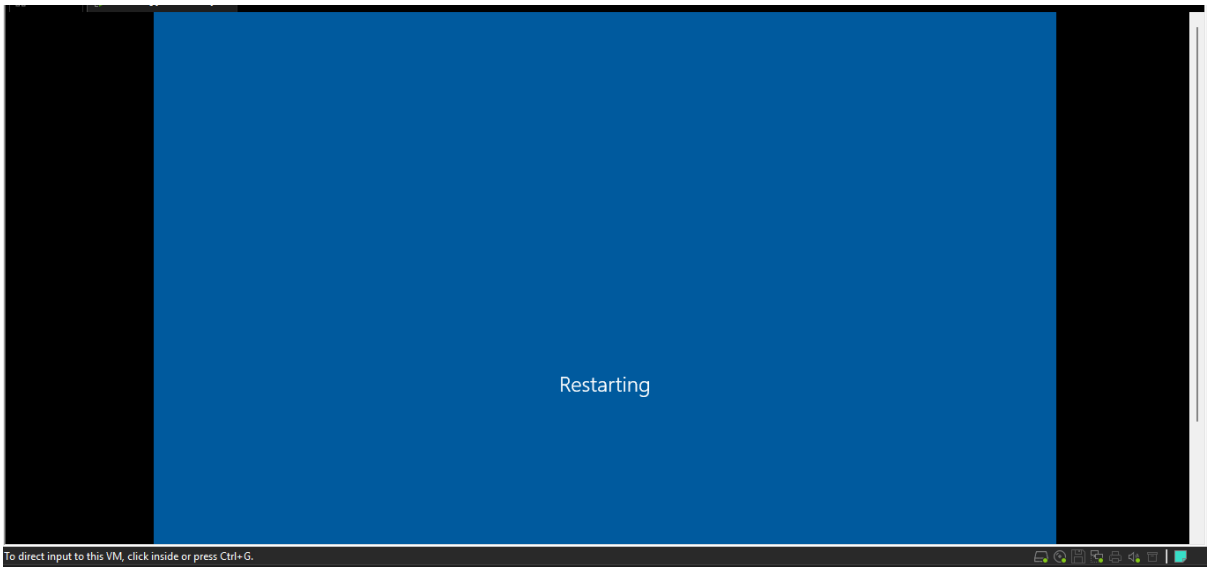
- Keep the default options and Click on **Next**



- It checks for pre-requisites. It should pass all the pre-requisites check (Warnings are acceptable) and Click on **Install**

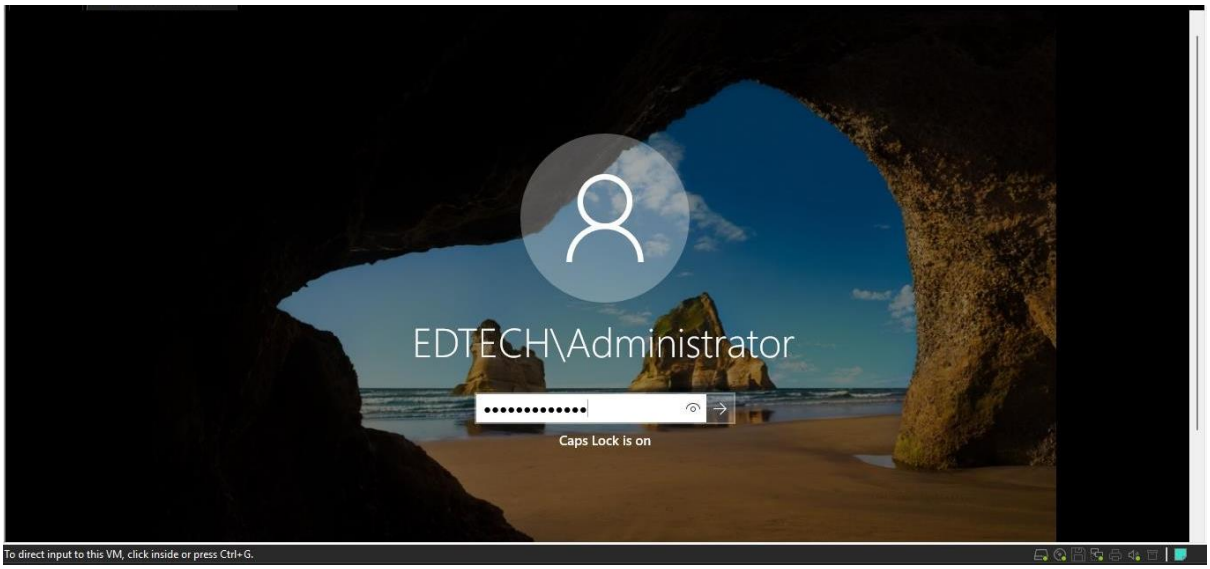


- After Completion of the installation the VM will restart for the changes to take effect

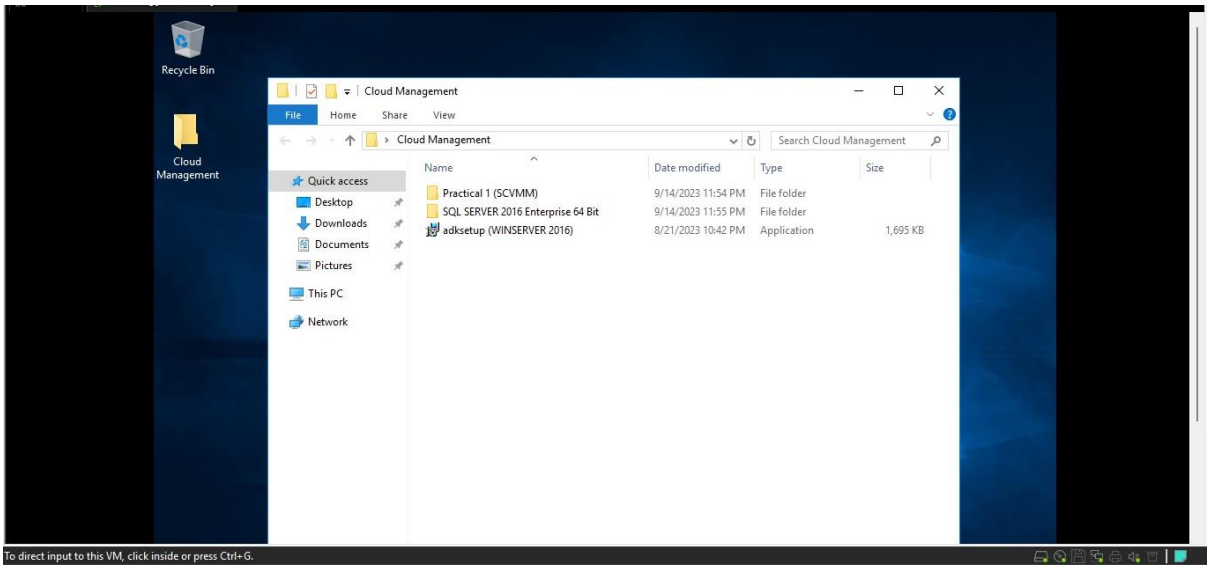


- Now the VM will be signed in as the Domain Controller

Step 34: Installing and configuring SQL Server

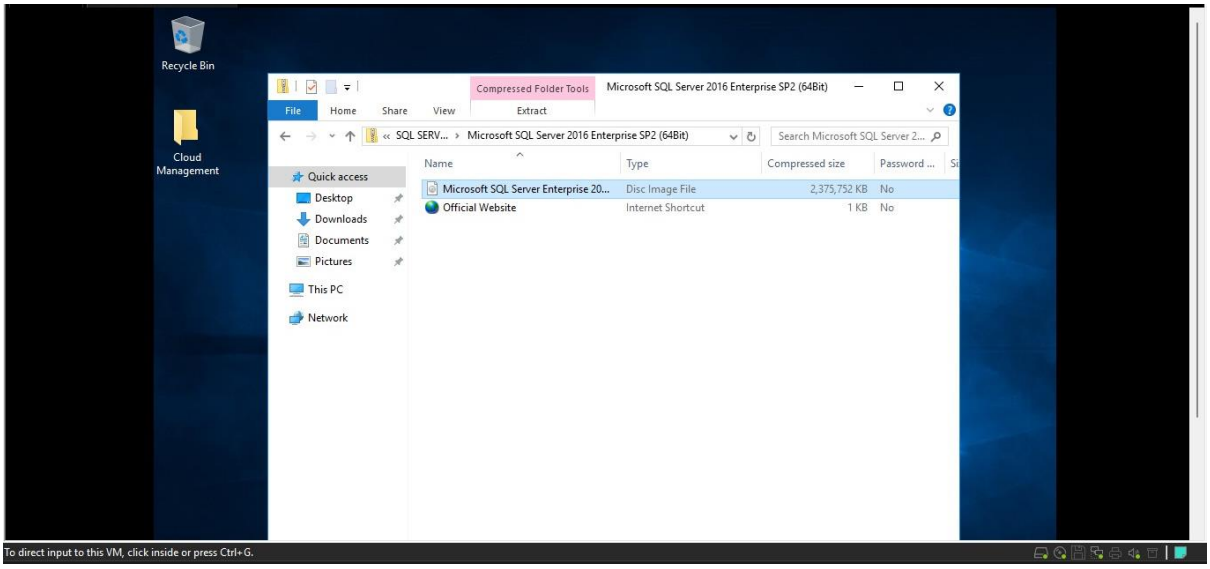


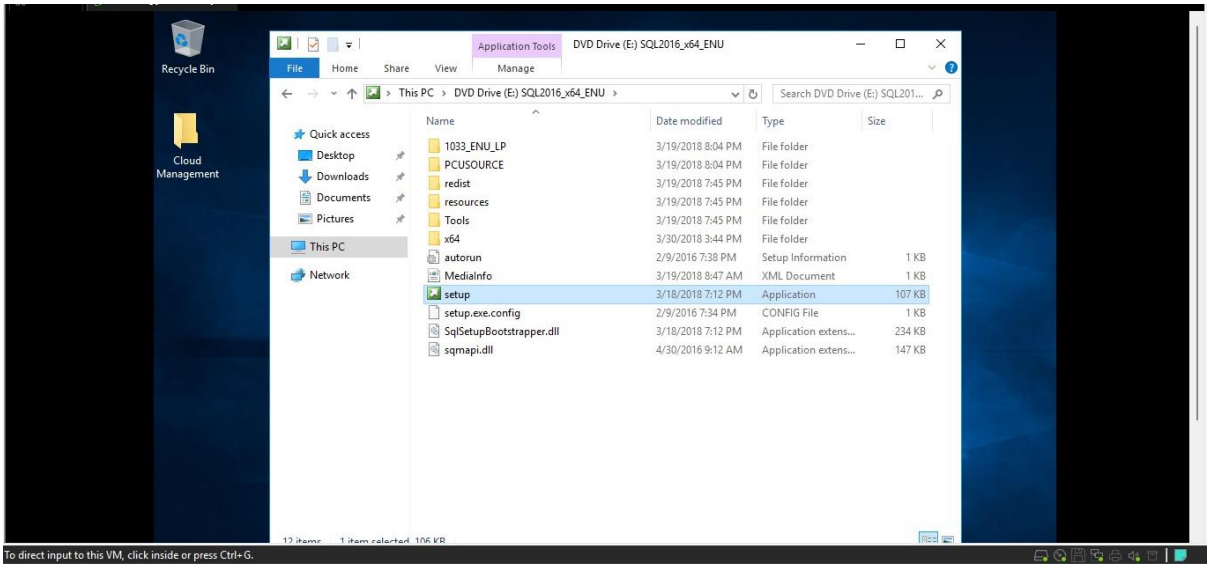
- Drag and Drop the required files for the practical into your VM



- Mount the SQL Server iso file (Either Double-click the iso file or Right-Click on the iso and Select **Mount**

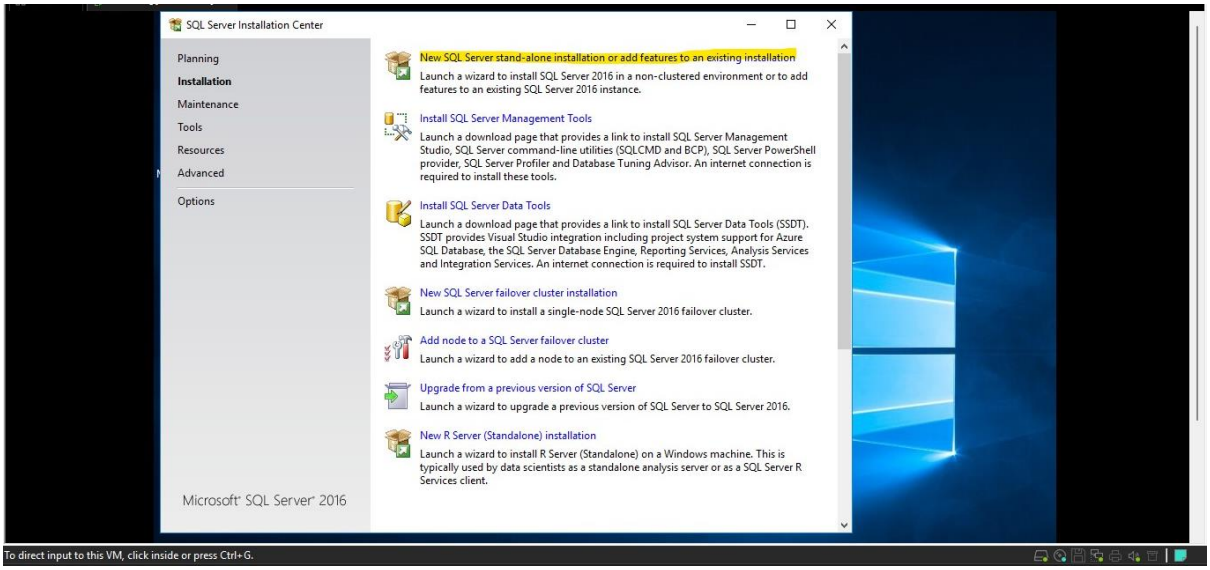
- Click on **Setup.exe**



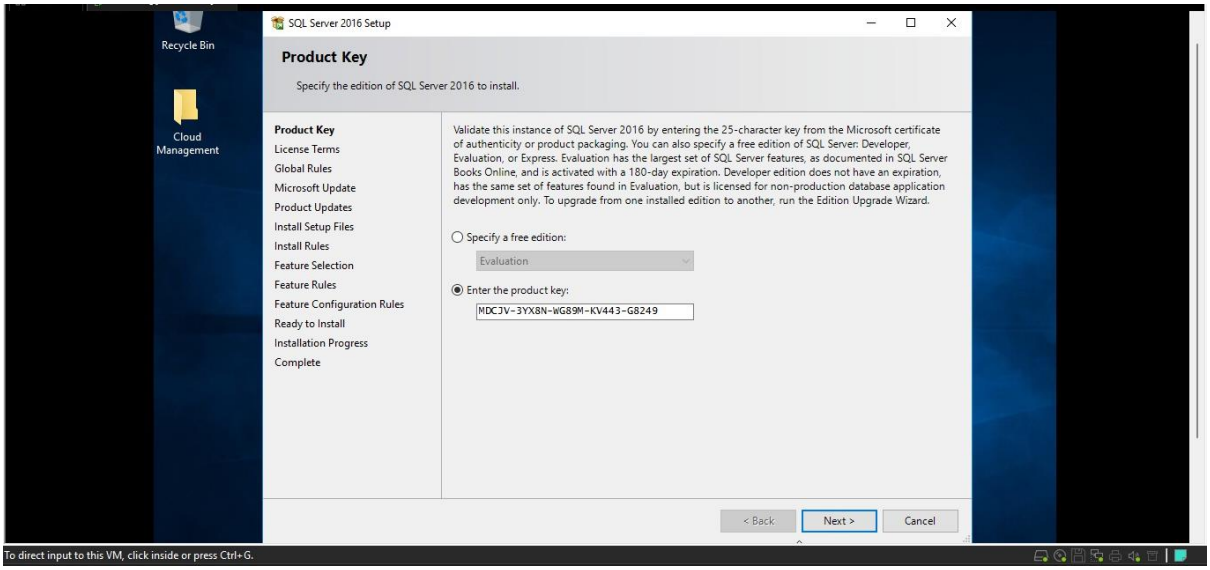


- The SQL Server Installation Center will open, Click on **Installation**
- Within Installation Click on **New SQL Server stand-alone installation or add features to an existing installation**

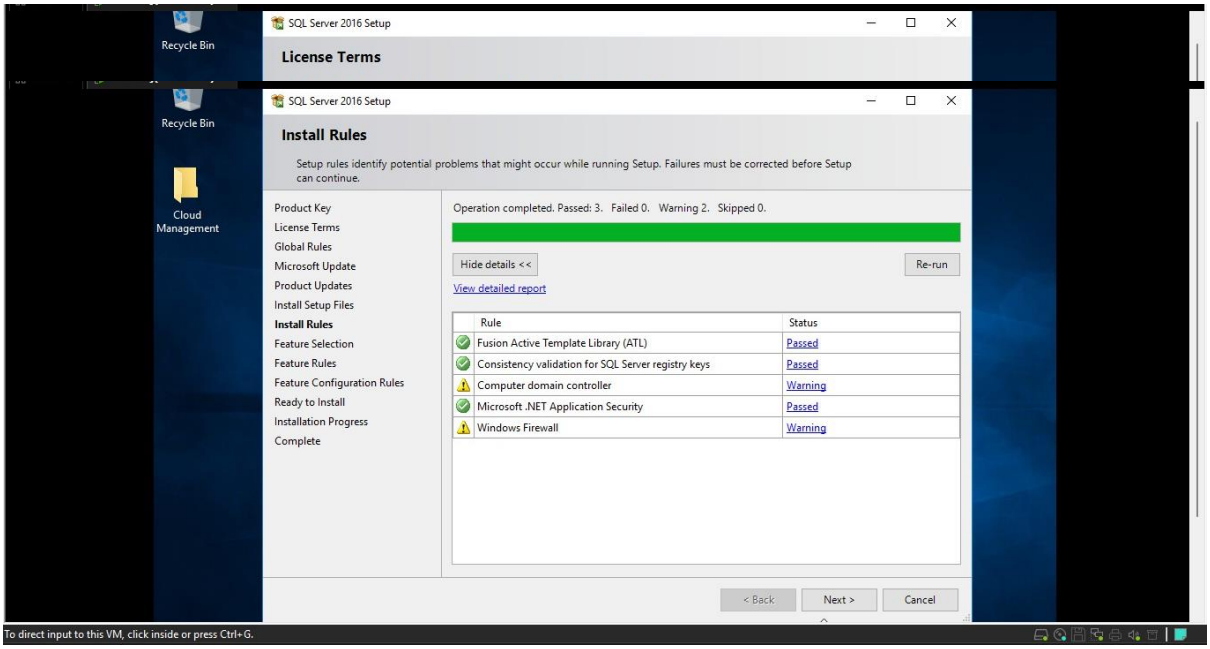
- Make sure Enter Product Key is selected and the default value is entered,



- Click **Next**

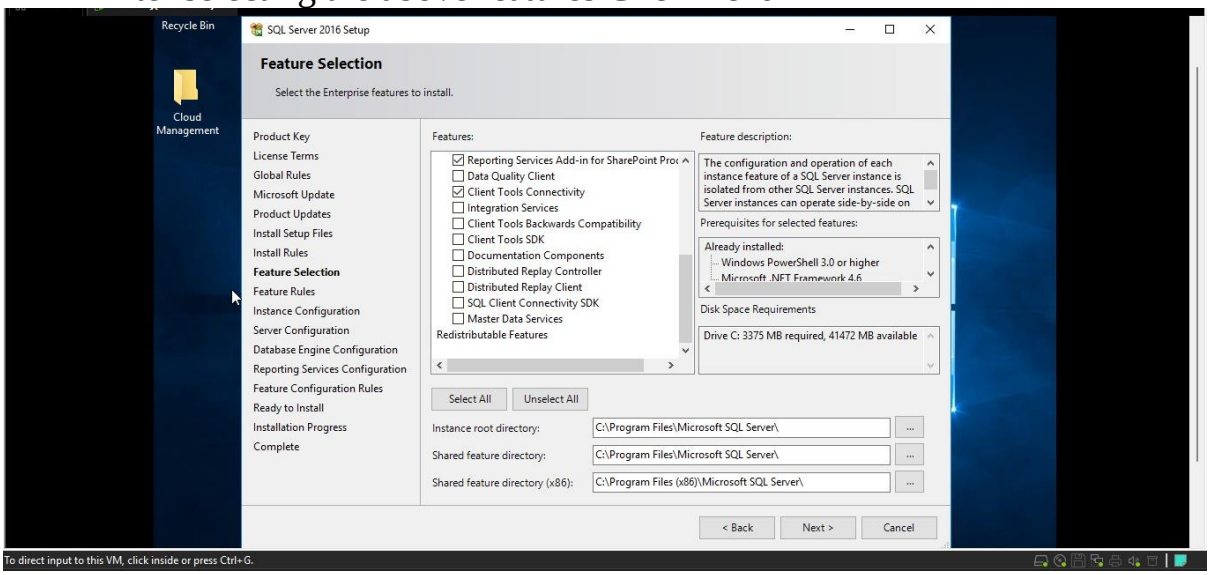


- Select **Accept license and terms** and Click **Next**
- Click Next on Microsoft Updates and Install Rules which should pass with only a few warnings

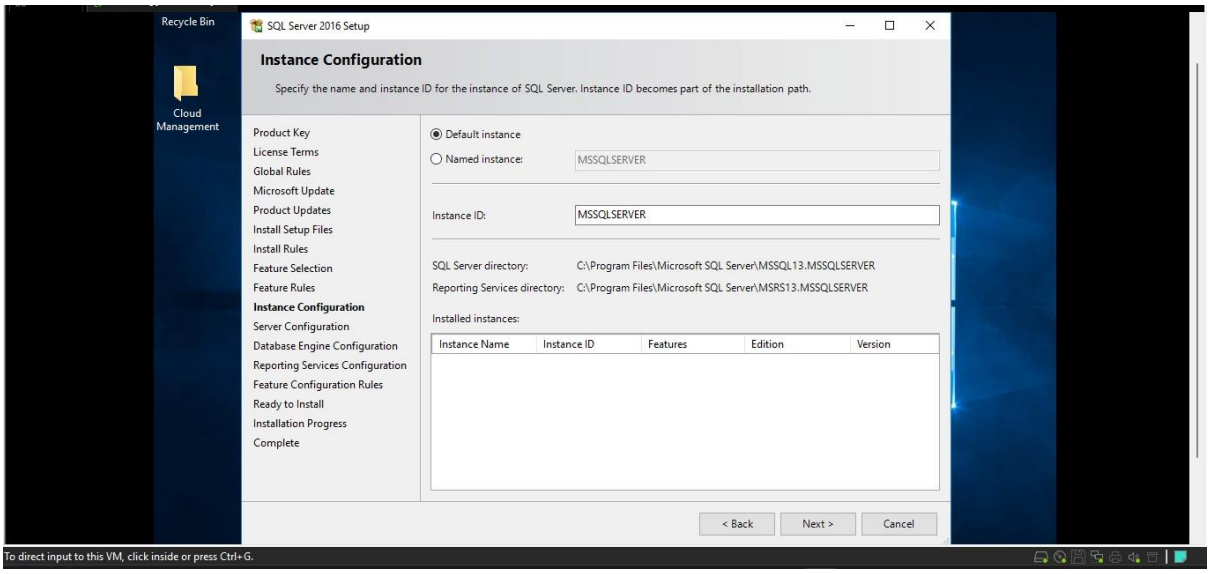


- In Feature Selection select the features given below:
  1. Database Engine Services
  2. Reporting Services – Native
  3. Reporting Services SharePoint
  4. Reporting Services Add-in for SharePoint products
  5. Client Tools Connectivity
  6. Management Tools – Basic (If not there its ok)
  7. Management Tools – Complete (If not there its ok)

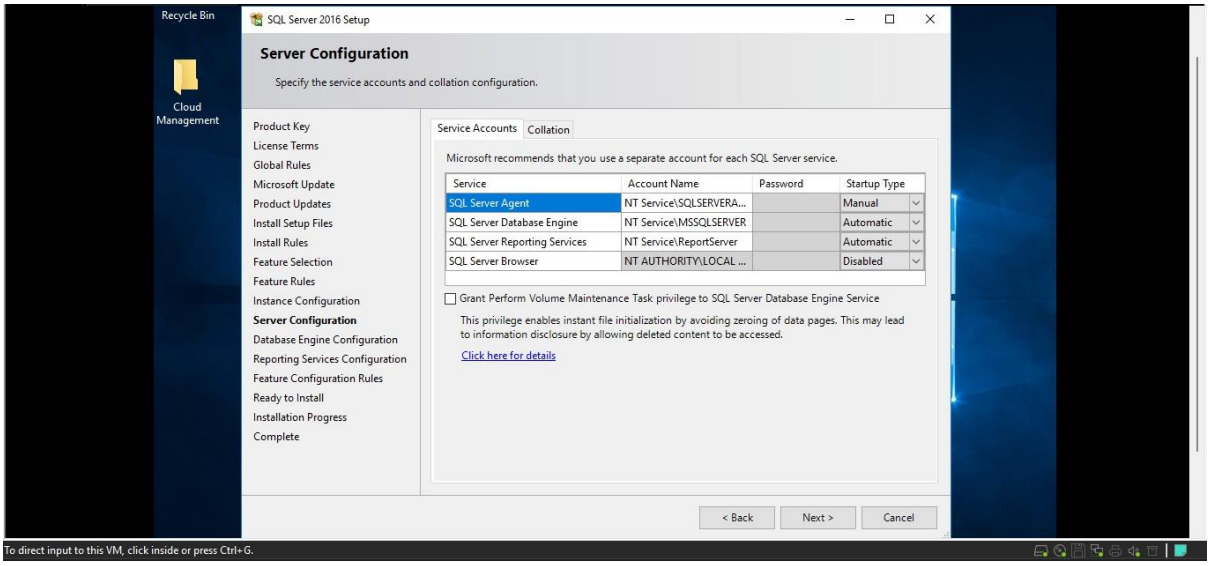
  After selecting the above features Click **Next**



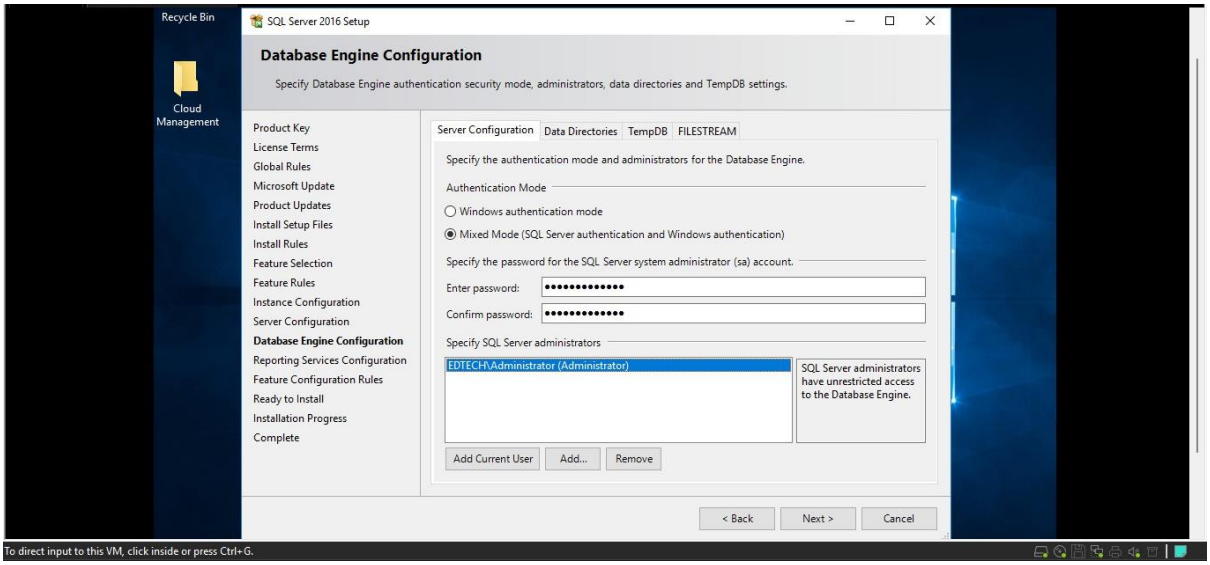
- Select Default instance and Click **Next**



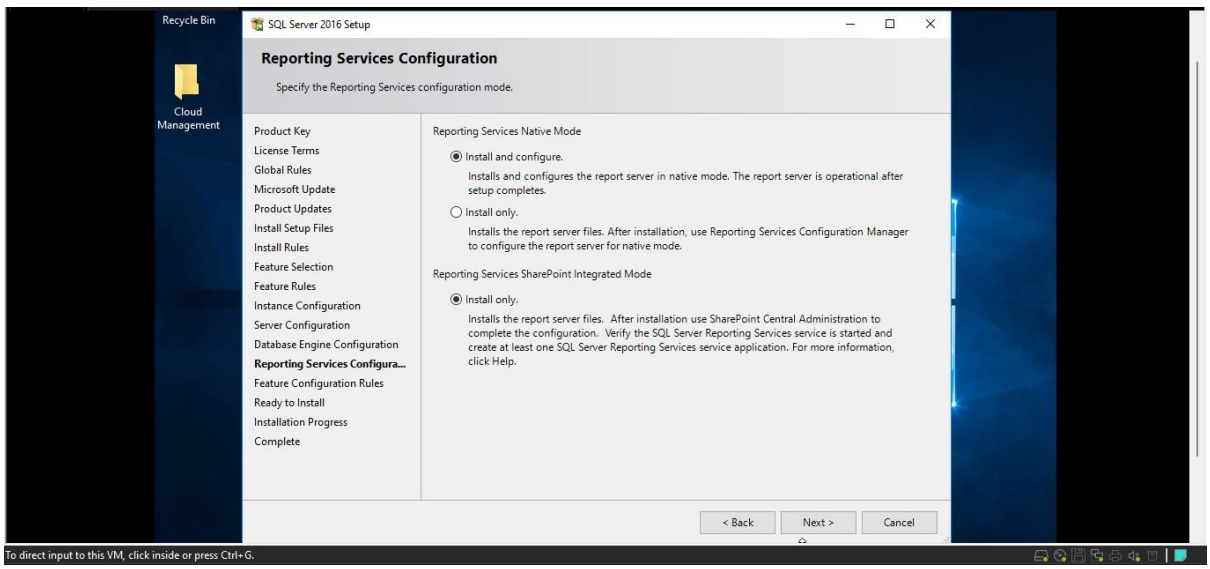
- Keep default values and Click **Next**



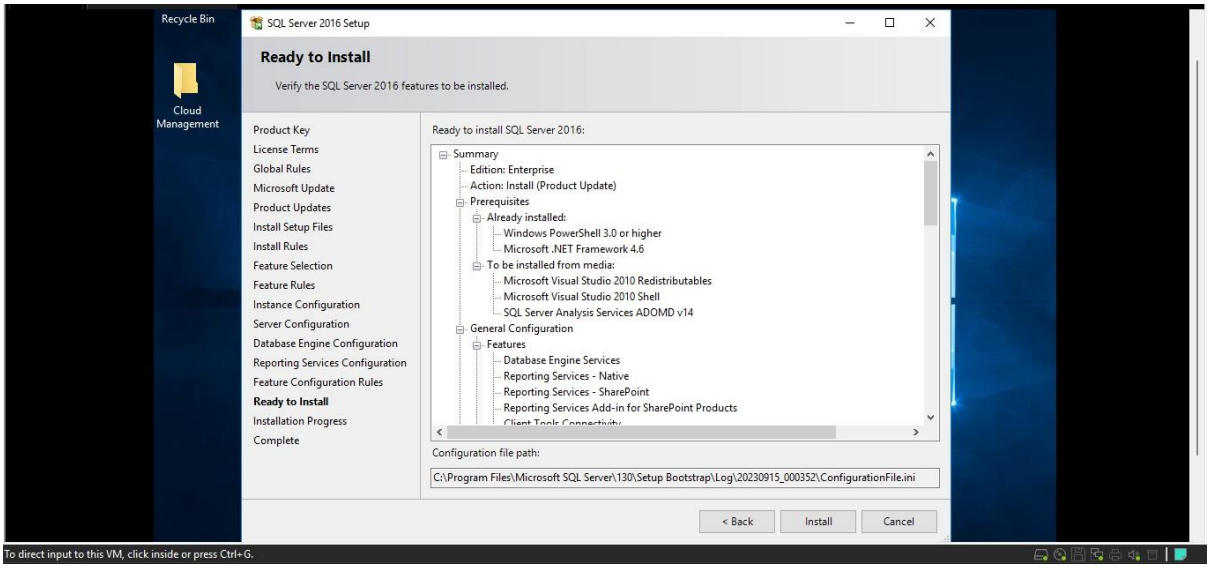
- In Database Engine Configuration, Select **Mixed Mode** and enter the same password as set while creating the VM
- Click on **Add Current User**, it should display the current Domain User and Click **Ok**



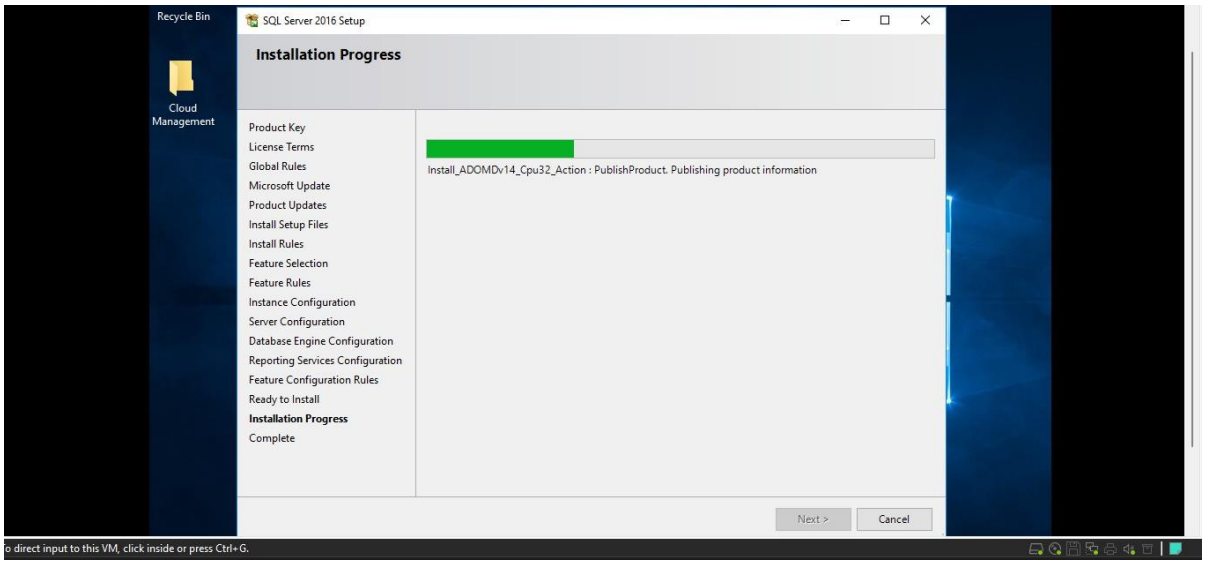
- Keep default values and Click **Next**



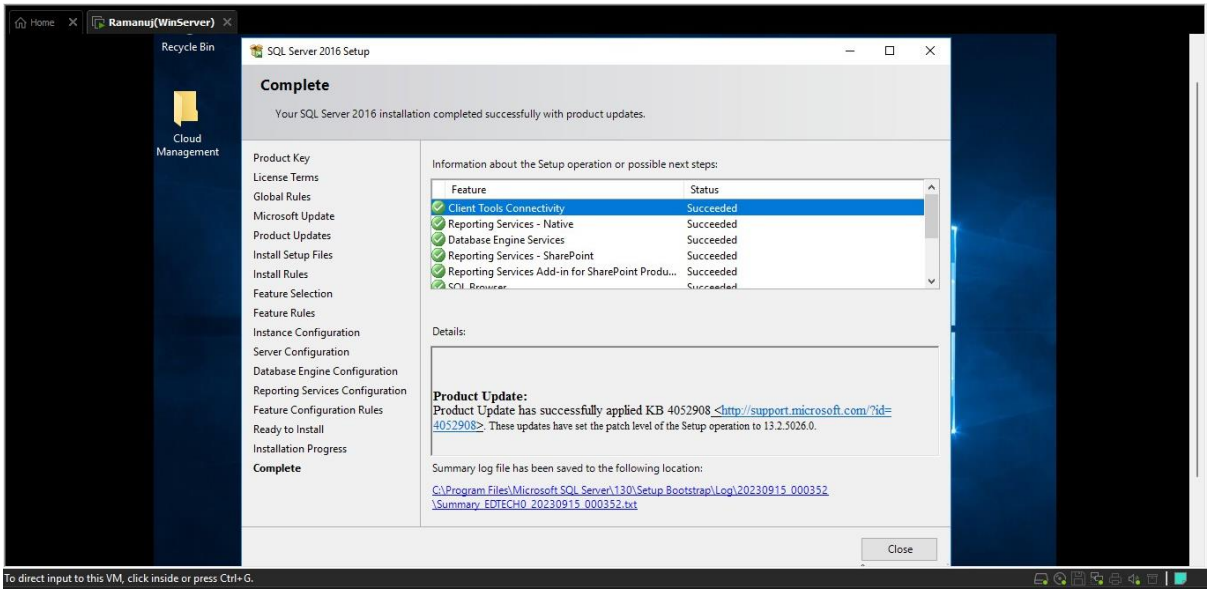
- Click on **Install**



- It will start installing

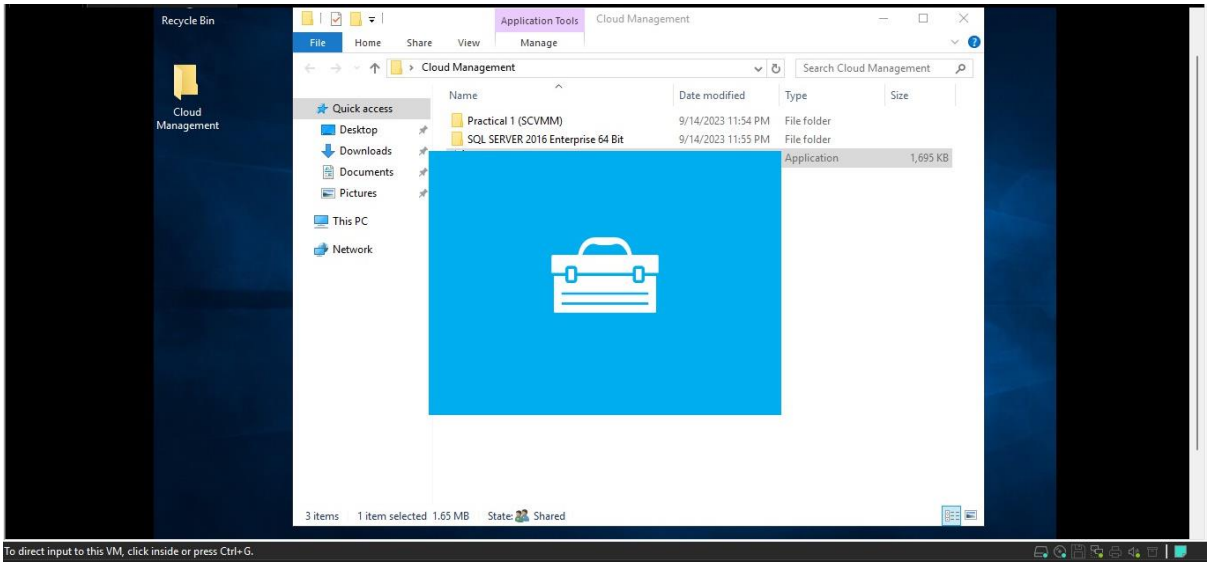


- It should show Installation succeeded

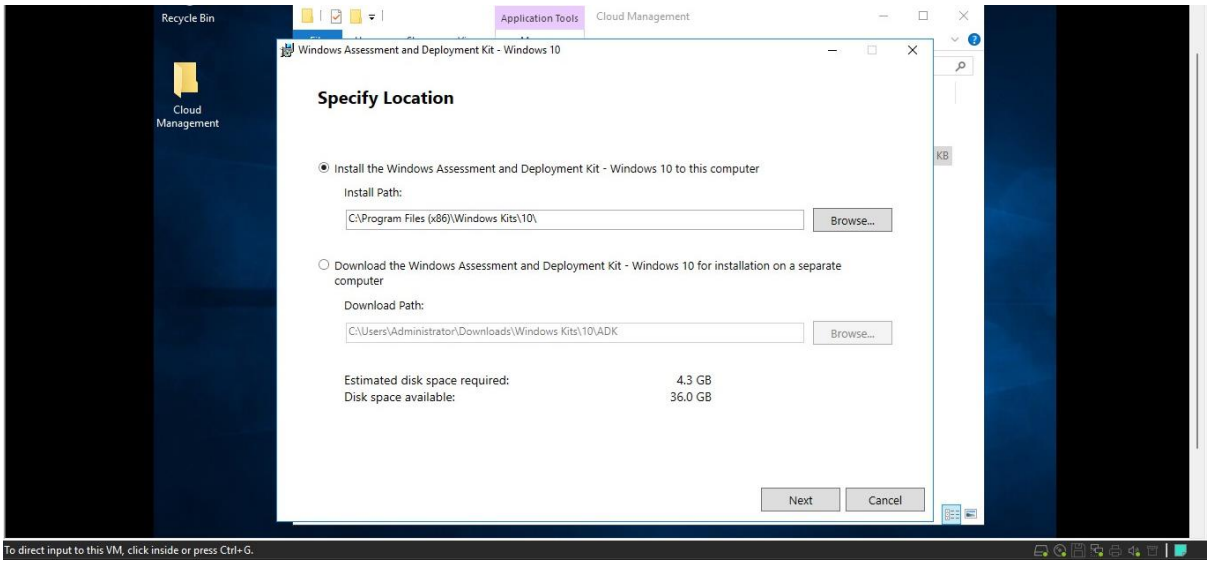


Step 35: Installing ADK-setup 2016 (Windows Toolkit)

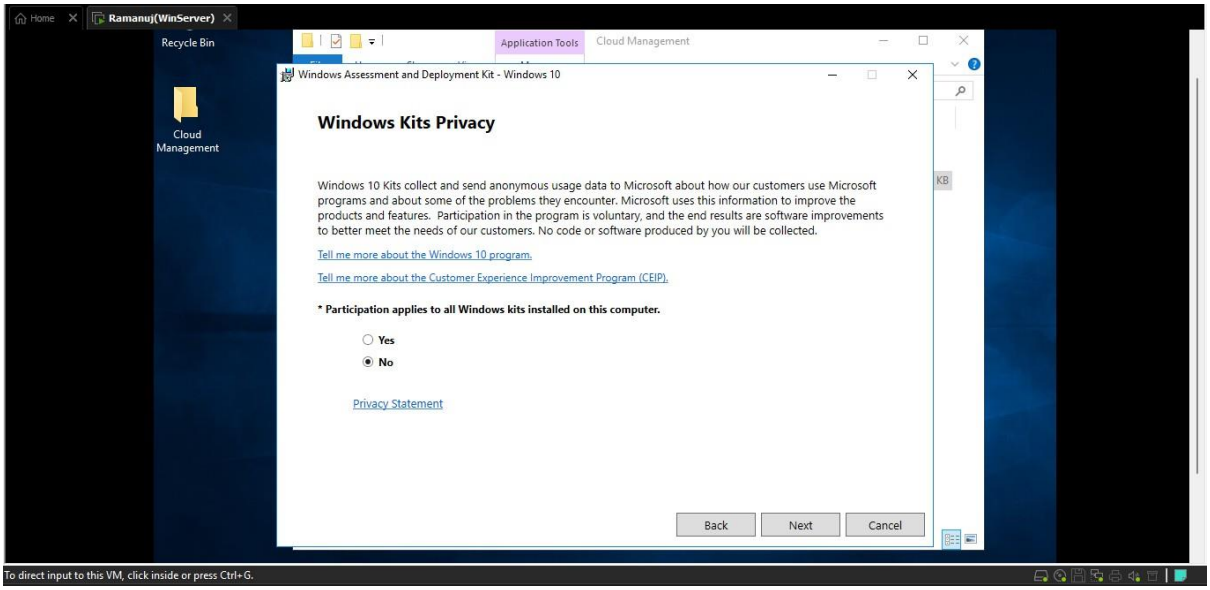
- run the ADK setup from the imported files in your VM



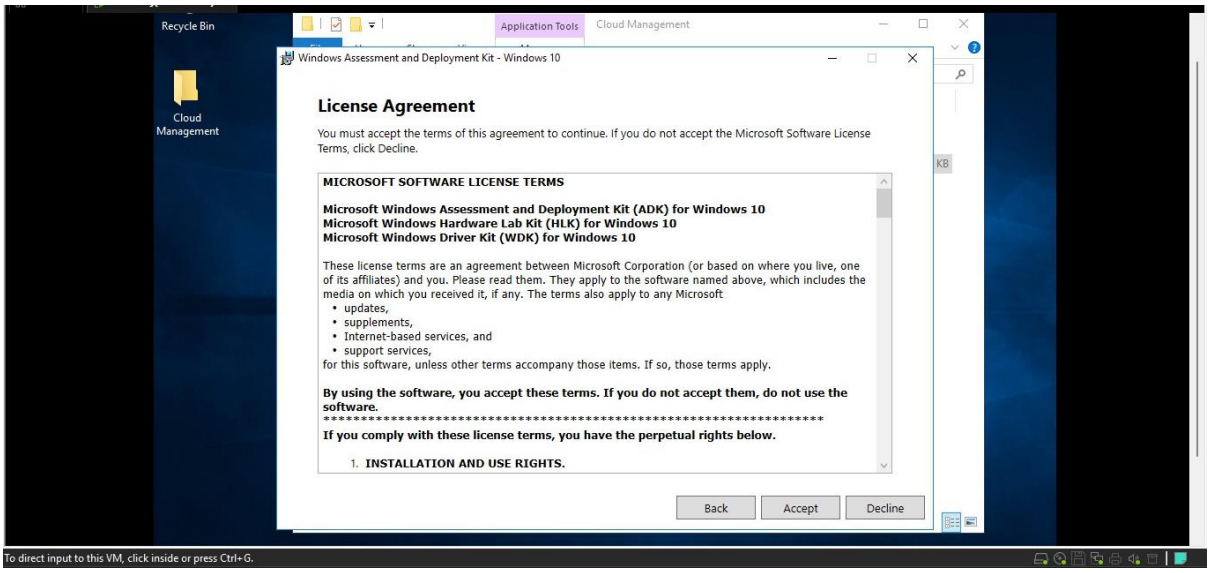
- Keep Default and Click **Next**



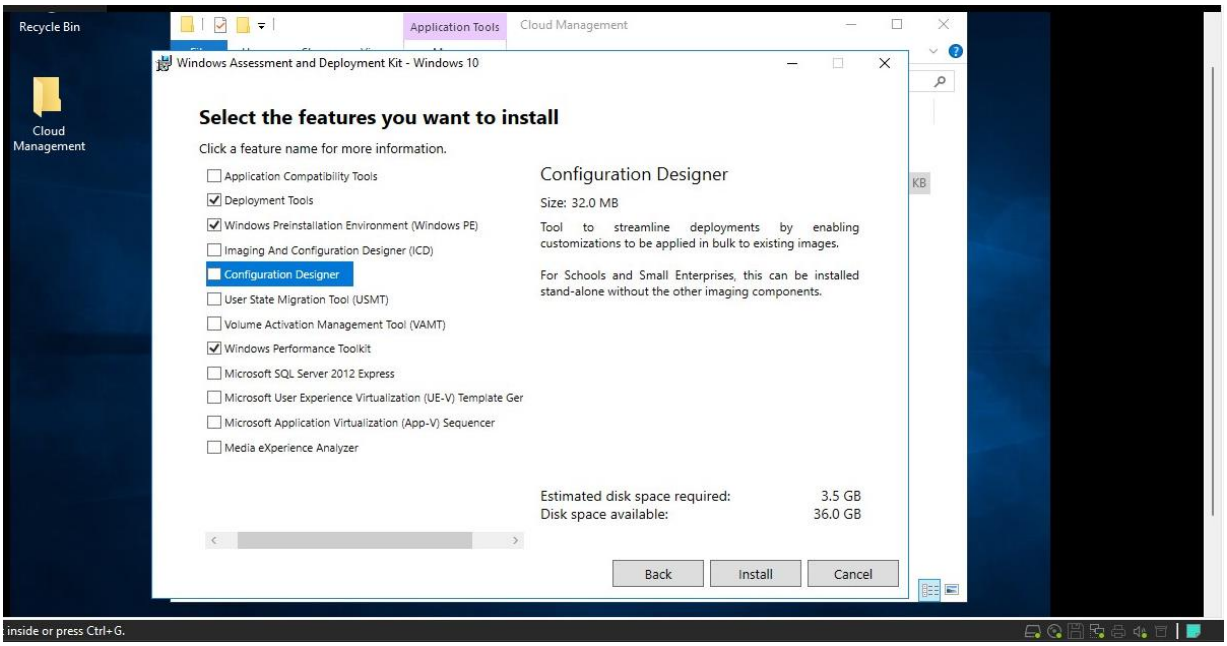
- Select **No** for participation in Windows Kit Privacy and Click **Next**



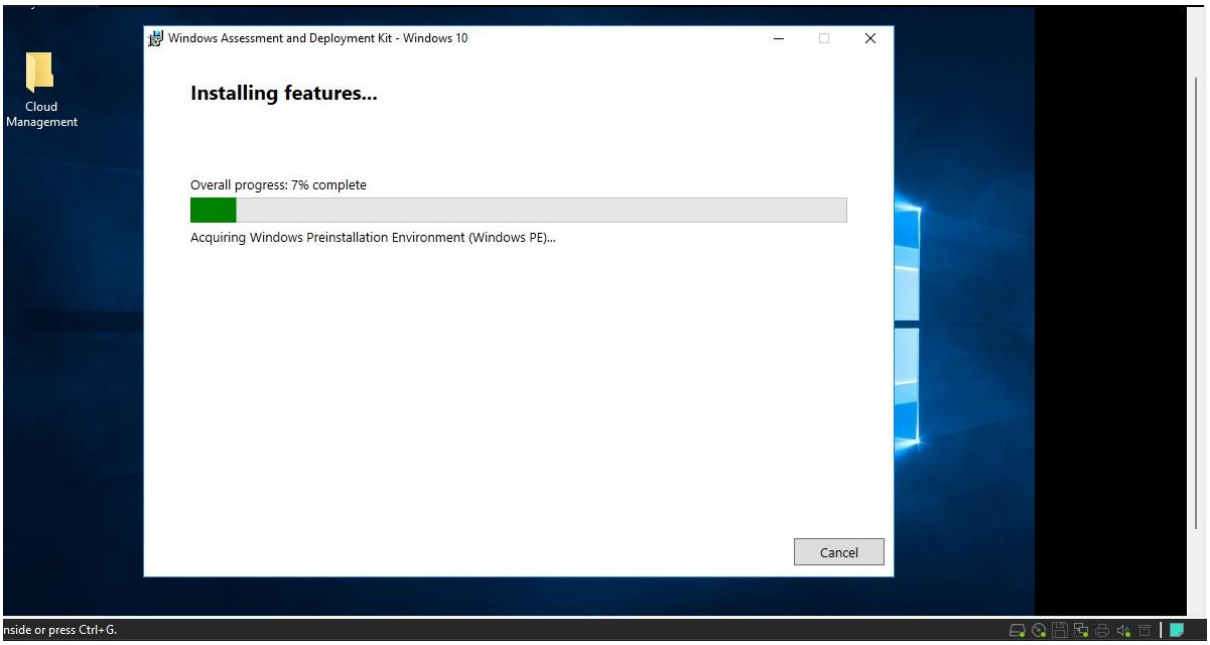
- Click **Accept**



- In the Selecting Features part click on the options given below:
  1. Deployment Tools
  2. Windows Pre-installation Environment (Windows PE)
  3. Windows Performance Toolkit

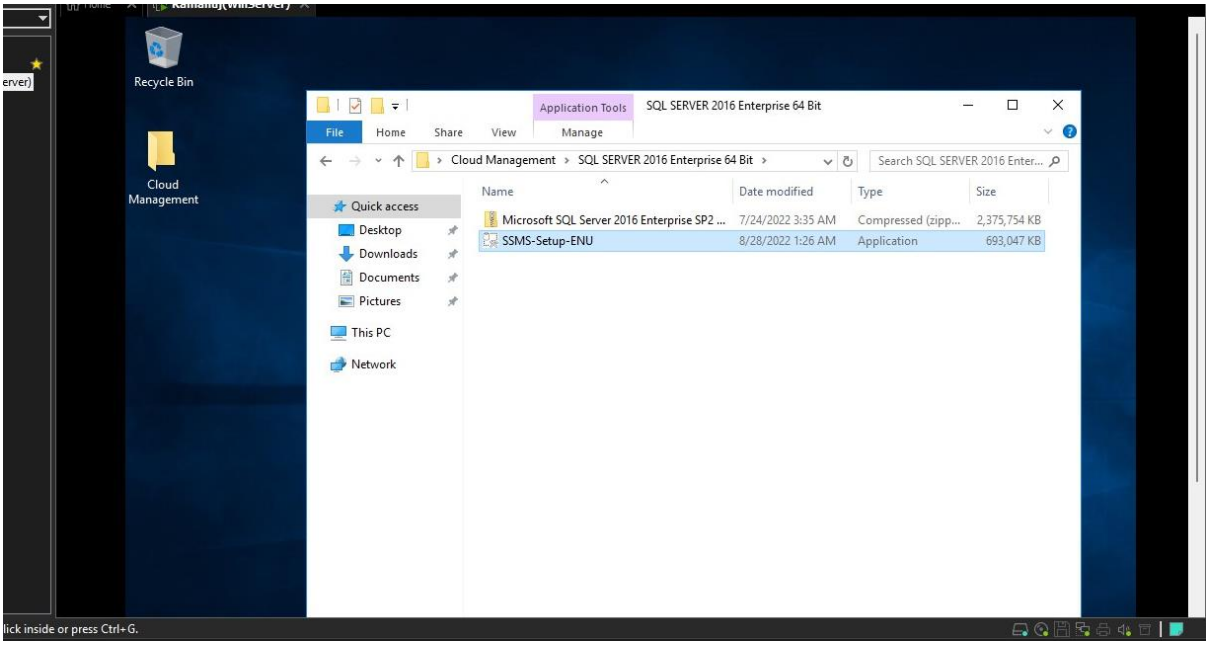


- Installation of Features will now start, after installation close the setup wizard.

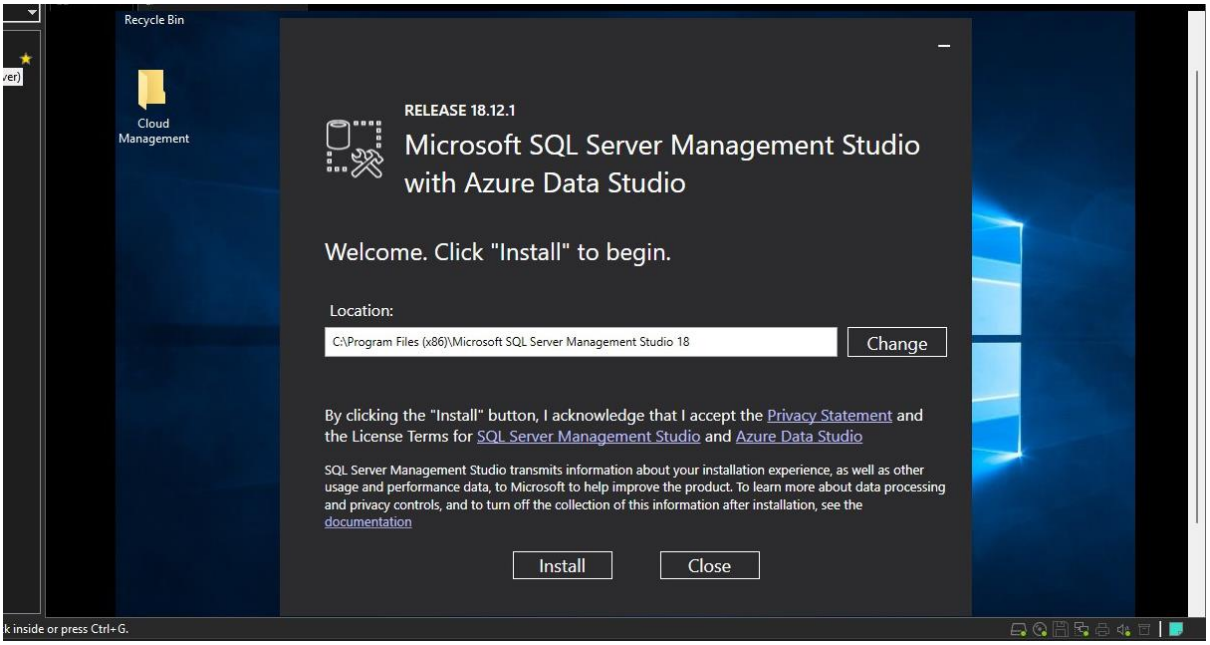


Step 36: Installing **SQL Server Management Studio**

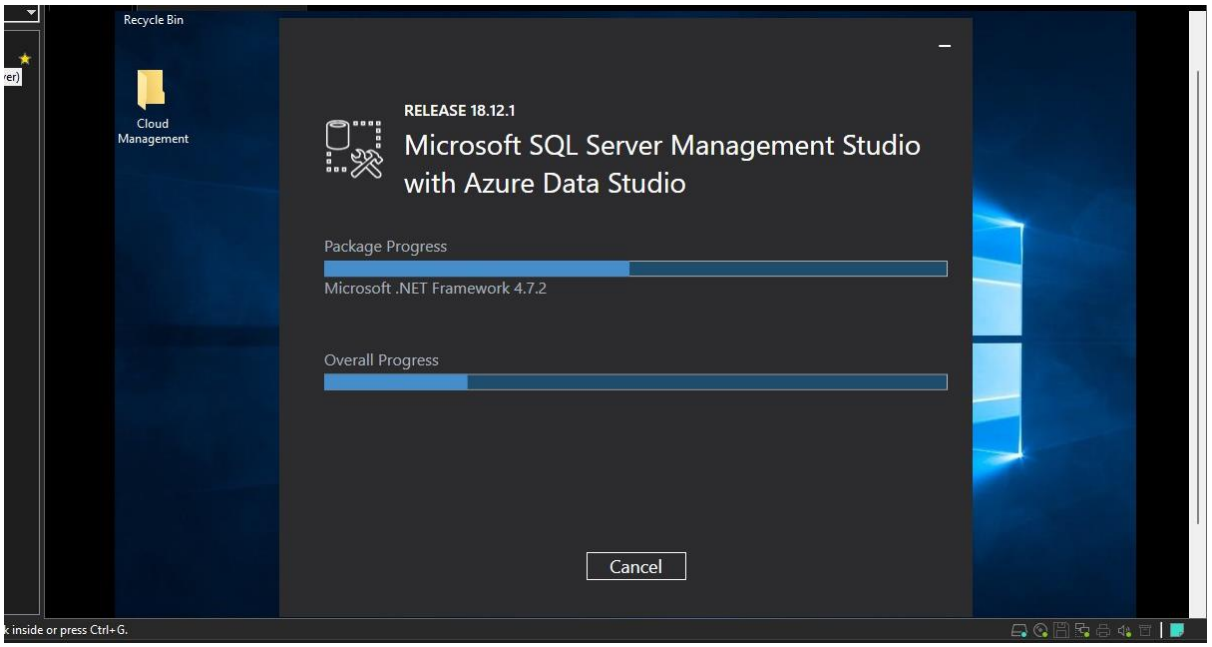
- Run the SSMS setup



- Keep Default settings and Click on **Install**



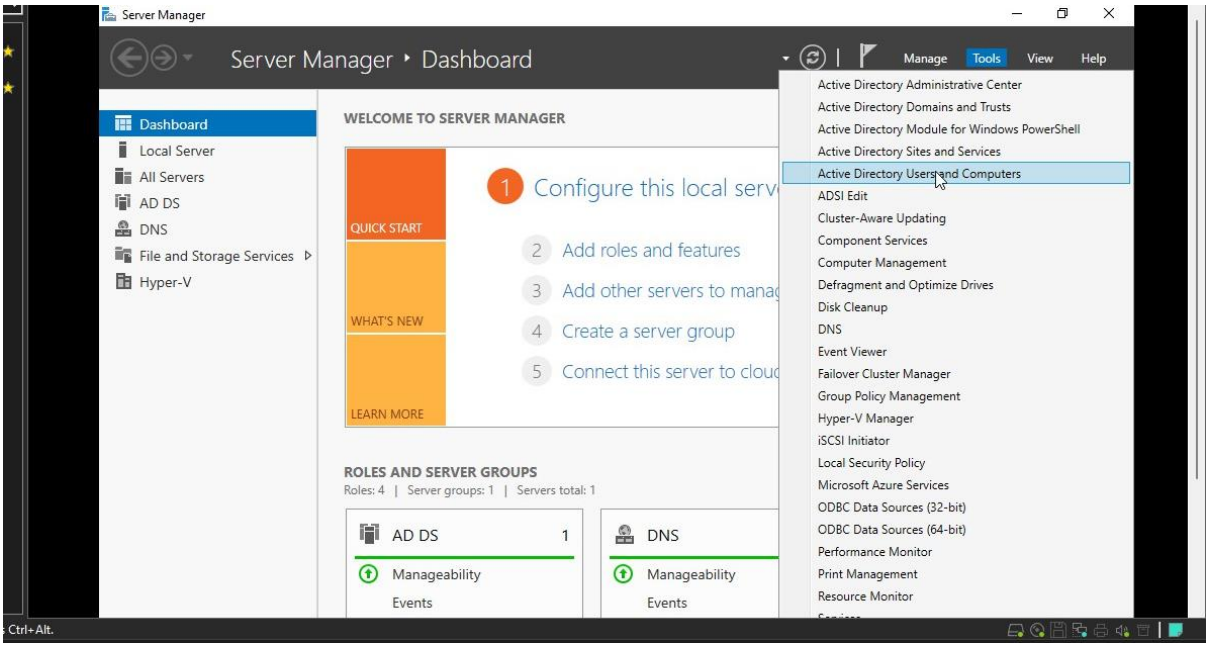
- It will start installing the necessary files



- Upon completion of the installation you will have to restart the VM

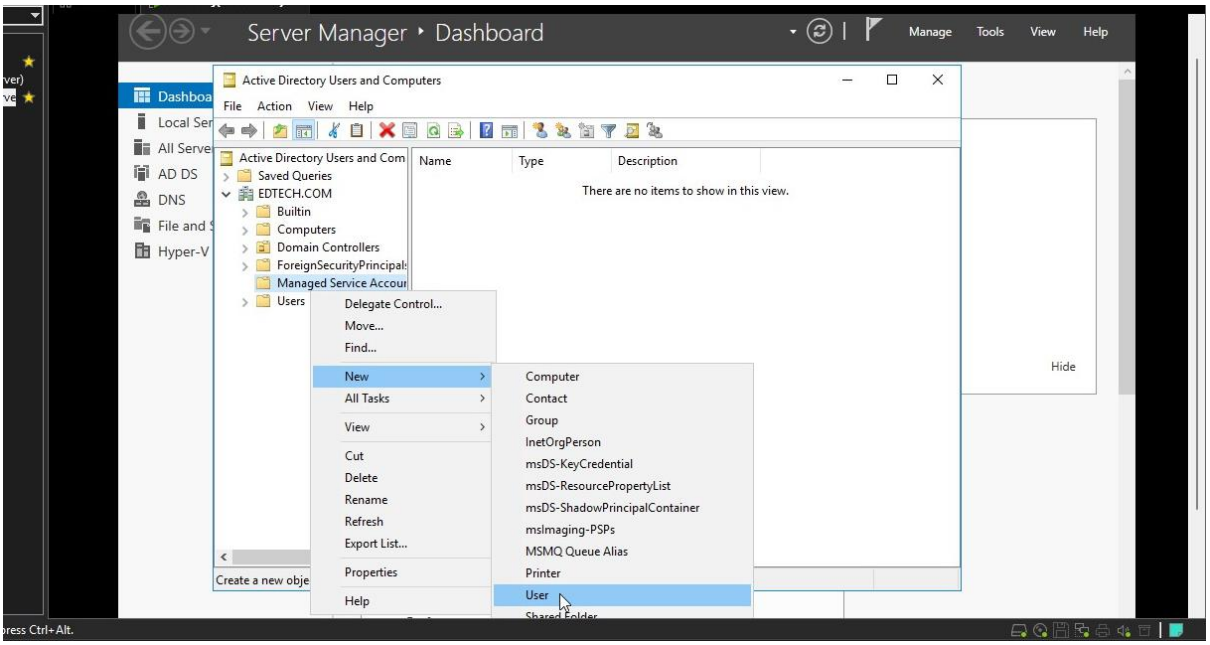
Step 37: Creation of User

- Open **Server Manager** and Click on **Tools**
- Within Tools Click on **Active Directory Users and Computers**

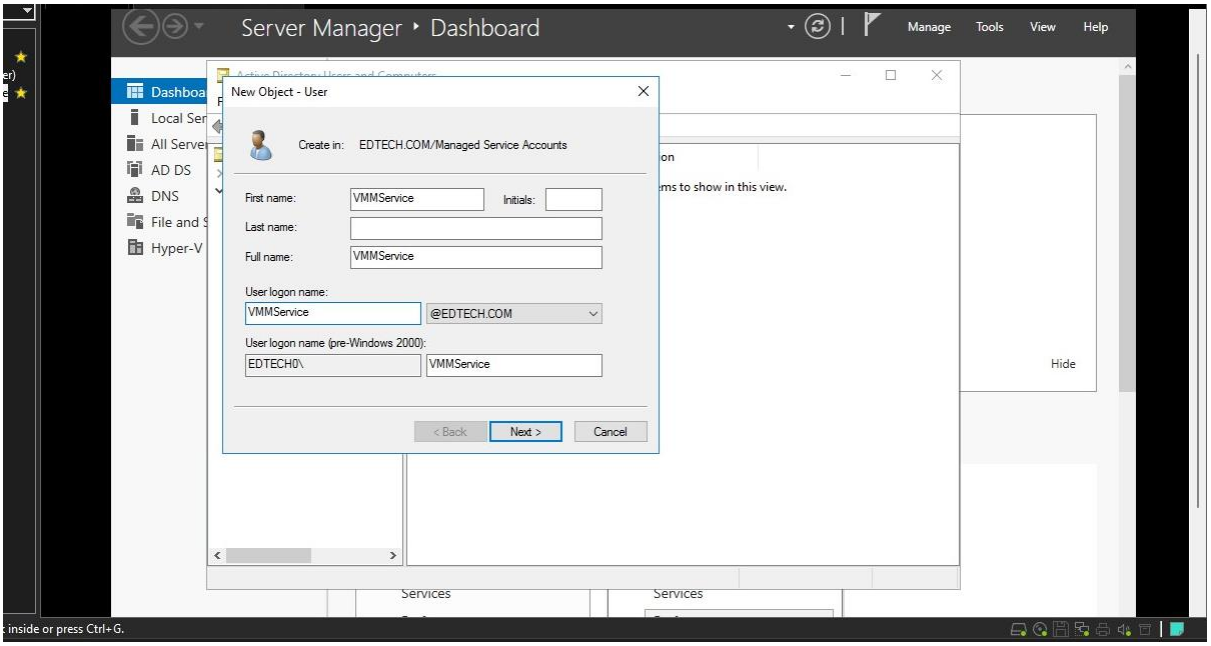


Now Right Click on **Managed Service Accounts** and Select **New**

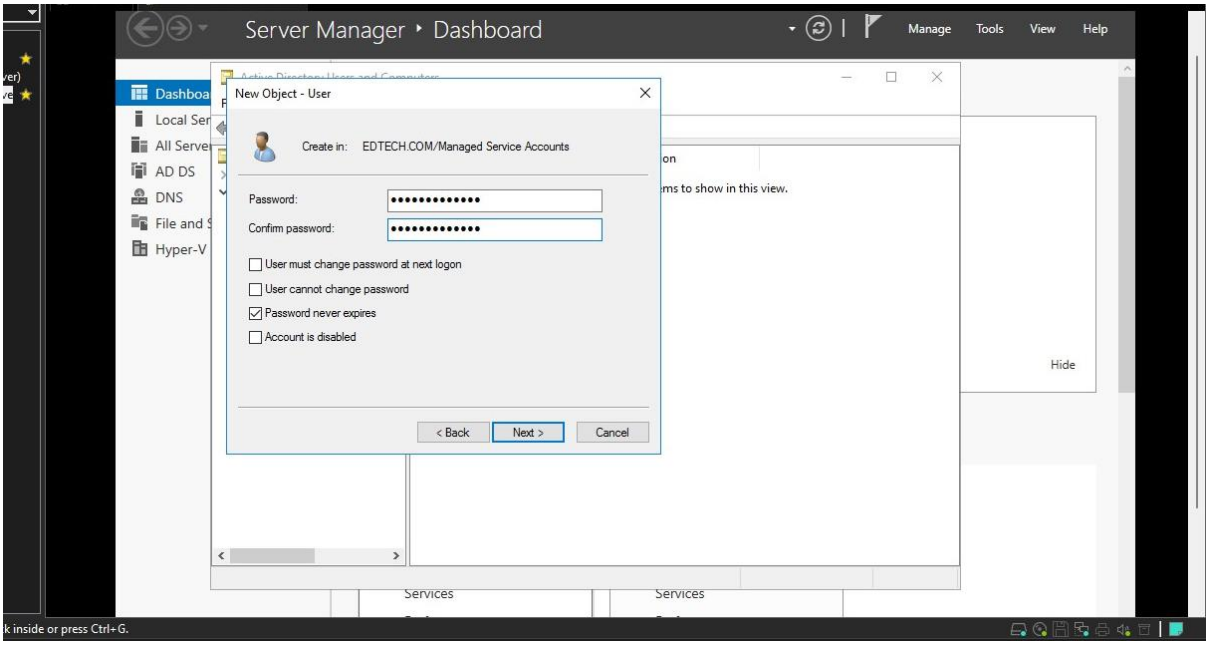
- Within New Select **User**



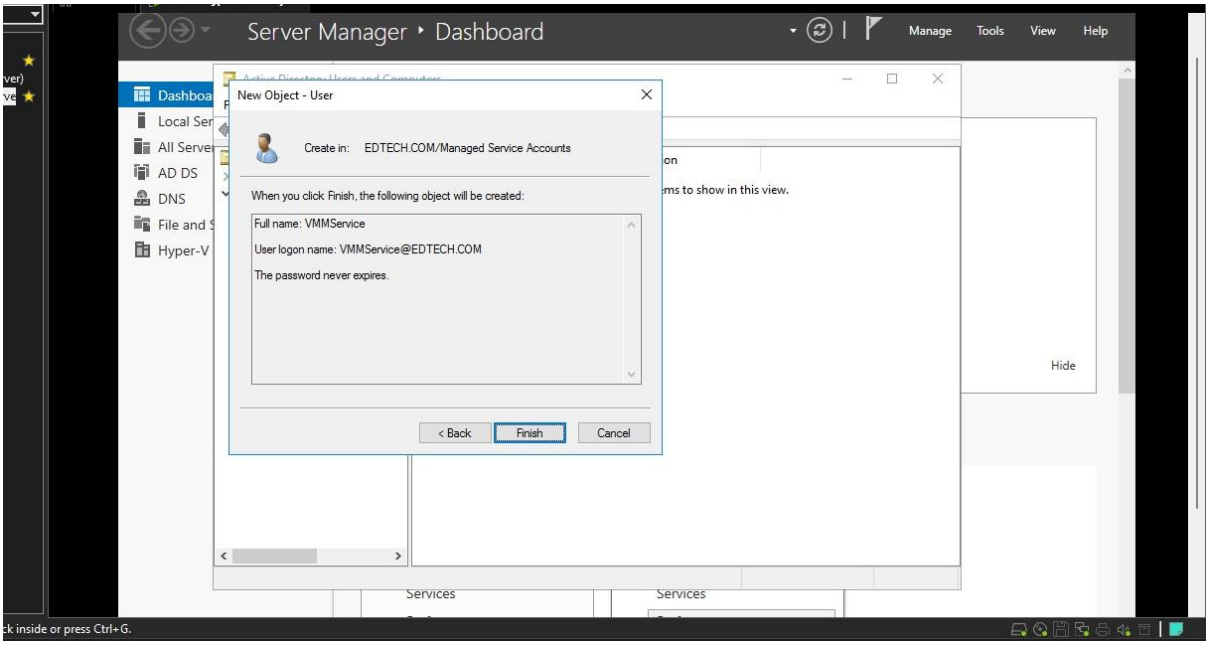
- In New Object -> User
- Enter a Username (Here it is VMMService) on both **First Name** and **Login Name** and Click **Next**



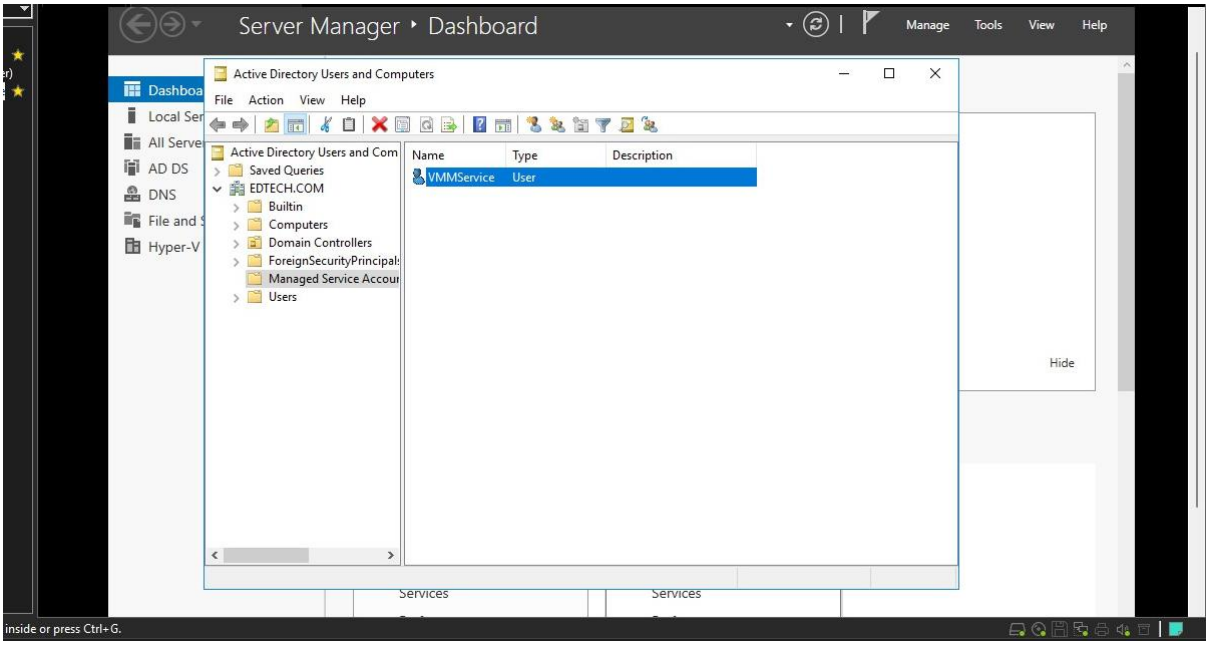
- In the next step enter a password (preferably the same as the admin) and Select **Password never expires** in the options and Click **Next**



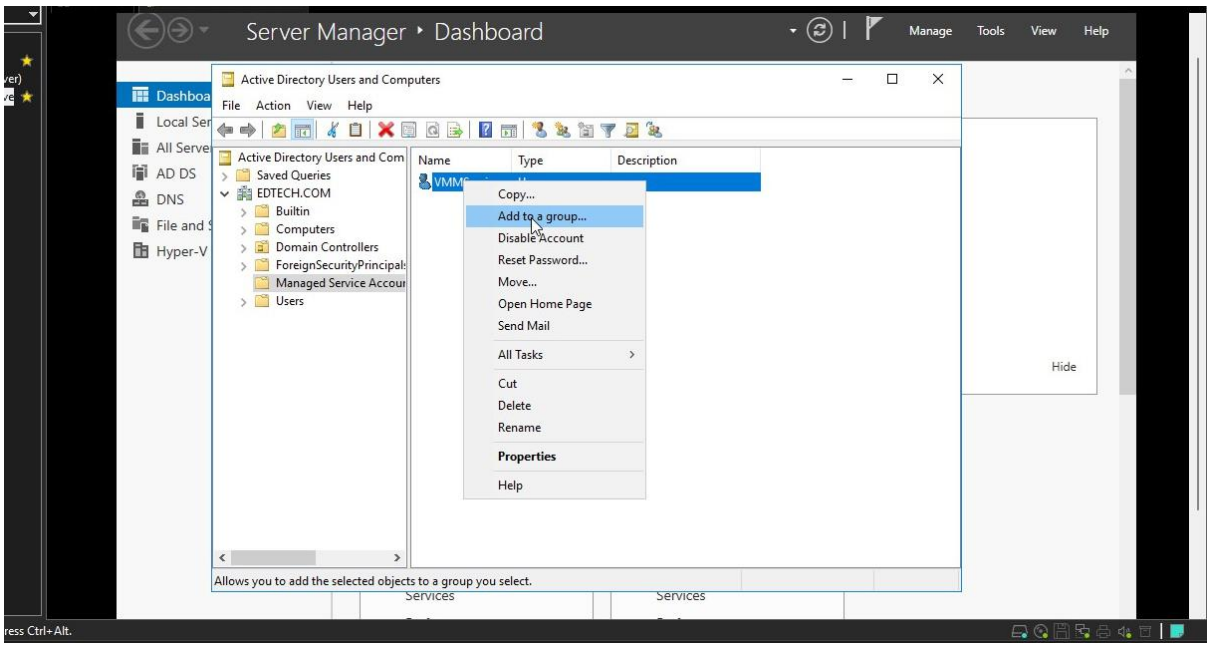
- Click on **Finish**



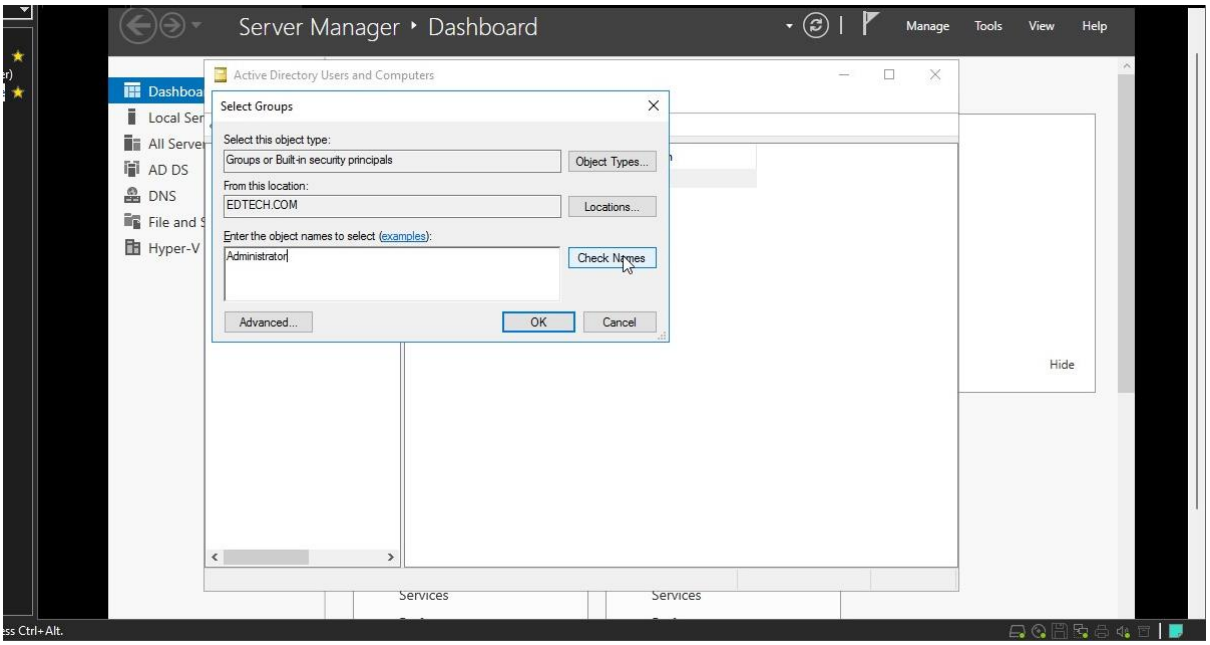
- Now **VMMService** will show up under Active Users and Computers



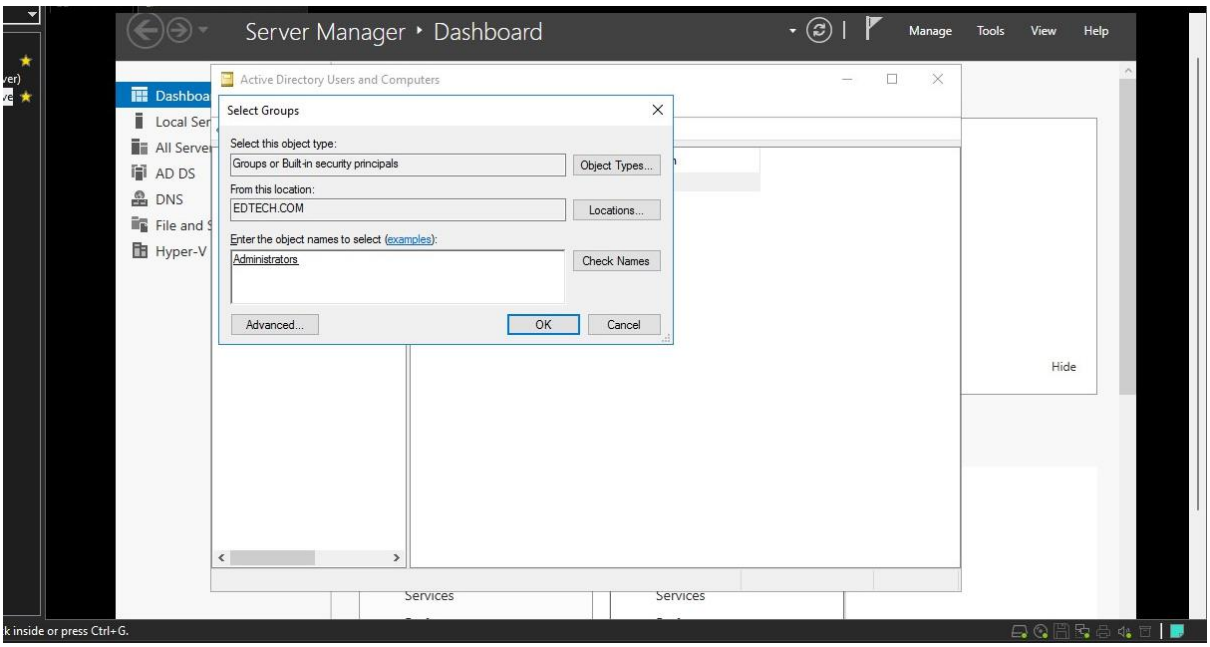
- Now Right-Click on **VMMService** and Select **Add to a Group**



- Under Object name to select type the beginning words of **Administrator** and click on **Check Names**

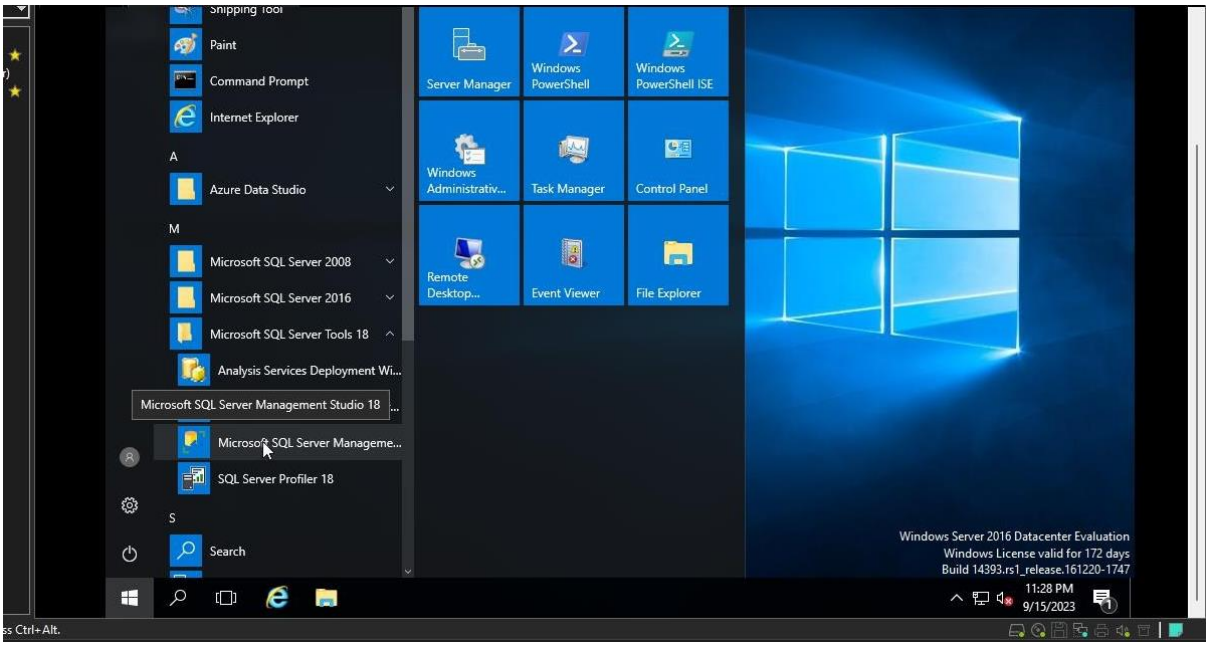


- Now **<u>Administrators</u>** will show up, Click OK
- Now the User will be successfully added to the group

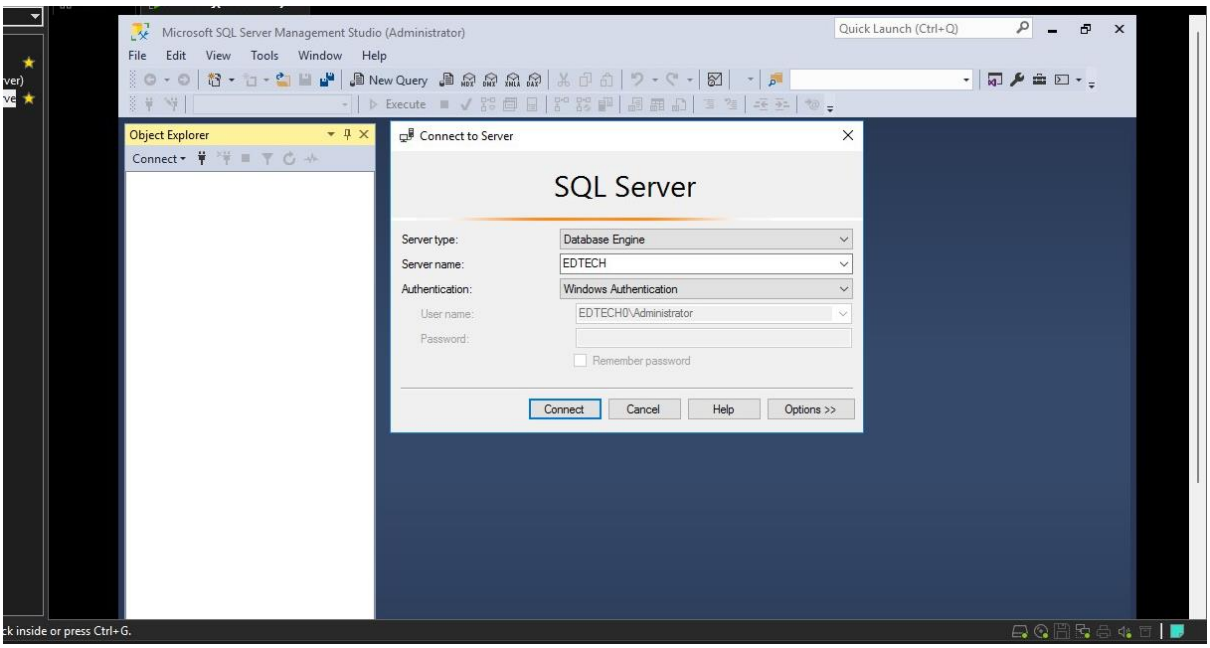


Step 38: Connecting SQL Server to Windows Server

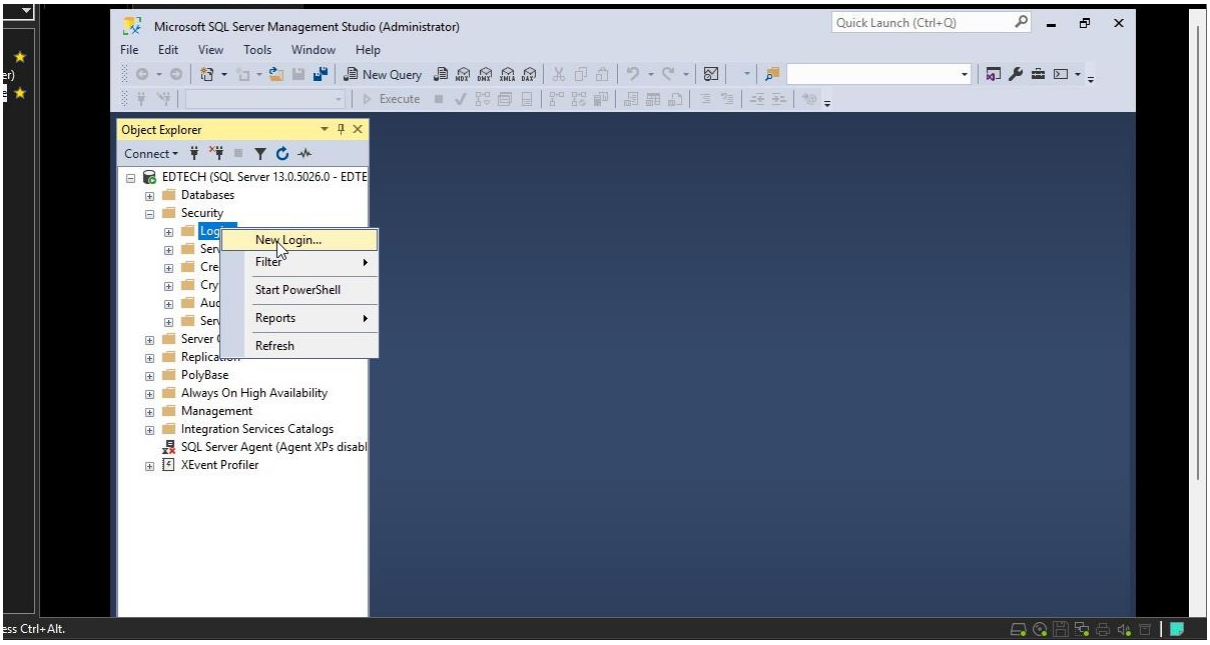
- Open the SSMS application



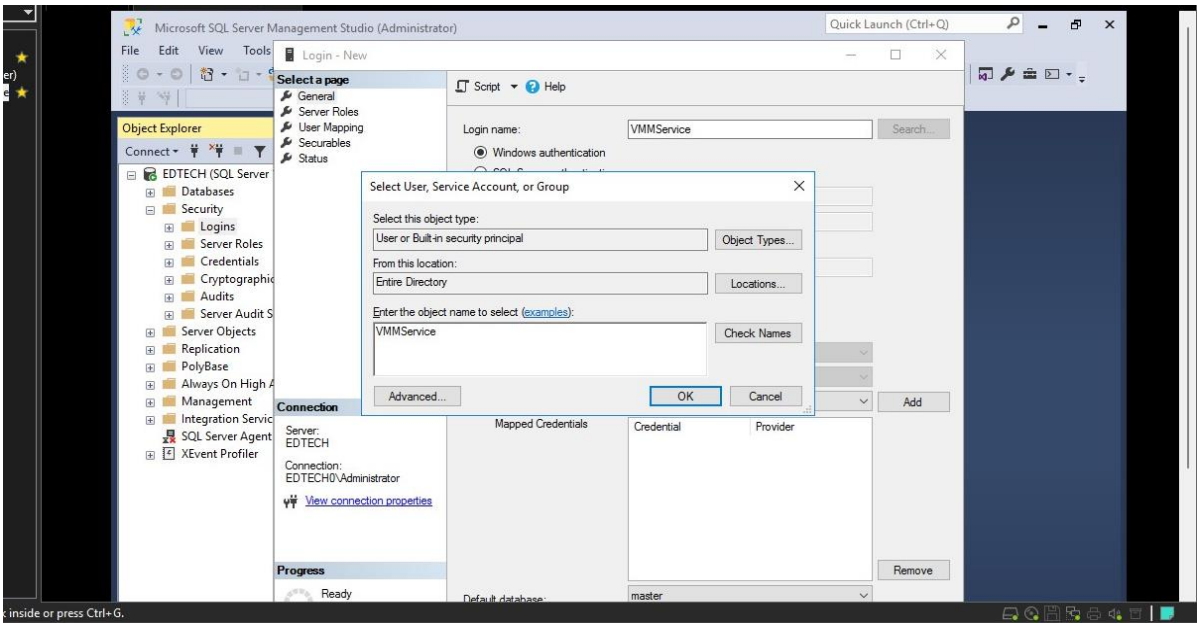
- Keep default values and Click on **Connect**



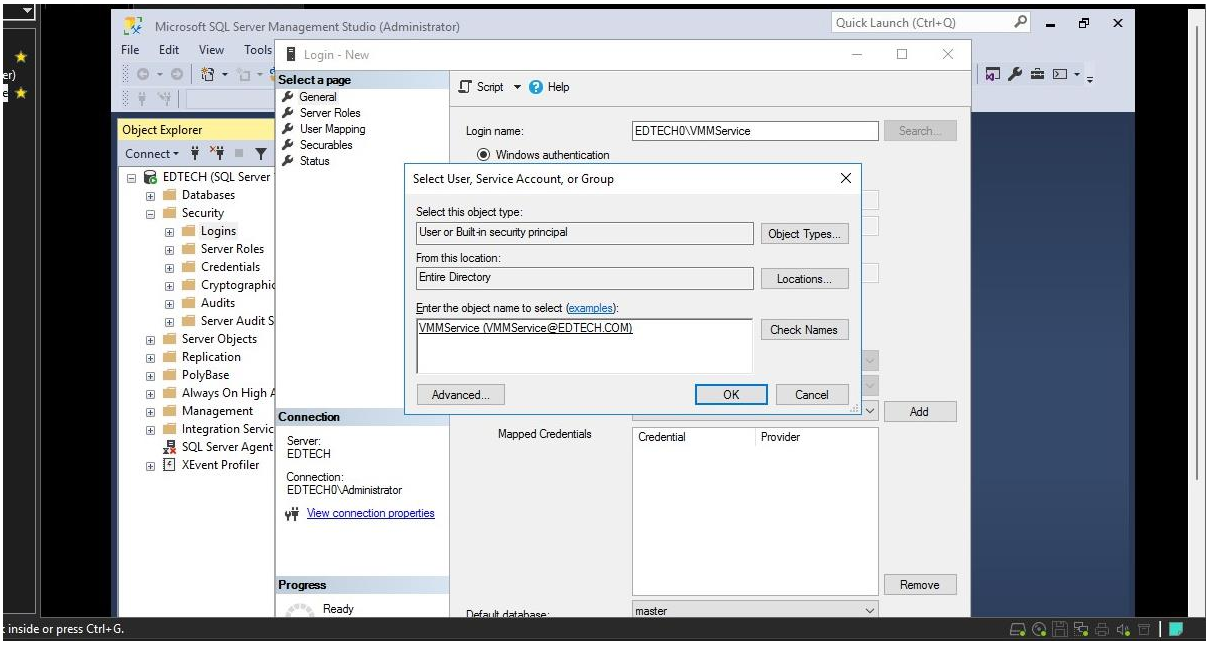
- Now within the instance Click on **Security** and Right Click on **Login** and Select **New Login**



- In the Login Name type the User Created (**VMMService**)
- Type **VMMService** in the Small Window and Click on **Check Names**

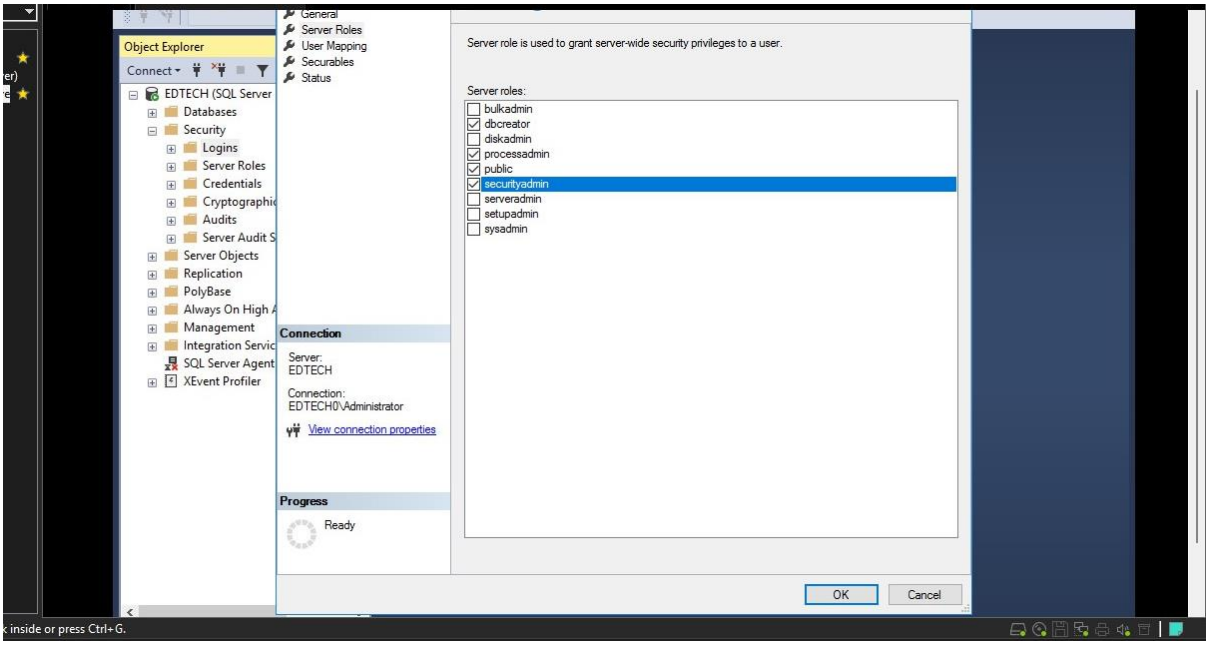


- It will show the full value of the User and Click **Ok**



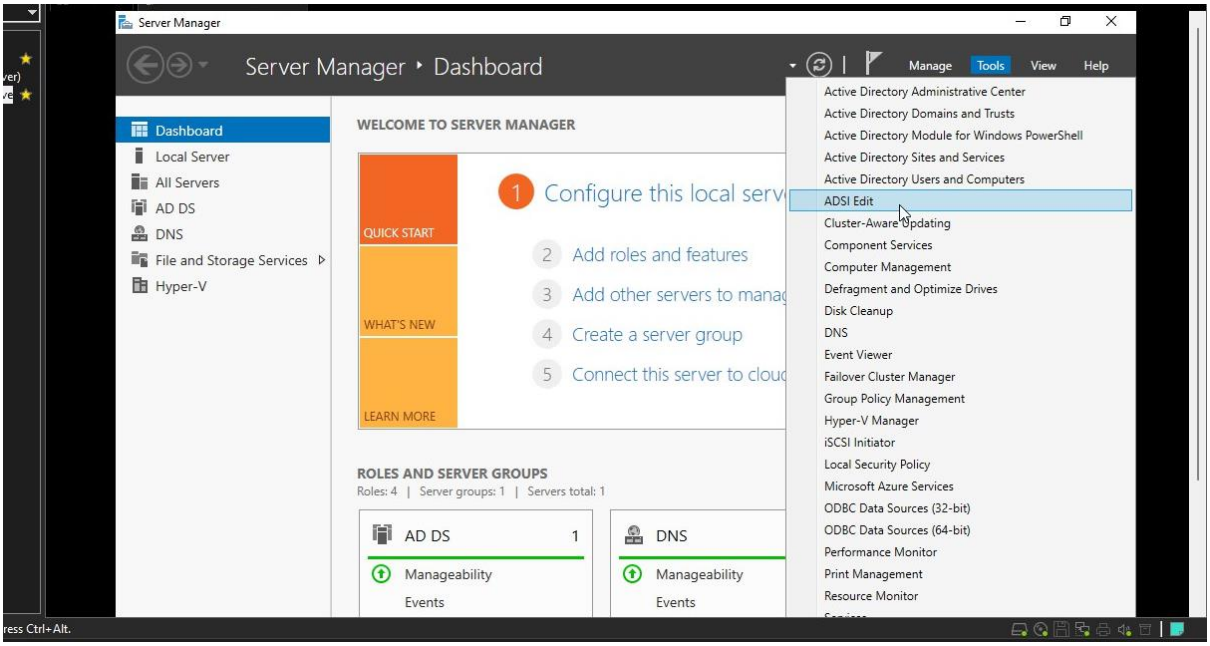
- Click on **Server Roles**, including **Public** select these options:
  dbcreator
  processadmin
  securityadmin

- Click on **Ok** and Close SSMS

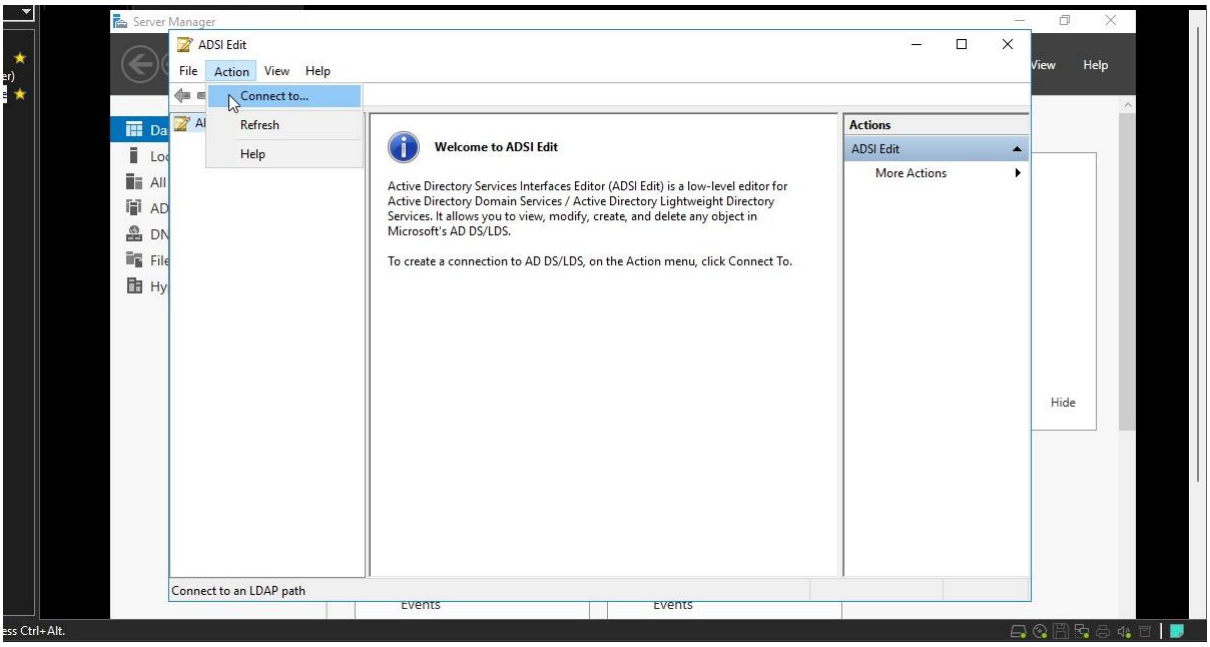


Step 39: Creating an Object in ADSI Edit

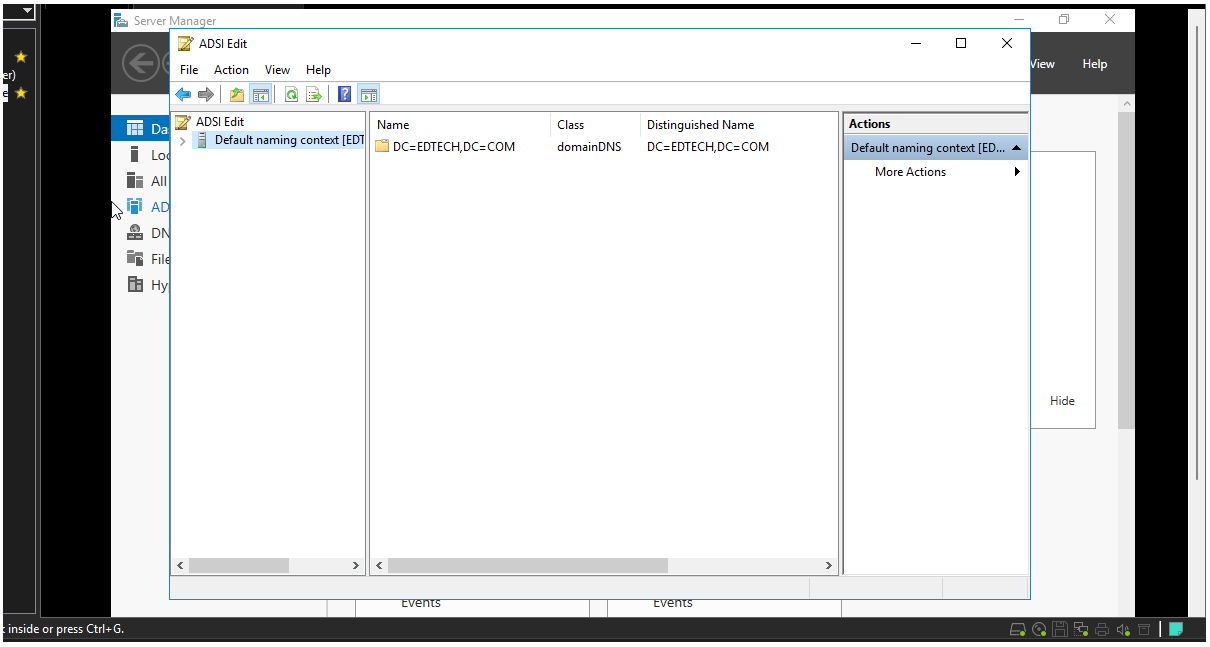
- Open **Server Manager** and Click on **Tools**
- Within Tools Click on **ADSI Edit**



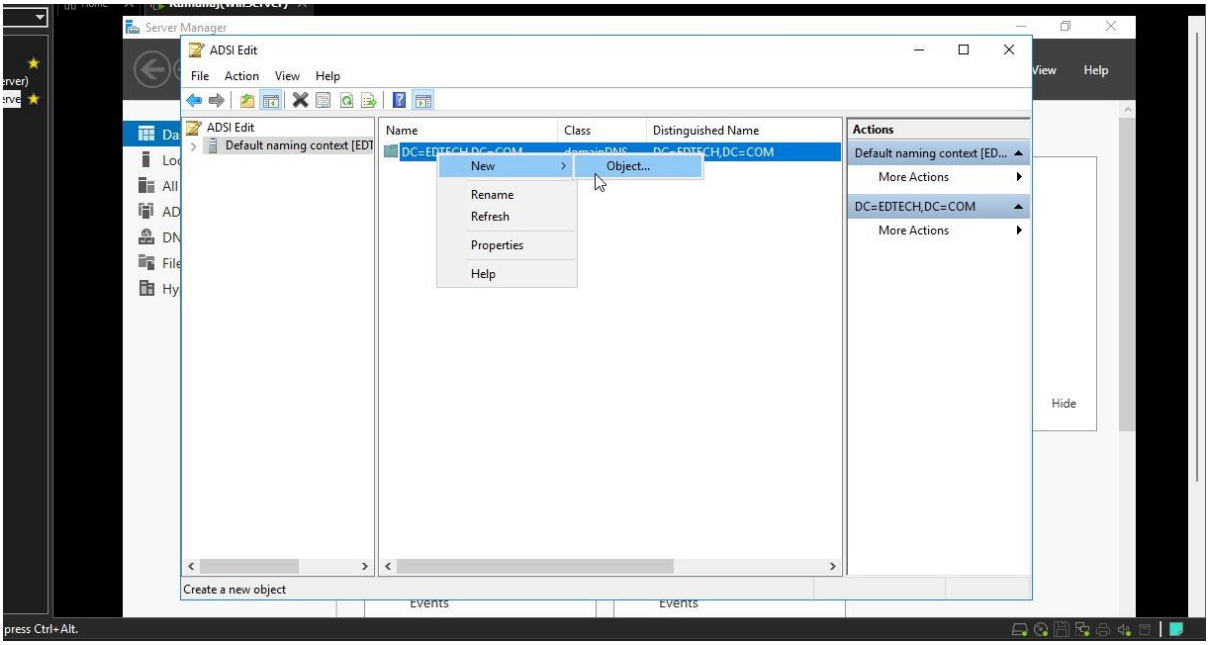
- Within ADSI Edit Click on **Actions** and Select **Connect To**



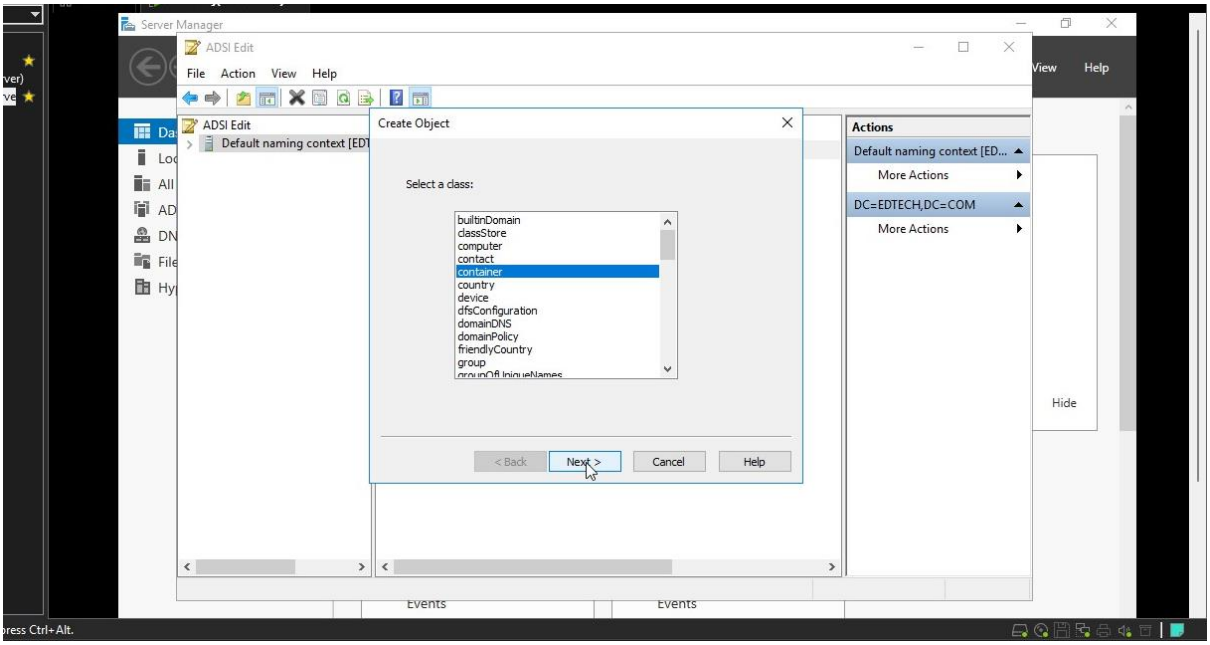
- In Connection Settings Keep the Default Values and Click **Ok** and a default value is created



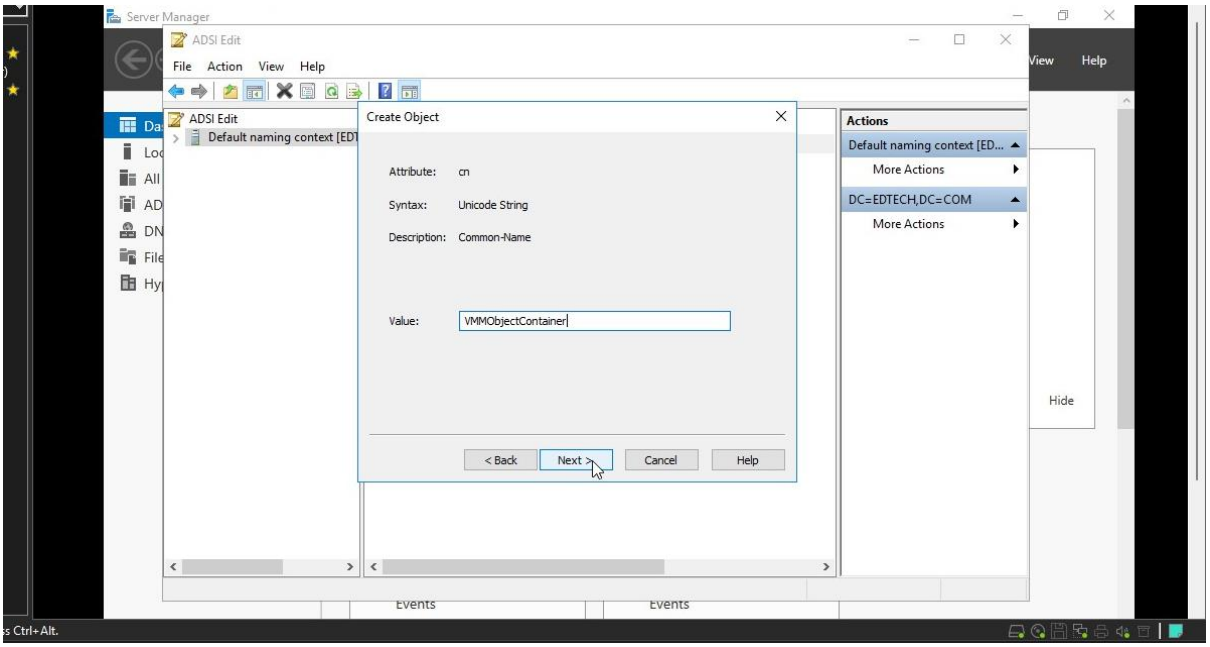
- Right Click on the **DC=EDTECH** Folder and Click on **New** and Select **Object**



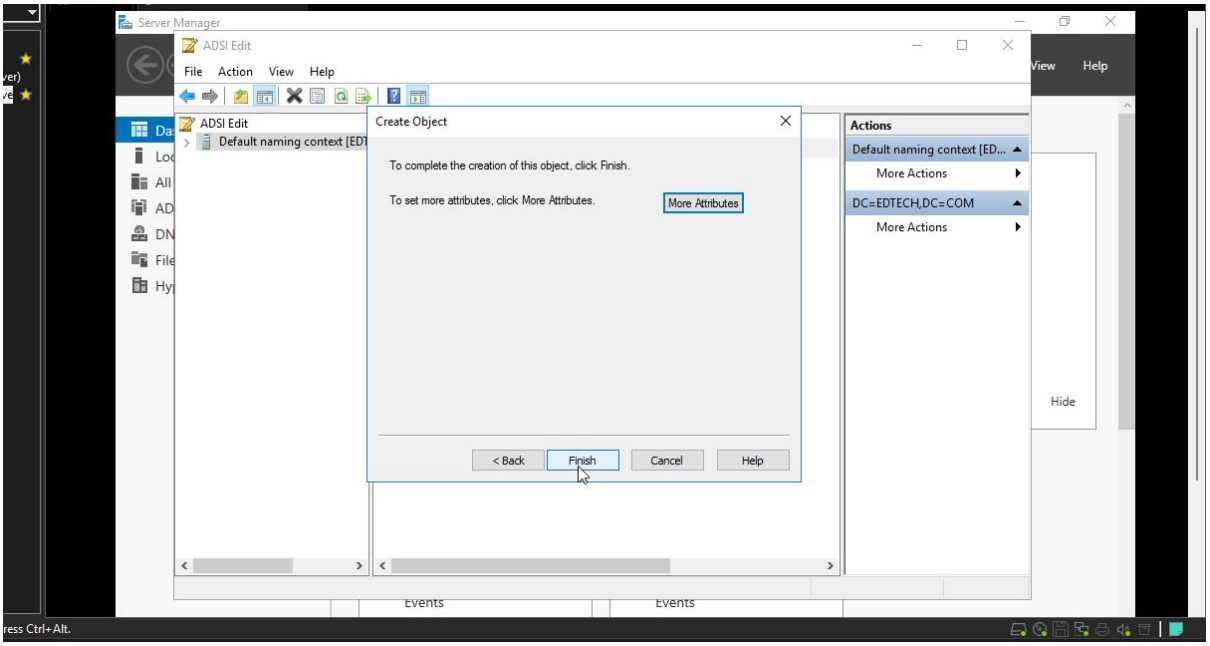
- Select **container** and Click on **Next**



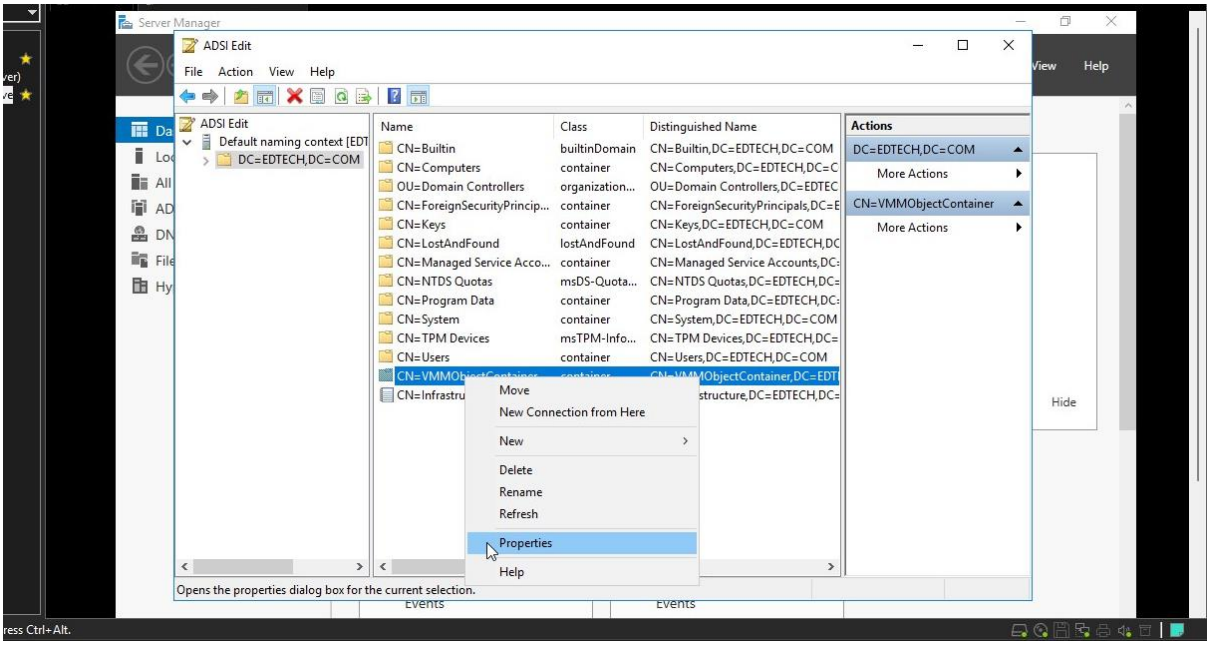
- Enter the value for the object. (Here it is VMMObjectContainer)
- Click on **Next**



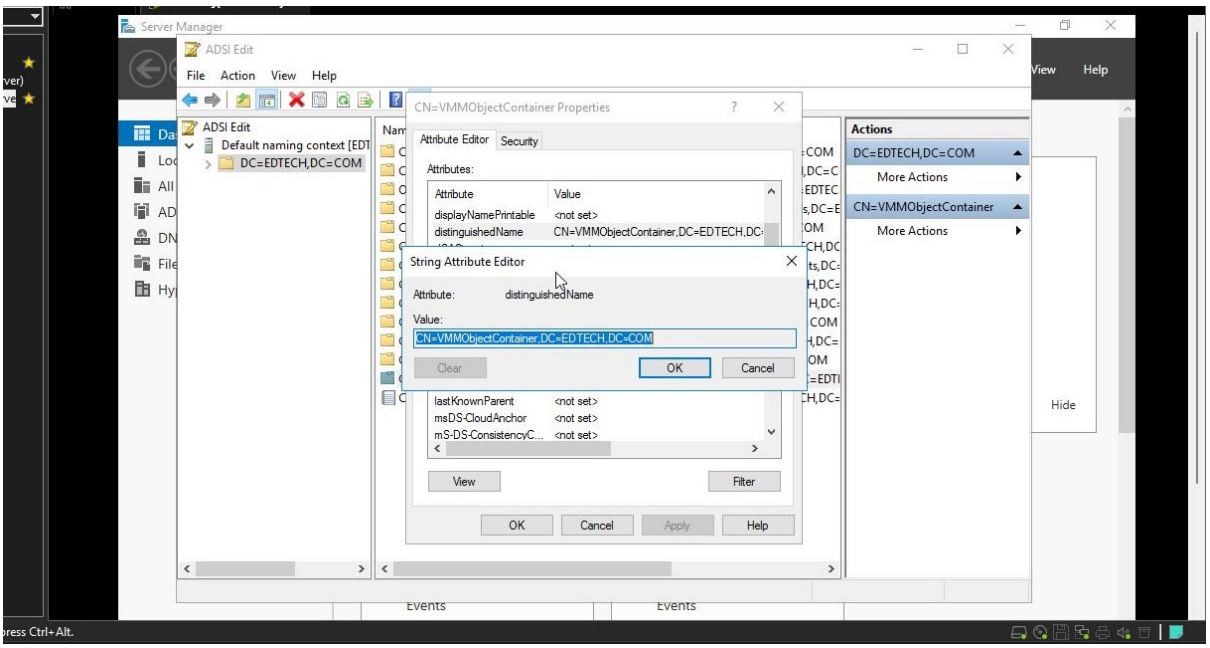
- Click on **Finish**



- Double Click on **DC=EDTECH** and Right Click on the **CN=VMMObjectiContainer** Folder and Select **Properties**

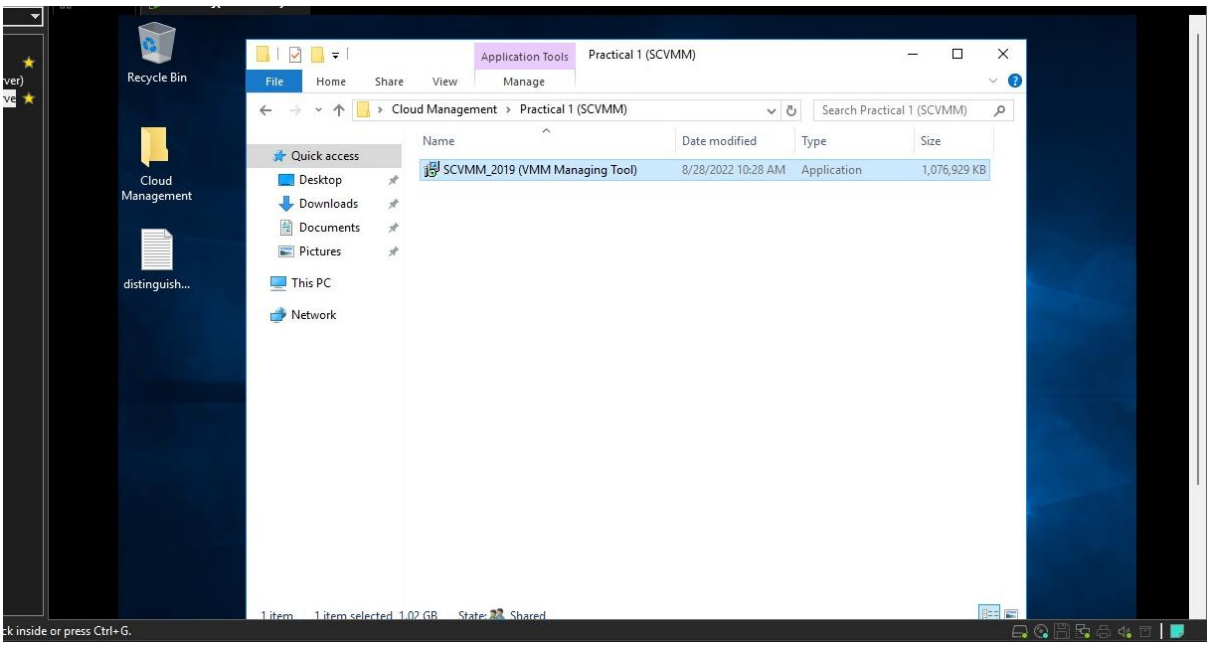


- Within Properties Click on **distinguishedName** and Click on **View**
- Copy the **distinguishedName** onto a Notepad as it is needed for the SCVMM setup
- Close the ADSI setup

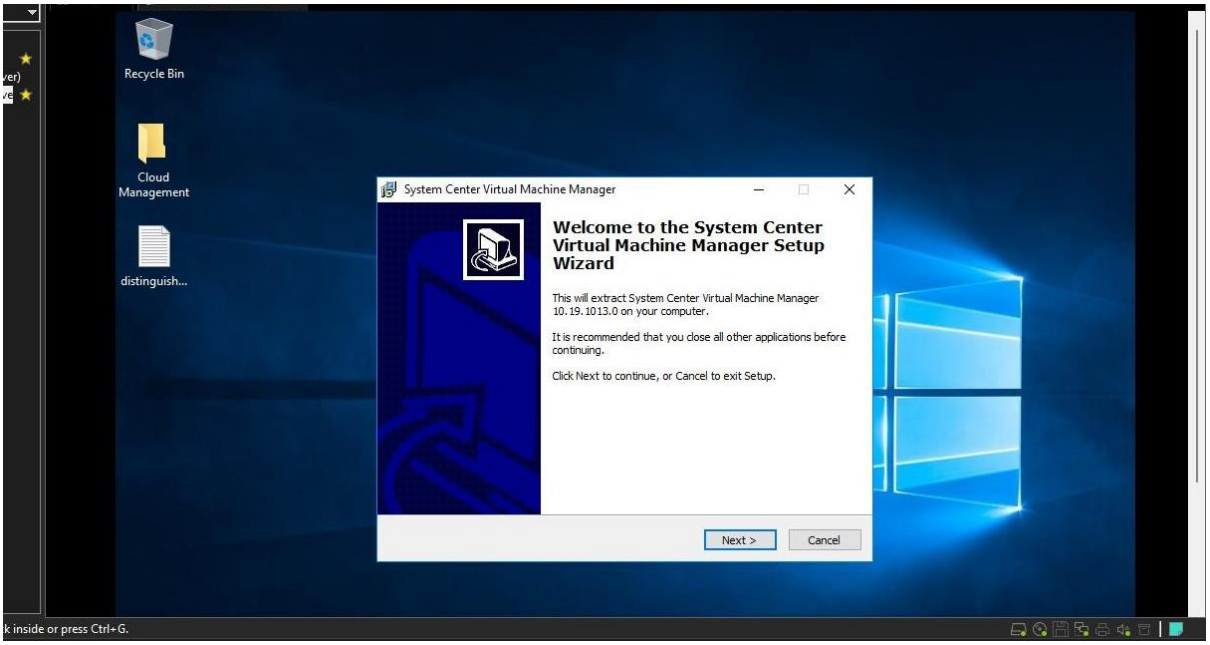


Step 40: SCVMM Setup

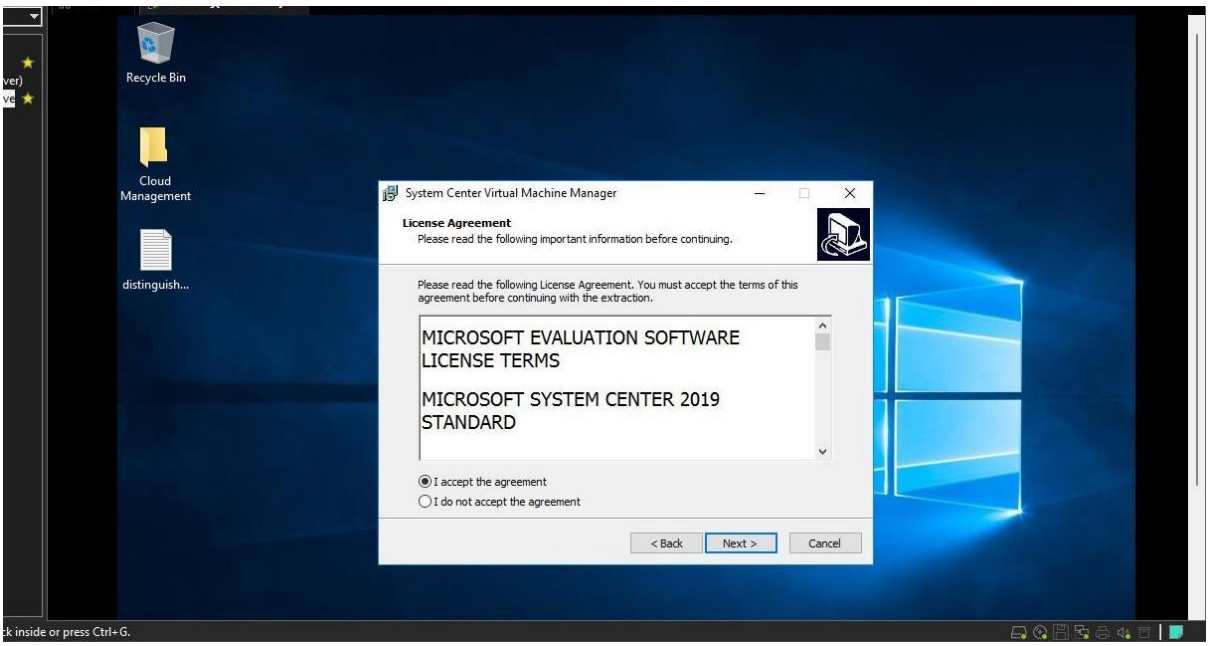
- From your Cloud Management Folder and Mount the SCVMM Setup file.



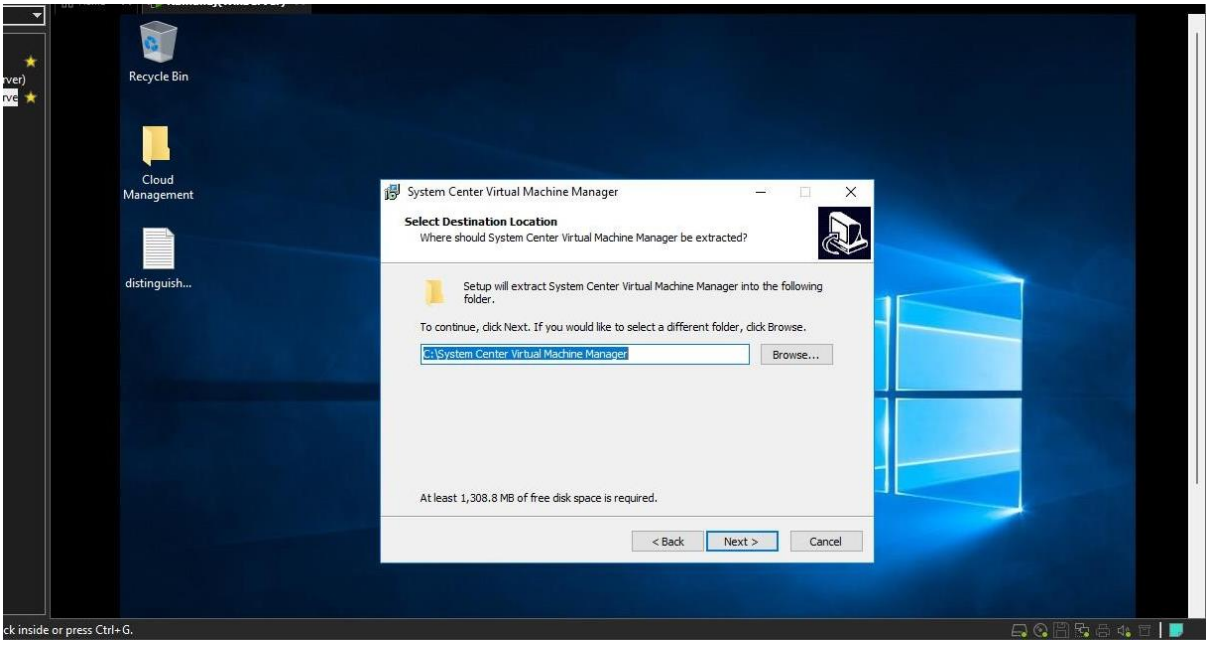
- Click **Next**



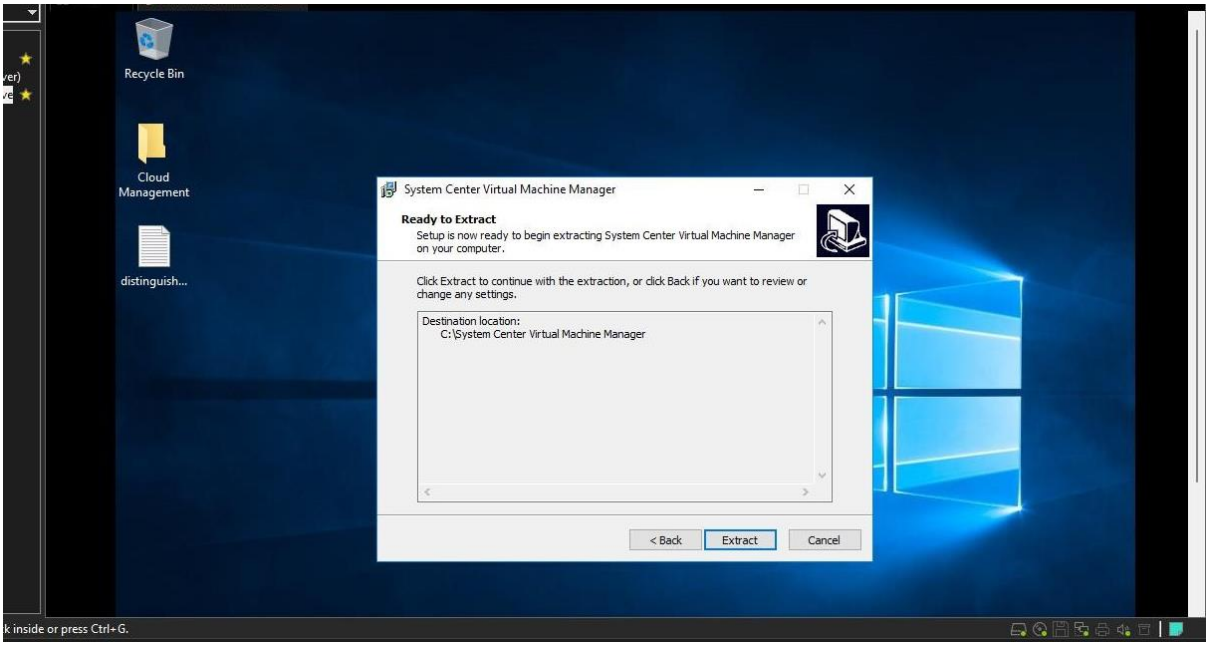
- Select **I accept the agreement** and Click on **Next**



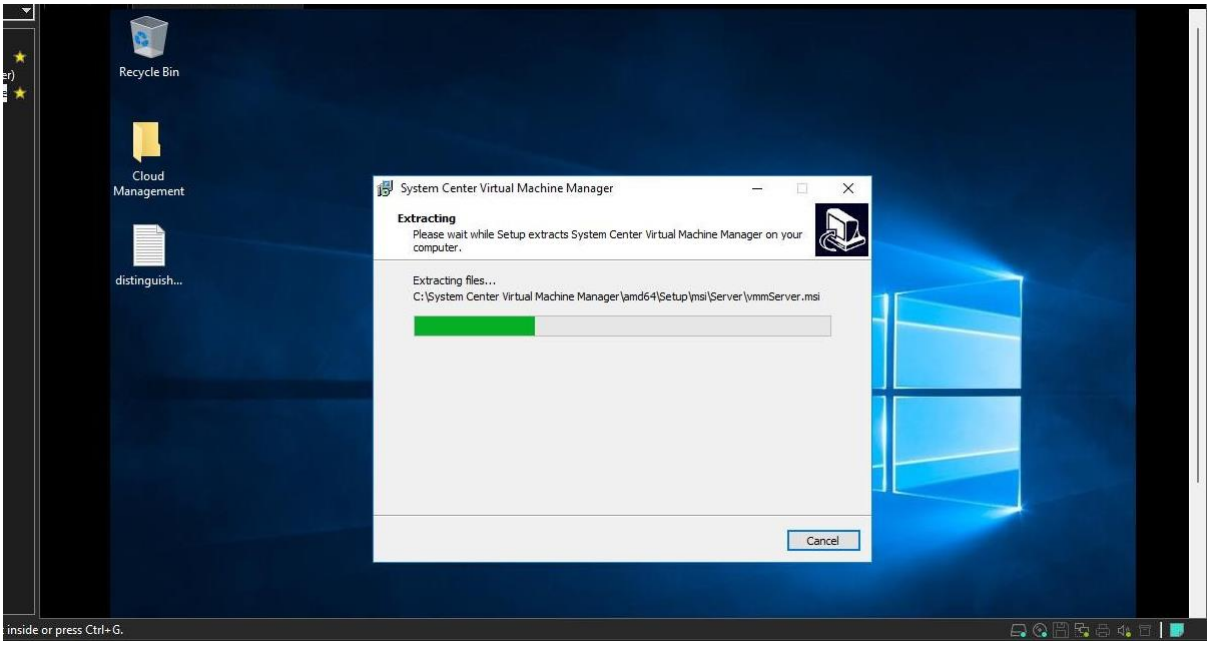
- Keep default values and Click **Next**



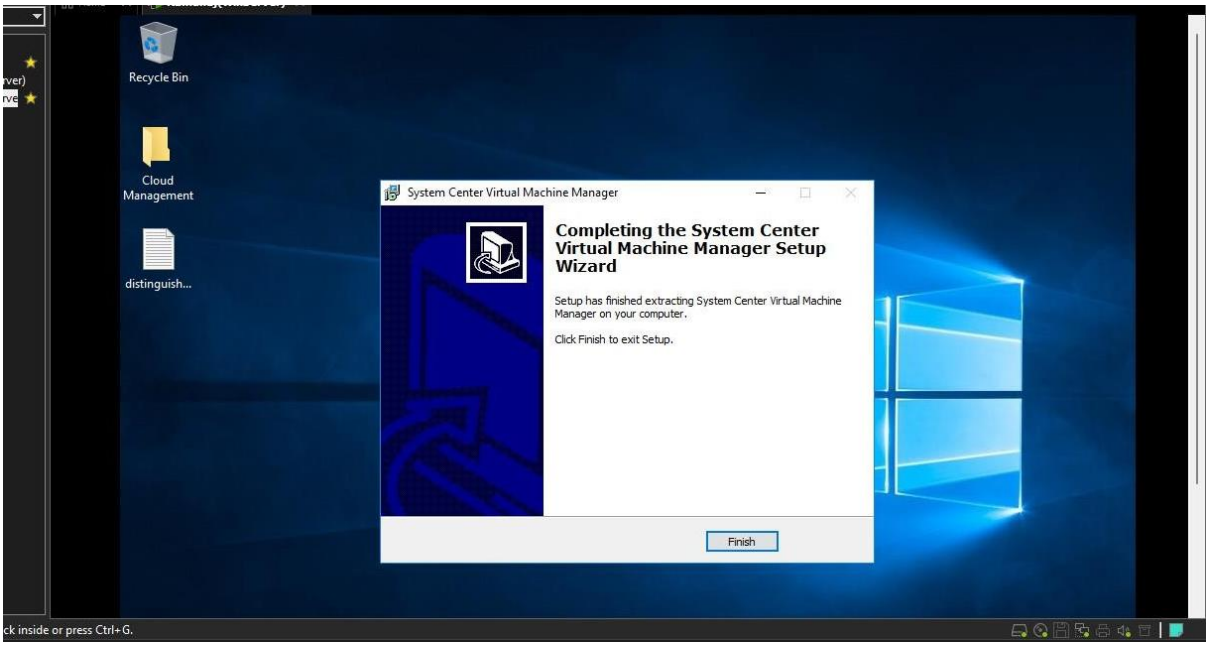
- Click on **Extract**



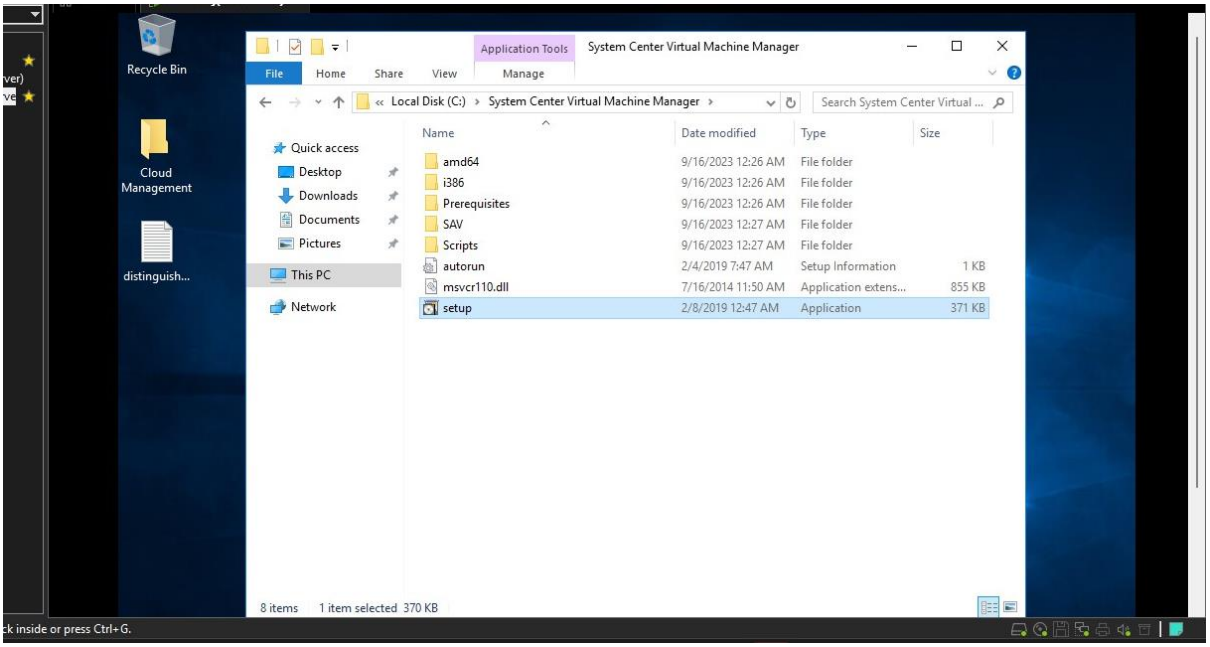
- It will extract the necessary files



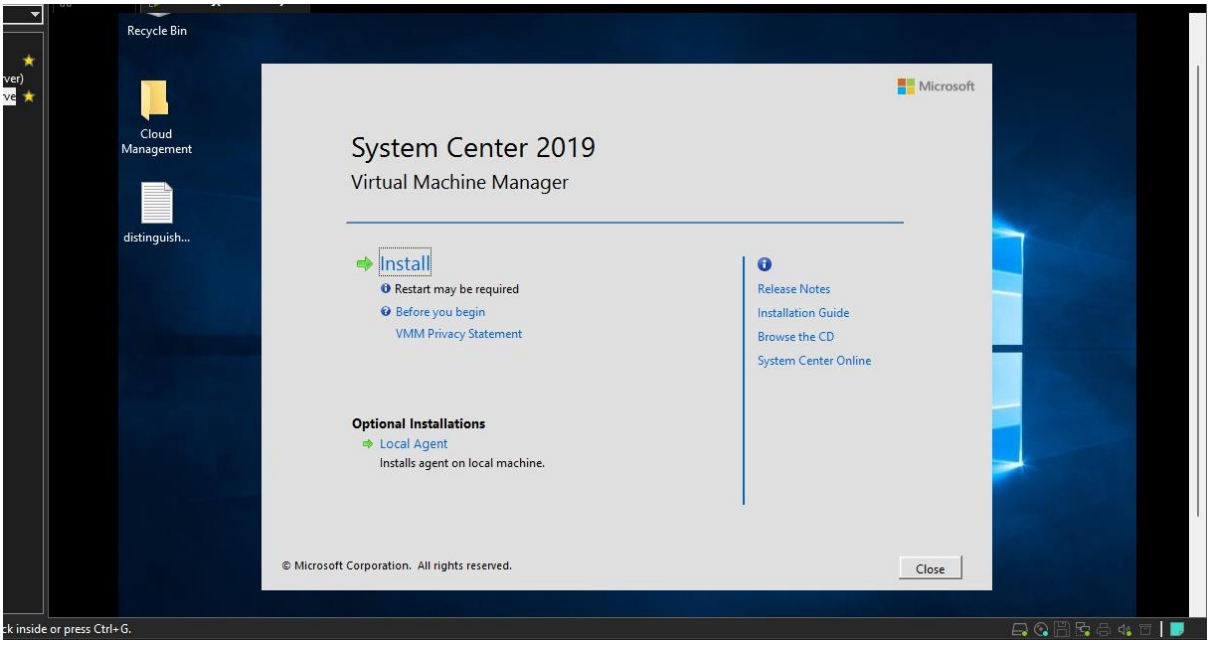
- Click on **Finish**



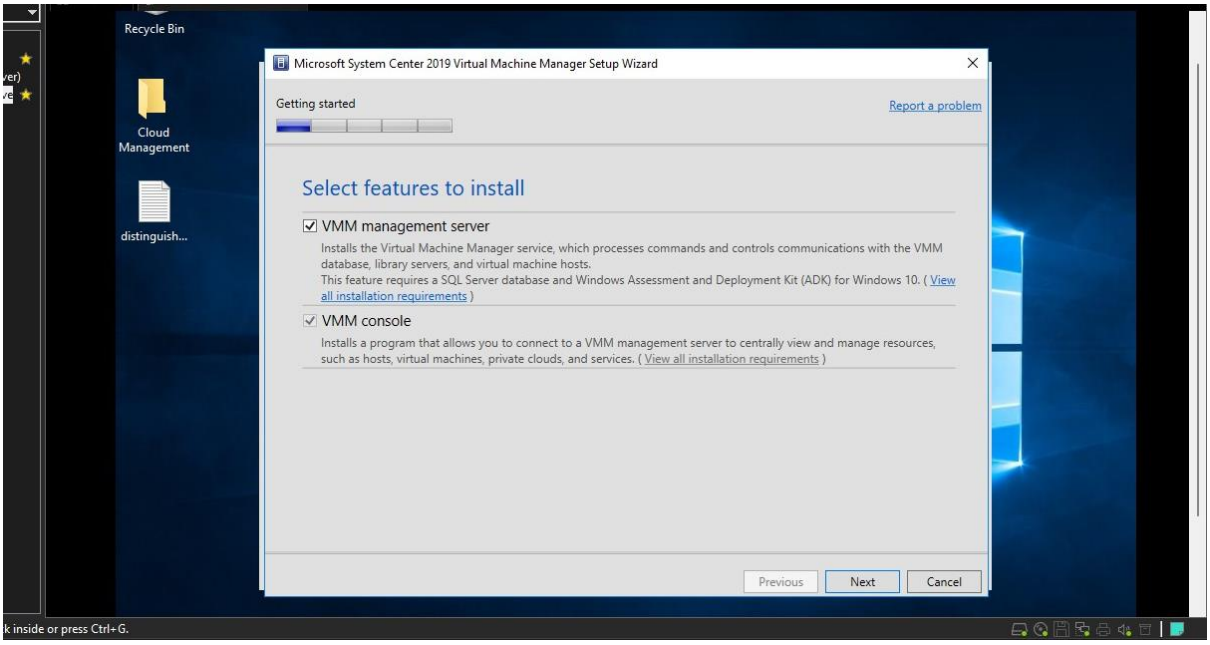
- Now within your **C: Drive** Click on **System Center Virtual Machine Manager** and Click on **Setup**



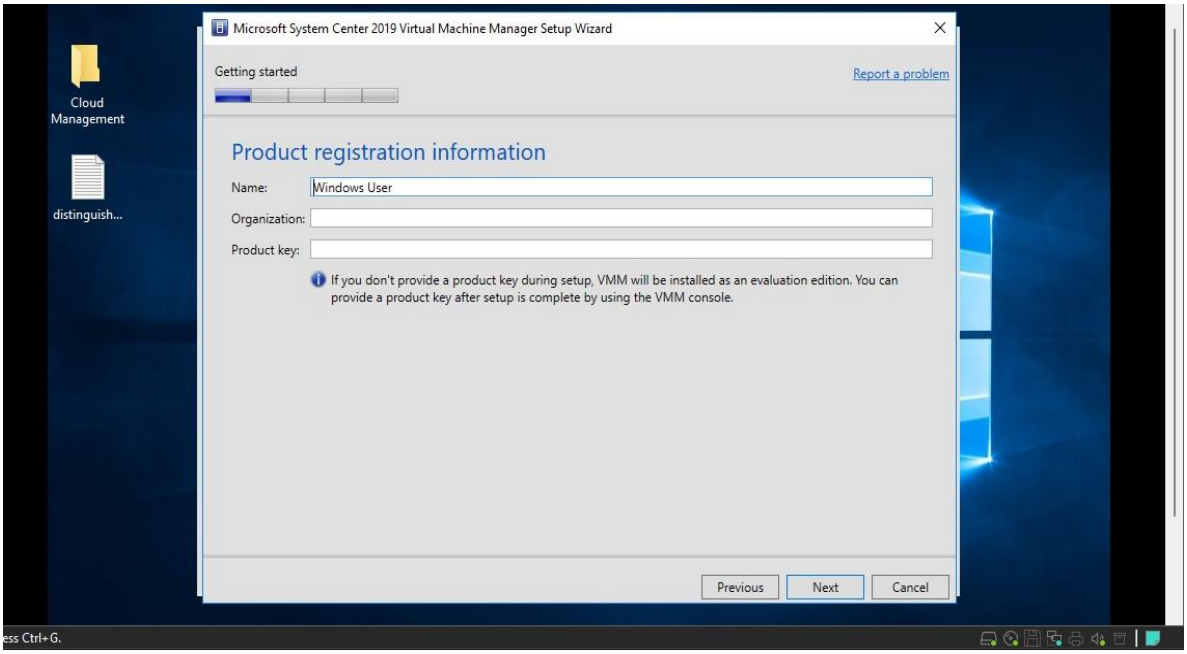
- Click on **Install**



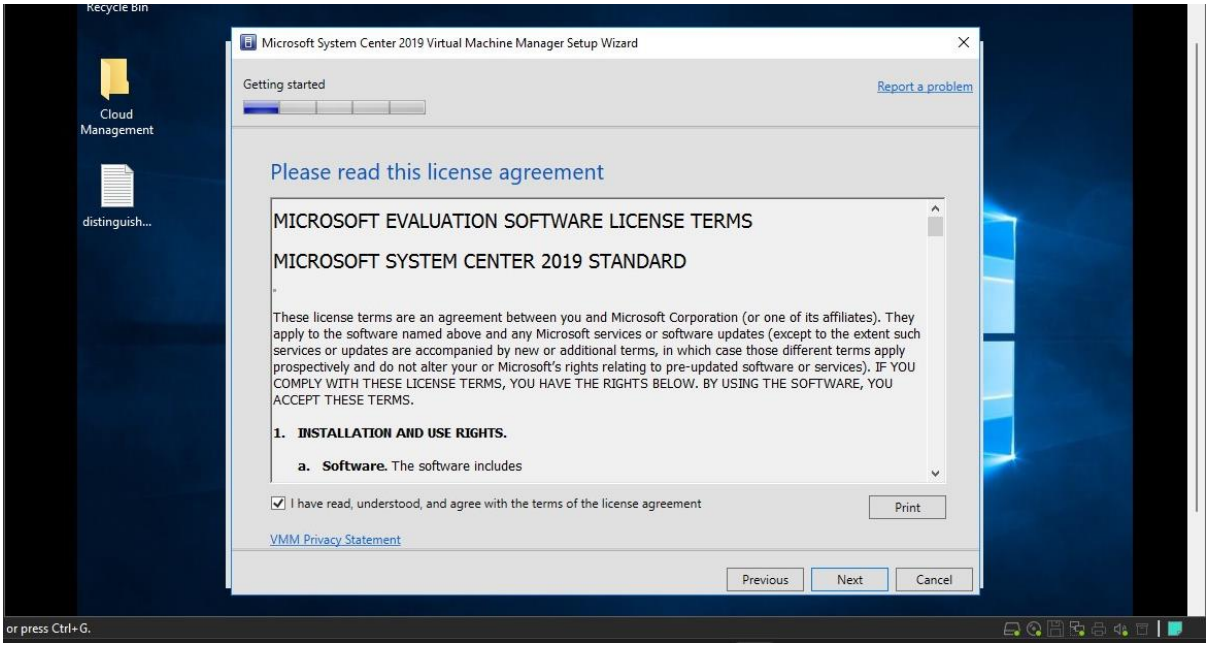
- Click on **VMM Management Server** and **VMM Console** gets auto-selected and Click **Next**



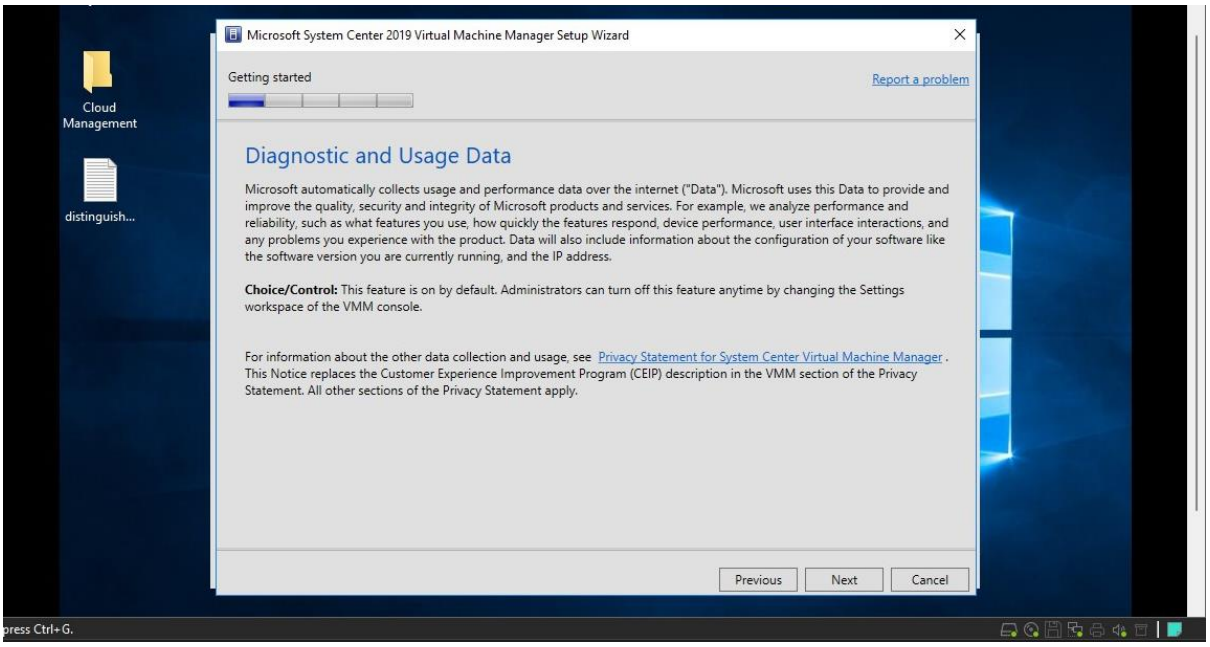
- Keep default values and Click **Next**



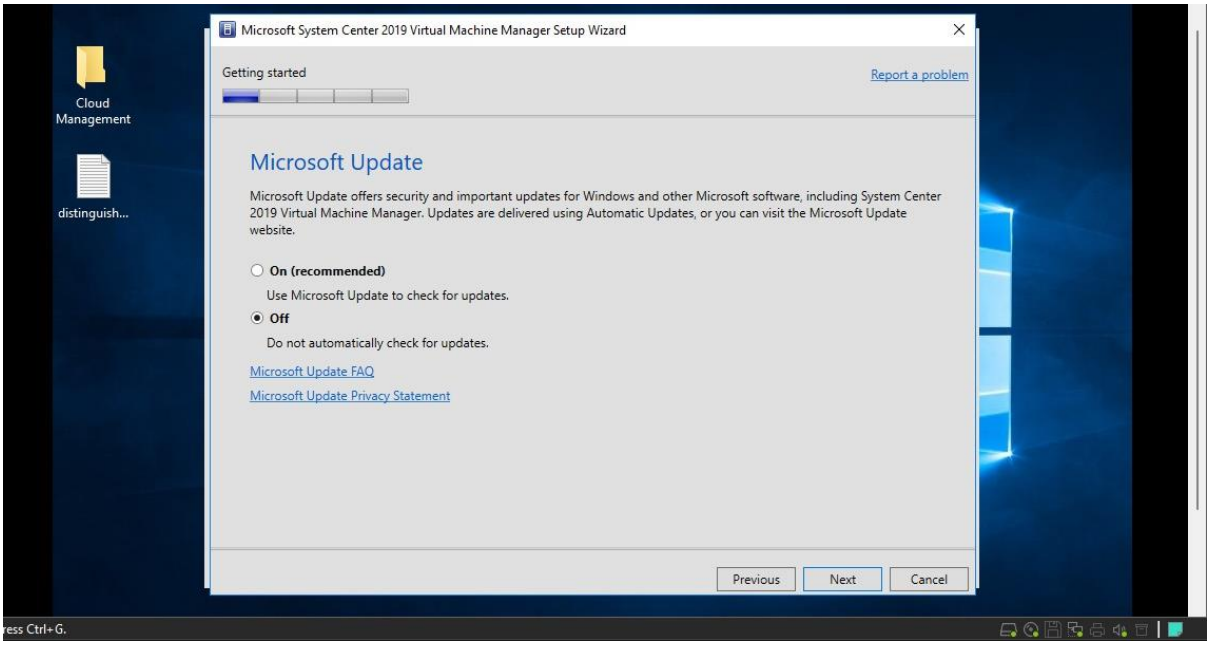
- Select **I have read and accept the license agreement** and Click **Next**



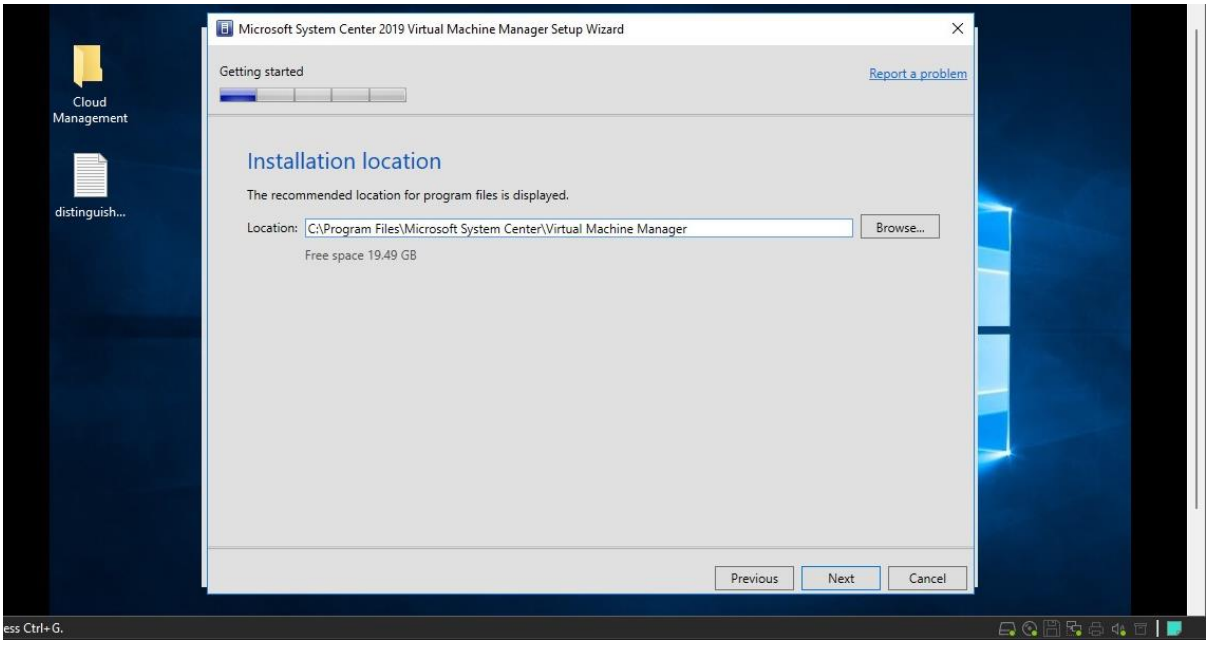
- Click **Next**



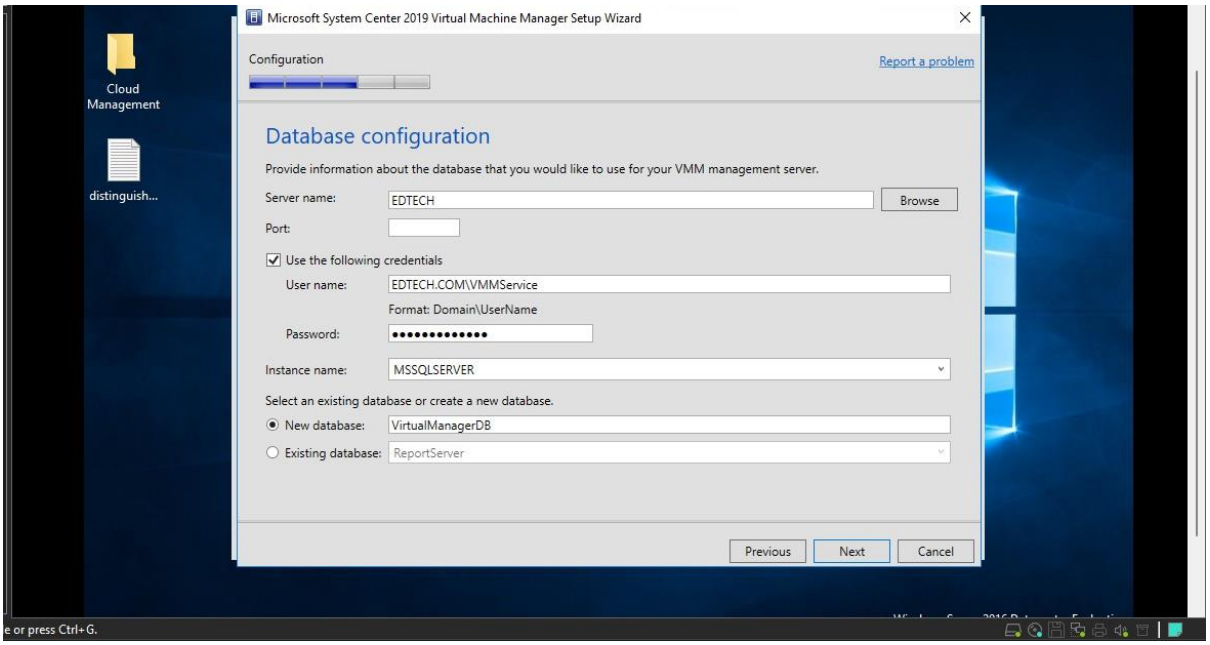
- Select **Off** for Microsoft Updates and Click **Next**



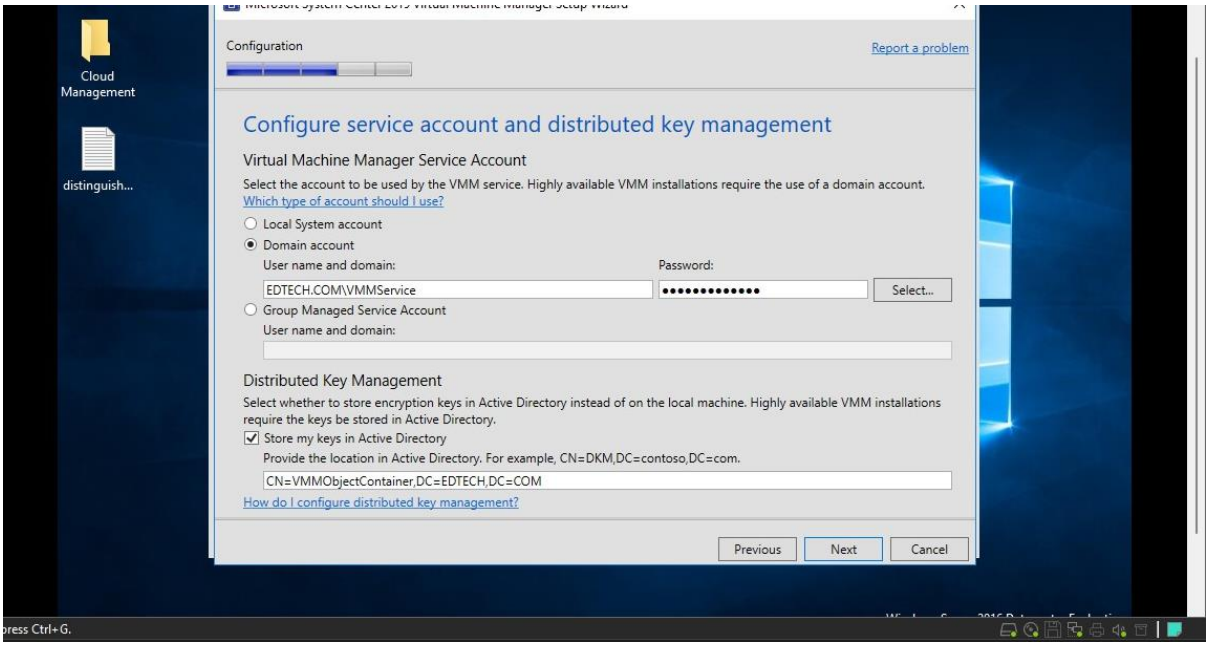
- Keep default values and Click **Next**



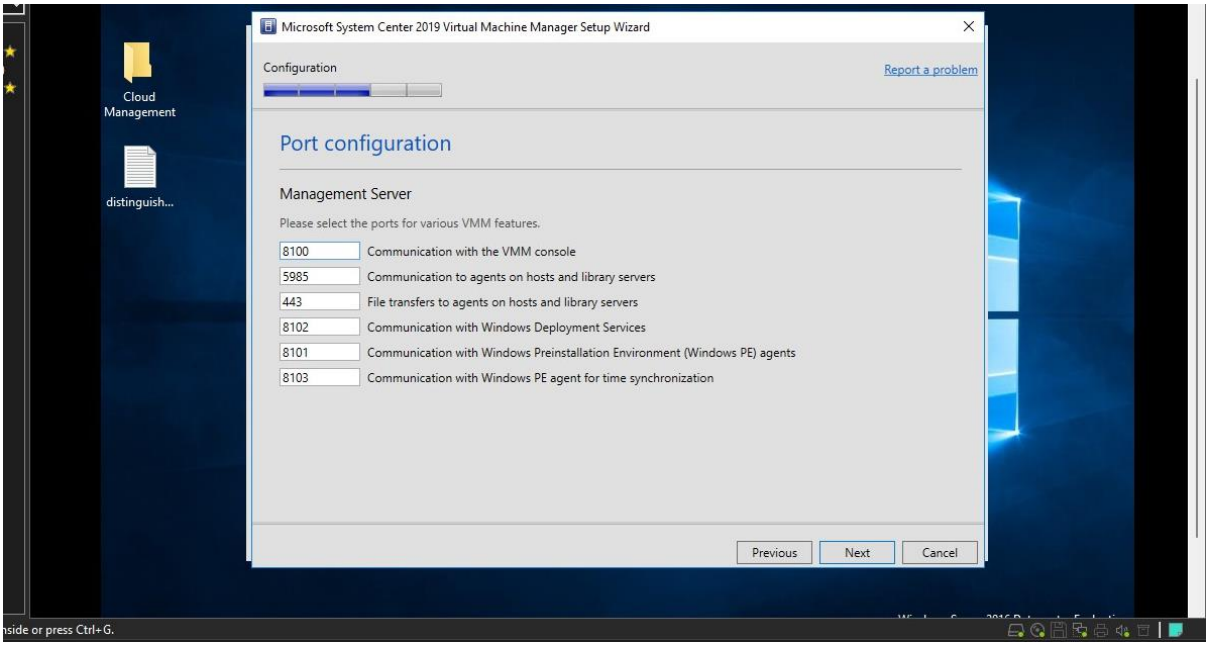
- Now in database configuration, type the same user and domain which was created (In this case its **VMMService)** and keep the instance name as default **MSSQLSERVER**



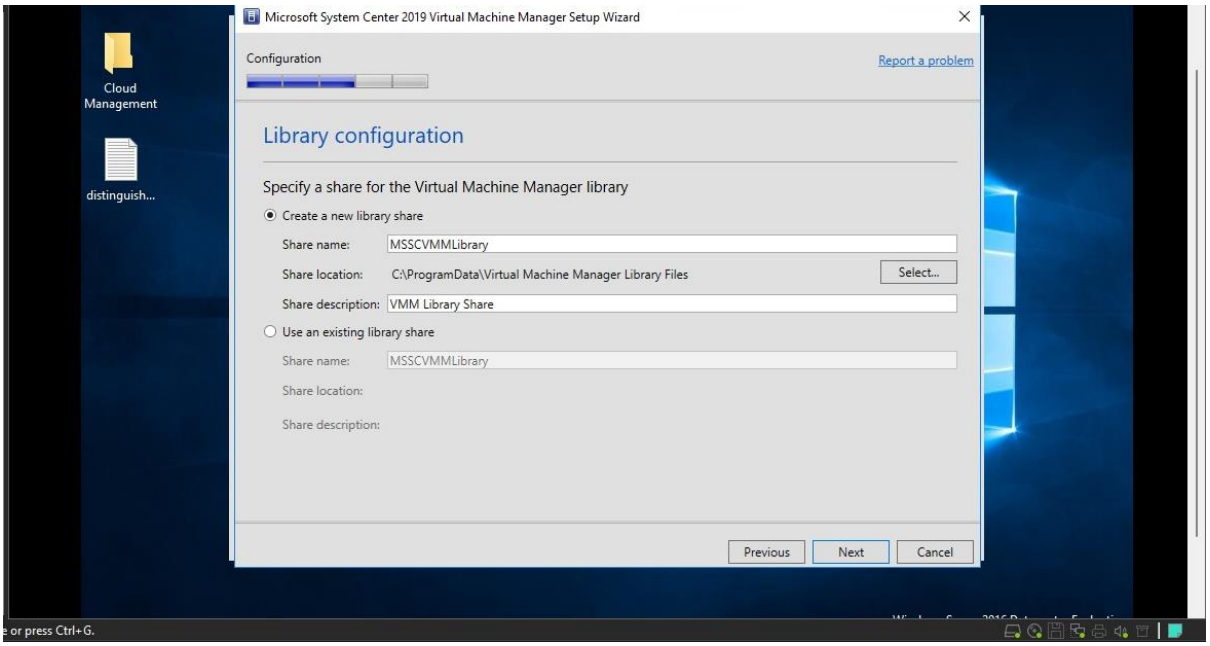
- Here in service account configuration, Select Domain Account and type in the User and Password (For VMMService)
- Select Store my keys in Active Directory and paste the **distinguishedName** that we have saved from before.



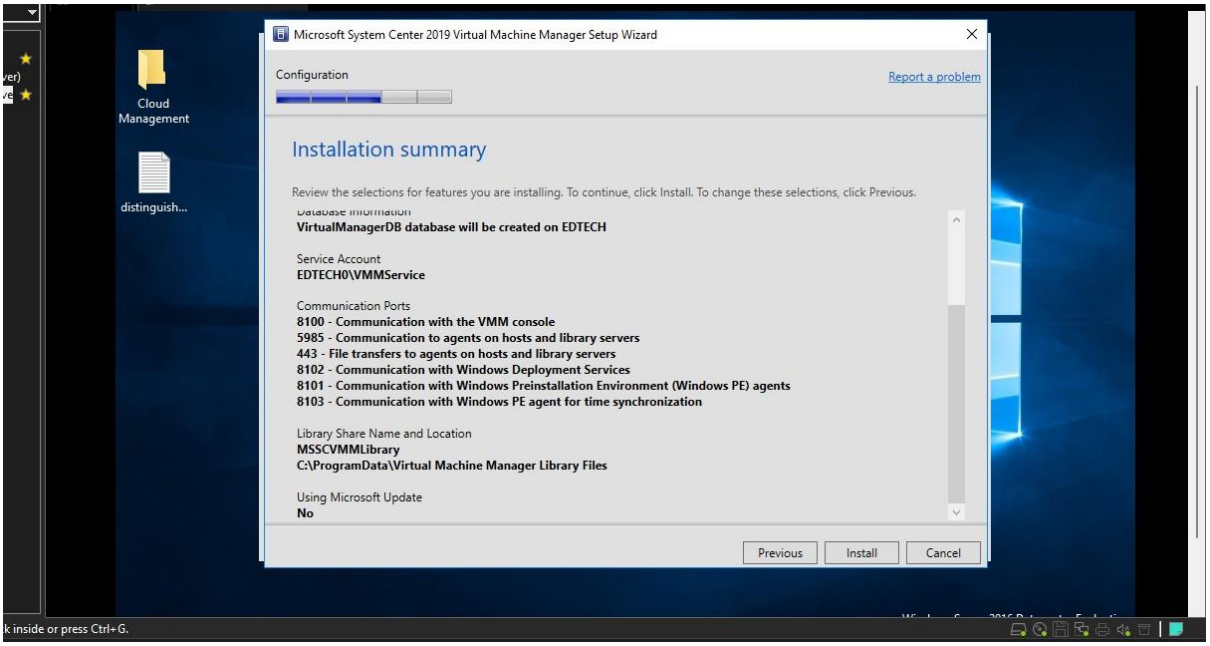
- Keep default values and Click **Next**



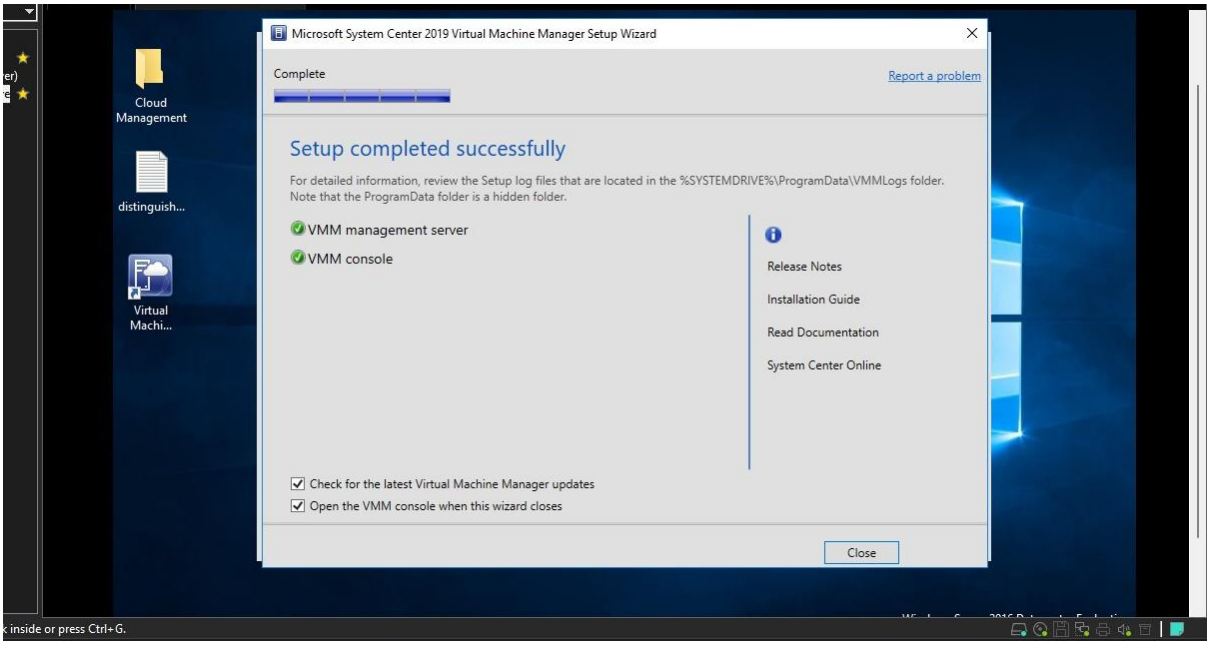
- Click on Next



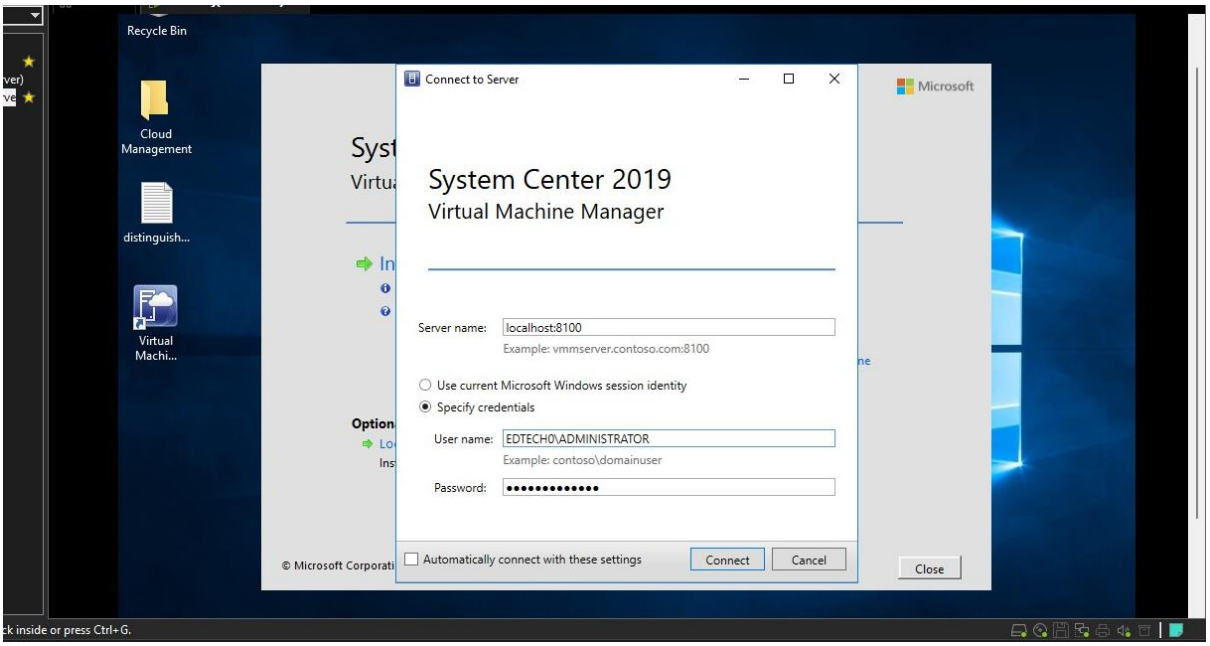
- Review the Installation Summary and Click on **Install**



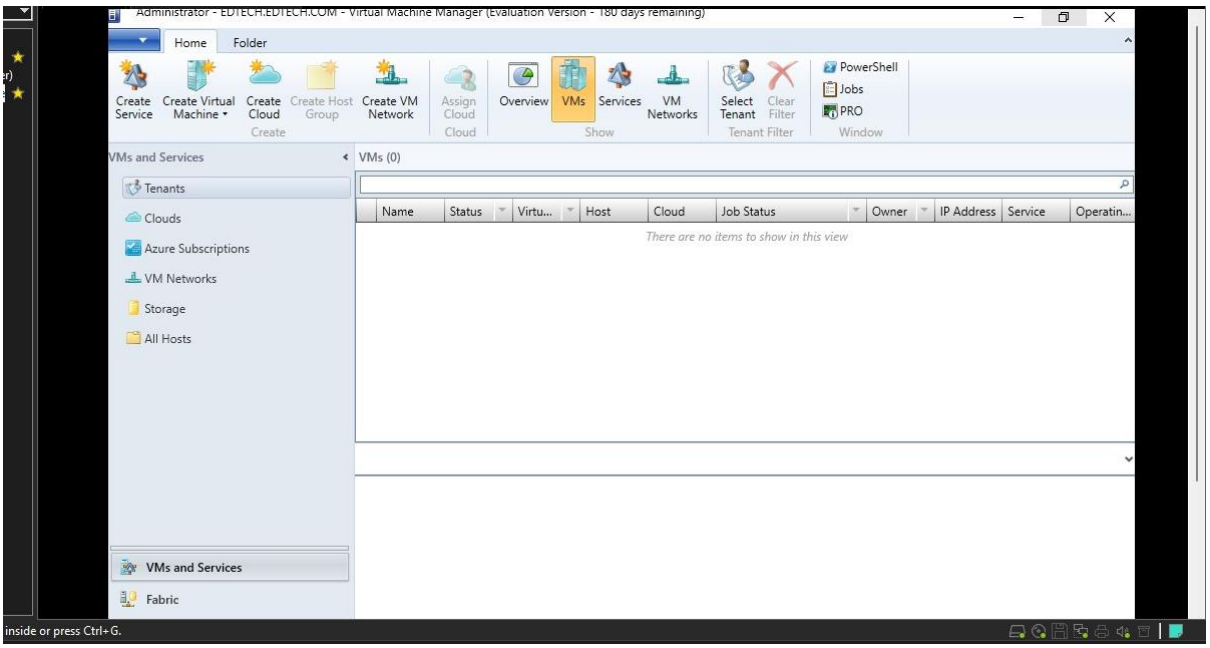
- After installation Click on **Close**



- Now when SCVMM starts enter your Domain controller credentials (In this case its EDTECH0\ADMINISTRATOR) with its password.
- After this SCVMM will start

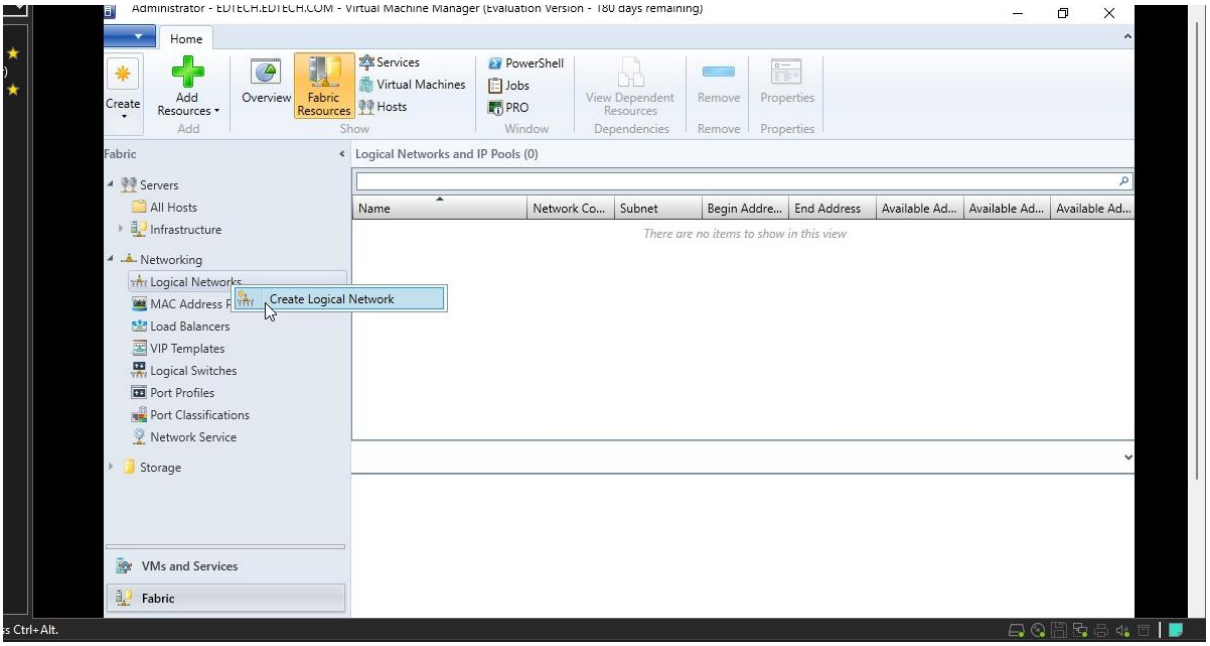


- This is the starting screen of SCVMM

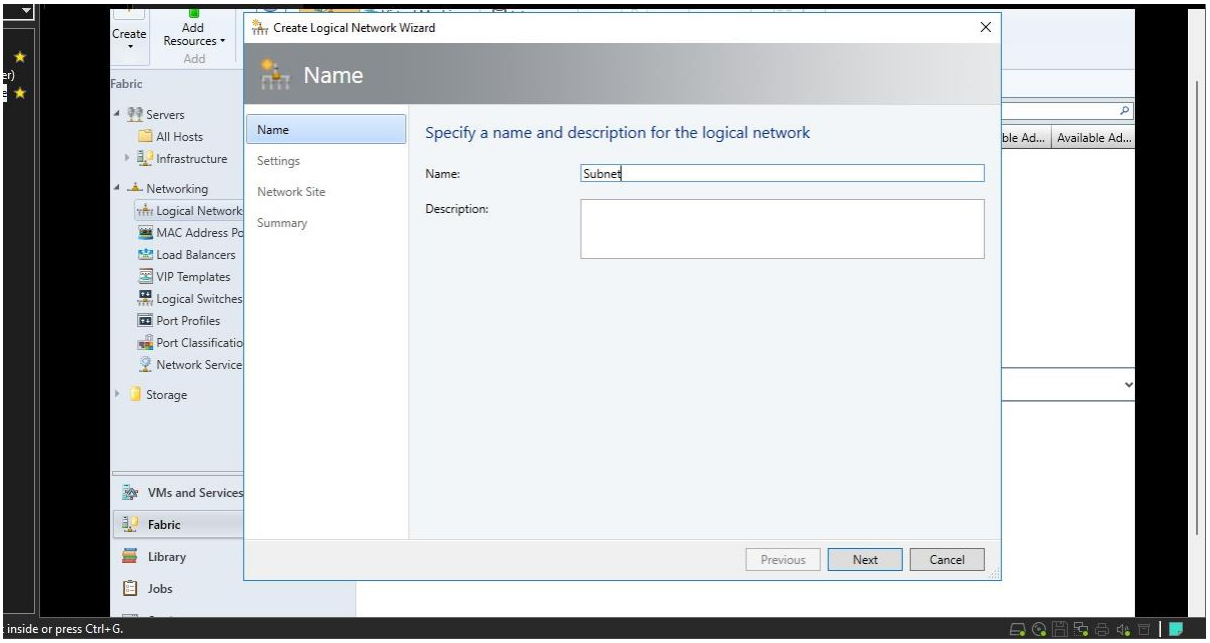


Step 41: Creation on Logical Networks

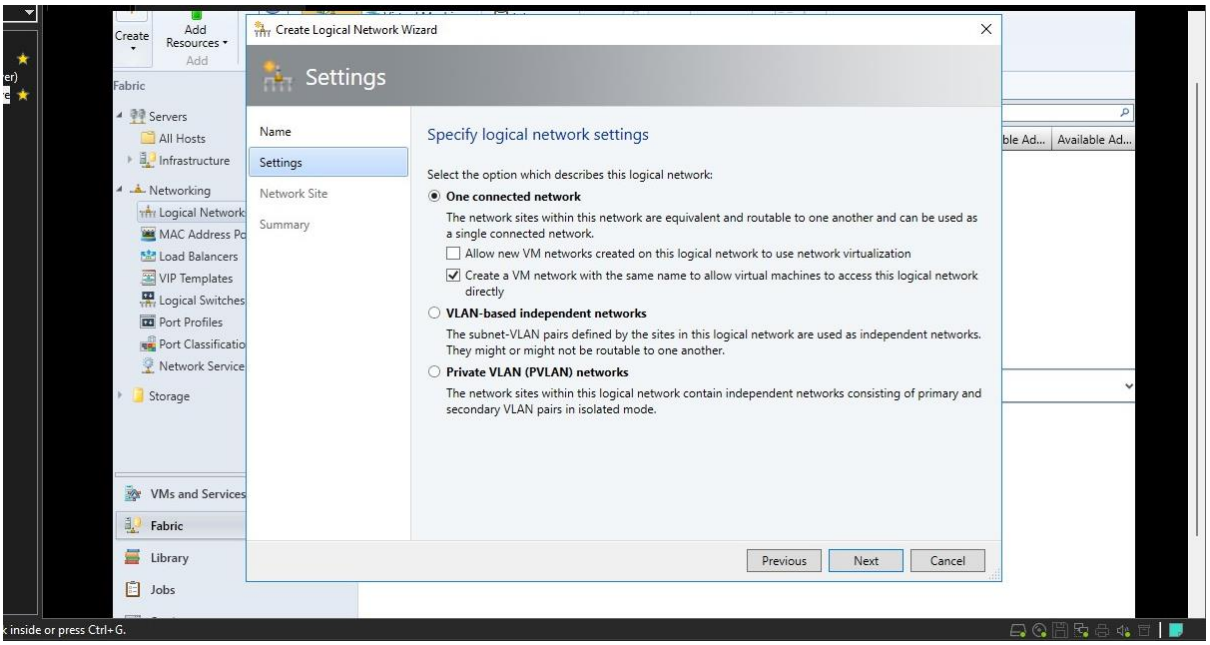
- Click on **Fabric**
- Click on **Networking**
- Within Networking Right-Click on **Logical Network** and Select **Create Logical Network**



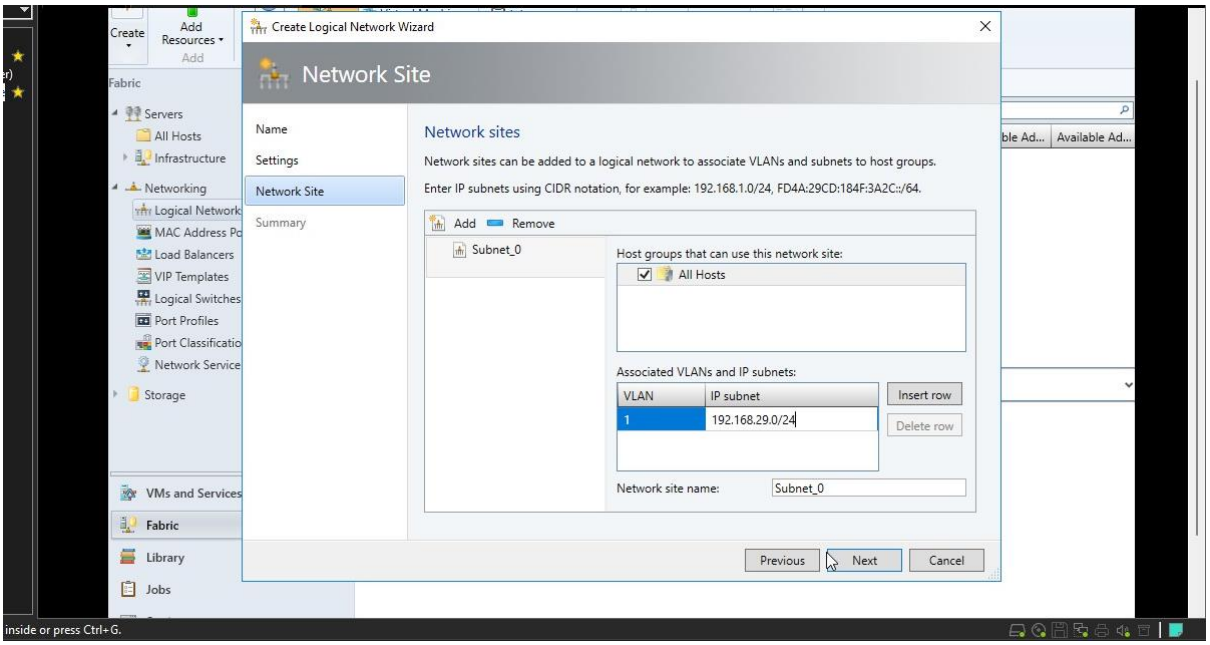
- Call this Subnet and Click **Next**



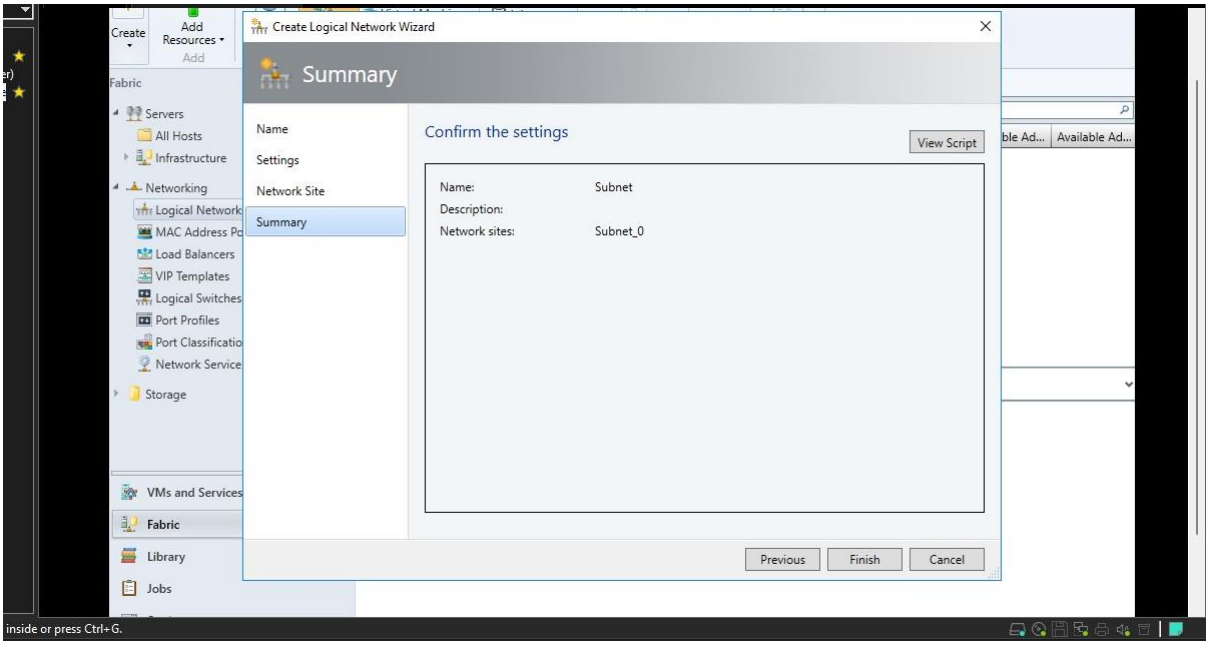
- Select **One Connected Network** and within that Tick **Create a VM network with the same name to allow virtual machines to access this logical network directly** and Click **Next**



- In Network Sites and Click **Add**
- Click on **All hosts**
- Click on **Insert Now** and Type **1** in VLAN and a sample IP (Here it is 192.168.29.0/24) and Click **Next**

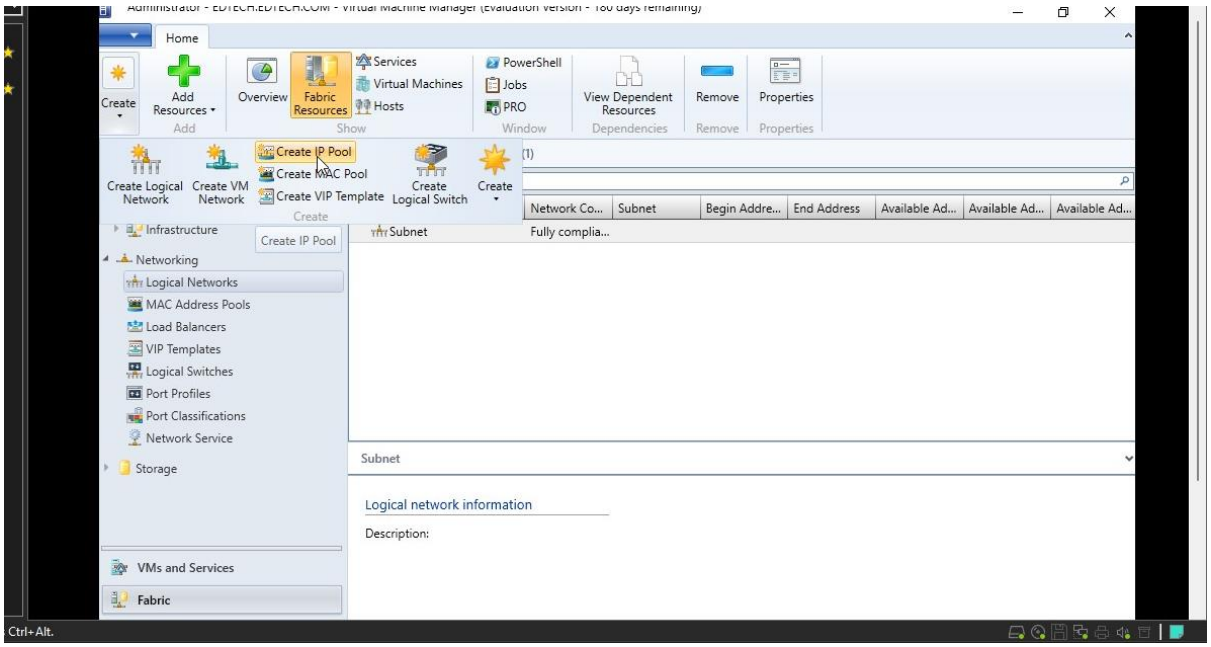


- Check the Summary and Click on **Finish**

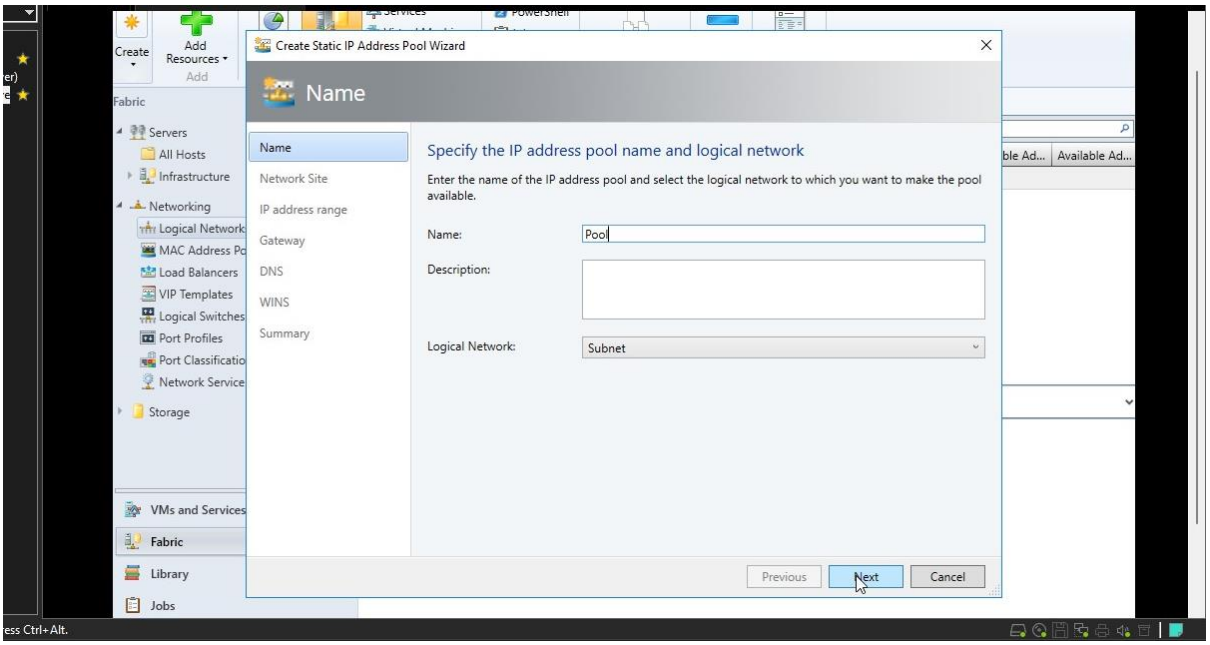


Step 42: Creating IP Pools

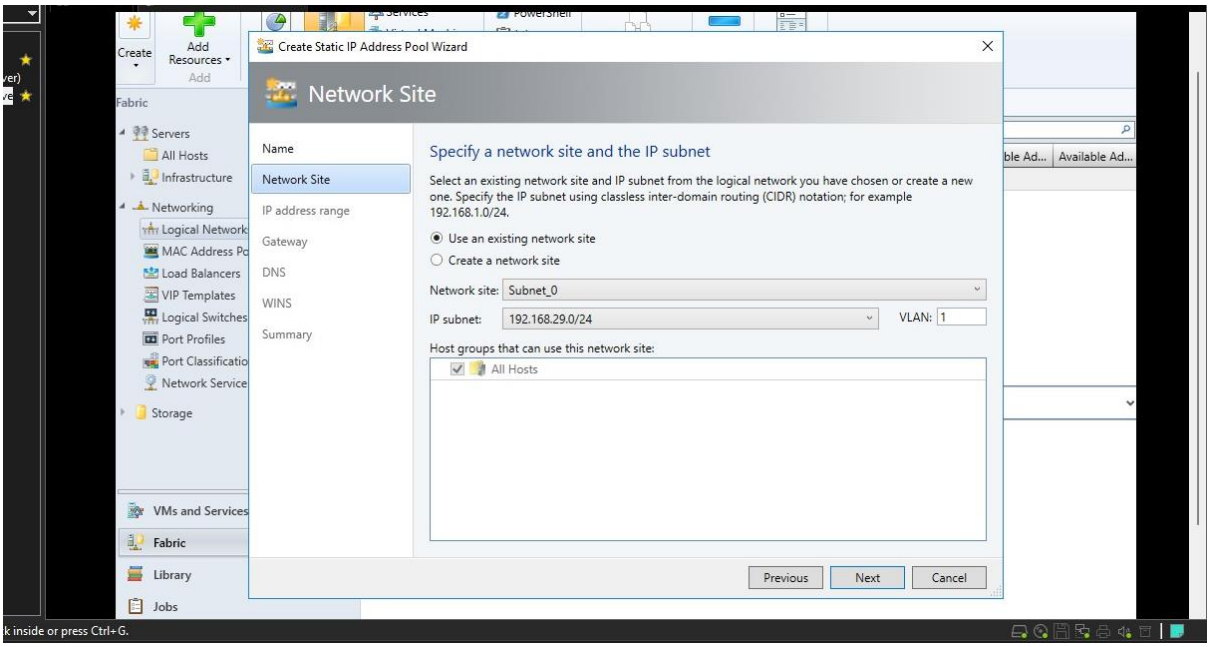
- Now in SCVMM on the Top Click on **Create**
- Within Create Click on **Create IP Pool**



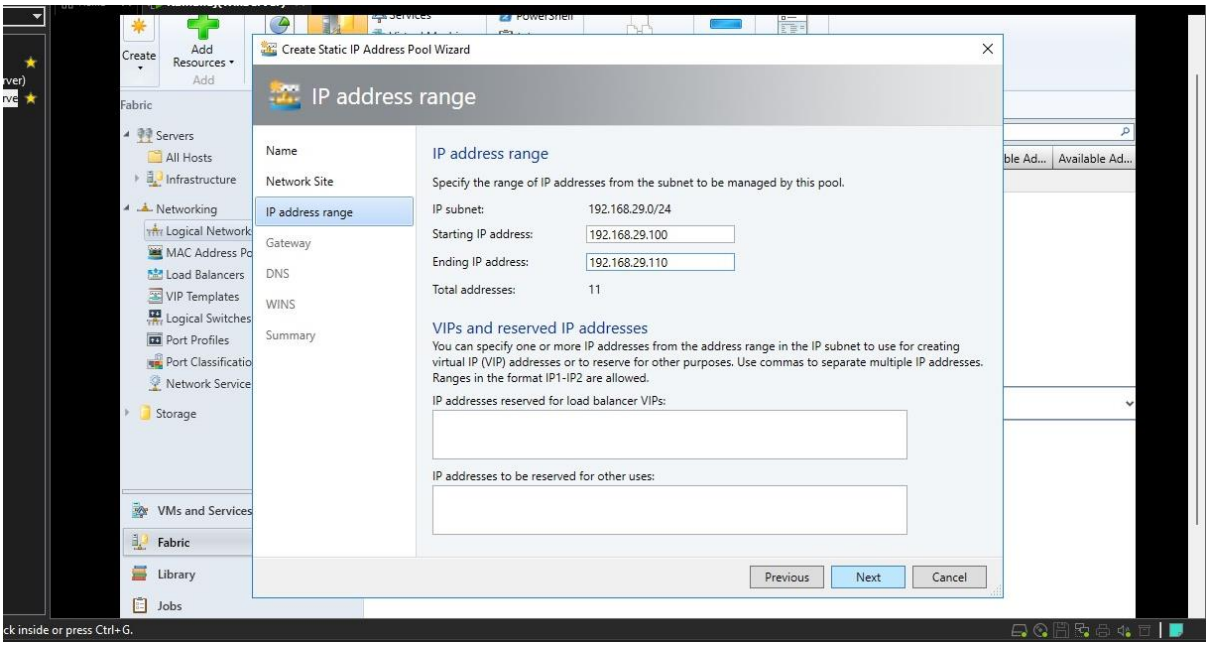
- Call it **Pool** and Make sure Logical Network is **Subnet**
- Then Click **Next**



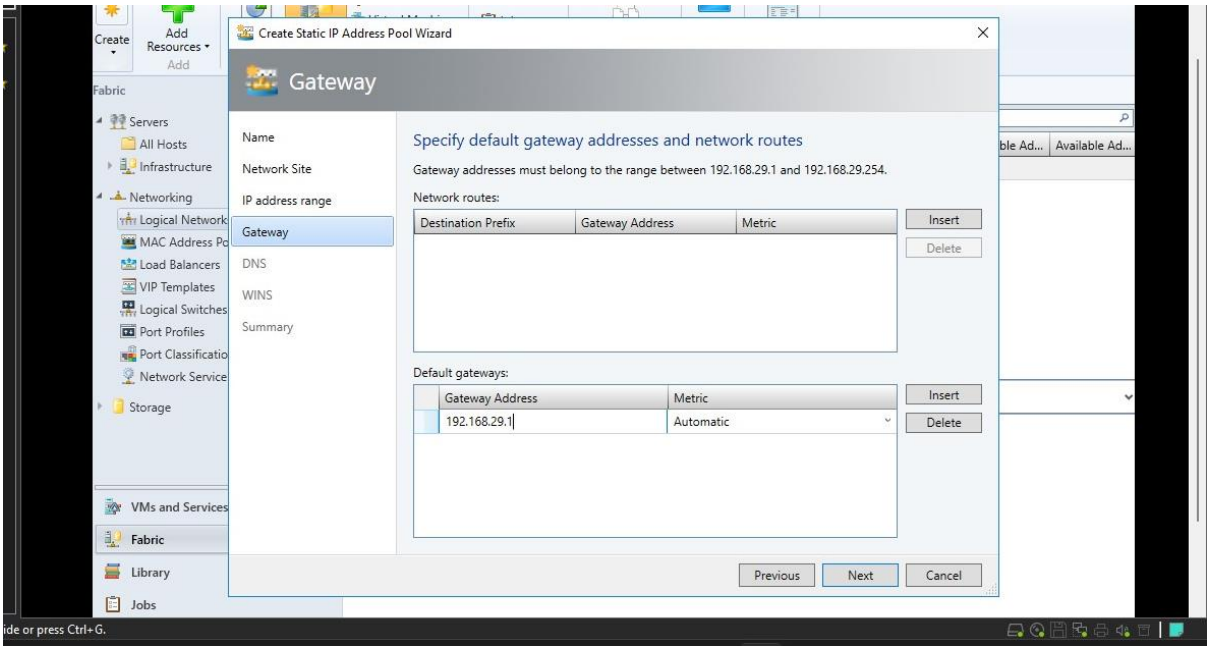
- Keep default values and Click **Next**



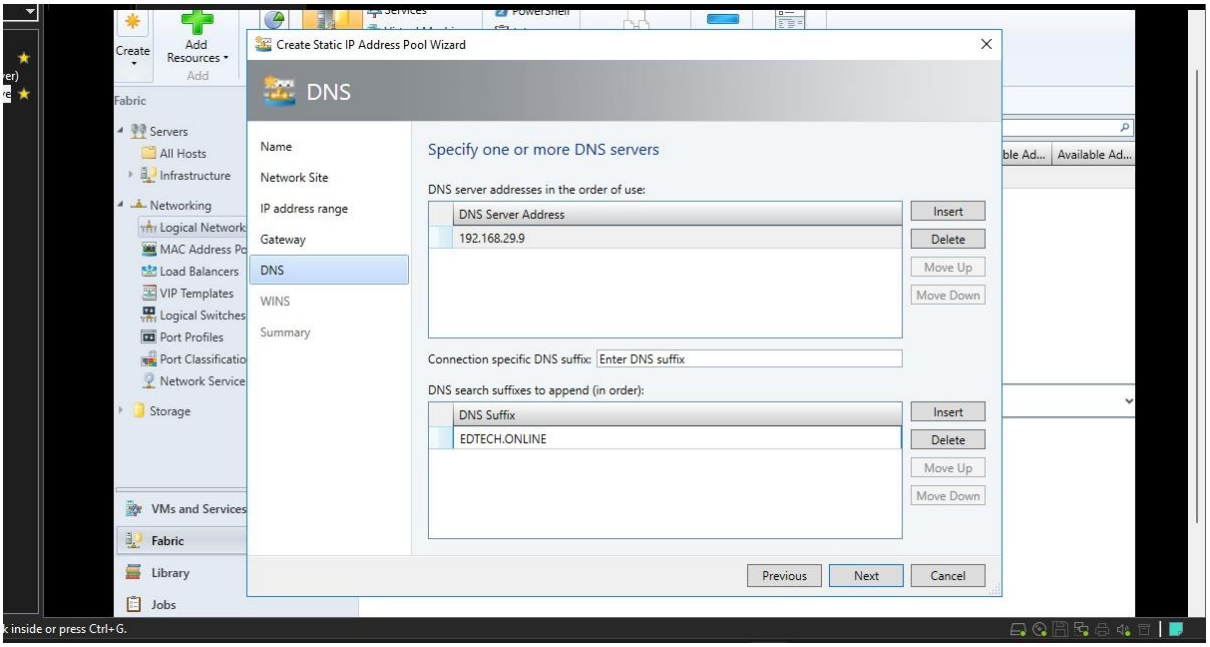
- In IP Address Range change the **Starting IP Address** to **192.168.29.100** and **Ending IP Address Range** to **192.168.29.110**
- Click **Next**



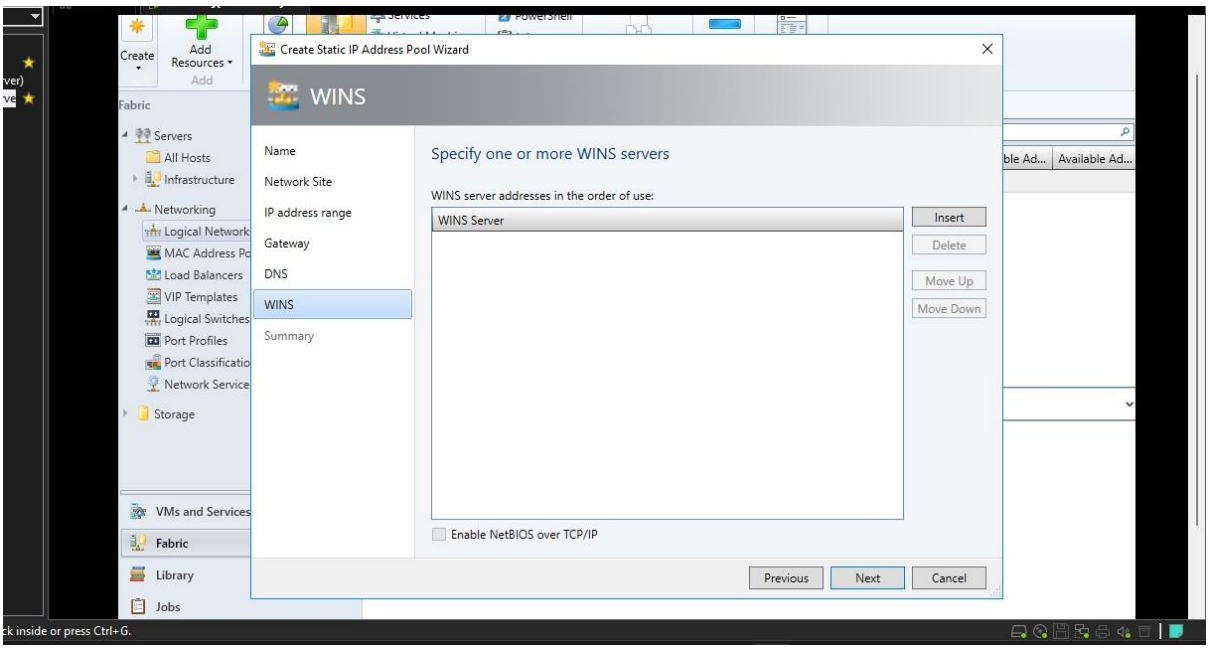
- In Gateway,
- Within Default Gateways Click on **Insert**
- Type the Gateway Address as **192.168.29.1** and Keep the metric as **Automatic**
- Click **Next**



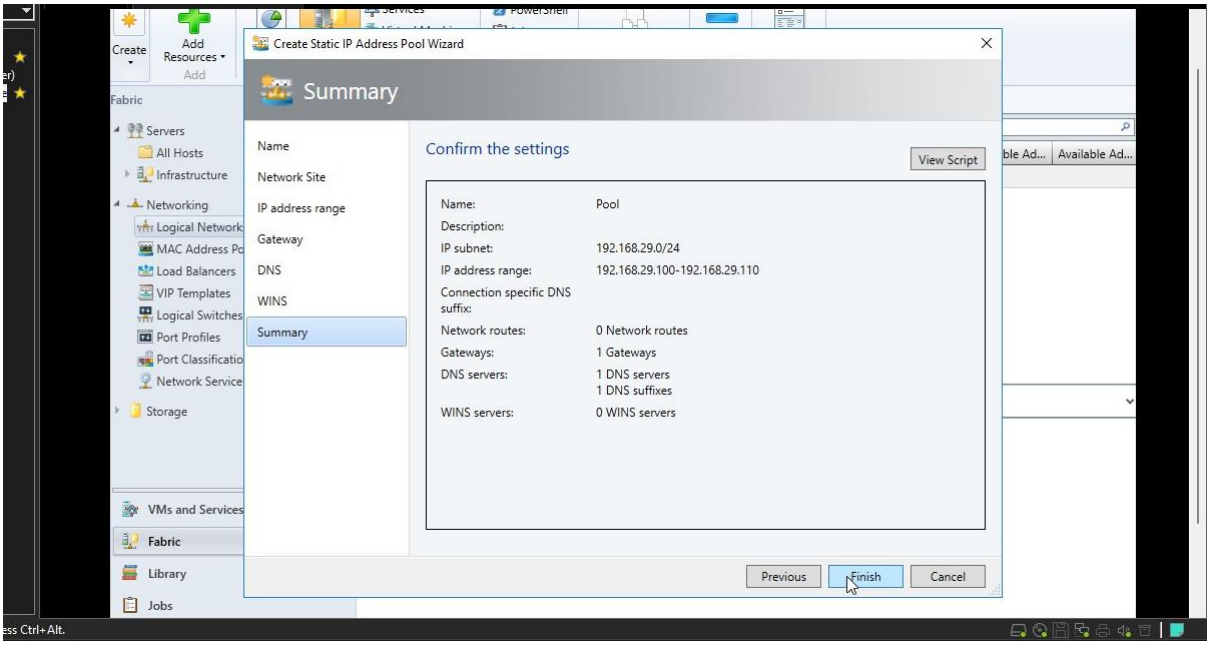
- In DNS, within **DNS server address in the order of use** Click on **Insert**
- Type in the IP Address **192.168.29.9**
- In **DNS Suffix** type your **Domainname.Online** i.e in this case it is **EDTECH.ONLINE**
- Click **Next**



- In WINS, keep it as is and Click **Next**

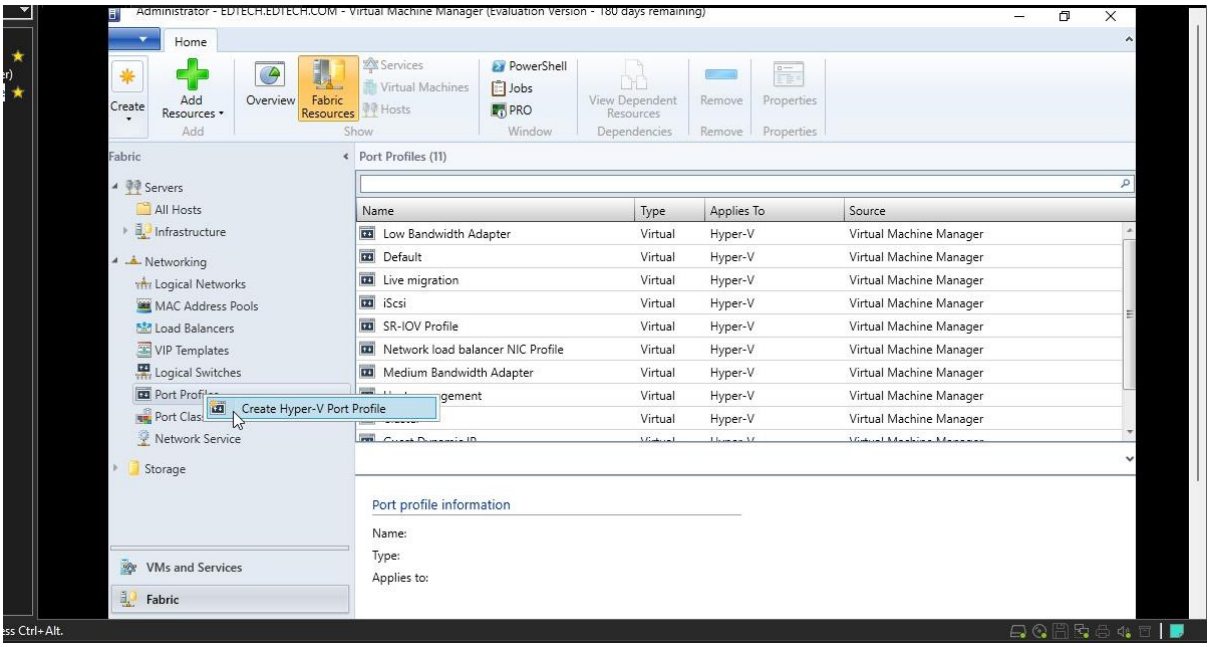


- View the Summary and Click **Finish**

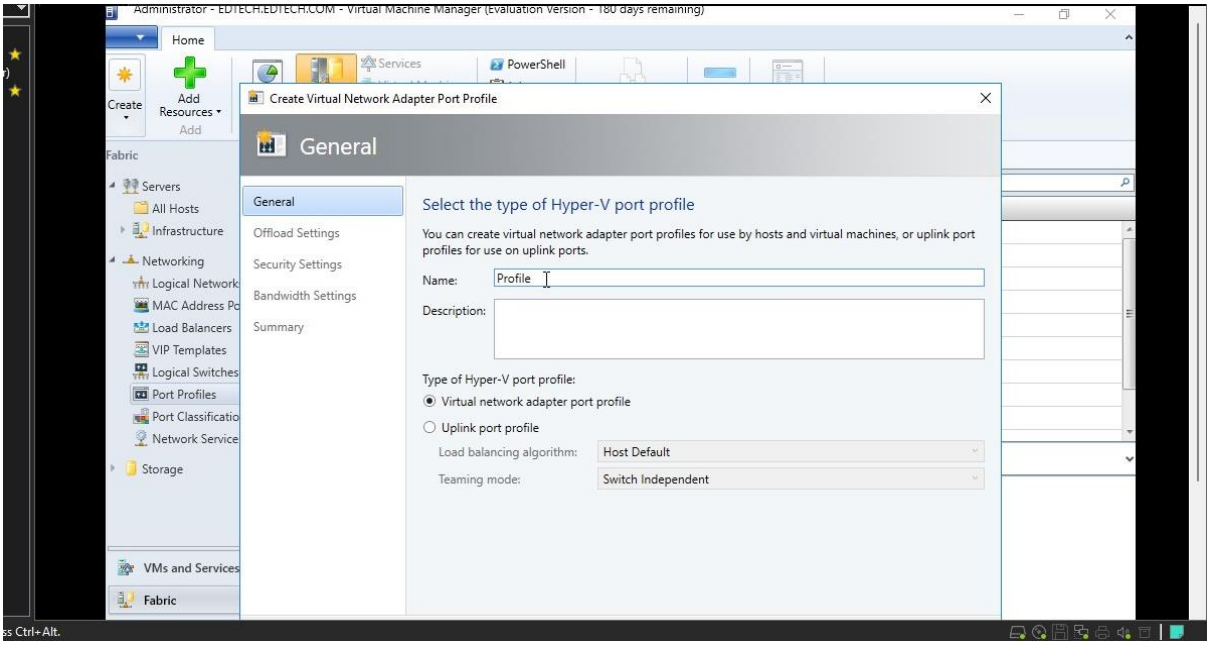


Step 43: Create IP Port Profiles

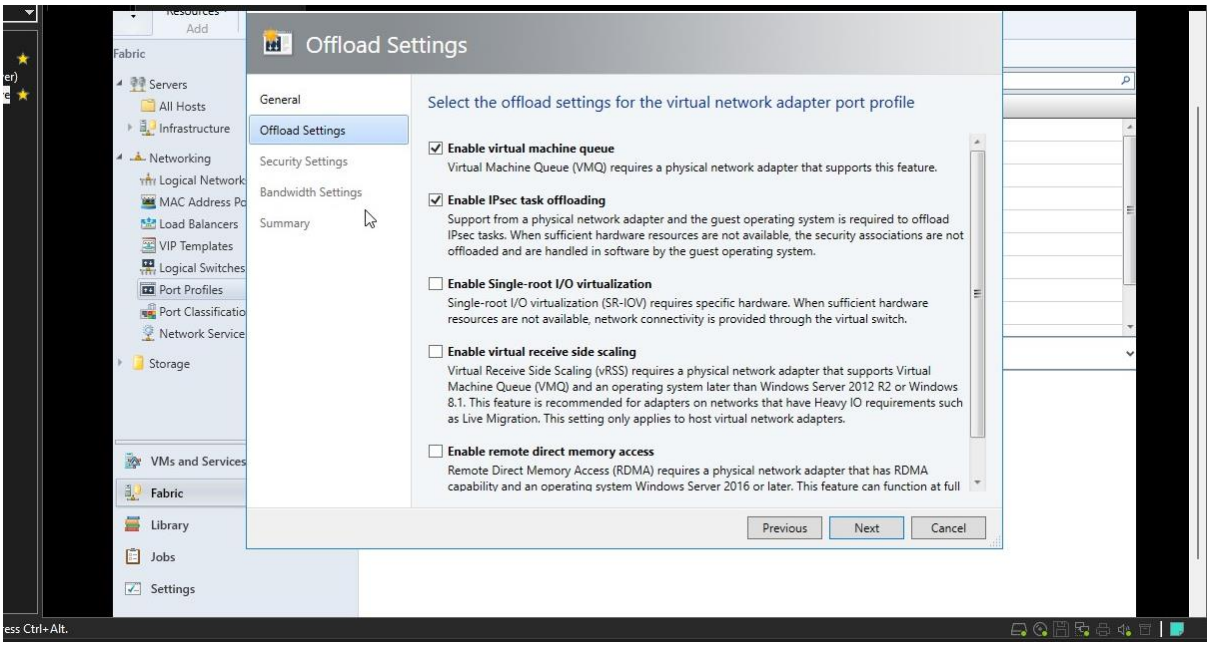
- In SCVMM Click on **Fabric**
- Within Fabric Click on **Networking**
- Within Networking Right-Click on **Port Profiles** and Select **Create Hyper-V Port Profile**



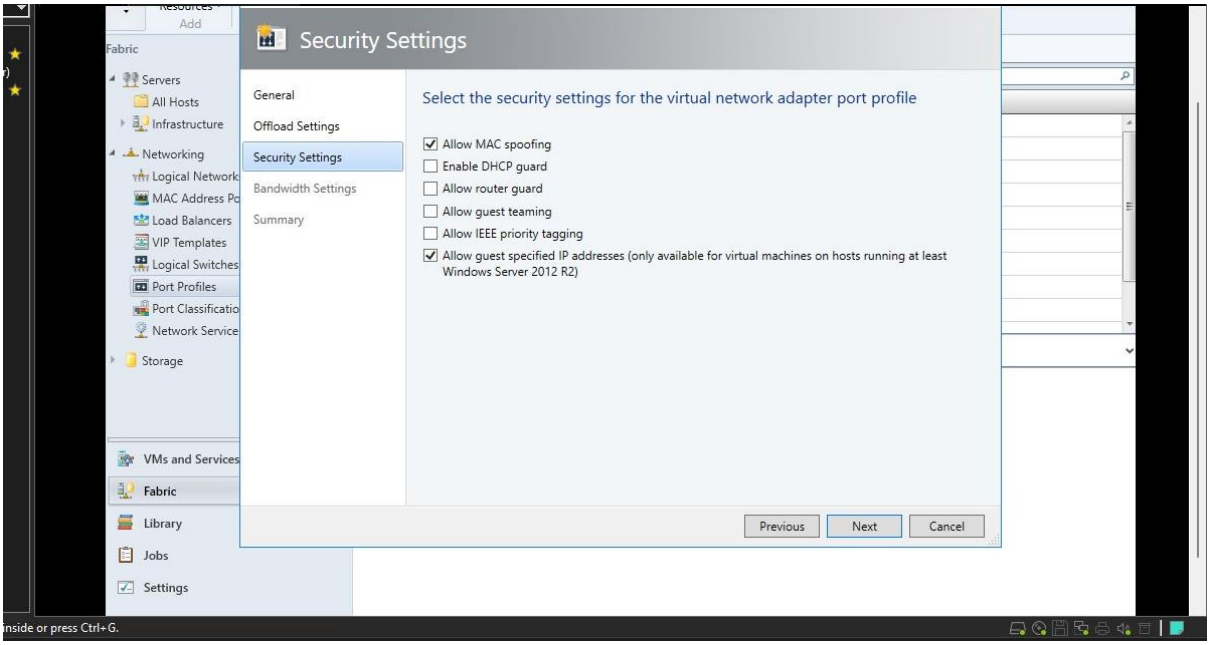
- Call this **Profile** and Click **Next**



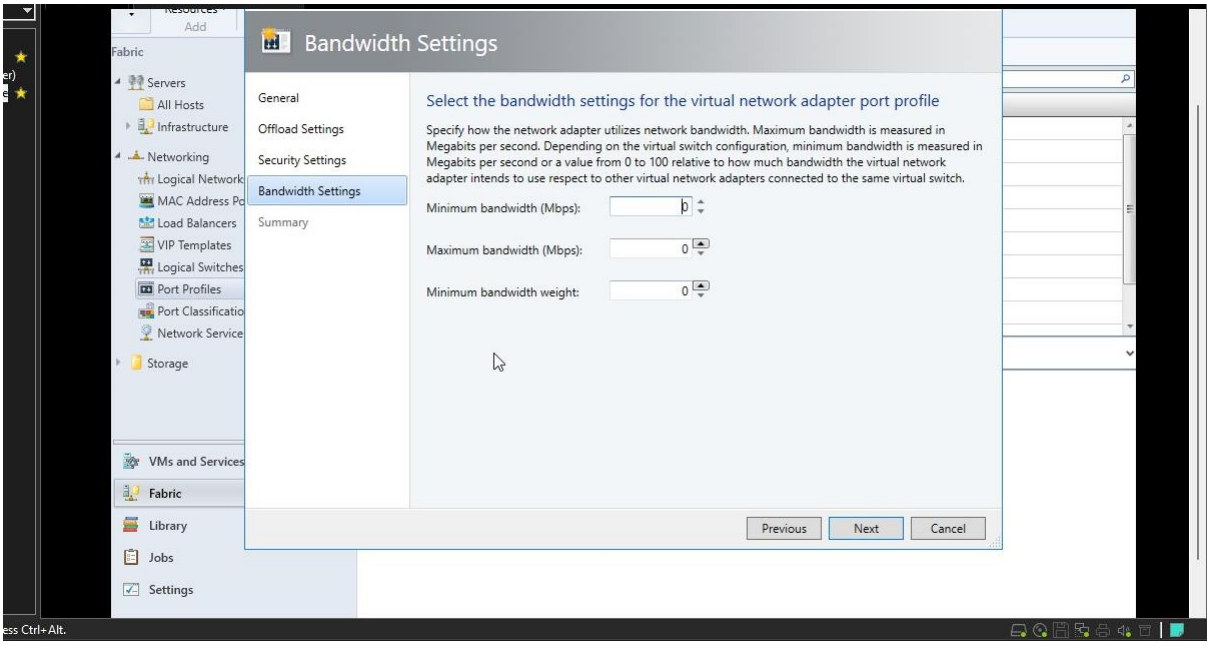
- In Offload Setting Select the following options:
  Enable virtual machine queue
  Enable IPSec task offloading
- Click on **Next**



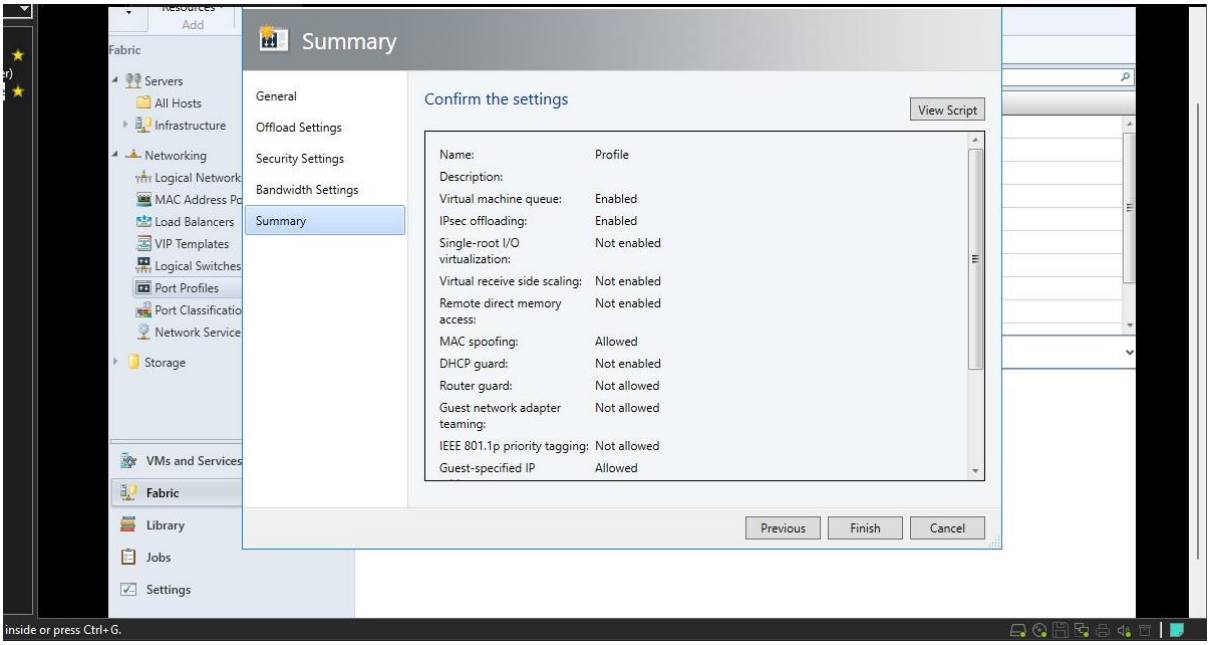
- In Security Settings Select **Allow MAC spoofing** and Click **Next**



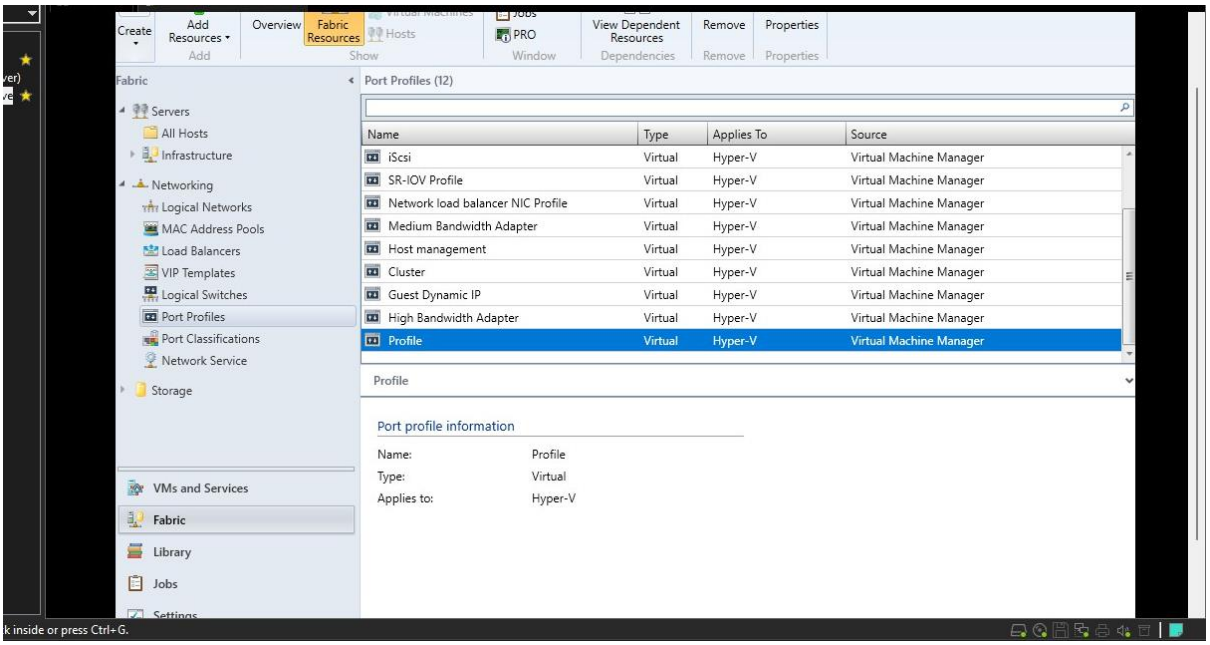
- Keep default values and Click **Next**



- View Summary and Click **Finish**

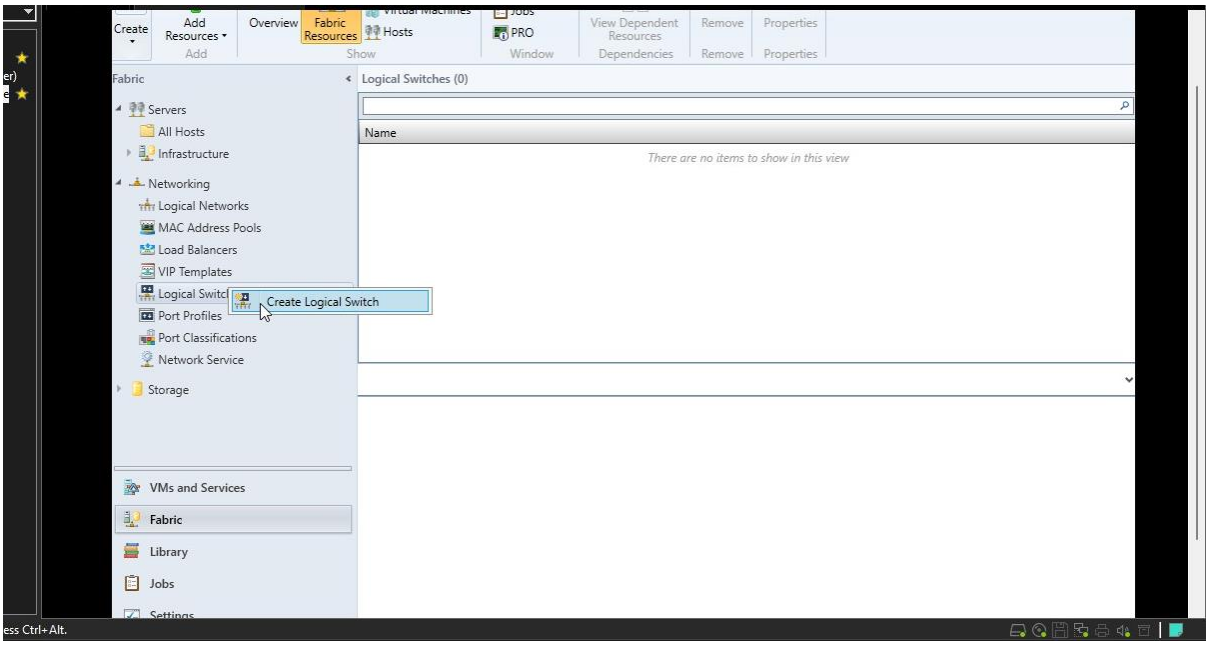


- New Port Profile called **Profile** is created

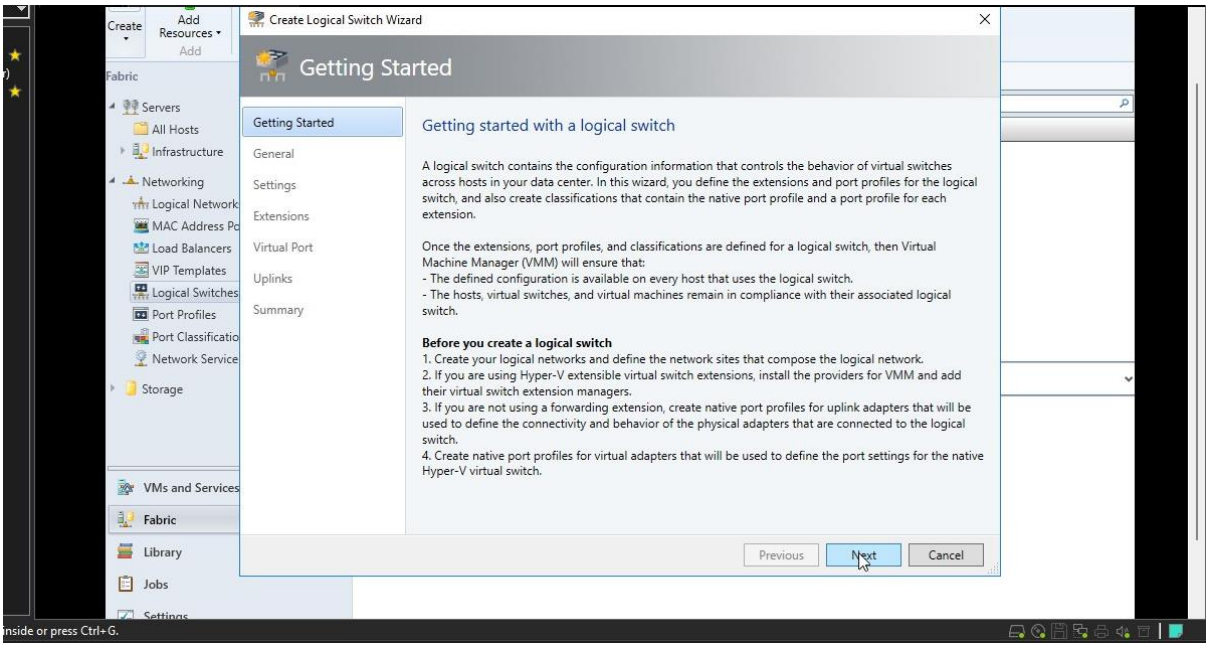


Step 44: Create Logical Switches

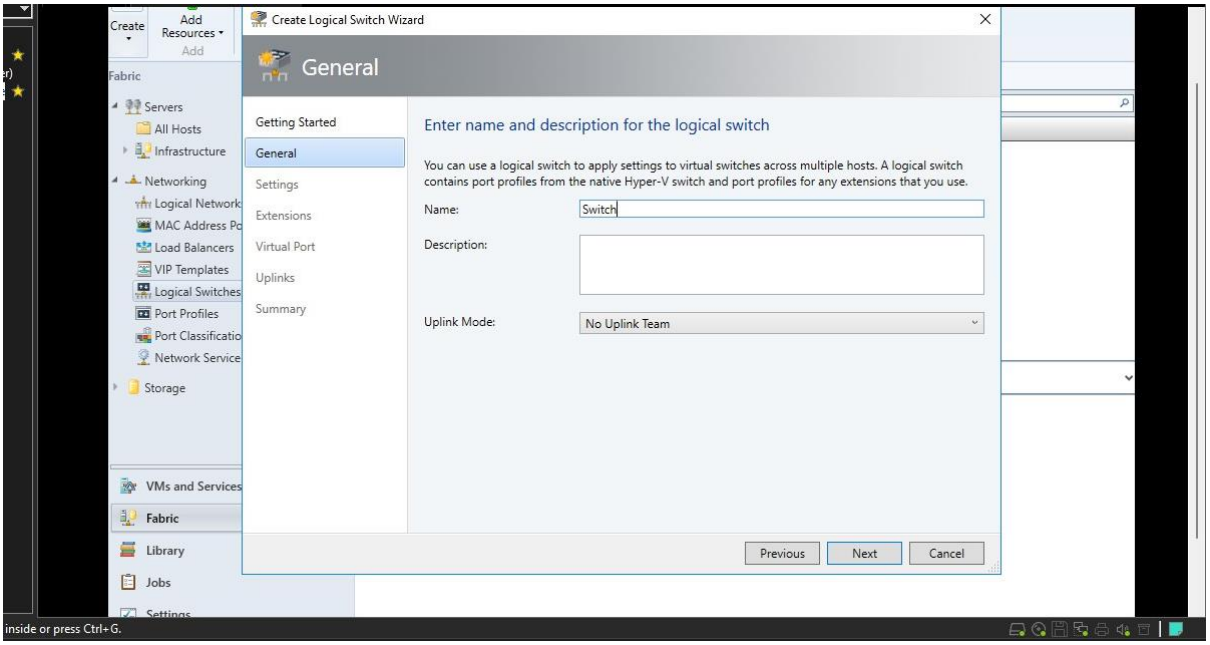
- In SCVMM Click on **Fabric**
- Within Fabric Click on **Networking**
- Within Networking Right-Click on **Logical Switches** and Select **Create Logical Switch**



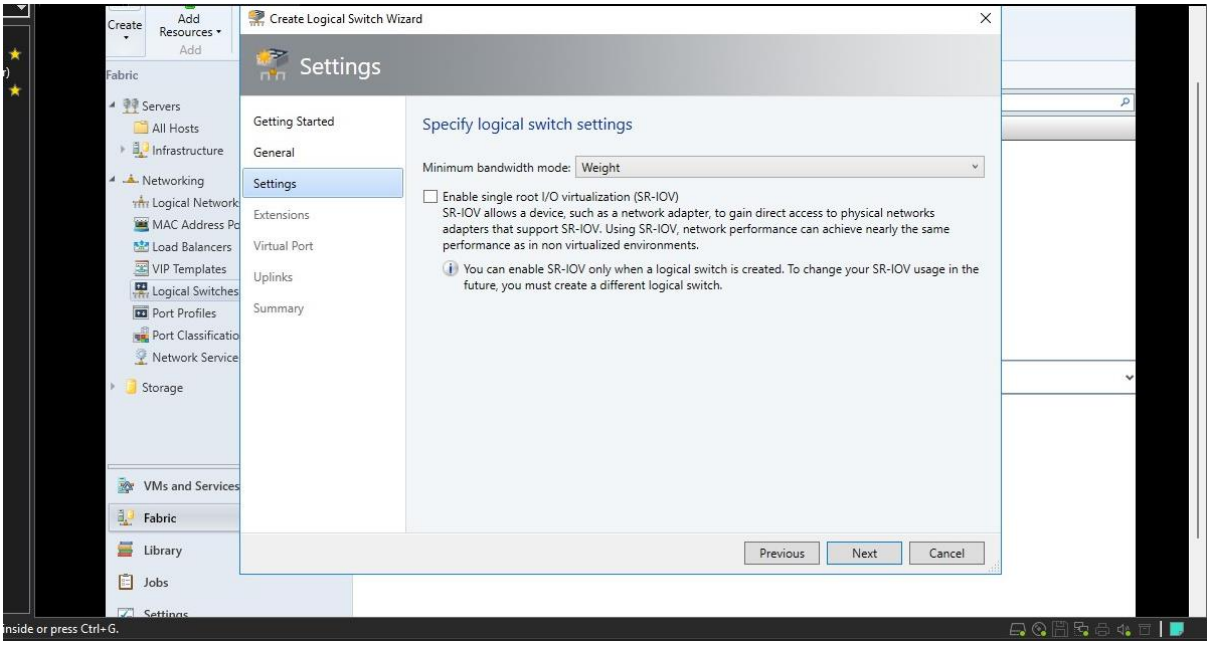
- Click **Next**



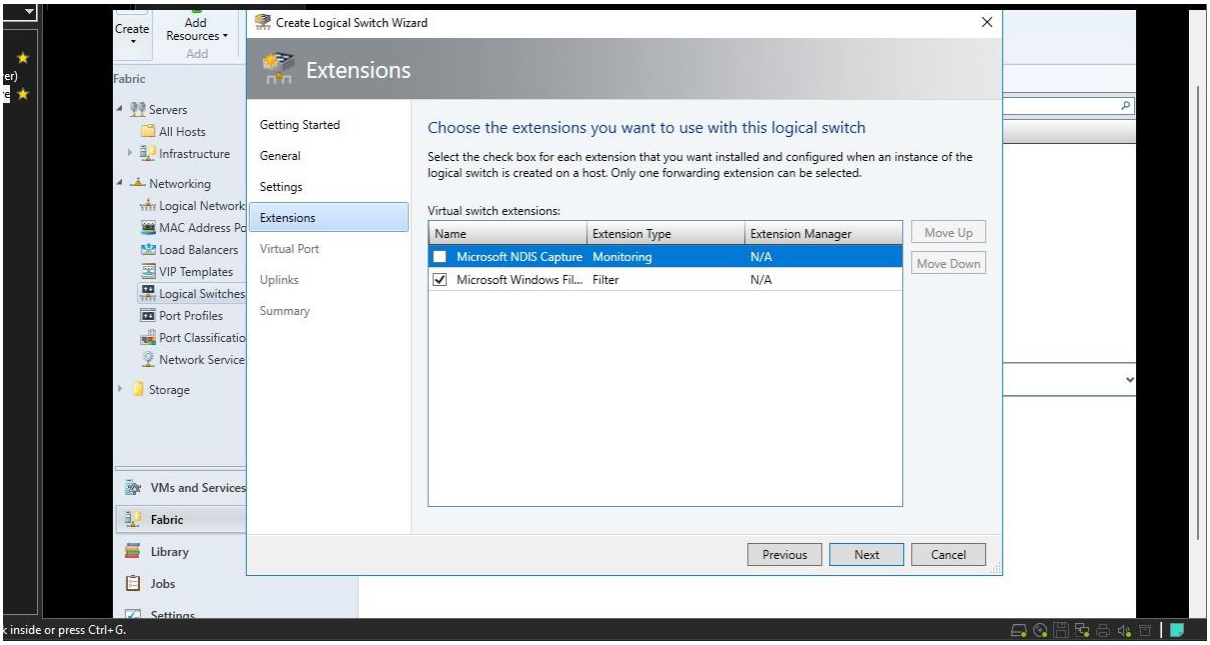
- Call it **Switch** and Click **Next**



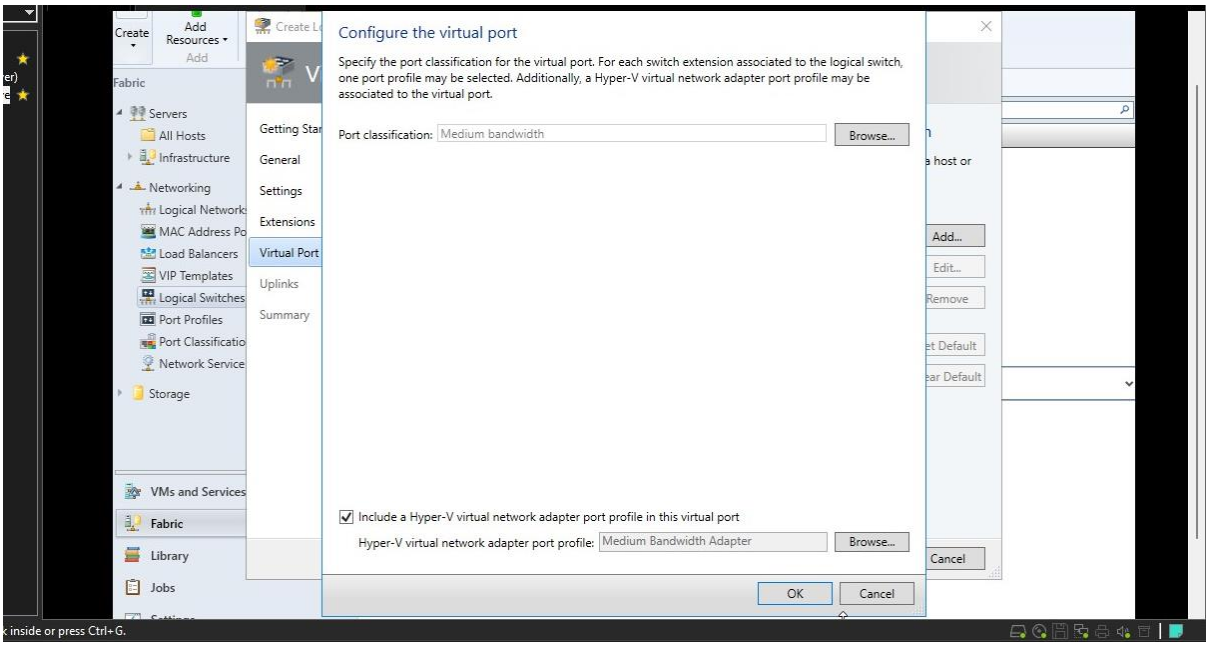
- Keep default values and Click **Next**



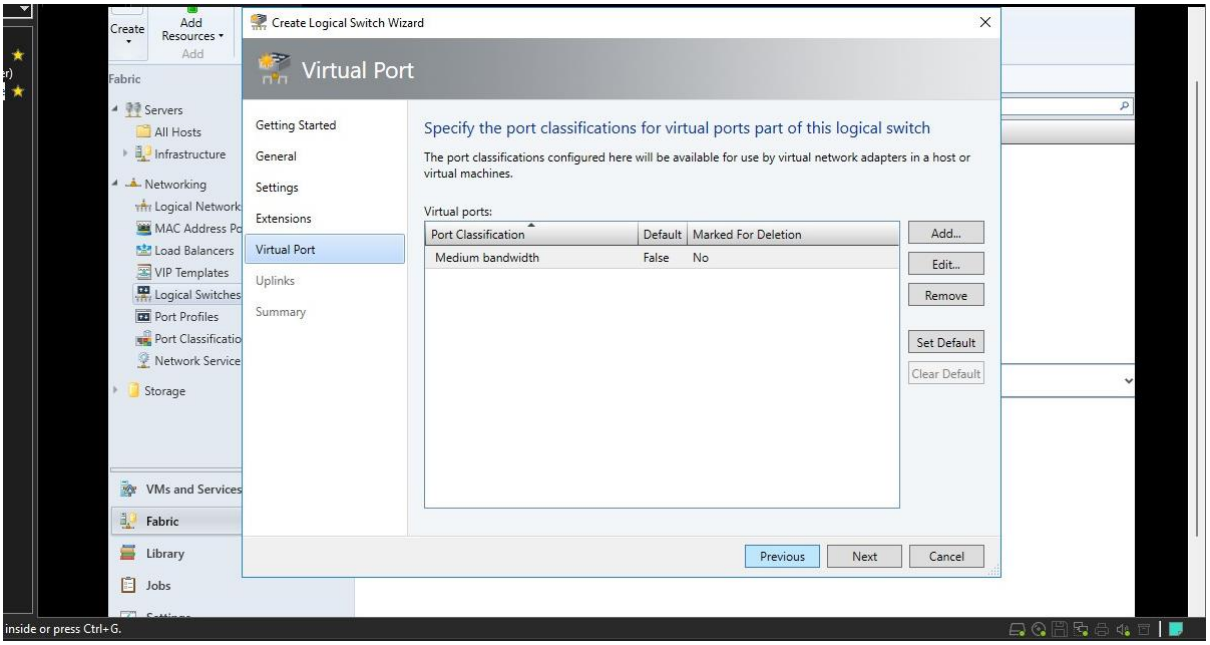
- Keep default values and Click **Next**



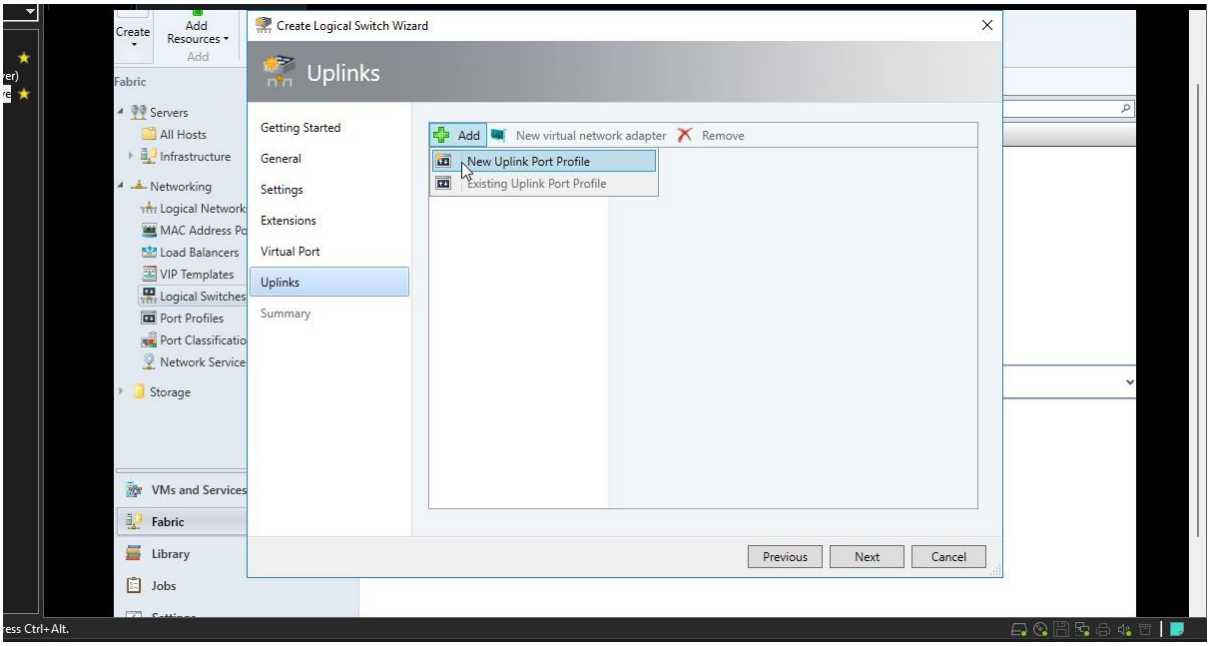
- In Virtual Port Click **Add**
- In Port Classification Select **Medium Bandwidth**
- Click on **Include a Hyper-V Virtual Network adapter port profile in this virtual port** and Select **Medium Bandwidth**
- Click on Ok



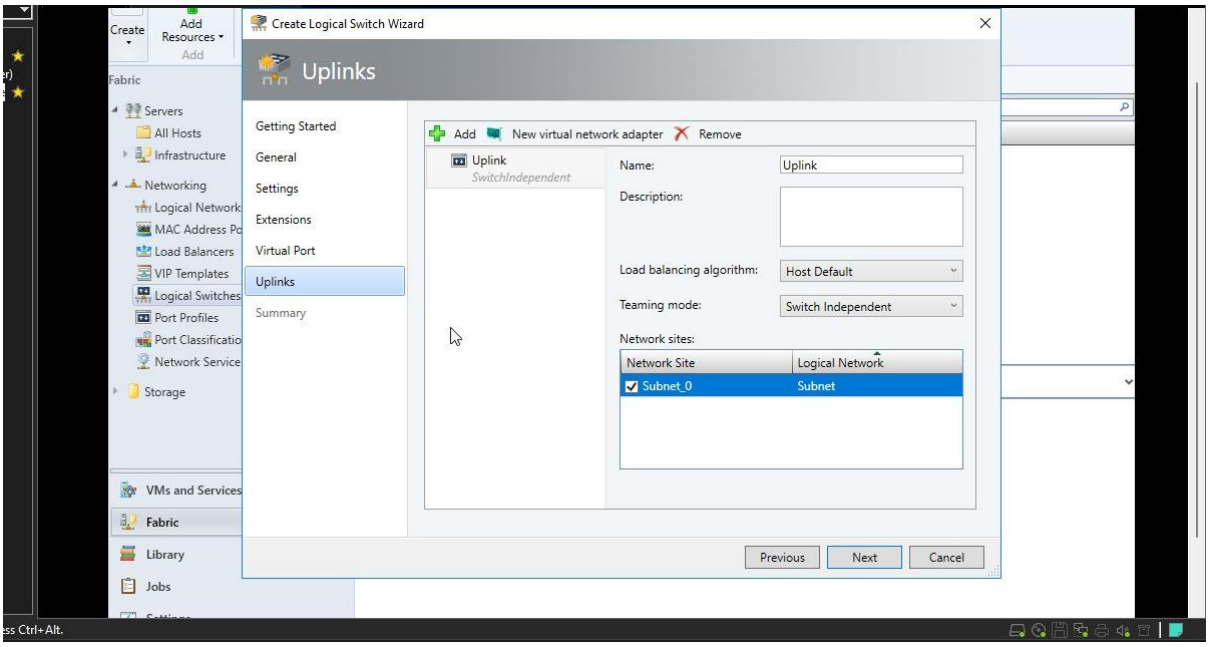
- On Virtual Port Click **Next**



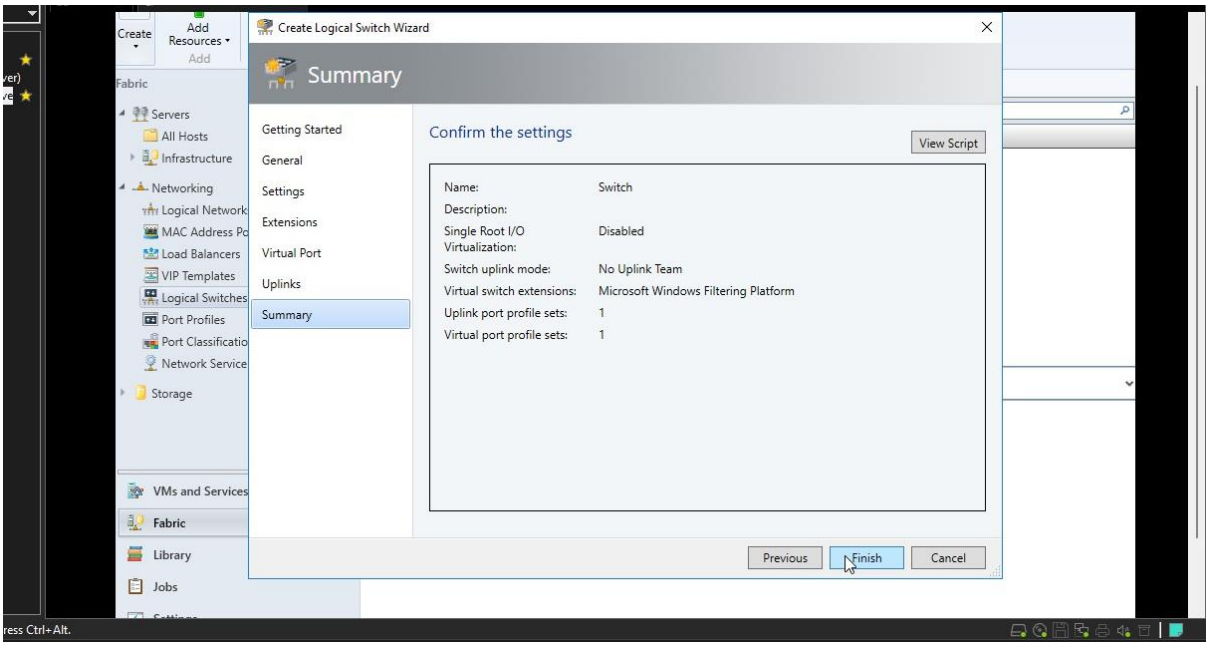
- On Uplink Click on **Add**
- Select **New Uplink Port Profile**



- In Name type **Uplink**
- Select the **Subnet_0**

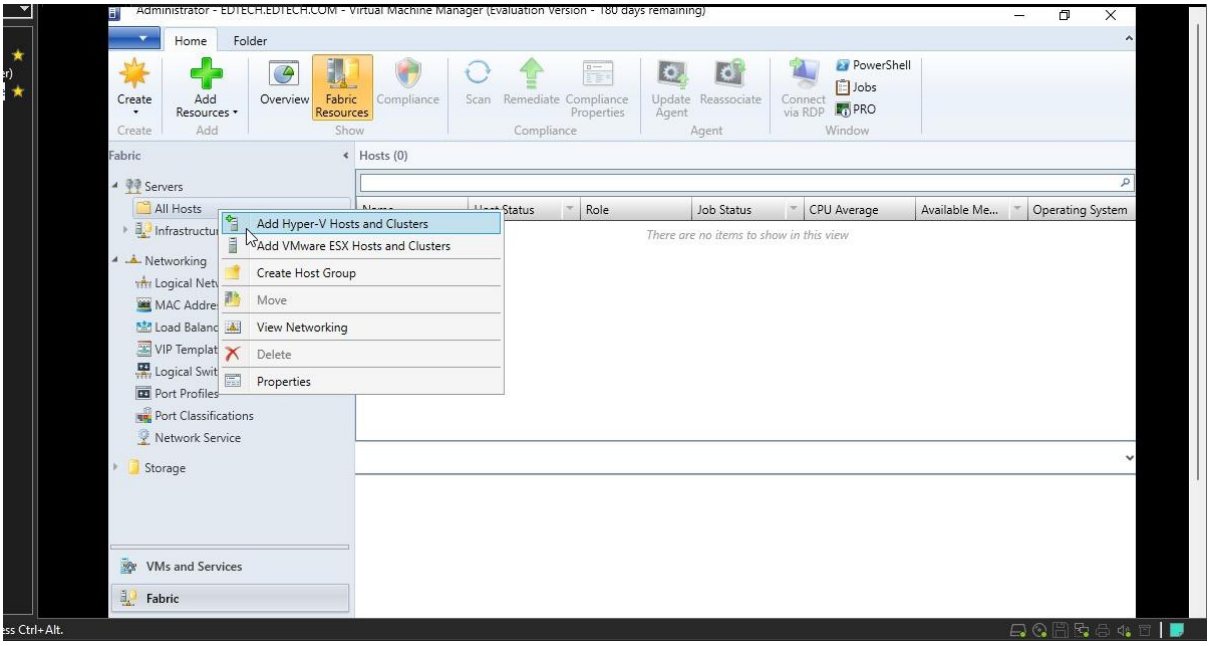


- View Summary and Click **Finish**

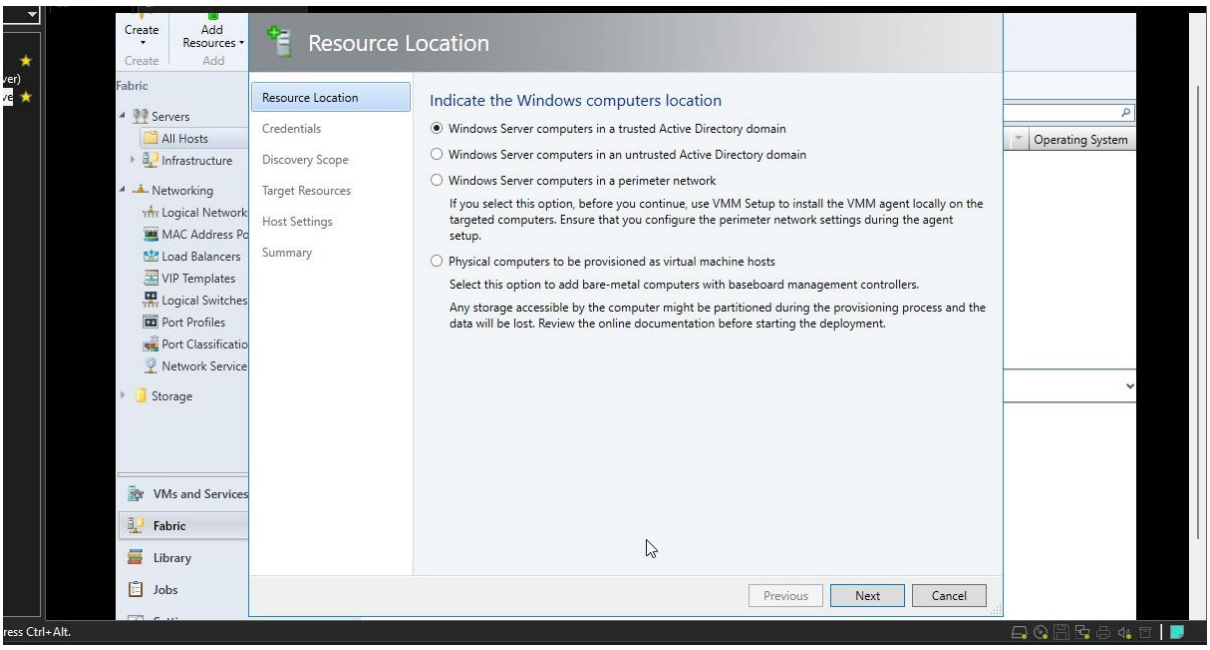


Step 45: Create Hyper-V Hosts & Clusters

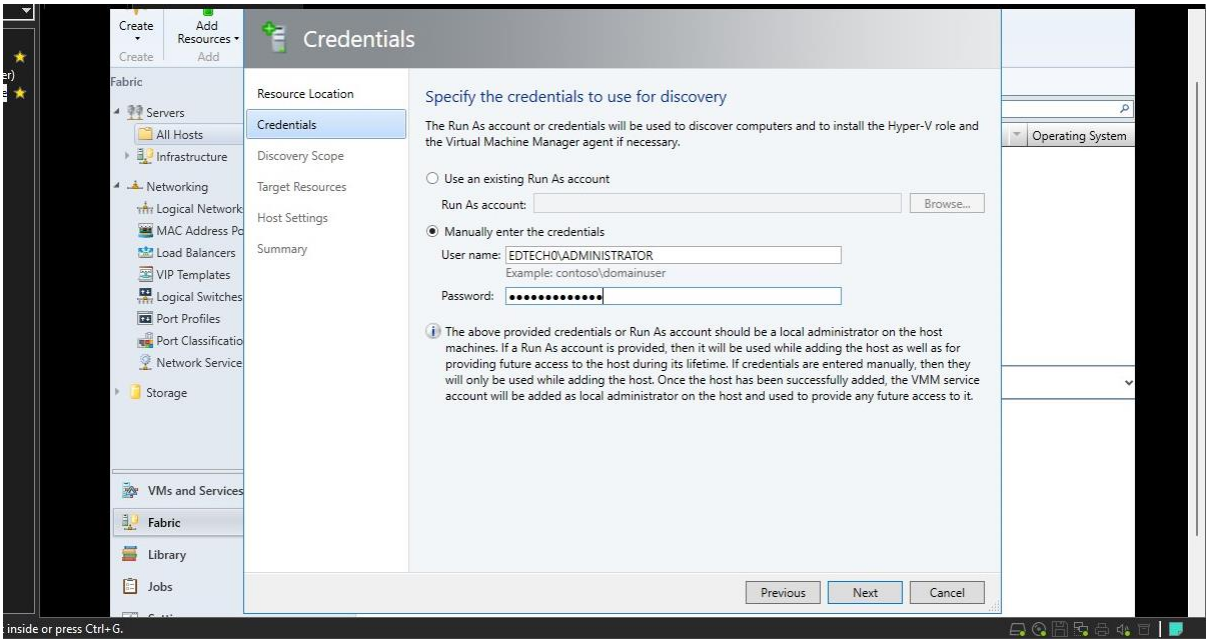
- In SCVMM Click on **Fabric**
- Right-Click on **All Host** and Select **Add Hyper-V Hosts and Clusters**



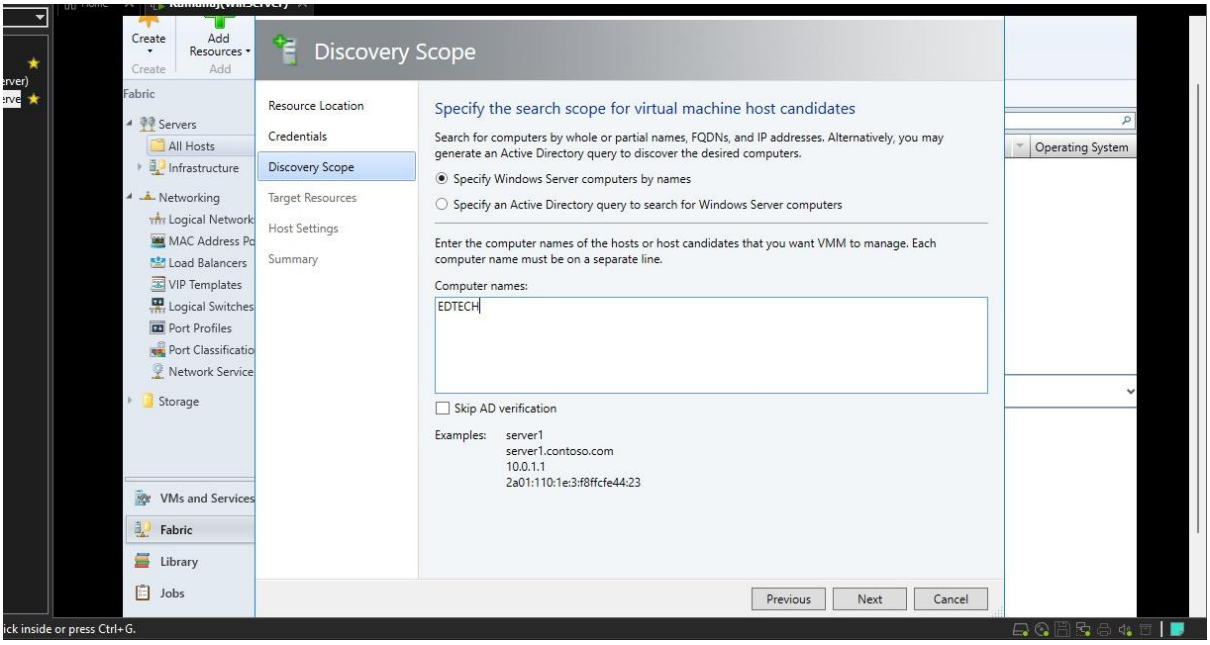
- Keep the default selected values and Click **Next**



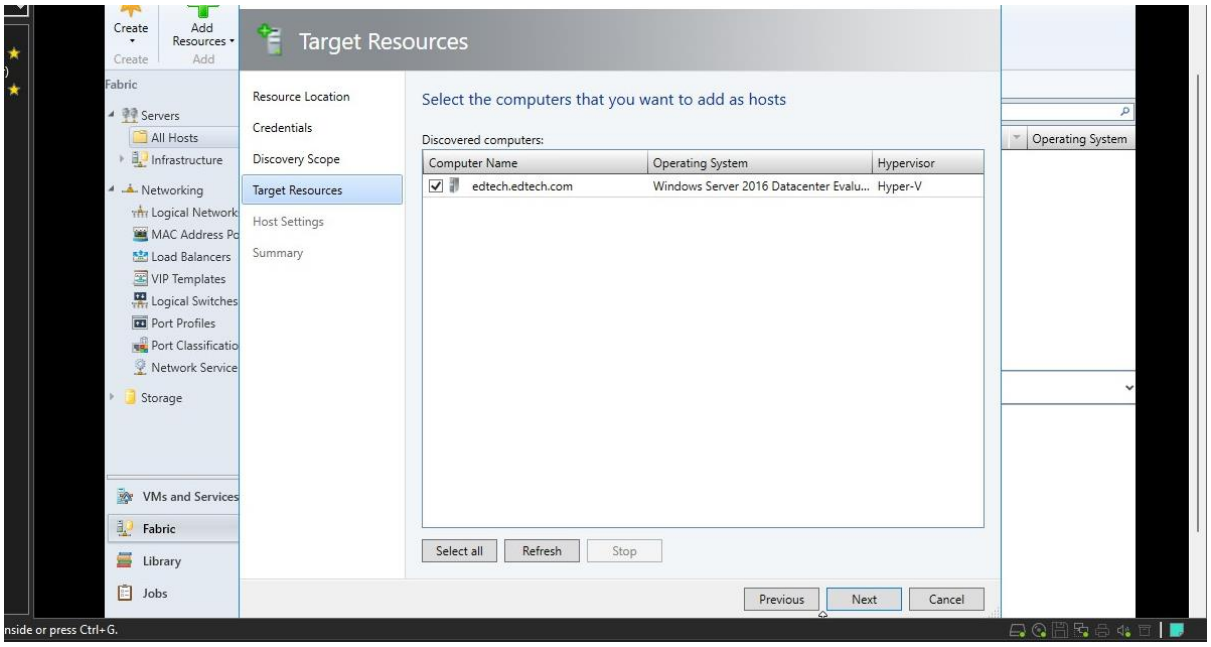
- Select **Manually enter credentials** and enter your Administrator credentials(Here it is EDTECH0\ADMINISTRATOR) and Click on **Next**



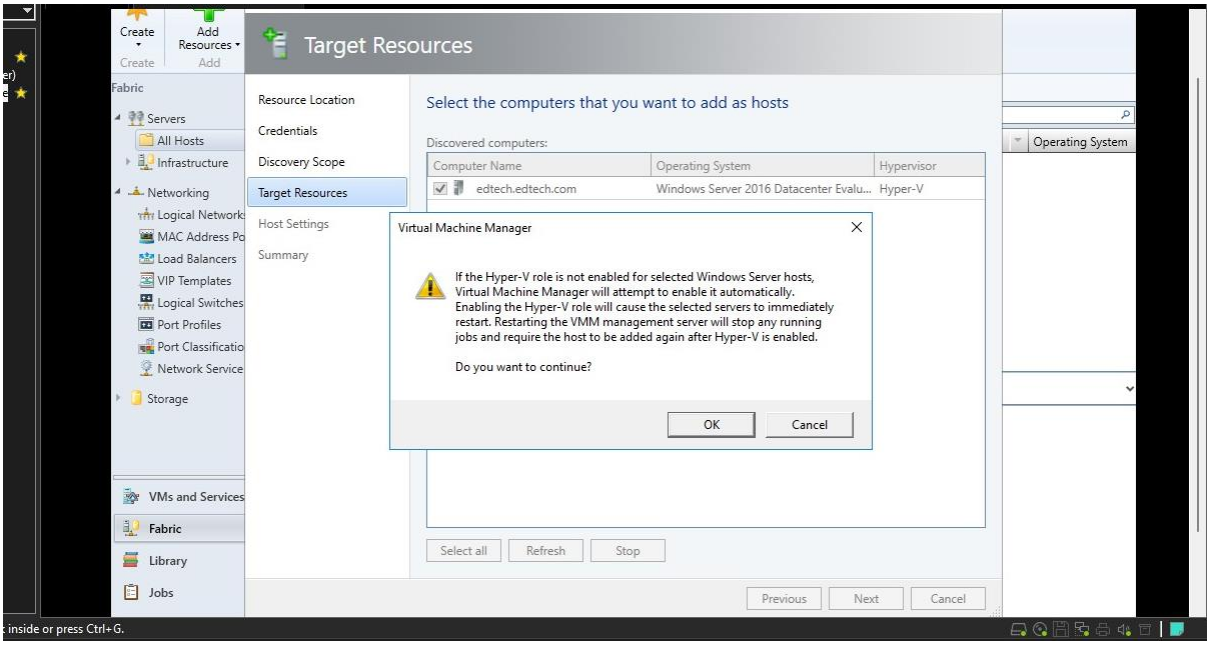
- In **Computer Names** specify your computer name (Here it is EDTECH)
- Click **Next**



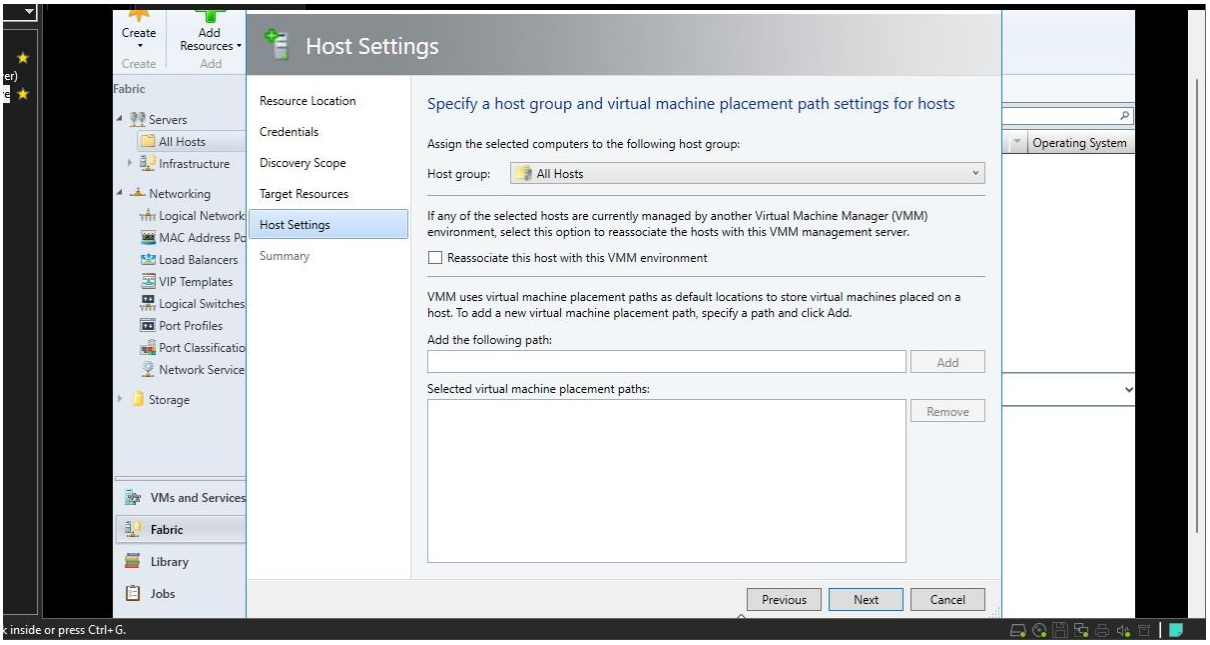
- In Target Resources Tick the computer (Here it is **edtech.edtech.com**)
- Click **Next**



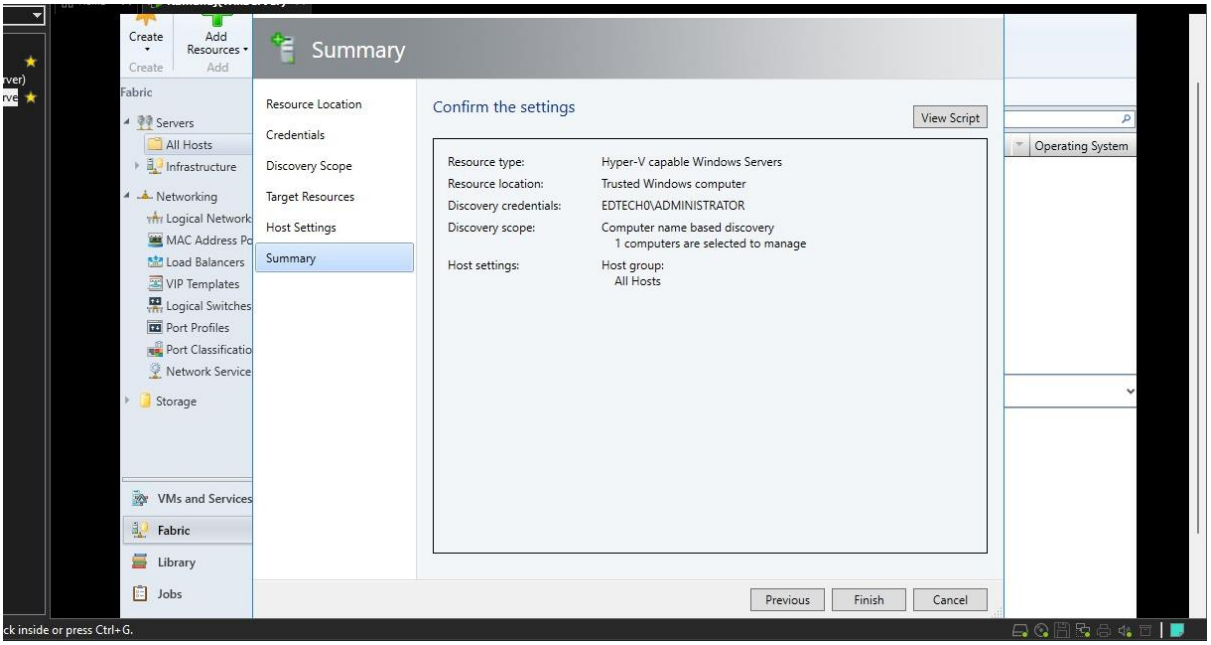
- After you Click Next you will see a pop-up Click **Ok**



- Keep default values and Click **Next**

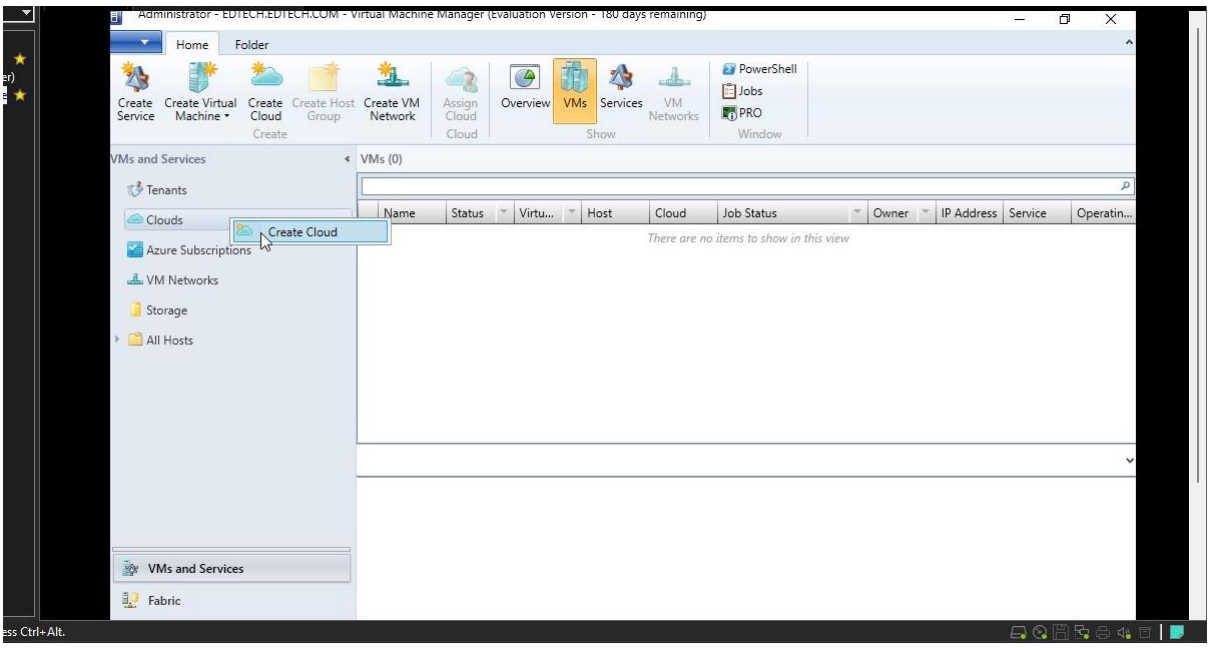


- View the Summary and Click **Finish**

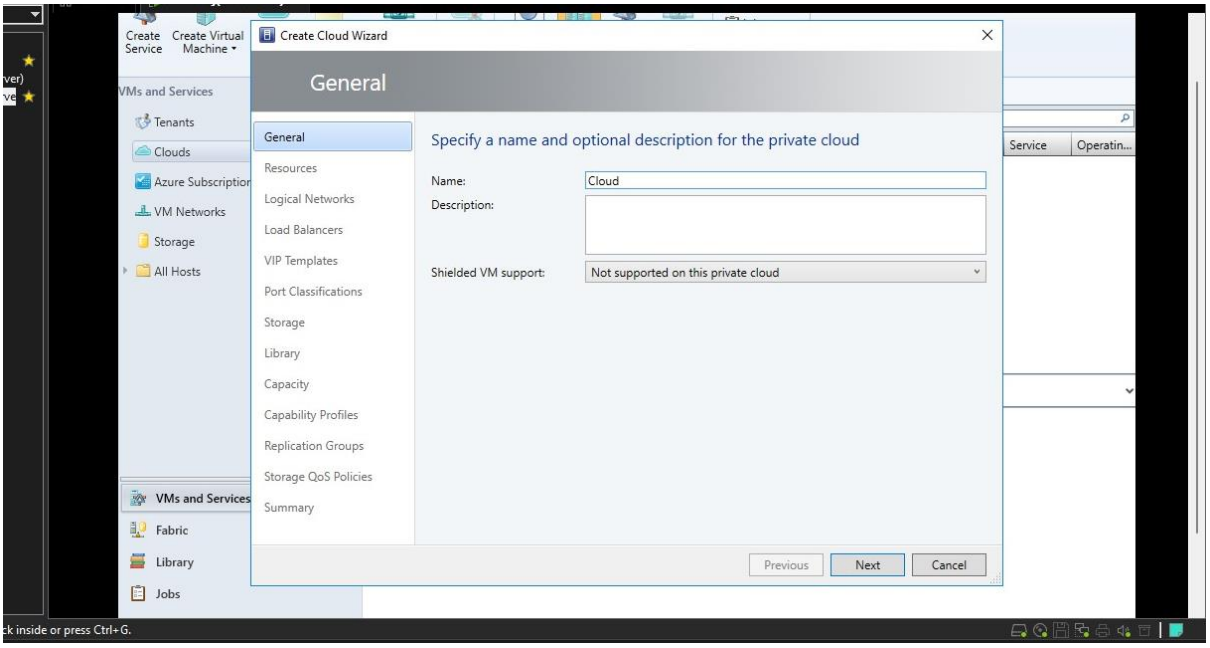


Step 45: Create a Cloud

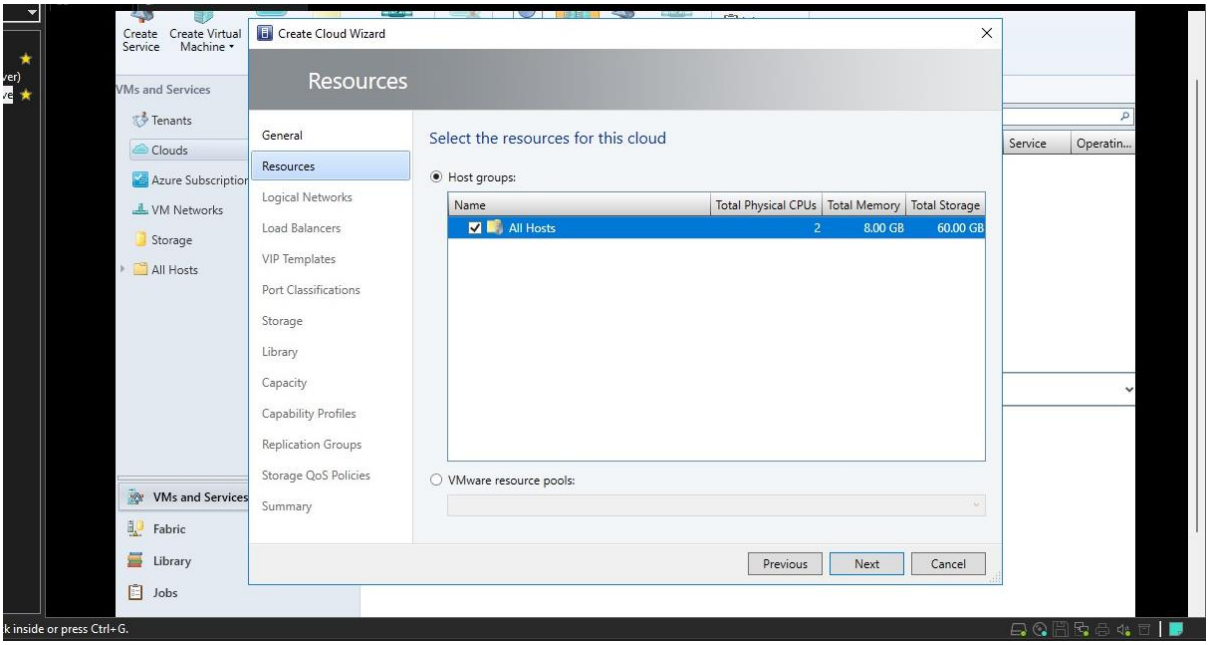
- In SCVMM Click on **VMs and Services**
- In VMs and Services Right-Click on **Cloud** and Select **Create Cloud**



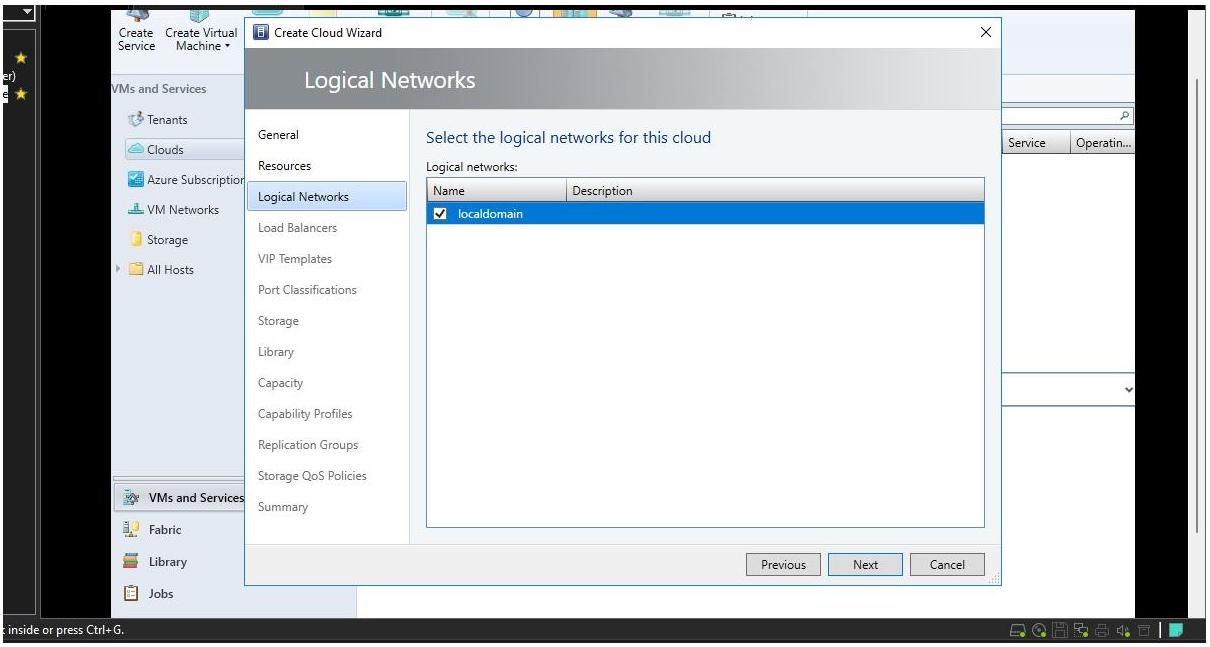
- Type in a name (Here it is **Cloud**) and Click **Next**



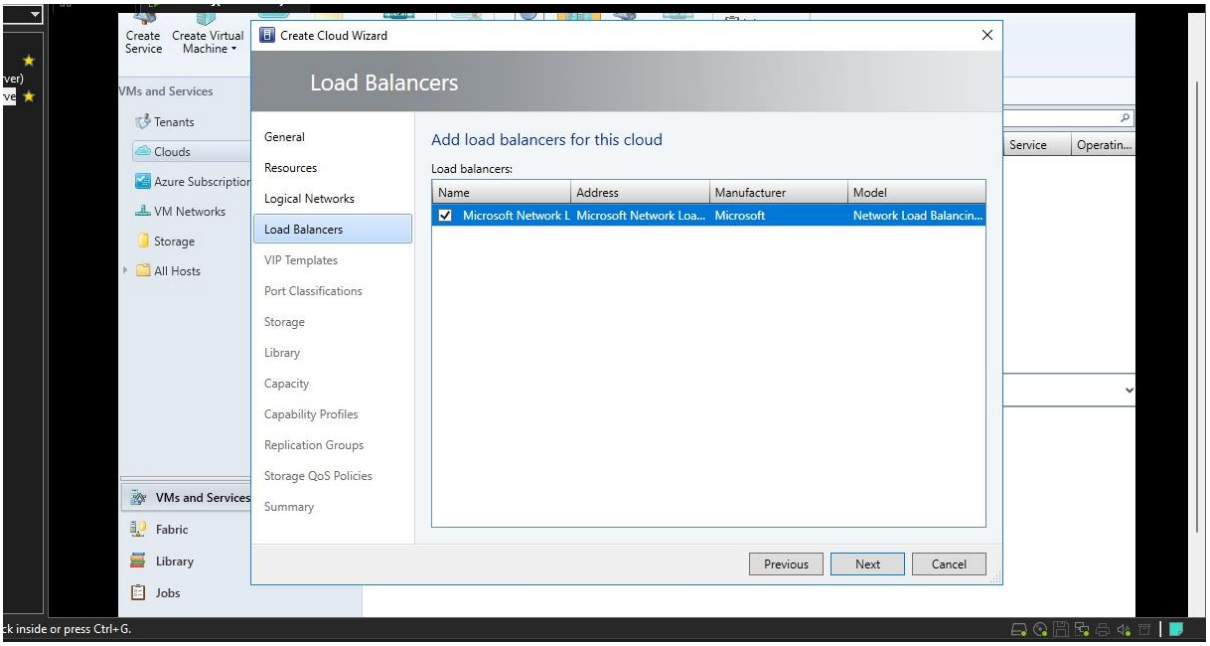
- Select **All hosts** and Click **Next**



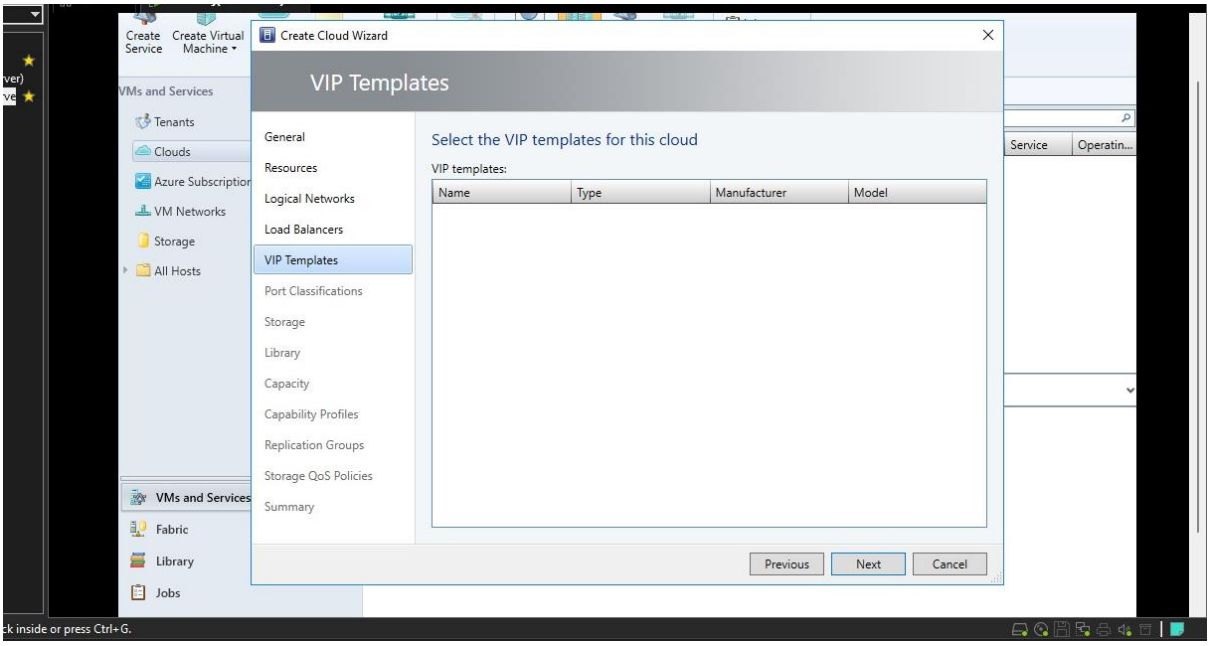
- Select **localdomain** and Click **Next**



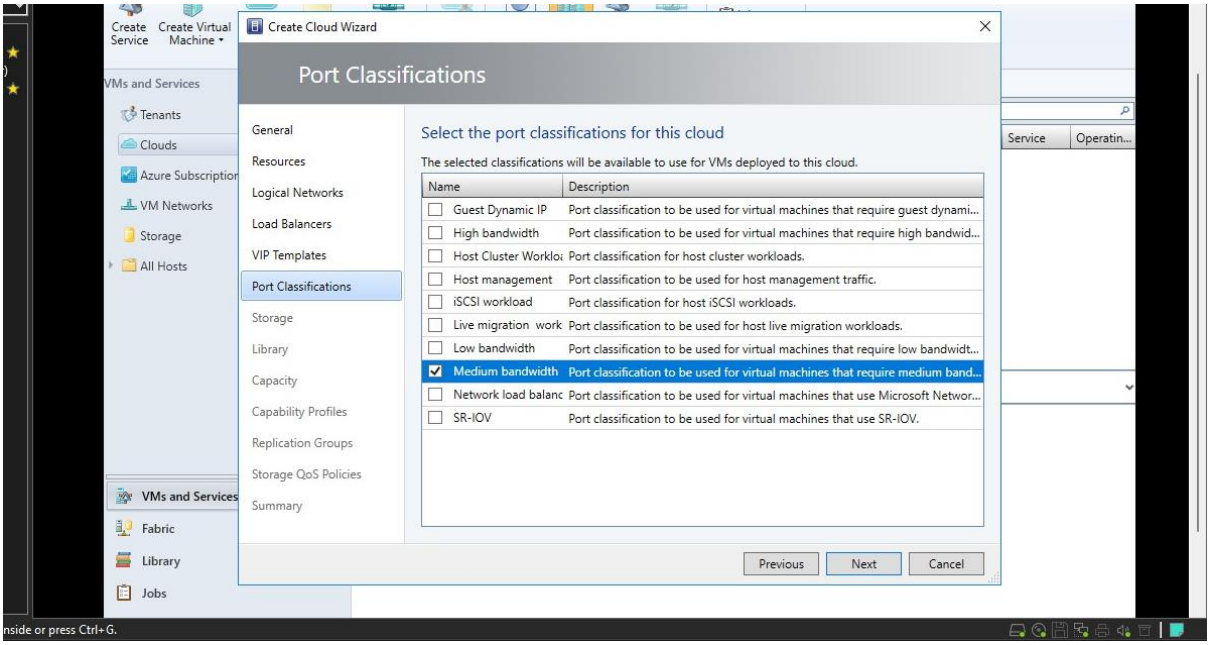
- Select **Microsoft Network Load Balancer** and Click **Next**



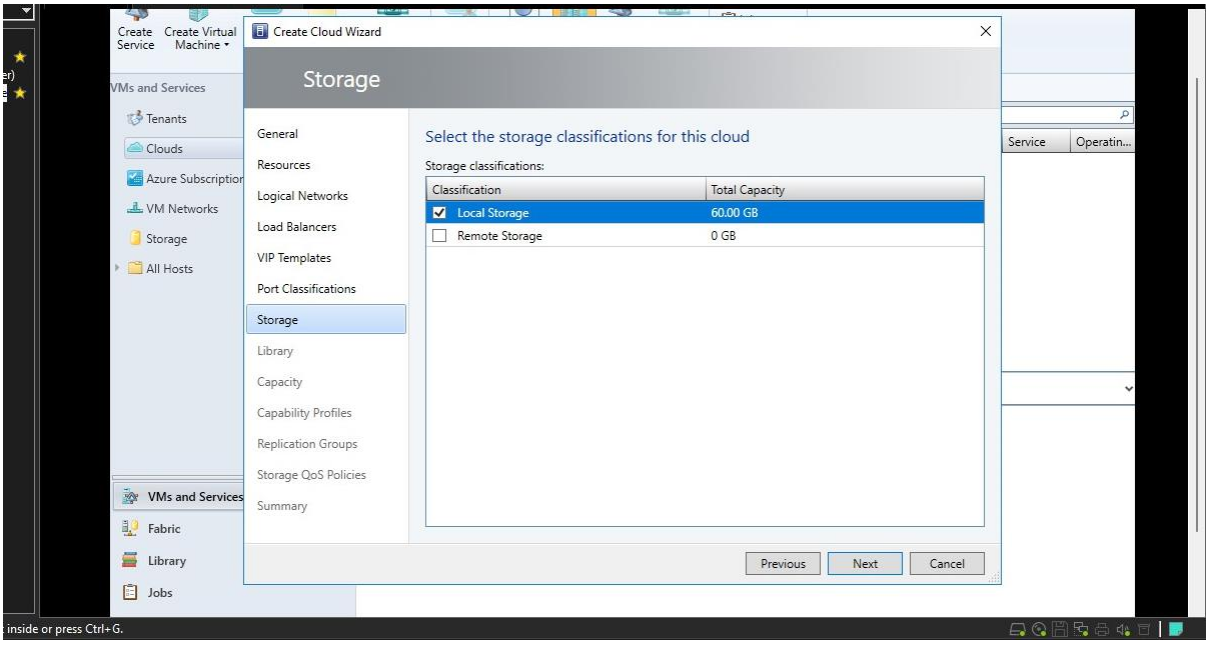
- Keep default values and Click **Next**



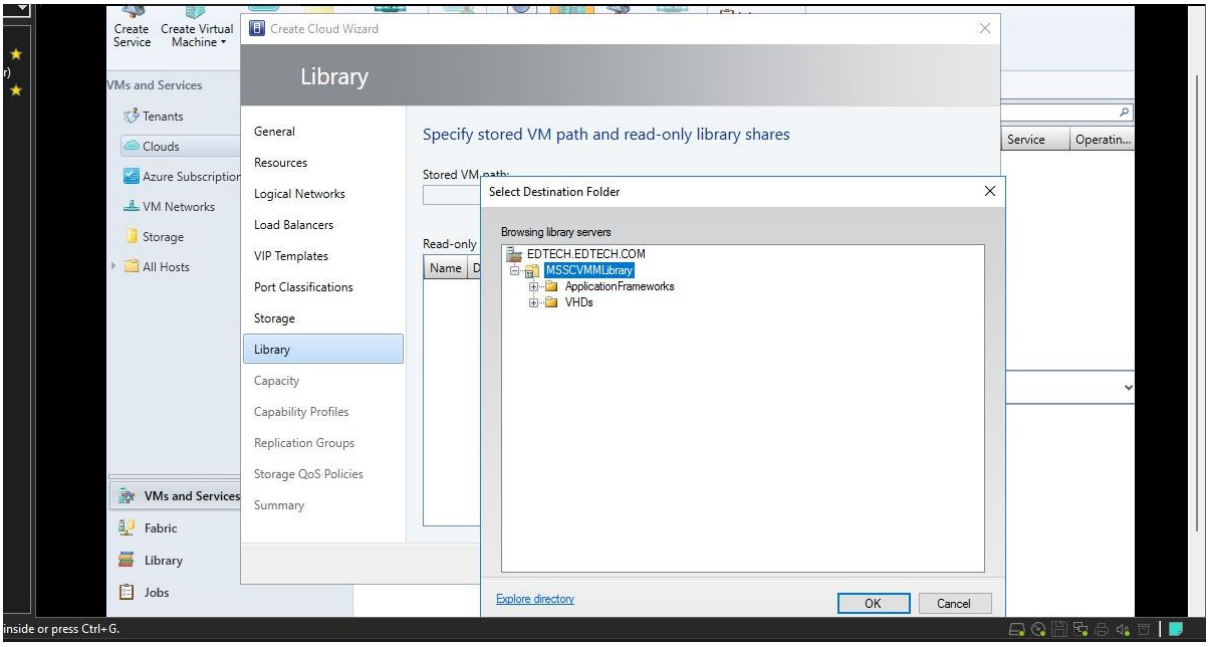
- In Port Classification select **Medium Bandwidth** and Click **Next**



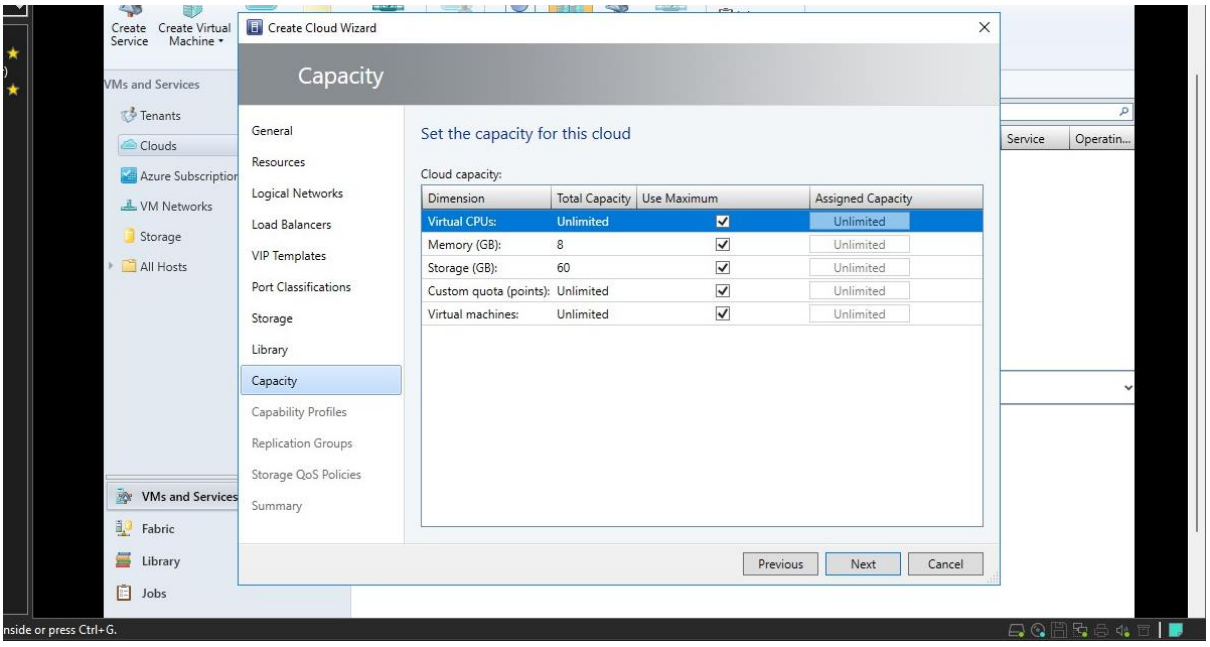
- In Storage select **Local Storage** and Click **Next**



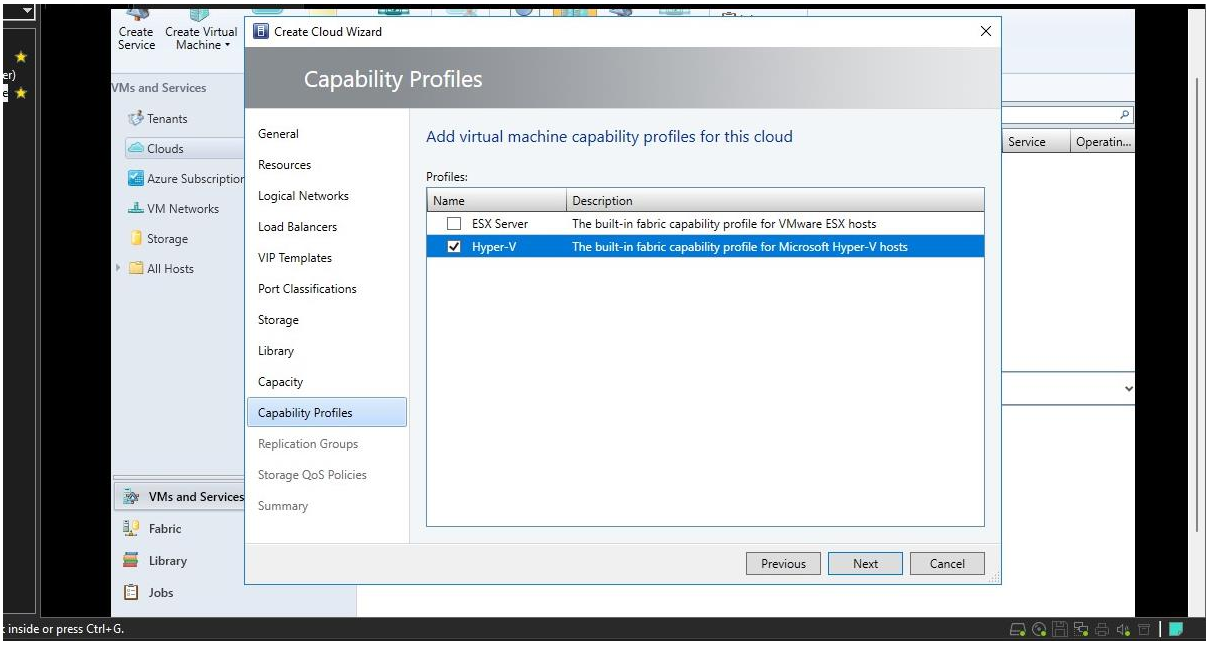
- In Library browse stored VM path and select **MSSCVMMLibrary** and Click **Ok**



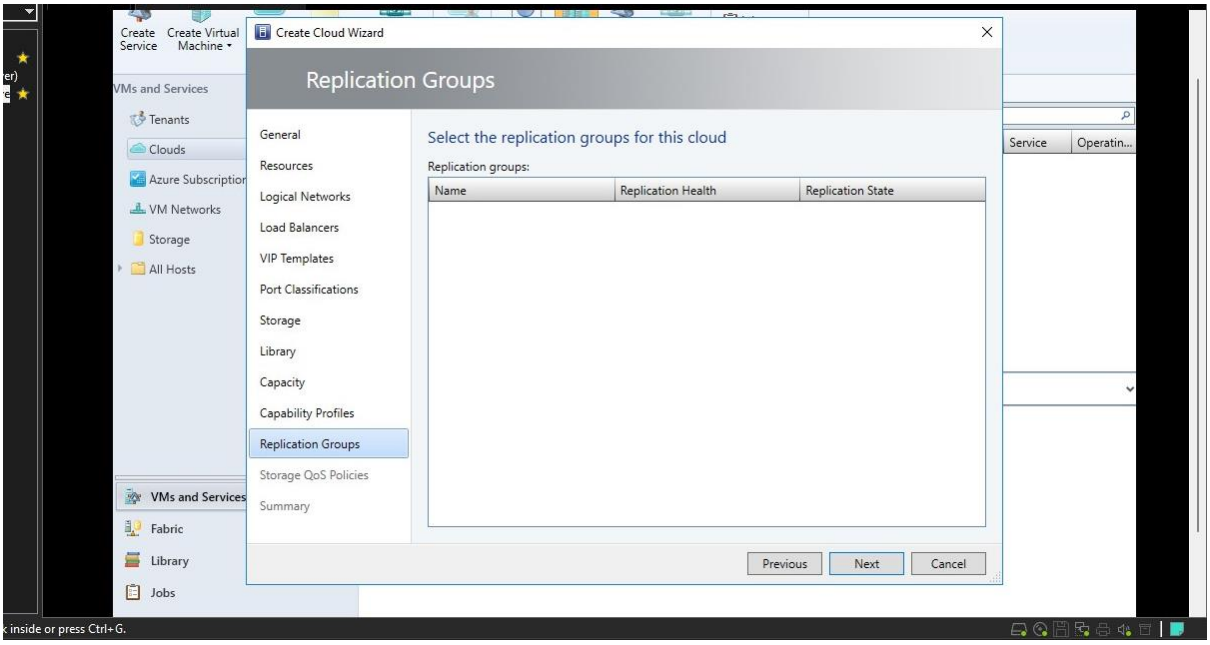
- Keep default values and Click **Next**



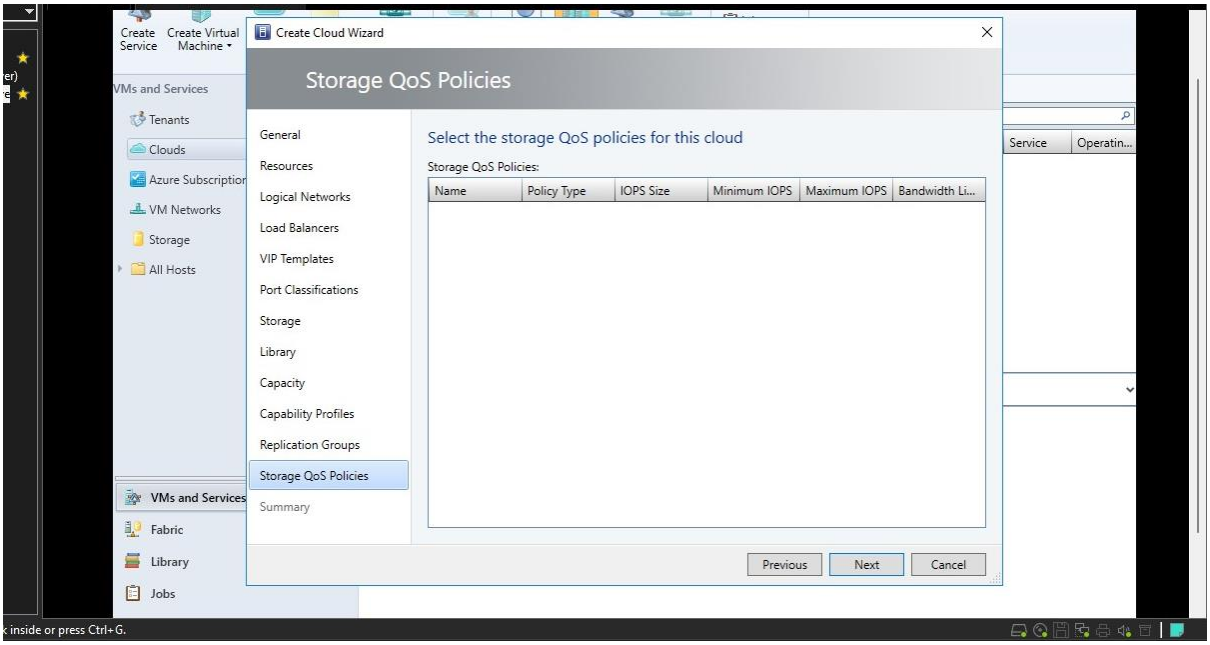
- In Capability Profiles Select **Hyper-V** and Click **Next**



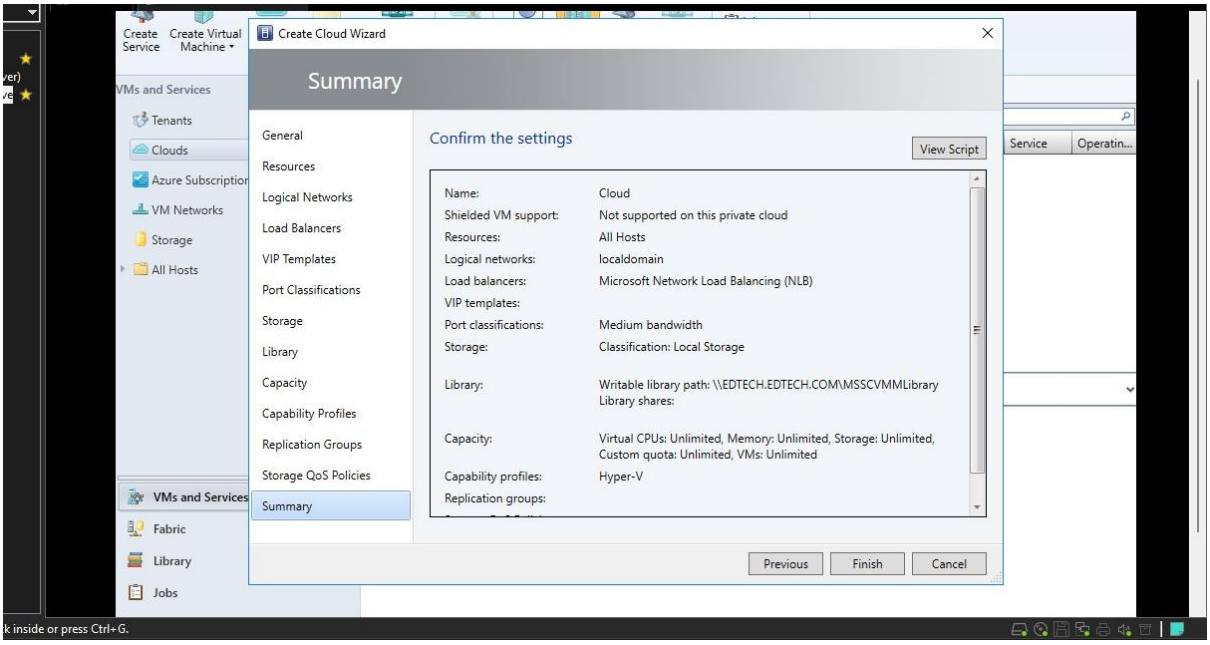
- Keep default values and Click **Next**



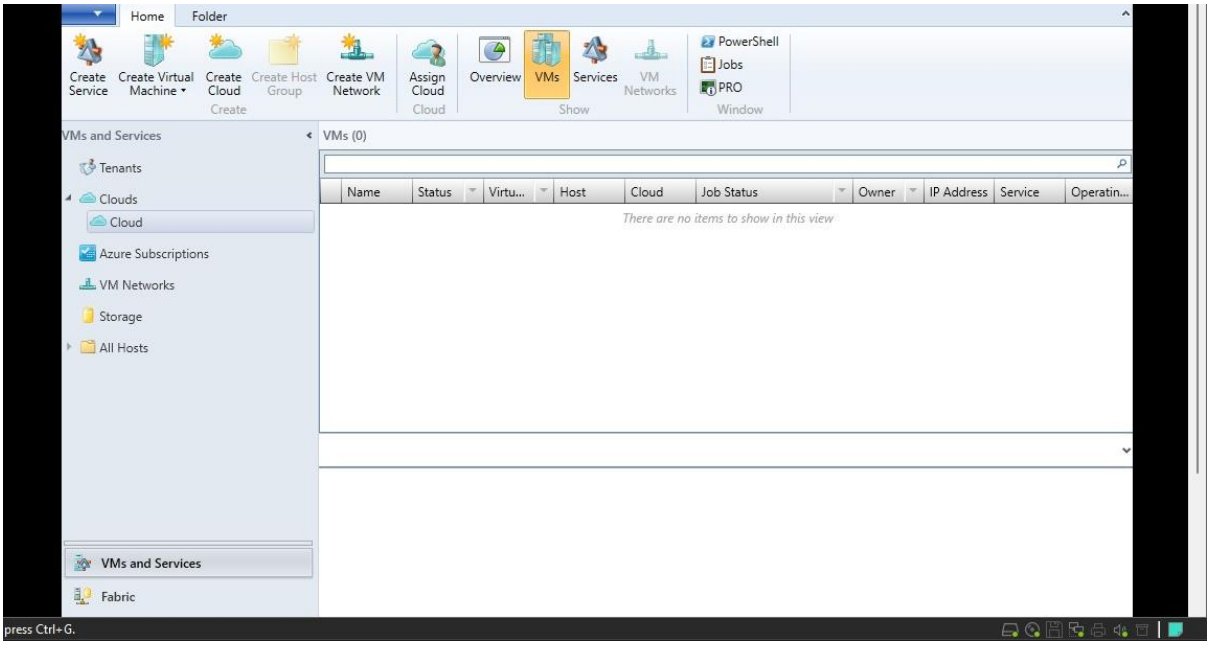
- Keep default values and Click **Next**



- View the Summary and Click **Finish**

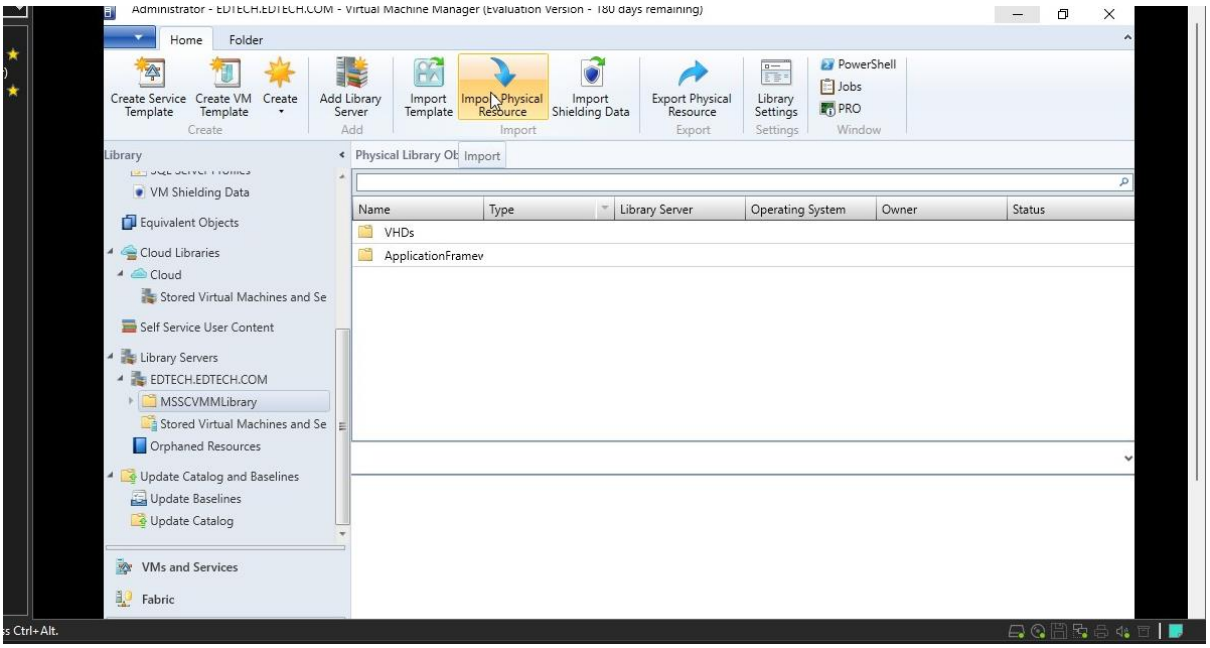


- Cloud has been created

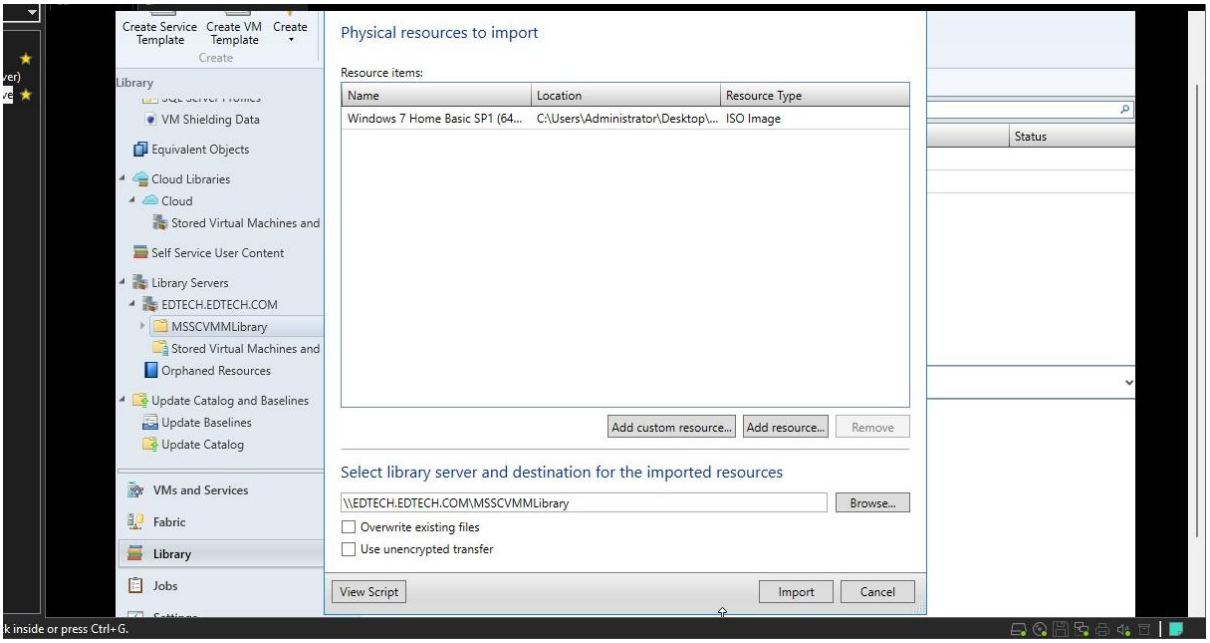


Step 46: Add Windows iso to SCVMM

- In SCVMM Click on **Library**
- Within Library Click on **Library Servers**
- Within Library Servers Click on **Domain Name** (Here it is EDTECH.EDTECH.COM)
- Within that Click on **MSSCVMMLibrary**
- On Top Click the **Import Physical Resource**

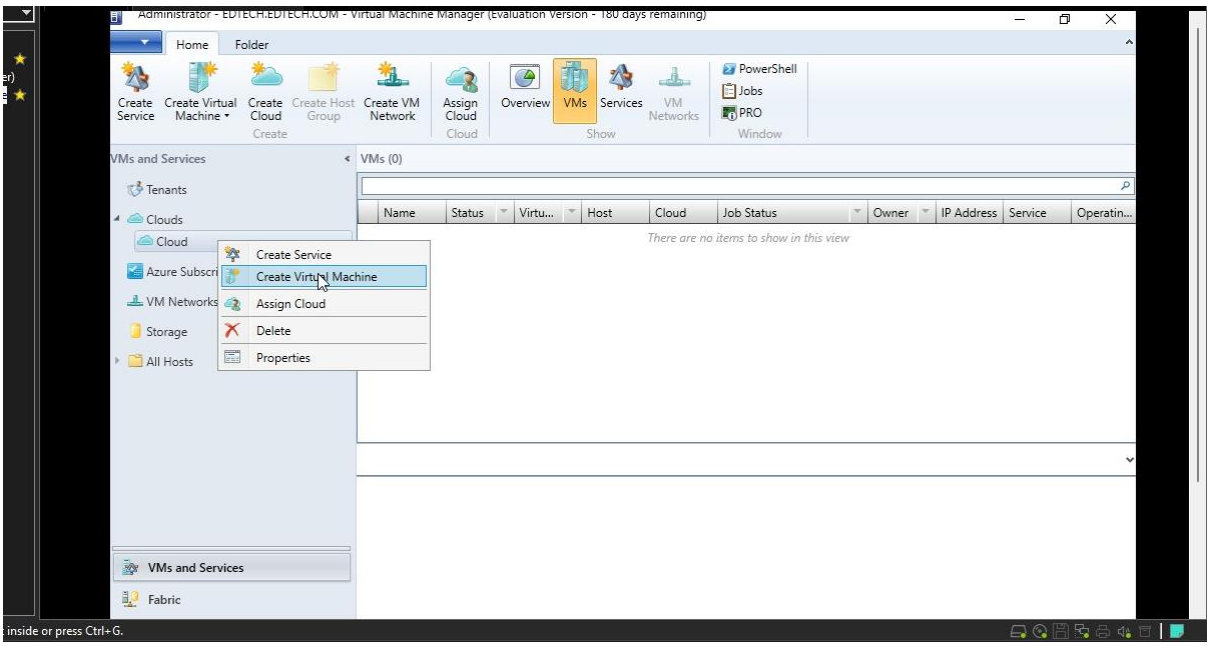


- In Import Physical Resource Click on **Add resource** and Select the Windows 7 iso file on your Desktop
- In Select Library Server Click **Browse** and Select **MSSCVMMLibrary** and Click **Import**

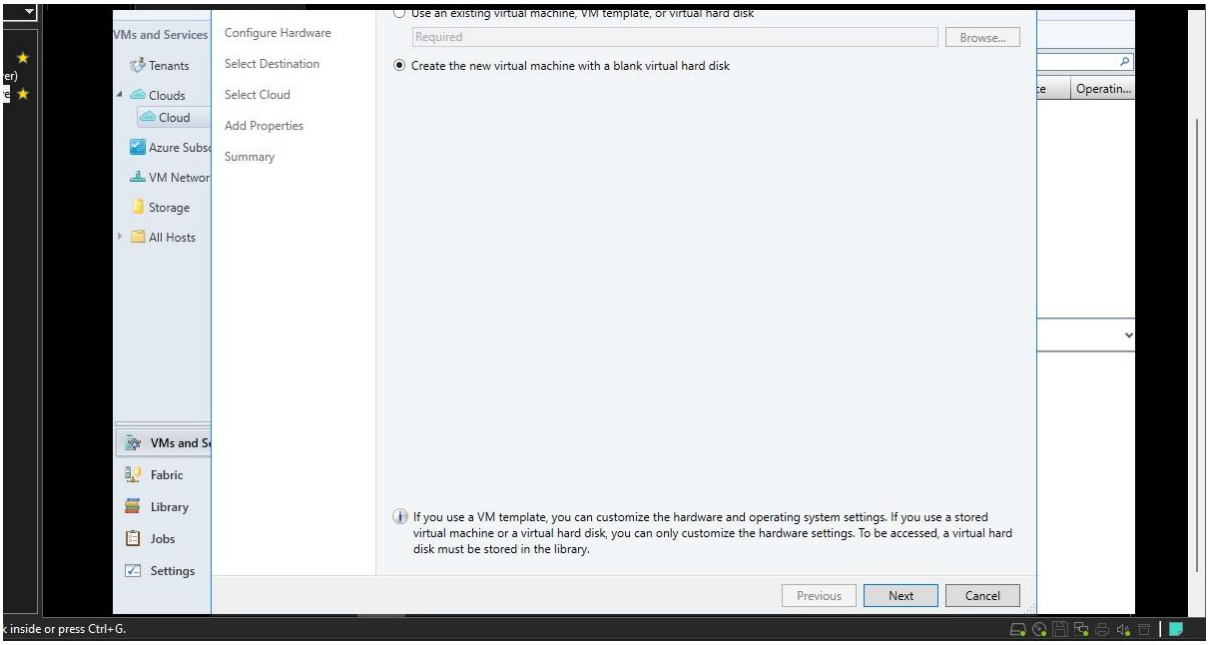


Step 47: Create a Cloud

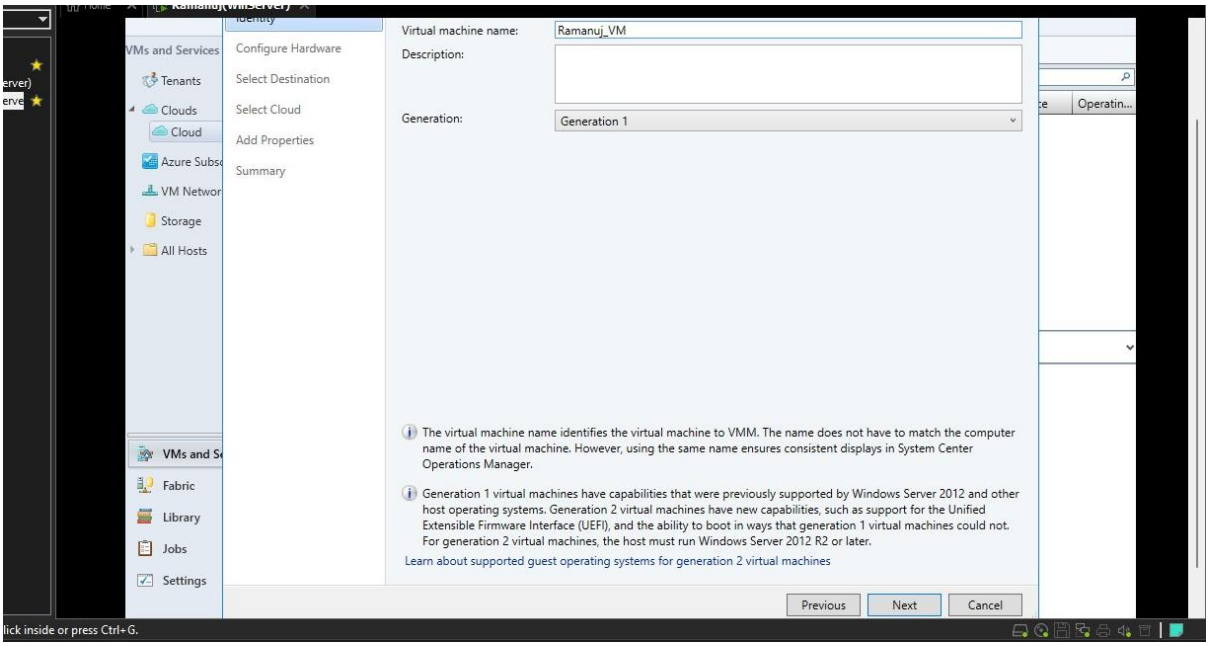
- In SCVMM Click on **VMs and Services**
- In VMs and Services Right-Click on **Cloud** instance and Select **Create a Virtual Machine**



- In Select Source, Select **create the new virtual machine with a blank virtual hard disk** and Click **Next**



- Type a name for your VM (Here it is VIQAR_VM) and Select Generation as **Generation 1** and Click **Next**

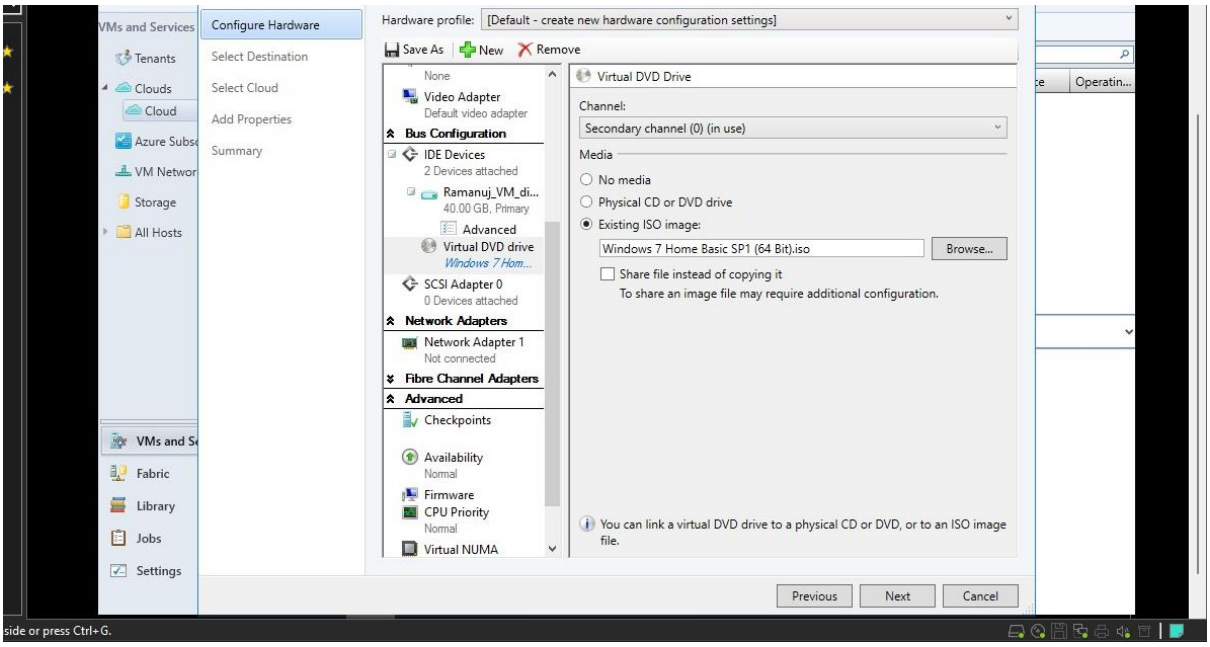


- In Configure Hardware Select the Following Options:
  In **Compatibility** Select **Hyper-V**
  In **Memory Change** the value to **2048MB**

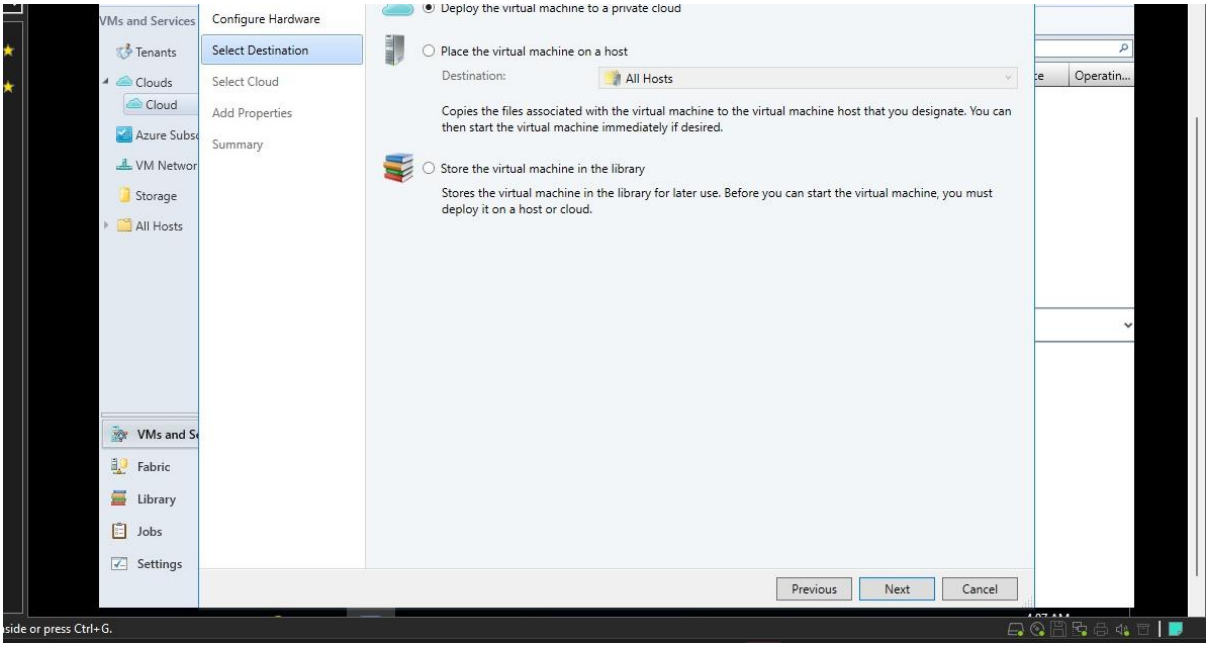
  In **Bus Configuration** Click on **Virtual DVD Drive**

  In Virtual DVD Drive Click on **Existing ISO Image** and **Browse** for the imported Windows 7 iso file

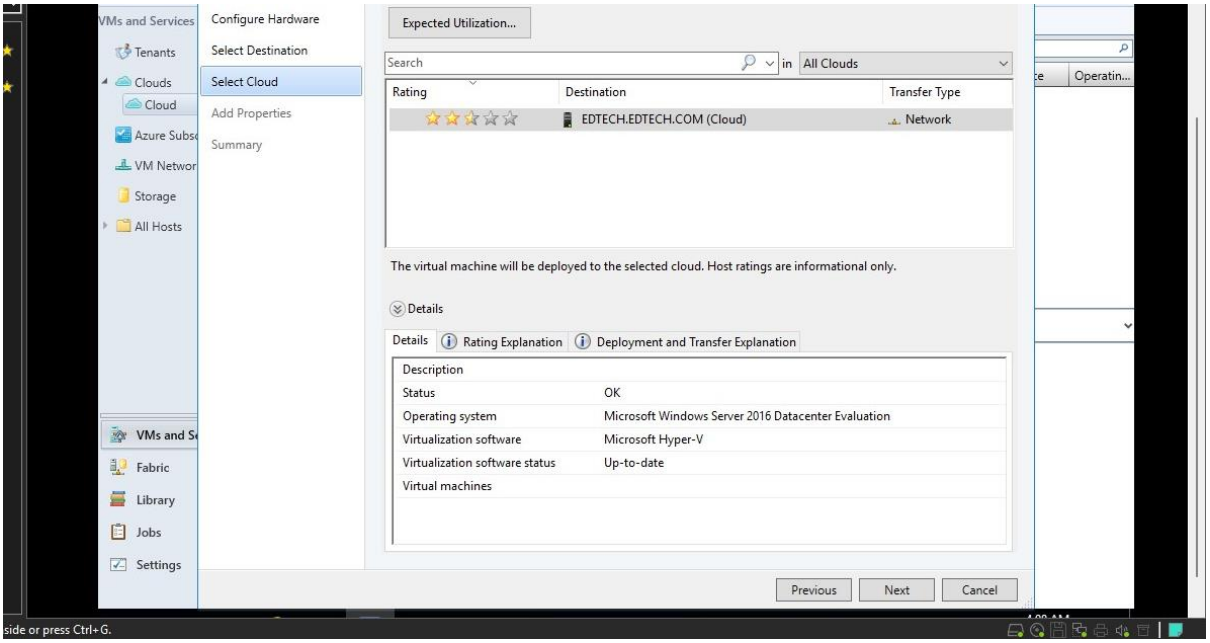
  After the above steps Click **Next**



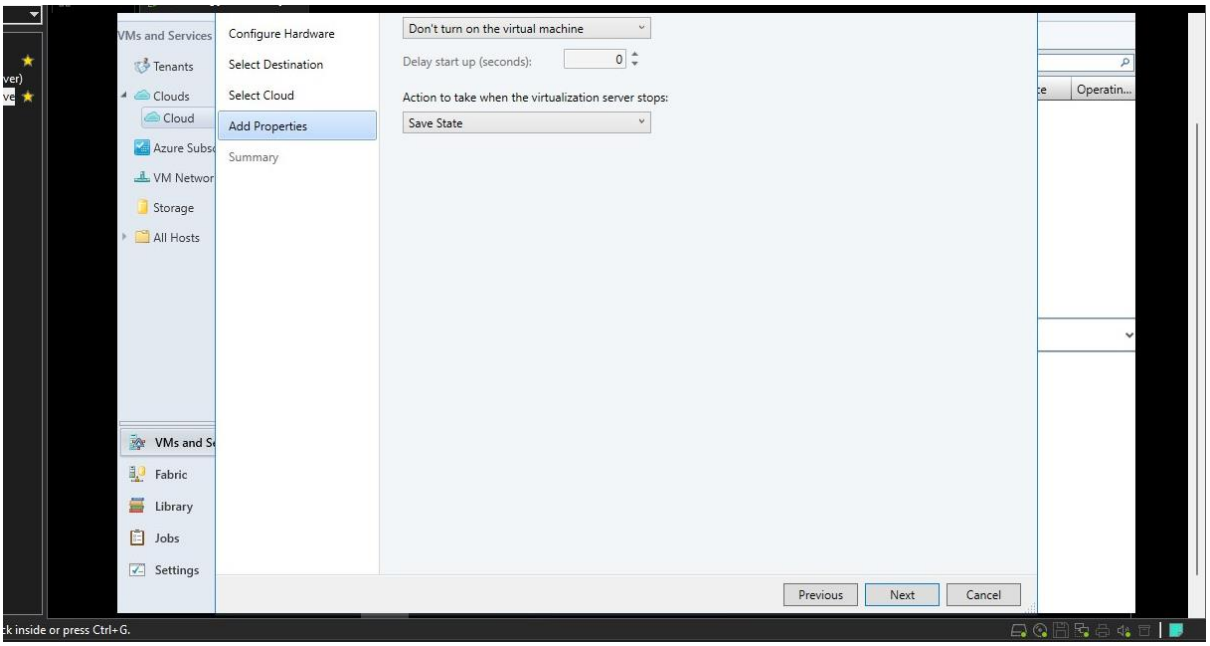
- Leave default settings and Click **Next**



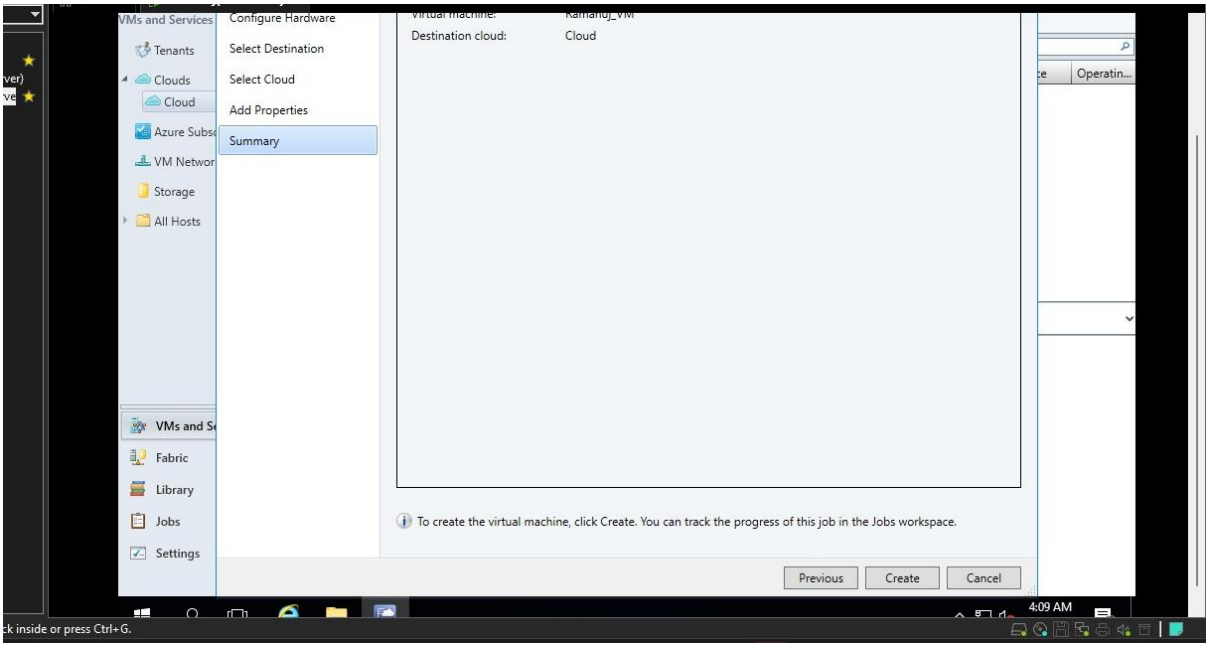
- Check the rating of your Virtual machine (Here it is 2 and ½ stars) and Click **Next**



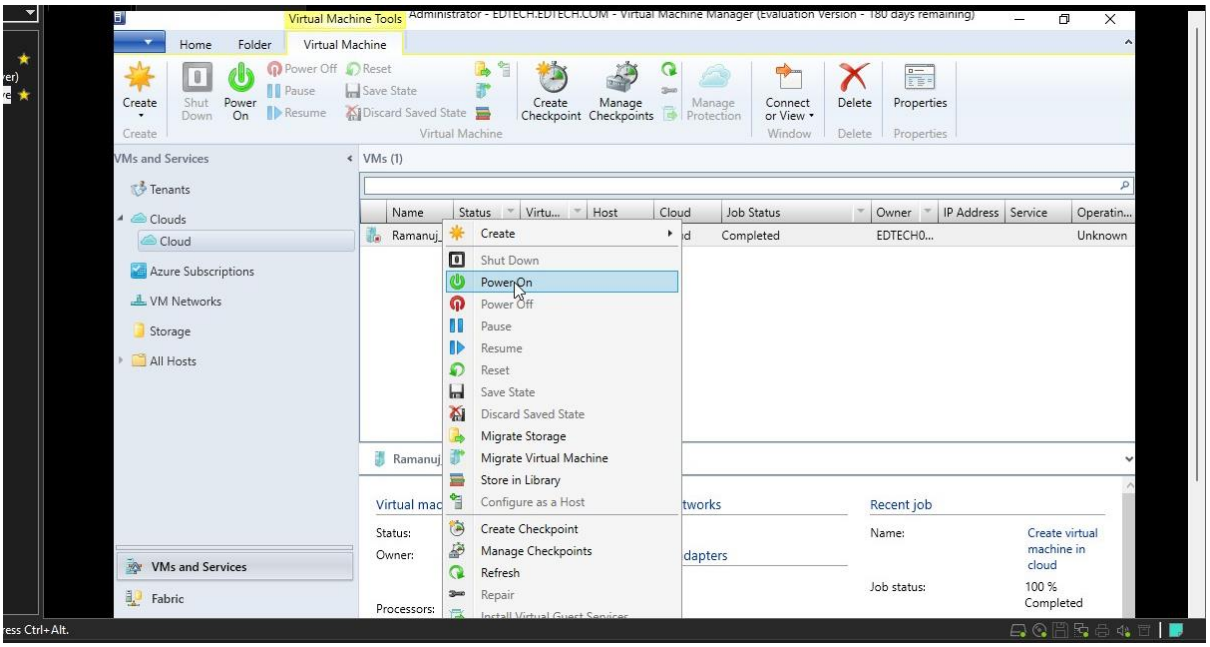
- Keep default settings and Click **Next**



- View the Summary and Click **Create**



- Now the Virtual Machine is created, Right-Click on the VM and Select **Power On**

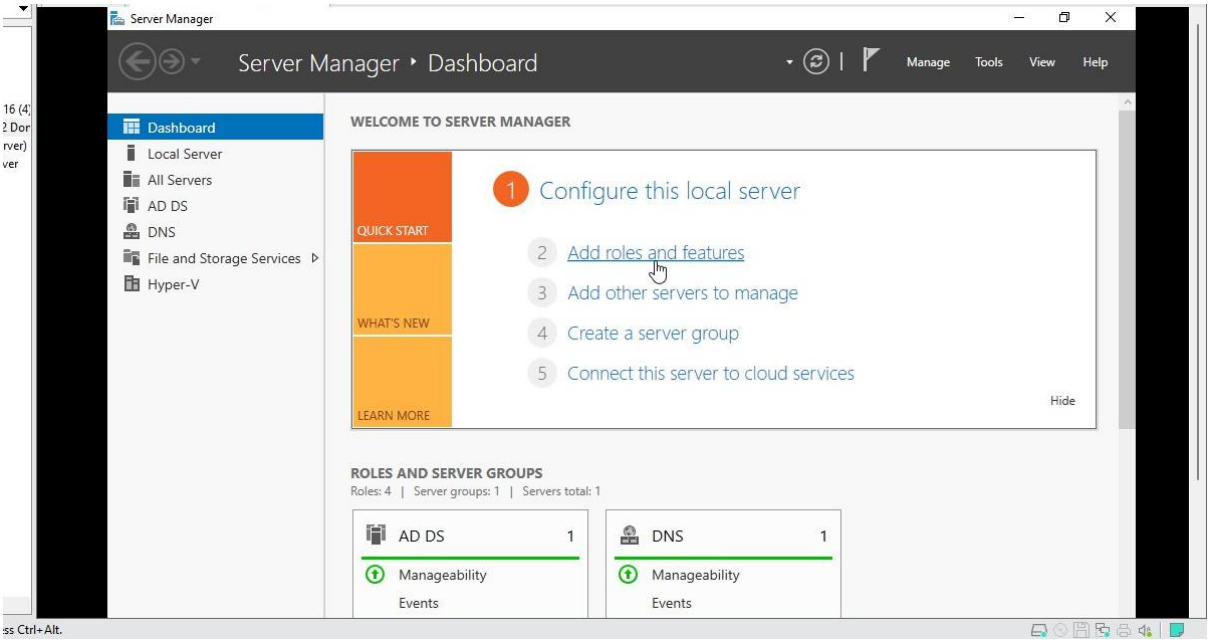


Practical 1-B:

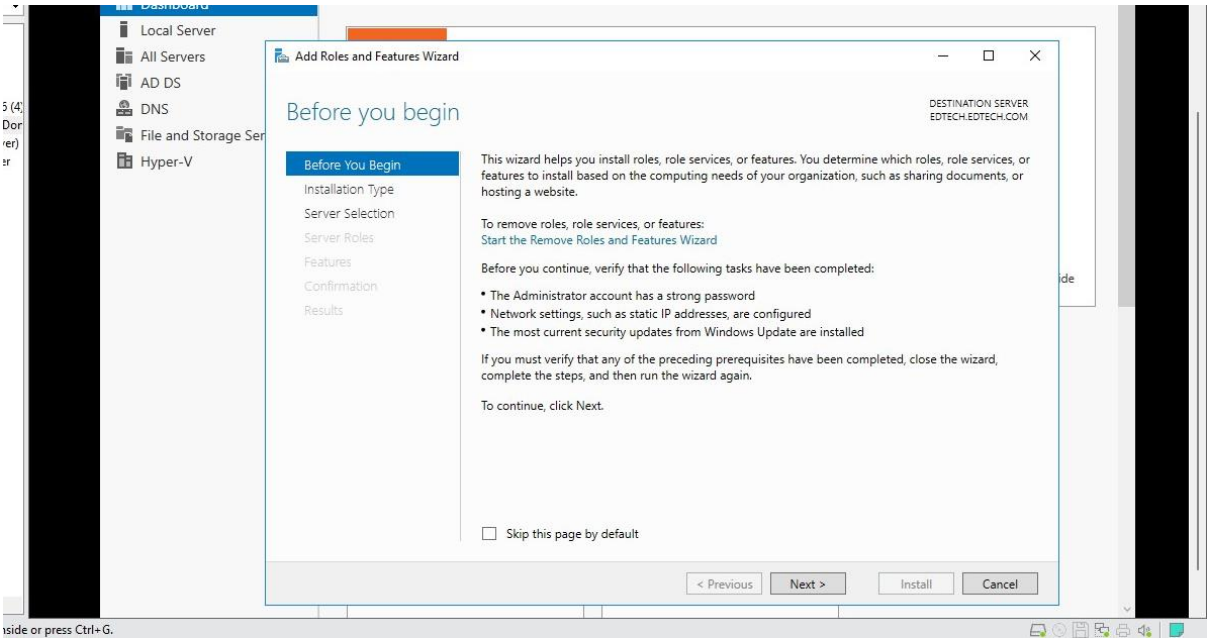
Aim: Installing and Enabling Host Guardian in a Cloud

Step 1: Adding the Host Guardian Role in Roles and Features

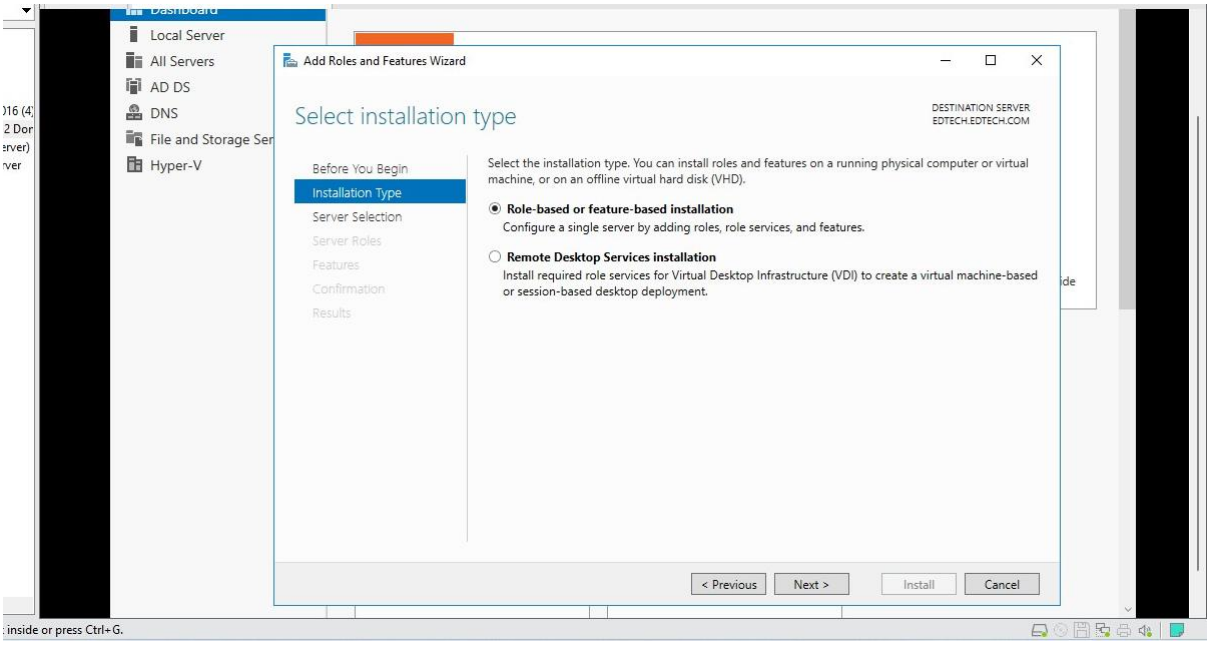
- Open **Server Manager** and Click on **Add Roles and Features**



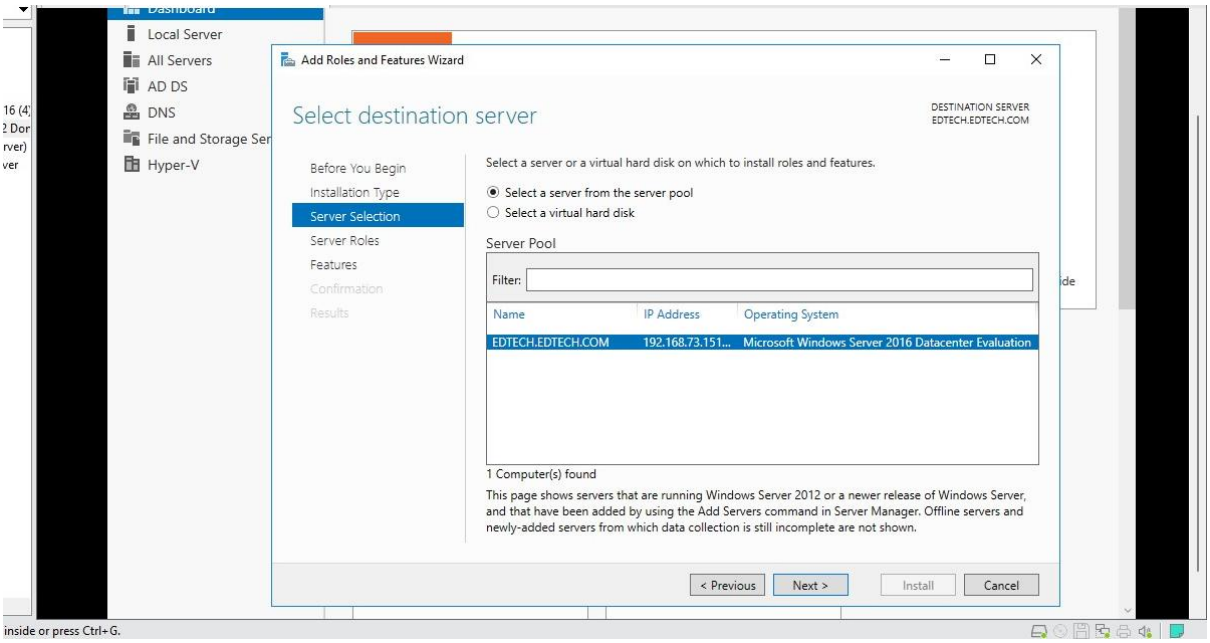
- Click **Next**



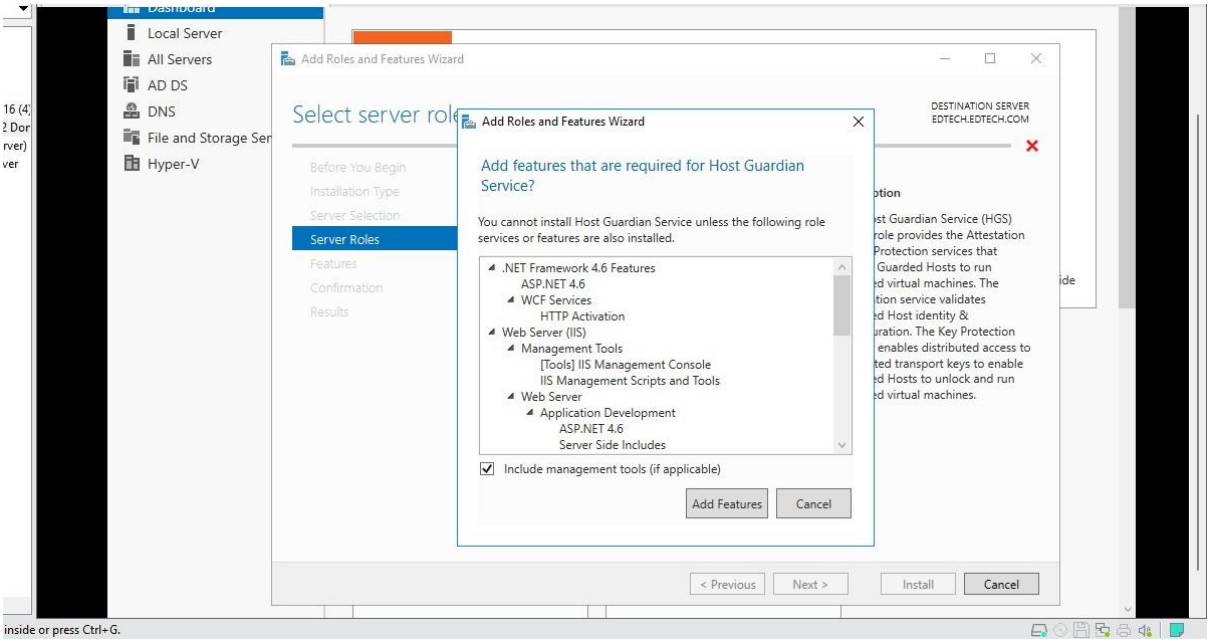
- Keep default values and Click **Next**



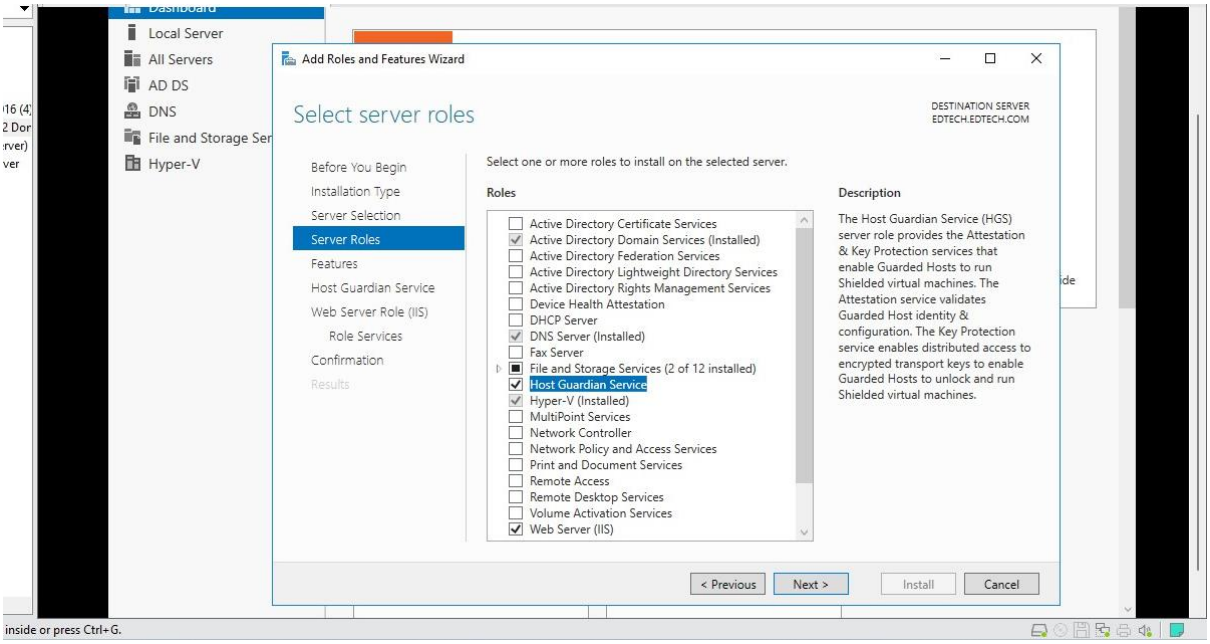
- Keep default values and Click **Next**



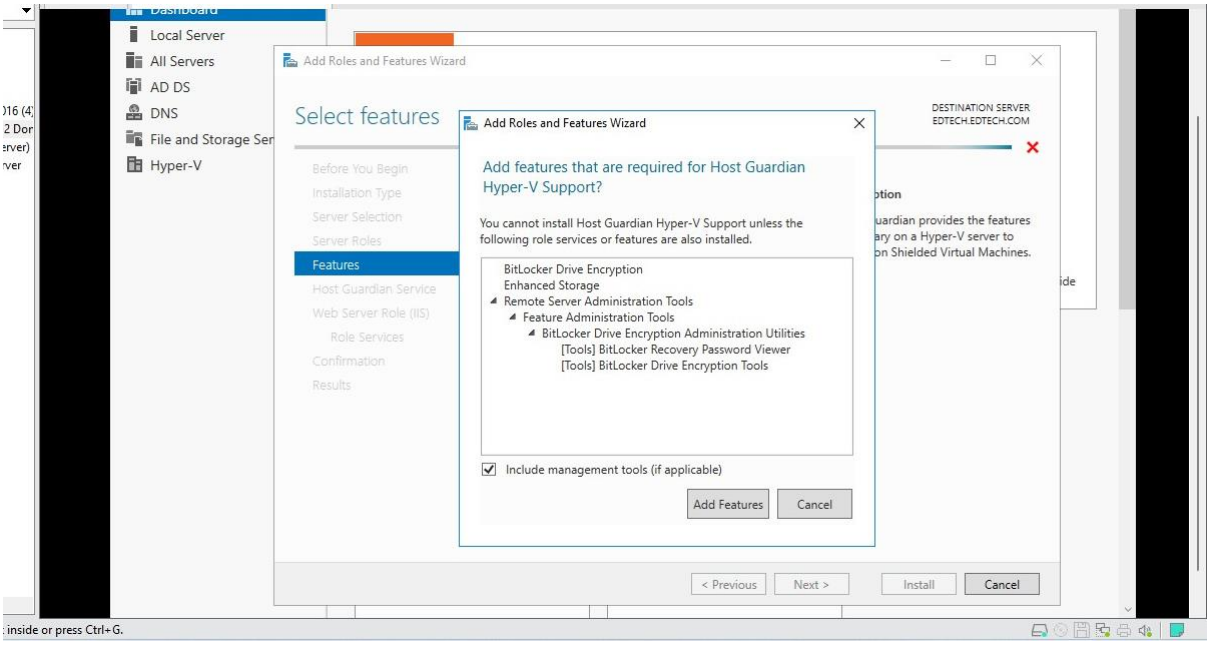
- Select **Host Guardian Service** and Click **Add Features**



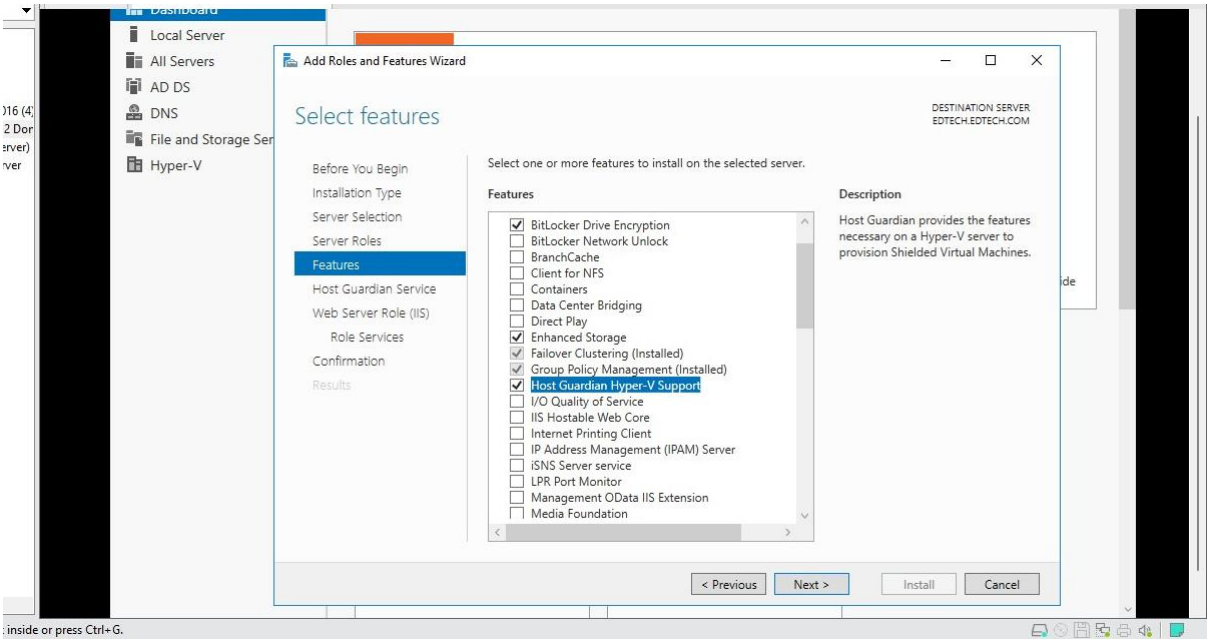
- Click **Next**



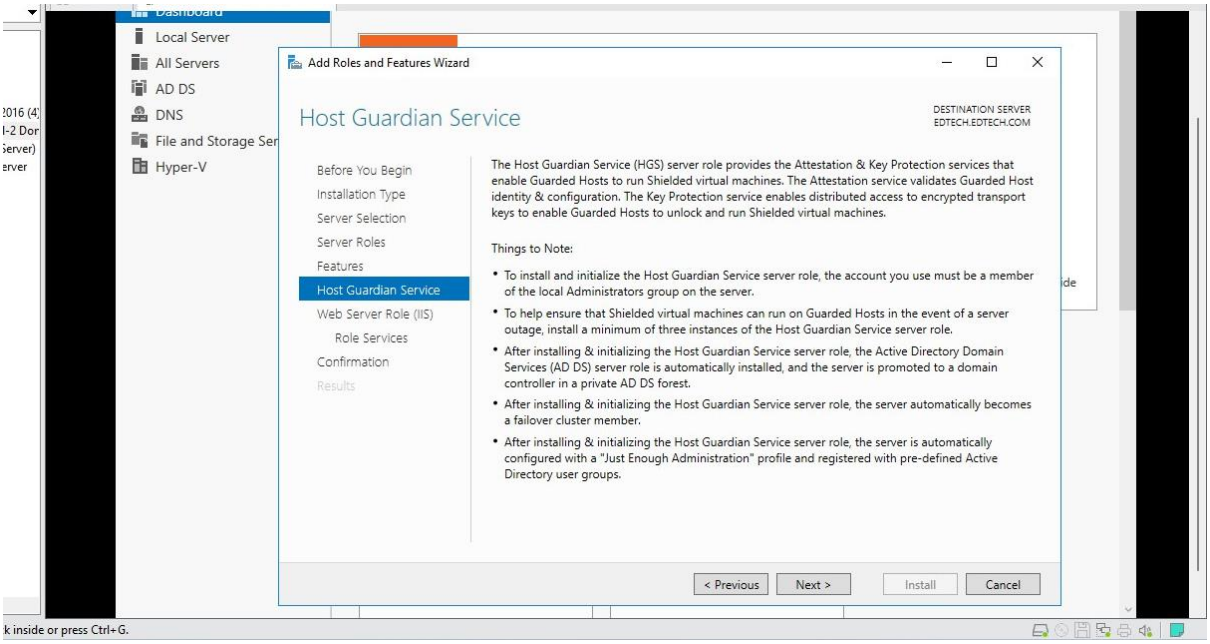
- Select **Host Guardian Hyper-V Support** and Click **Add Features**



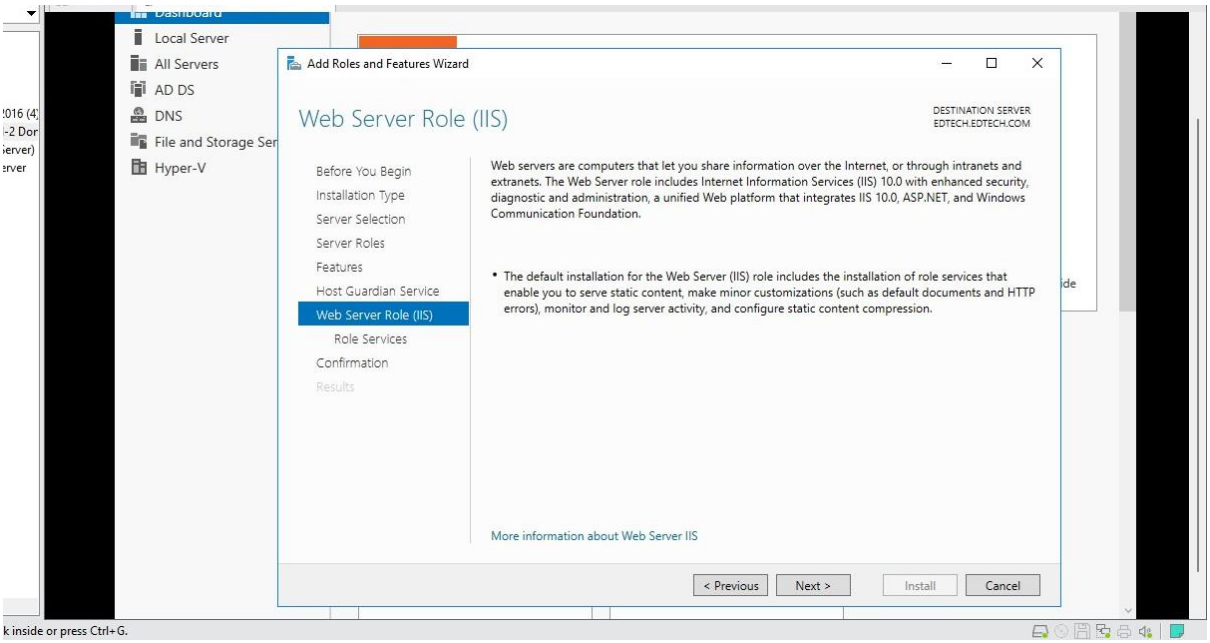
- Click **Next**



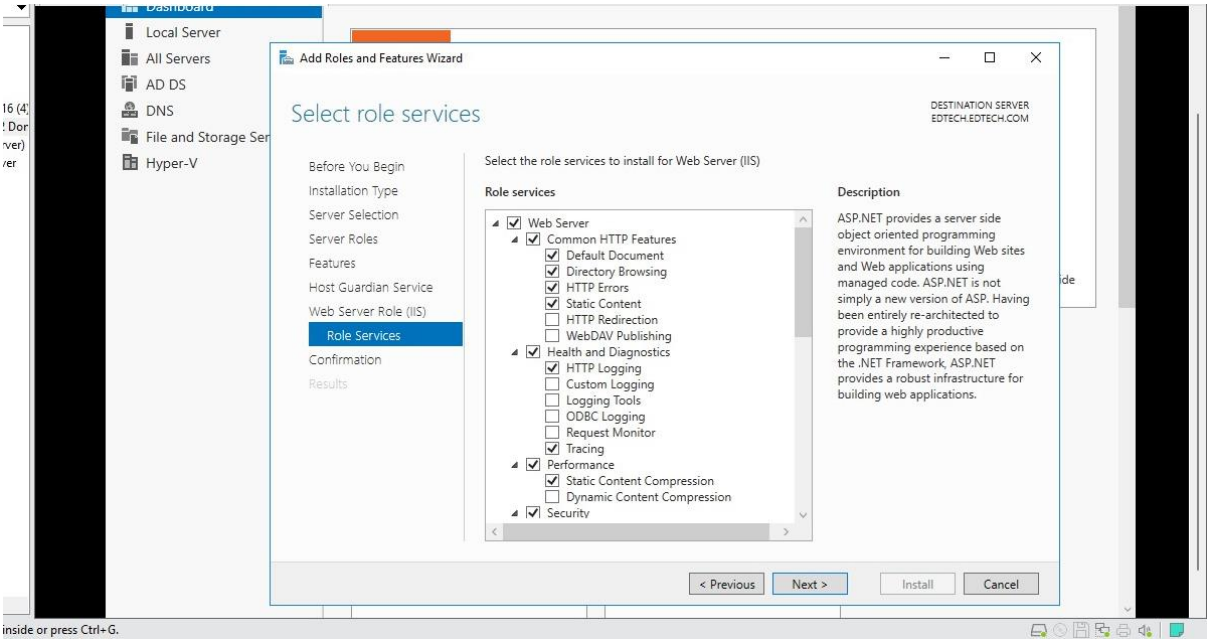
- Click **Next**



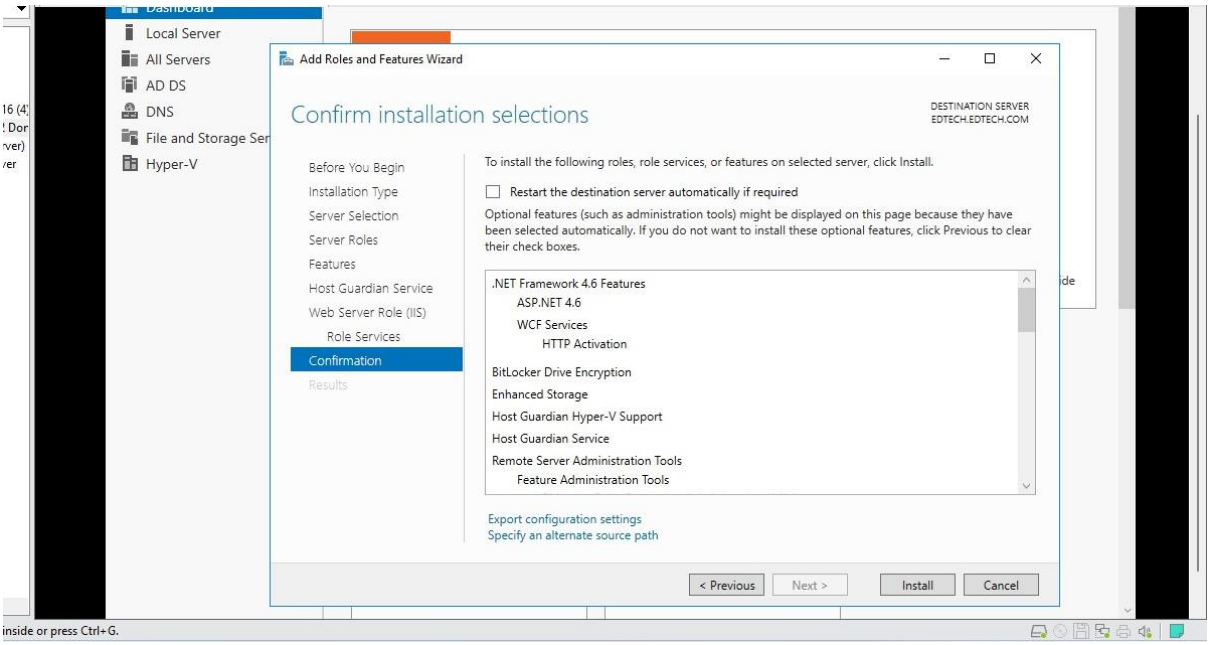
- Click **Next**



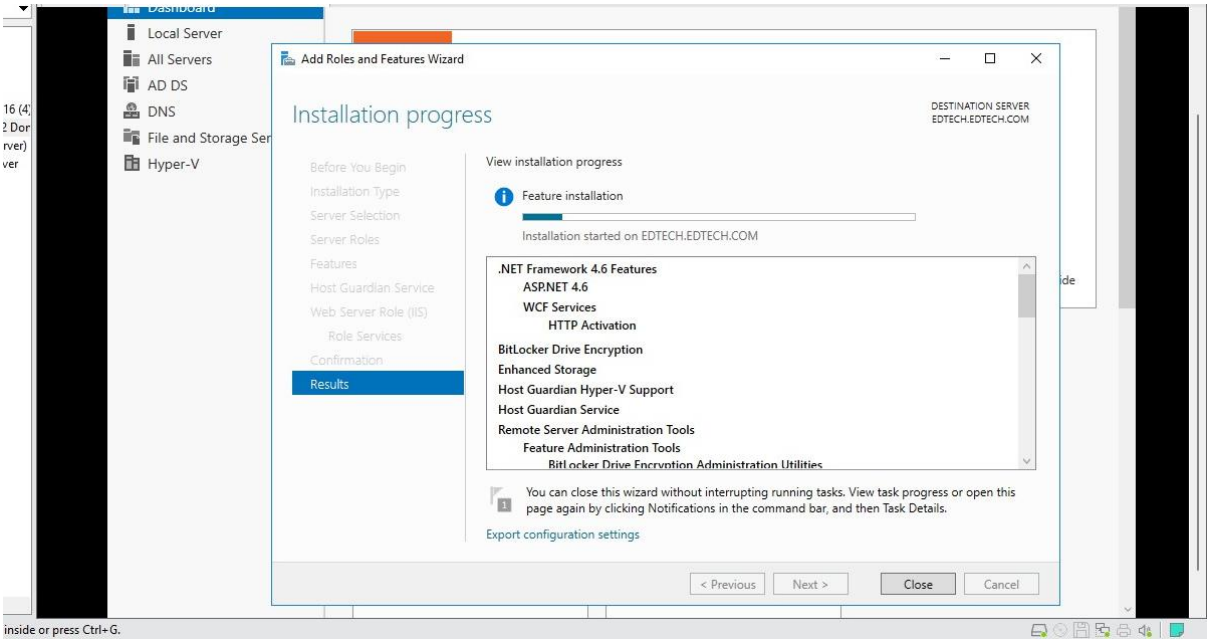
- Keep default values and select **ASP.NET 3.5** and Click **Next**



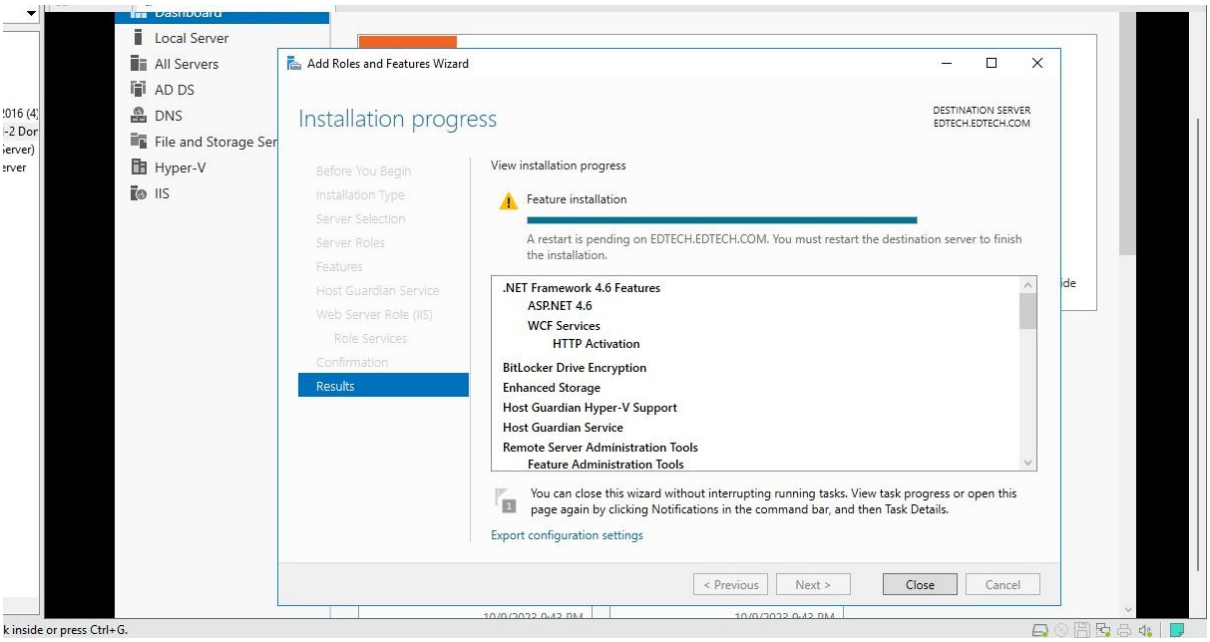
- Click **Install**



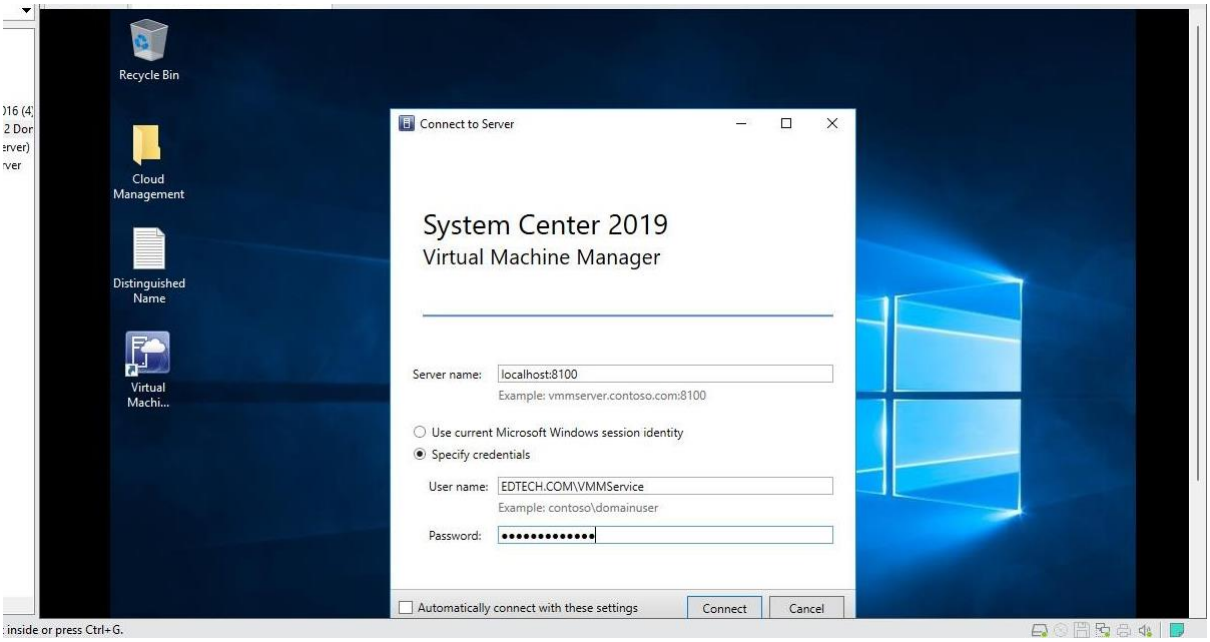
- Features will start installing



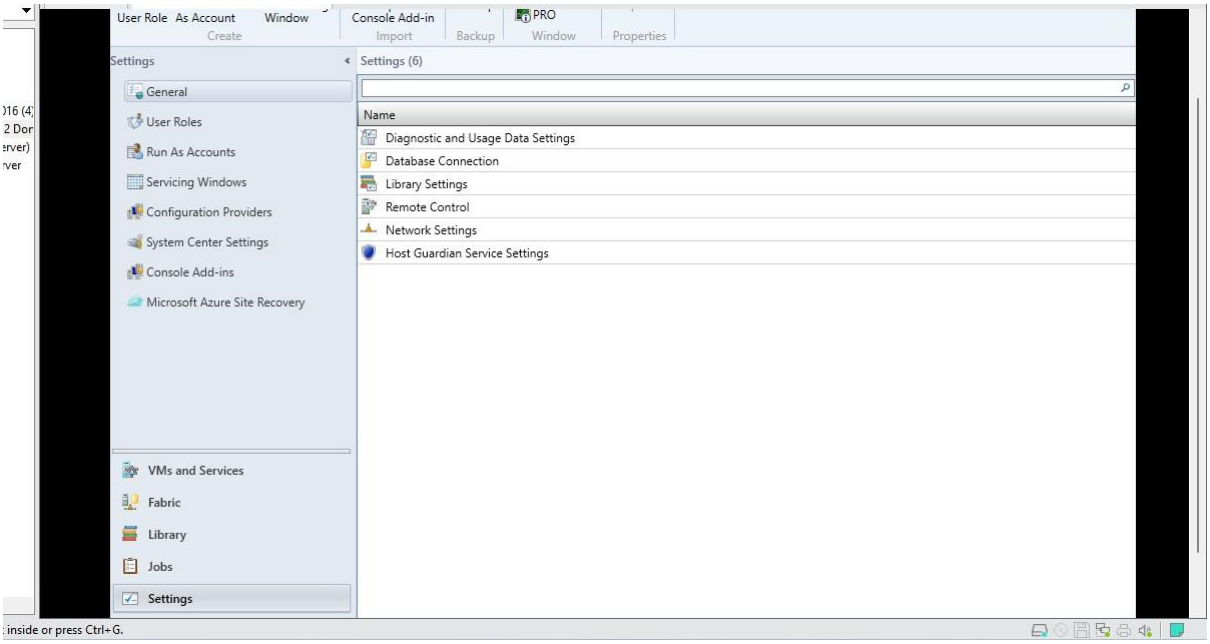
- After installation you will have to restart for the new features to take effect



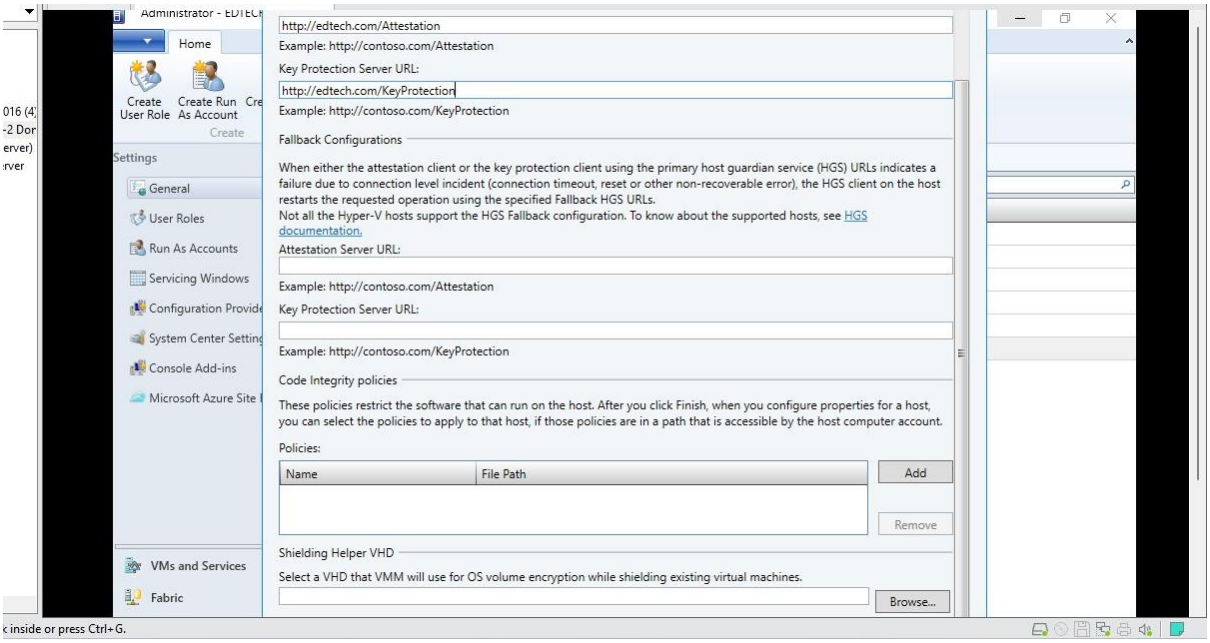
- After restarting open the **Virtual Machine Manager,** Enter your details and Click **Connect**



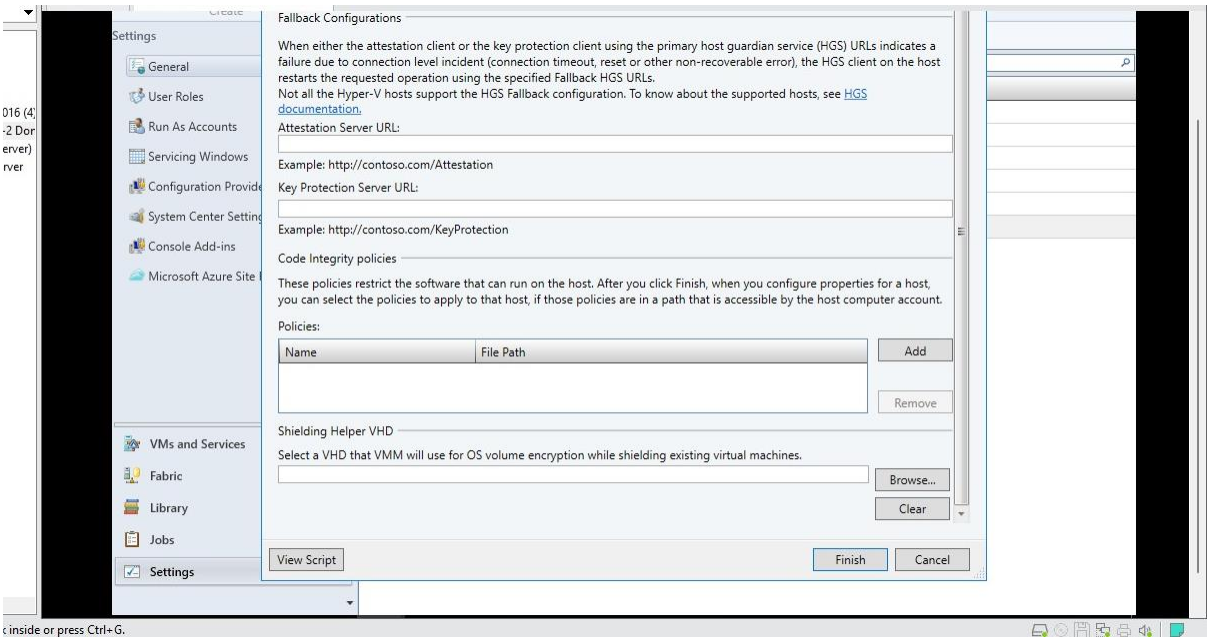
- On the dashboard Click on **Settings** and Select **Host Guardian Service Settings**



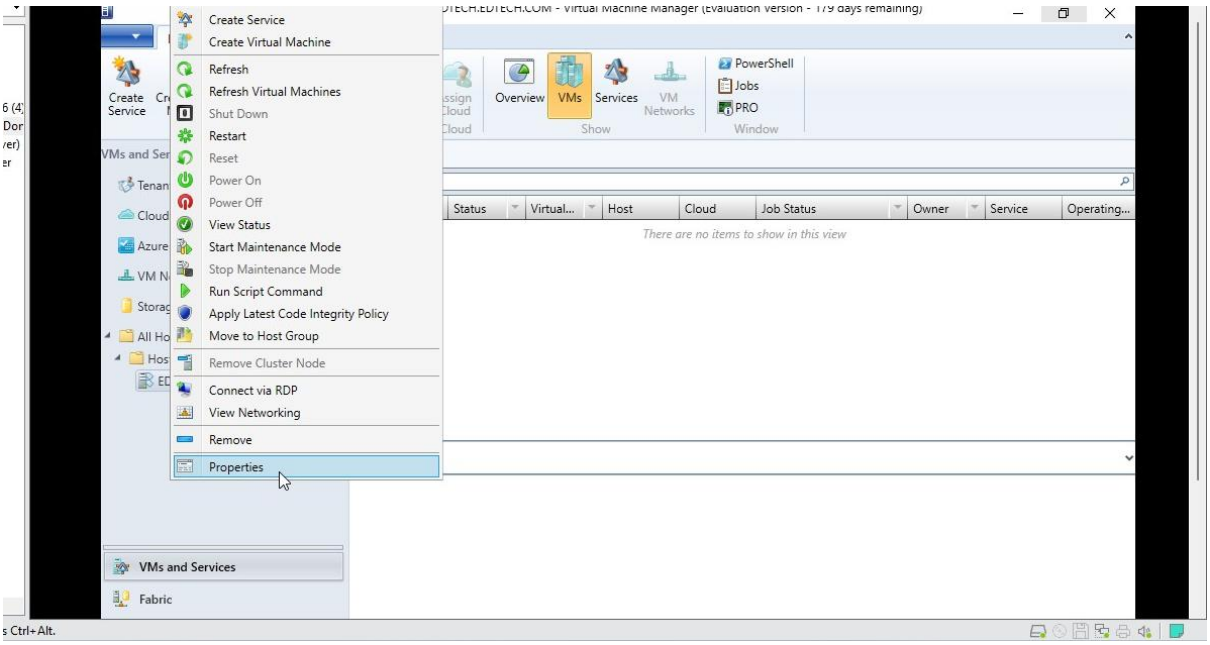
- Within Host Guardian Service Settings Enter your custom domain name followed by Attestation and Repeat the same for KeyProtection.
- (Here it is **http://edtech.com/Attestation** and **http://edtech.com/KeyProtection**)



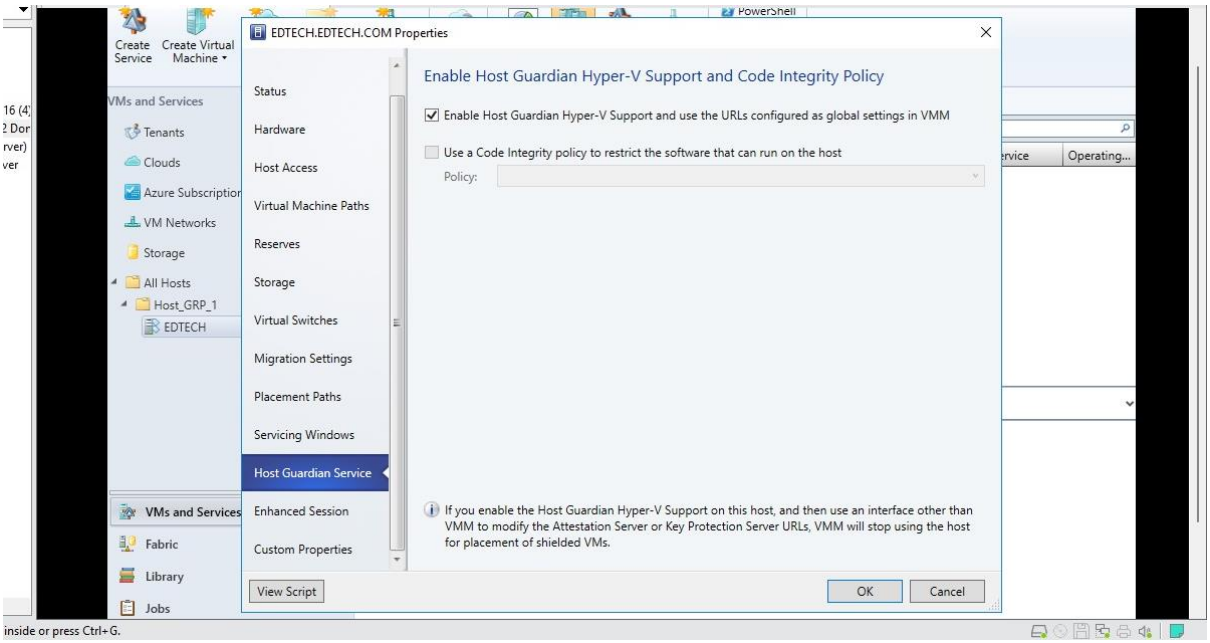
- After entering your details Click on **Finish**



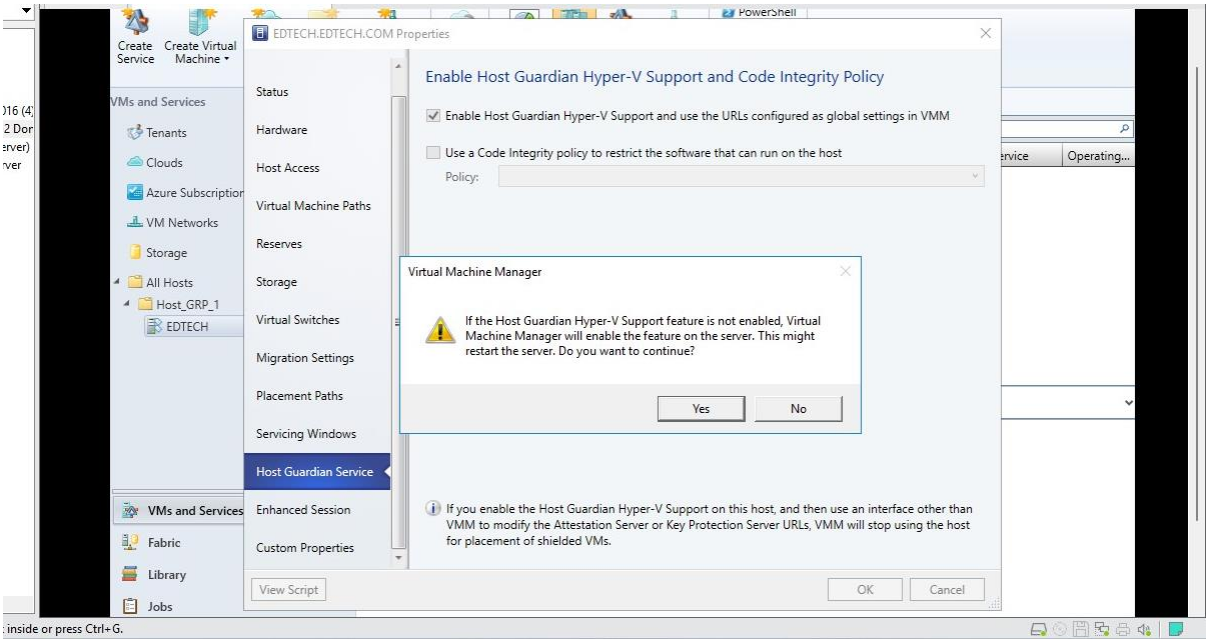
- **Pre-requisite:** Create a Cloud and Create a Server on a Host Group (Here it is **EDTECH**)
- Now within your Host Group Right-Click on **EDTECH** and Select **Properties**



- Within properties Select **Host Guardian Service** and Select **Enable Host Guardian Hyper-V Support and use the URLs configured as global settings in VMM** and Click **Ok**

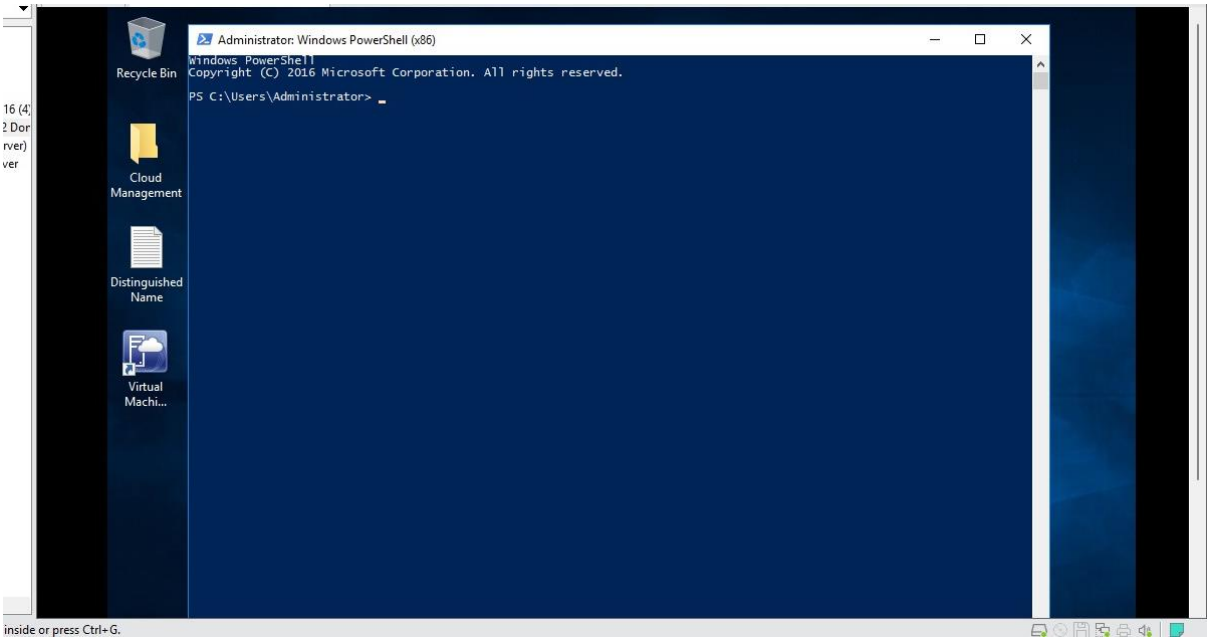


- A Pop-up will come to restart the server for the Host Guardian changes to apply, Click **Yes**



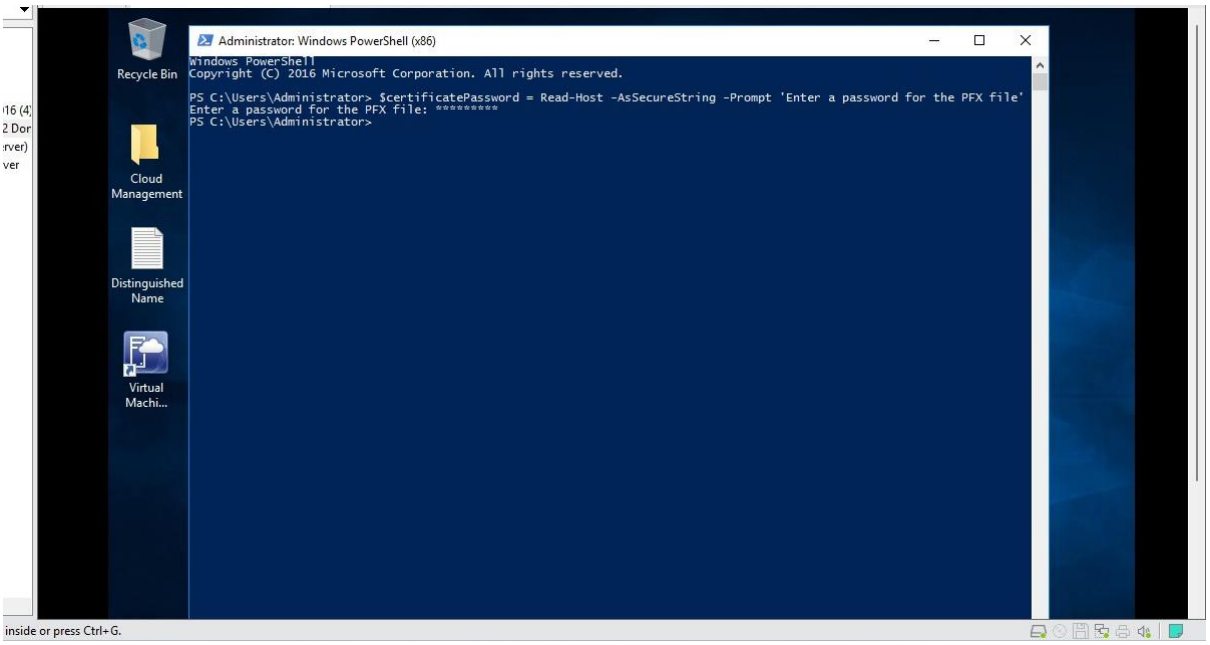
Step 2: Creating the **pfx** file for the HGS Server

- Open **Windows Powershel**l as **Administrator**

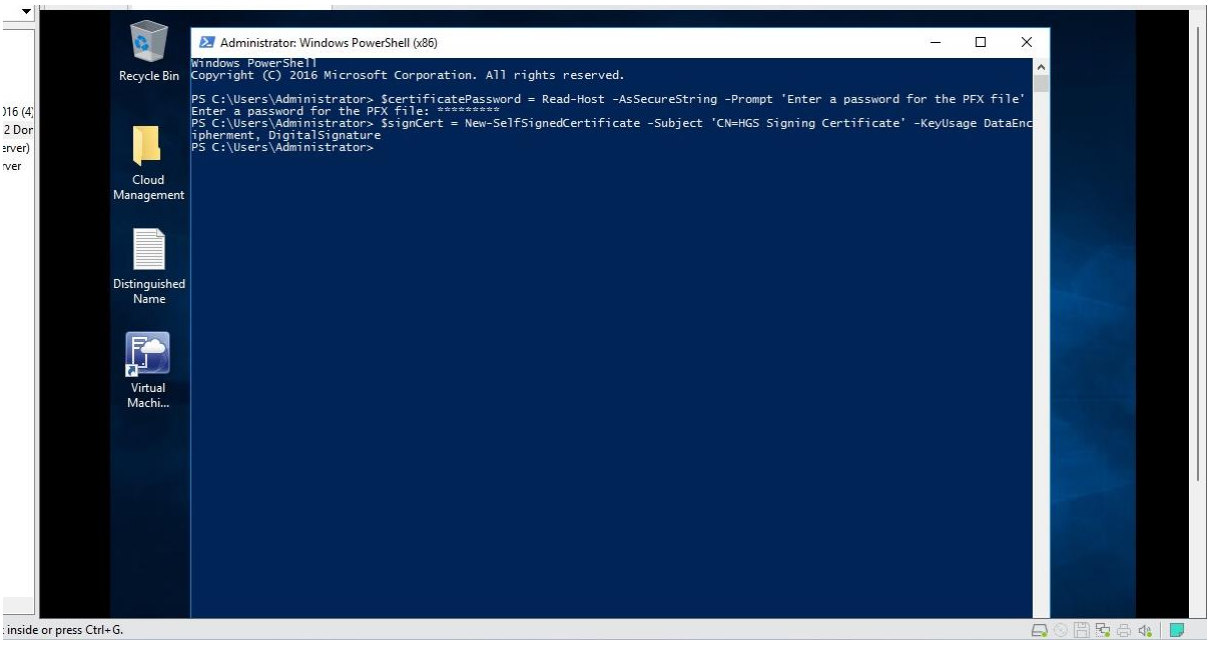


In the Powershell Type the following code:

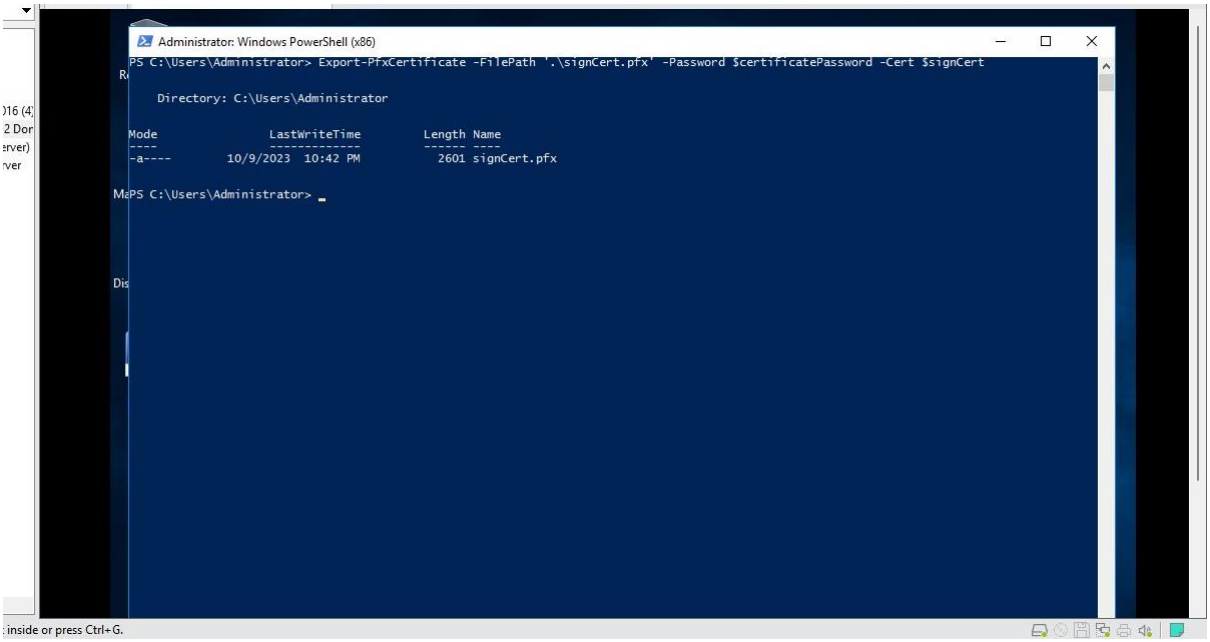
- $certificatePassword = Read-Host –AsSecureString –Prompt ‘Enter a password for the PFX file’



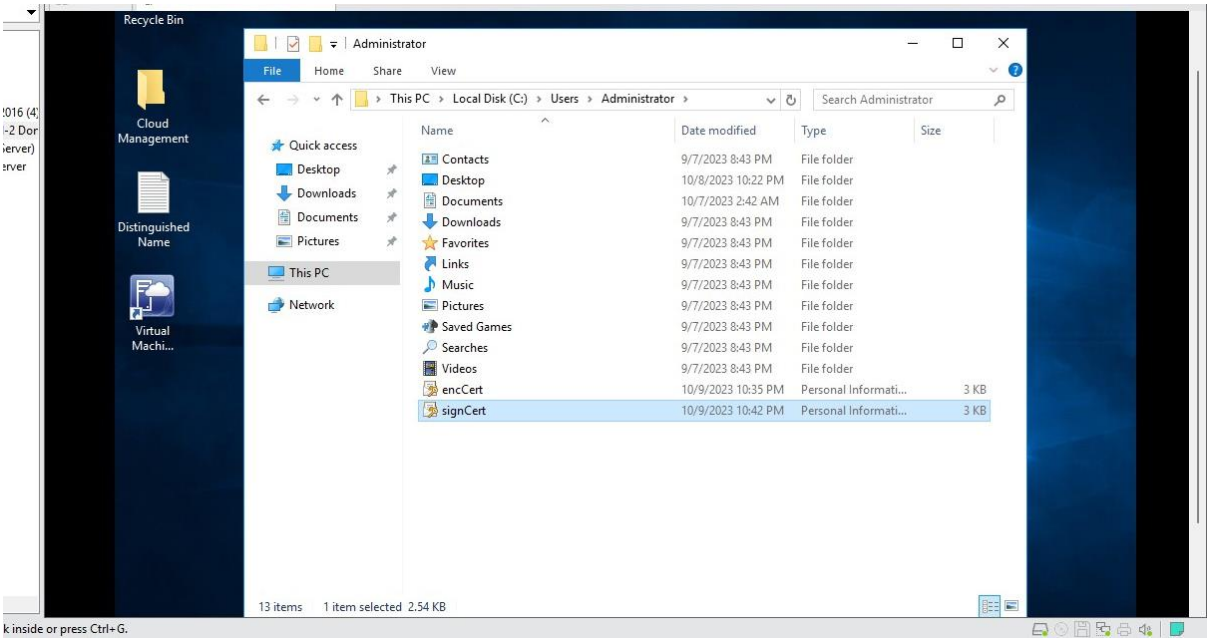
- $signCert = New-SelfSignedCertificate –Subject ‘CN=HGS Signing Certificate’ –KeyUsage DataEncipherment, DigitalSignature



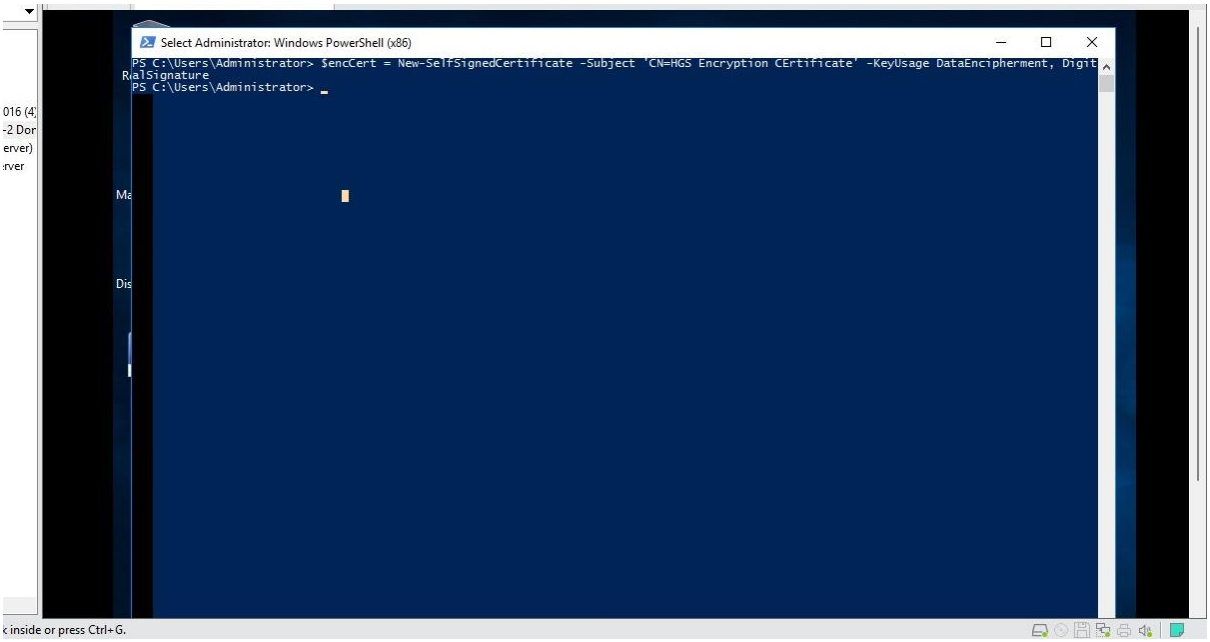
- Export-PfxCertificate –FilePath '.\signCert.pfx' –Password $certificatePassword –Cert $signCert



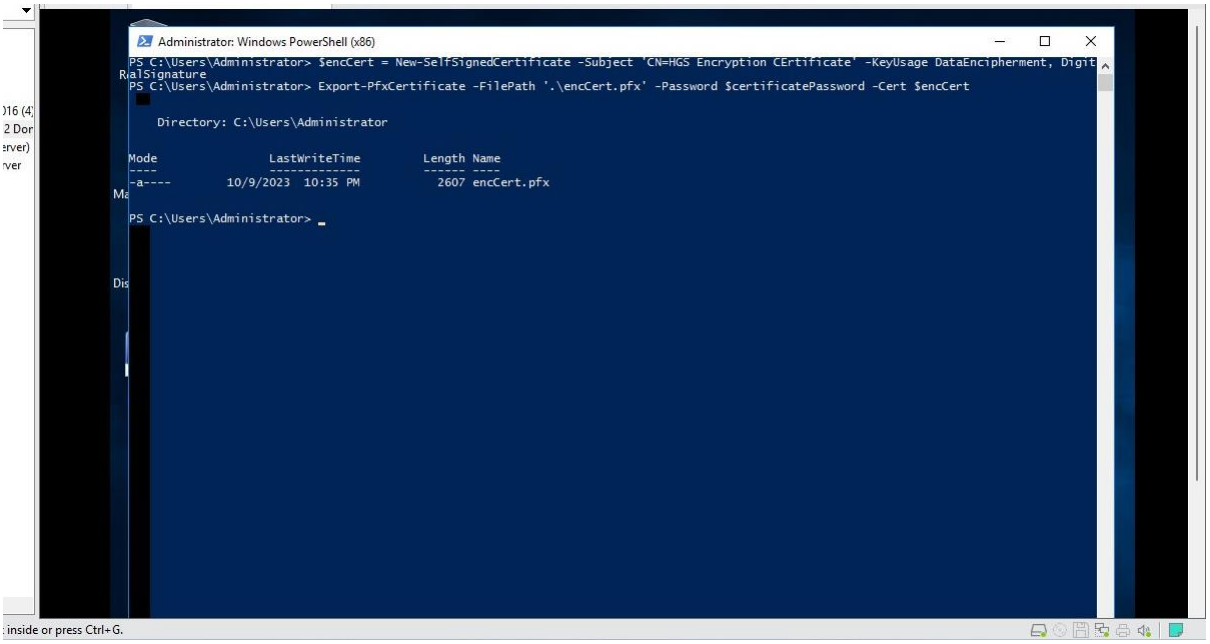
- To confirm the creation of the file Check the **Administrator** folder in **C:\Users**



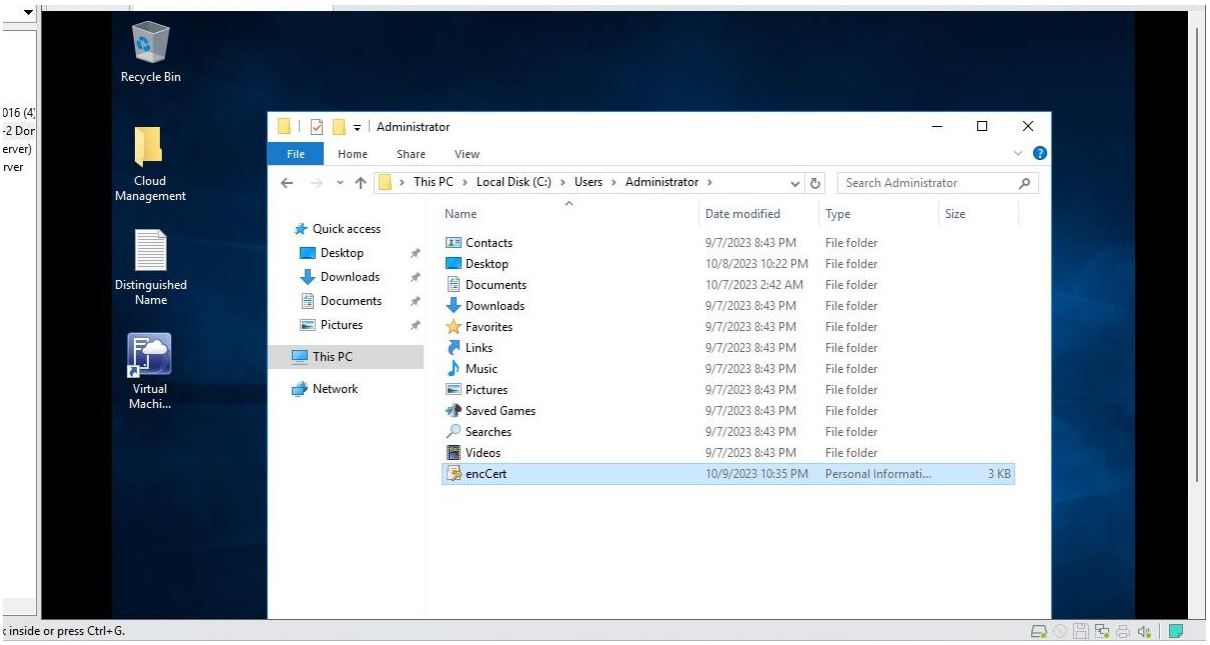
- $encCert = New-SelfSignedCertificate –Subject ‘CN=HGS Encryption Certificate’ –KeyUsage DataEncipherment, DigitalSignature



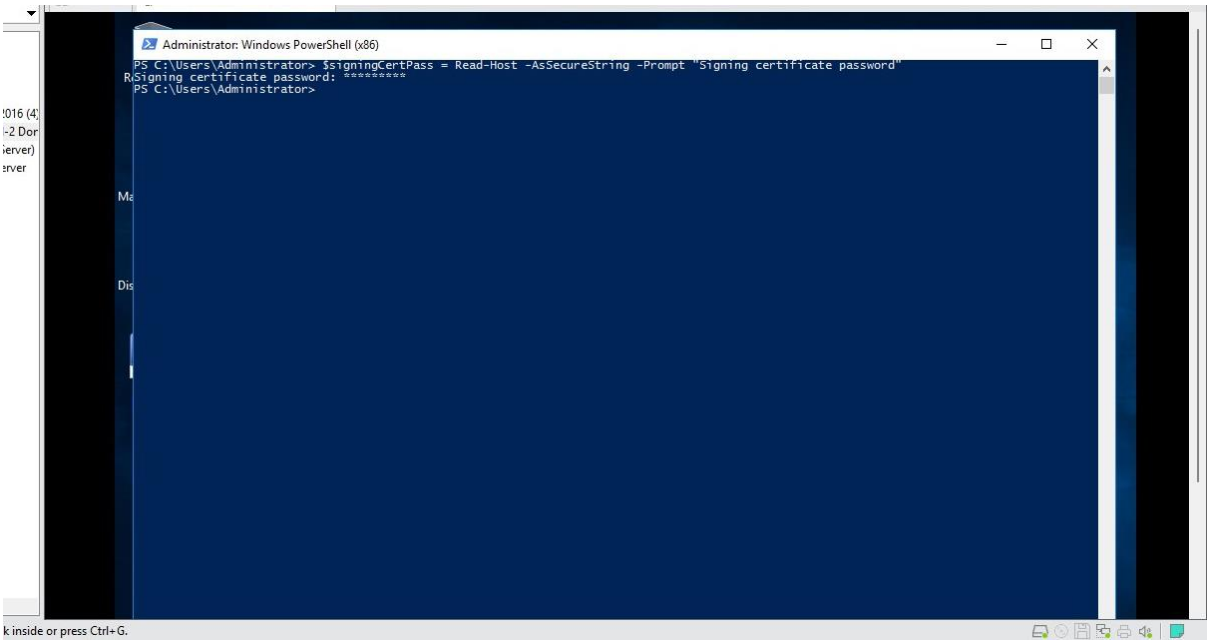
- Export-PfxCertificate –FilePath ‘.\signCert.pfx’ –Password $certificatePassword –Cert $signCert



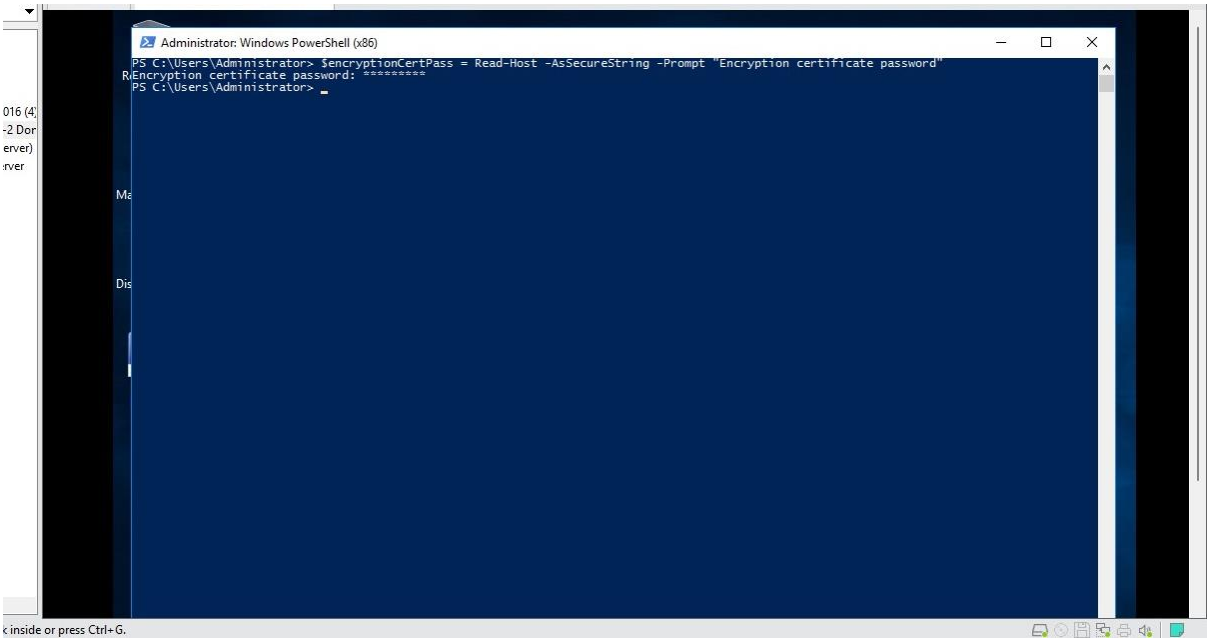
- We confirm the creation of the PFX file by going to the **Administrator** folder in **C:\Users**



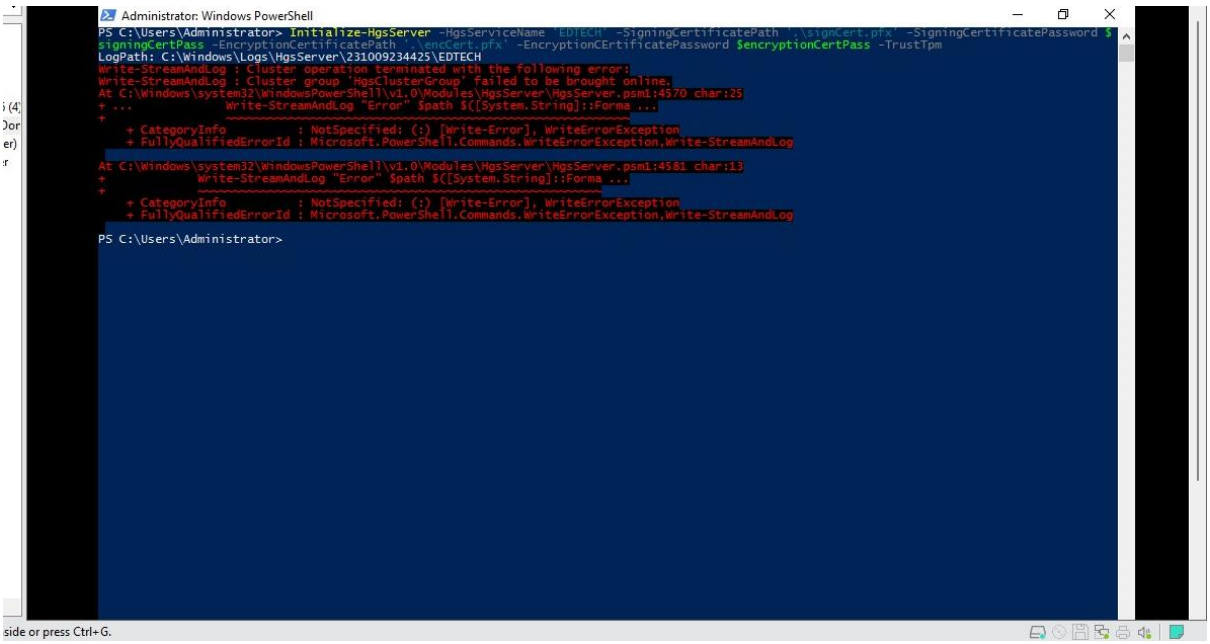
- $signingCertPass = Read-Host –AsSecureString –Prompt “Signing certificate password”



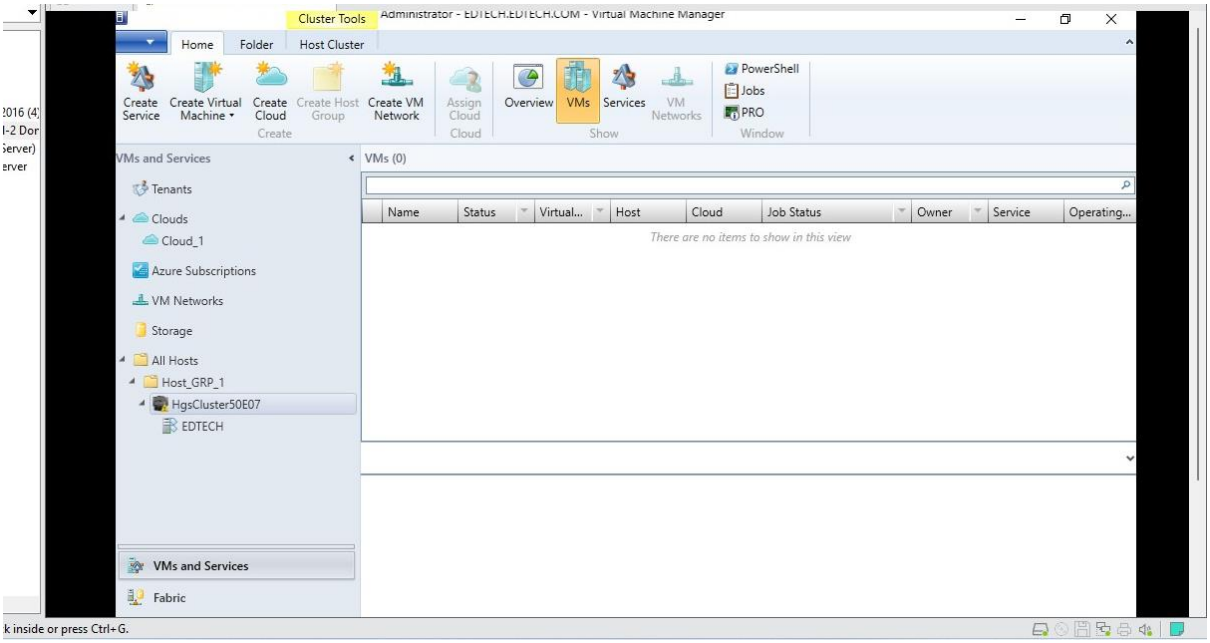
- $encryptionCertPass = Read-Host –AsSecureString –Prompt “Encryption certificate password”



- Initialize-HgsServer –HgsServiceName ‘WINSERVER2016’ –SigningCertificatePath ‘.\signCert.pfx’ –SigningCertificatePassword $signingCertPass –EncryptionCertificatePath ‘.\encCert.pfx’ –EncryptionCertificatePassword $encryptionCertPass –TrustTpm


Administrator: Windows PowerShell
PS C:\Users\Administrator> Initialize-HgsServer -HgsServiceName "EDTECH" -SigningCertificatePath ".\signCert.pfx" -SigningCertificatePassword $
signingCertPass -EncryptionCertificatePath ".\encCert.pfx" -EncryptionCErtificatePassword $encryptionCertPass -TrustTpm
LogPath: C:\Windows\Logs\HgsServer\231009234425\EDTECH
Write-StreamAndLog : Cluster operation terminated with the following error:
Write-StreamAndLog : Cluster group 'HgsClusterGroup' failed to be brought online.
At C:\Windows\system32\WindowsPowerShell\v1.0\Modules\HgsServer\HgsServer.psm1:4570 char:25
+ ... Write-StreamAndLog "Error" $path $([System.String]::Forma ...
+ ~~~

- To Confirm the creation of the HGS Cluster, Open the **Virtual Machine Manager** and it should show in **Hosts**



Practical 2

Aim: Deploy and Manage SDN infrastructure using SCVMM 2019

Writeup:

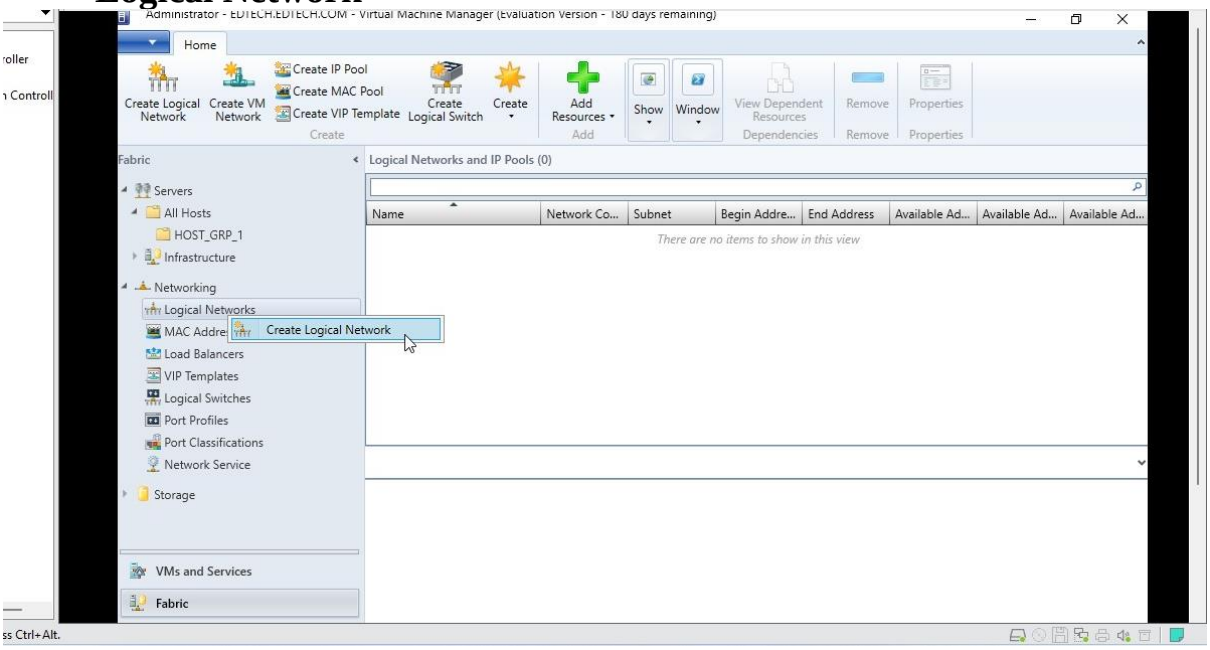
Pre-requisites:

- SCVMM from practical 1

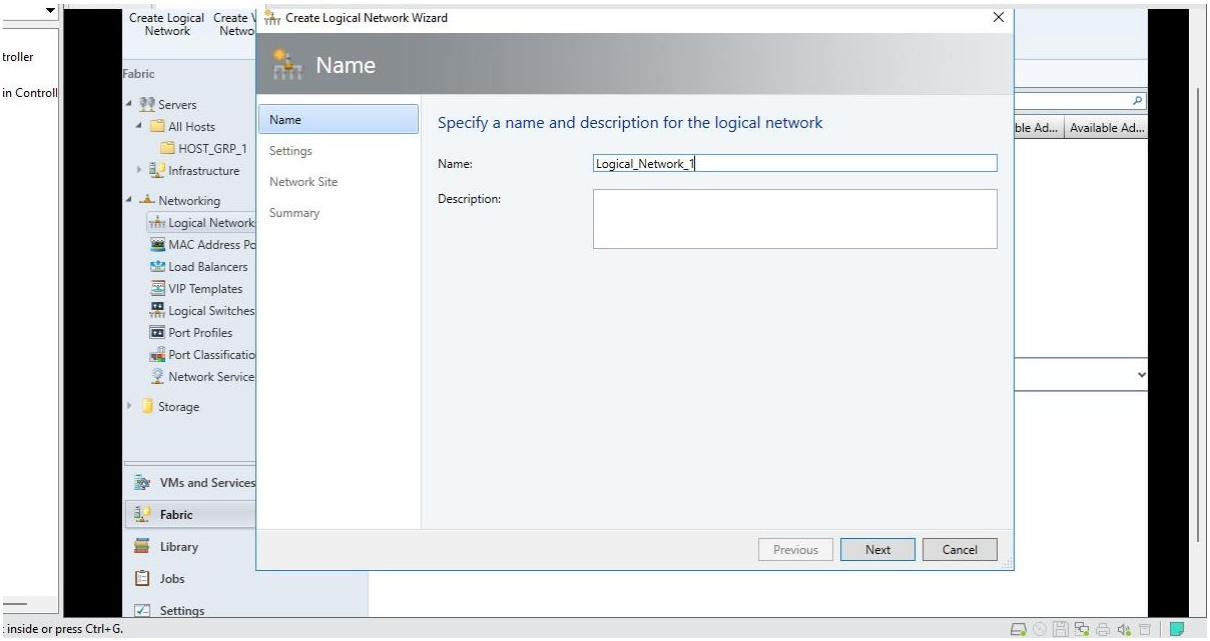
4-A: Deploying Network Controller Step

1: Create a Logical Network

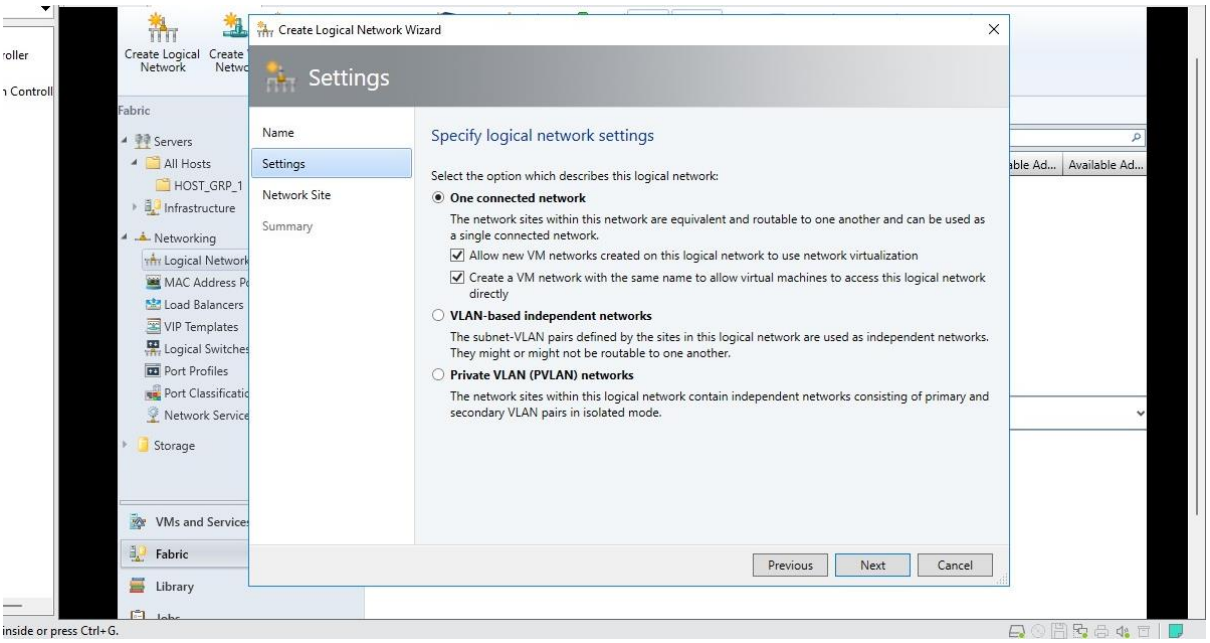
- Open **SCVMM** and Click on the **Fabric** Tab and Select **Networking**, within Networking Right-Click on **Logical Network** and Select **Create Logical Network**



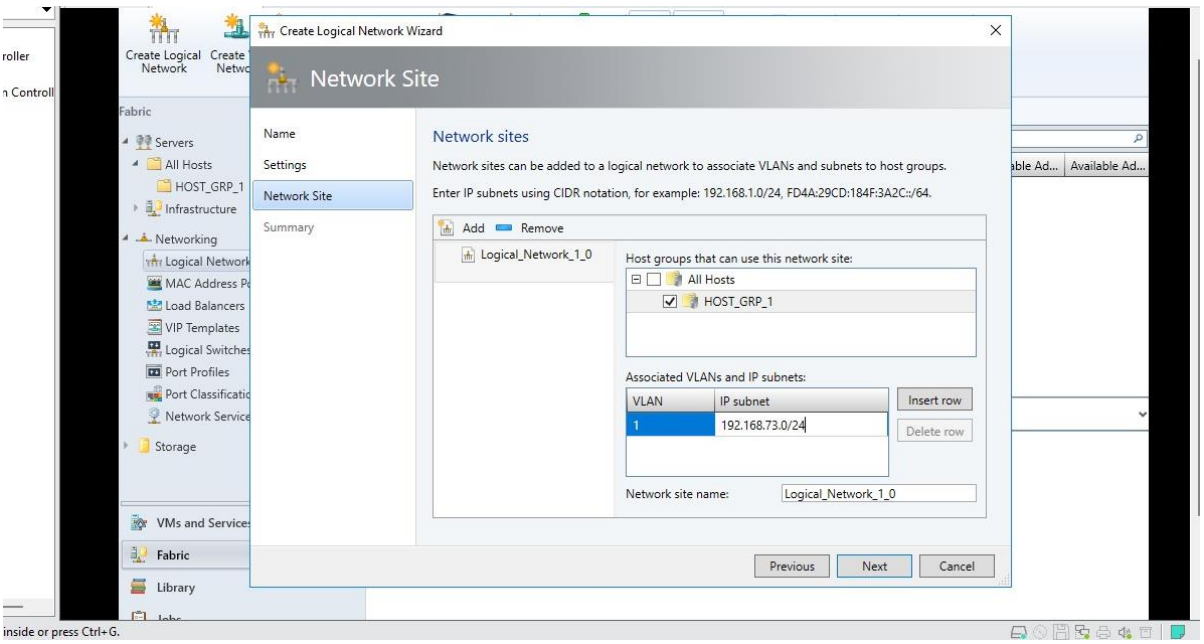
- Name your Logical Network and Click **Next**



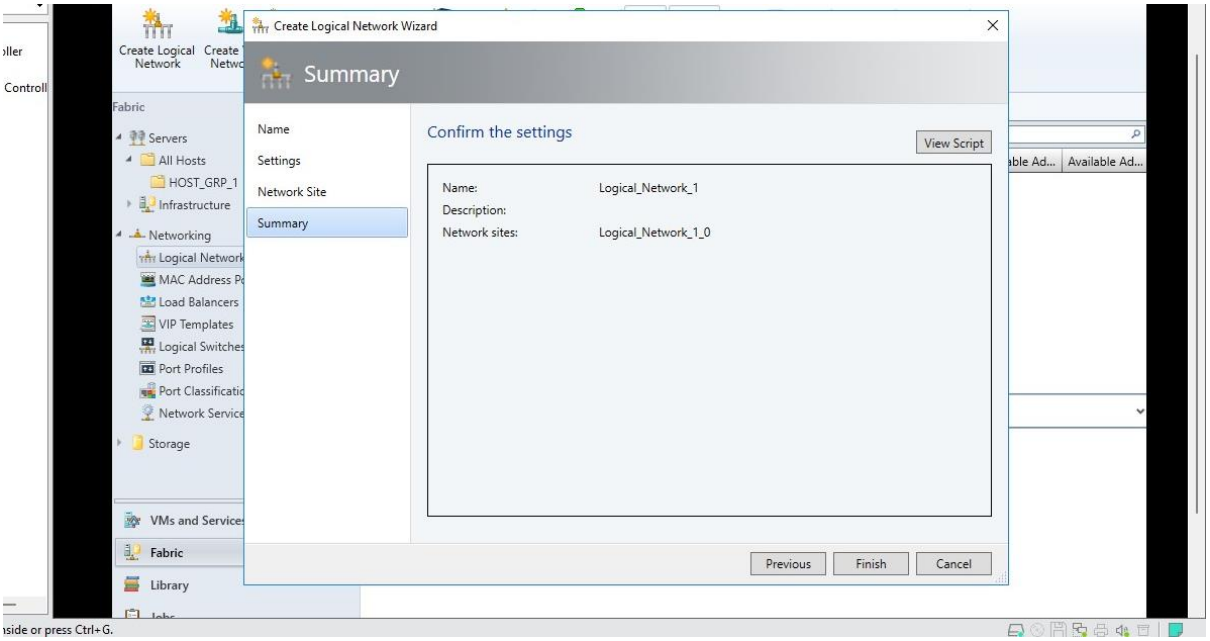
- Select **One-connected network** and Tick both **Allow new VM networks created on the logical network to use network virtualisation** and Click **Next**



- Click **Add** and Select **HOST_GRP_1** and Click on **Insert Now** and type in the VLAN number and an **IP Address** and Click **Next**

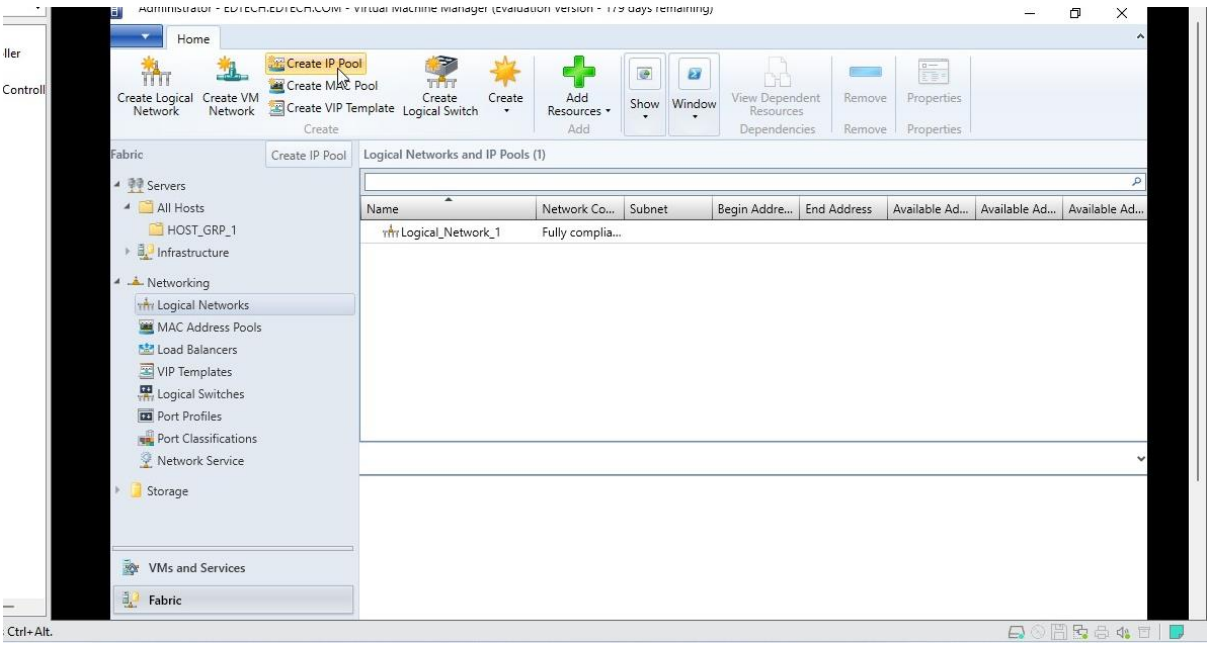


- Click **Finish**

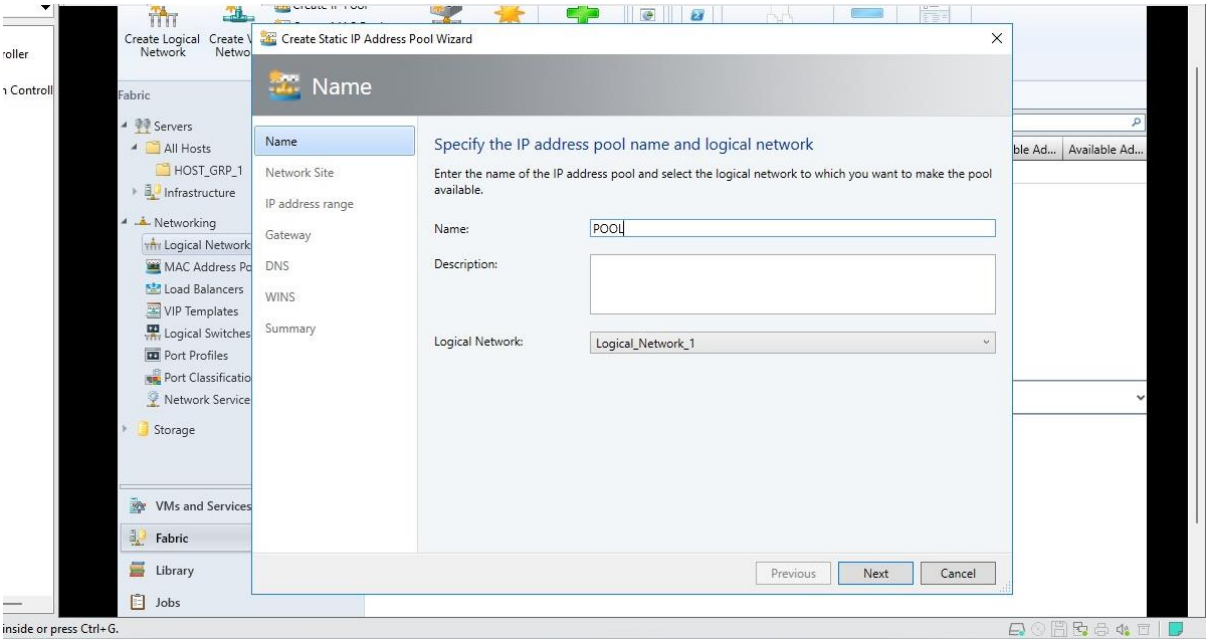


Step 2: Creating IP Pools

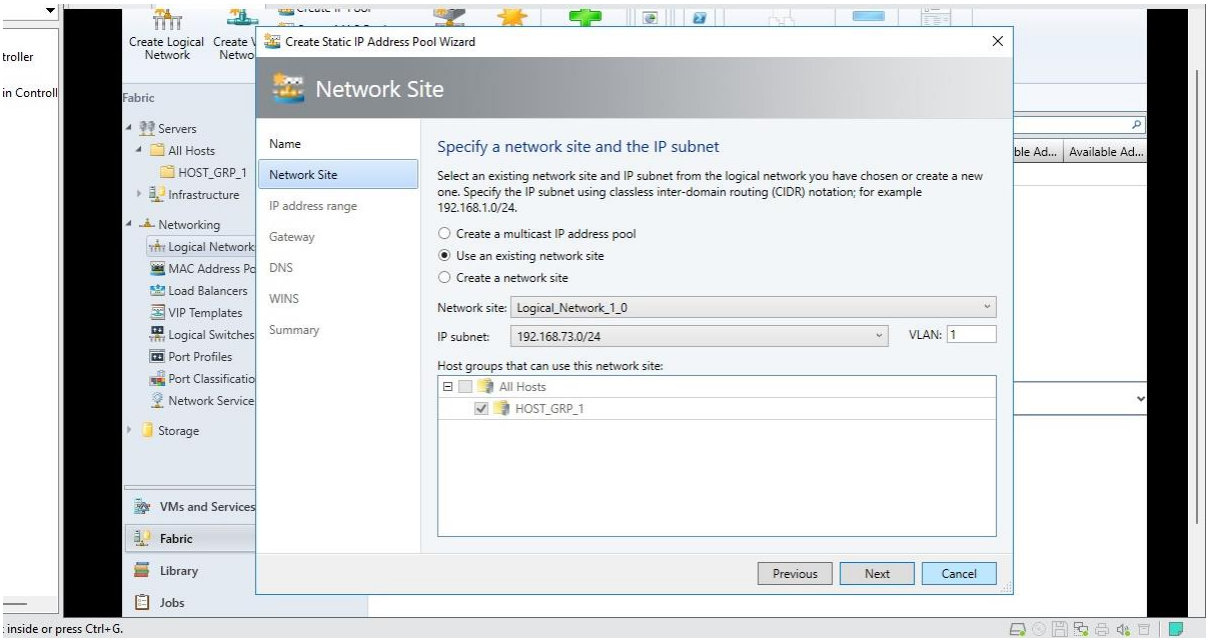
- Now within SCVMM on the Top-right Click on **Create IP Pool**



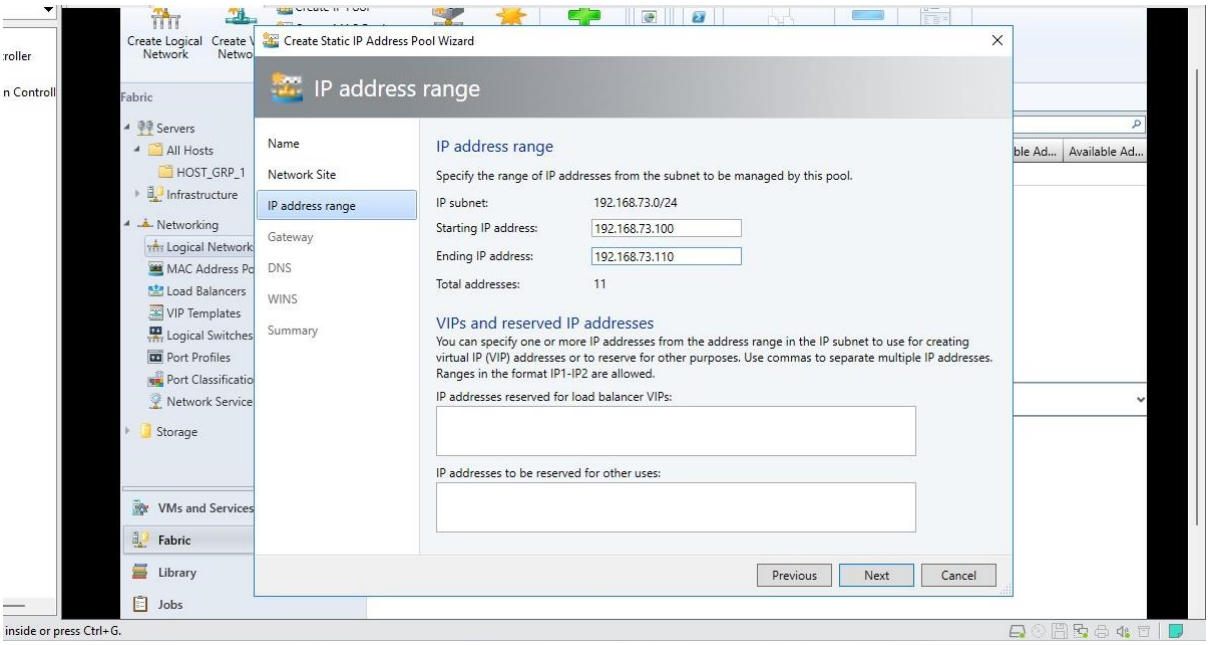
- Name it Pool and Make sure the Logical Network you just created has been selected and Click **Next**



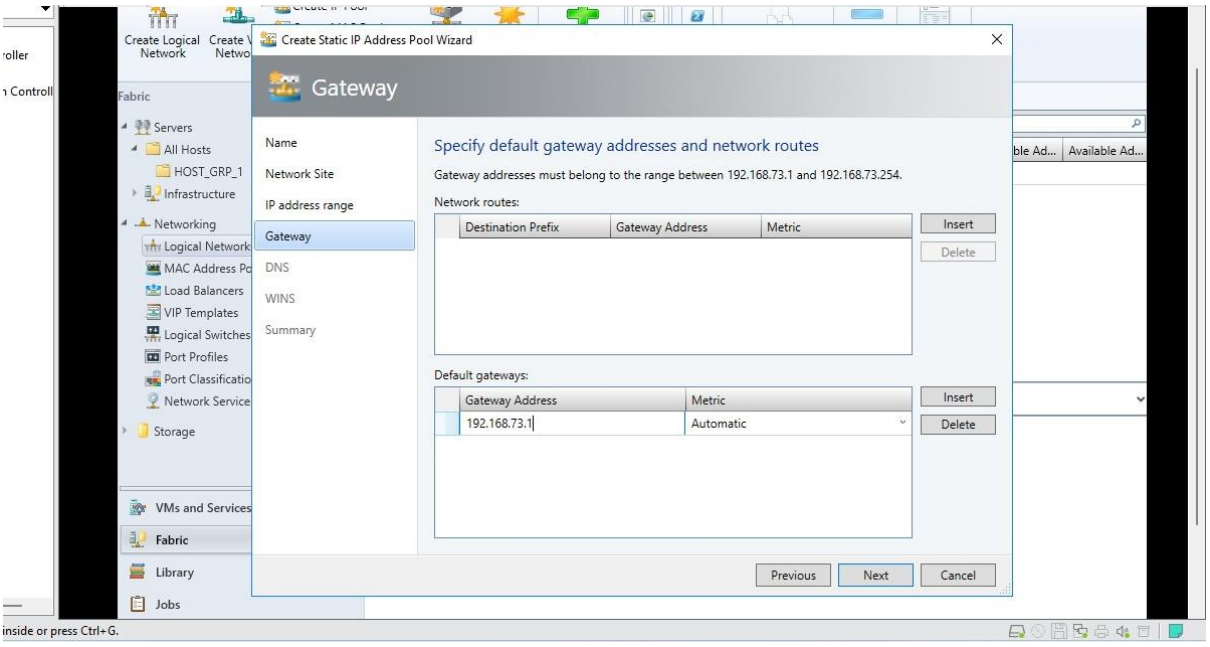
- Keep default values and Click **Next**



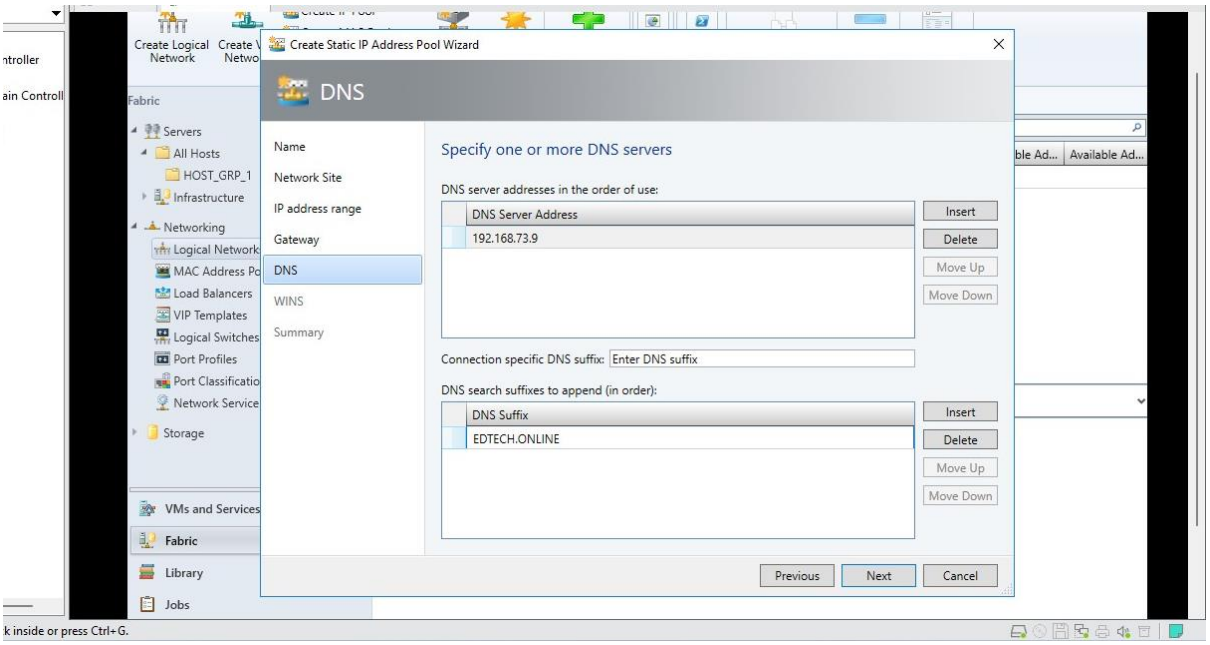
- In IP Address range Change the Starting IP Address to **192.168.73.100** and Ending IP Address Range to **192.168.73.110** and Click **Next**



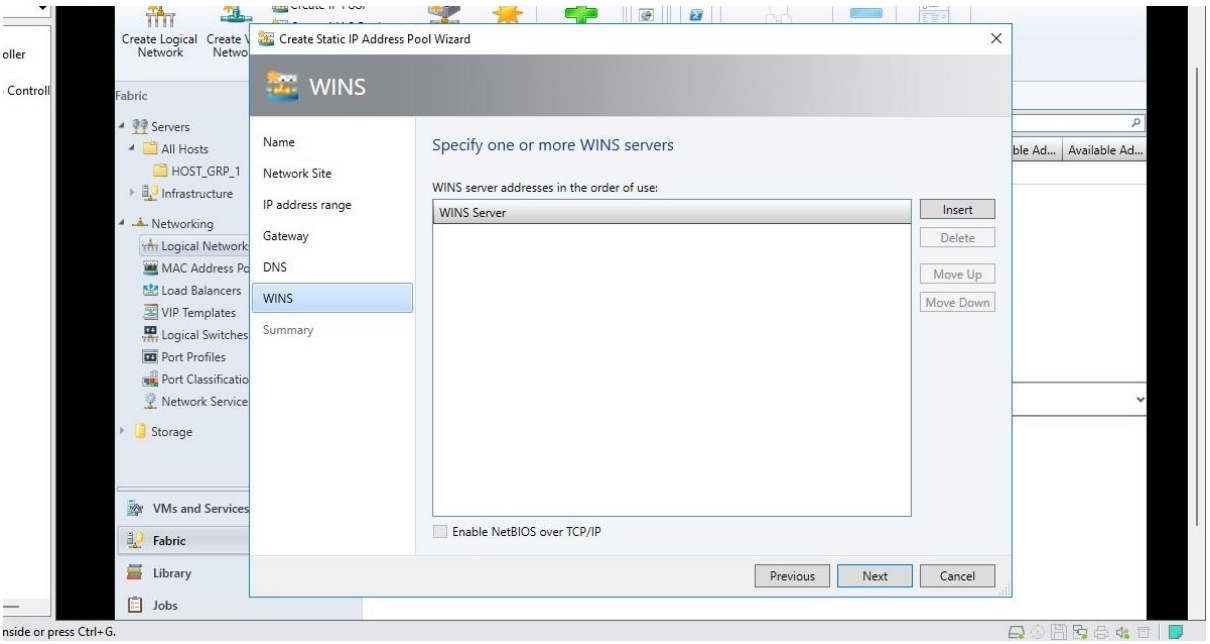
- Within Default Gateway Click on **Insert** and Enter the IP Address 192.168.73.1 and Keep the metric as **Automatic** and Click **Next**



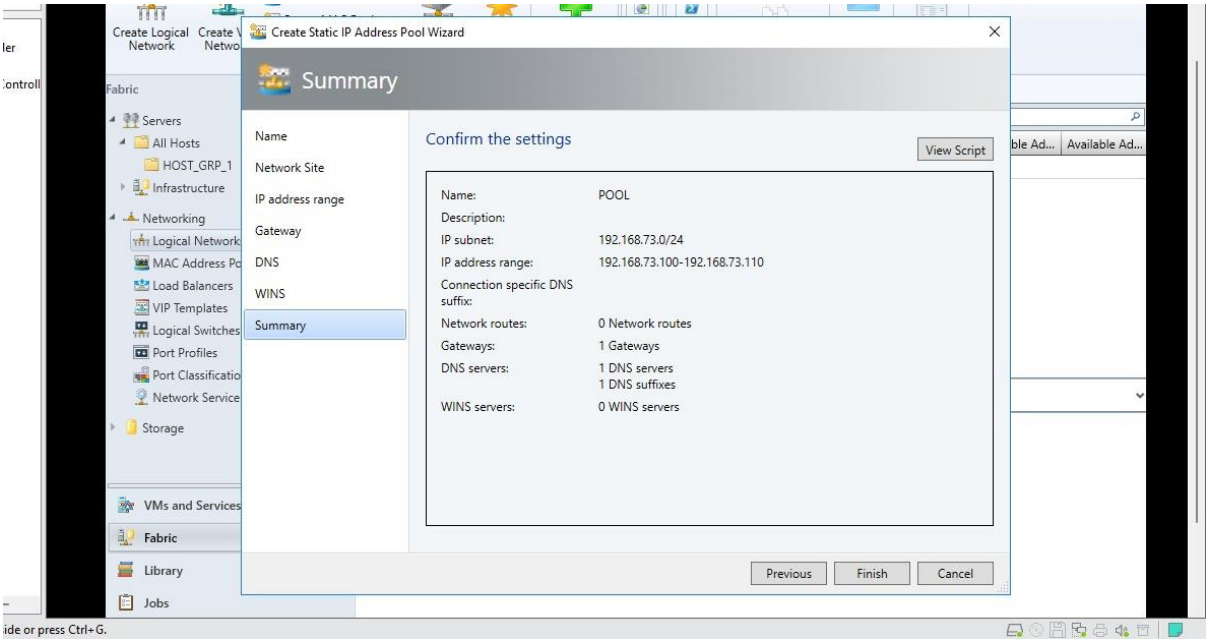
- In DNS , within **DNS Server address in the order of use** Click on **Insert** and Type in the IP Address **192.168.73.9**
- In **DNS Suffix** type your **Domainname.ONLINE** i.e in this case it is **EDTECH.ONLINE** and Click **Next**



- In WNS, keep default values and Click **Next**

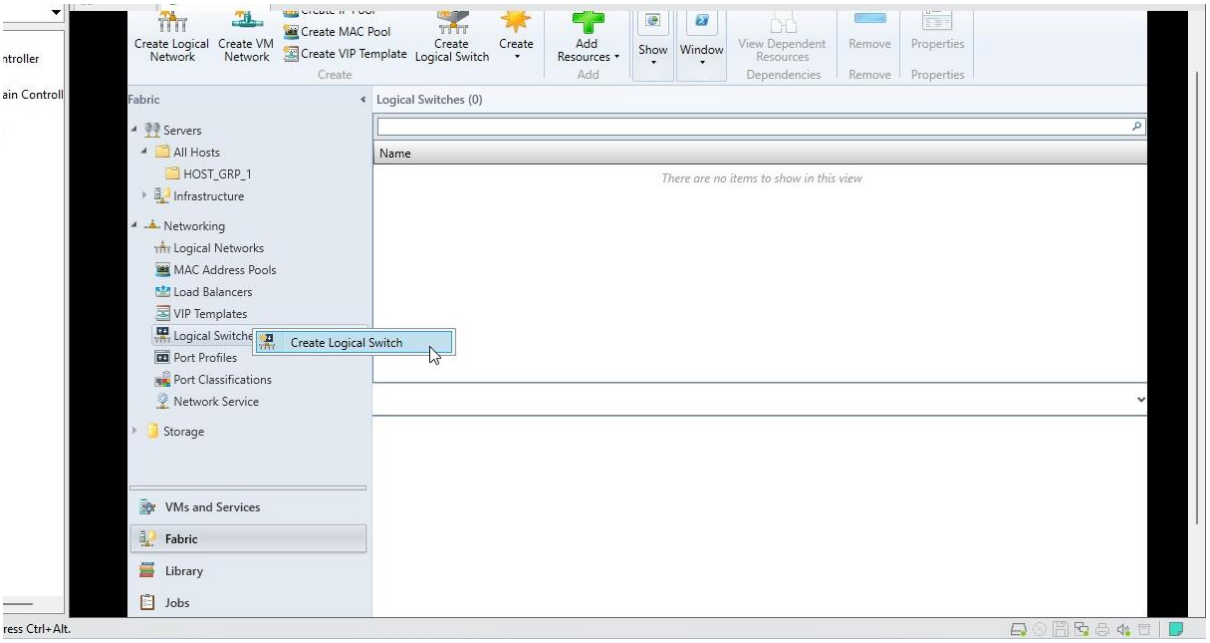


- Click on **Finish**

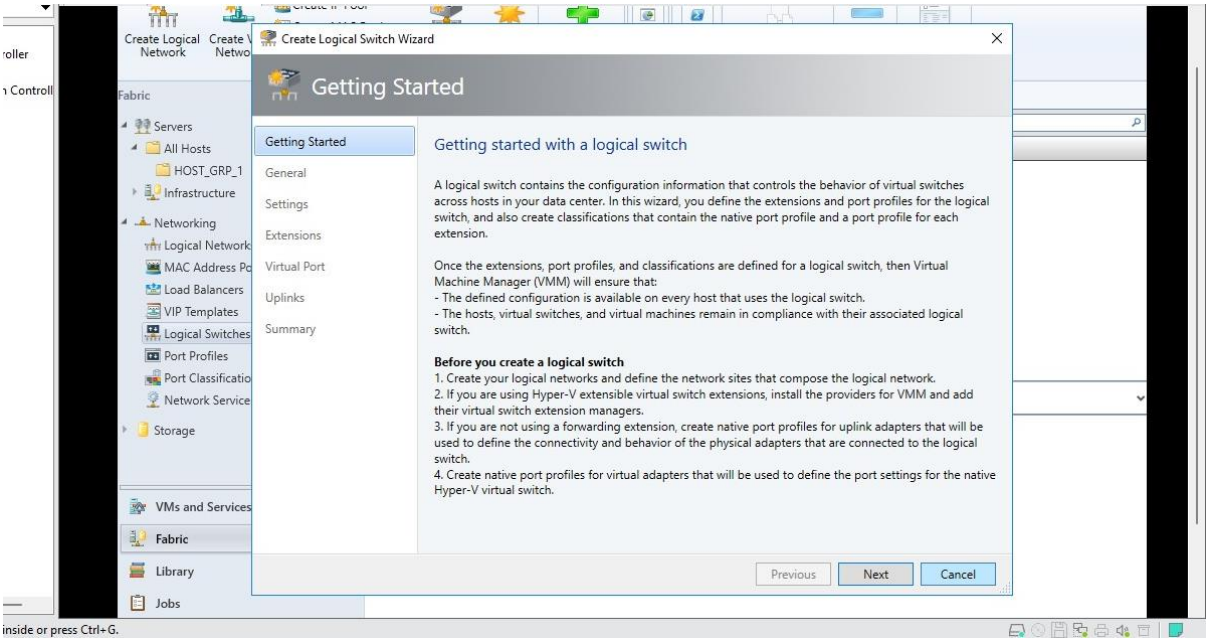


Step 3: Creating Logical Switch

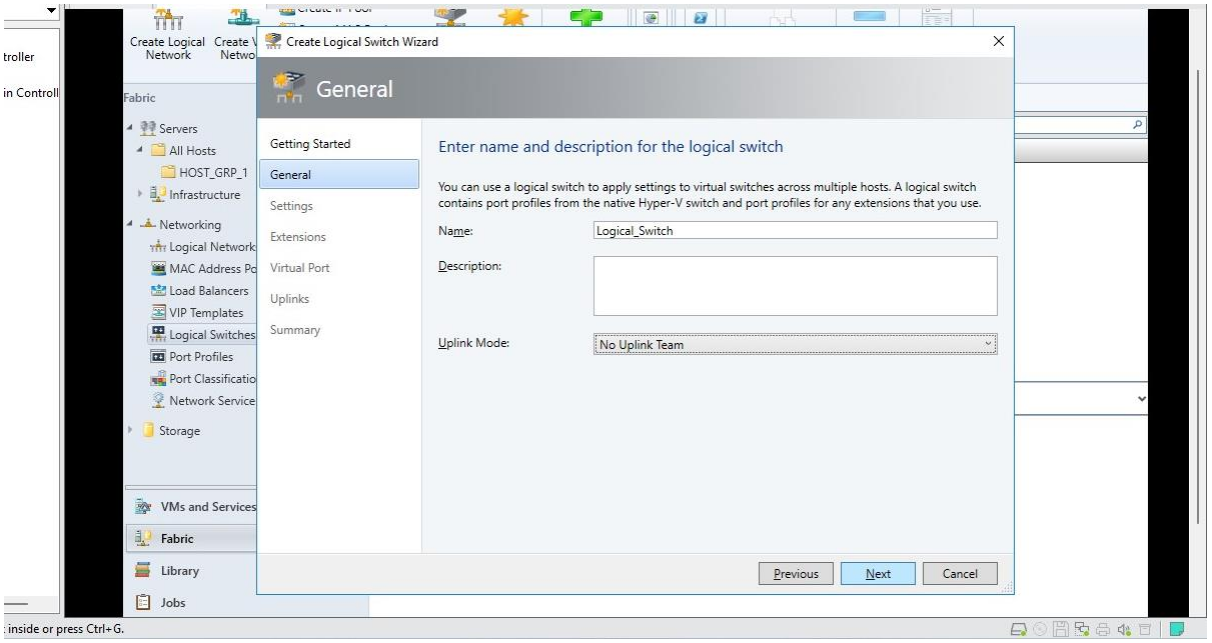
- In Networking, Right-Click on **Logical Switch** and Select **Create Logical Switch**



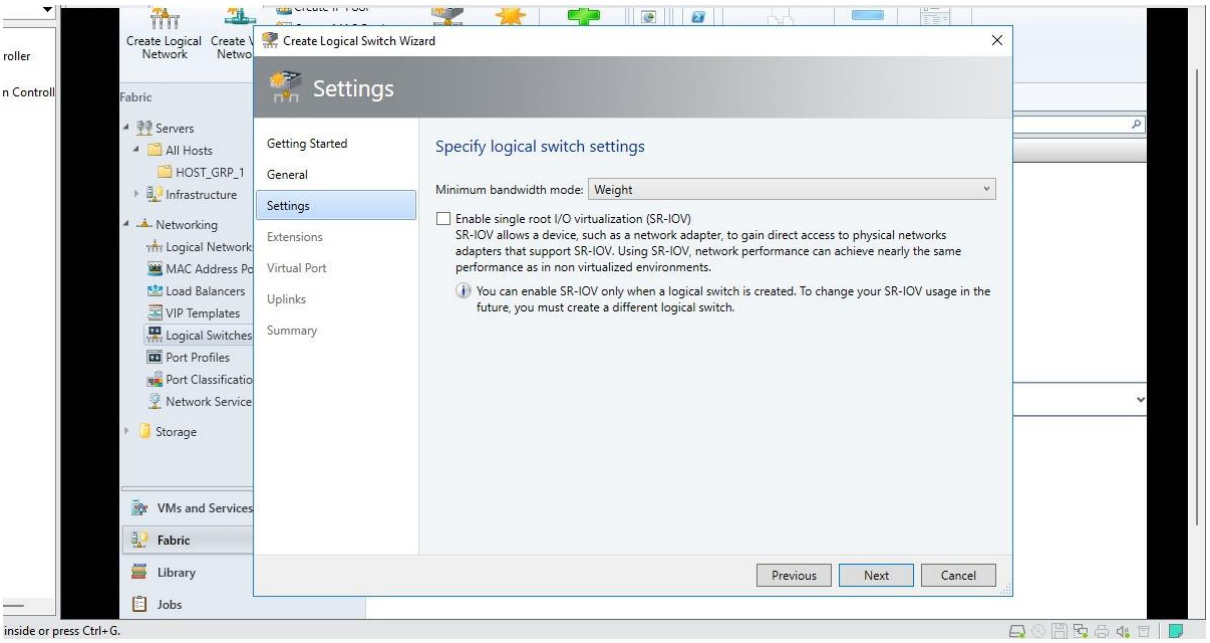
- Click **Next**



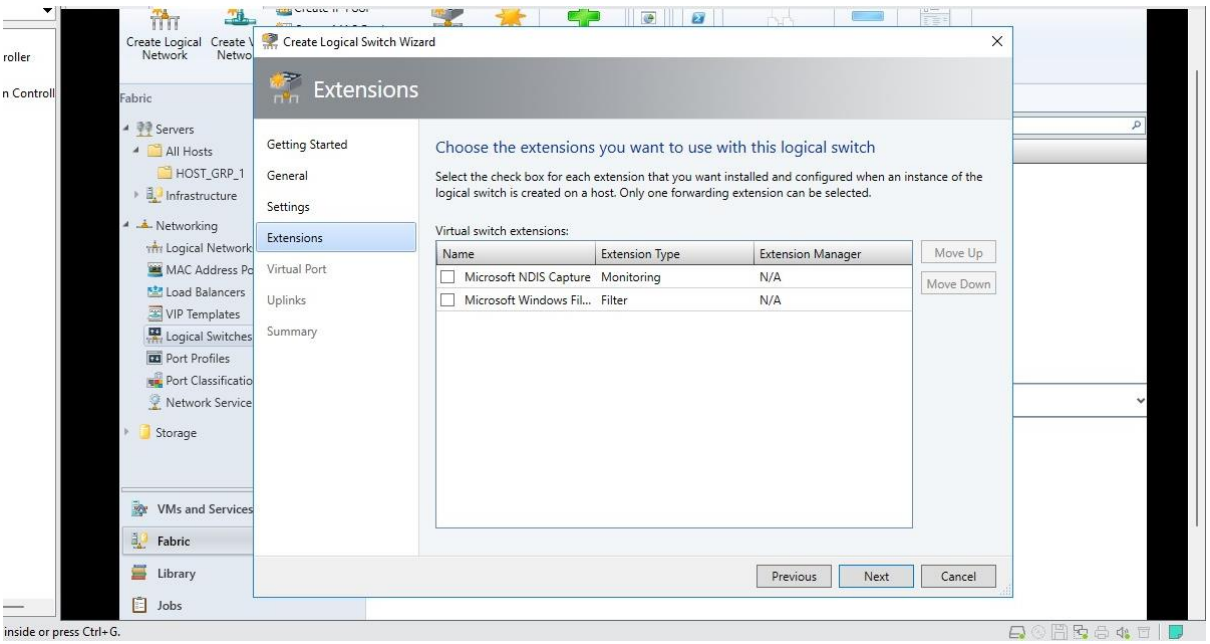
- Name the Switch and Select **No Uplink Team** and Click **Next**



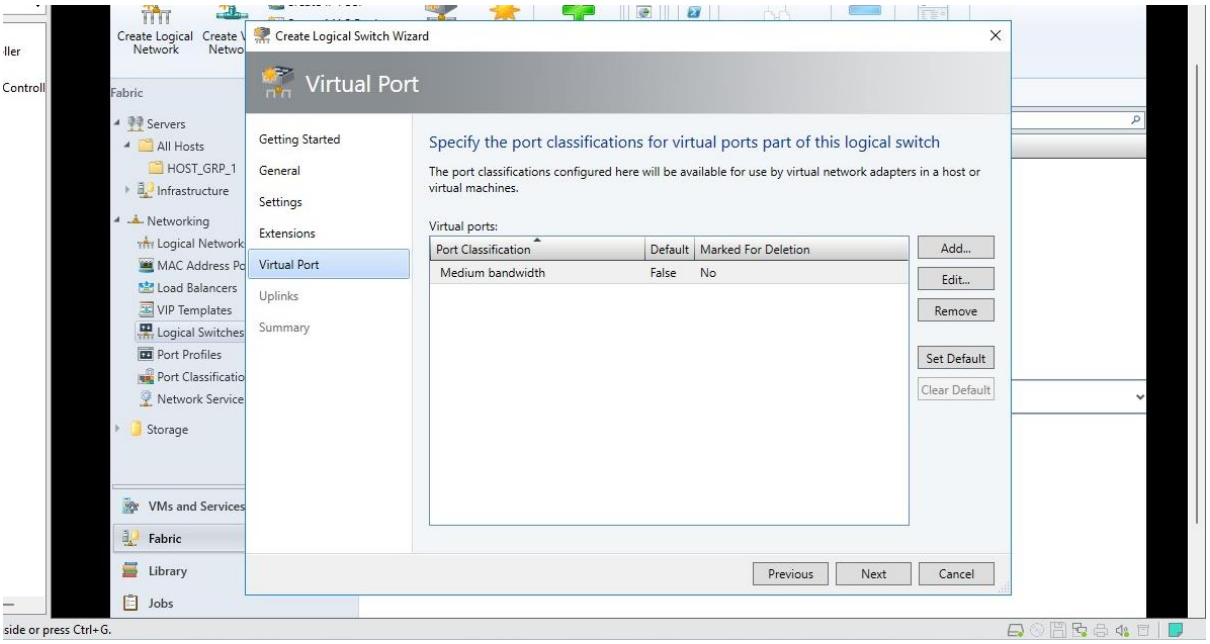
- Select the **Weight** option and Click **Next**



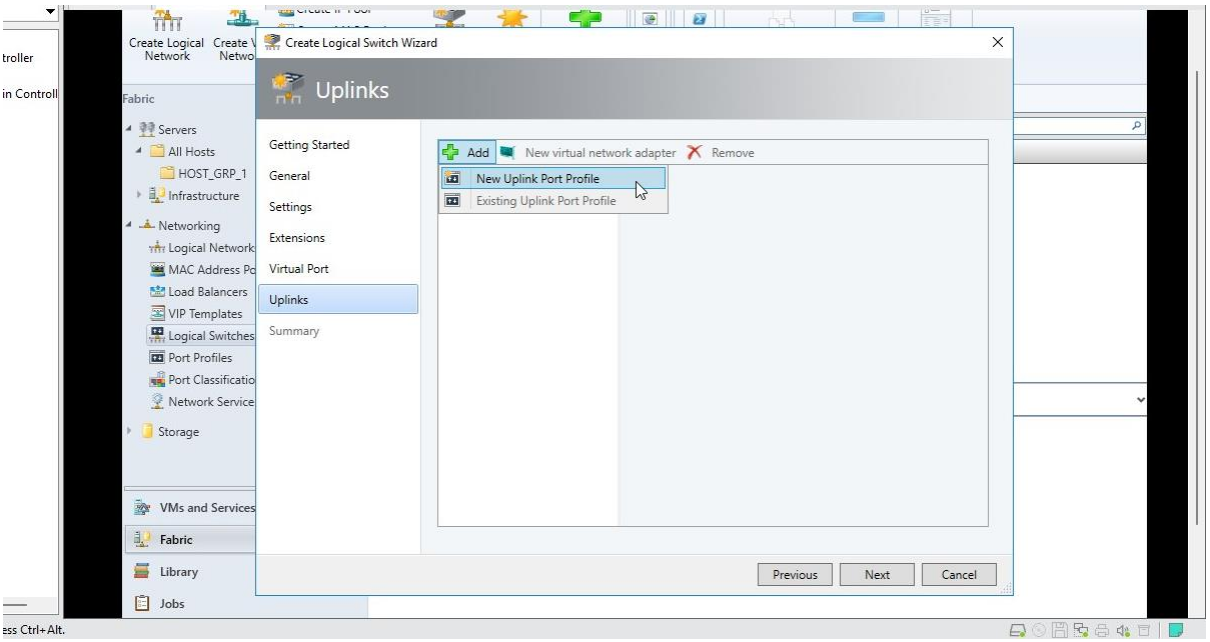
- In Extension, **Un-Check** all the Extensions and Click **Next**



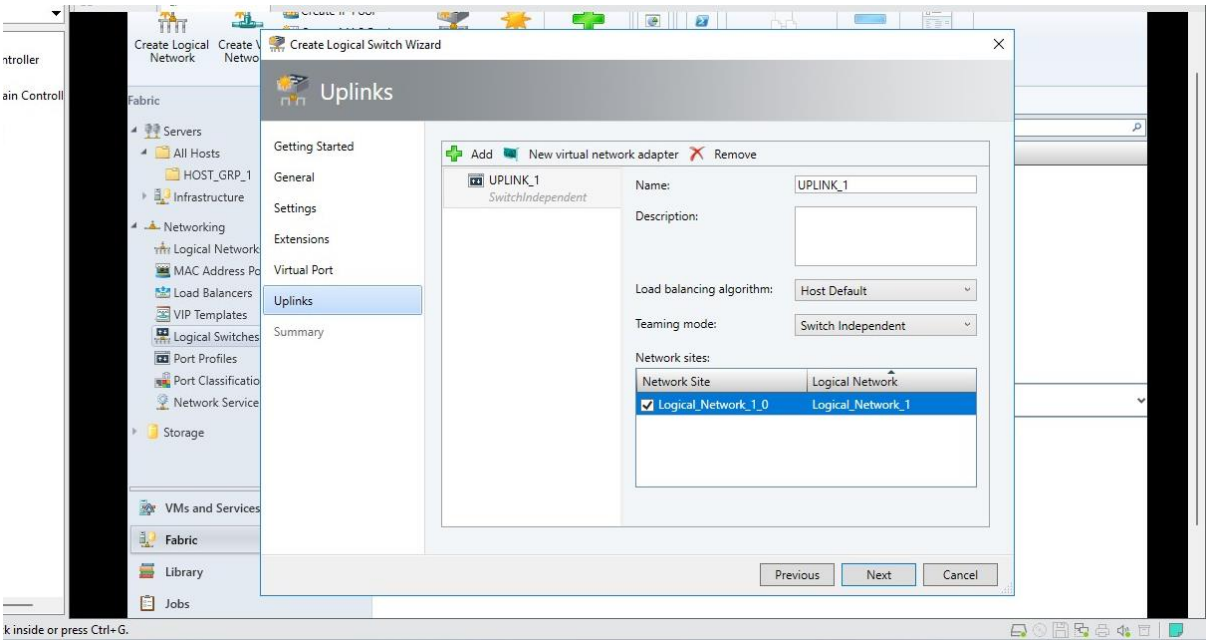
- Click on **Add**, in port classification Select **Medium bandwidth** and Select **Include a Hyper-V virtual network adapter port profile in this virtual port** and Select **Medium bandwidth adapter** and Click **Ok** and Click **Next**



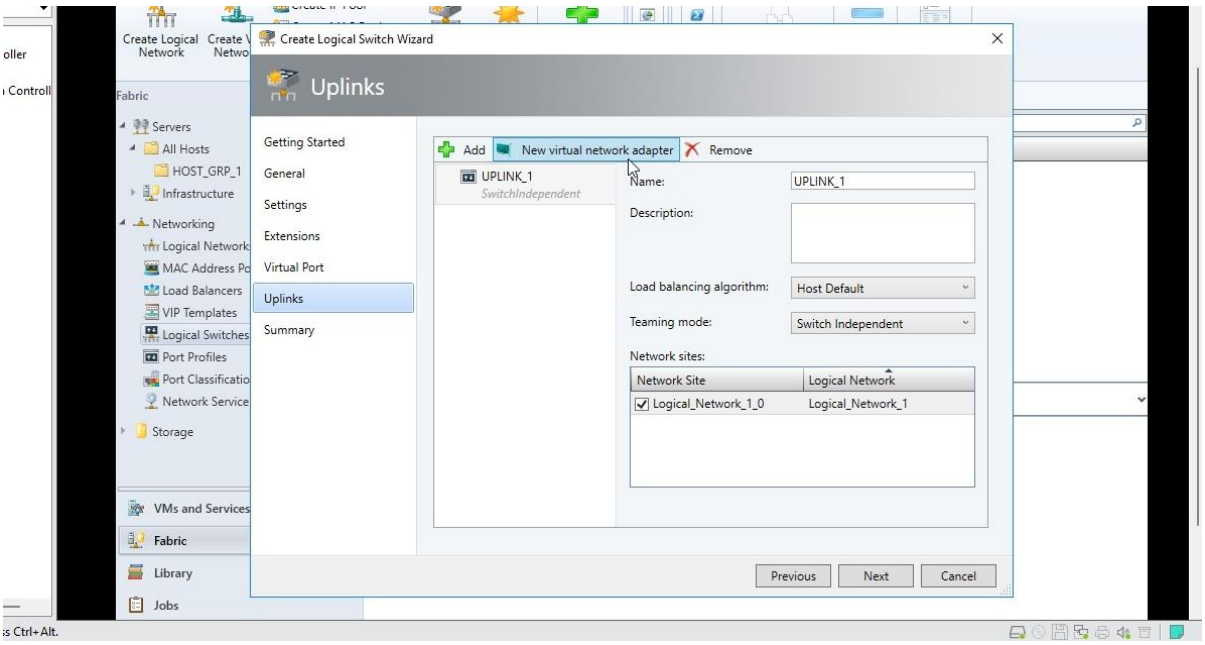
- In Uplinks, Click on **Add** and **Select New Uplink Port Profile**



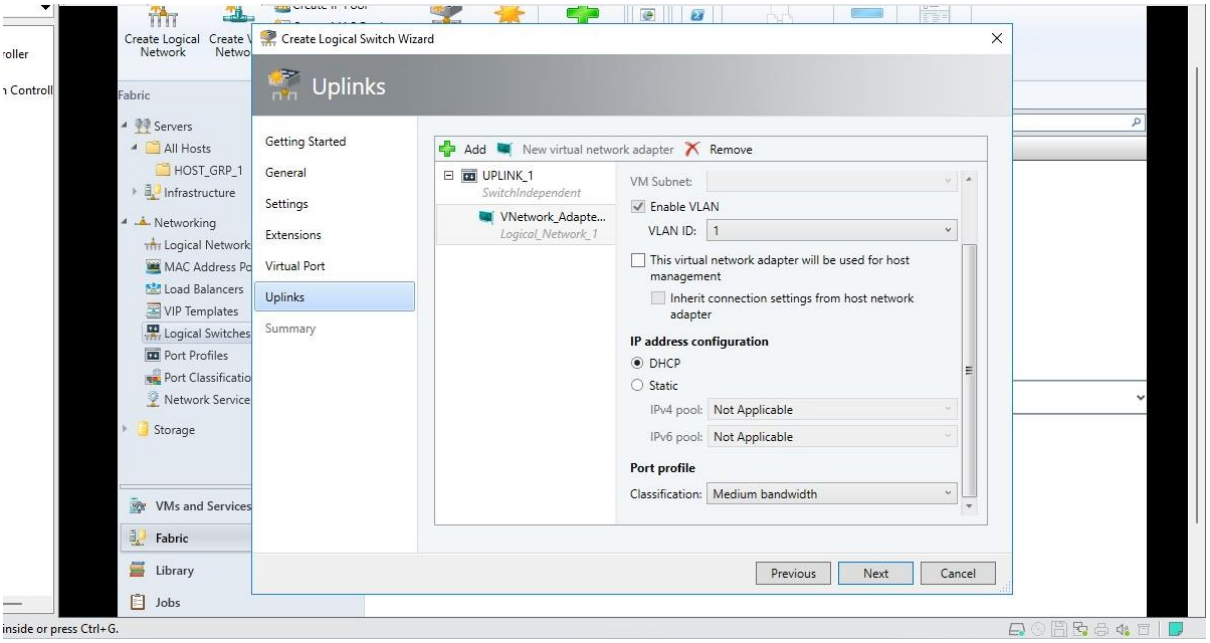
- Name the Uplink Port profile and Keep the default **Load Balancing Algorithm** and **Teaming Mode** and In Network Sites Select your previously created **Logical Network**



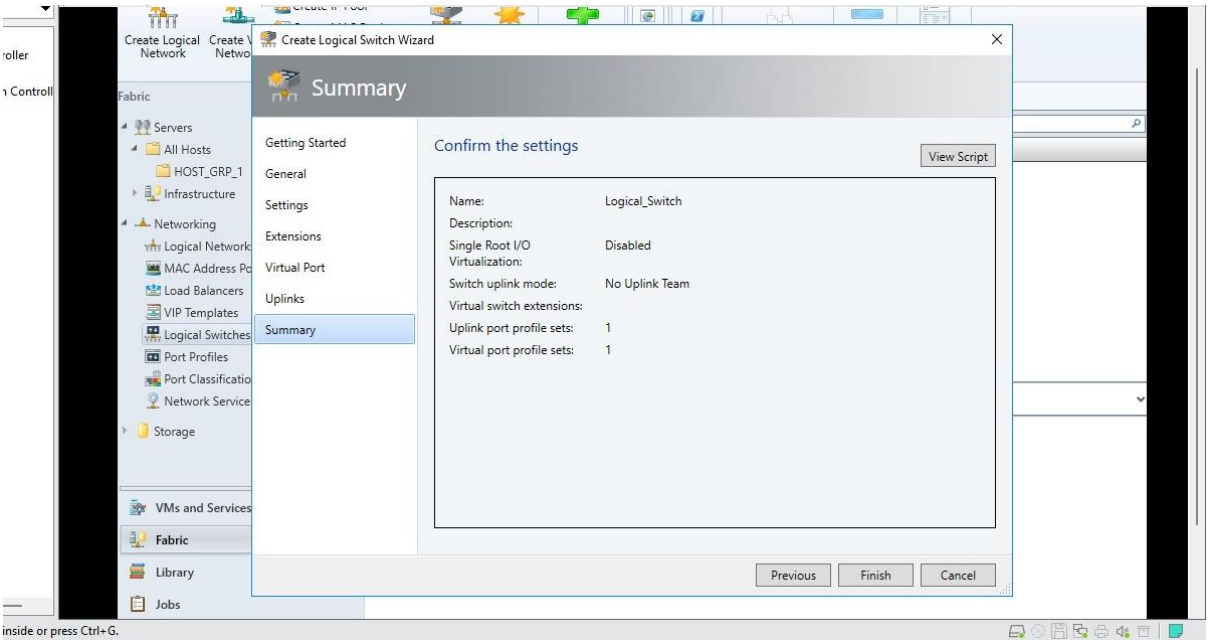
- Now Click on **new virtual network adapter**



- Name your virtual network adapter and Keep majority of the settings default and Select **Medium bandwidth** in Port Profile and Click **Next**

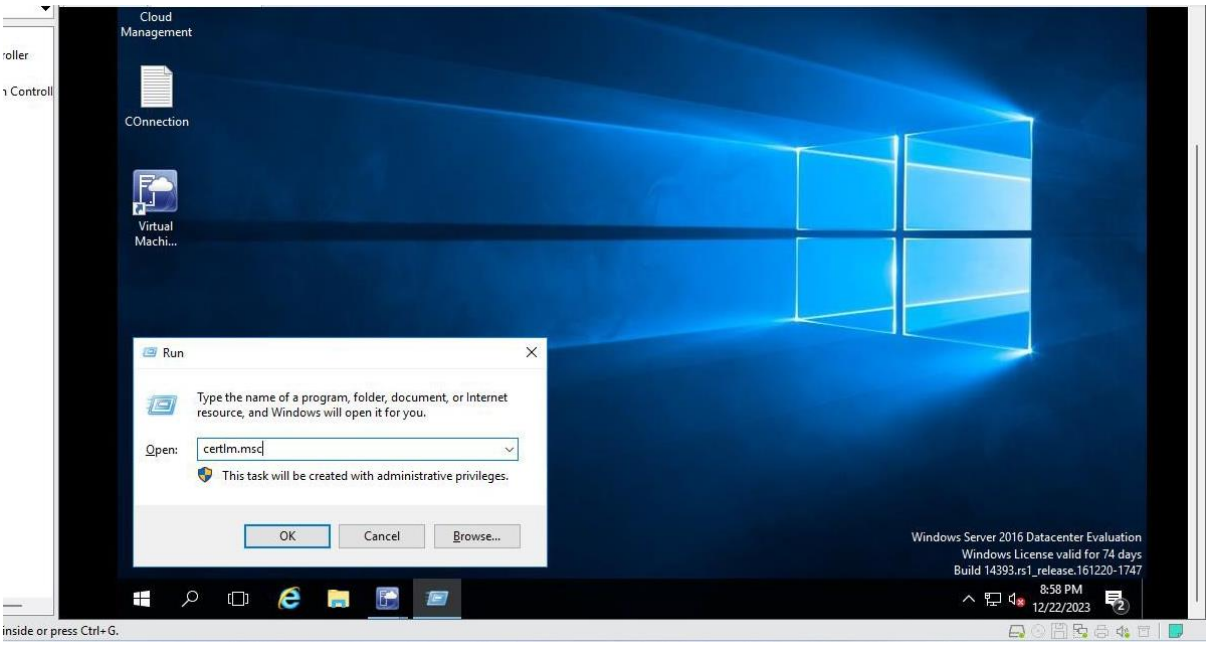


- Now view the summary of your Logical Switch and Click **Finish**

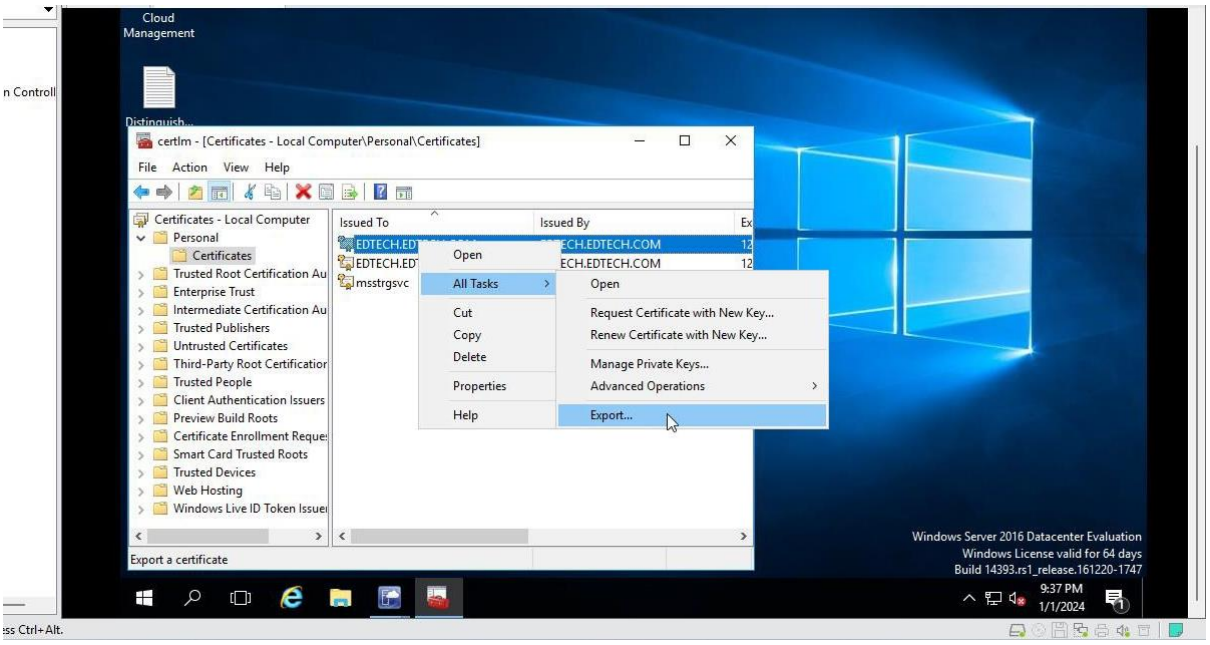


Step 4: Setting up the Security Certificate

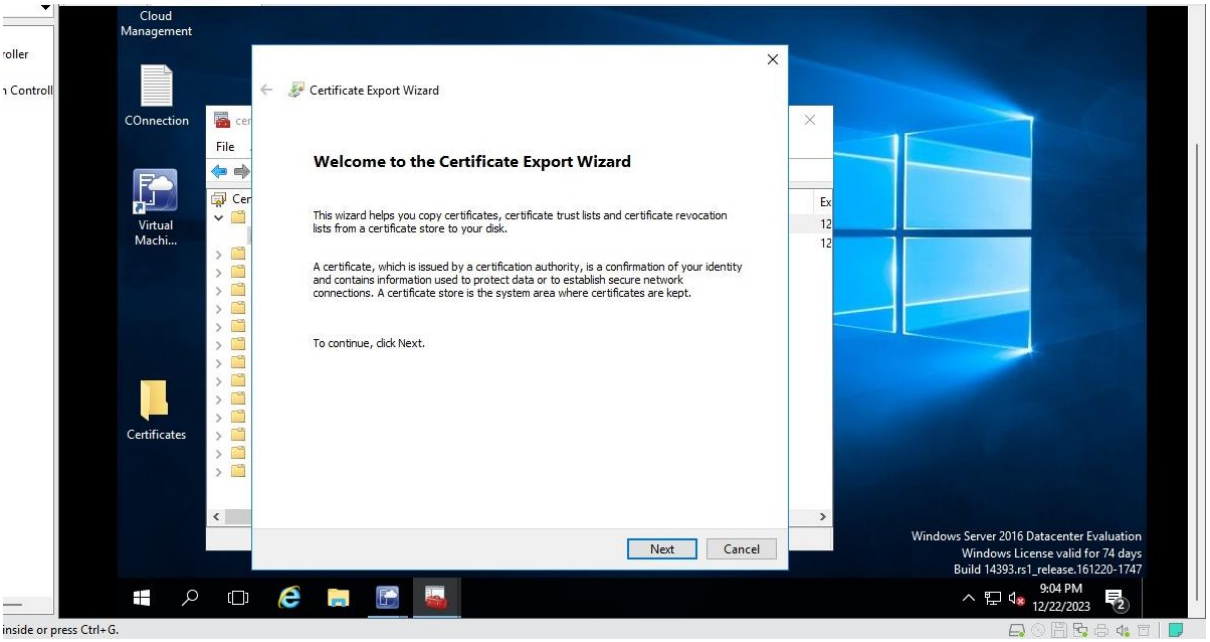
- In your Windows Run type in **certlm.msc** and Click **Ok**



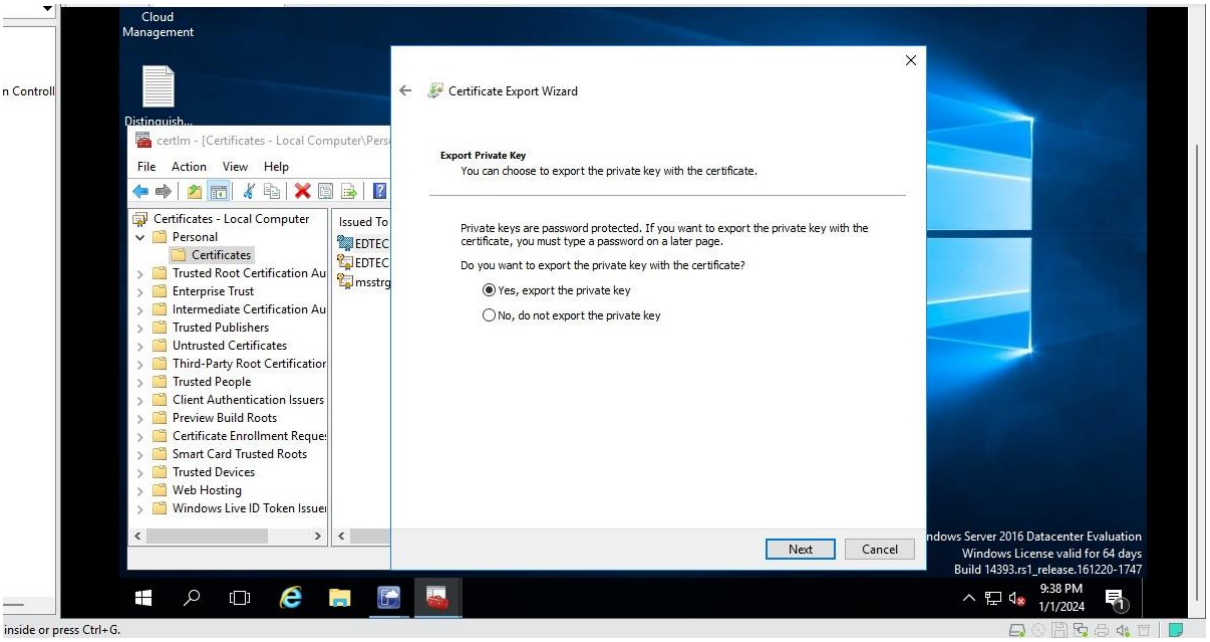
- Now Click on **Personal** and Select **Certificate** and within Certificate, Right-Click on **EDTECH.EDTECH.COM** and **msstrgsvc** and Click **All tasks** and Click **Export**



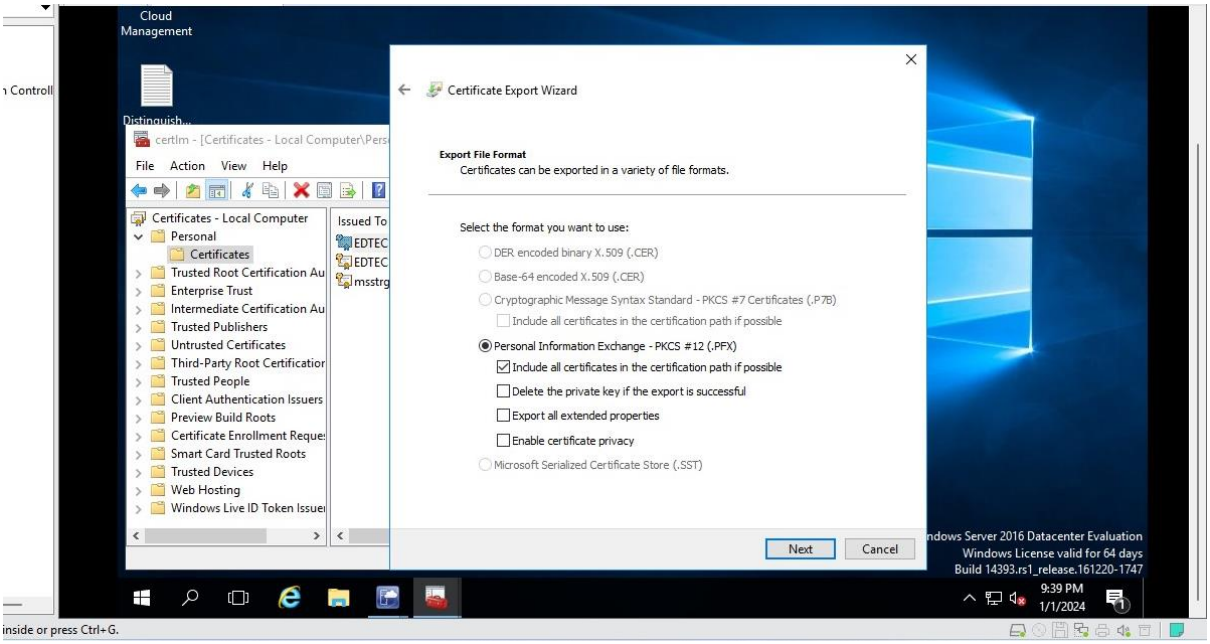
- Click **Next**



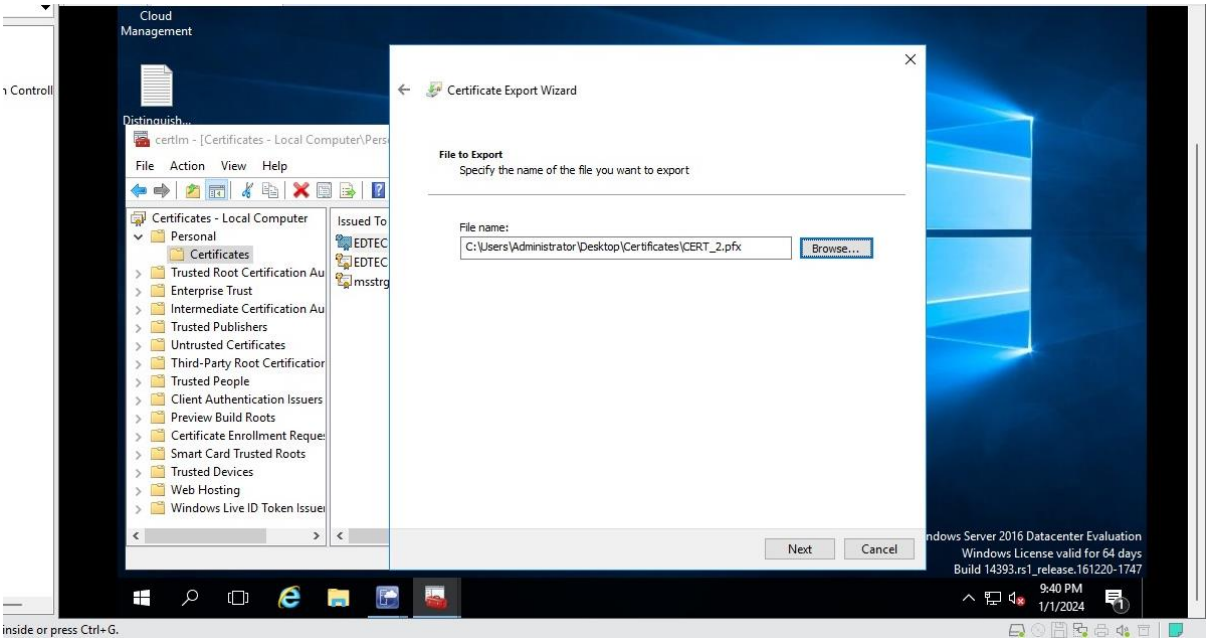
- Select **Yes, export the private key** and Click **Next**



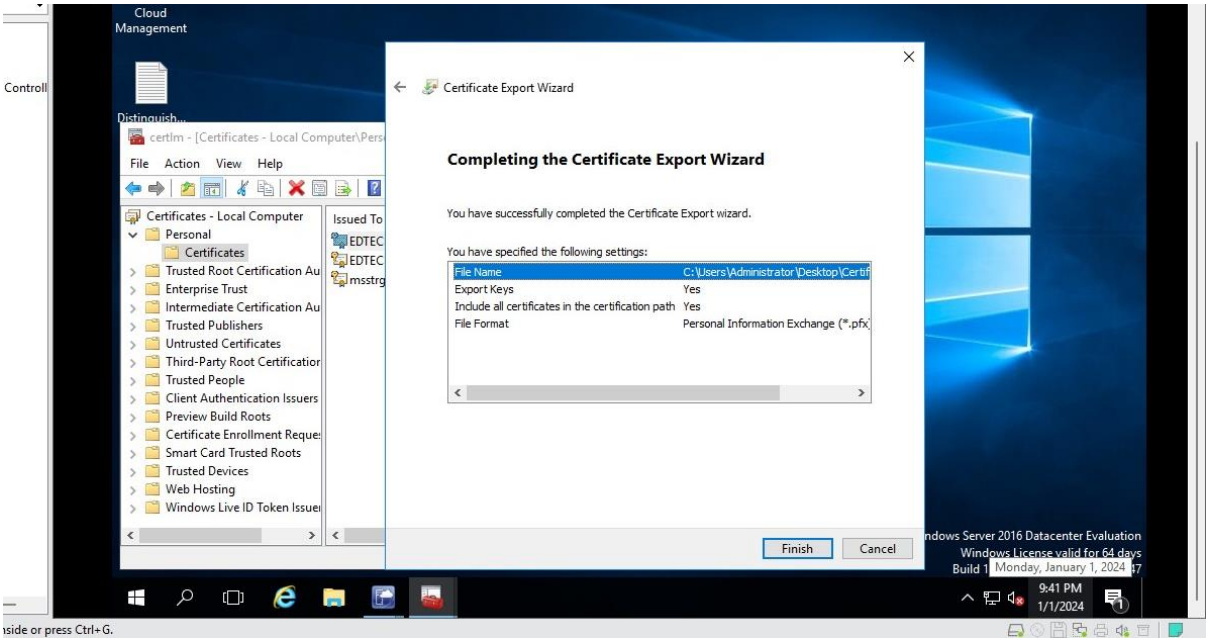
- Keep default values and Click **Next**



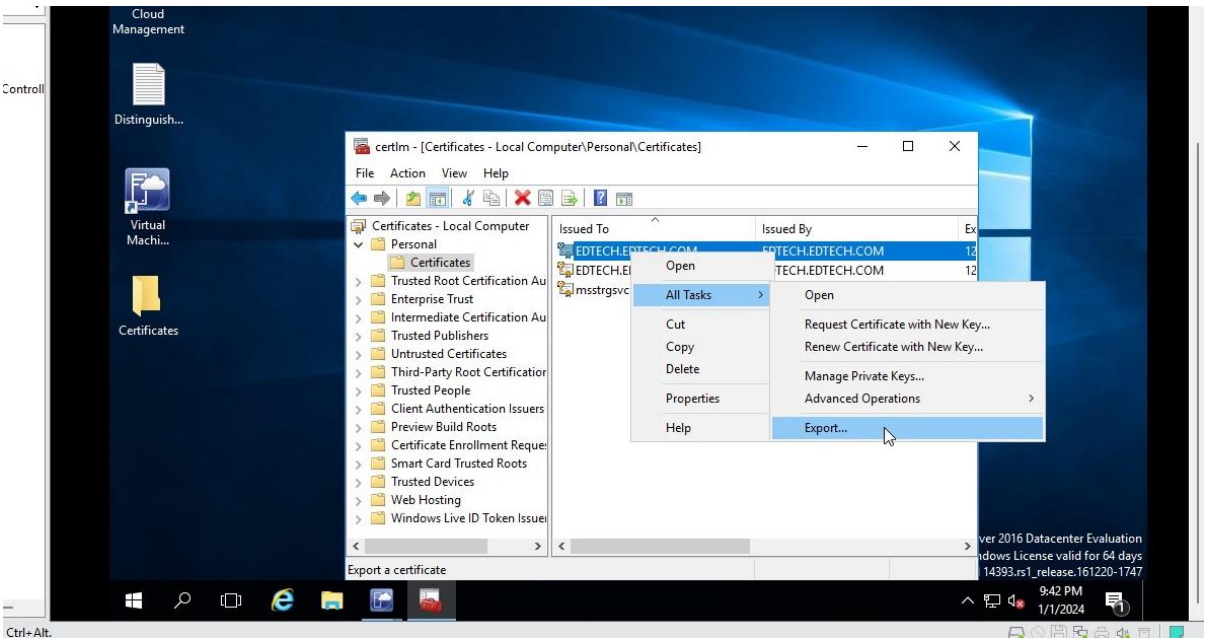
- Give it a file name and Click **Next**



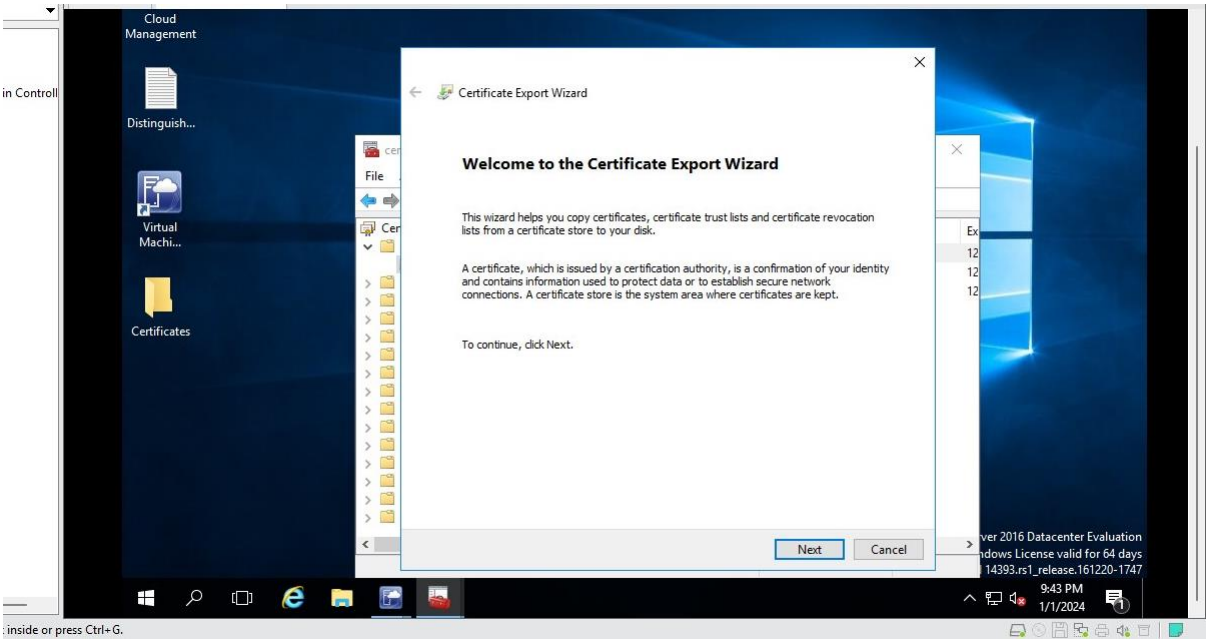
- Click **Finish**



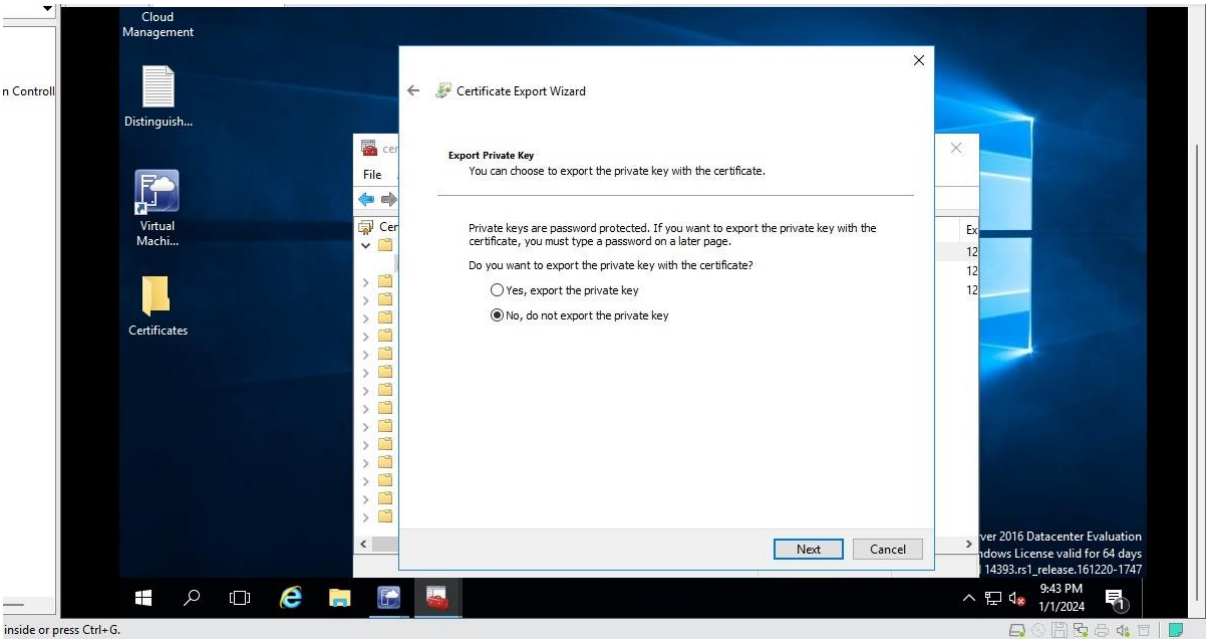
- Now Right-Click on the certificate again and Click on **Export**



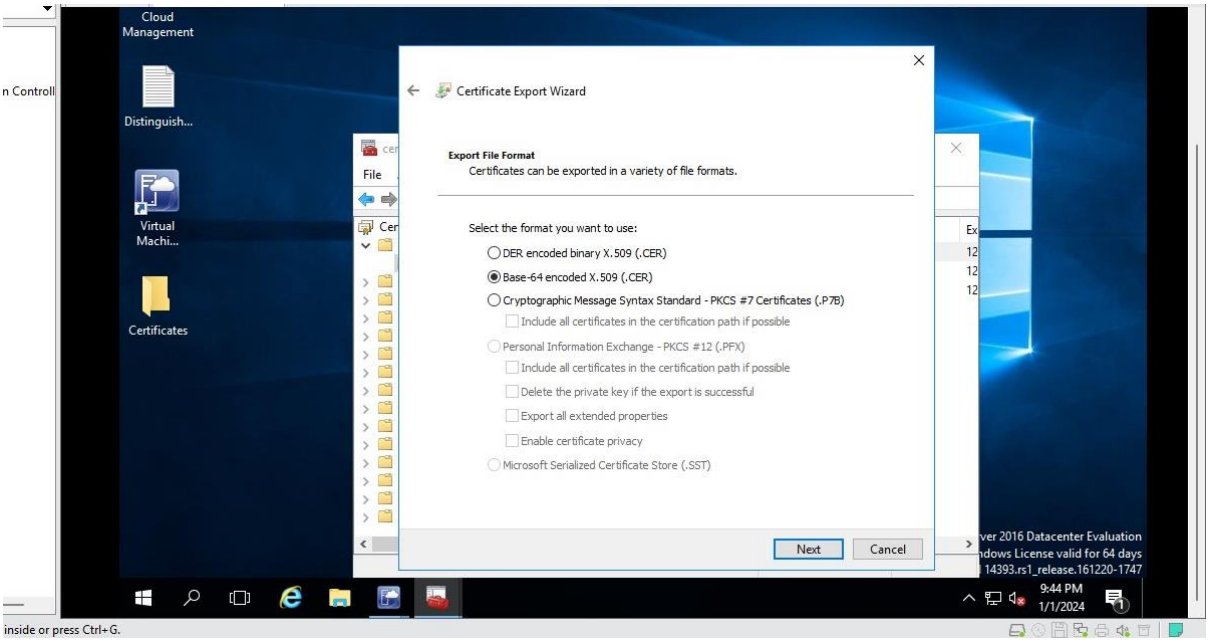
- Click **Next**



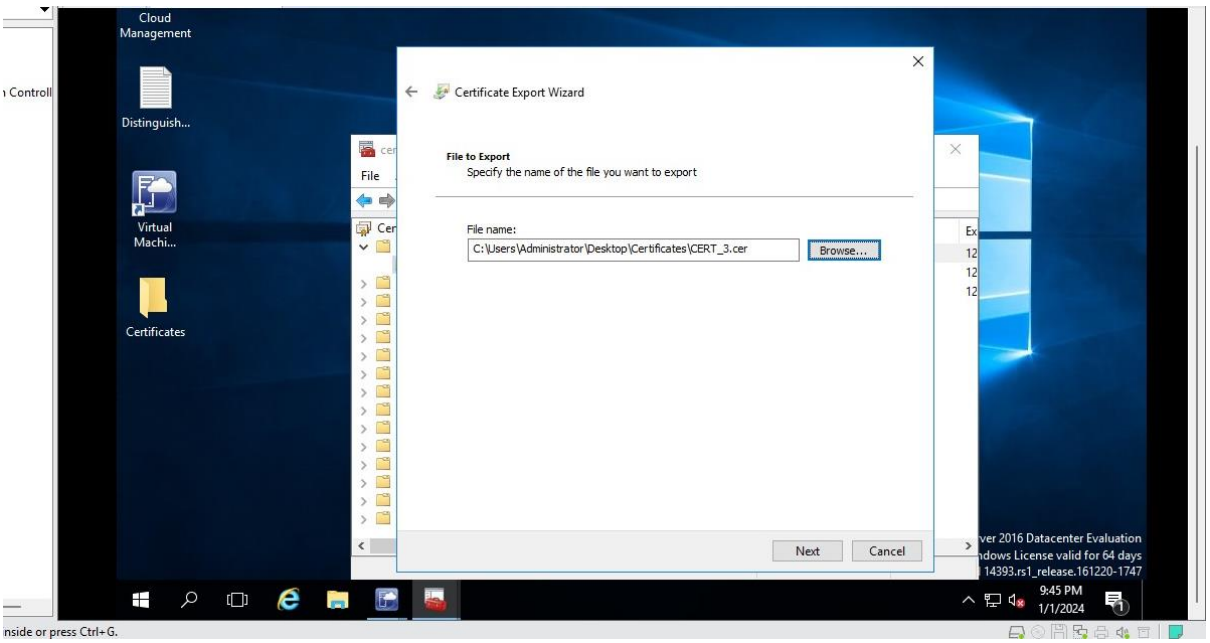
- Select **No, do not export the private key** and Click **Next**



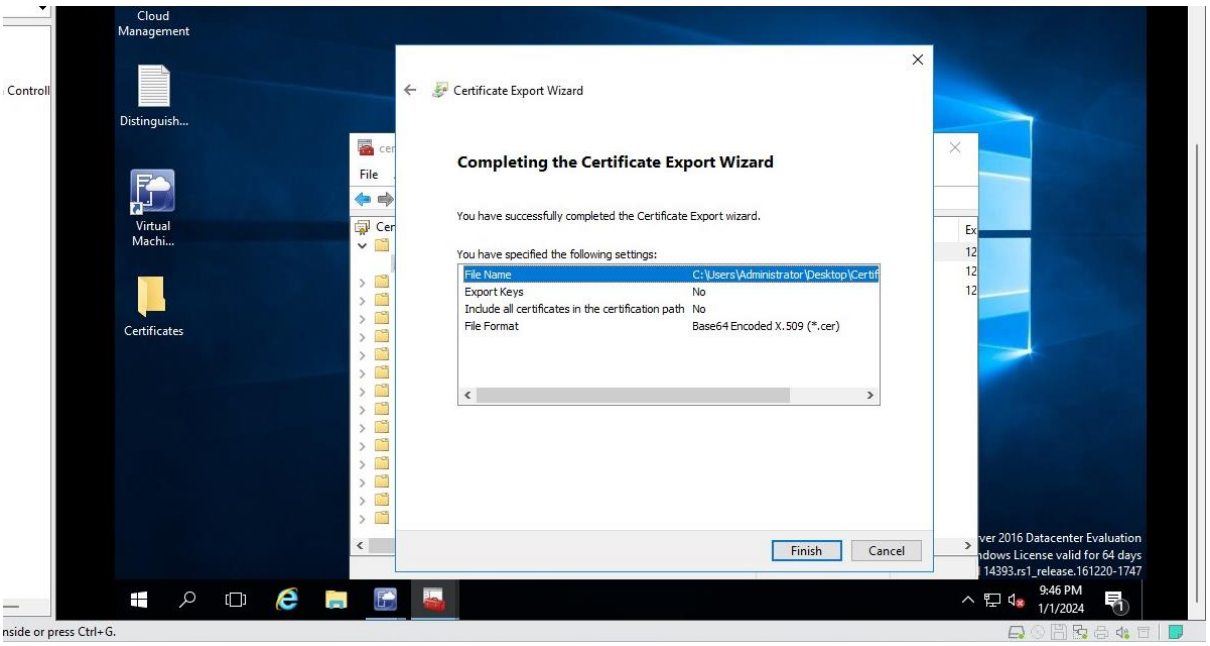
- Select **Base-64-encoded X.509 (.CER)** and Click **Next**



- Give it a path and Click **Next**

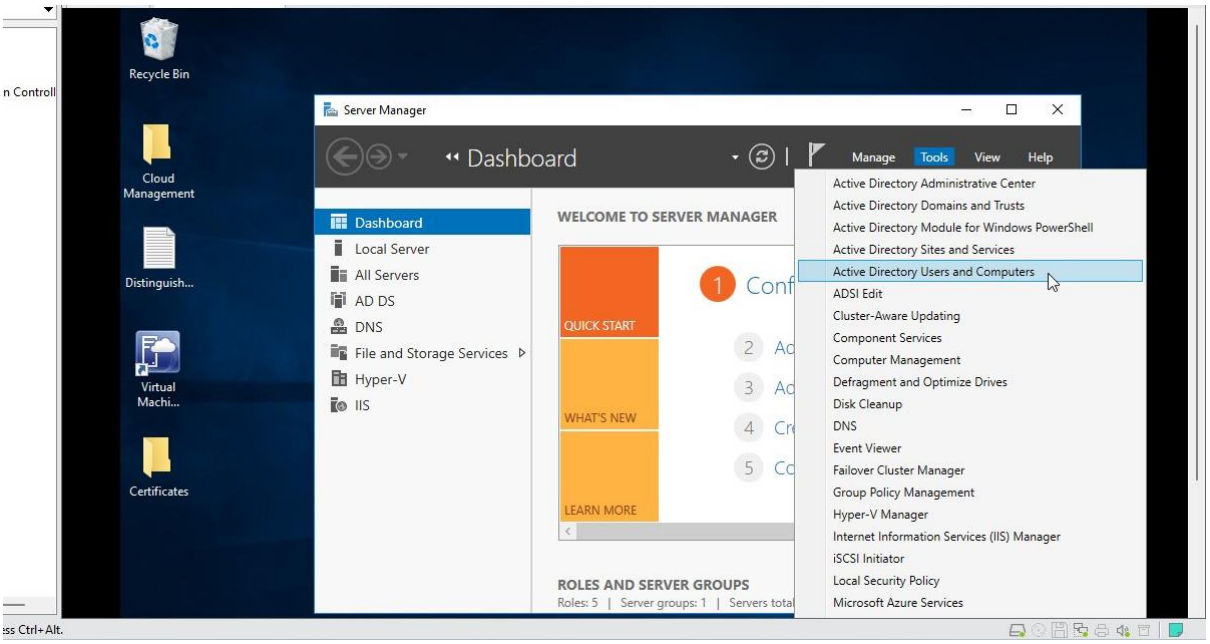


- Click **Finish**

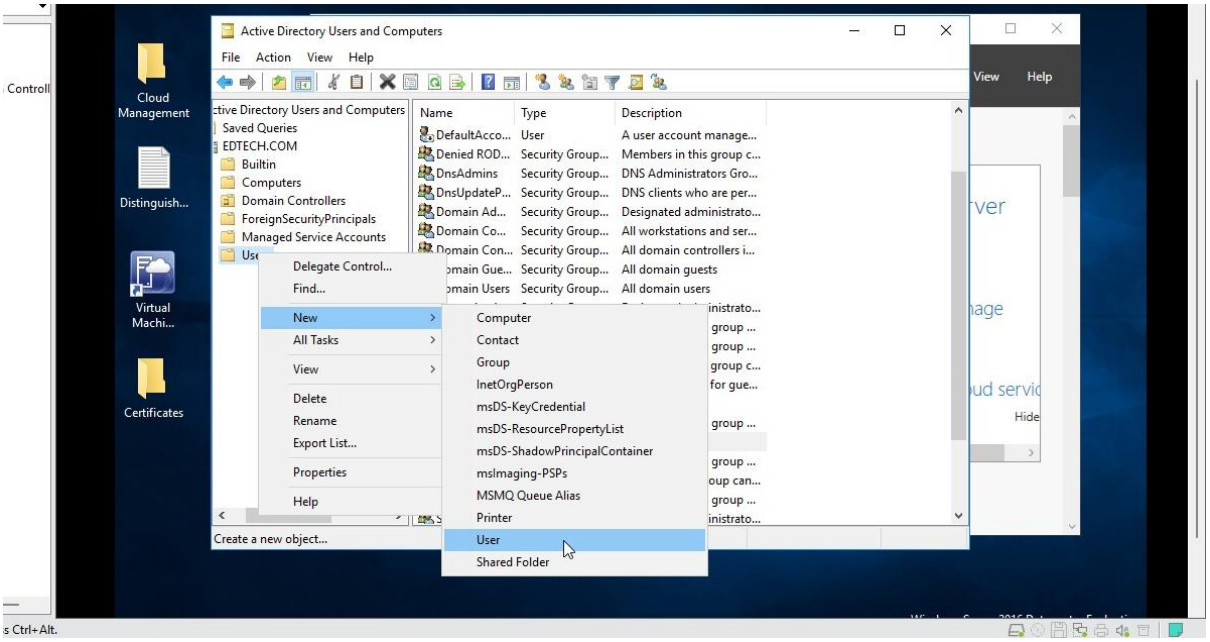


Step 5: Setting Up Security Group

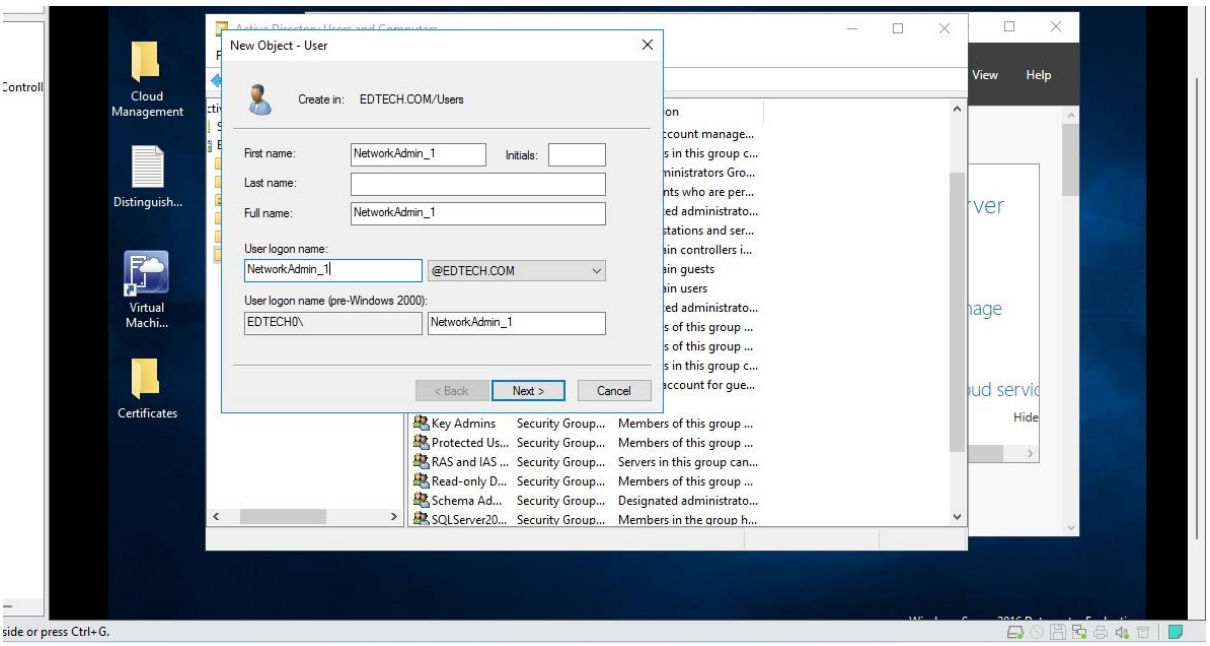
- Open **Server Manager** and Select **Active Directory Users and Computers**



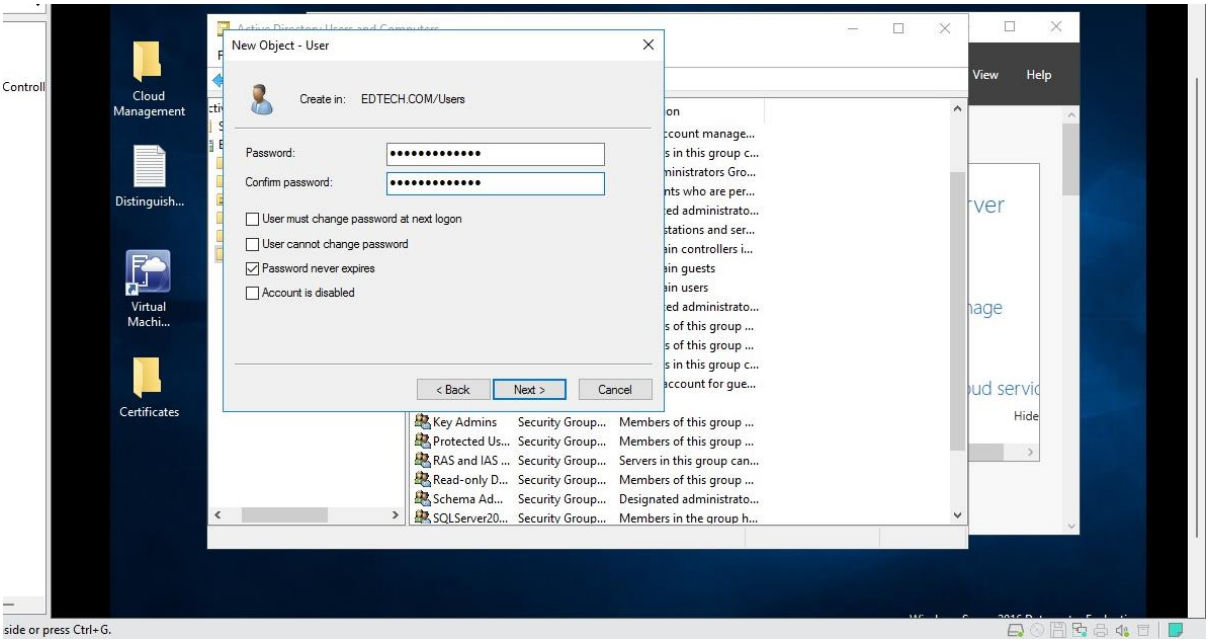
- Right-Click on Users and Select **New** and Click on **Users**



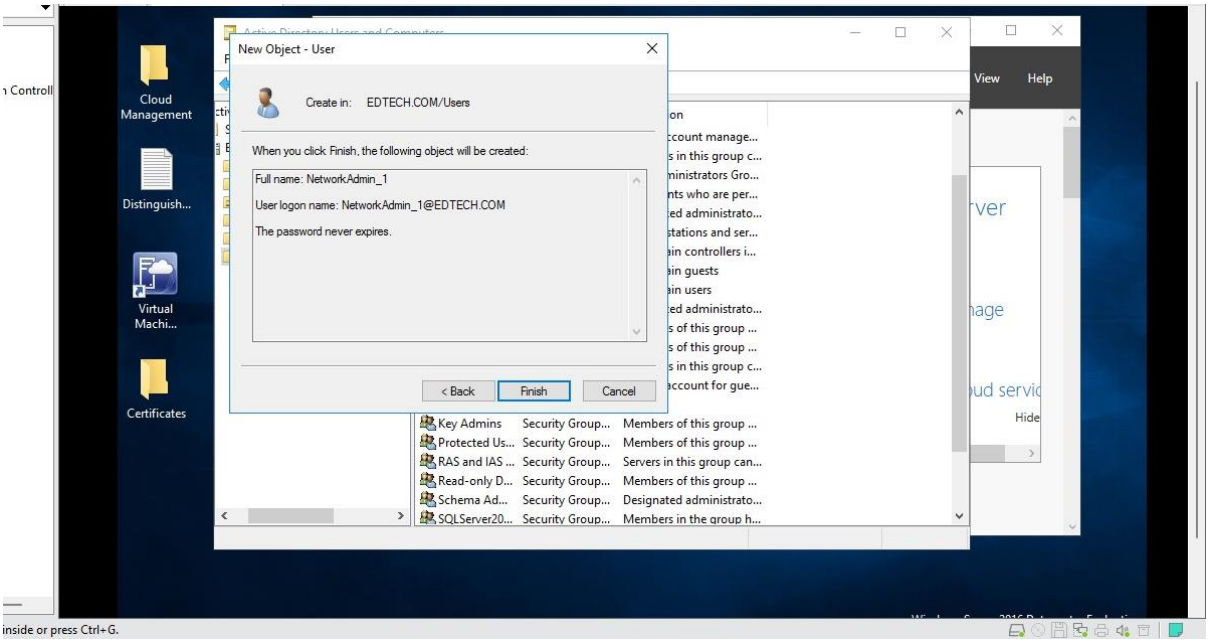
- Name you User (NetworkAdmin_1) and Click **Next**



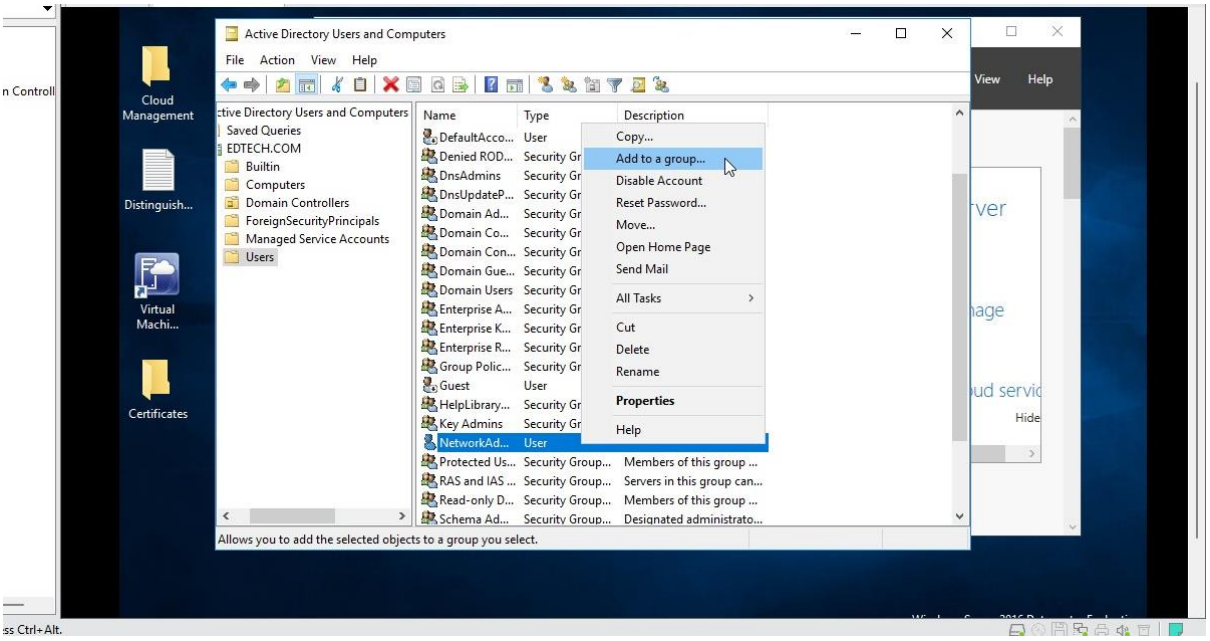
- Type in a password and Select **Password never expires** and Click **Next**



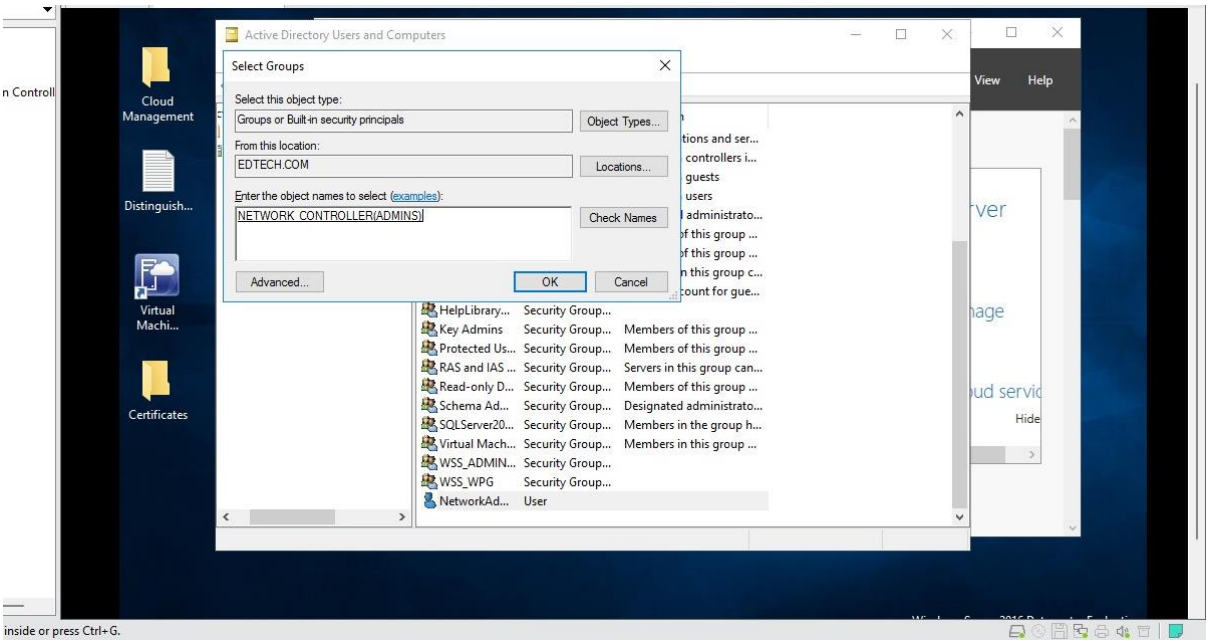
- Click **Finish**



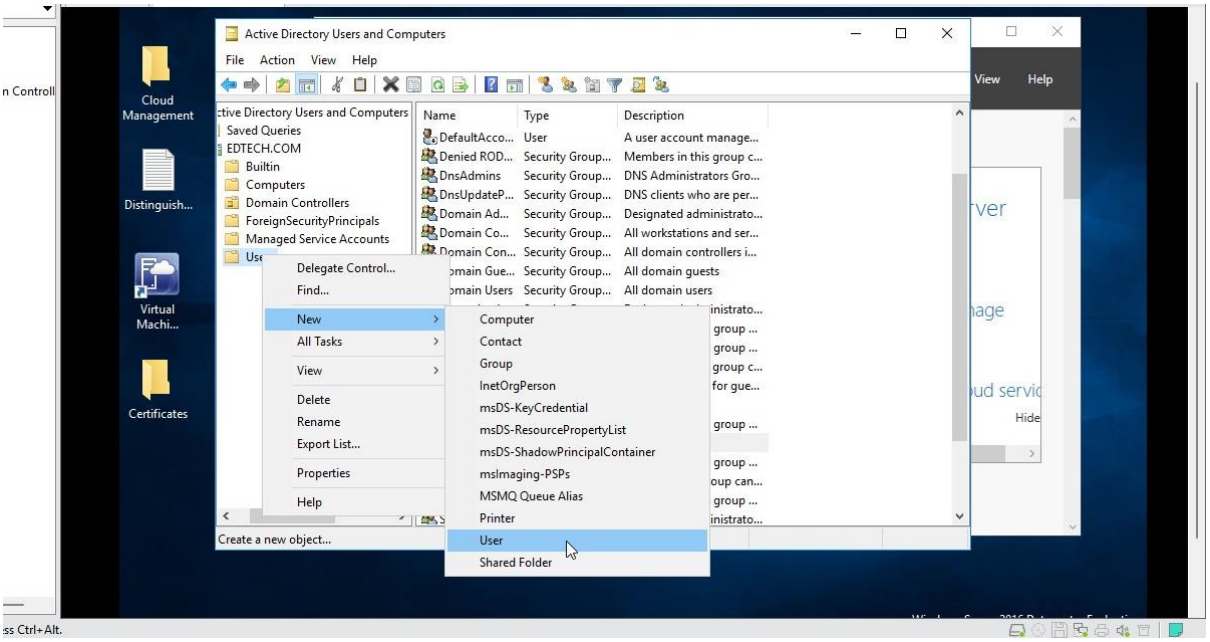
- Now Right-Click on your newly created user and Select **Add to a group**



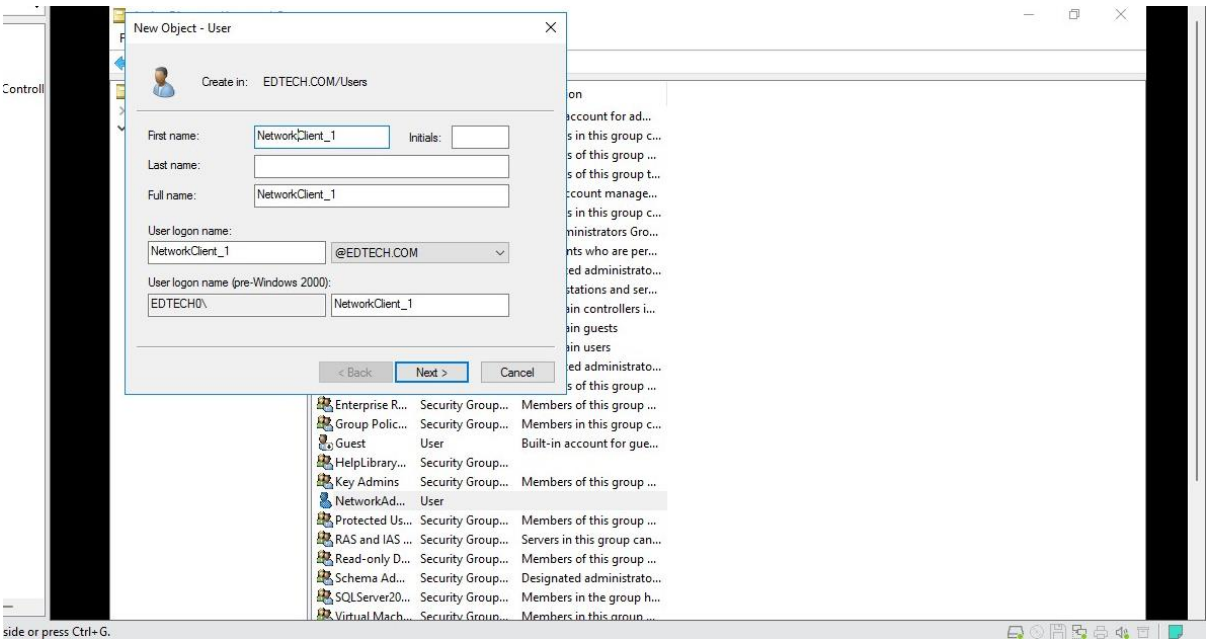
- Type in **Network_Controller(Admins)** and Click on **Check Names** and Click **Ok**



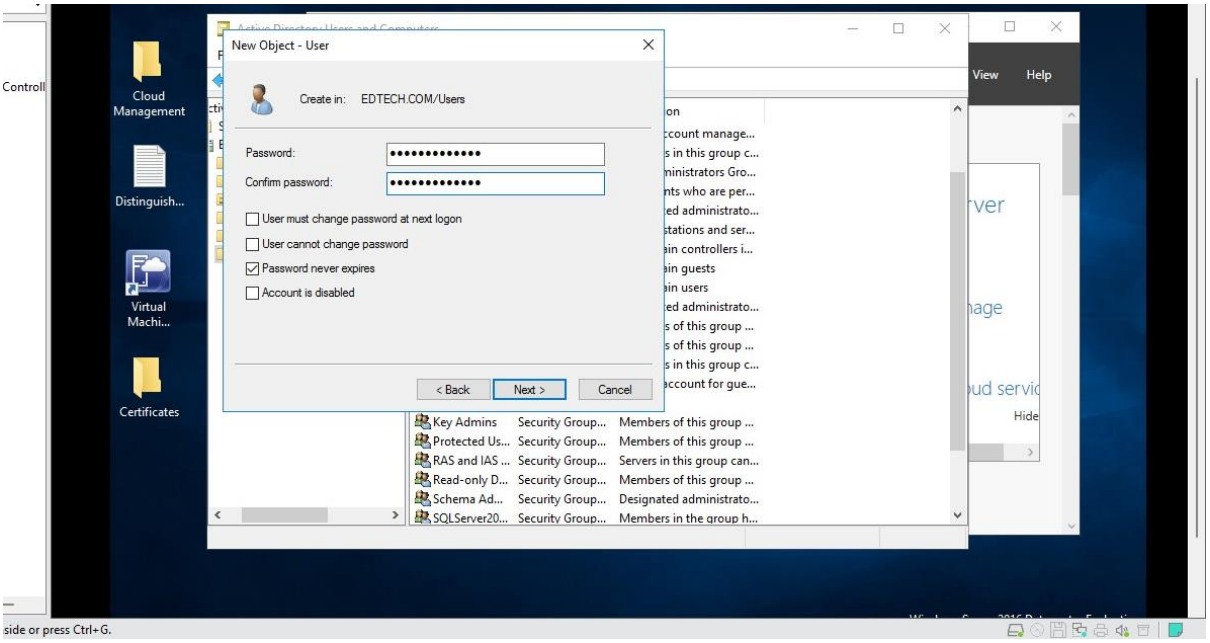
- Right-Click on Users and Select **New** and Click on **Users**



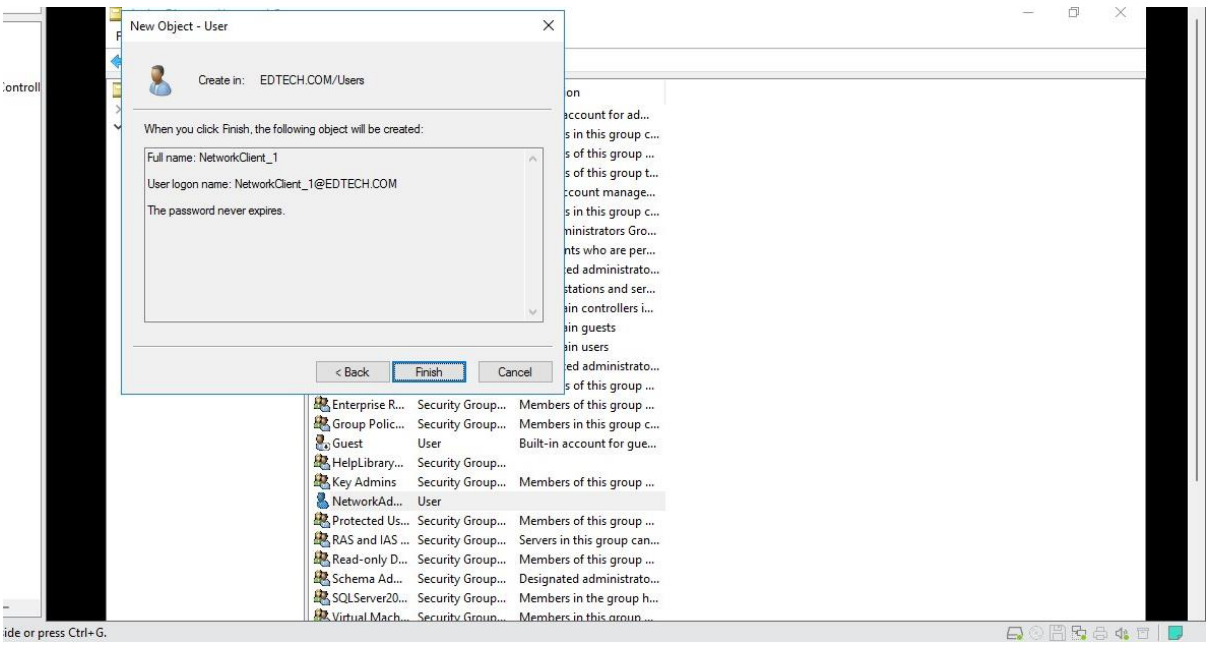
- Name you User (NetworkClient_1) and Click **Next**



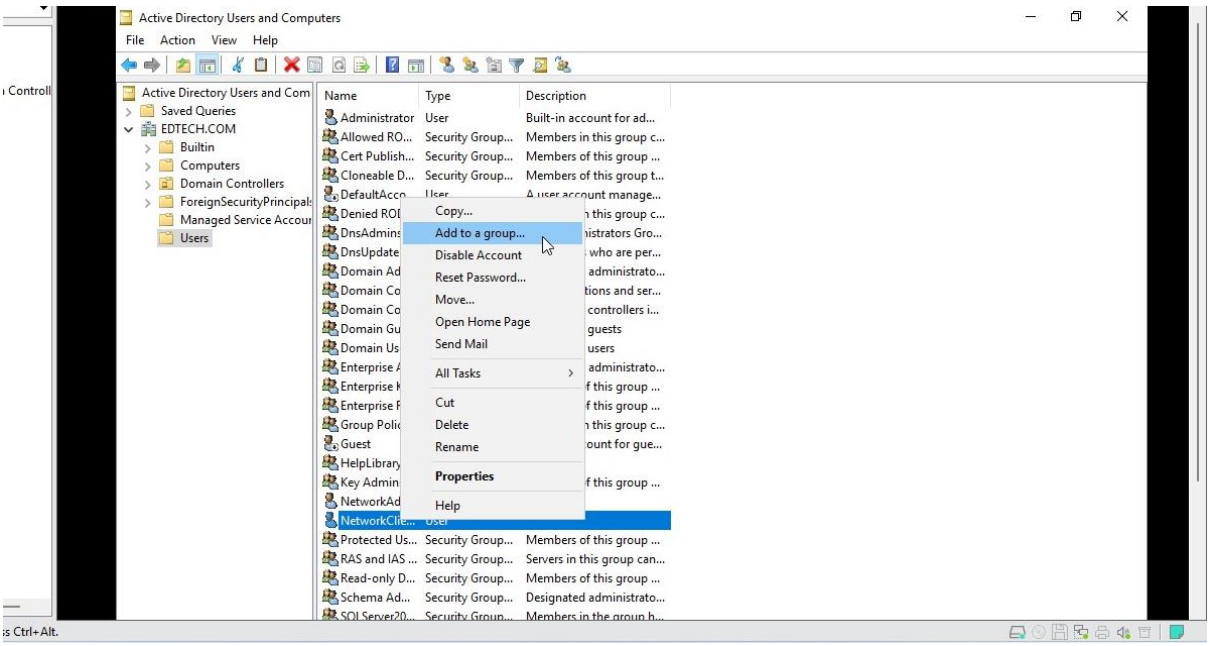
- Type in a password and Select **Password never expires** and Click **Next**



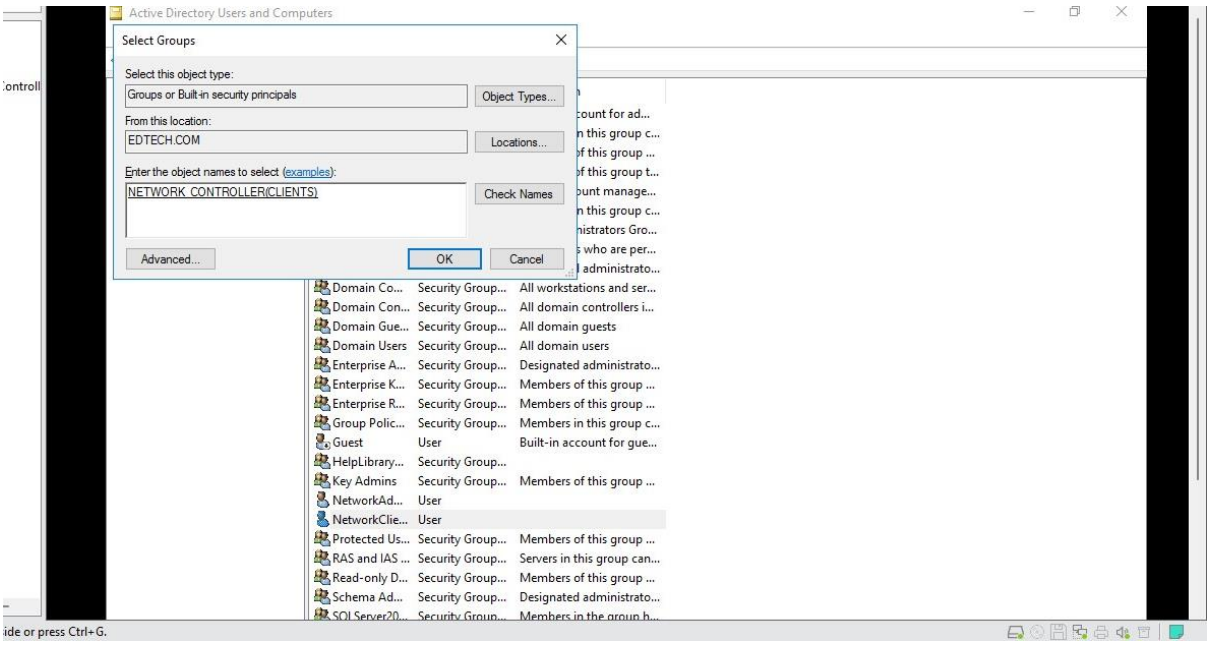
- Click **Finish**



- Now Right-Click on your newly created user and Select **Add to a group**

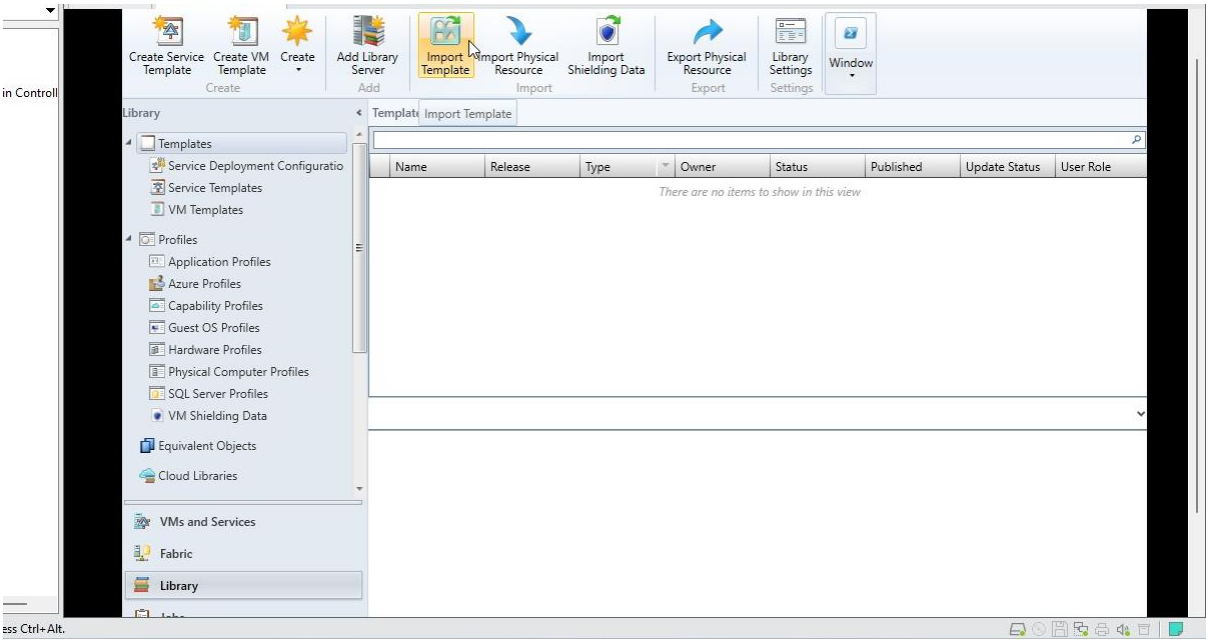


- Type in **Network_Controller(Clients)** and Click on **Check Names** and Click **Ok**

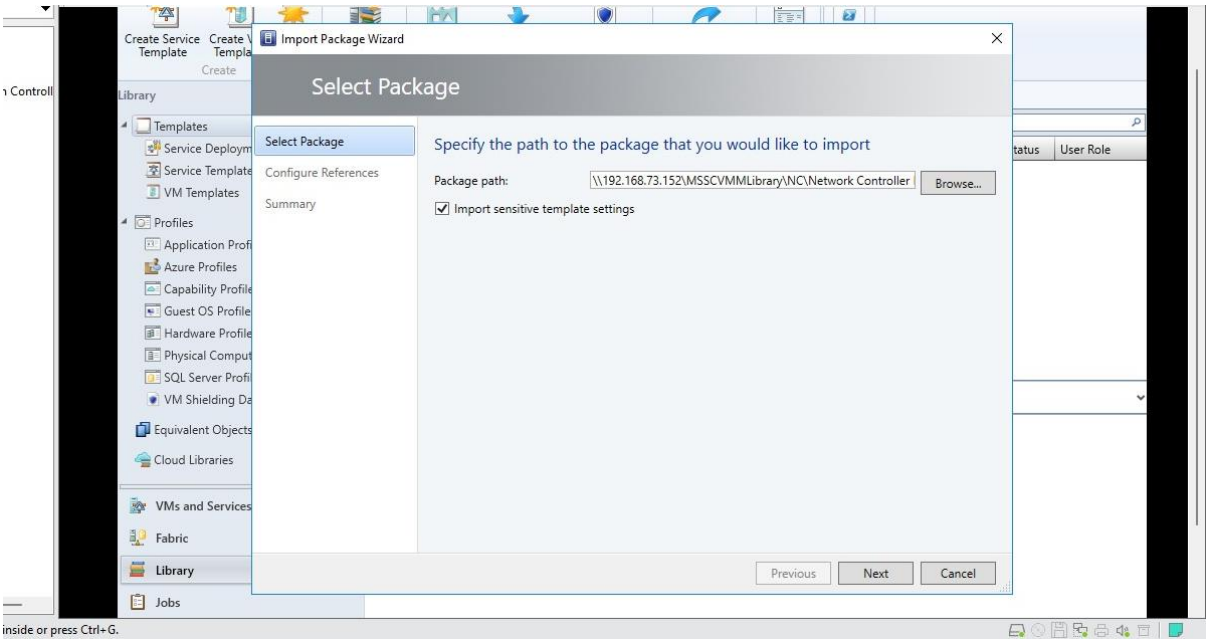


Step 6: Set up Service Template

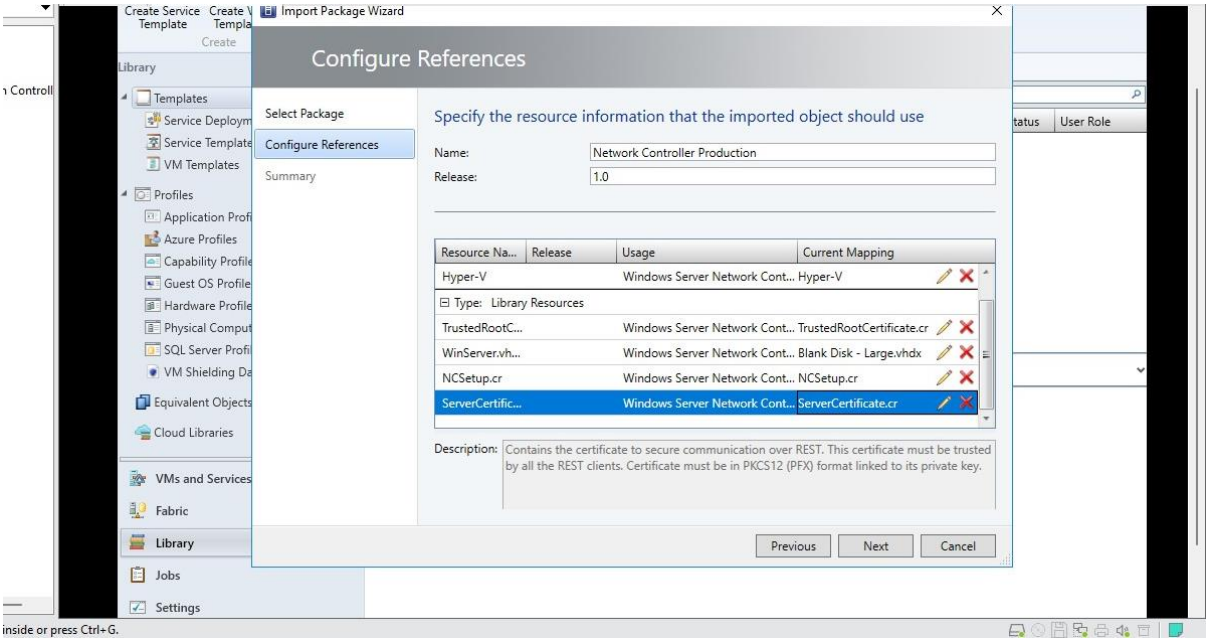
- In SCVMM Select the **Library** Tab and Click on **Import Template**



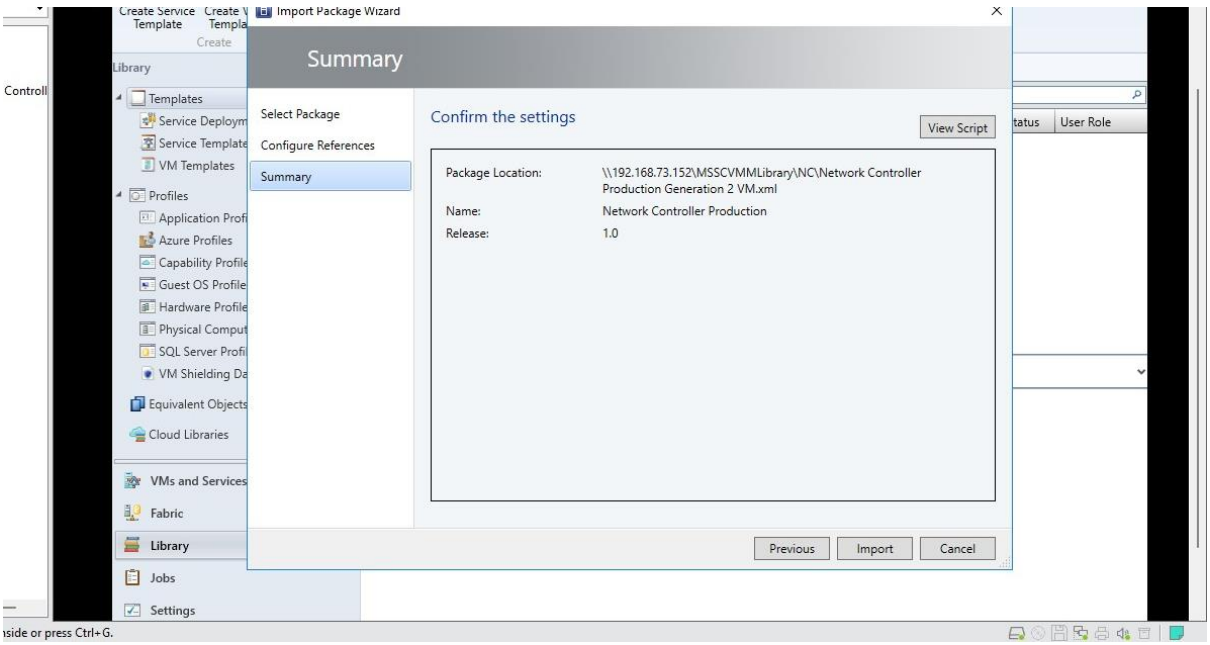
- Click on **Browse** and Search the NC folder for **Network Controller Production Generation 2 VM.xml** file and Click **Next**



- Select all the necessary resources from your template folder and Click **Next**

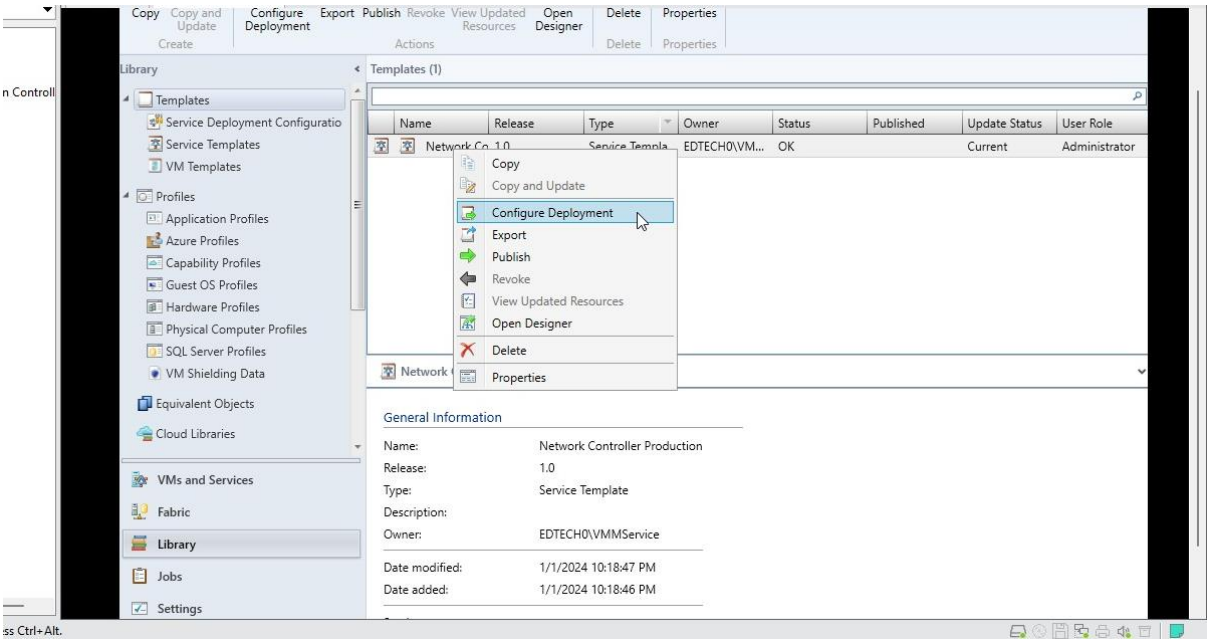


- Select **Import**

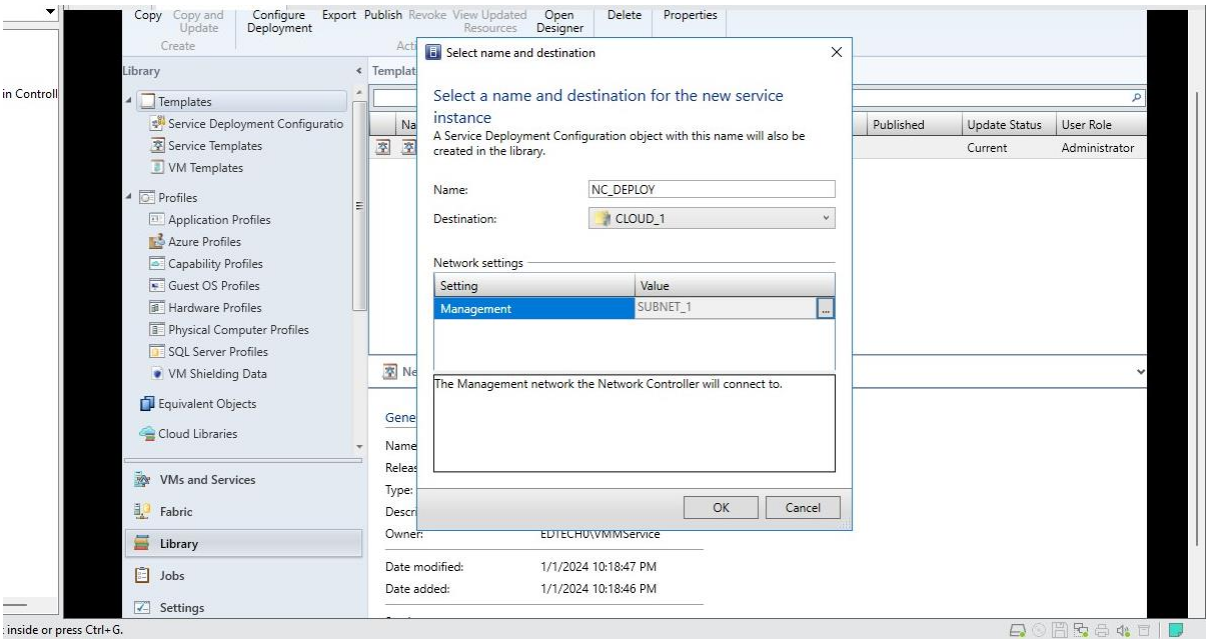


Step 7: Deploying the Network Controller

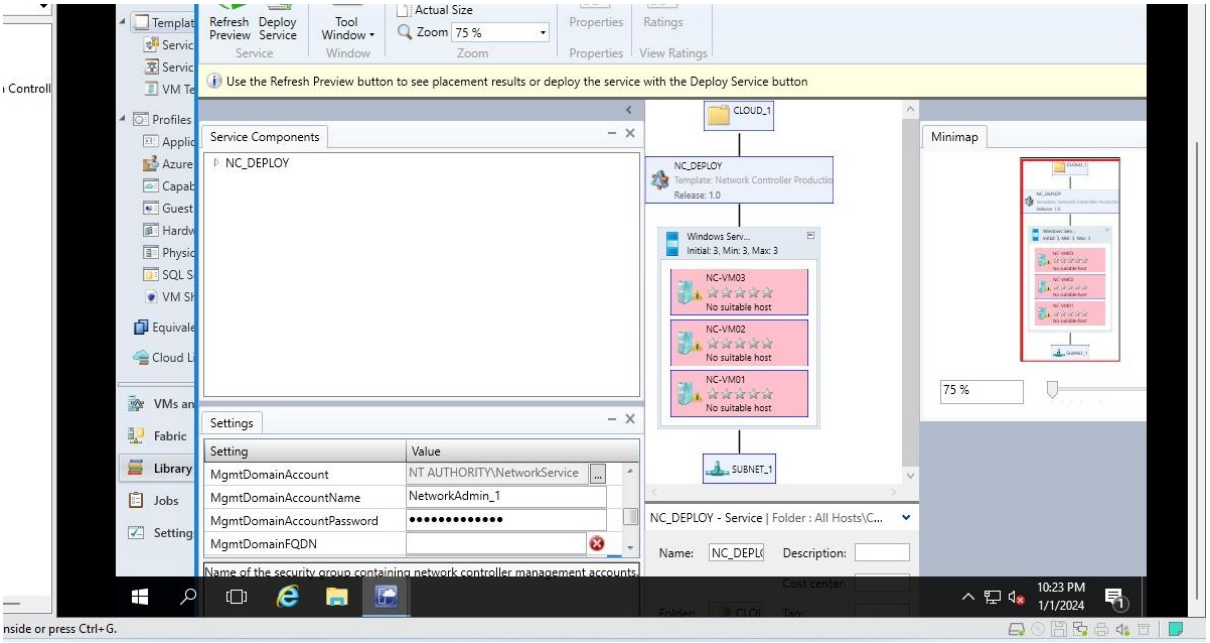
- Right-Click on the newly created Network Controller template and Select **Configure Deployment**



- Give it a name and Select you management as your Logical Network and Click **Ok**



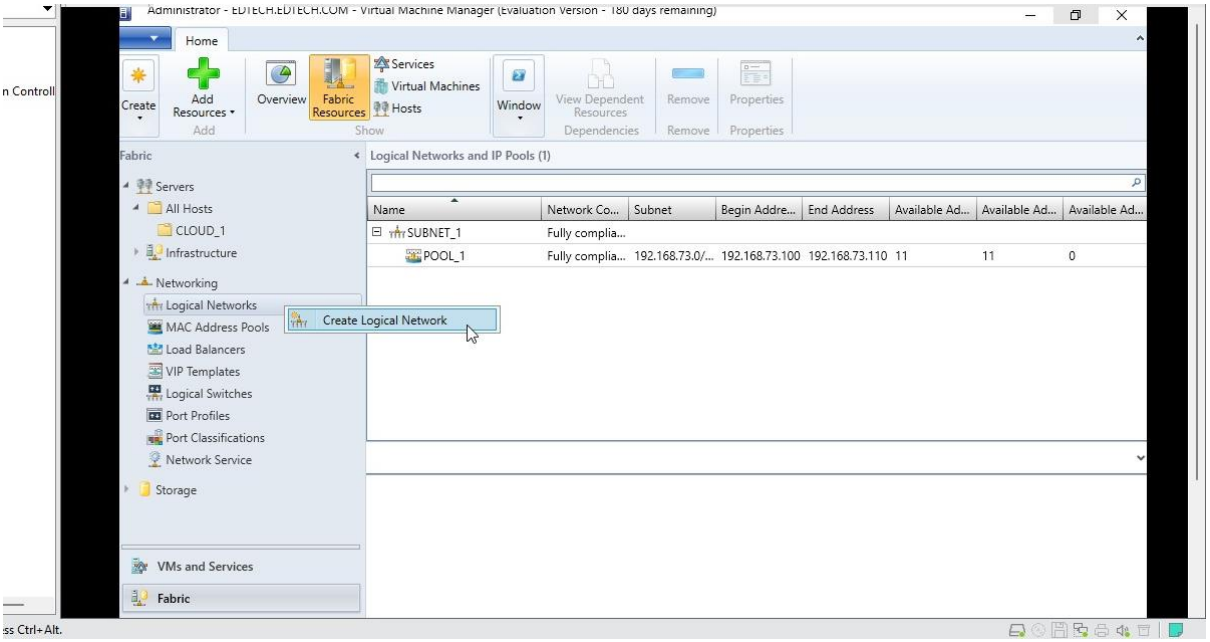
- This is the deployment of the Network Controller Service Template



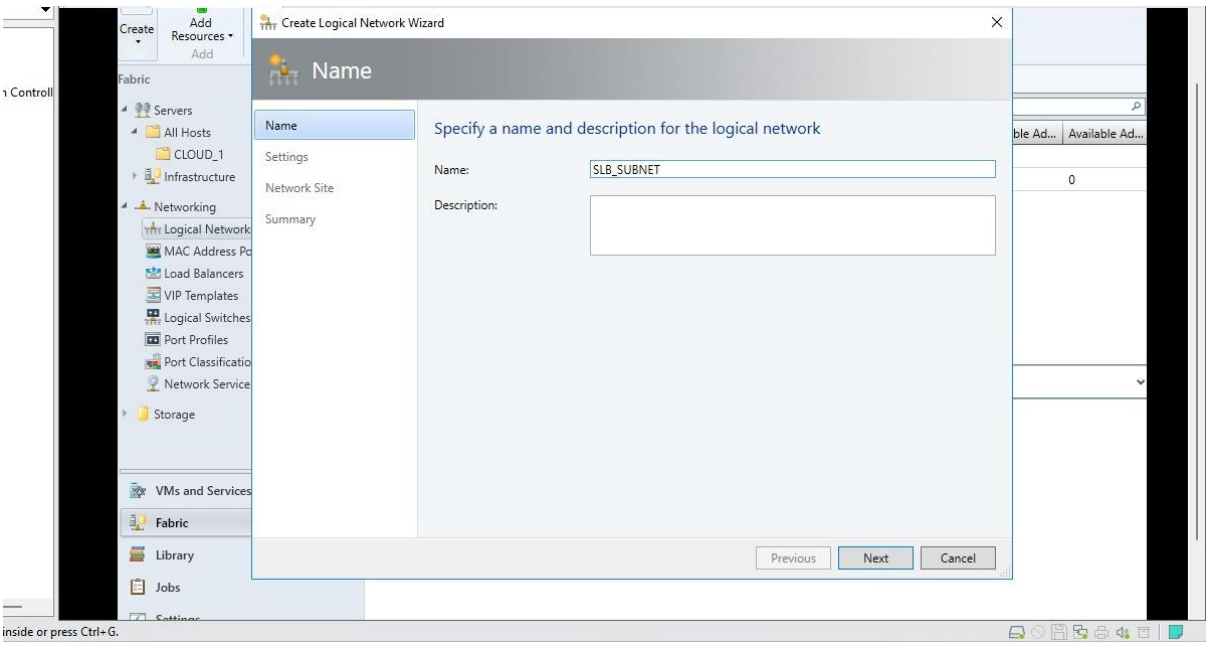
2-B: Deploying Software Load Balancer

Step 1: Create a Logical Network

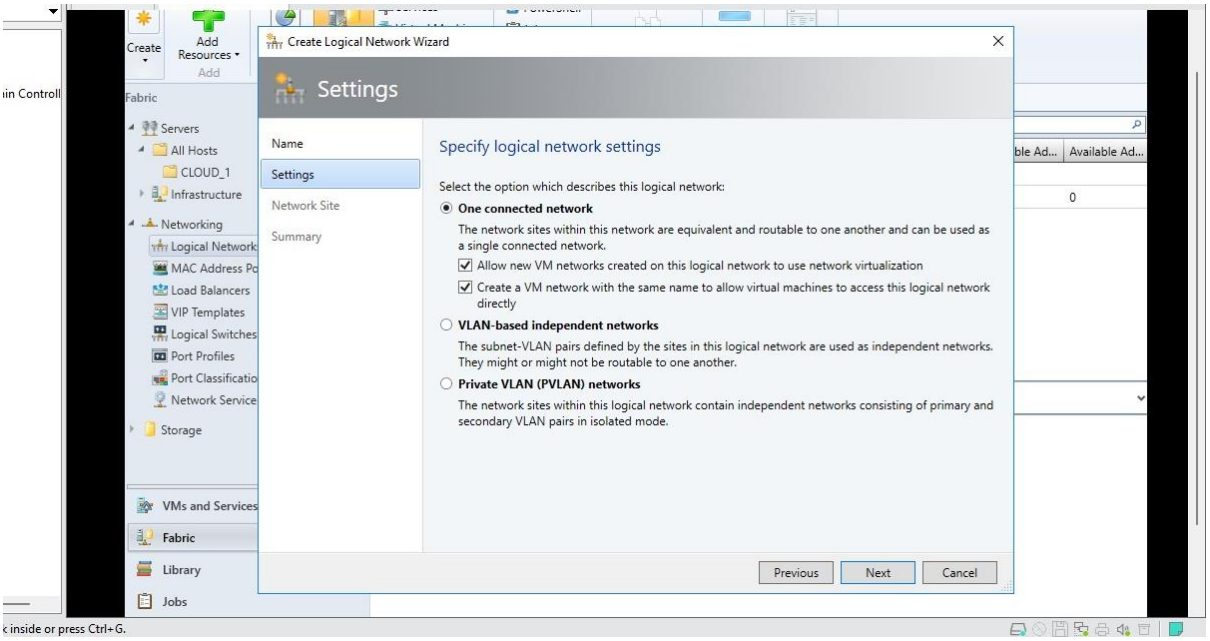
- Create a new logical network by Selecting the **Fabric** Tab in SCVMM and Right-Click on **Logical Networks** and Select **Create a Logical Network**



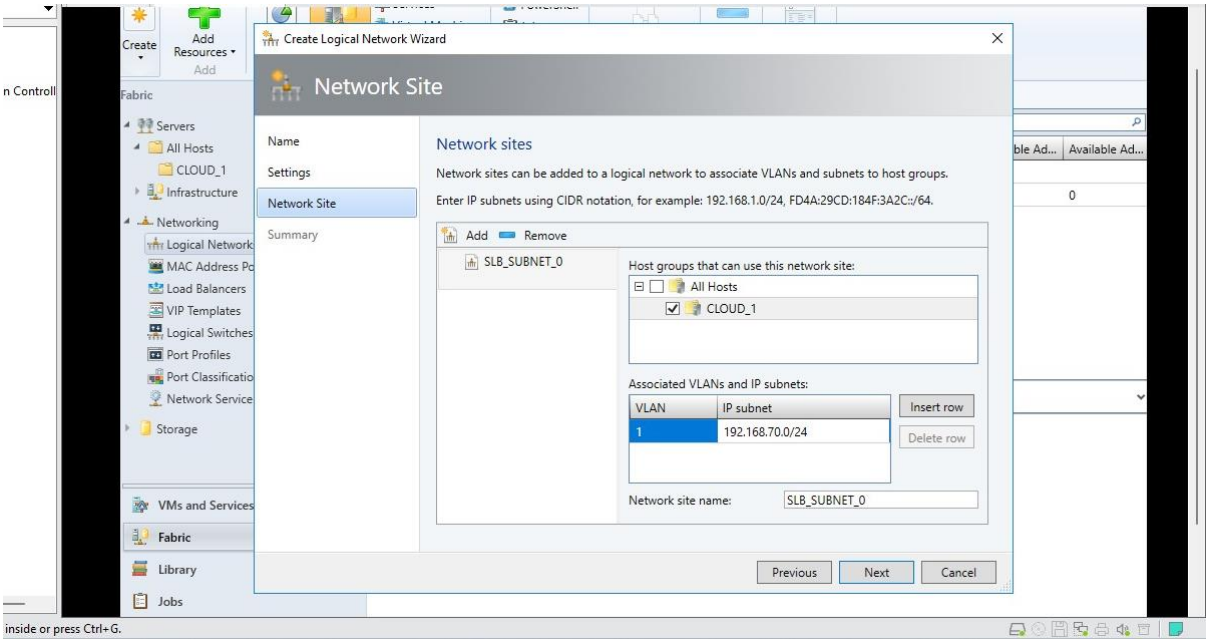
- Name it **SLB_SUBNET** and Click **Next**



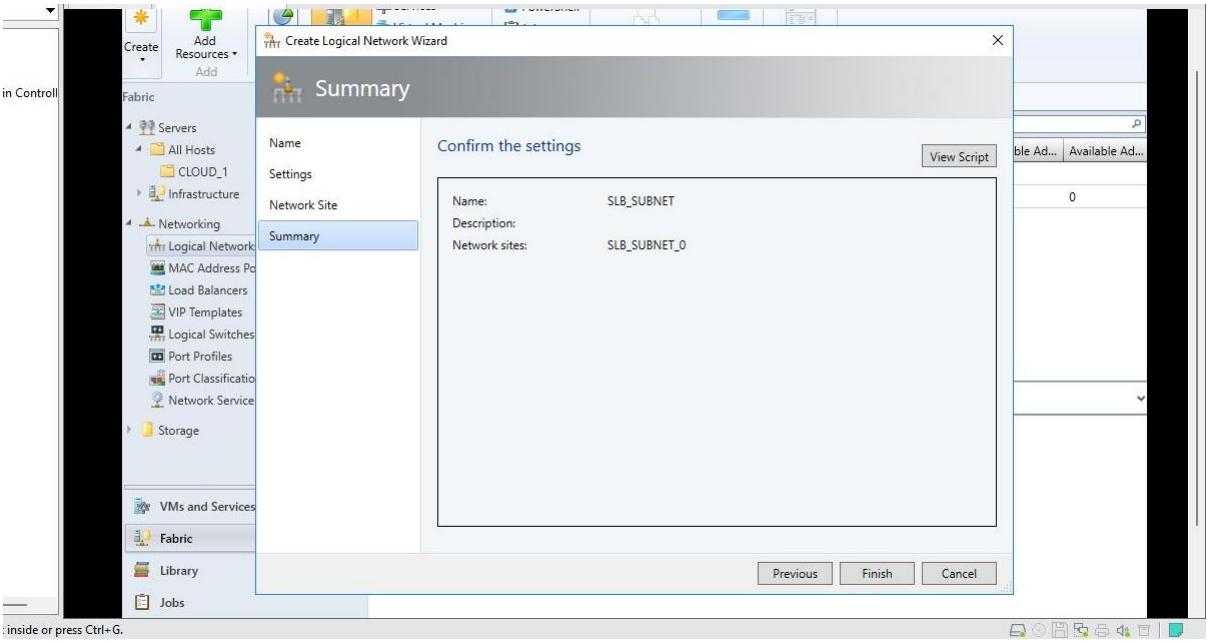
- Select **One Connected Network** and Tick both the boxes and Click **Next**



- In Network Site Select your current Host Group and Enter an IP Address Range (Here it is 192.168.70.0/24) and Click **Next**

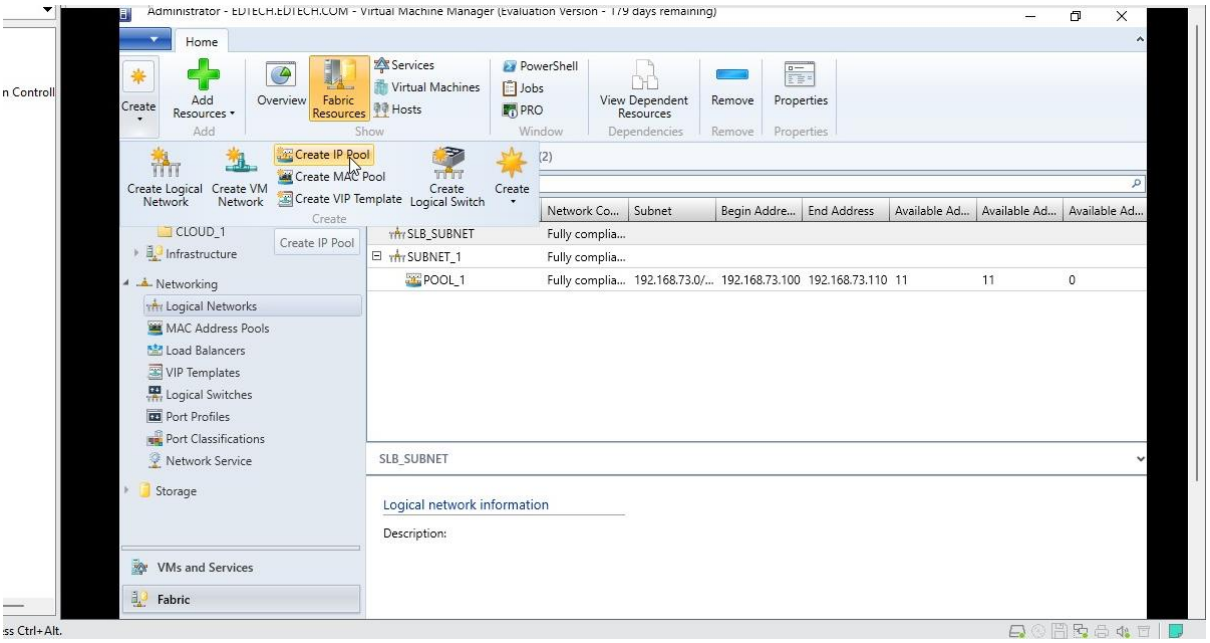


- View the summary and Click **Finish**

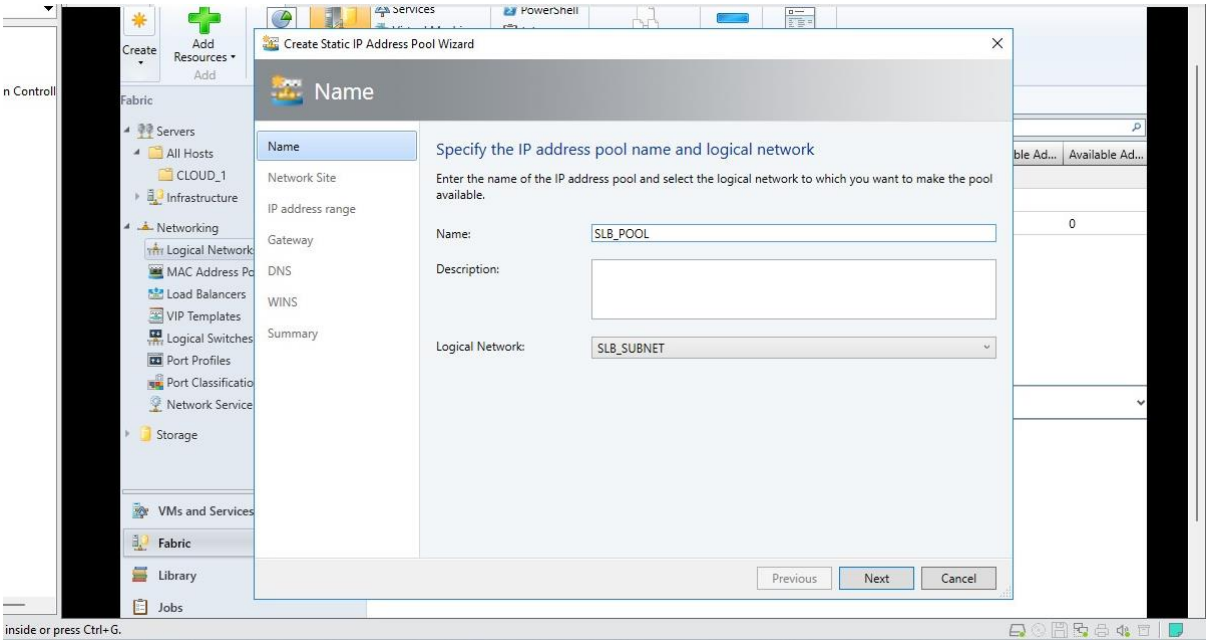


Step 2: Create an IP Pool for the newly created Logical Network

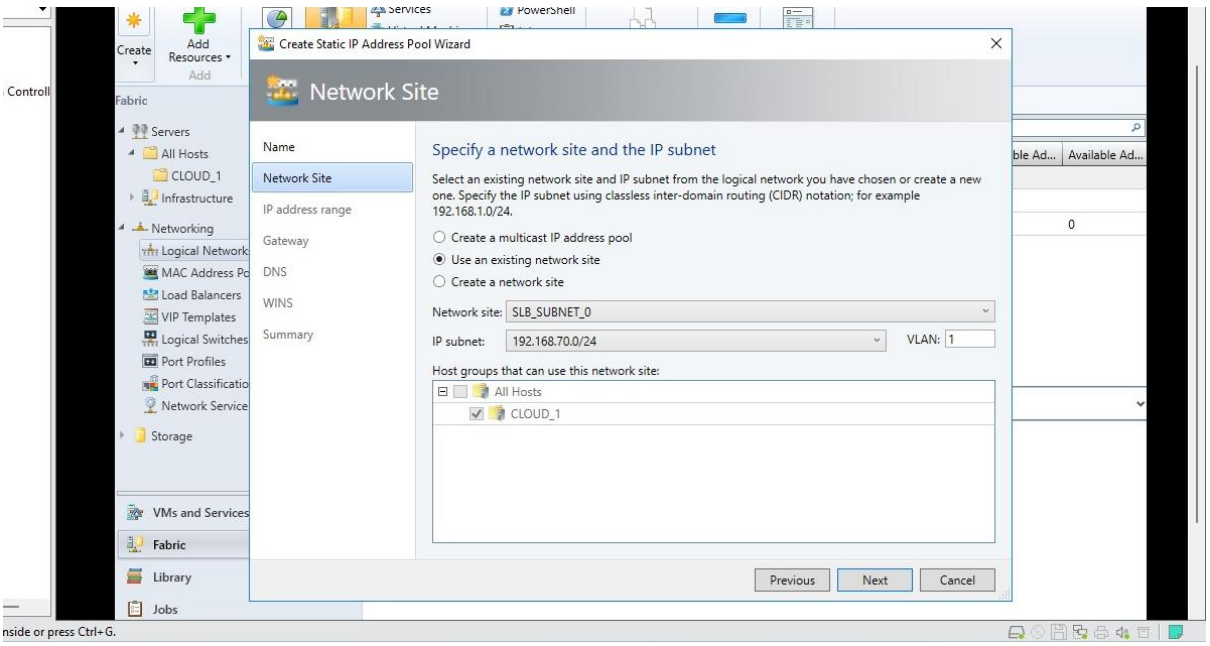
- In the Fabric Tab Click on the **Create** button and Select **Create IP Pool**



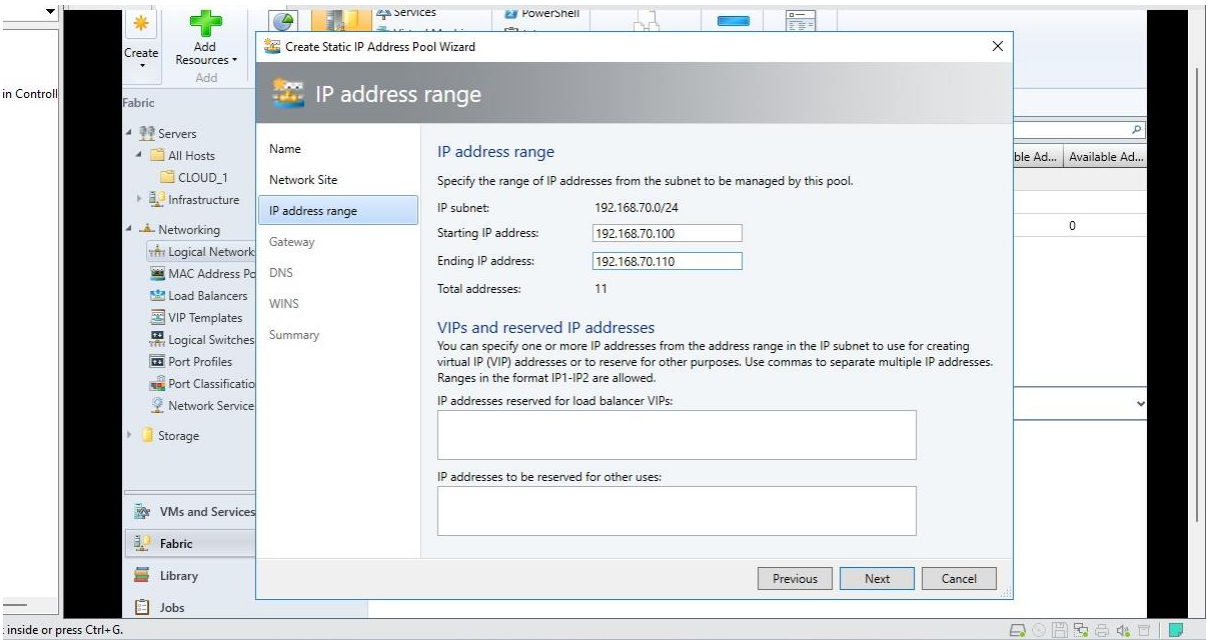
- Name your IP Pool (Here it SLB_POOL) and ensure that it is selected with the **SLB** Logical Network and Click **Next**



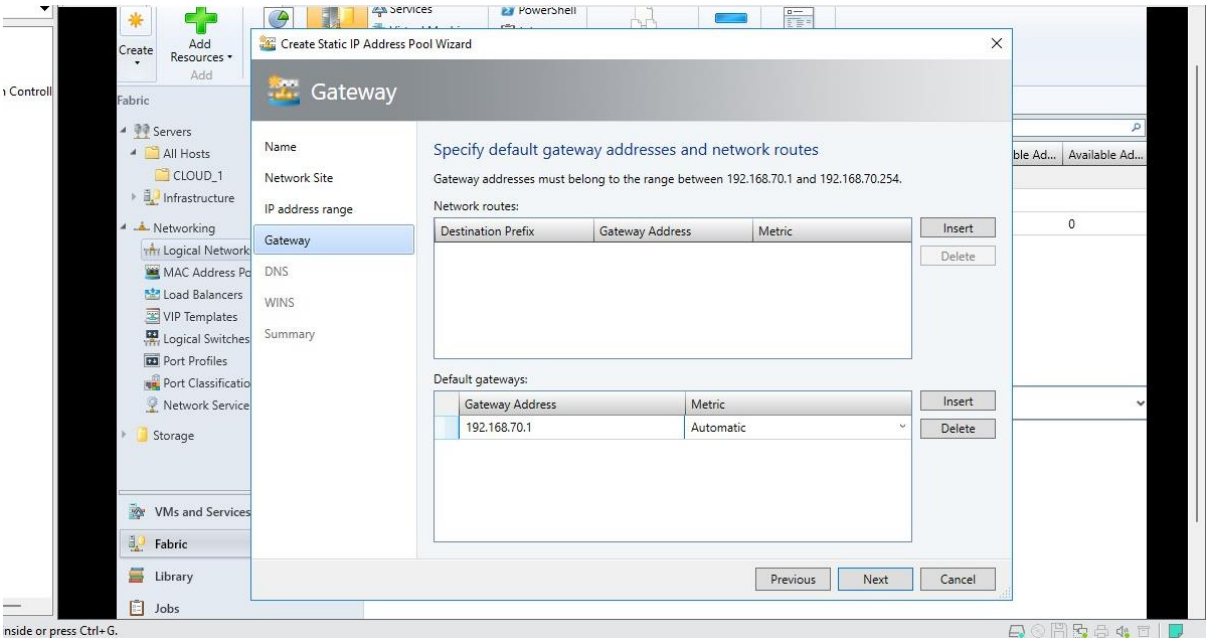
- Keep default values and Click **Next**



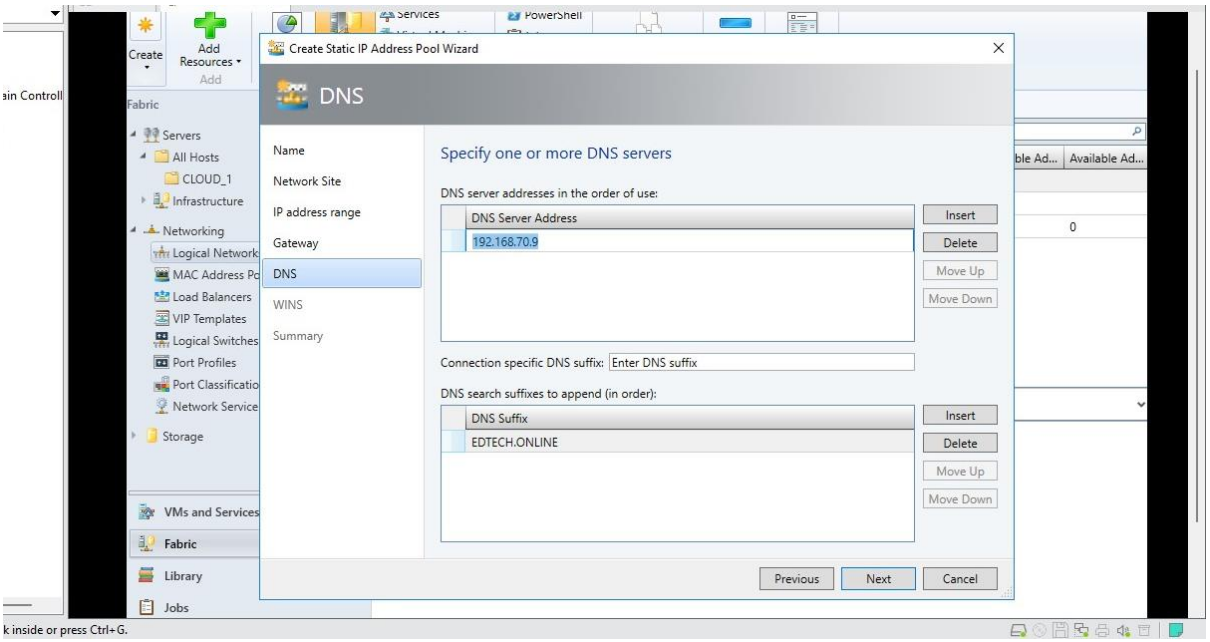
- Keep the **Starting IP address** as **192.168.70.100** and the **Ending IP Address** as **192.168.70.110** and Click **Next**



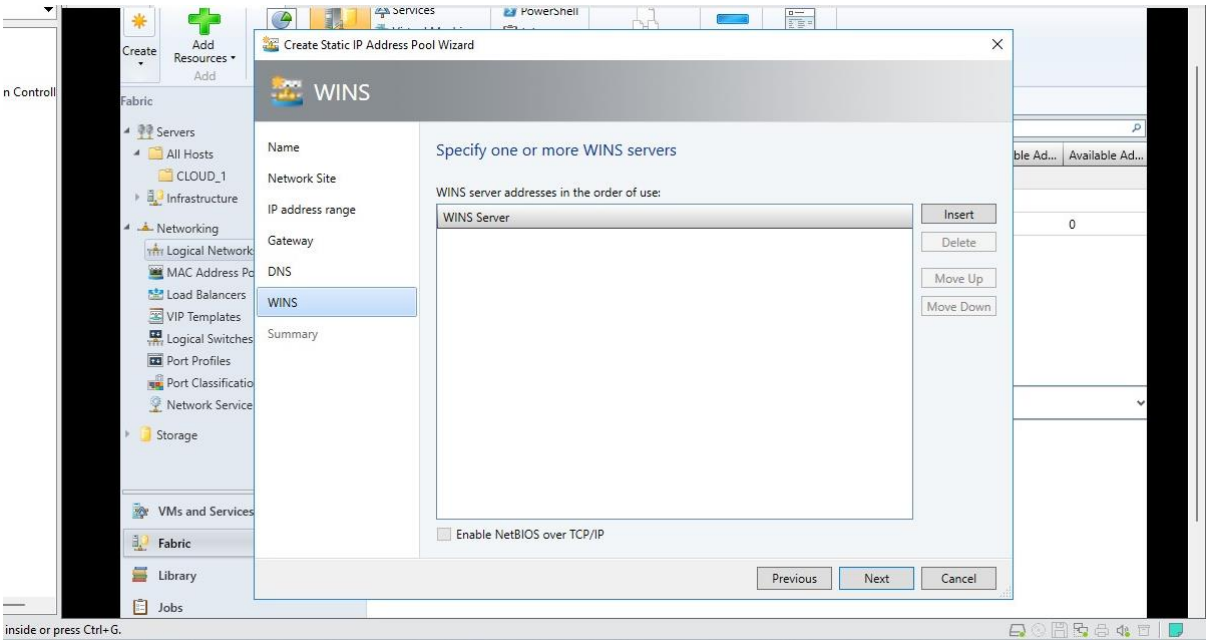
- Enter a Default gateway address **192.168.70.1** and Keep the Metric as **Automatic** and Click **Next**



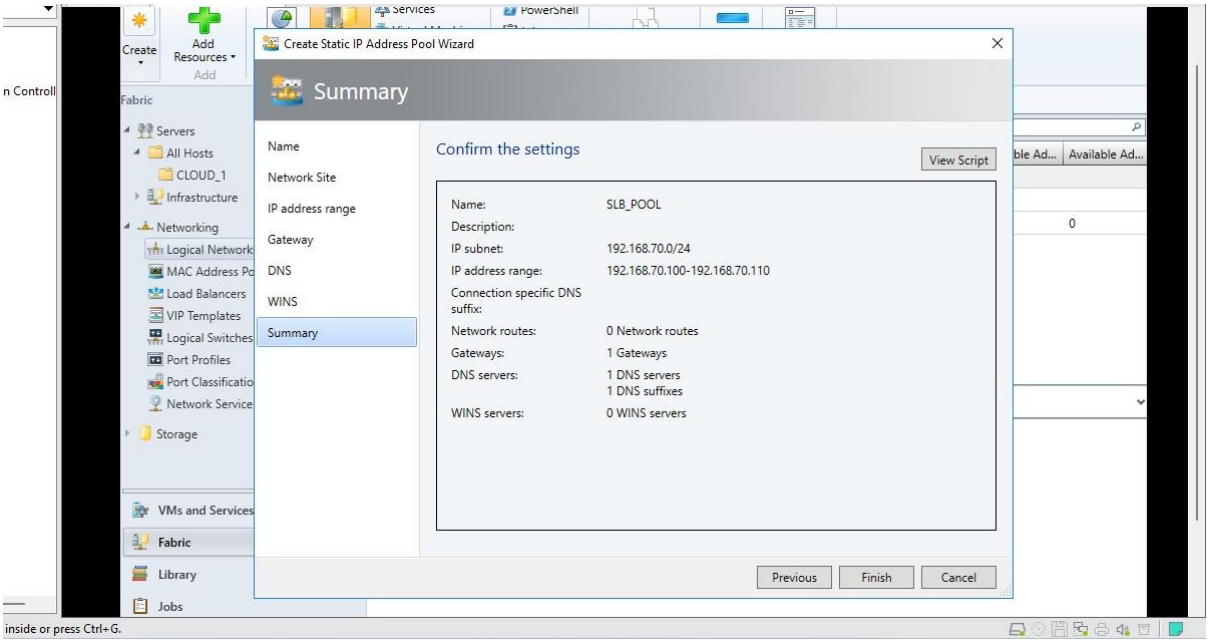
- Enter a **DNS IP Address** (Here it is 192.168.70.9) and a **DNS Suffix** which is your DOMAIN_NAME.ONLINE (Here it is EDTECH.ONLINE) and Click **Next**



- Keep default values and Click **Next**

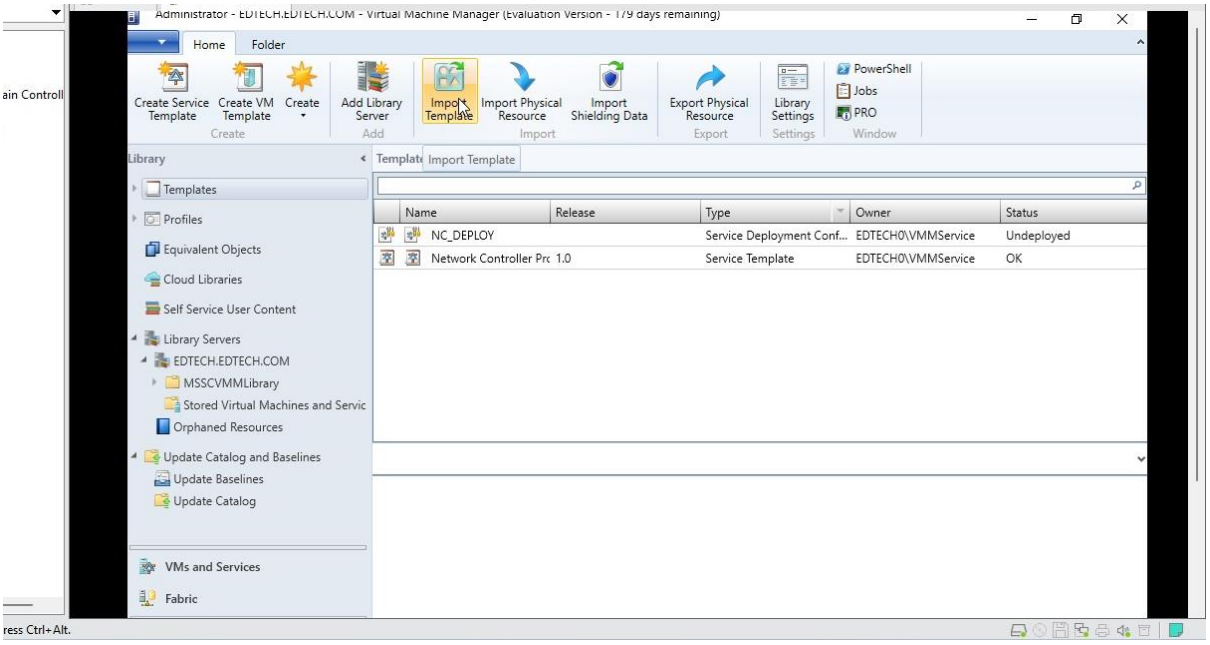


- View the summary of the IP Pool and Click **Finish**

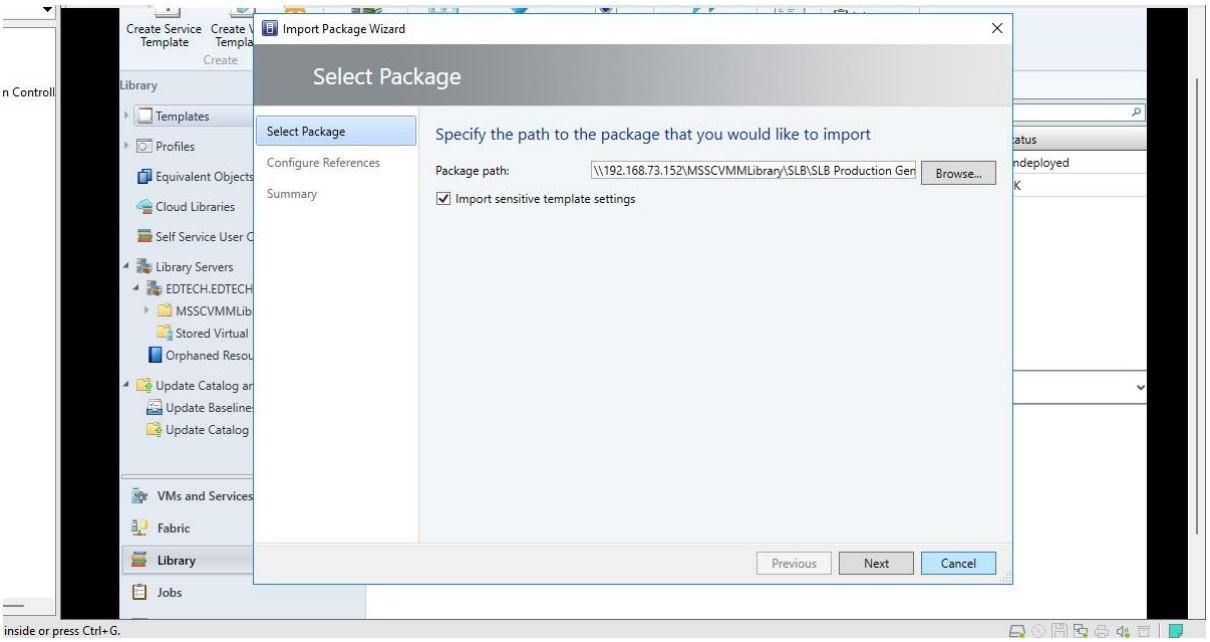


Step 3: Creating an SLB Service Template

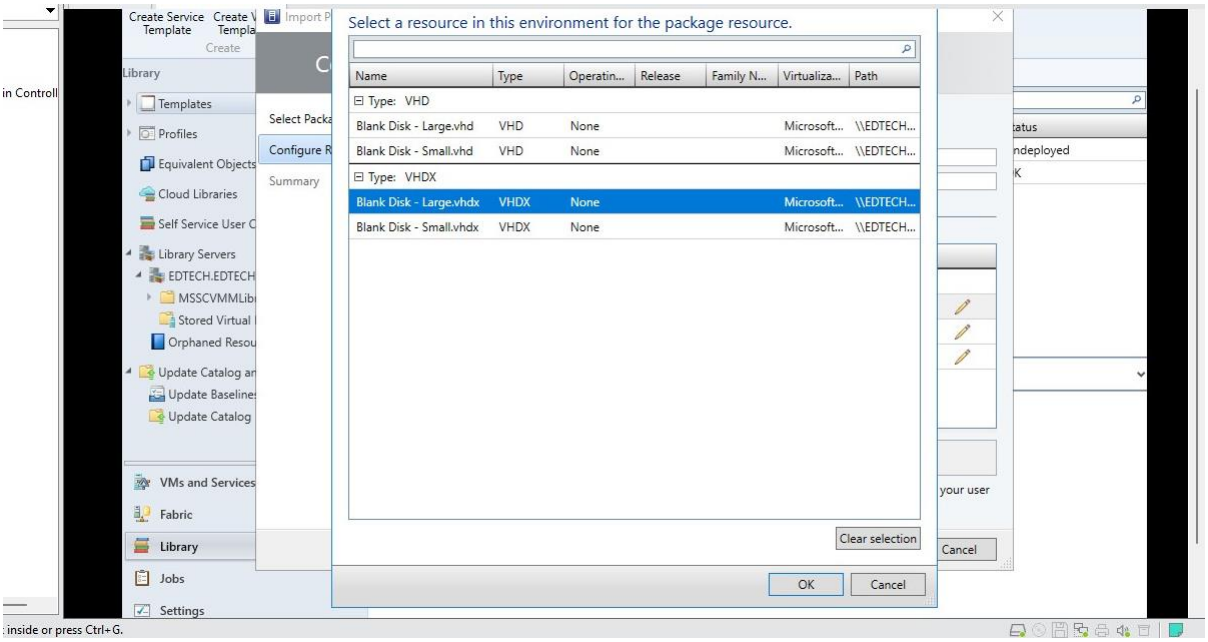
- Select the **Library** Tab and Click on **Import Template**



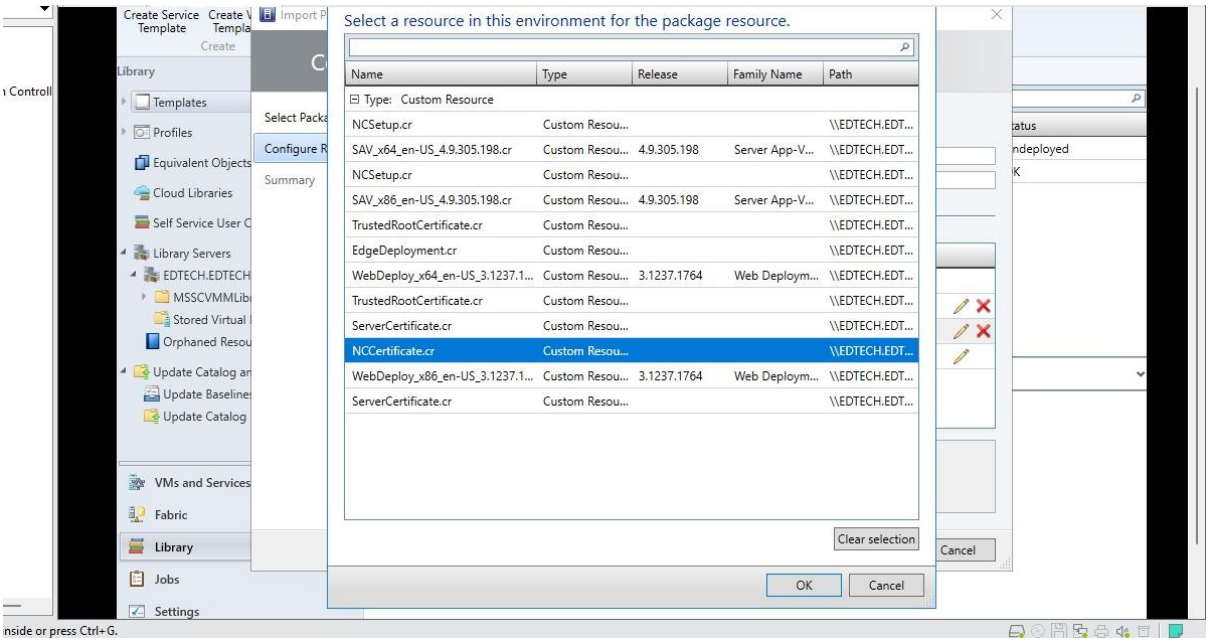
- In Package Path Click on **Browse** and Search for the **SLB Production Generation 2 VM.xml** file within the SLB folder and Click **Next**



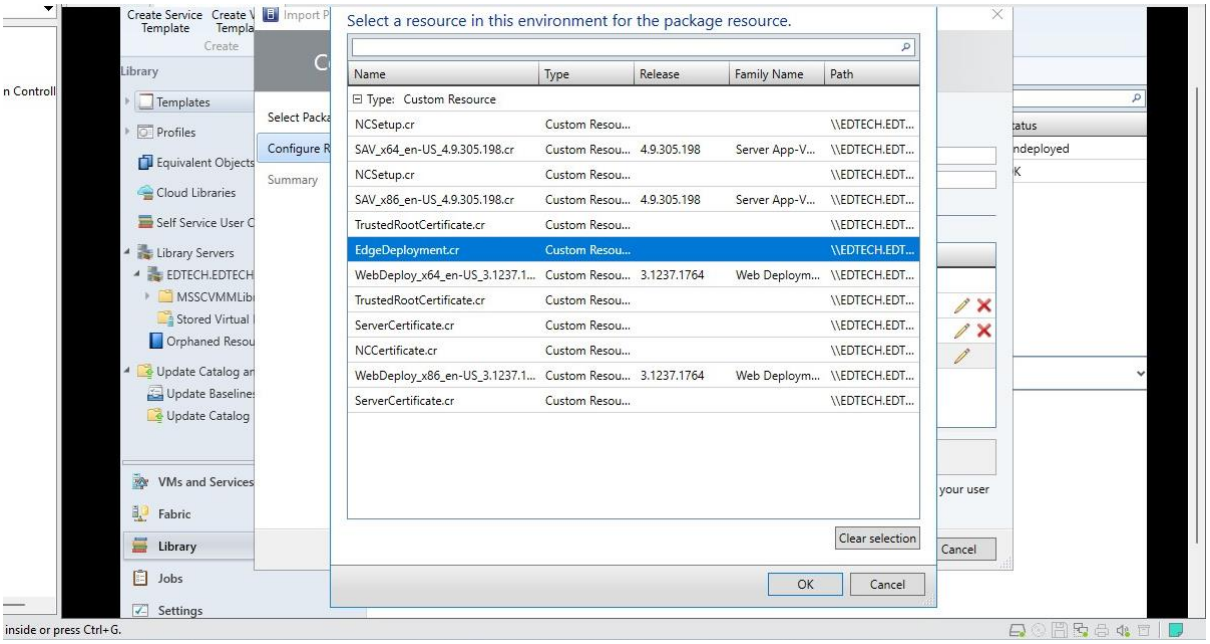
- In WinServ.vhdx Select **Blank Disk-Large.vhdx** and Click **Ok**



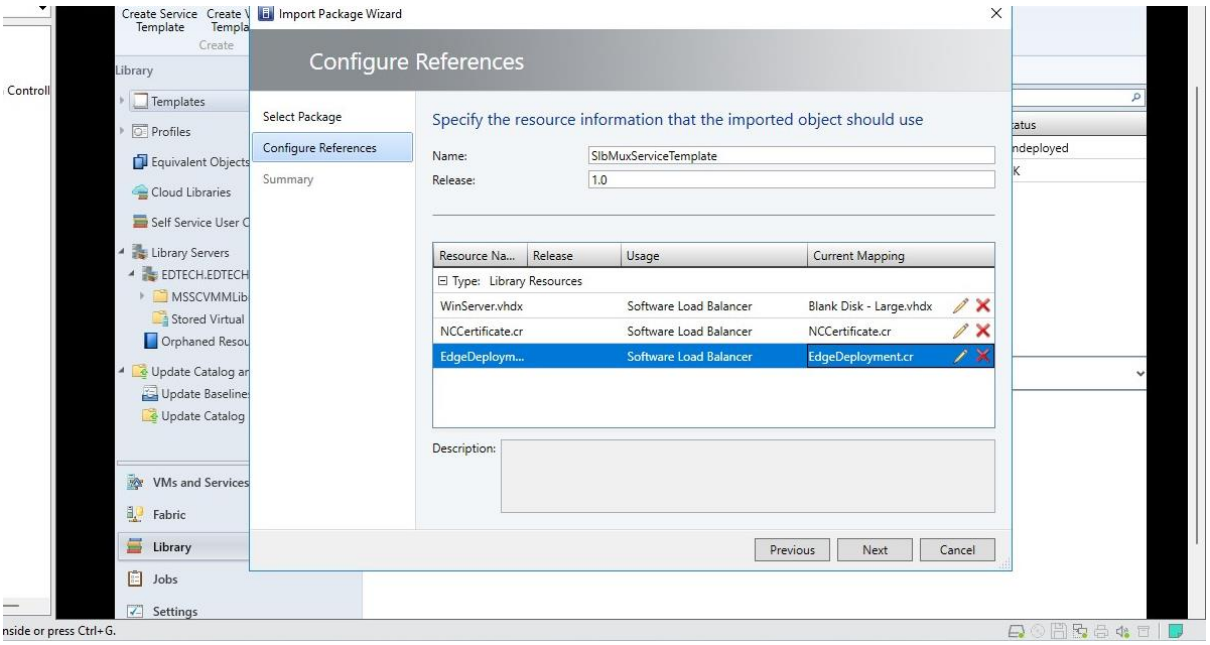
- In NCCertificate, Click on the Custom Resource **NCCertificate.cr** and Click **Ok**



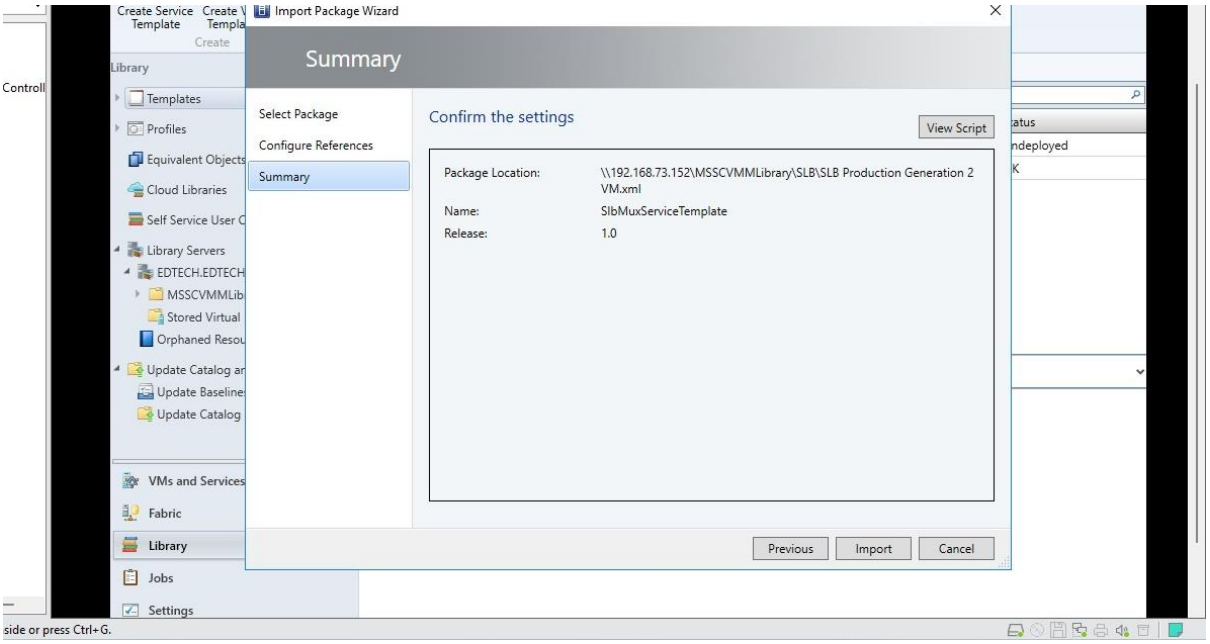
- In Edge Deployment Select the Custom Resource **EdgeDeployment.cr** and Click **Ok**



- Click **Next**

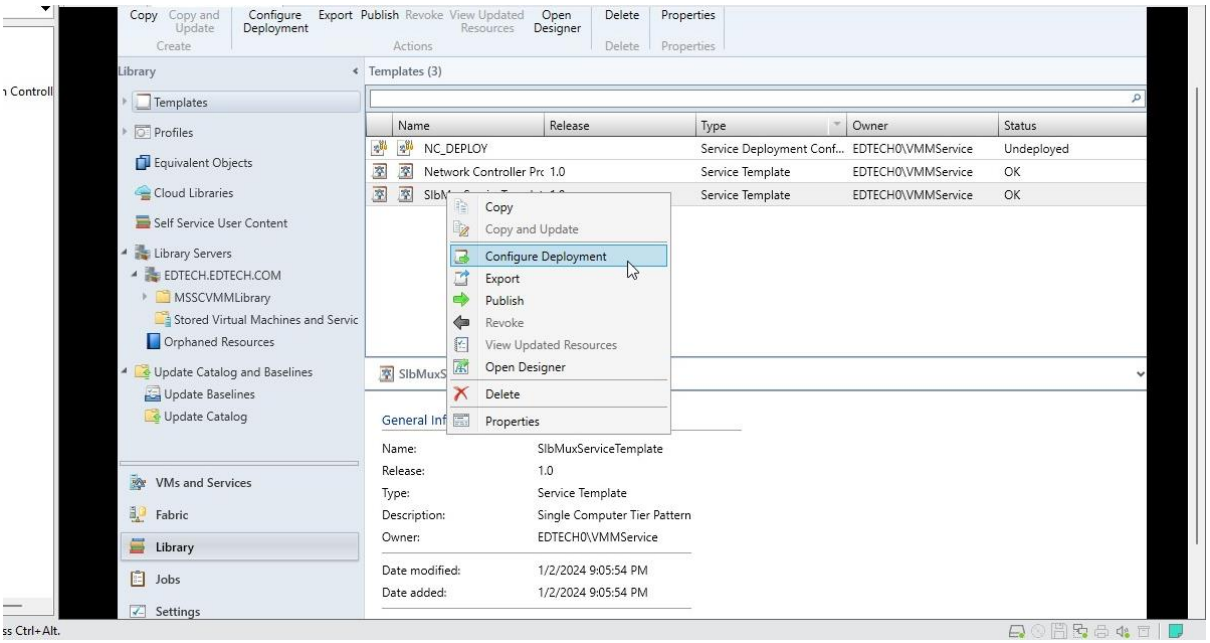


- Click on **Import**

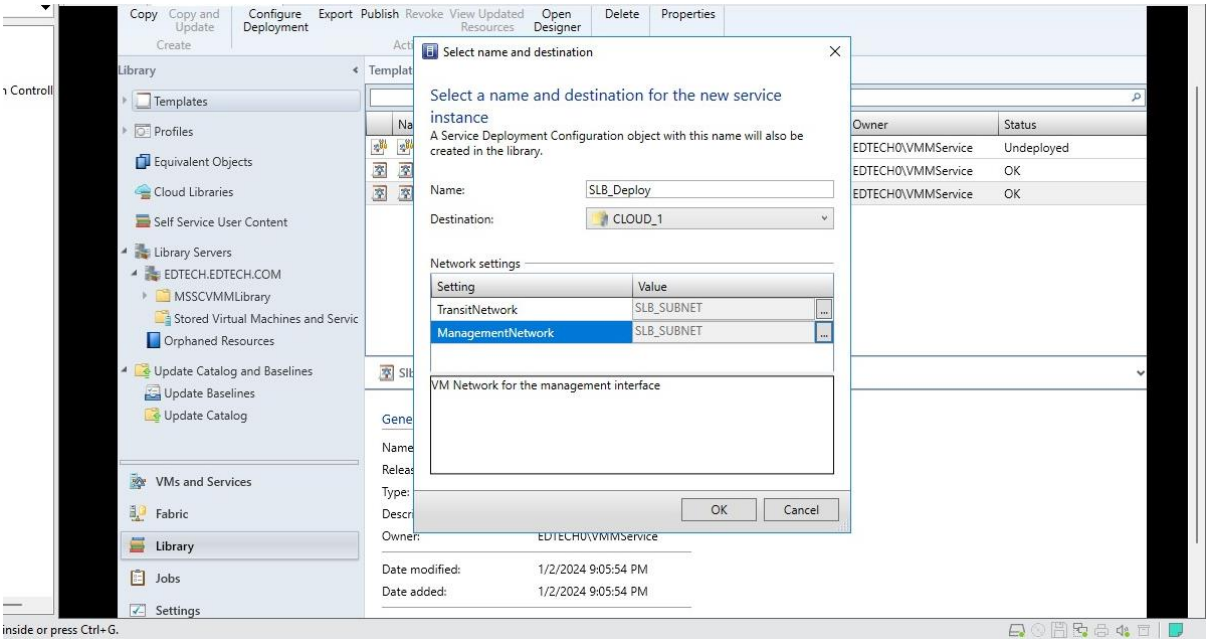


Step 4: Deploying the SLB Service Template

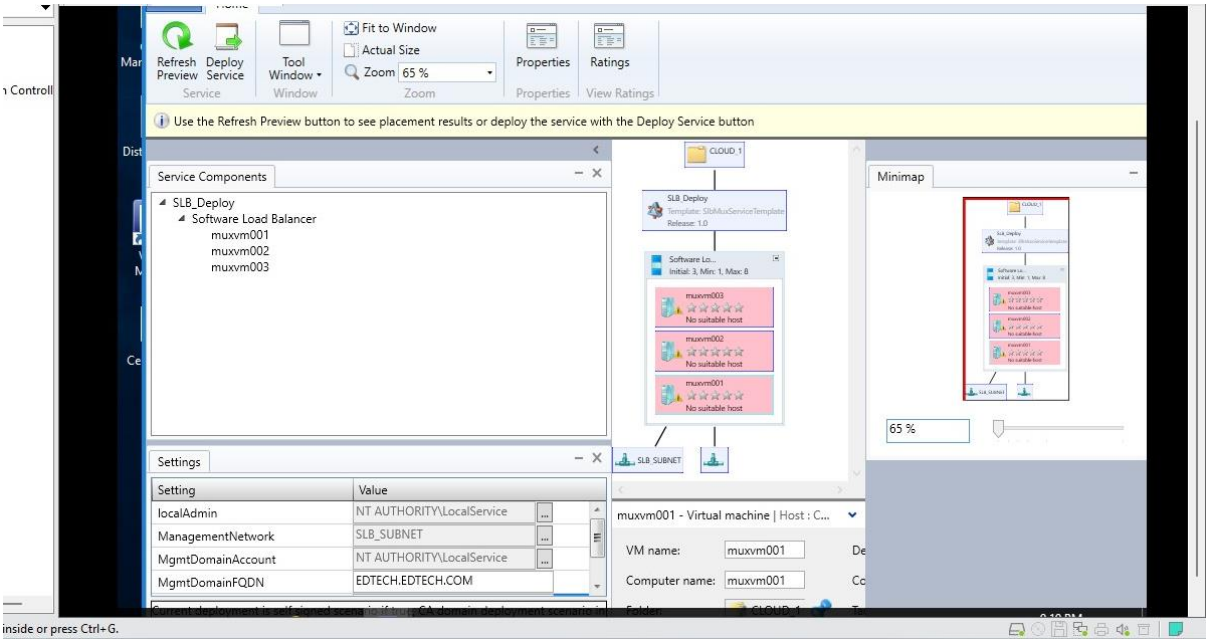
- Right-Click on the newly created SLB service template and Select **Configure Deployment**



- Type in the **name** (Here it is SLB_Deploy) and in the **Transit** and **Management** Network Select the newly created **Logical Network** (Here it is SLB_SUBNET) and Click **Ok**



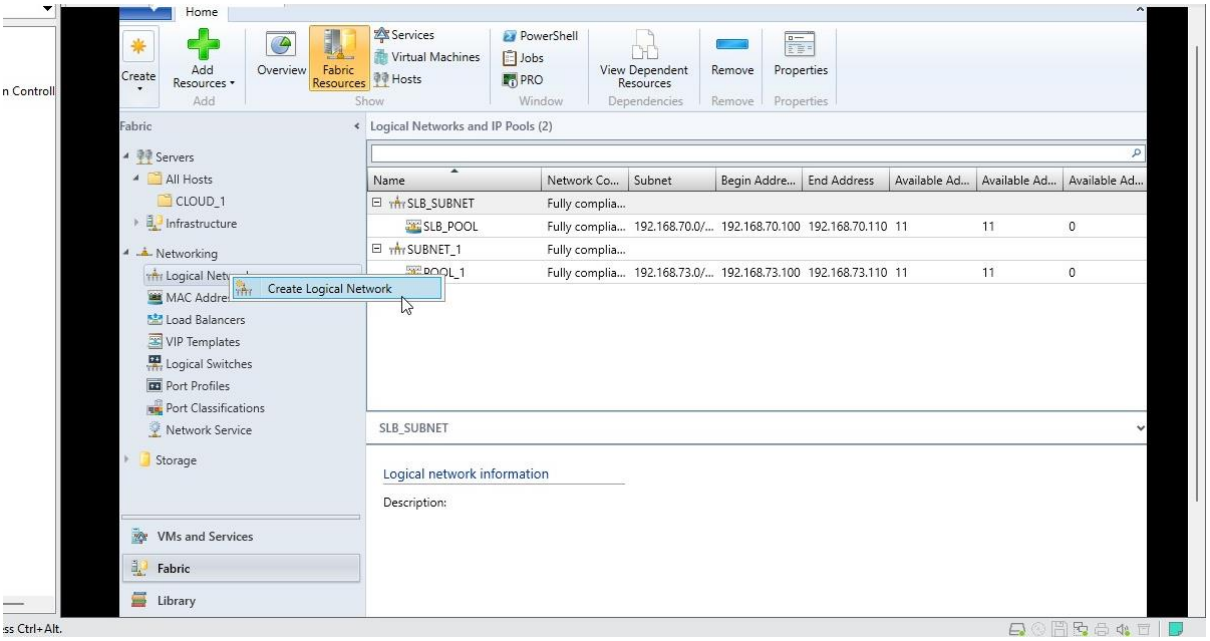
- Now in Settings Select the Following:
- **localAdmin:** NT AUTHORITY\Local Service
- **ManagementNetwork:** SLB_SUBNET
- **MgmtDomainAccount:** NT AUTHORITY\LocalService
- **MgmtDomain FQDN:** EDTECH.EDTECH.COM
- **SelfSignedCertificate:** True
- **TransitNetwork:** SLB_SUBNET



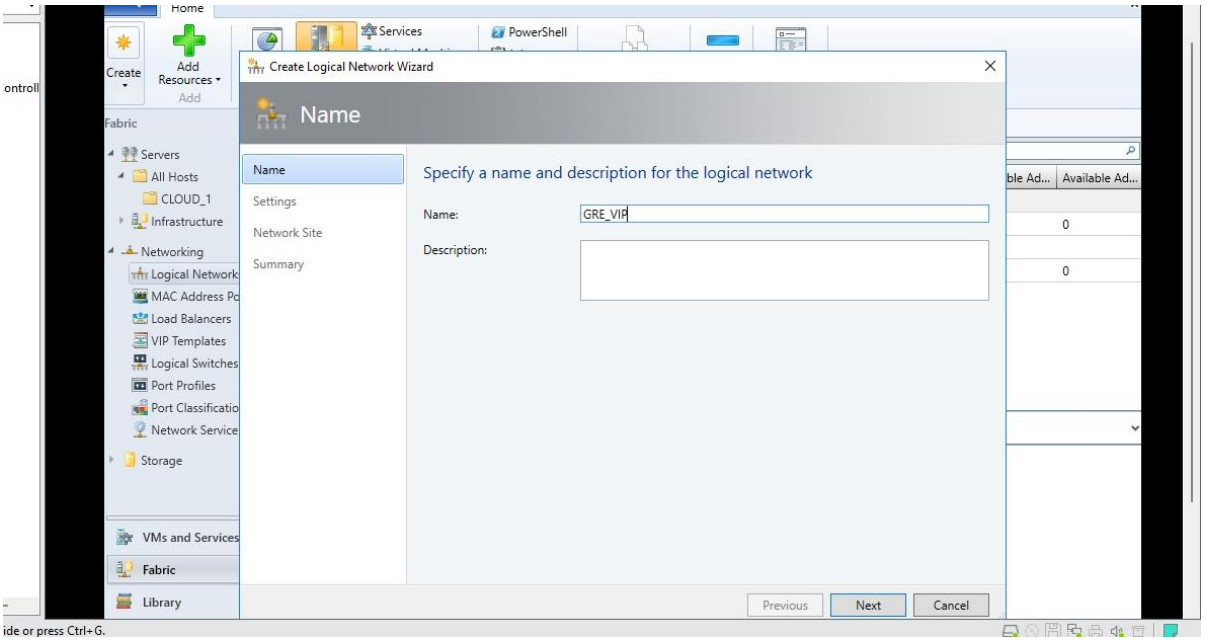
2-C: Deploying RAS Gateway Services

Step 1: Create a Logical Network

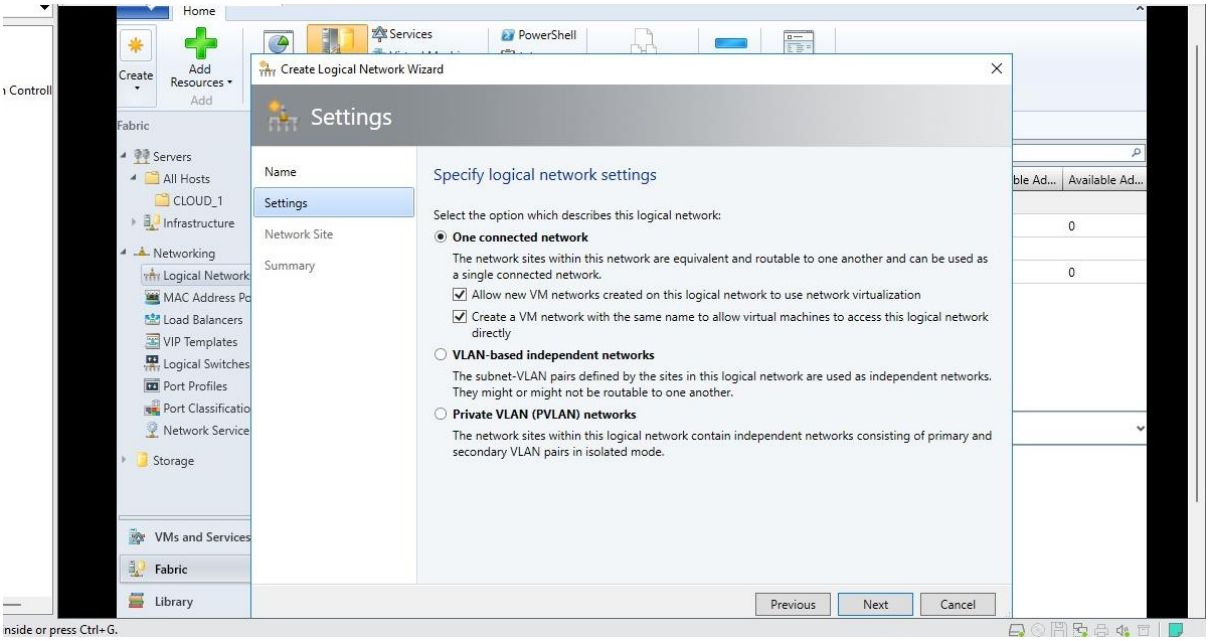
- Select the **Fabric** Tab and Right Click on **Logical Network** and Select **Create Logical Network**



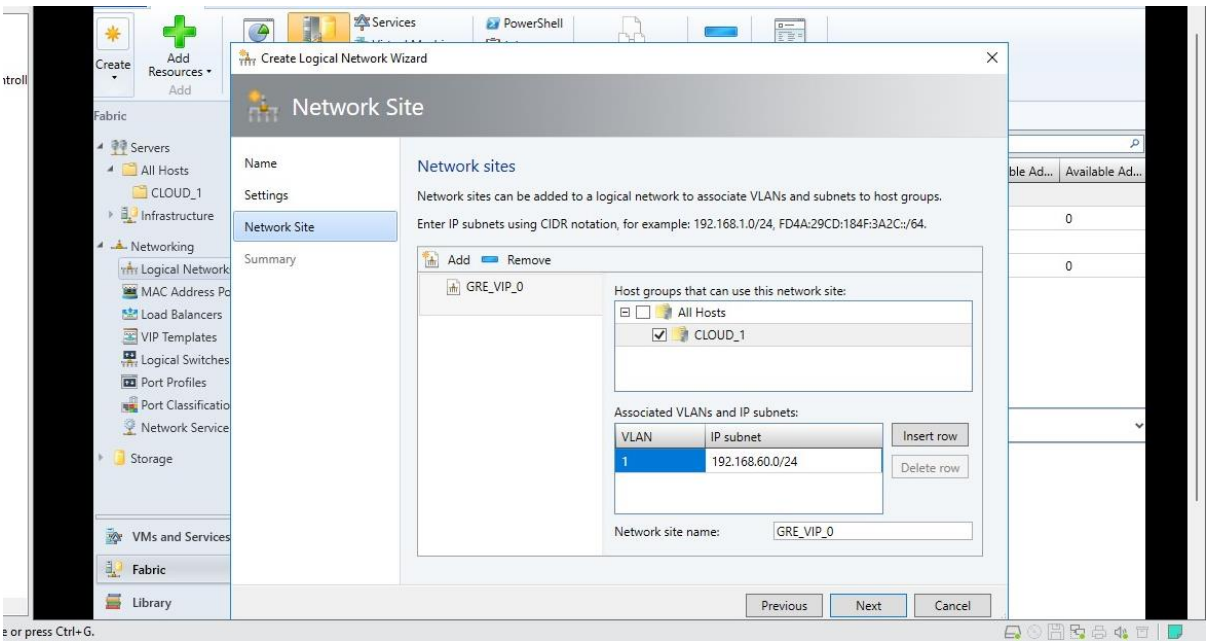
- Name your logical Network GRE_VIP and Click **Next**



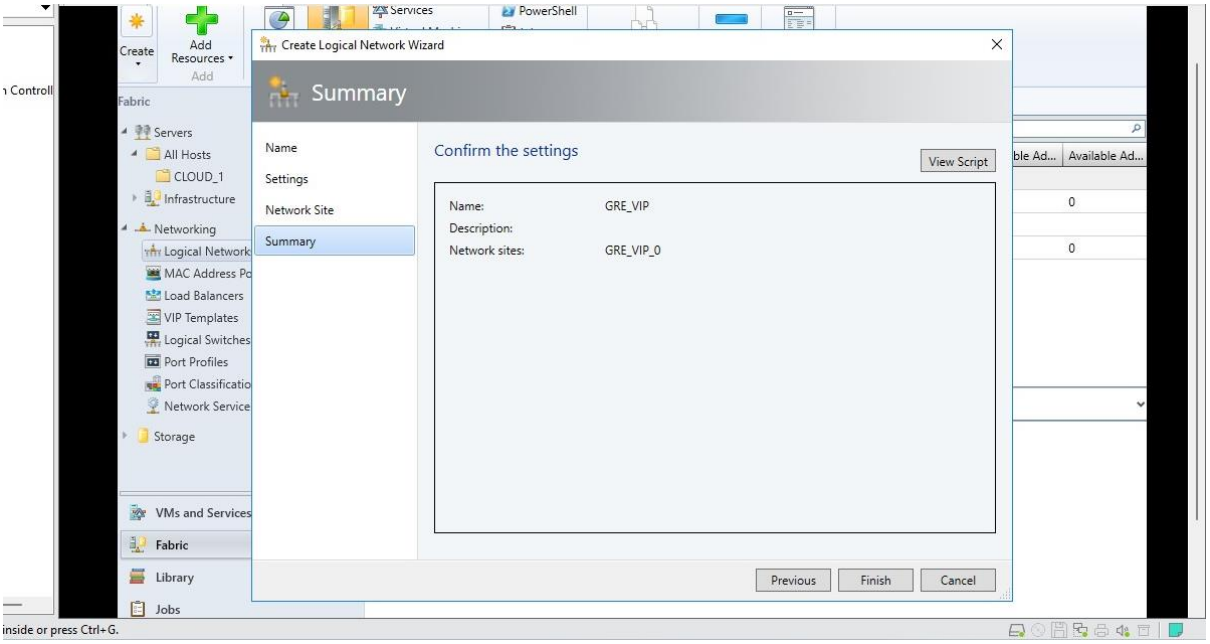
- Select the **One-Connected Network** and Tick the two boxes and Click **Next**



- Enter an IP Address Range (Here it is 192.168.60.0/24) and Click **Next**

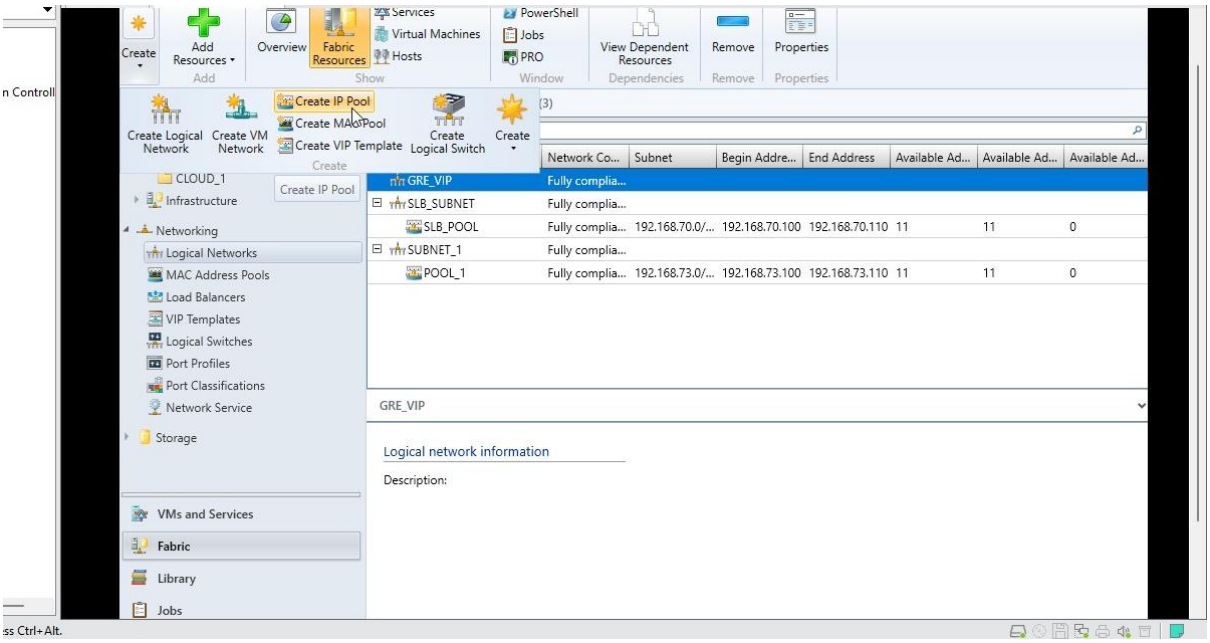


- View the summary of your logical network and Click **Finish**

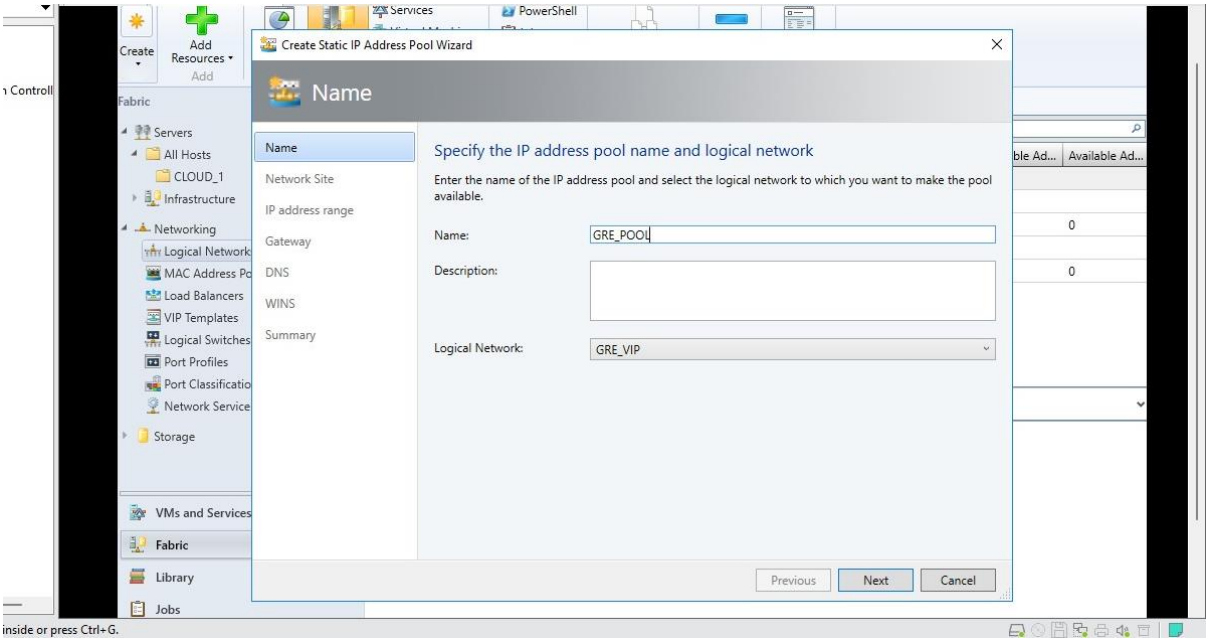


Step 2: Create an IP Address Pool

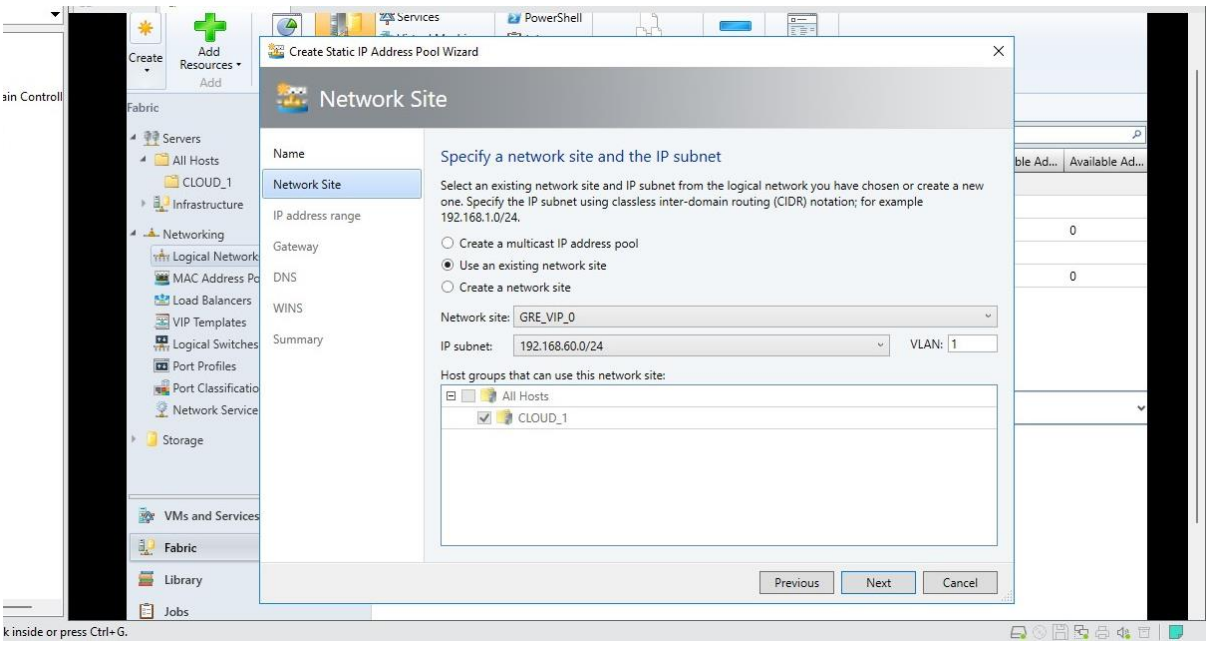
- In Fabric Click on **Create** and Select **Create an IP Pool**



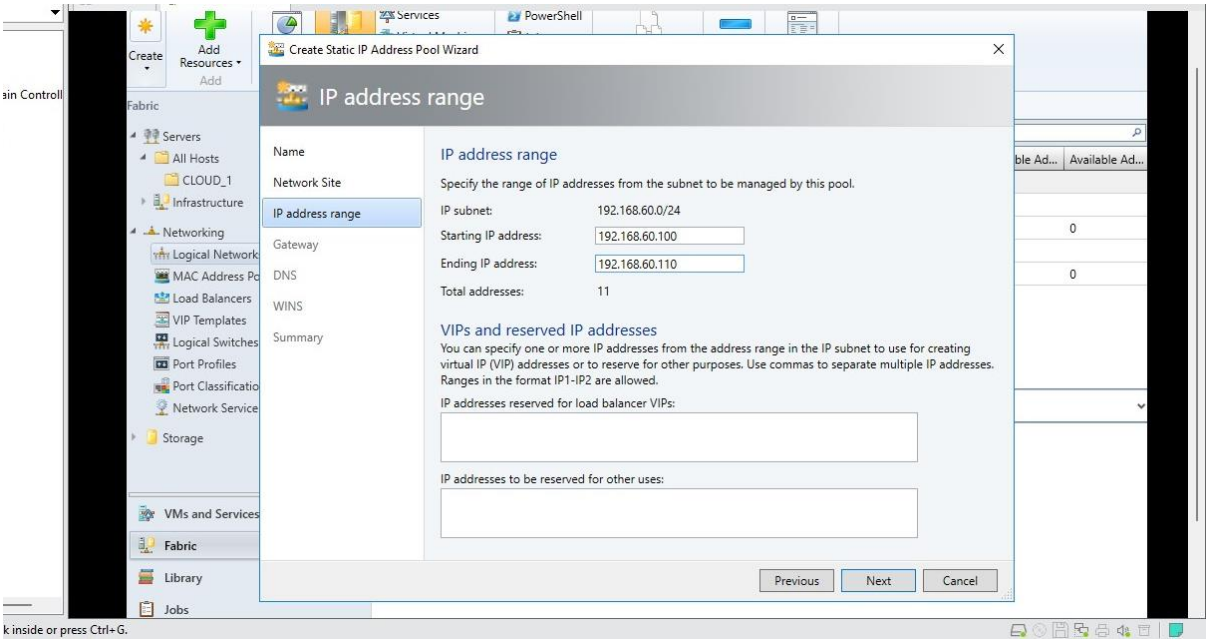
- Name it GRE_POOL and Click **Next**



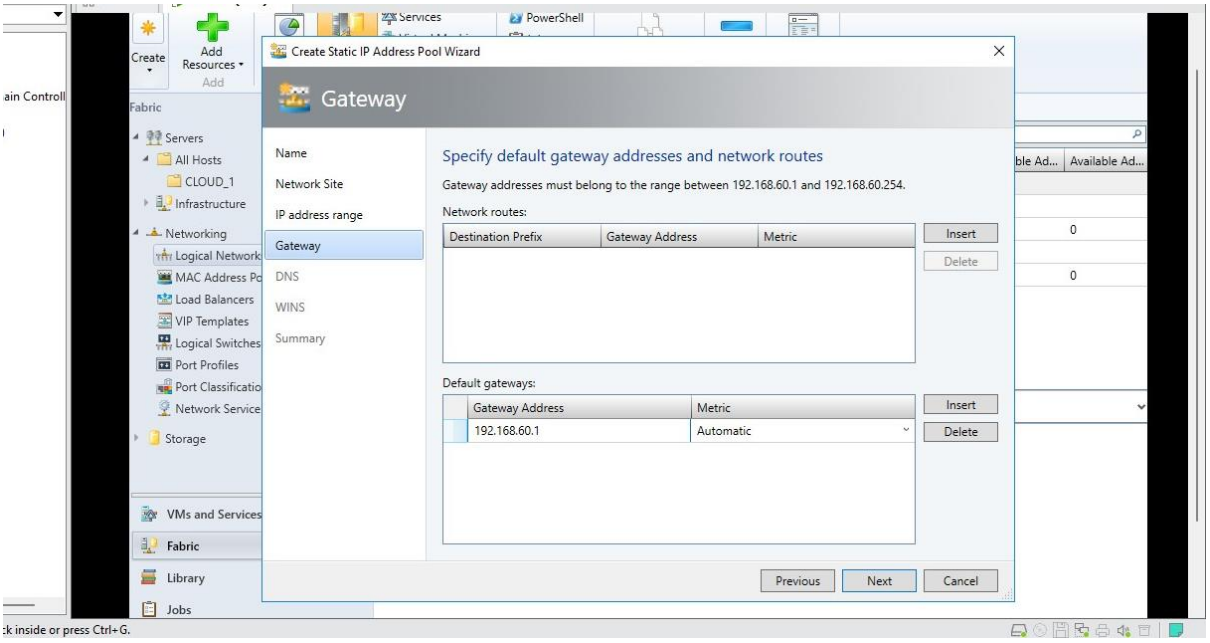
- Keep default values and Click **Next**



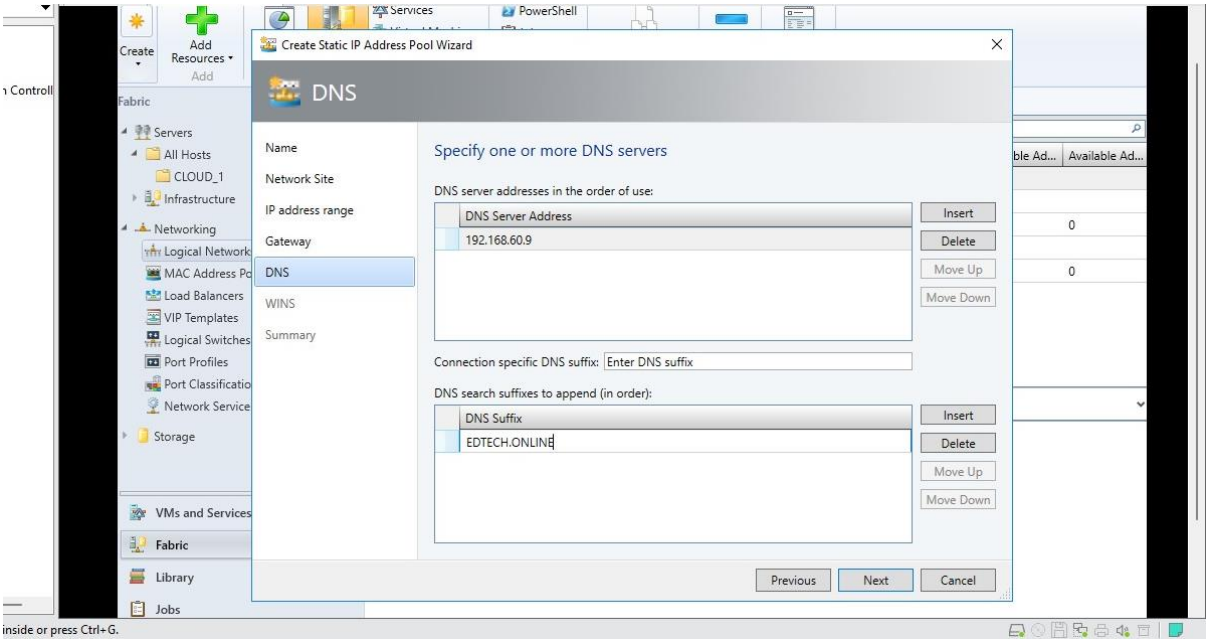
- Keep the **Starting IP Address** as **192.168.60.100** and the **Ending IP Address** as **192.168.60.110** and Click **Next**



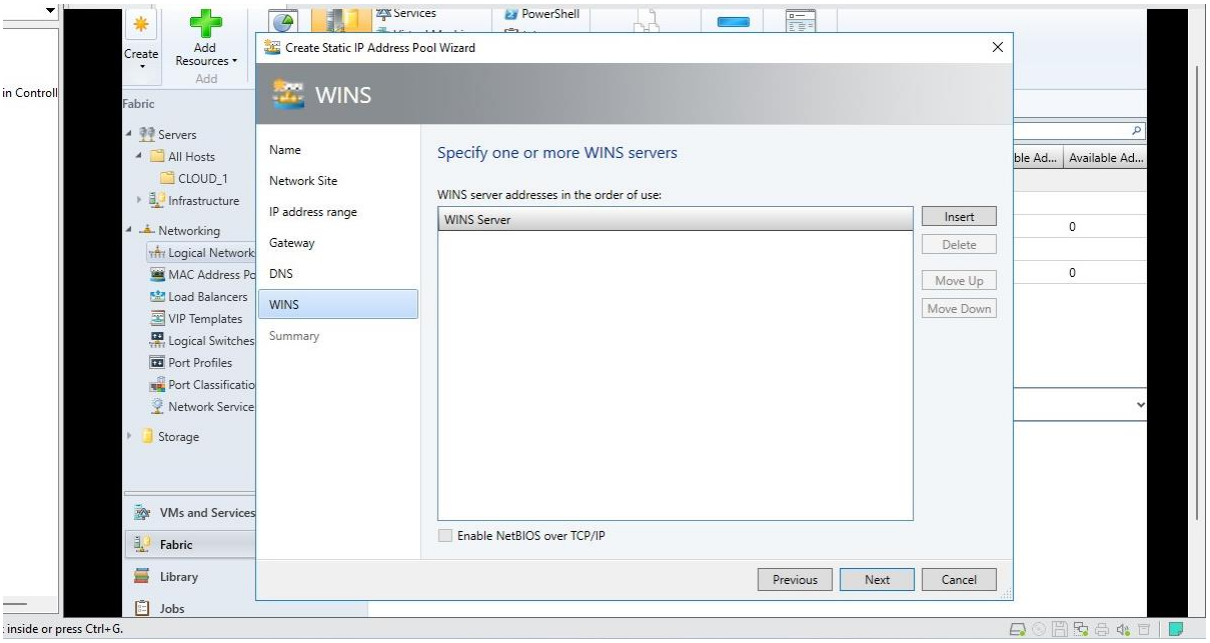
- In Default gateways type in the IP Address **192.168.60.1** and Click **Next**



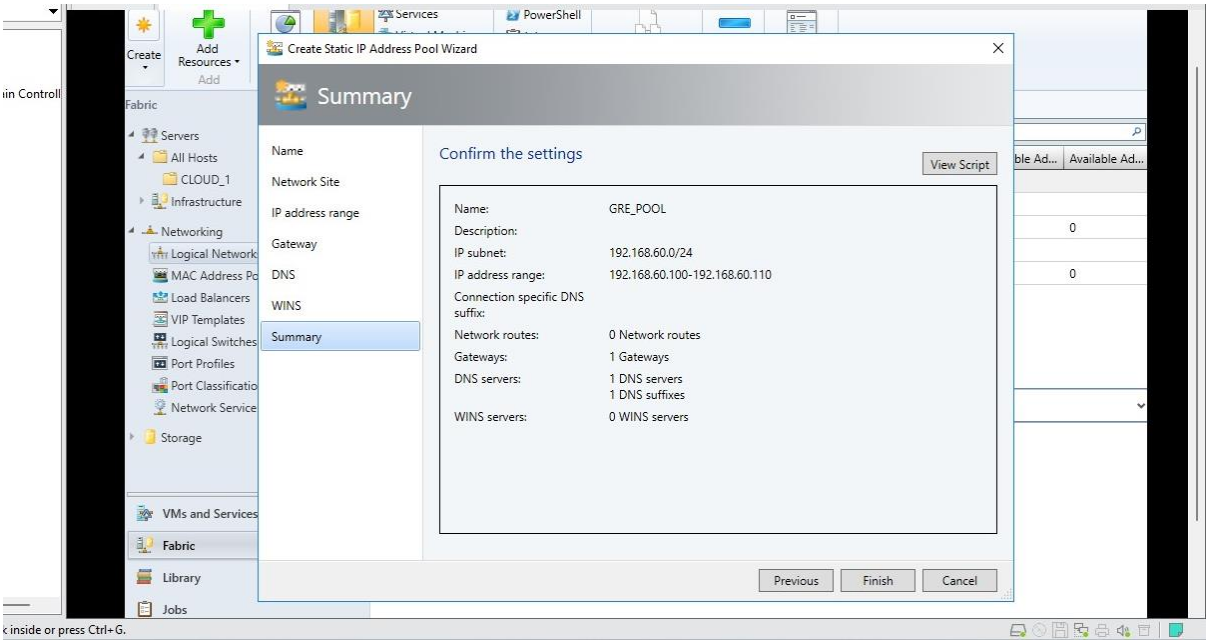
- Enter a **DNS IP Address** (Here it is 192.168.60.9) and **DNS Suffix** as Domainname.ONLINE (Here it is EDTECH.ONLINE) and Click **Next**



- Keep default values and Click **Next**

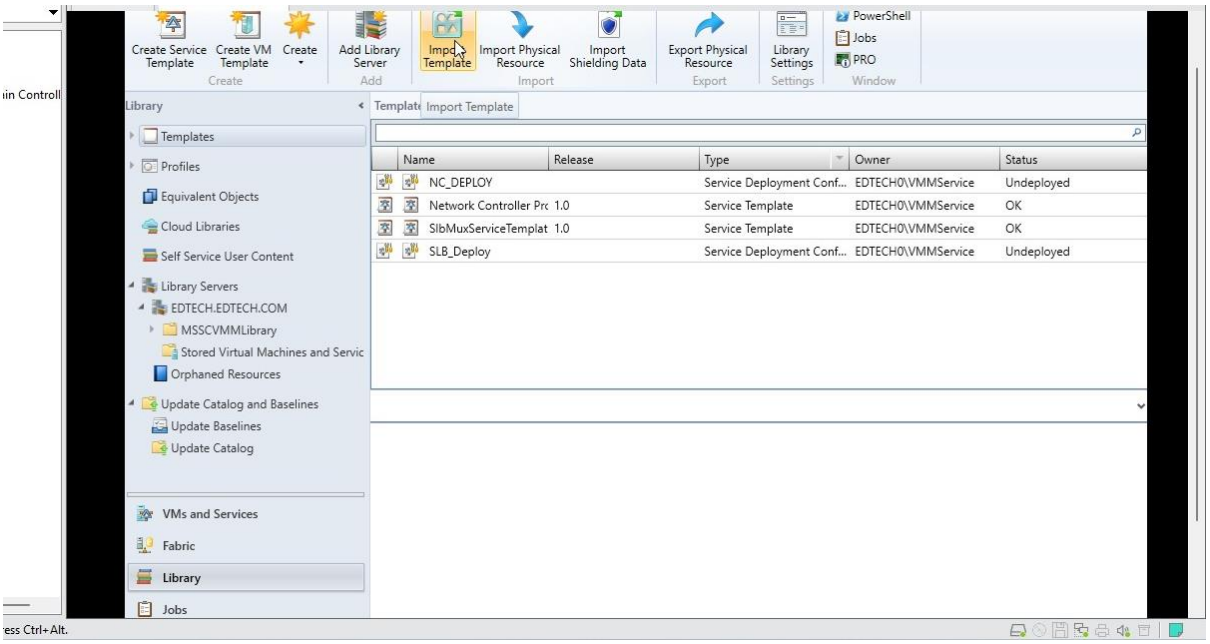


- View the summary of your IP Pool and Click **Finish**

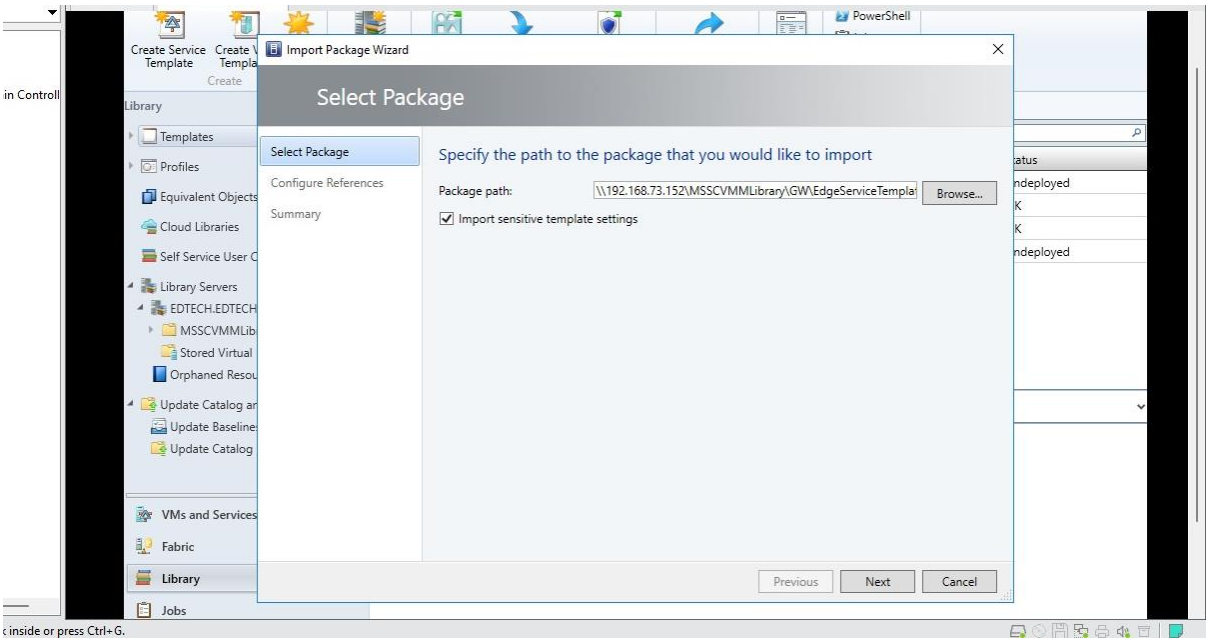


Step 3: Creating a GRE Service Template

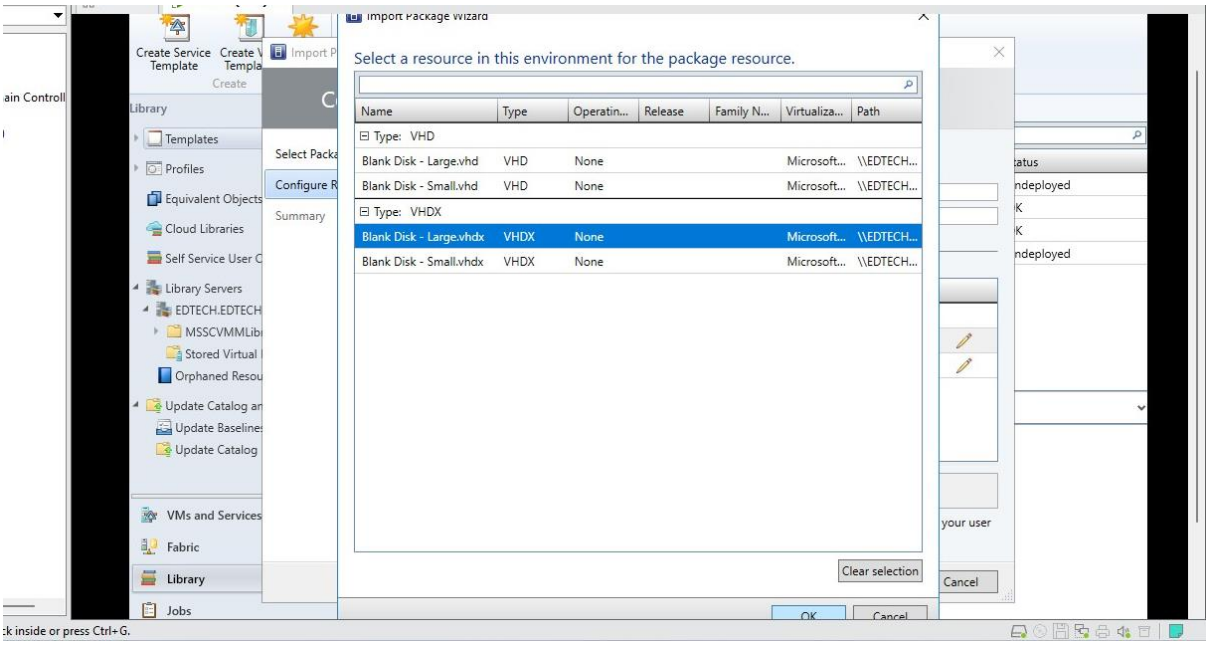
- Select the **Library** Tab and Click on **Import Template**



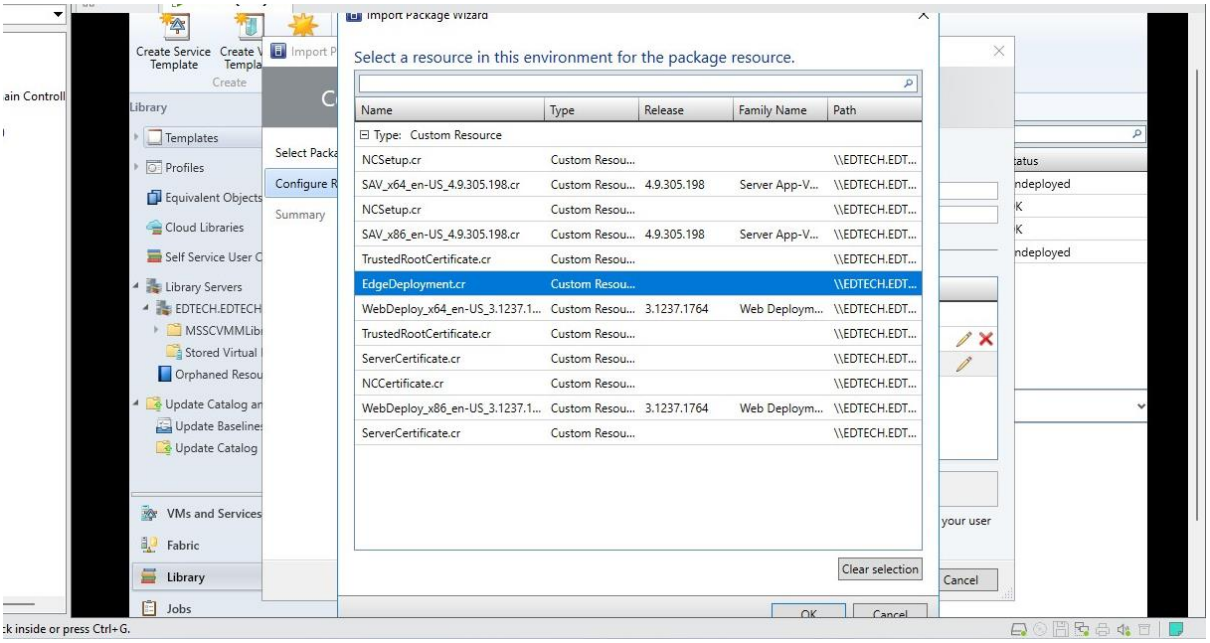
- In Package Path Click on **Browse** and Select **EdgeServiceTemplate_Generation 2.xml** file from the GW folder and Click **Next**



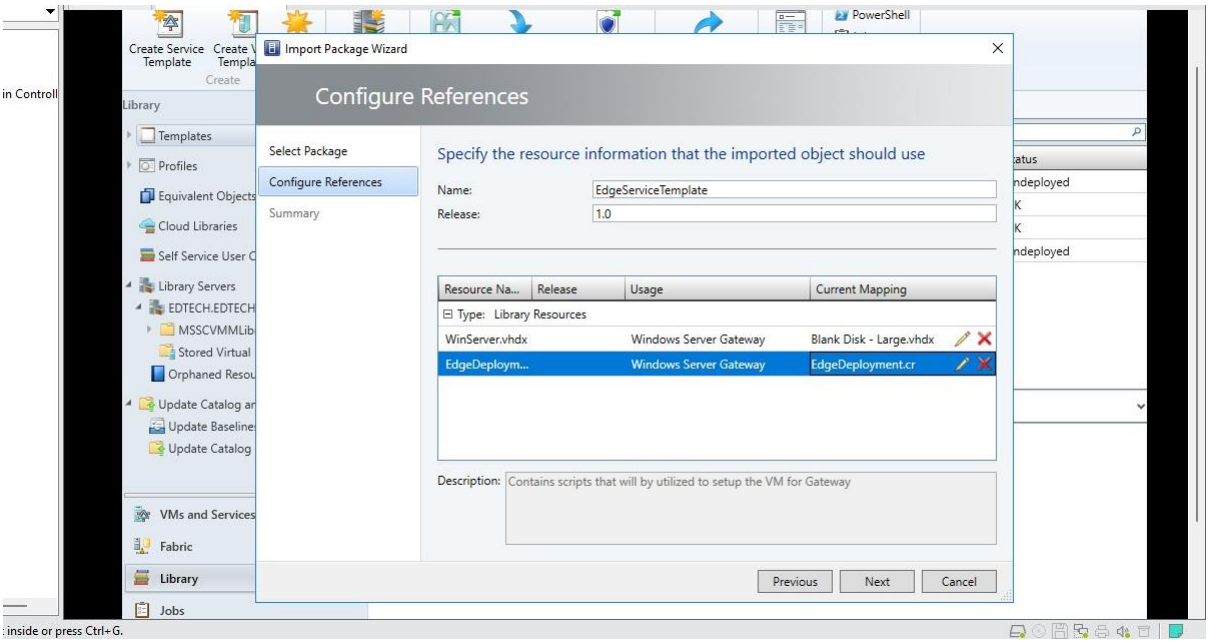
- In **WinServ.vhdx** Select **Large.vhdx** and Click **Ok**



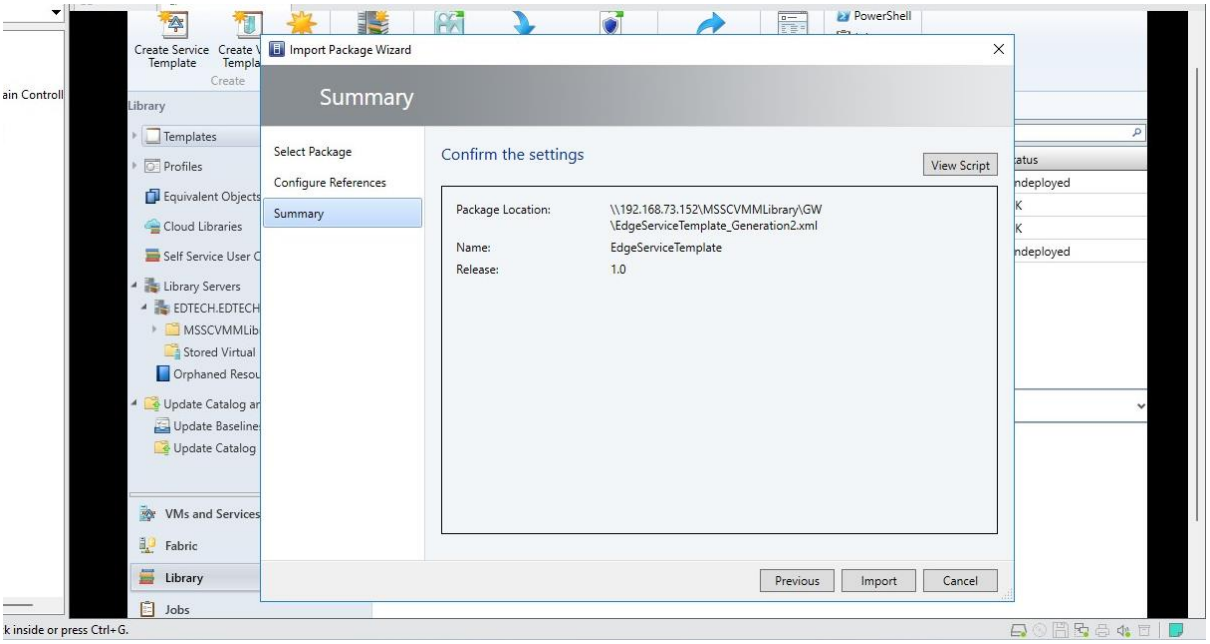
- In Edge Deployment Click on Custom resource **EdgeDeployment.cr** and Click **Ok**



- Click **Next**

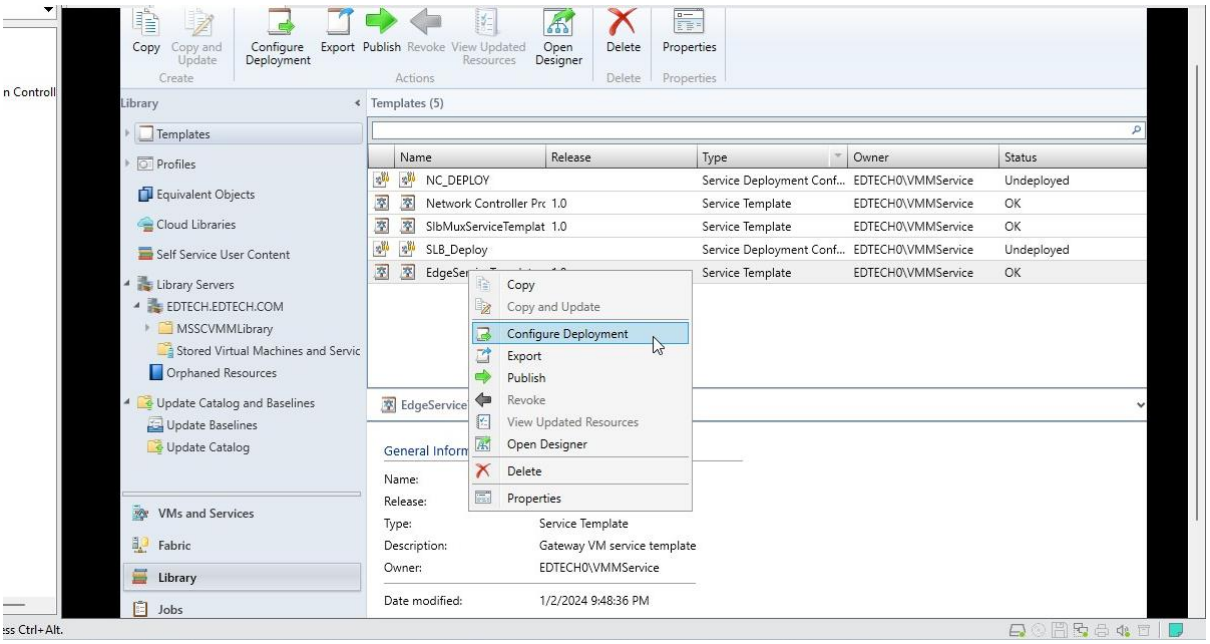


- Click **Import**

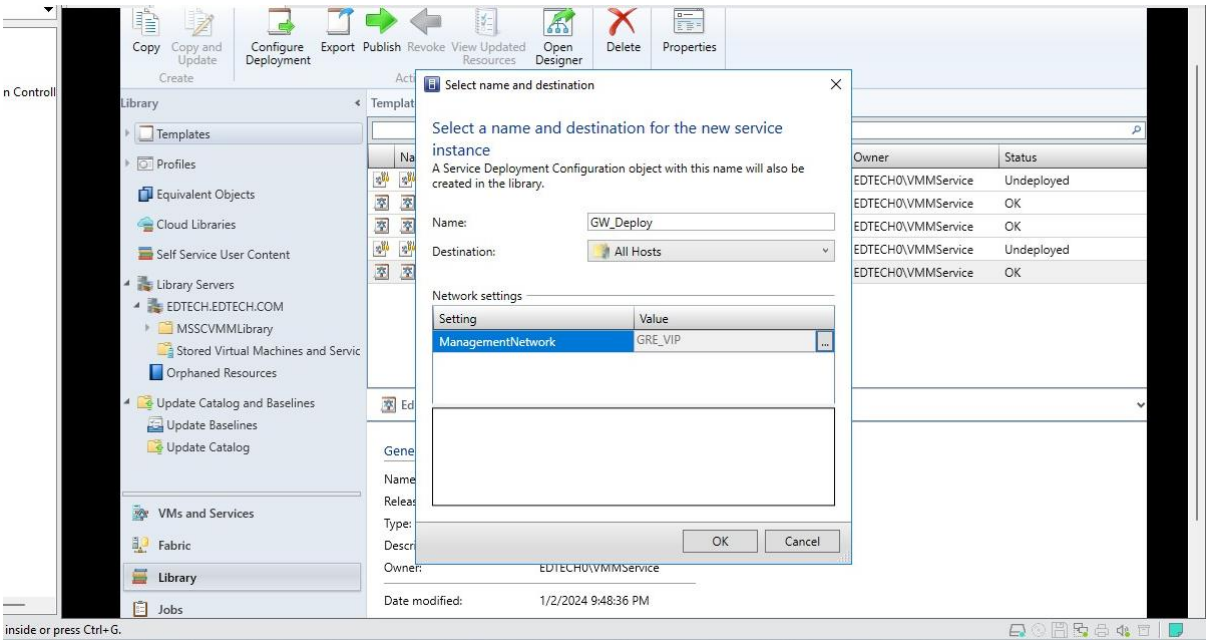


Step 4: Deploying the GRE Service Template

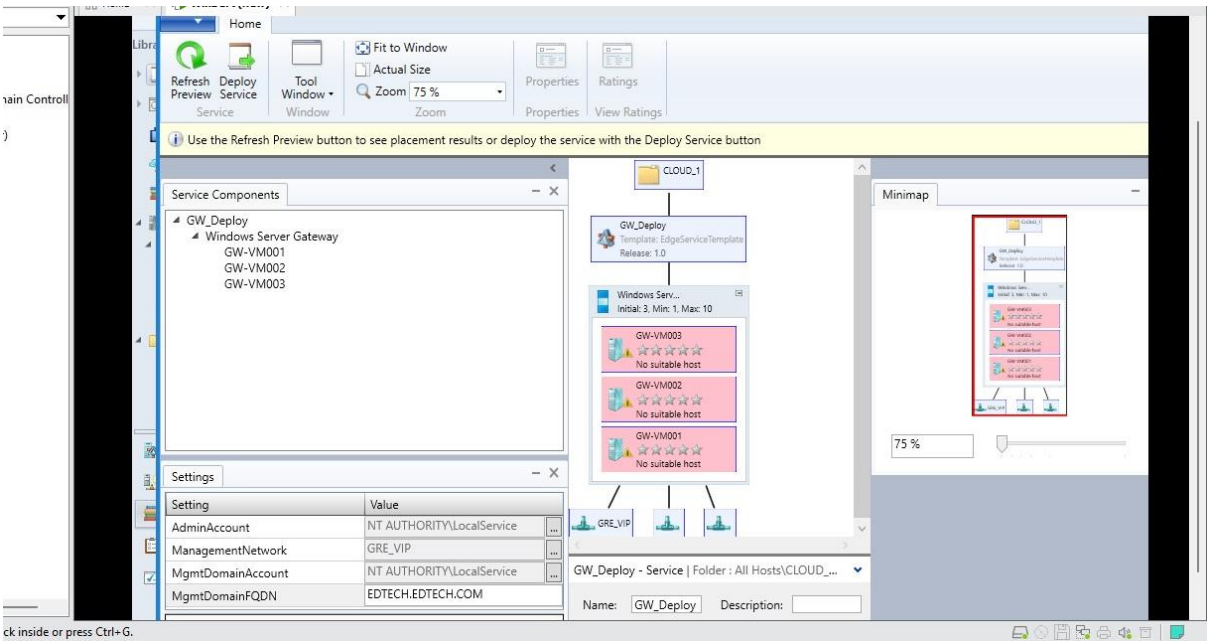
- Right-Click on the Newly created EdgeService Template and Select **Configure Deployment**



- Give it a **name** (Here it is GW_Deploy) and in Management Network Select the newly created **Logical Network** (Here it is GRE_VIP) and Click **Ok**



- Here enter the following:
- **AdminAccount:** NT AUTHORITY\LocalService
- **MangementNetwork:** GRE_VIP
- **MgmtDomainAccount:** NT AUTHORITY\Local Service
- **MgmtDomainFQDN:** EDTECH.EDTECH.COM



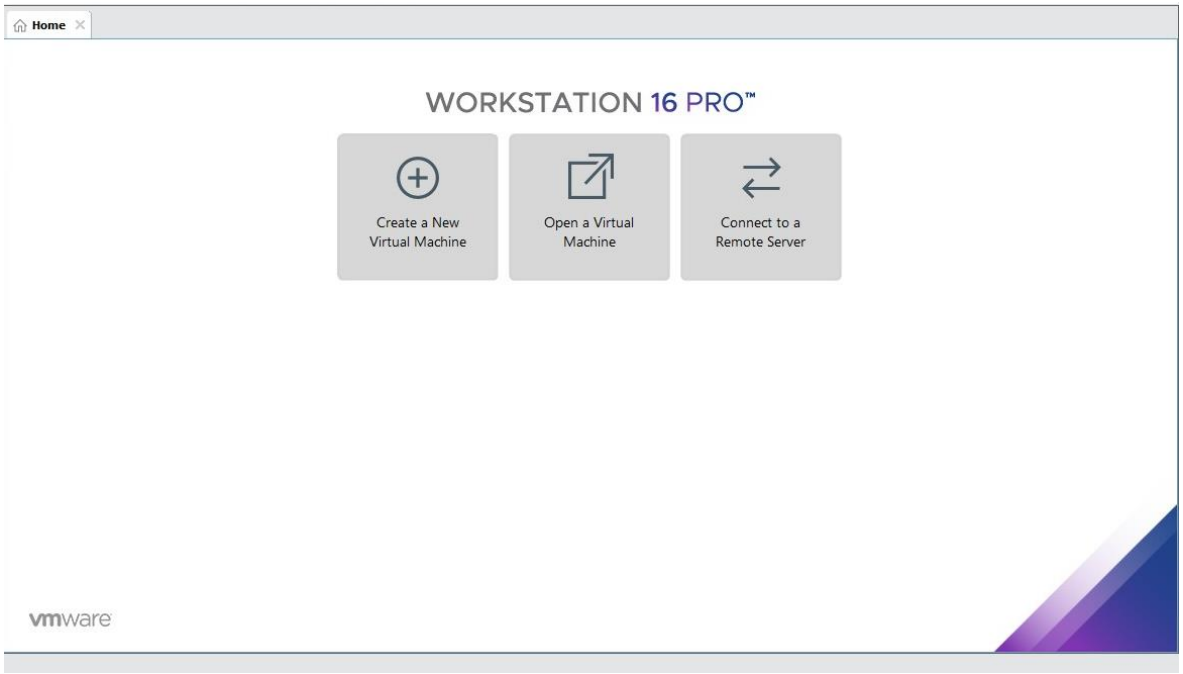
Practical 3

Aim: Deploy Service Manager 2019 and install on 2 Computer Scenario and Setup SQL Server reporting Service using Service Manager 2019

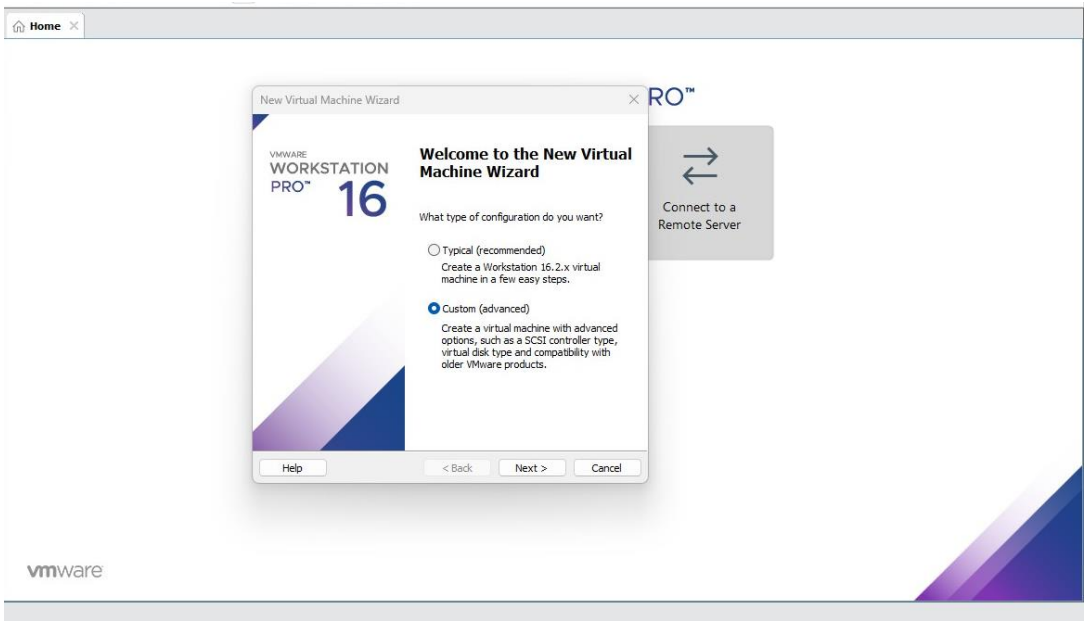
Writeup:

Step 1: We have to establish a connection with a Domain Controller and a User (SQL Server).

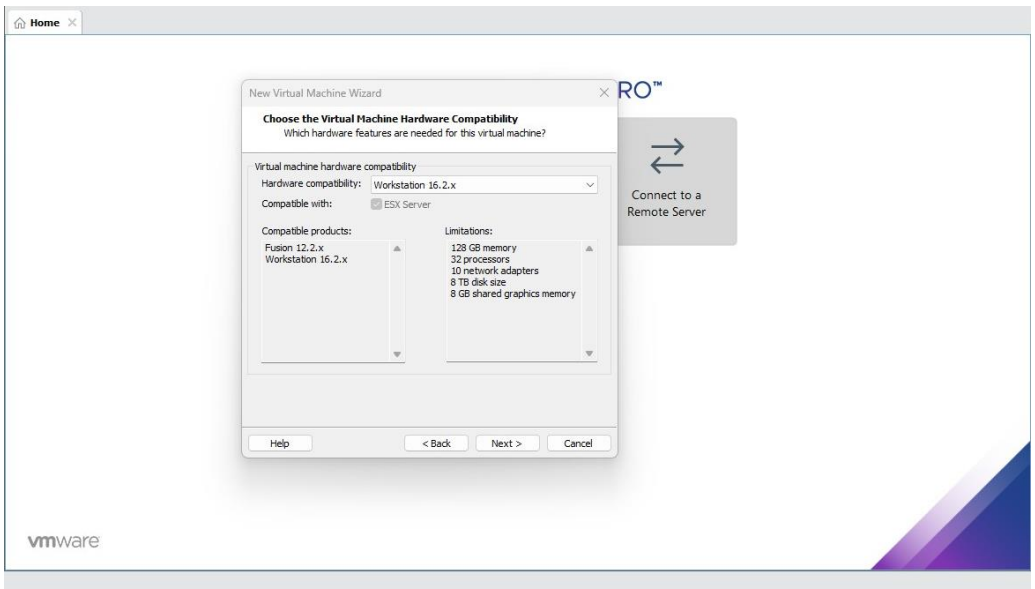
- Domain Controller has already been created in the previous practical and we have to only create the new SQL Server.
- For this create a New VM.
- Click on **Create new Virtual Machine**



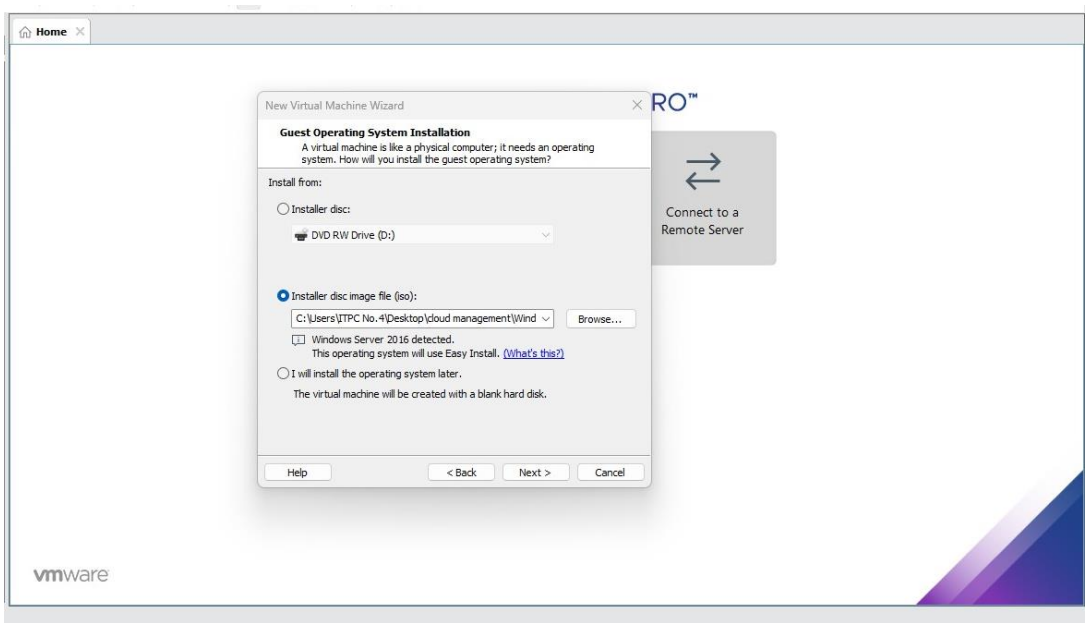
- Select Custom and Click **Next**



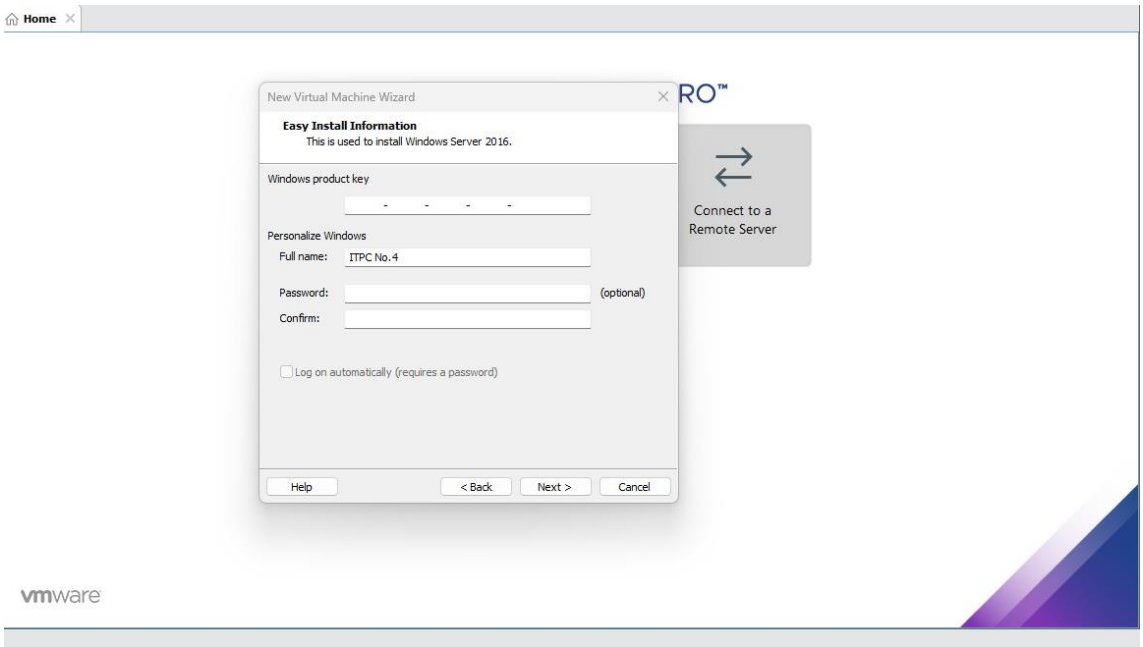
- Keep default values and Click **Next**



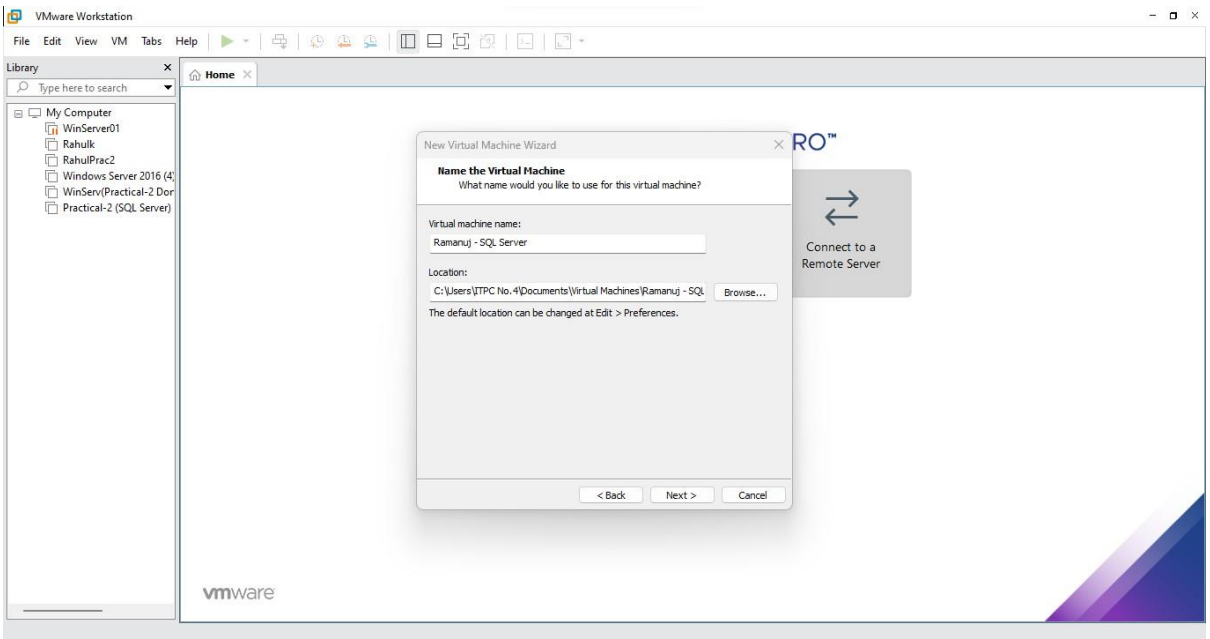
- Select **installer disc image file** and browse your Directory for the **Windows Server 2016 iso** file



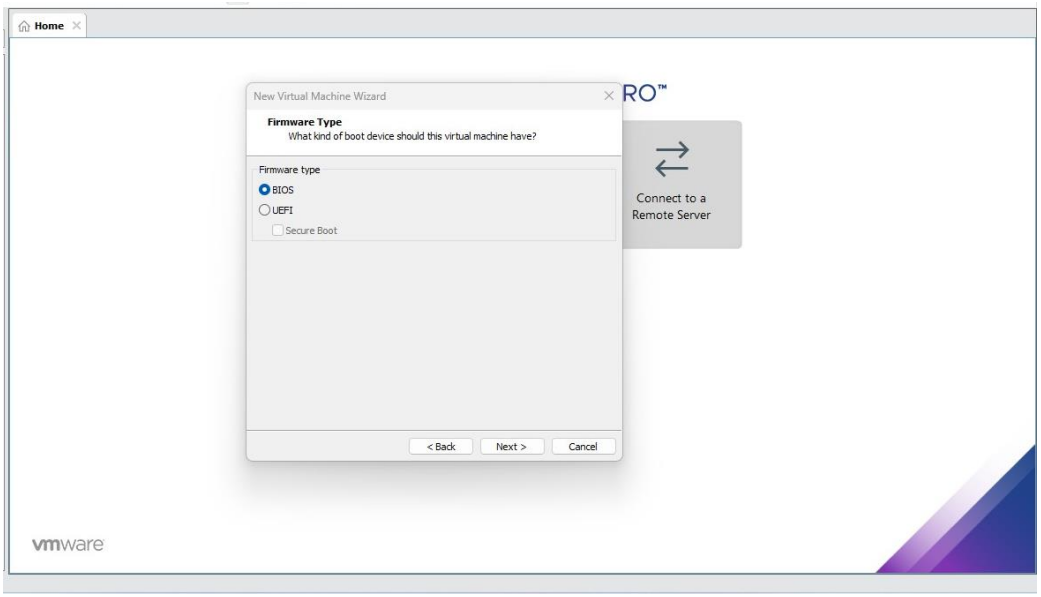
- Keep default values and Click **Next**



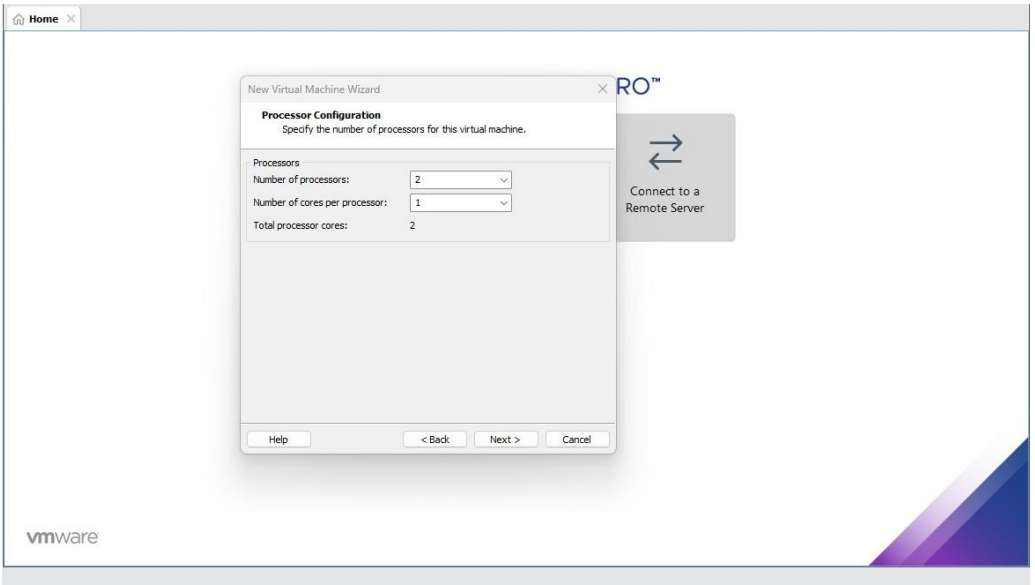
- Name your virtual machine (In this case it is **VIQAR – SQL Server**) and Click **Next**



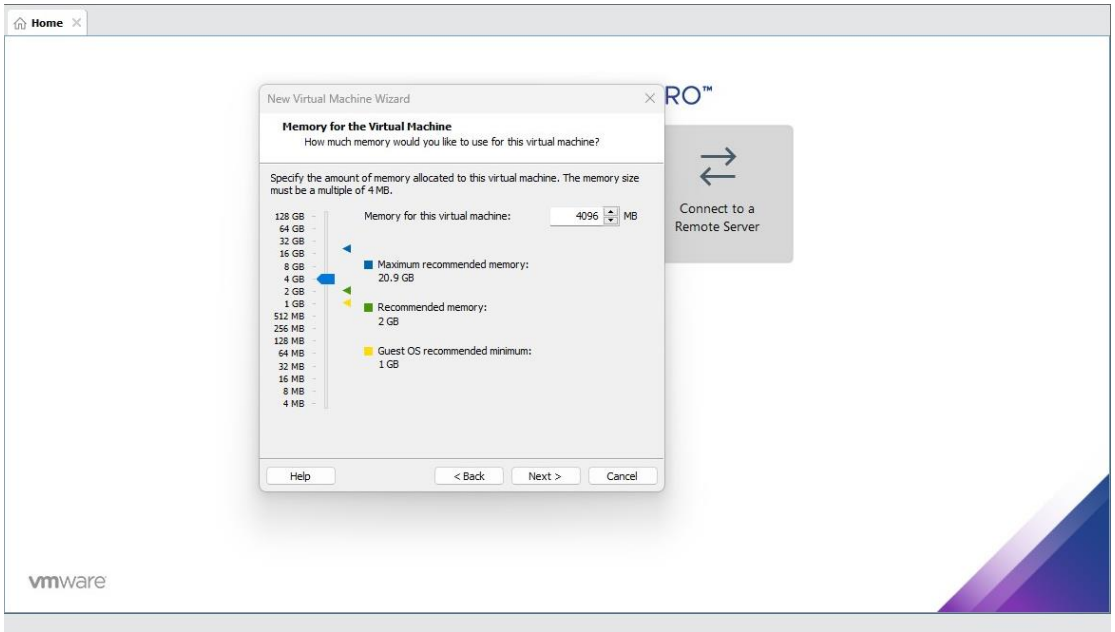
- Select **BIOS** and Click **Next**



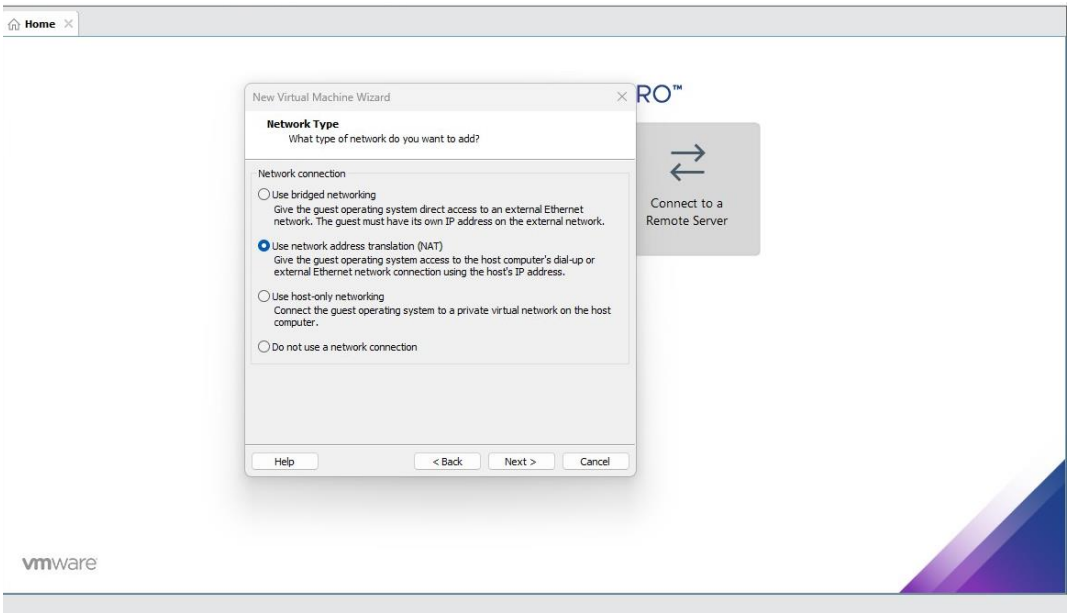
- Keep default values and Click **Next**



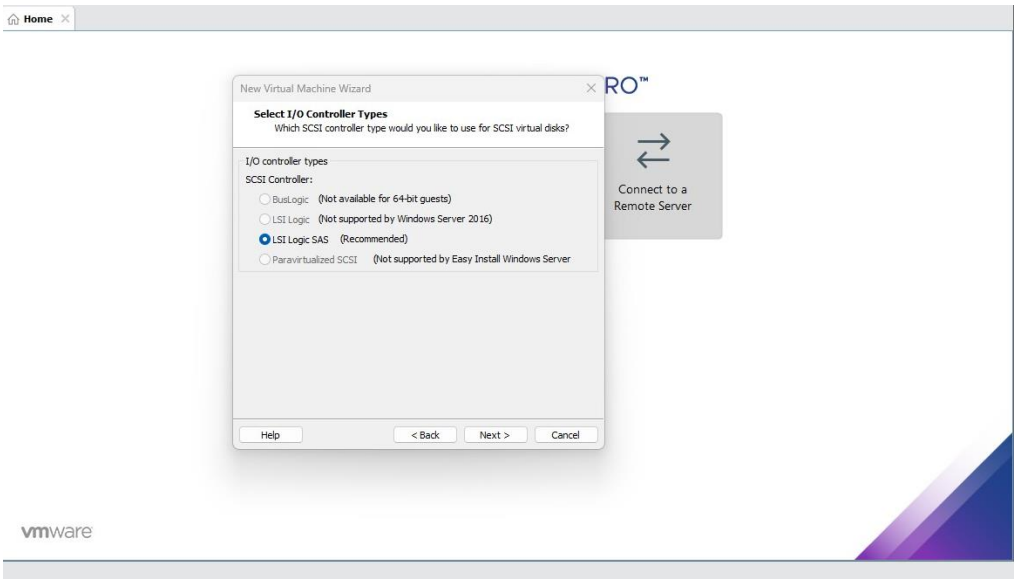
- Set the RAM to **4096 MB** (4 GB) and Click **Next**



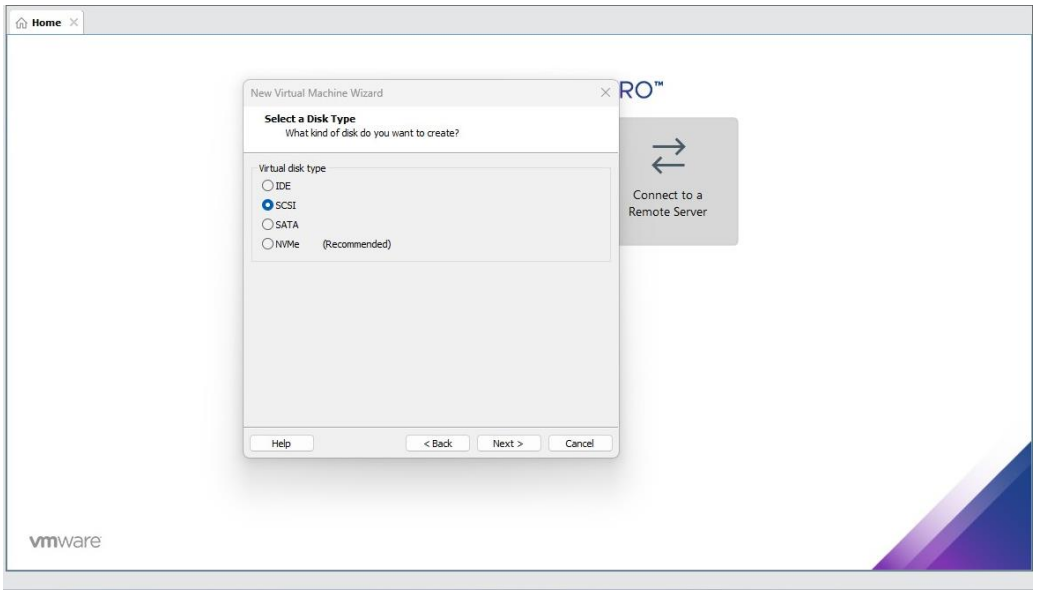
- Keep default values and Click **Next**



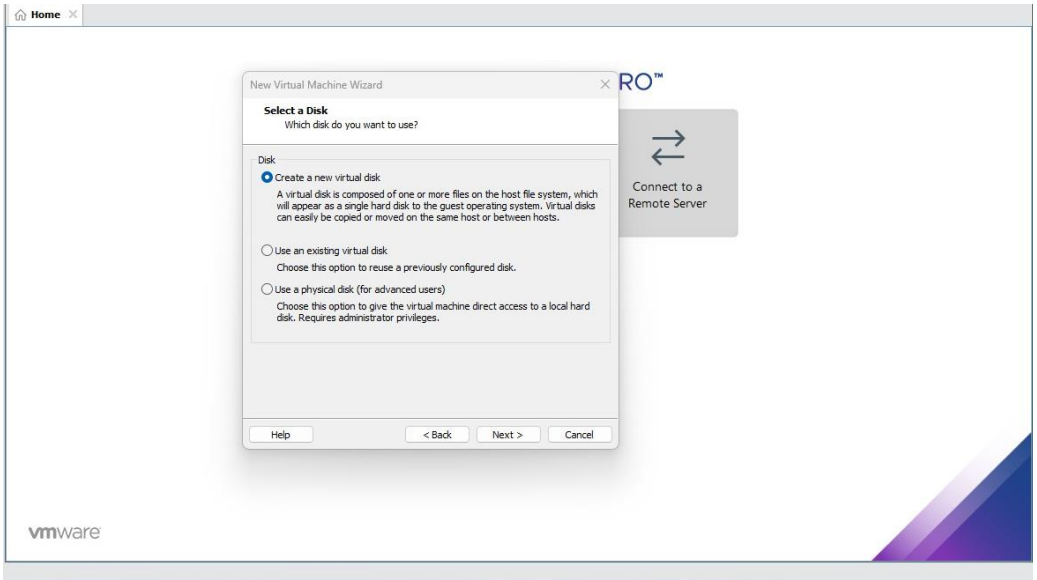
- Keep default values and Click **Next**



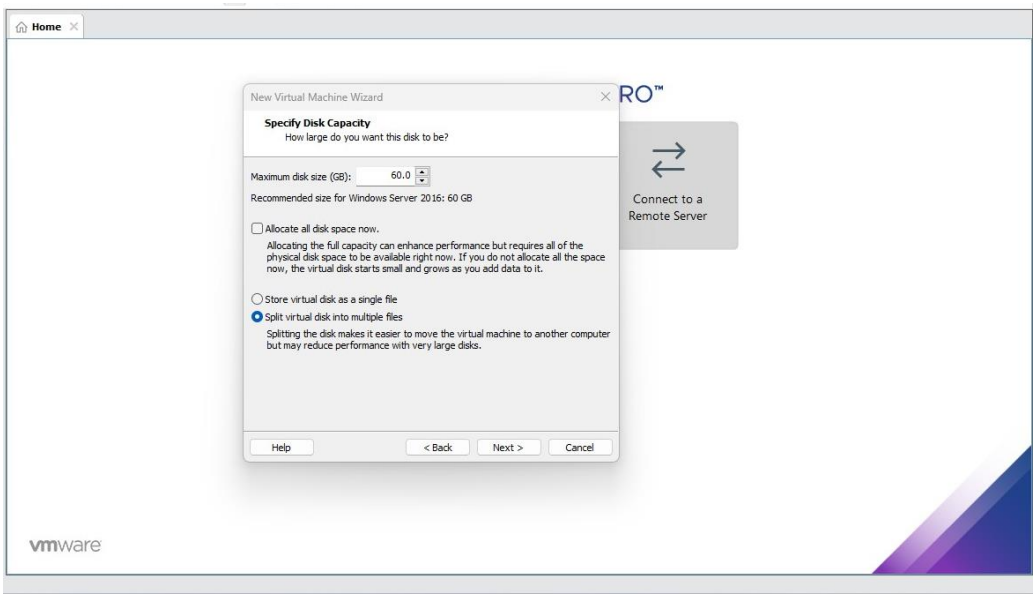
- Select **SCSI** and Click **Next**



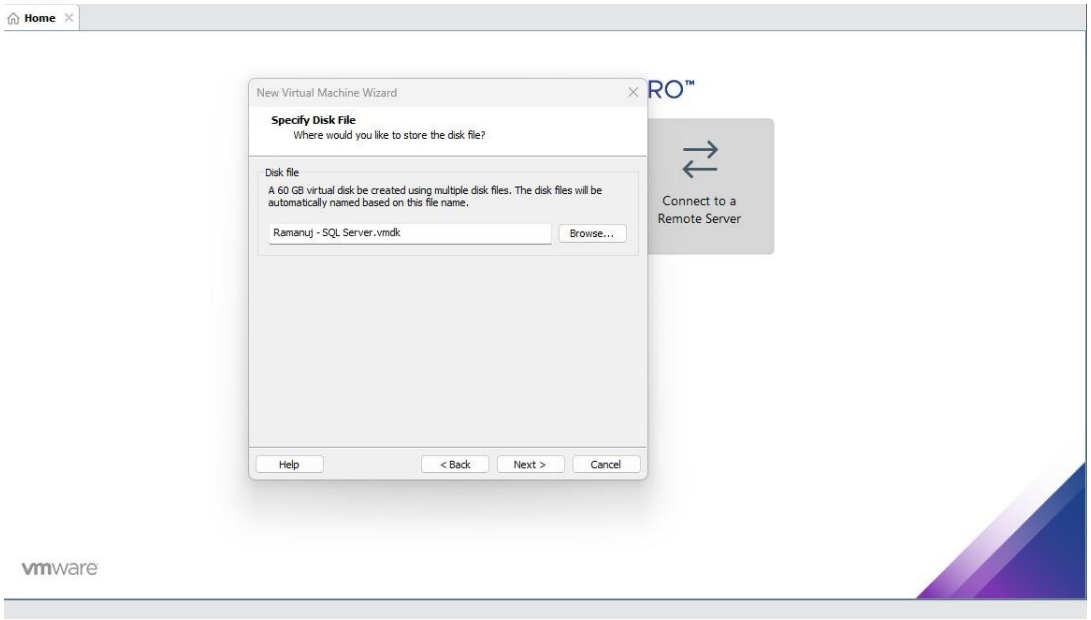
- Keep default values and Click **Next**



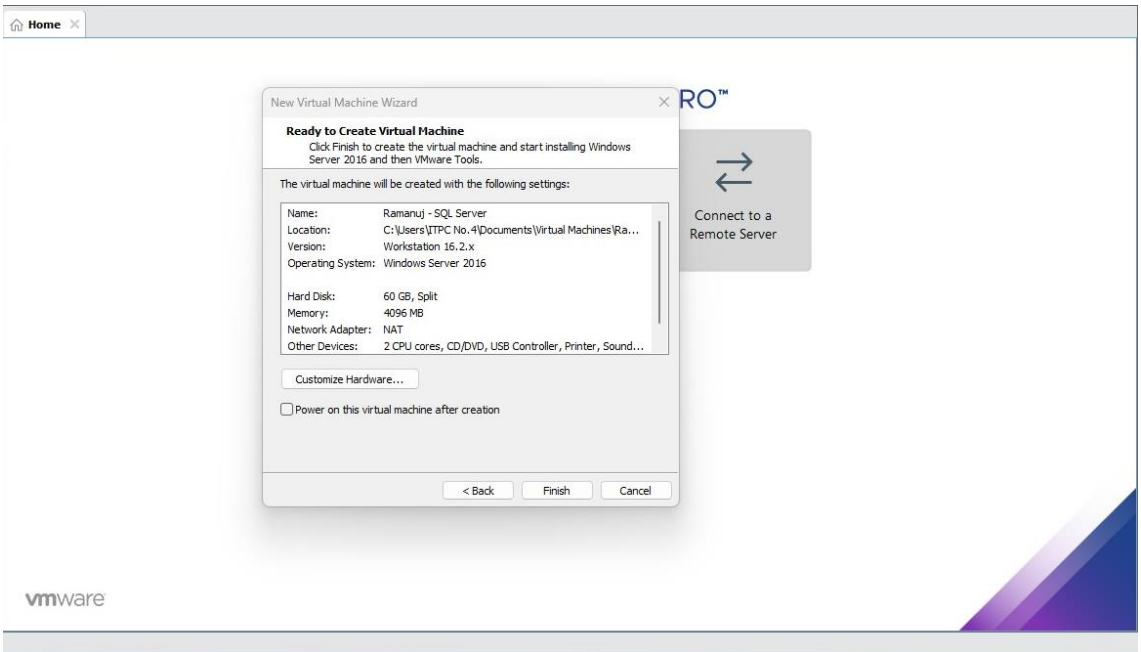
- Keep default values and Click **Next**



- Keep default values and Click **Next**

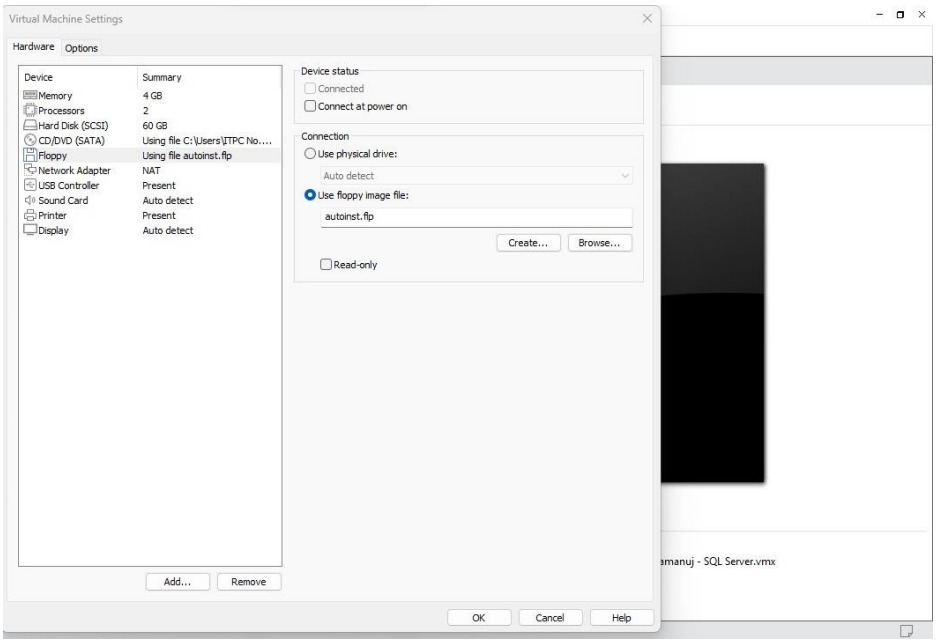


- Click on **Finish**

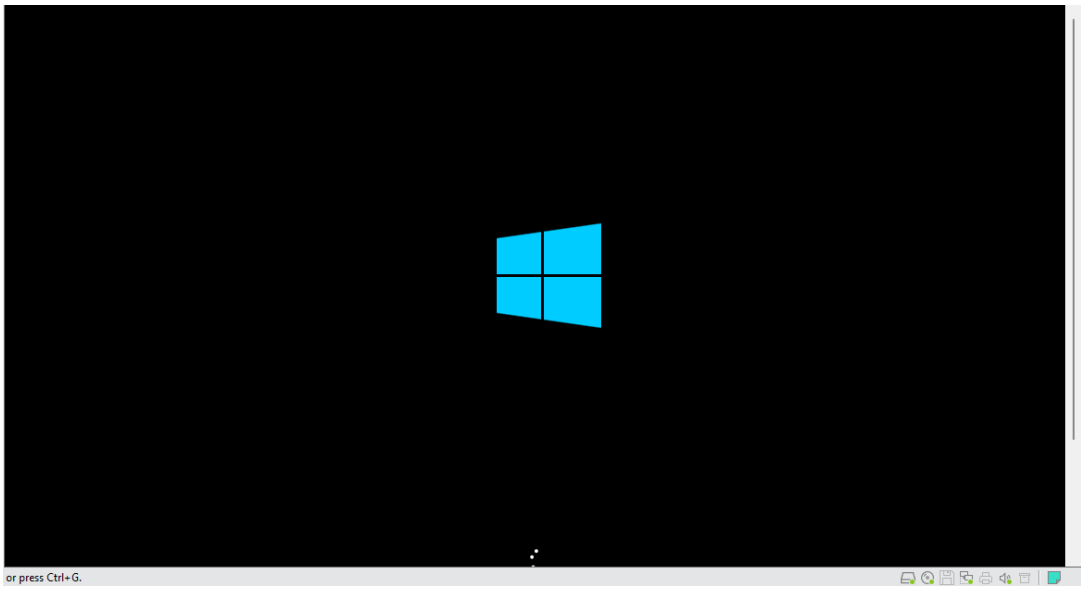


- Your Virtual Machine is created

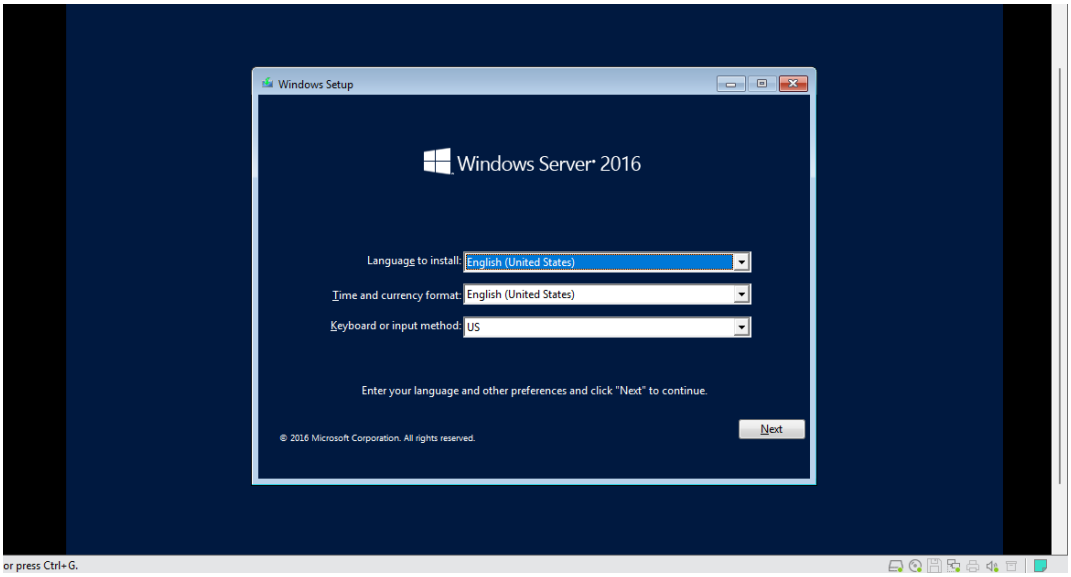
- Before powering on your virtual machine perform the following pre-requisites:
  - Click on **Edit Virtual Machine Settings**
  - Within Virtual Machine Settings Click on **Floppy** and UnClick **Connect on Power On**
  - Click **Ok**



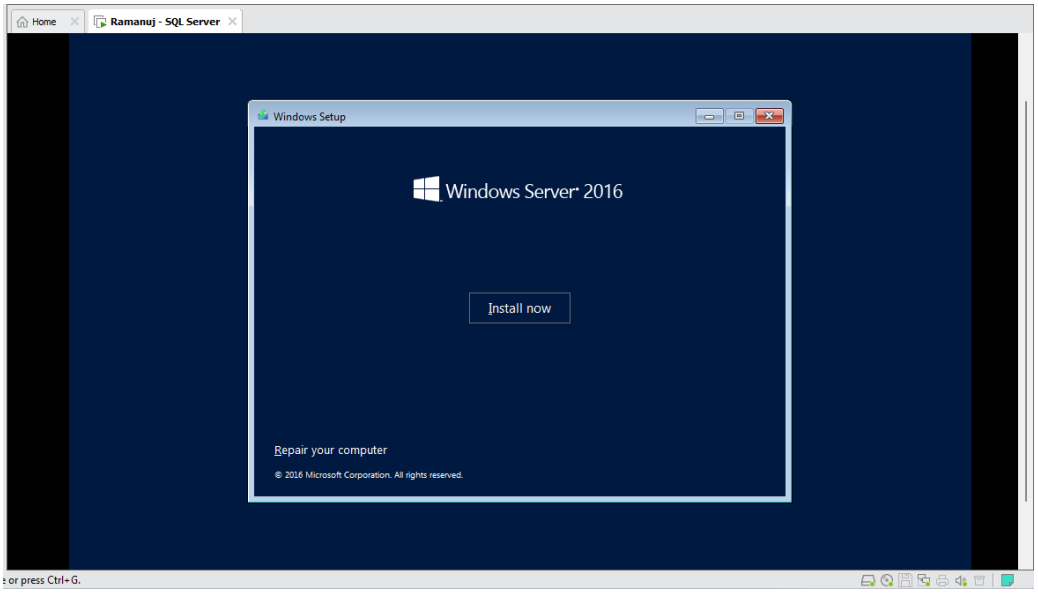
- Now Power On your VM



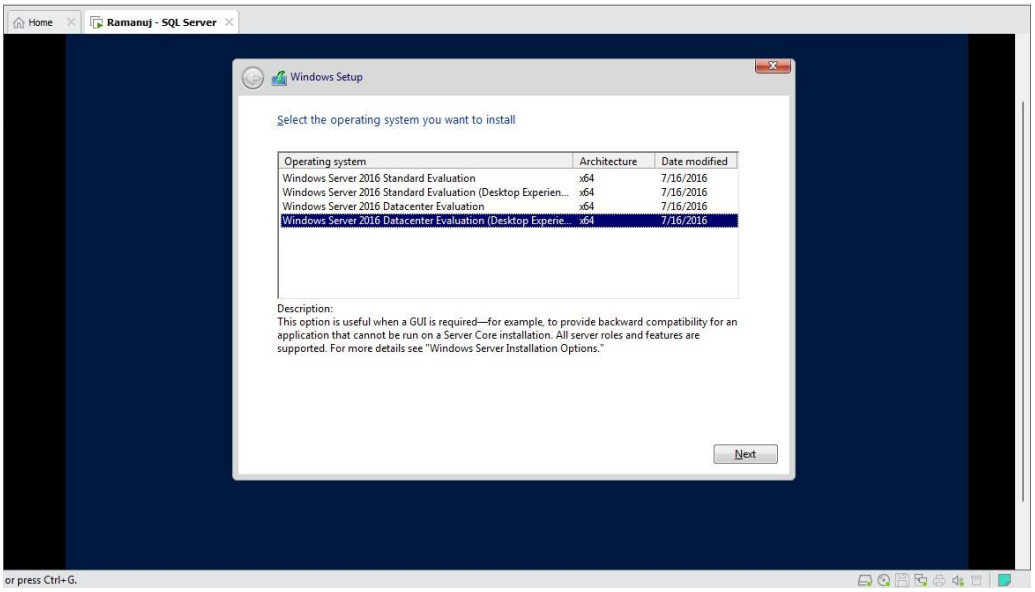
- Click Next



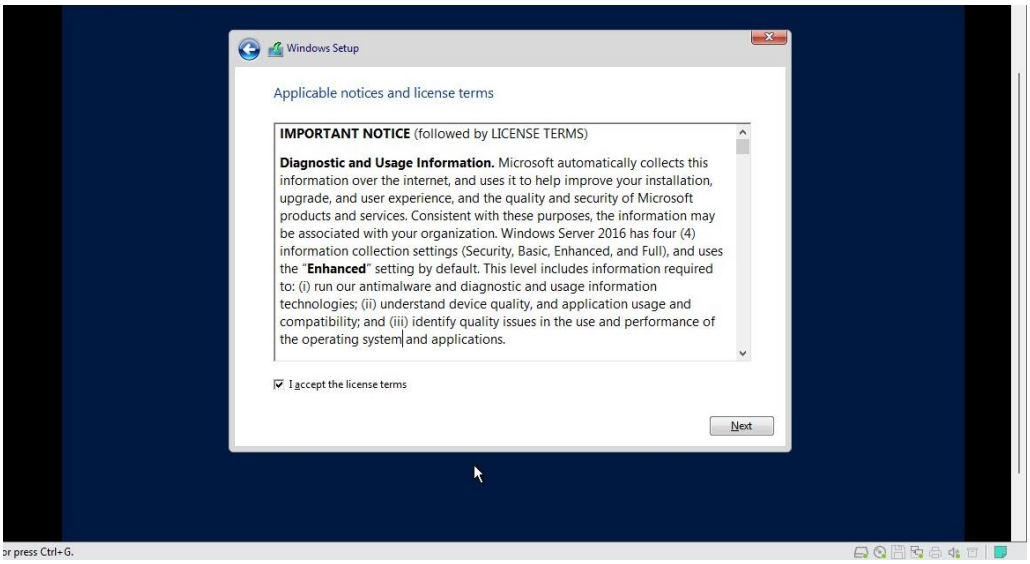
- Click on **Install Now**



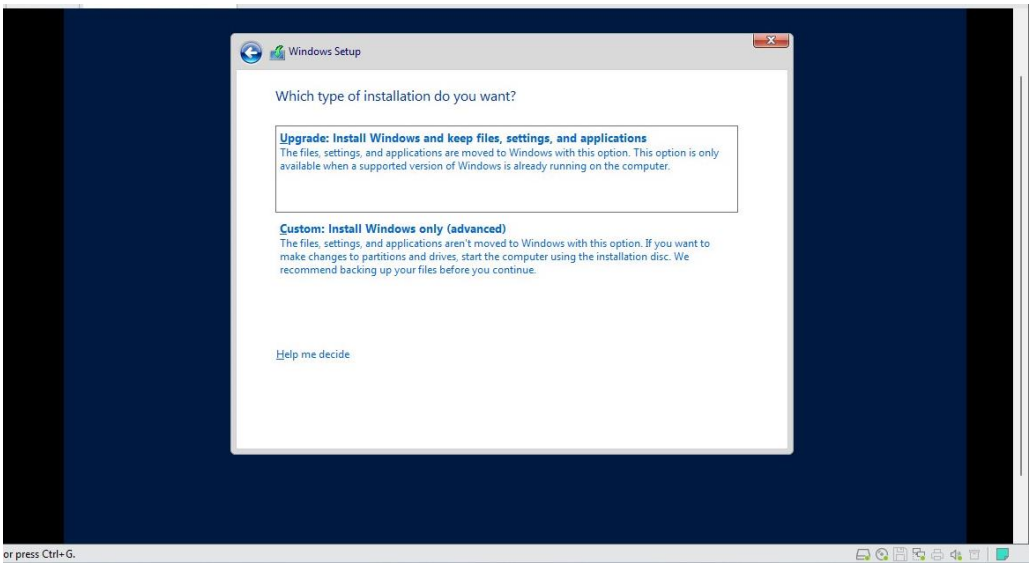
- Select **Windows Server 2016 Datacenter Evaluation (Desktop Expereience)** and Click **Next**



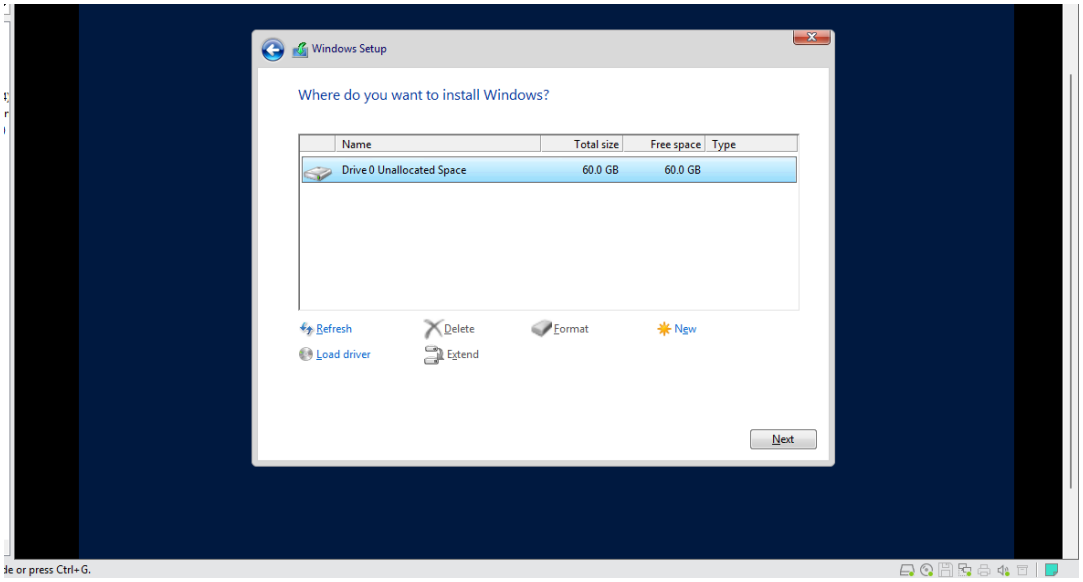
- Select **I accept license terms** and Click **Next**



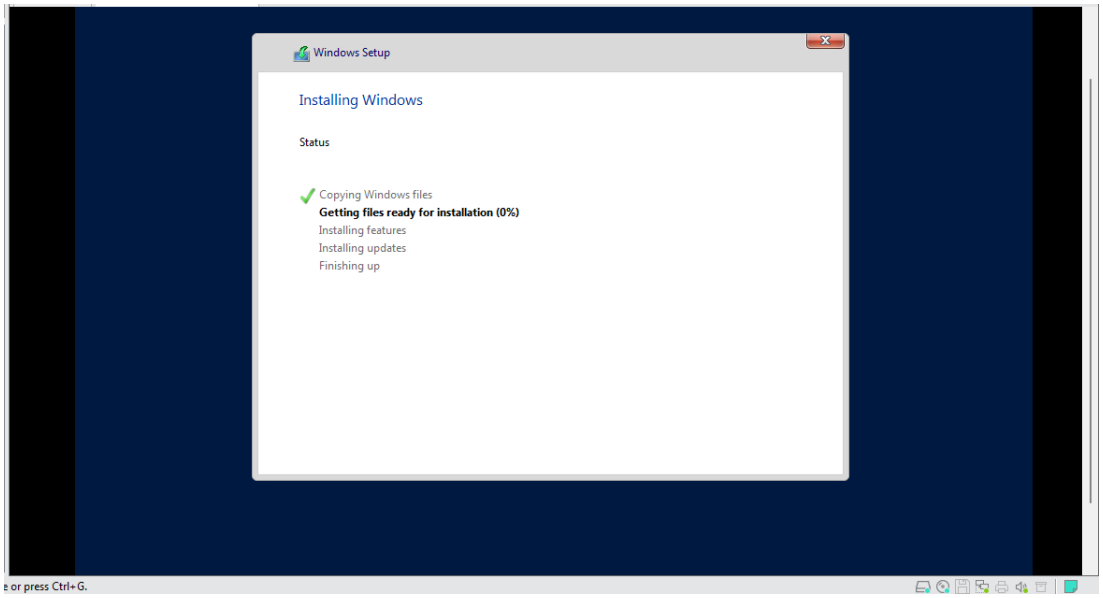
- Click on **Custom**



- Keep default values and Click **Next**

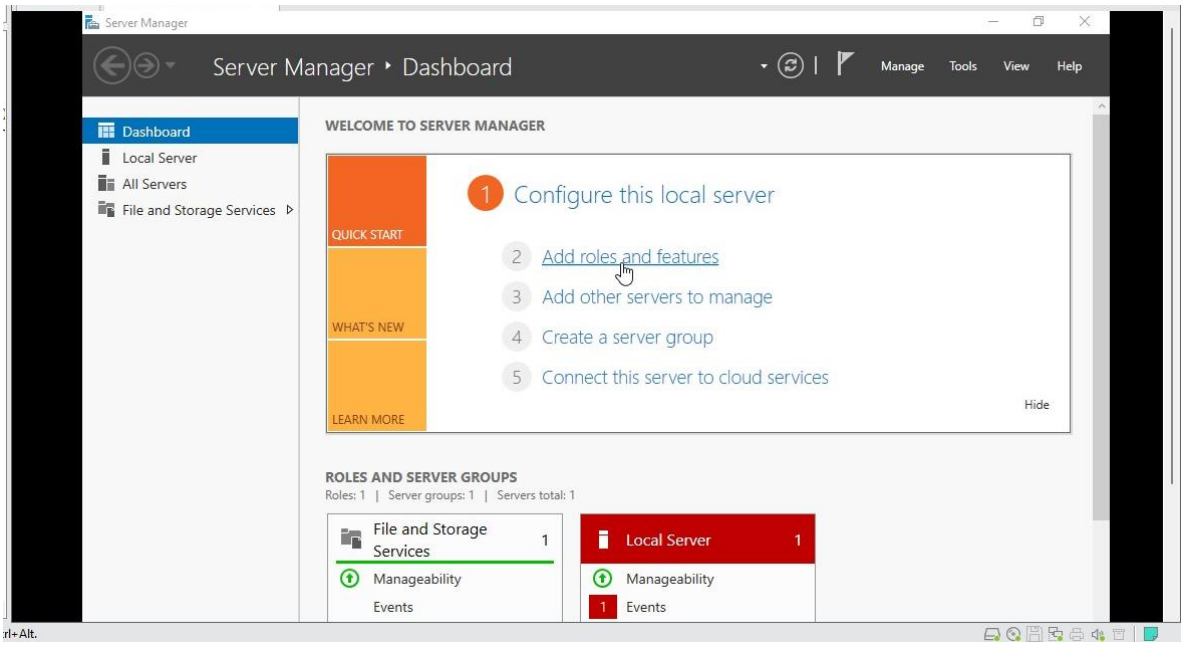


- Now it will start installing Windows onto the VM

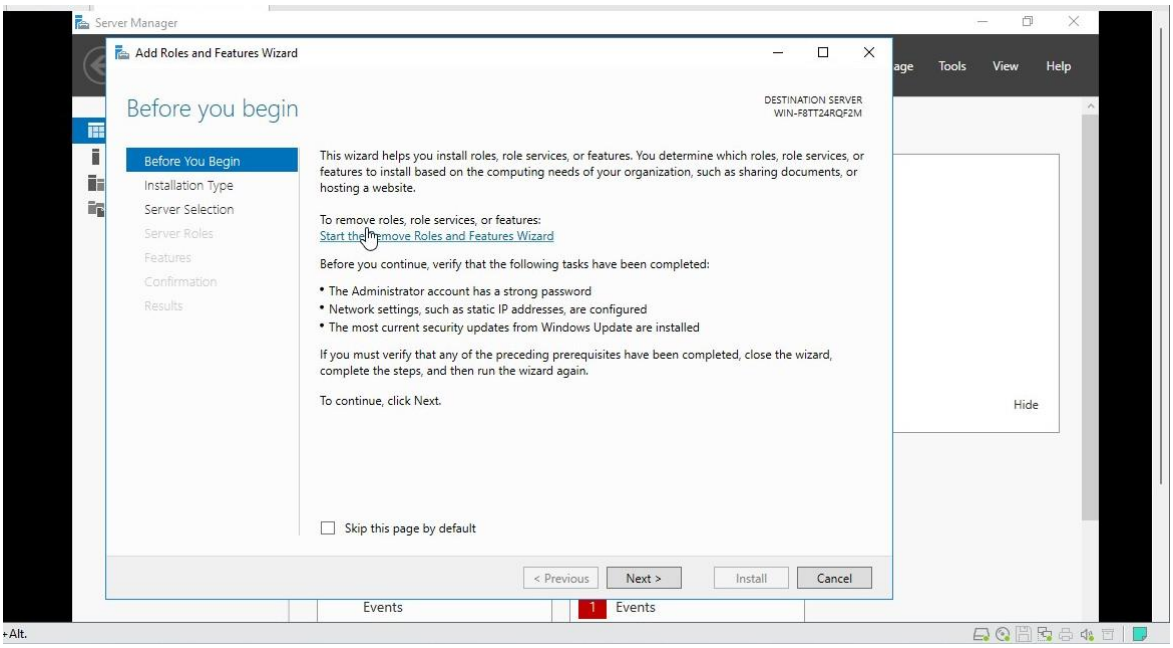


- Now enter a password for the system and login

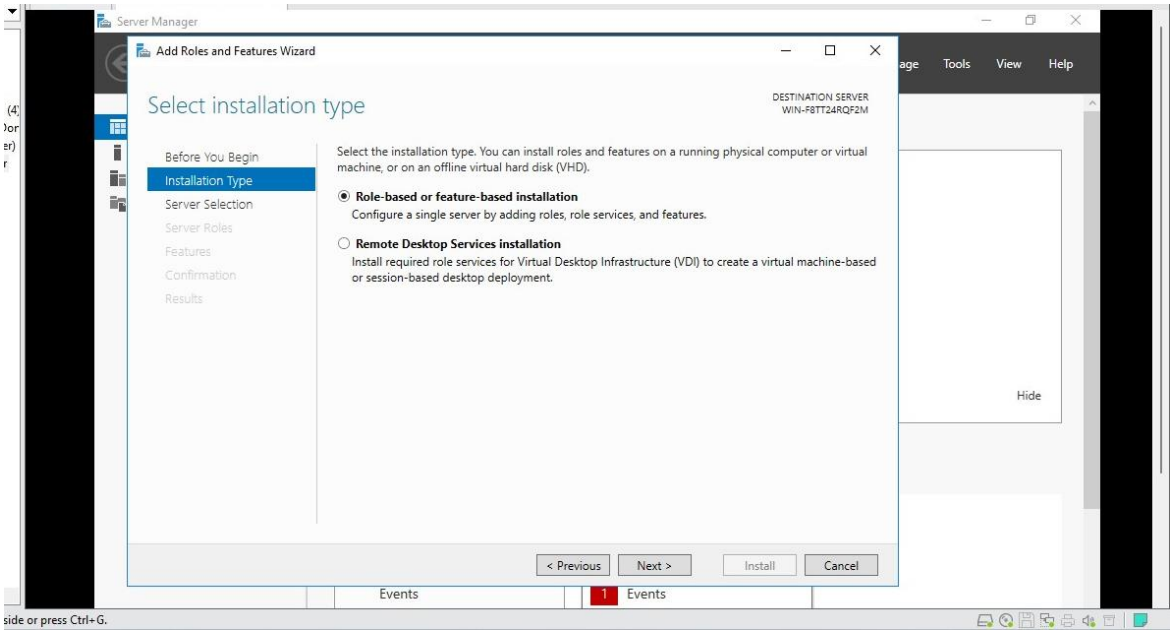
- Open **Server Manager** and Click on **Add Roles and Features**



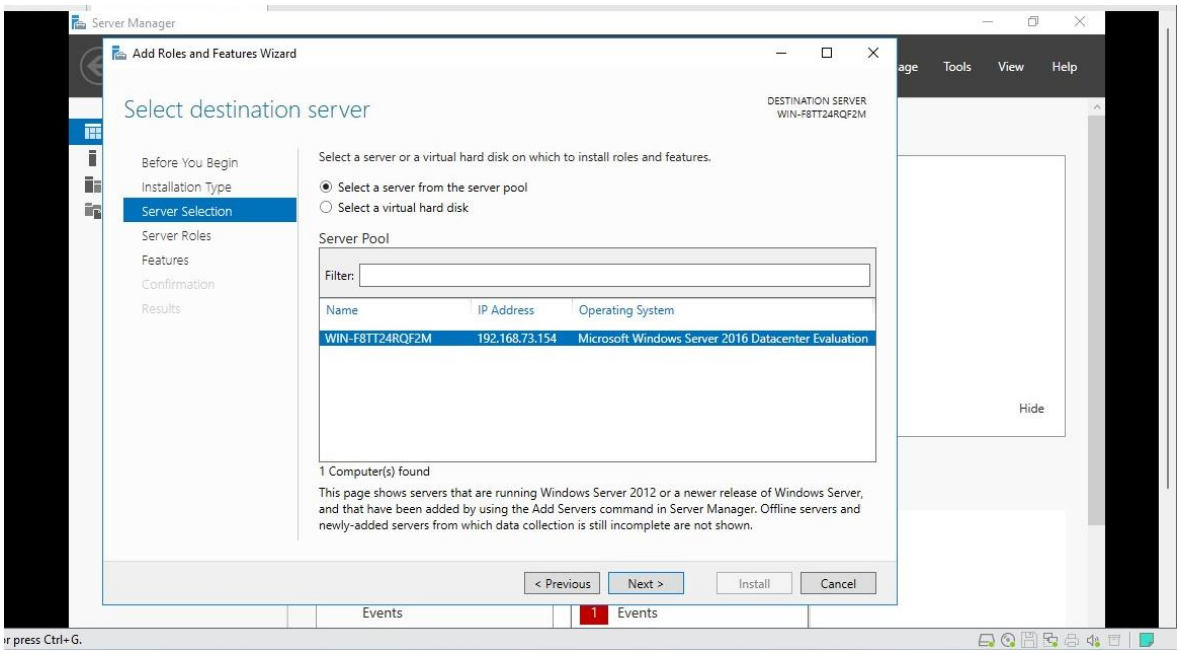
- Click on Next



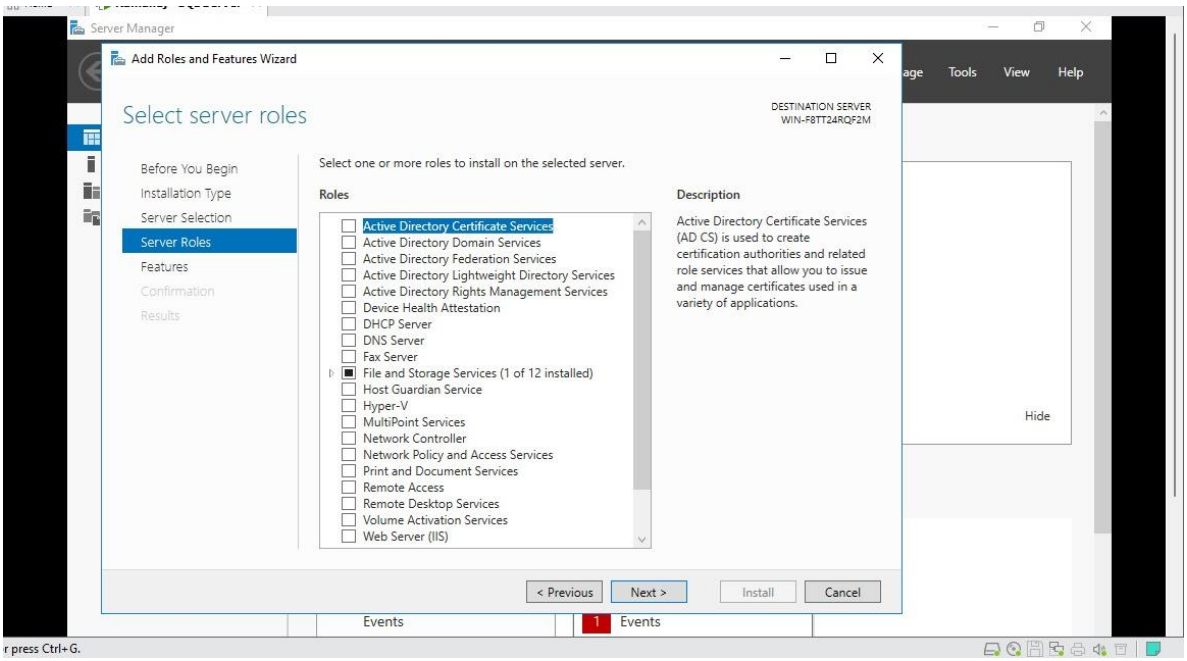
- Keep default values and Click **Next**



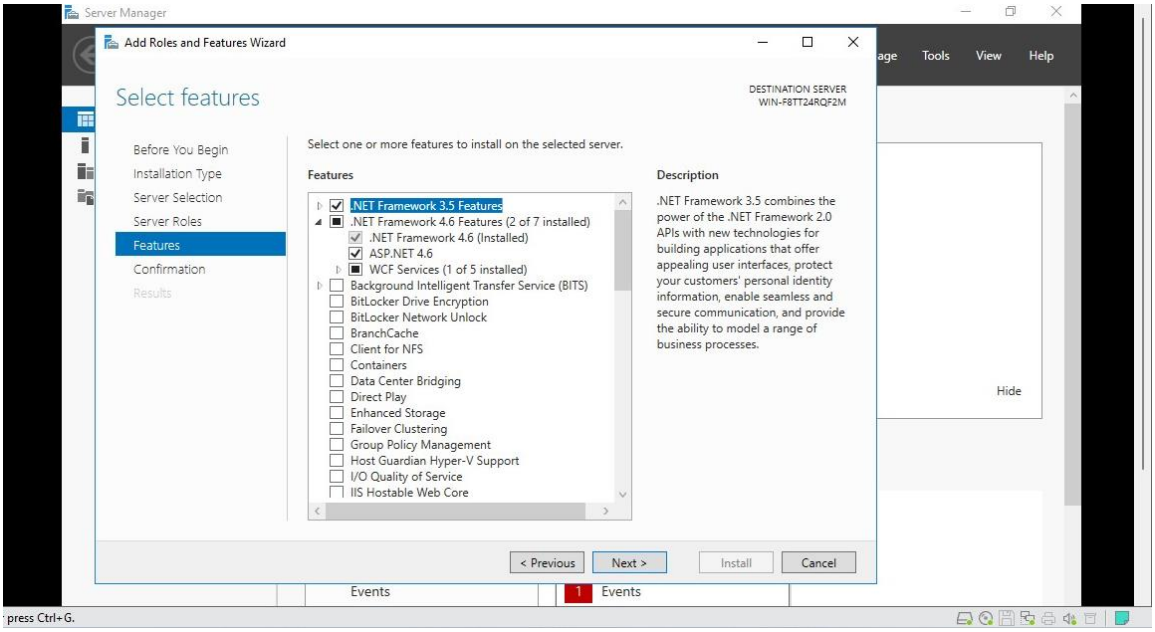
- Keep default values and Click **Next**



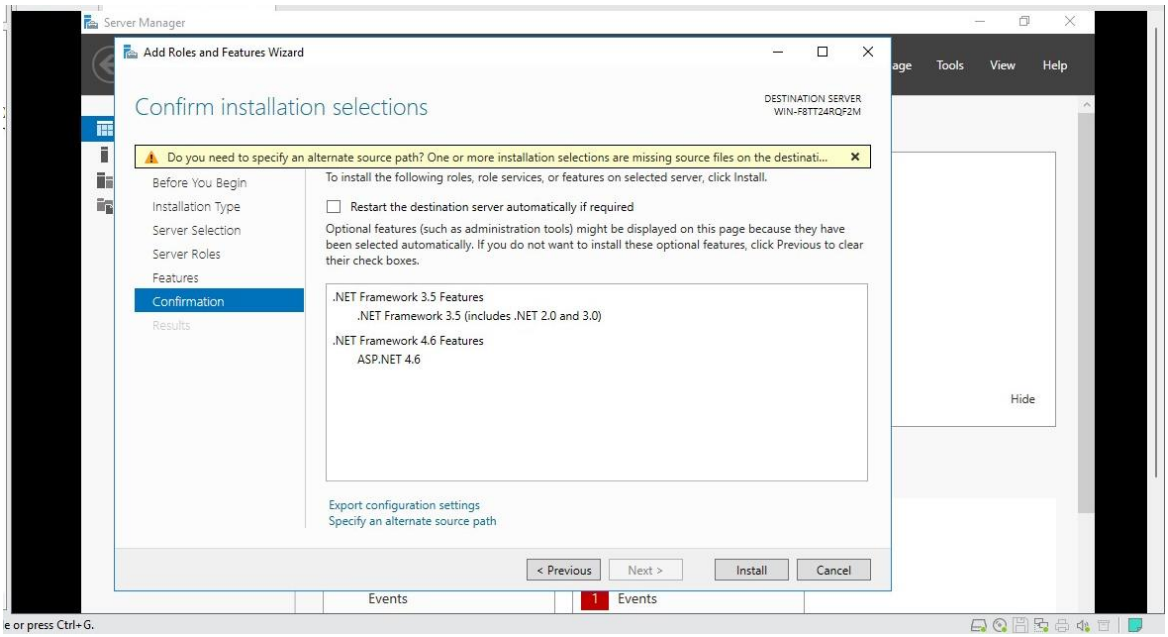
- Keep default values and Click **Next**



- Select **.NET Framework 3.5 Features** and within .NET Framework 4.6 Features Select **ASP .NET 4.6** and Click **Next**

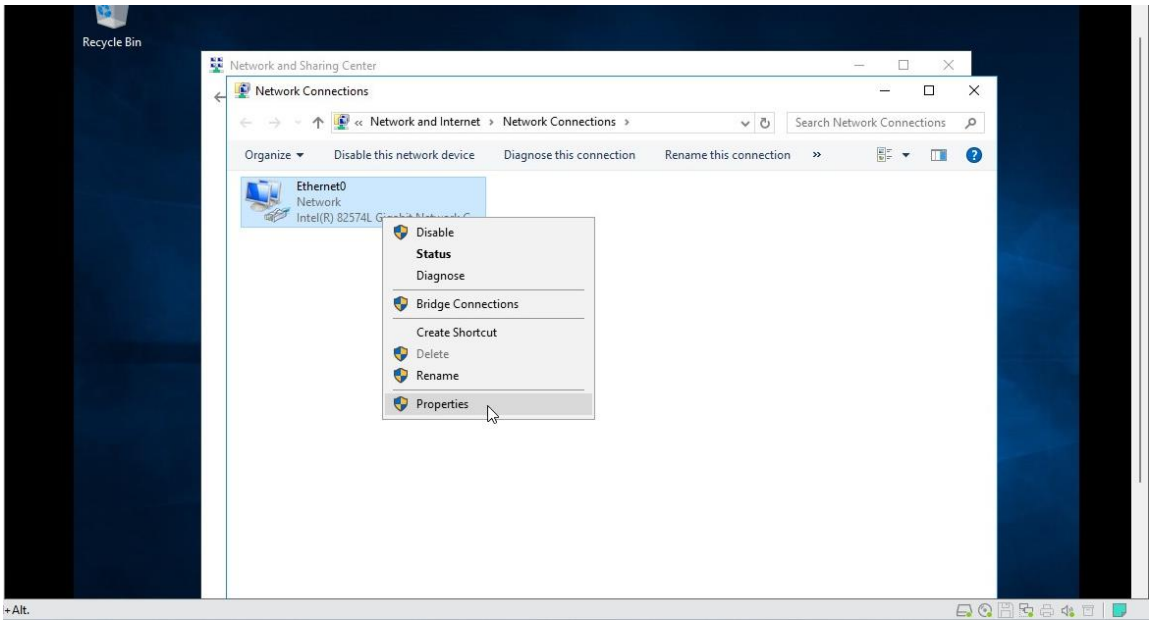


- Click on **Install**

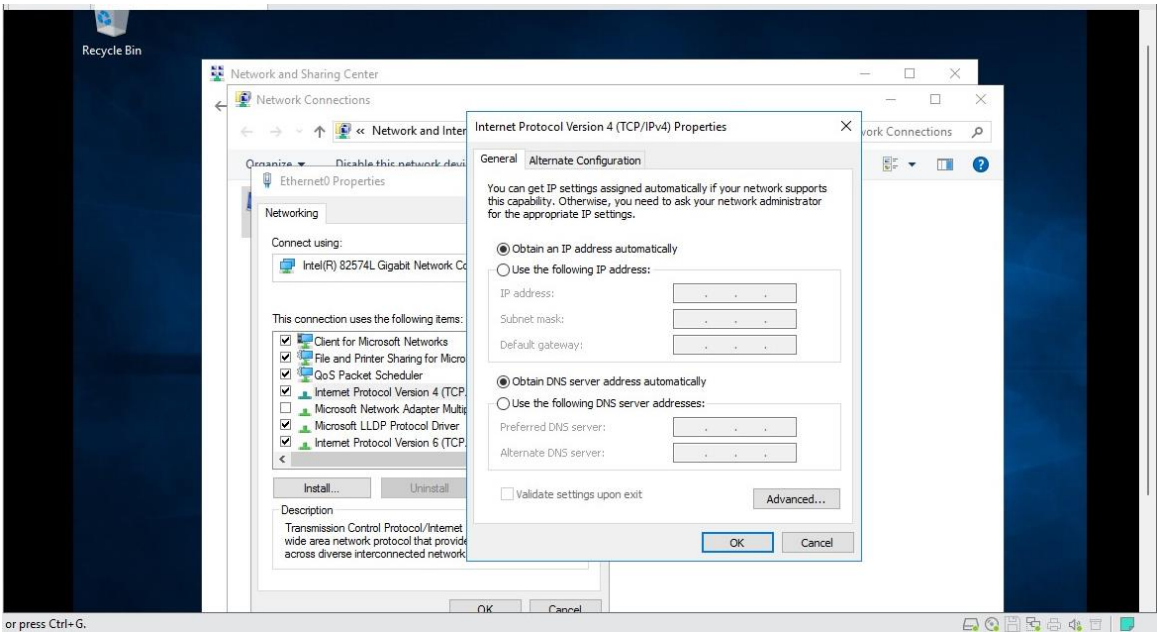


Step 2: Linking the SQL Server to the Domain Controller

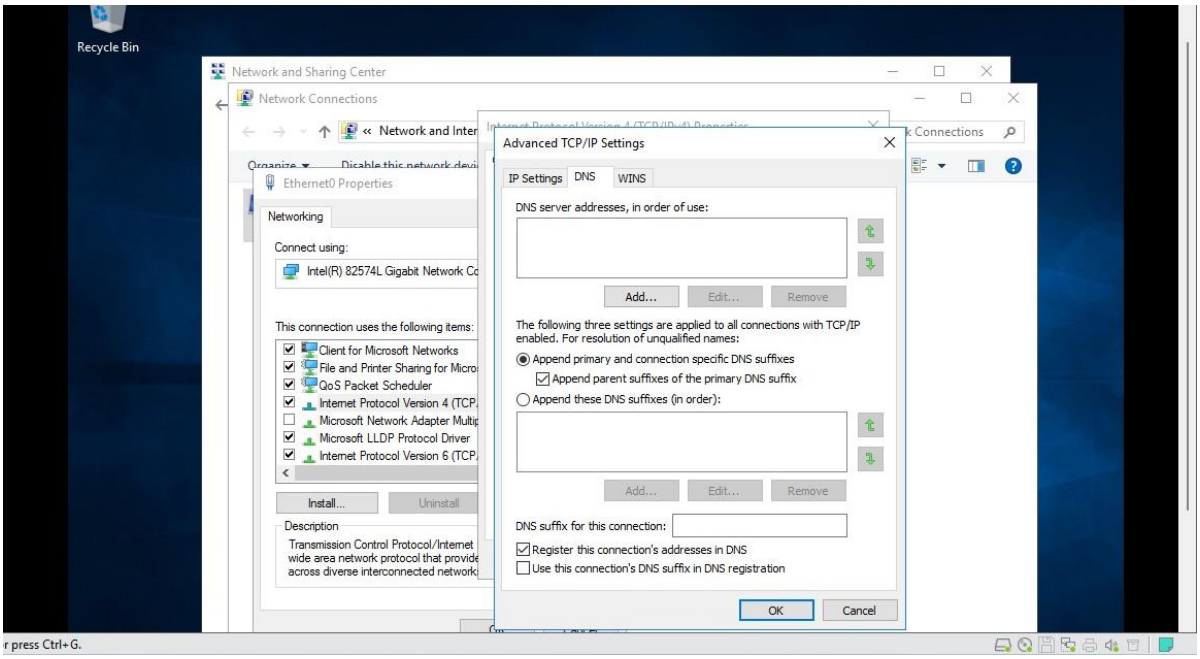
- In the SQL Server, Go to **Network Adapter Settings**, Right Click on **Ethernet0** and Select **Properties**



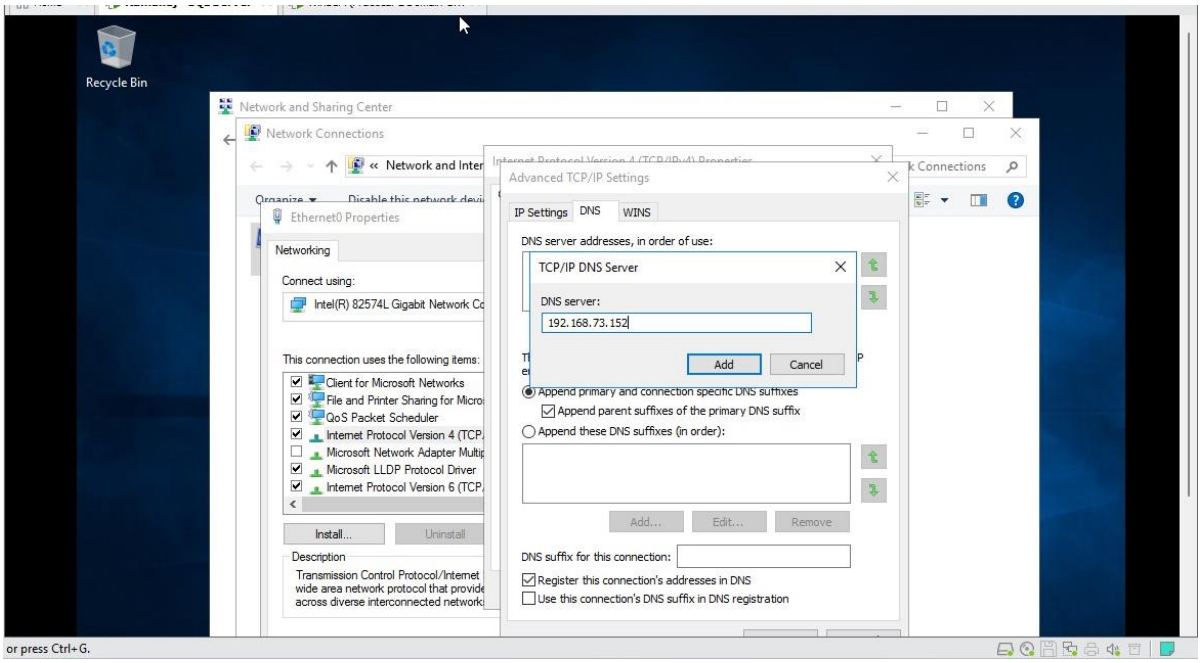
Double Click on **Internet Protocol Version 4**



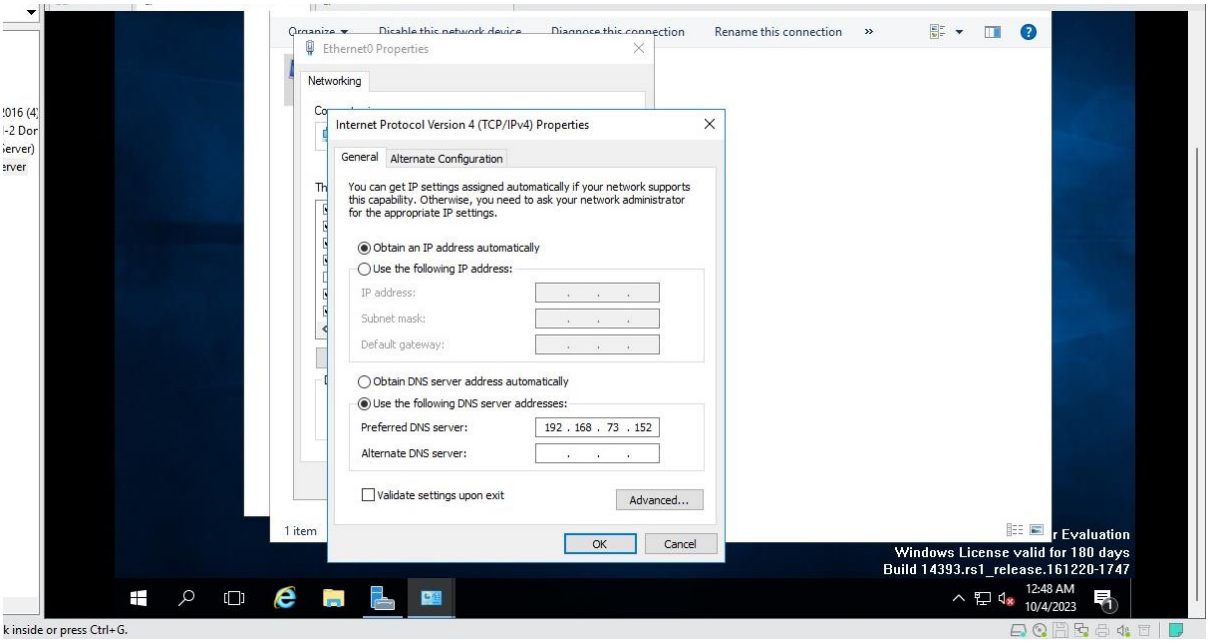
- Click on **Advanced** and Select **DNS**



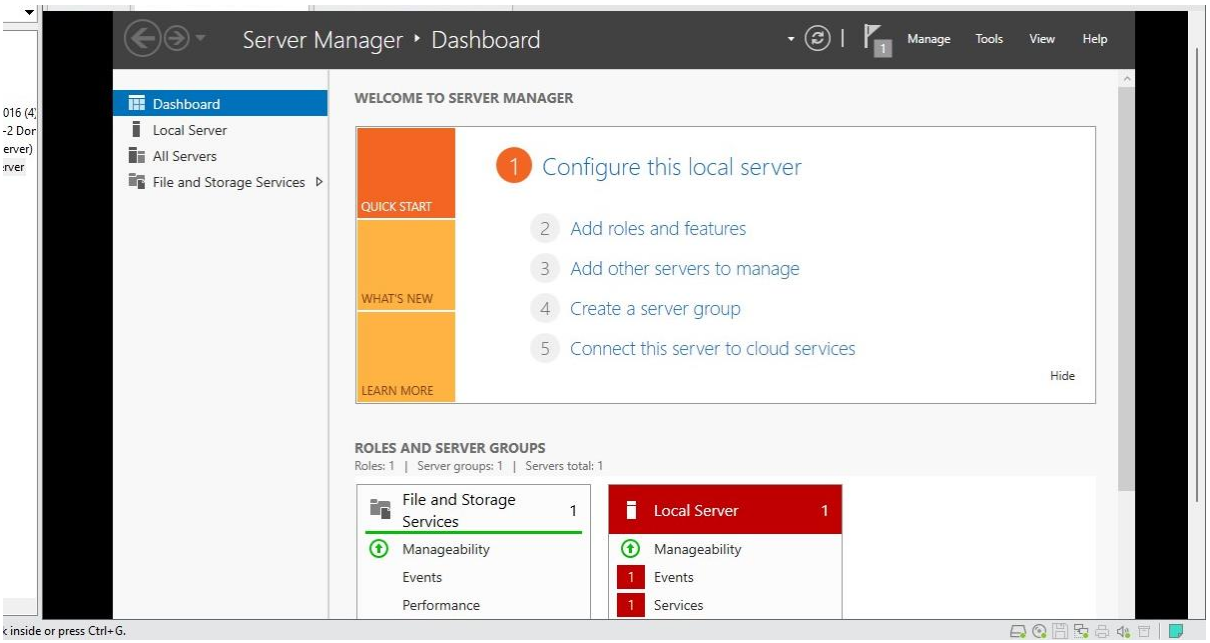
- Now start your previous VM that contains the **Domain Controller** and copy its **IP Address** and within DNS in the **SQL Server** Click on **Add** and Paste the copied IP Address and Click **Add**



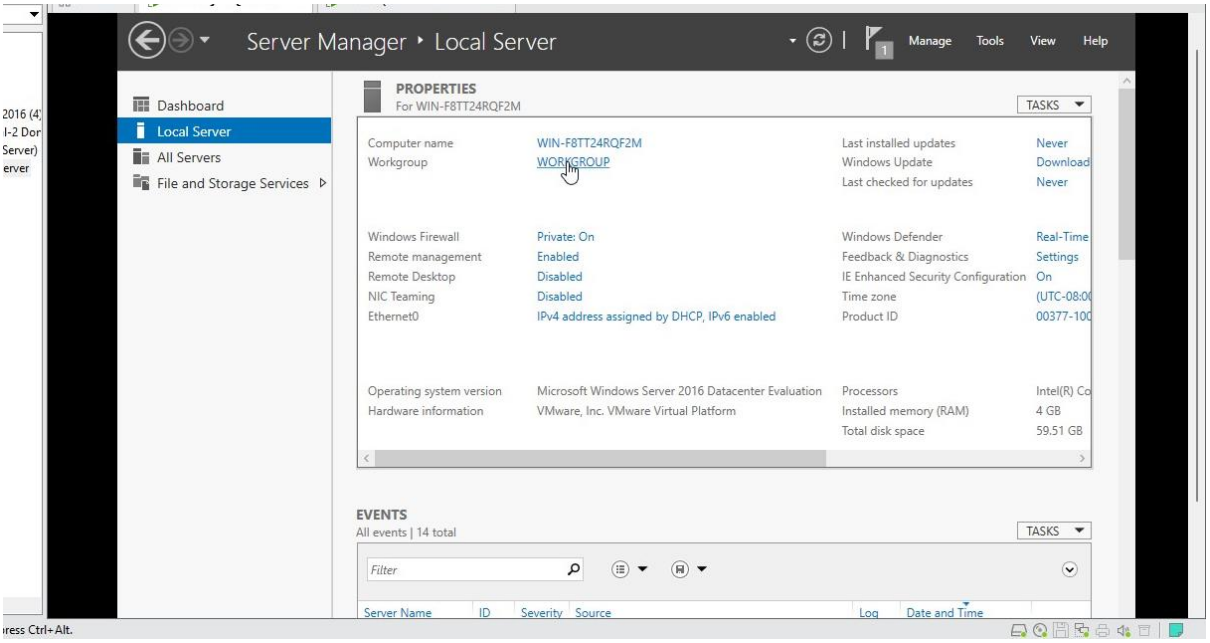
- Now this IP Address will be set as the Preferred DNS Address



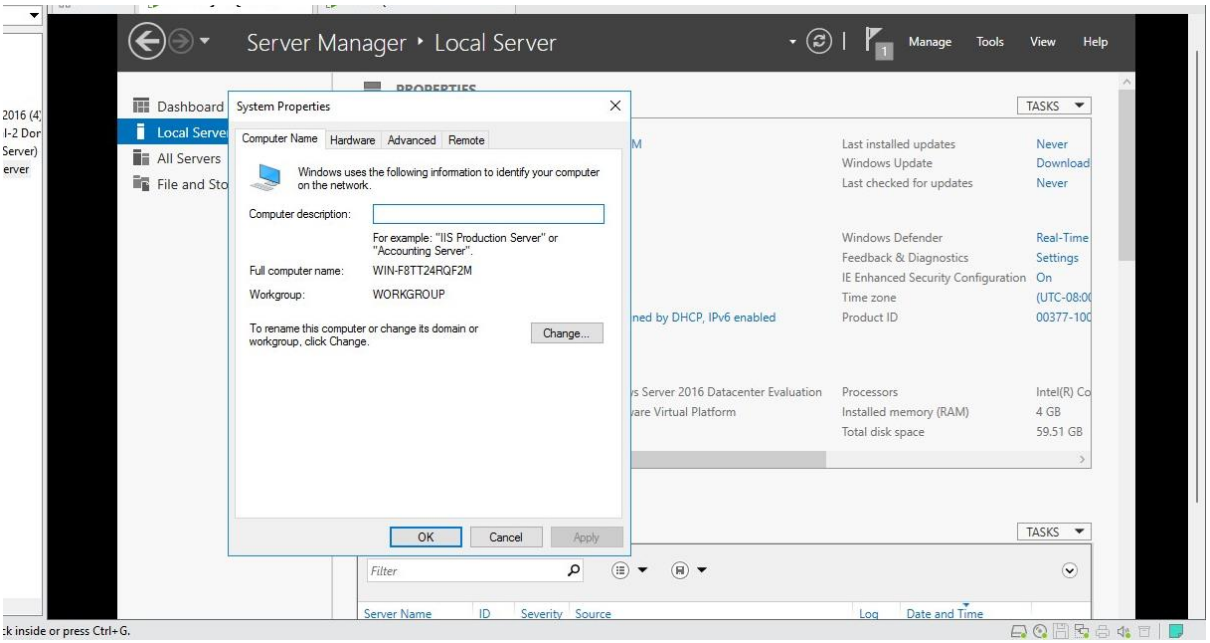
- Now Exit out of Network Settings and Open **Server Manager**



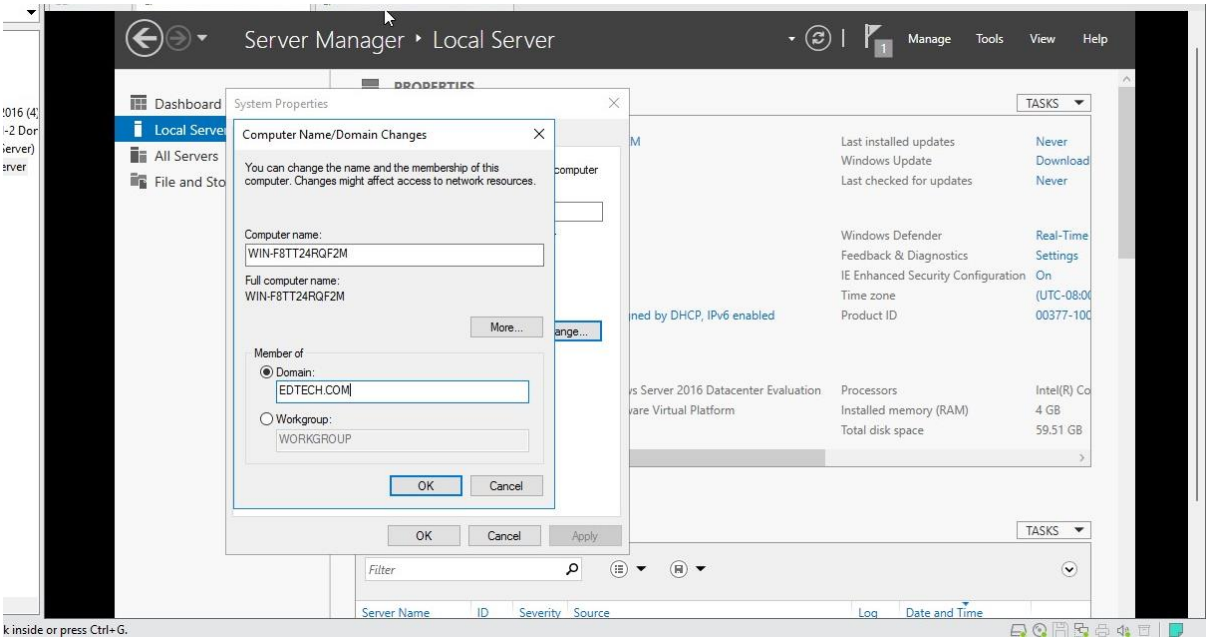
- Within Server Manager Click on **Local Server** and Click on **Workgroup**



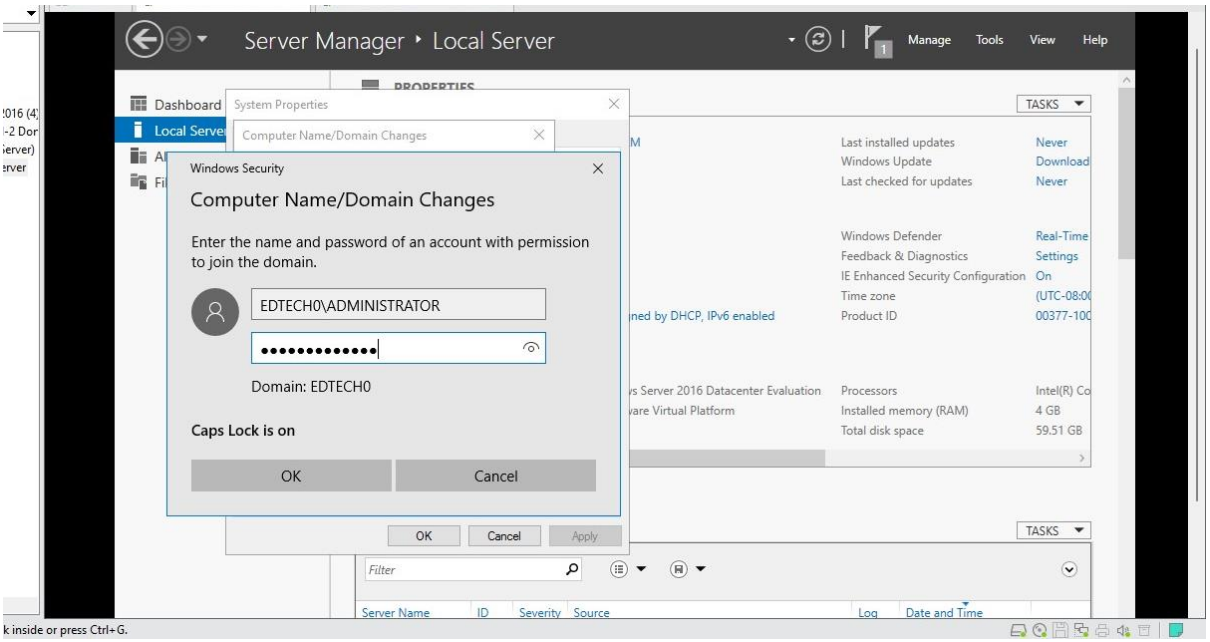
- Within Workgroup Click on **Change**



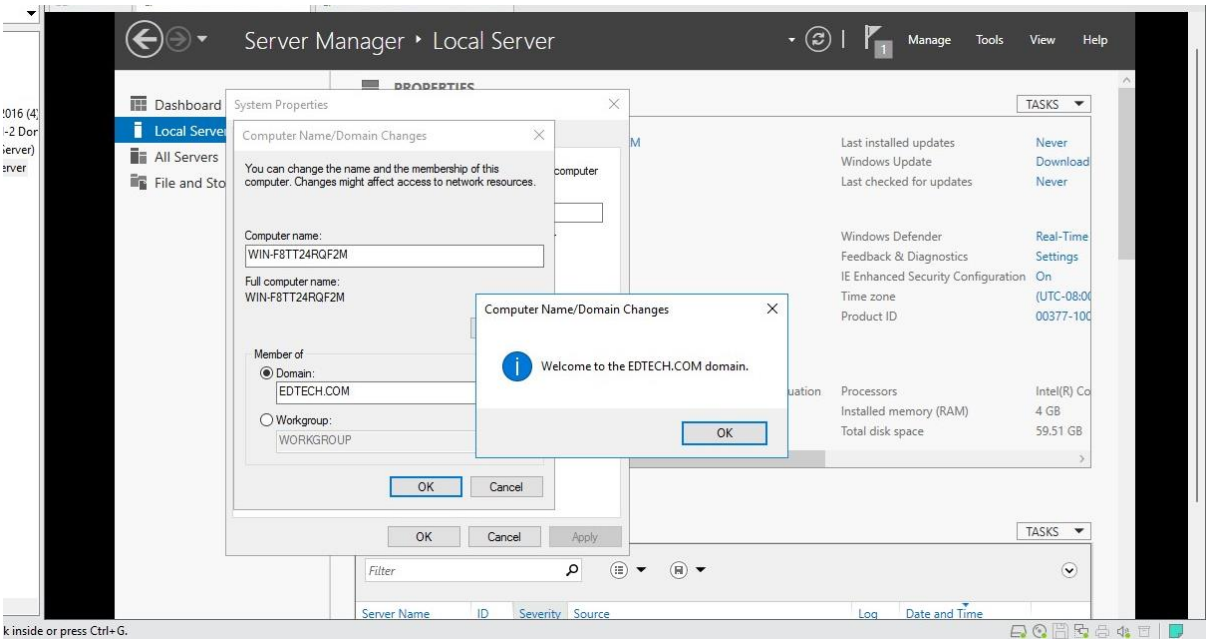
- Now in Member of Select Domain and Enter the Domain Name of the Domain Controller (In this case it is EDTECH.COM)



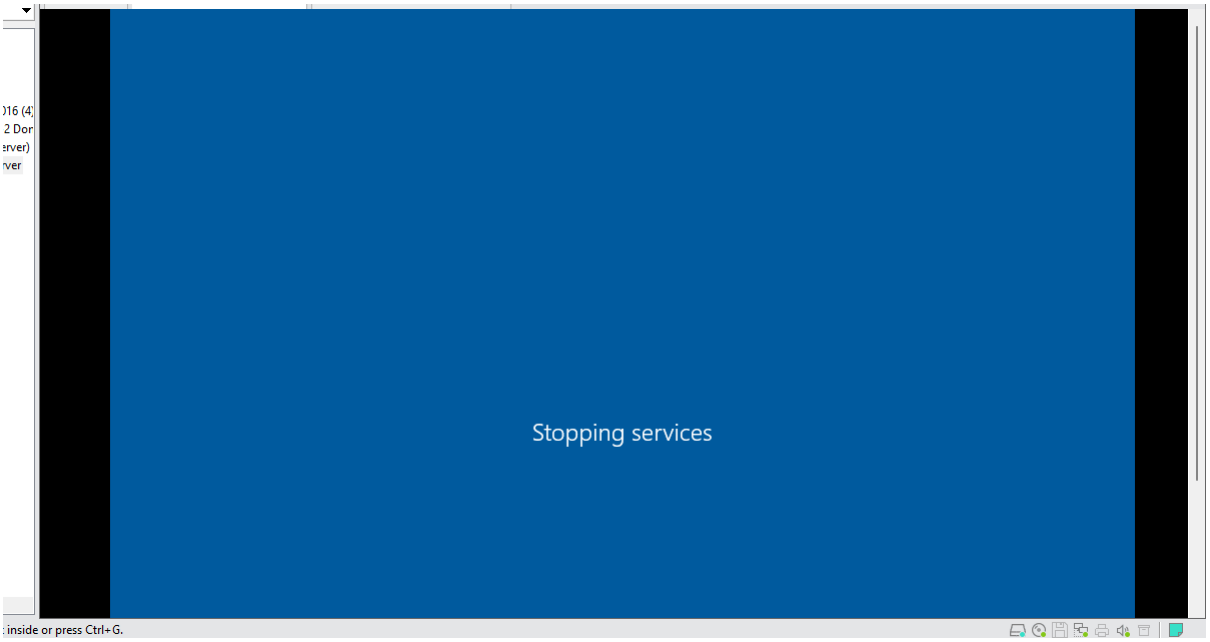
- Enter your **Domain Controllers** Username and Password for Access and Click **Ok**



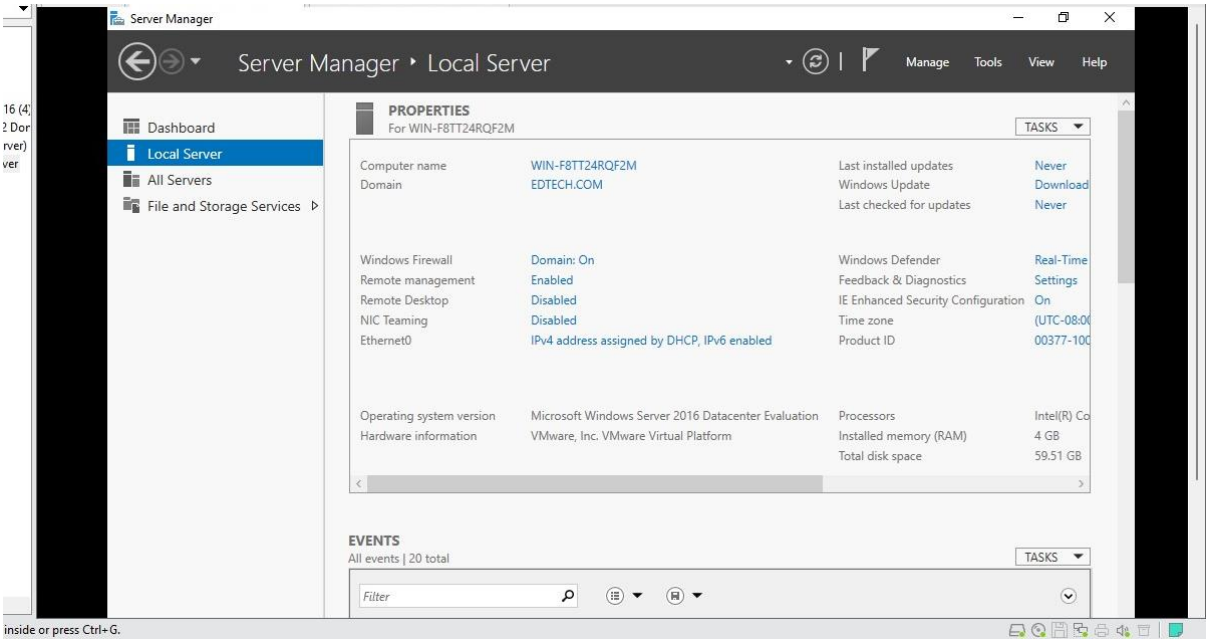
- You have now successfully linked your SQL Server to your Domain Controller. After this you have to restart for the system to update the changes.



- The SQL Server VM will now restart

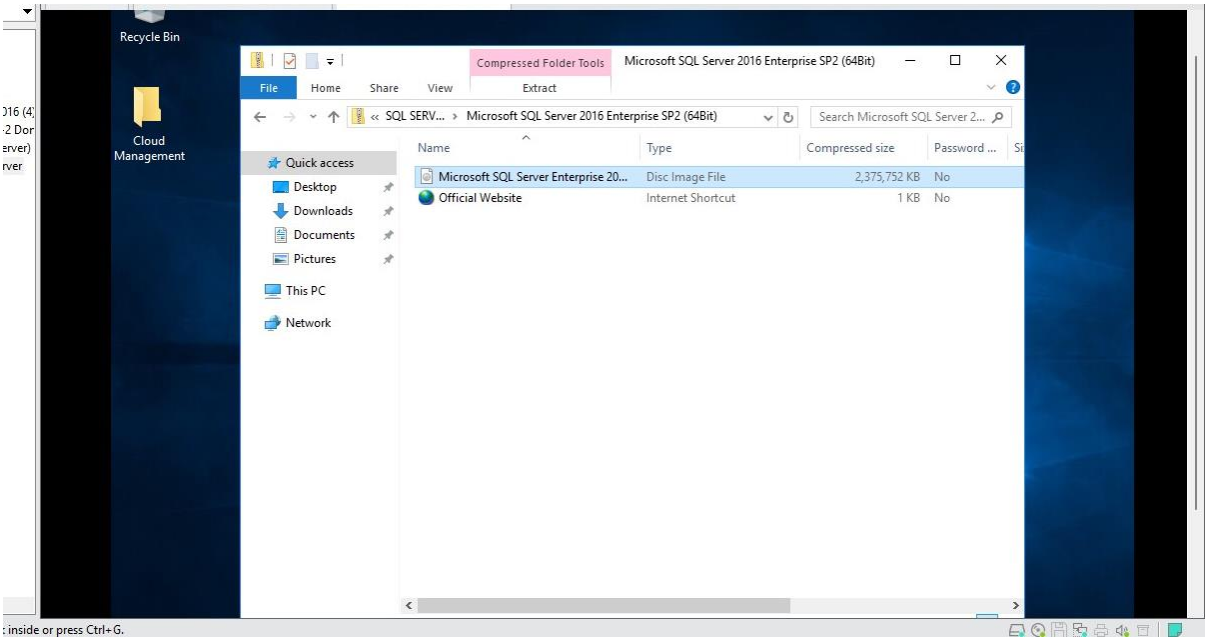


- To confirm the changes go to Local Server in Server Manager and Check the Domain Name

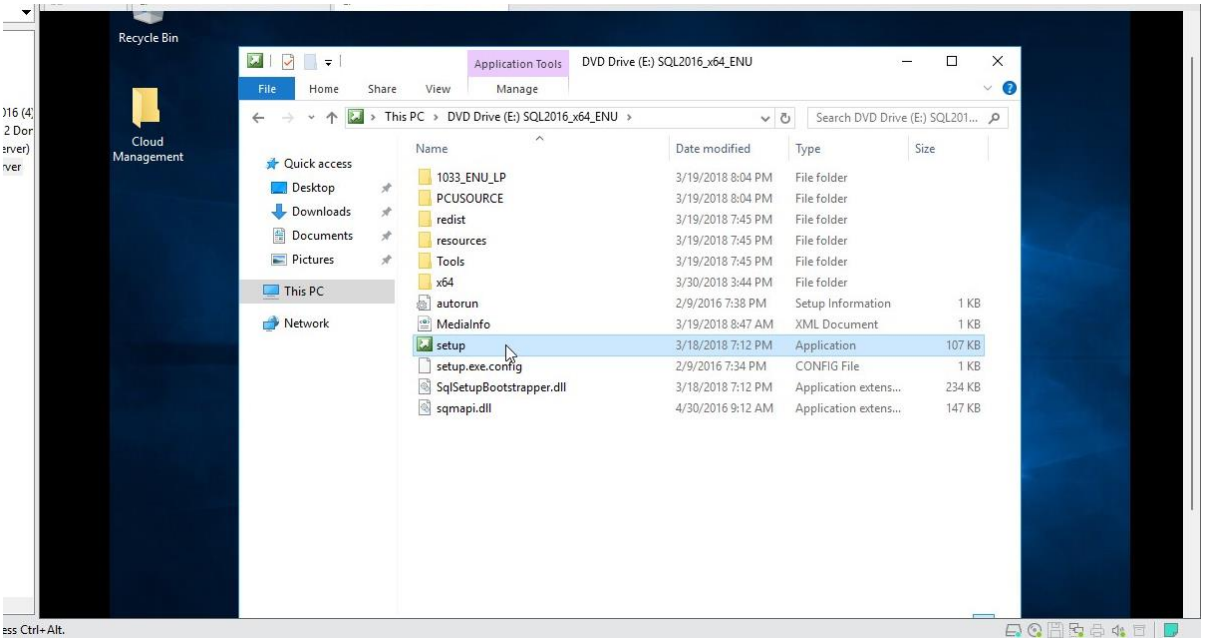


Step 3: Installing SQL Server 2016

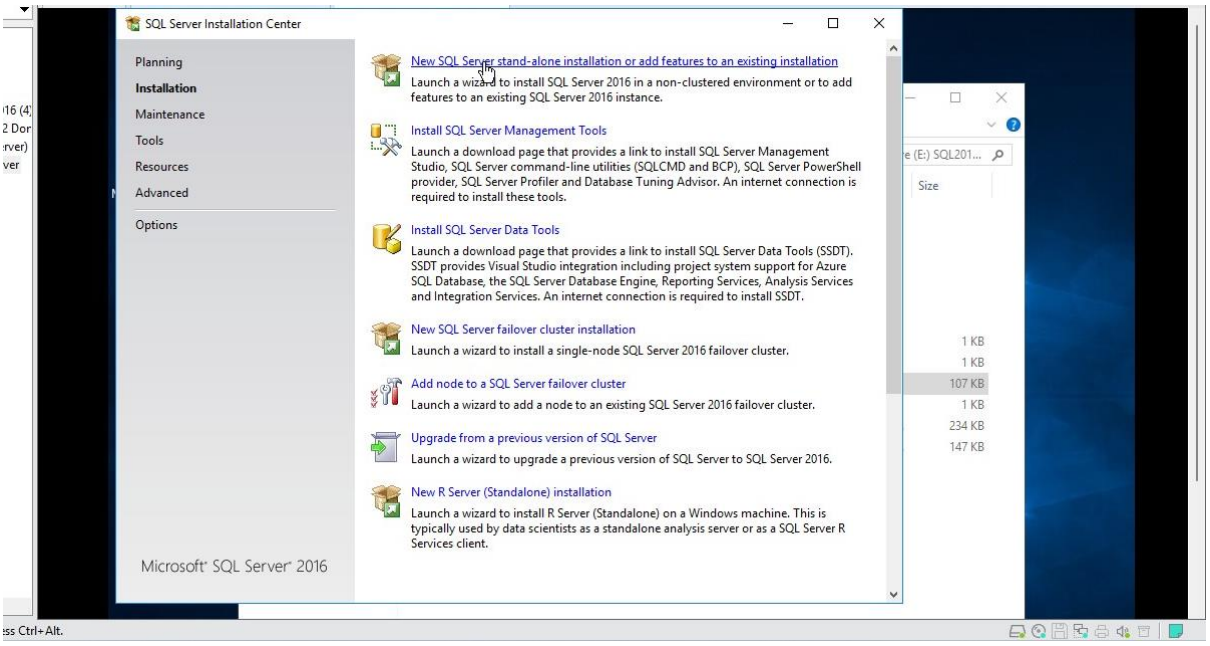
Within your Cloud Management Server Click on SQL Server 2016 iso.



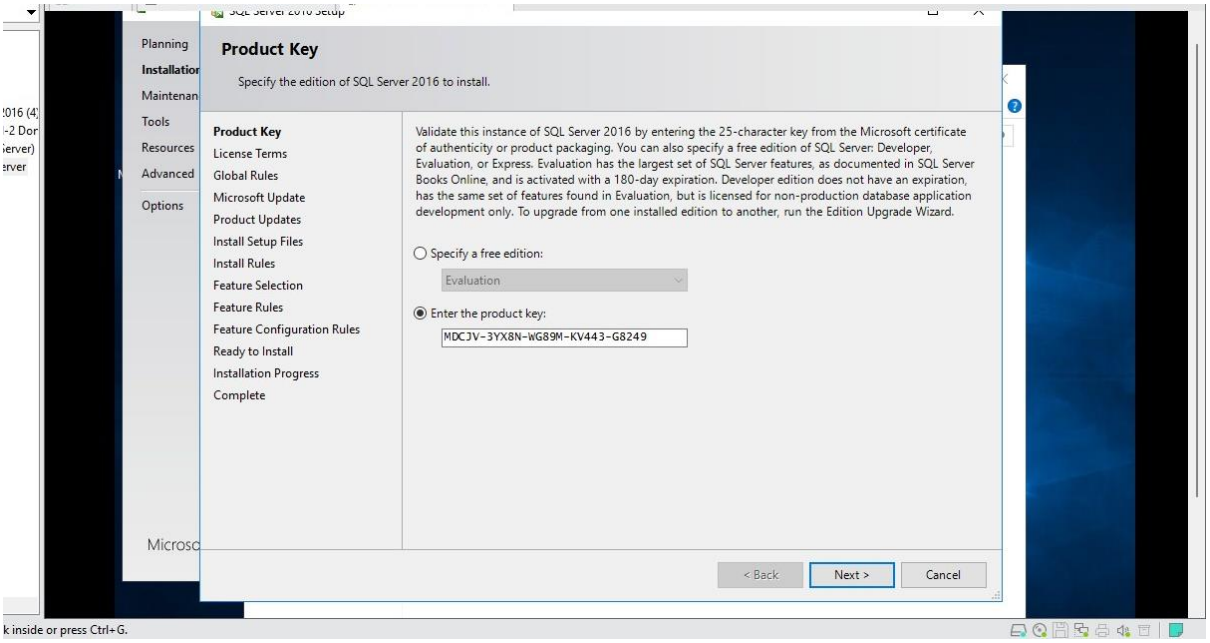
- Double Click Setup to start the installer



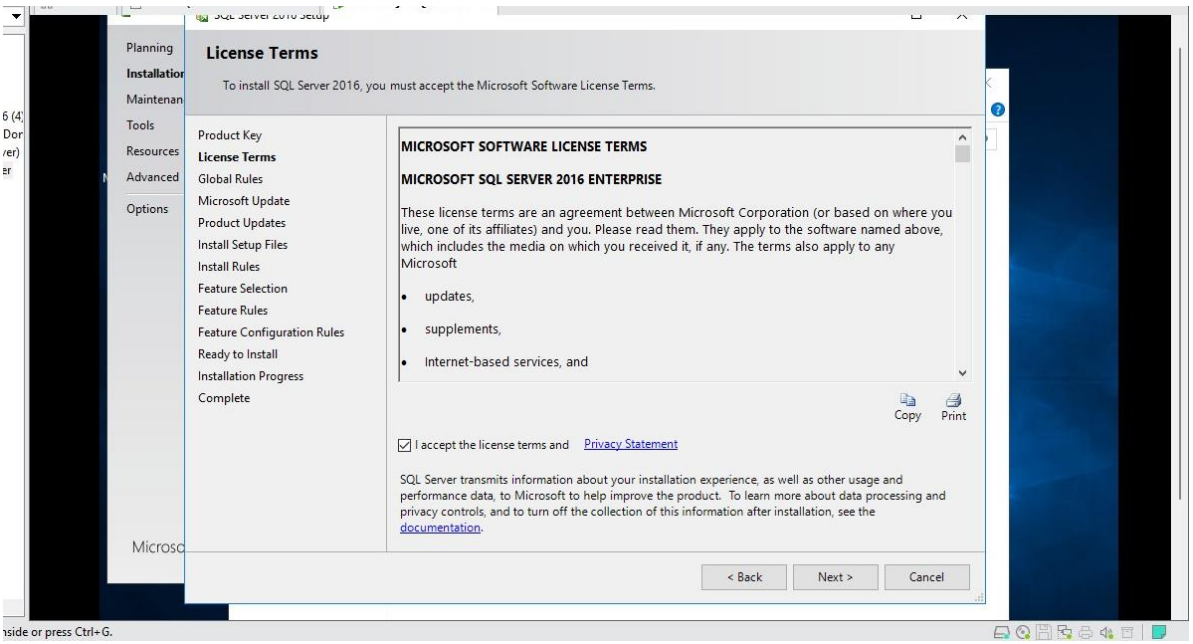
- Click on **Installation** and Click on **New SQL Server stand alone installation**



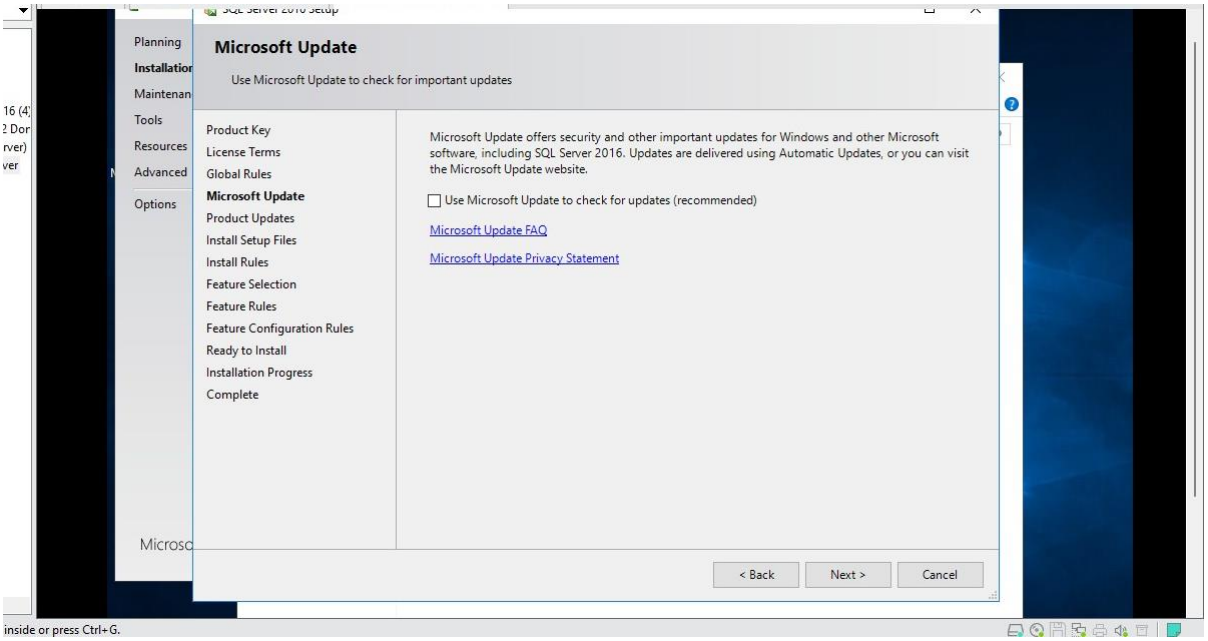
- Keep default values and Click **Next**



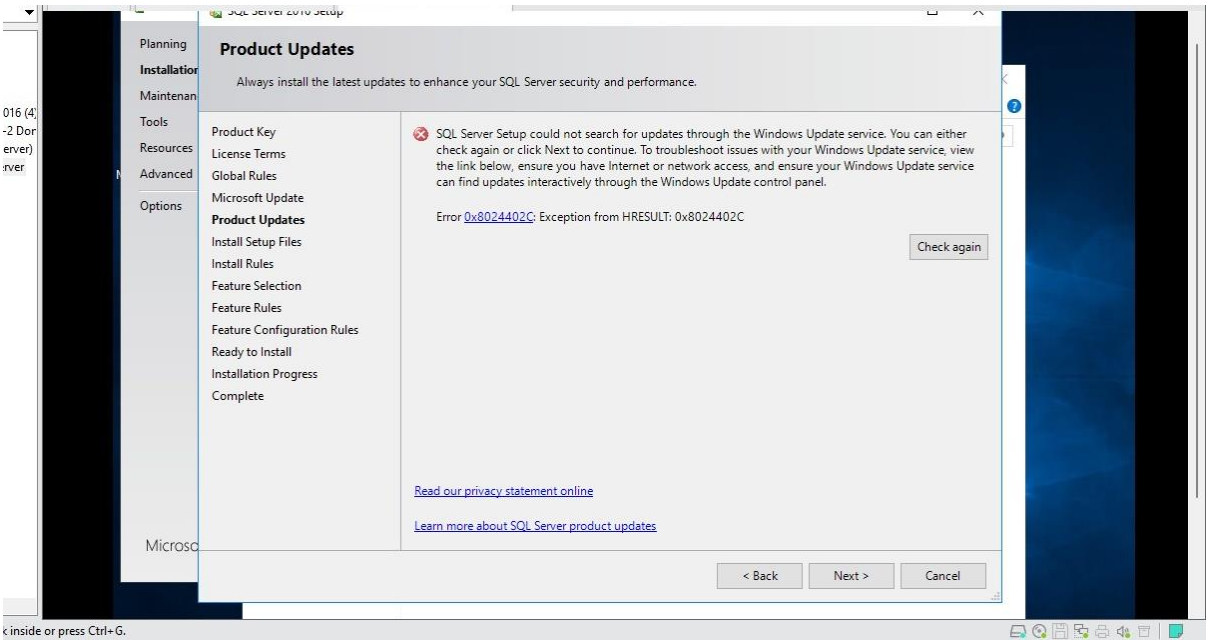
- Select **I accept the license terms** and Click **Next**



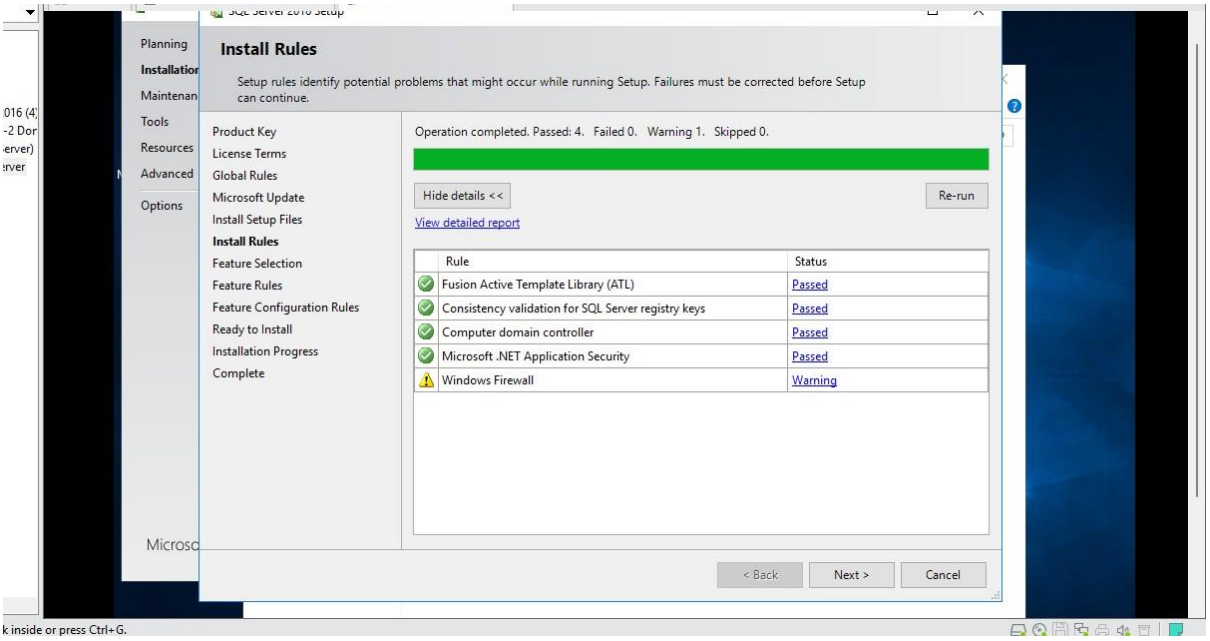
- Keep default values and Click **Next**



- Click **Next**



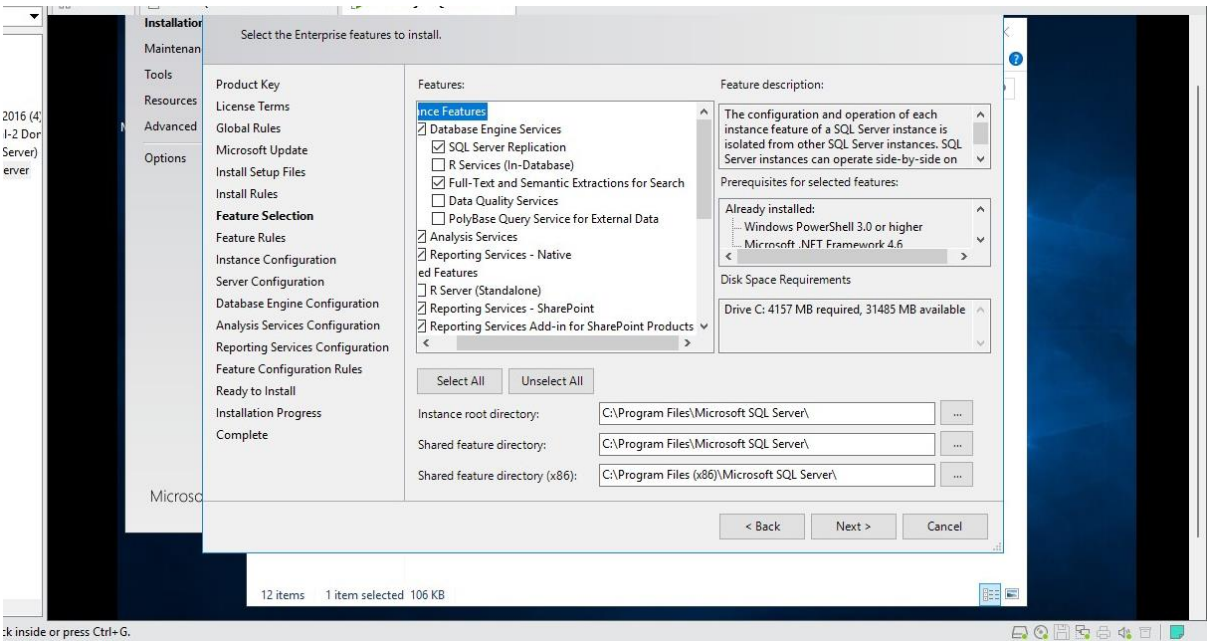
- Click **Next**



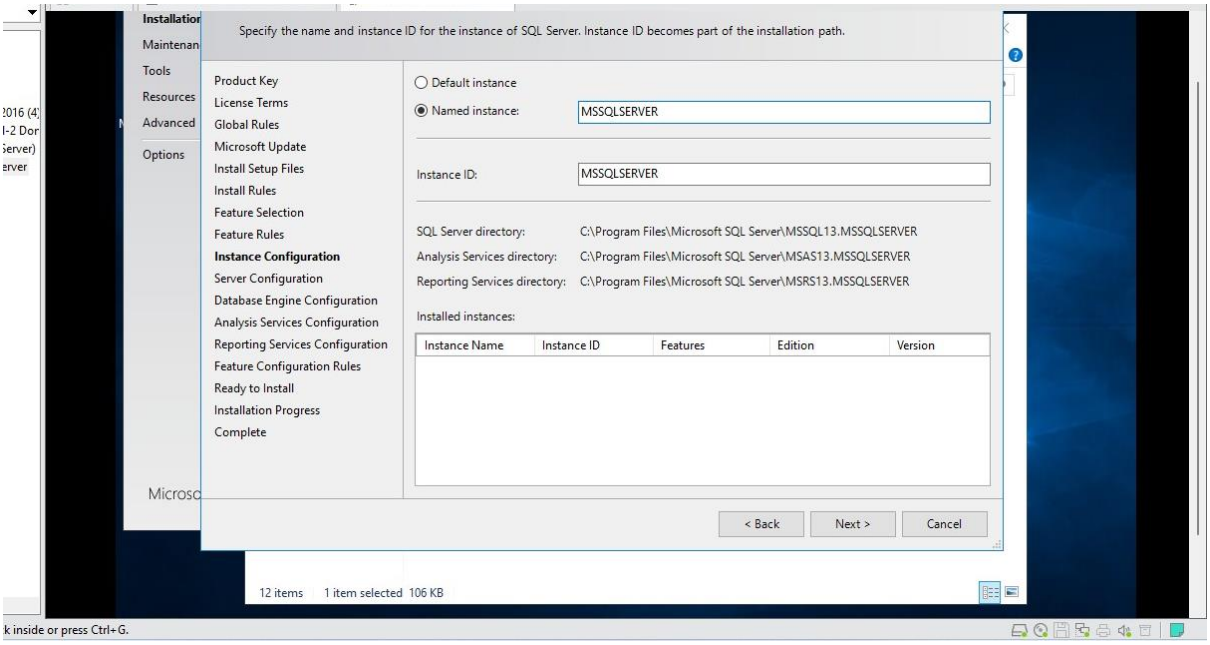
- Select the features given below:
  SQL Server Replication
  Full Text and Semantic Extractions for Search
  Analysis Service

  Reporting Service –Native
  Reporting Service –Sharepoint
  Reporting Service add-in for Sharepoint Products

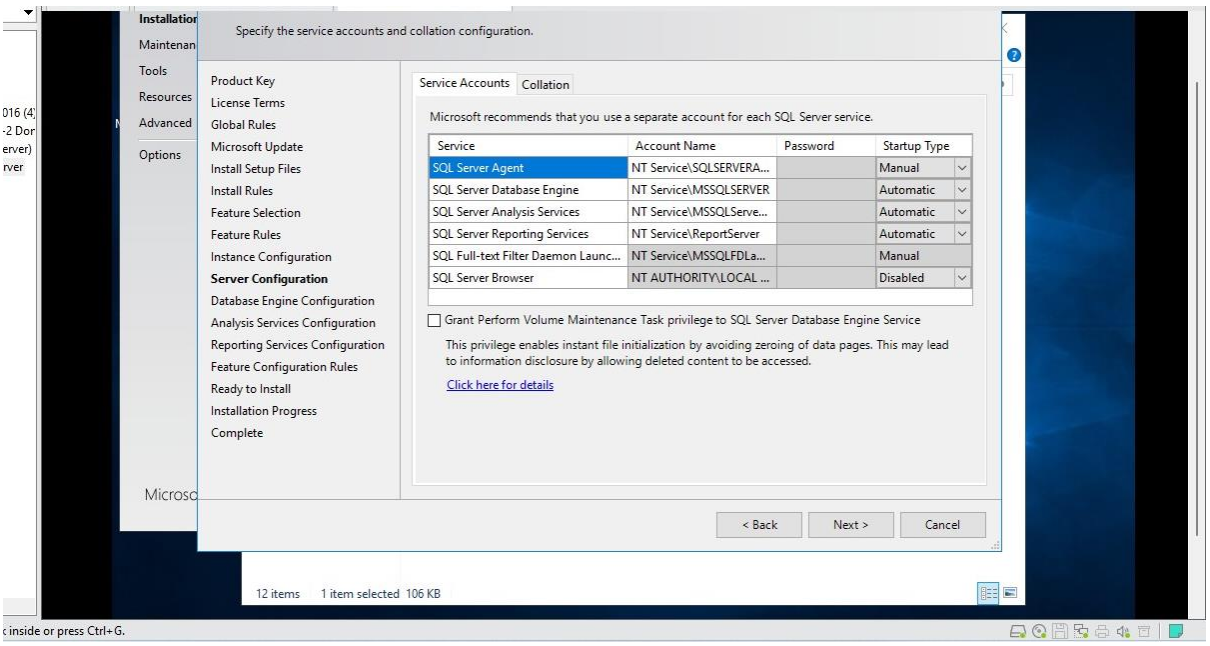
  And Click **Next**



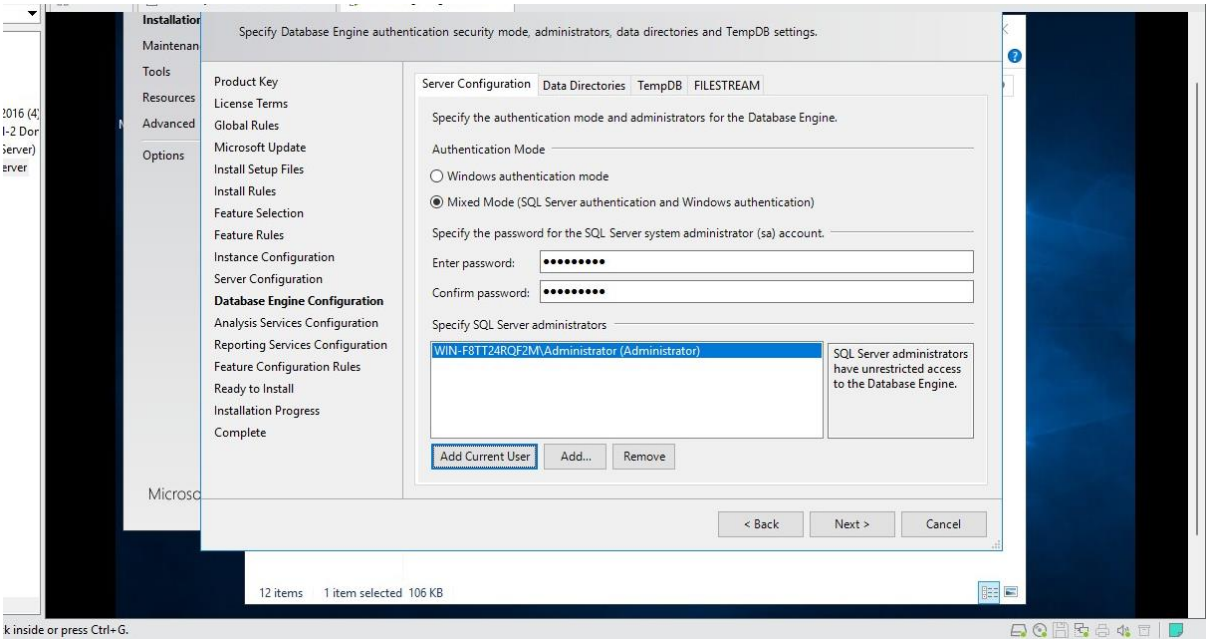
- Select **Named Instance** and type **MSSQLSERVER** and Click **Next**



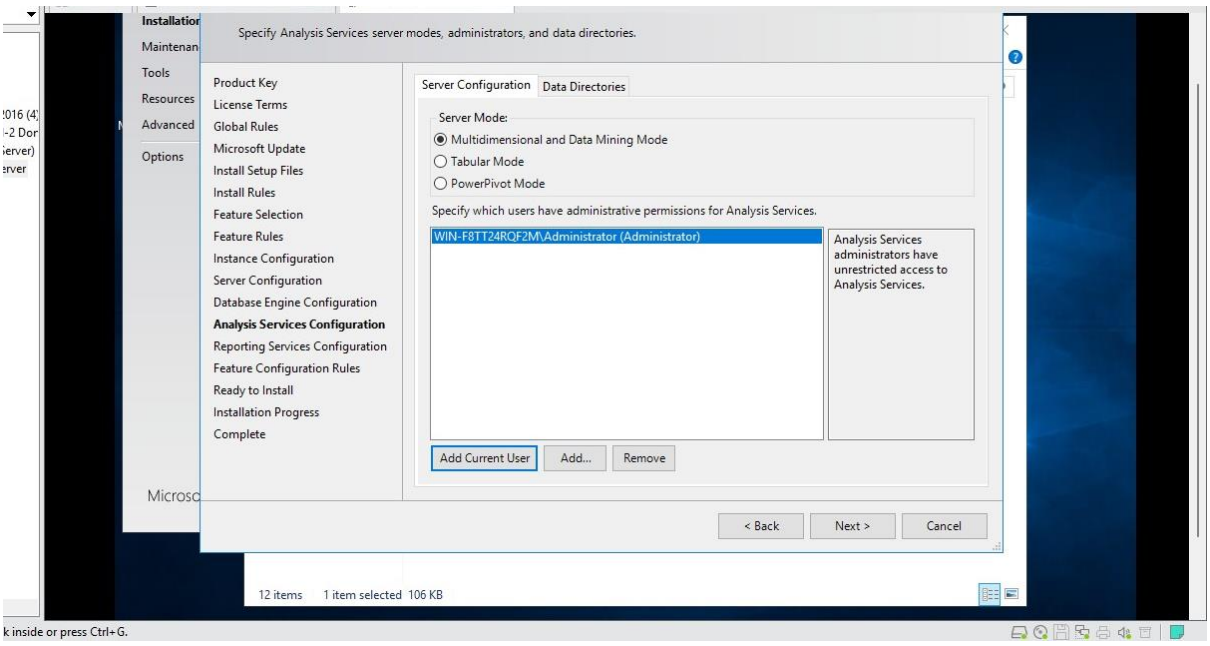
- Keep default values and Click **Next**



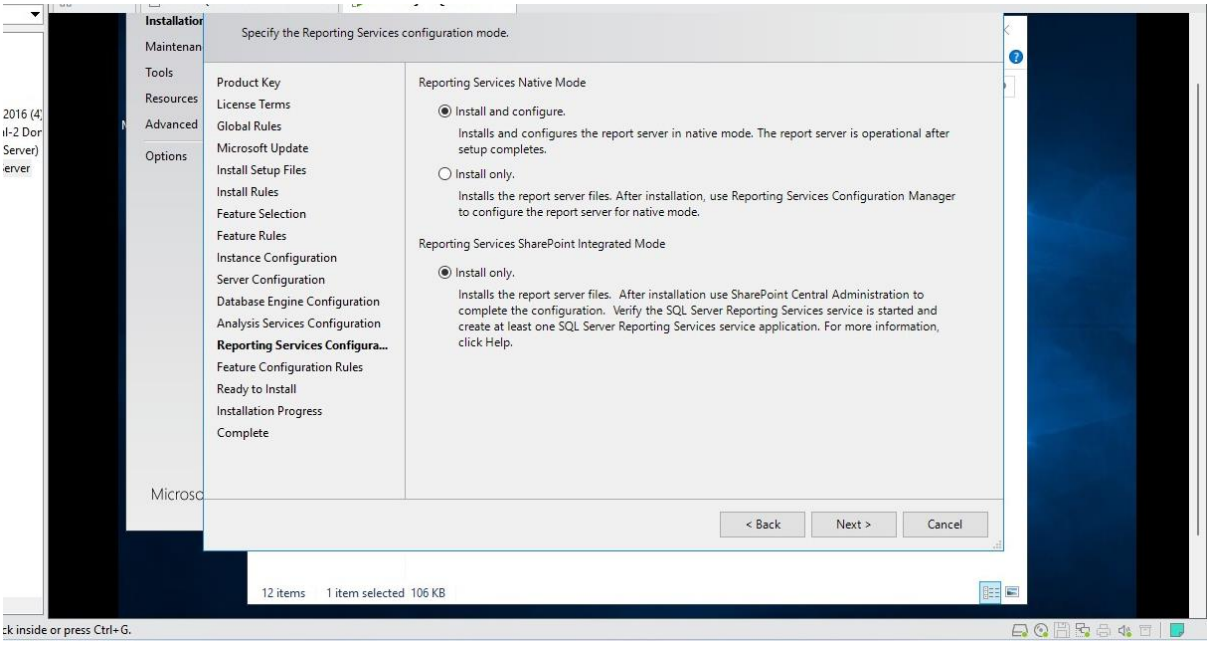
- Select **Mixed Mode** and Set a password (Here it is ADMIN@123) and Click on **Add Current User** and Click **Next**



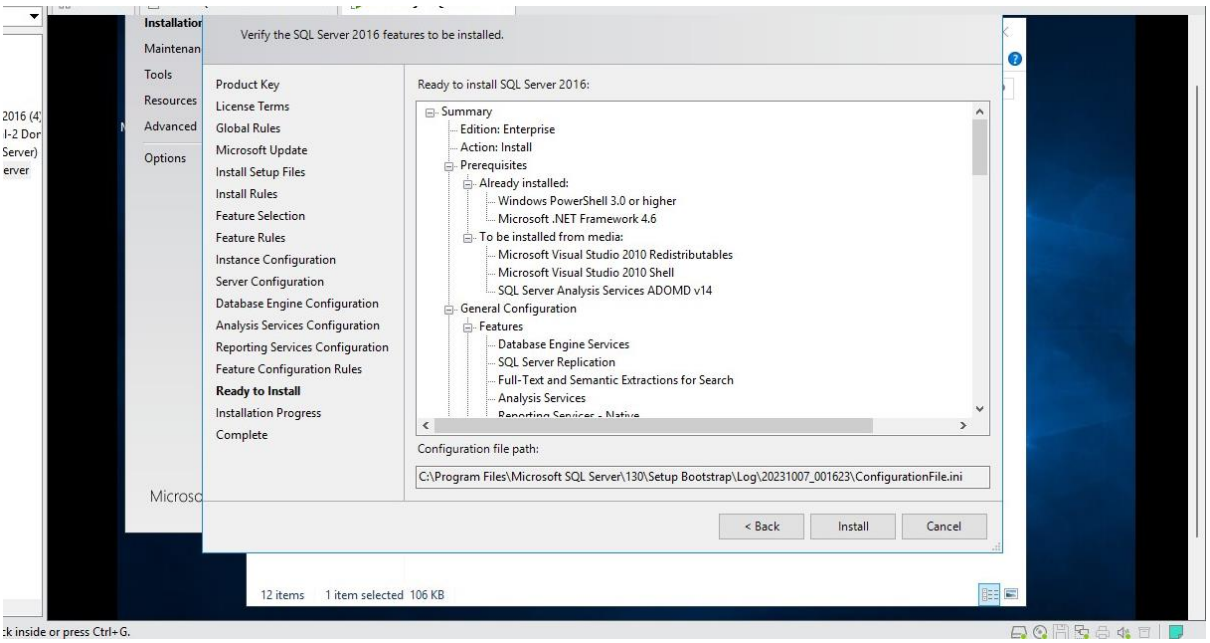
- Click on **Add Current User** and Click **Next**



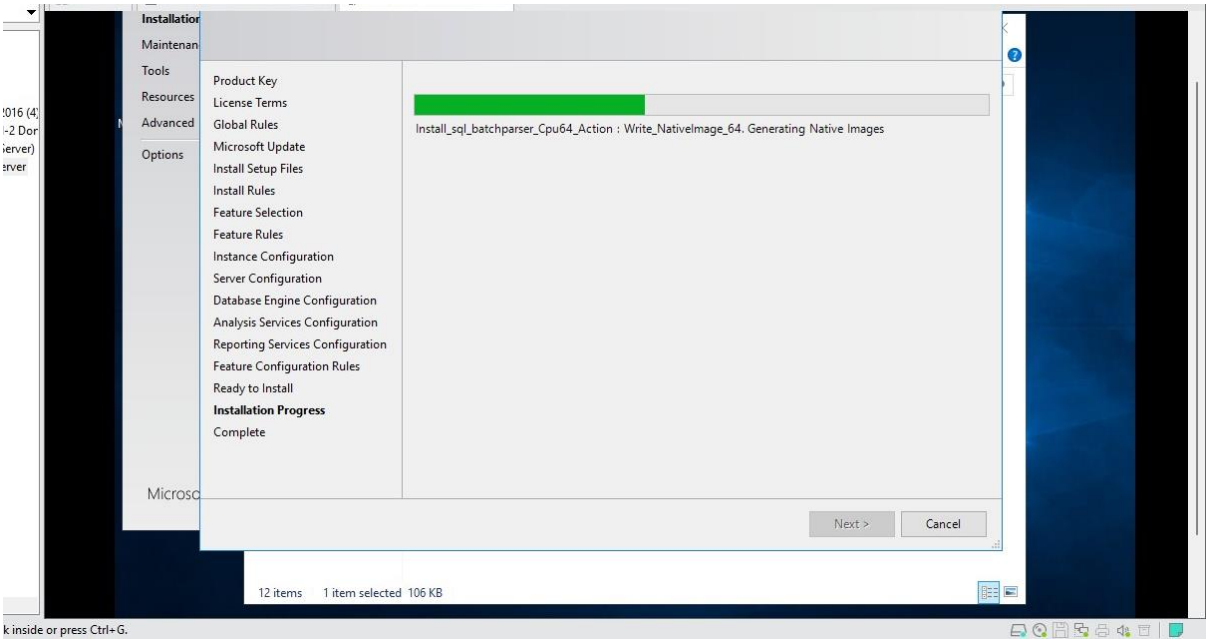
- Keep default values and Click **Next**



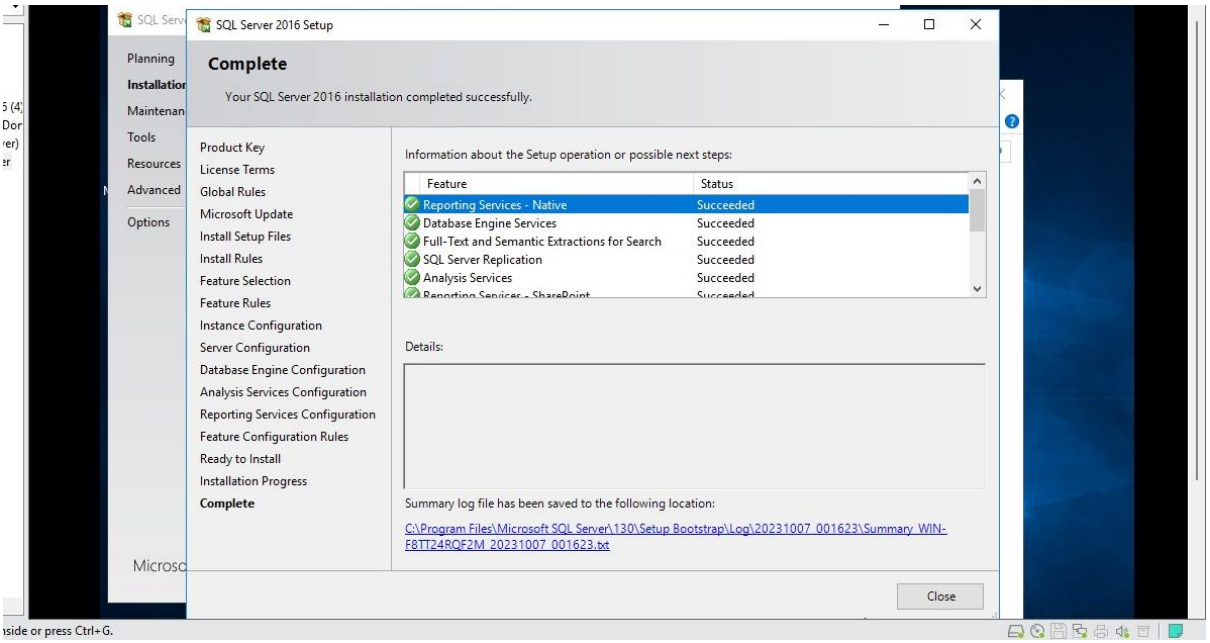
- Click on **Install**



- SQL Files will start installing

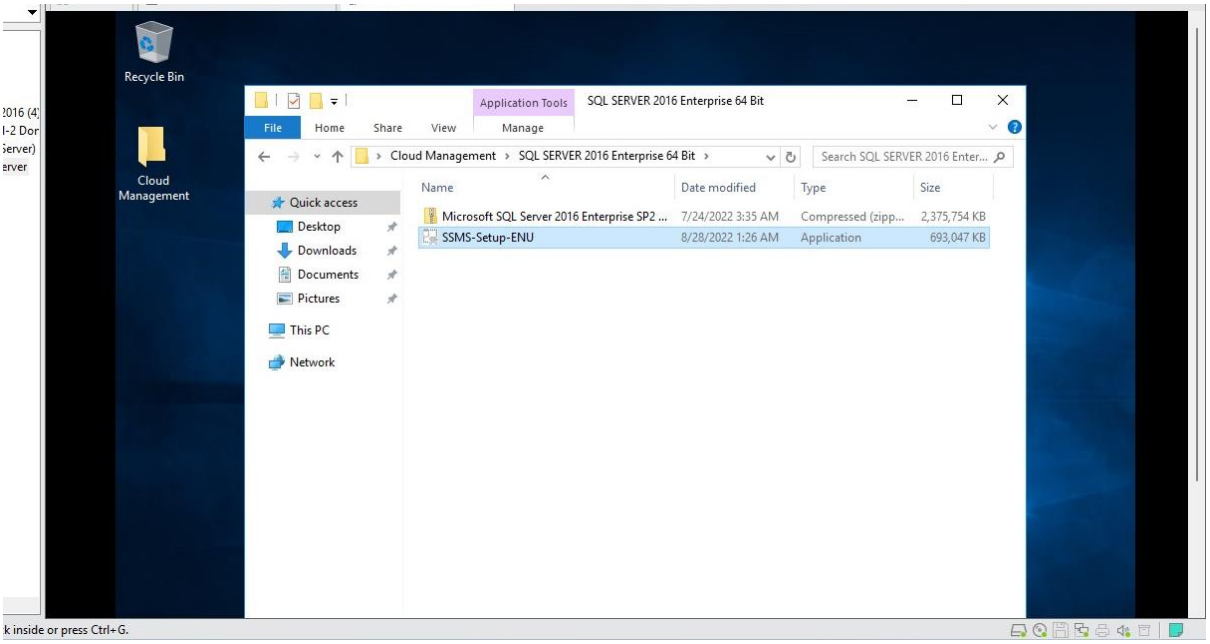


- SQL Server has finished installing and Click **Close**

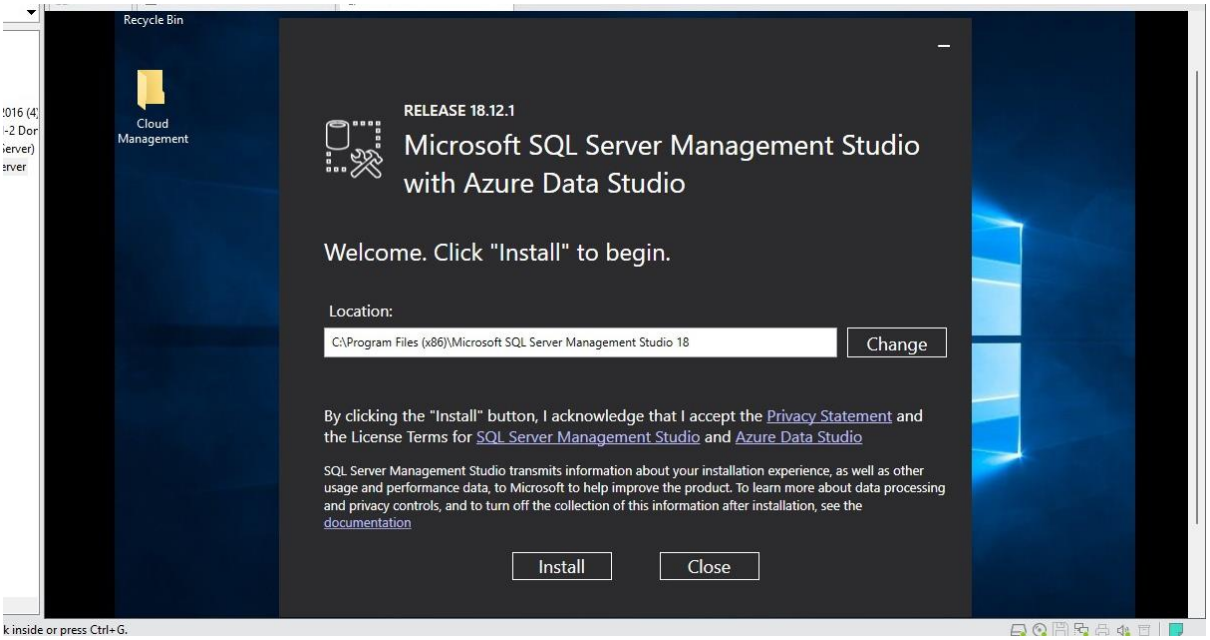


Step 4: Installing SSMS (SQL Server Management Studio)

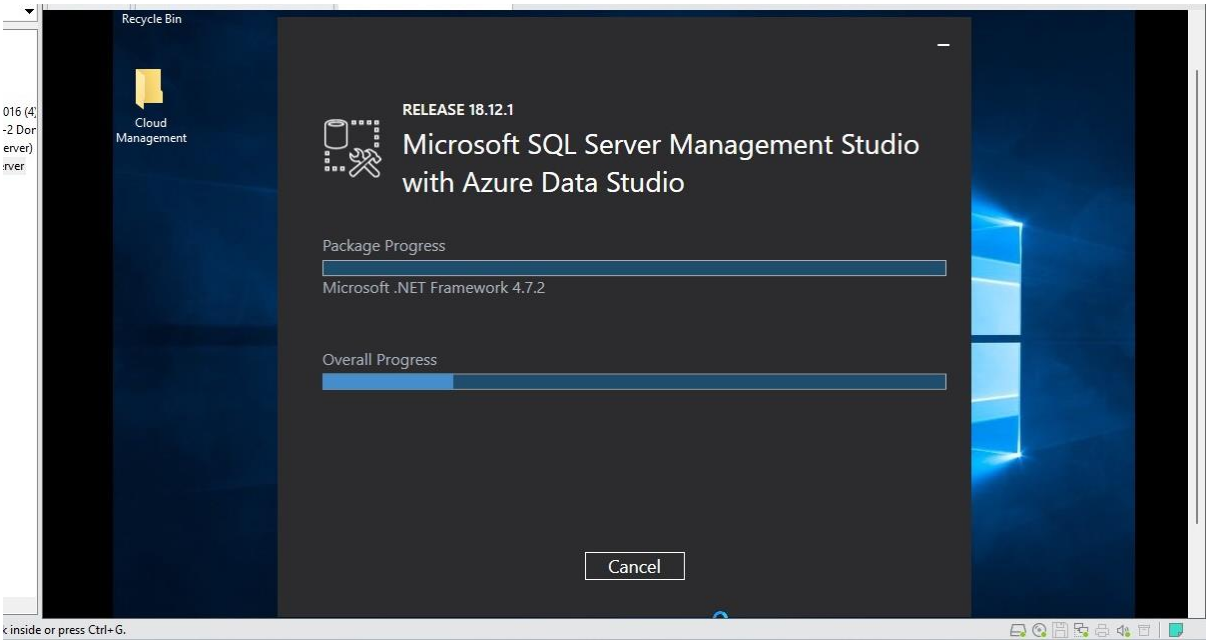
- Click on the **SSMS** setup



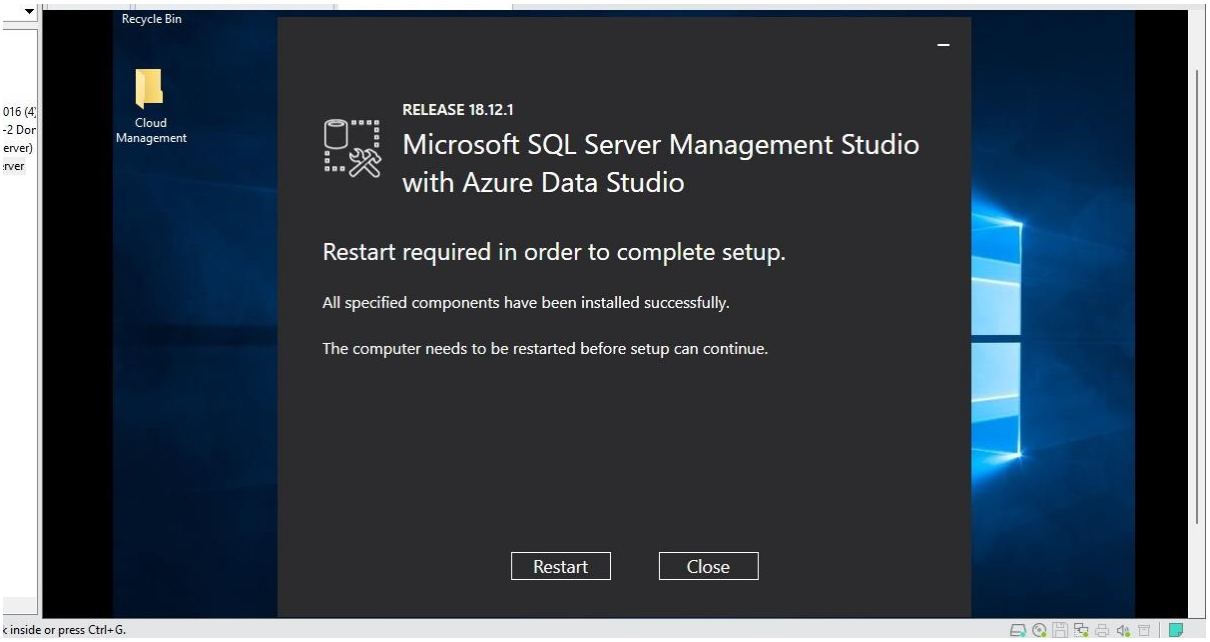
- Click **Install**



- SSMS will start installing

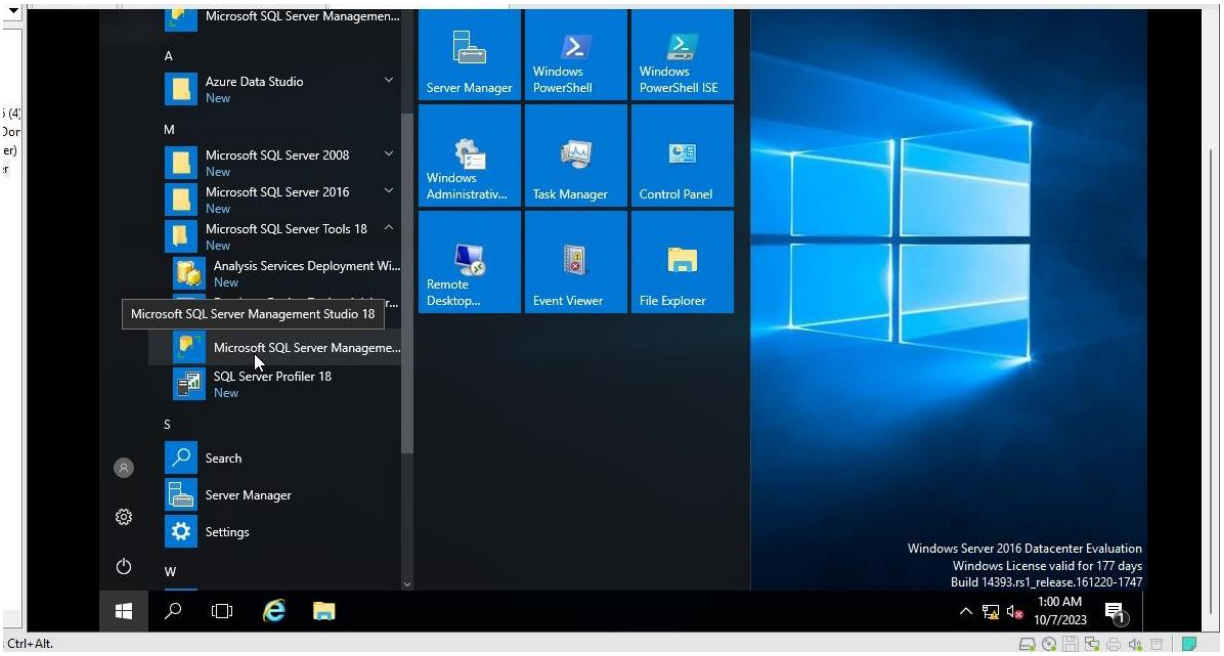


- After the components are installed you will have to restart your VM. Click on **Restart**

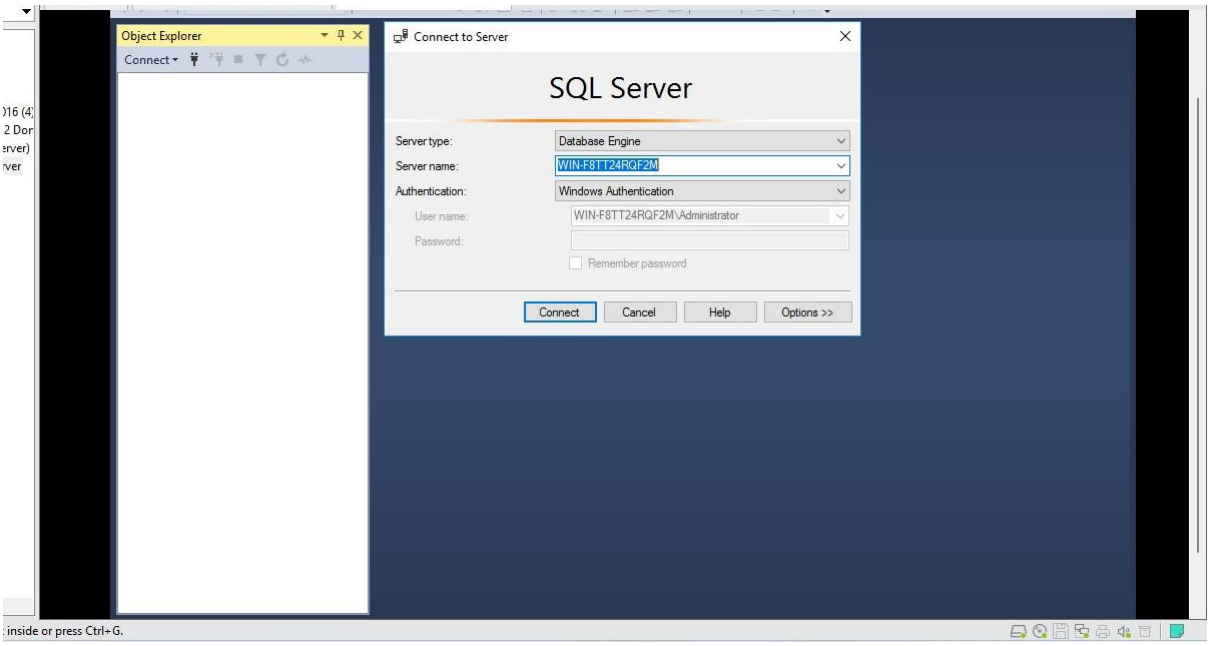


Step 5: Connect SQL Server to SSMS

- Open **SSMS**

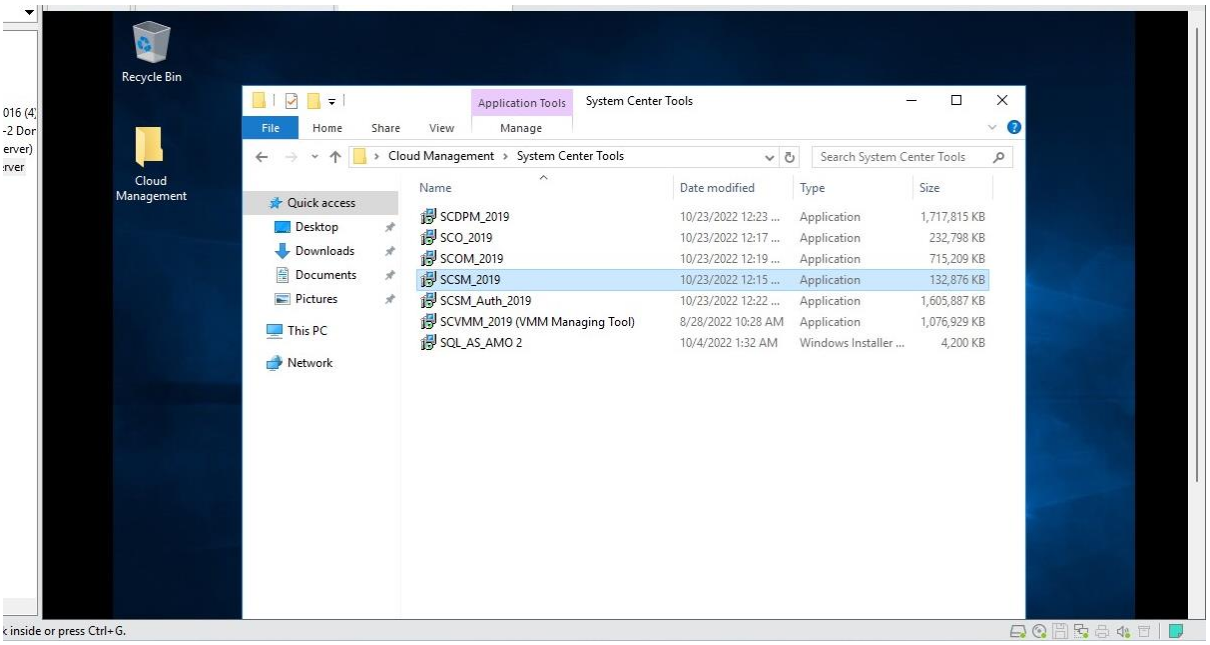


- Click on **Connect**

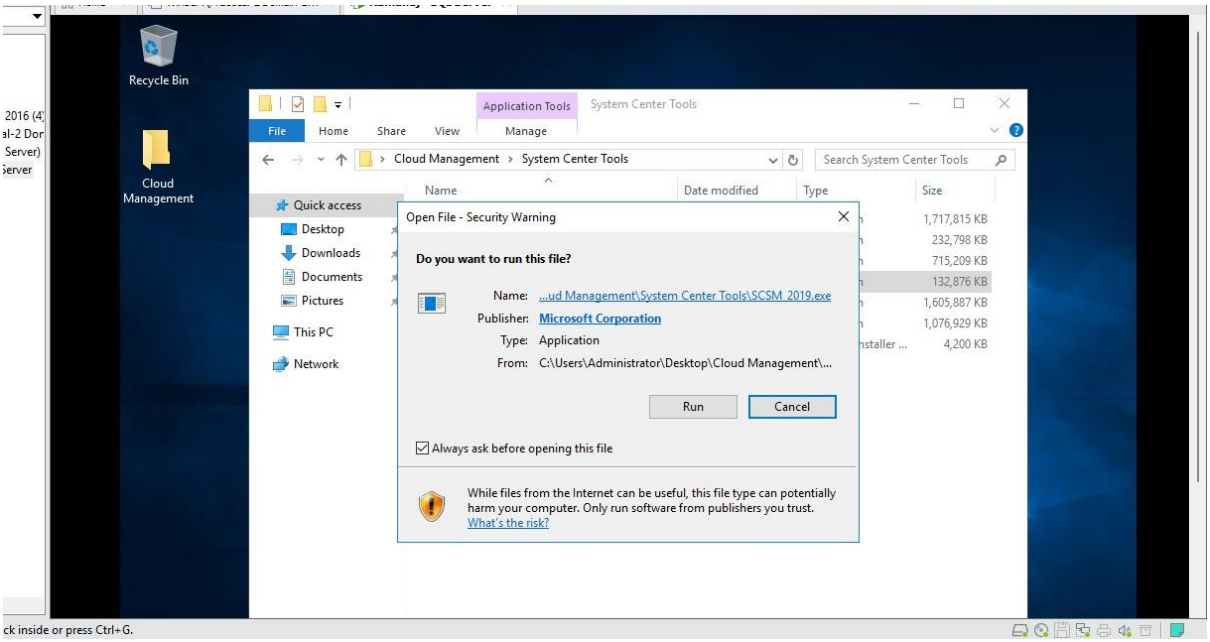


Step 6: Install System Center Service Manager 2019

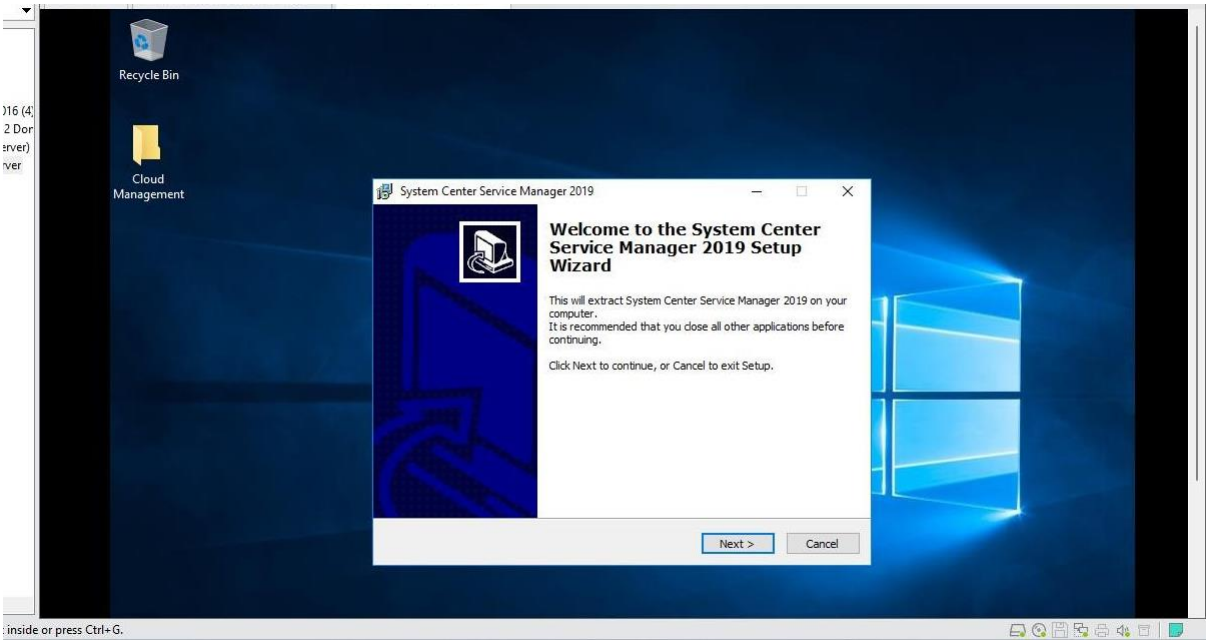
- Click on the **SCSM_2019** setup



- Click on **Run**

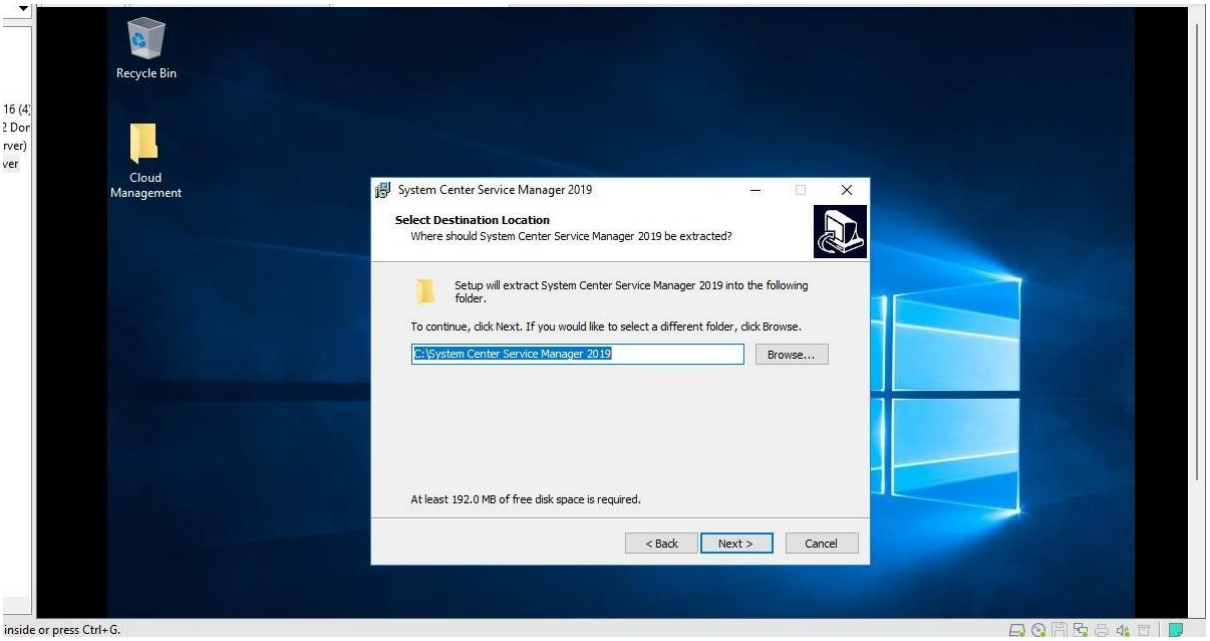


- Click **Next**

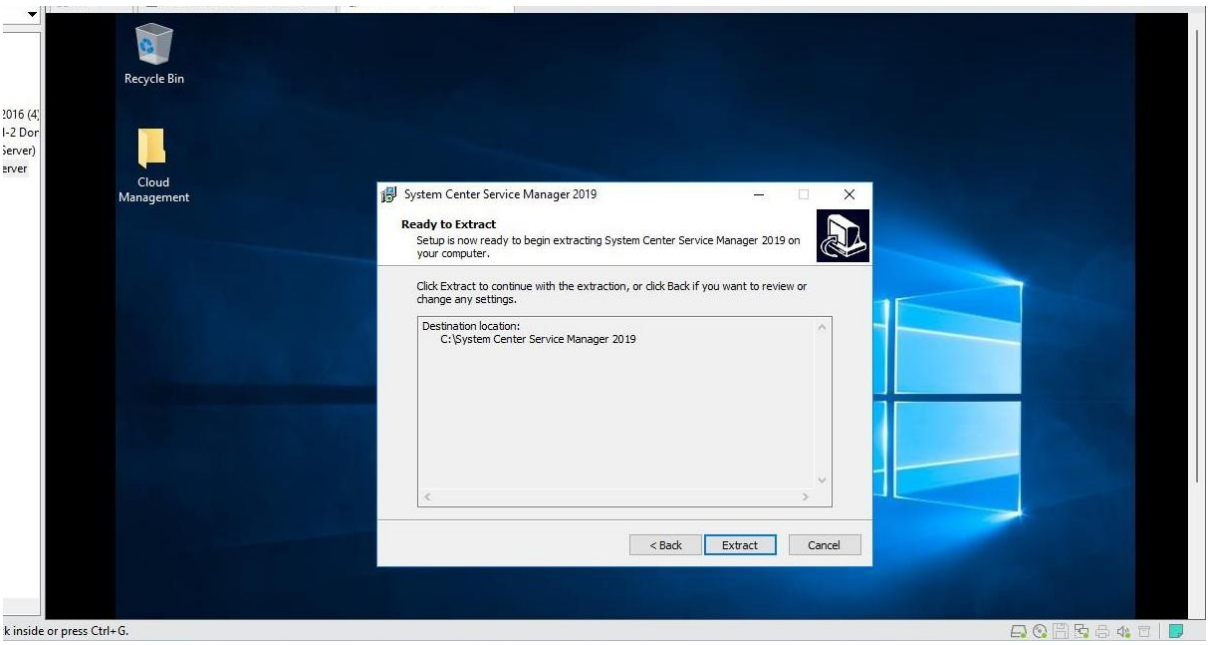


- Select **I accept the agreement** and Click **Next**

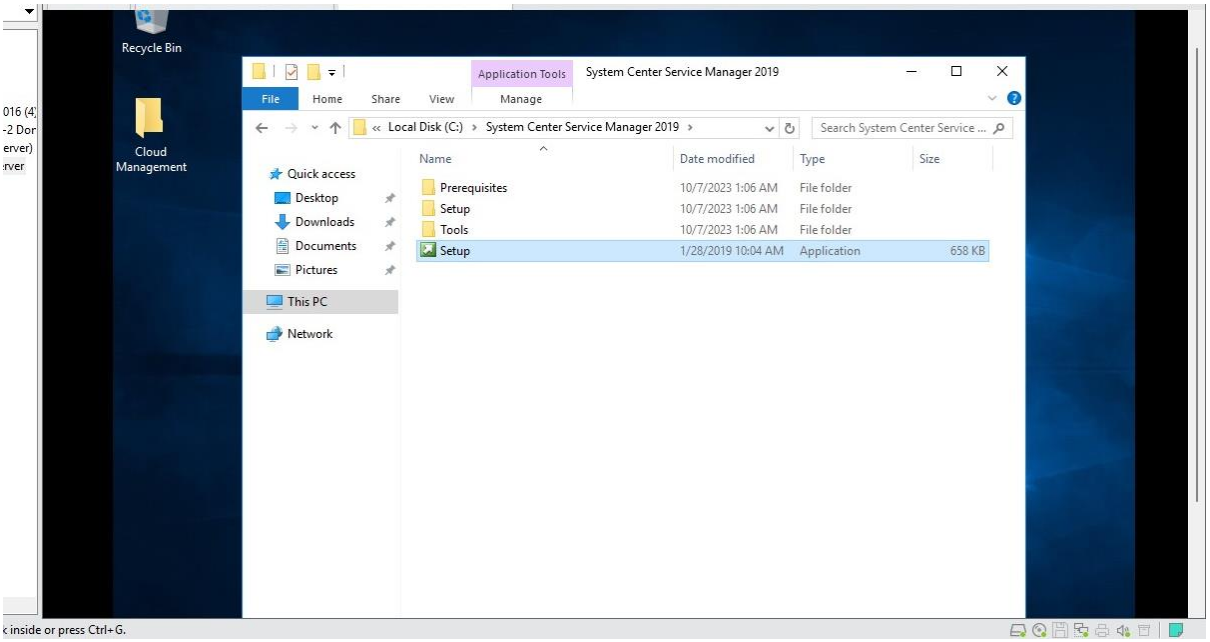
- Keep default path and Click **Next**



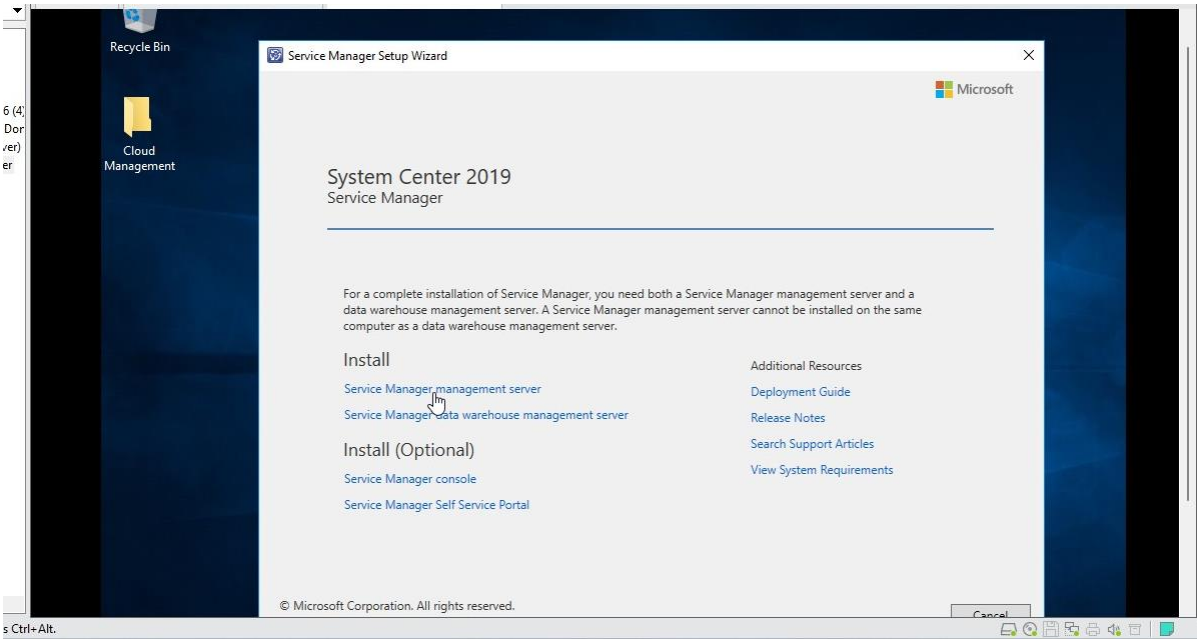
- Click on **Extract**



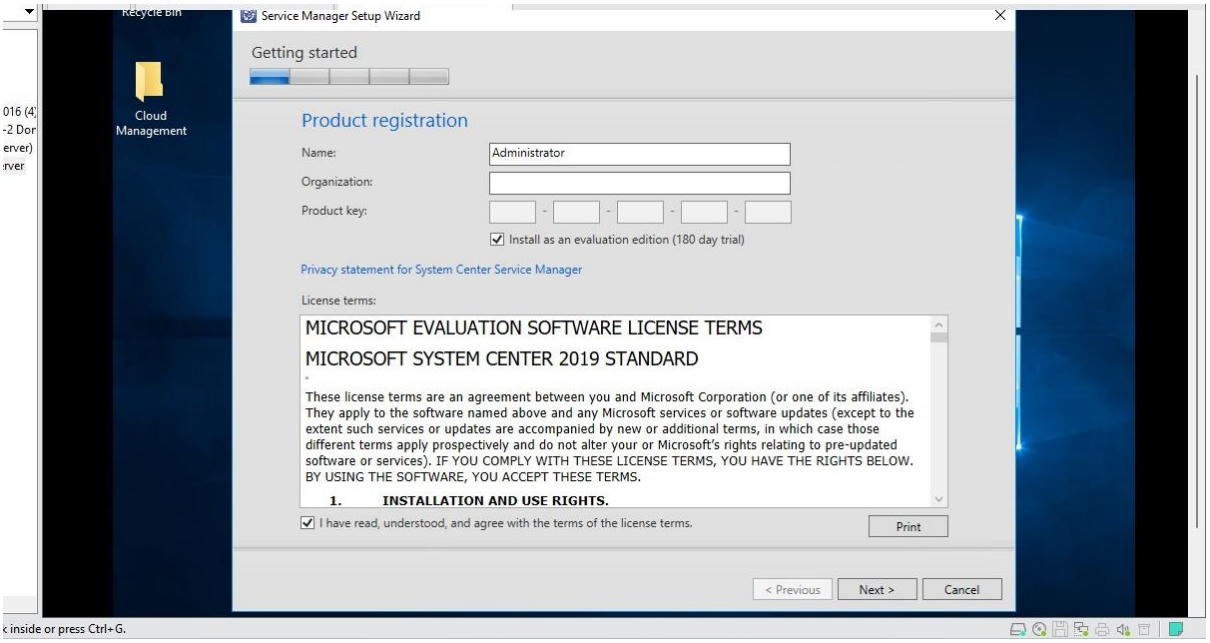
- After extracting open the SCSM 2019 file in your C: Directory and Click on **Setup**



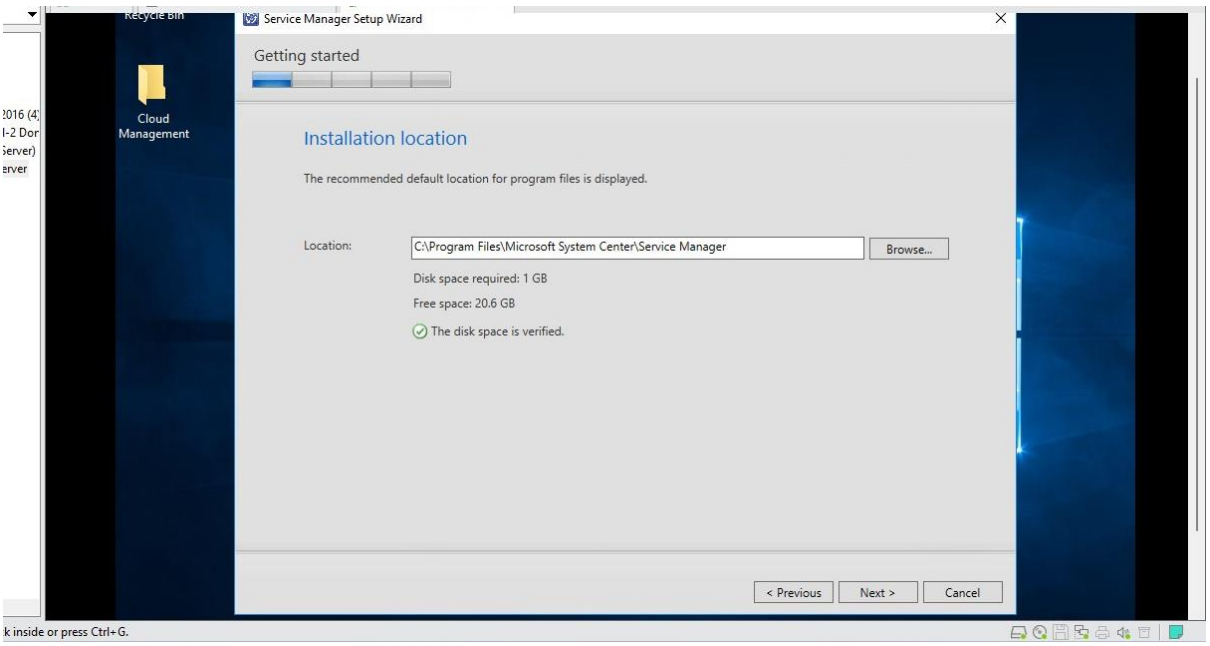
- Click on **Service Manager Management Server**



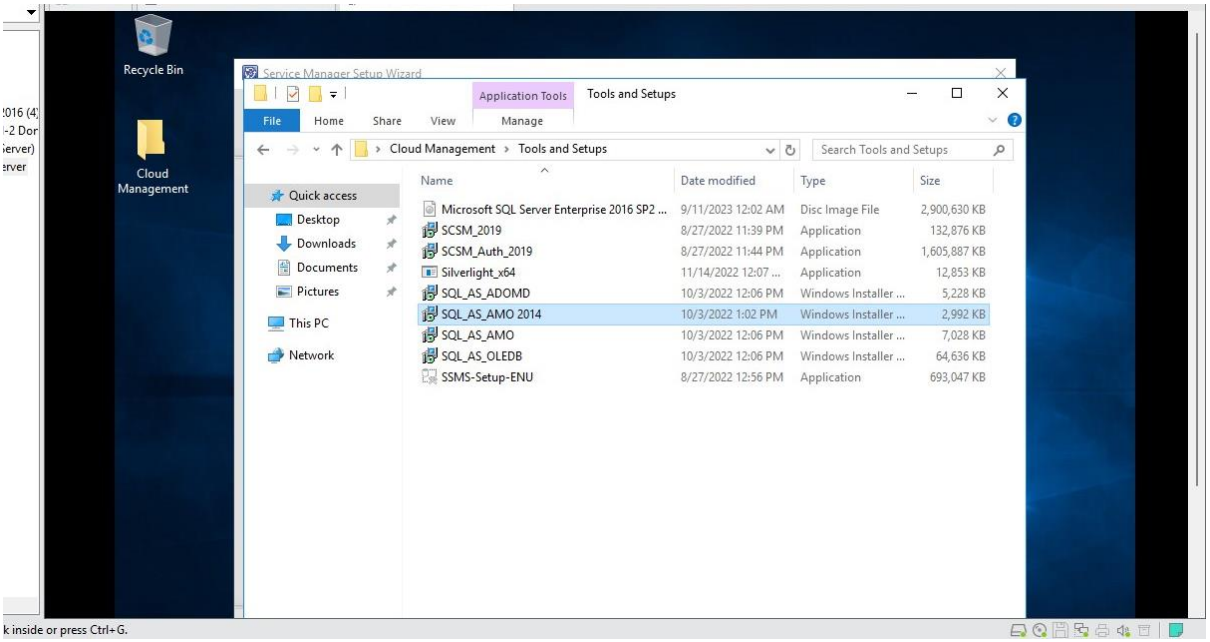
- Select **Install as Evaluation Edition** and Select **I have read and understood the above agreement** and Click **Next**



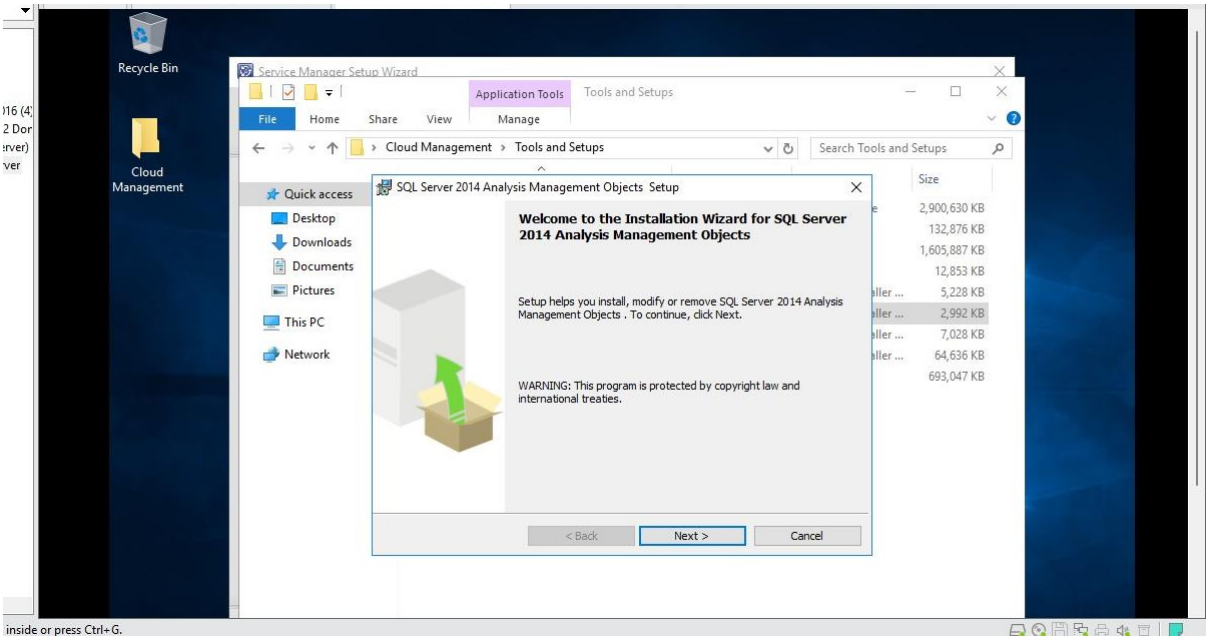
- Keep default values and Click **Next**



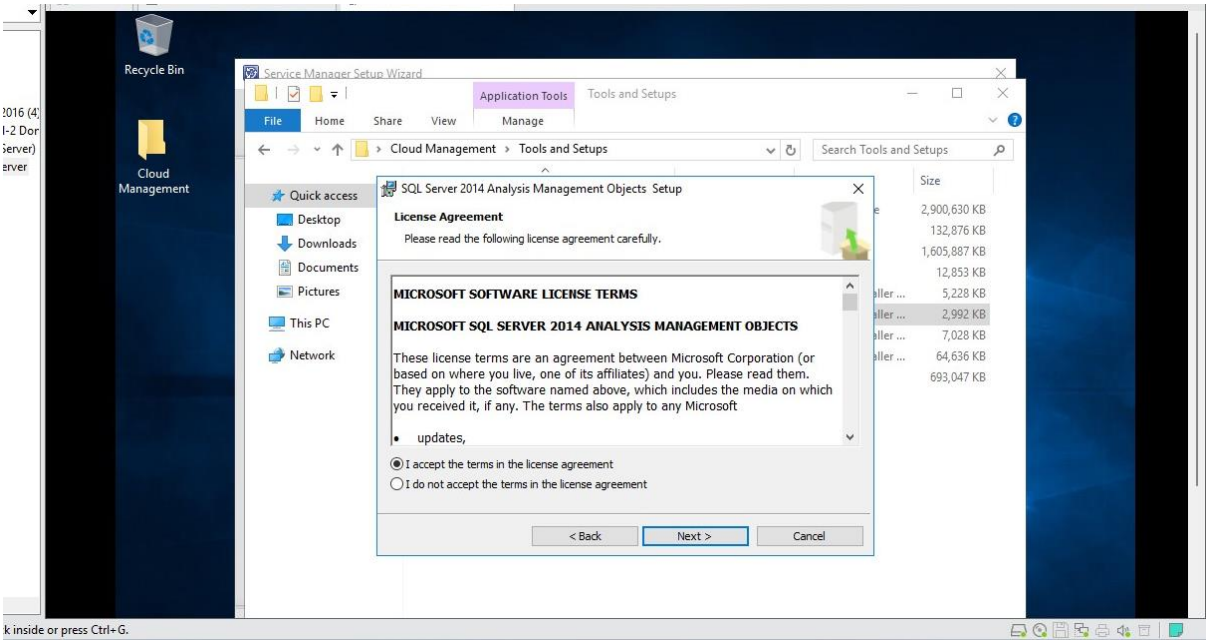
- Now an Error will show, to clear this error we have to install the Analysis Management Objects (AMO) 2014. Click on the **Setup** File



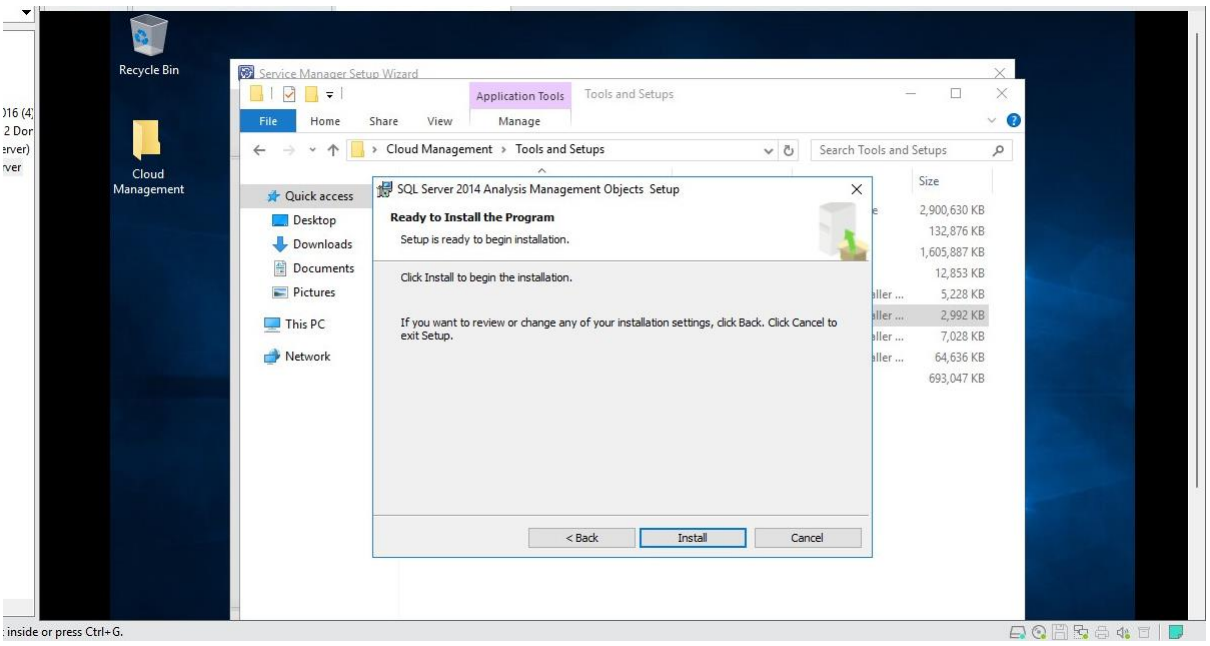
- Click **Next**



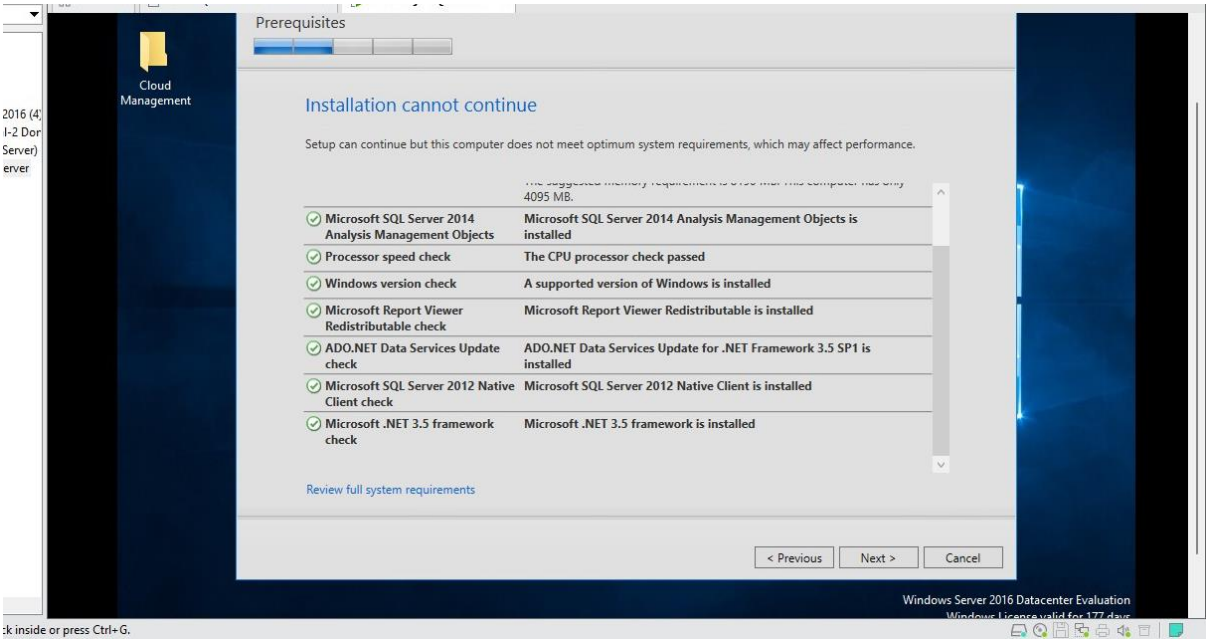
- Select **I accept the terms of this agreement** and Click **Next**



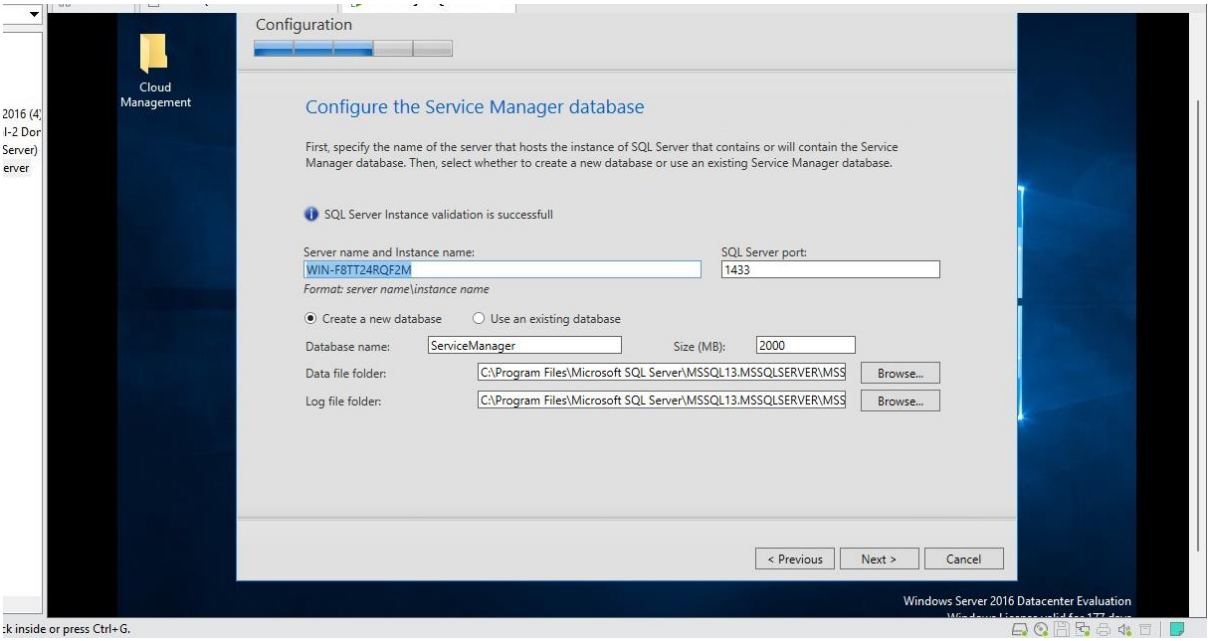
- Click on **Install**



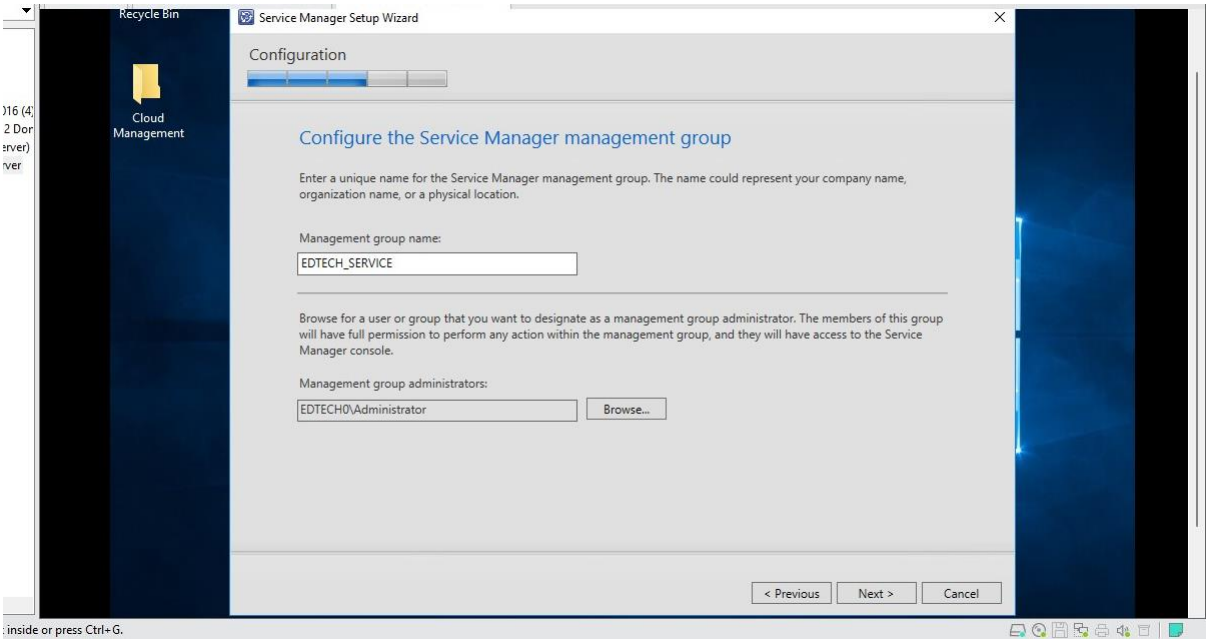
- After installation go back to the **SCSM setup** and Click on **Check pre-requisites again,** the error will be solved and Click **Next**



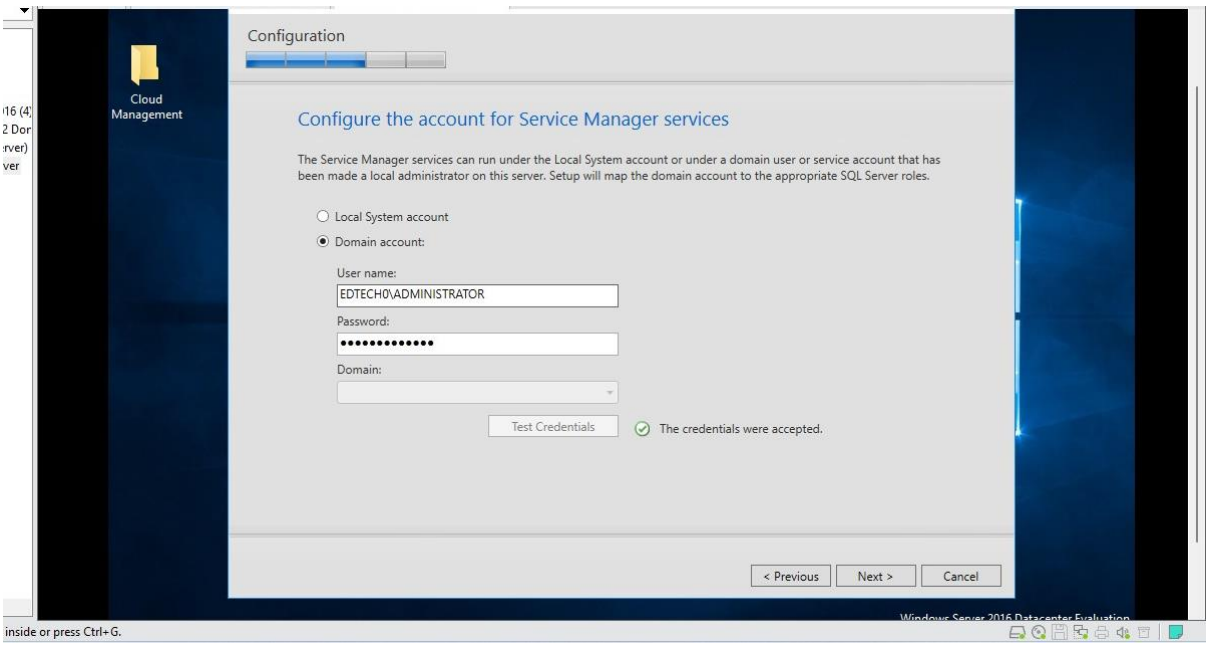
- Enter your SQL Server name (In this case it is WIN-F8TT24RQF2M) and Click **Next**



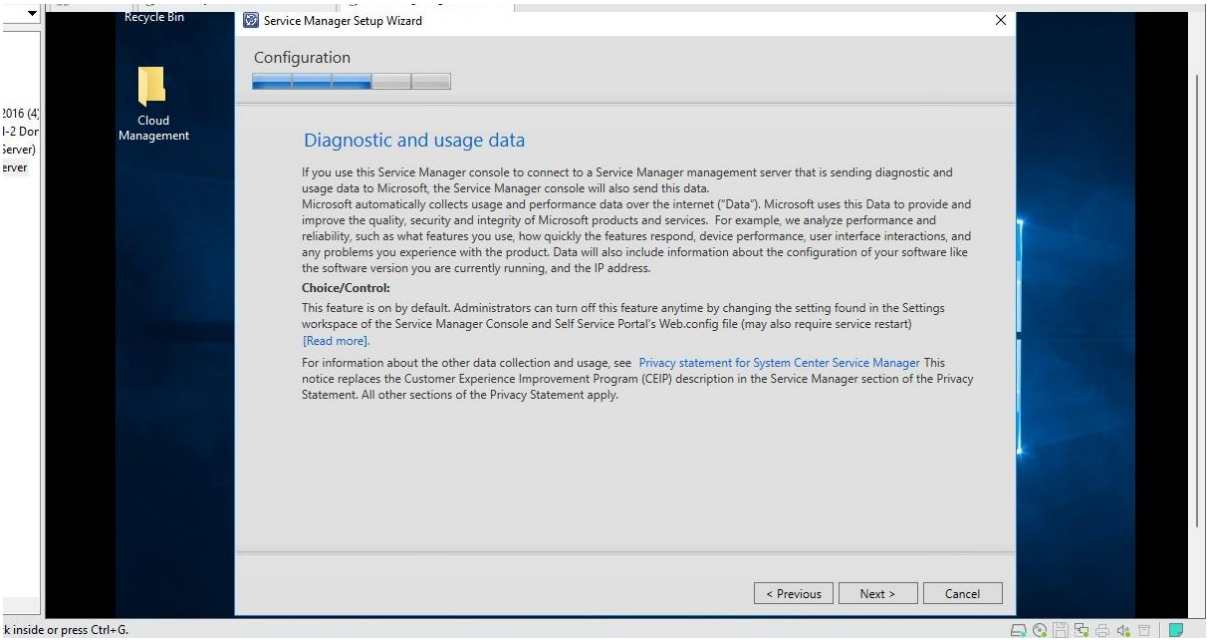
- Enter a management group name (Here it is EDTECH_SERVICE) and Click on **browse** and within the text field type **administrator** and Click **Ok**, Then Click **Next**



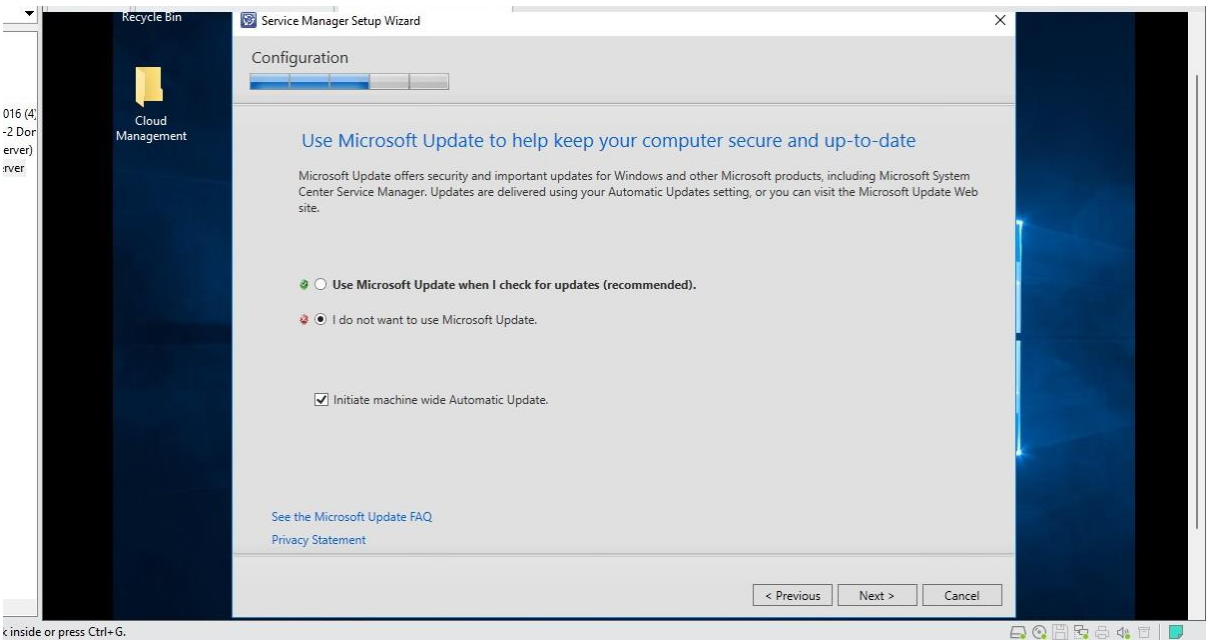
- Select **Domain Account** and Enter the details of the **Domain Controller** and Click **Test Credentials** and Click **Next**



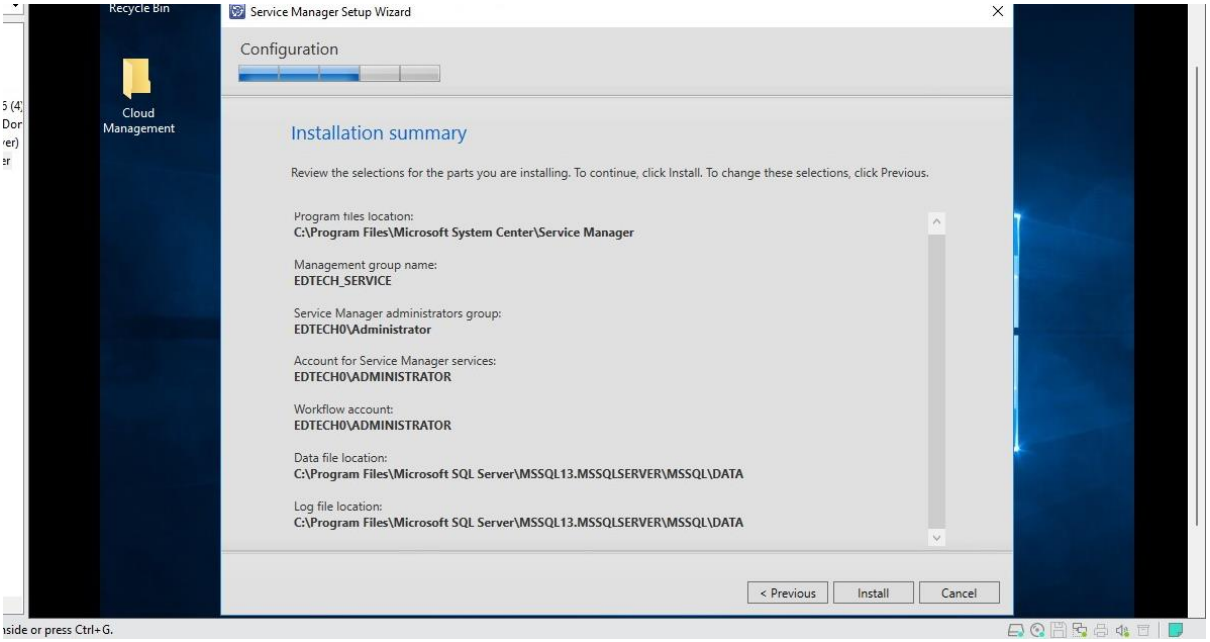
- Click **Next**



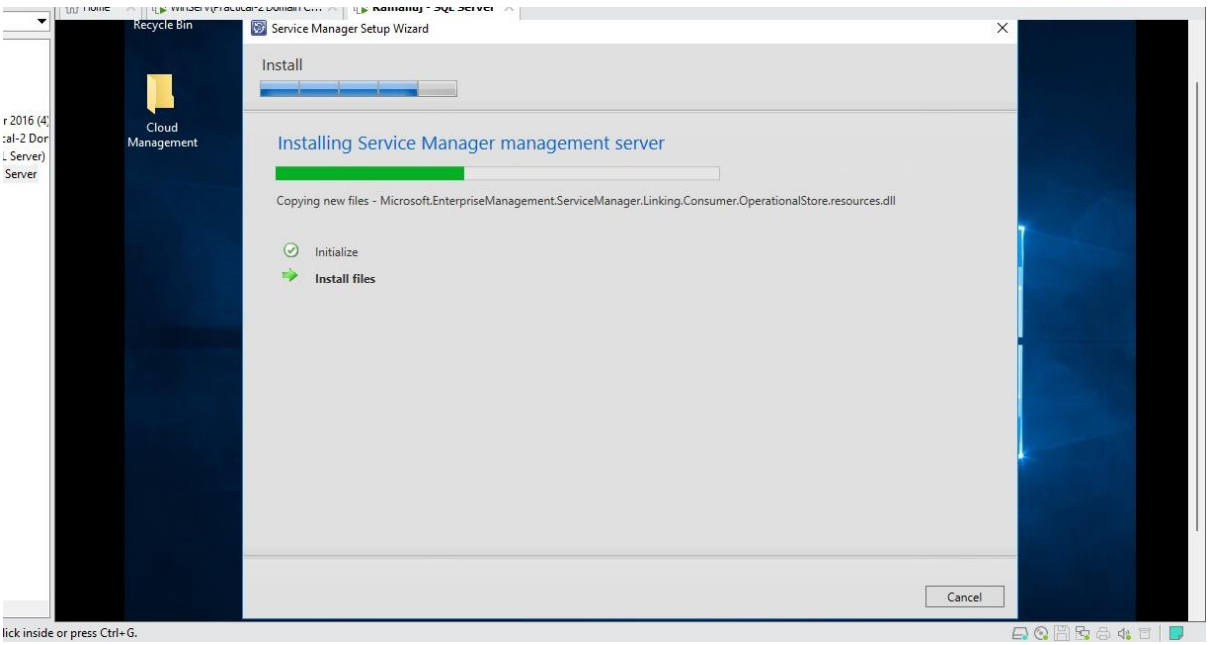
- Select **I do not want Microsoft Updates** and Click **Next**



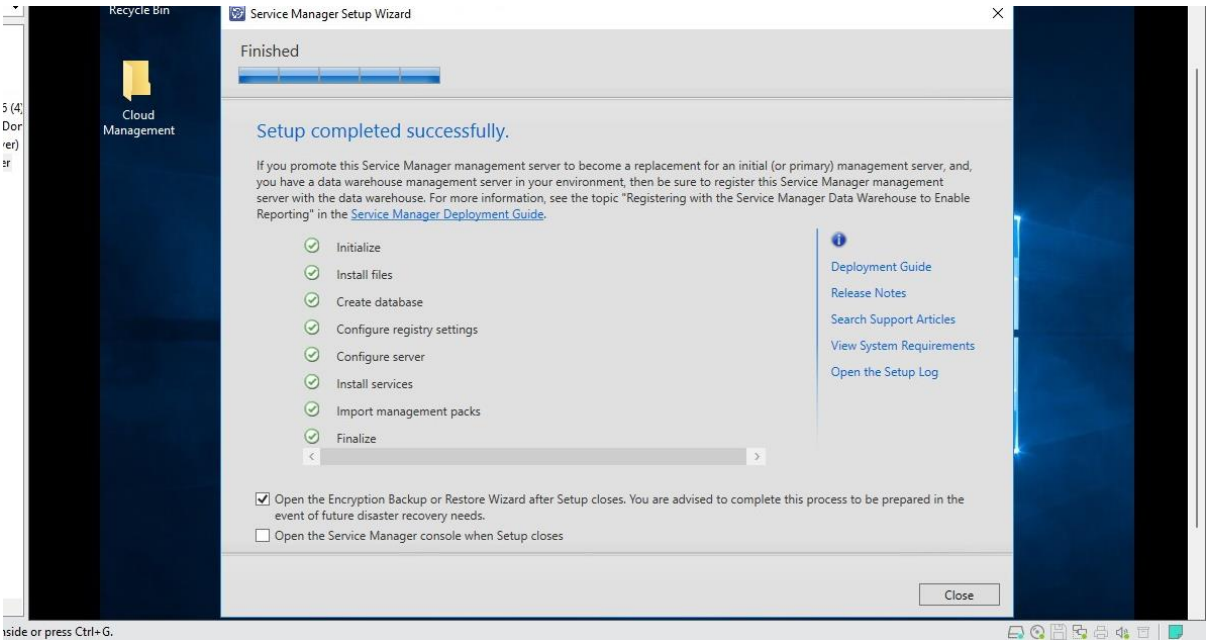
- Click on **Install**



- Service Management Server will start installing

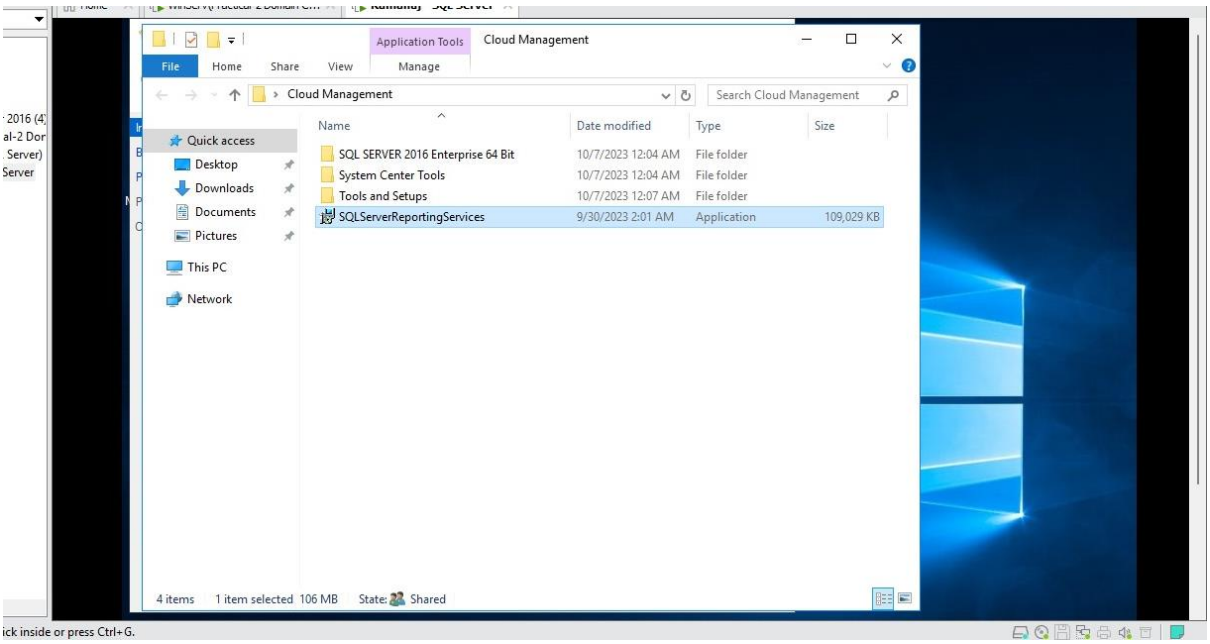


- The service management server is successfully created.



Step 7: Installing SQL Server Reporting Services

- Click on the **SQLSERVERREPORTINGSERVICES** installer



- Click on Install **Reporting Services**

- Keep default values and Click **Next**

- Select **I accept these license terms** and Click **Next**

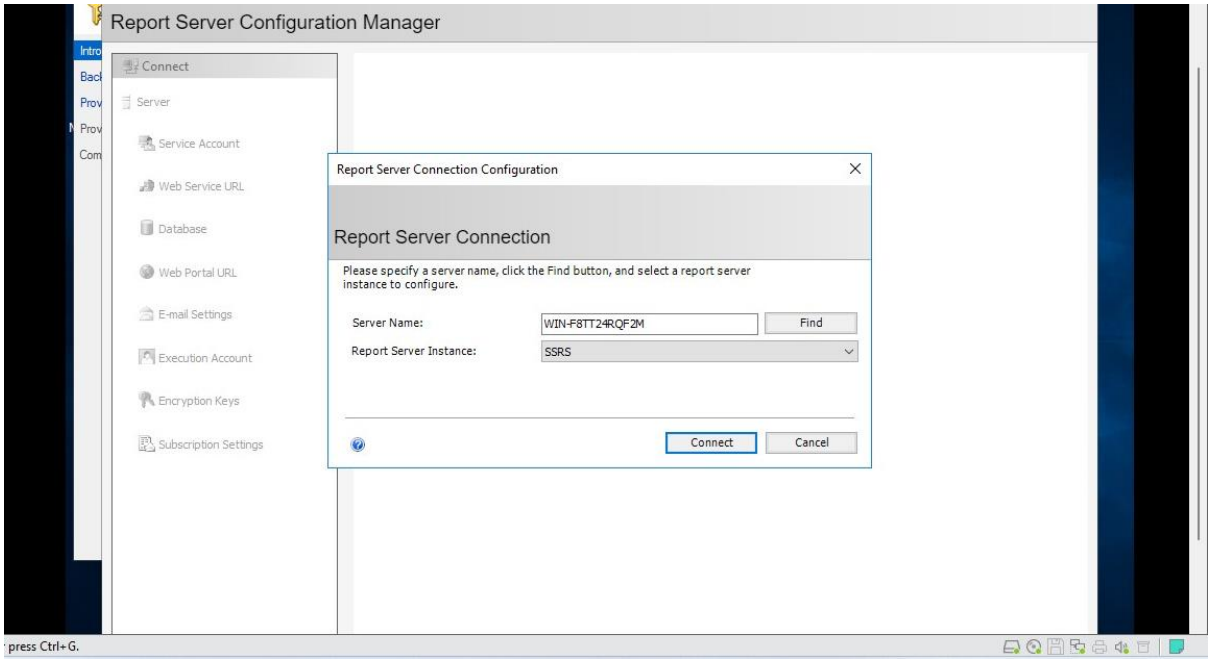
- Click **Next**

- Keep default path and Click **Install**

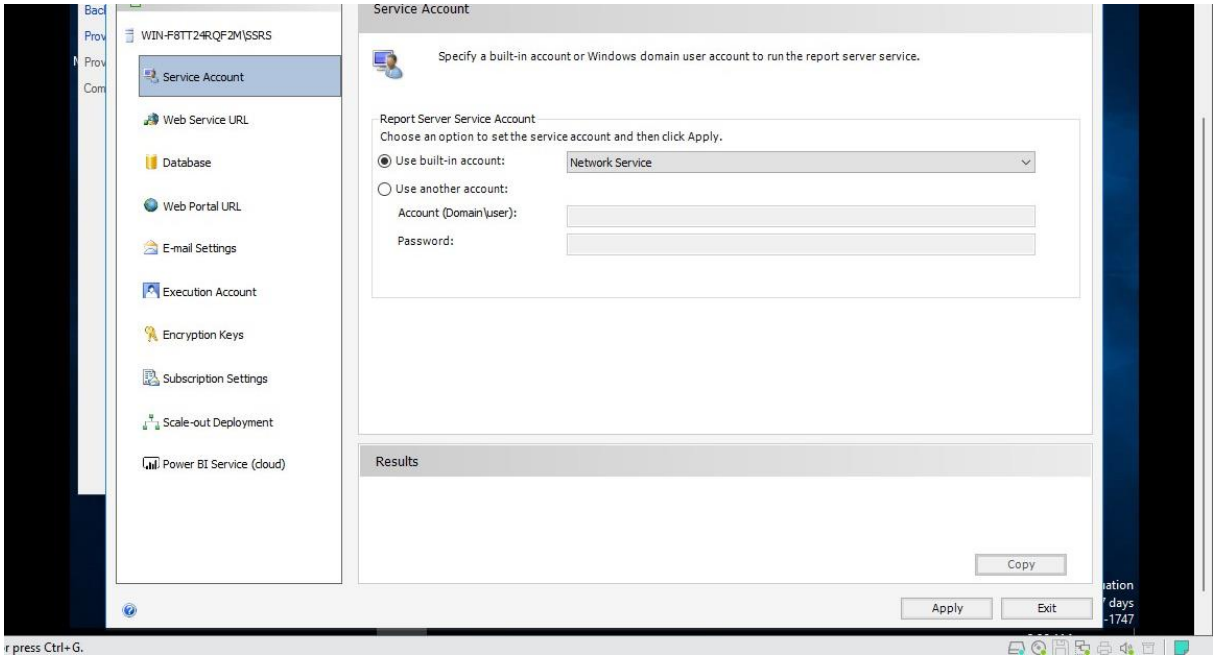
- Reporting Services will start installing

- After completion Click on **Configure Report Server**

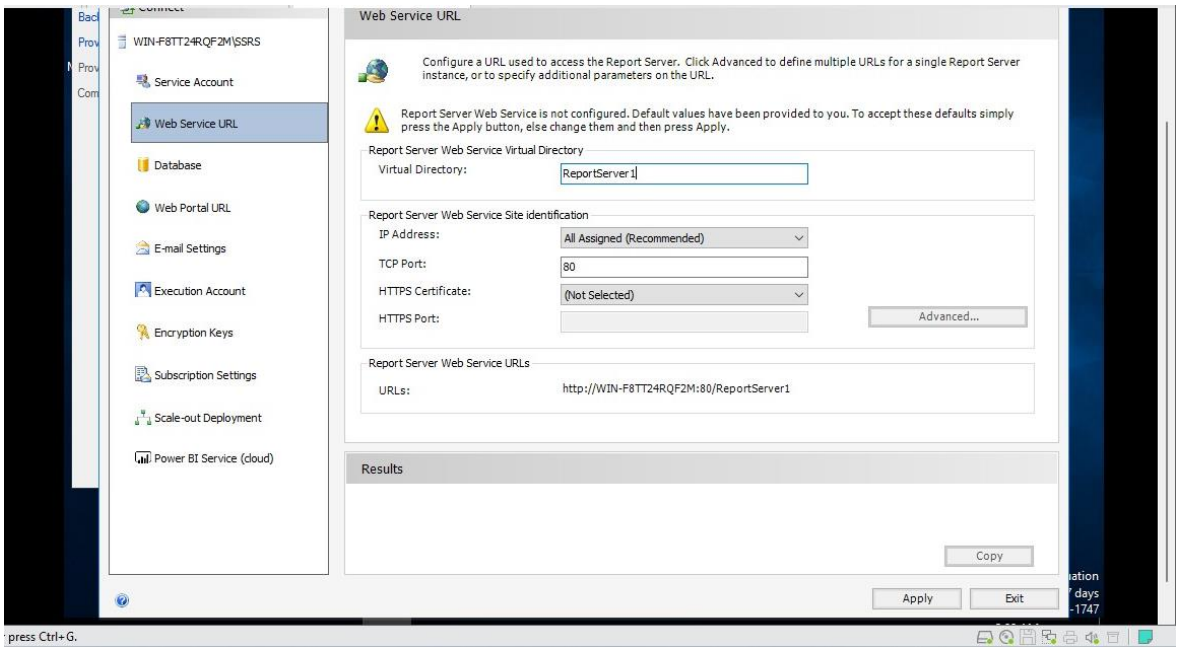
- Keep default values and Click on **Connect**



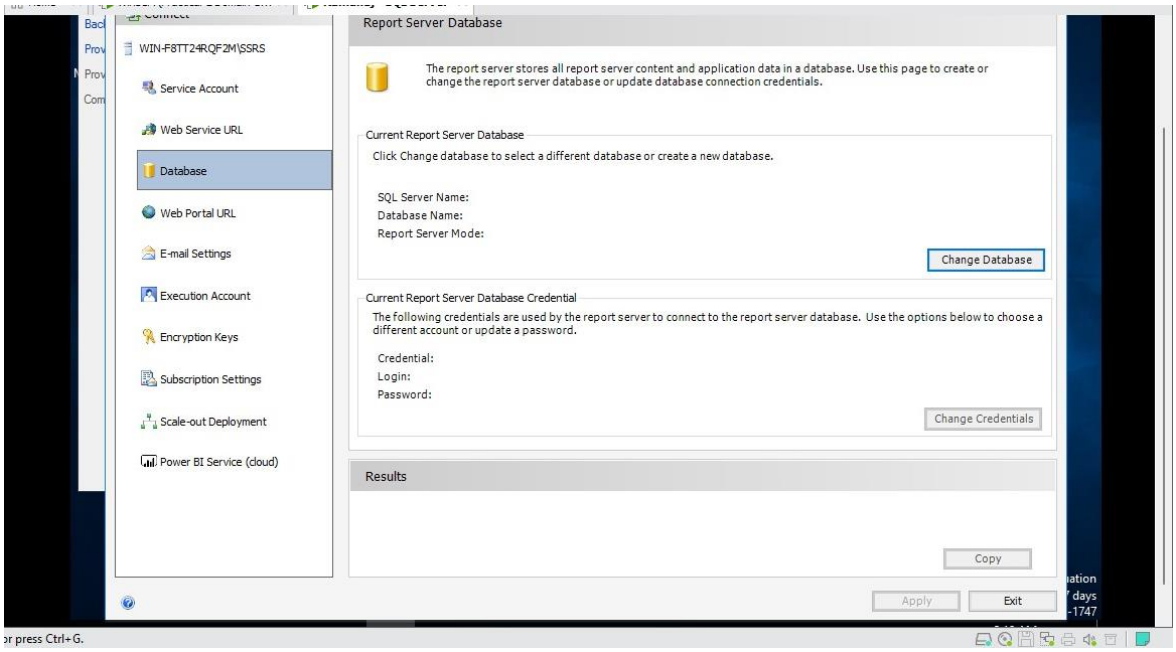
- Select **Service Account**, within service account in **Use built-in account** Select **Network Service** and Click **Apply**



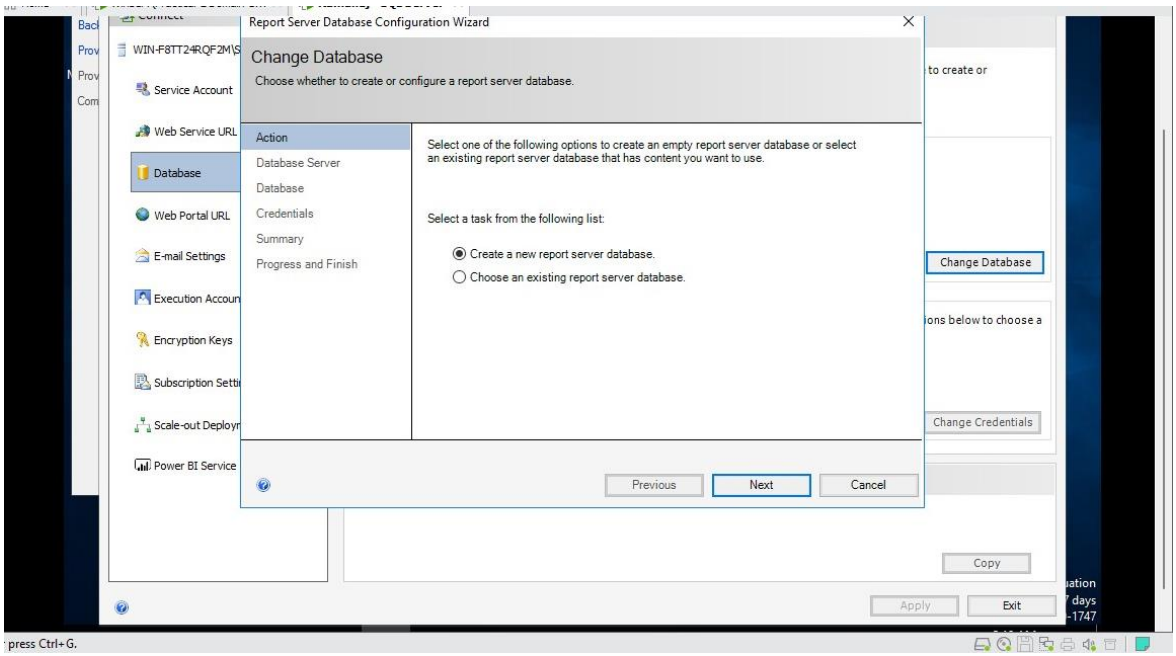
- Select **Web Service URL**, Change the Virtual Directory Value to **ReportServer1** and Click **Apply**



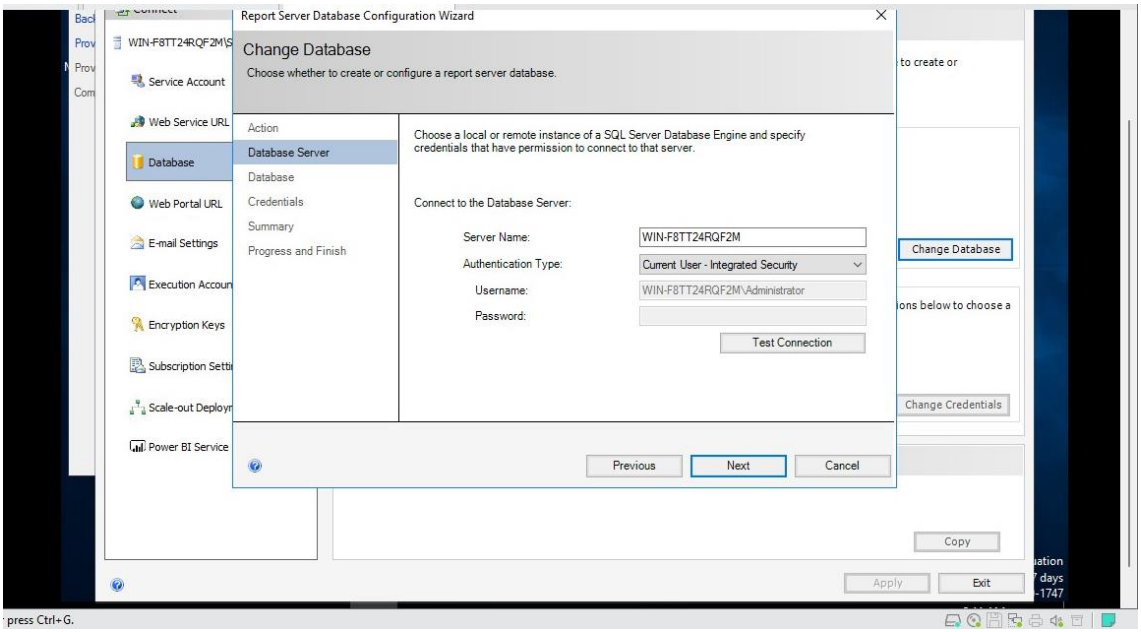
- Select **Database** and Click on **Change Database**



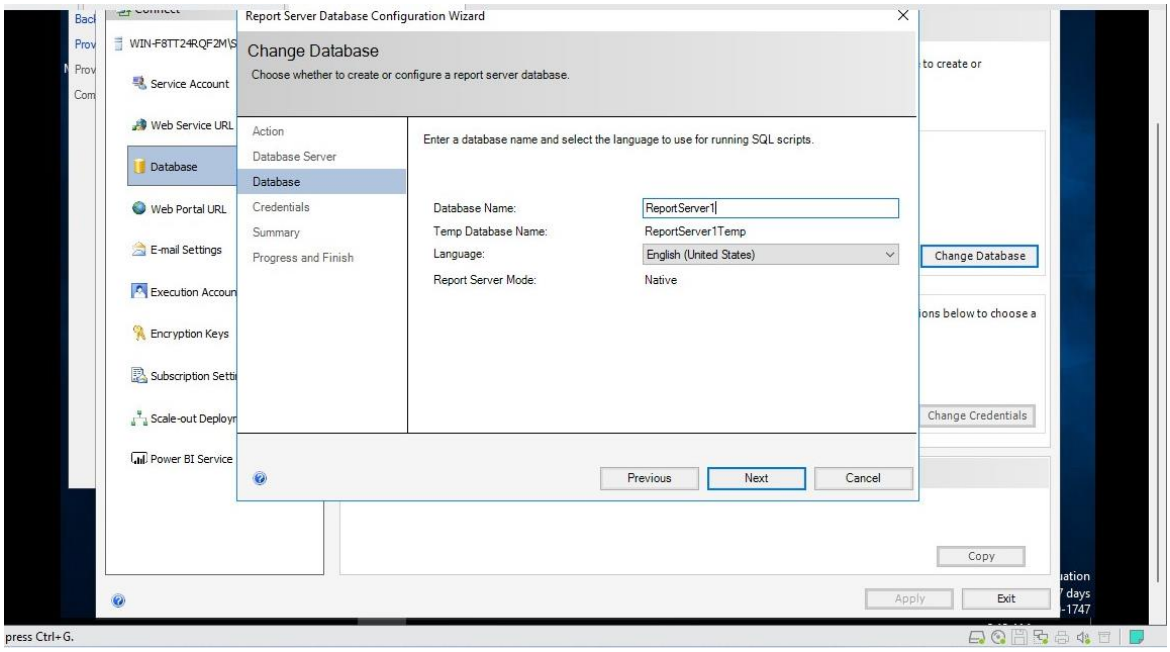
- Keep default values and Click **Next**



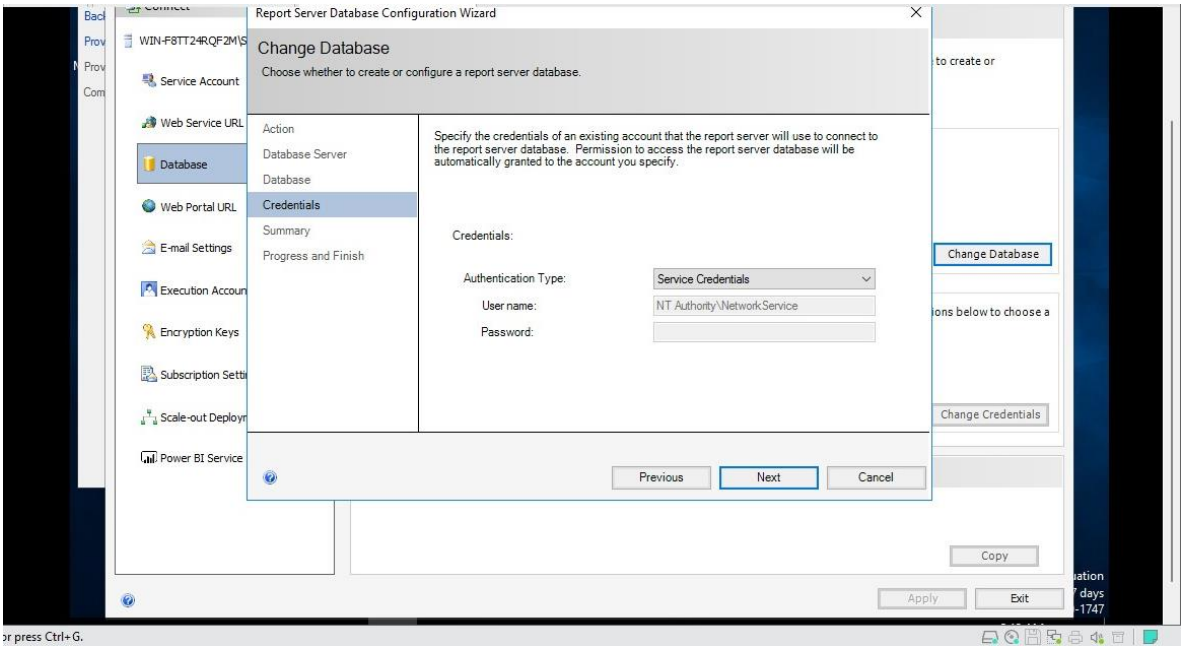
- Keep default values, Click on **Test Connection** when successful Click on **Next**



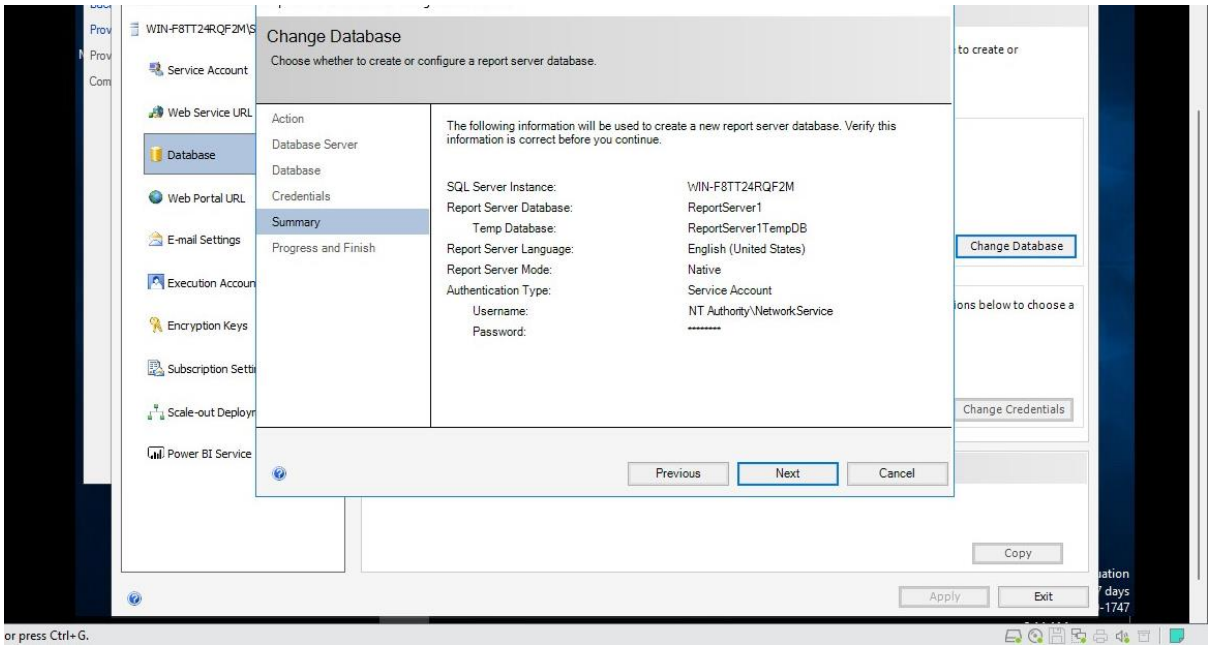
- Change Database name to **ReportServer1** and Click **Next**



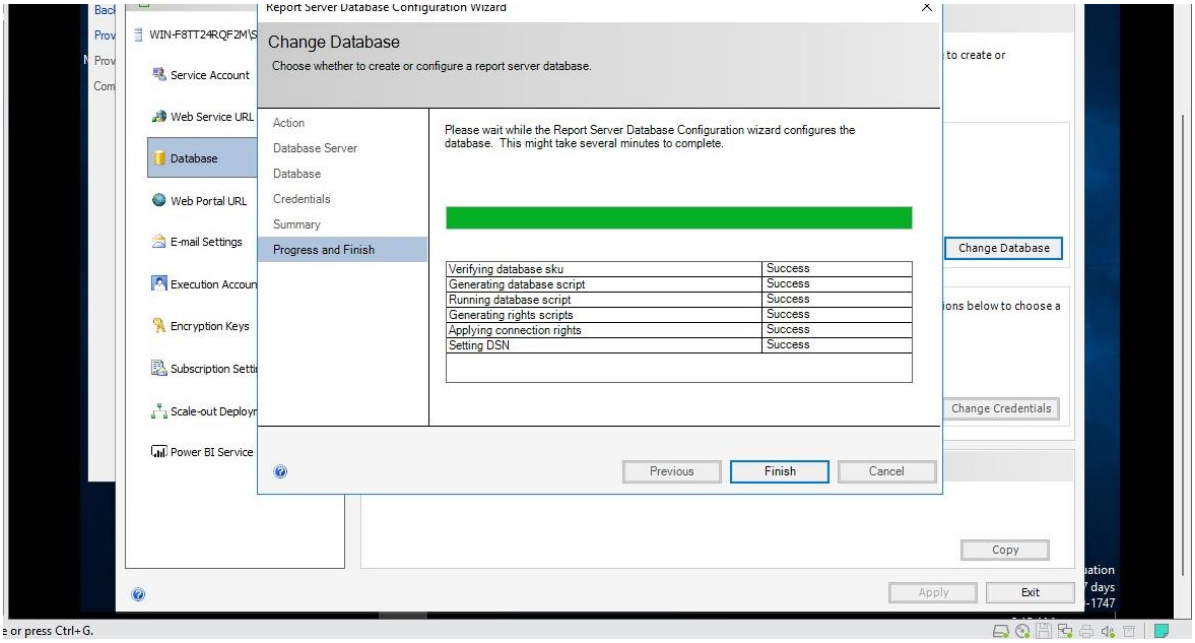
- Keep default values and Click **Next**



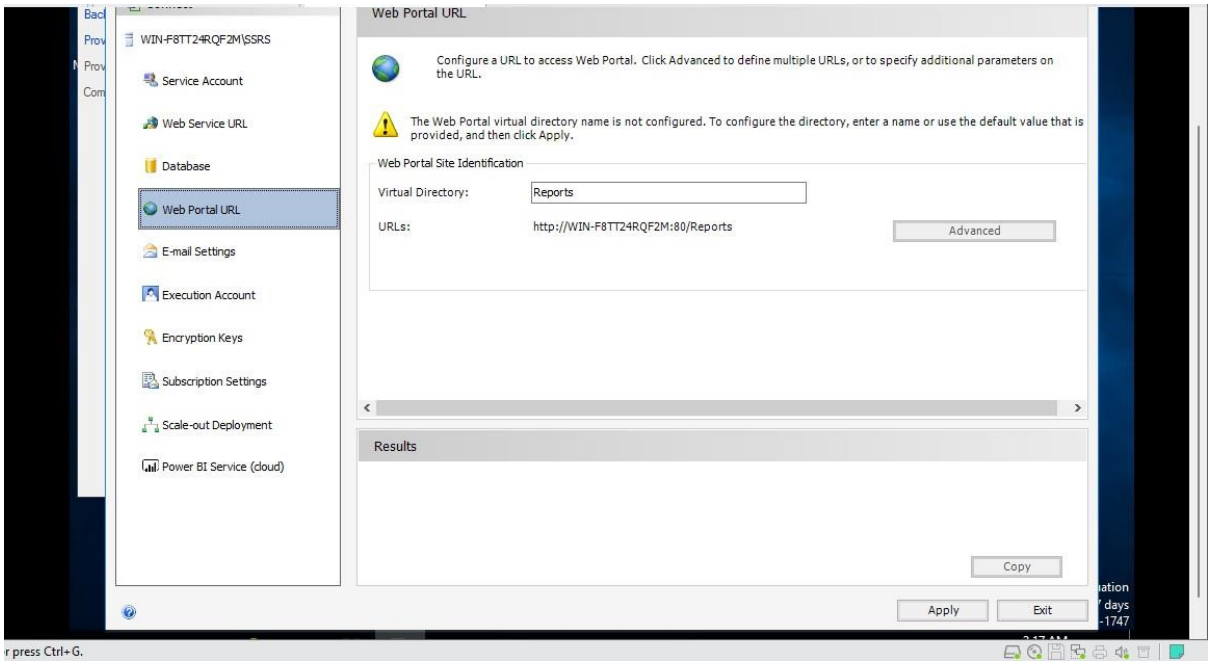
- Click **Next**



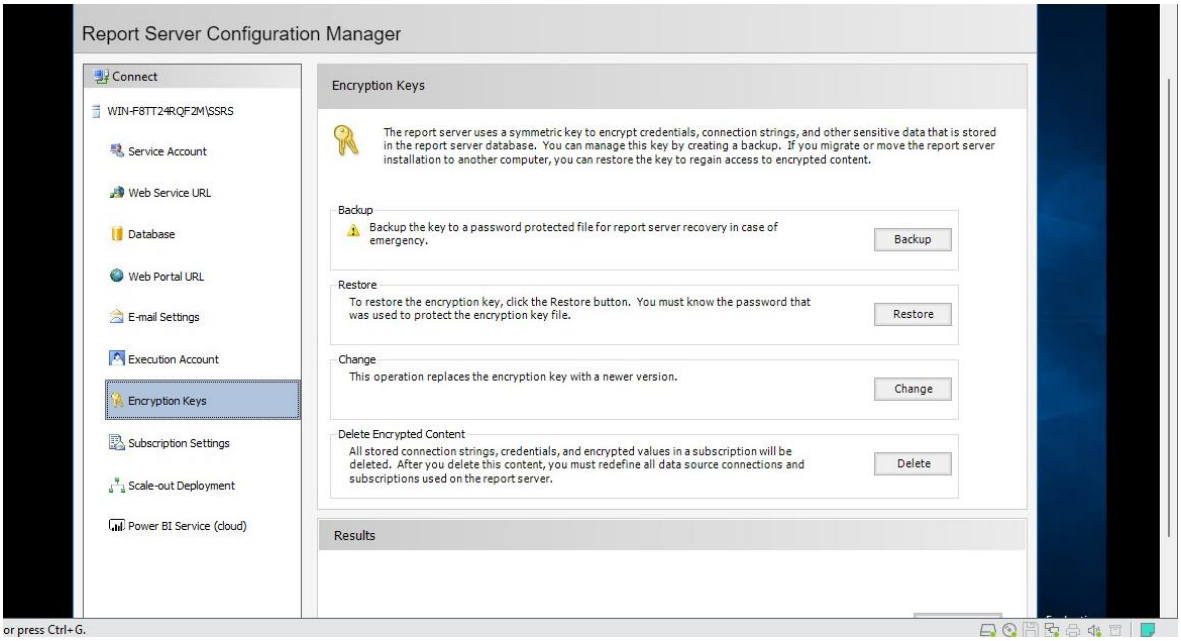
- Database configuration will install, after installation Click on **Finish**



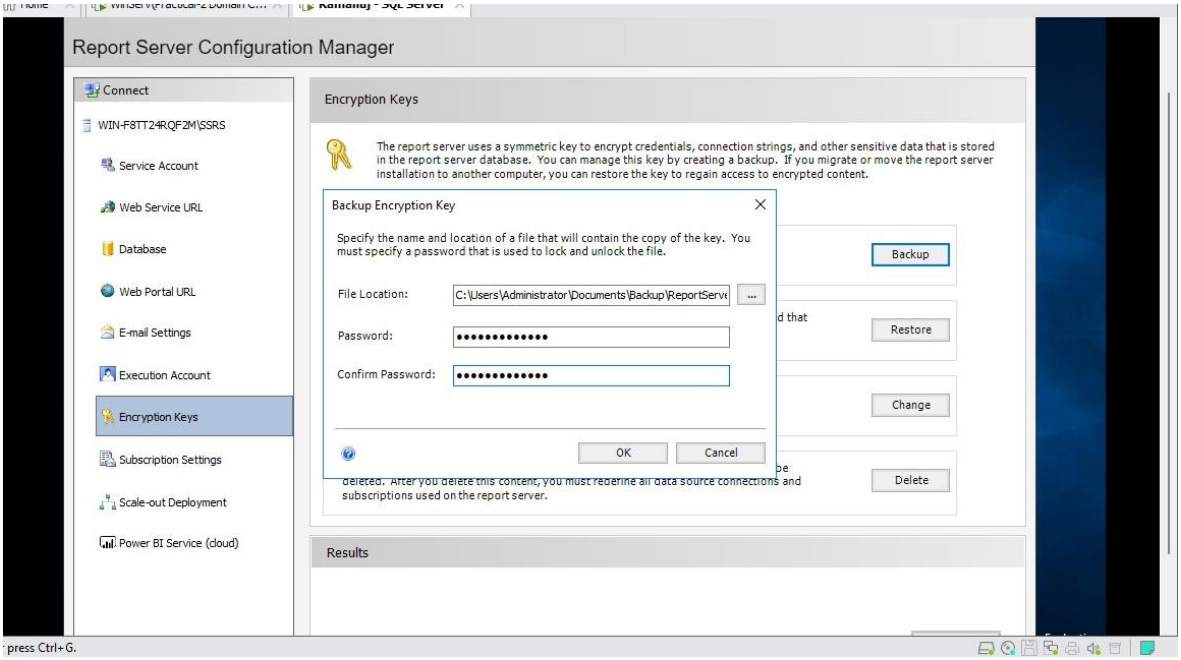
- Select **Web Portal URL** and keep a copy of the **url** on which your reports will be shown.



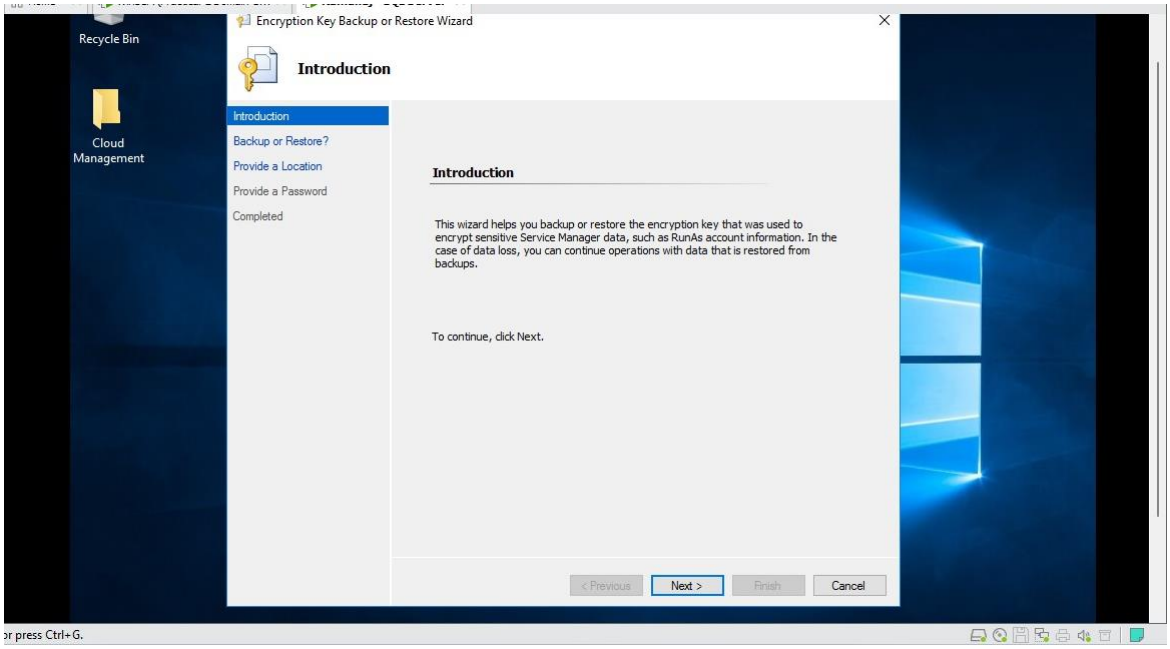
- Within your VM's Directory create a new folder named **Backup**
- Select **Encryption Keys** and Click on **Backup**



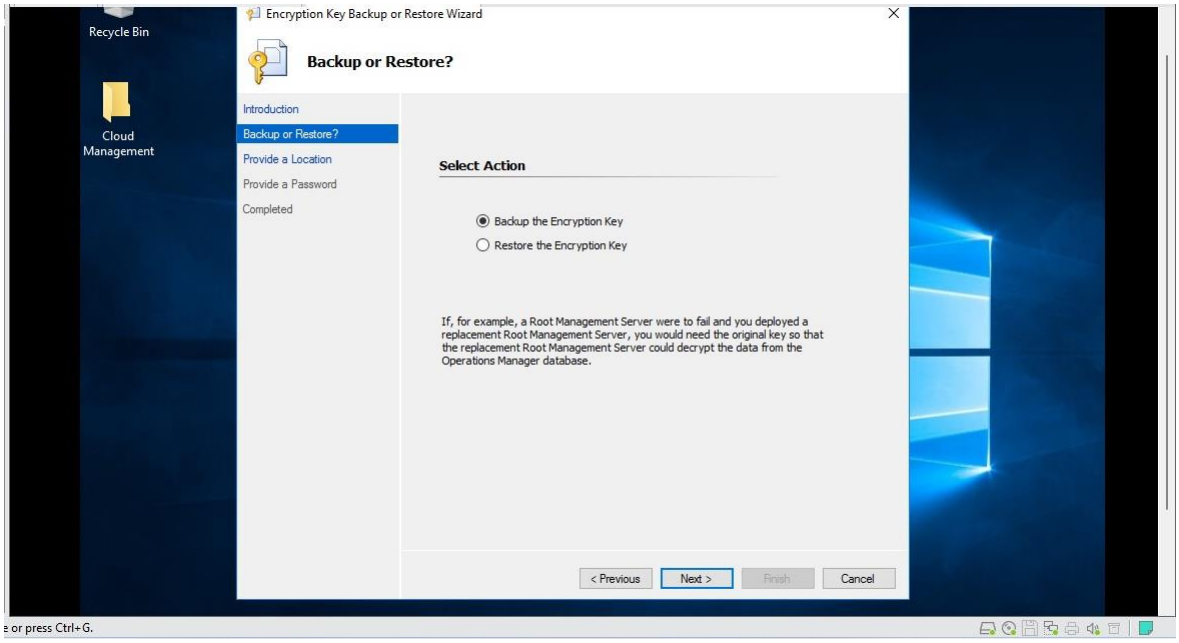
- Browse the folder that you just created and save a new file under any name (Here it is ReportServer1) and give it a password and Click **Ok**



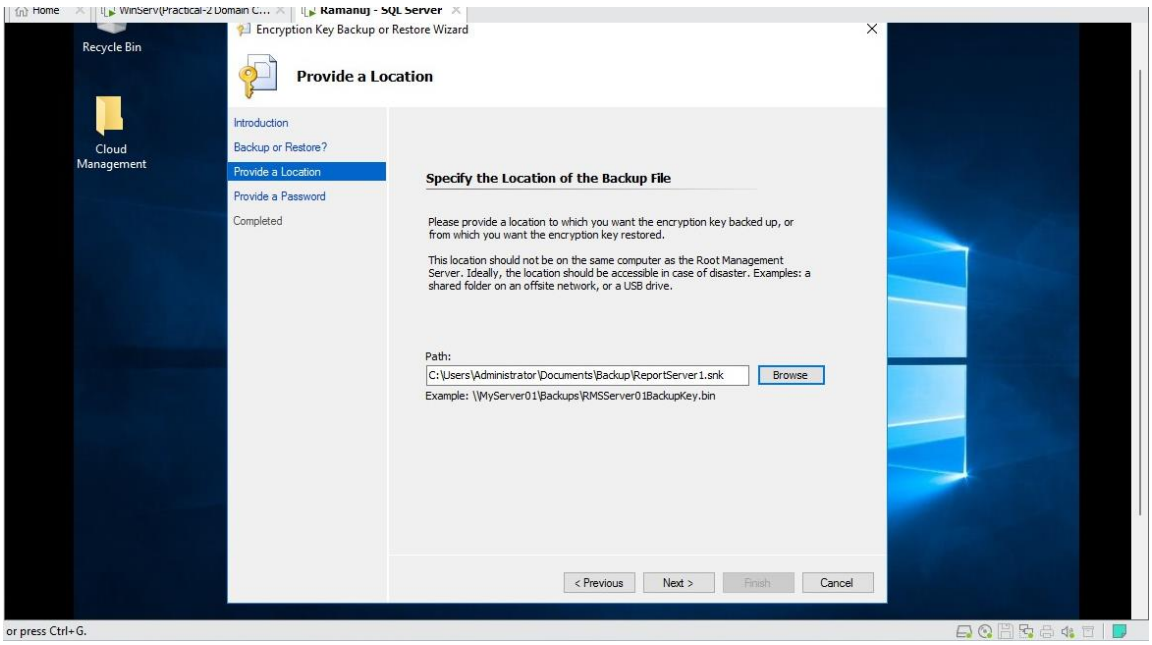
- Now go back to the SCSM setup and continue from Encryption Key Backup, Click **Next**



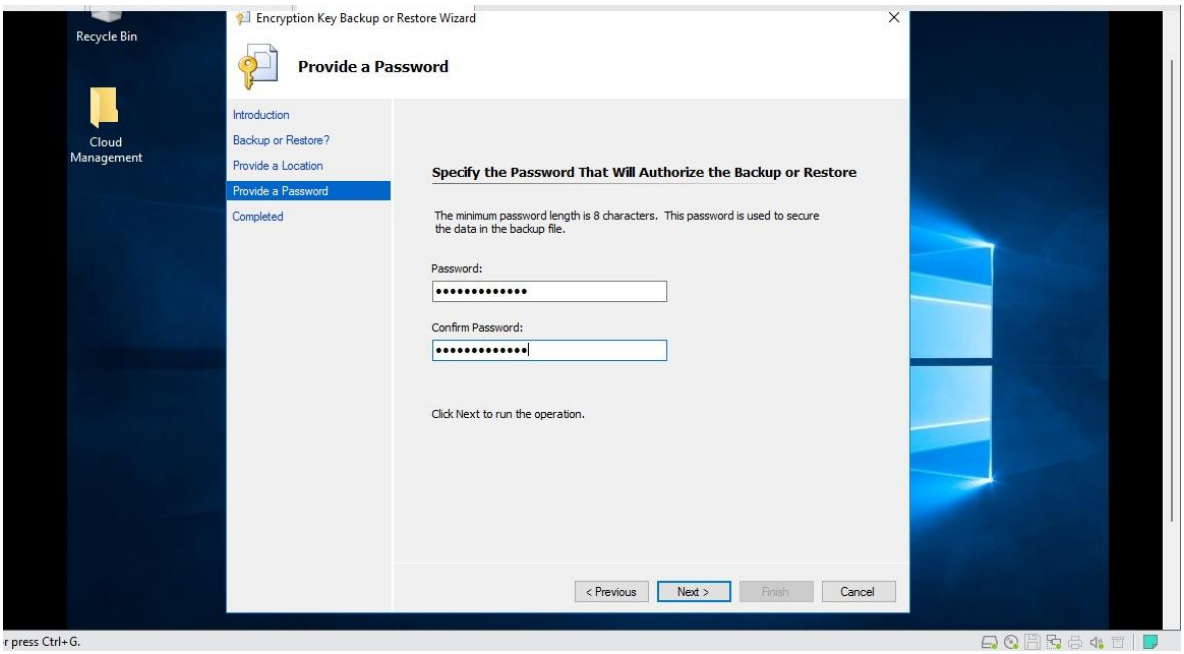
- Keep default values and Click **Next**



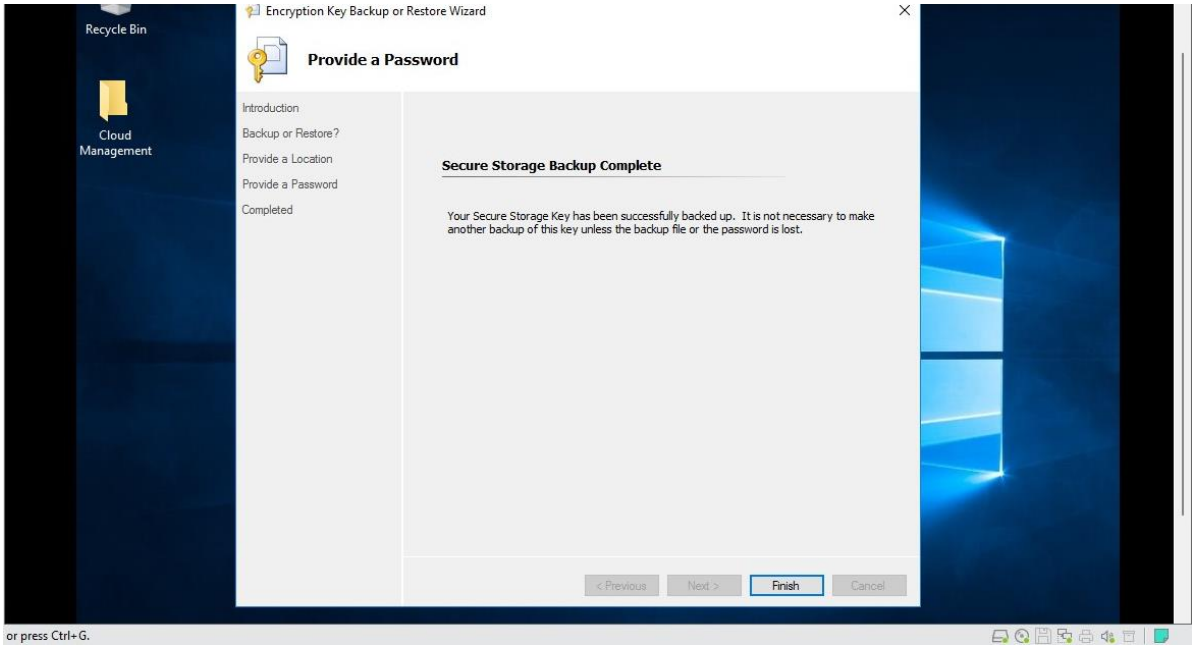
- Click on **Browse** and Select the Backup that created a few steps back (Here it is ReportServer1) and Click **Next**



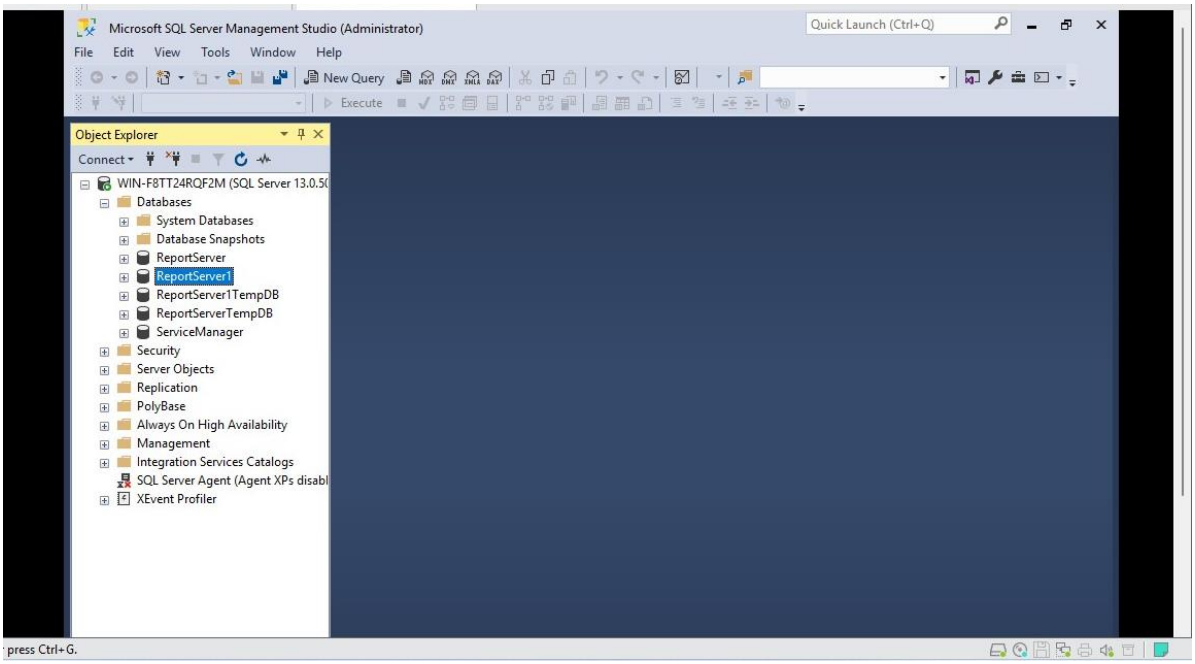
- Enter the password and Click **Next**



- Click on **Finish**



- Now within your SSMS you can see the new database that has been created



Practical 4

Practial 4-A: Installing System Centre Orchestrator

Aim: Installing System Centre Orchestrator

Writeup:

Pre-requisites:

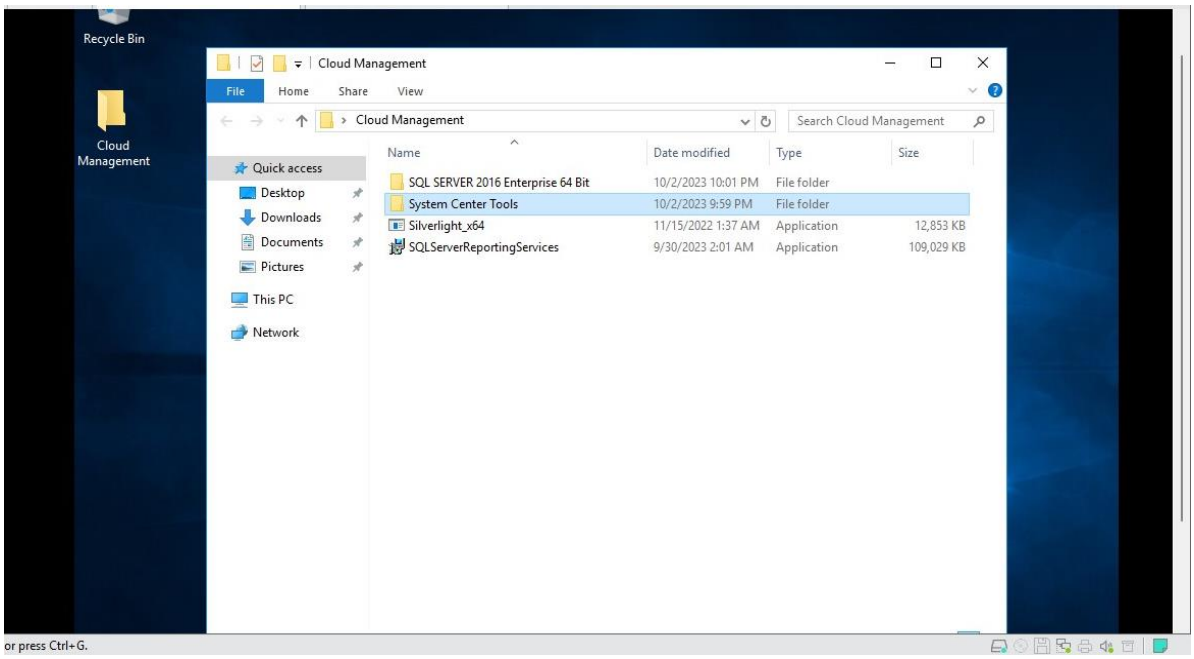
Using the same 2-computer scenario from Practical 2 we can use the same

Domain Controller and SQL Instances in this practical.
In addition to the previous features we require:

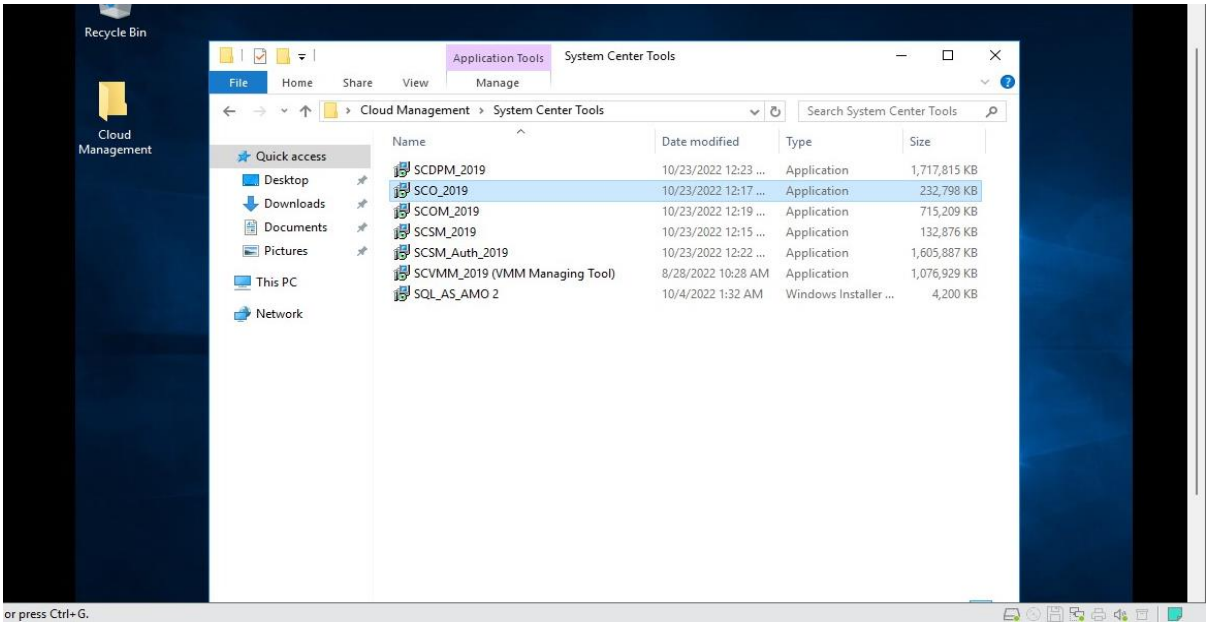
- System Centre Orchestrator 2019
- .NET 3.5 Framework

Step 1: Installing System Centre Orchestrator 2019

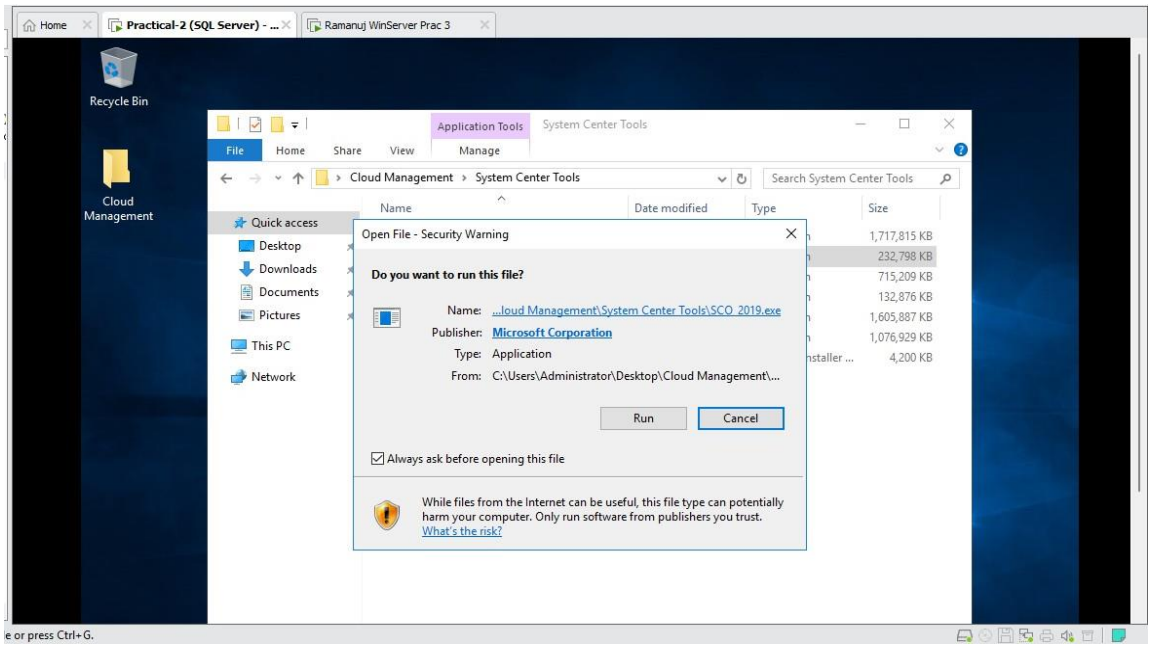
- Within your Cloud Management File Click on **System Center Tools**



- Click on **SCO_2019**

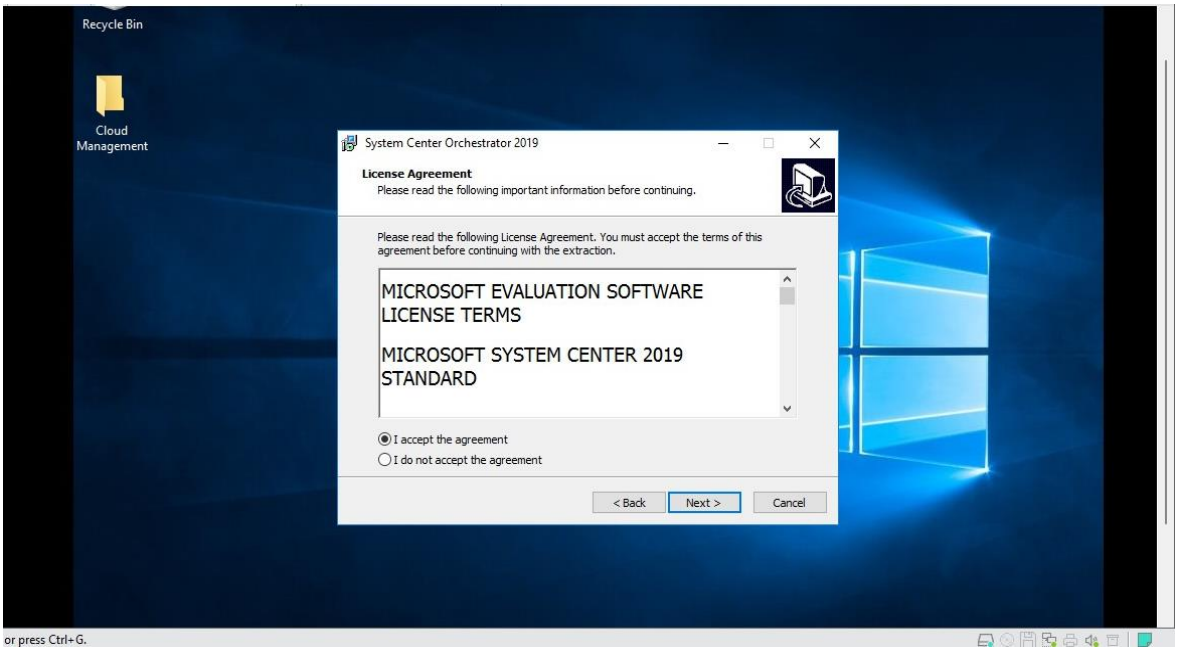


- Click **Run**

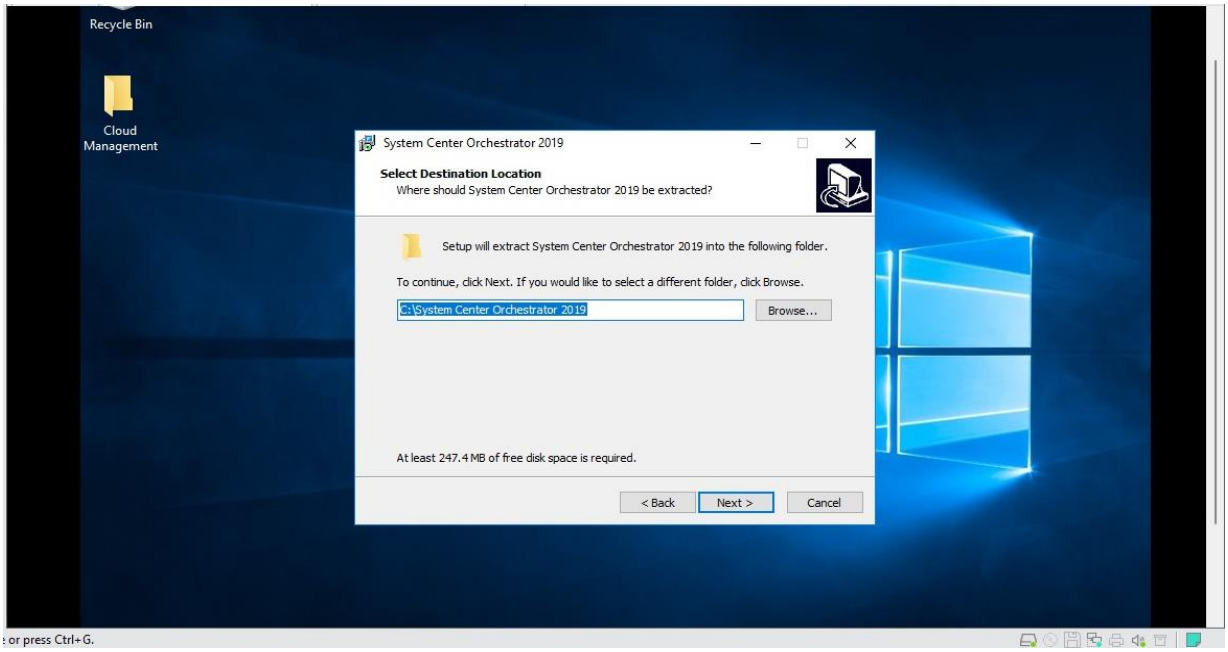


- Click **Next**

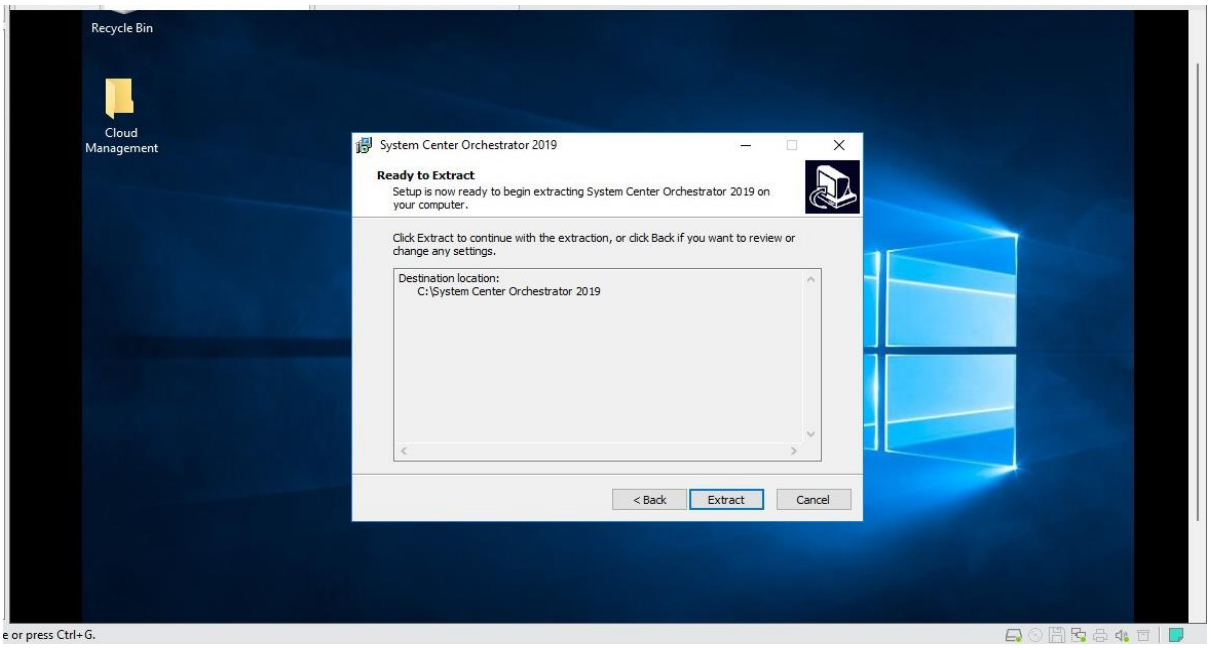
- Select **I accept the agreement** and Click **Next**



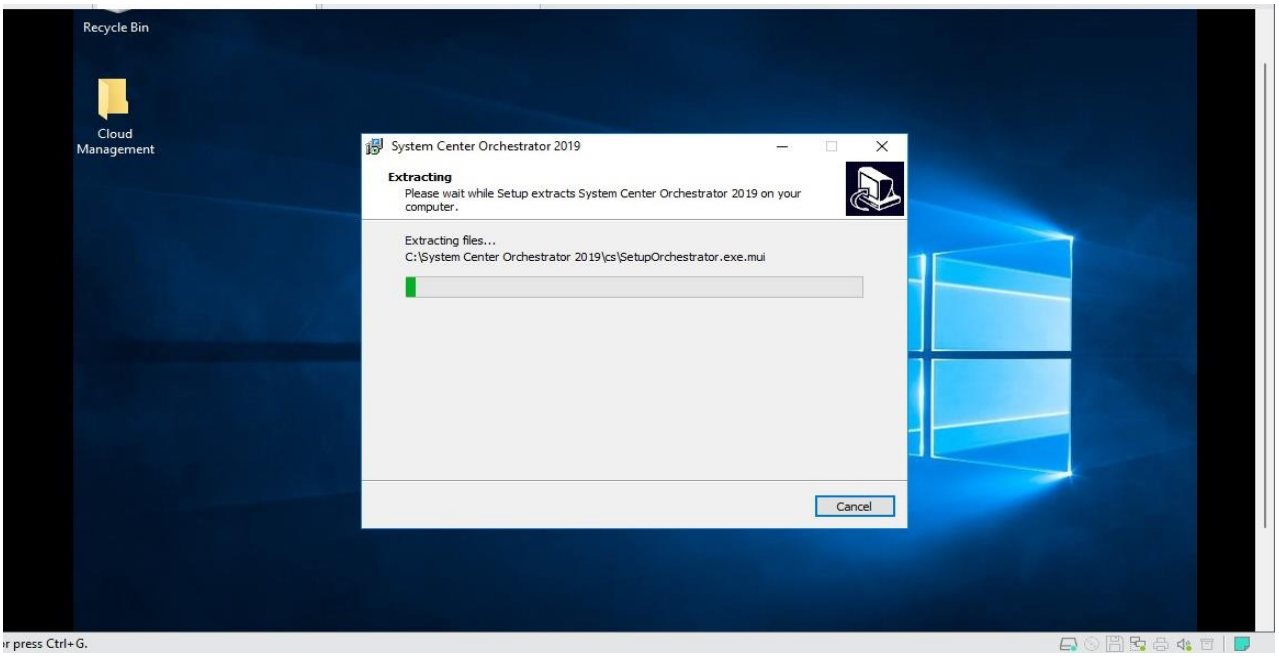
- Keep default values and Click **Next**



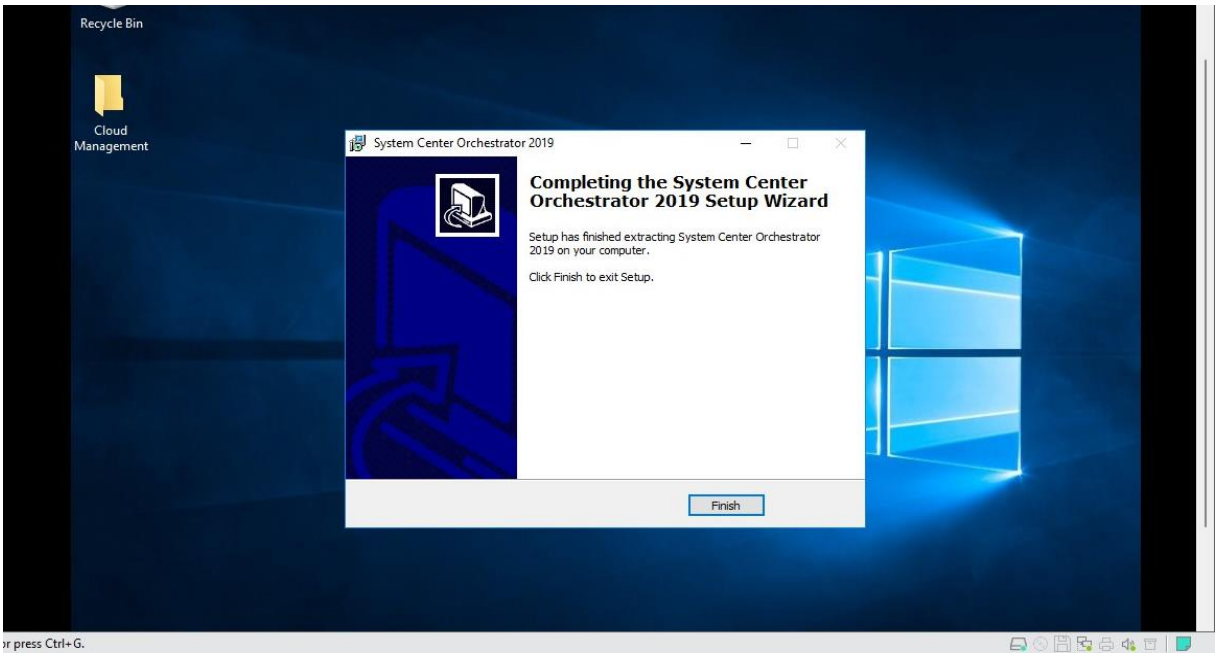
- Click **Extract**



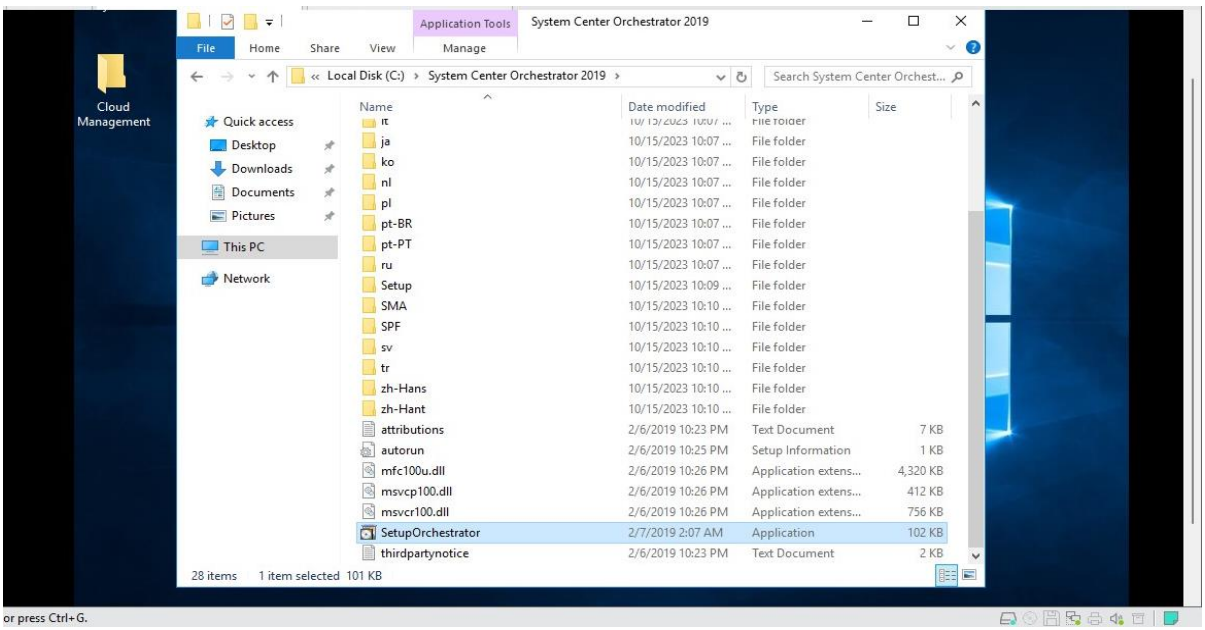
- It will start extracting the necessary files to the destination folder



- After extraction Click **Finish**

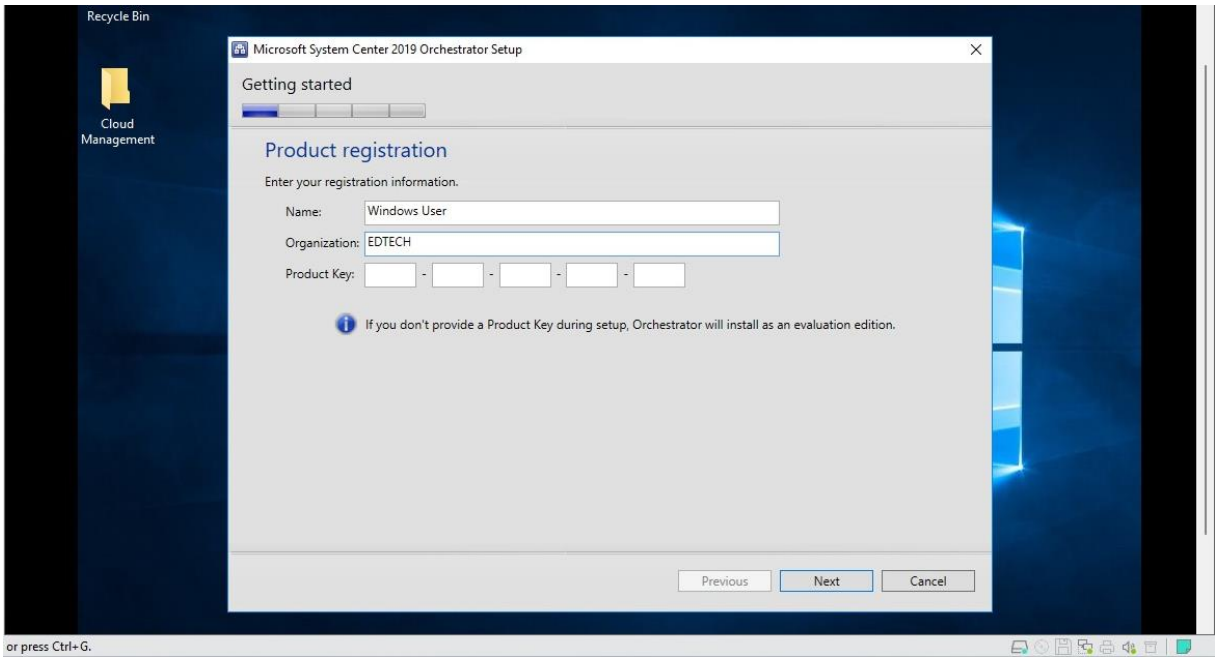


- Now within your C: Directory Click on **System Orchestrator 2019**, Within System Orchestrator 2019 Click on **SetupOrchestrator**

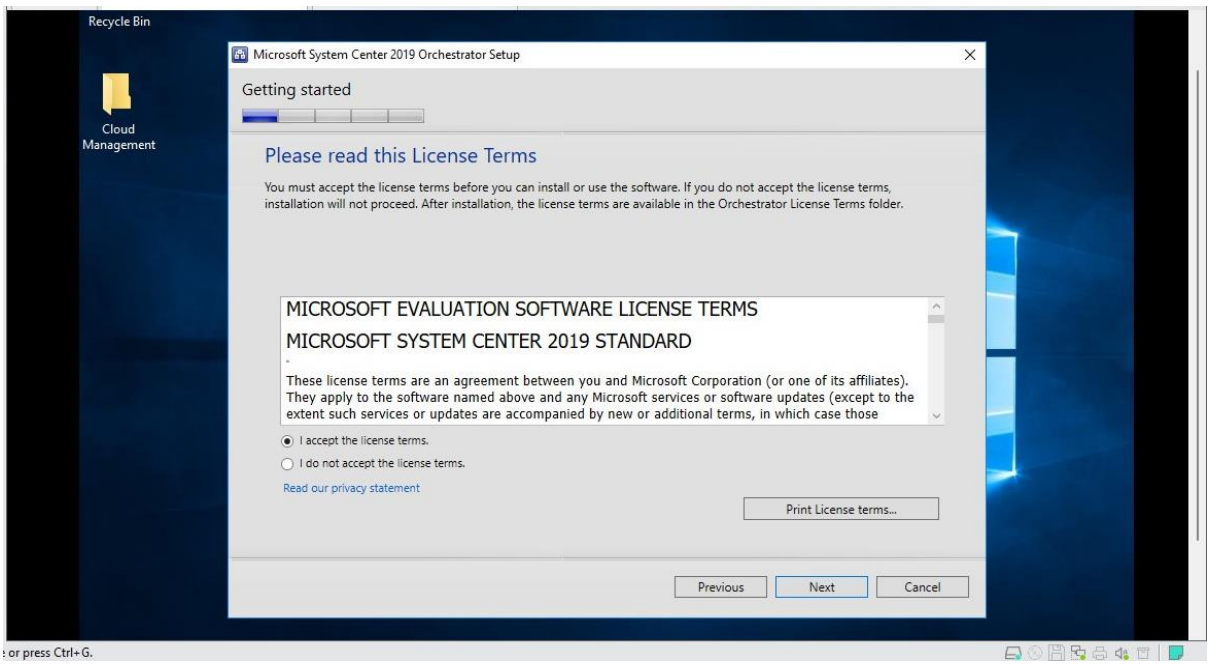


- Click on **Install**

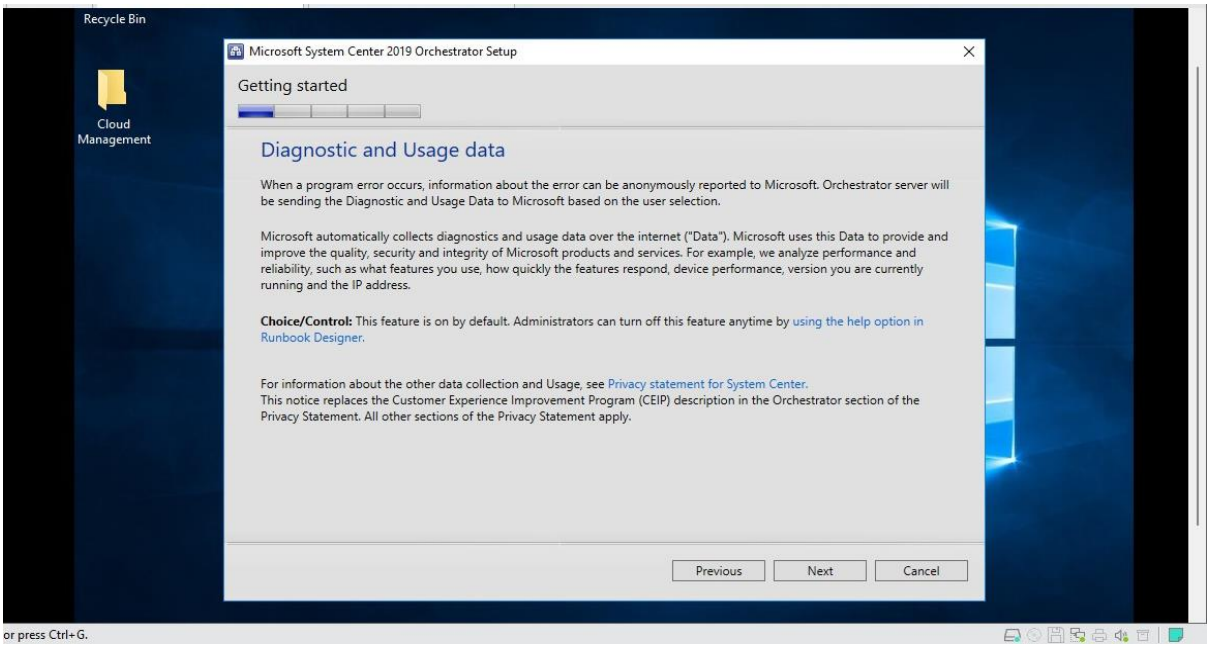
- Type a name under organization (Here it is EDTECH) and Click **Next**



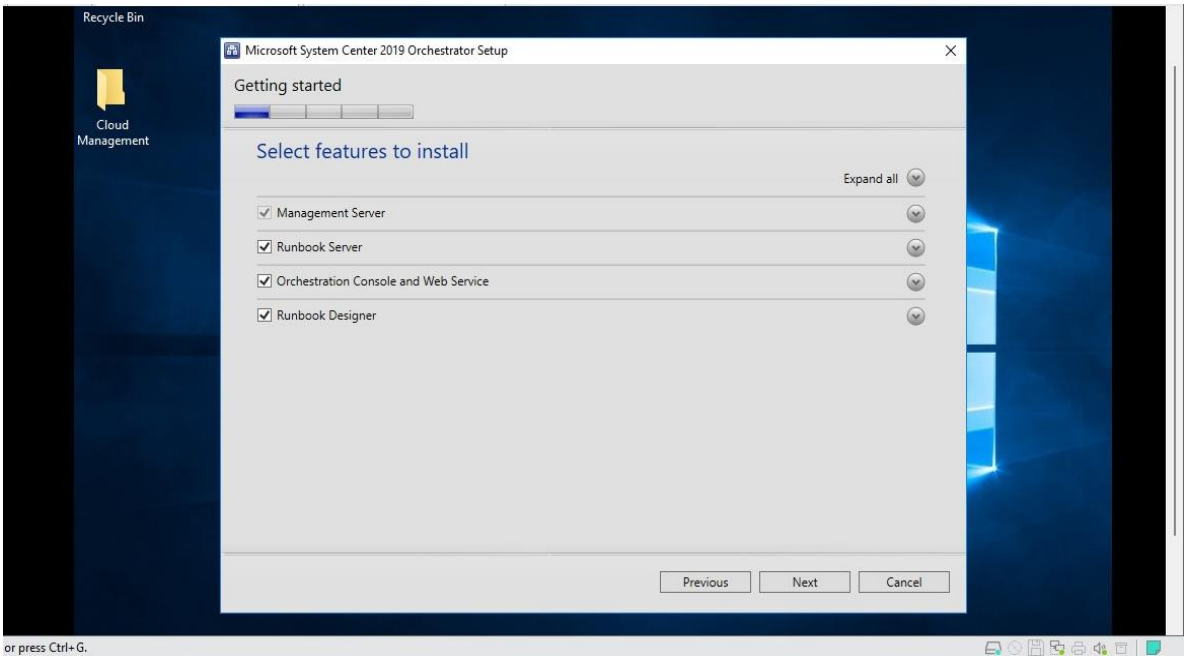
- Select **I accept the license terms** and Click **Next**



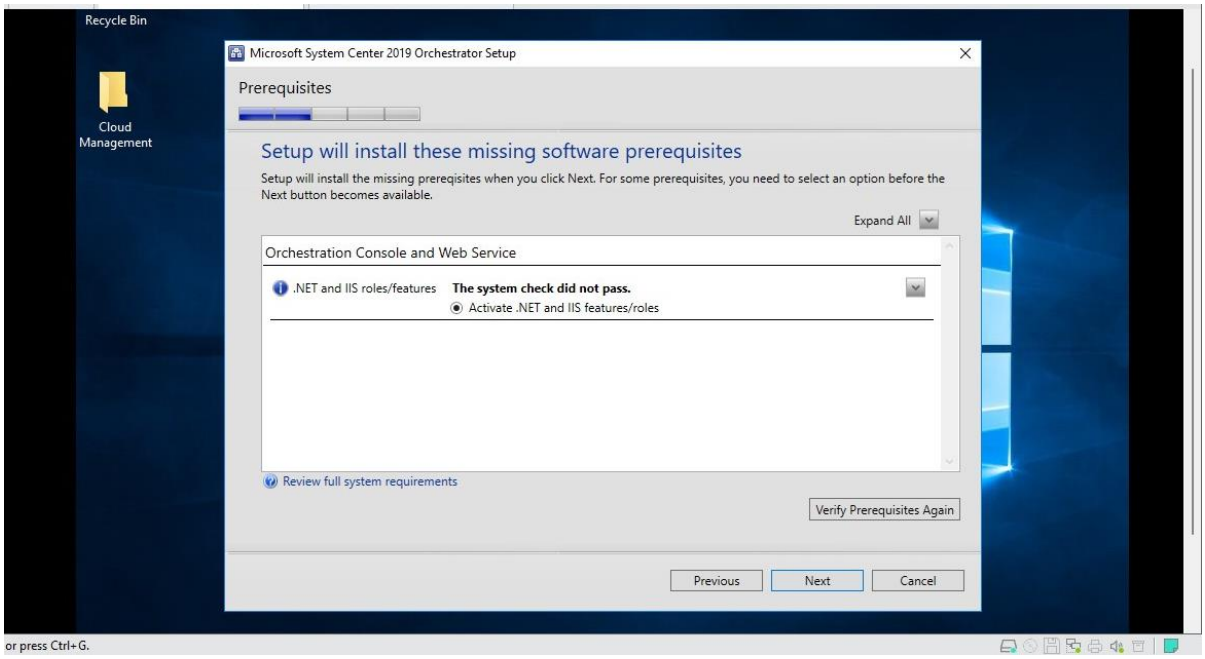
- Click **Next**



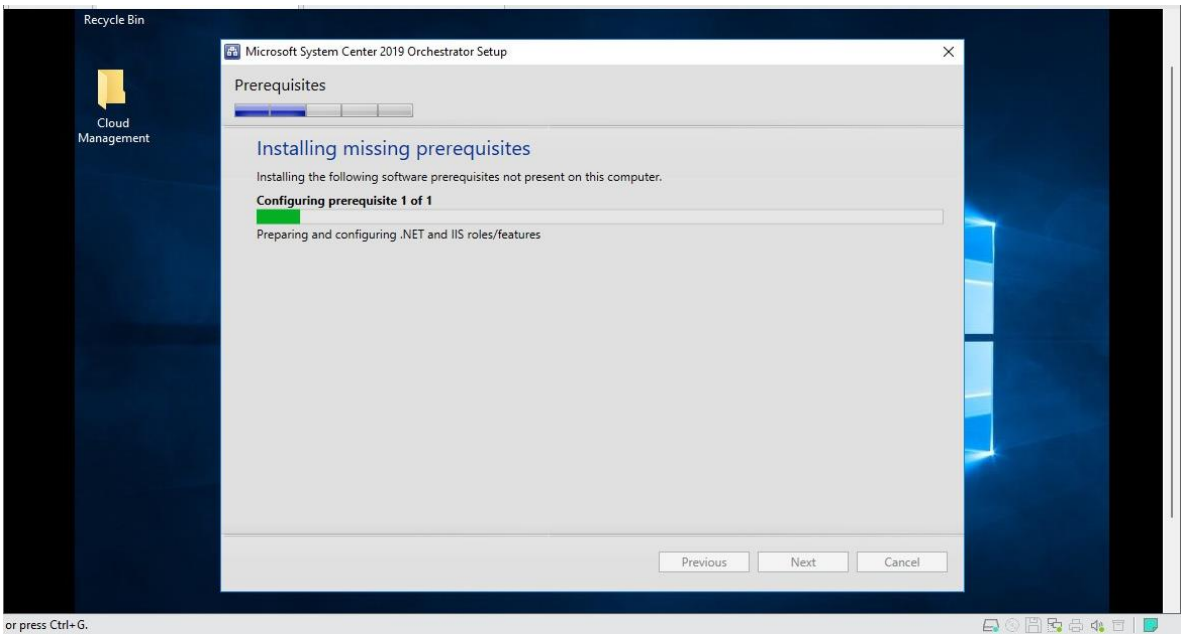
- Keep default values and Click **Next**



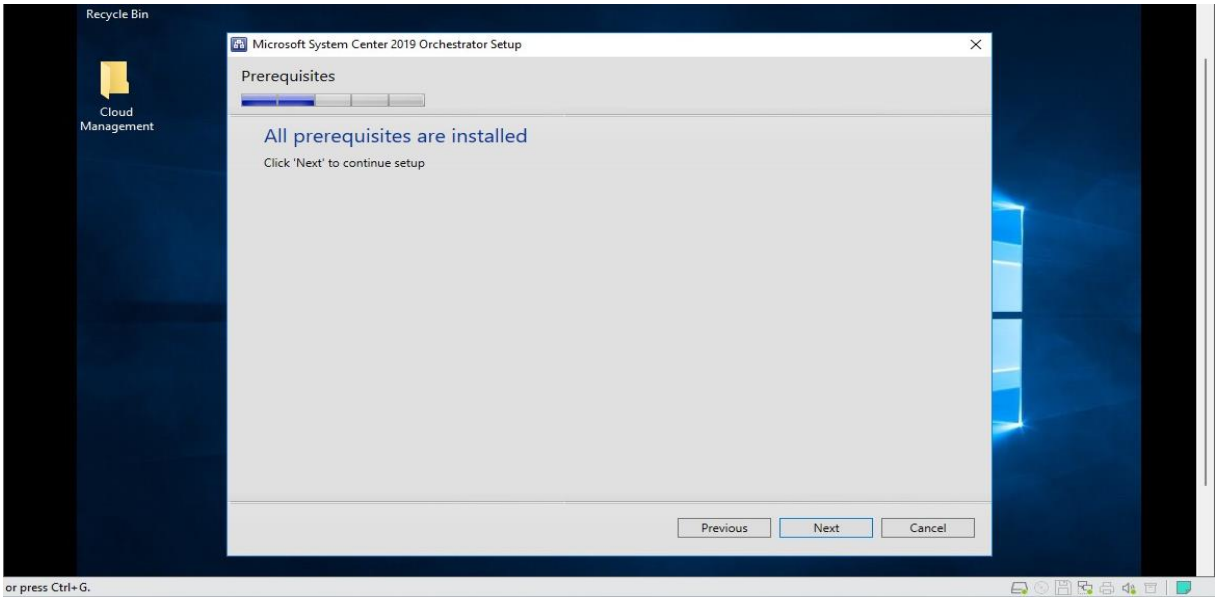
- There will be some missing software, Select **Activate IIS/.NET features/roles** and Click **Next**



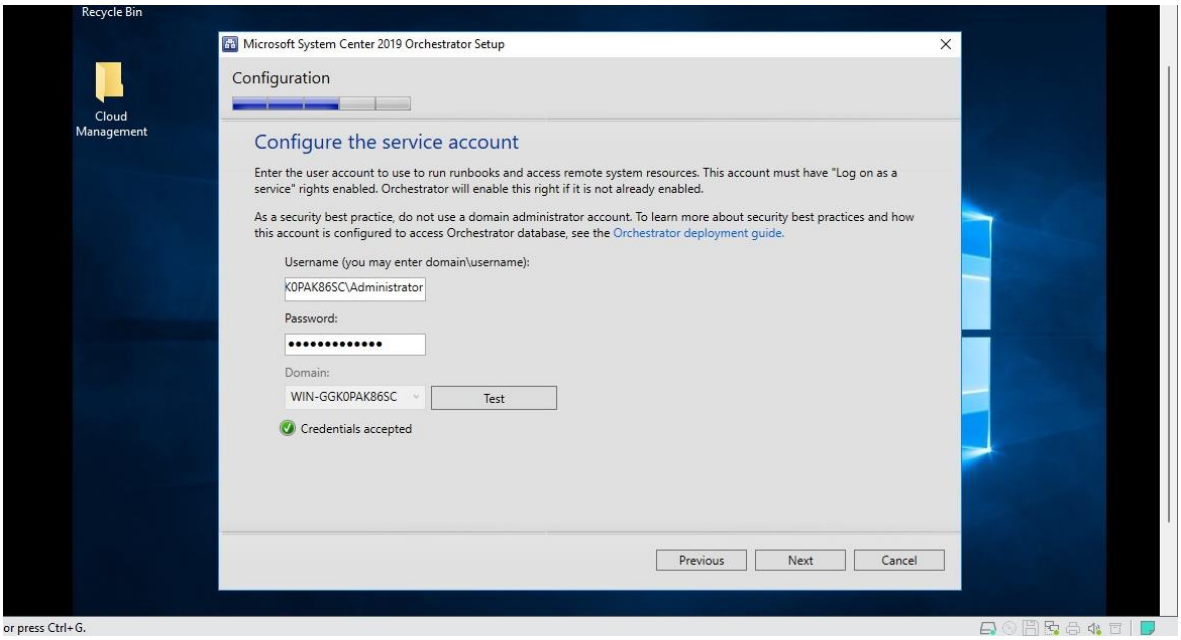
- It will start installing the missing pre-requisites



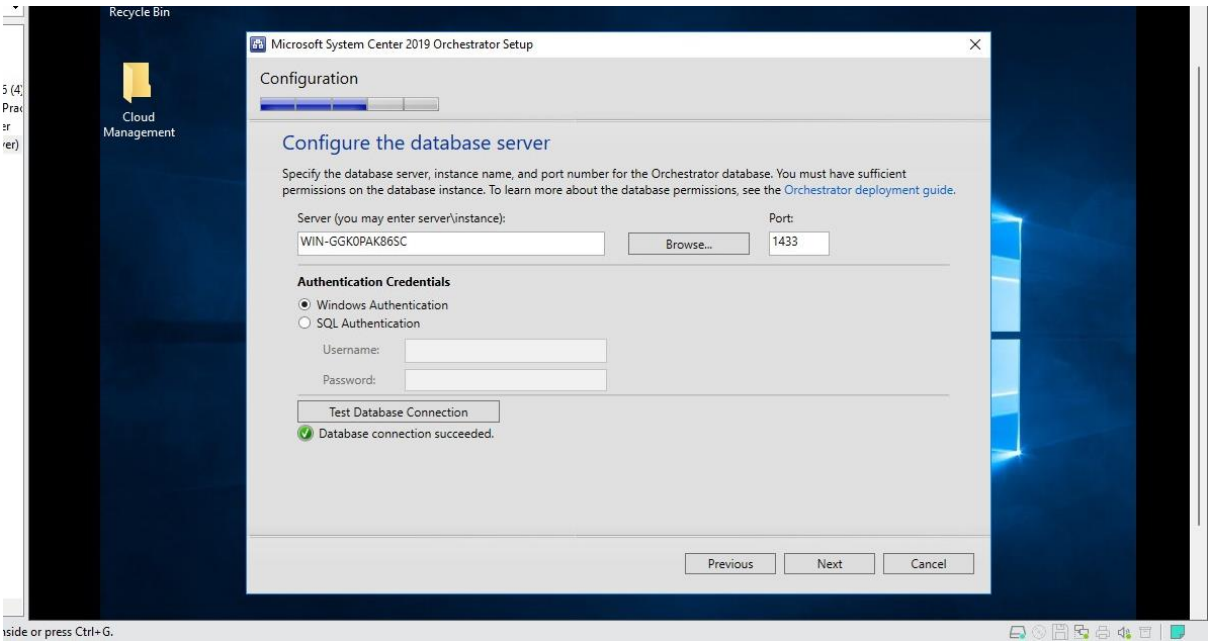
- Once the pre-requisites are installed and Click **Next**



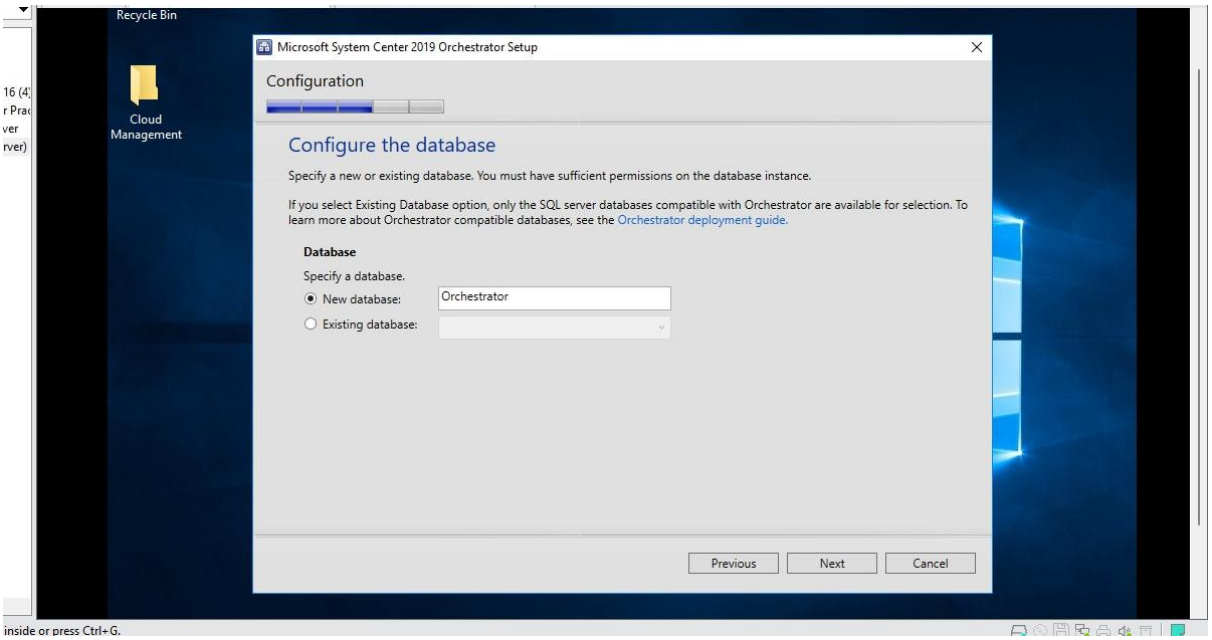
- In Configure Service Account Type the credentials of the domain you have selected and **Test** it, If the Test is successful Click **Next**



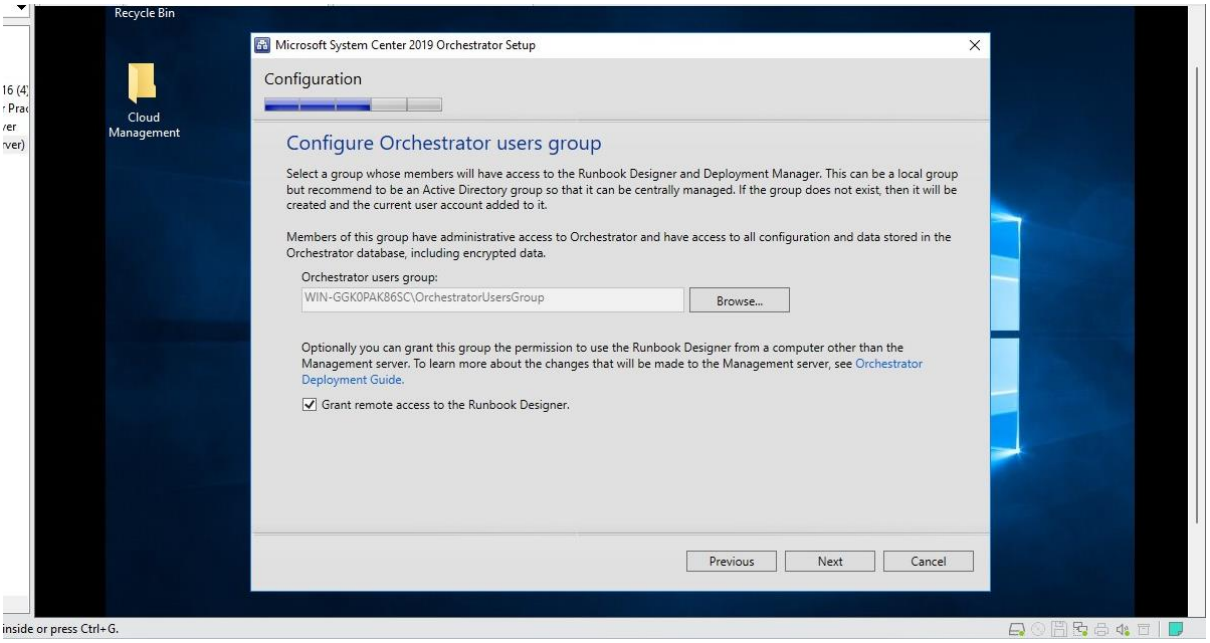
- Enter your SQL Database server name and **Test** the database server connection. If the Test is successful Click **Next**



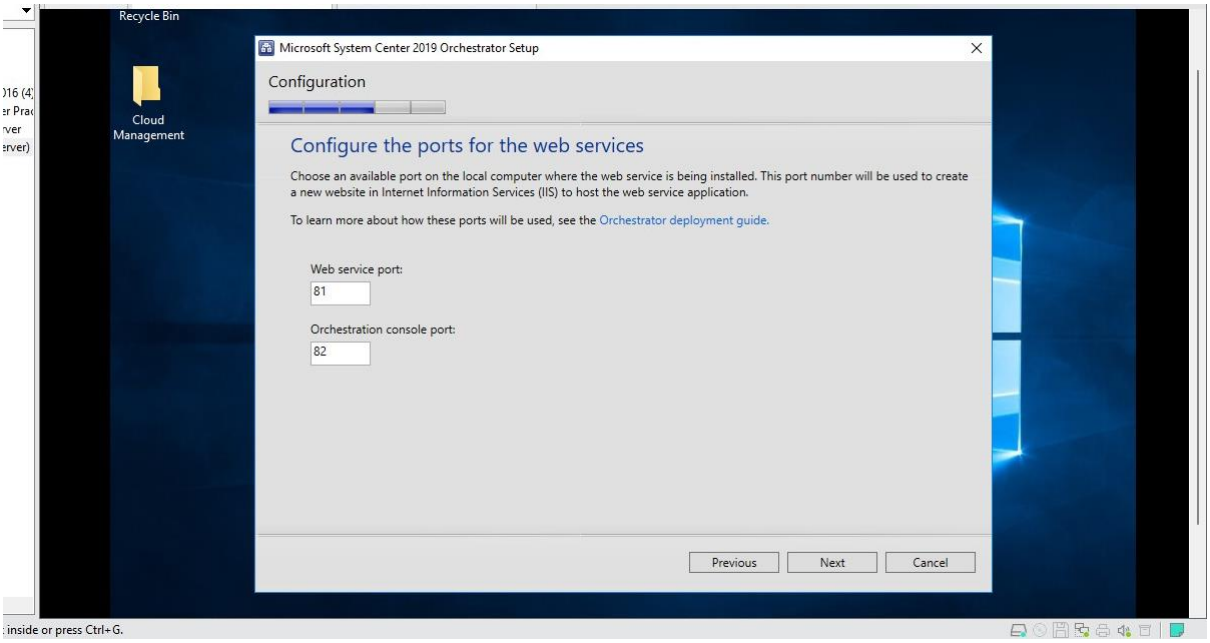
- Select New Database and Enter the name as **Orchestrator** and Click **Next**



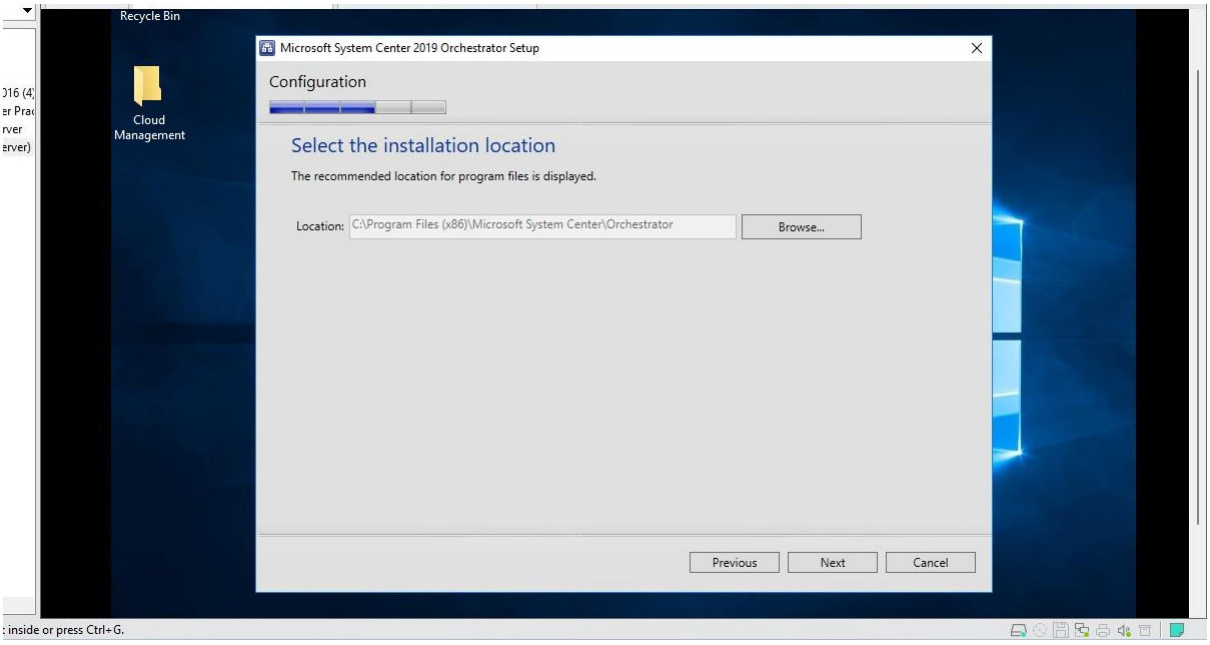
- Keep default values and Click **Next**



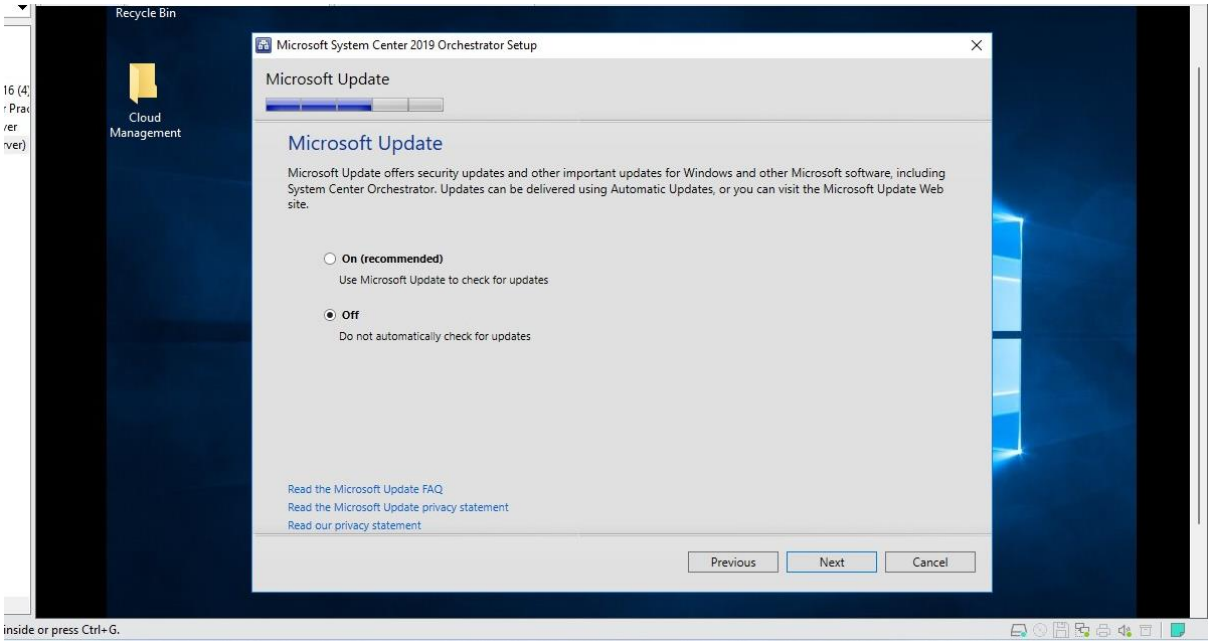
- Keep default values and Click **Next**



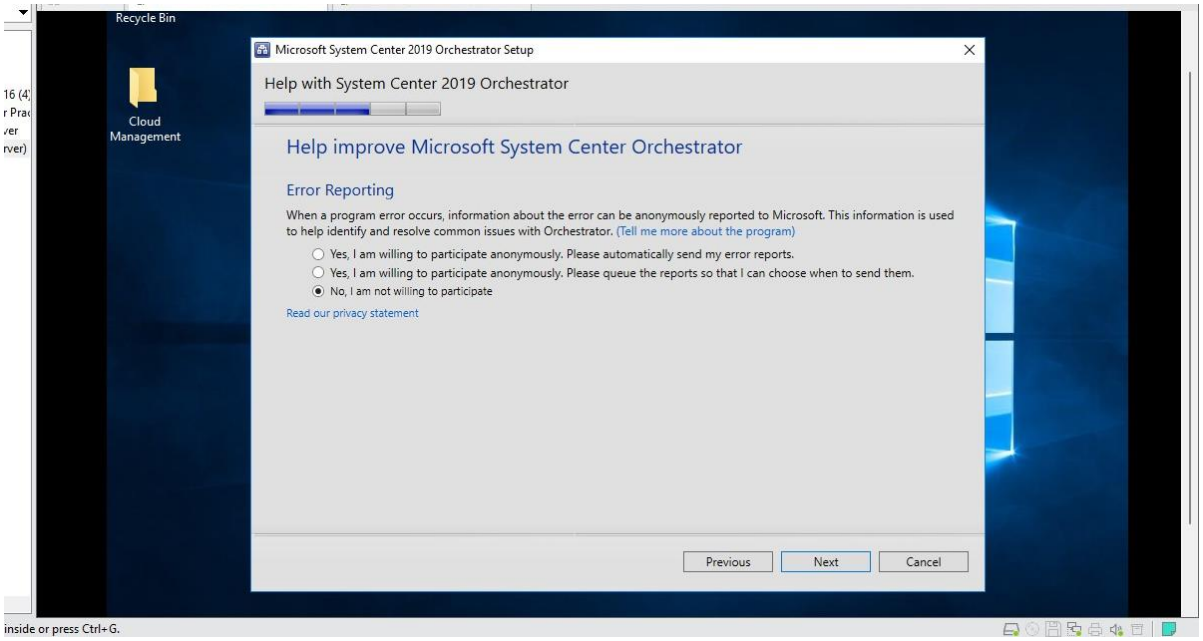
- Click **Next**



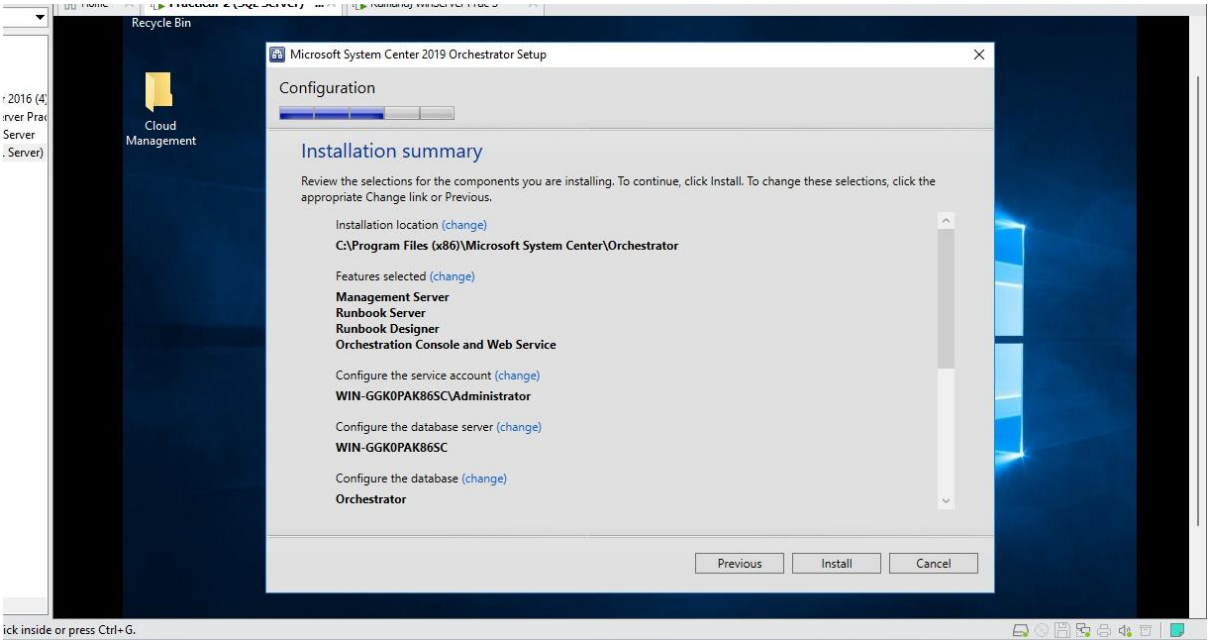
- Select **Off** and Click **Next**



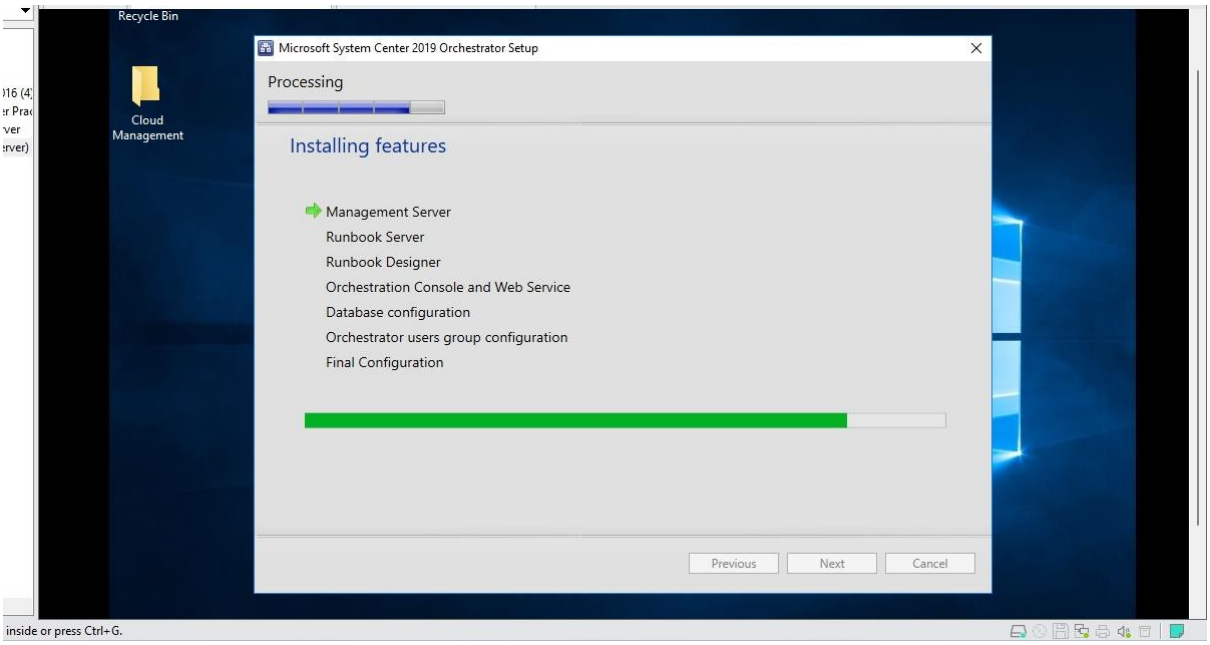
- Select **No, I am not willing to participate** and Click **Next**



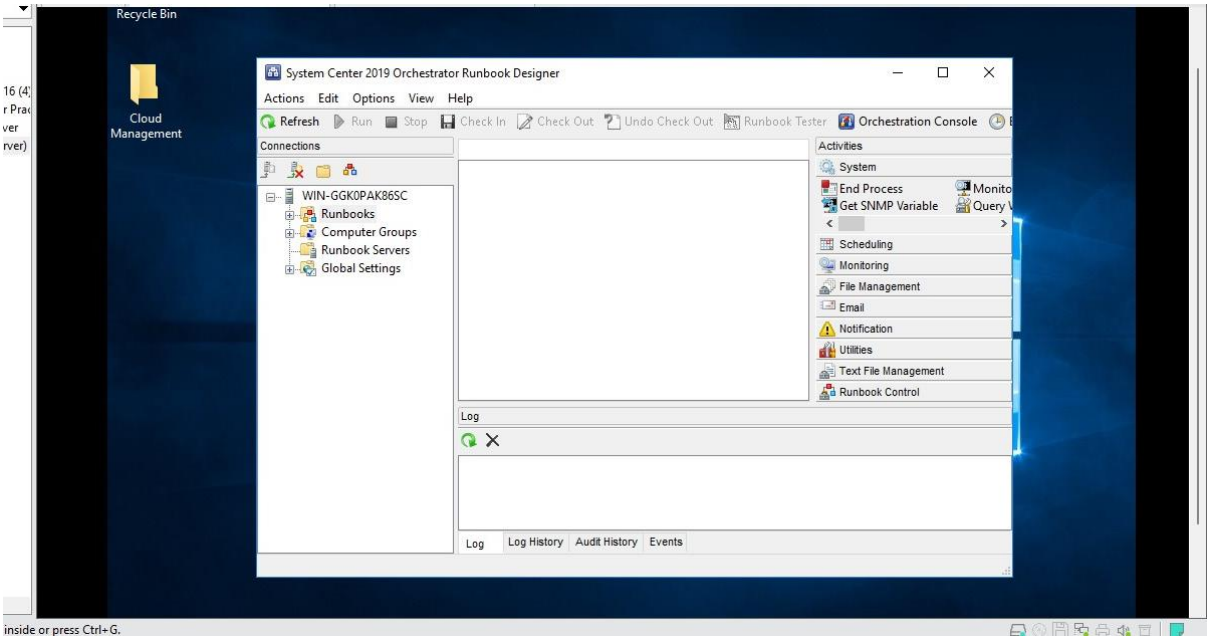
- Check the summary of your features and Click **Install**



- It will start installing the features

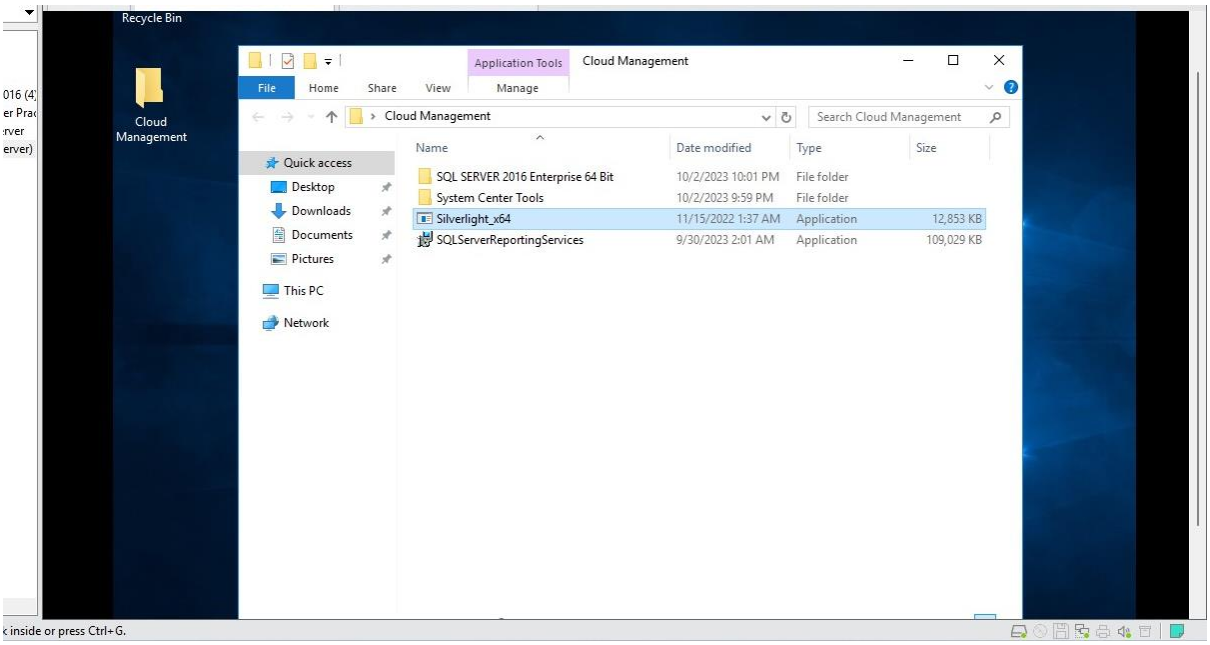


- After installation is complete the Runbook Designer will start



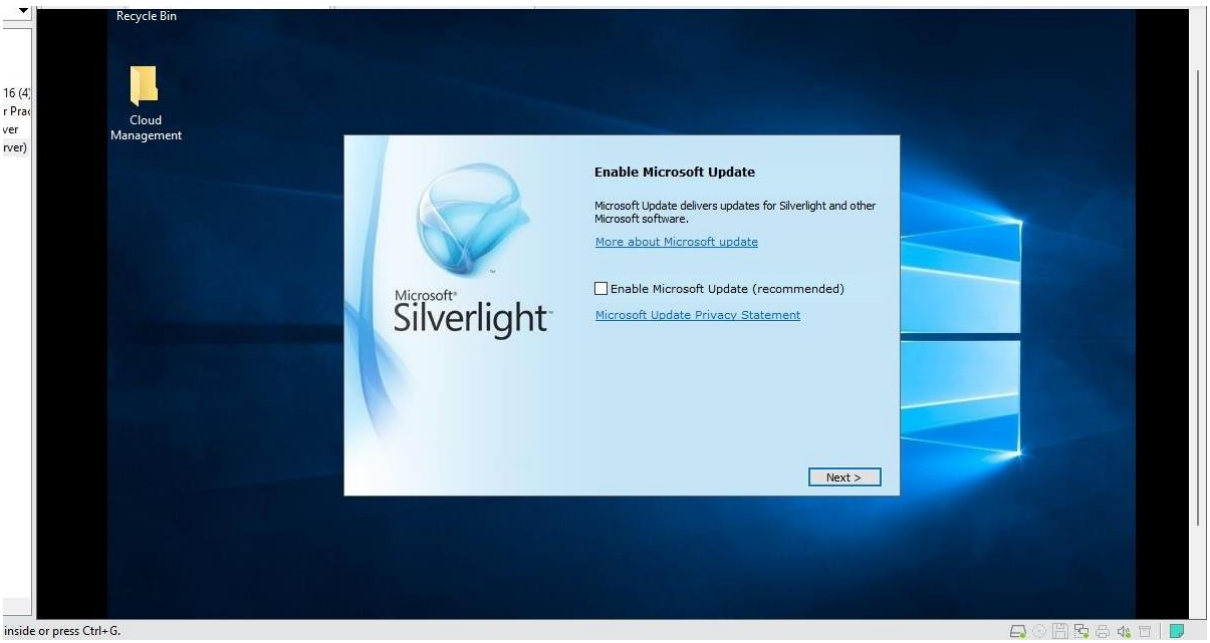
Step 2: Installing Sliverlight x64

- In your Cloud Folder Click on the **Silverlight_x64** application

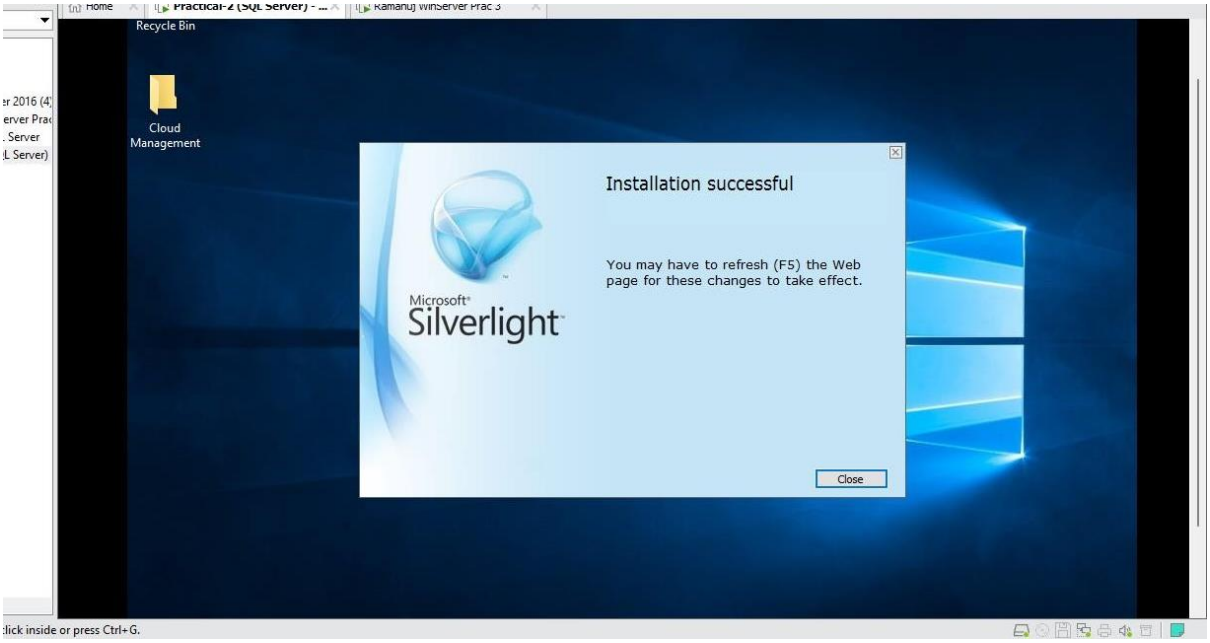


- Click on **Install now**

- Un-Click Enable **Microsoft Updat**e and Click **Next**



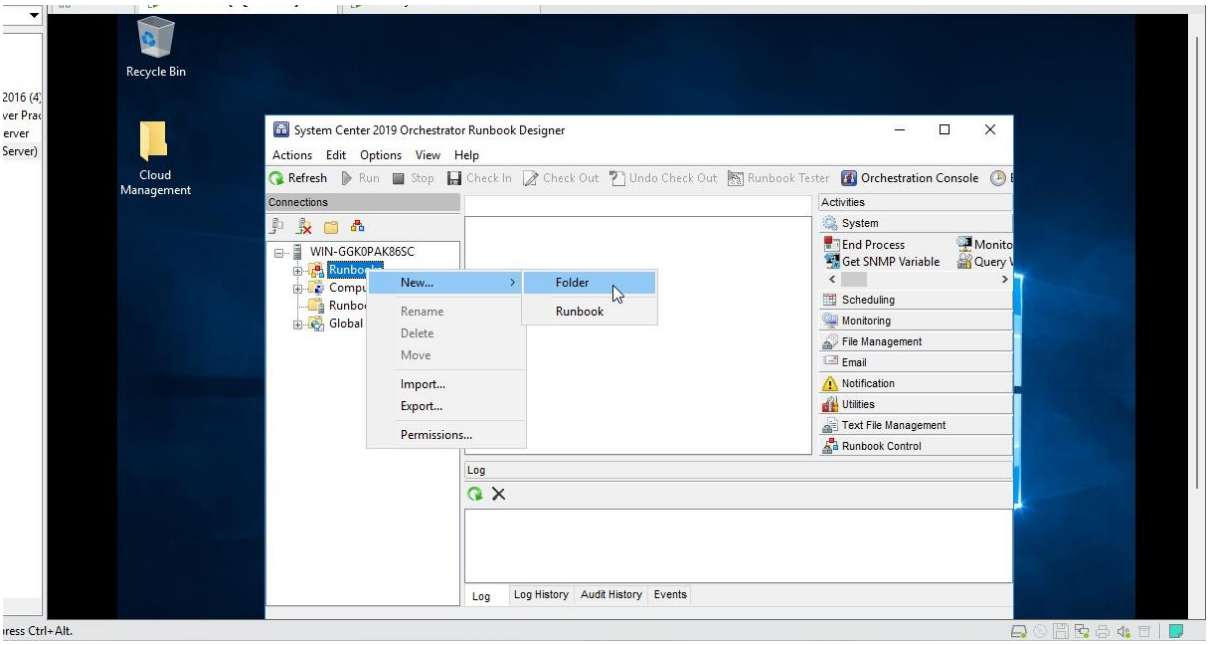
- Click **Close**


Recycle Bin
Cloud Management
Installation successful
You may have to refresh (F5) the Web page for these changes to take effect.
Microsoft Silverlight
Close

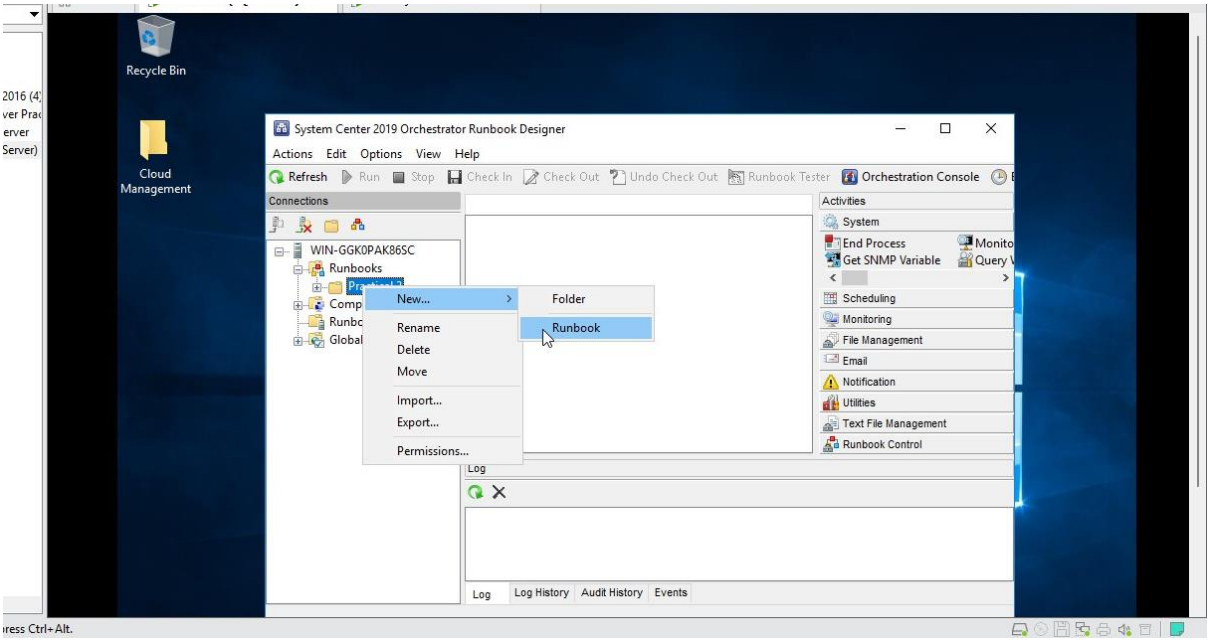
Practical 4-B: Creating & Testing a monitor Runbook

Aim: Creating and Testing a Monitor Runbook

- Right-Click on **Runbook** and Select **New Folder**

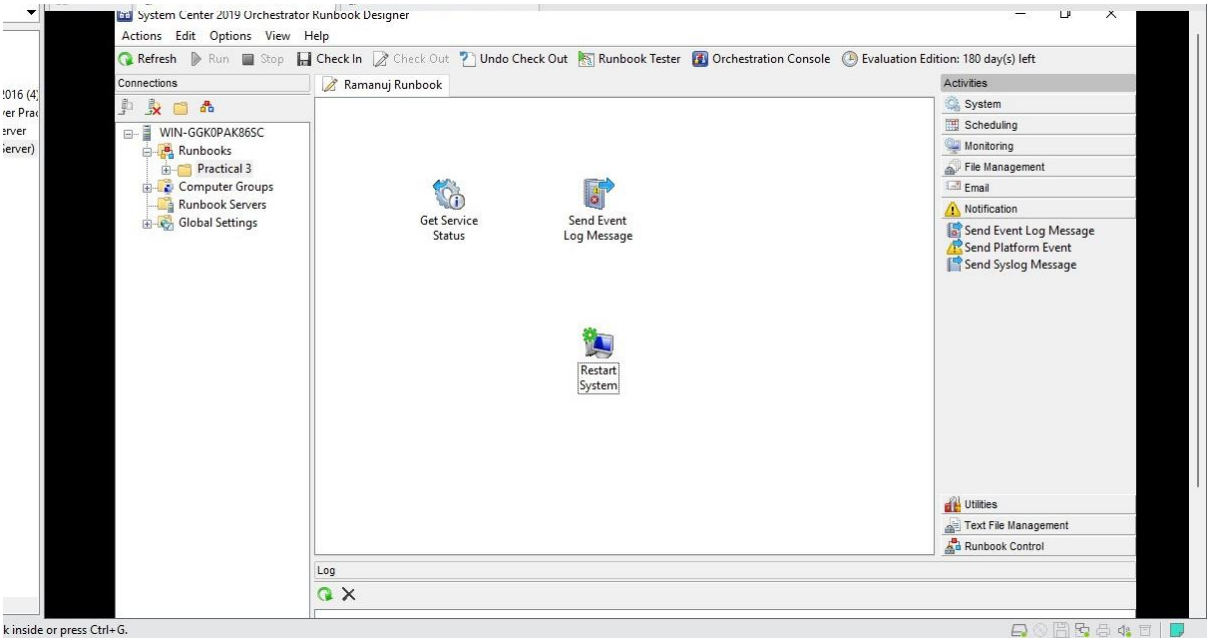


- Name the folder and again Right-Click on the **Folder** and Select **Runbook**

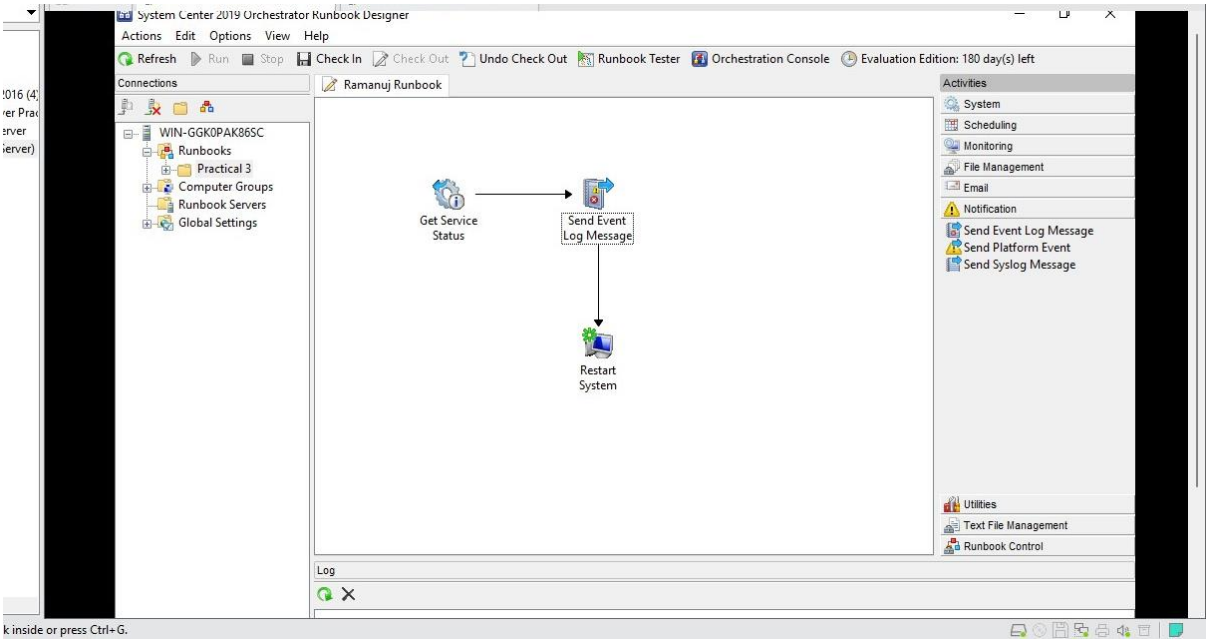


Now within the Runbook created we have to show a workflow being executed. On the left side in Activites Select the following Items:

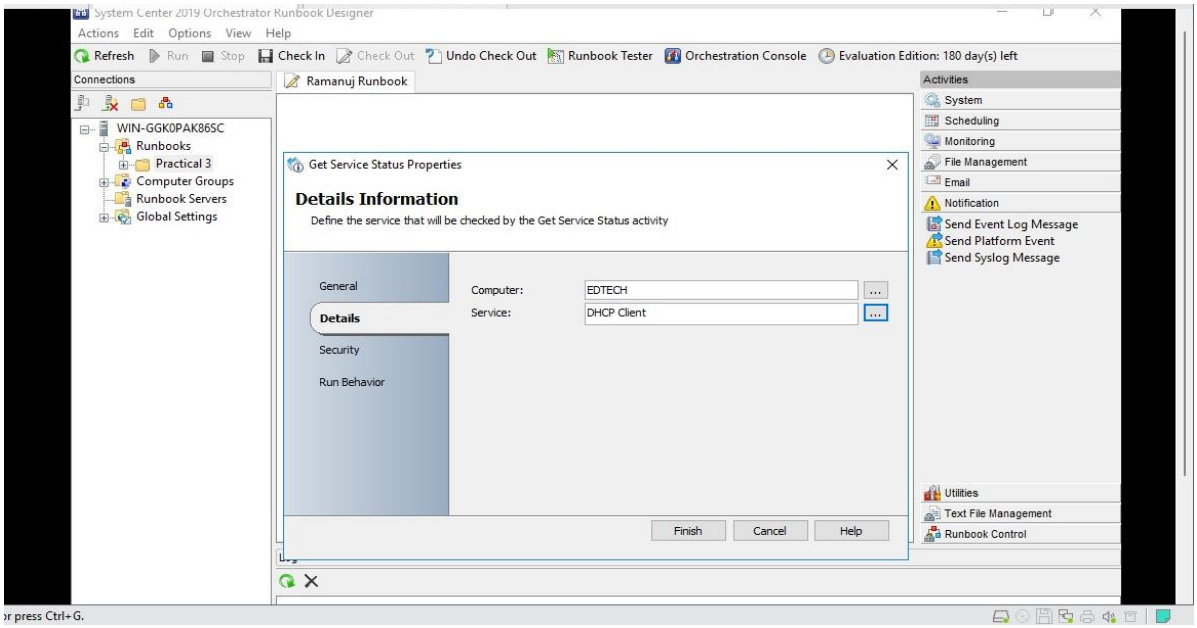
- **System:**
  Restart System
- **Monitoring:**
  Get Service Status
- **Notifications:**
  Send Event Log Message



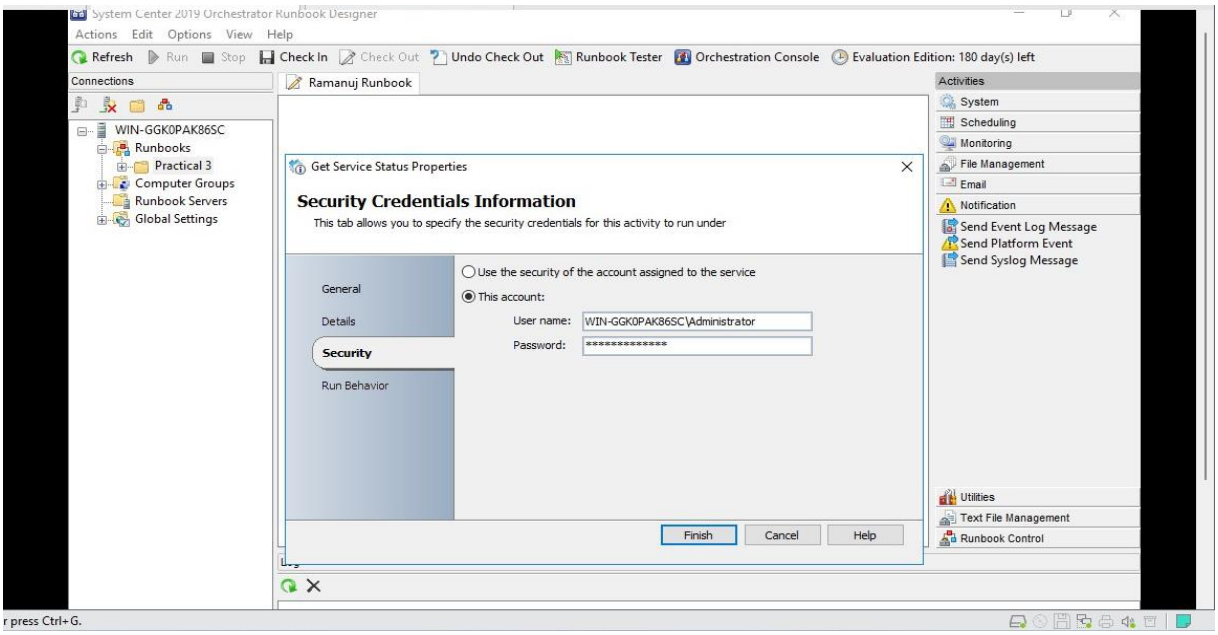
- Now with these three features link them to each other as shown below:



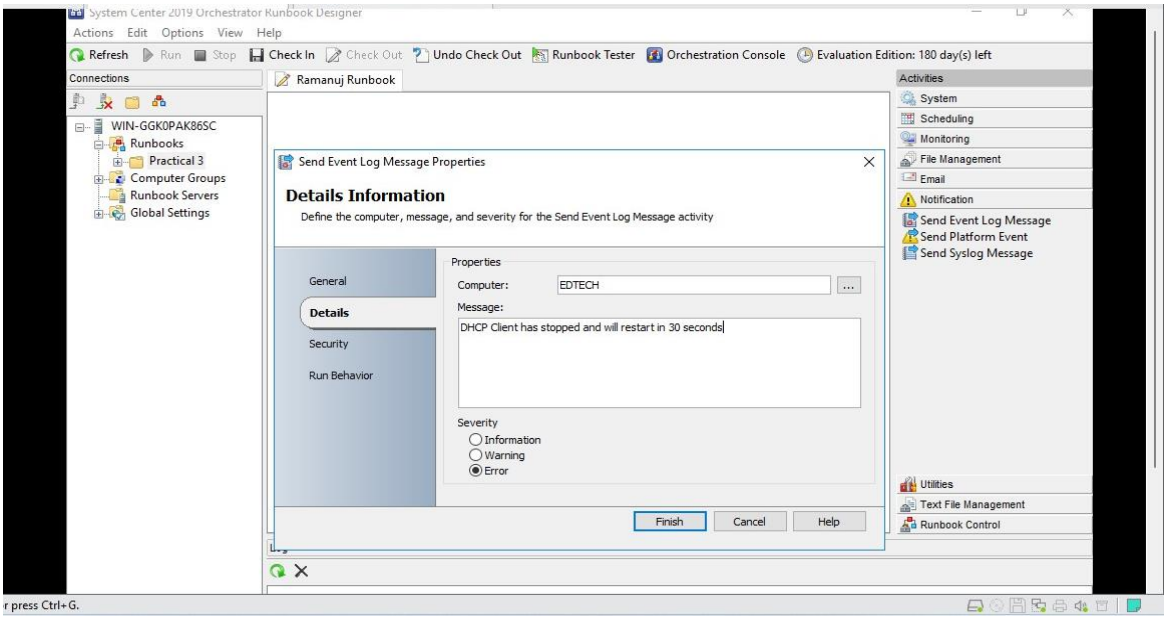
- Double-Click on **Get Service Status,** within it type a computer name (Here it is EDTECH) and in Service select **DHCP Client**



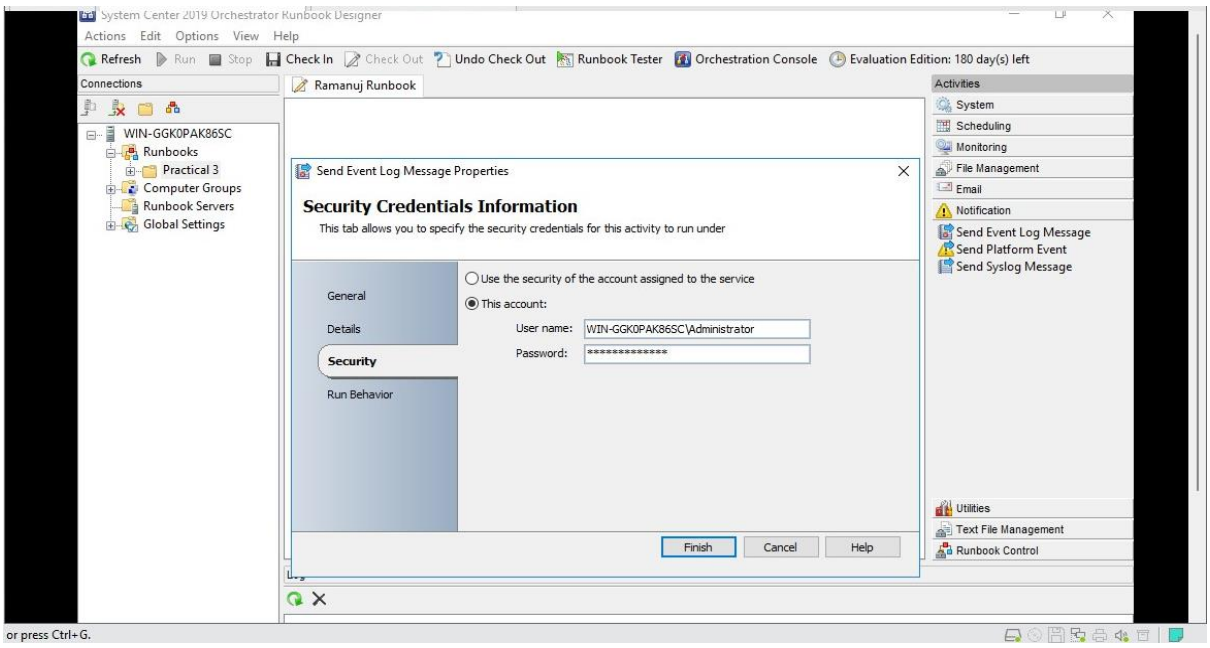
- Select **Security** and Click on **this account** and enter your credentials and Click on **Finish**



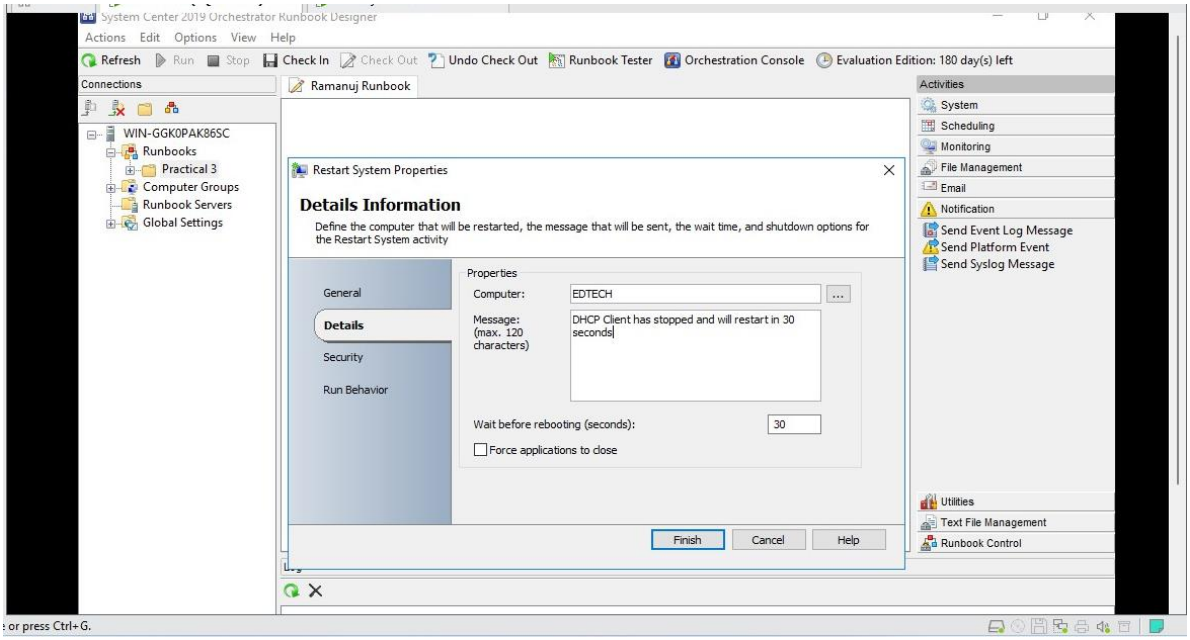
- Double-Click on **Send-Event-Log Message**, within that type the computer name (Here it is EDTECH) and Enter a Message i.e (DHCP Client has Stopped) and Select **Error** in Severity



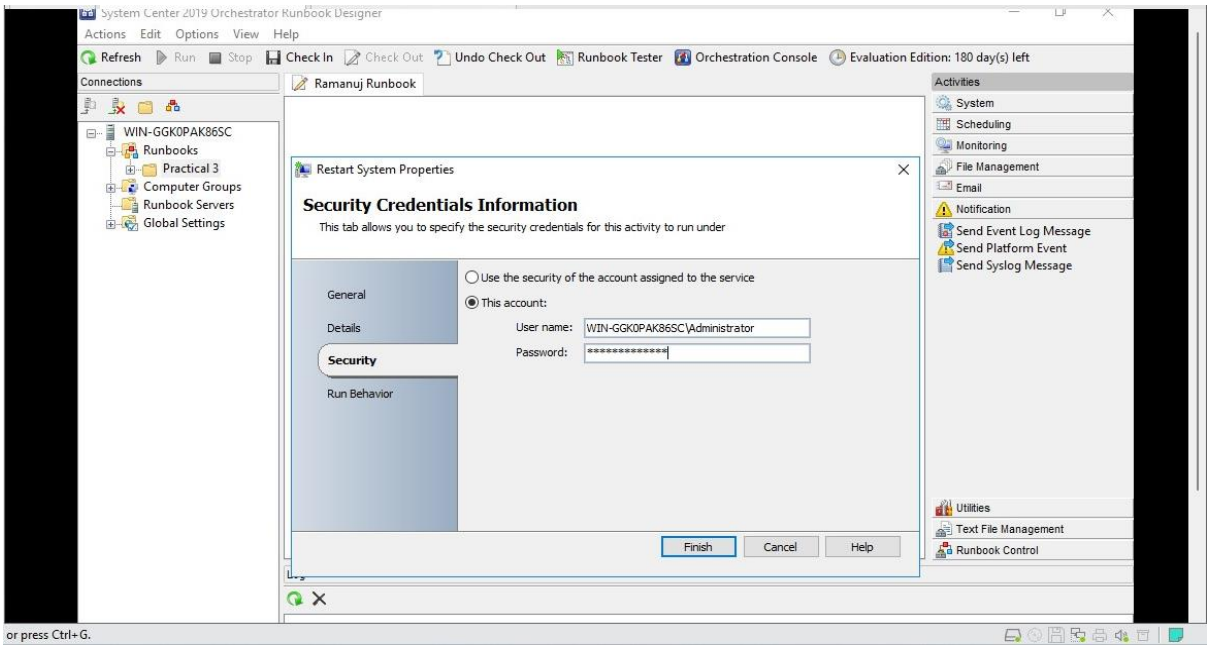
- Select **Security** and Click on **this account** and enter your credentials and Click on **Finish**



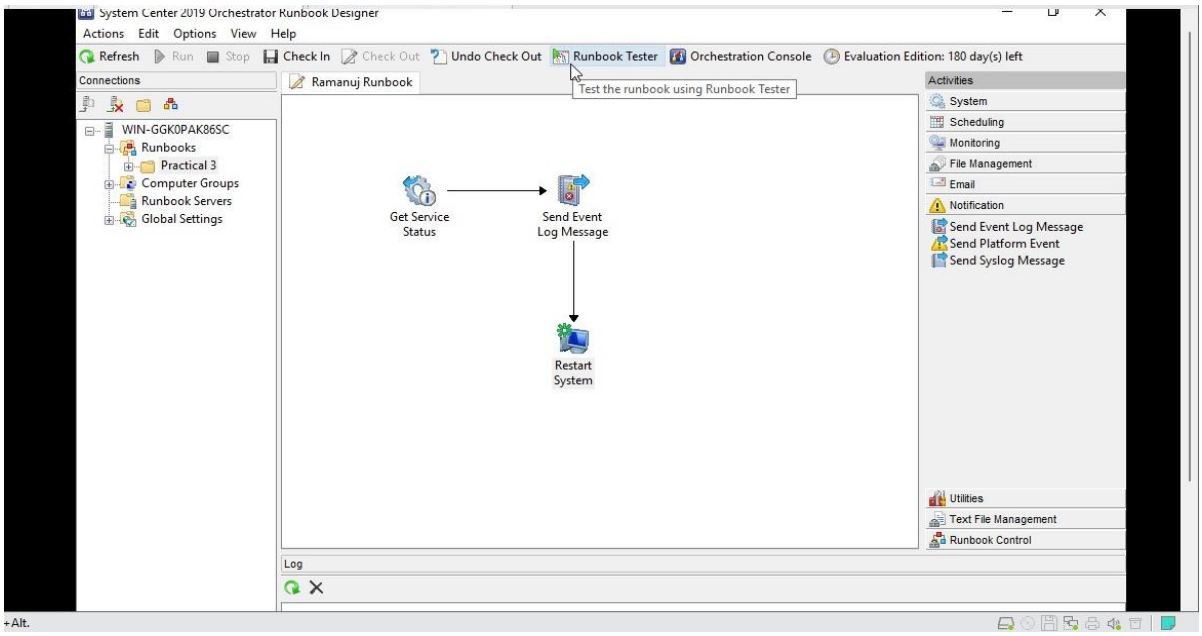
- Double-Click on **Restart System**, within that type the computer name (Here it is EDTECH) and Enter a Message i.e (DHCP Client has Stopped and will restart in 30 seconds)



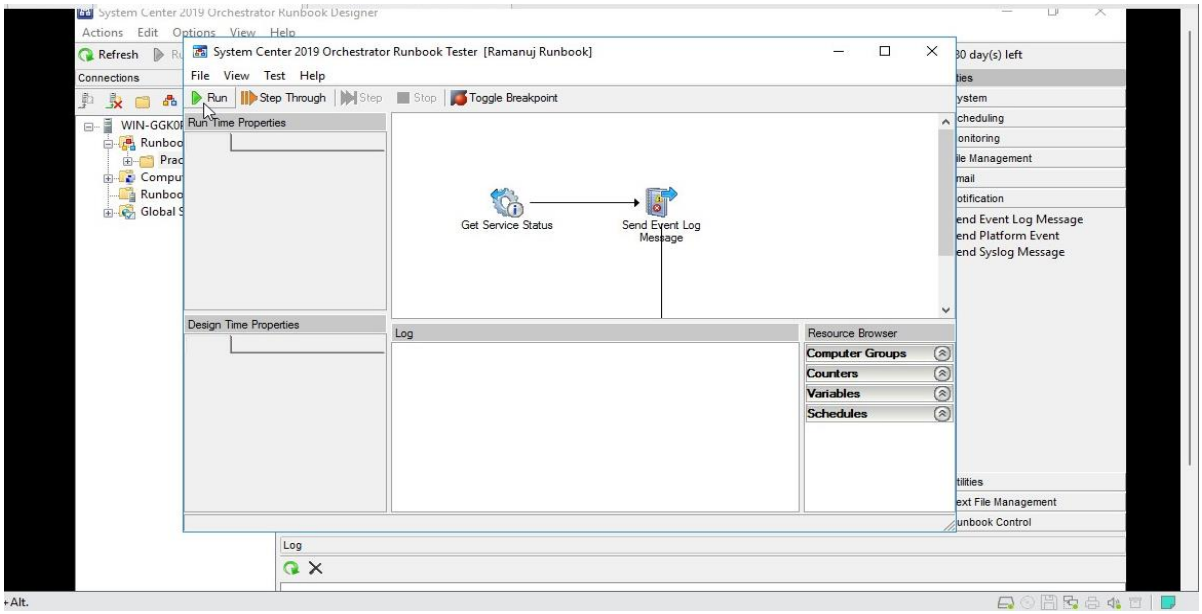
- Select **Security** and Click on **this account** and enter your credentials and Click on **Finish**



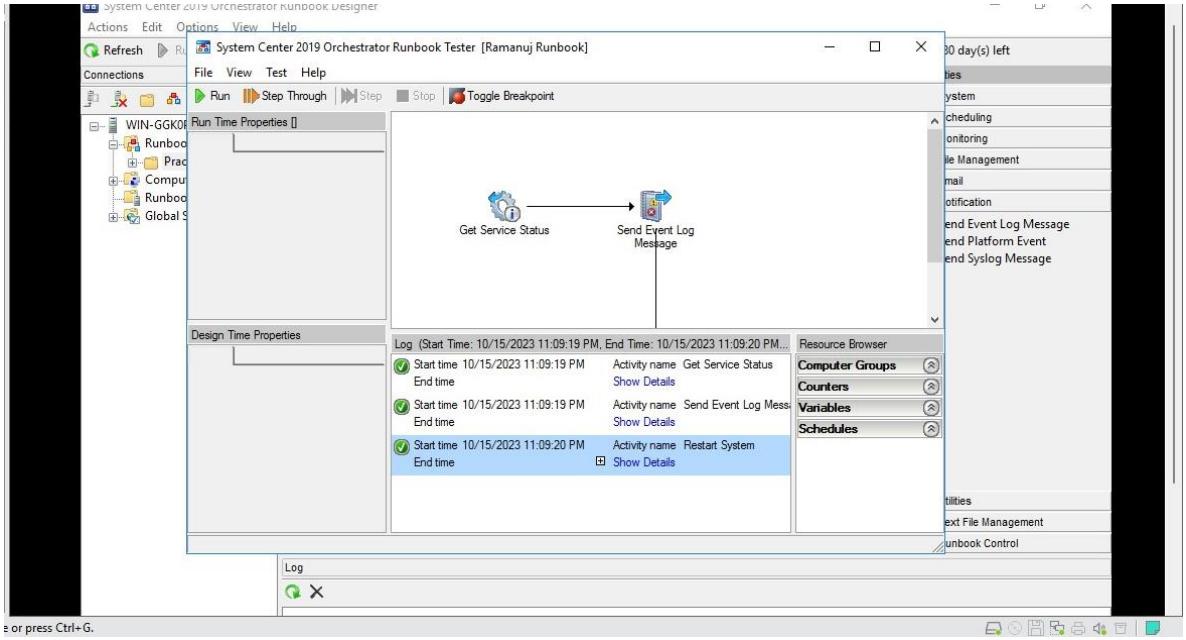
- Click on **Runbook Tester**



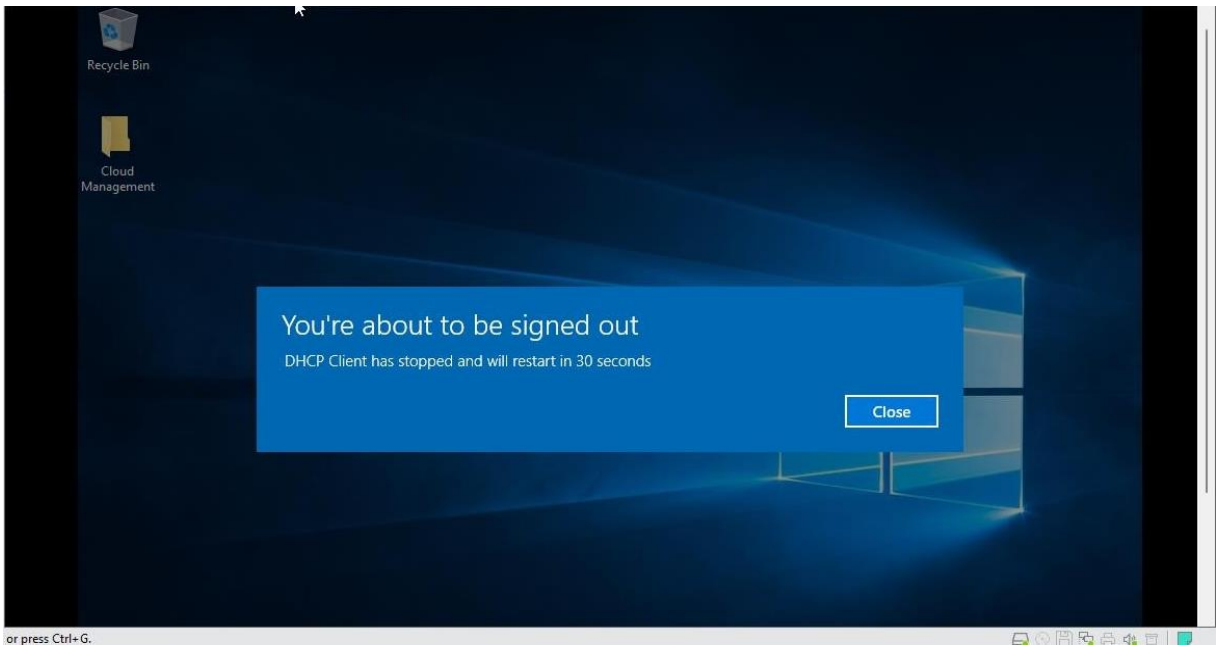
- Within Runbook Test Click on **Run**



- The Logs should show three successful tasks



- Now if we go back to our domain controller we will see this message and will restart your Domain Controller



- The Domain Controller has been restarted

Practical 5

Aim: Install and Deploy Data Protection Manager

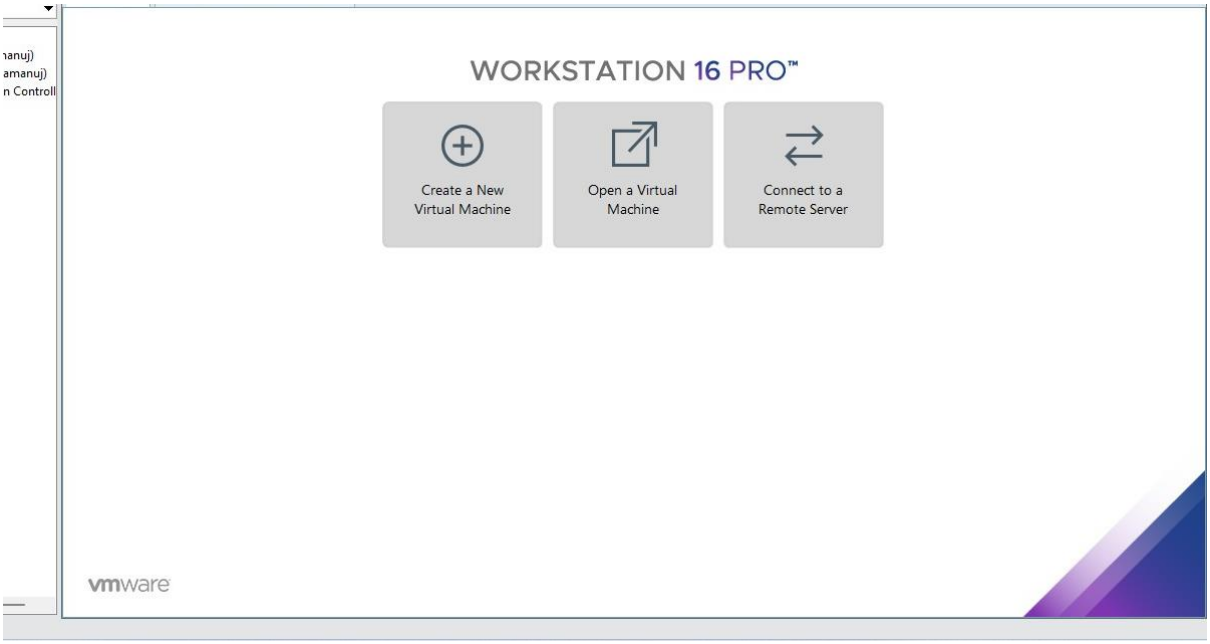
Writeup:

5-A: InstallingDPMPrerequisites

- Domain Controller
- User containing SQL Server

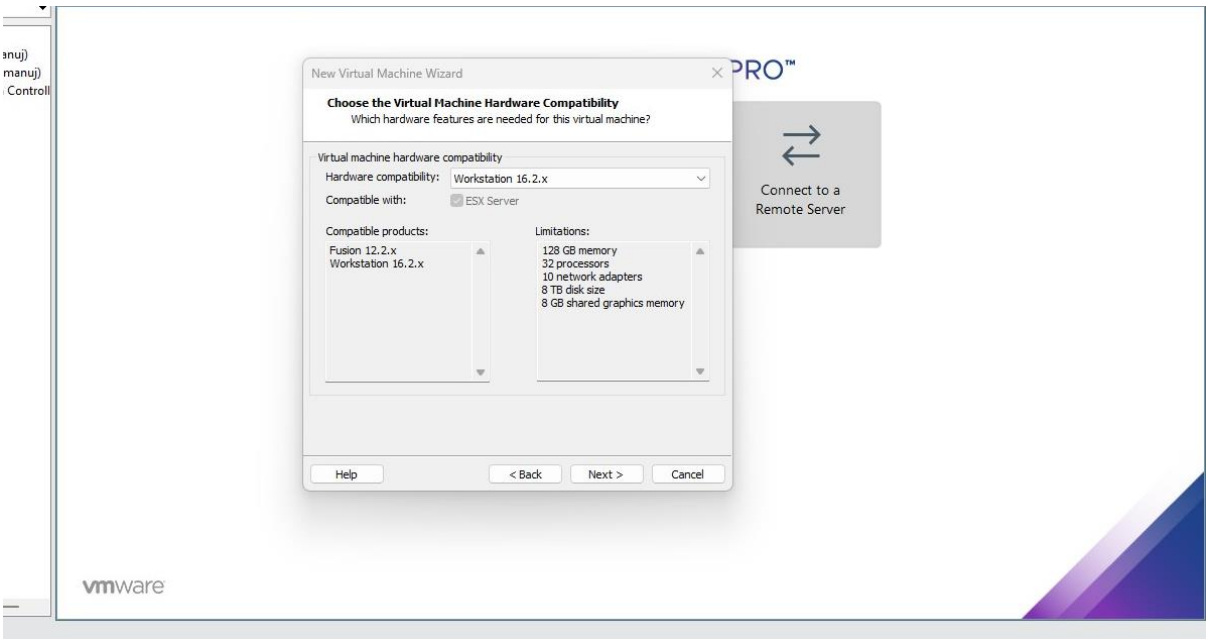
Step 1: We will be using the same Domain Controller created in Practical 2 and only have to create a new User VM.

- Open **VMware Workstation** and Click on **Create a New Virtual Machine**

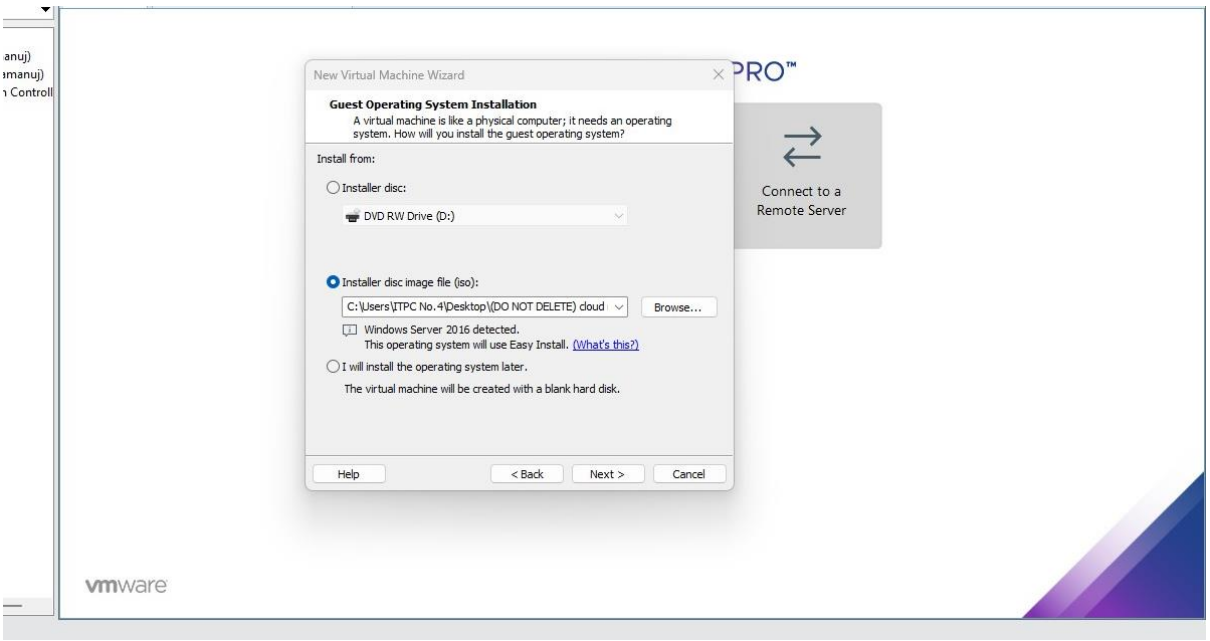


- Select **Custom** and Click **Next**

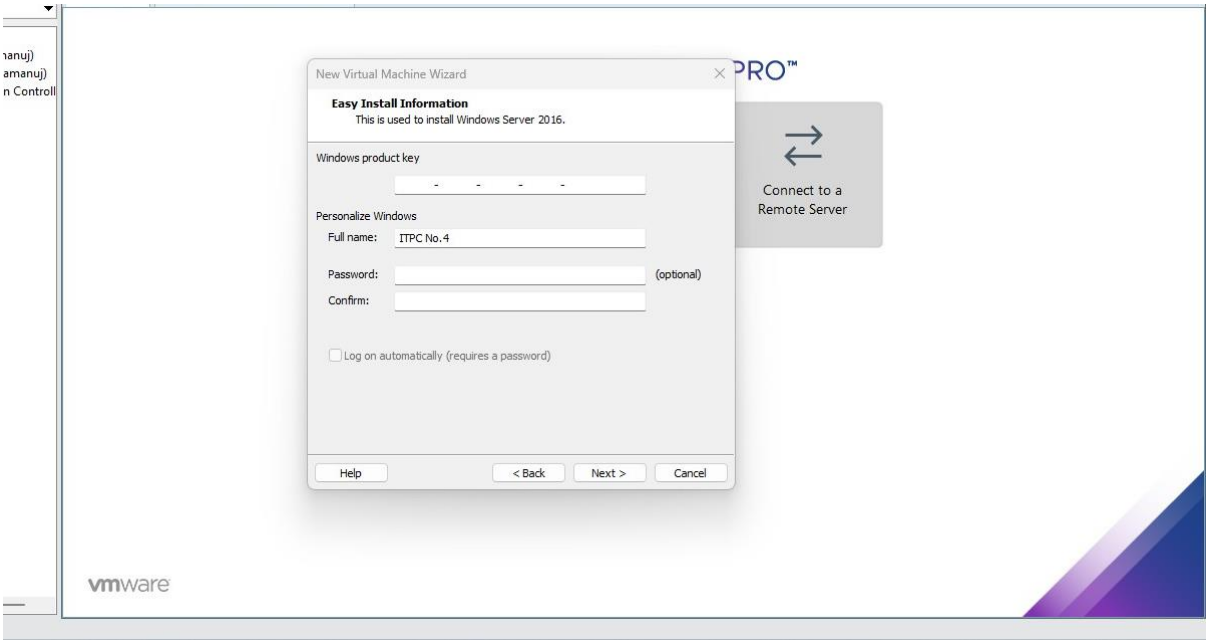
- Keep default values and Click **Next**



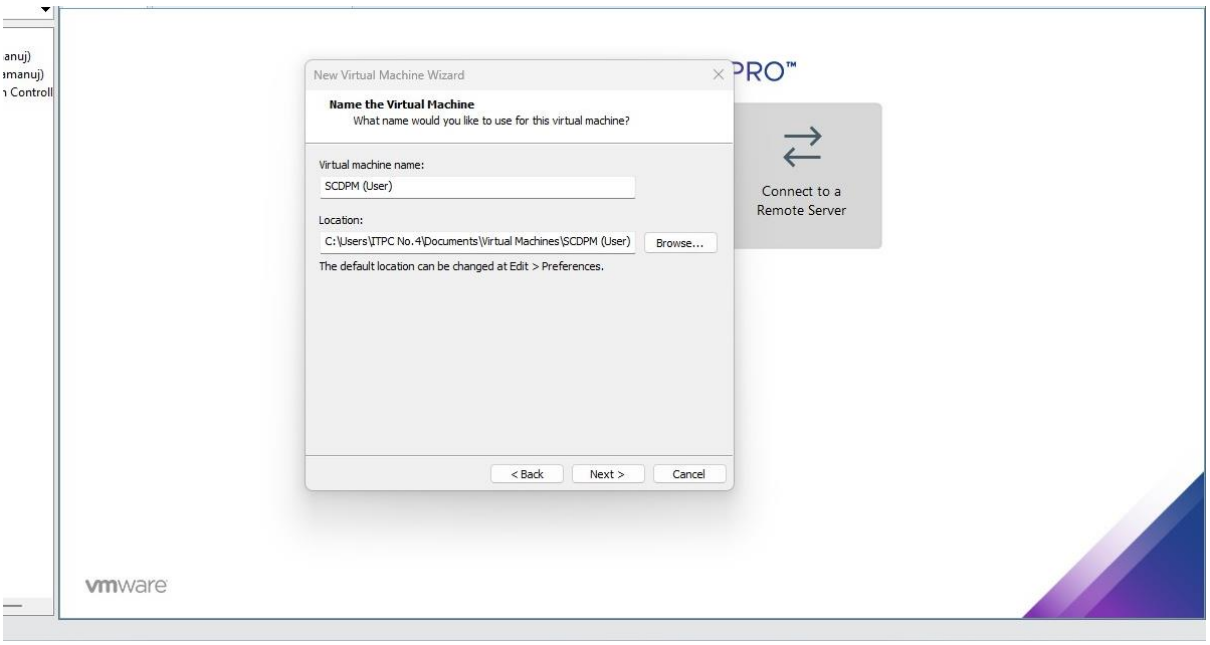
- Select **Installer disc image file (iso)** and browse for **the 2016 Windows Server iso** on your host PC



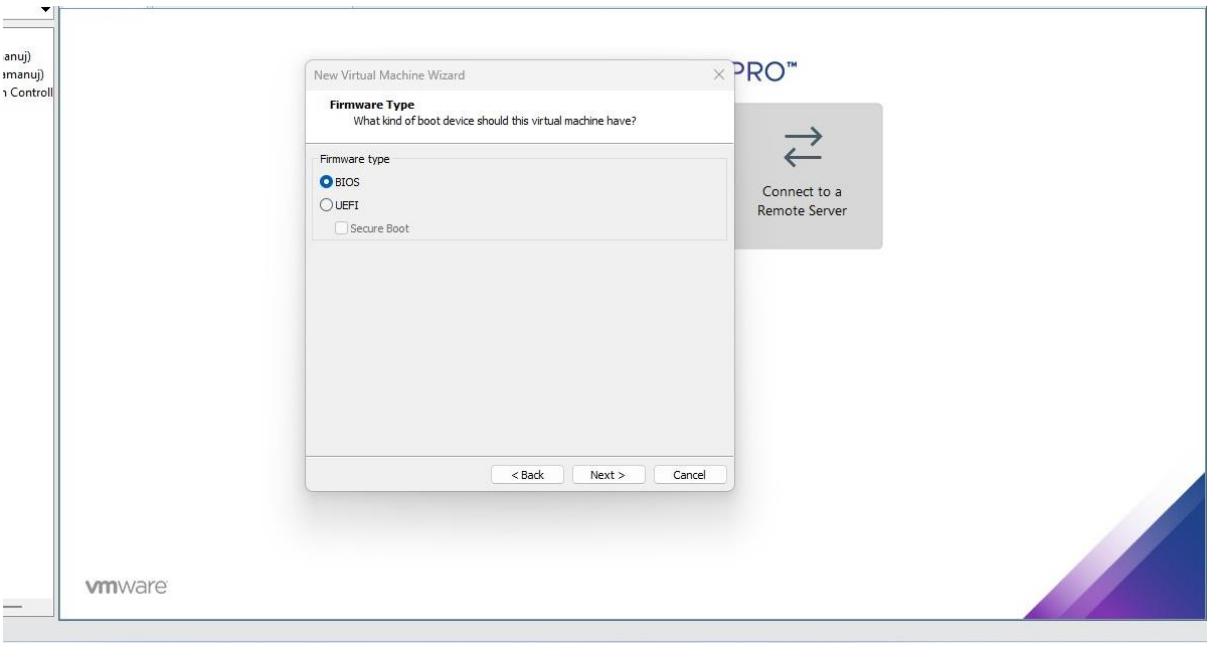
- Keep default values and Click **Next**



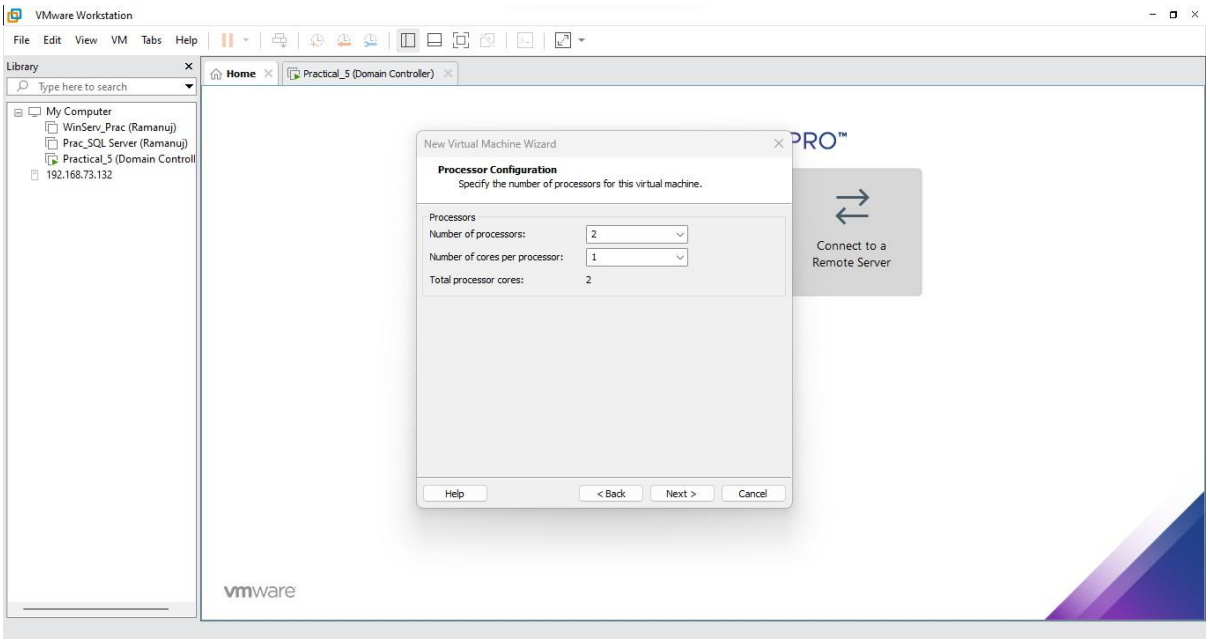
- Name your virtual machine (Here it is called **SCDPM (User)**) and Click **Next**



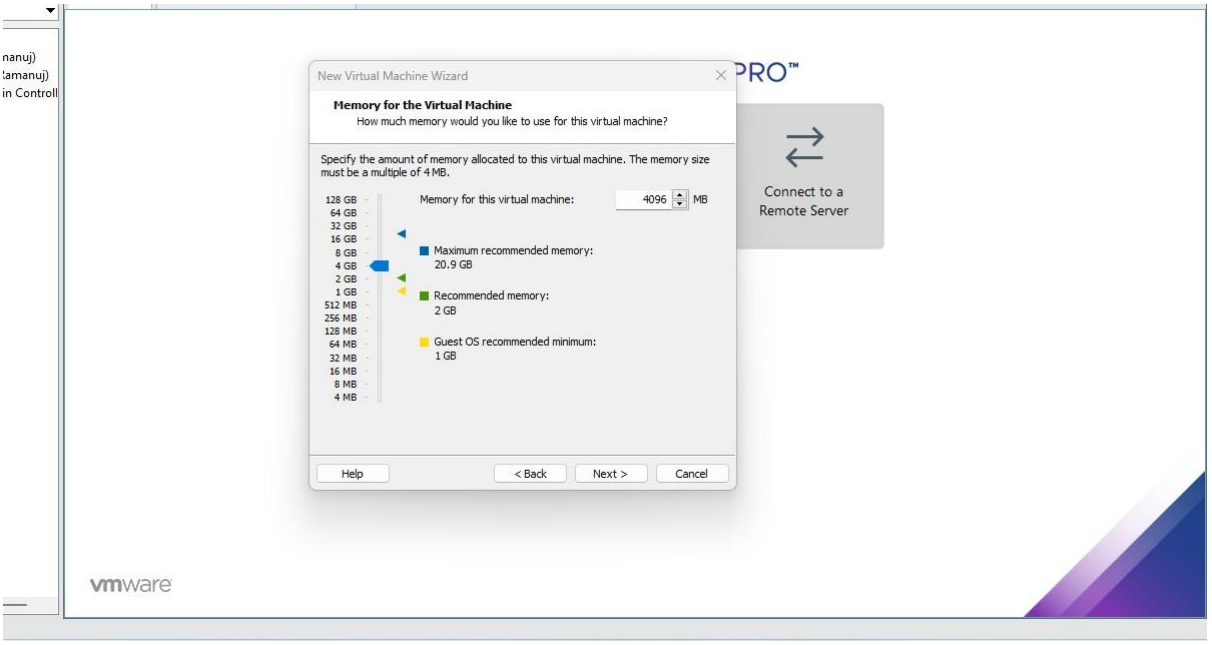
- In Firmware type Select **BIOS** and Click **Next**



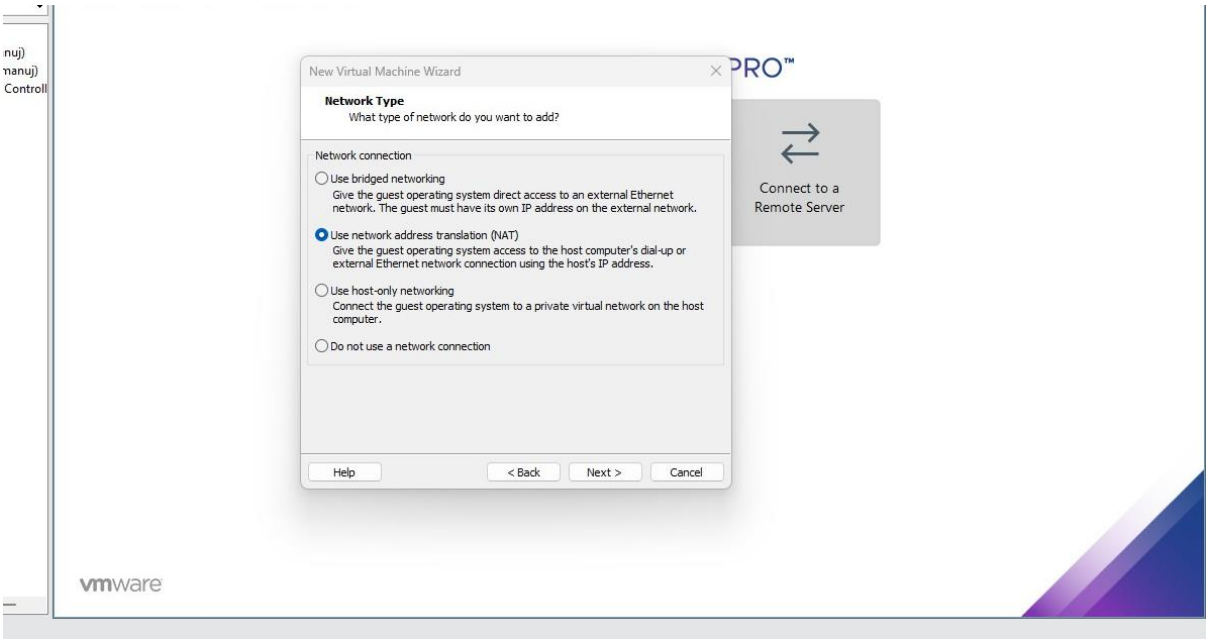
- Keep default values and Click **Next**



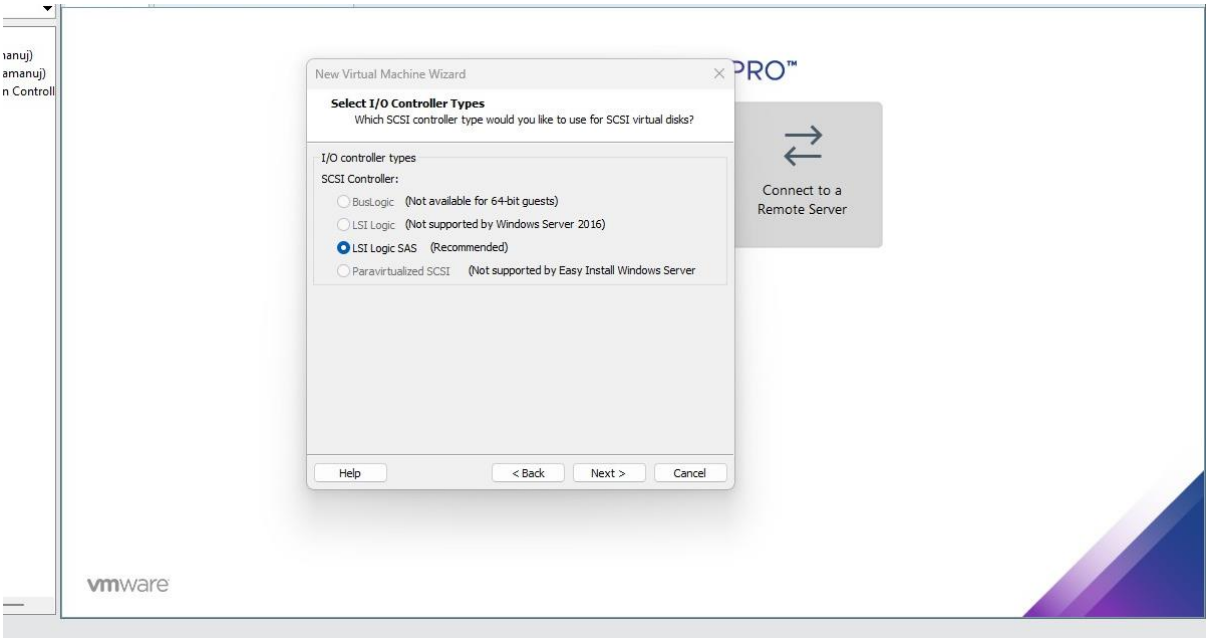
- Change the RAM value to **4096 MB** and Click **Next**



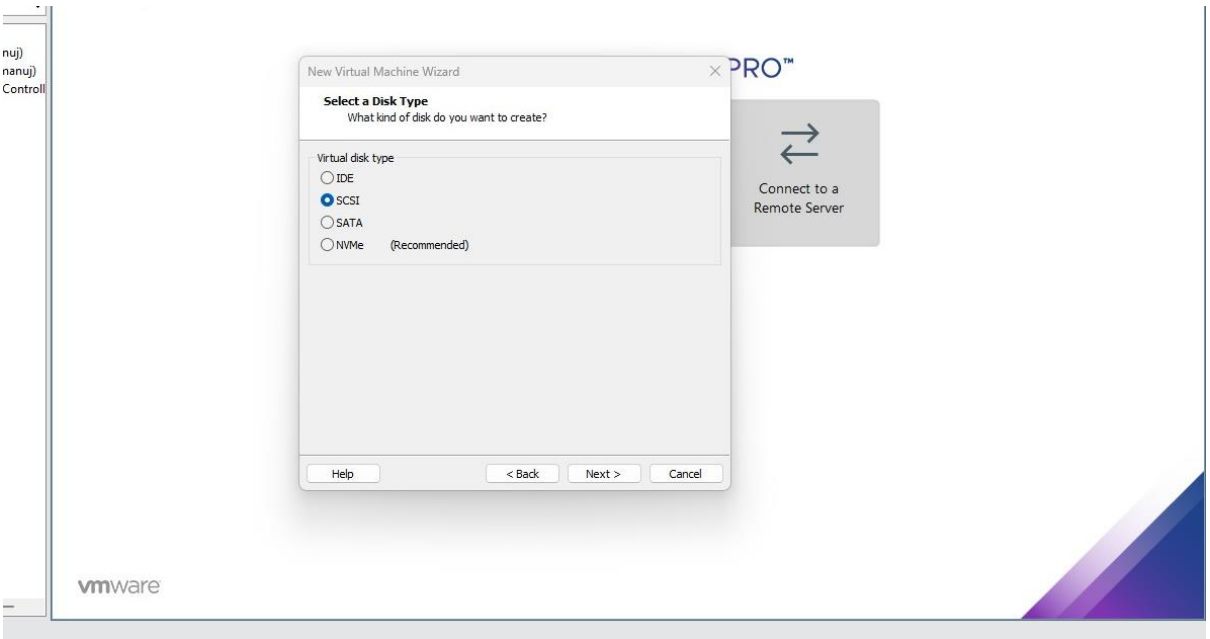
- Select **Use network address translation (NAT)** and Click **Next**



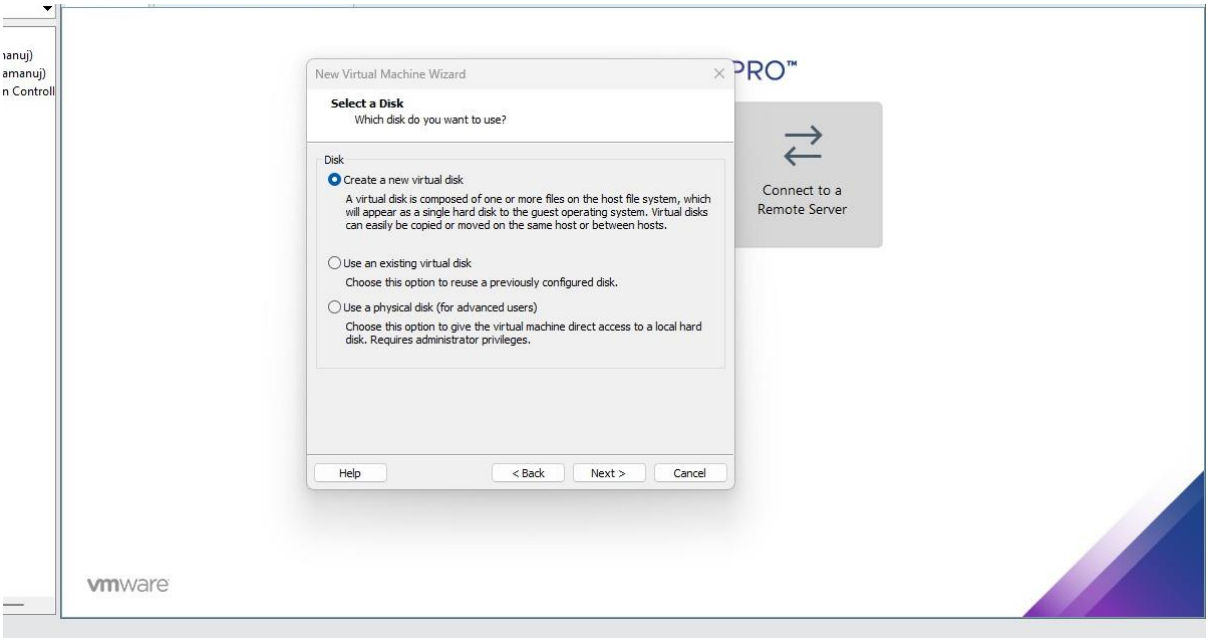
- Keep default values and Click **Next**



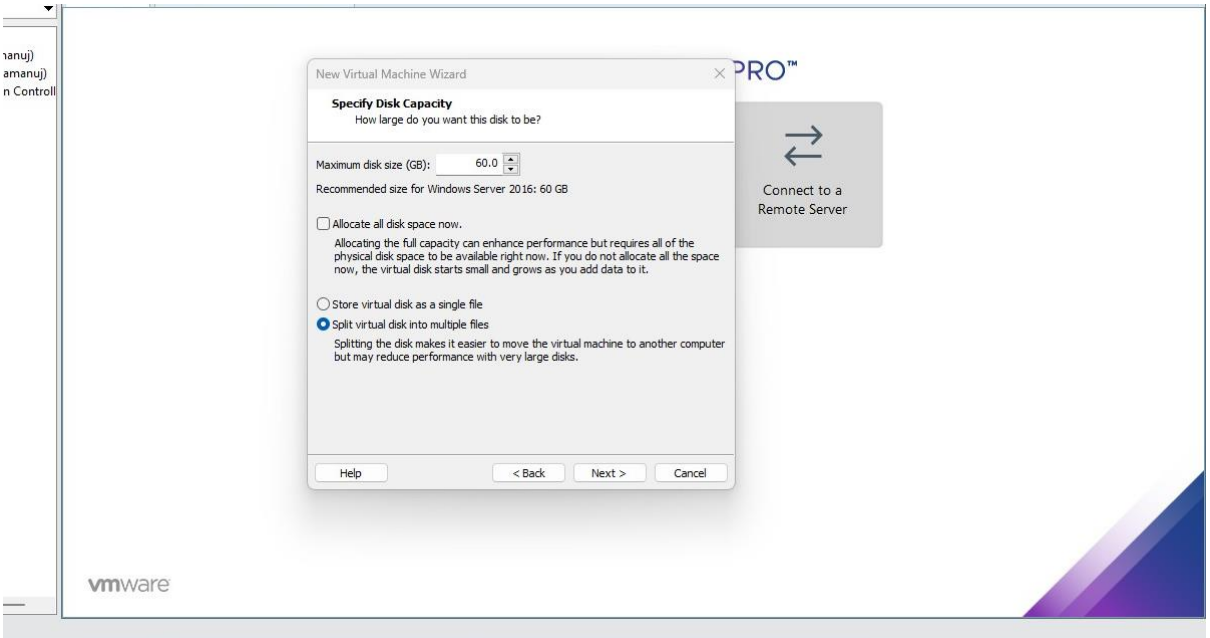
- Select Virtual disk type as **SCSI** and Click **Next**



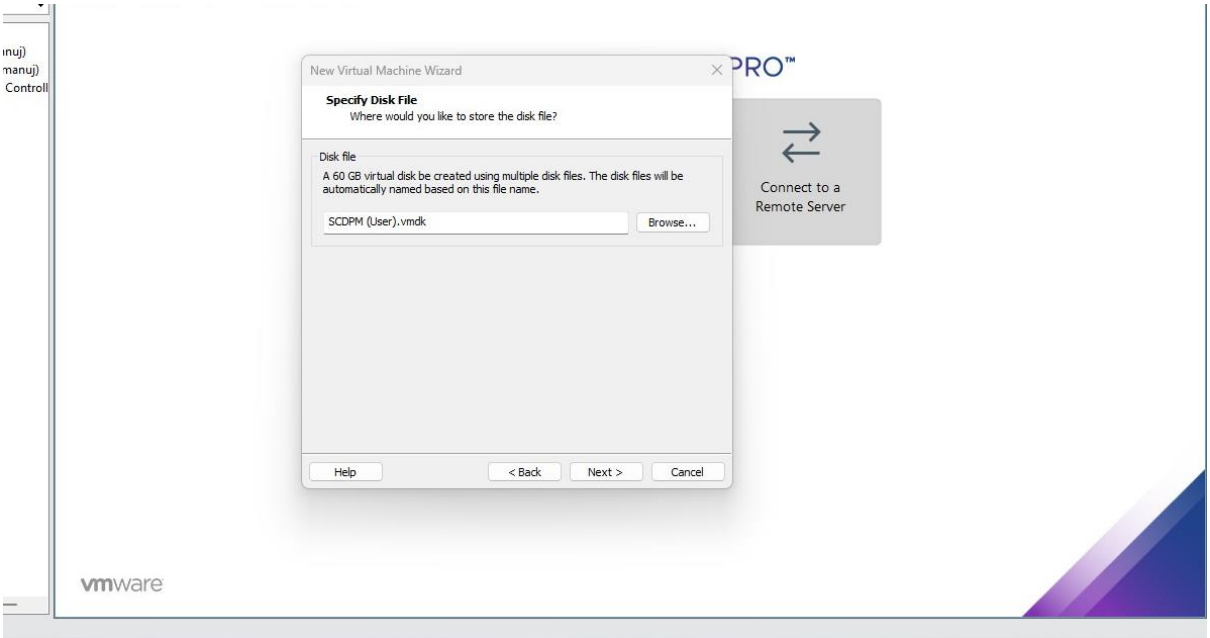
- Keep default values and Click **Next**



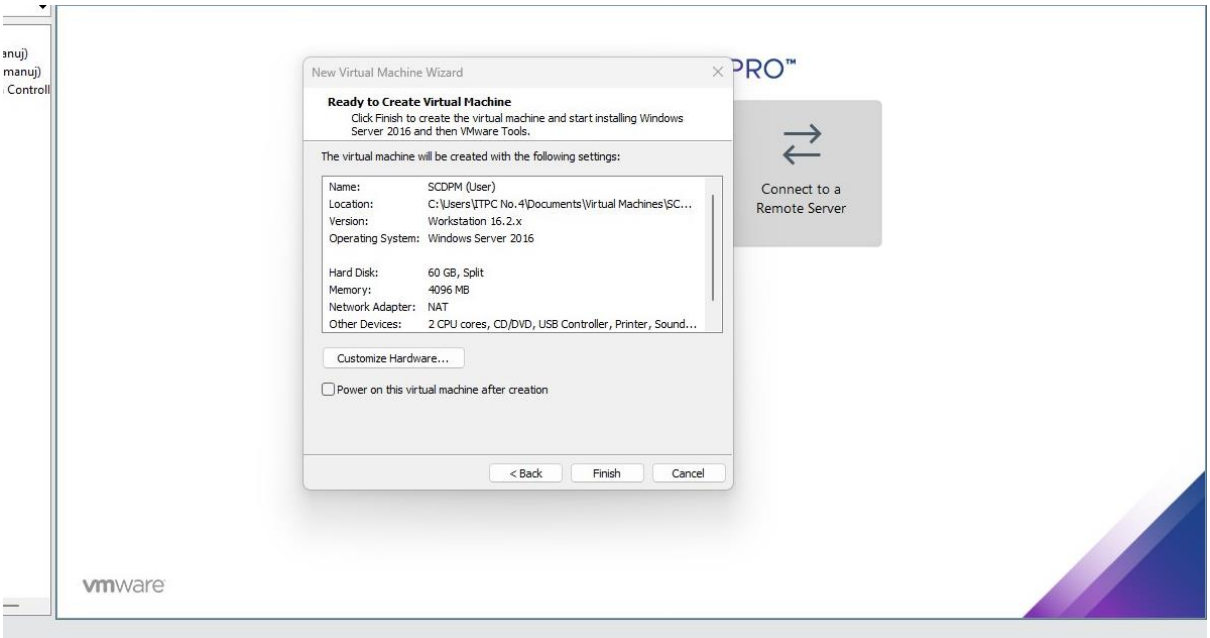
- Keep default value of **60 GB** and Click **Next**



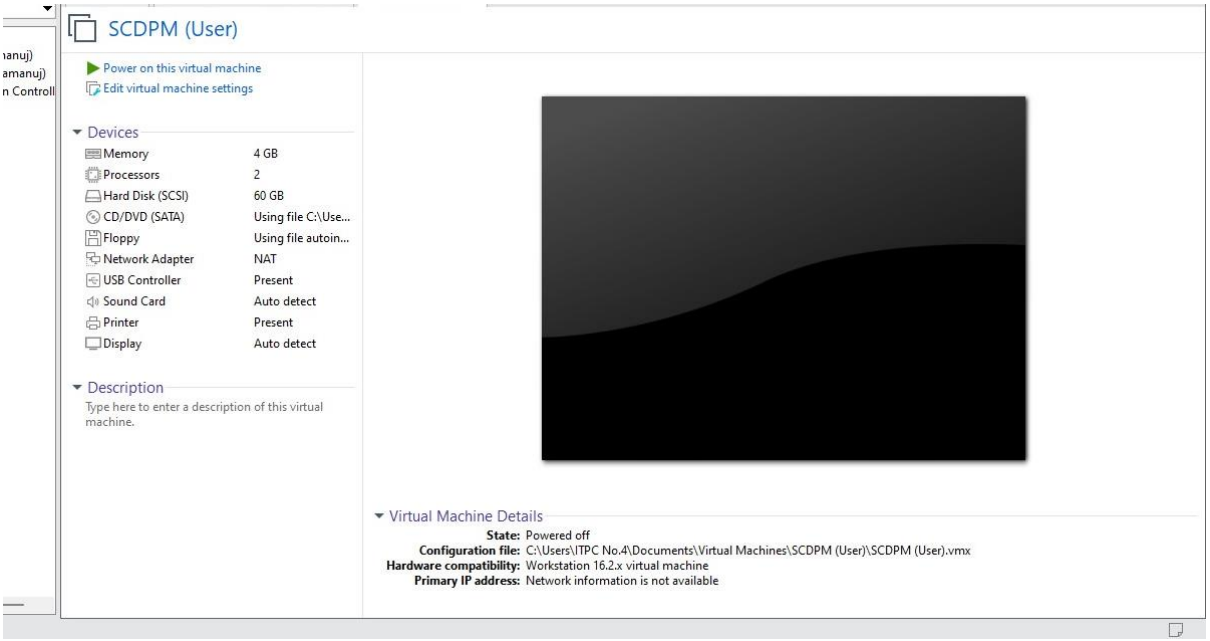
- Keep default values and Click **Next**



- Review the summary of your virtual machine and Click **Finish**

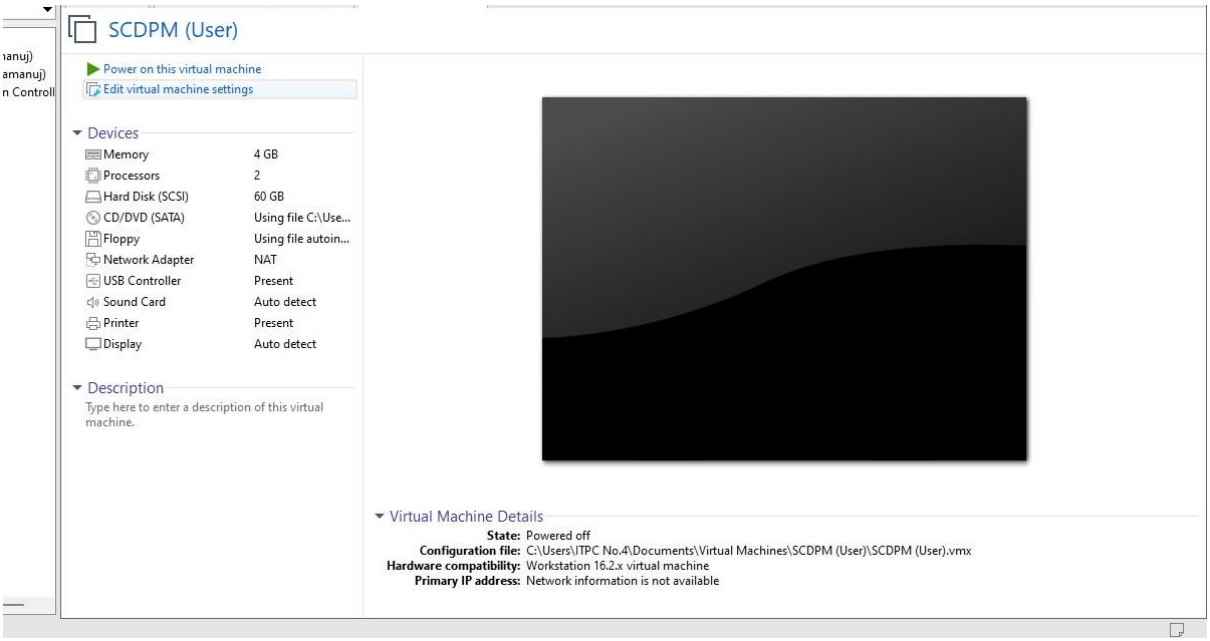


- Your virtual machine has been created

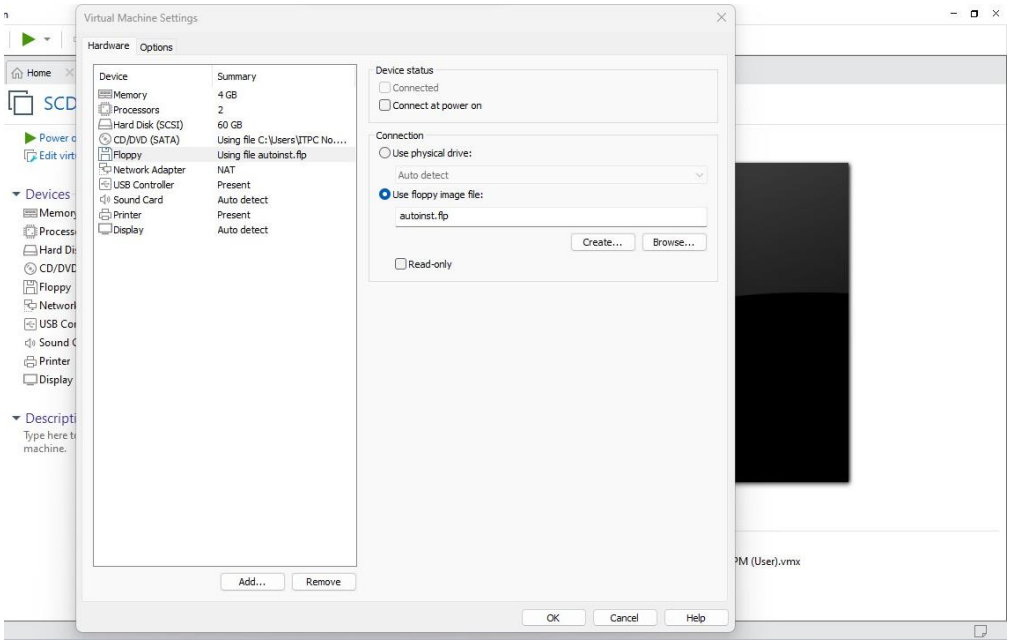


Step 2: Before Powering On the virtual machine a few change need to be made in the **virtual machine settings**

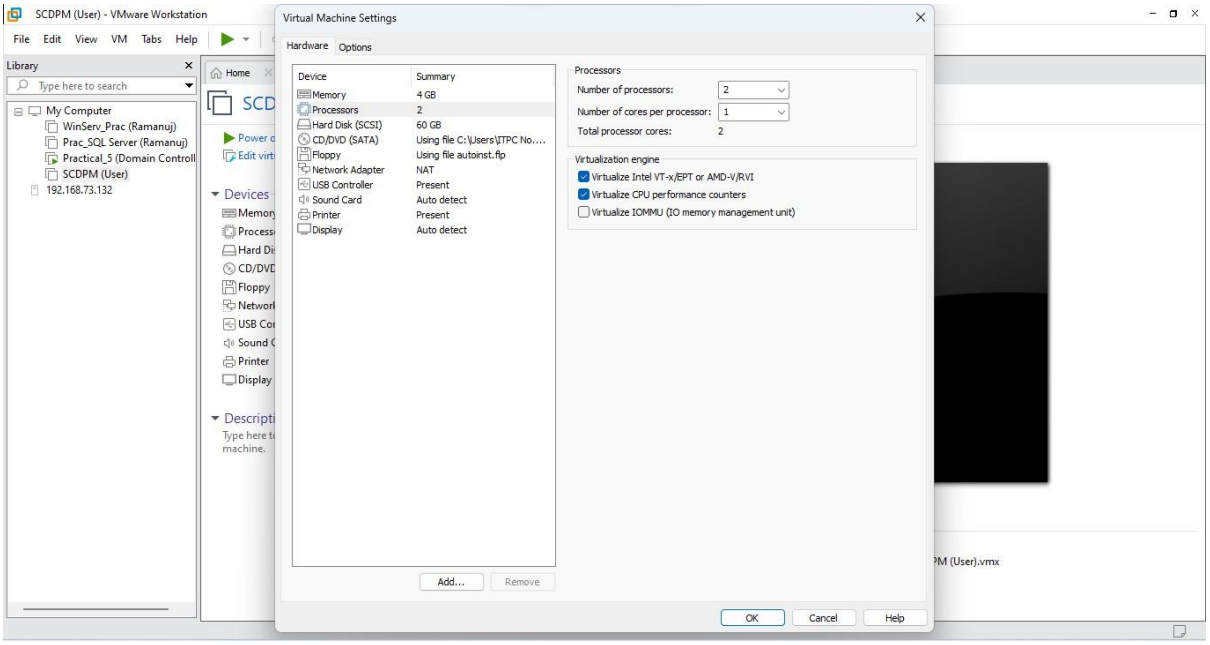
- Click on **Edit virtual machine settings**



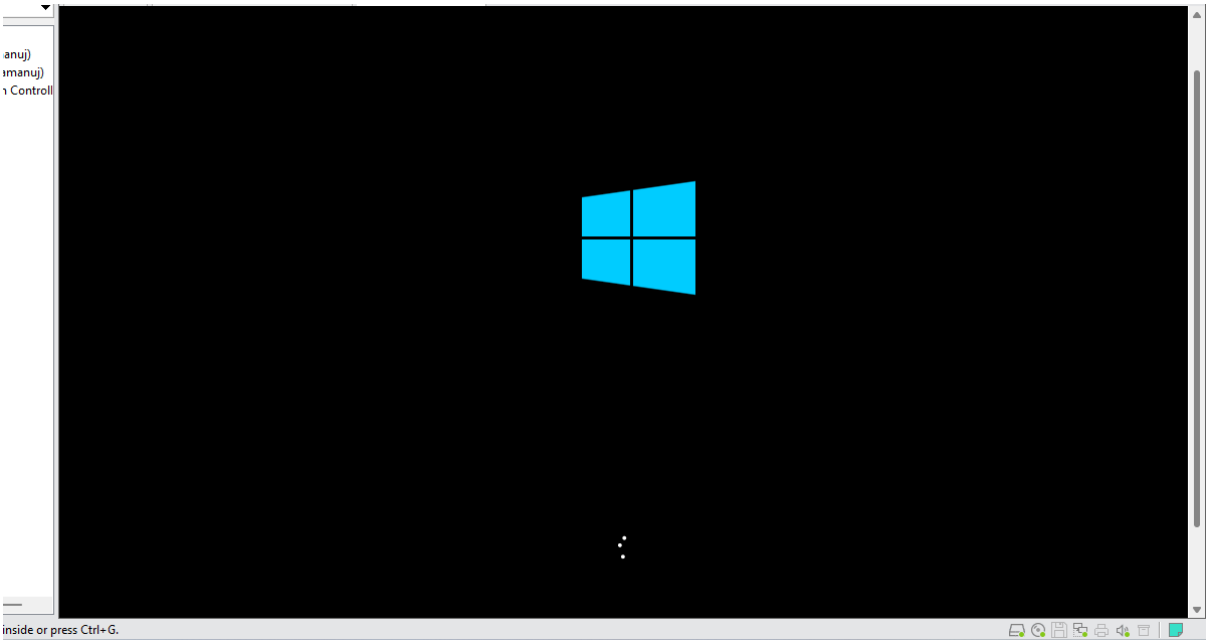
- Within virtual machine settings Select **Floppy** and **Un-Click Connect on Power On**



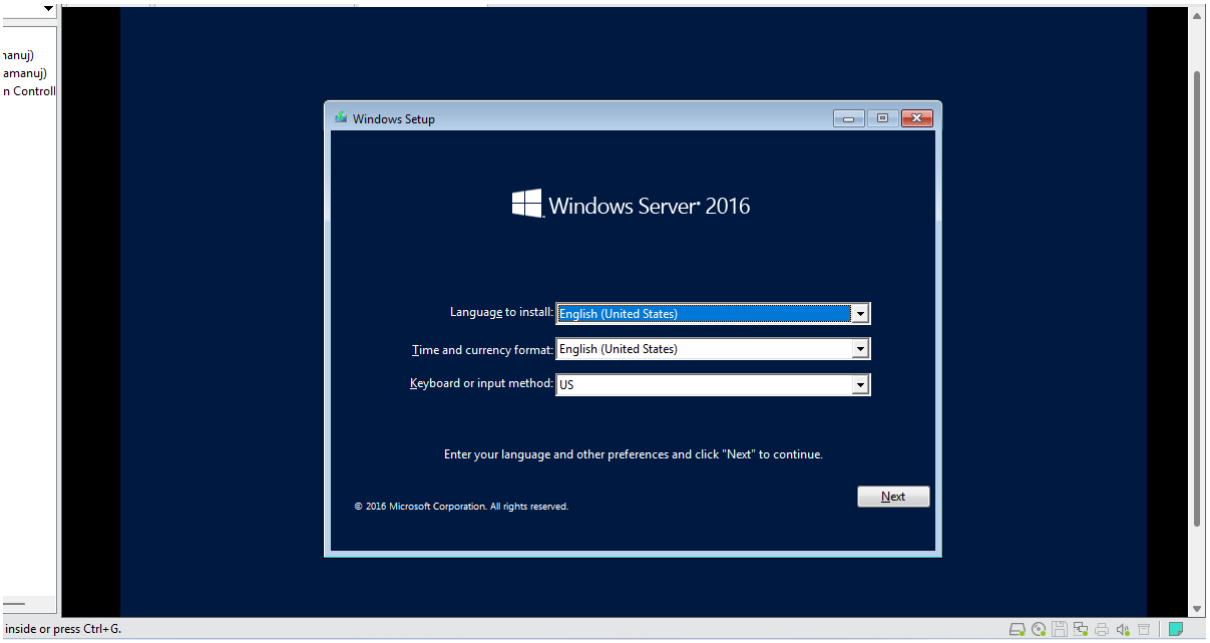
- Select **Processors** and Click on **Virtualized INTEL** and **Virtualized CPU performance counters** and Click **Ok**



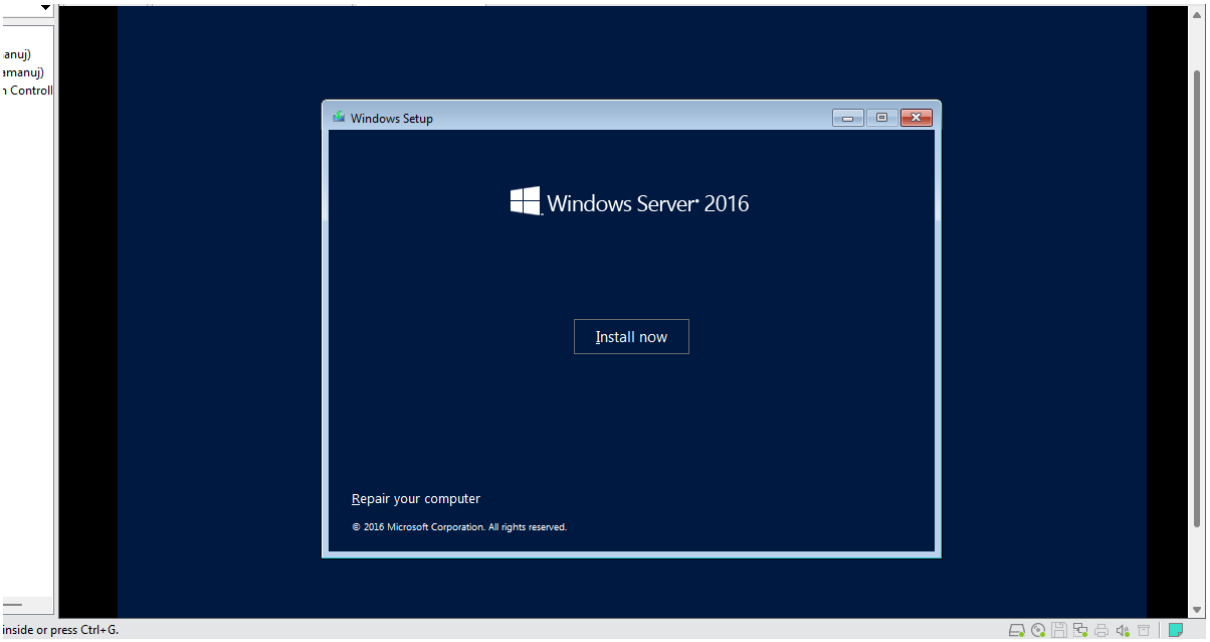
- Now Power On your virtual machine



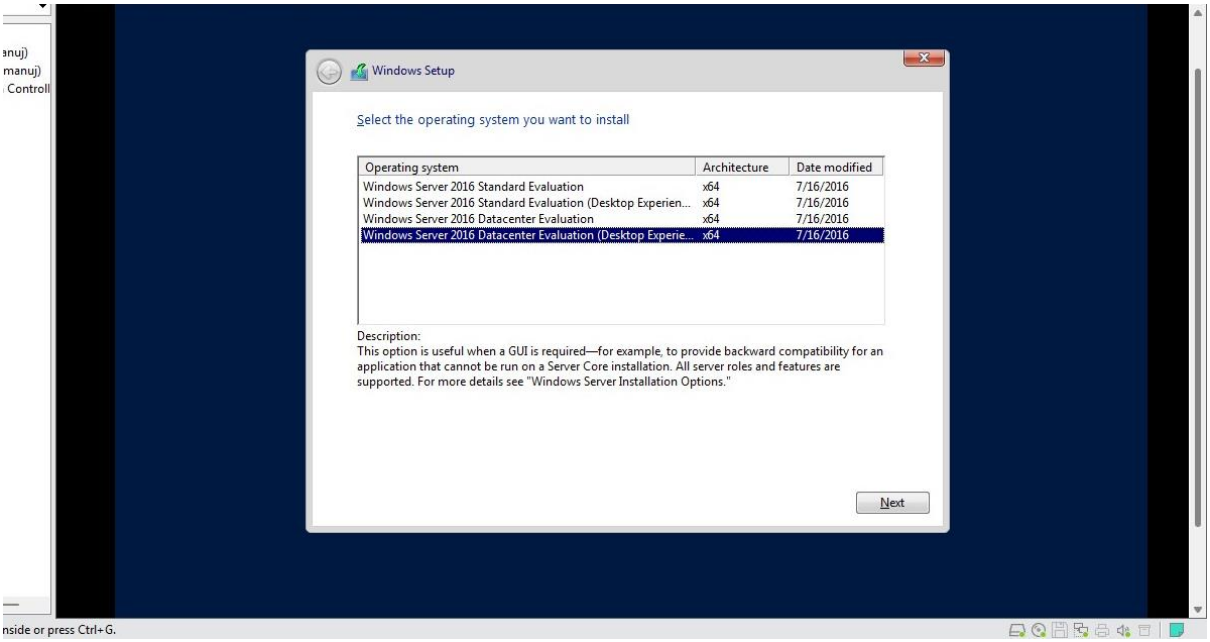
- The Windows Server Installer initialize, Keep default values and Click **Next**



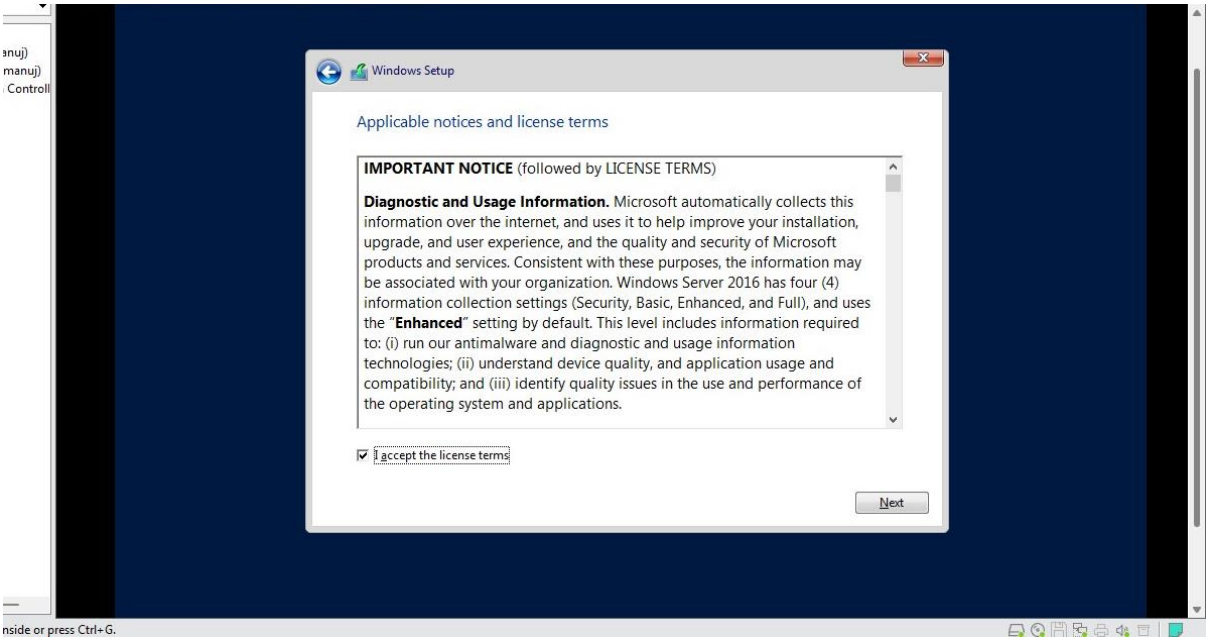
- Click on **Install Now**



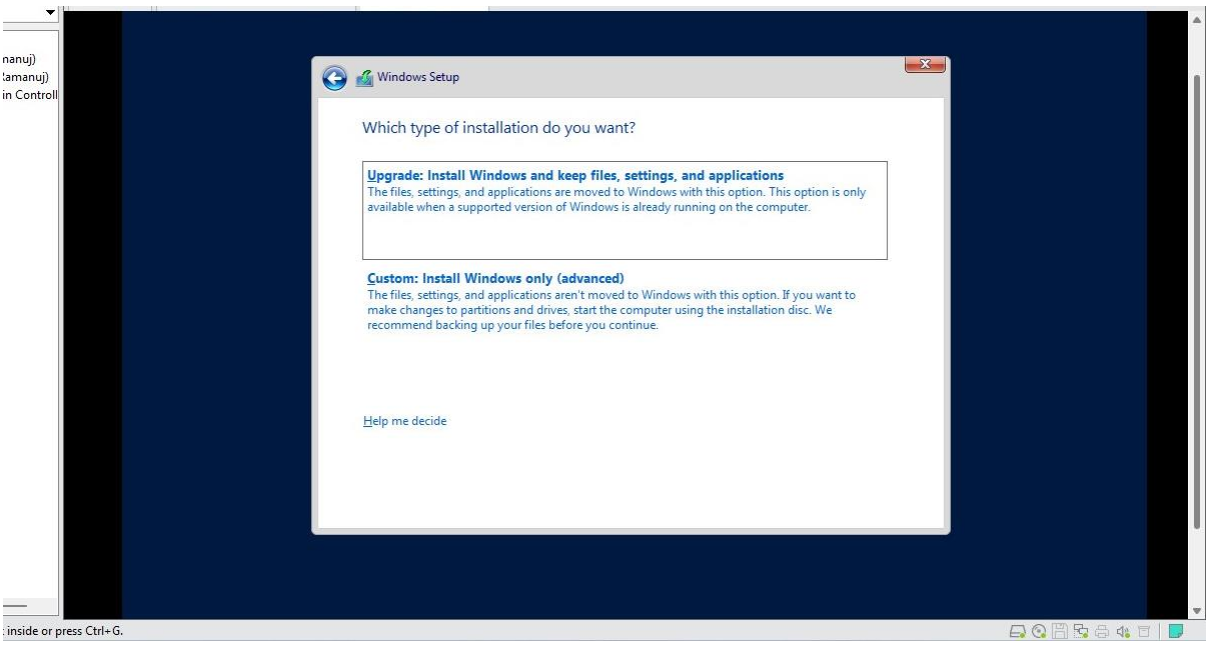
- In Operating Systems Select **Windows Server 2016 Datacenter Evaluation (Desktop Experience)** and Click **Next**



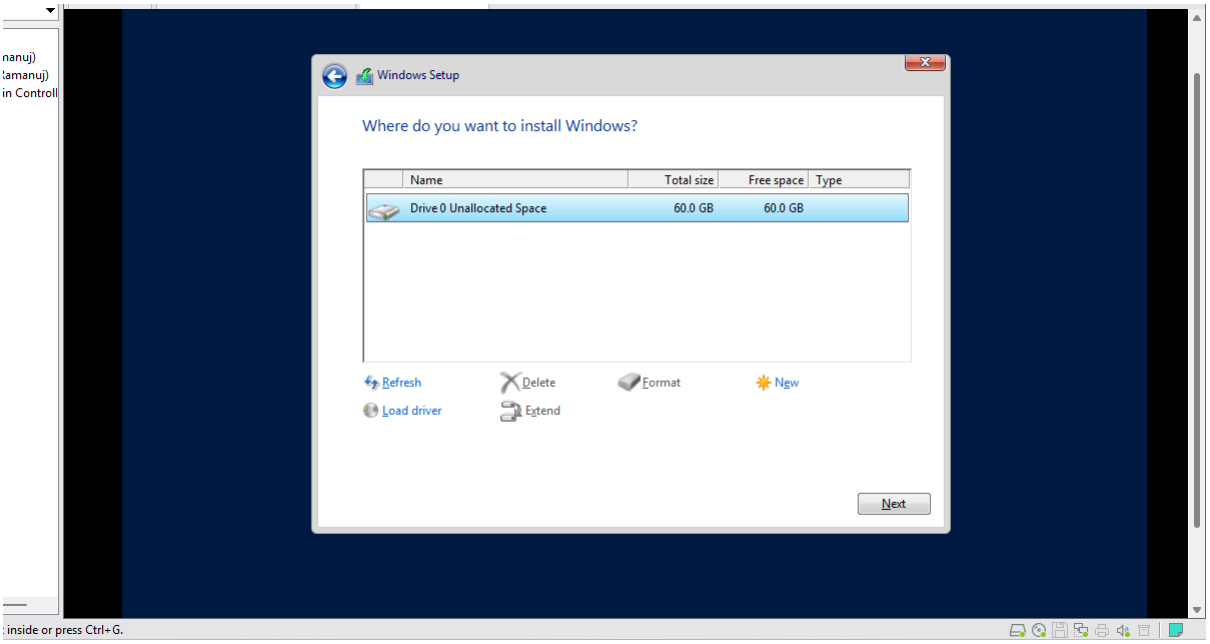
- Select **I accept these license terms** and Click **Next**



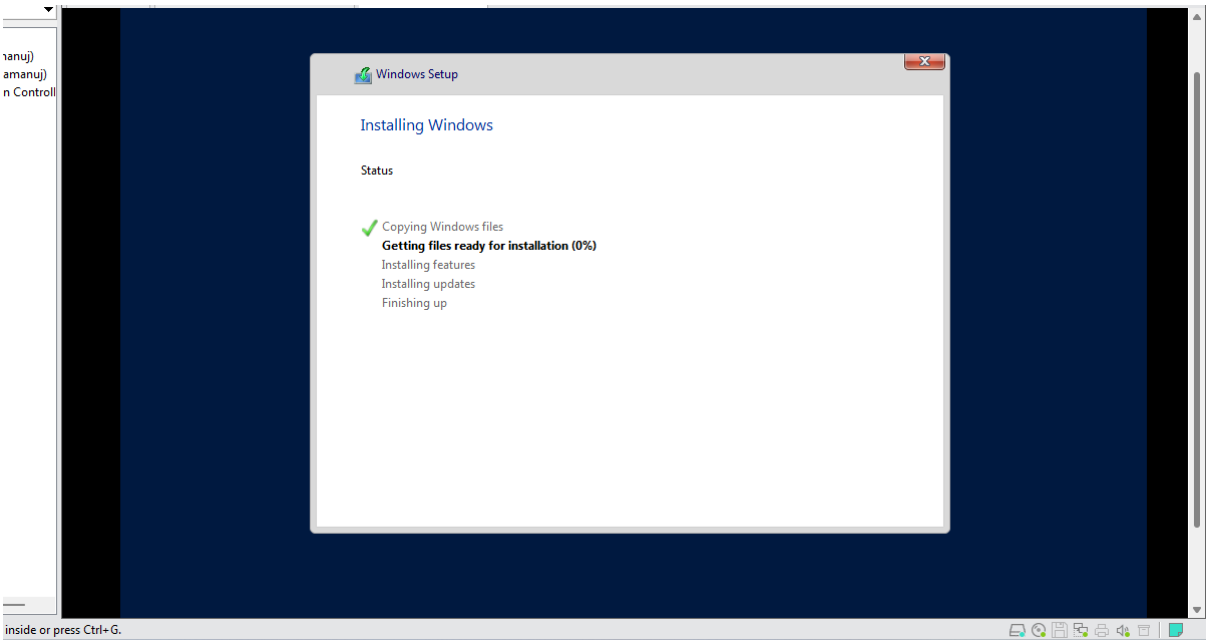
- Select **Custom**



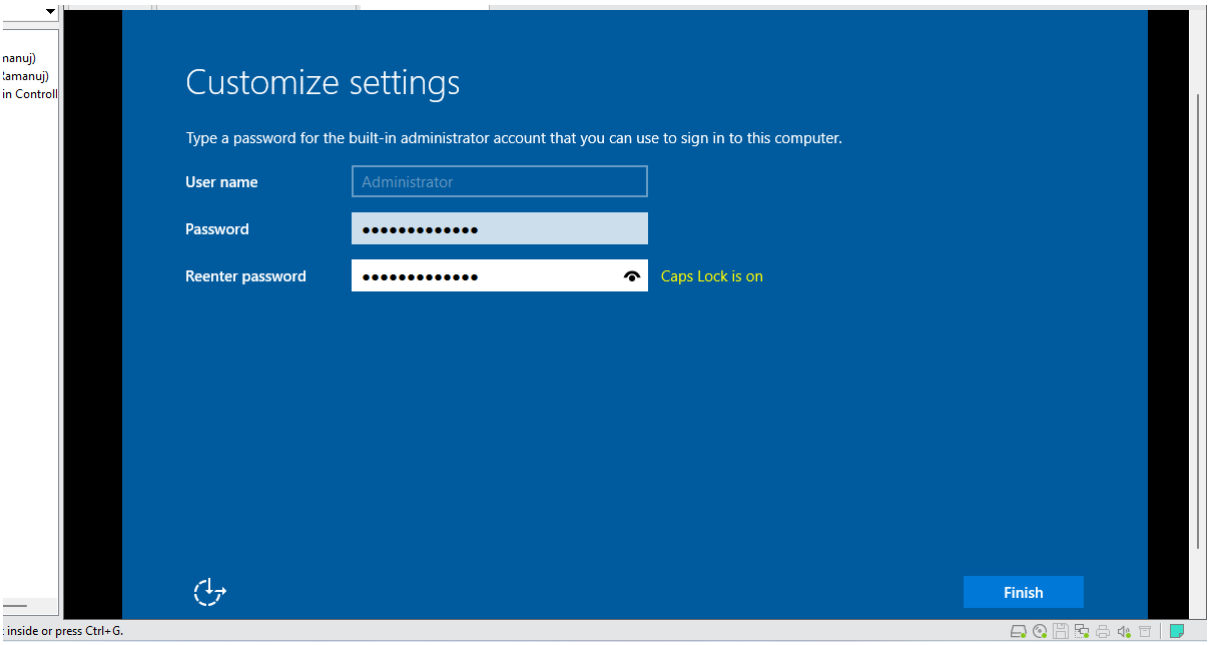
- Keep default values and Click **Next**



- Windows Server will begin installing



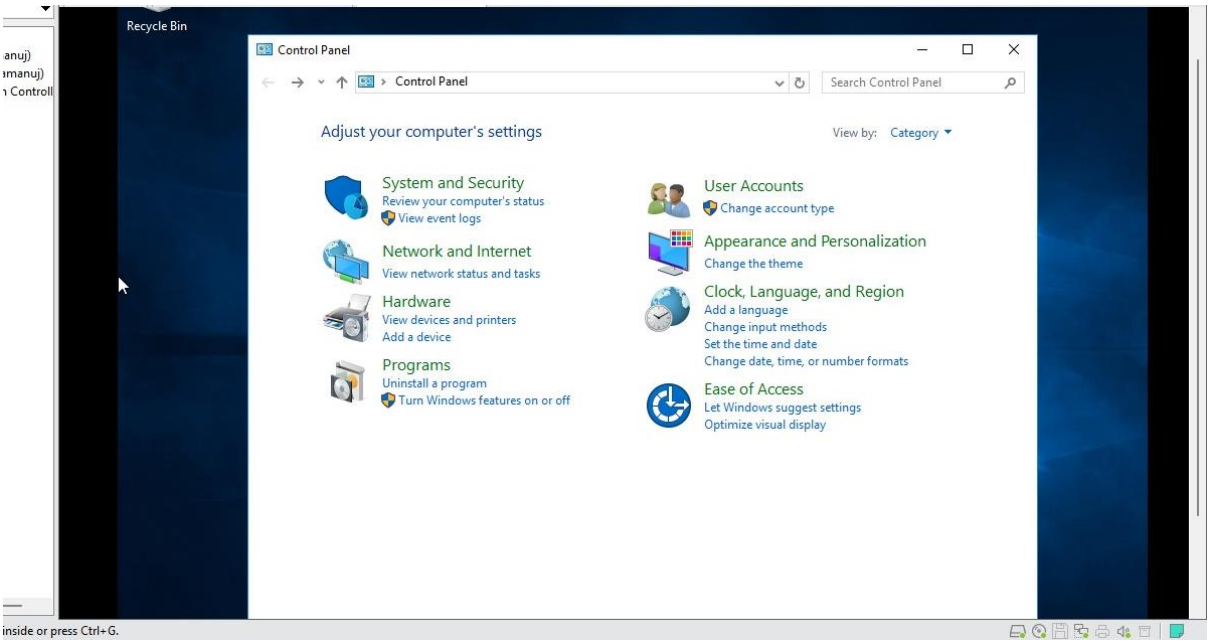
- After installation type in a password for the Windows Server and Click **Finish**



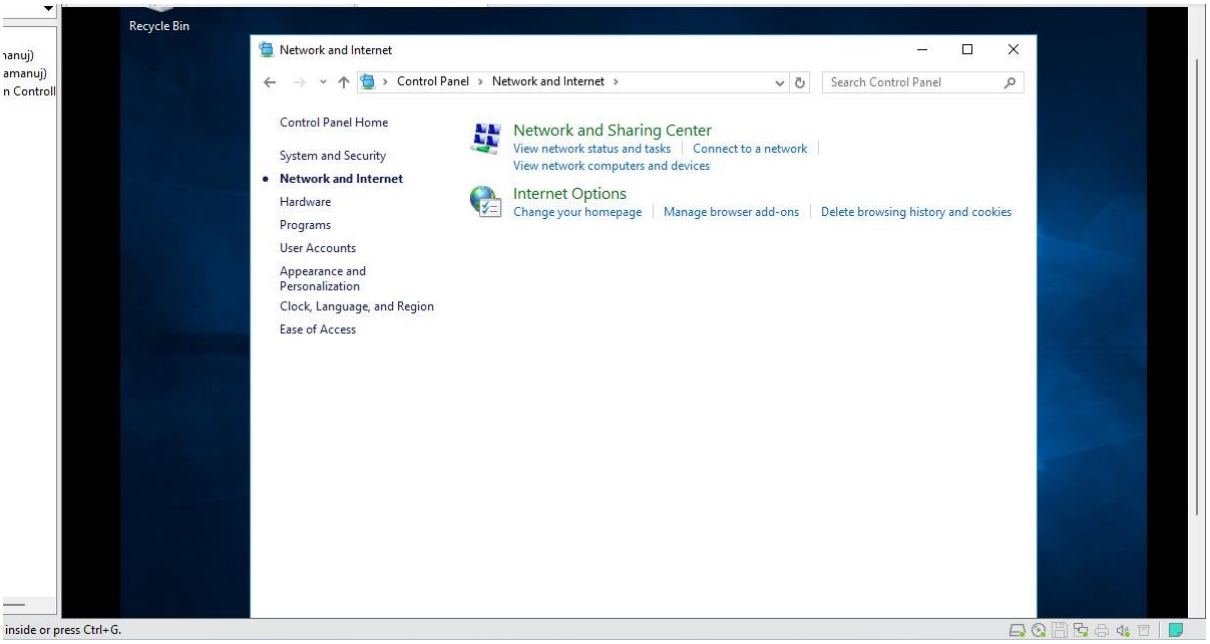
- Your Windows Server has now been successfully created

Step 3: Establishing a connection with the User VM and Domain Controller by connecting the User VM to the Domain Controller's Workgroup

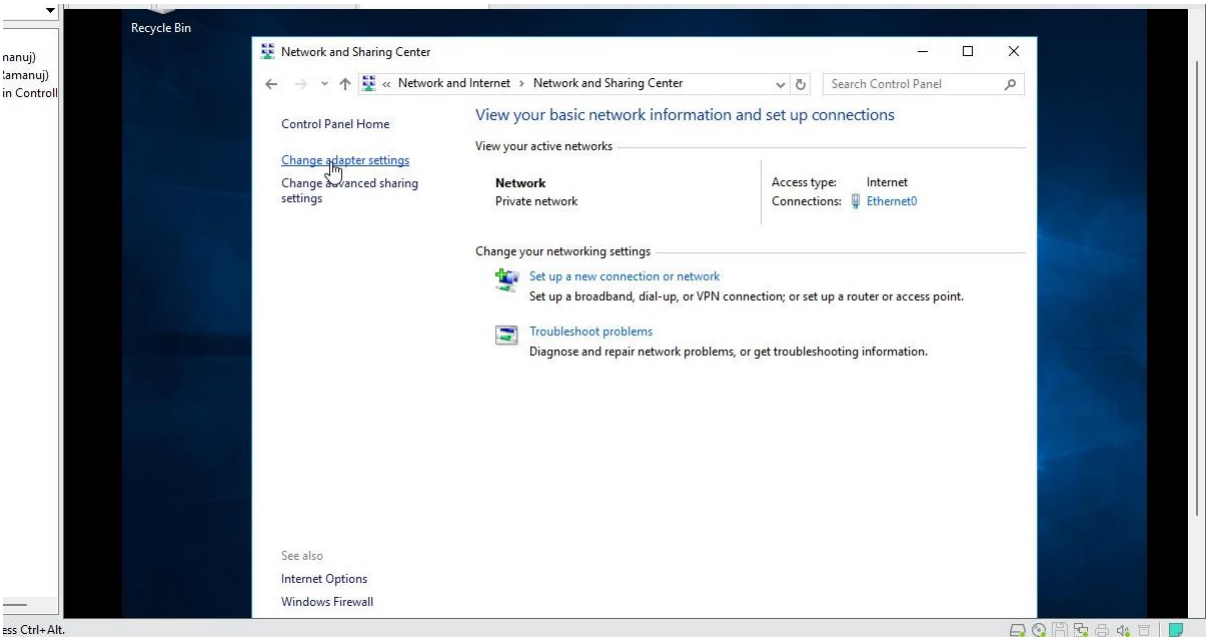
- Open **Control Panel** and Click on **Network and Internet**



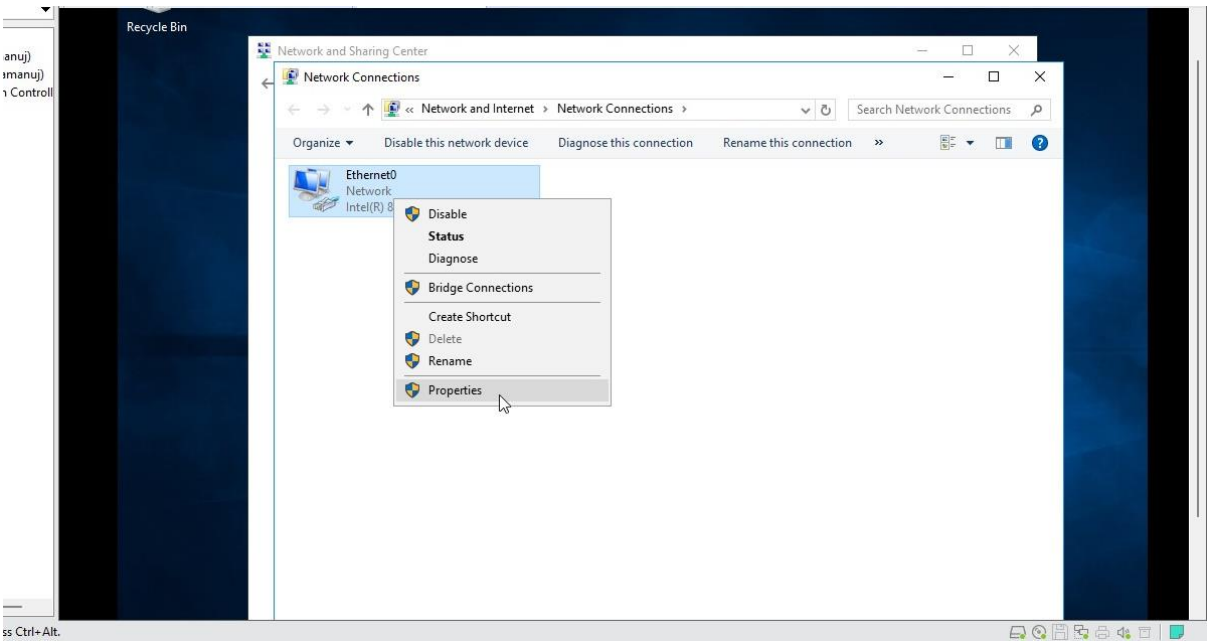
- Select **Network and Sharing Center**



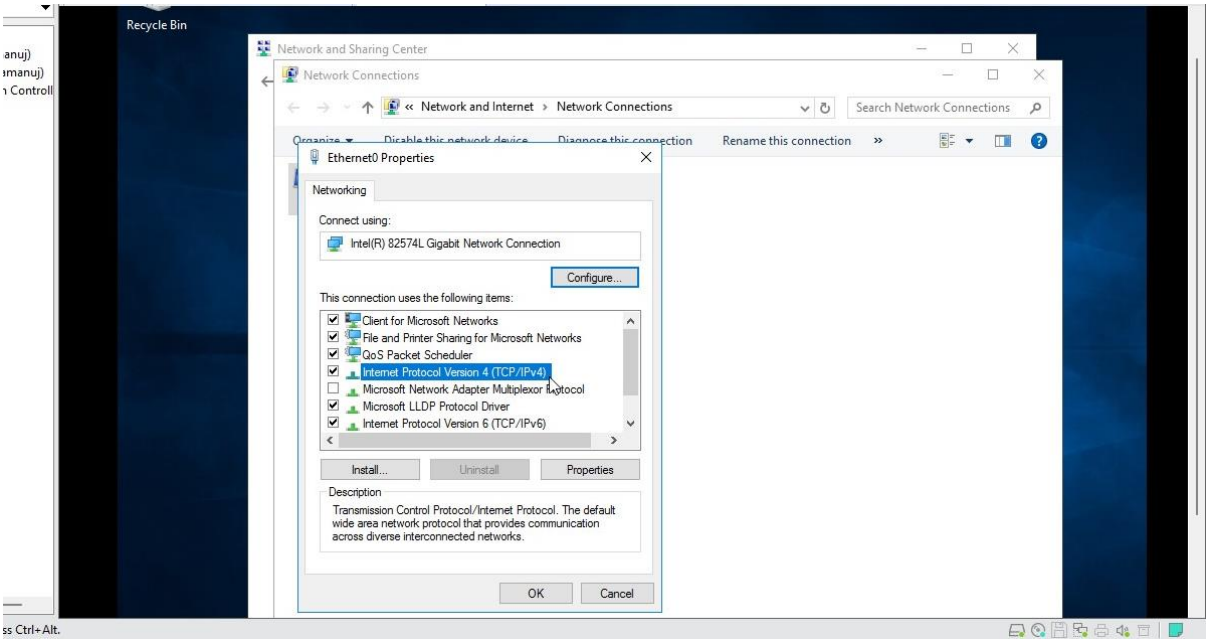
- Click on **Change adapter settings**



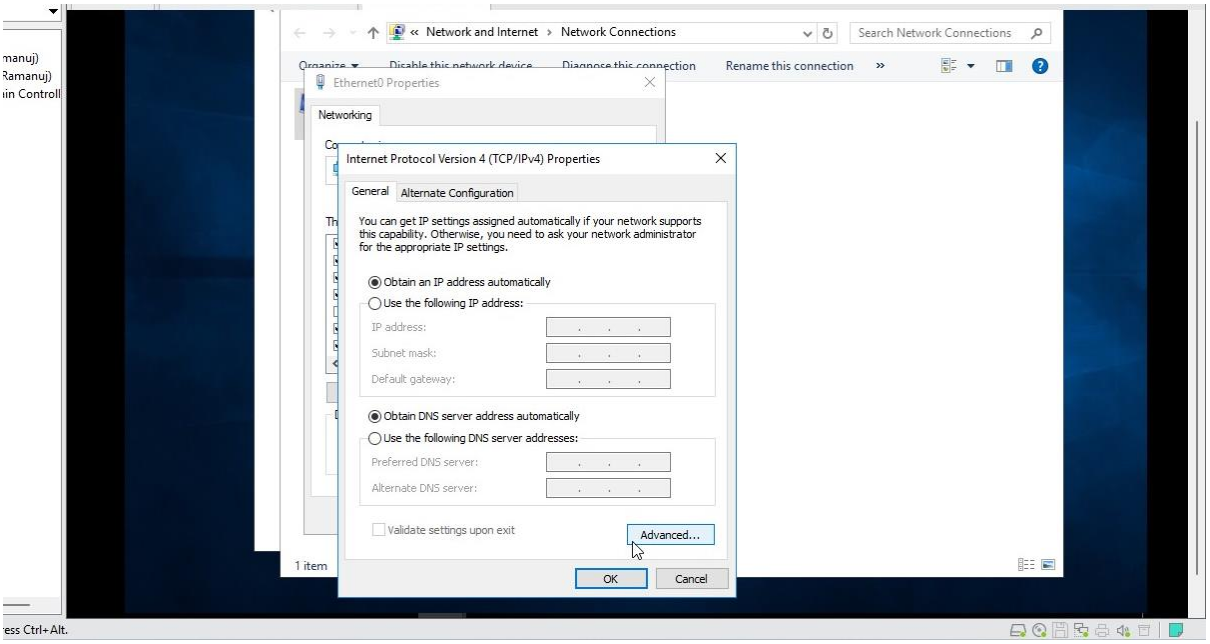
- Right Click on **Ethernet0** and Select **Properties**



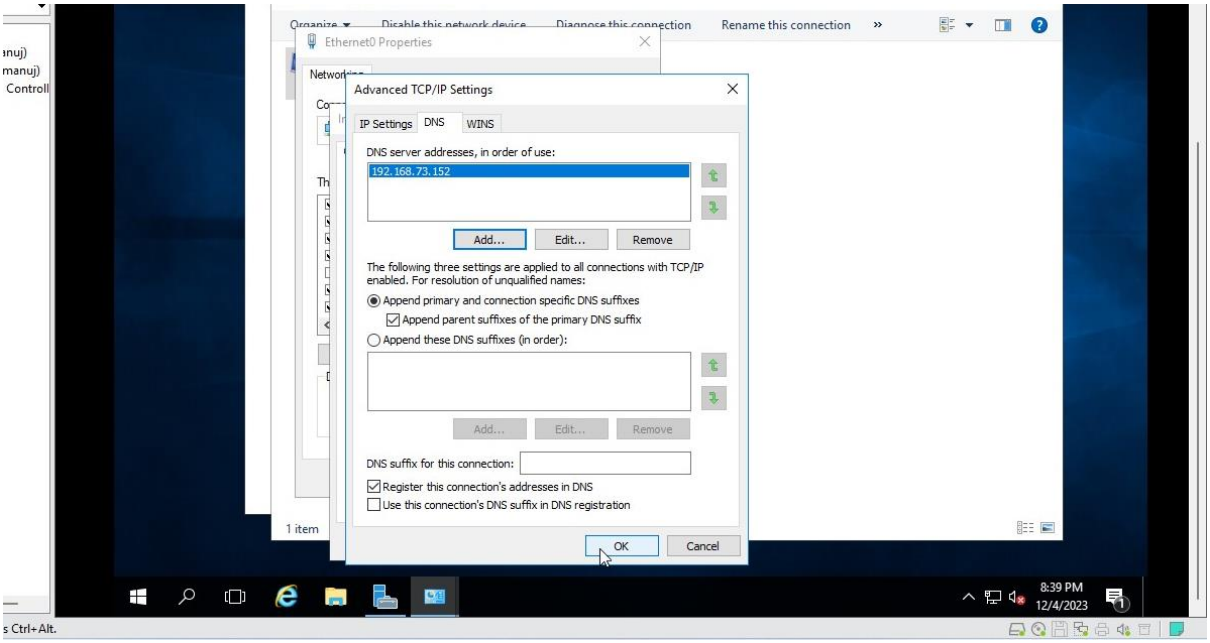
- Click on **Internet Protocol Version 4**



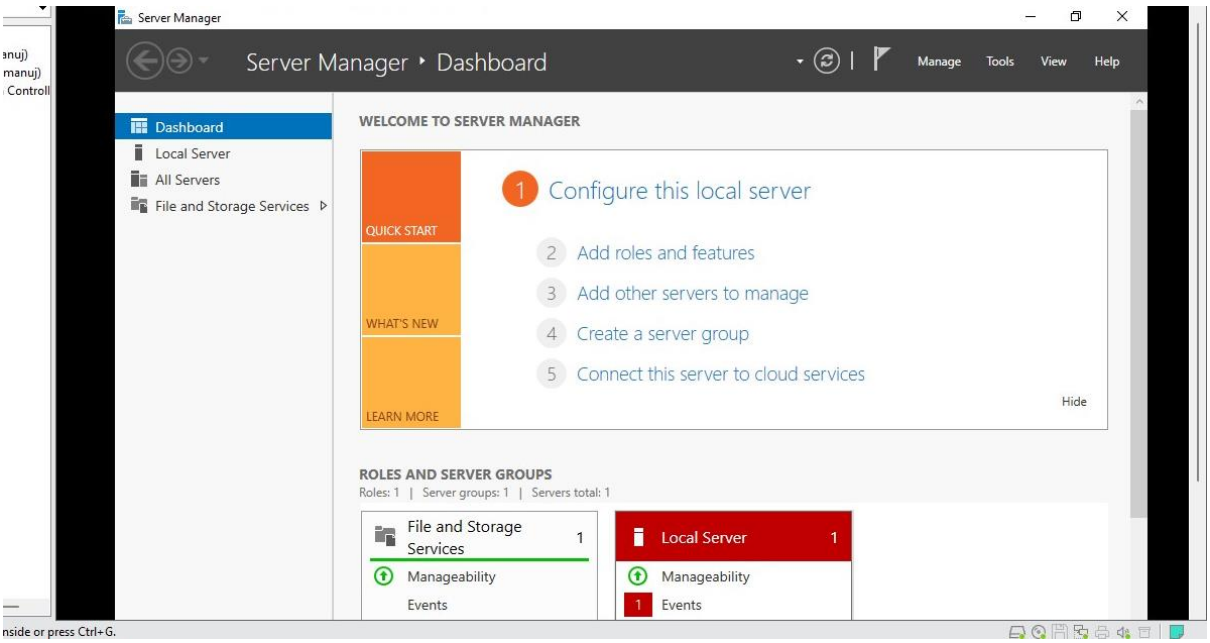
- Within Internet Protocol Version 4 Click on **Advanced**



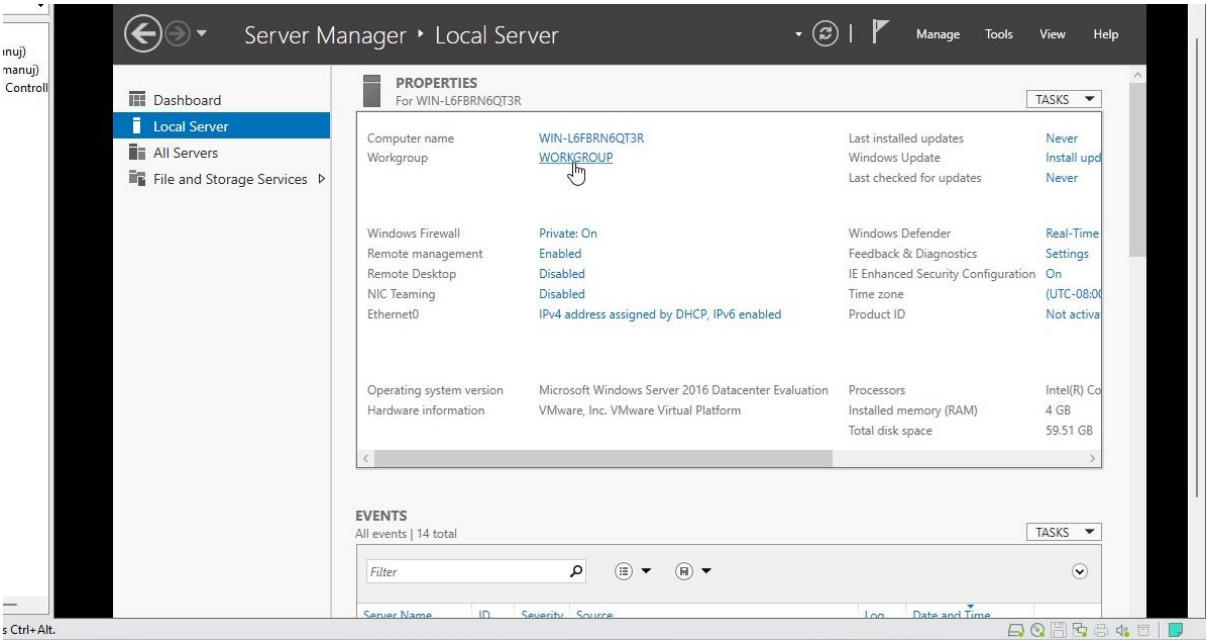
- Select **DNS** and Click on **Add** with the IP Address of the Domain Controller and Click **Ok**



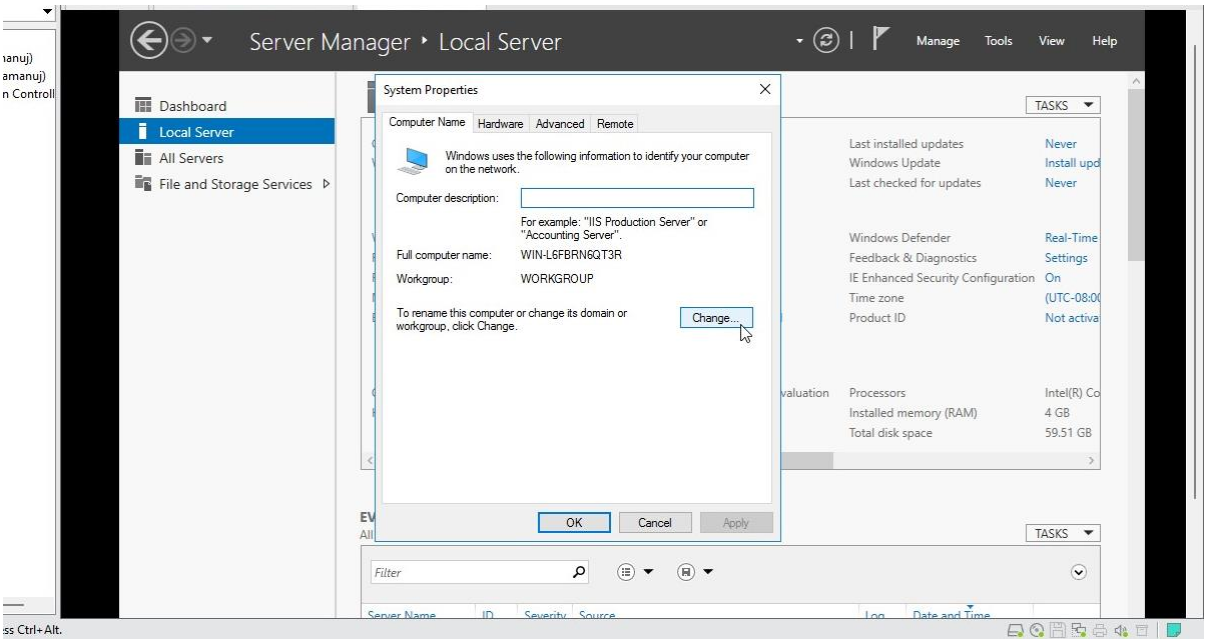
- Now Exit out of network settings and Click on **Server Manager**



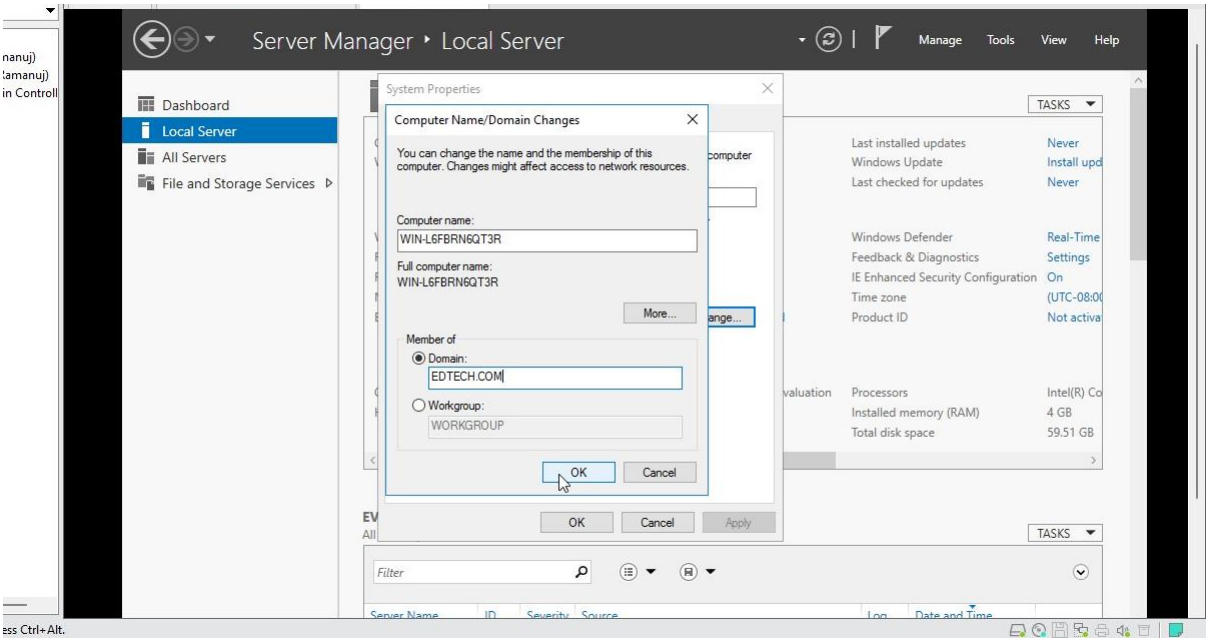
- Within Server Manger Click on **Local Server** and Select **Workgroup**



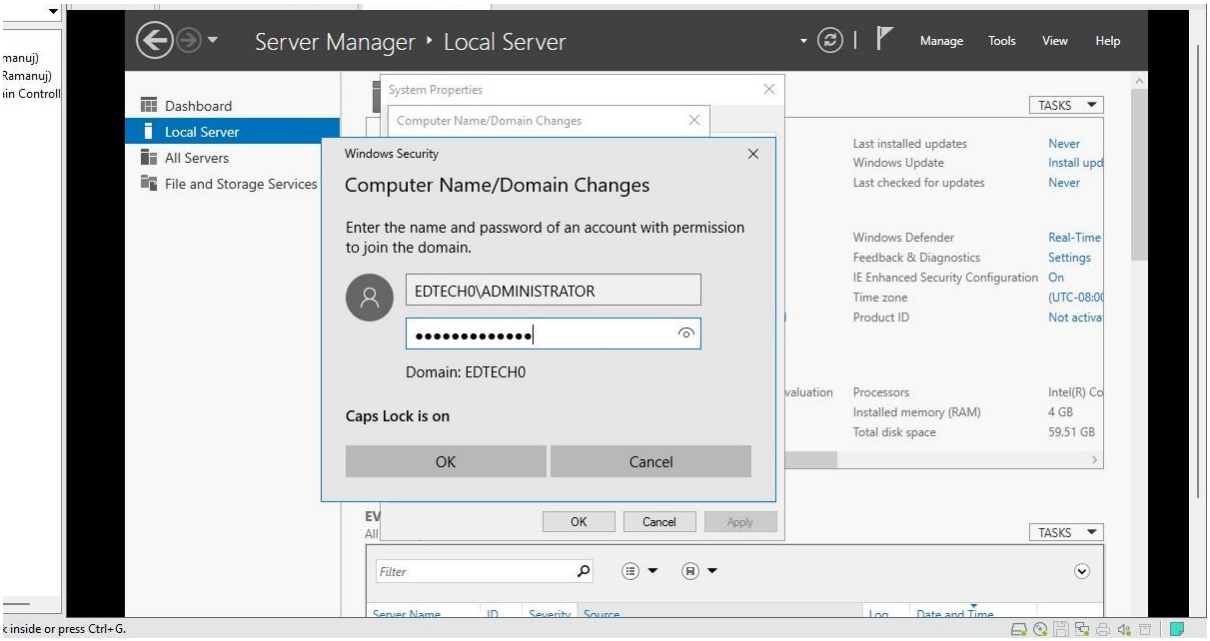
- Within Workgroup Click on **Change**



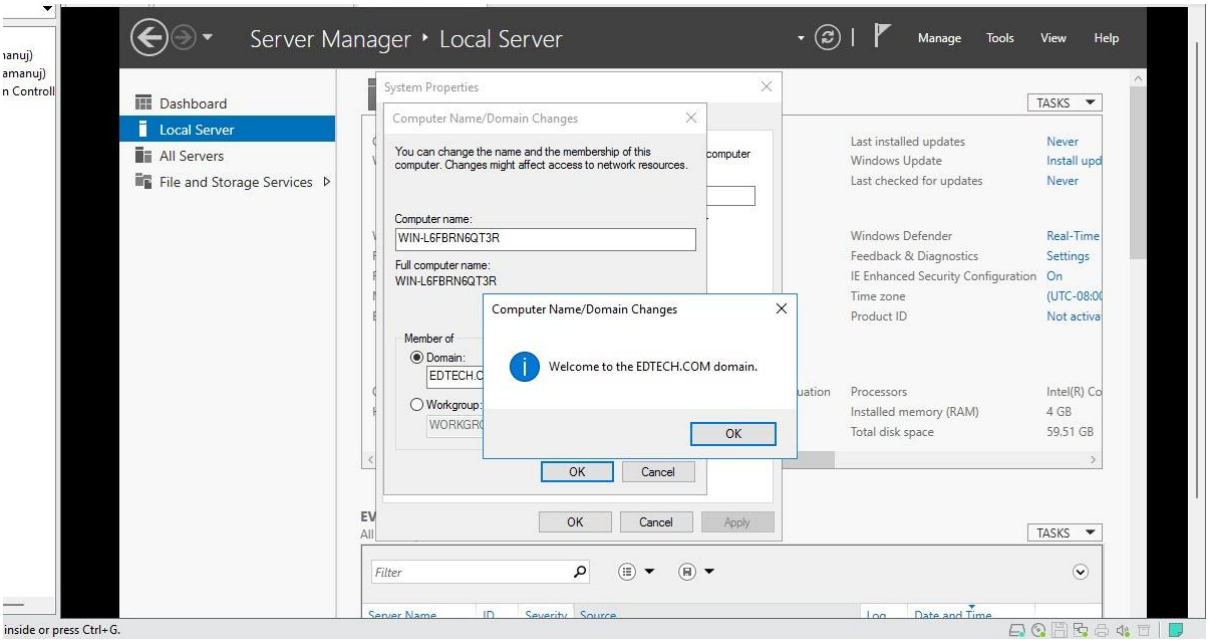
- In Member of Select **Domain** and type the Domain name (here it is EDTECH.COM) and Click **Ok**



- Enter the credentials of the Domain Controller and Click on **Ok**

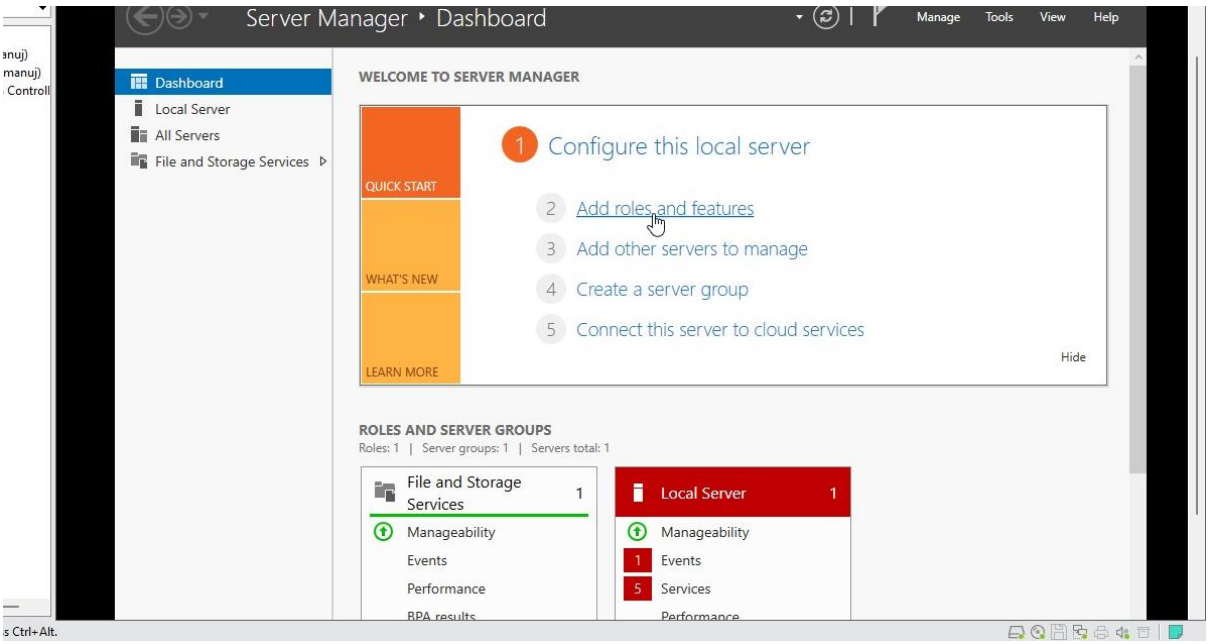


- The User VM is now in the same Domain as the Domain Controller and the system will require a restart for the changes to take effect

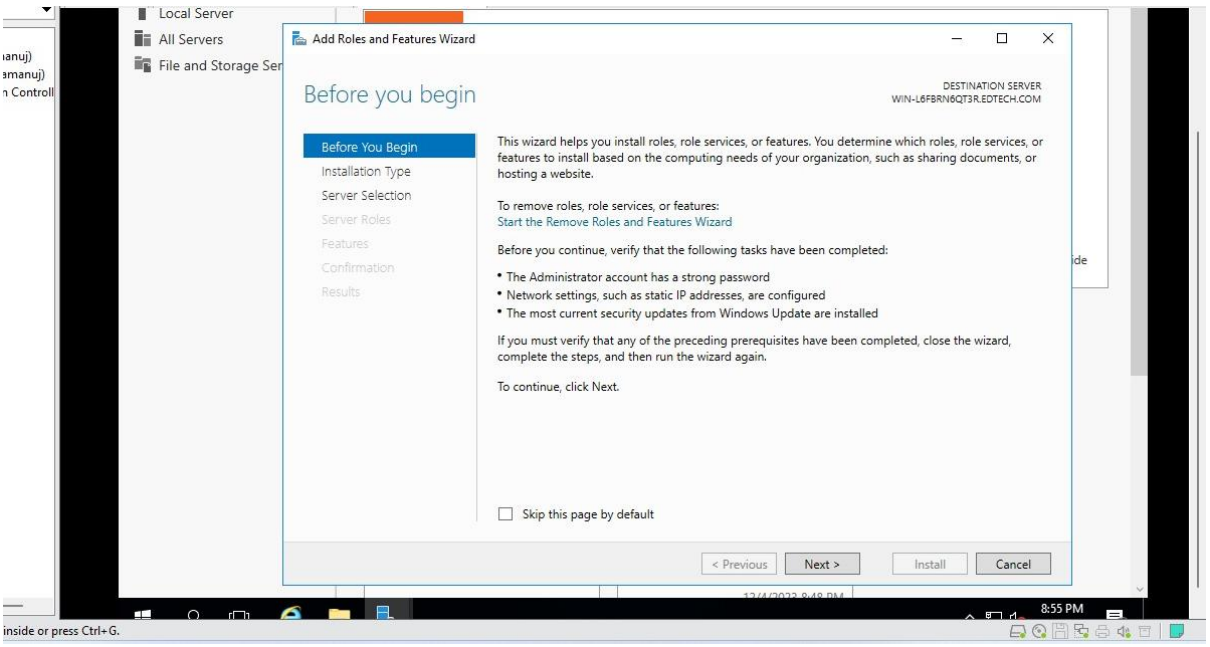


Step 4: Creation of User (SCDPM)

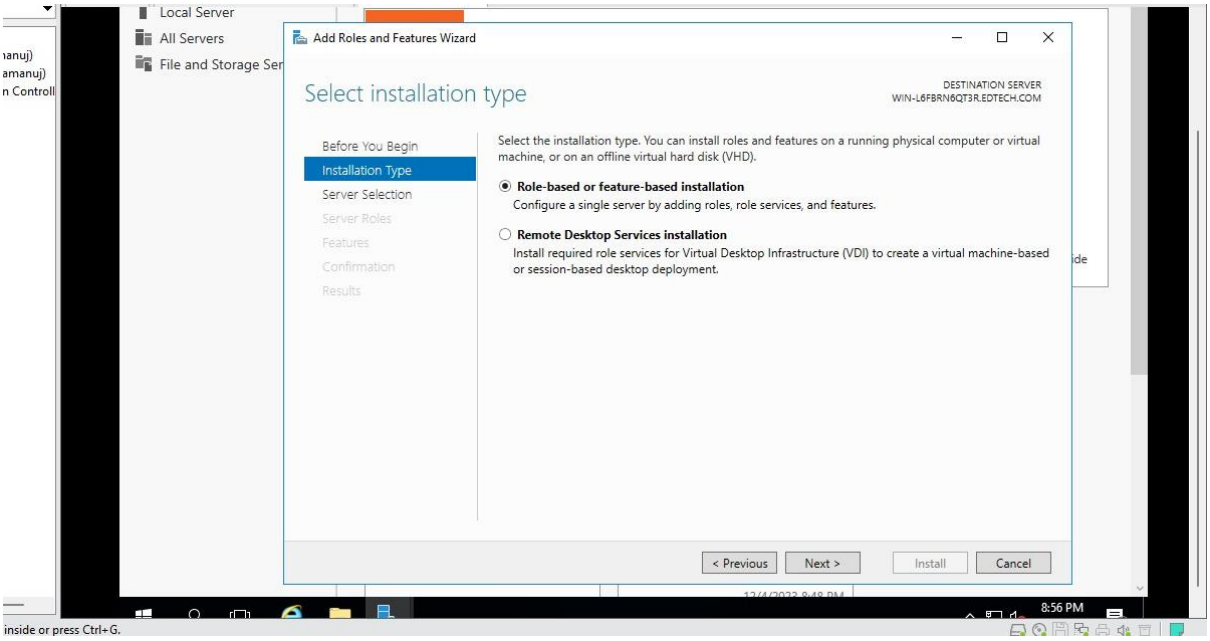
- To create a User first we require the **Active Directory Domain Service** which can be added through the Server Manager
- Open **Server Manager** and Click on **Add Roles and Features**



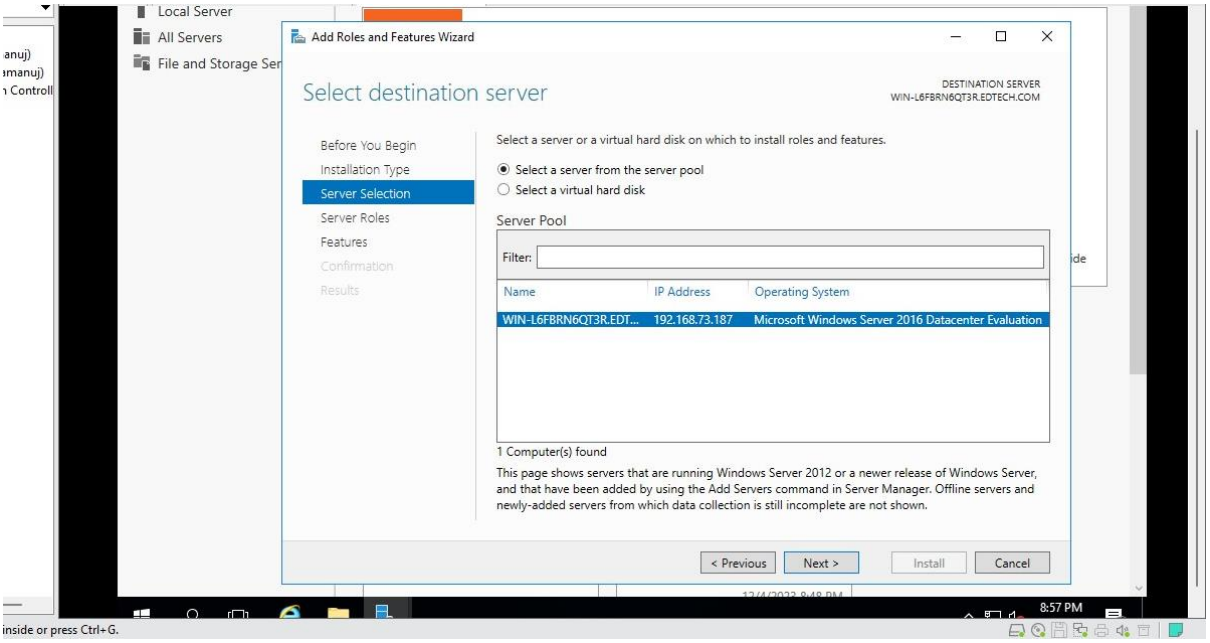
- Click **Next**



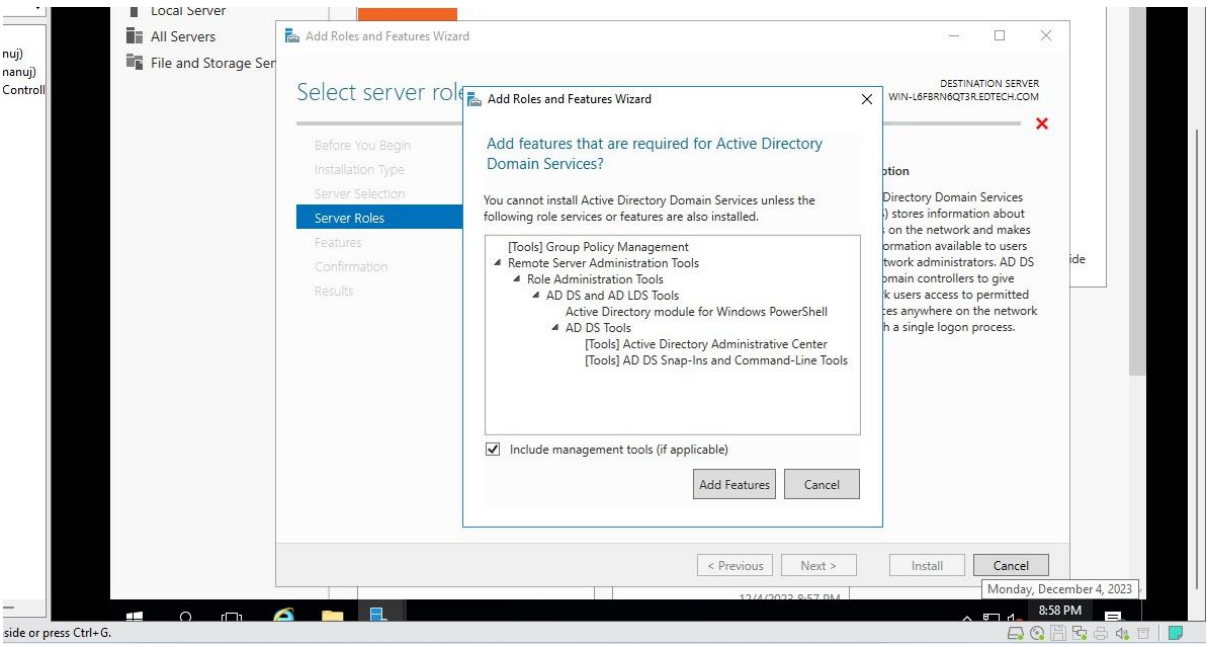
- Select **Role-based or Feature-based installation** and Click **Next**



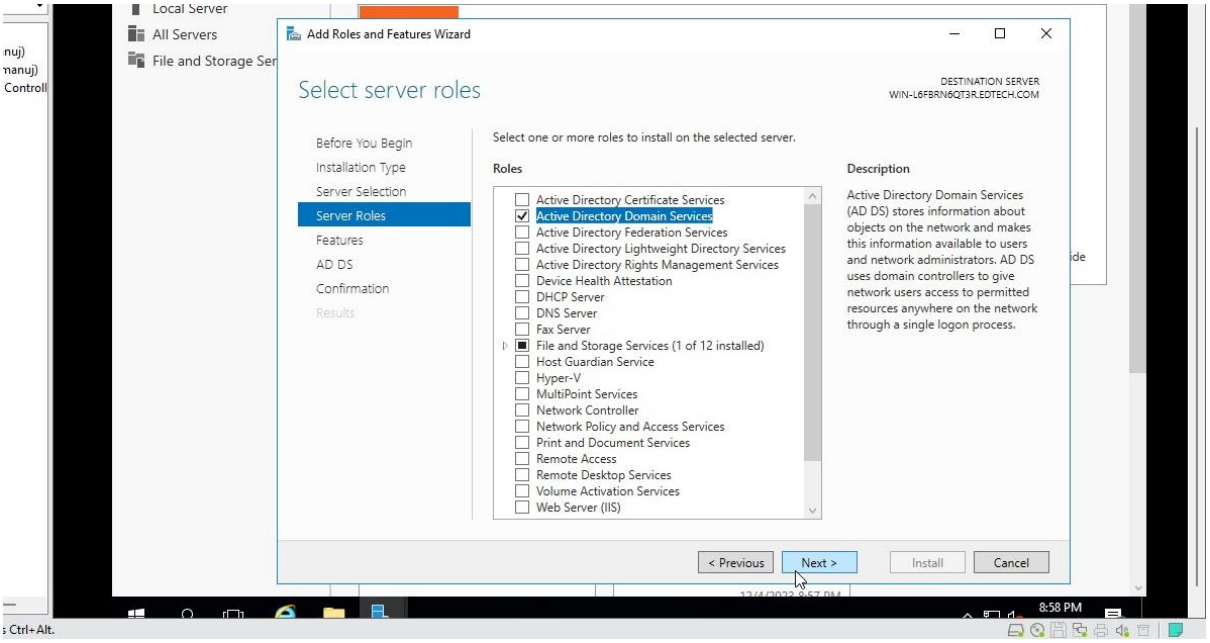
- Keep default values and Click **Next**



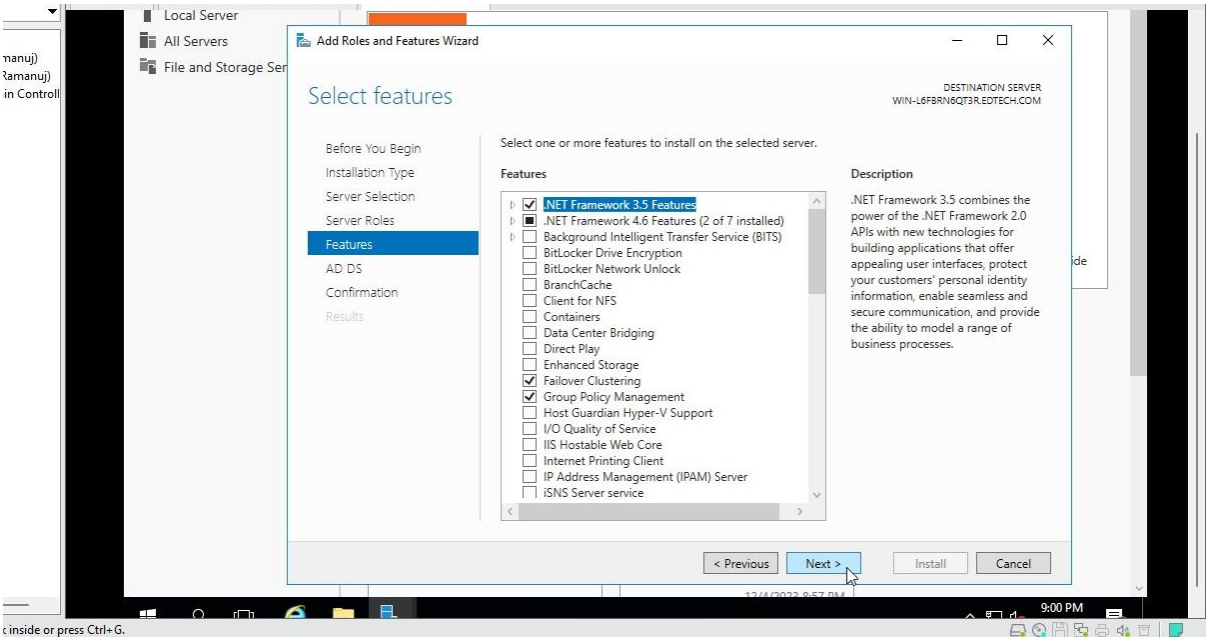
- Select **Active Directory Domain Service** and Click on **Add Feature**



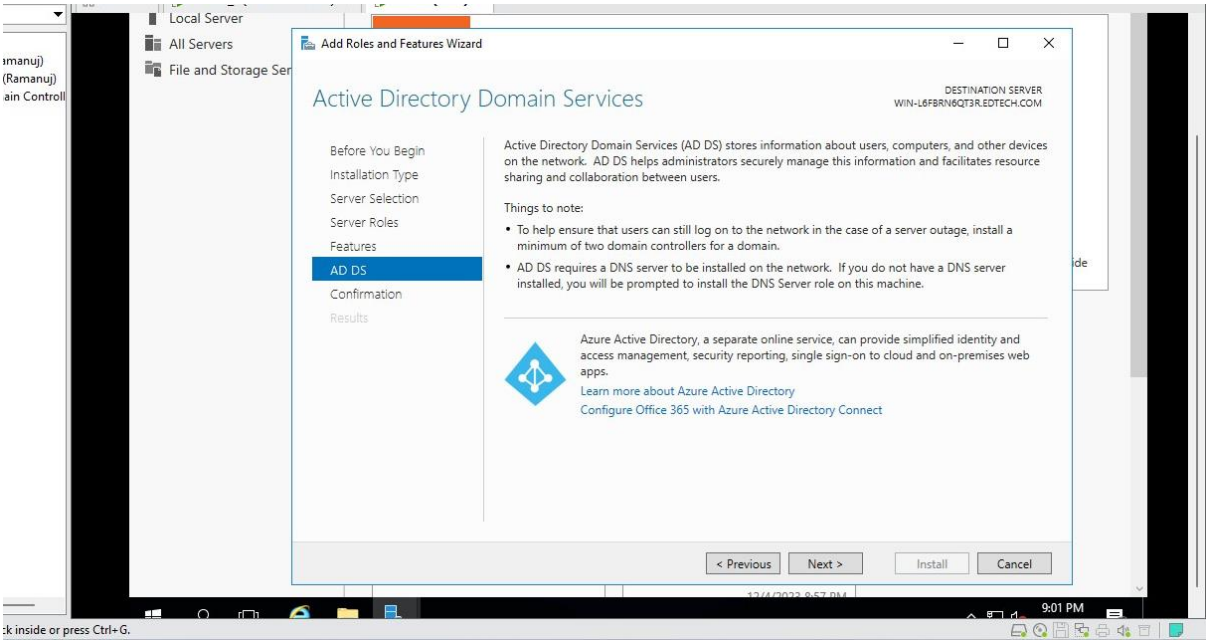
- Click **Next**



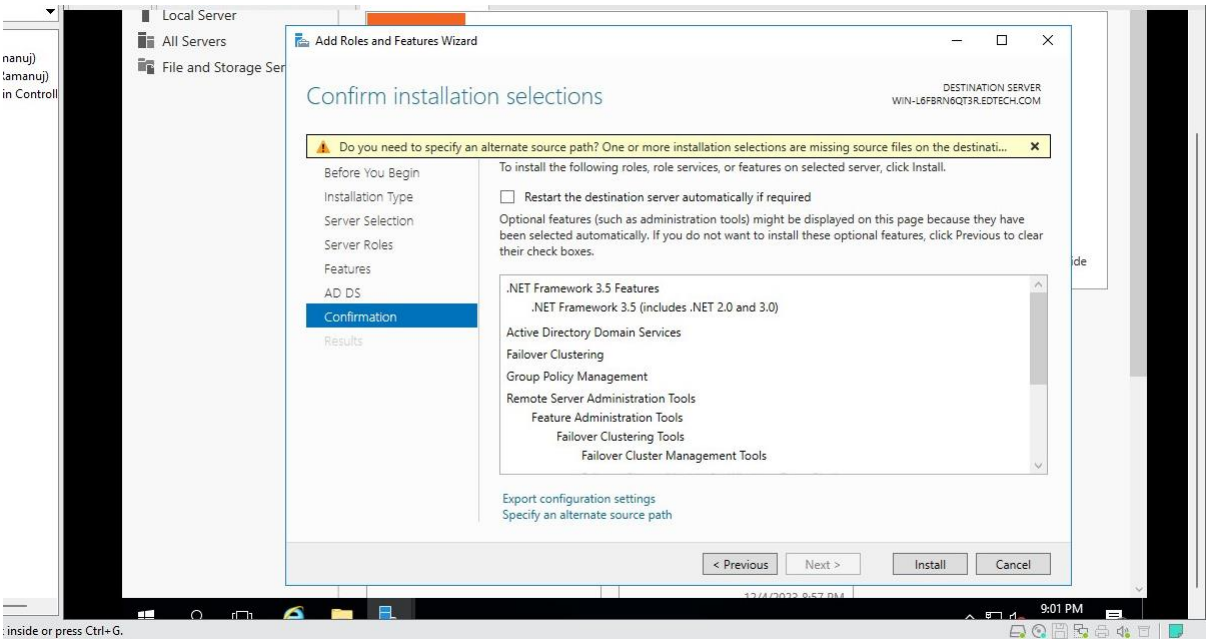
- Select **.NET 3.5 Features** and **Failover Clustering** and Click **Next**



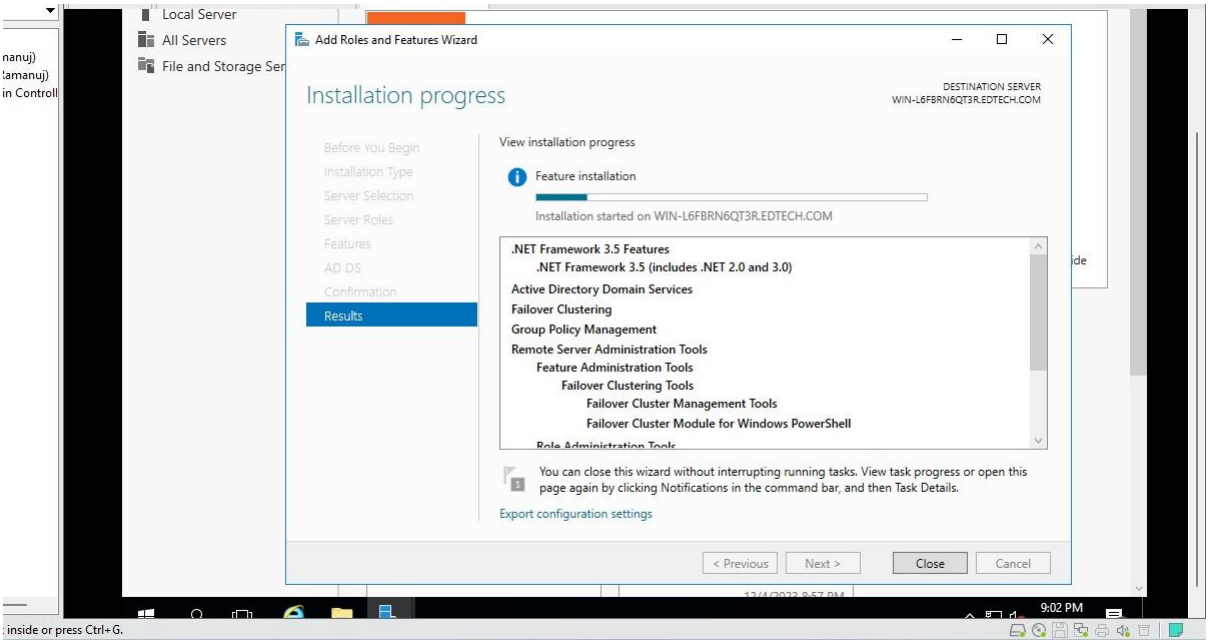
- Click **Next**



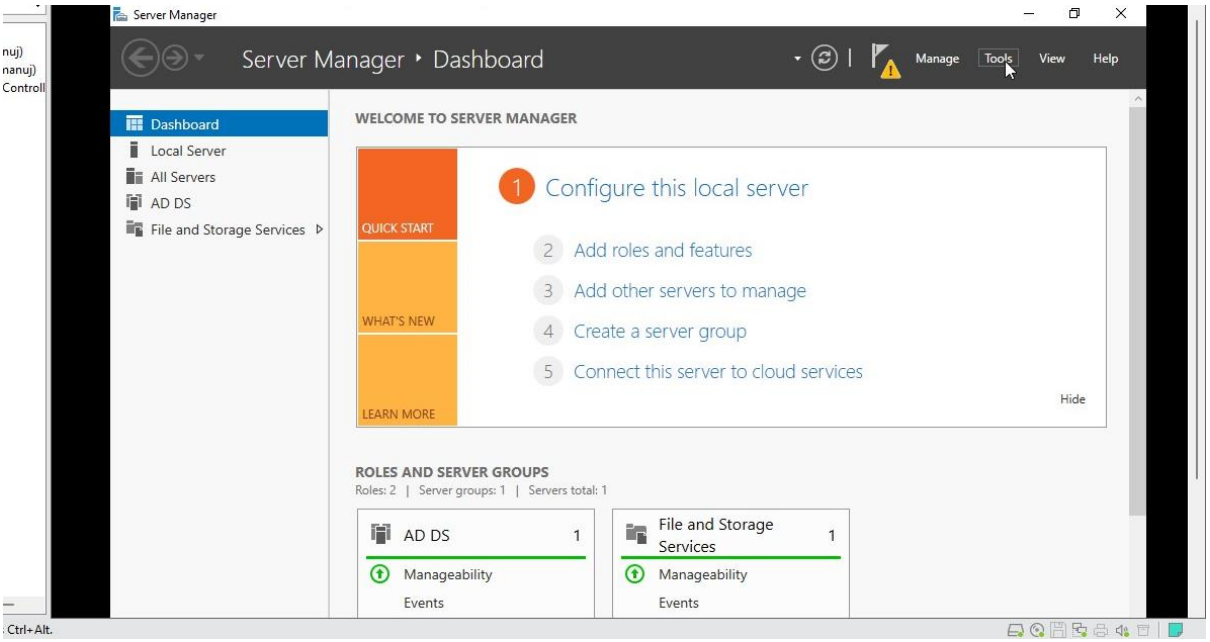
- Click **Install**



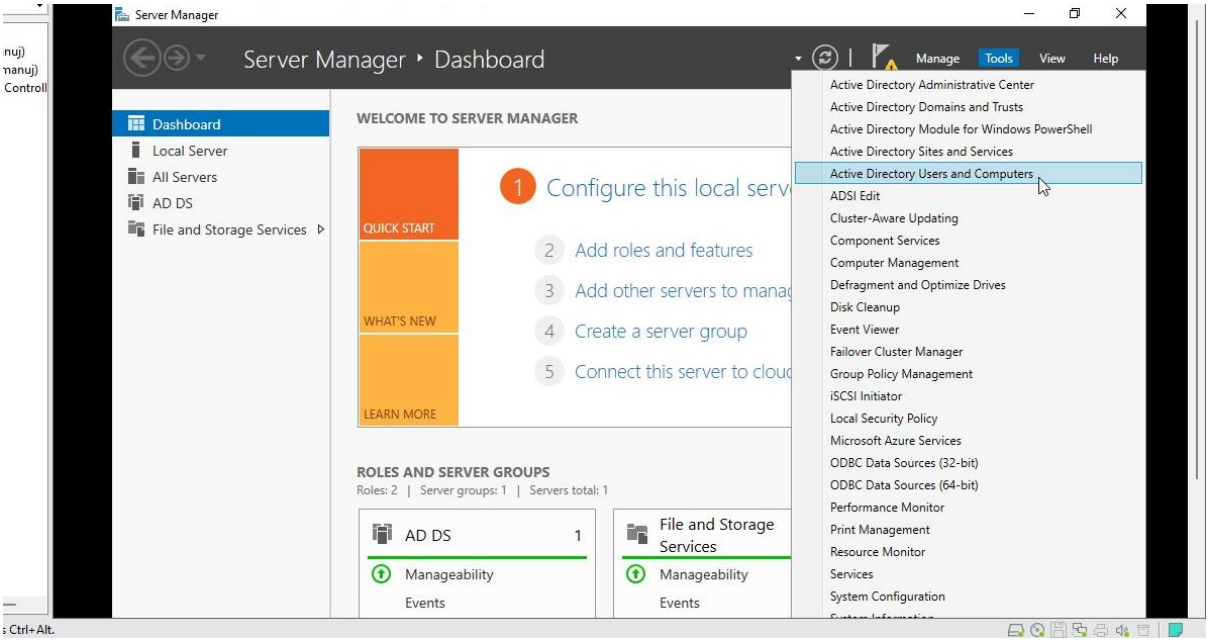
- Features will start installing in the system



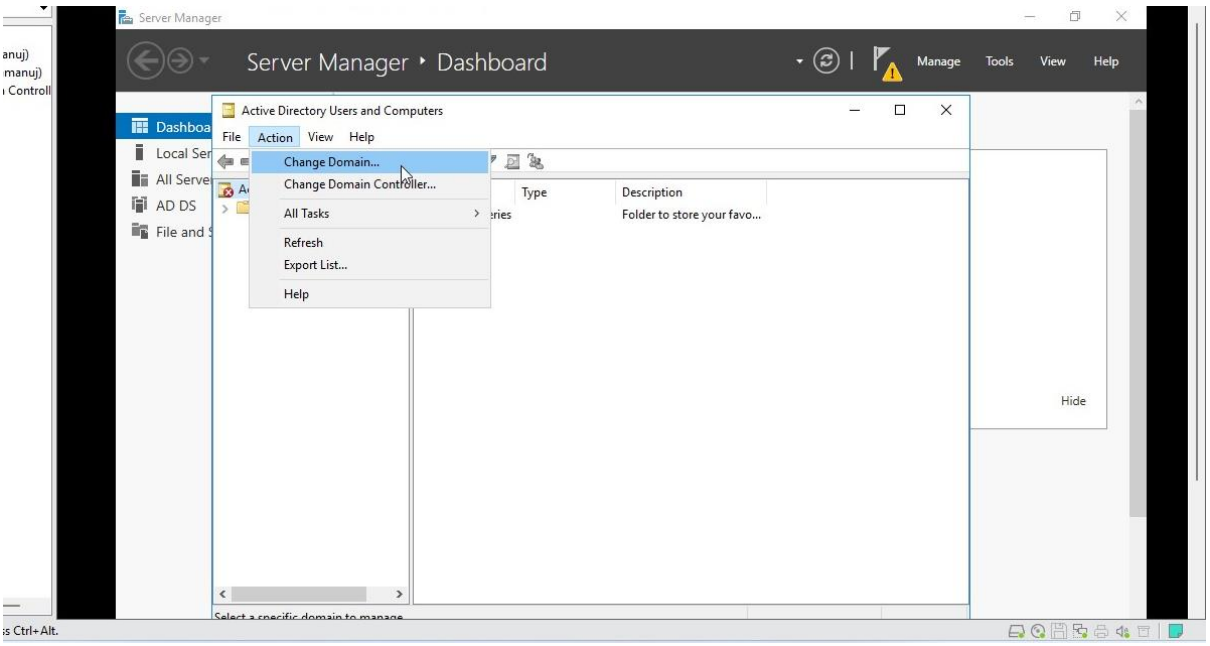
- After installation, within Server Manager Click on **Tools**



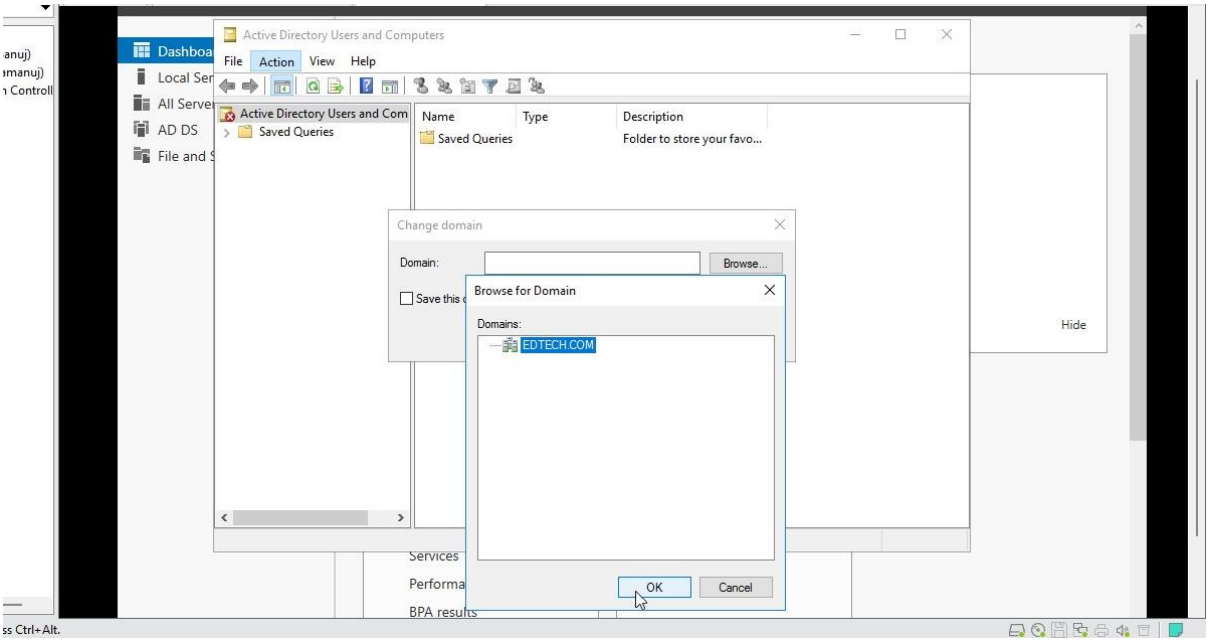
- Within Tools Click on **Active Directory Users and Computers**



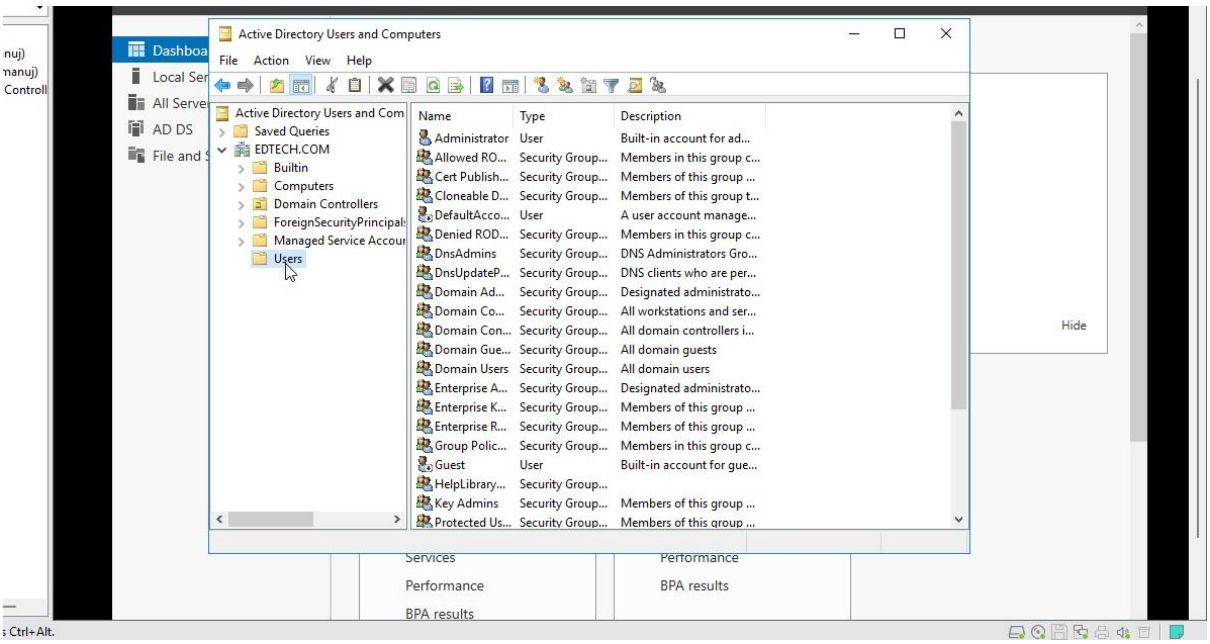
- Within Active Directory Users and Computers, Click on **Action** and Select **Change Domain**



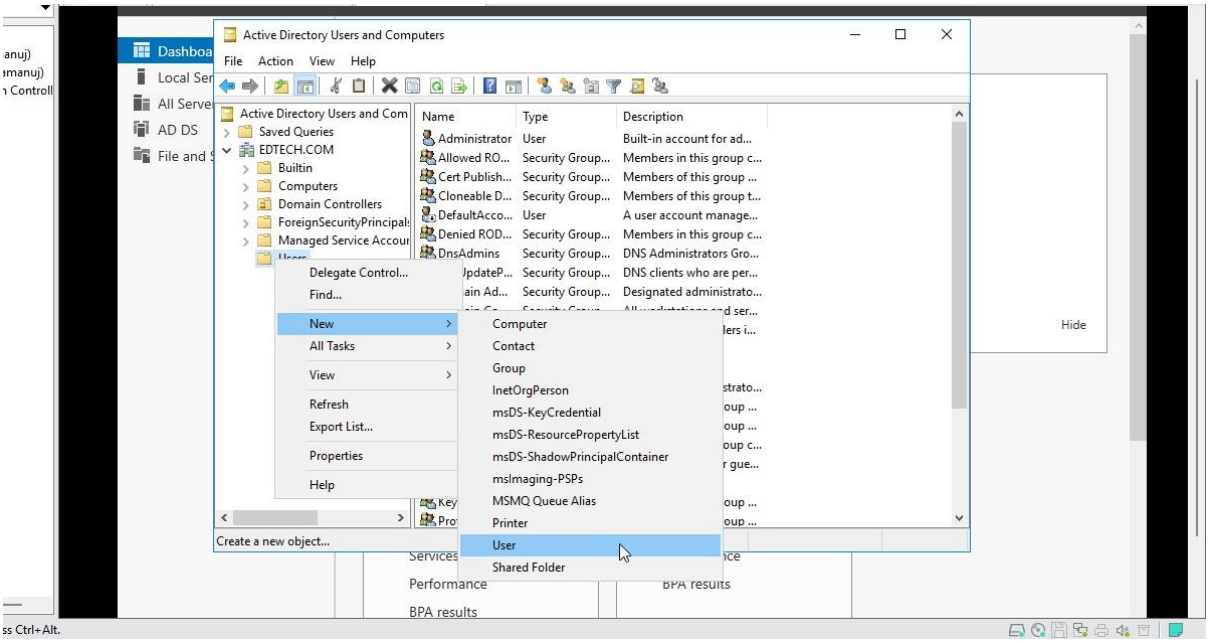
- Click on **Browse** and Select the **Domain Controller** and Click **Ok**



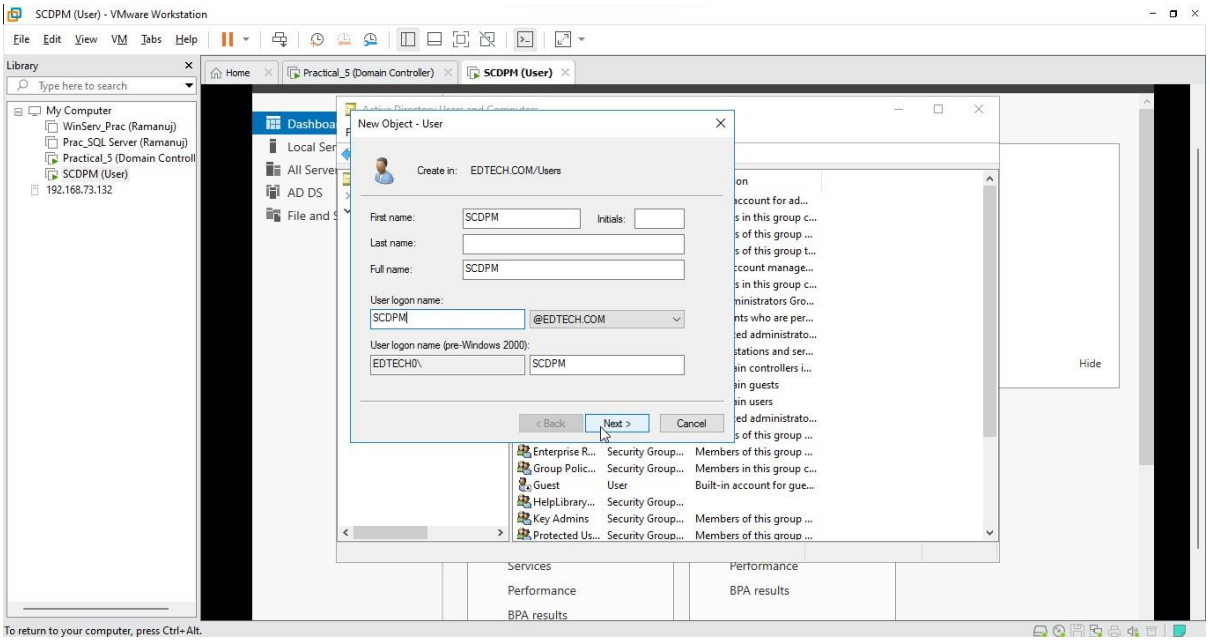
- Now the Domain Controller will be added, Click on the **Domain Controller** and Click on **Users**



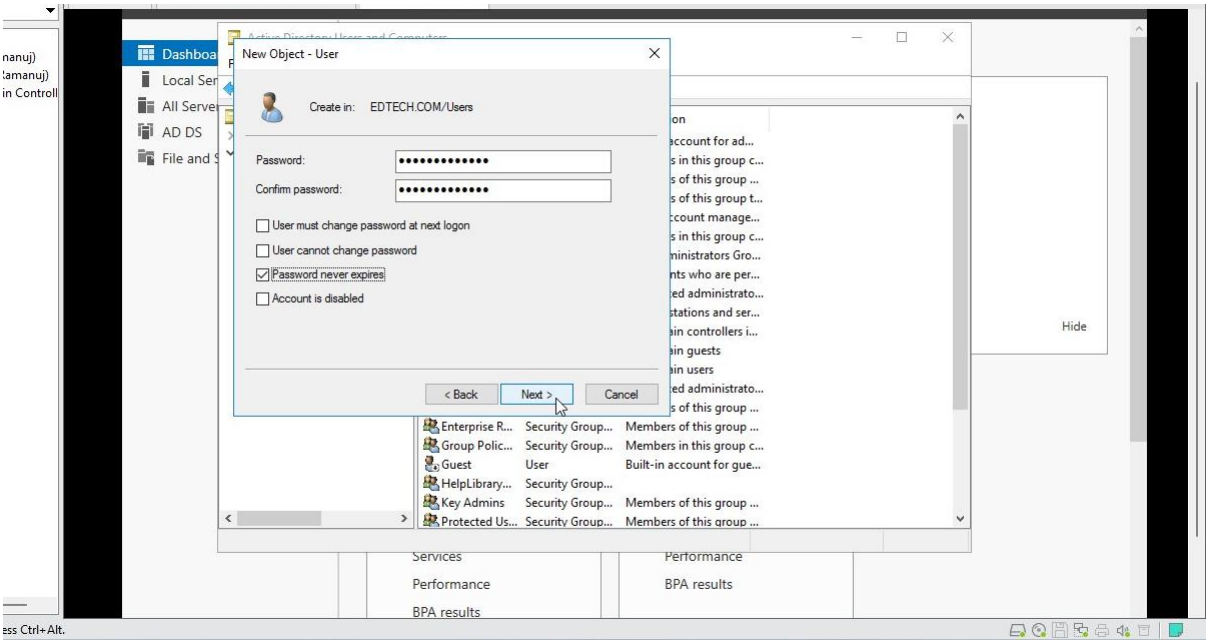
- Right Click on **Users** and Click **New** and **User**



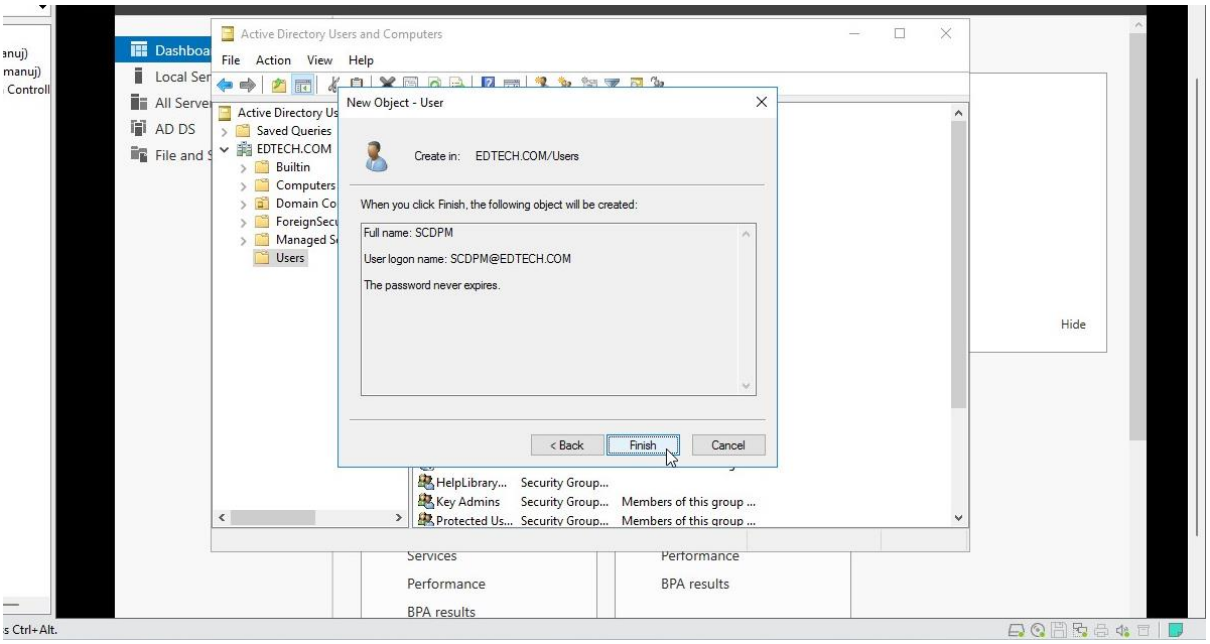
- Type in a new User name (here it is SCDPM) and Click **Next**



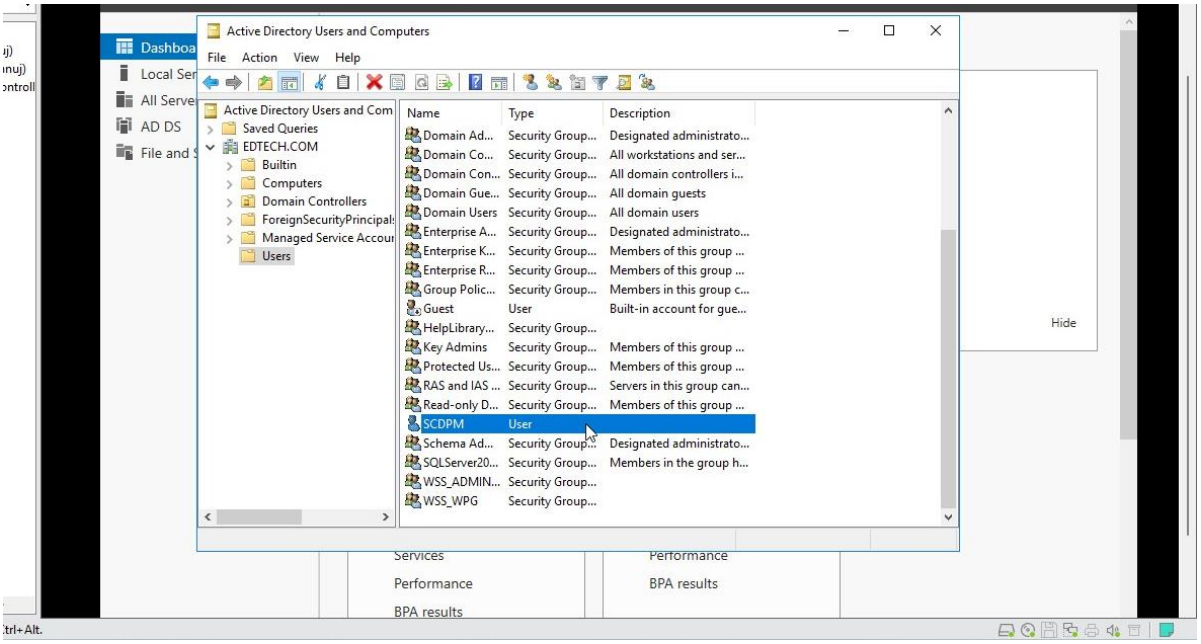
- Type in a password and Select **Password never expires** and Click **Next**



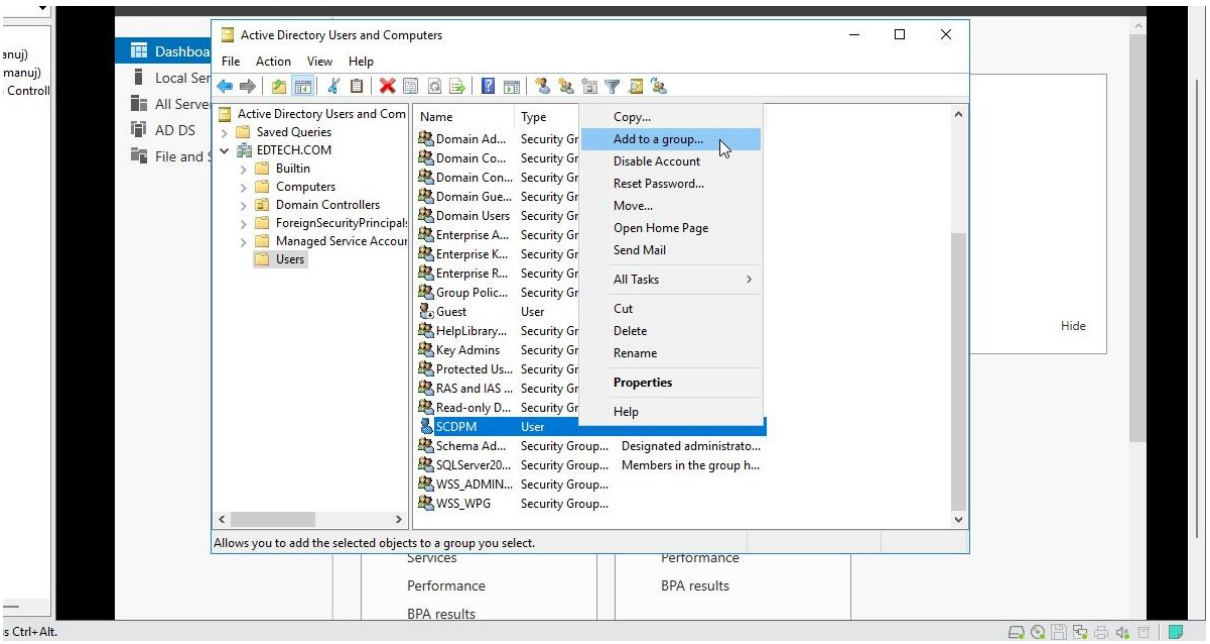
- Click on **Finish**



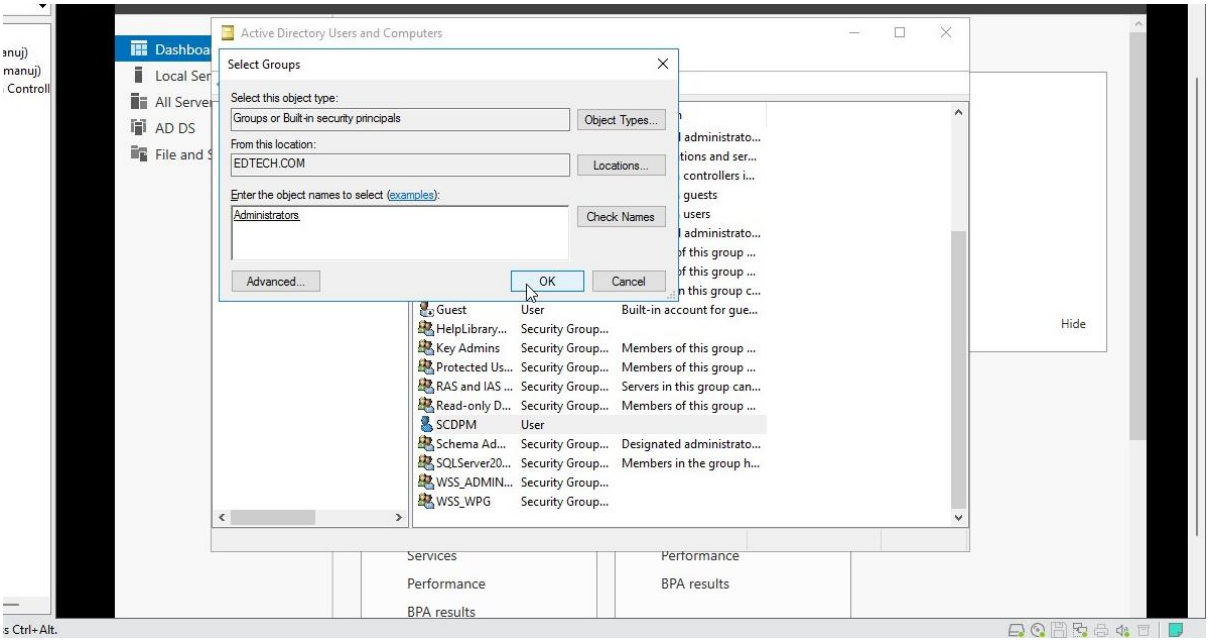
- The SCDPM User has been created



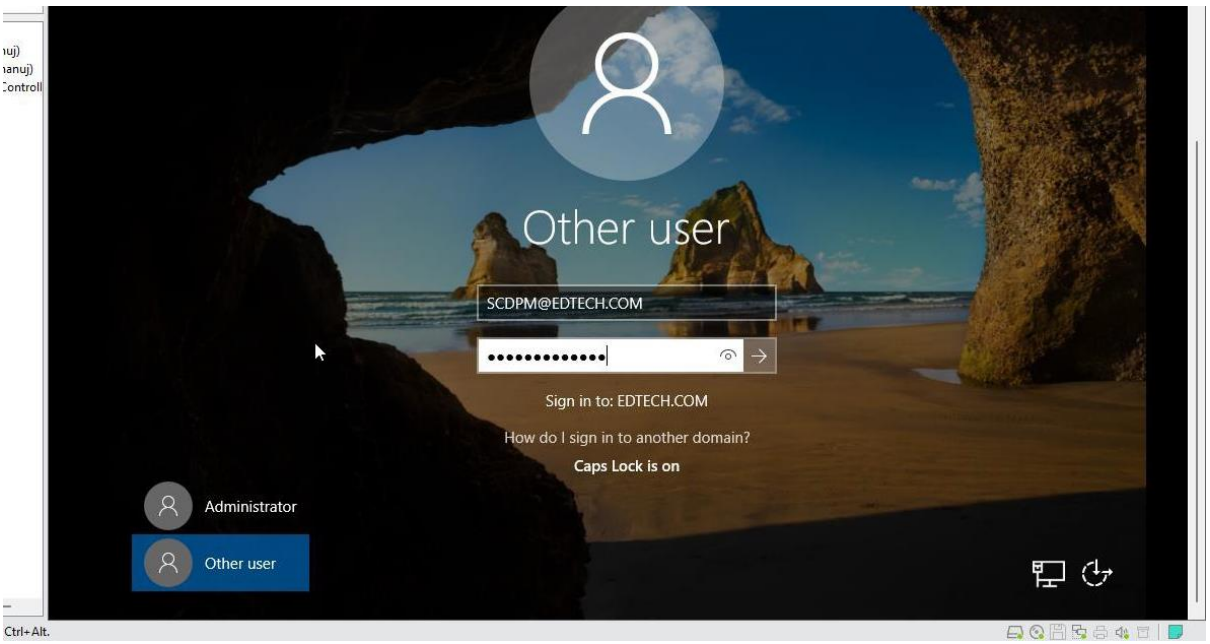
- Add the User to the **Domain Group**, Right Click on SCDPM and Select **Add to a group**



- Type in **Administrator** and Click on **Check Names** and Click on **Ok**



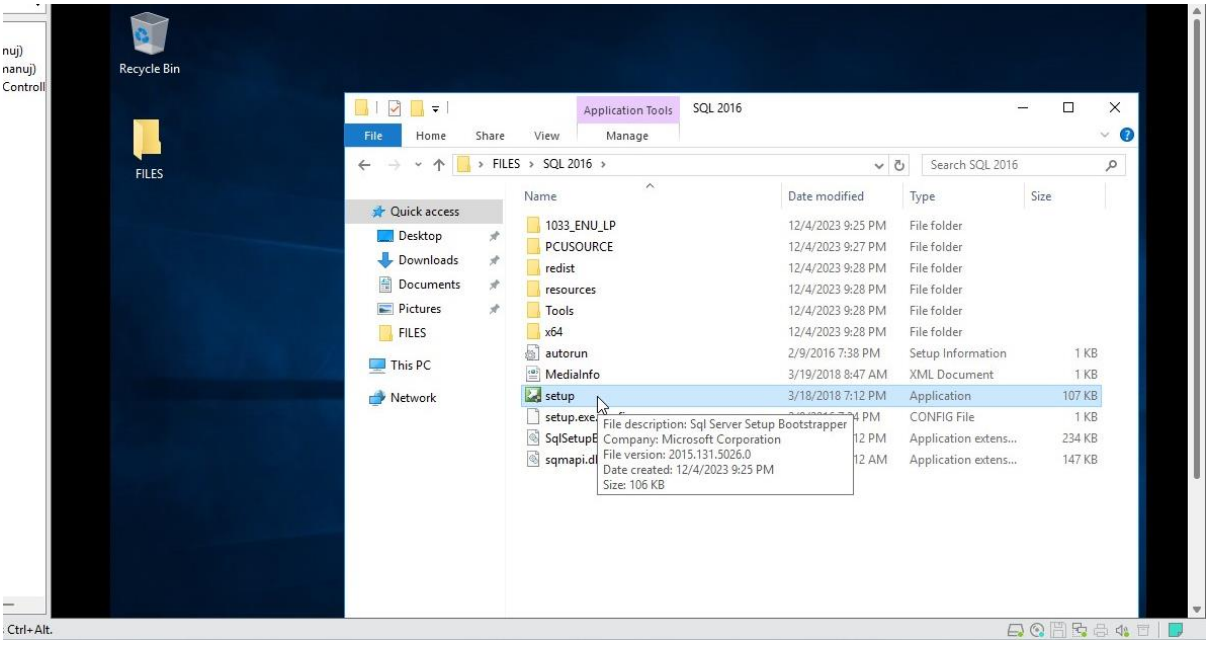
- Now Login as SCDPM



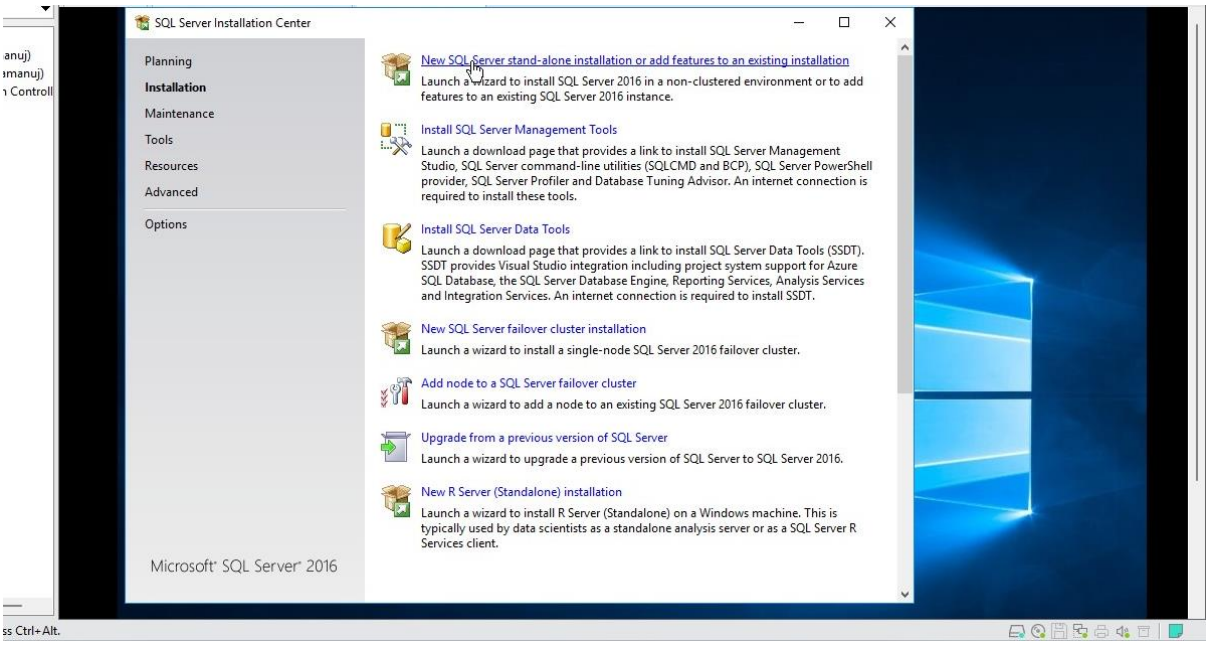
Step 5: Installing SQL Server

- Now Open the SQL 2016 setup file from your folder

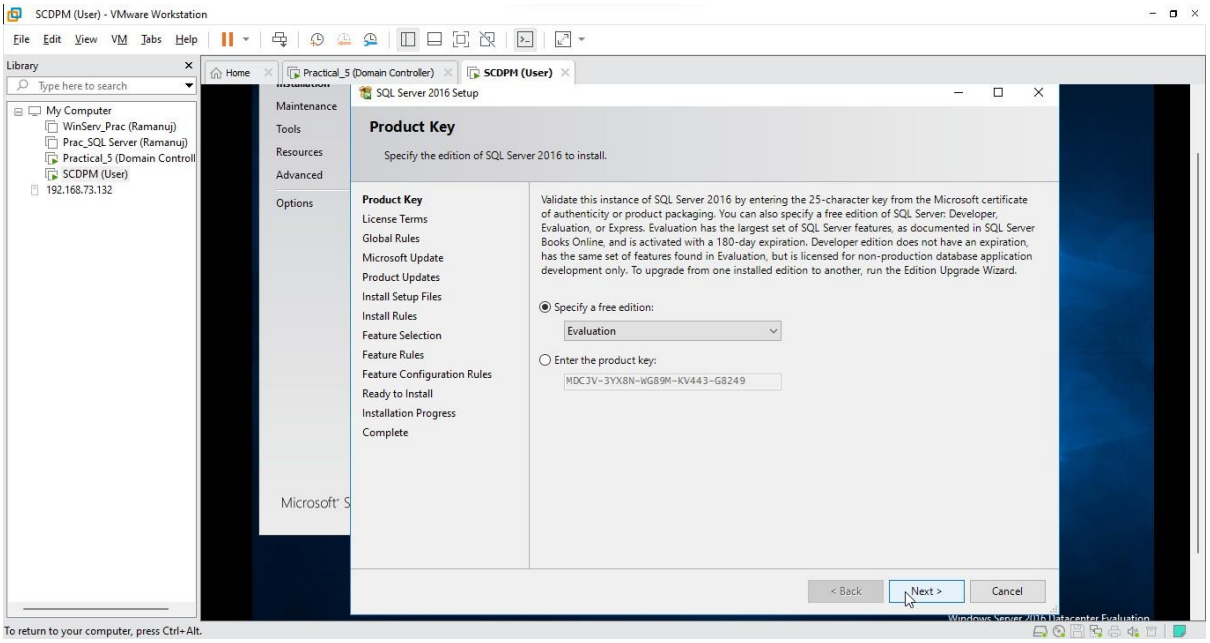
Note: This has to take place within SCDPM User and not Administrator



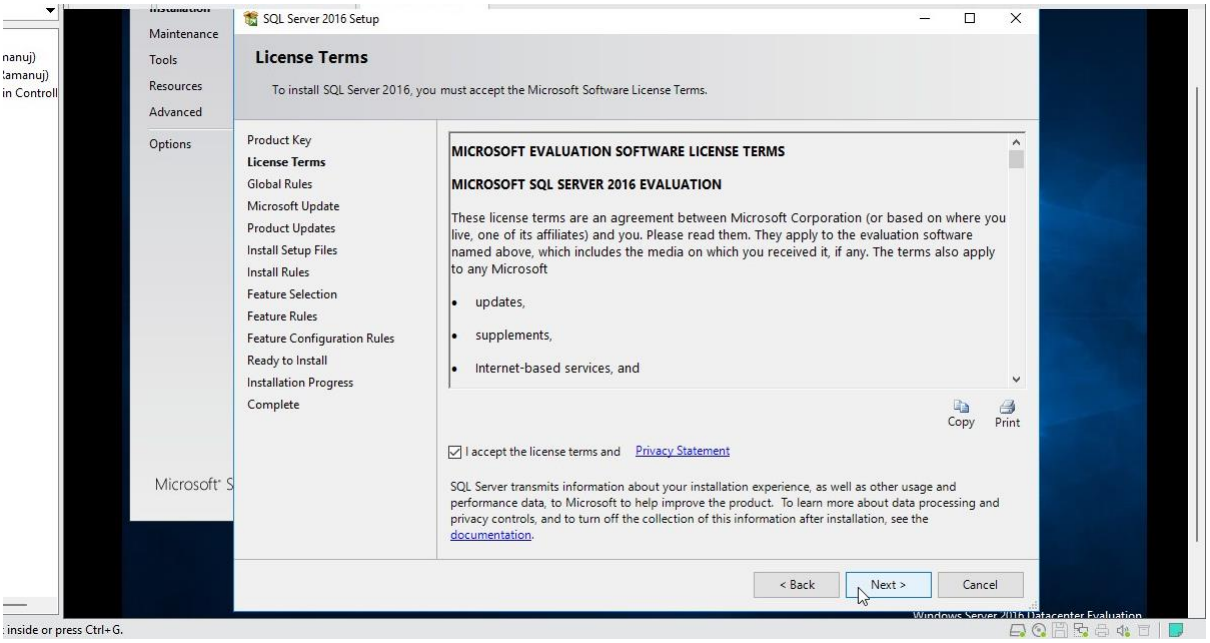
- Select **Installation** and Click on **New SQL Server Stand-alone installation**



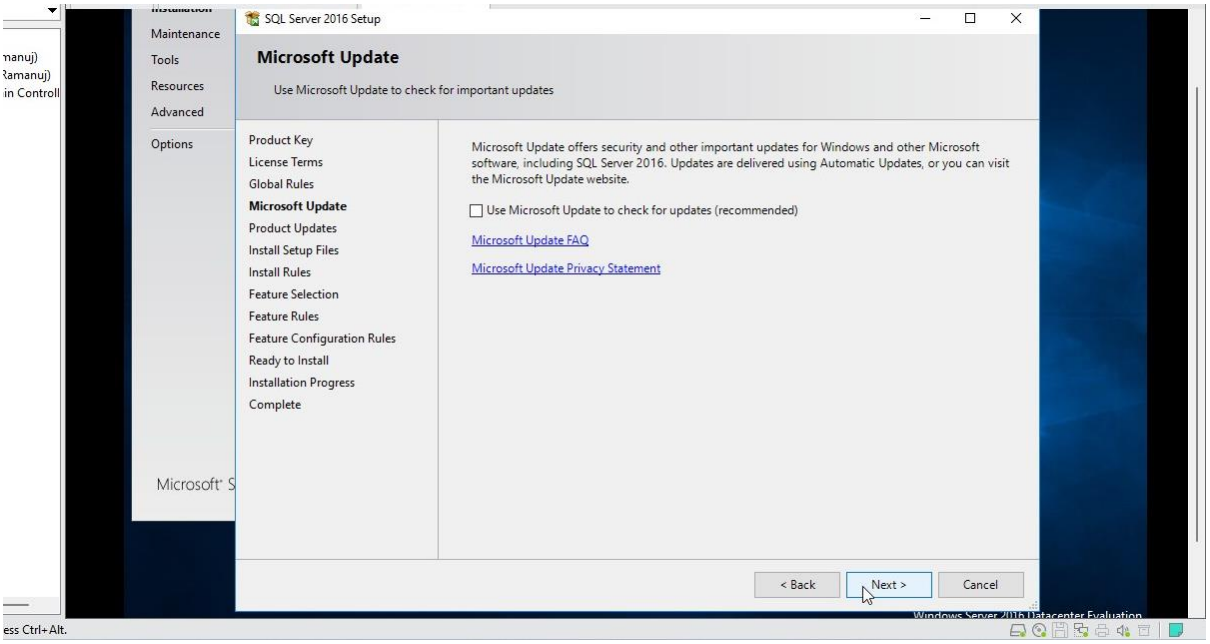
- Select **Specify a free edition** and Click on **Evaluation** and Click **Next**



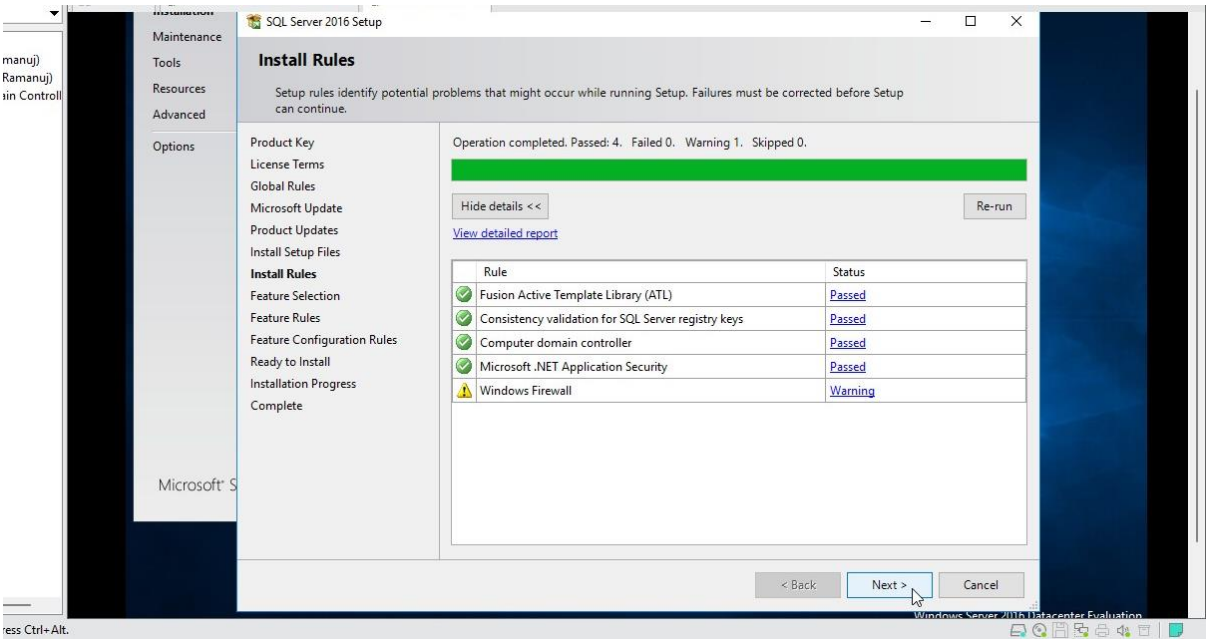
- Select **I accept these license terms** and Click **Next**



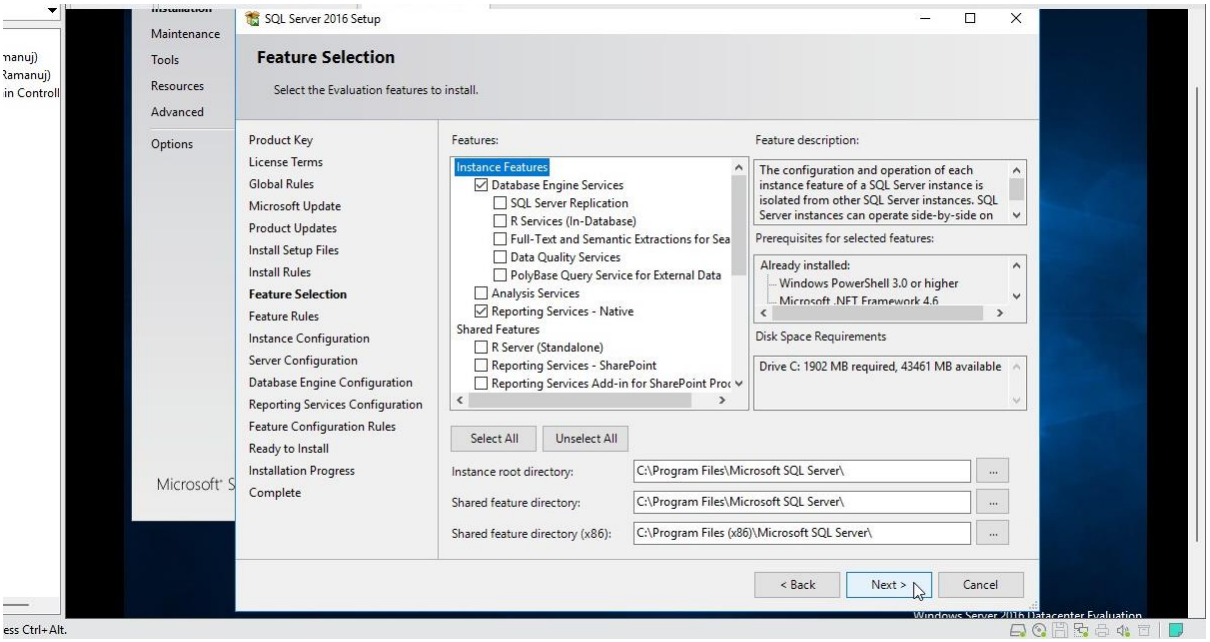
- Keep default values and Click **Next**



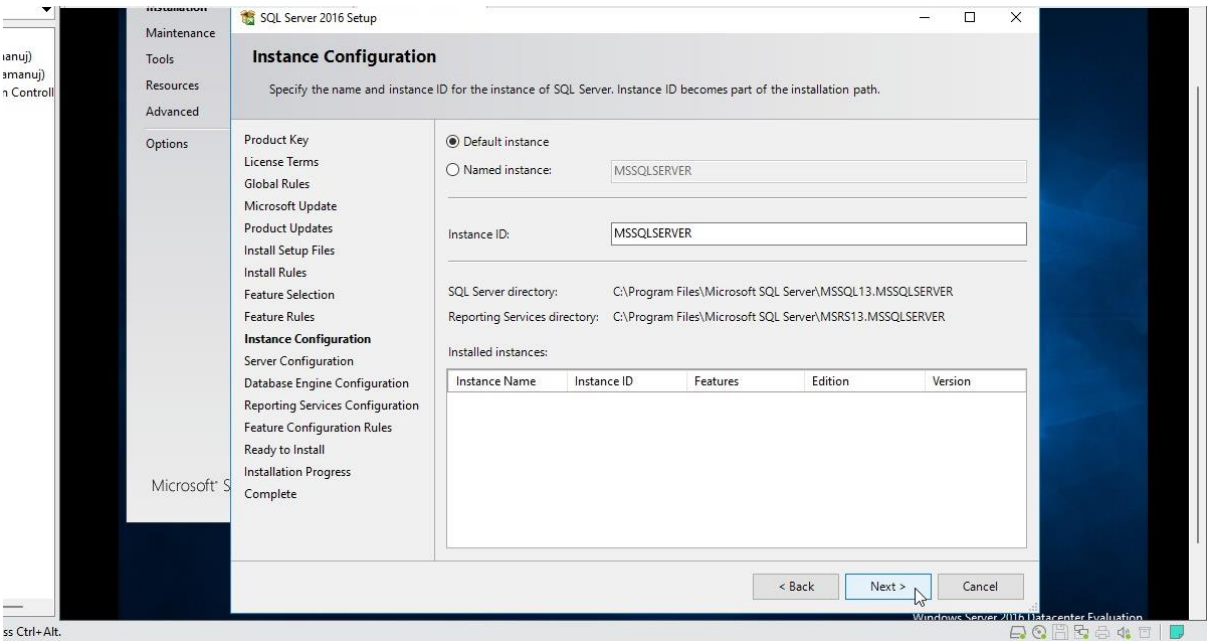
- Warnings are acceptable, Click **Next**



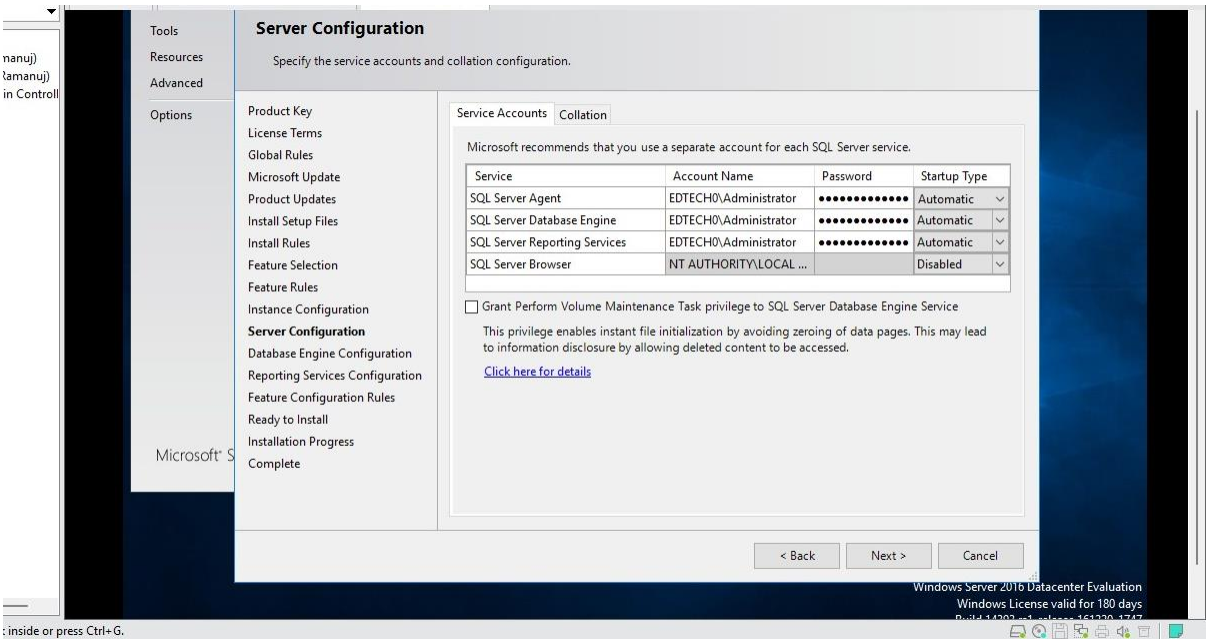
- Select two features: **Database Engine Services** and **Reporting Service- Native** and Click **Next**



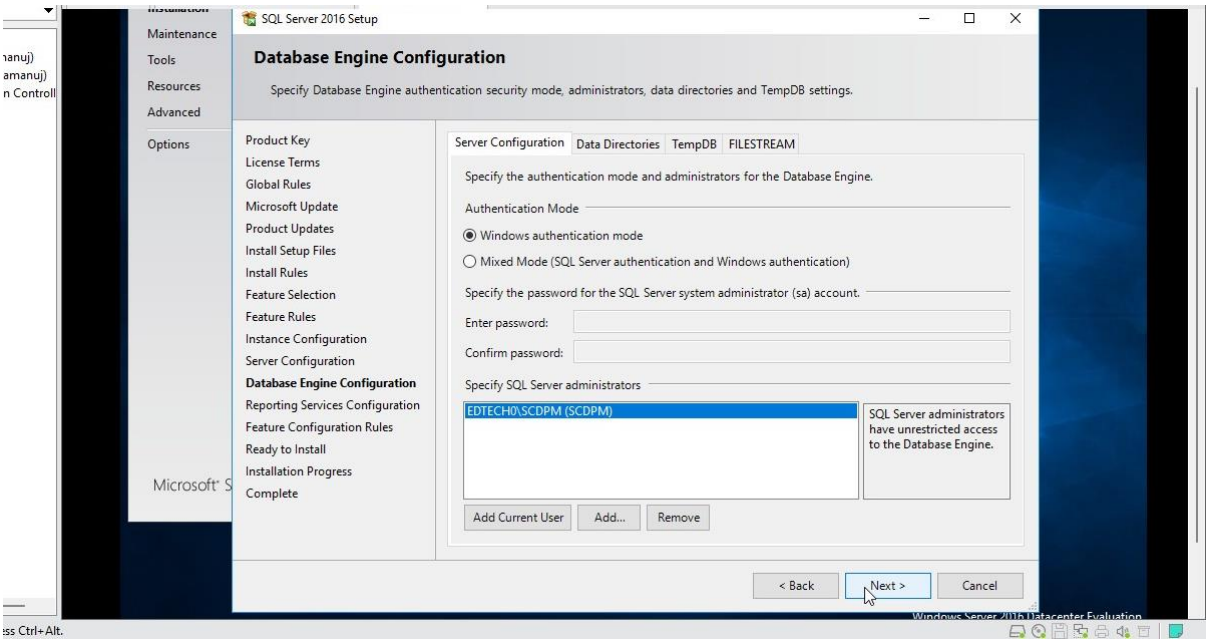
- Keep default values and Click **Next**



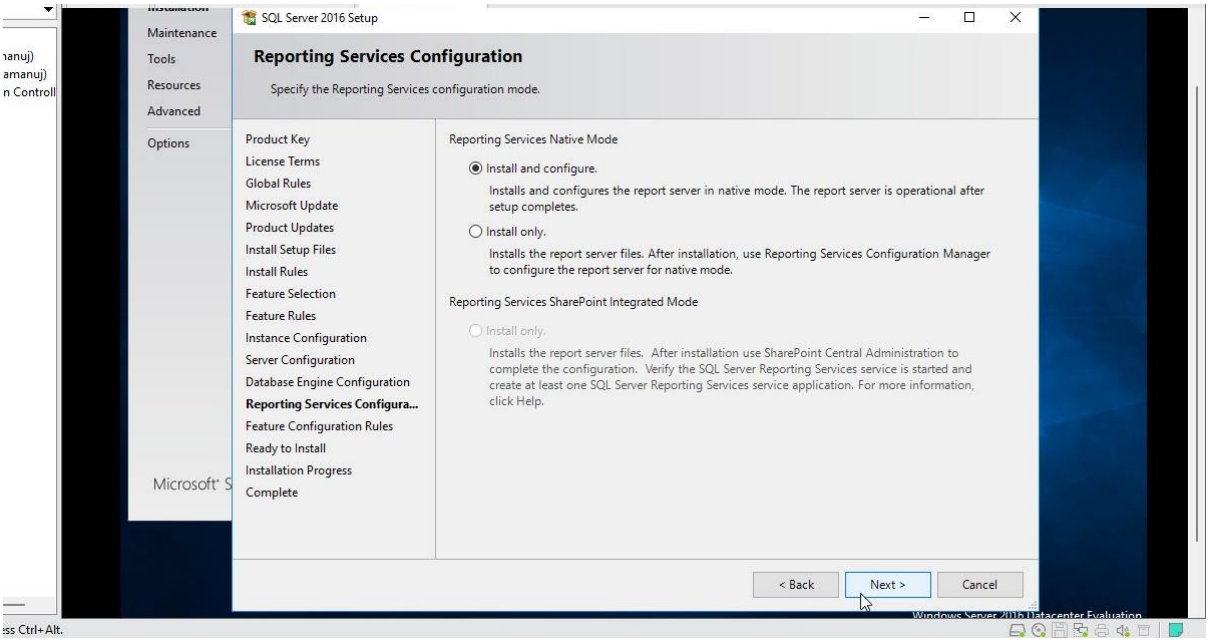
- Change the Account Name for **SQL Server Agent**, **Database Engine** and **Reporting Services** to the **Users Account** and Ensure the Start-up type is **Automatic** and Click **Next**



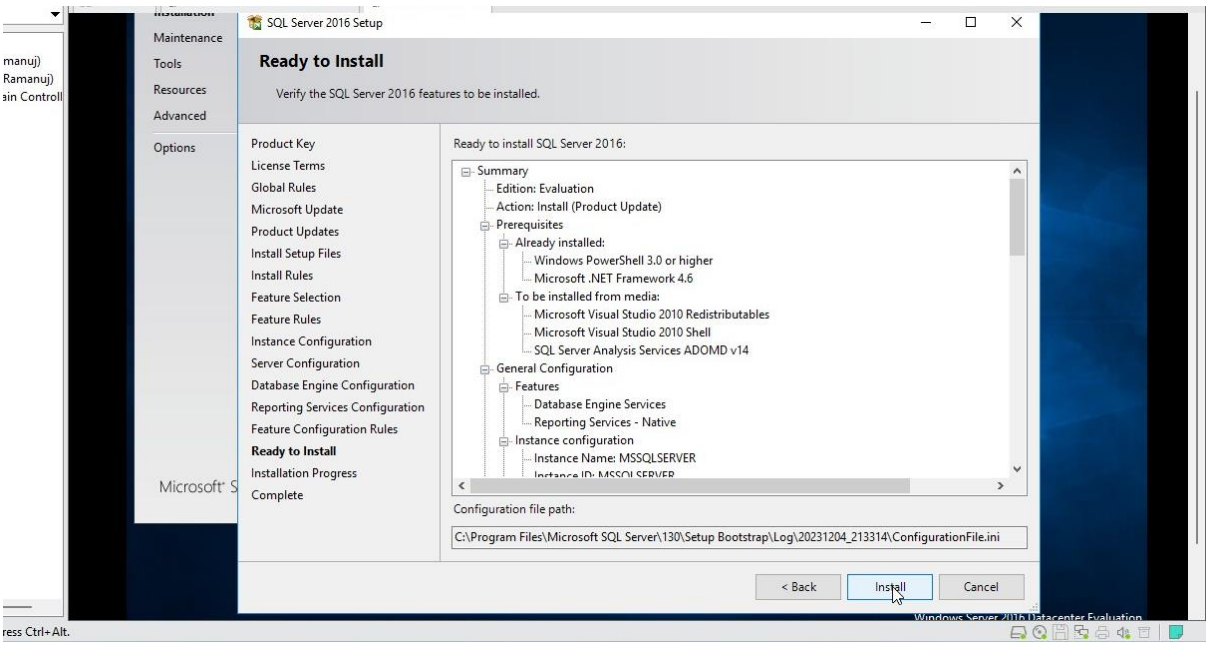
- Click on **Add Current User** (Ensure it is SCDPM and not the Administrator) and Click **Next**



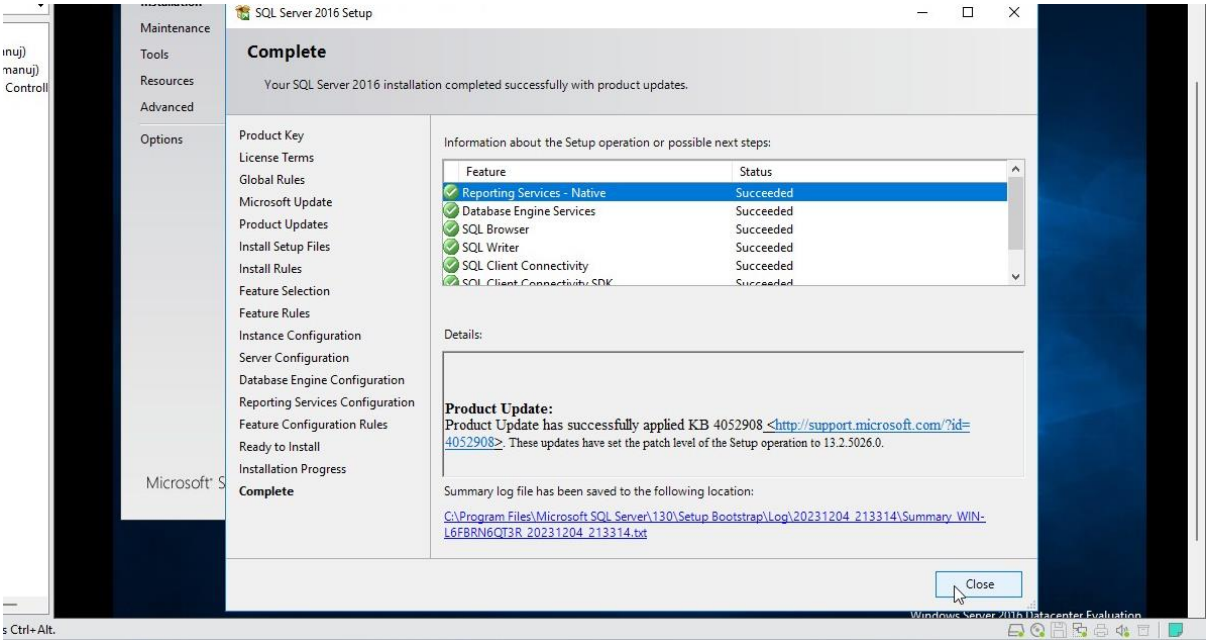
- Keep default values and Click **Next**



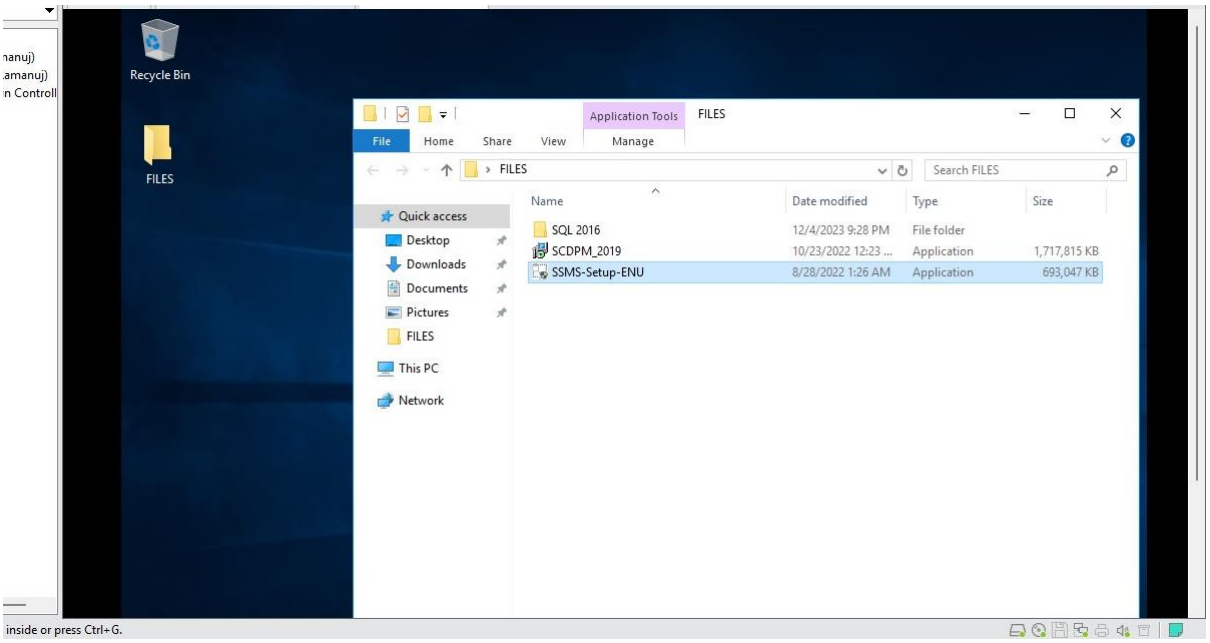
- Review the summary of the SQL Server and Click on **Install**



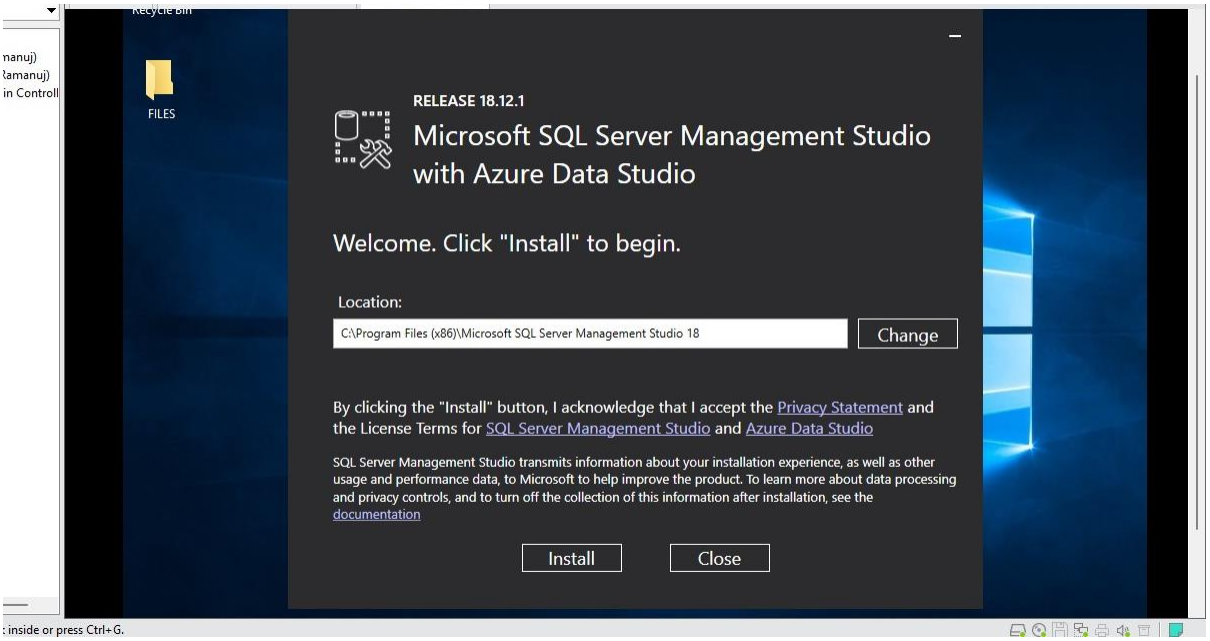
- After installation Click **Close**



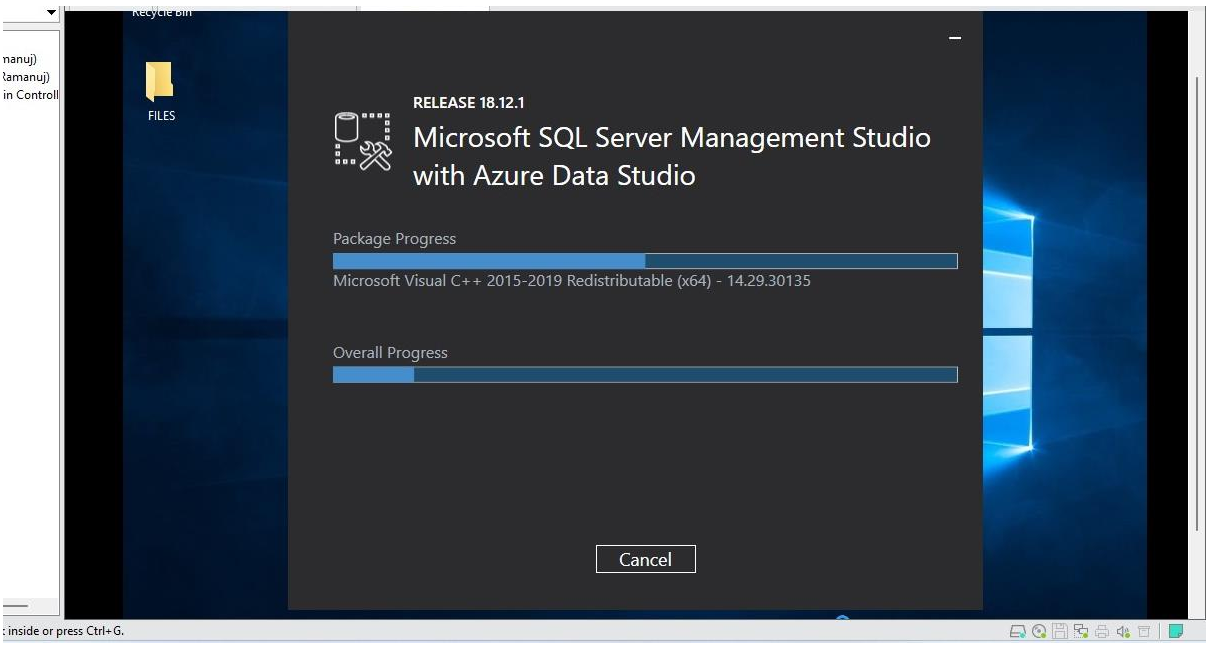
- Now Open **SSMS** Setup from your folder



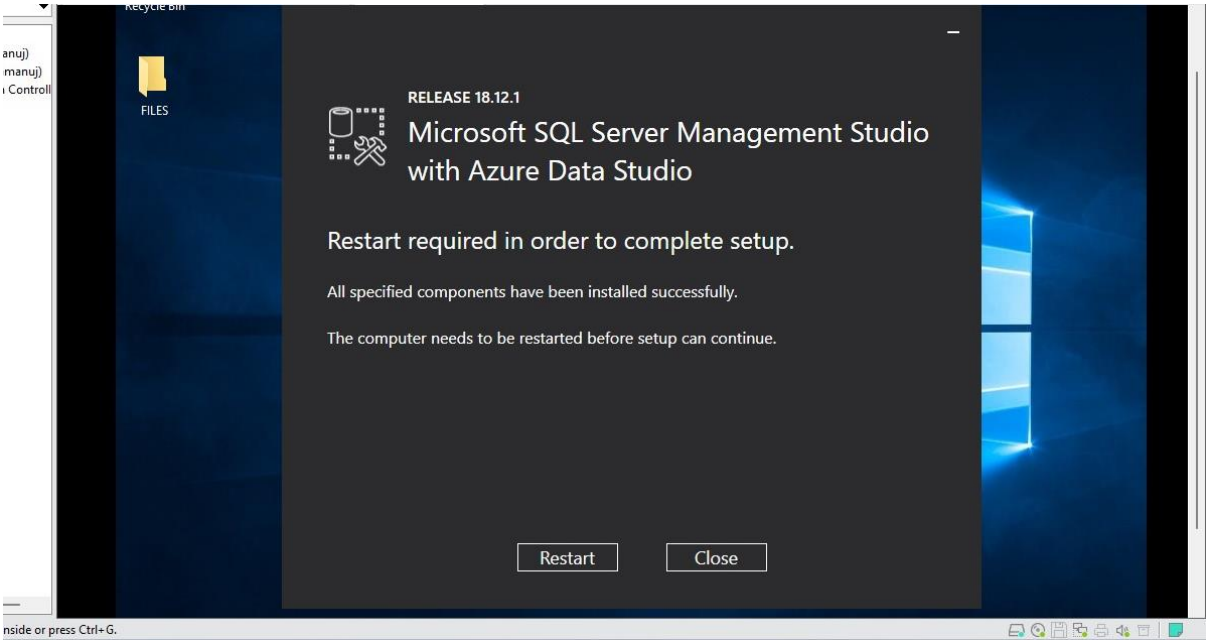
- Click on **Install**



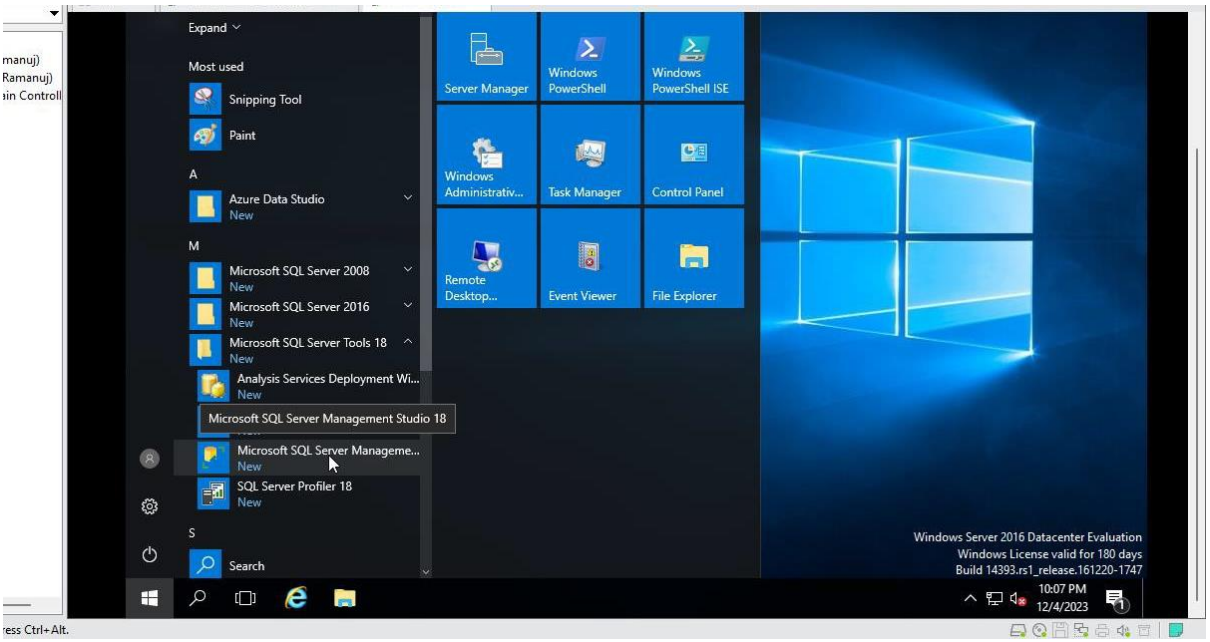
- SSMS will start installing onto your system



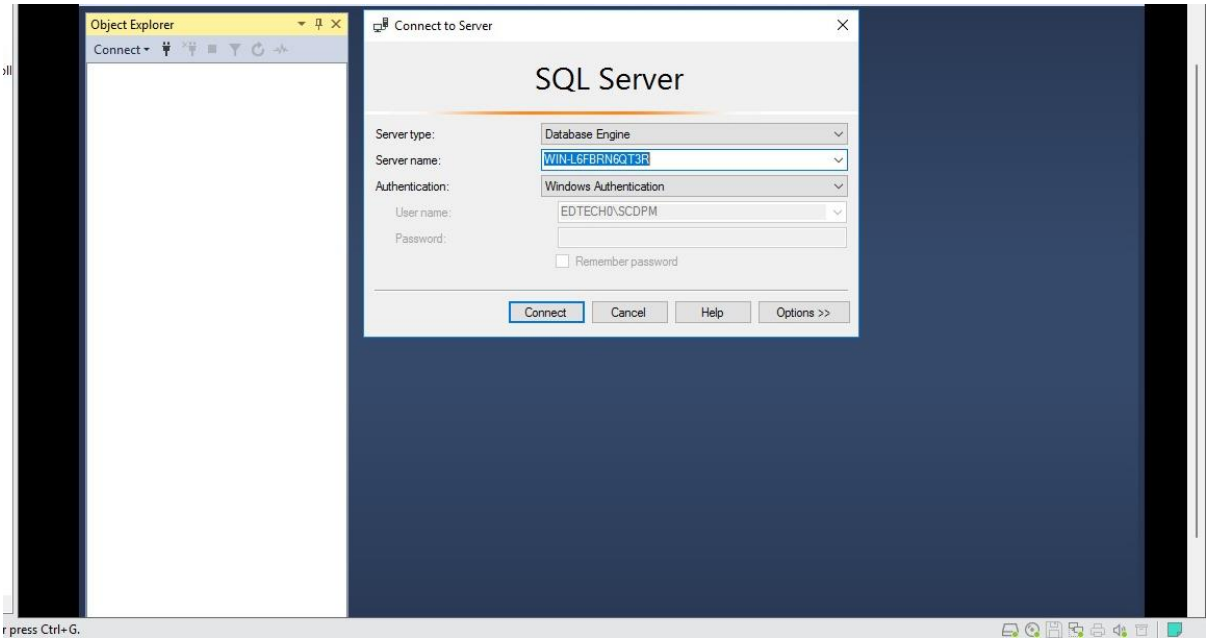
- After installation a restart is required



- Open **SQL Server Management Studio 18**

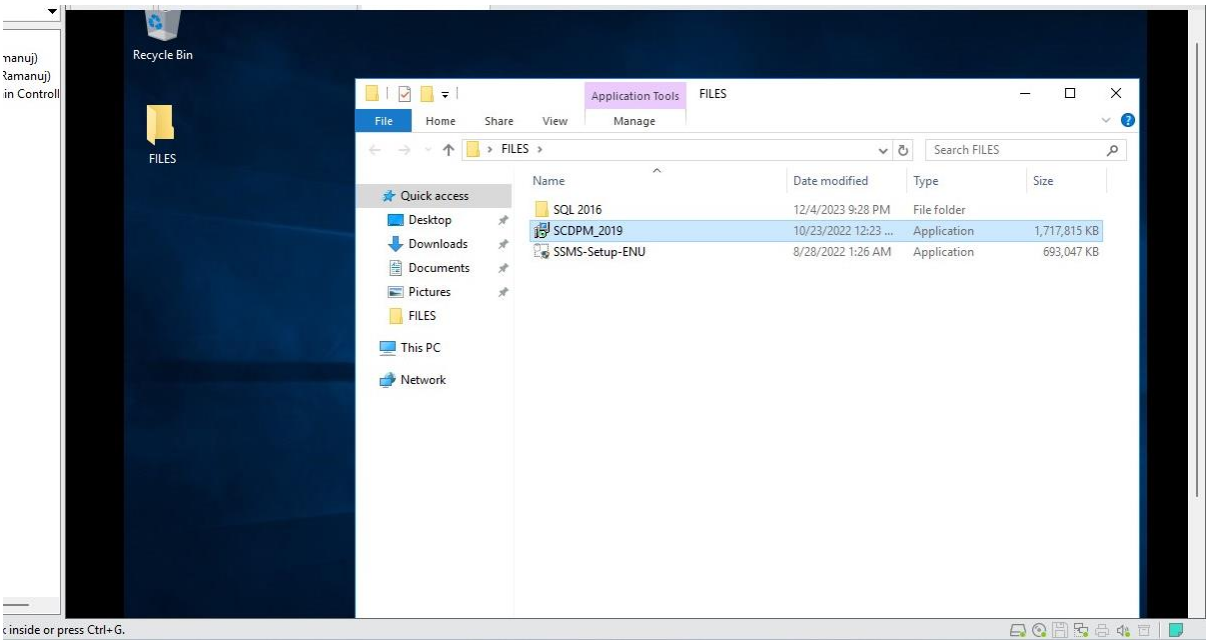


- Keep default values and Click on **Connect**

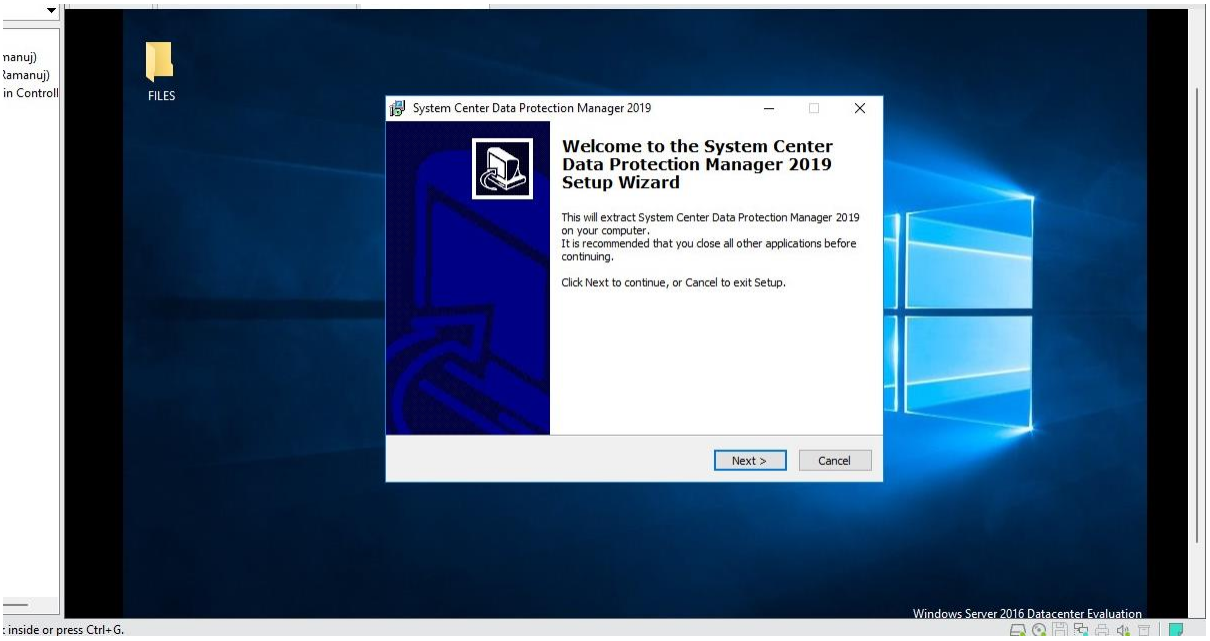


Step 6: Installing Data Protection Manager

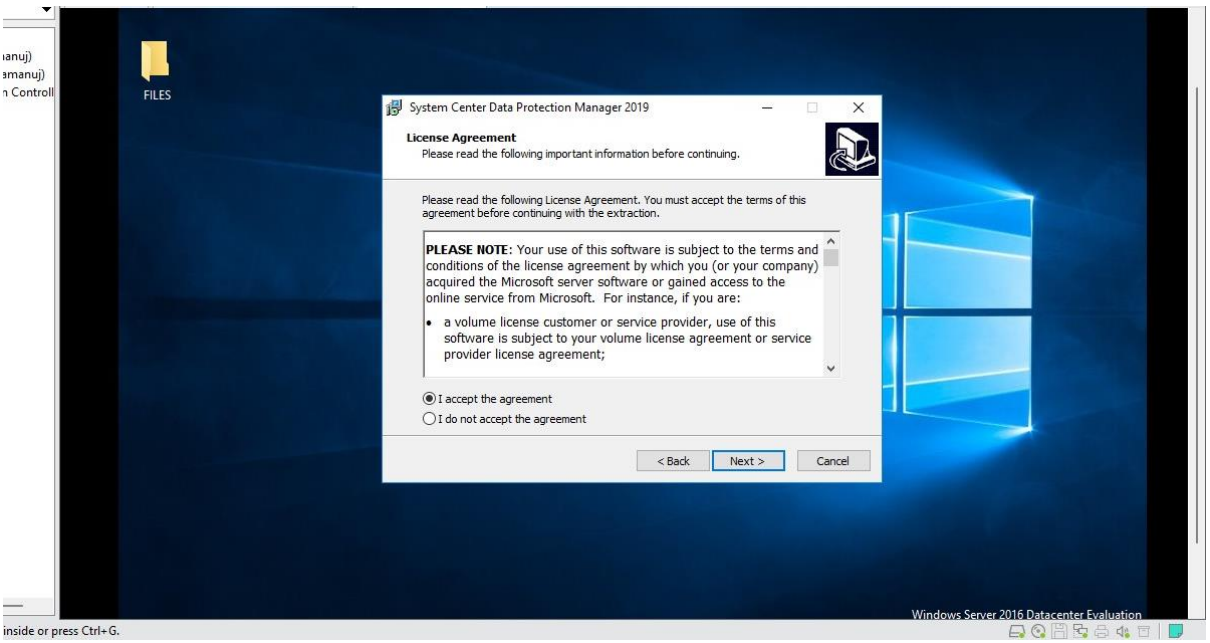
- Open **SCDPM_2019** from your folder



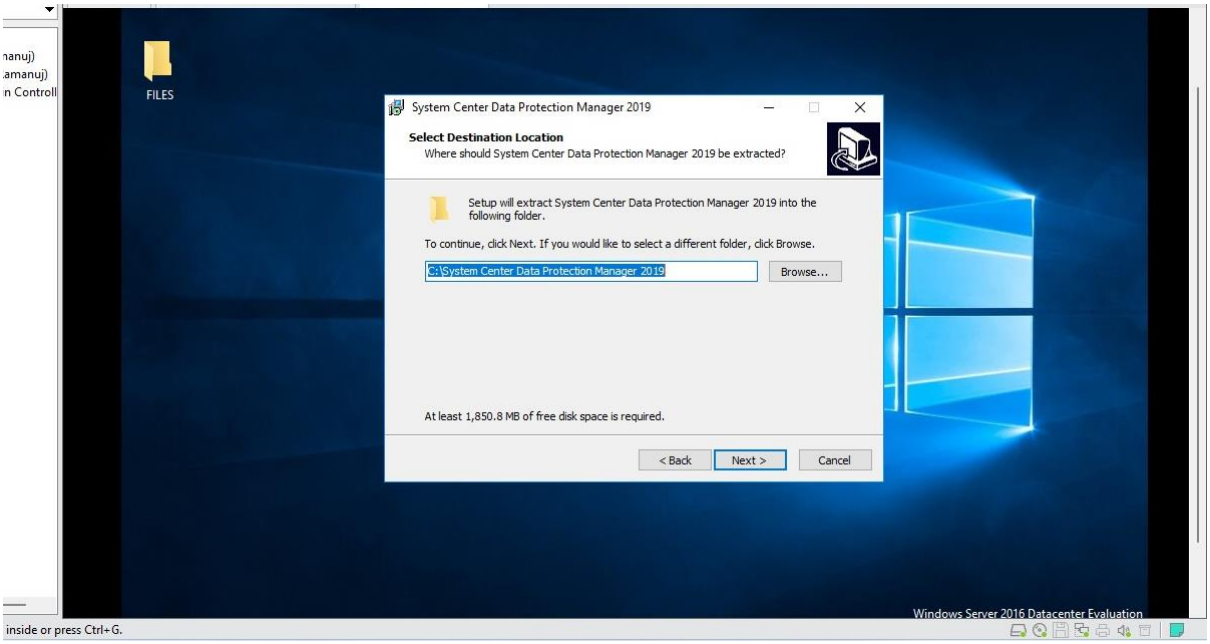
- Click **Next**



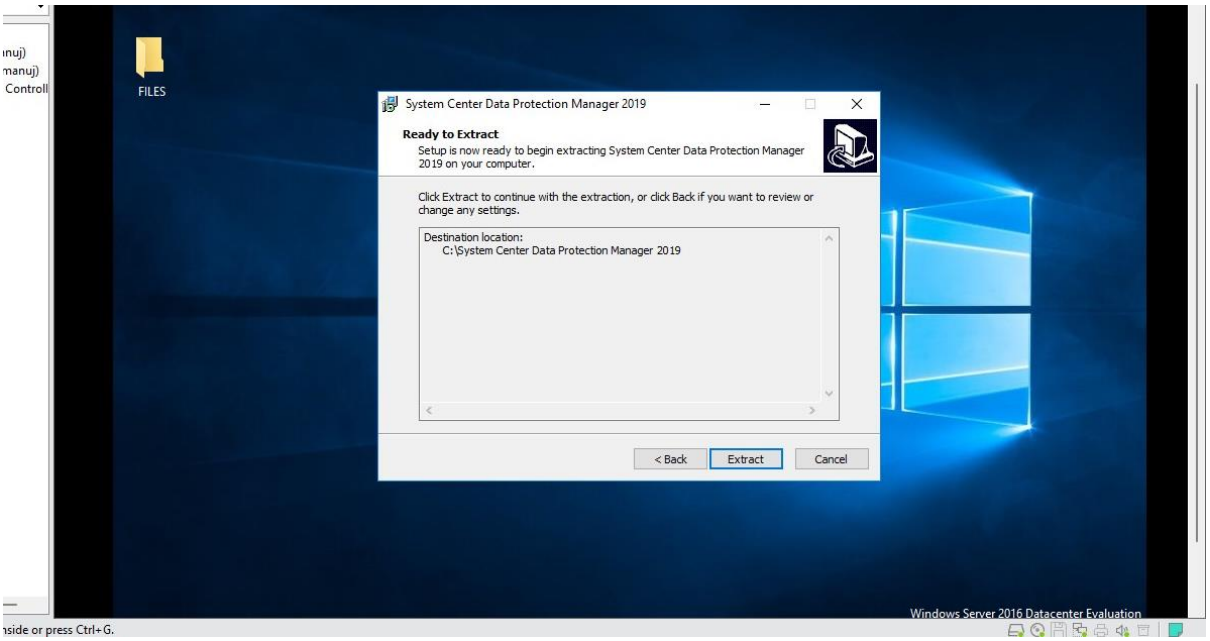
- Select **I accept the agreement** and Click **Next**



- Keep default values and Click **Next**

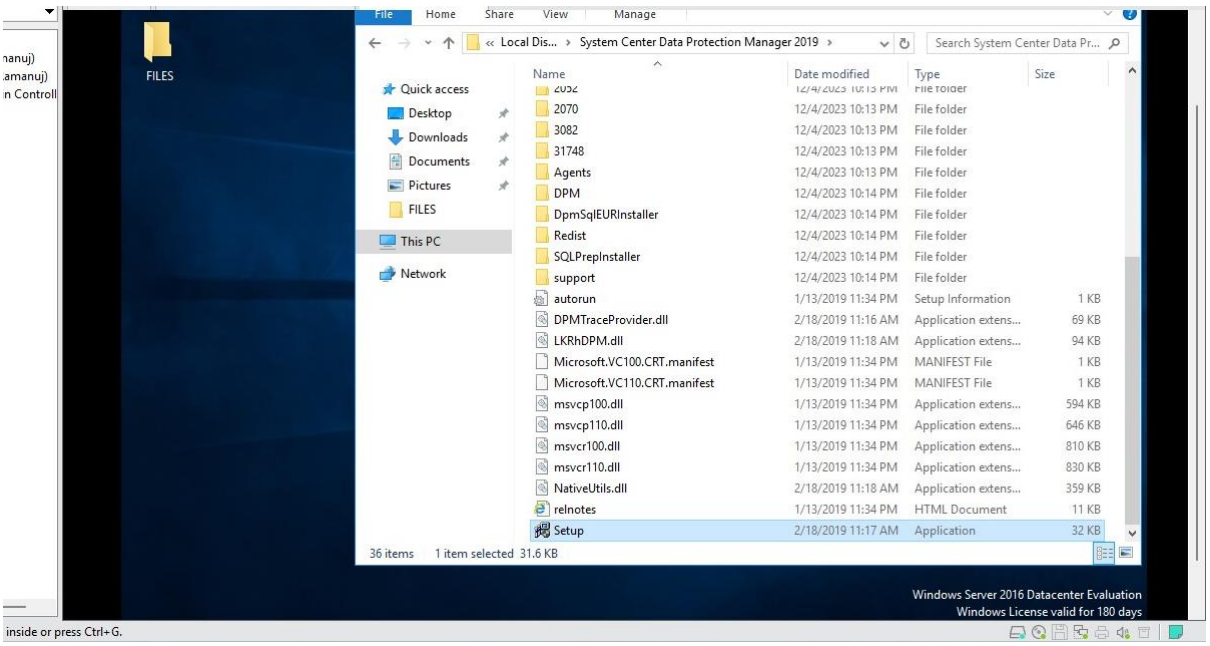


- Click on **Extract**

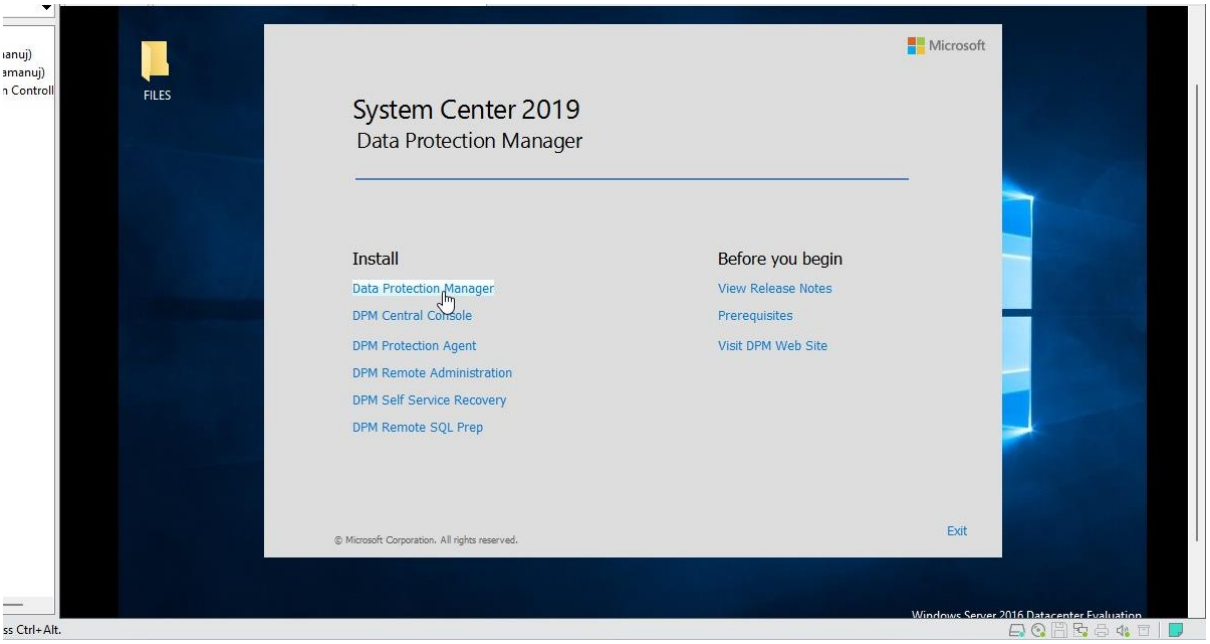


- Click on **Finish**

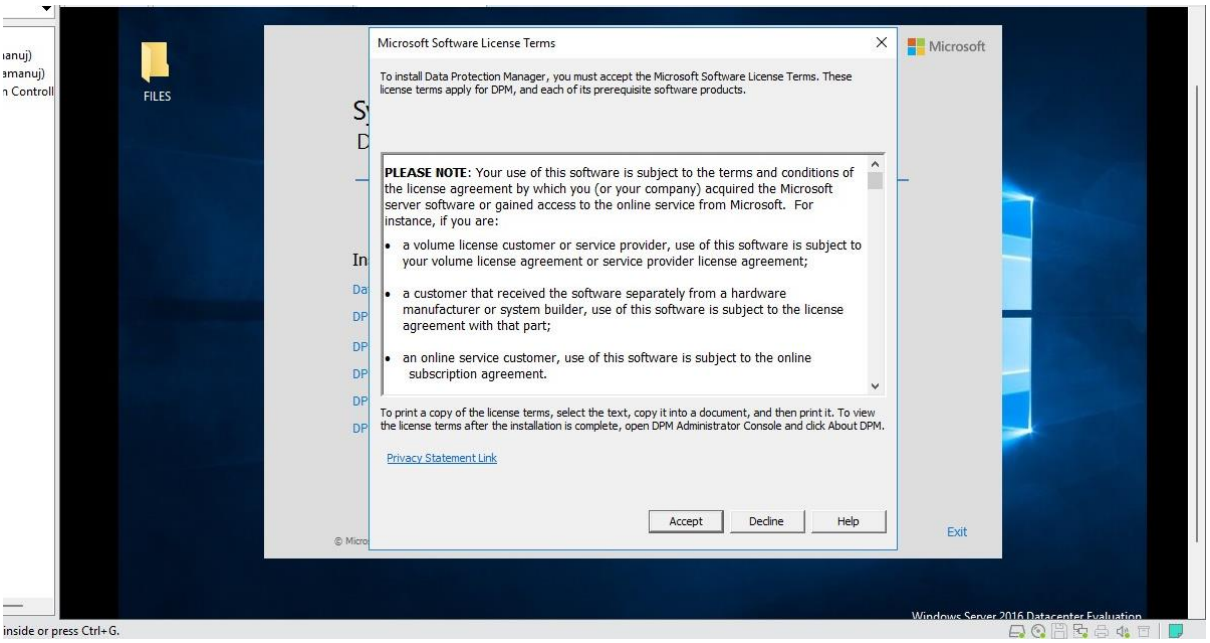
- Now In you C: Directory Click on the **System Center Data Protection Manager** folder and Click on **Setup**



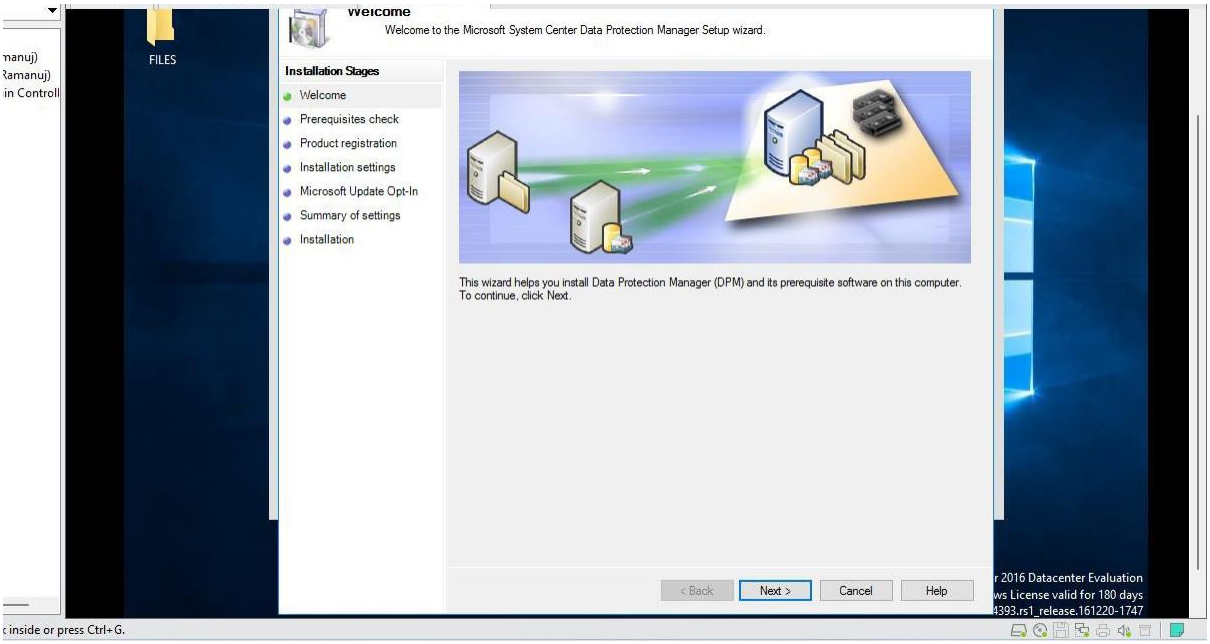
- Click on **Data Protection Manager**



- Click on **Accept**

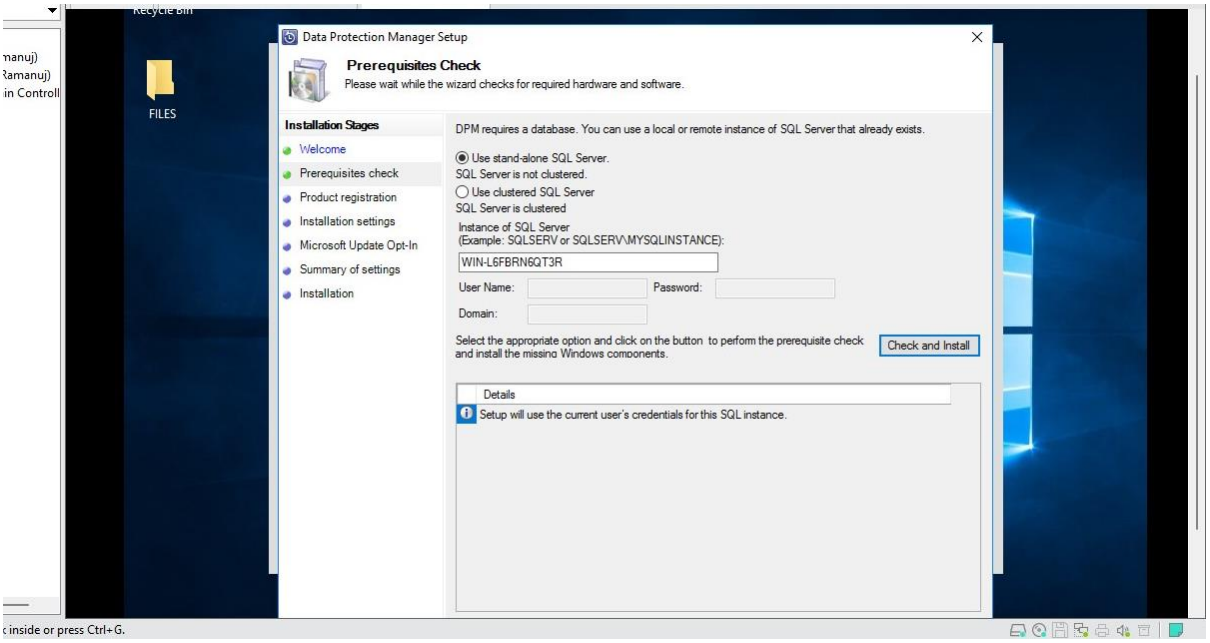


- Click **Next**

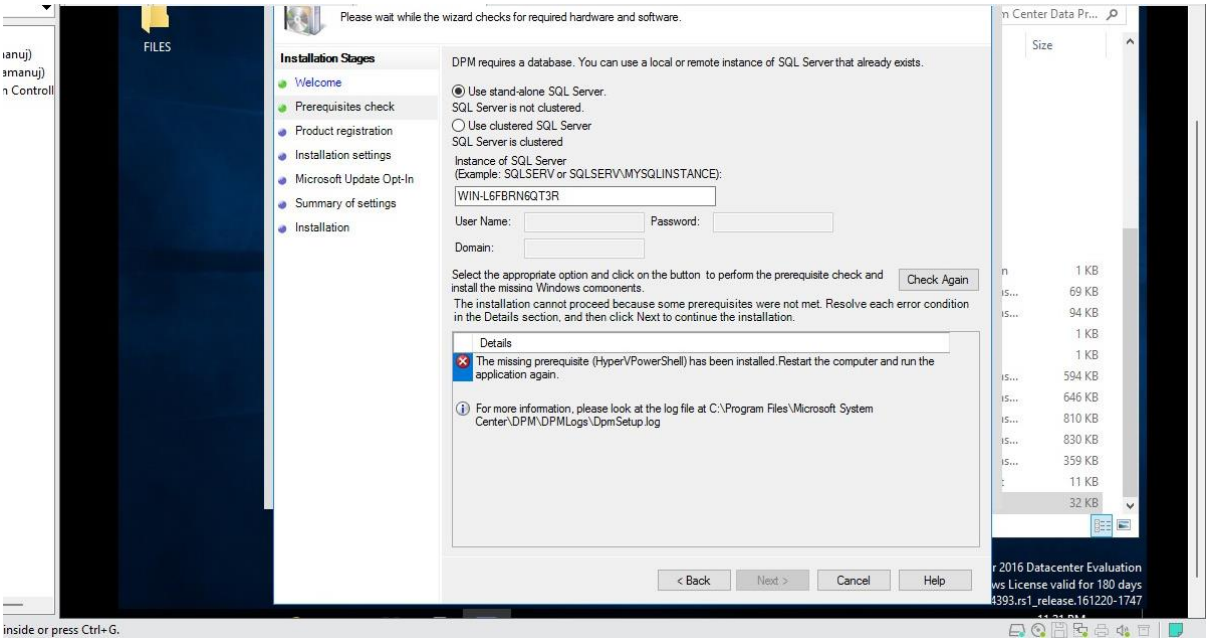


- Select **Use Stand-alone SQL Server** and Enter the Server Name and Click on **Check and Install**

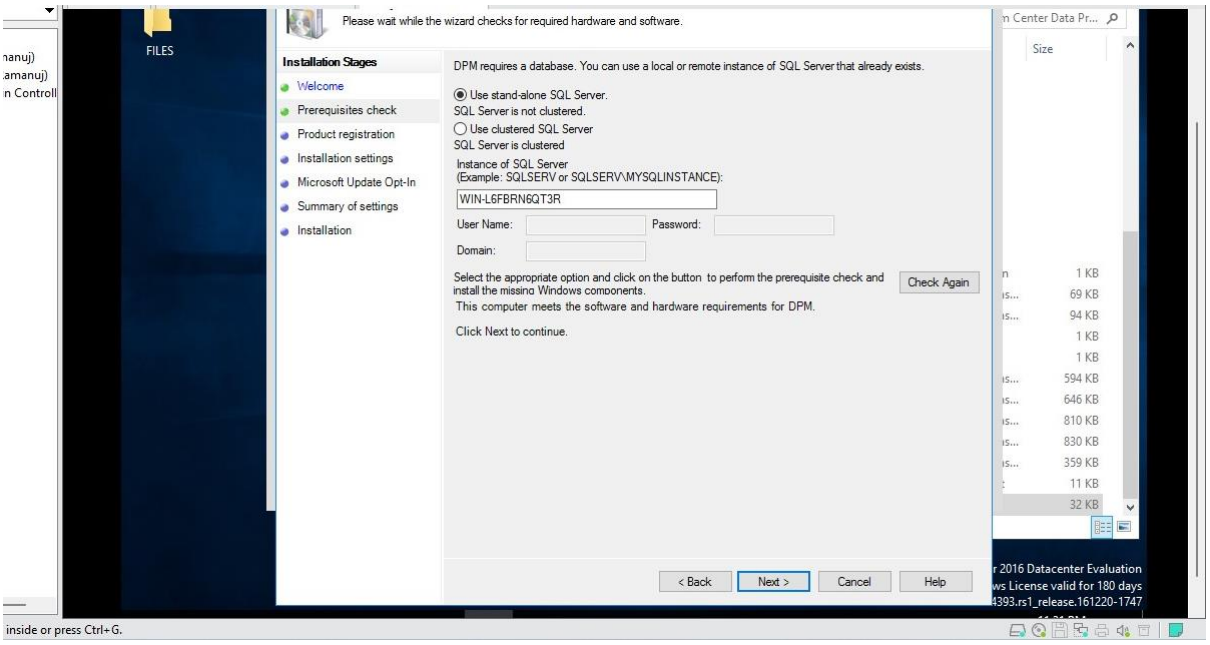
Note: If there is an Error try to elevate the control of your User



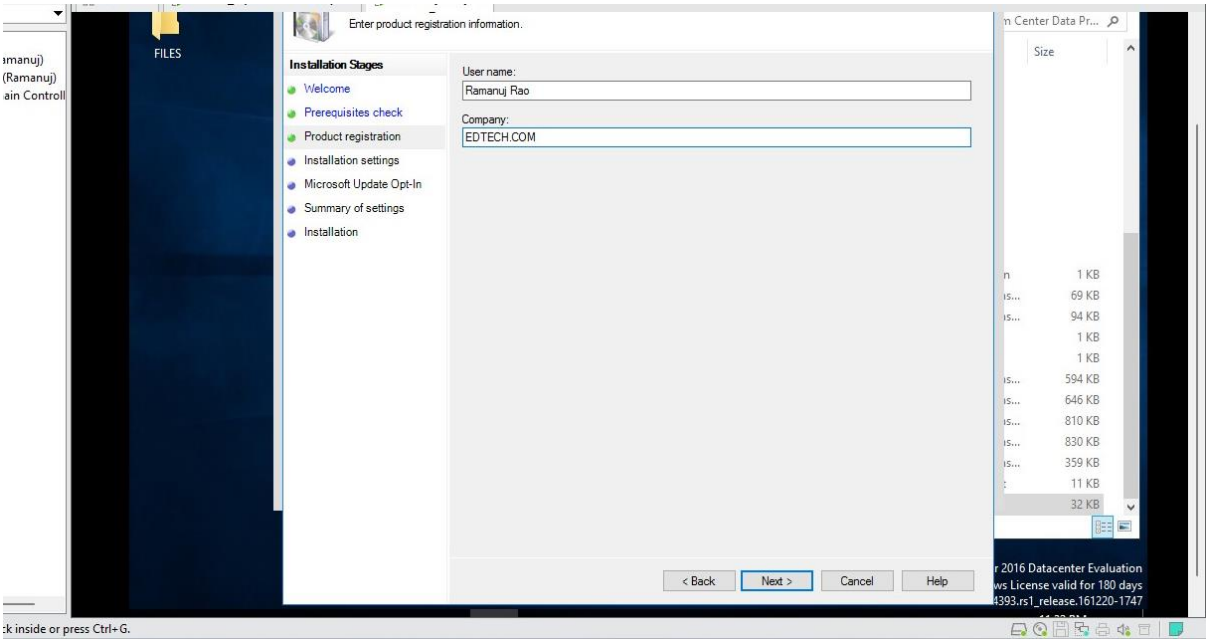
- While checking this error will pop-up which requires a restart of the system



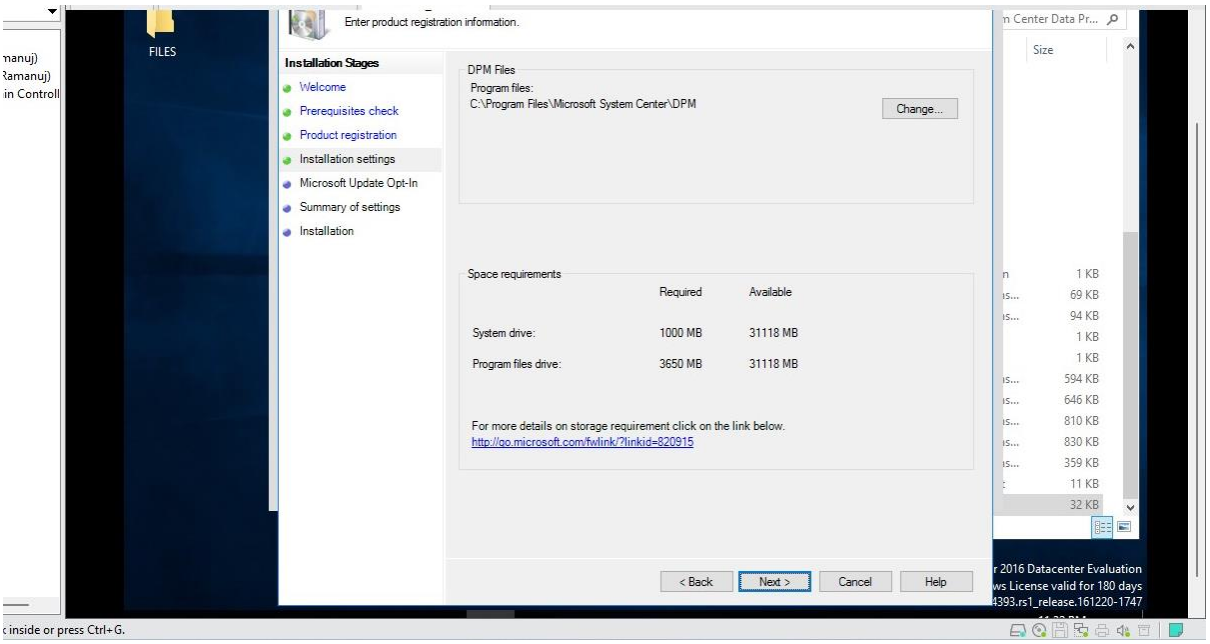
- After the checks are completed Click **Next**



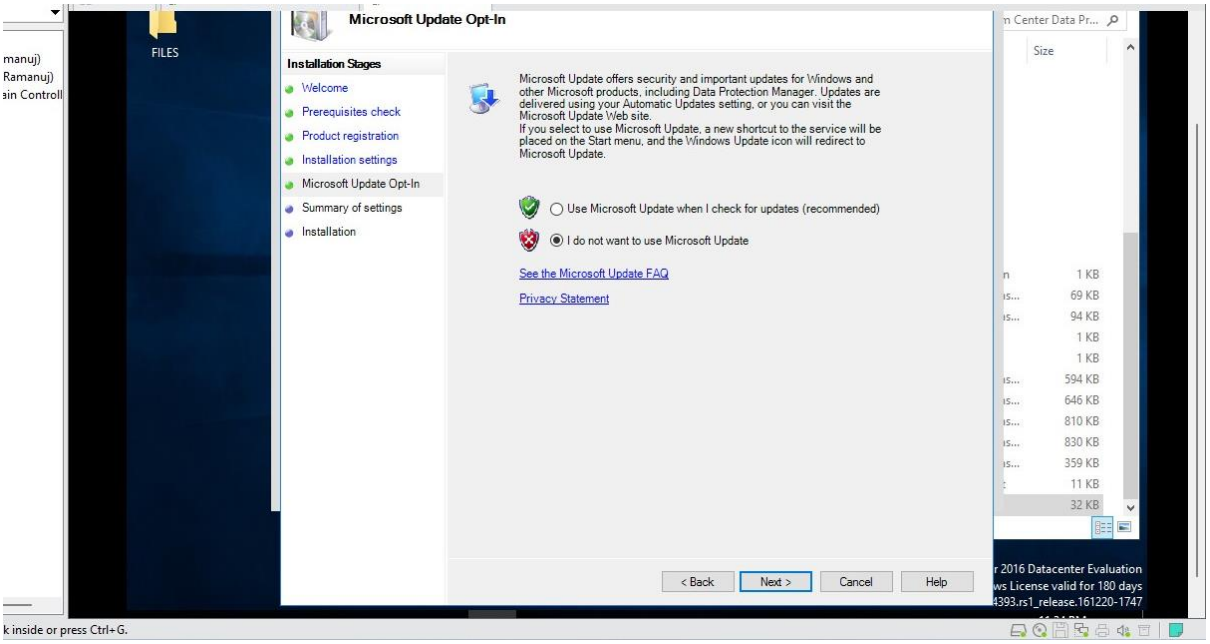
- Enter a User name and Company Name (Here it is VIQAR Rao & EDTECH.COM) and Click **Next**



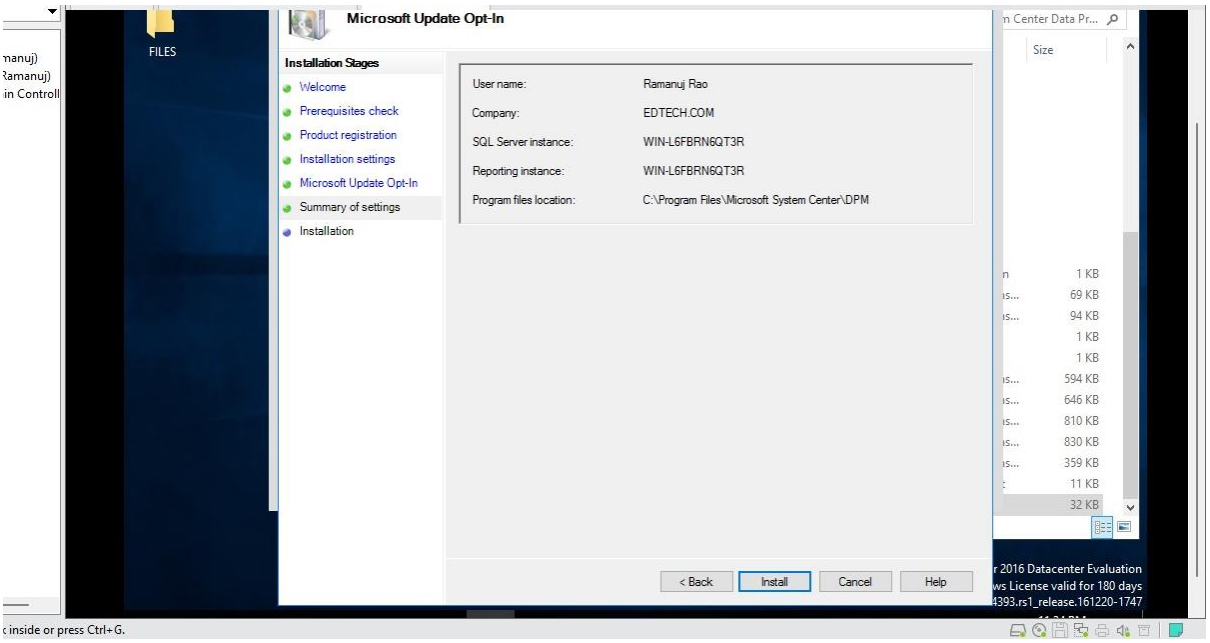
- Click **Next**



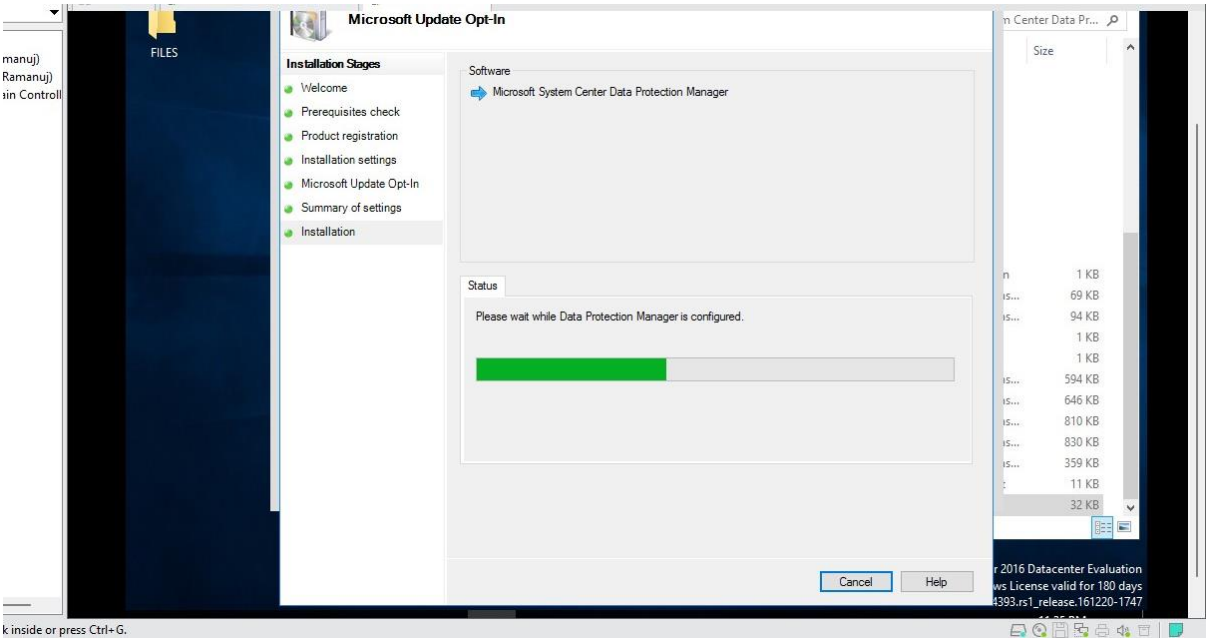
- Select **I do not want Microsoft Updates** and Click **Next**



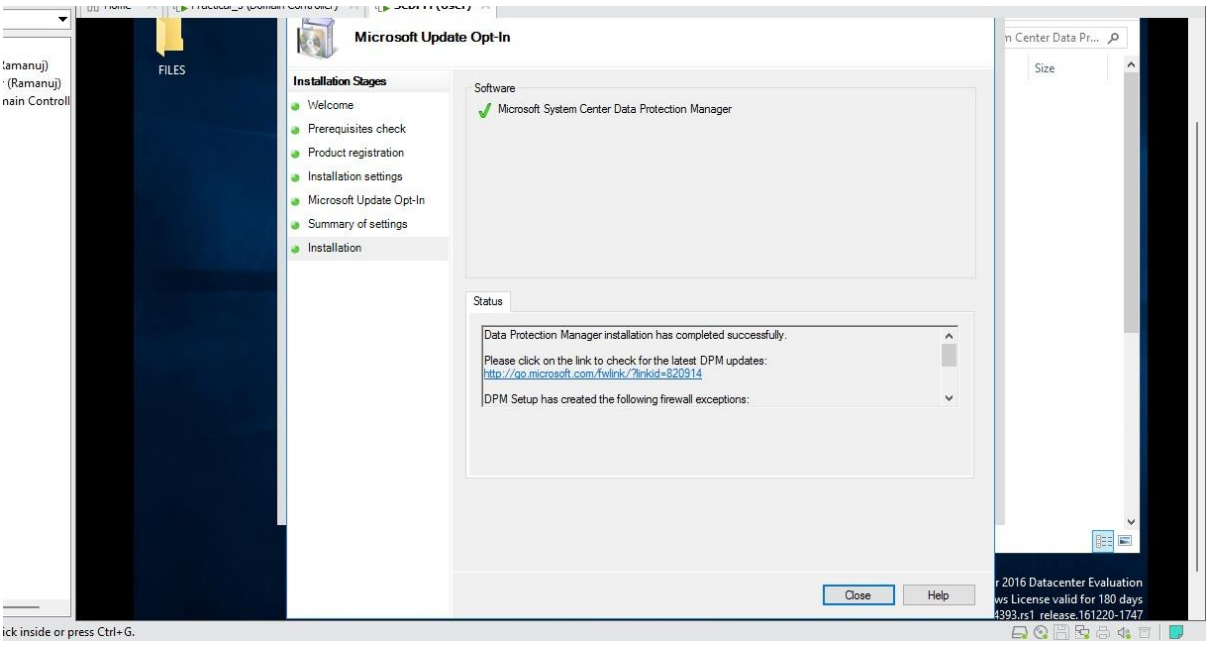
- Click on **Install**



- DPM will start installing



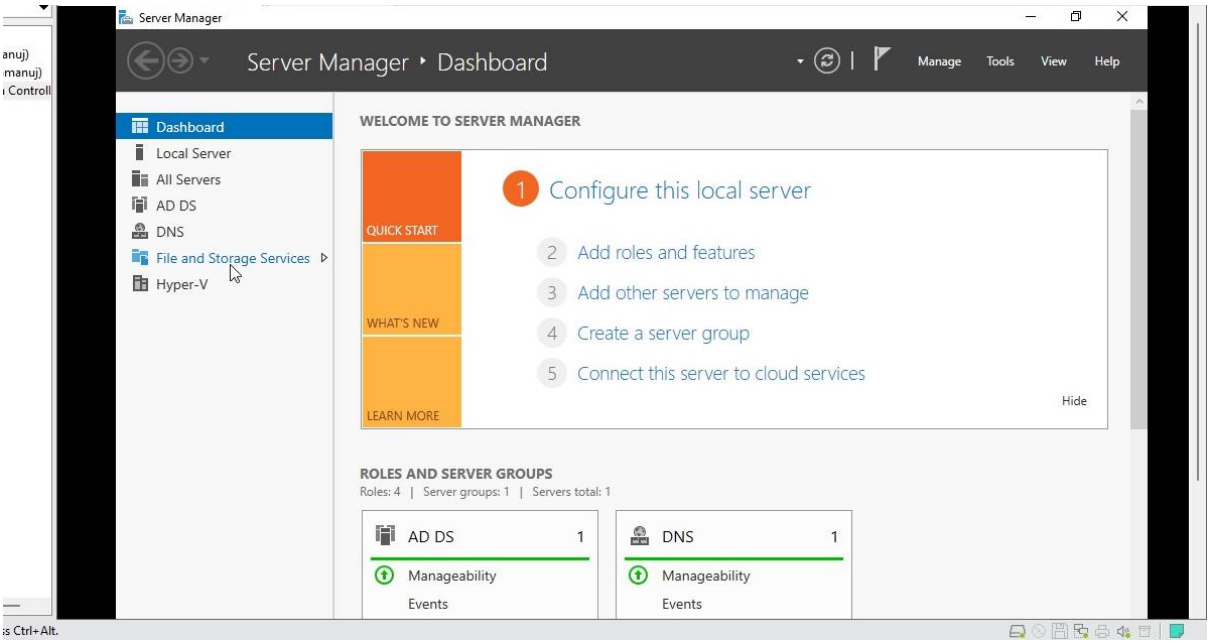
- Once DPM is installed Click **Close**



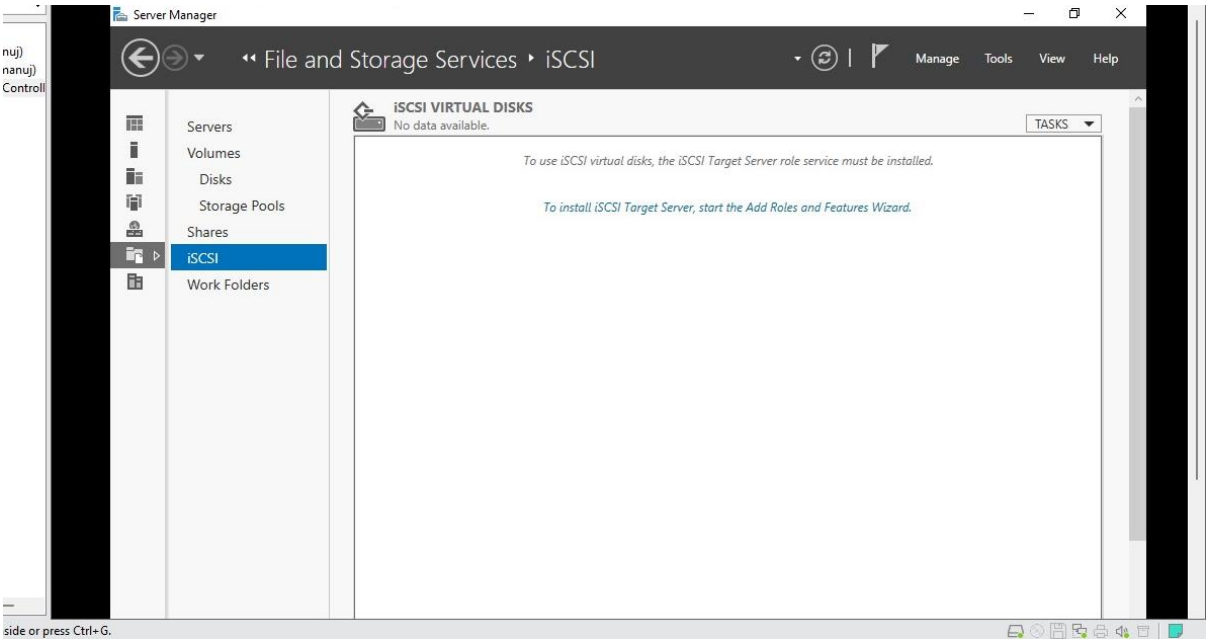
Step 7: Creating and initializing iSCSI Disk Storage

The following steps have to be executed in the Domain Controller:

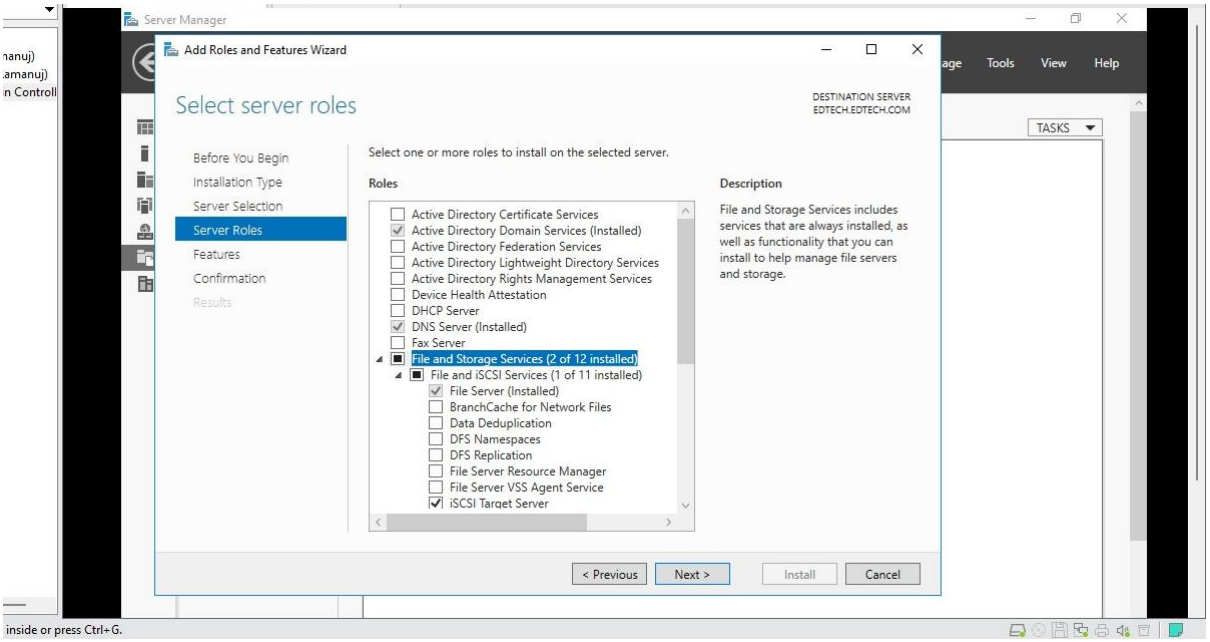
- Open **Server Manager** and Click on **File and Storage Services**



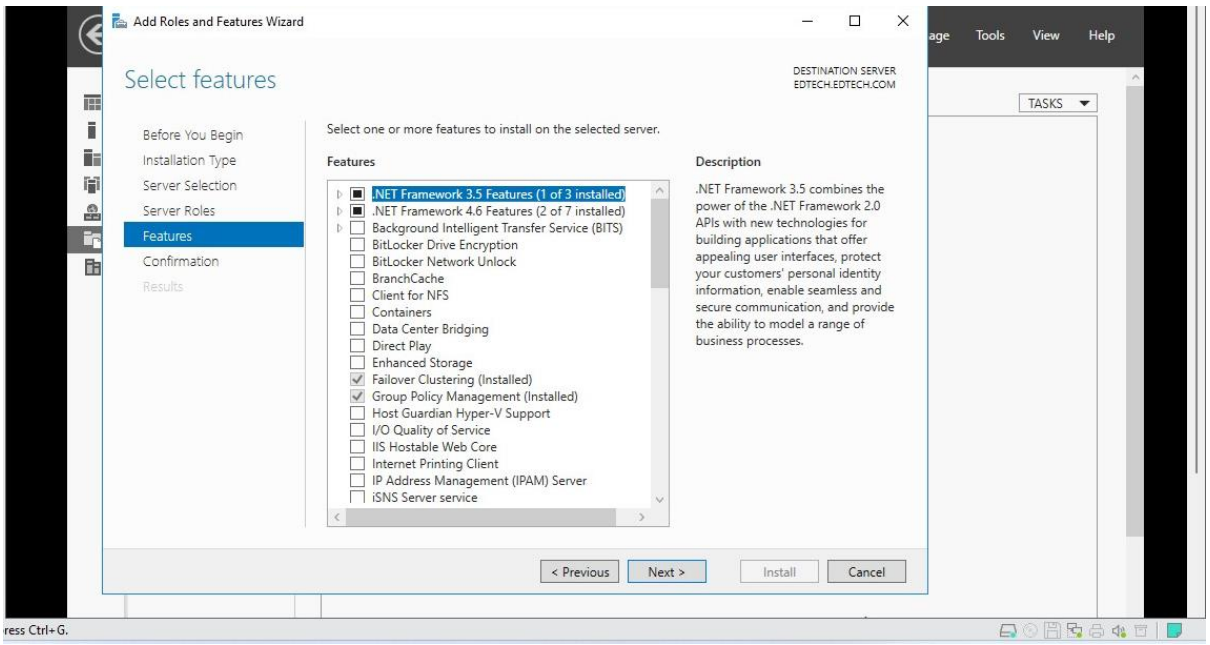
- Within File and Storage Services Click on **iSCSI** and Click on **To install iSCSI Target Server, Start the Add Roles and Features Wizard**



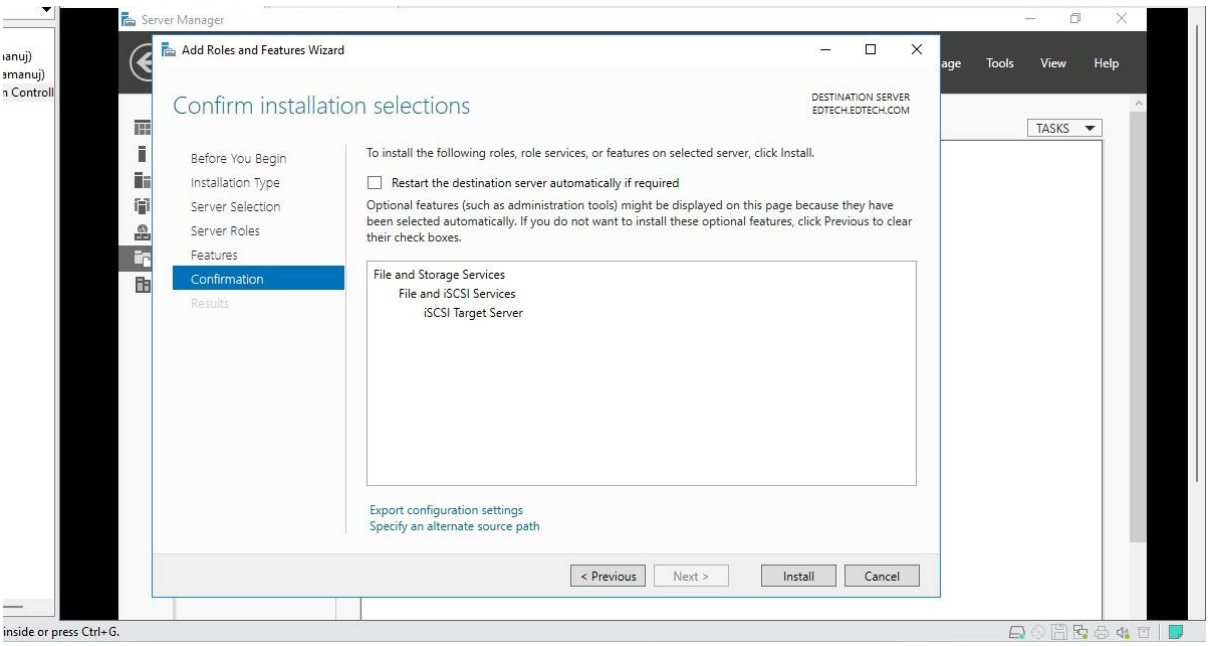
- After Click it will open the **Add Roles and Features** Wizard, Keep the default values and Click **Next**



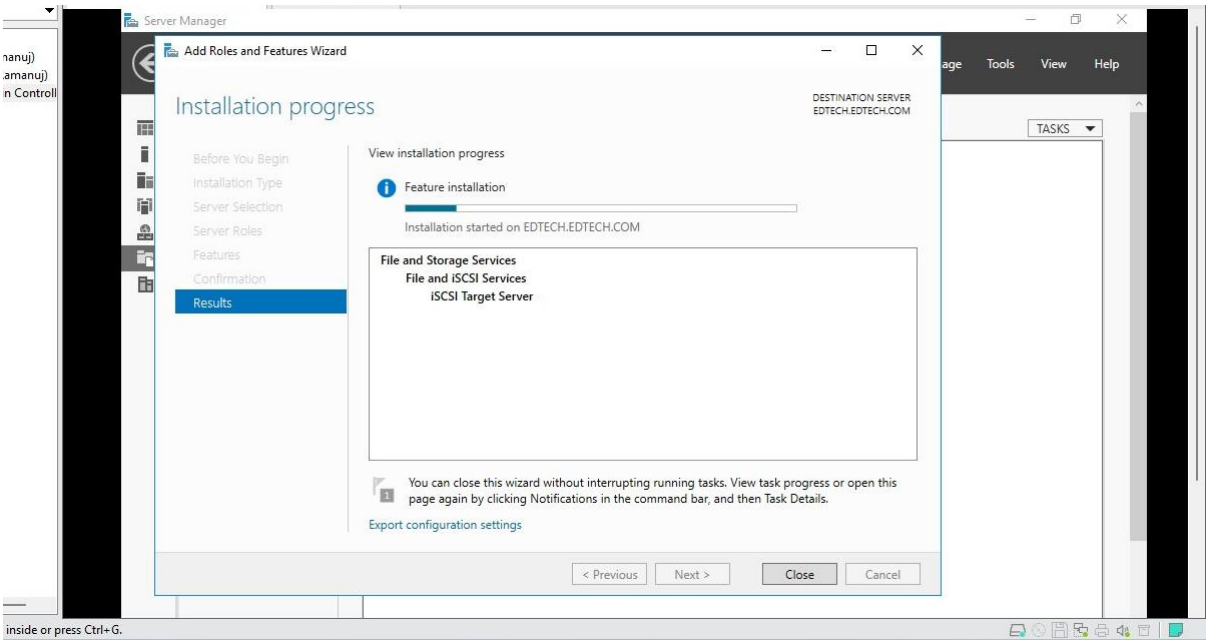
- Keep default values and Click **Next**



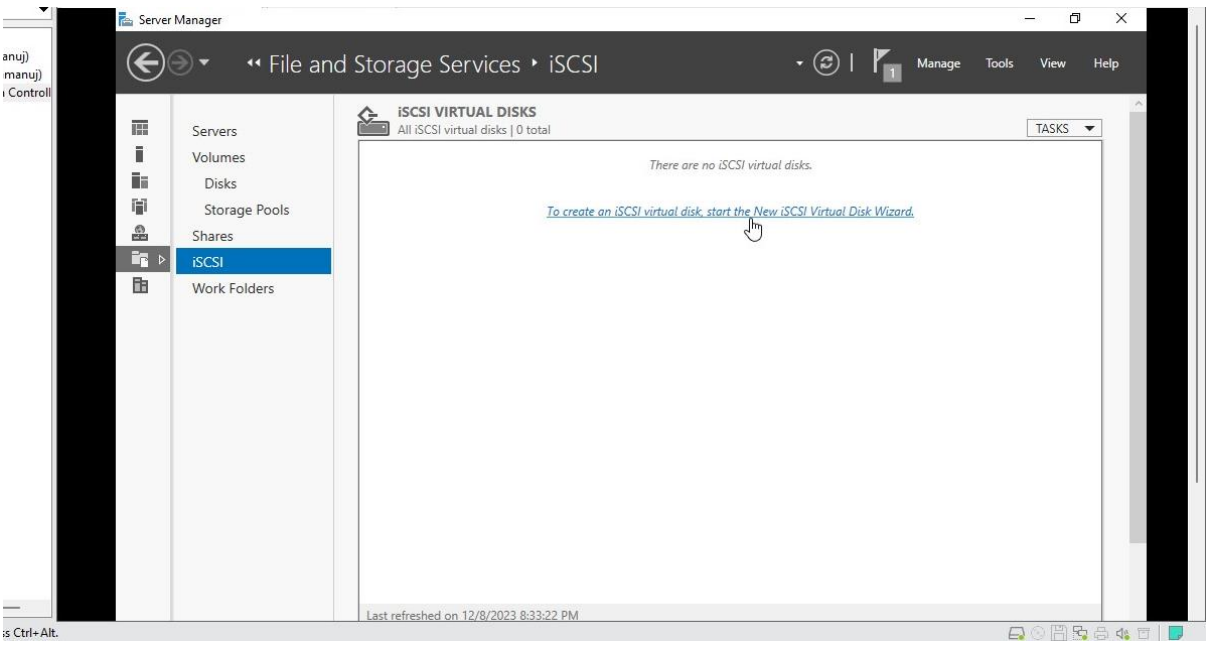
- Click on **Install**



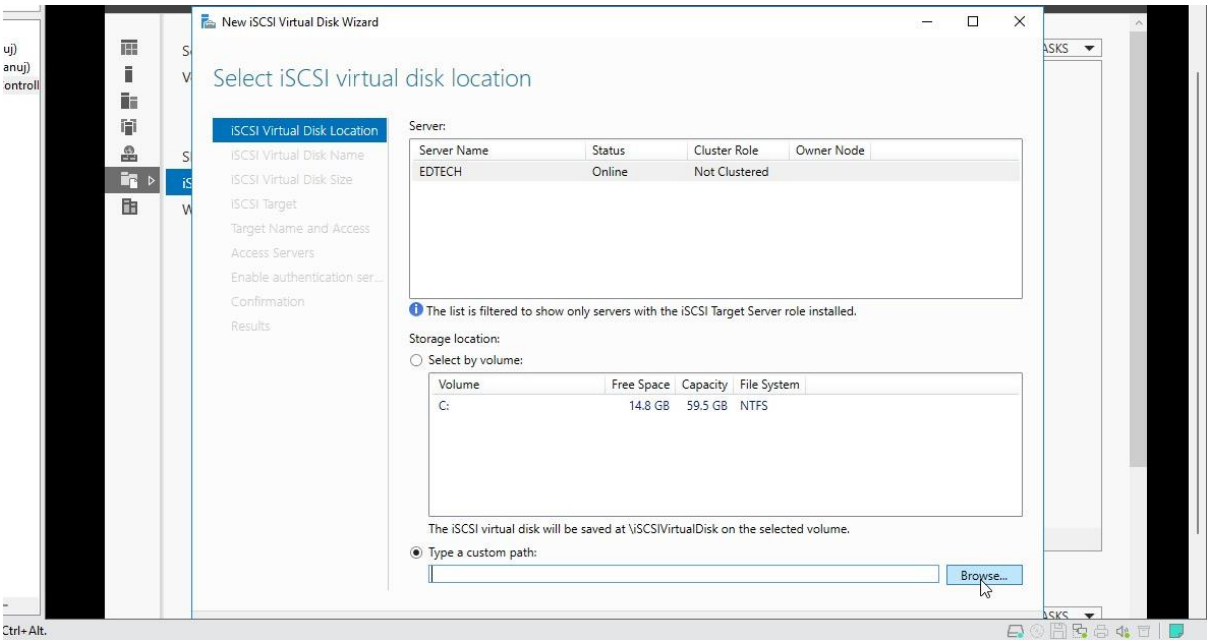
- Features will start installing



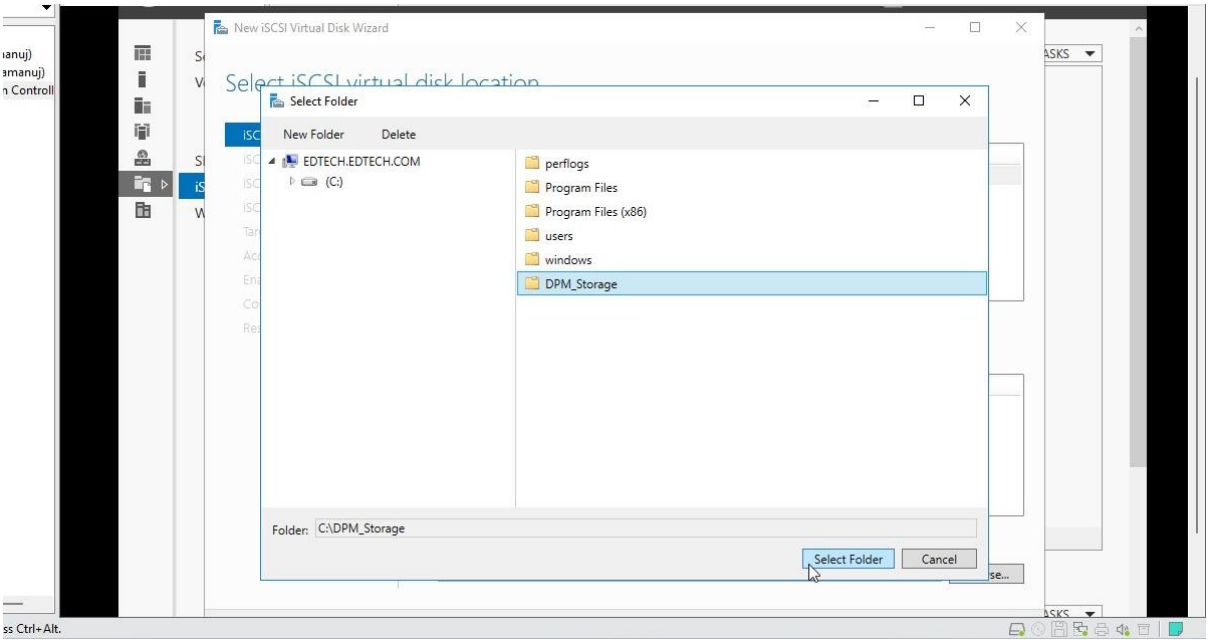
- After the installation is completed Click on **To create an iSCSI virtual disk, start the New iSCSI Virtual Disk Wizard**



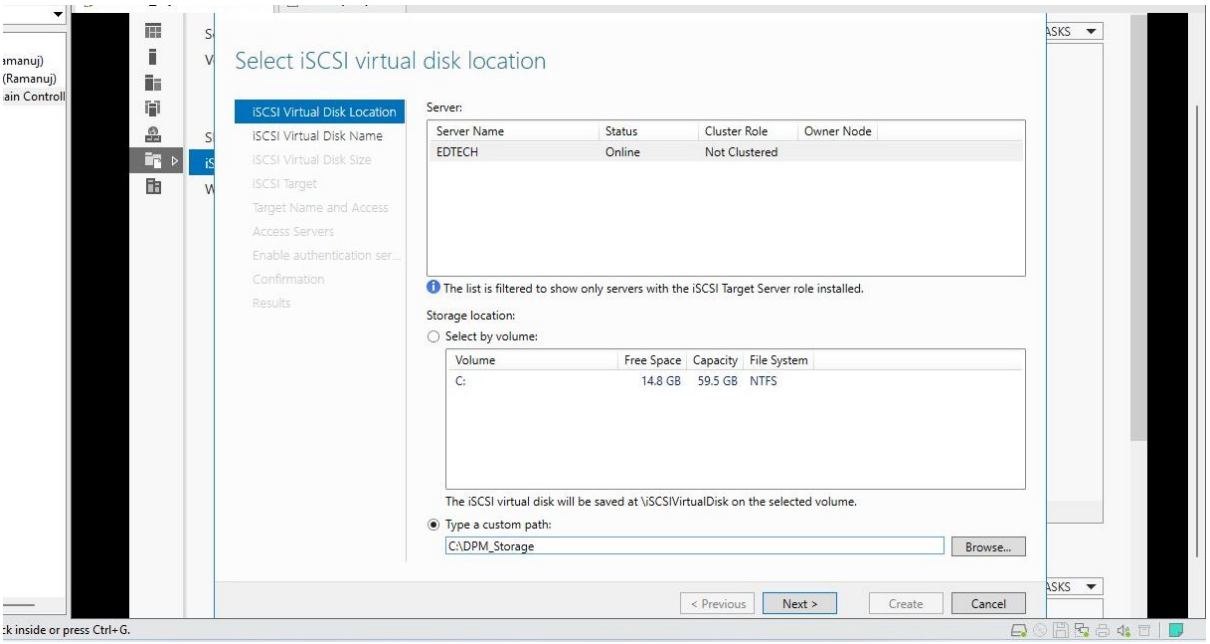
- Select **Type a custom path** and Click on **Browse**



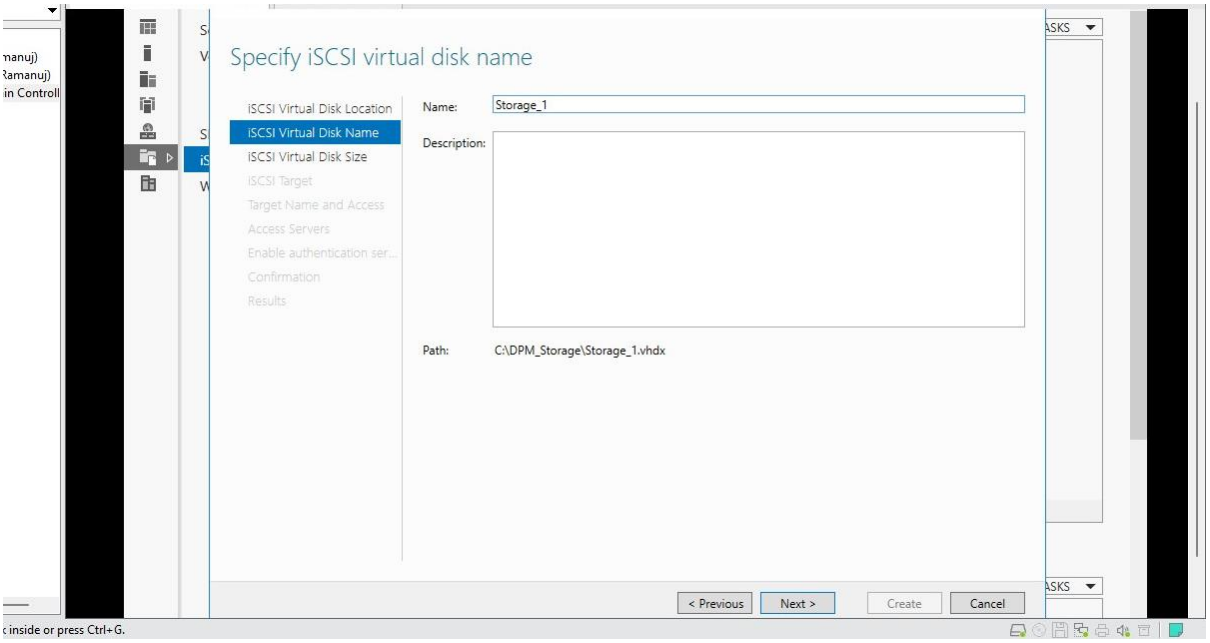
- Within Browse create a new folder and give it a name (Here it is DPM_Storage) and Click on **Select Folder**



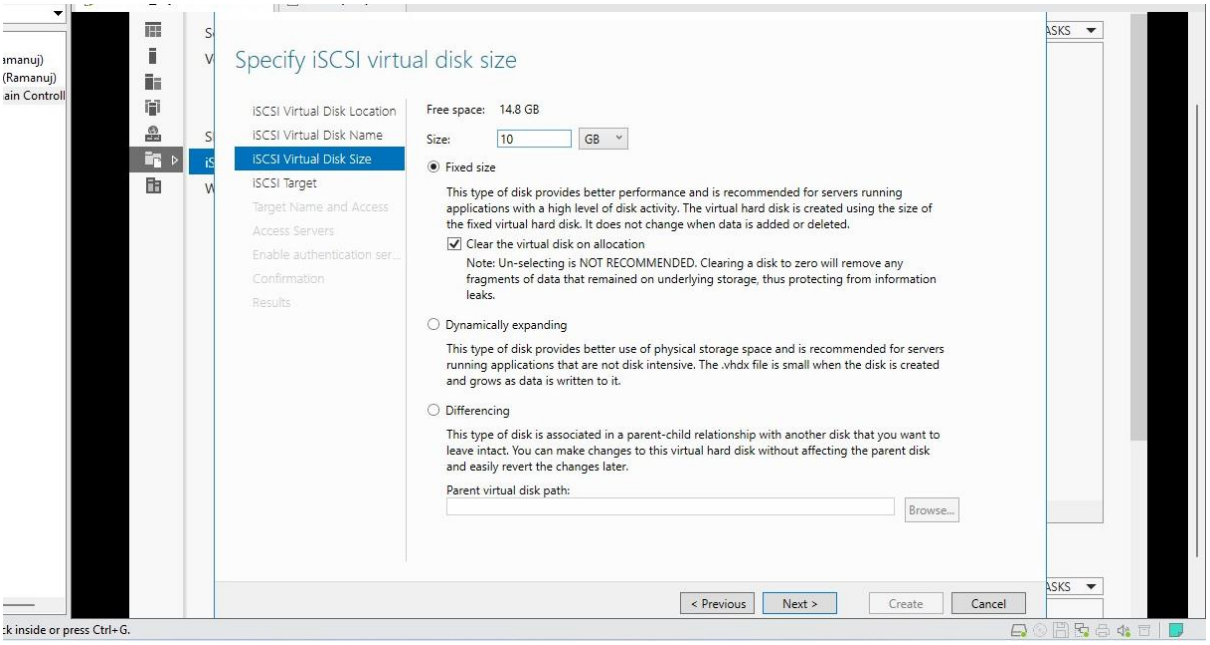
- Click **Next**



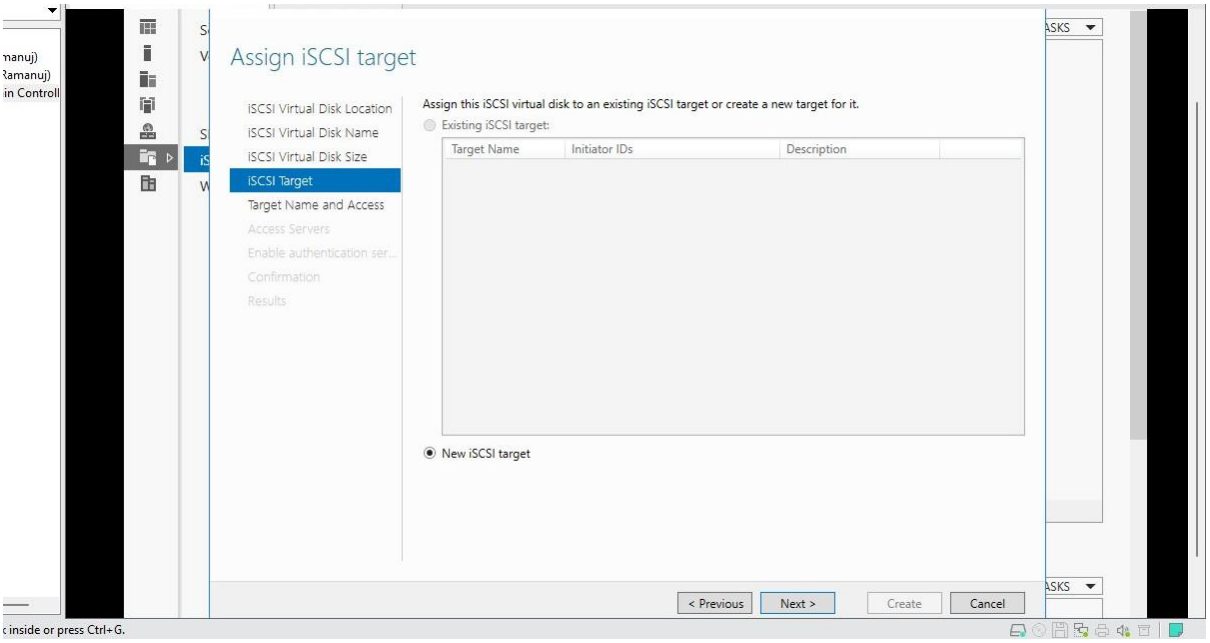
- Give your virtual disk a name (here it is Storage_1) and Click **Next**



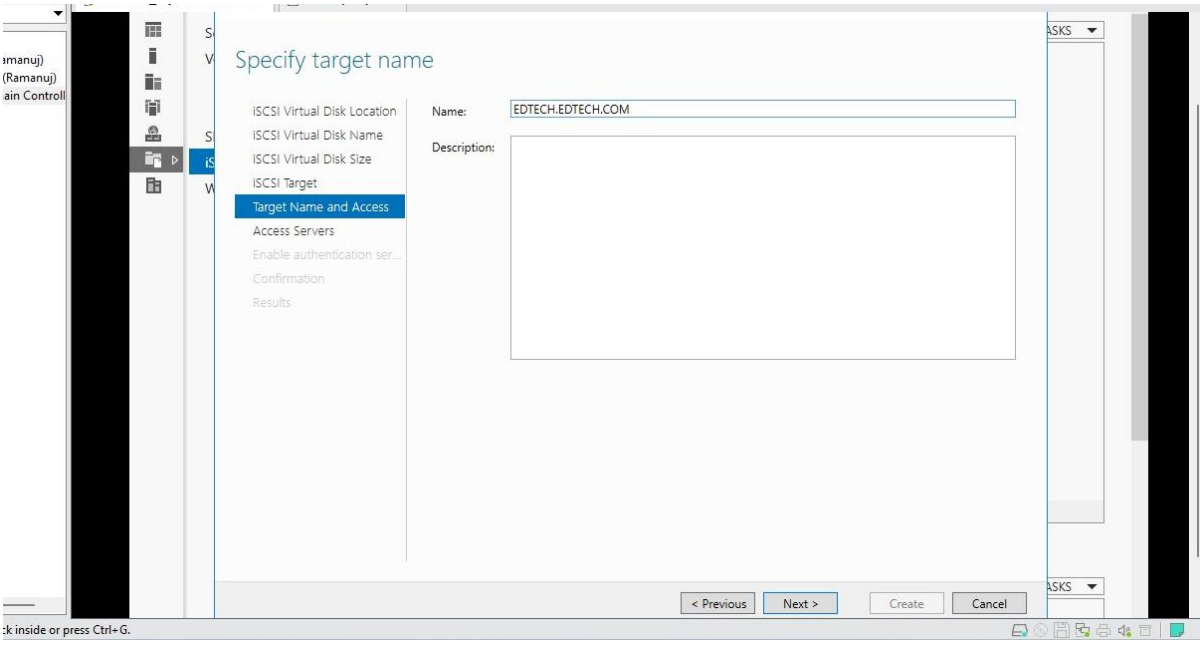
- Type in **10 GB** for Size and Select **Fixed Size** and Click **Next**



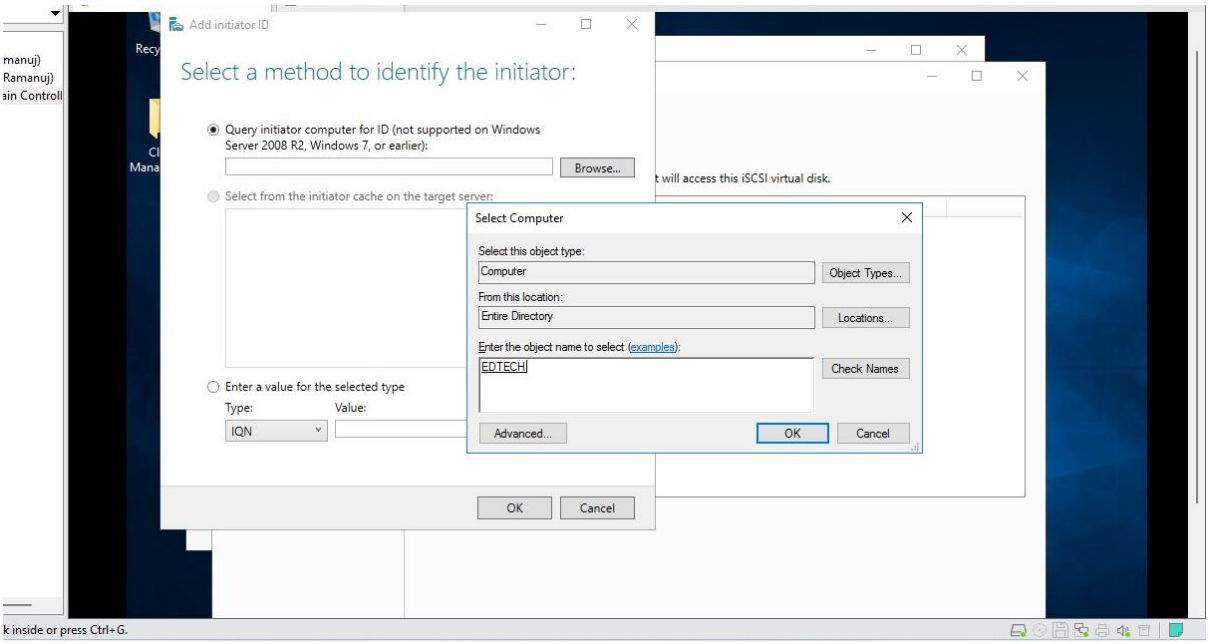
- Select **New iSCSI Target** and Click **Next**



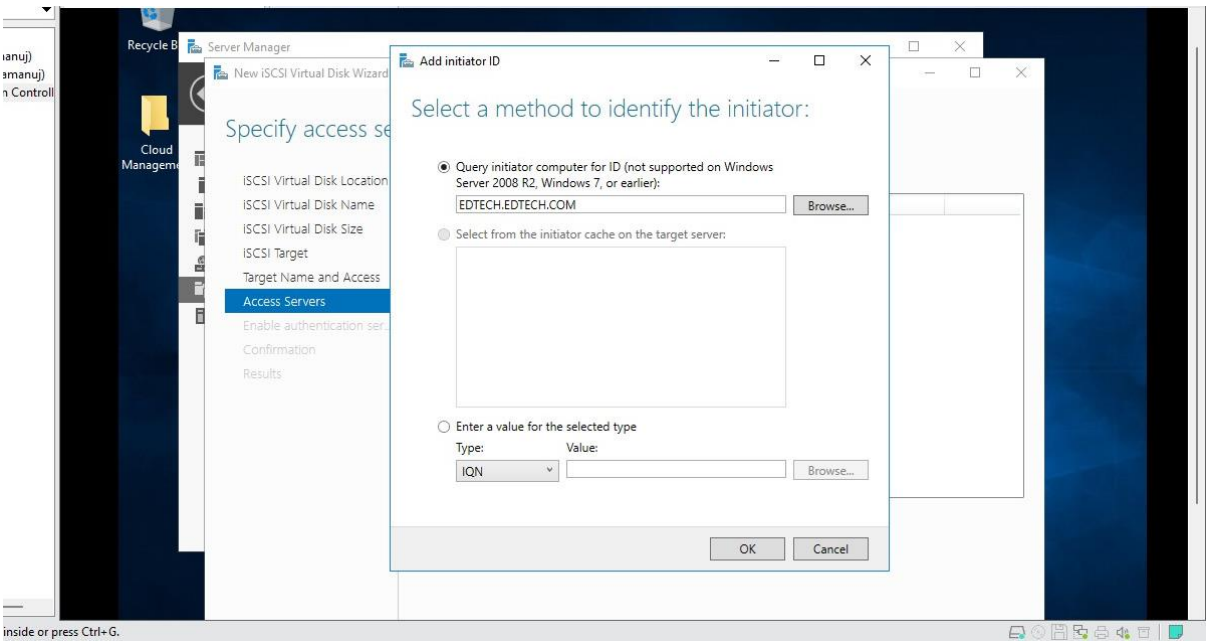
- In Target Name type in your Domain Name (here it is EDTECH.EDTECH.COM) and Click **Next**



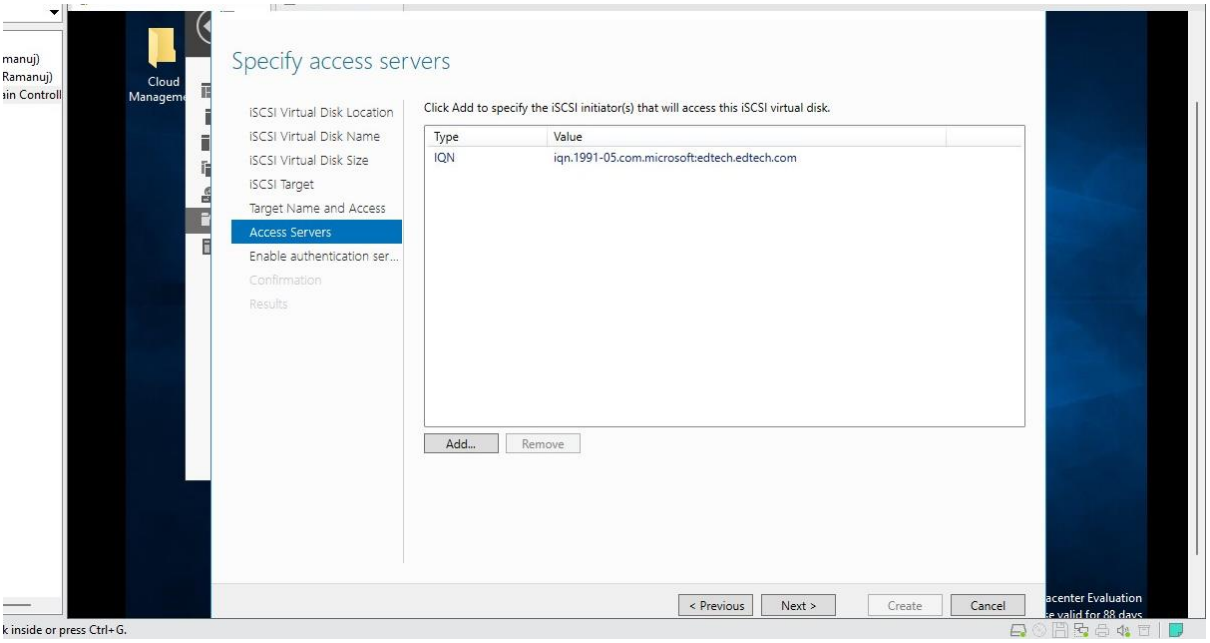
- Click on **Add** and Click on **Browse**, Type in the Name of your Domain Controller (Here it is EDTECH) and Click on **Check Names,** then Click **Ok**



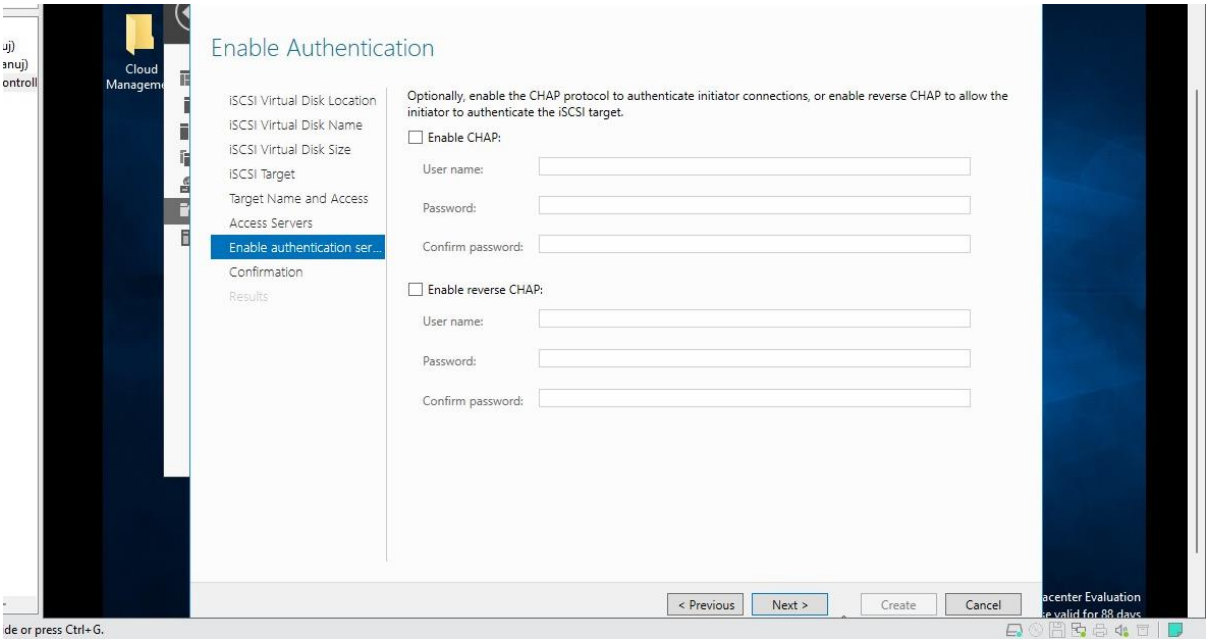
- Click **Ok**



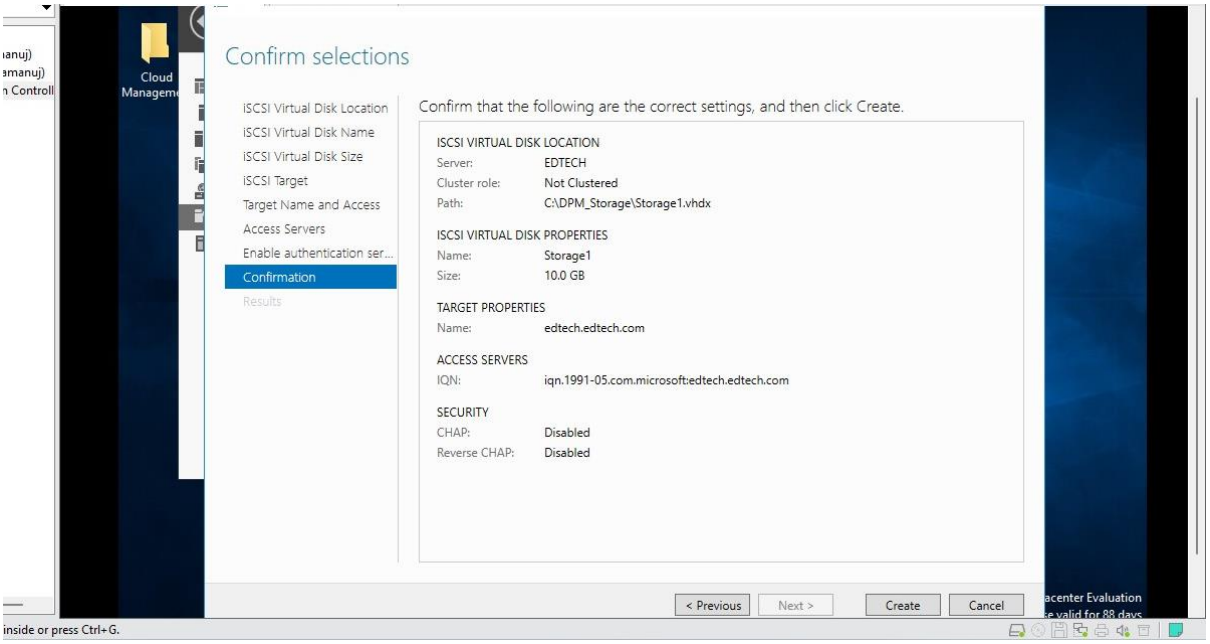
- Click **Next**



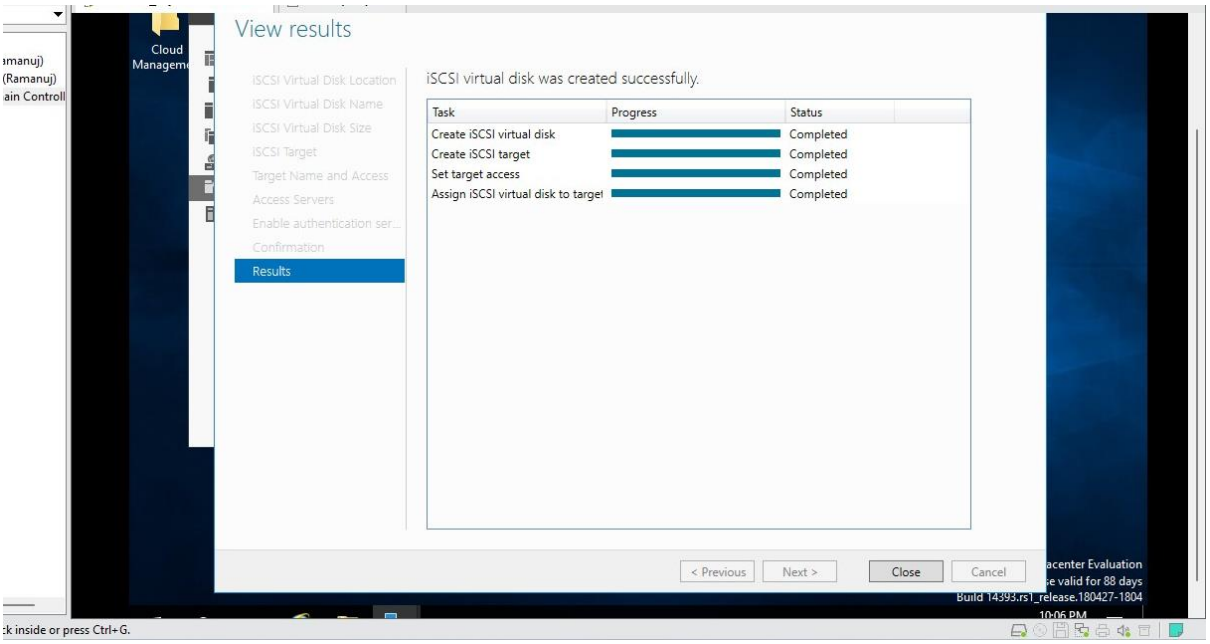
- Keep default values and Click **Next**



- Review the summary of your iSCSI instance and Click **Create**

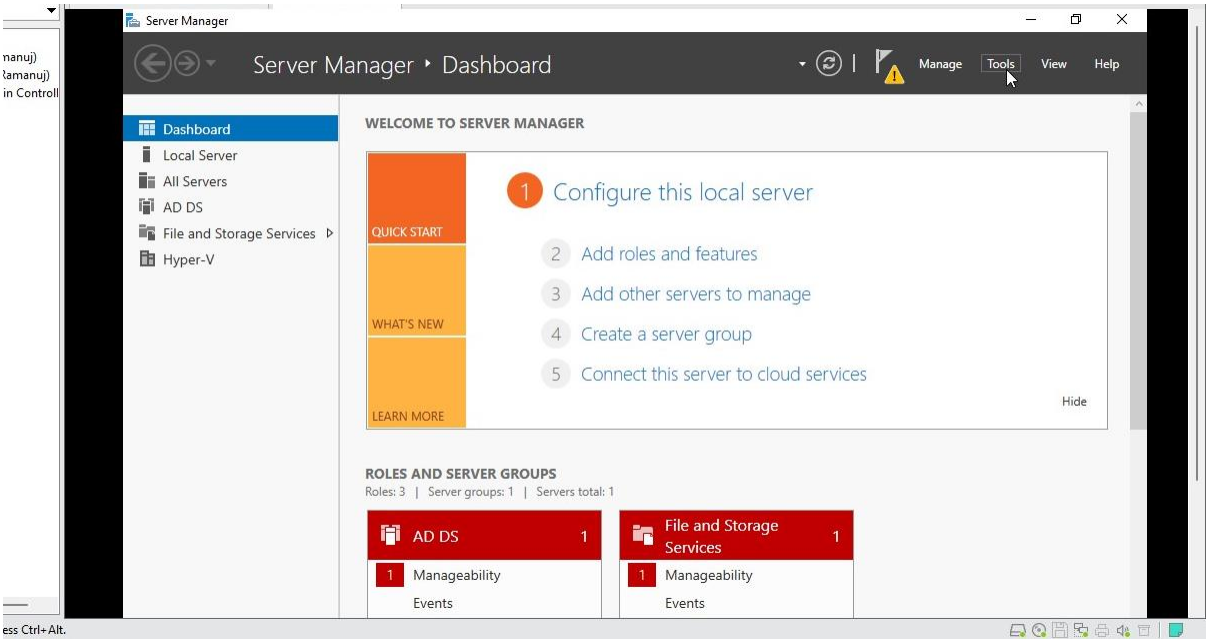


- Your iSCSI instance has been created successfully

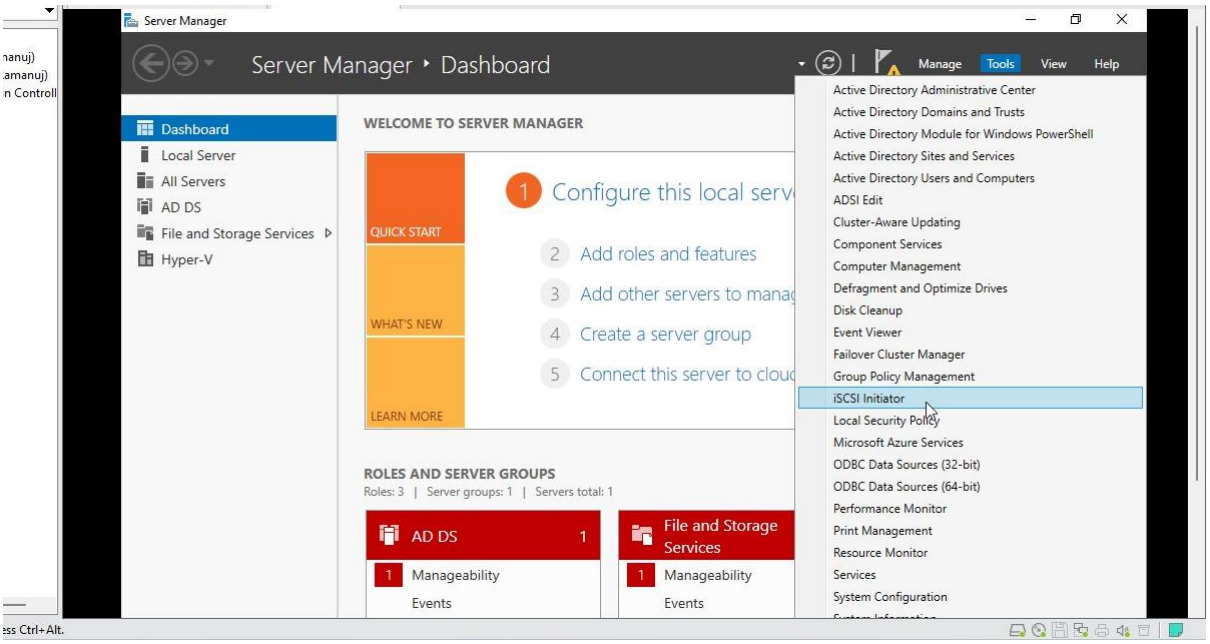


Note: The following steps are for the **SCDPM VM** instance, where we will initialize the iSCSI instance created in the domain controller. Ensure that both VM are running

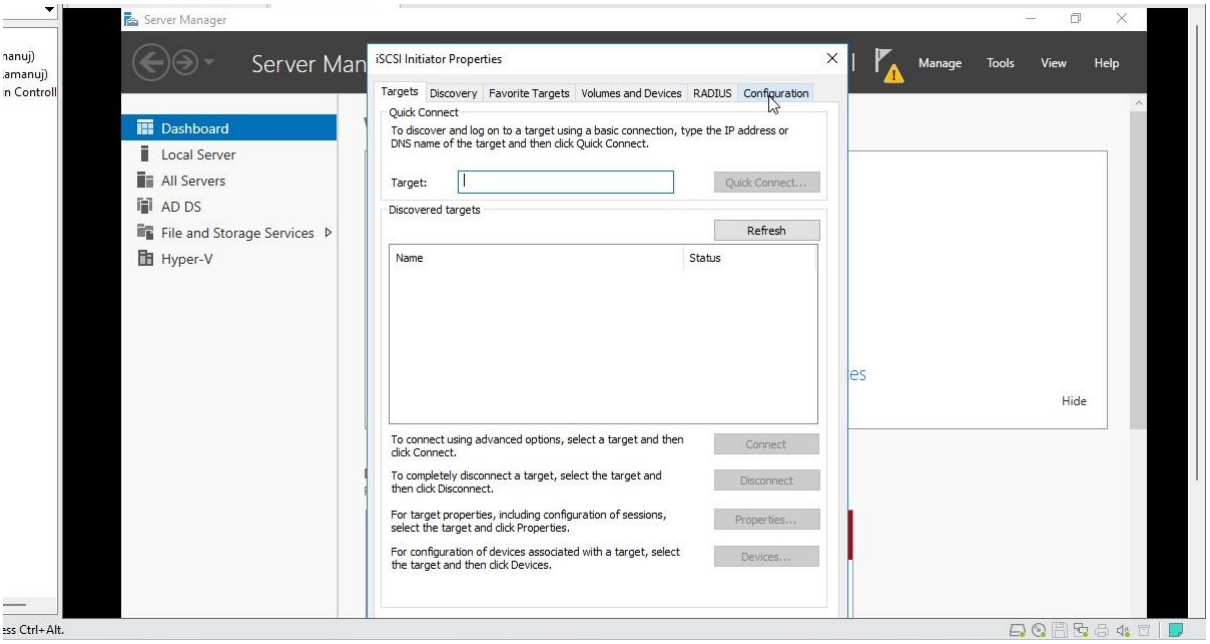
- Open **Server Manager** and Click on **Tools**



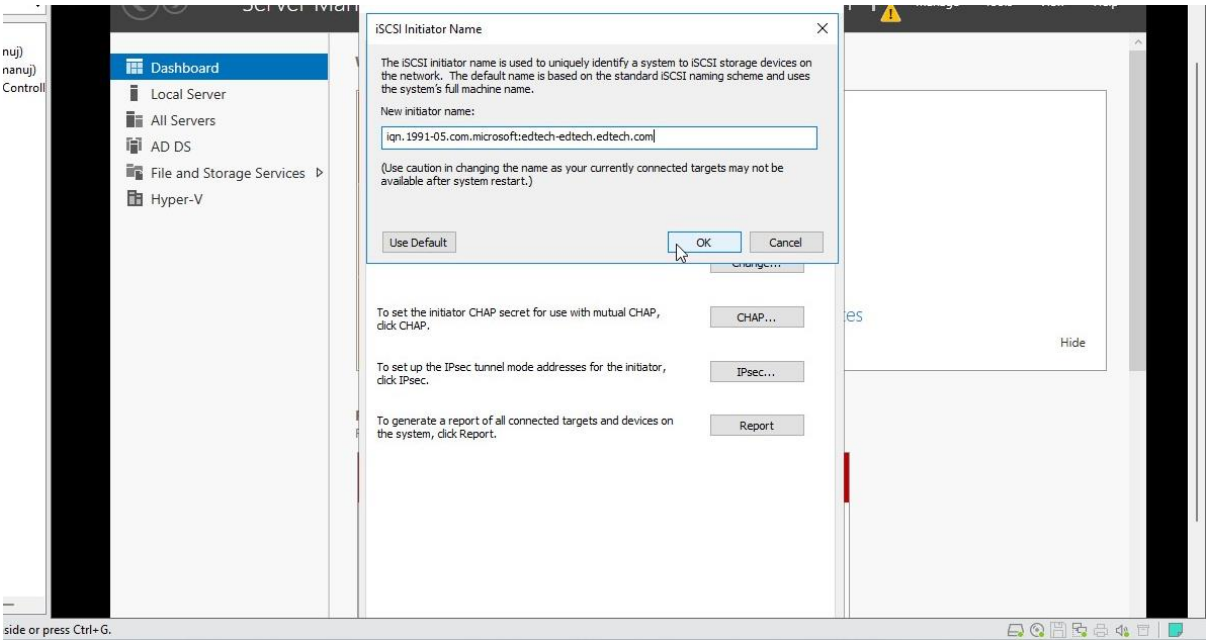
- Within Tools Click on **iSCSI Initiator**



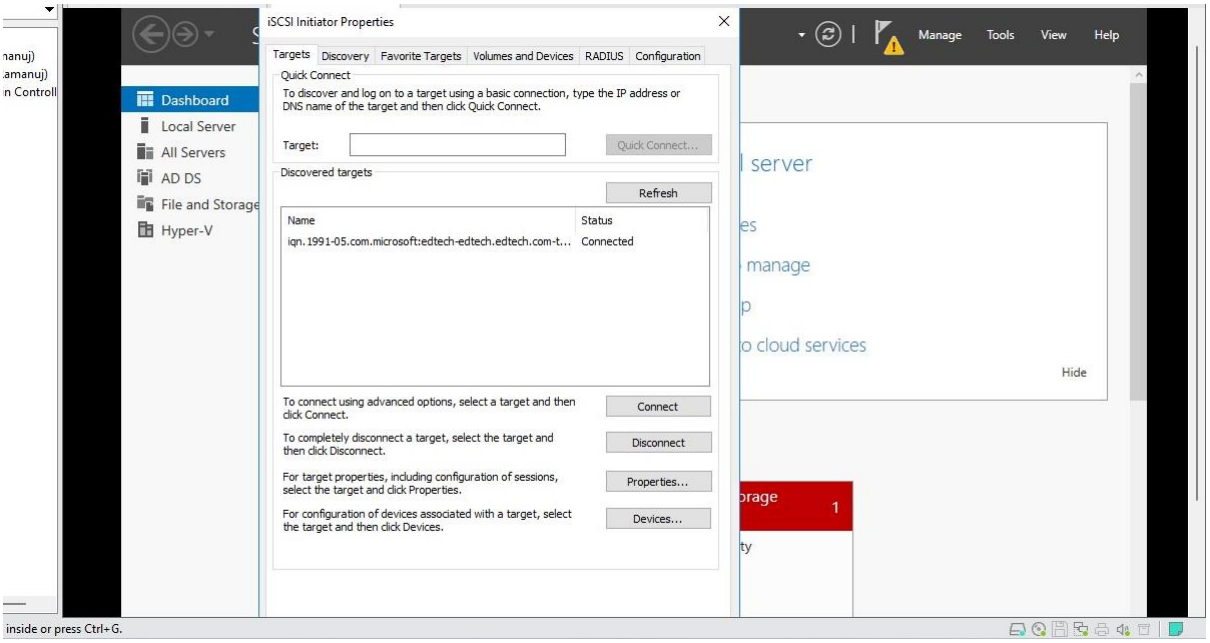
- Within iSCSI Initiator Click on **Configuration**



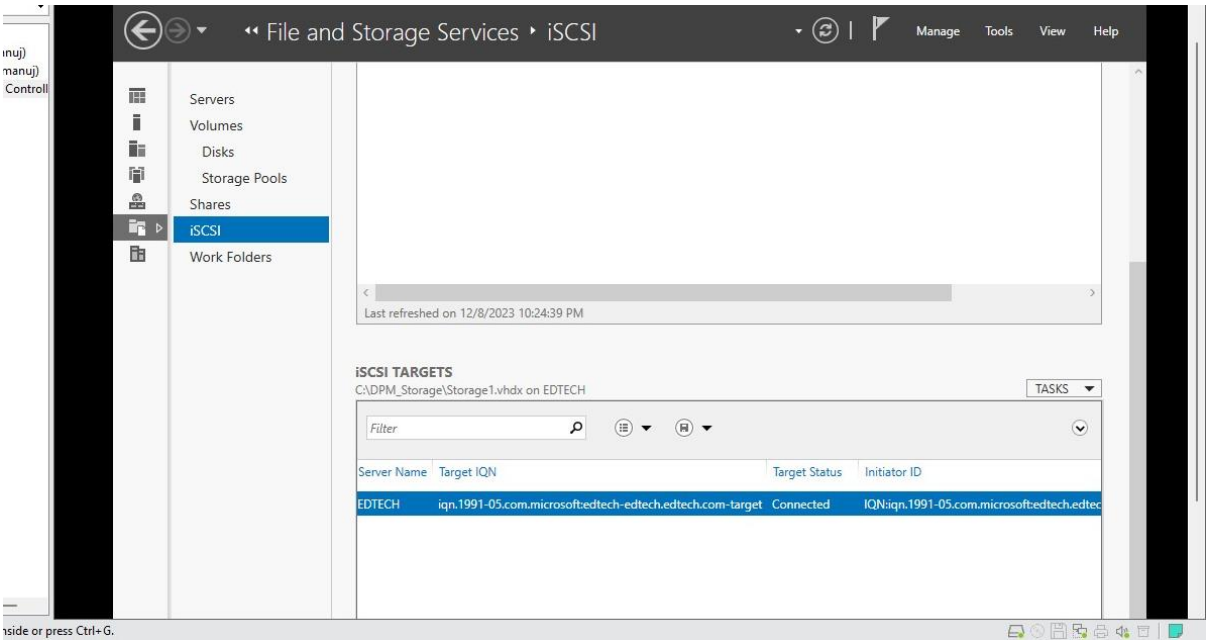
- Click on **Change** and paste in the IQN value from the Domain Controller and Click **Ok**



- Now Click on **Targets** and Enter the IP of the Domain Controller and Click on **Quick Connect**

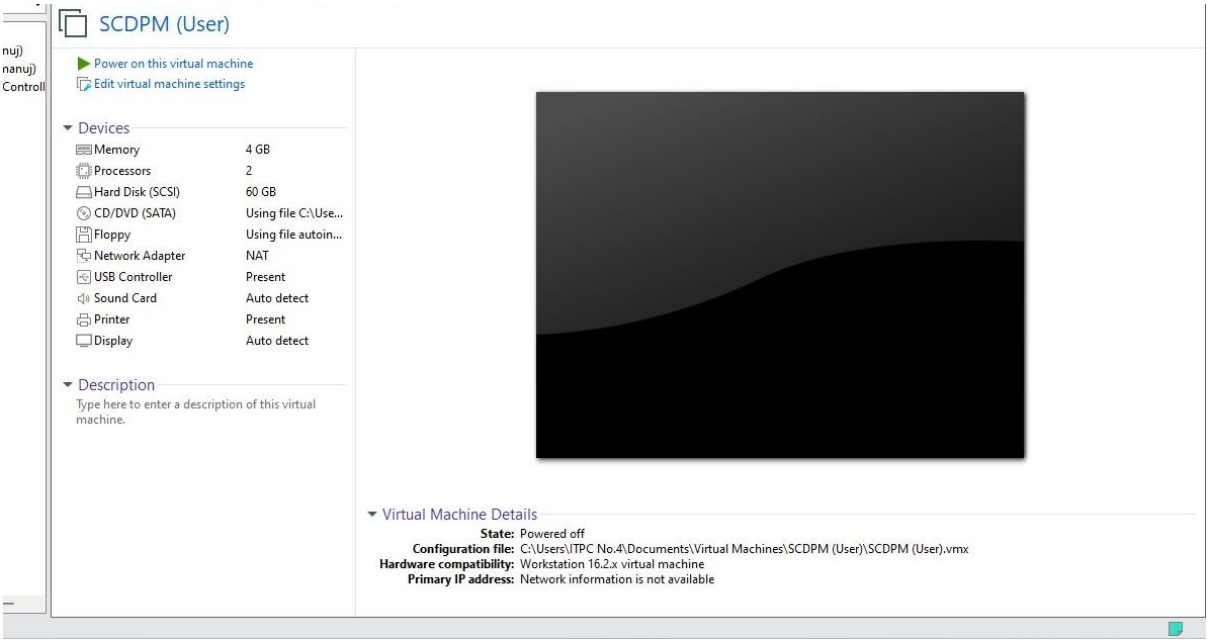


- Confirm the connection on the iSCSI Server on the Domain Controller

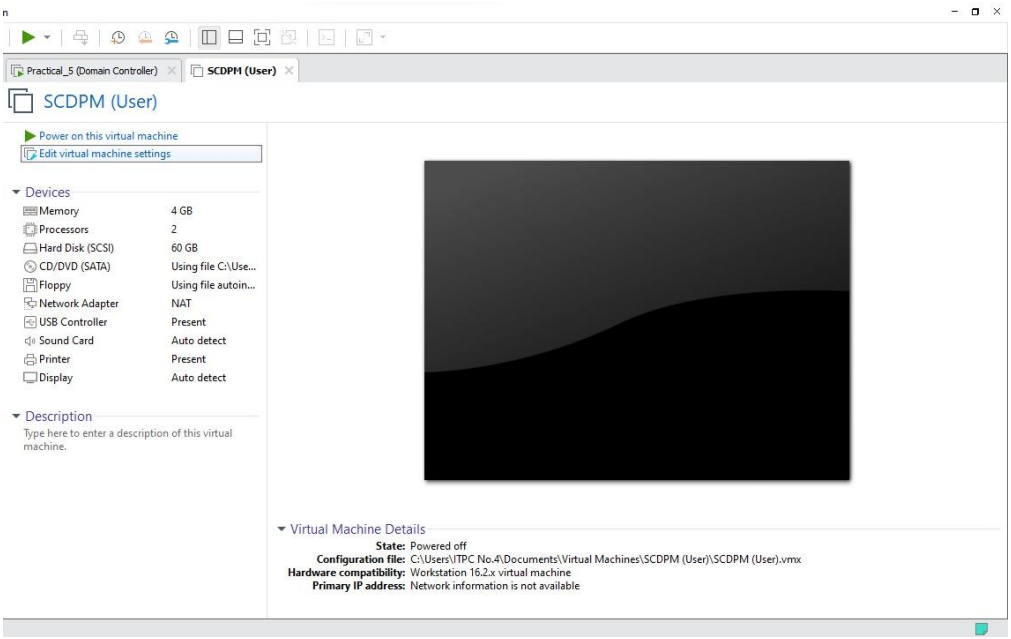


Step 8: Creating Disk Storage in SCDPM

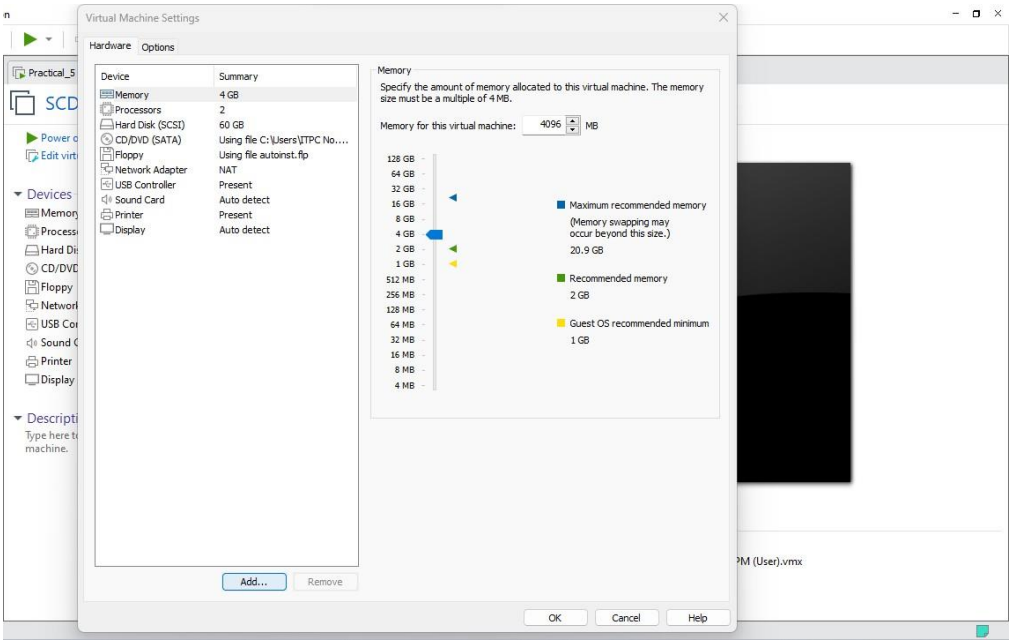
- There are a few modification that need to be made to the SCDPM VM
- Shutdown the VM



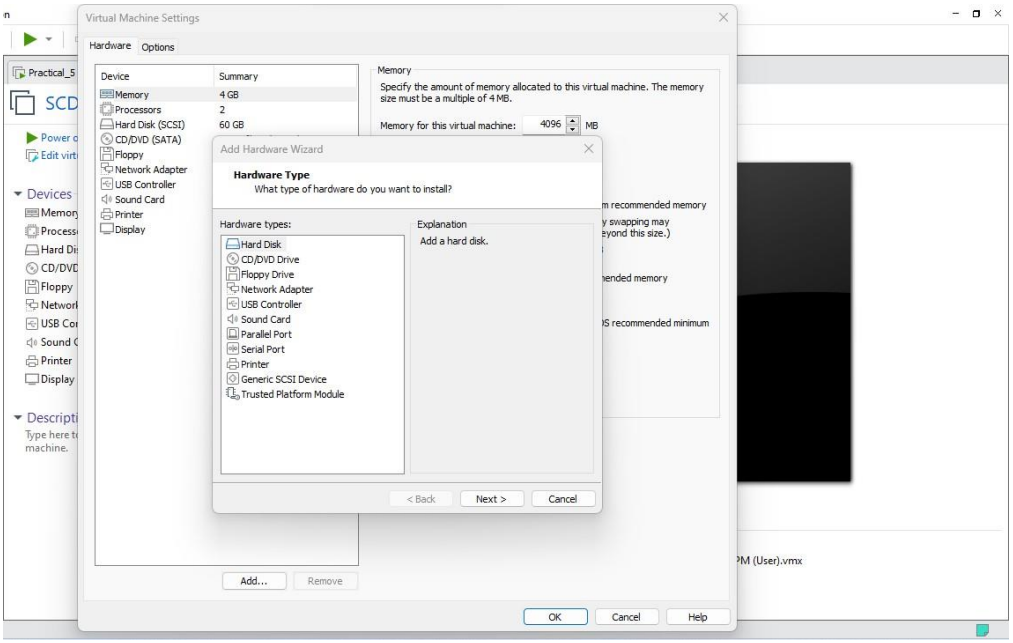
- Click on **Edit virtual machine settings**



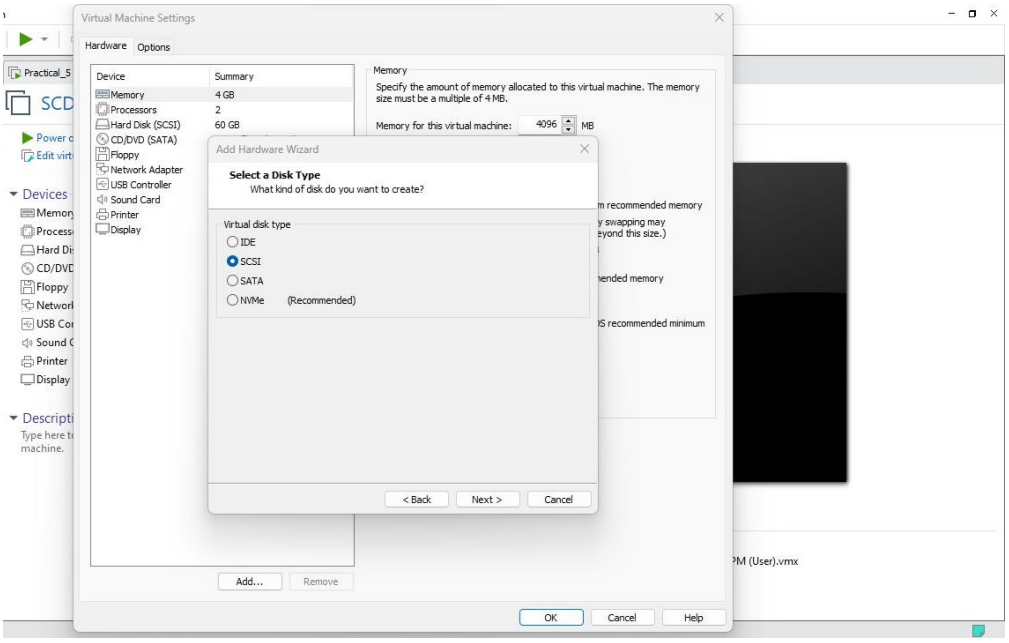
- Now within Edit virtual machine settings Click on **Add**



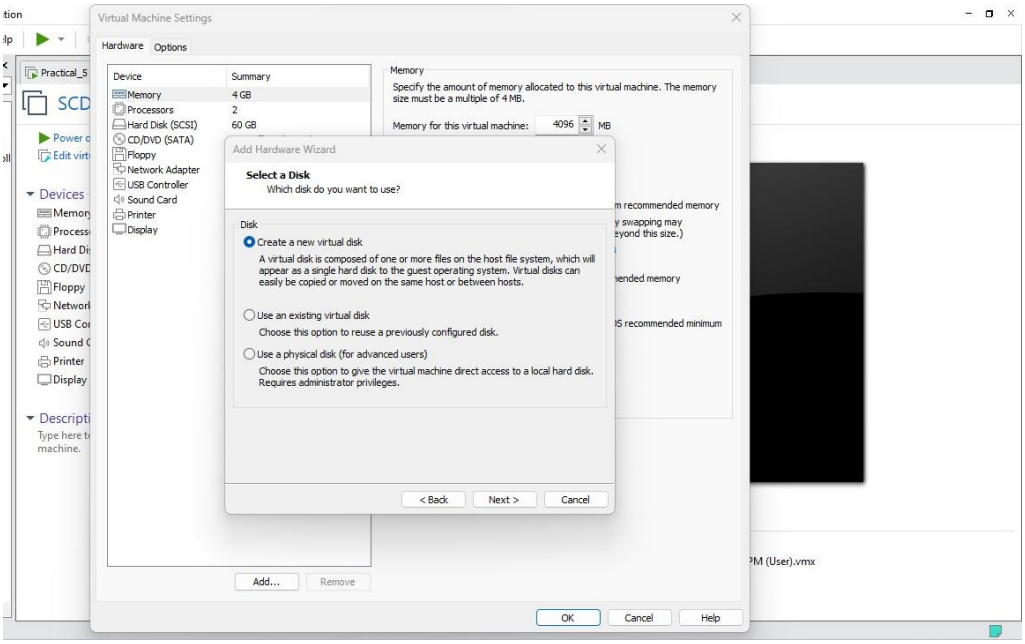
- Select **Hard Disk** and Click **Next**



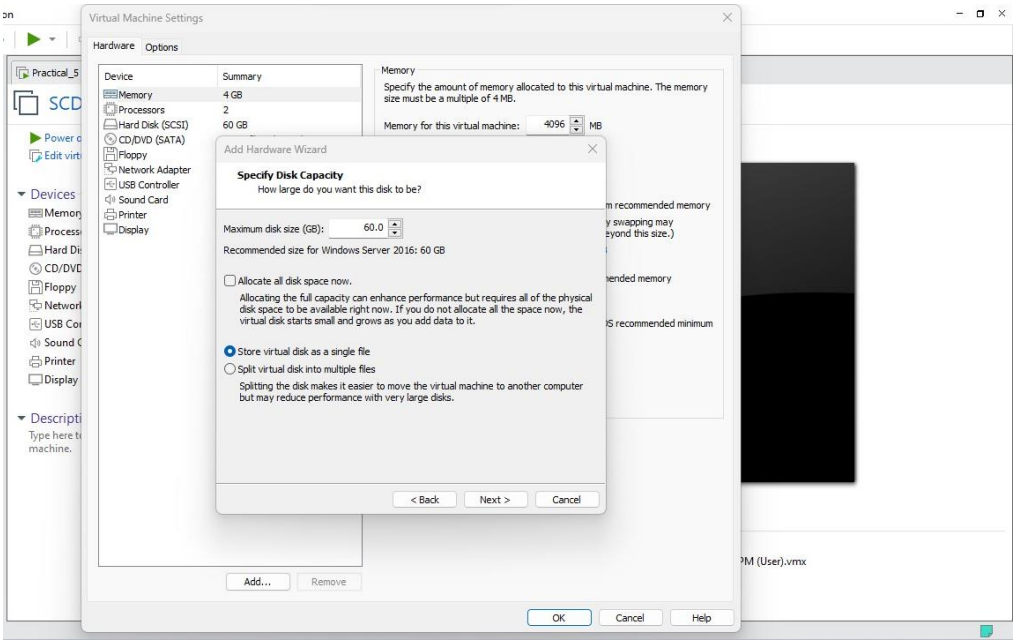
- Select **SCSI** and Click **Next**



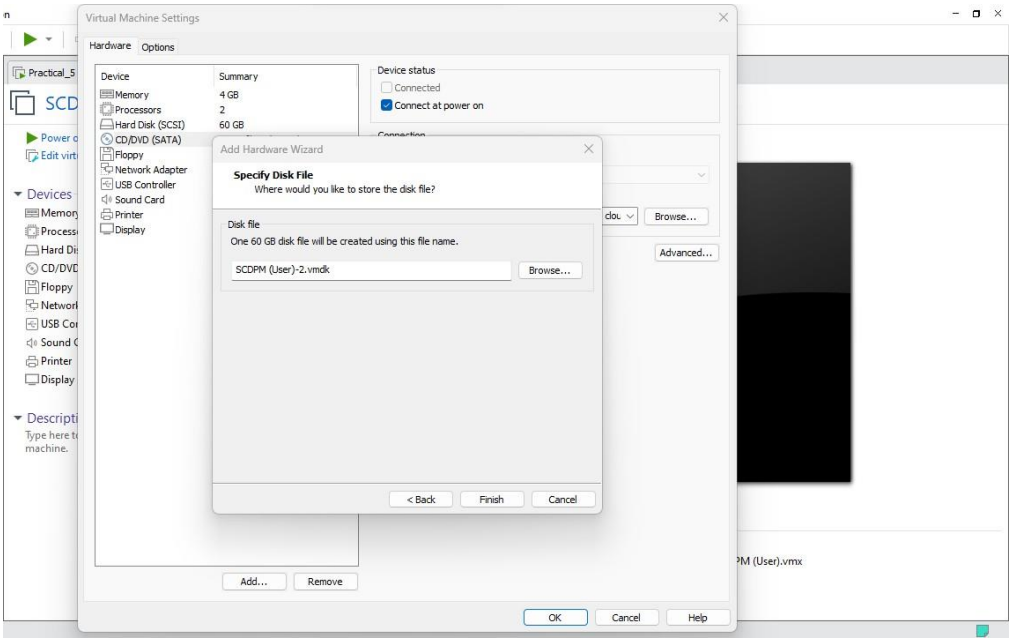
- Keep default values and Click **Next**



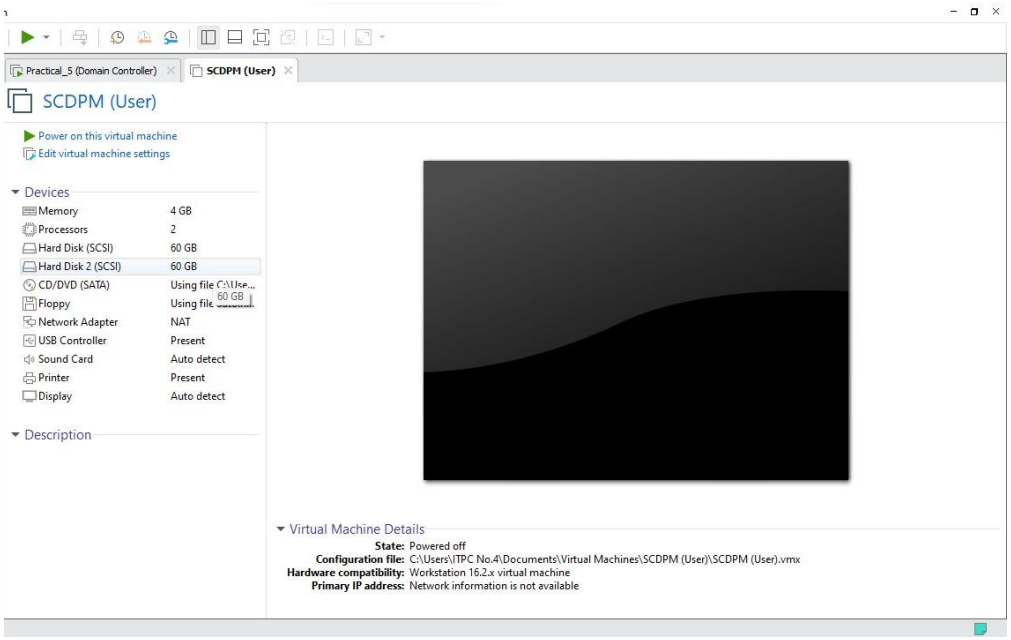
- Select **Store virtual disk as a single file** and Click **Next**



- Click on **Finish**

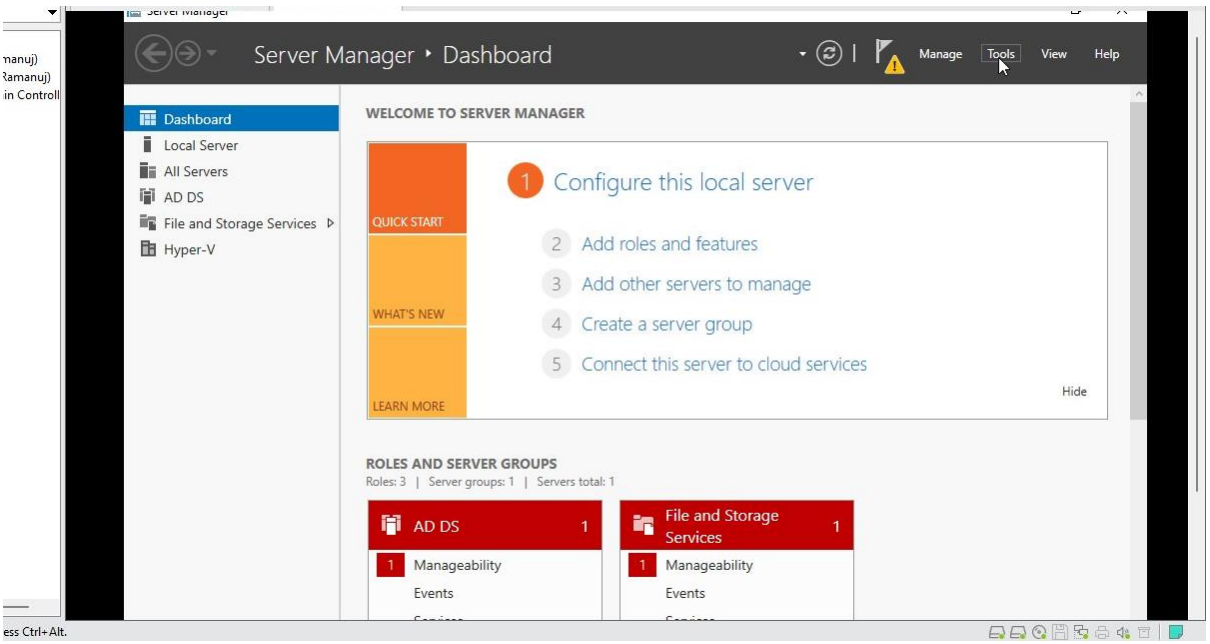


- Click on **Ok** and Check if the hard is detected by the VM

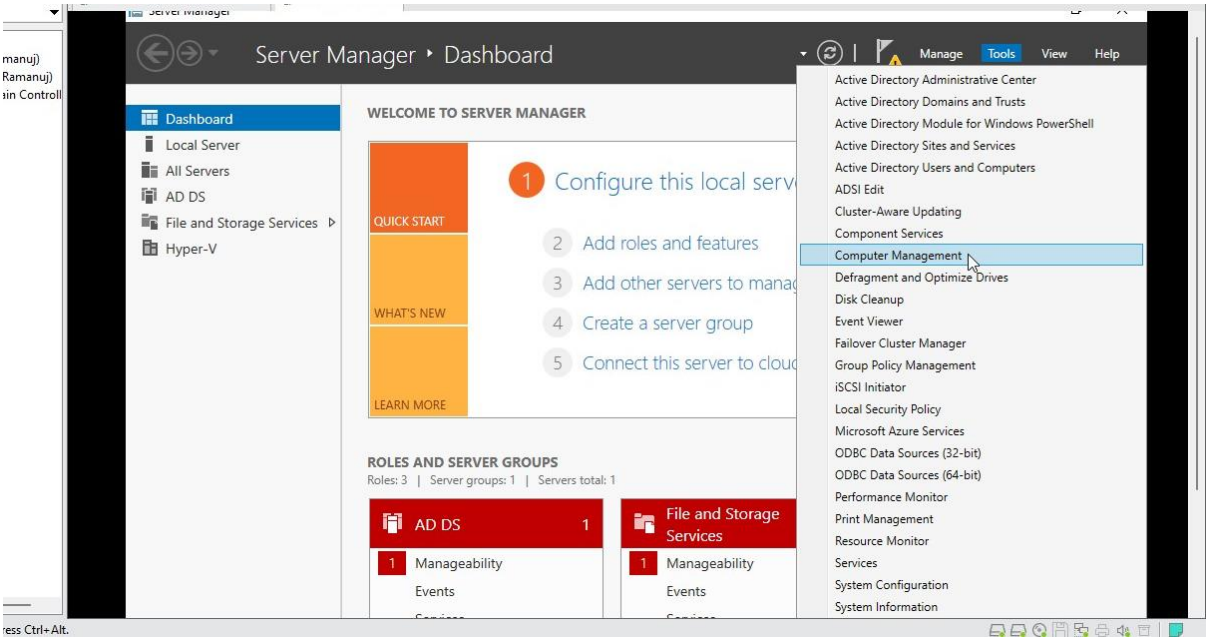


- Now Turn On the VM and Open **Server Manager** Click on **Tools**

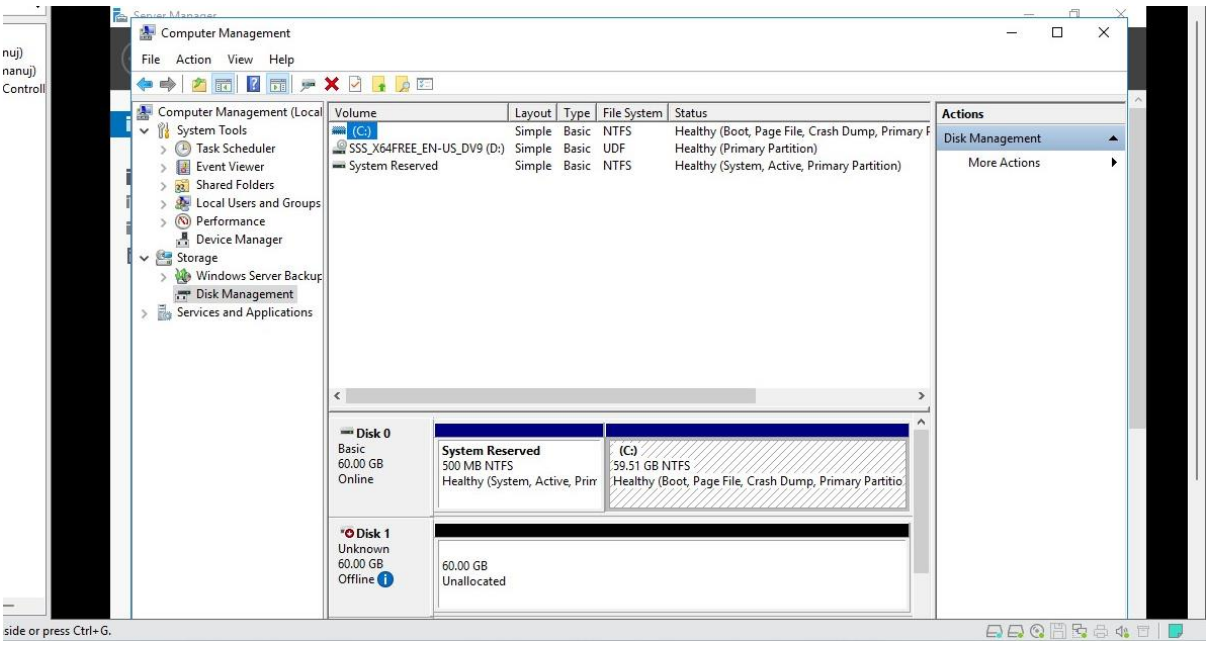
Note: This is to be done in the Administrator and not as SCDPM



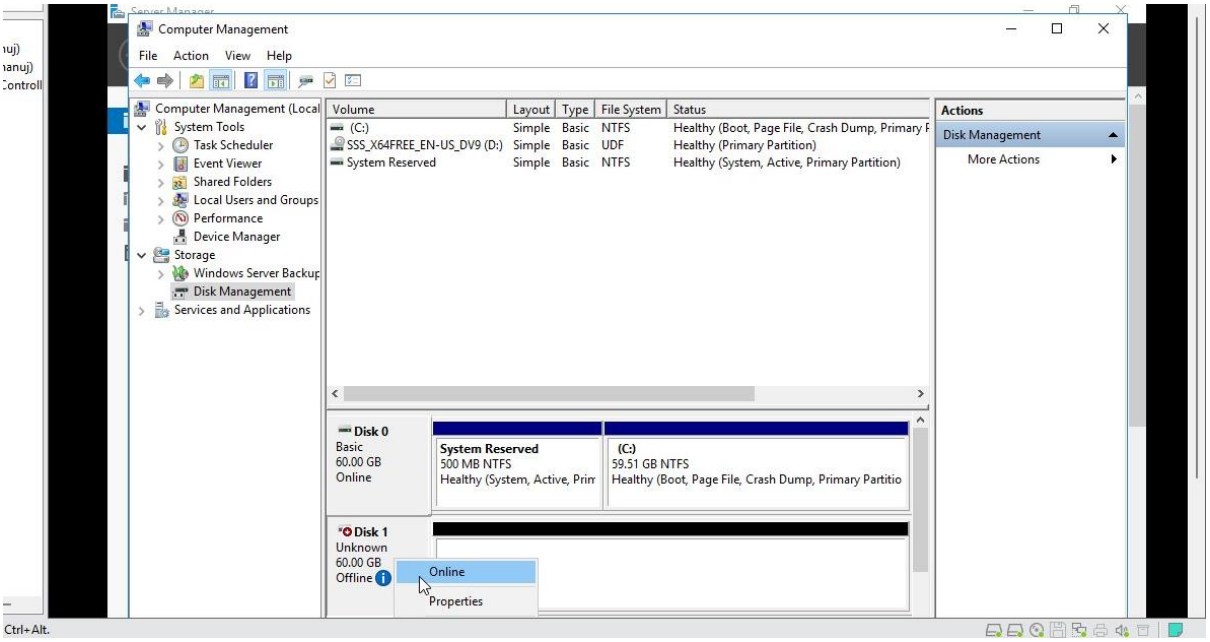
- In Tools Click on **Computer Management**



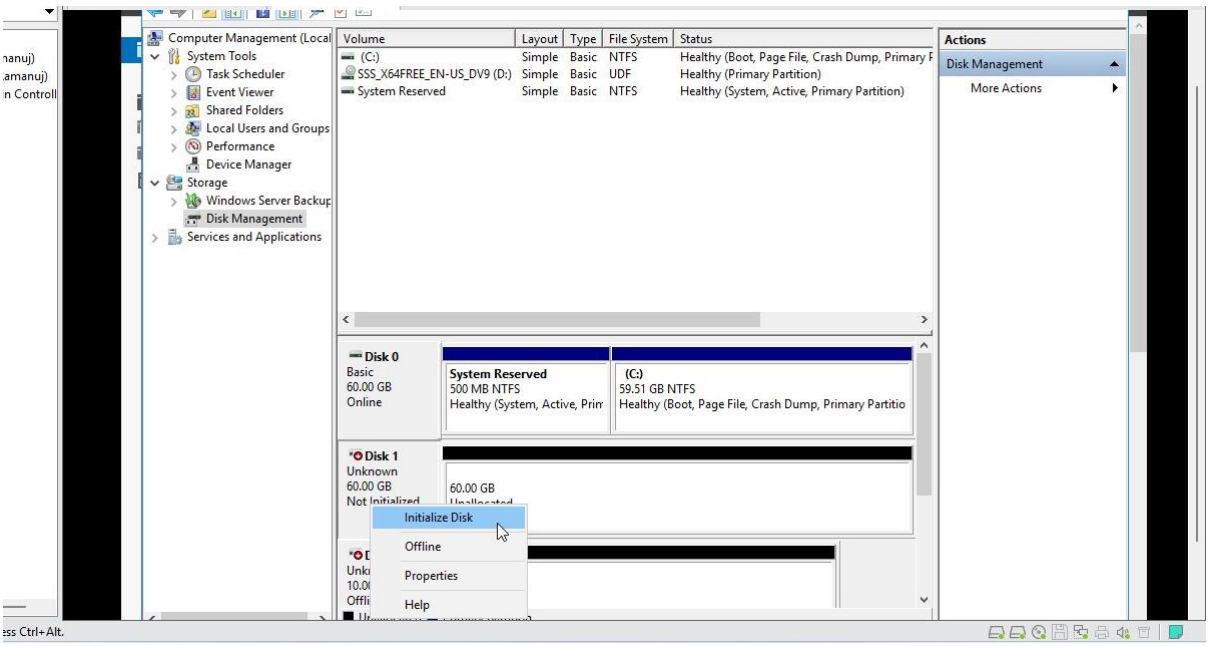
- Click on **Disk Management**



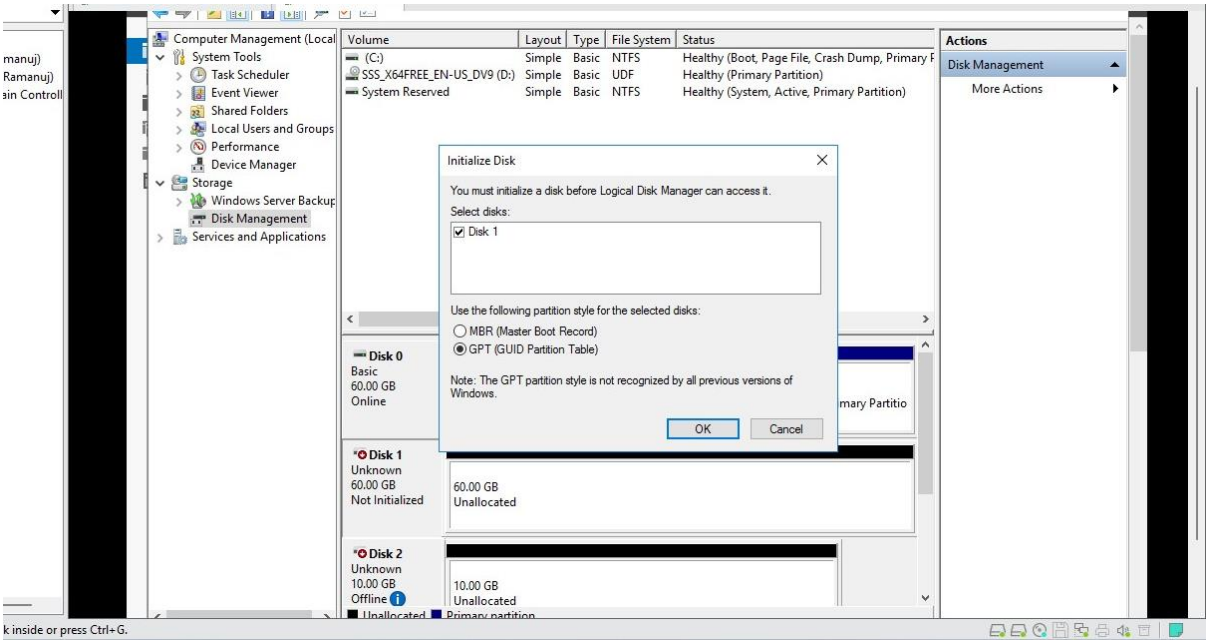
- Right Click on **Disk 1** and Select **Online**



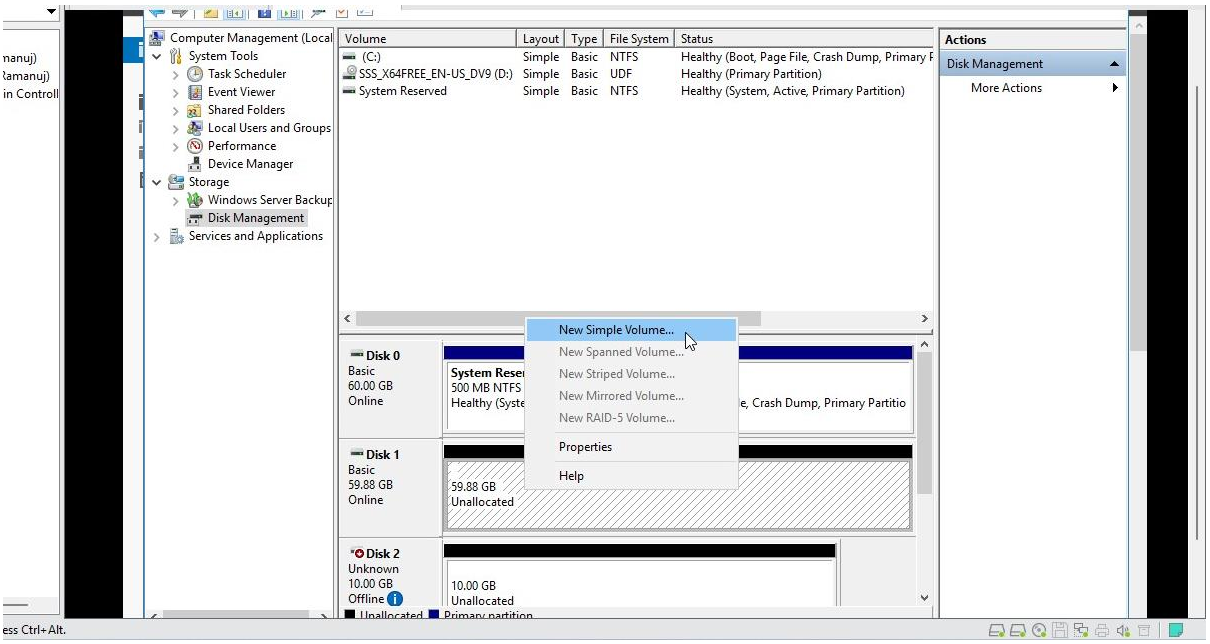
- Again Right Click on **Disk 1** and Select **Initialise Disk**



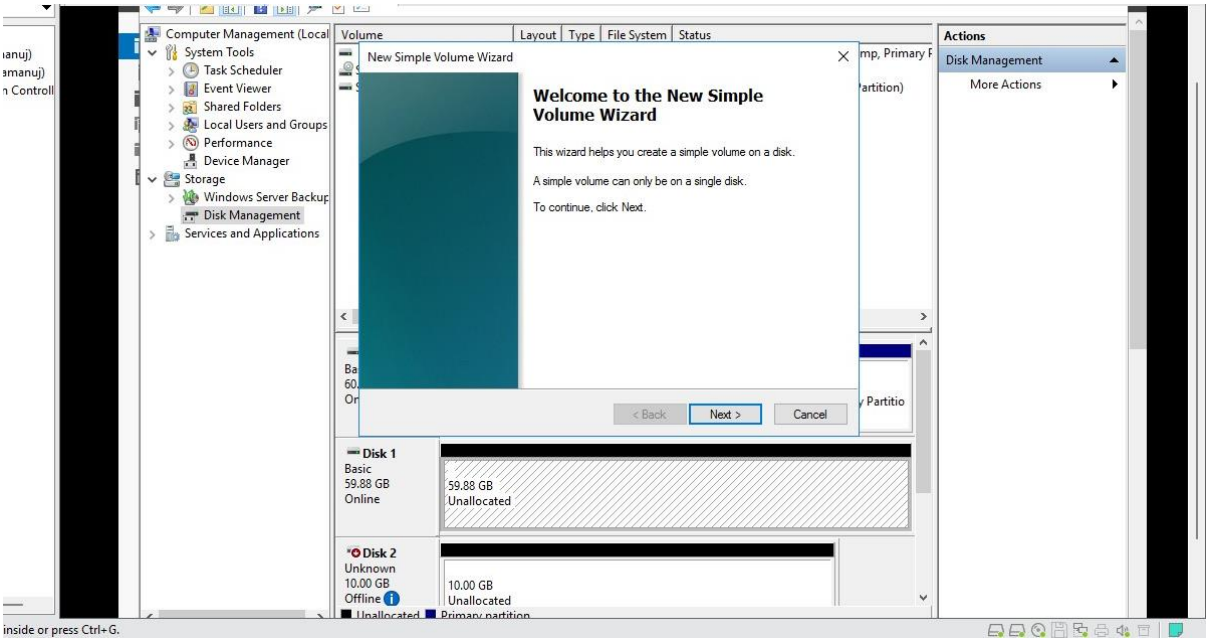
- Select **GPT** and Click **Ok**



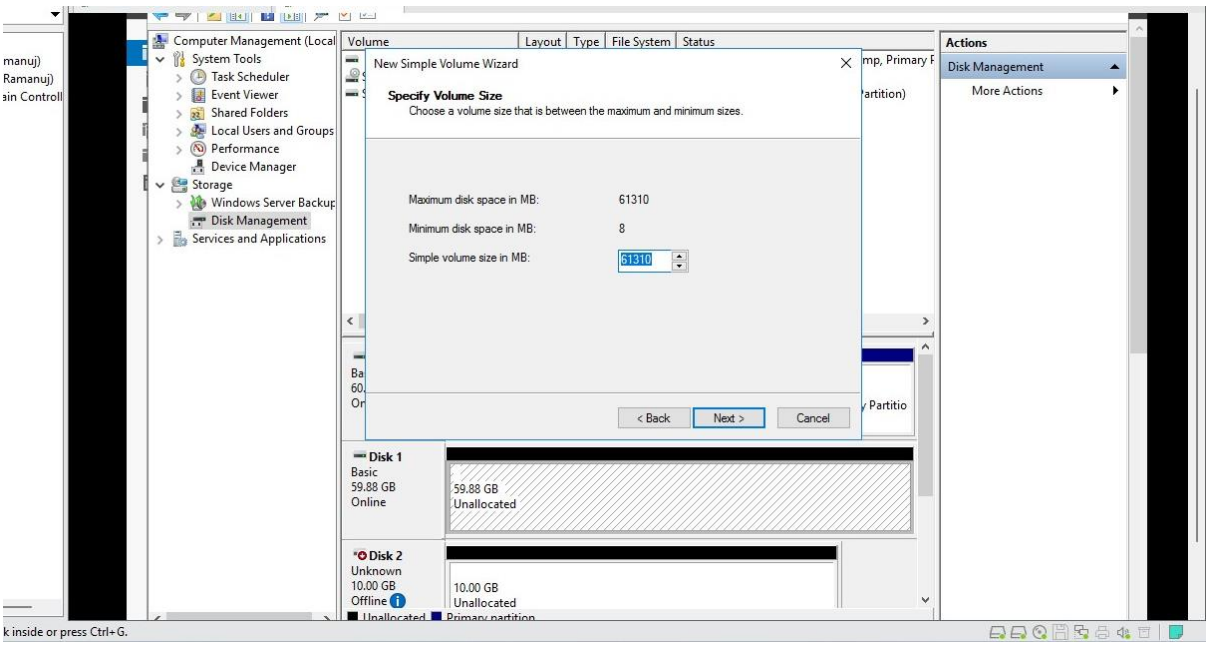
- Right-Click on the storage of **Disk 1** and Click on **Create new simple volume**



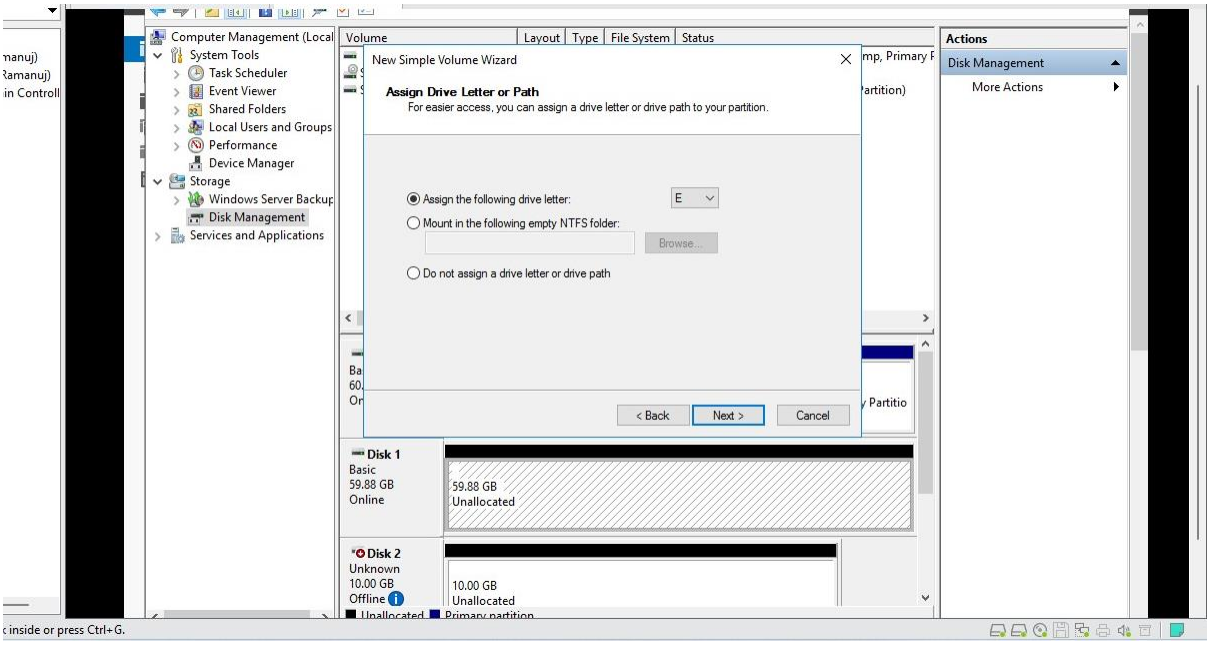
- Click **Next**



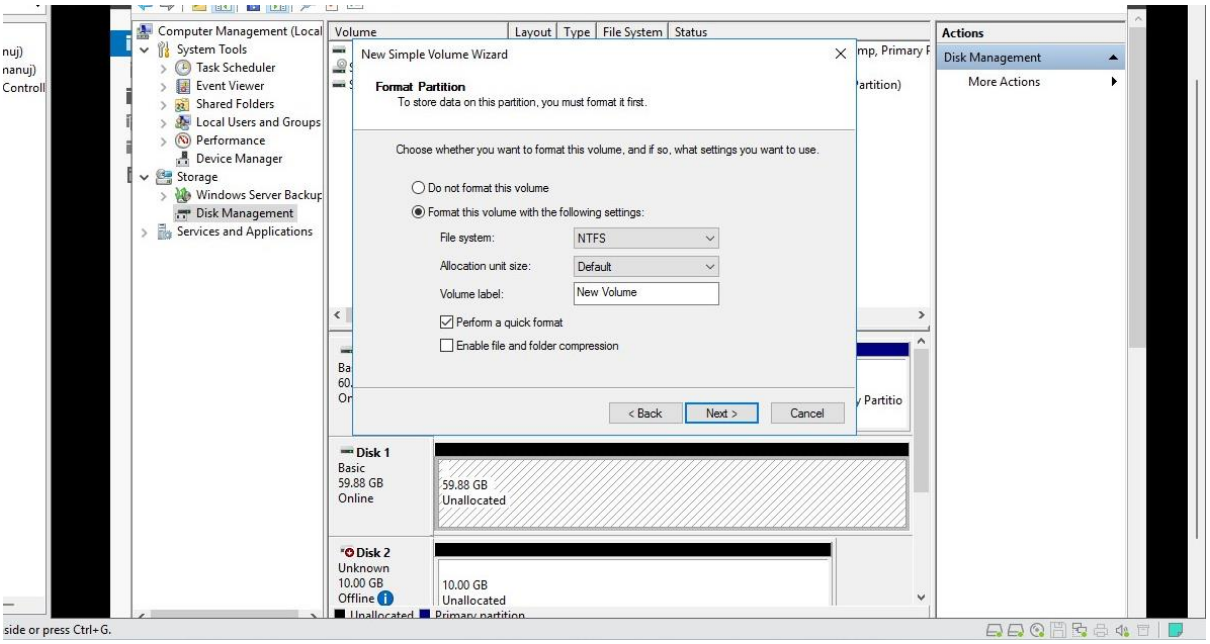
- Keep default values and Click **Next**



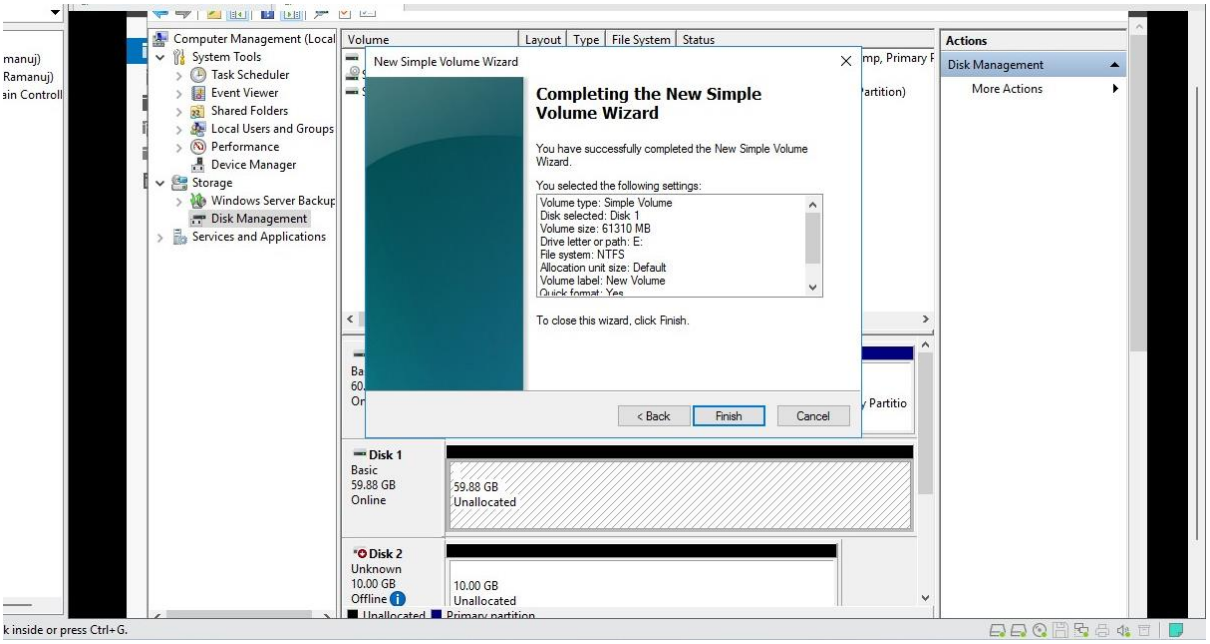
- Keep default values and Click **Next**



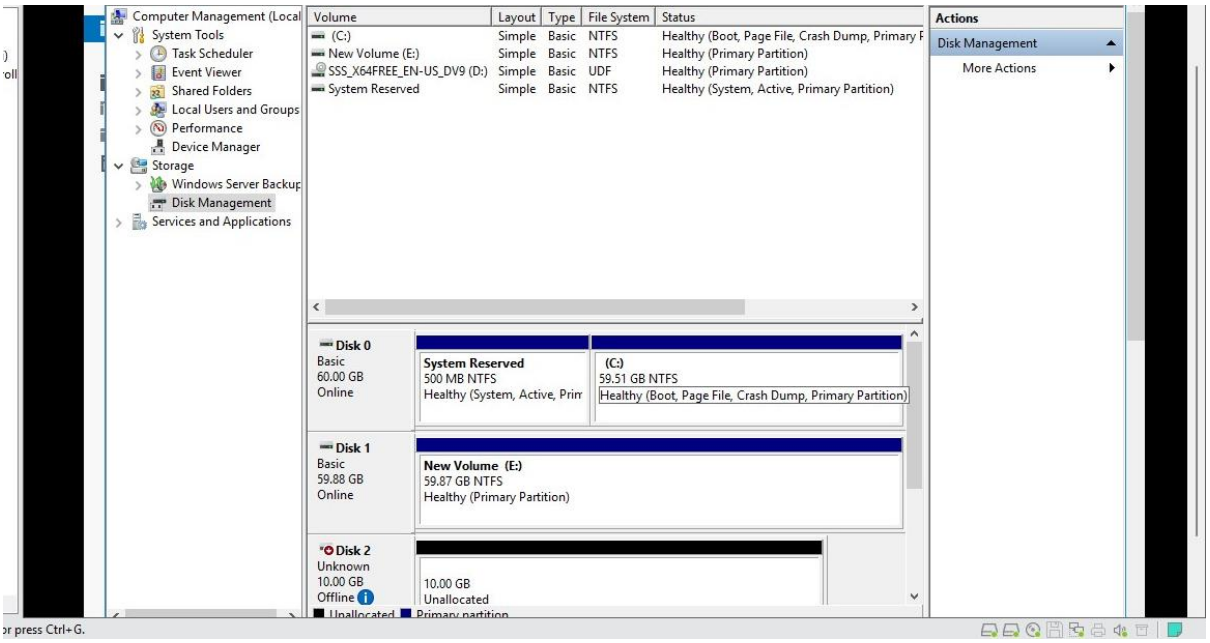
- Keep default values and Click **Next**



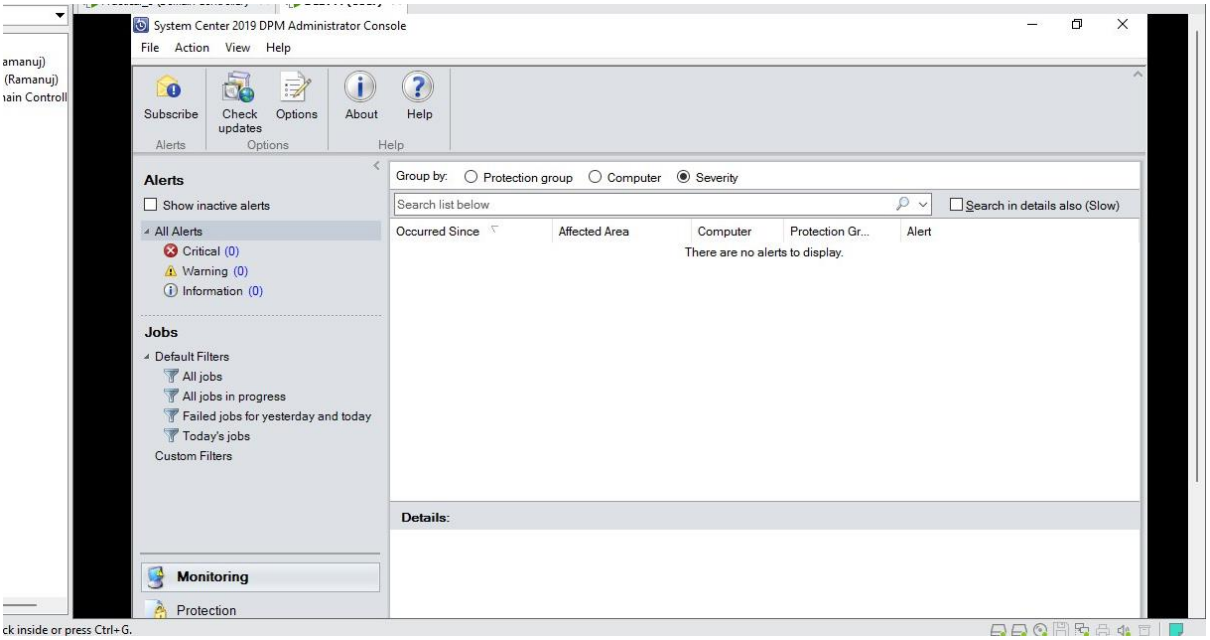
- Click on **Finish**



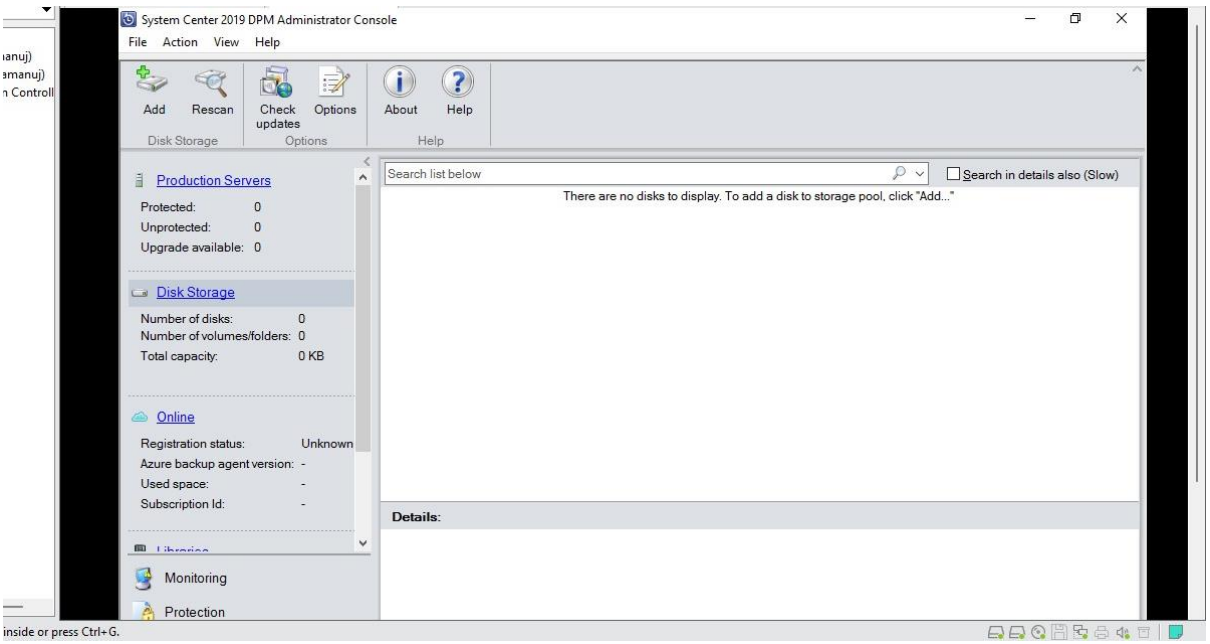
- The new volume has been created



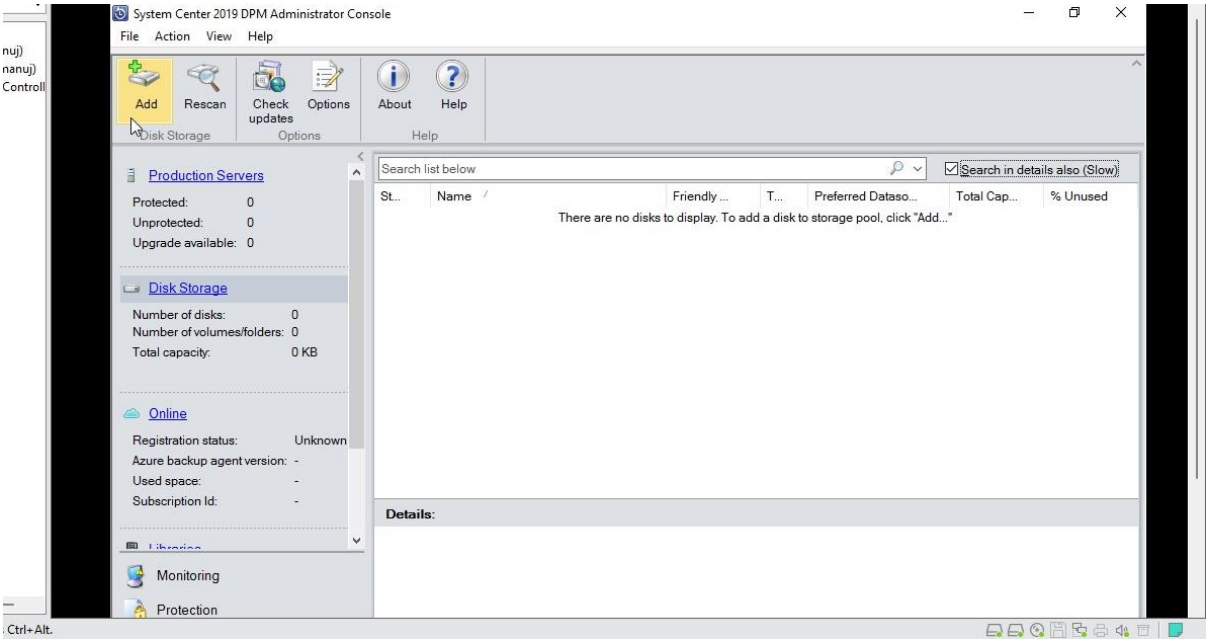
- After the volume is created change the user back to SCDPM and Run SCDPM



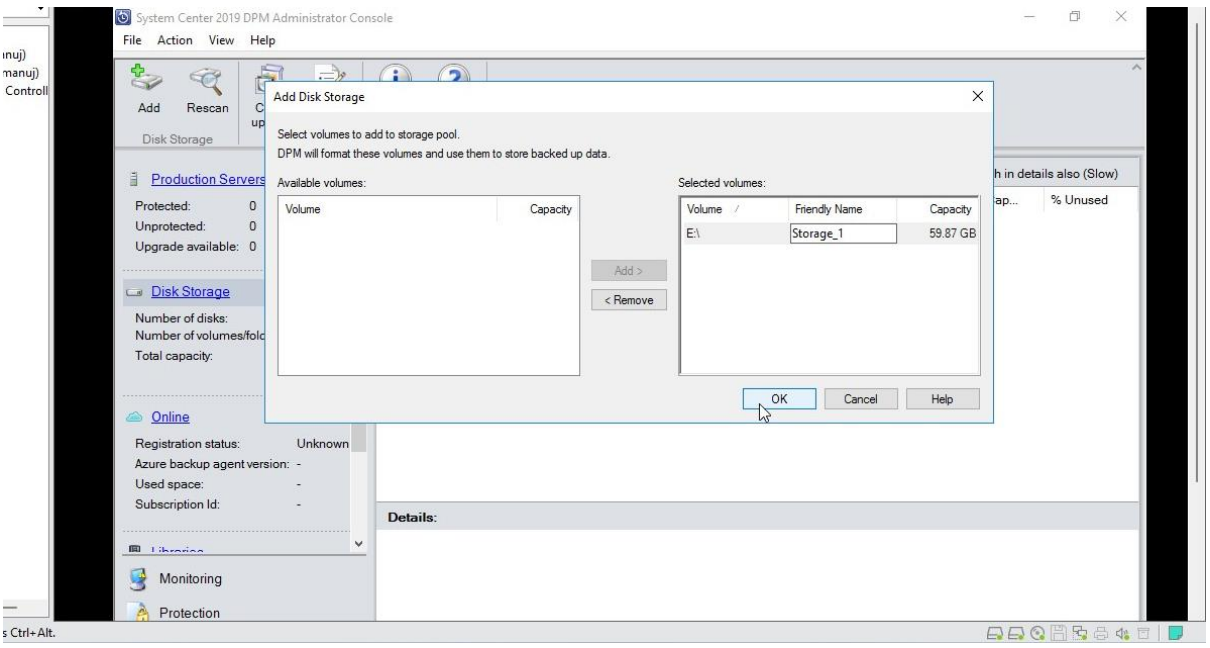
- Click on **Management** and Select **Disk Storage**



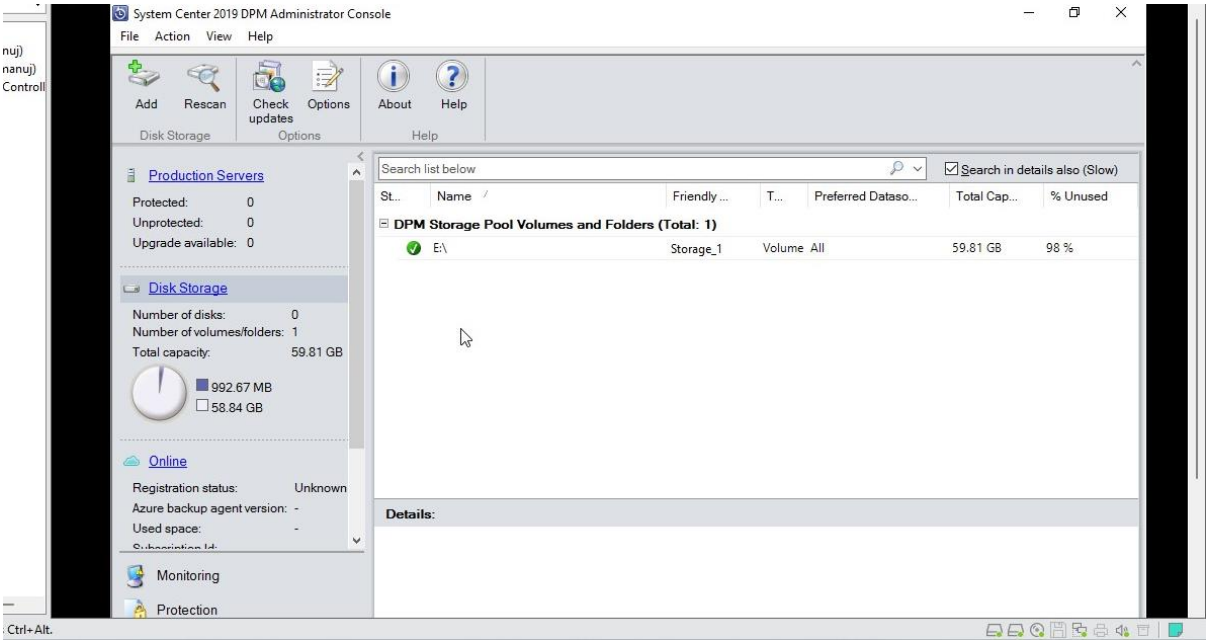
- Click **Add**



- Select volume E and Click **Add**, then Name the Storage and Click **Ok**



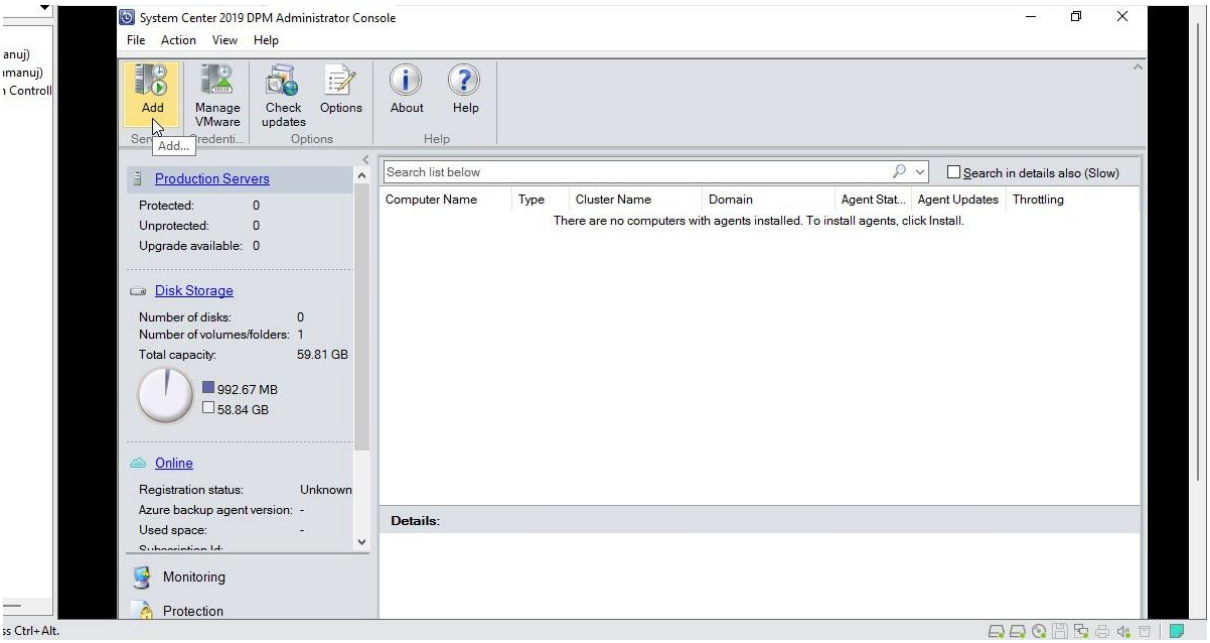
- The Storage has been created



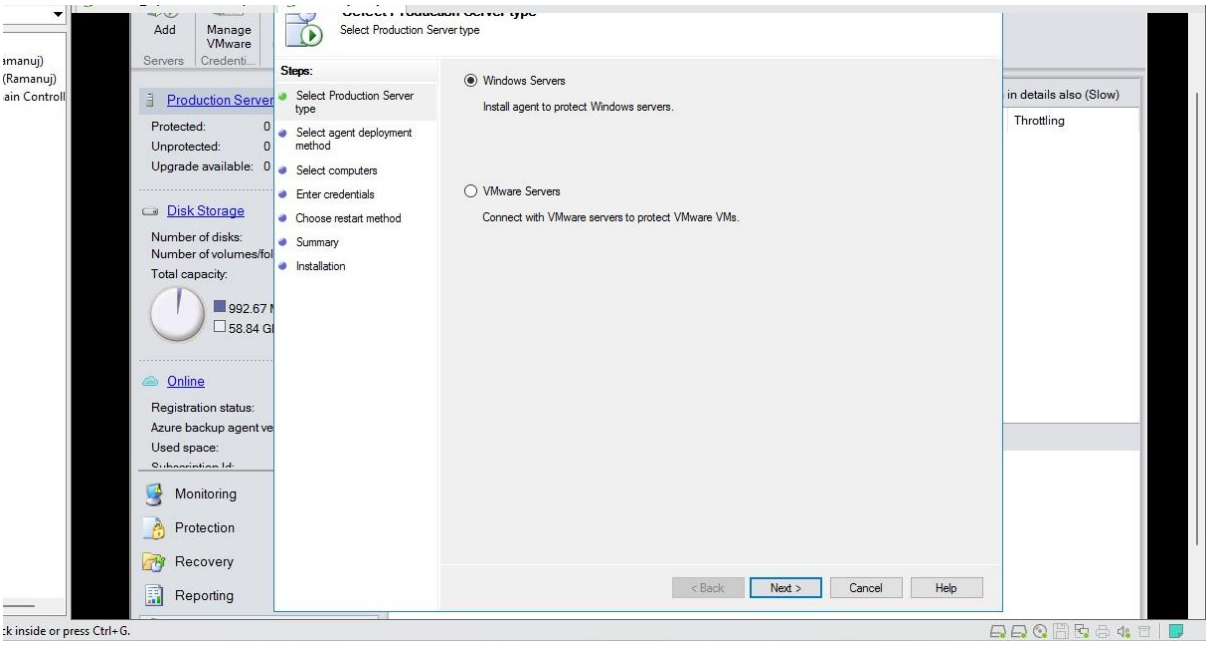
5-B: Deploy Protection Agent

Step 9: Creating a Production Server

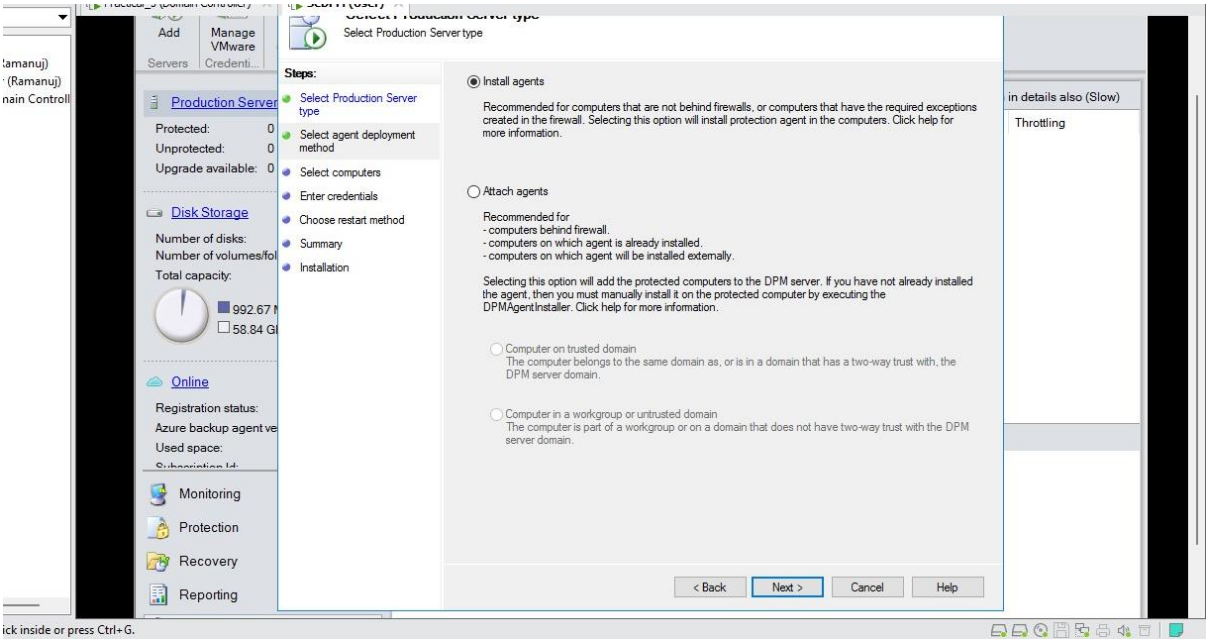
- Within Management Click on **Production Servers** and Click on **Add**



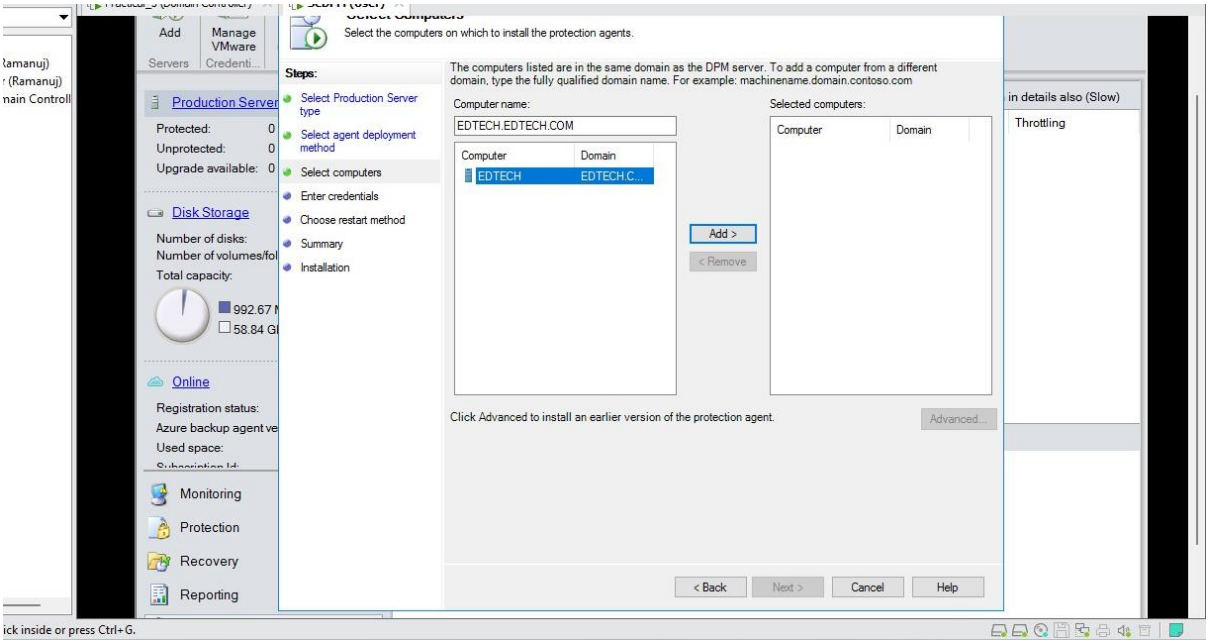
- Select **Windows Server** and Click **Next**



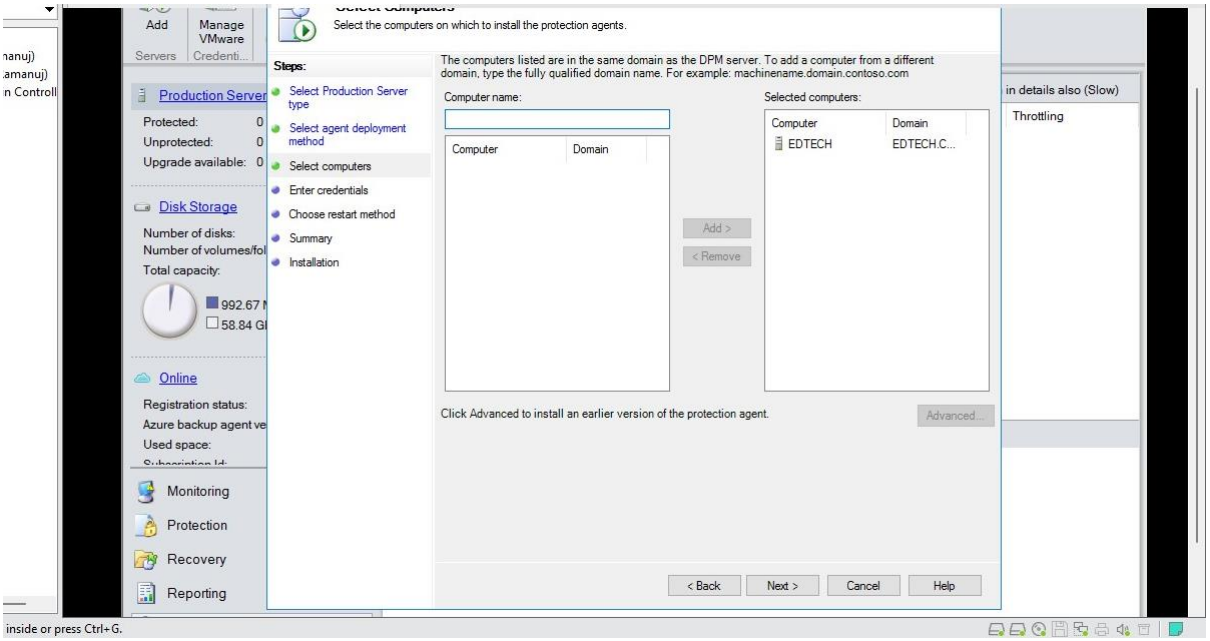
- Select **Install Agents** and Click **Next**



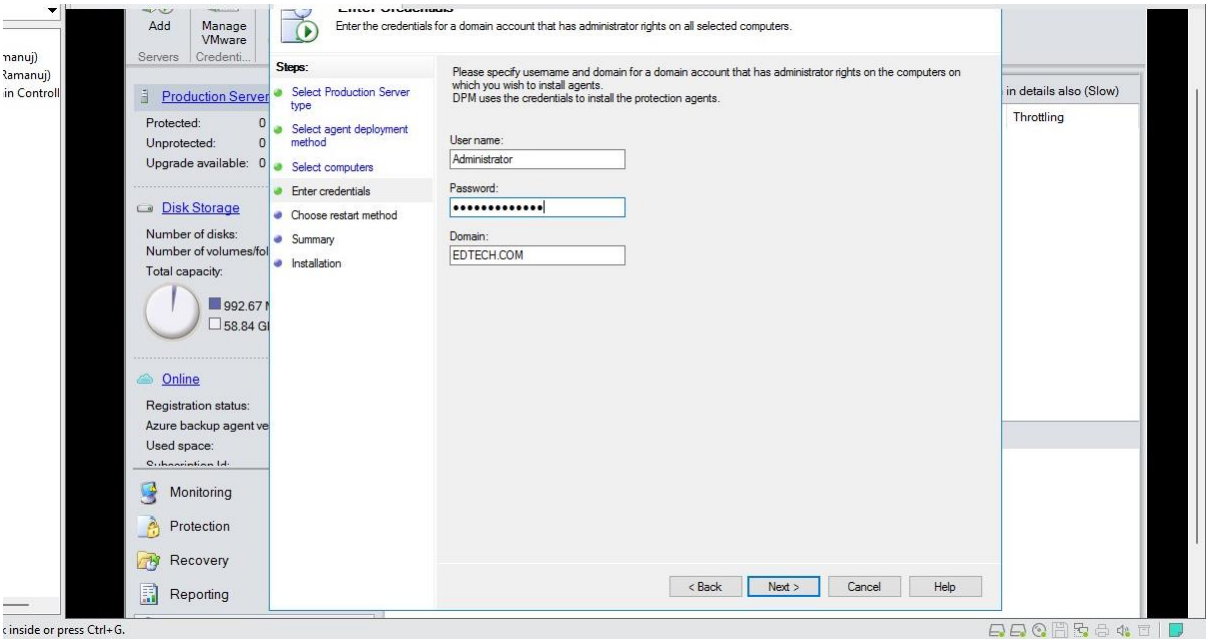
- Select **EDTECH** and Click **Add**



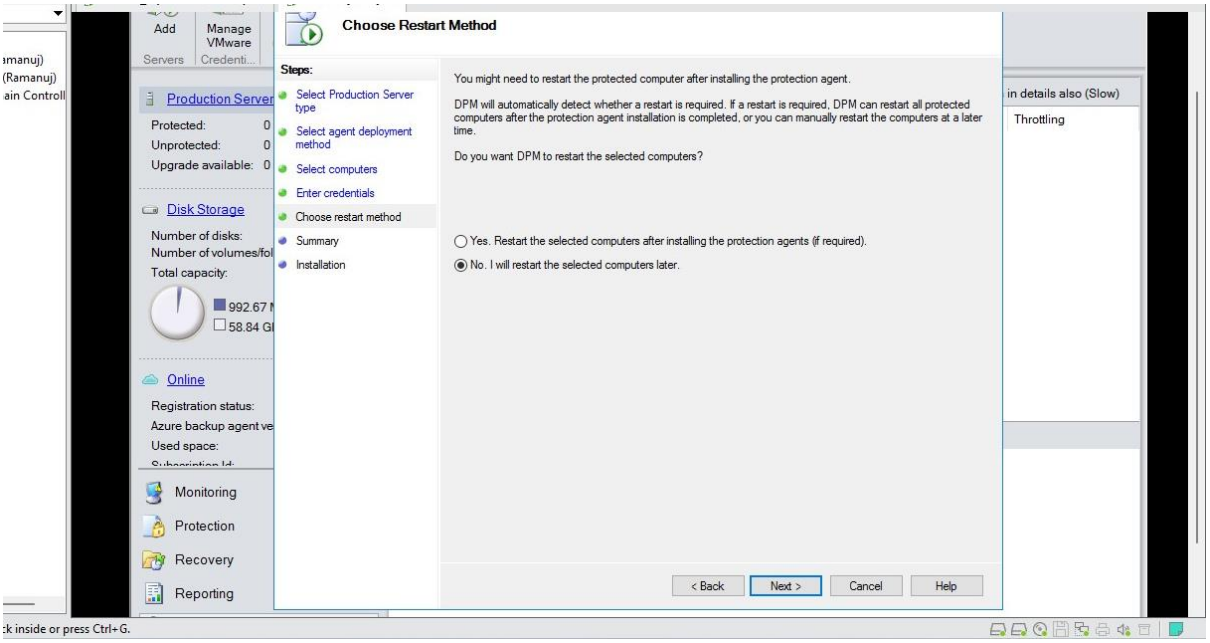
- Click **Next**



- Type in the credentials and Click on **Next**

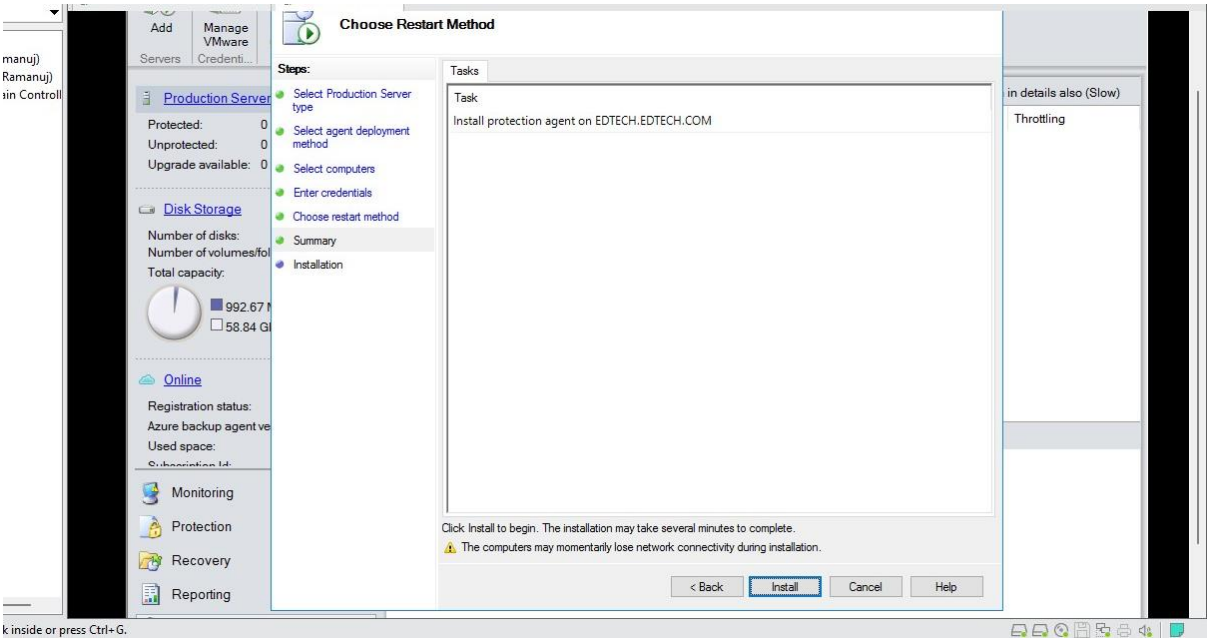


- Select **No, I will restart the selected computers later** and Click **Next**



- Click on **Install**

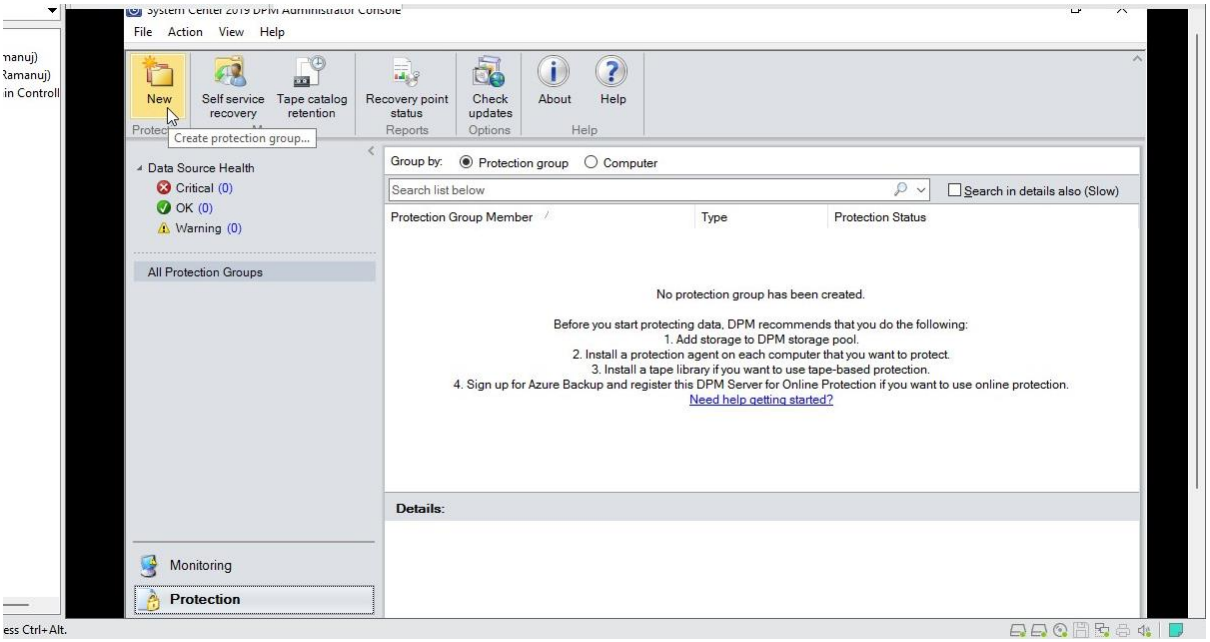
Note: If there is an error 313 or 319 then **Disable** the firewalls of both the Domain Controller and SCDPM. You can also refer to **Step 10** for the cmd commands for allowing particular files in the firewall



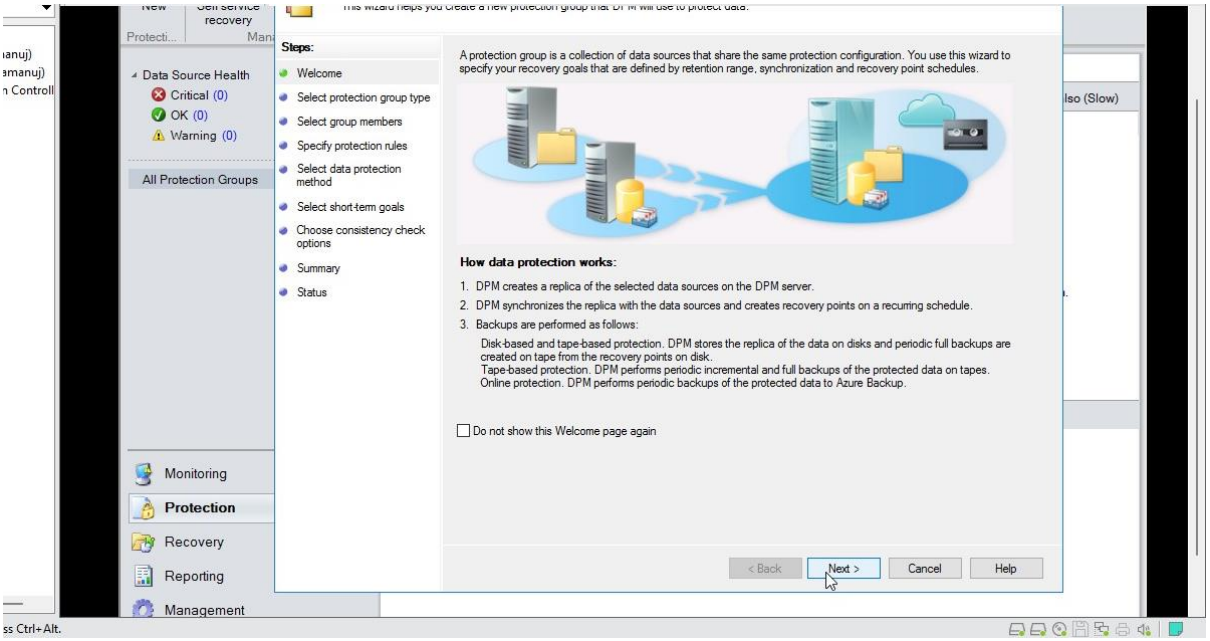
5-C: Deploy Protection Groups

Step 9: Creating a Protection Group in SCDPM

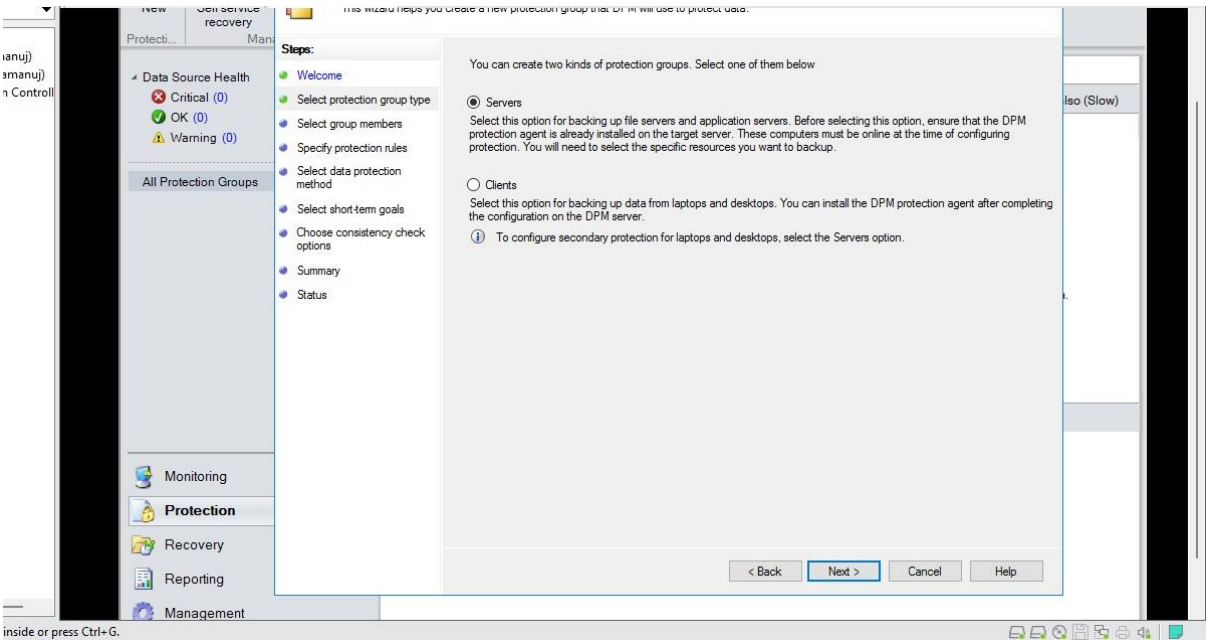
- Click on **Protection** and Click on **New**



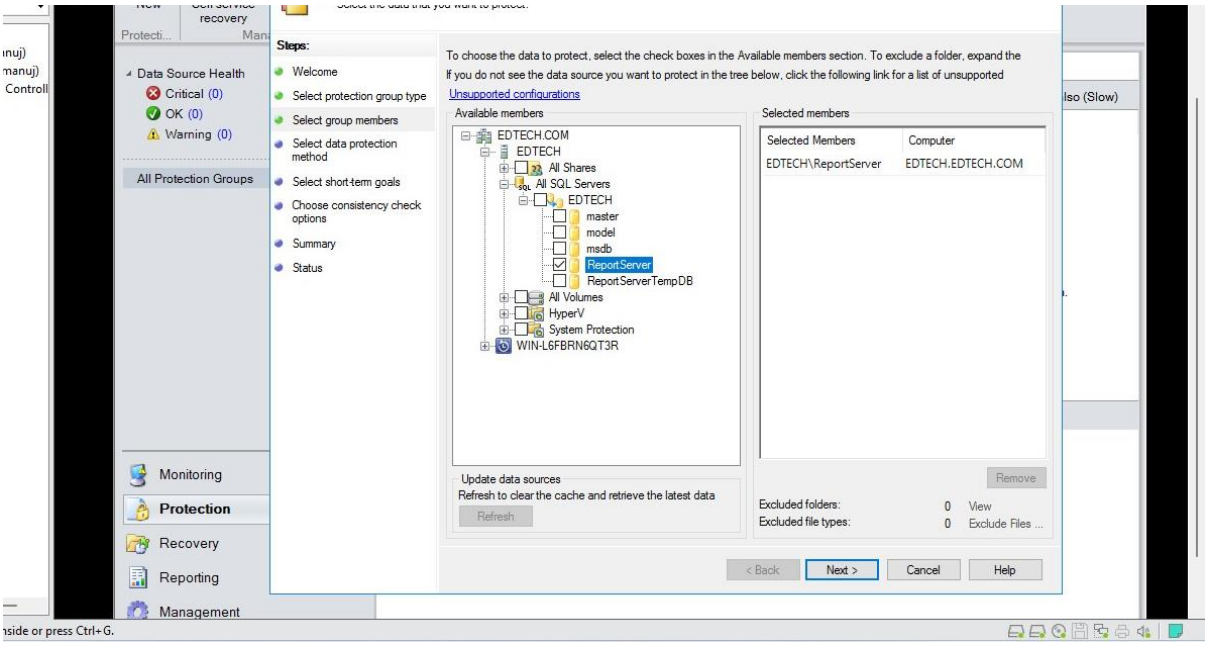
- Click **Next**



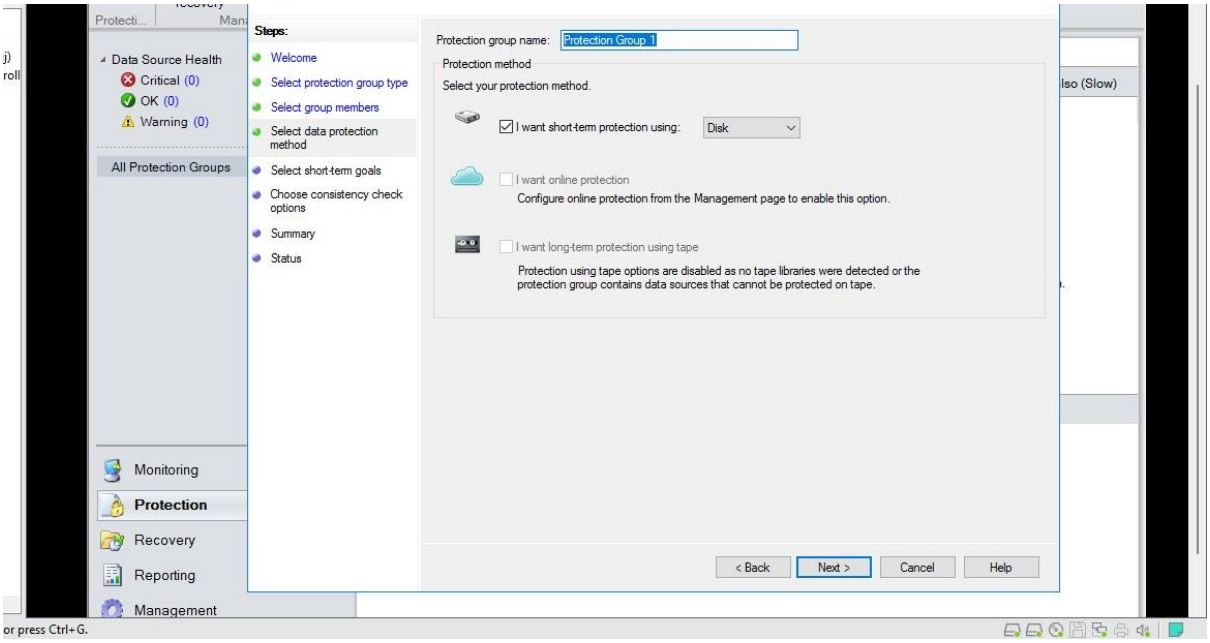
- Select **Server** and Click **Next**



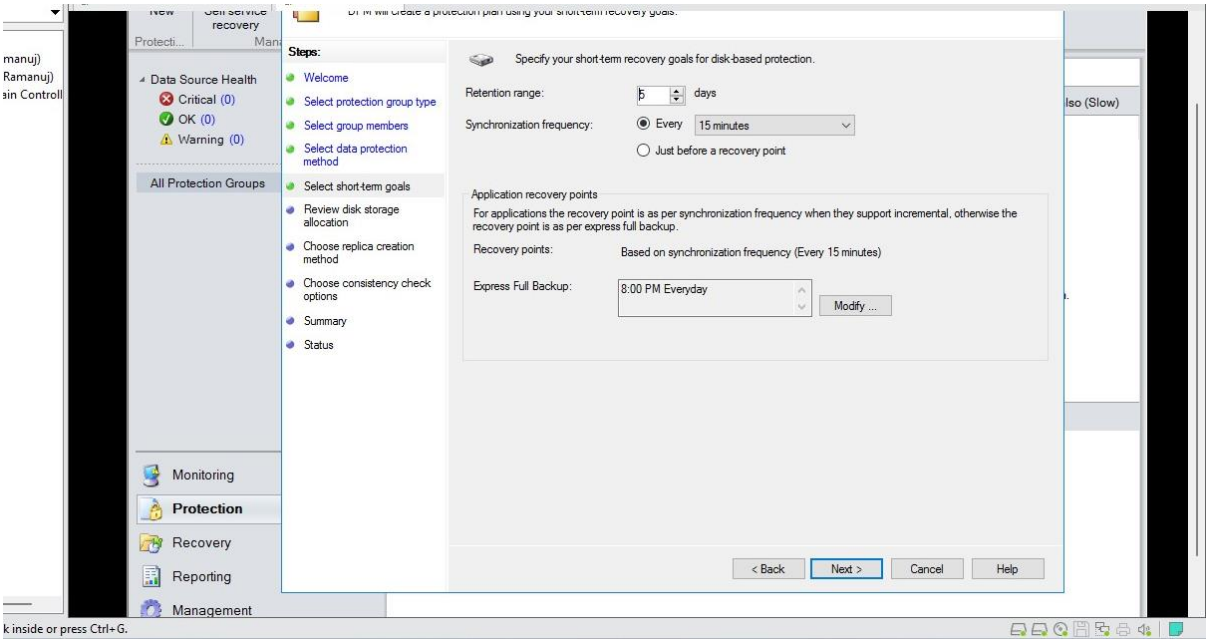
- Select a Folder from your SQL Server (Here it is Report Server) and Click **Next**



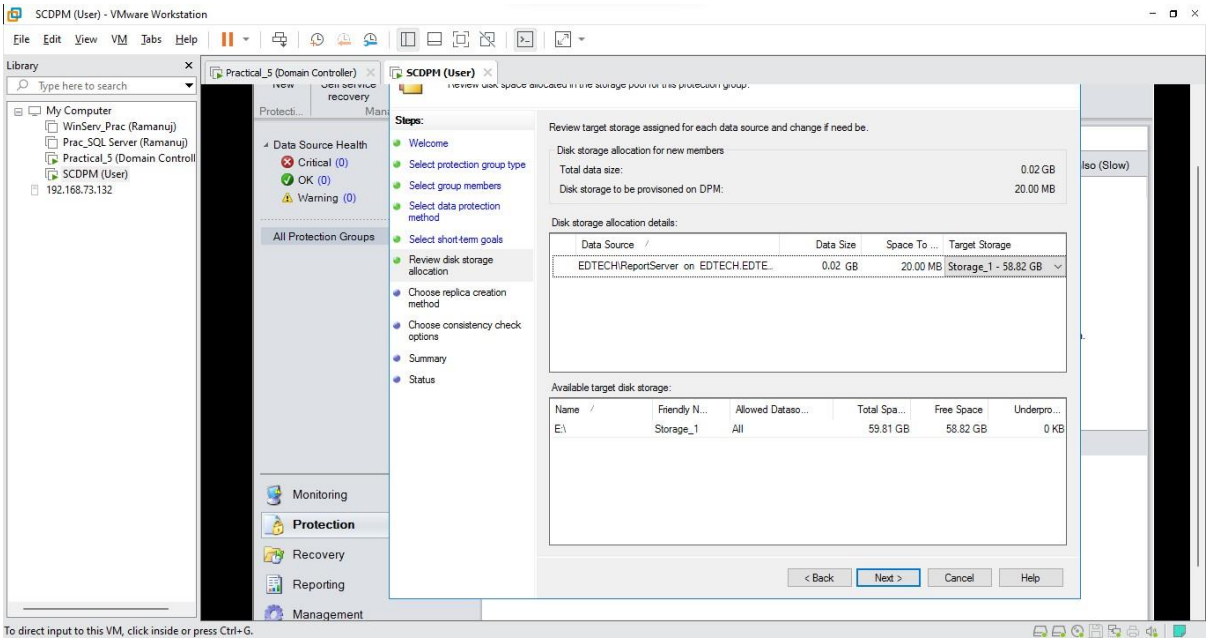
- Name the Protection Group or Keep the default value and Click **Next**



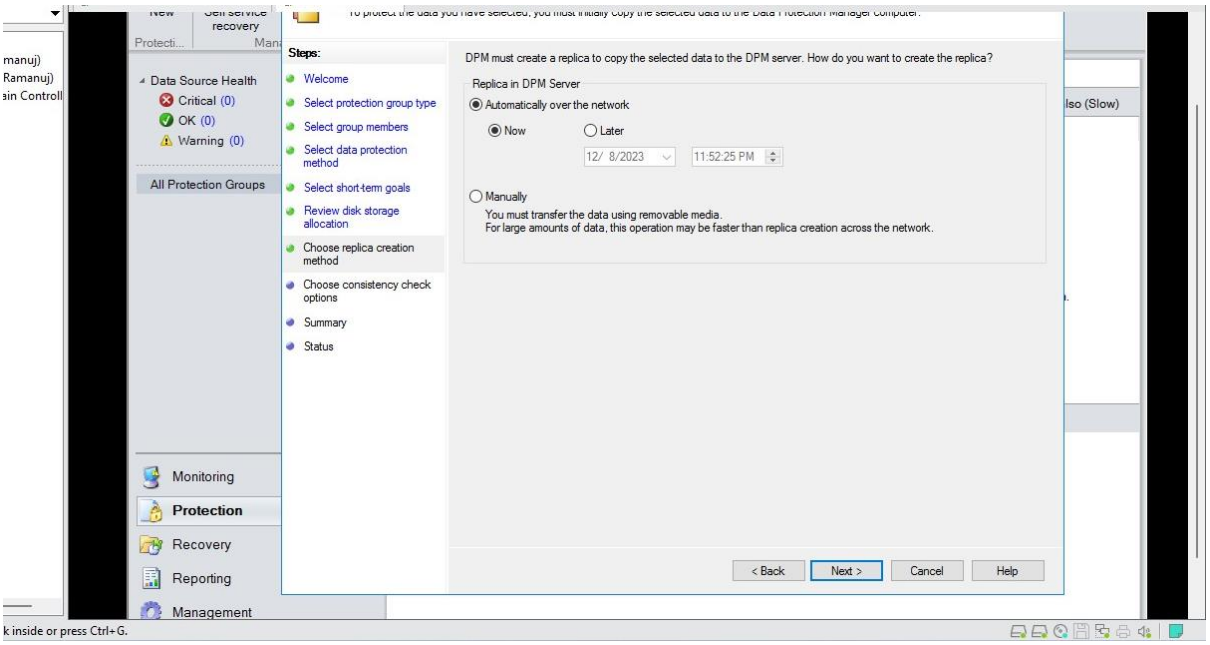
- Keep default values and Click **Next**



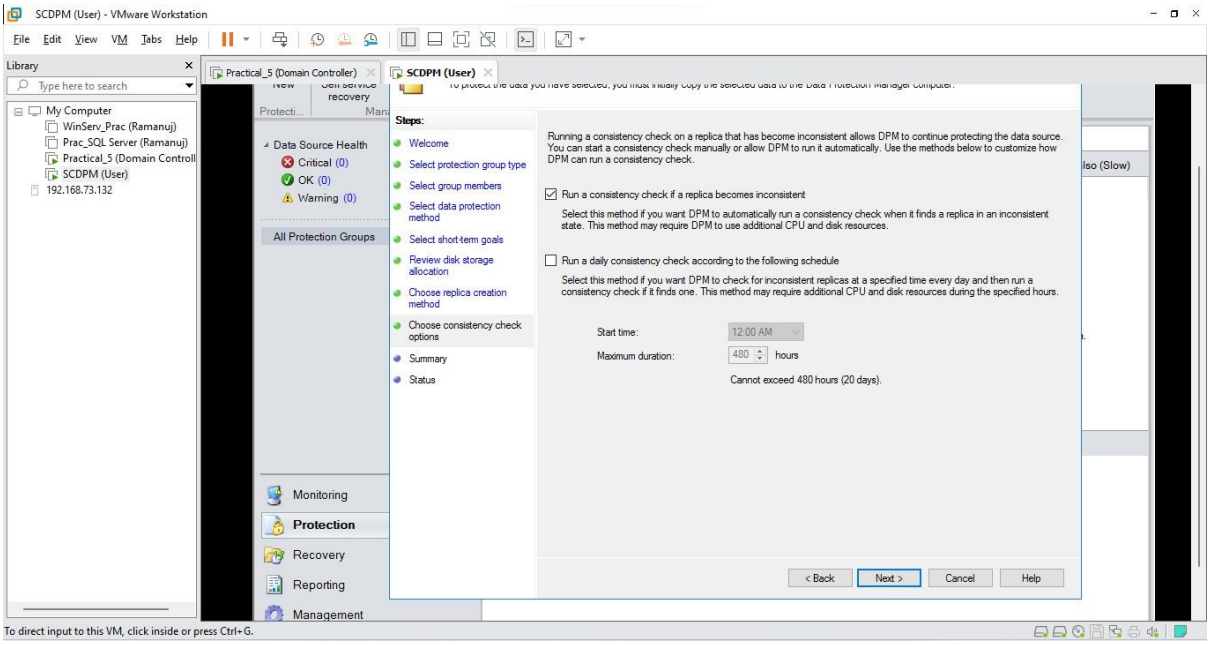
- Click **Next**



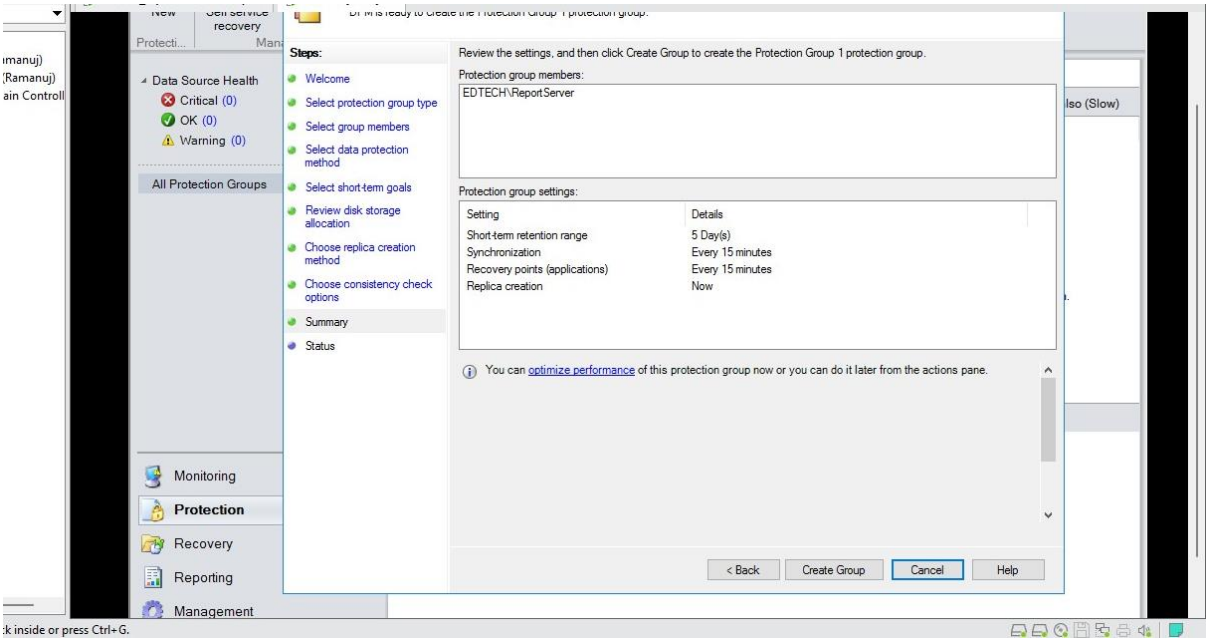
- Select **Automatic** and Click **Next**



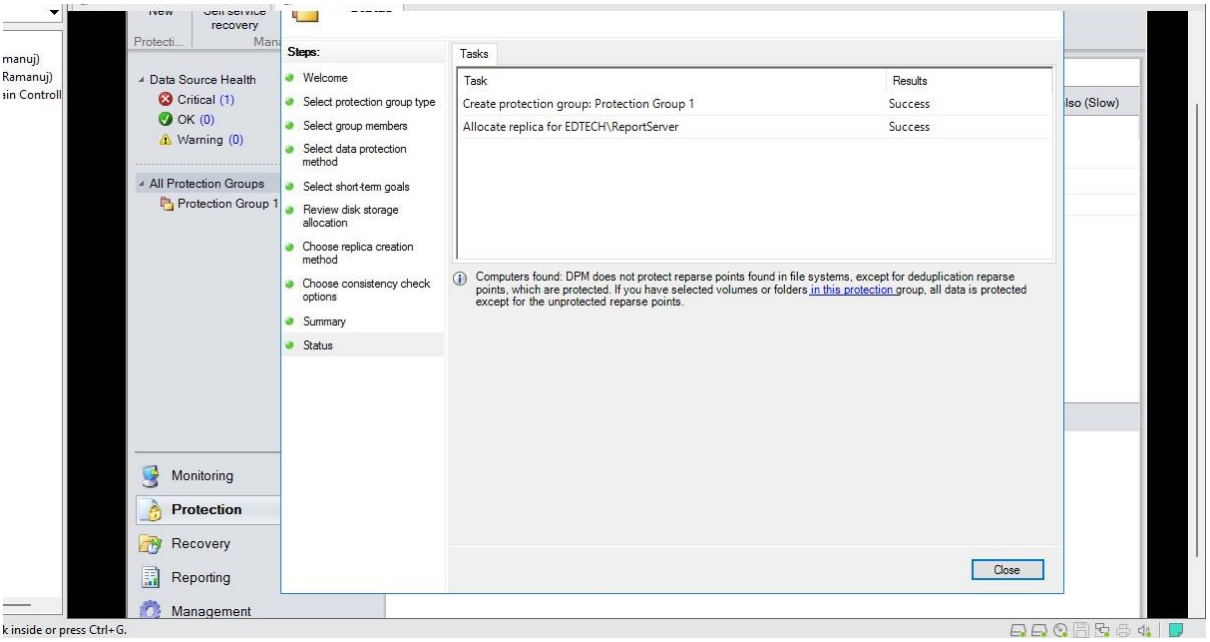
- Keep default values and Click **Next**



- View the summary of your protection group and Click **Create Group**



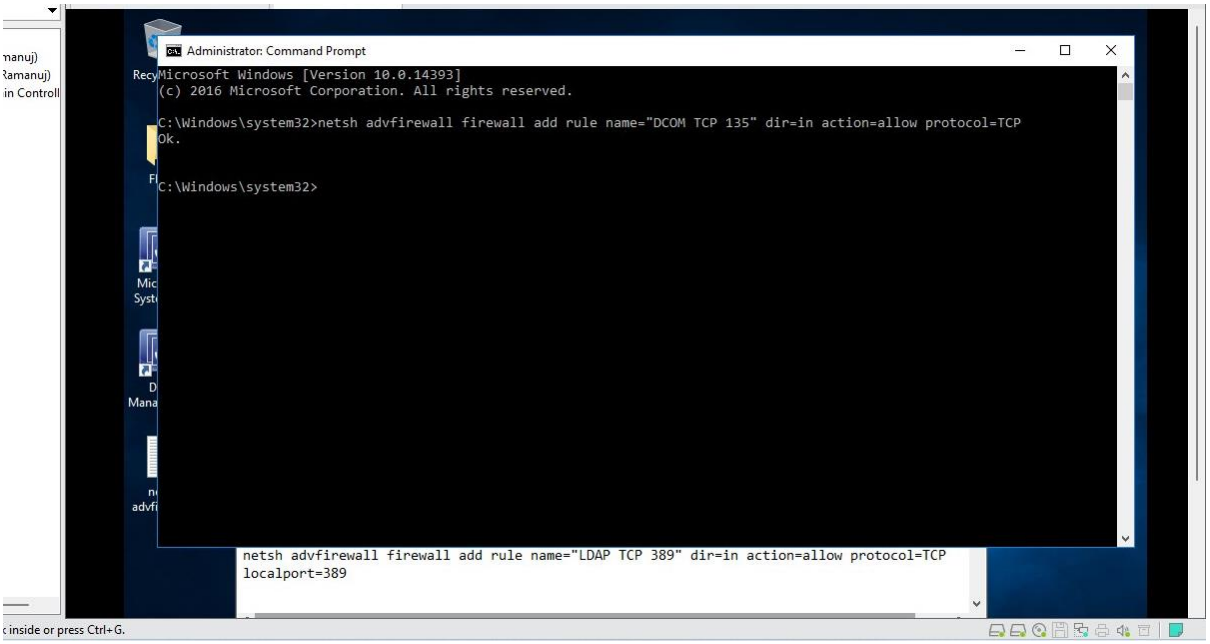
- Protection Group has been successfully created



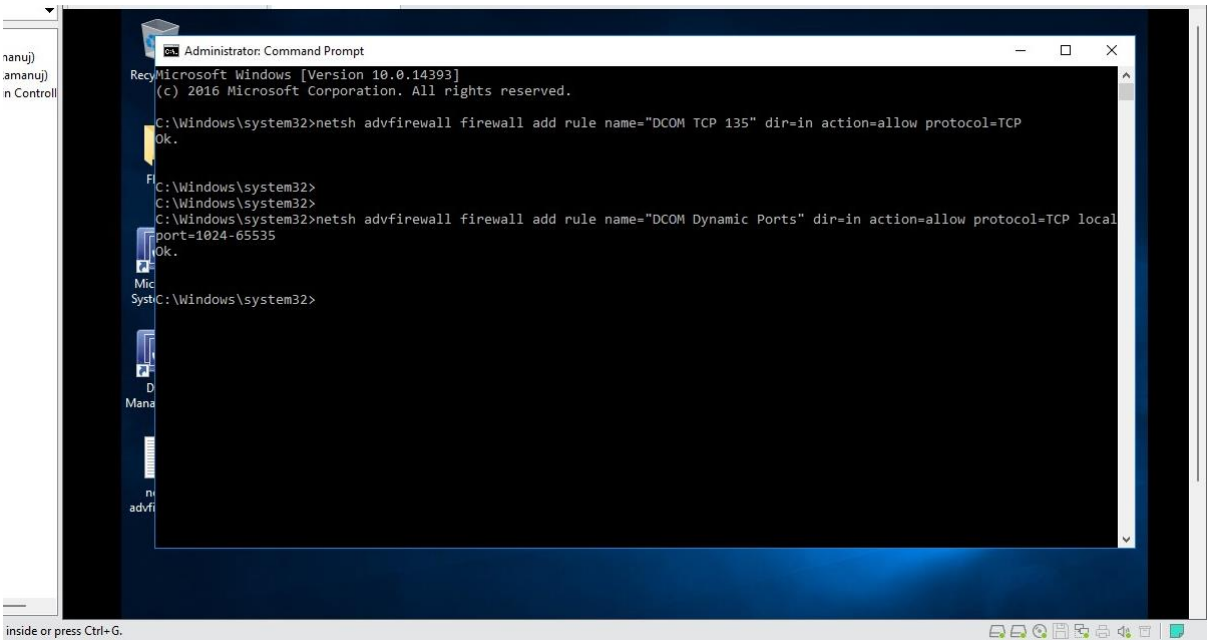
5-D: Configure Firewall Settings

Step 10: Run firewall commands in command prompt

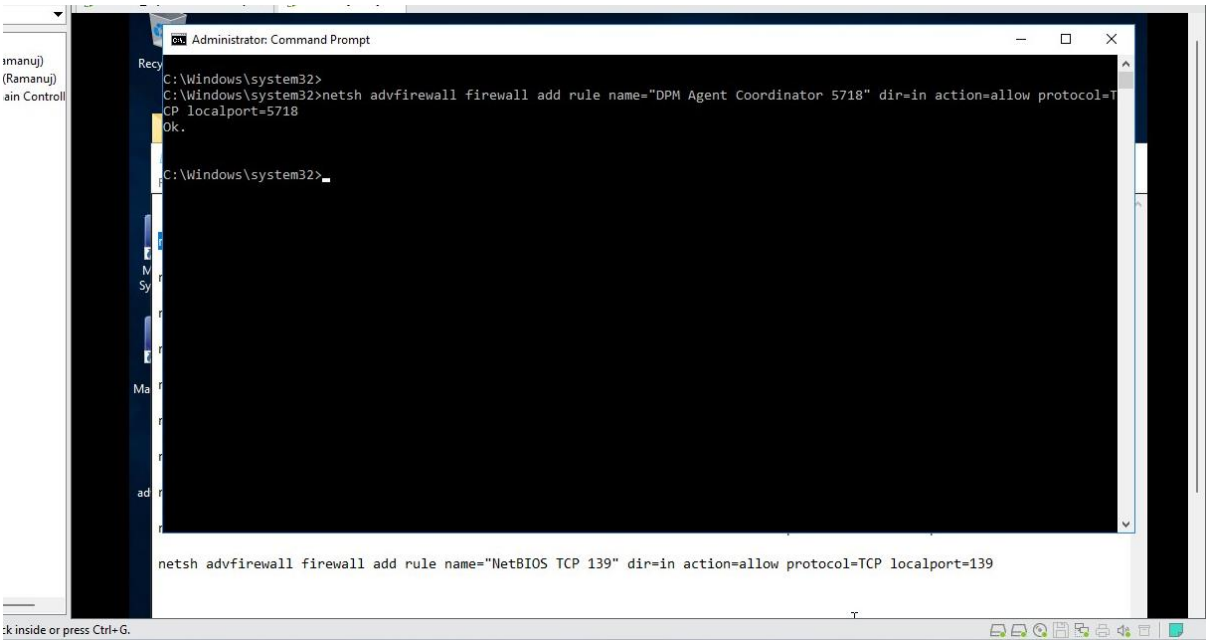
- **netsh advfirewall firewall add rule name="DCOM TCP 135" dir=in action=allow protocol=TCP localport=135**



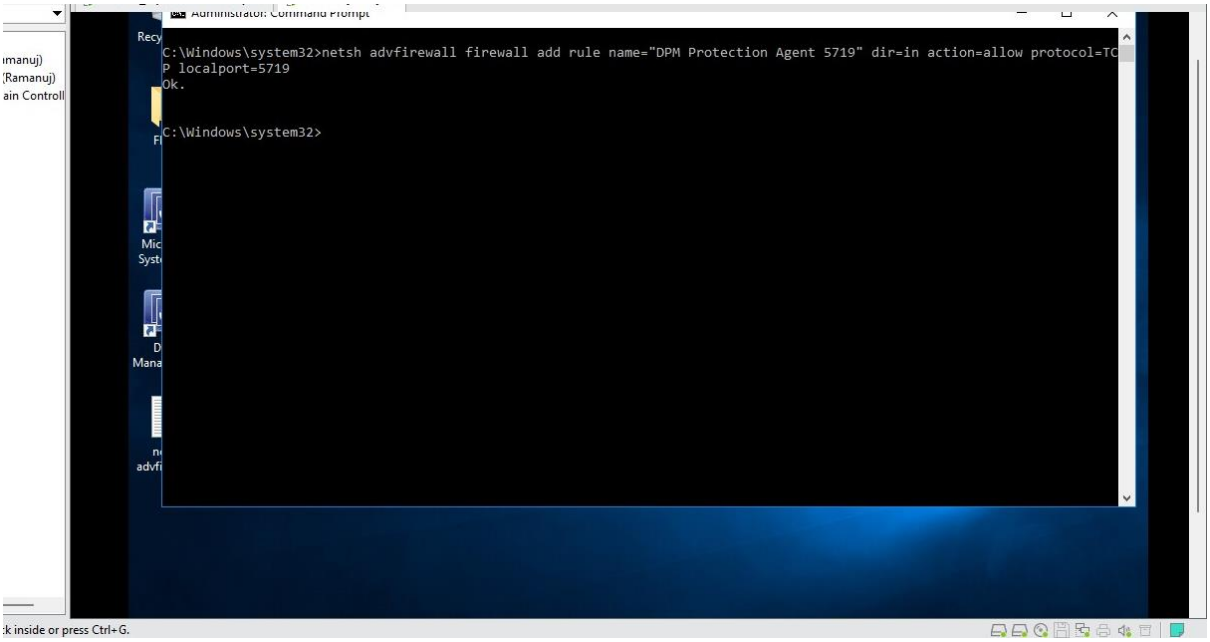
- **netsh advfirewall firewall add rule name="DCOM Dynamic Ports" dir=in action=allow protocol=TCP localport=1024-65535**



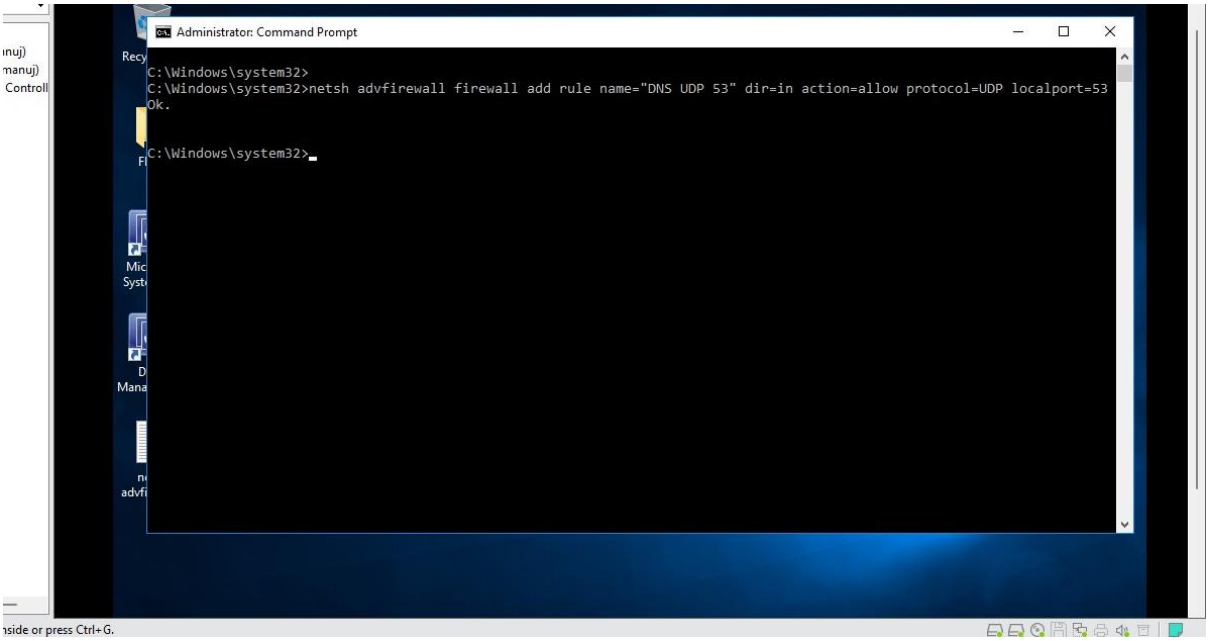
- **netsh advfirewall firewall add rule name="DPM Agent Coordinator 5718" dir=in action=allow protocol=TCP localport=5718**



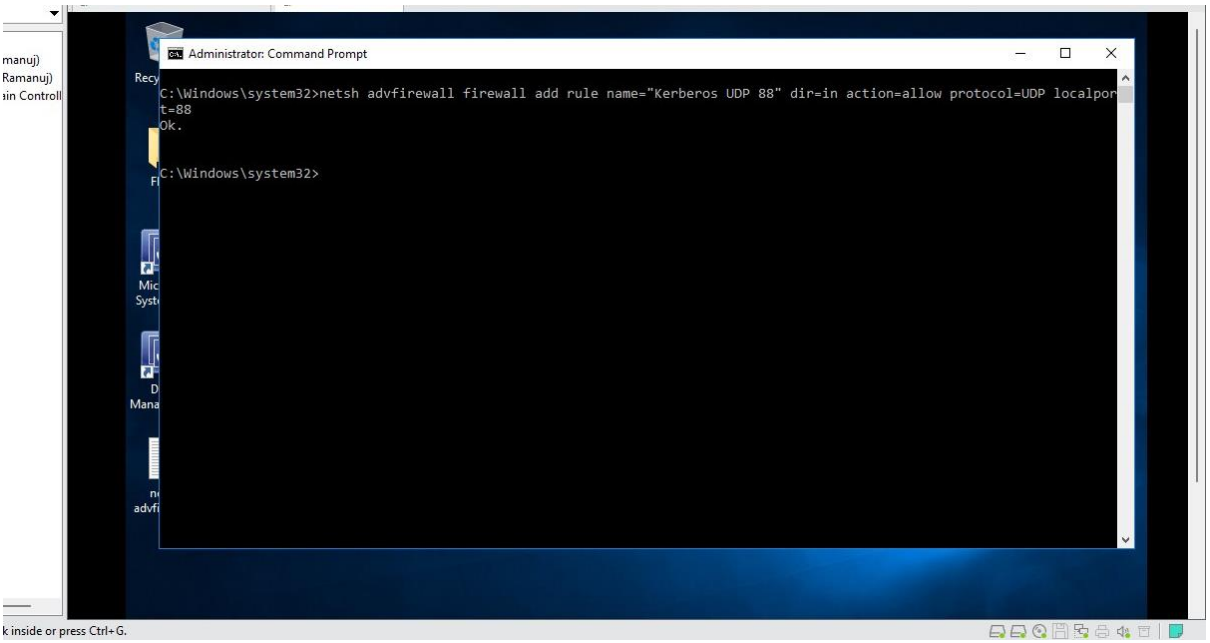
- **netsh advfirewall firewall add rule name="DPM Protection Agent 5719" dir=in action=allow protocol=TCP localport=5719**



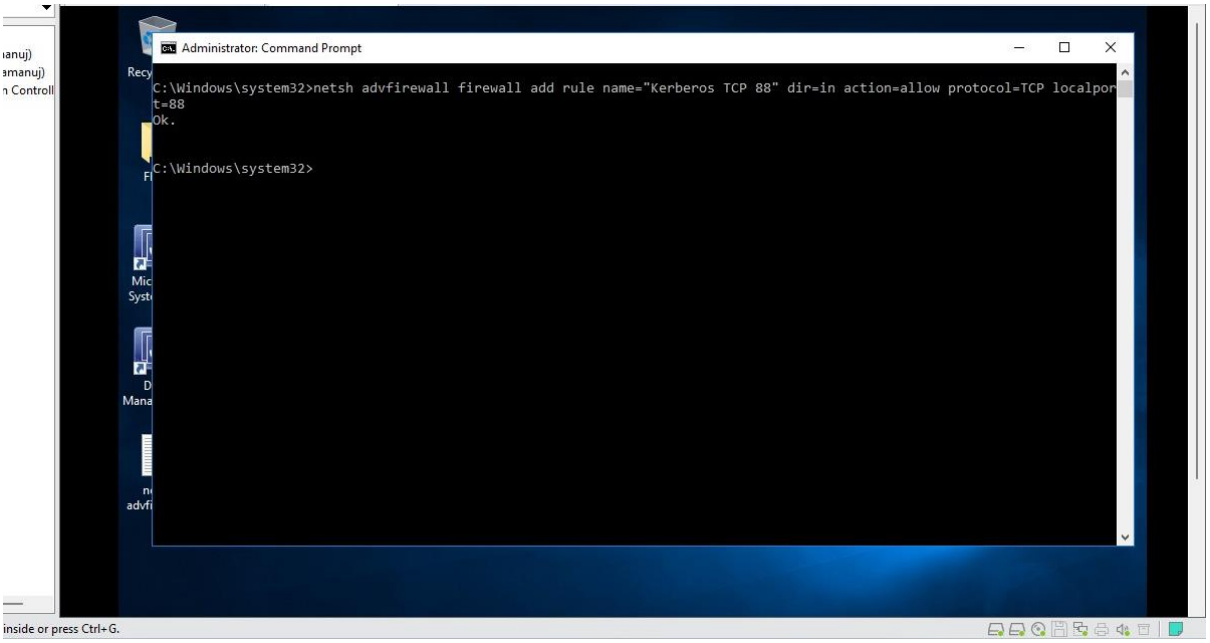
- **netsh advfirewall firewall add rule name="DNS UDP 53" dir=in action=allow protocol=UDP localport=53**



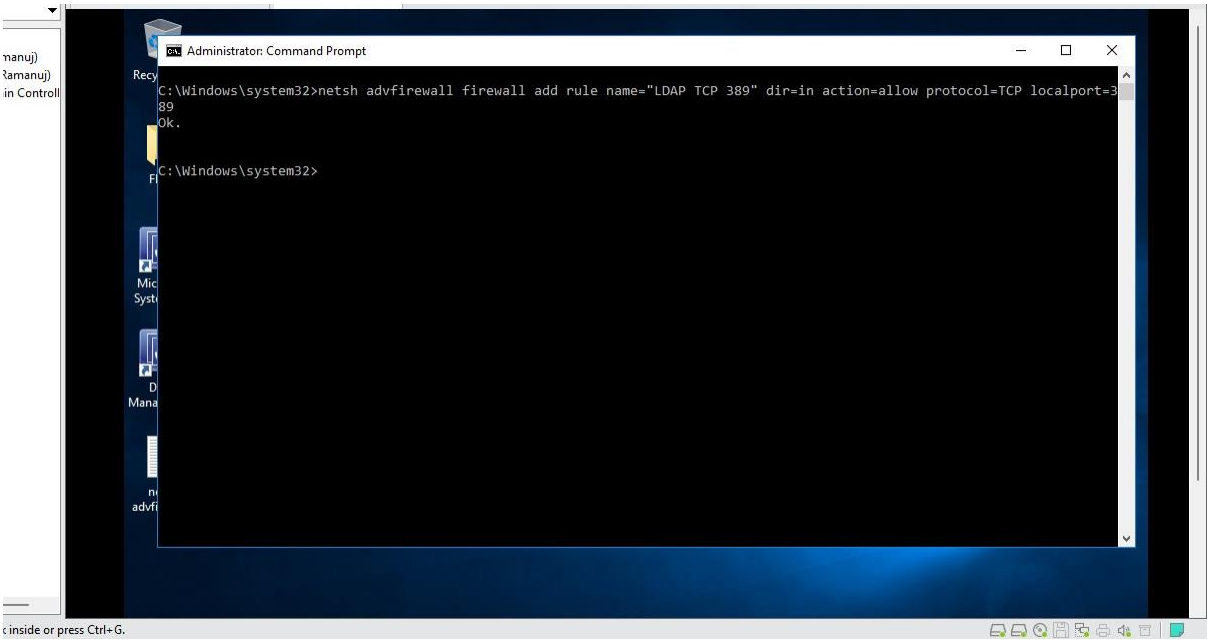
- **netsh advfirewall firewall add rule name="Kerberos UDP 88" dir=in action=allow protocol=UDP localport=88**



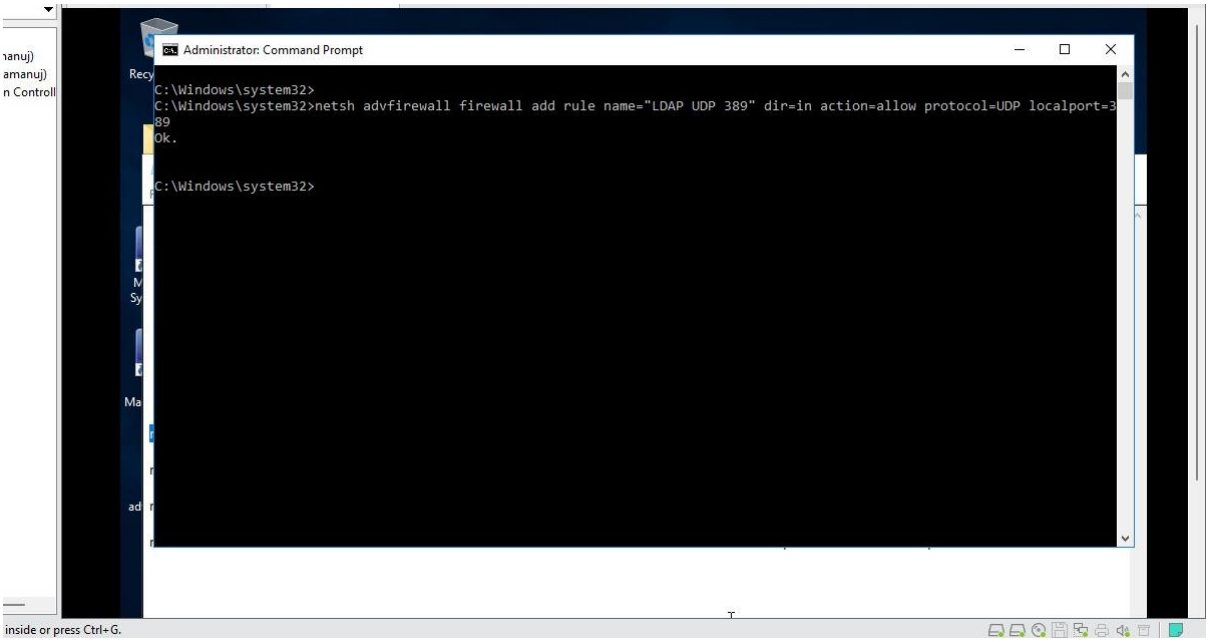
- **netsh advfirewall firewall add rule name="Kerberos TCP 88" dir=in action=allow protocol=TCP localport=88**



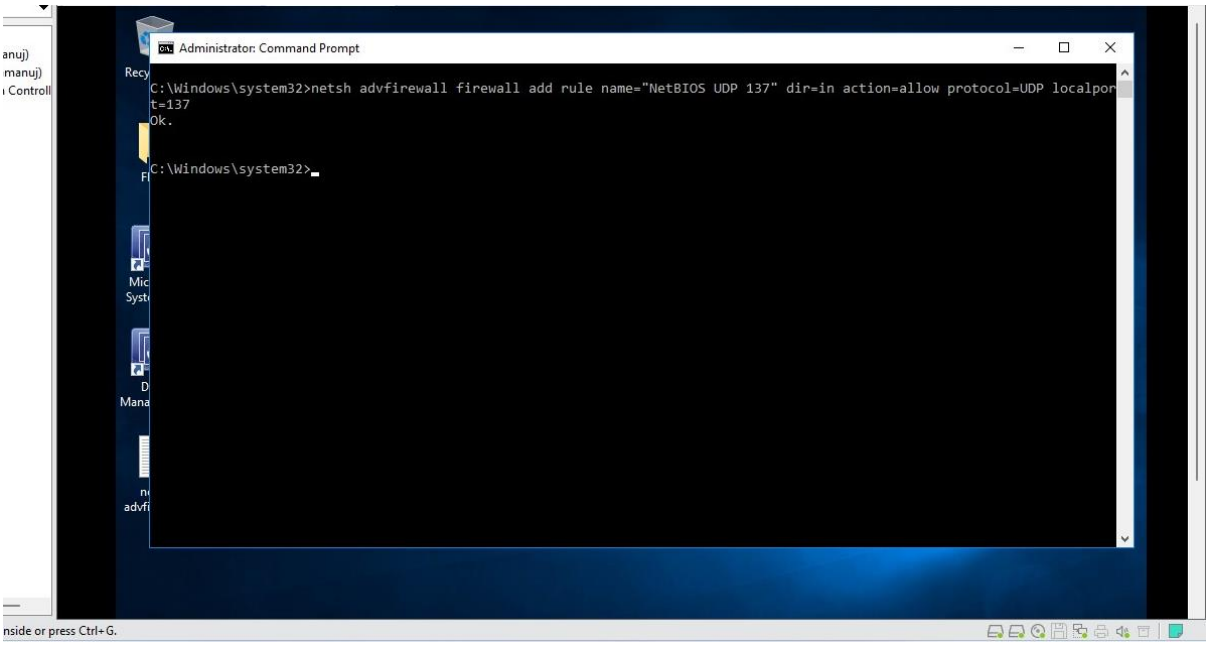
- **netsh advfirewall firewall add rule name="LDAP TCP 389" dir=in action=allow protocol=TCP localport=389**



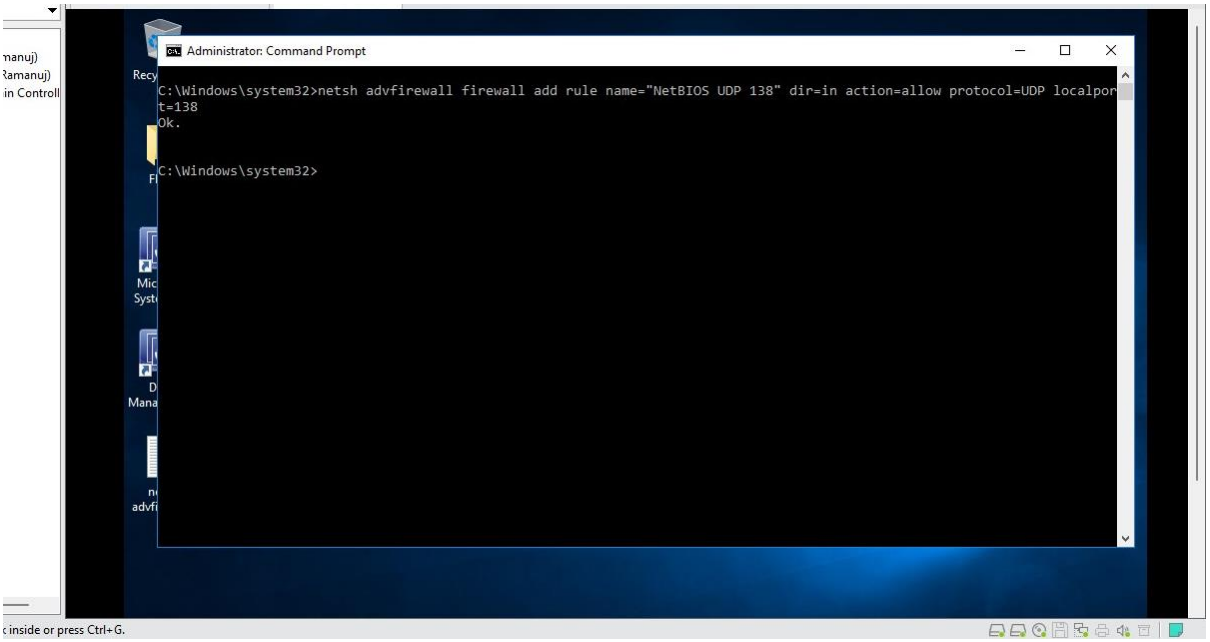
- **netsh advfirewall firewall add rule name="LDAP UDP 389" dir=in action=allow protocol=UDP localport=389**



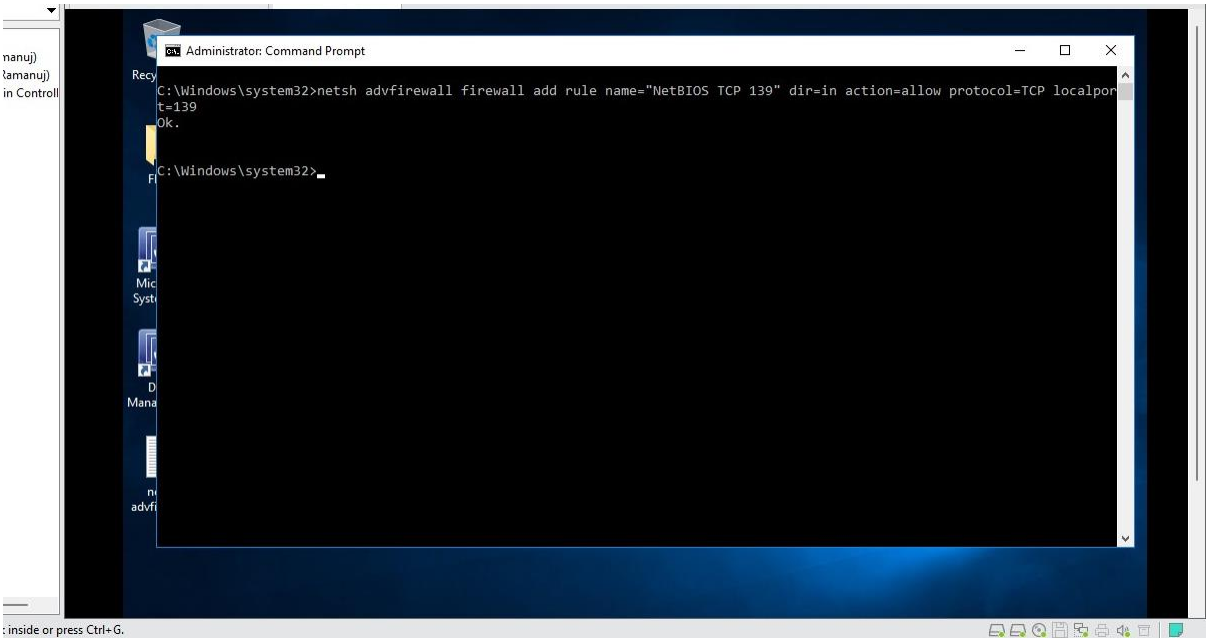
- **netsh advfirewall firewall add rule name="NetBIOS UDP 137" dir=in action=allow protocol=UDP localport=137**



- **netsh advfirewall firewall add rule name="NetBIOS UDP 138" dir=in action=allow protocol=UDP localport=138**



- **netsh advfirewall firewall add rule name="NetBIOS TCP 139" dir=in action=allow protocol=TCP localport=139**



Practical 6

Aim: Managing Orchestrator Servers

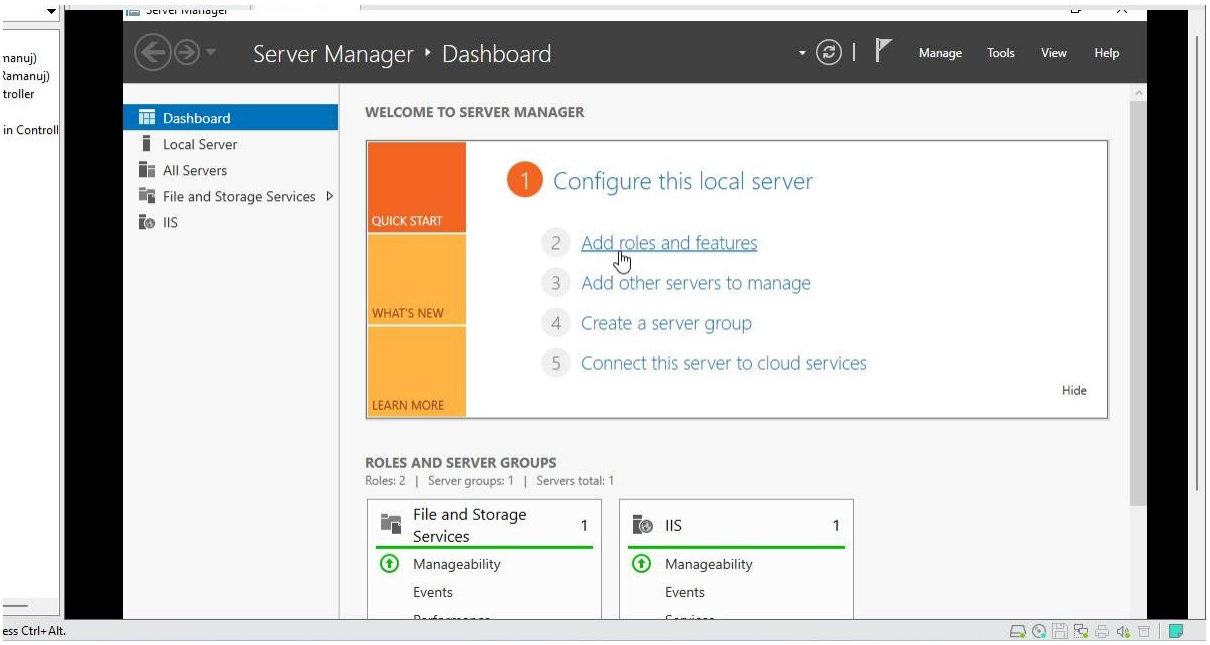
Writeup:

Pre-requisites: SCO VM and Domain Controller from Practical 3-B

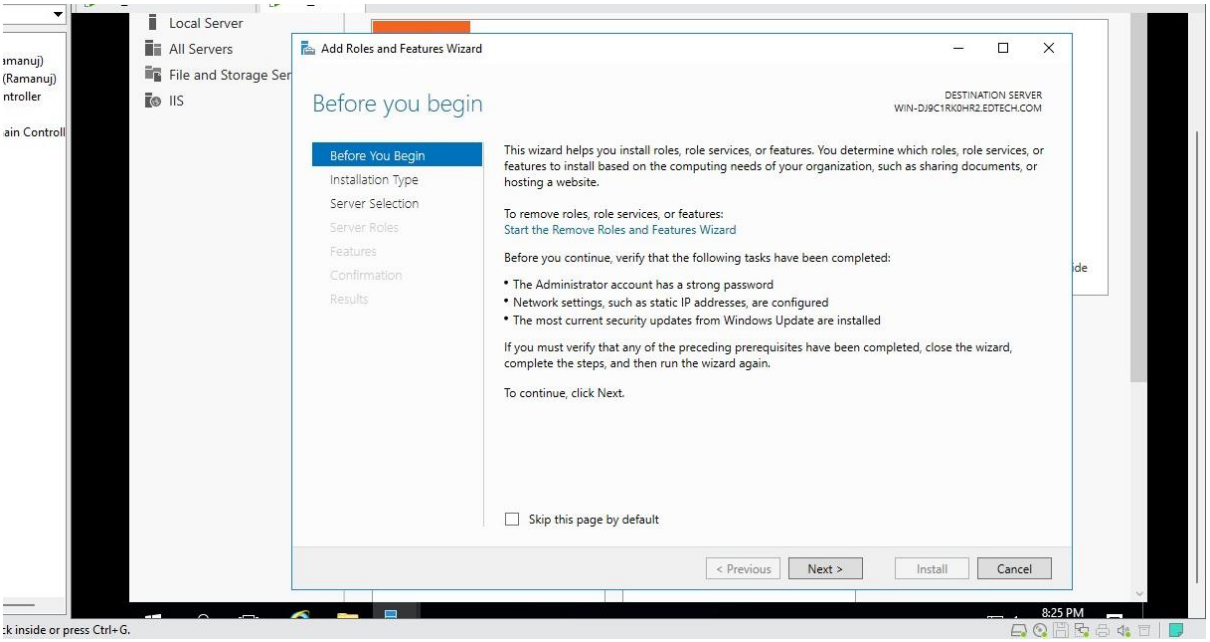
6-A: Manage Orchestrator Servers -1
Step 1: Runbook Permissions

Note: Before carrying out the following step we have to create a User in the SCO VM

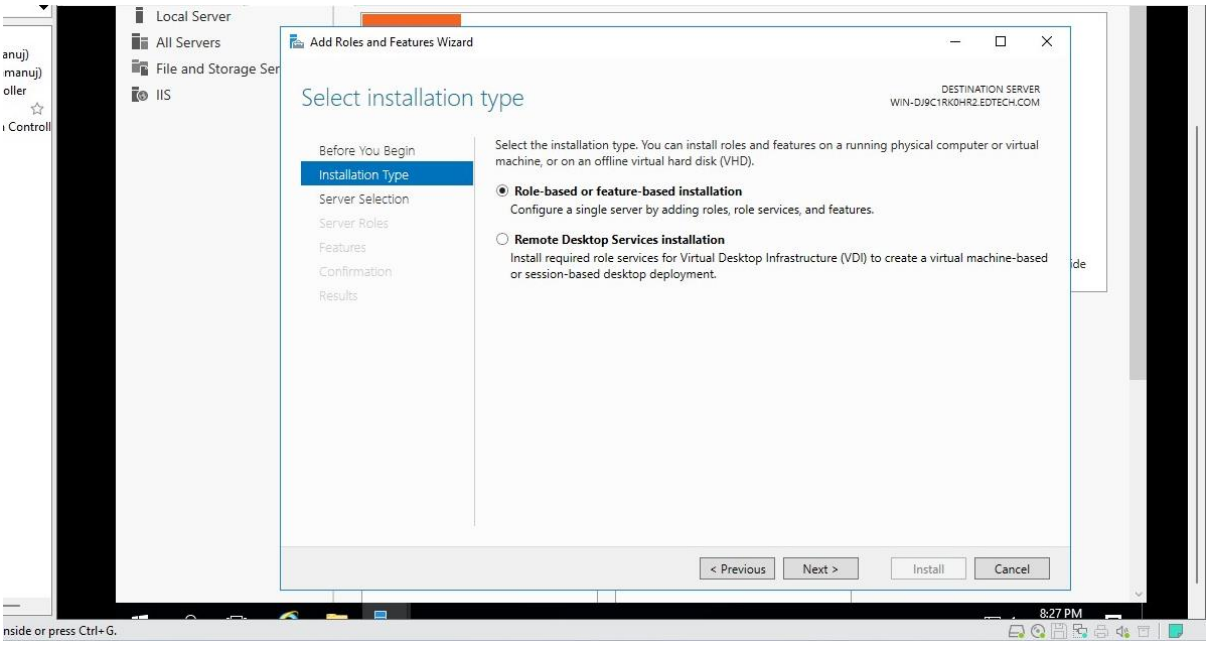
- Creating the User
- Open **Server Manager** and Click on **Add Roles and Features**



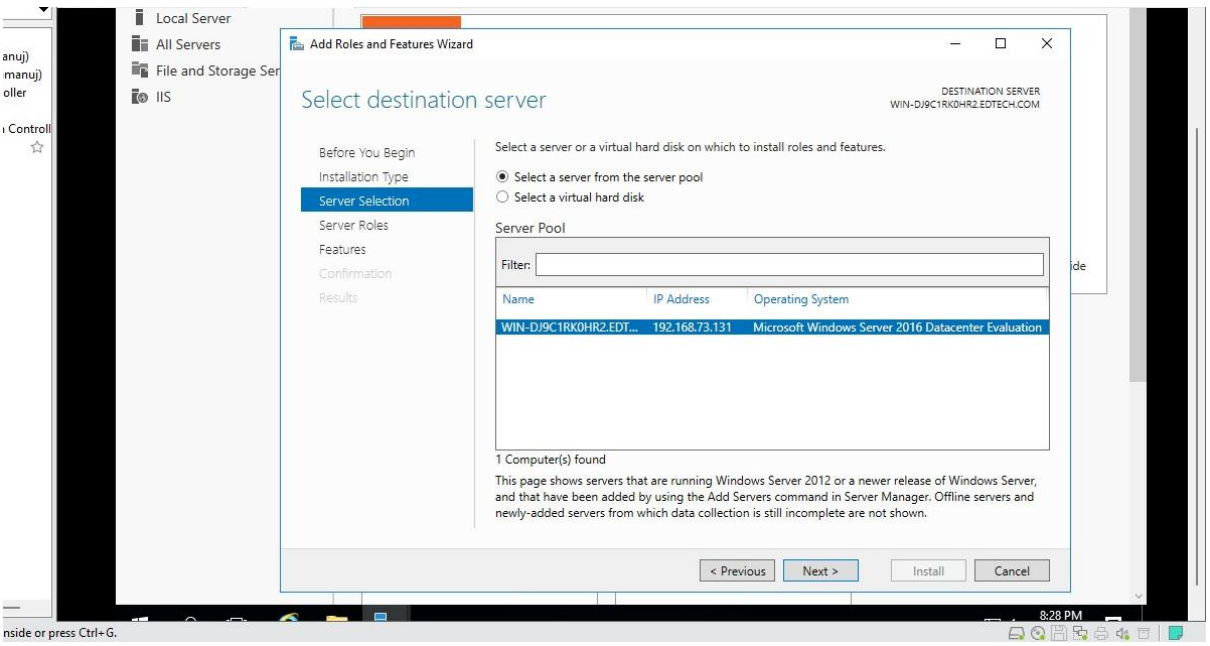
- Within Add Roles and Features, Click **Next**



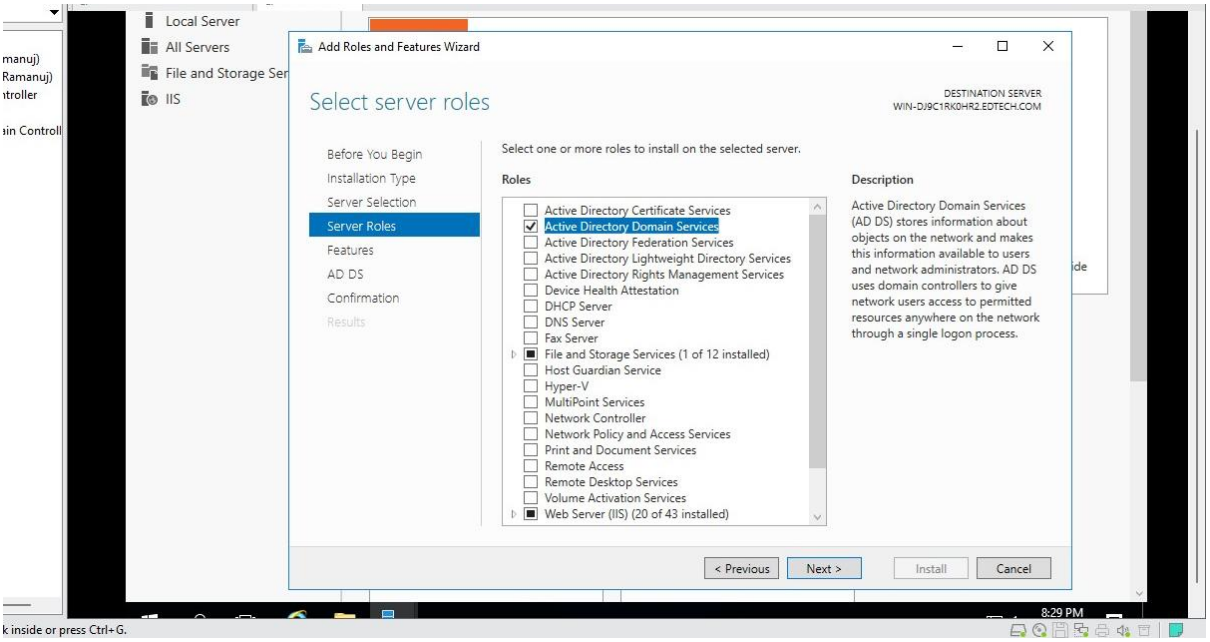
- Select **Role-based or Feature-based installation** and Click **Next**



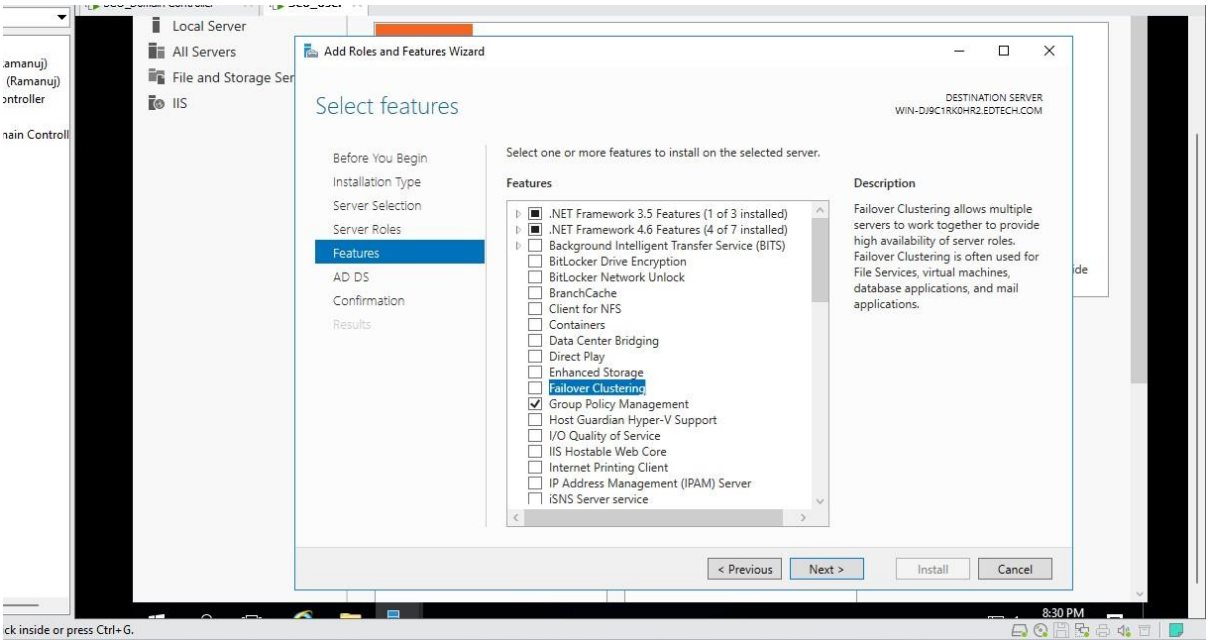
- Keep default values and Click **Next**



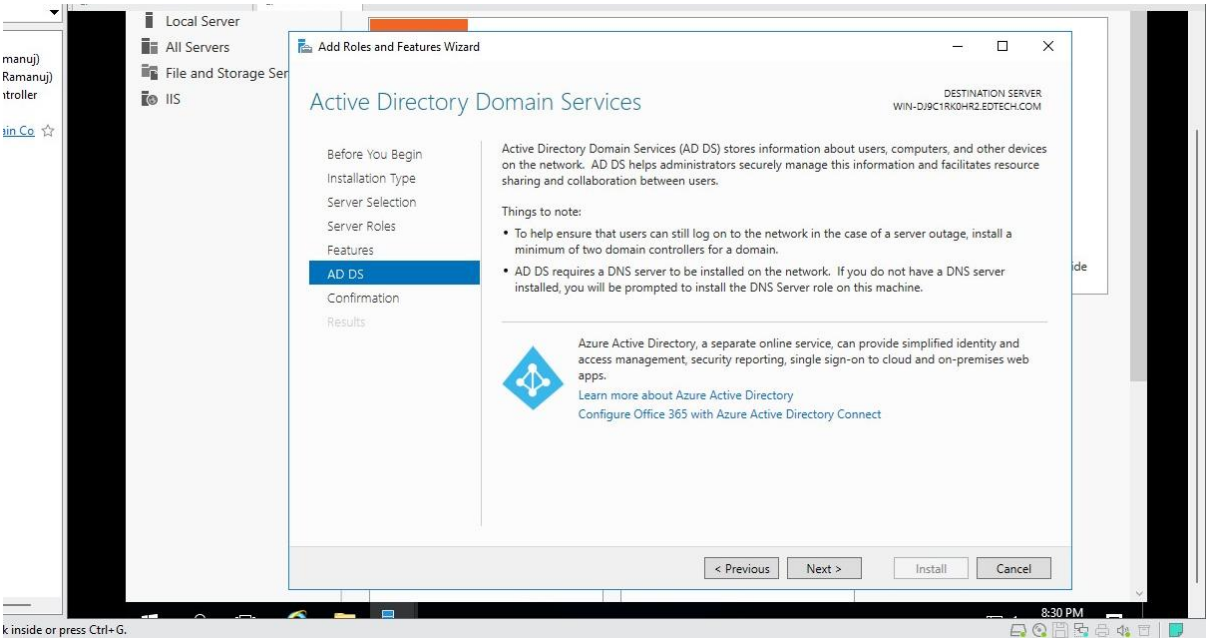
- Select **Active Directory Domain Services** and Click of **Add Feature**, Click **Next**



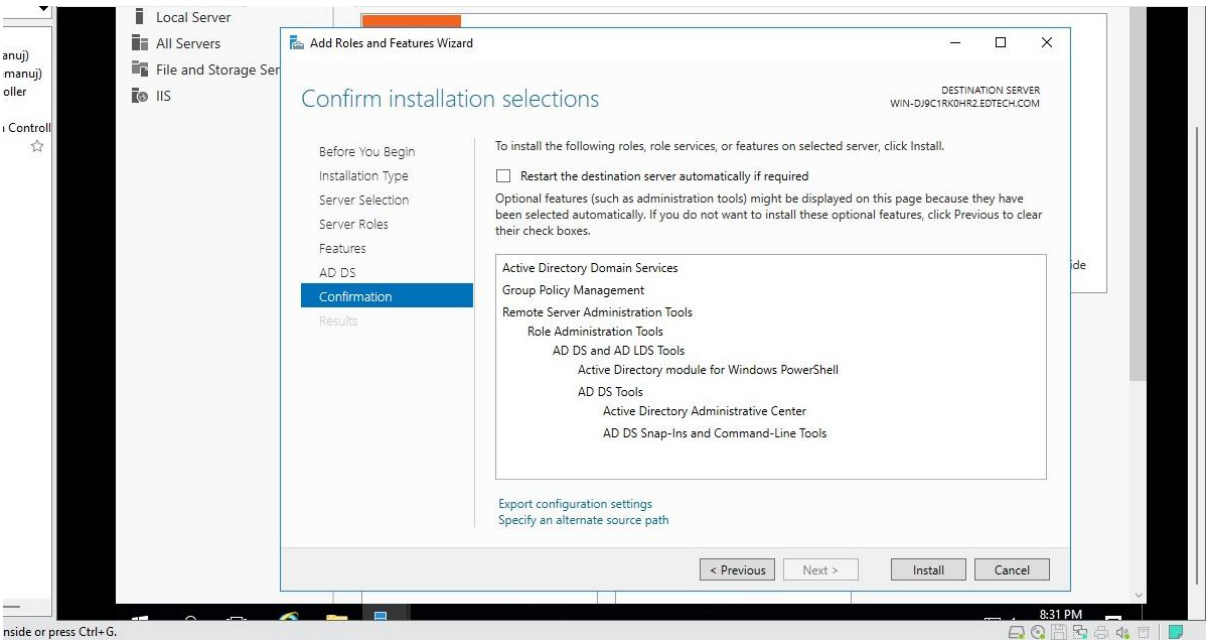
- Keep default values Click **Next**



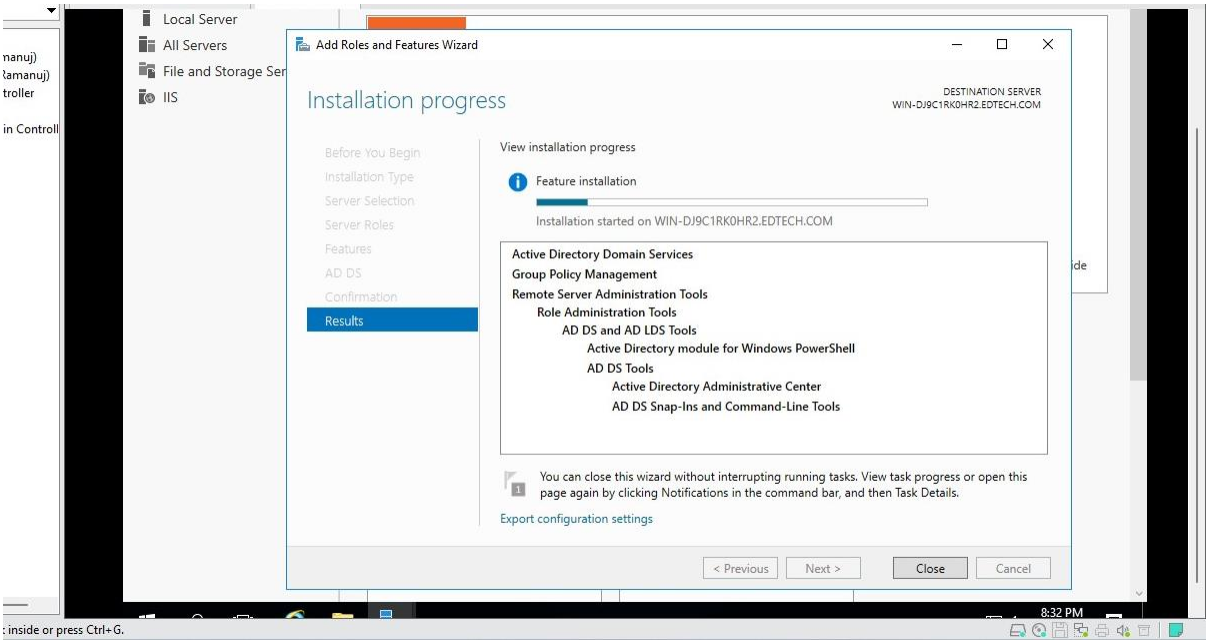
- Click **Next**



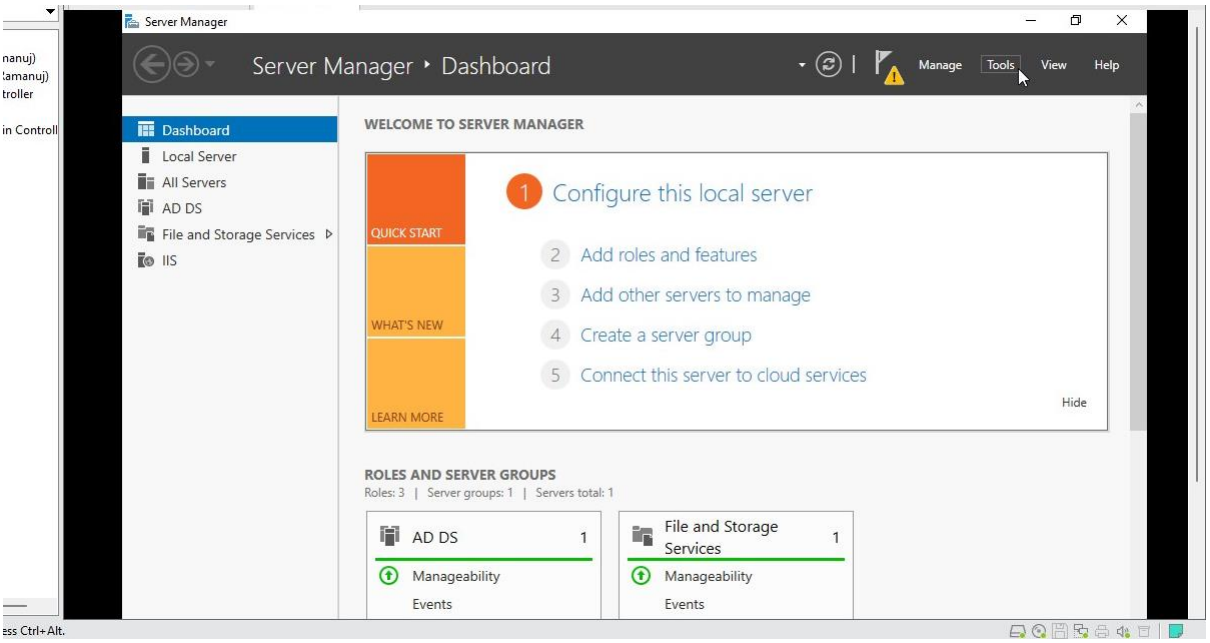
- Click on **Install**



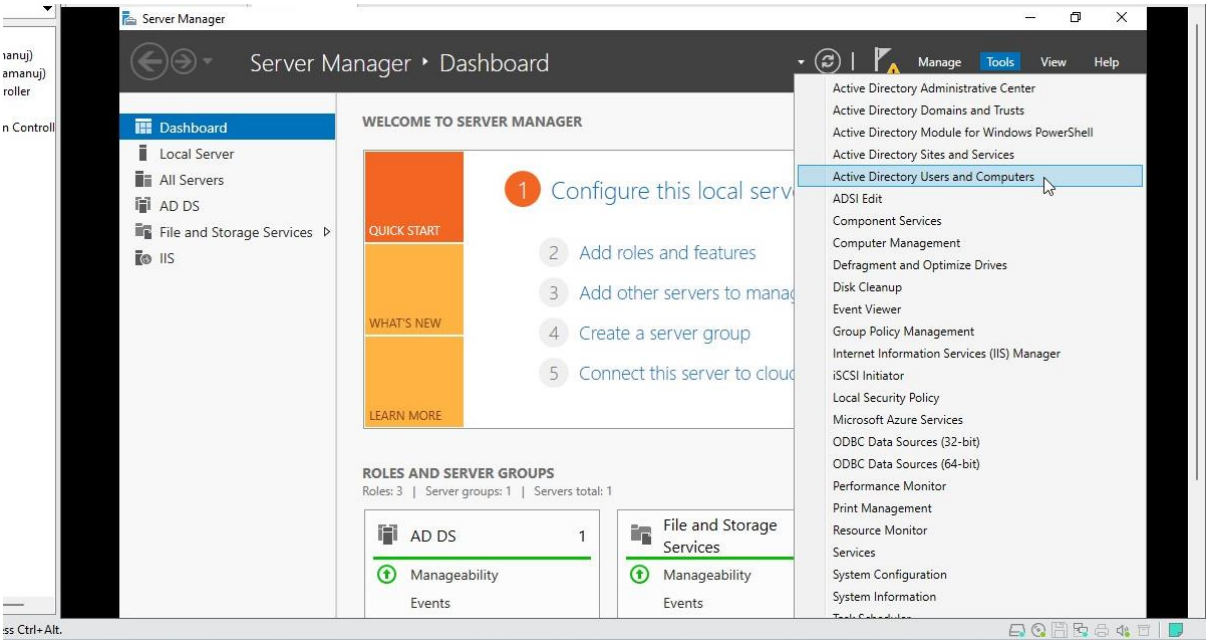
- Features will start installing



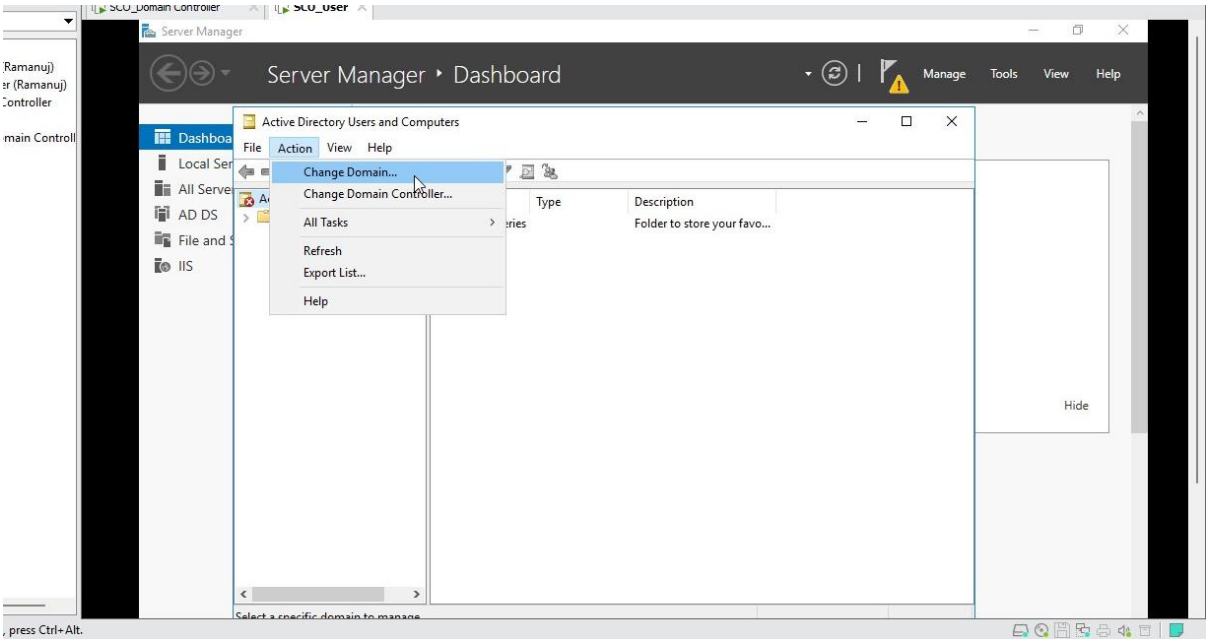
- After installation Open **Server Manager** and Click on **Tools**



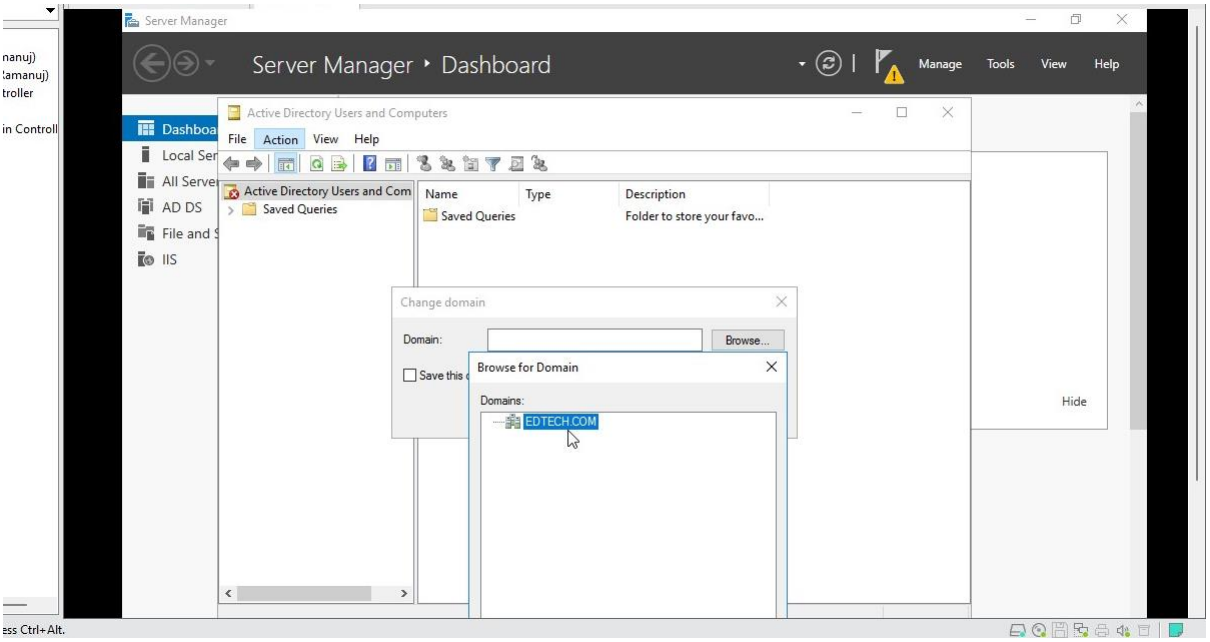
- Within Tools Select **Active Directory Users and Computers**



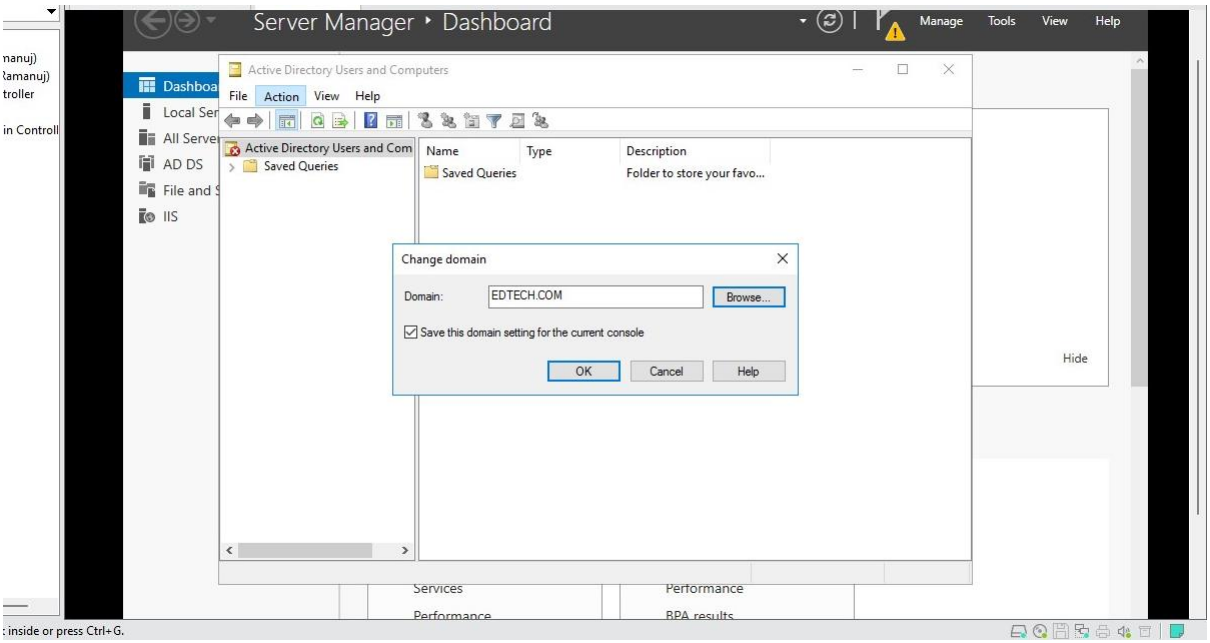
- Select **Action** and Click on **Change Domain**



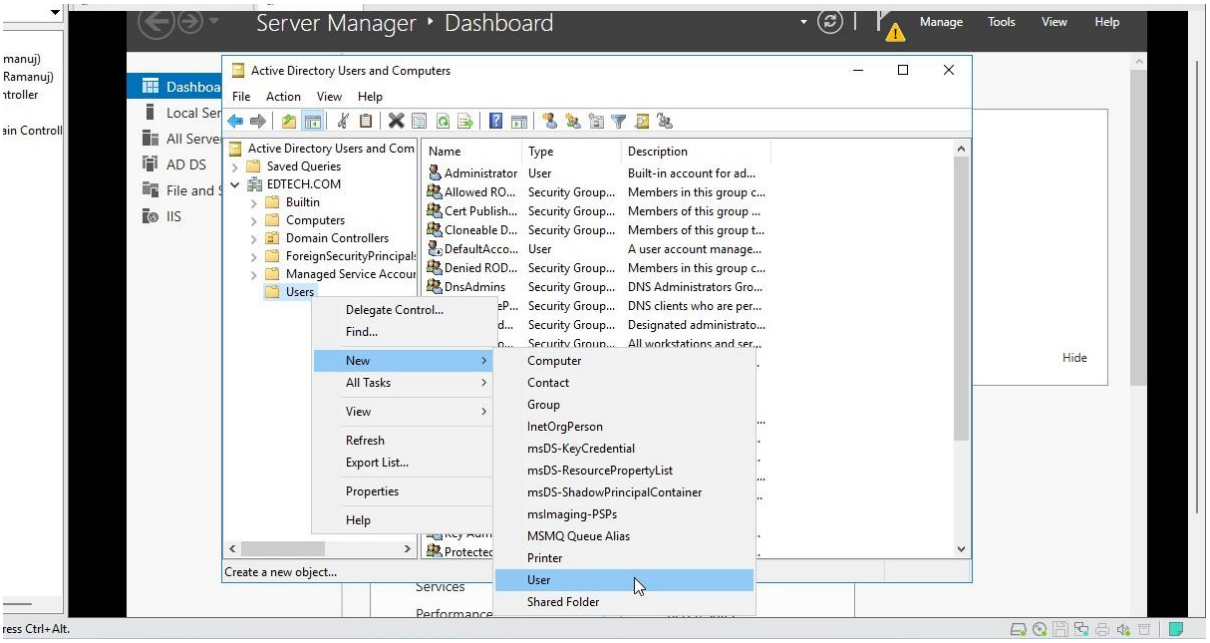
- Within Change Domain Select **Browse** and Select your **Domain Controller** (Here it is EDTECH.COM)



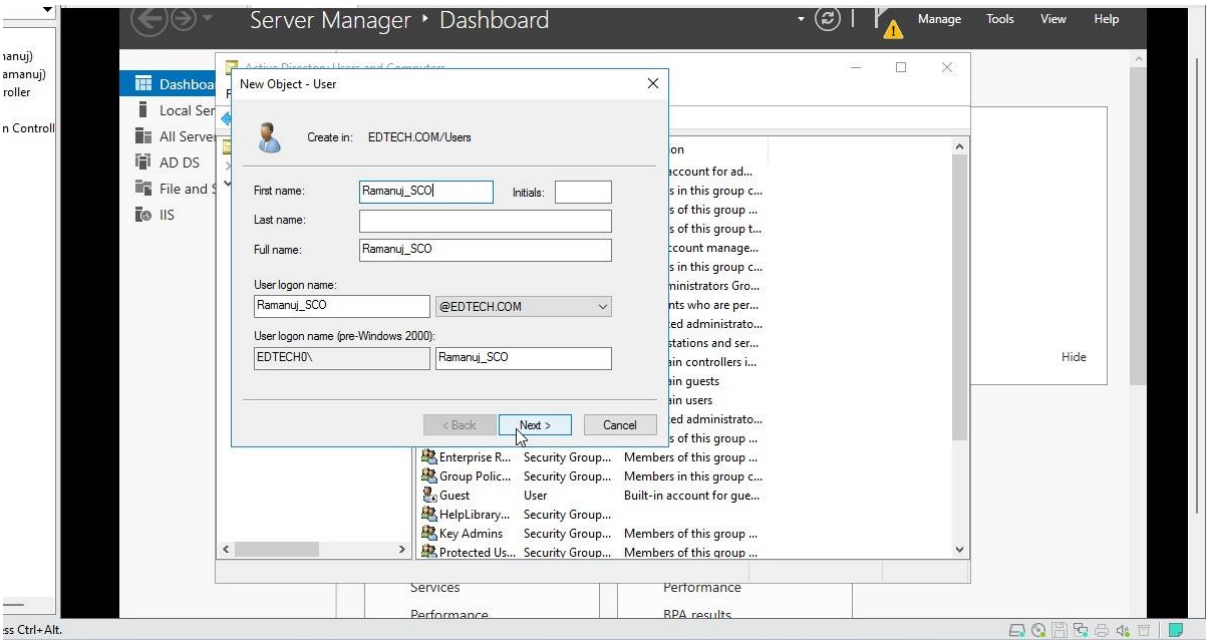
- Click **Ok**



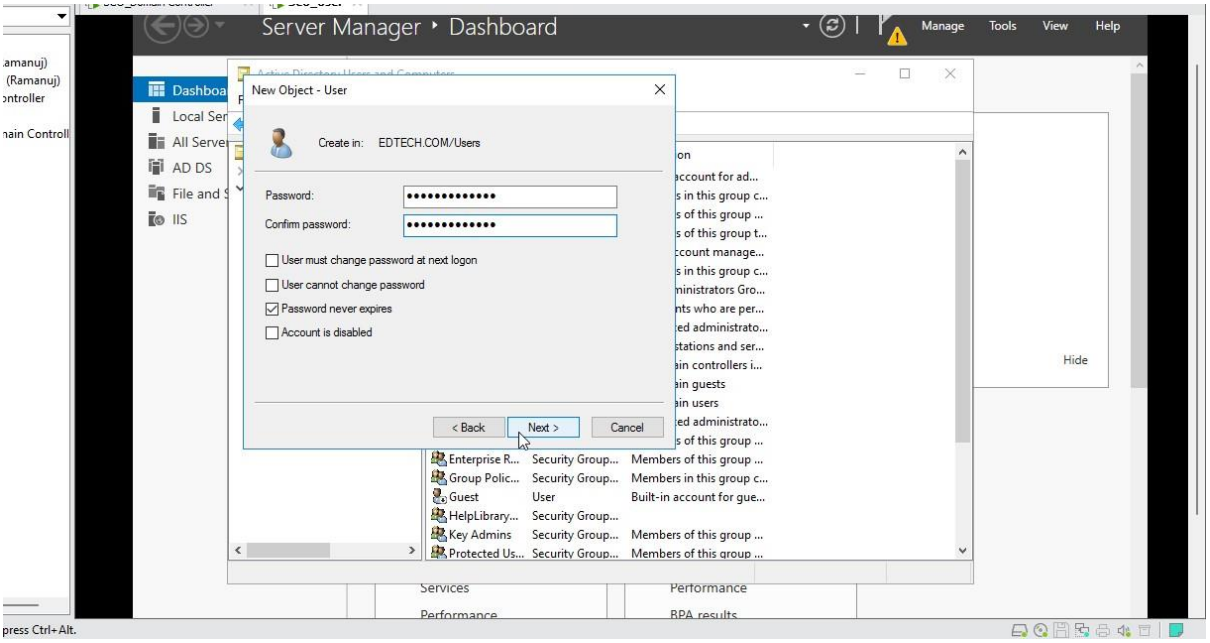
- Select **EDTECH.COM** and Right Click on **Users,** Select **New** and Click on **User**



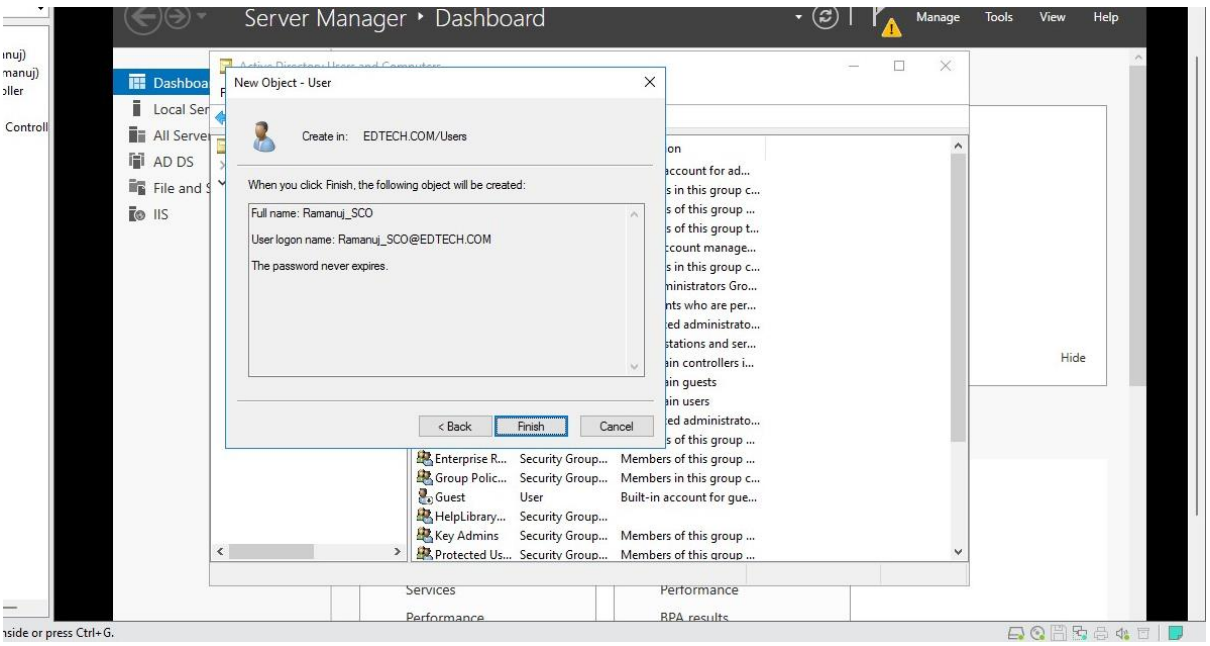
- Enter a name and Click **Next** (Here it is VIQAR_SCO)



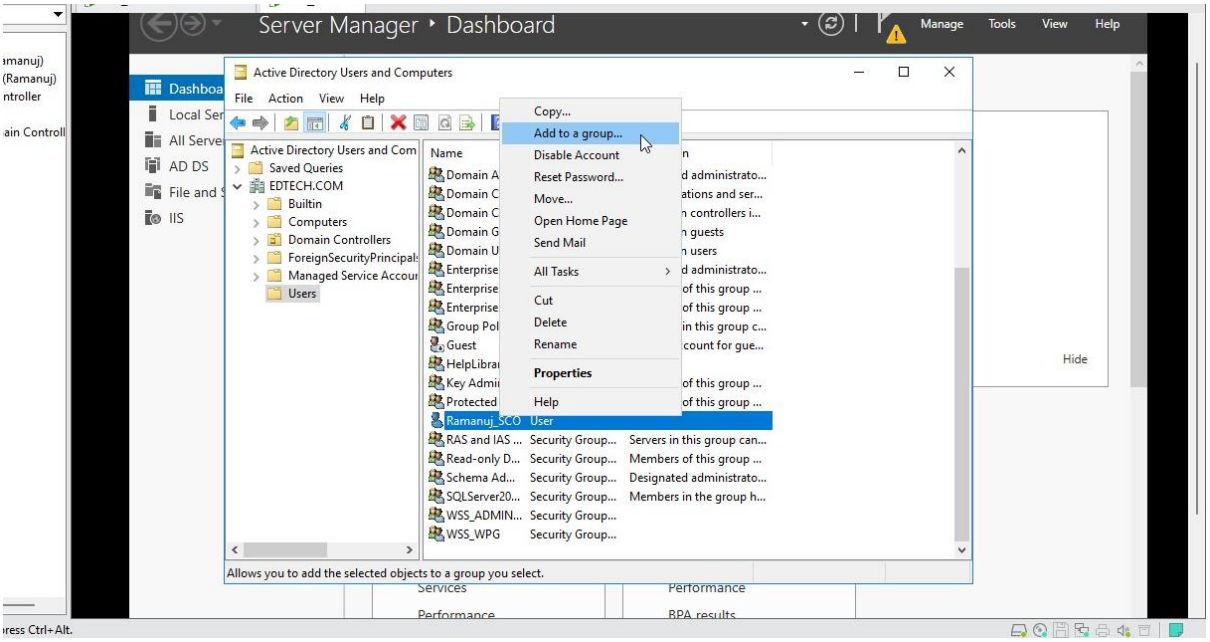
- Give it a password and Select **Password never expires** and Click **Next**



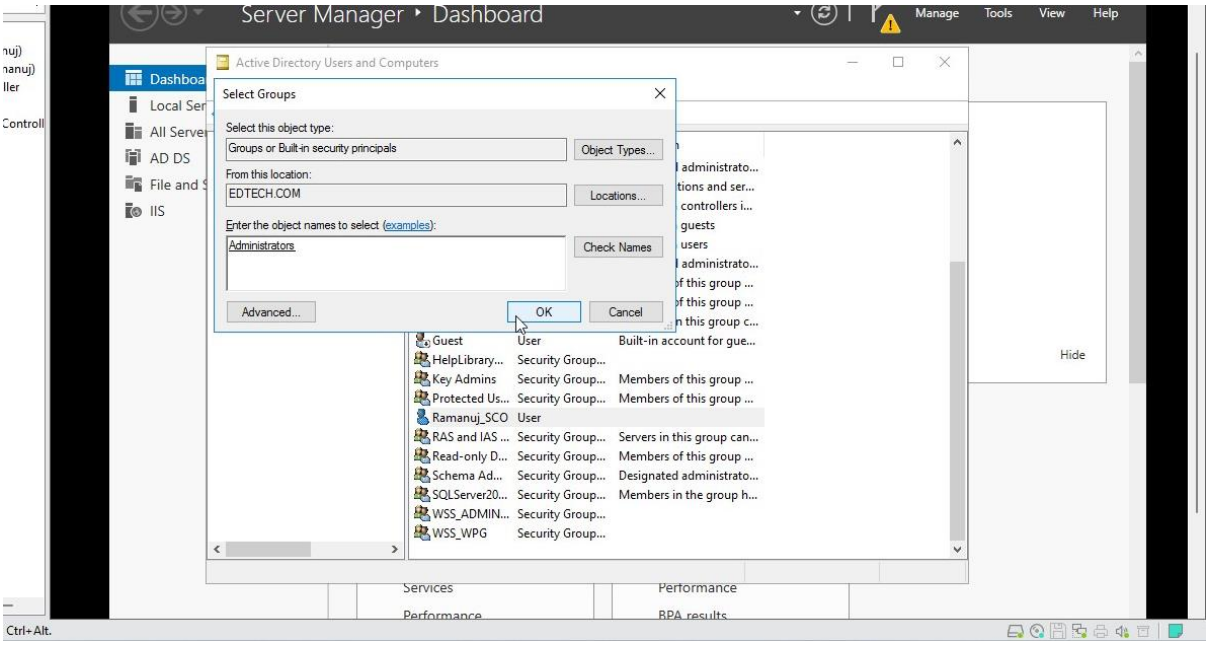
- Click **Finish**



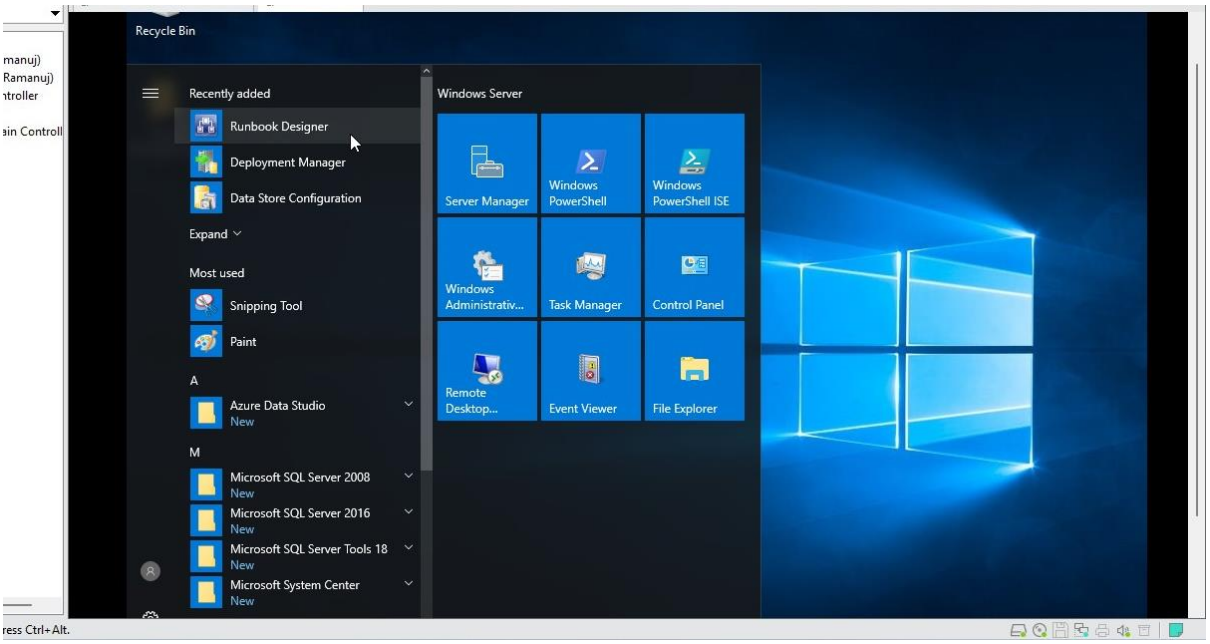
- Right-Click on the New User created (VIQAR_SCO) and Select **Add to a group**



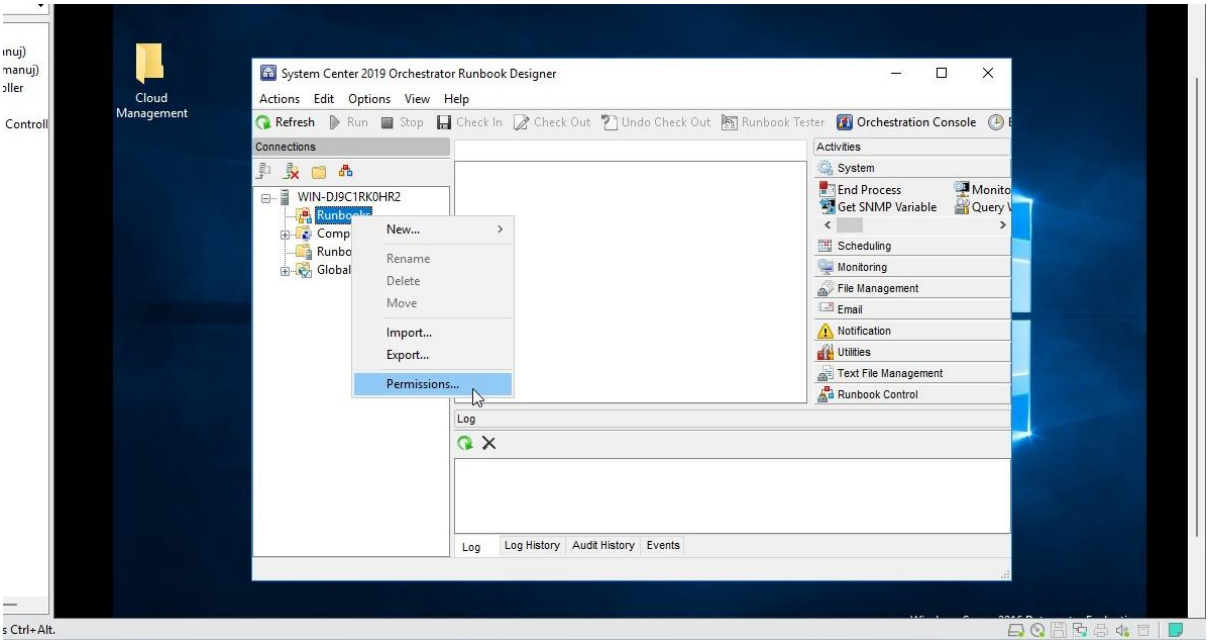
- Enter Administrator and Click on **Check Names** (Login with your Domain Controller credentials) and Click **Ok**



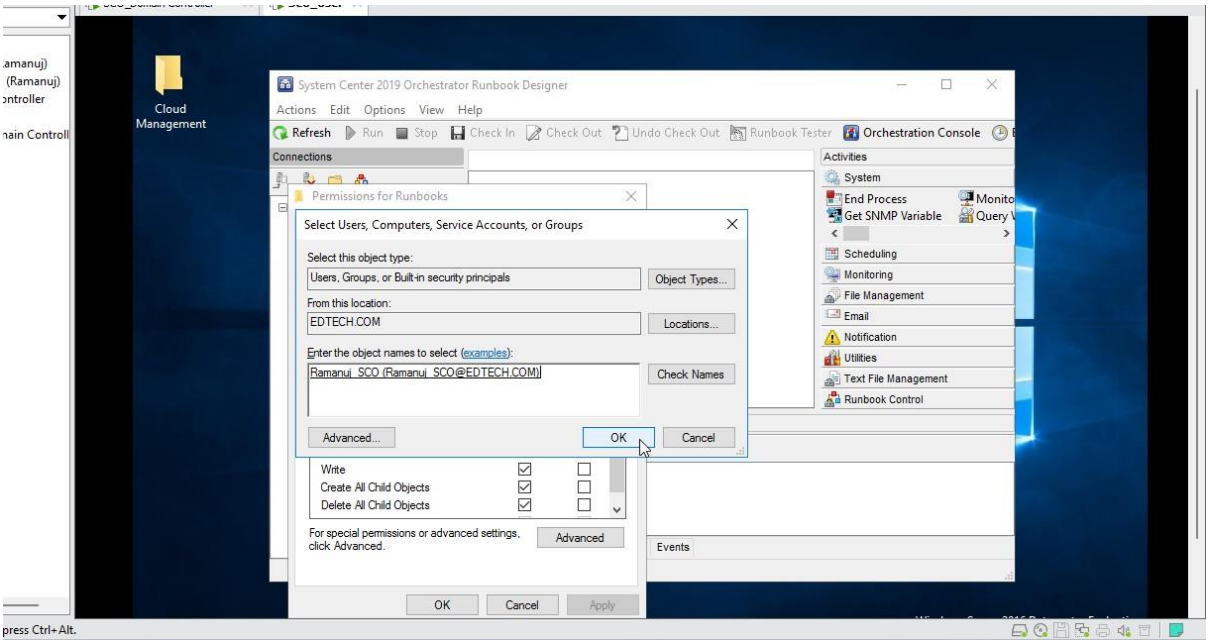
- Now since the User is created we can start the steps for Runbook Permissions. Open the **Runbook Designer** from your App list



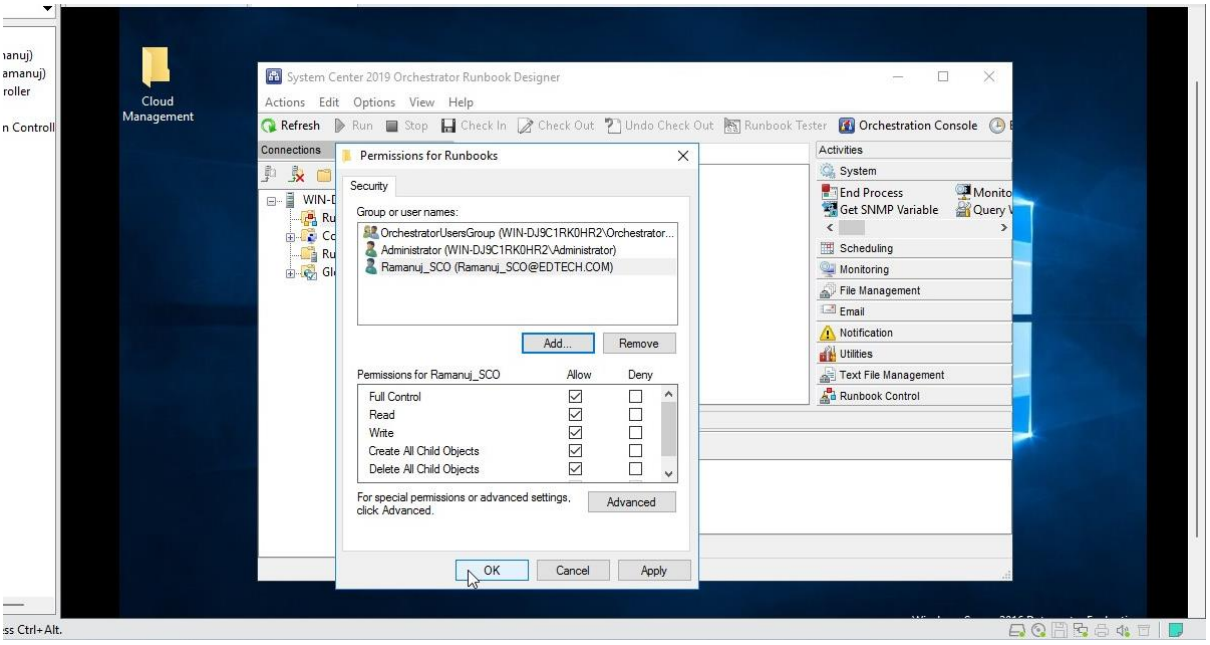
- Within Runbook Designer, Right-Click on the **Runbooks** Folder and Click on **Permissions**



- Click on **Add** and Enter the newly created user (Here it is VIQAR_SCO) and Click on **Check Names** and Click Ok

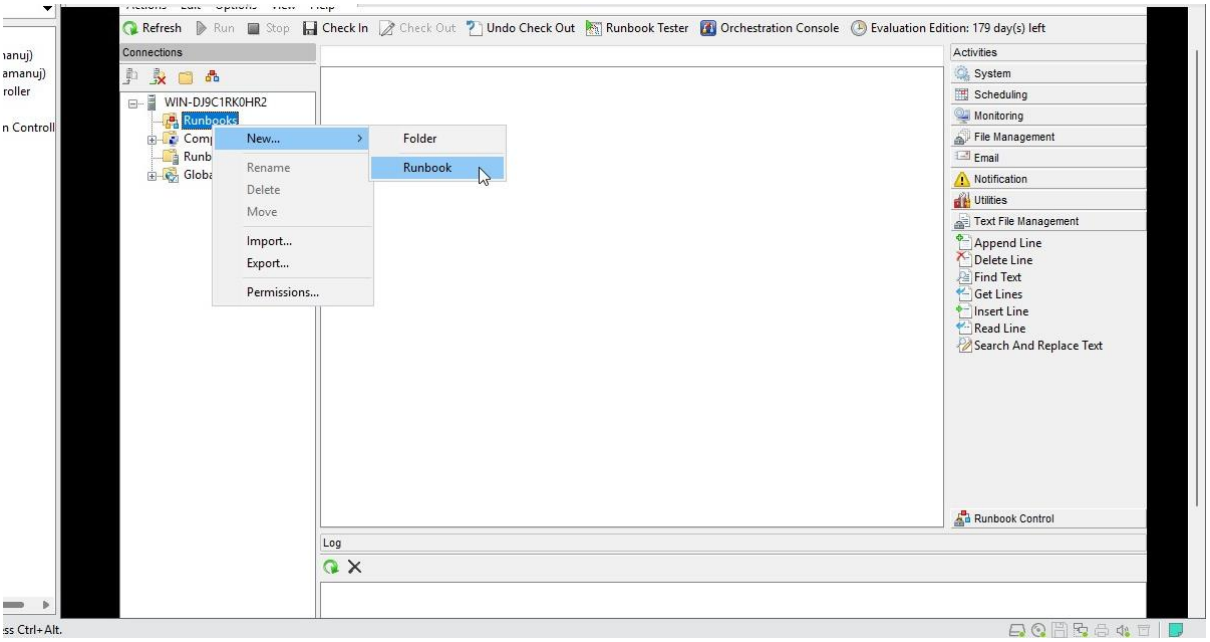


- Give Full Control to the User and Click **Ok**

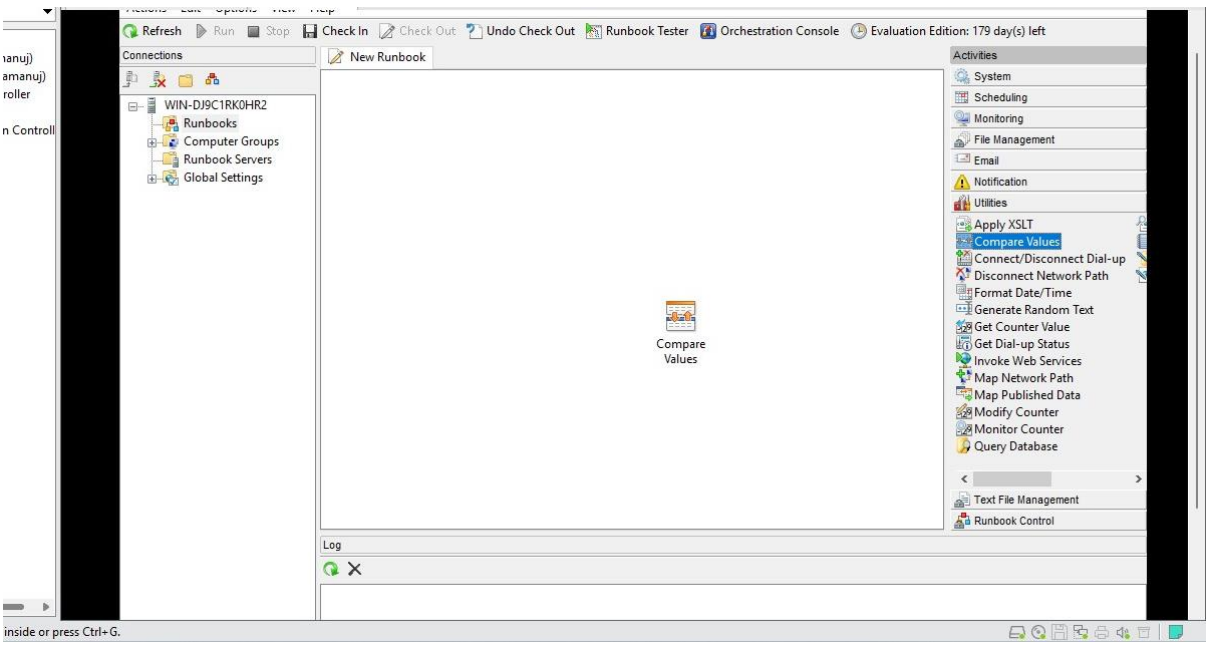


Step 2: Benchmark your Runbook

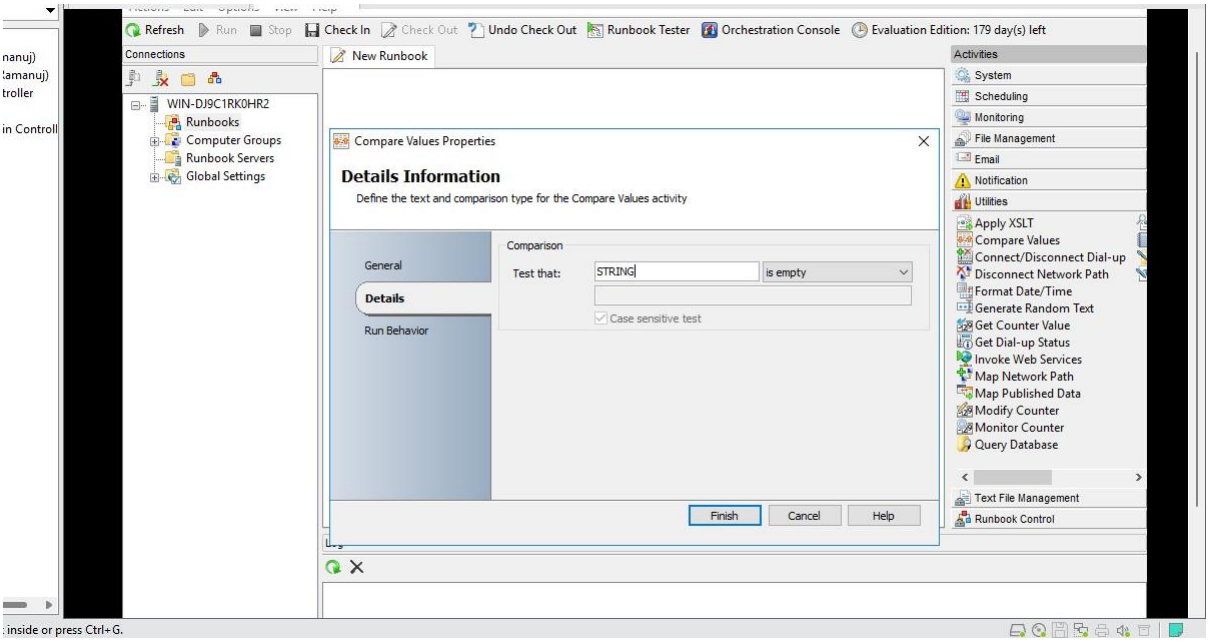
- Open **Runbook Designer** and Right-Click on **Runbooks** and Select **New** and Click on **Runbook**



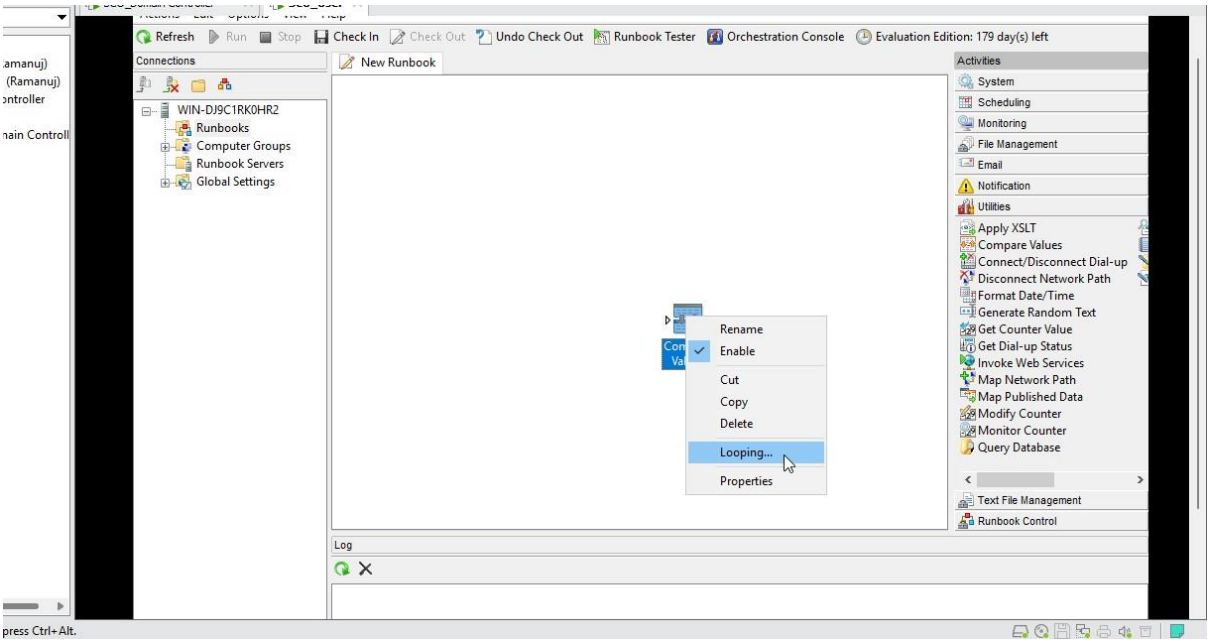
- On the Right side in **Activites**, under **Utilities** Click on **Compare Values** and drag it into the Runbook



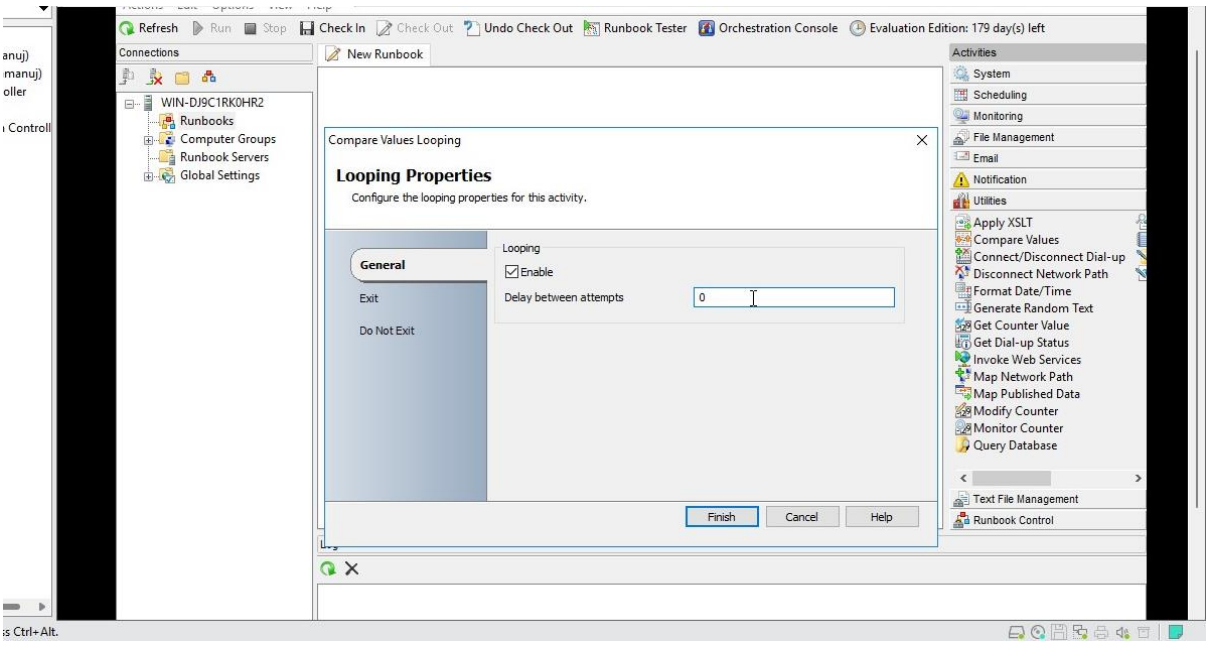
- Double-Click on **Compare Values** and Select the **Details** tab, and Enter the value **STRING** and Select **is empty** and Click **Finish**



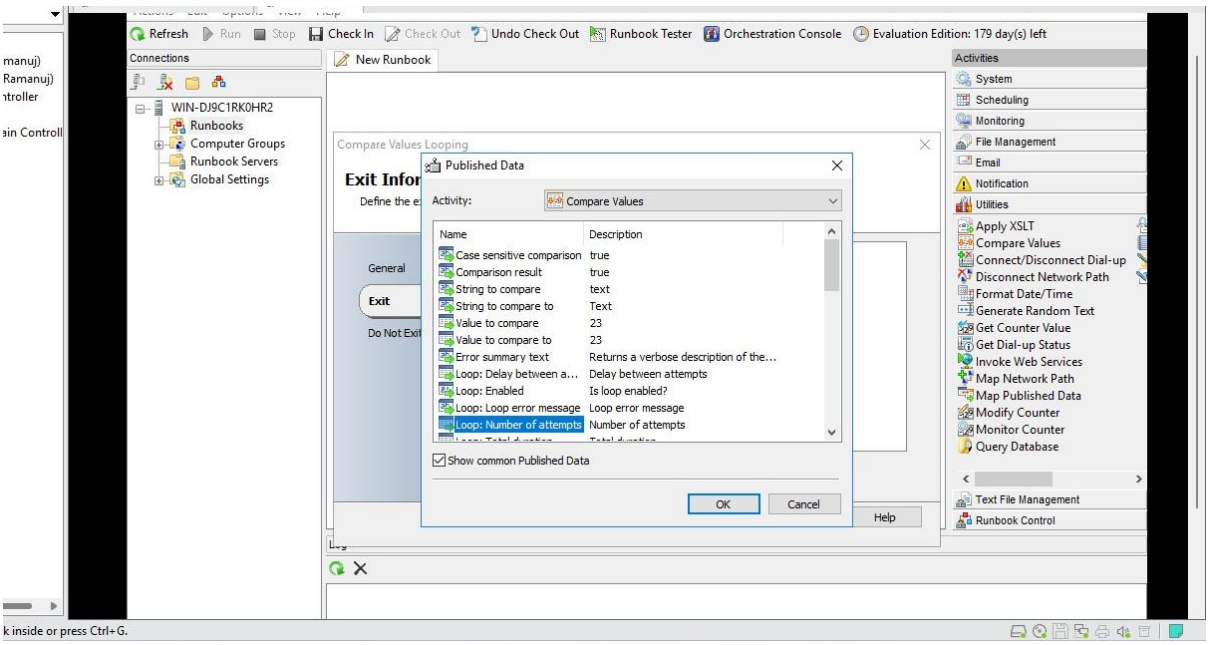
- Now Right-Click on **Compare Values** and Select **Looping**



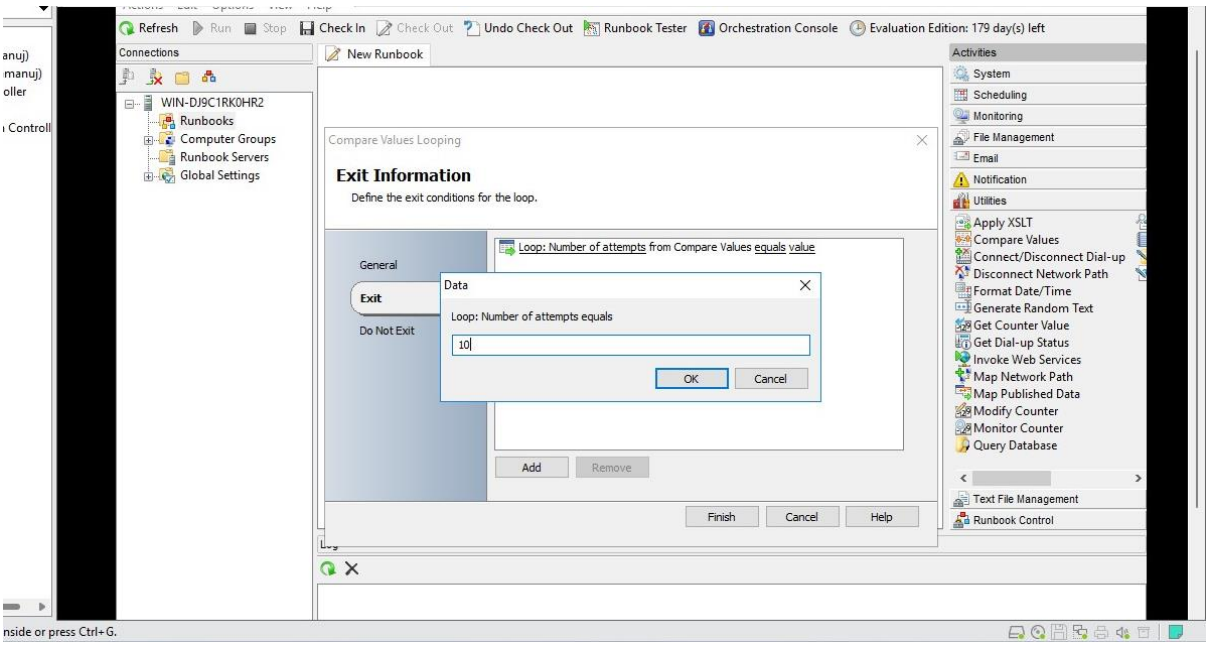
- Select **Enable** and Enter **0** in Delay between attempts



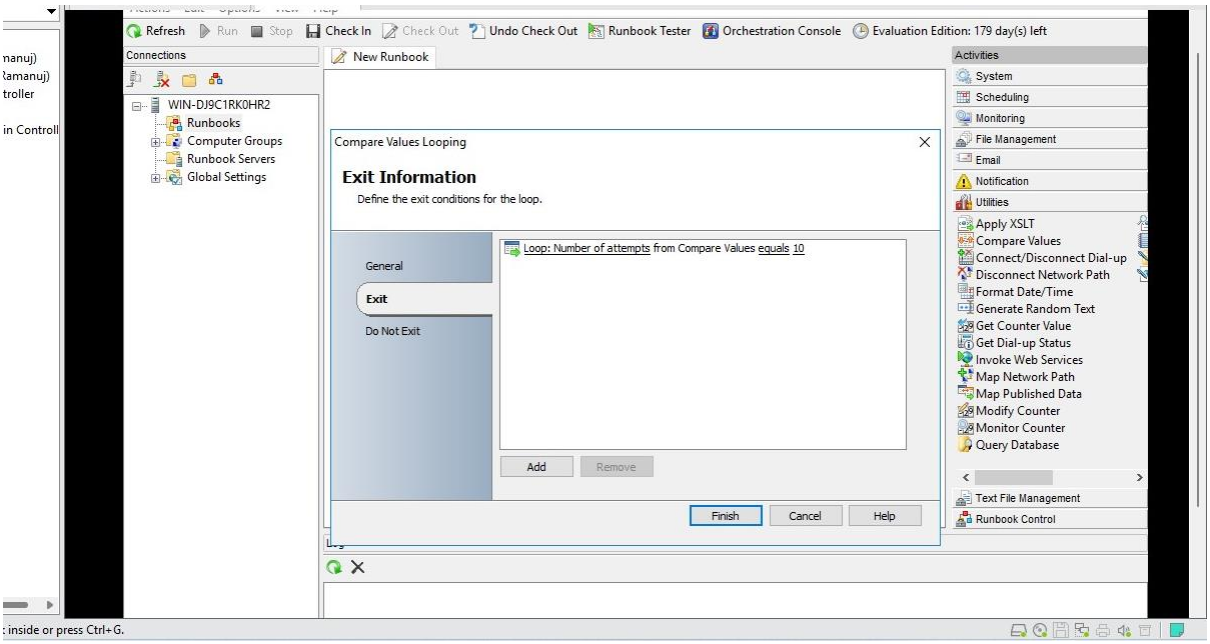
- Select the **Exit** tab and Click on **Compare Values** and Select **Show Common Published Data** and Double Click on **Looping Number of Attempts**



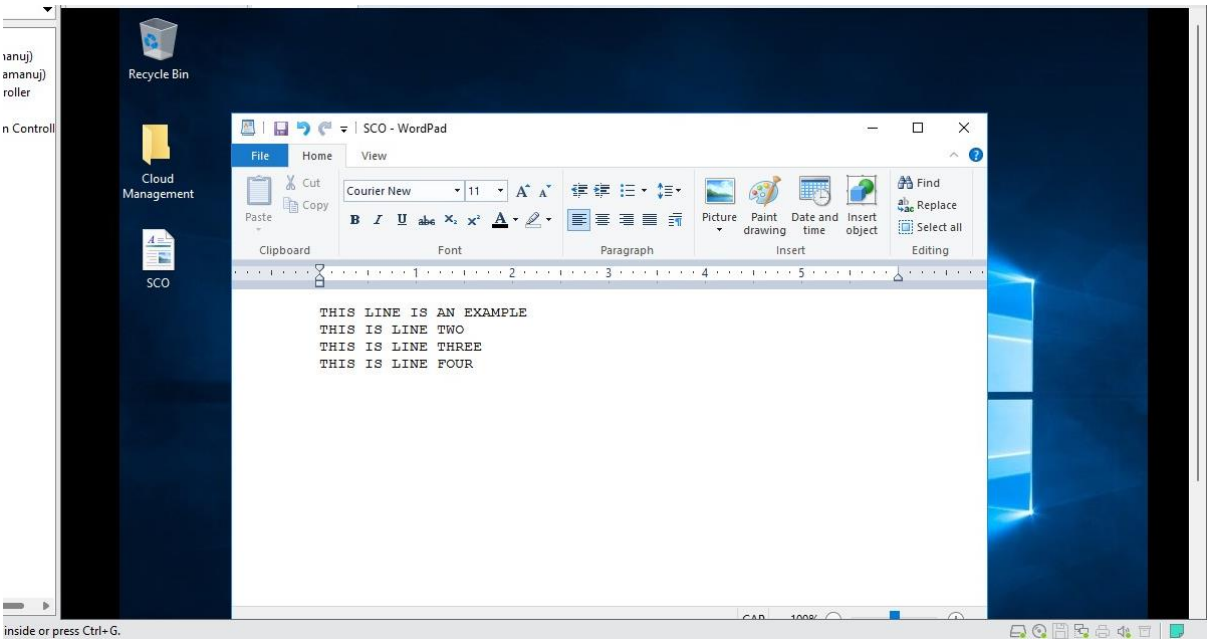
- Now Click on **value** and Enter **10** and Click **Ok**



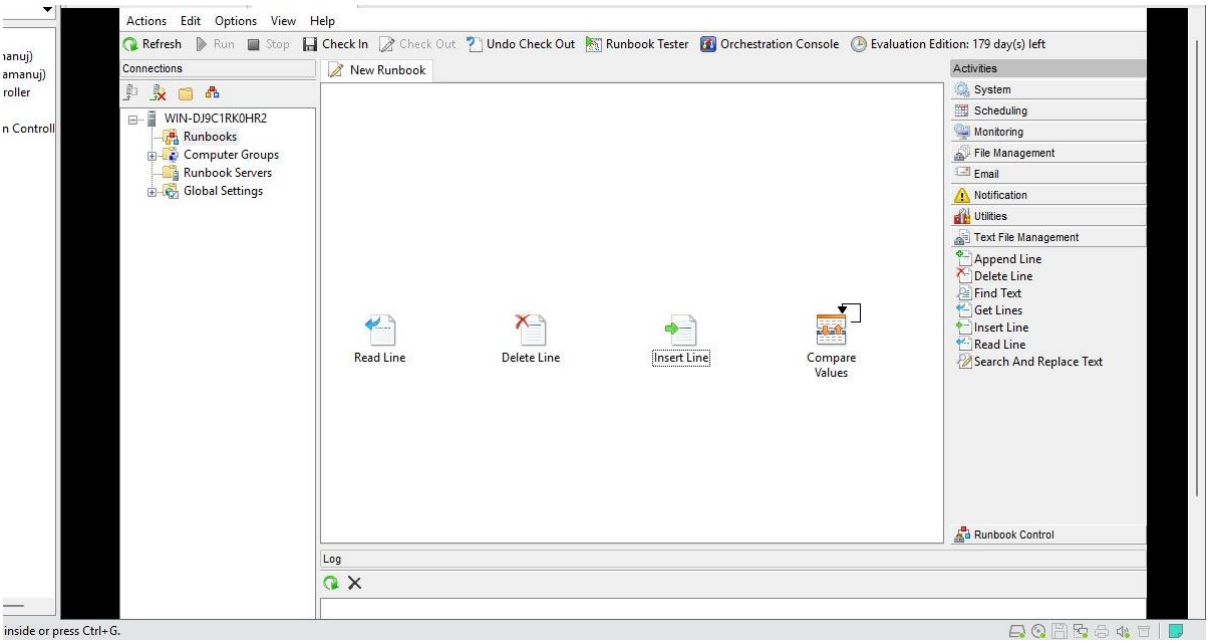
- Click **Finish**



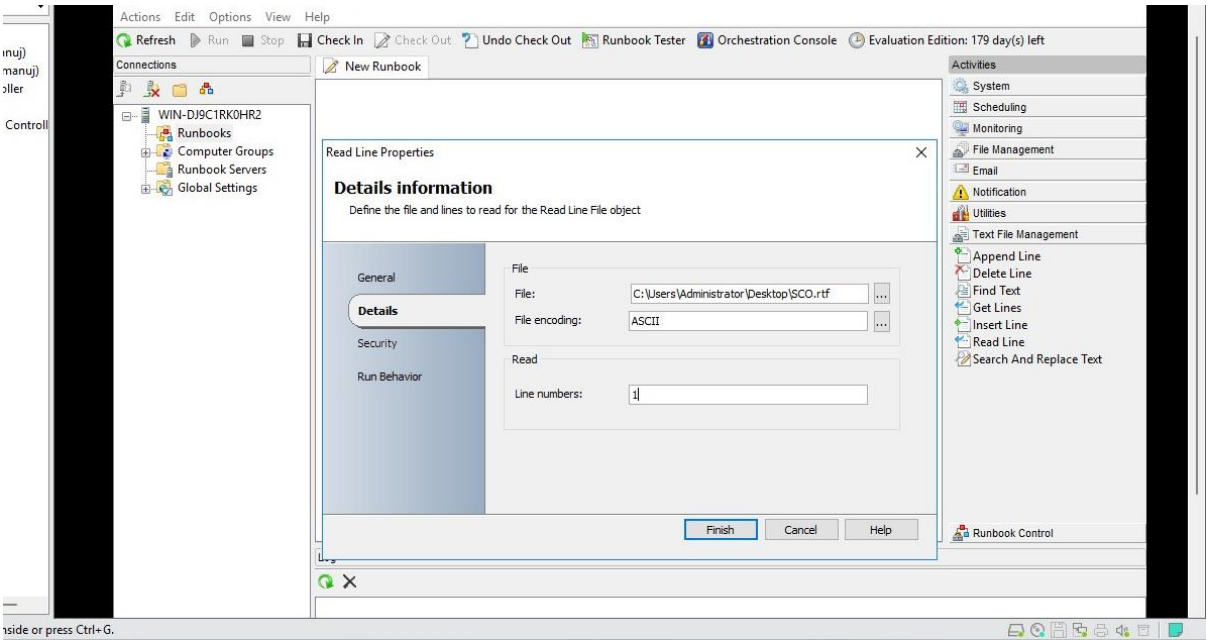
- Now to Test Compare Values we need to create a simple Workflow
- On the Desktop of your VM create a new text document and type in a few lines and save it under the name **SCO**



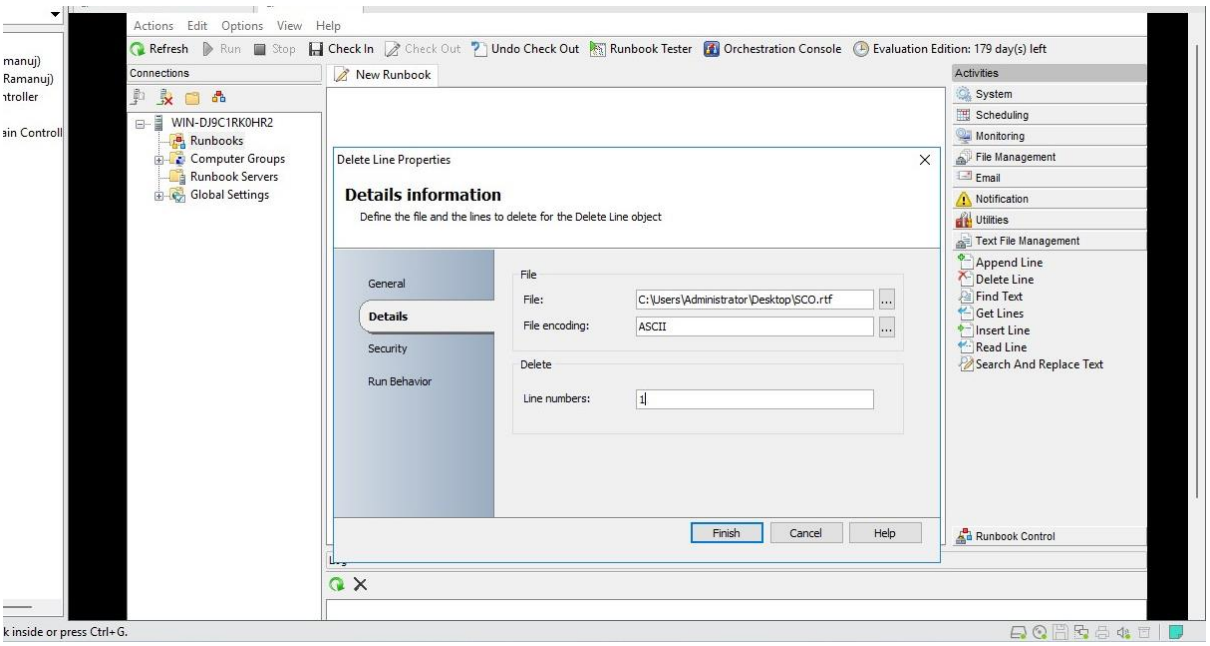
- Now in your Runbook designer, under **Activites**, in **Text File Management** Select **Read Line**, **Insert Line** and **Delete Line** and Drag them onto the Runbook



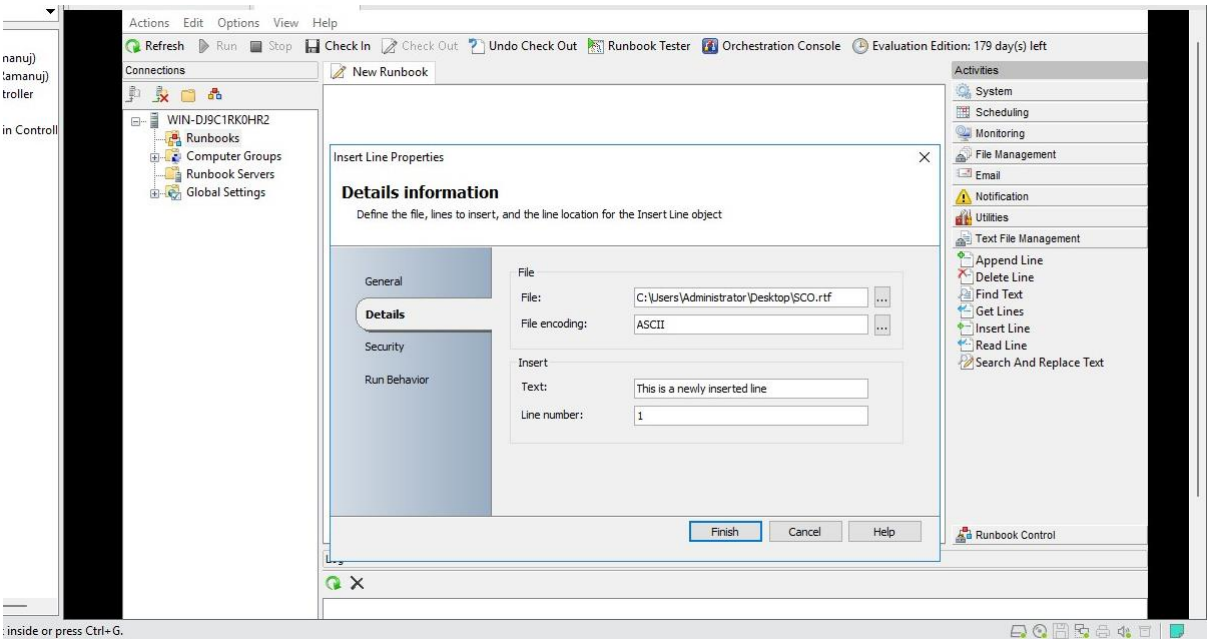
- Double-Click on **Read Line** and Browse for the **SCO** text document and Keep File Encoding as **ASCII** and in line numbers type **1** and Click **Finish**



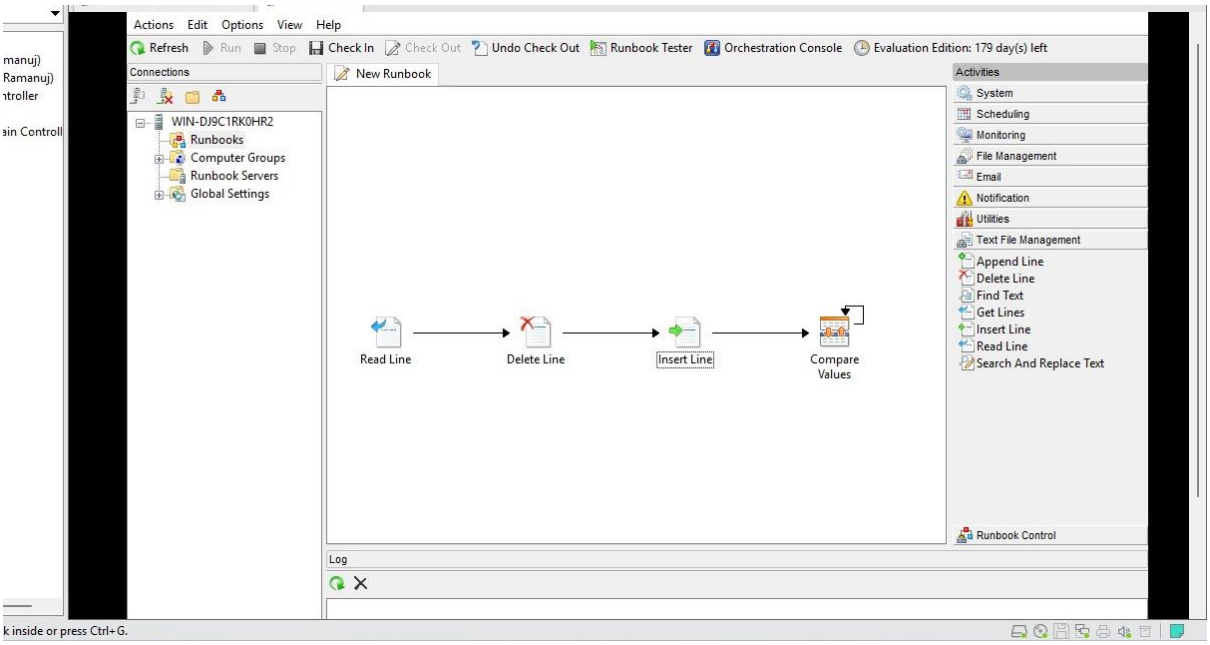
- Double-Click on **Delete Line** and Browse for the **SCO** text document and Keep File Encoding as **ASCII** and in line numbers type **1** and Click **Finish**



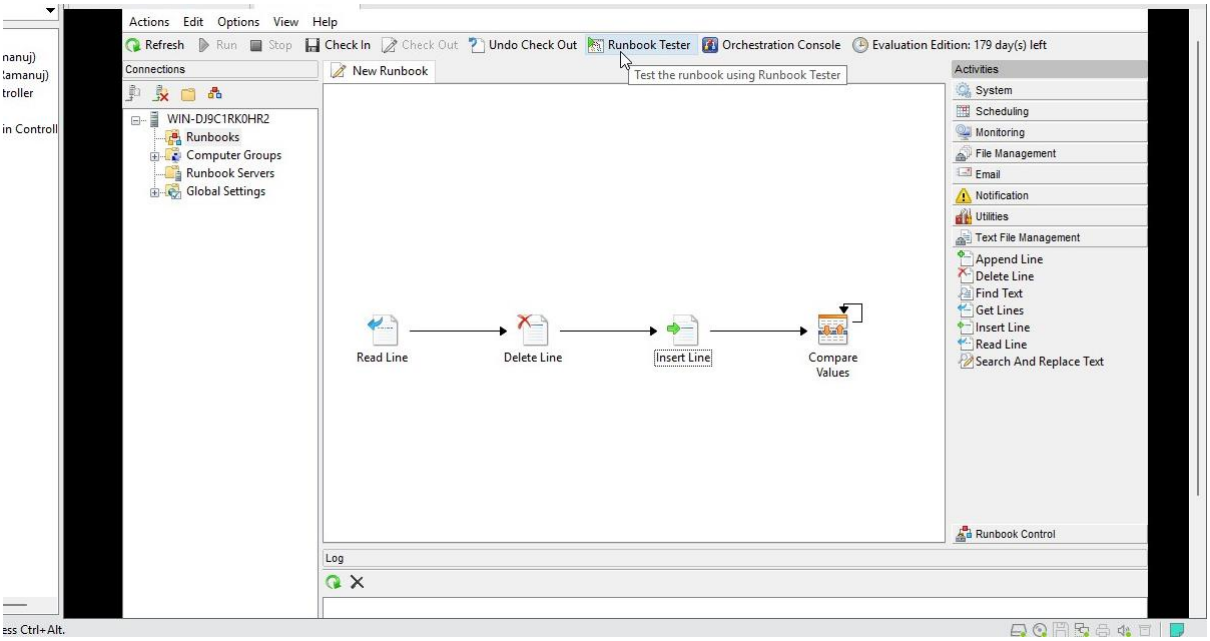
- Double-Click on **Insert Line** and Browse for the **SCO** text document and Keep File Encoding as **ASCII** and in **Text** type a new line (here it is "**This is a newly inserted line**") and in Line number type **1** and Click on **Finish**



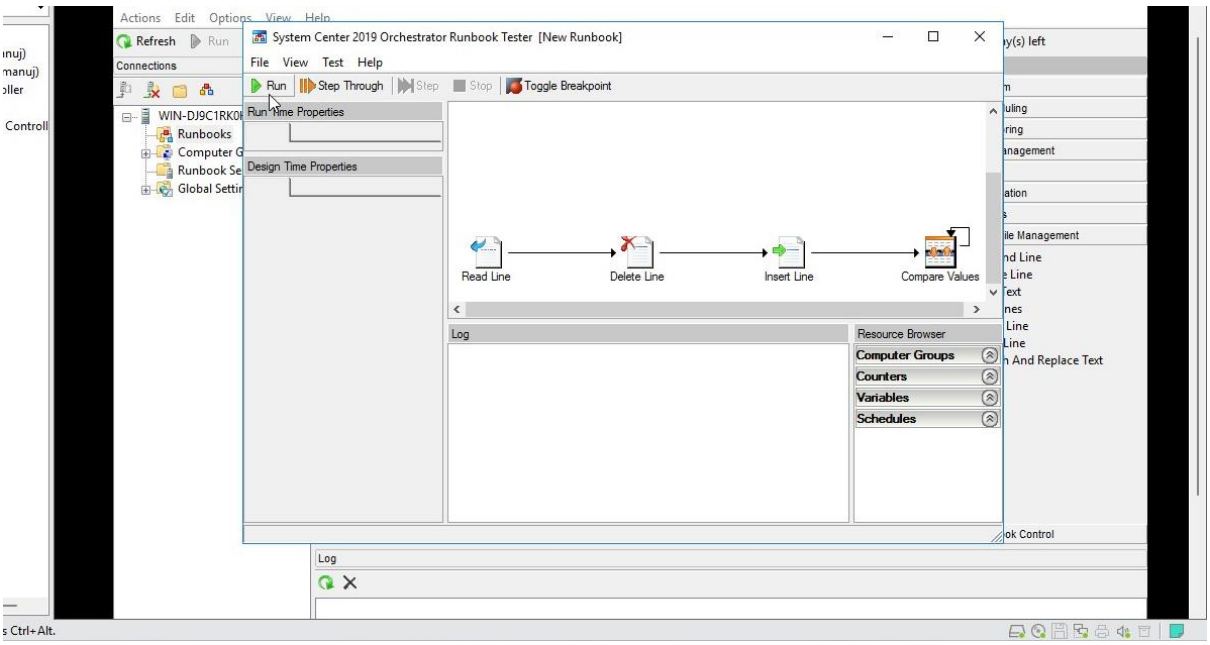
- Now link all the steps in your Runbook using the arrows



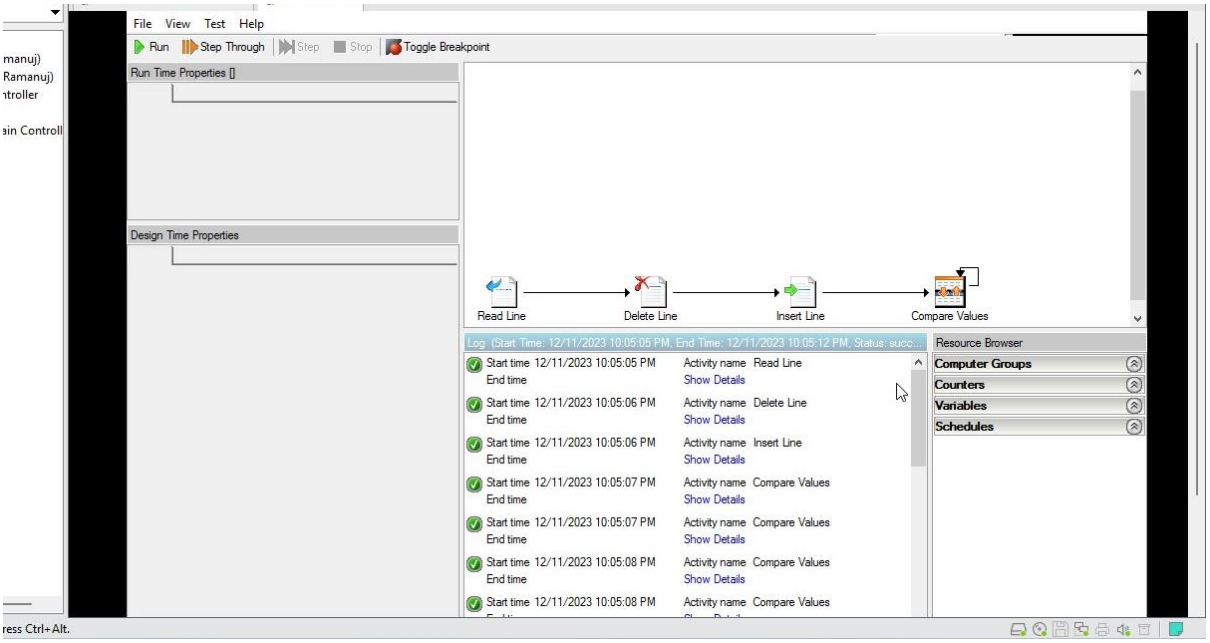
- Now Click on **Check-In** to save your Runbook and Click on **Runbook Tester**



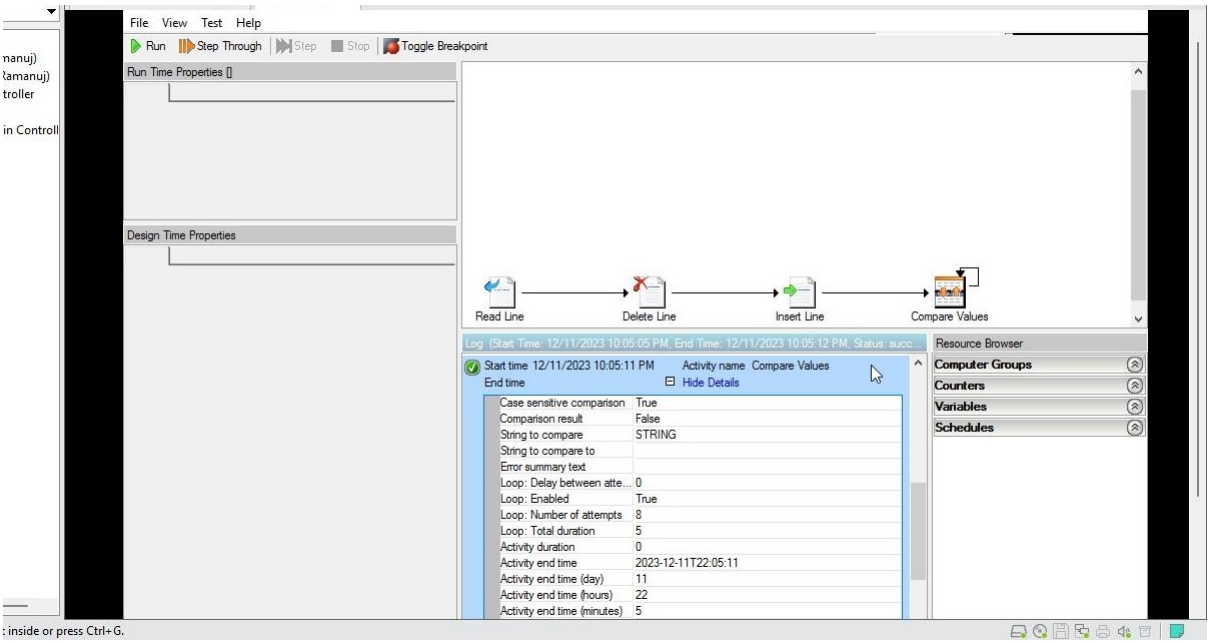
- Now in Runbook Tester Click on **Run**



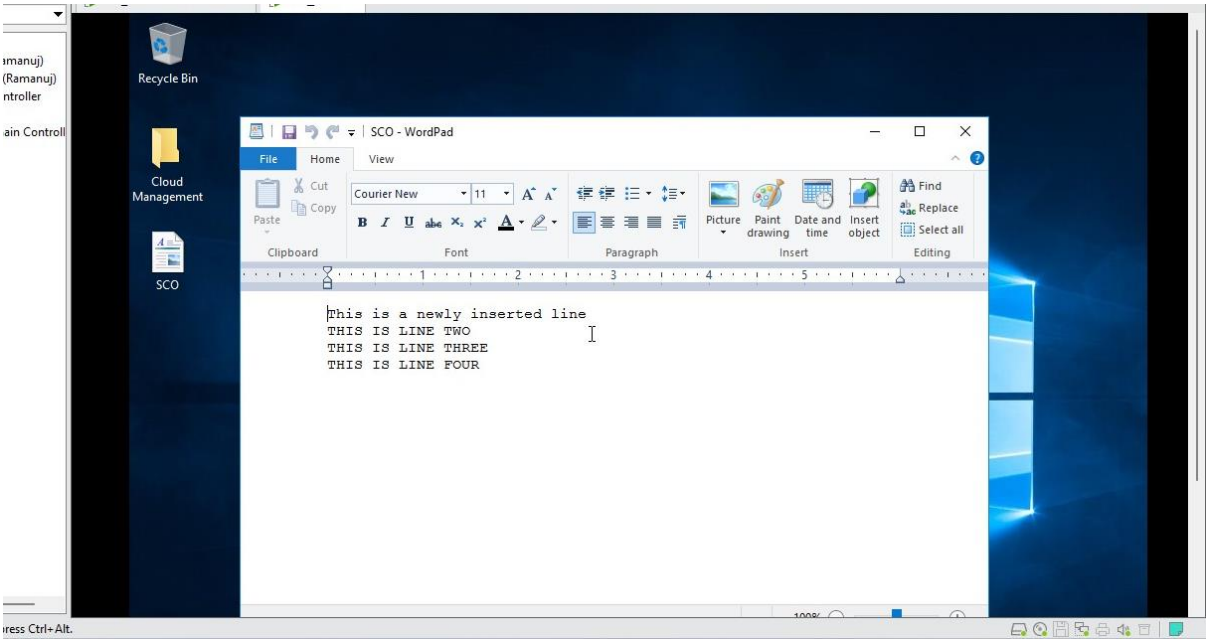
- When the Runbook is being tested it will created logs for each event taking place



- Now Scroll down the logs to the last Event of Compare Values and Click on **Show Details,** this is the results of benchmarking the Runbook

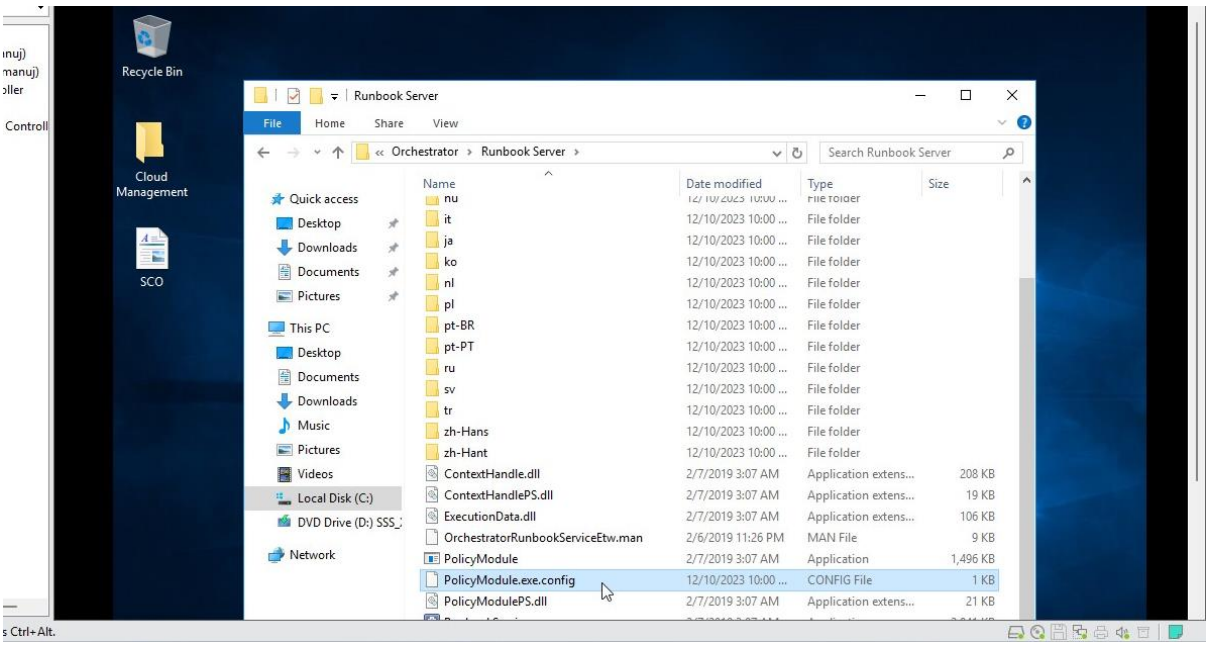


- To confirm that the Runbook infact worked Open the **SCO** text Document and see the changed line

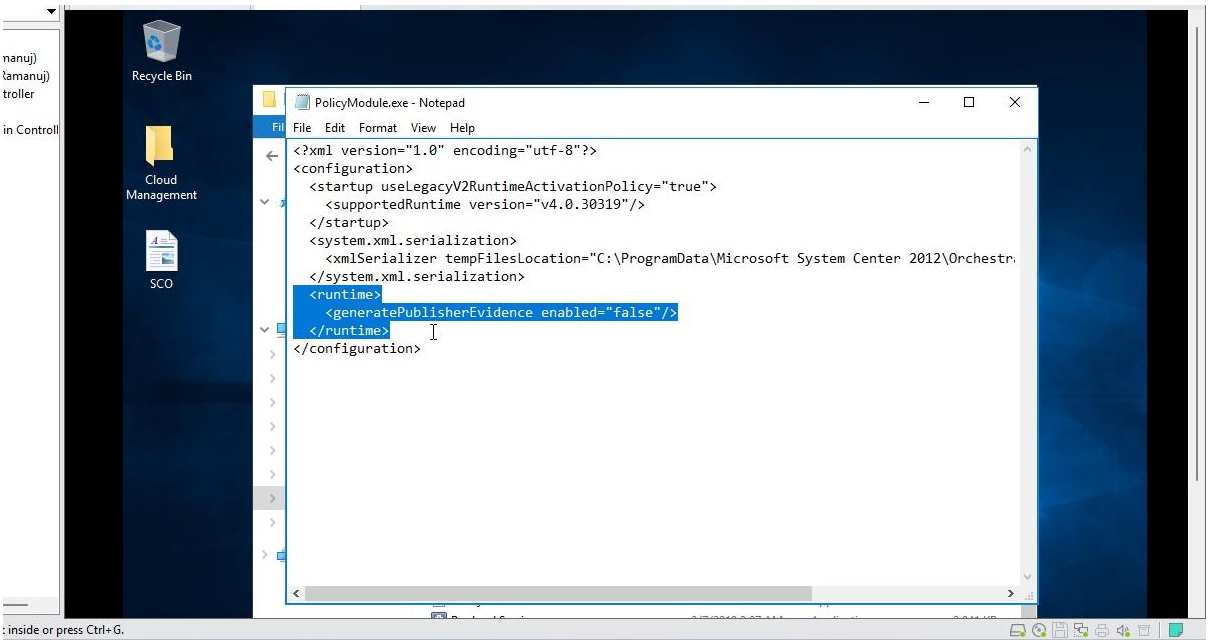


Step 3: Optimize Performance for .NET activites

- In your Directory search for this file:
- C:\Program Files (x86)\Microsoft System Center\Orchestrator\Runbook Server
- Find and Open the **PolicyModule.exe.config** file



- Within the PolicyModule.exe.config file add the following line of code:
  <runtime>
  <generatePublisherEvidence enabled="false"/>
  </runtime>
  And Save the file

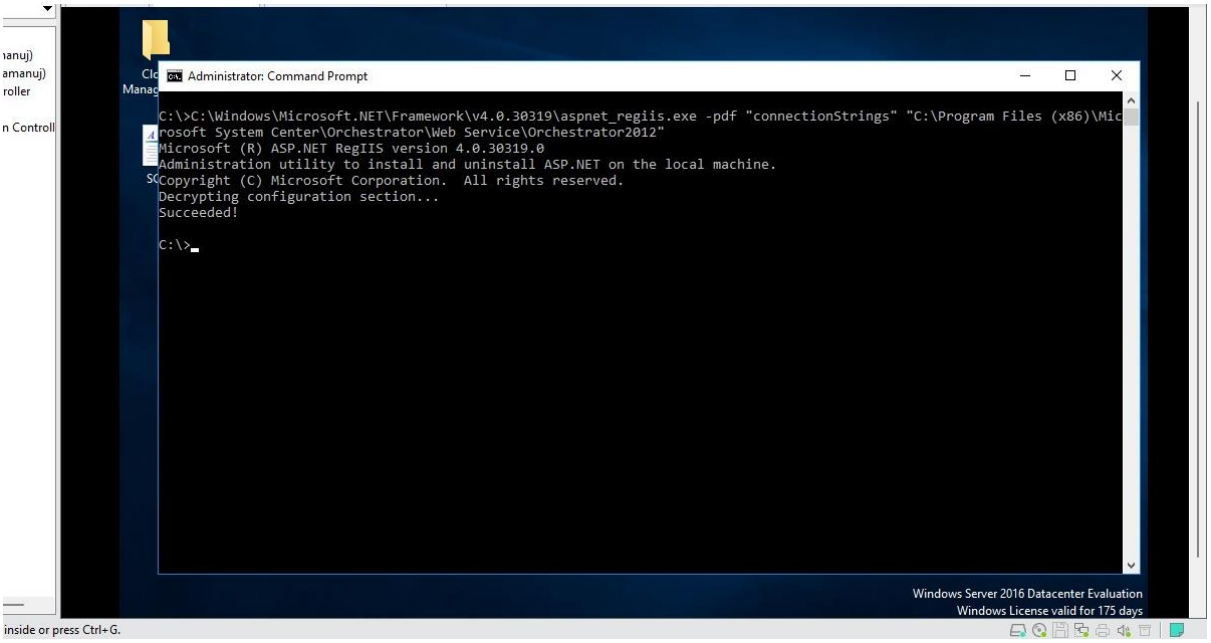


6-B: Manage Orchestrator Servers:

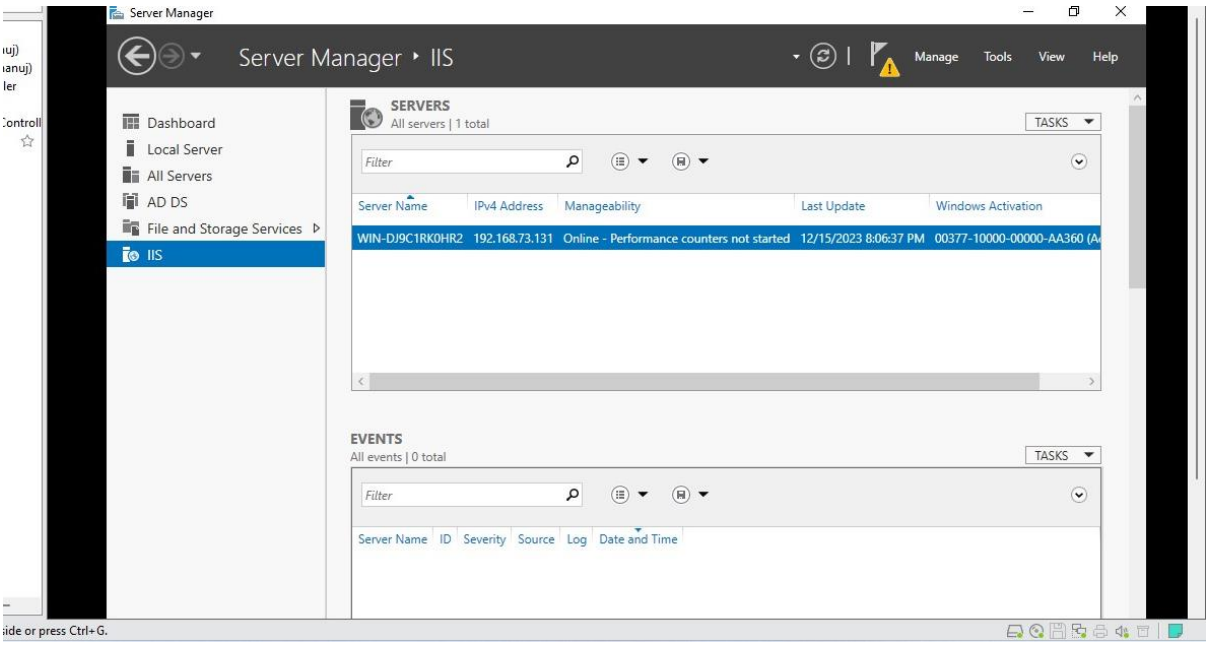
Step 1: Recover Web Components

- Open **Command Prompt** as **Administrator** and type in the following command:

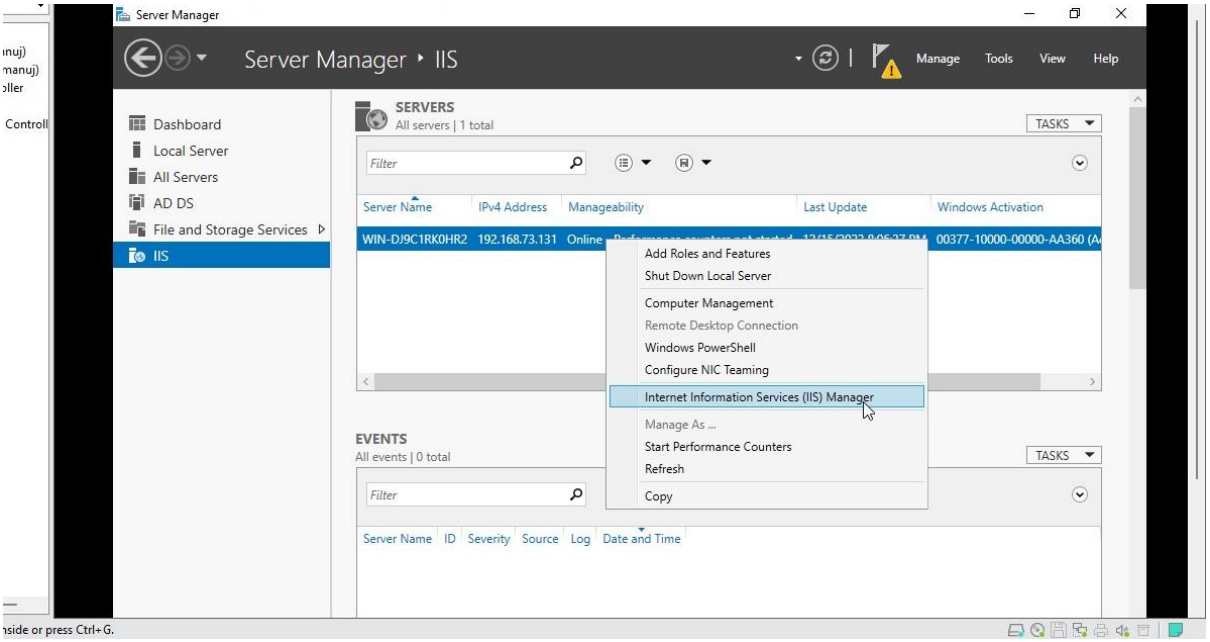
C:\Windows\Microsoft.NET\Framework\v4.0.30319\aspnet_regiis.exe –pdf "connectionStrings" "C:\Program Files (x86)\Microsoft System Center\Orchestrator\Web Services\Orchestrator 2012



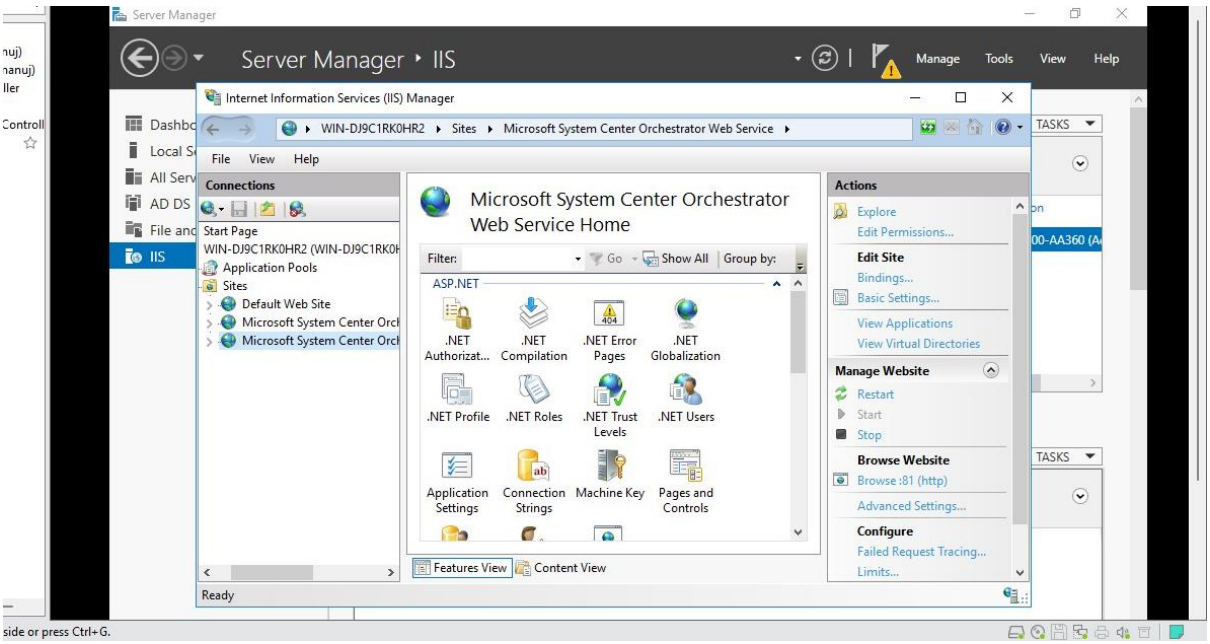
- Now Open the Server manager and Click on **IIS**



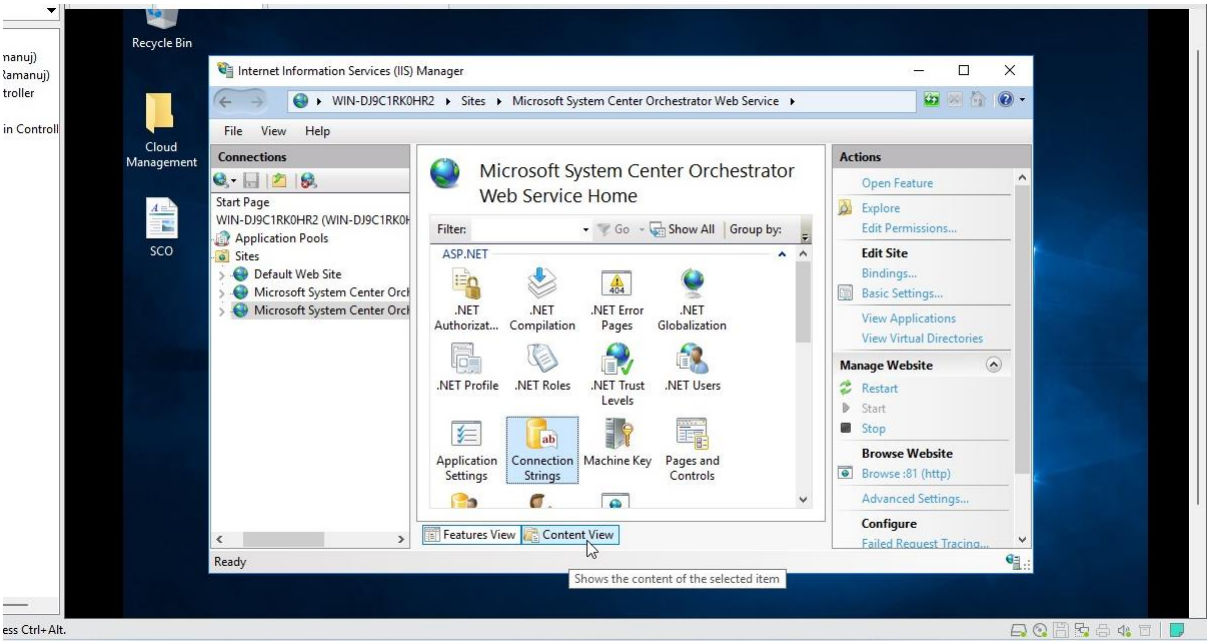
- Now Right-Click on your server and Select **Internet Information Service (IIS) Manager**



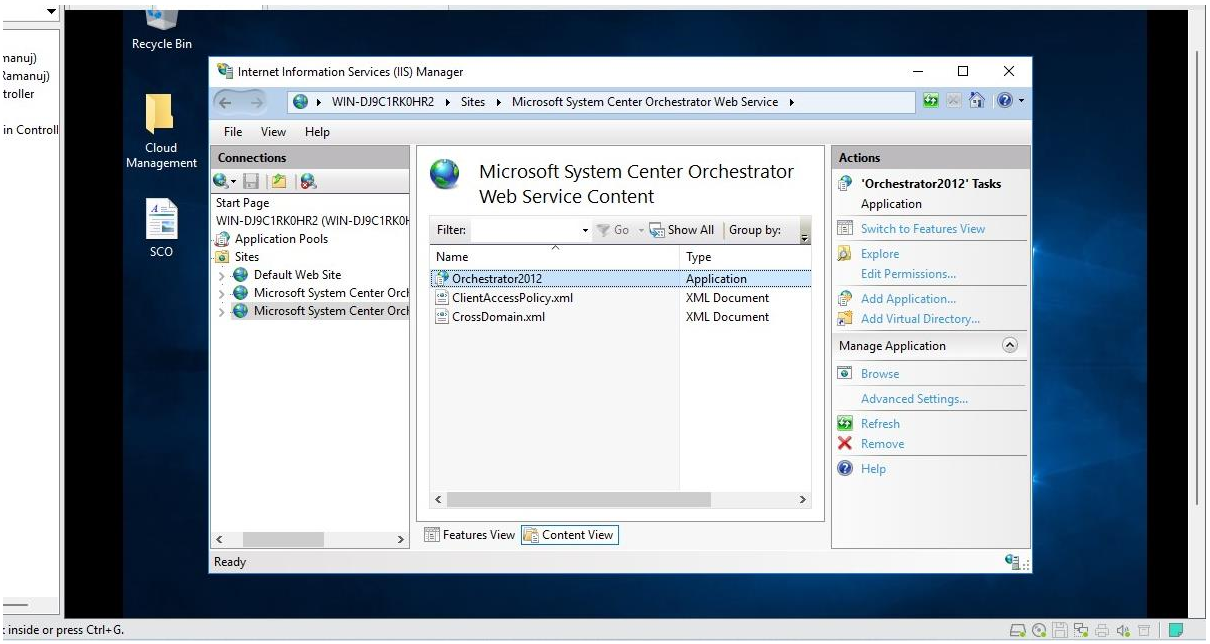
- Now Select your server and Click on **Sites** and Select **Microsoft System Center Orchestrator Web Service**



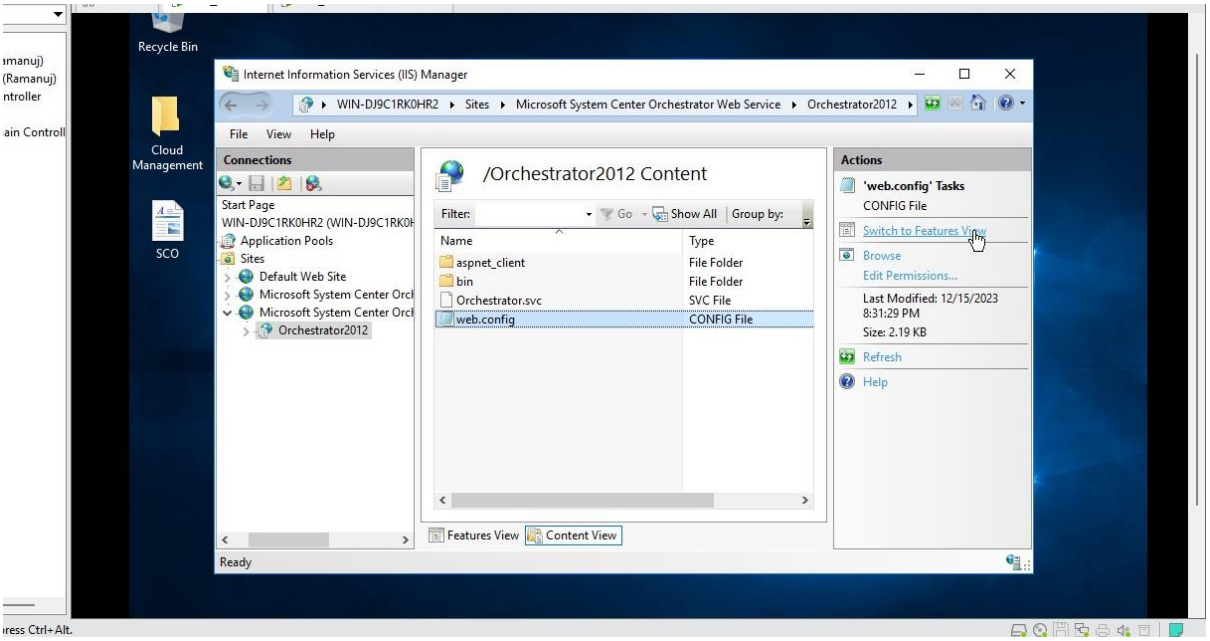
- Select **Connection Strings** and Click on **Content View**



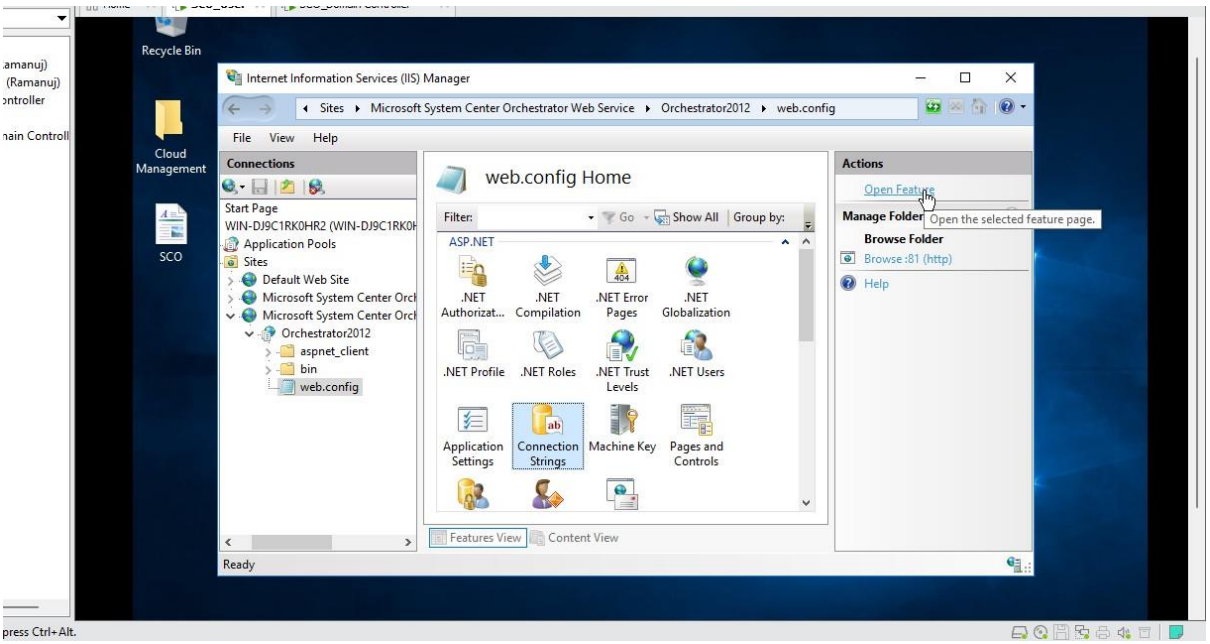
- Within Content View Double-Click on **Orchestrator2012**



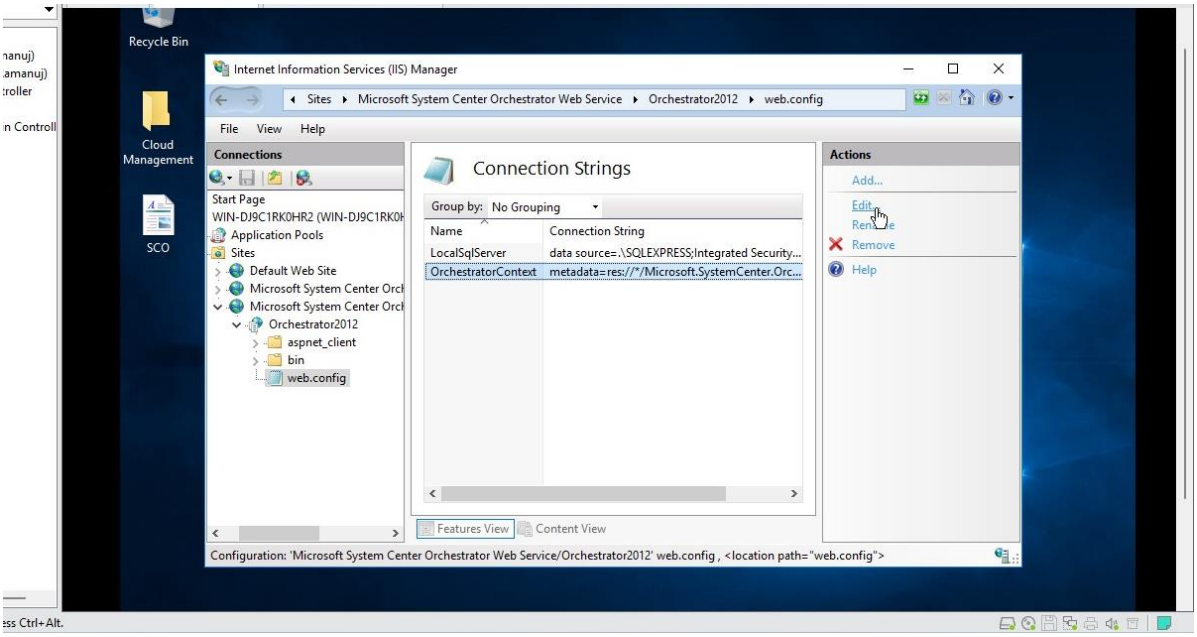
- Within Orchestrator2012 Select **web.config** and Click on **Switch to Feature View**



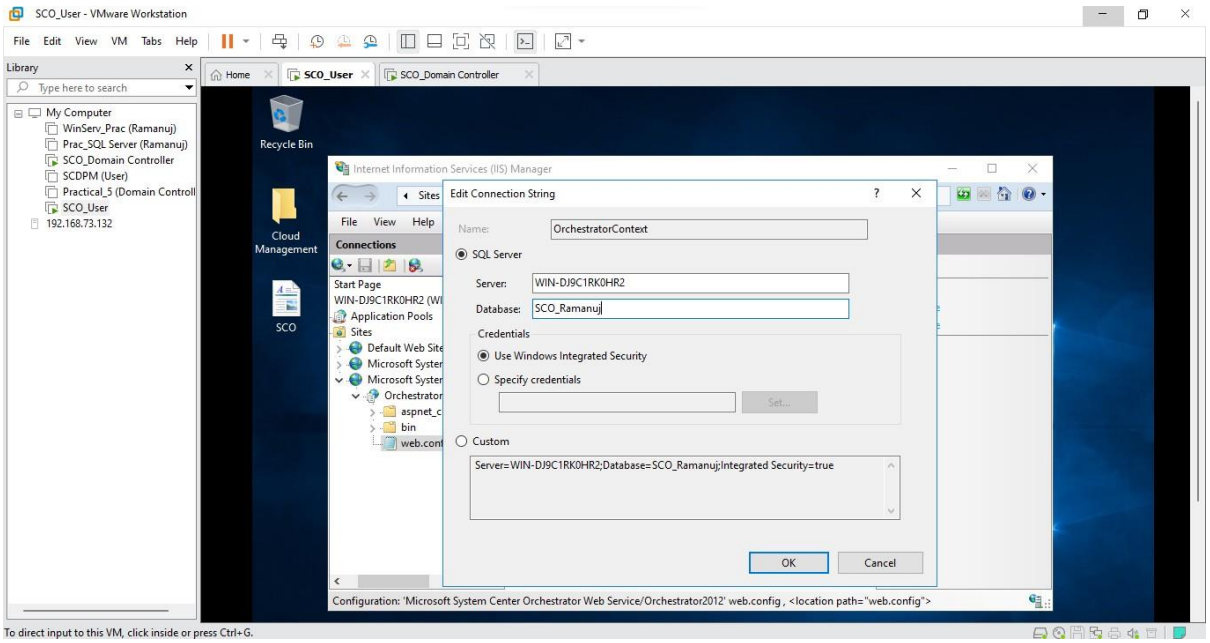
- Now Select **Connection Strings** and Click on Open **Feature**



- Select **OrchestratorContext** and Click **Edit..**

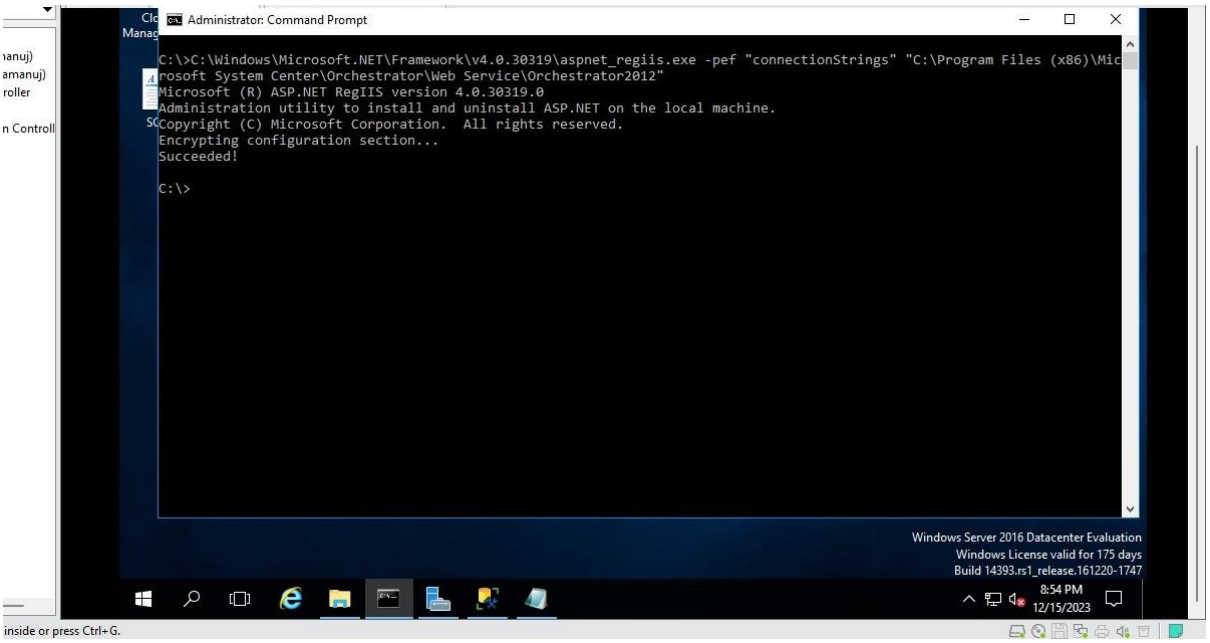


- Select **SQL Server** and Enter the name of your server but change the database to a new one (Create a new one in SSMS) and Change your Database from **Orchestrator** to the new Database (Here it is **SCO_VIQAR**) and Click on **Ok**



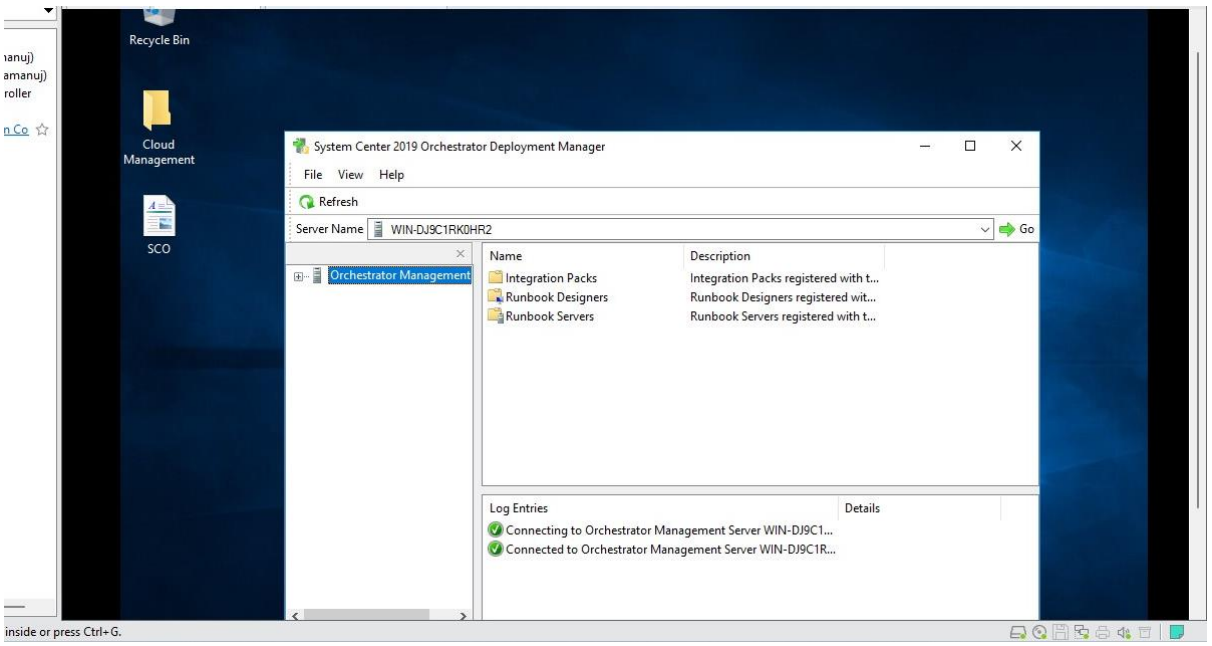
- Now Exit the **IIS Manager** and Open **Command Prompt (Administrator)** again to re-encrypt your connection strings
- Type in the following command:

C:\Windows\Microsoft.NET\Framework\v4.0.30319\aspnet_regiis.exe –pef “connectionStrings” “C:\Program Files (x86)\Microsoft System Center\Orchestrator\Web Services\Orchestrator 2012

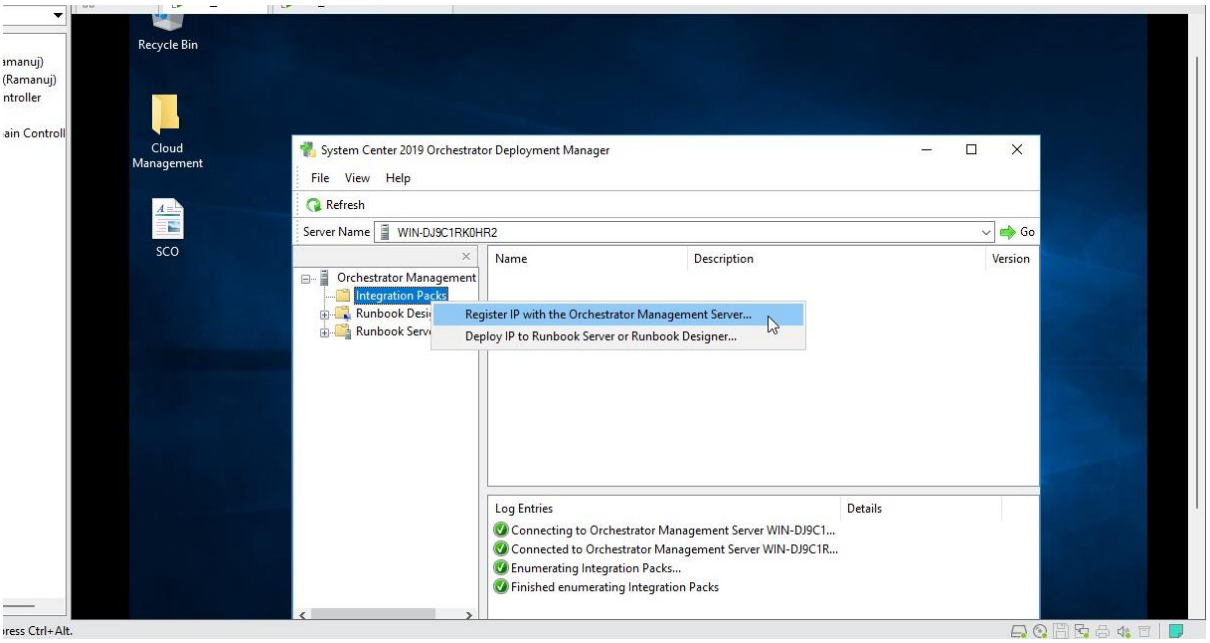


Step 2: Add an integration pack

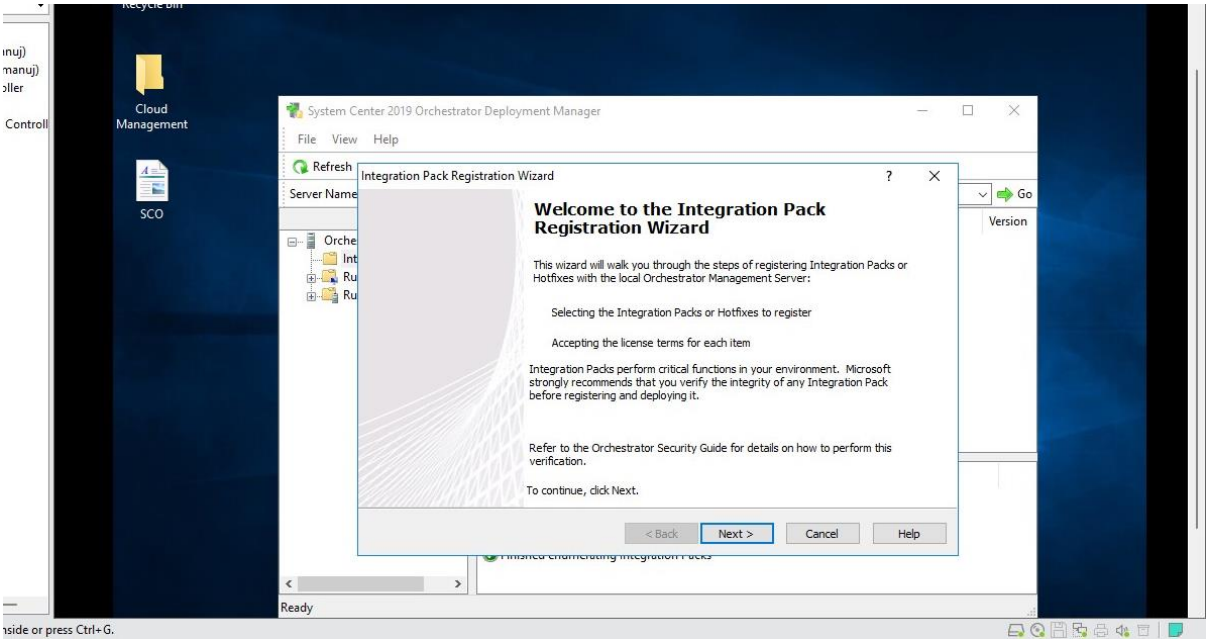
Pre-requisites: Keep a few .OIP Files from Microsoft System Center on the VM



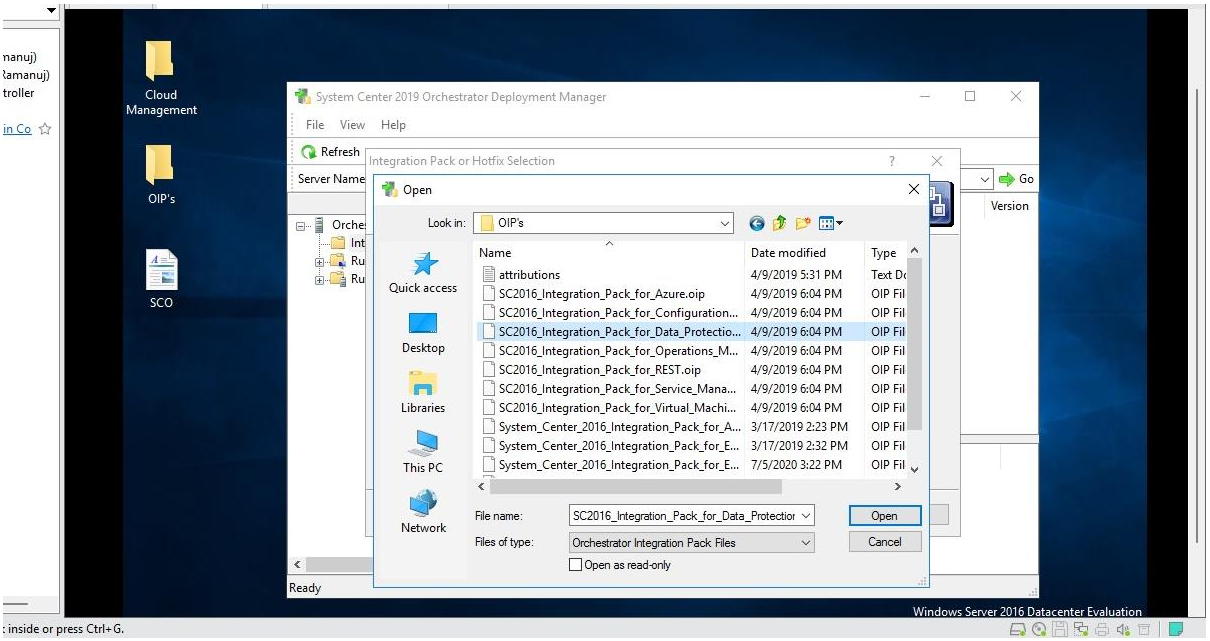
- Open **Deployment Manager**
- Expand the **Orchestrator Management Server** and Right-Click on **Integration Packs** and Select **Register IP with the Orchestrator Management Server**



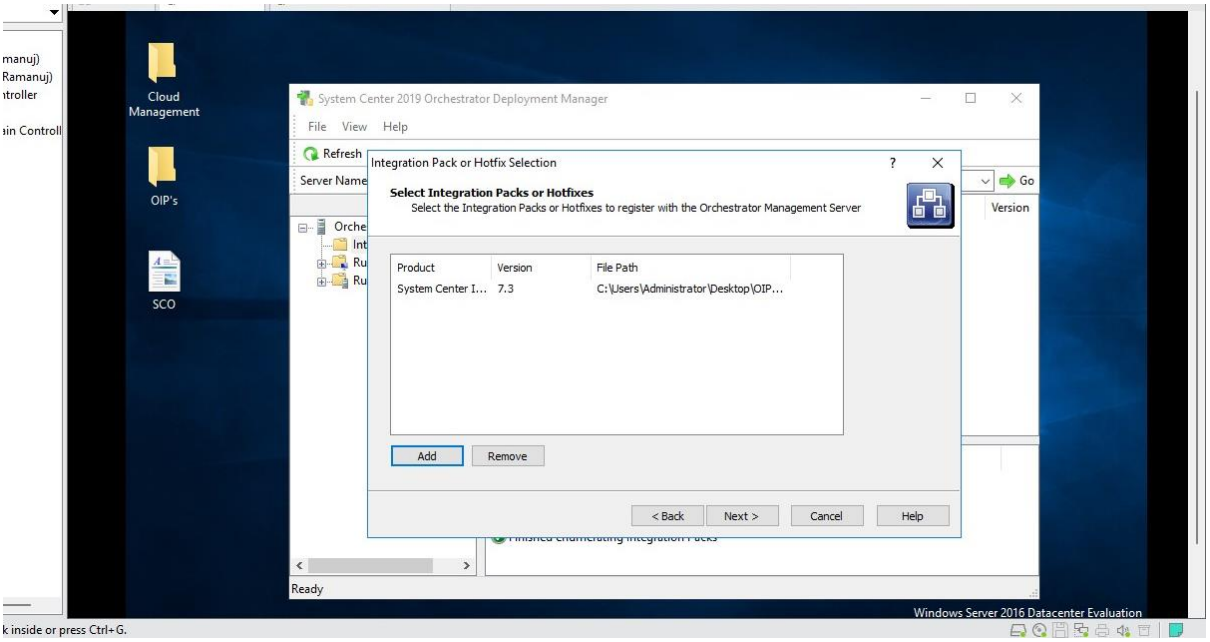
- Click **Next**



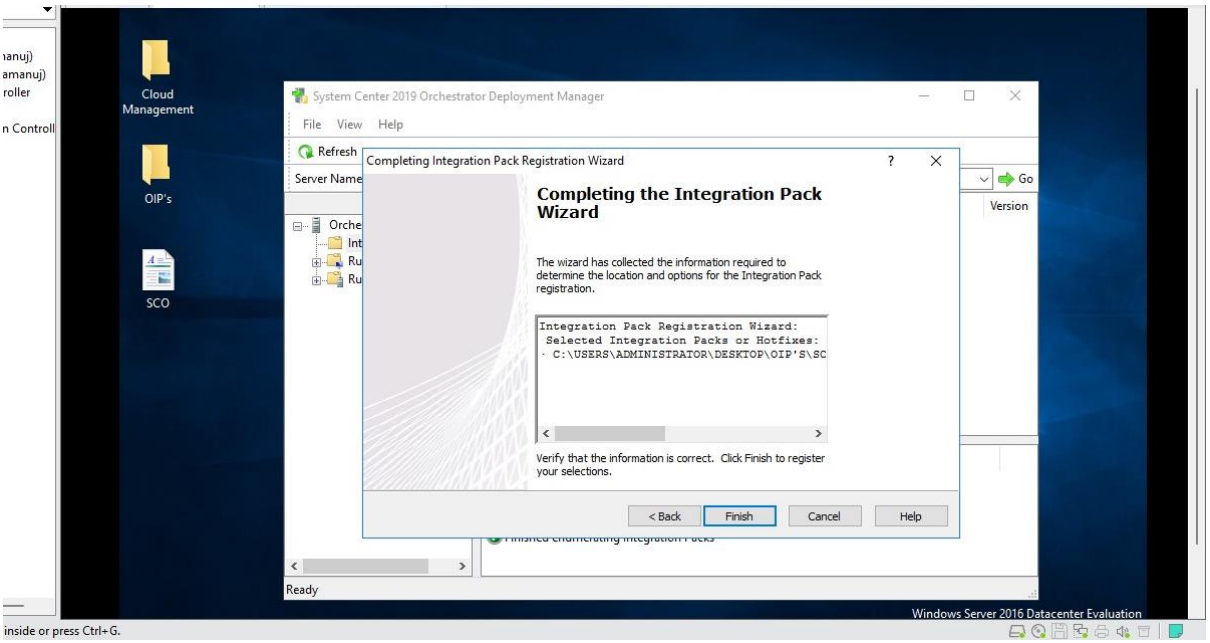
- Click on **Add** and Select a **.OIP** files from your folder (Here I am choosing the DPM_Integration OIP file) and Click **Open**



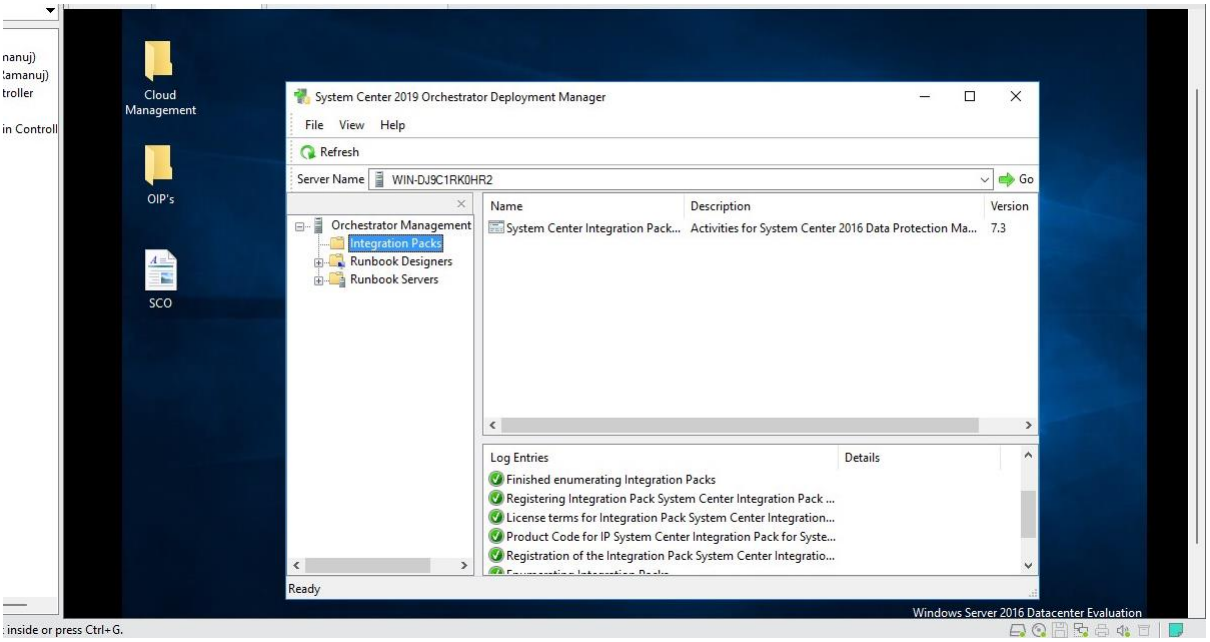
- Click **Next**



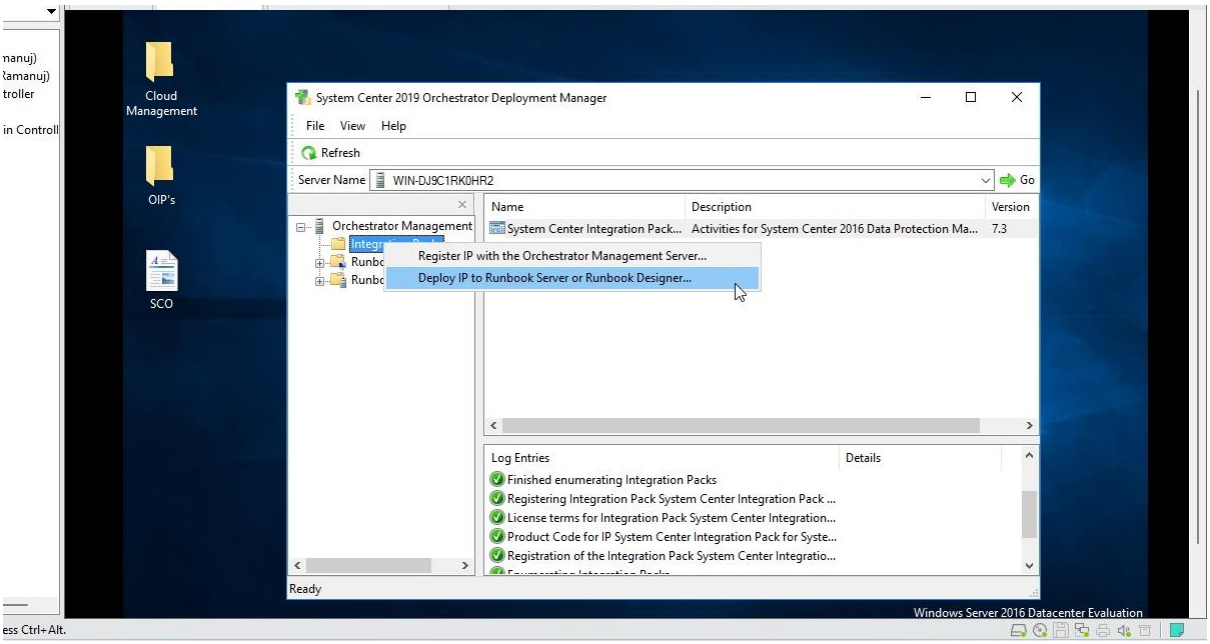
- Click **Finish**



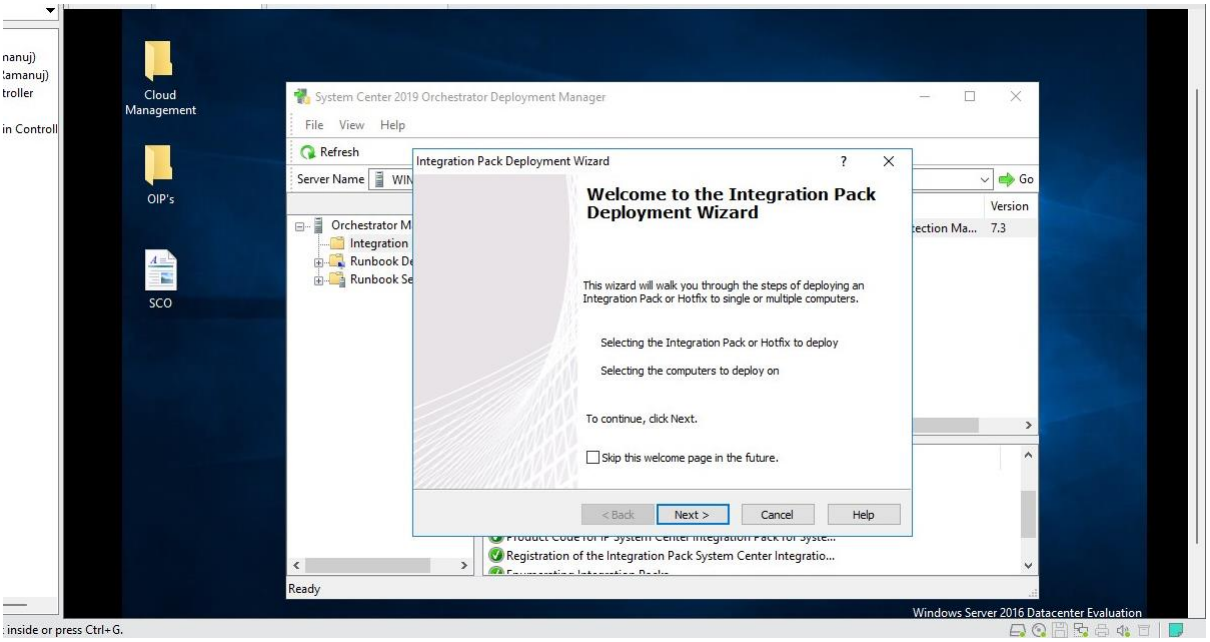
- Now the Integration Pack will appear in **Deployment Manager**



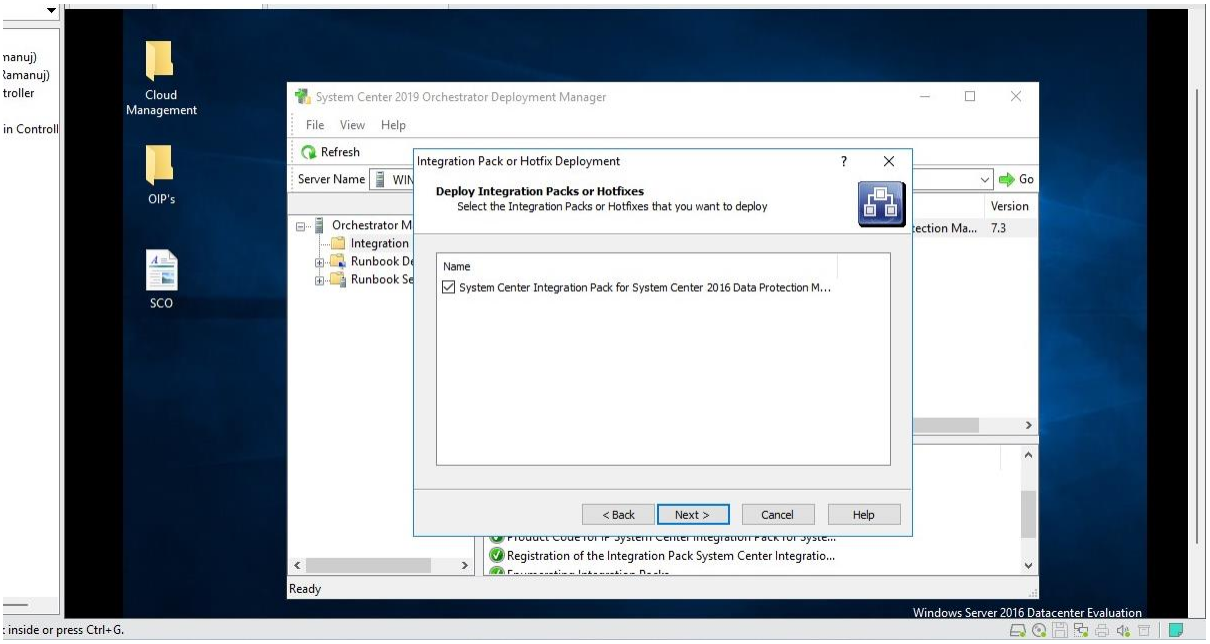
- Now Right-Click on **Integration Packs** and Select **Deploy IP to Runbook Server or Runbook Designer**



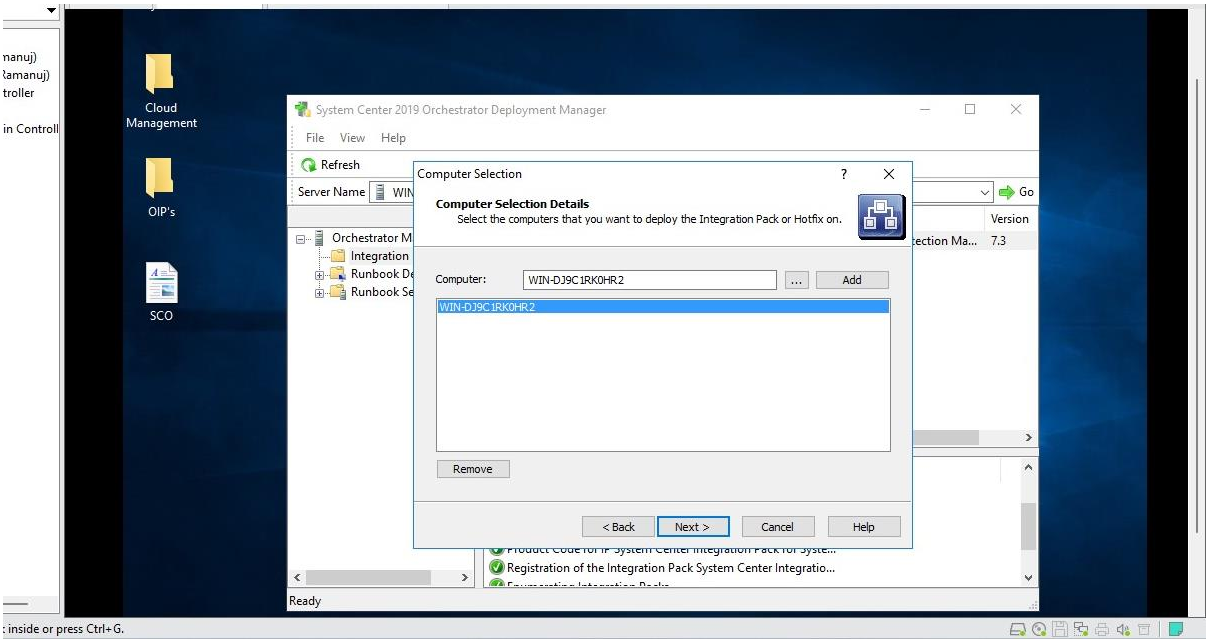
- Click **Next**



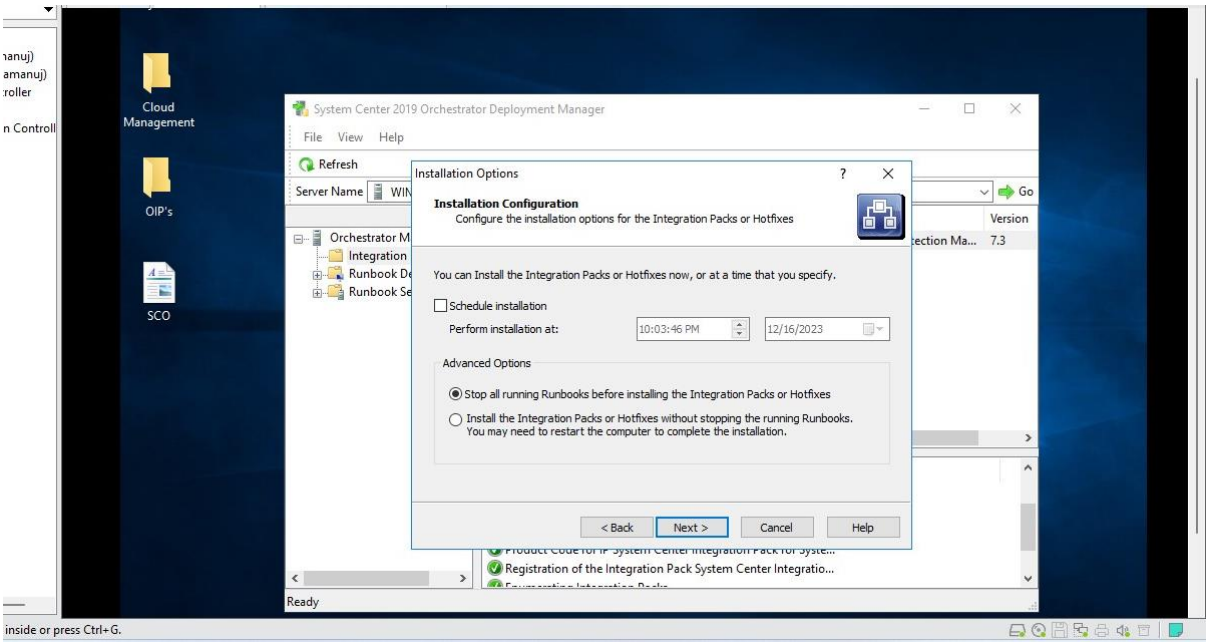
- Select your integration pack and Click **Next**



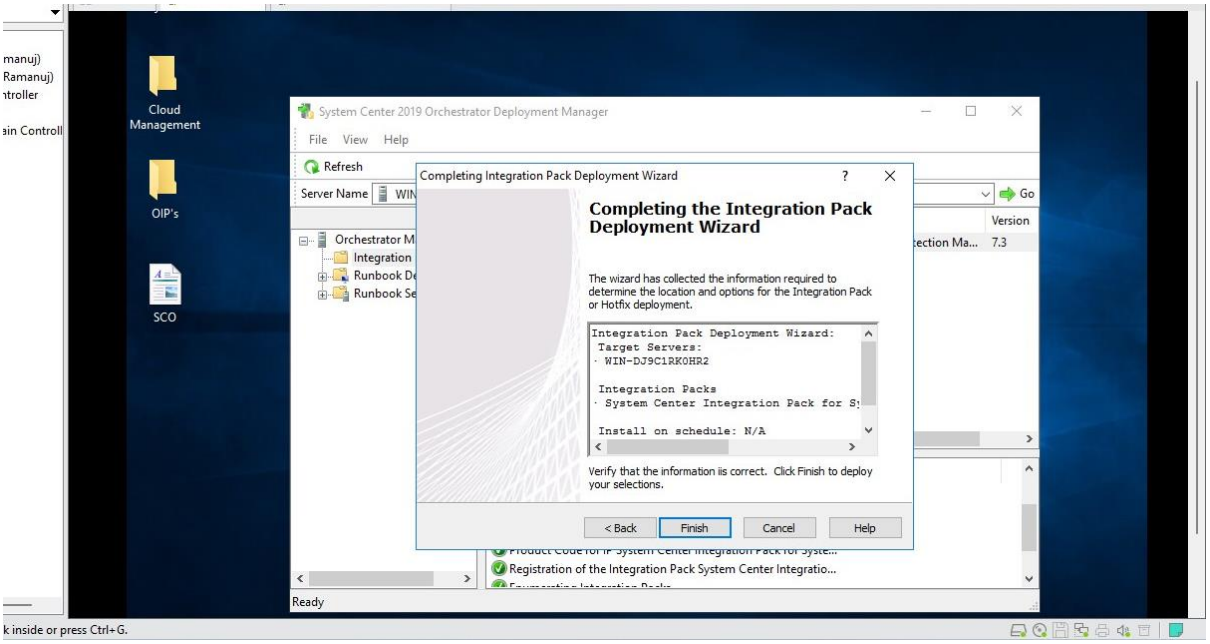
- Now type in the Name of your Computer and Click **Next**



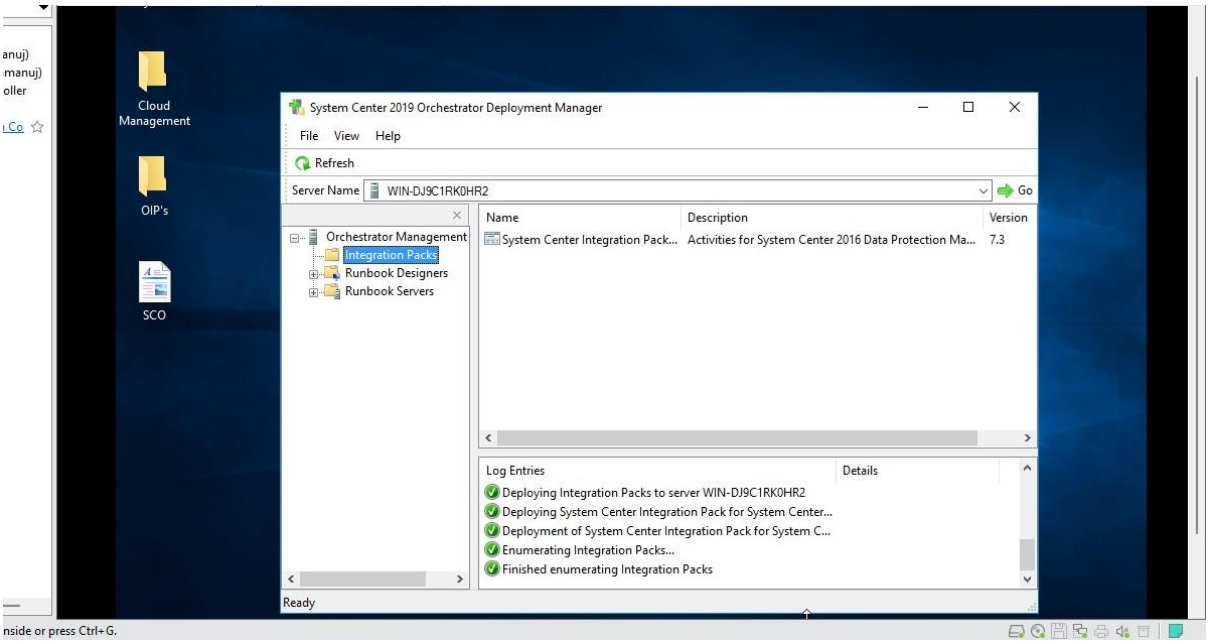
- Keep default values and Click **Next**



- Click **Finish**

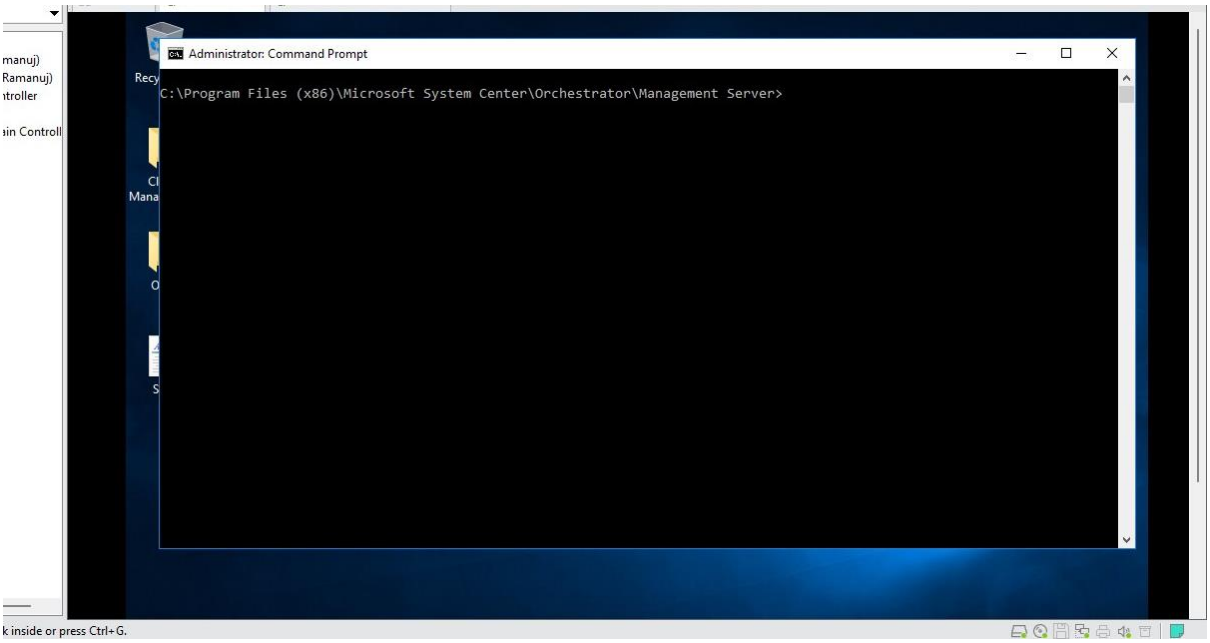


- Now it shows successful deployment of integration pack

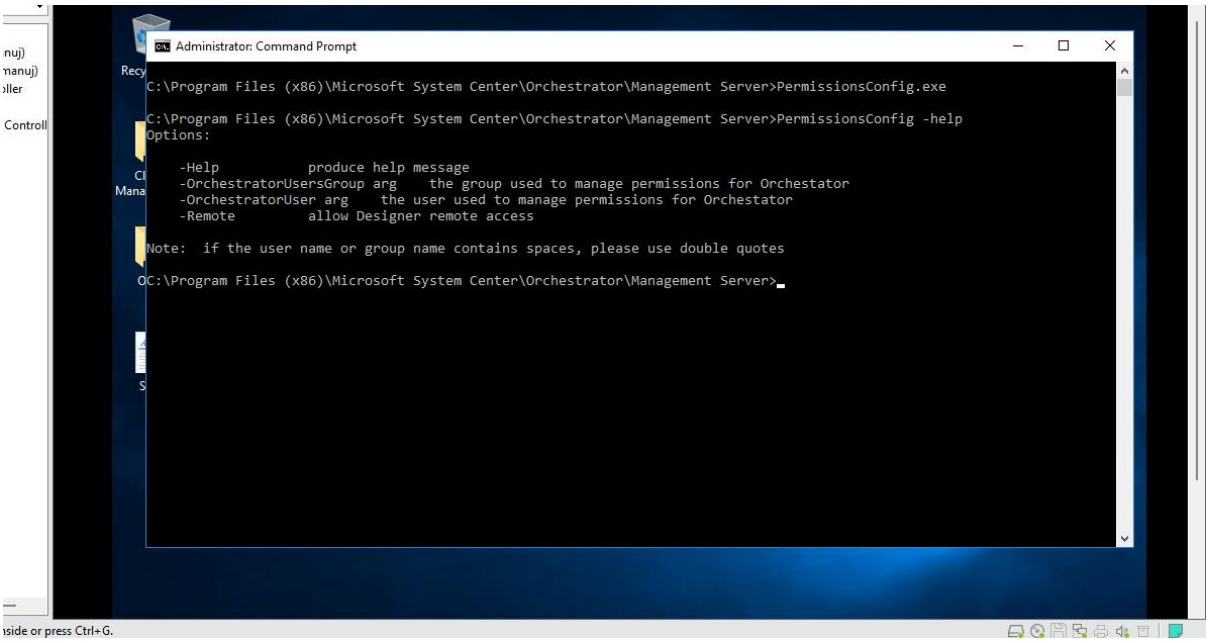


Step 3: Modify the Orchestrator users group

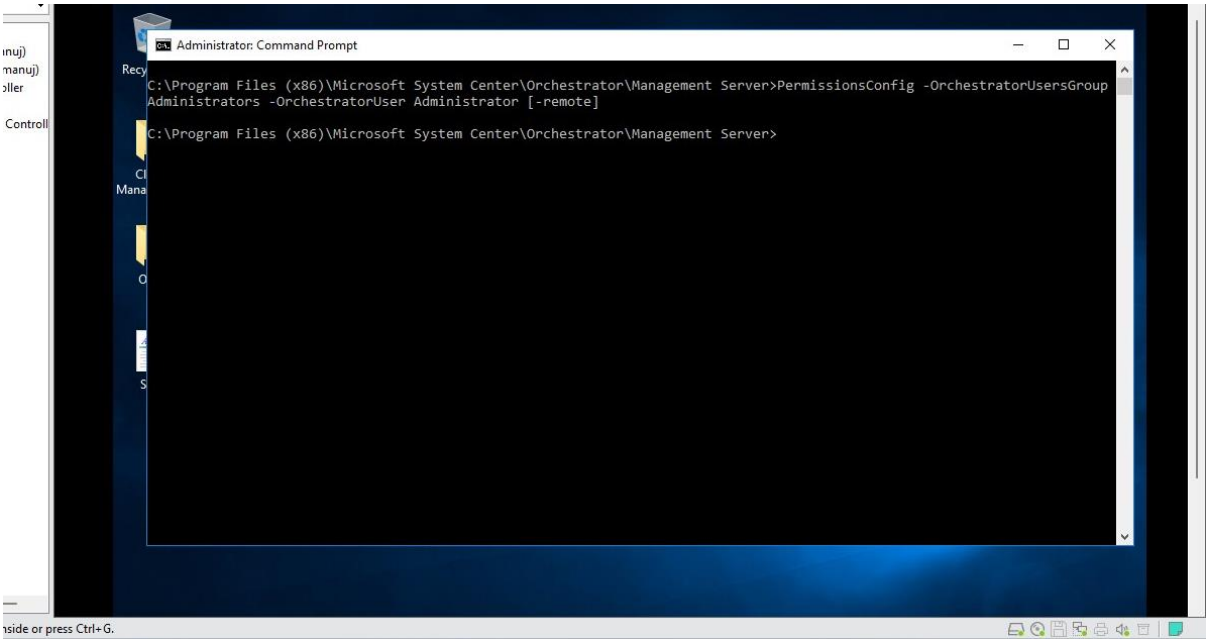
- Open the **Management Server** folder from the **System Center** Folder and Open it in **command prompt**



- Type in the following Commands:
  PermissionsConfig.exe
  PermissionsConfig –help

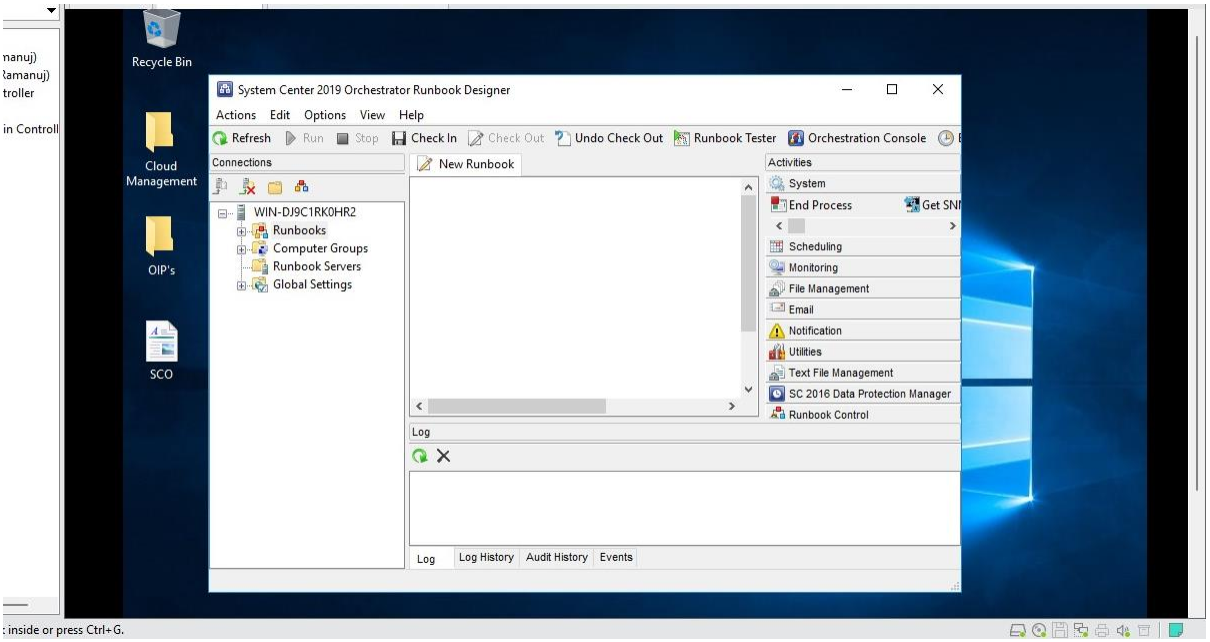


- Now type in the following command: **PermissionsConfig –OrchestratorUsersGroup Administators –OrchestratorUser Administrator [-remote]**

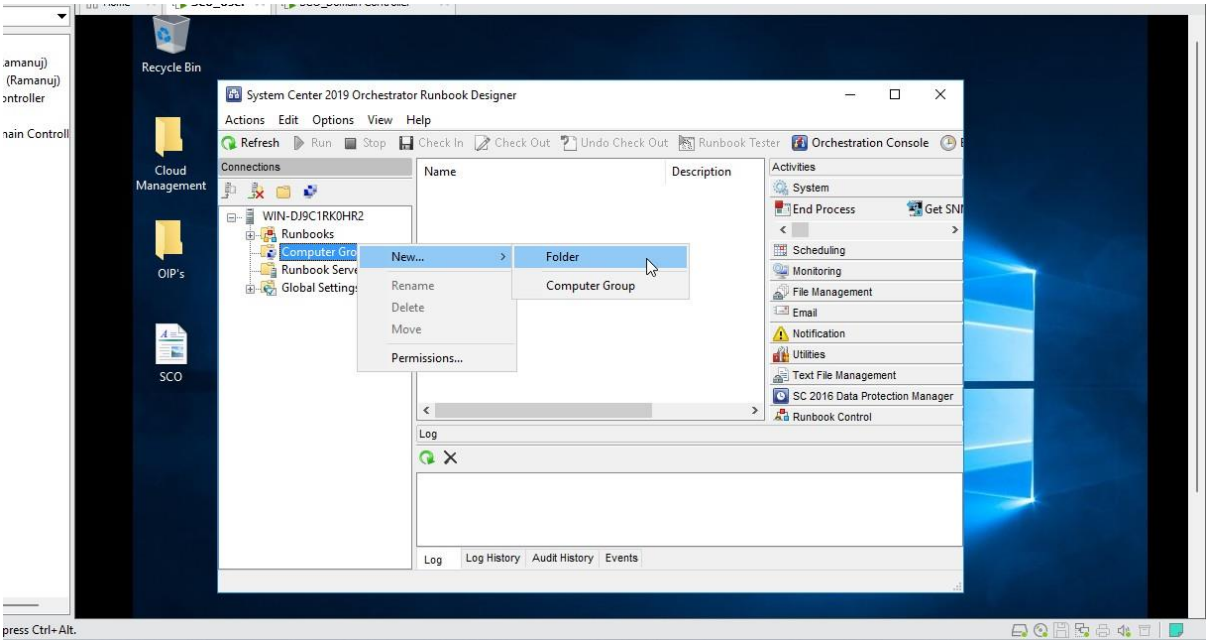


Step 4: Computer Groups

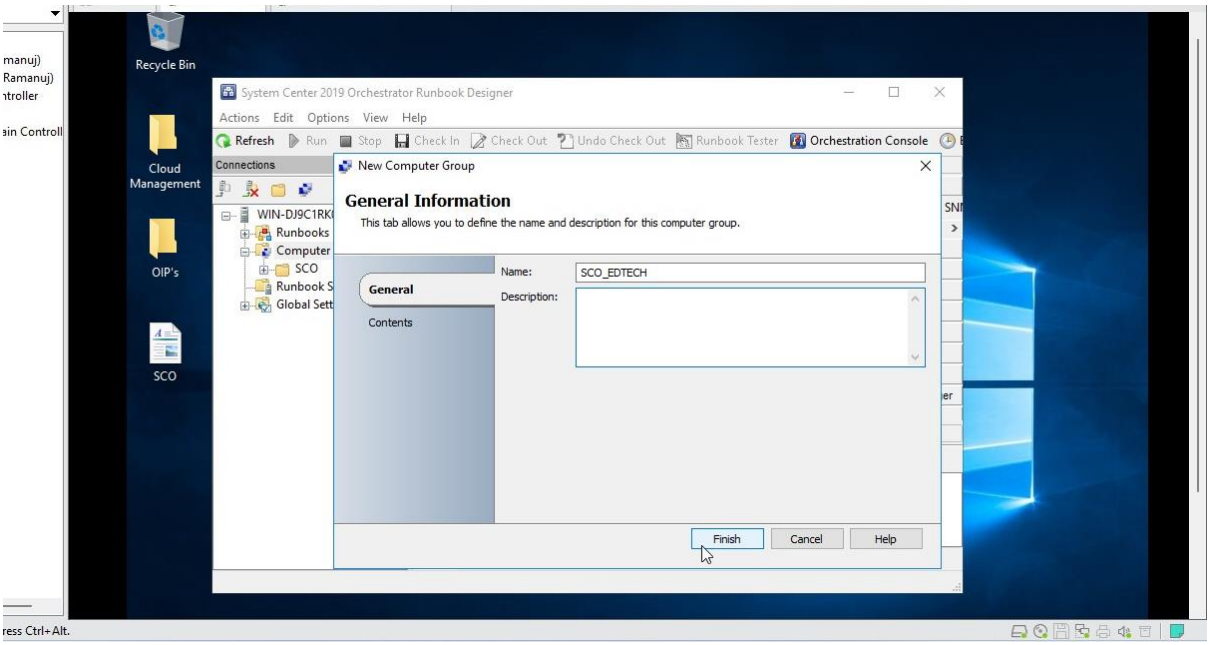
- Open **Runbook Designer**



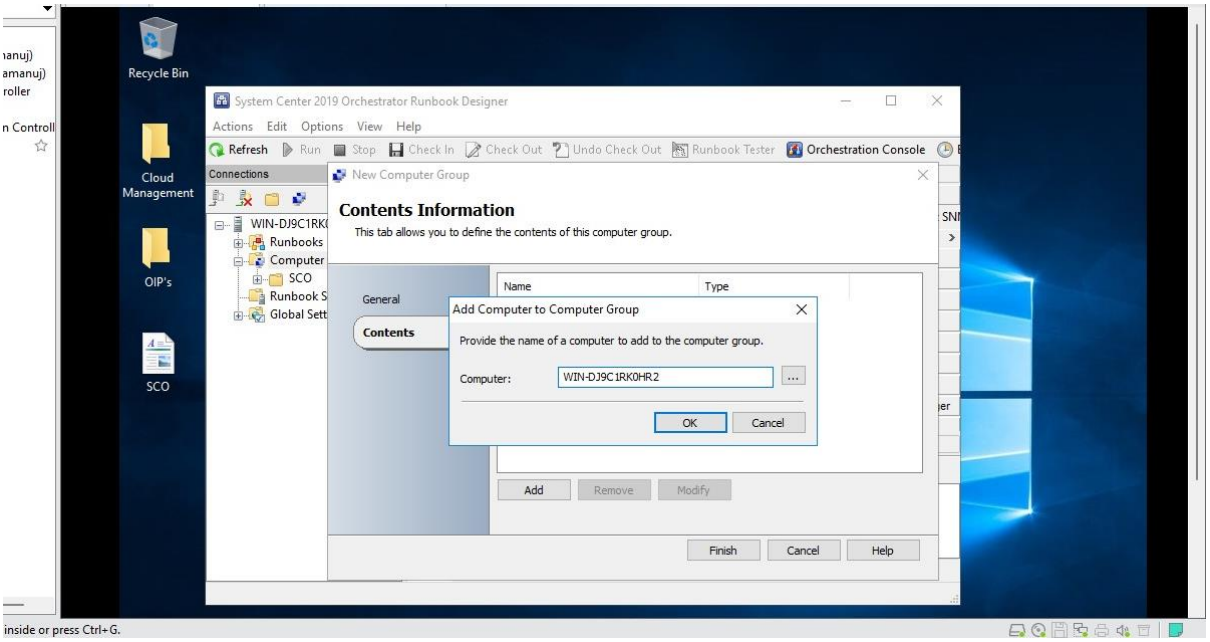
- Right-Click on **Computer Group** and Select **New** and Click **Folder** and name the group



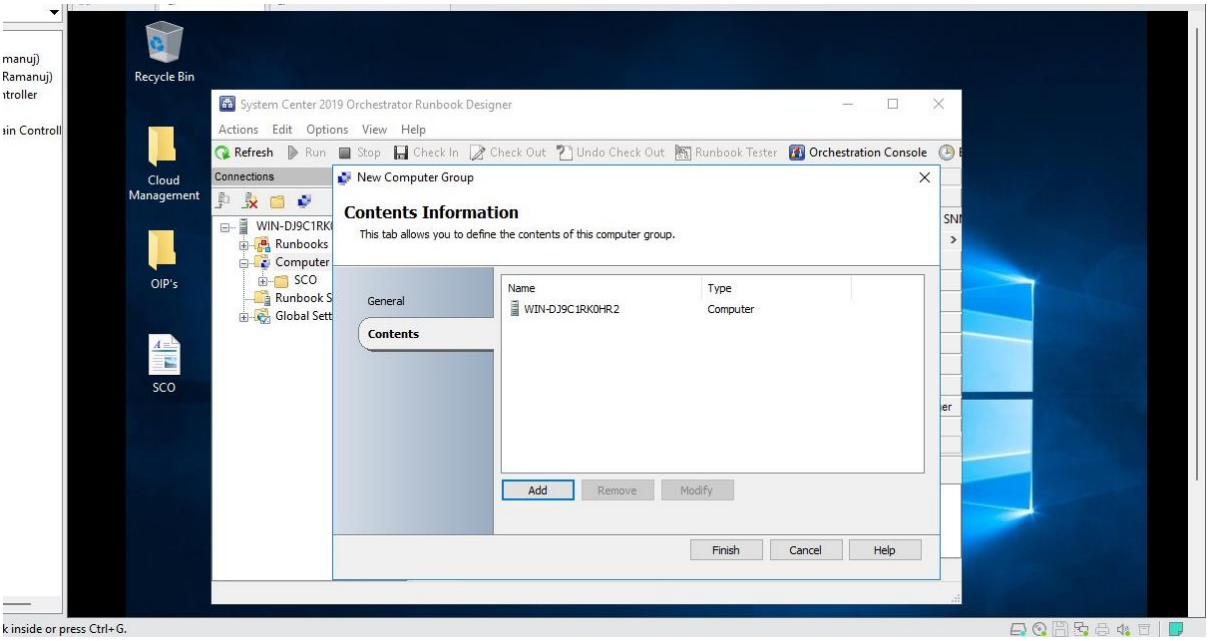
- Now Select **Computer Group** and Click **New** and Select **Computer Group,** Give the group a name and Click on **Finish**



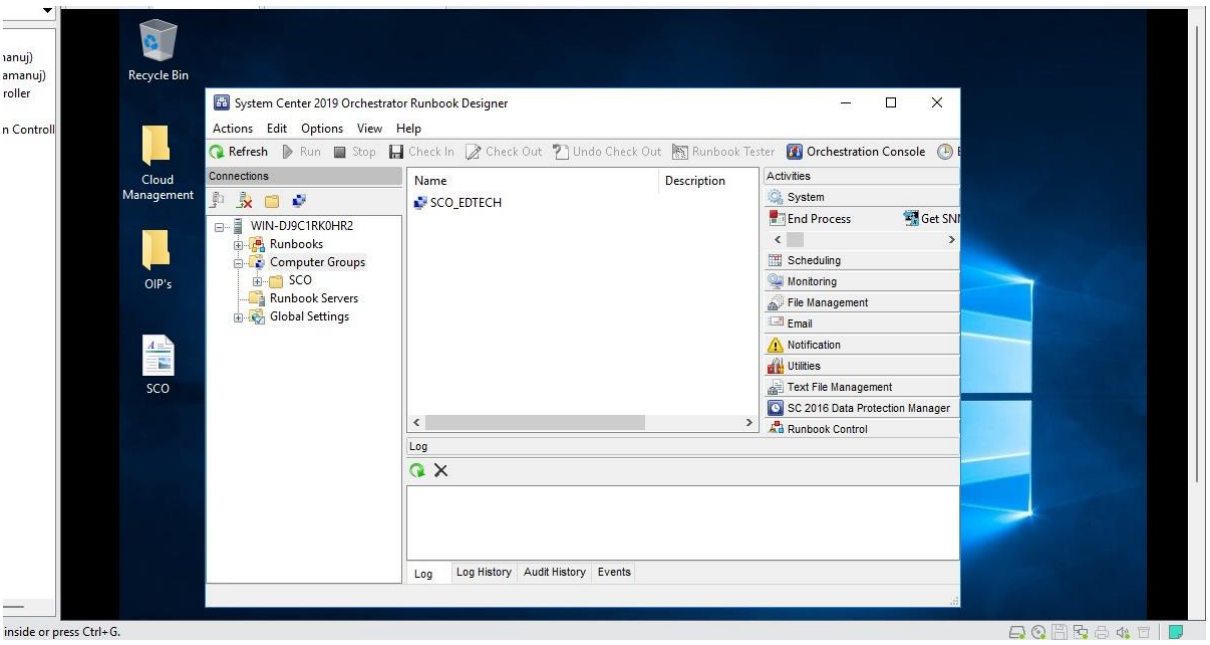
- Now Click on the **Contents** Tab and Click on **Add** and Type in your Computer name and Click **Ok**



- Now Click **Finish**



- The Computer Group has been created in the Runbook Designer



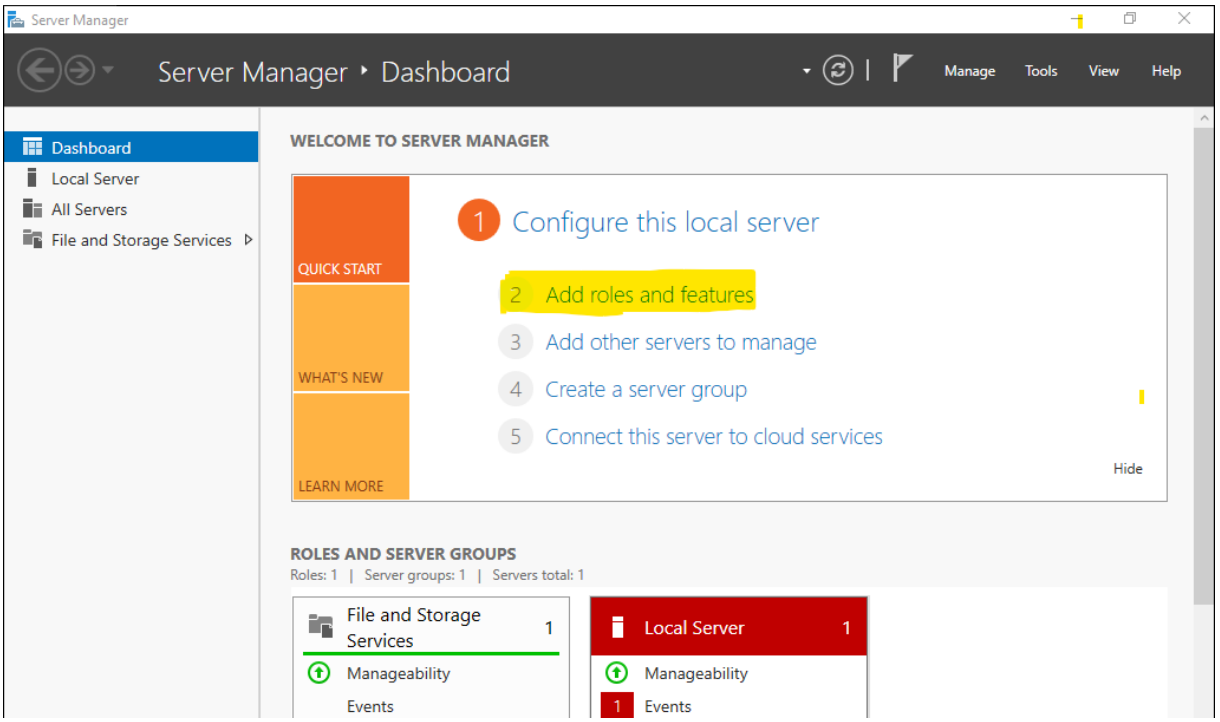
Practical 7

Aim: Protecting Workloads using Data Protection Manager

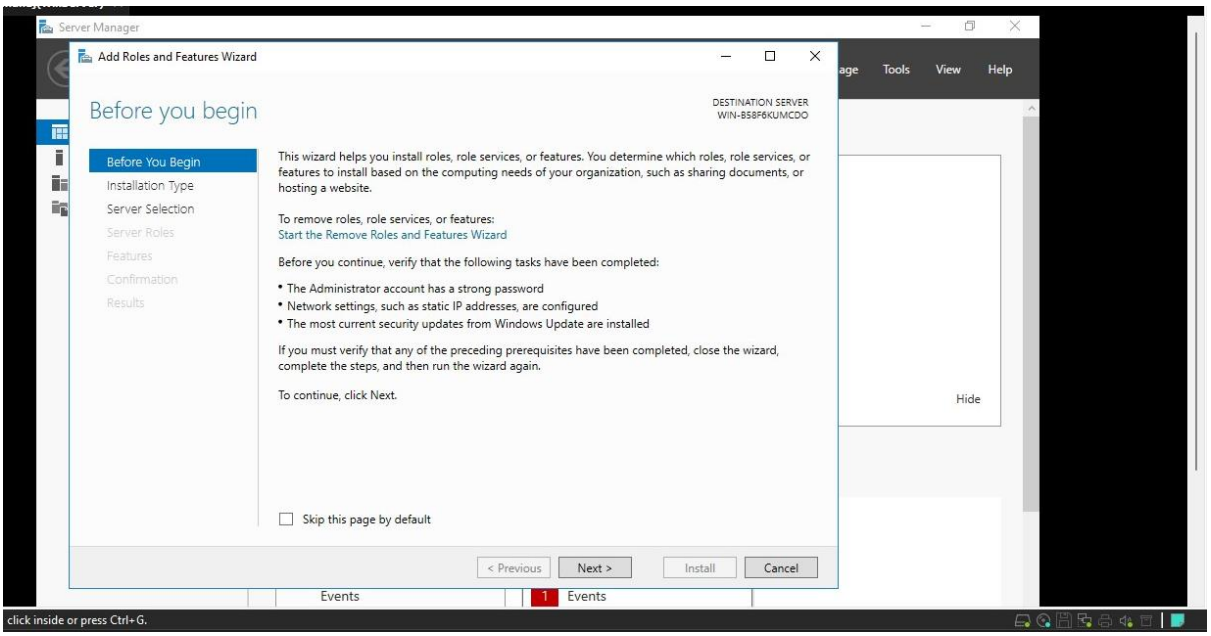
Writeup:

7-A: Back up Hyper-V Virtual Machine
Note: This is to be installed in your Domain Controller
Step 1: Installing Hyper-V on Server Manager

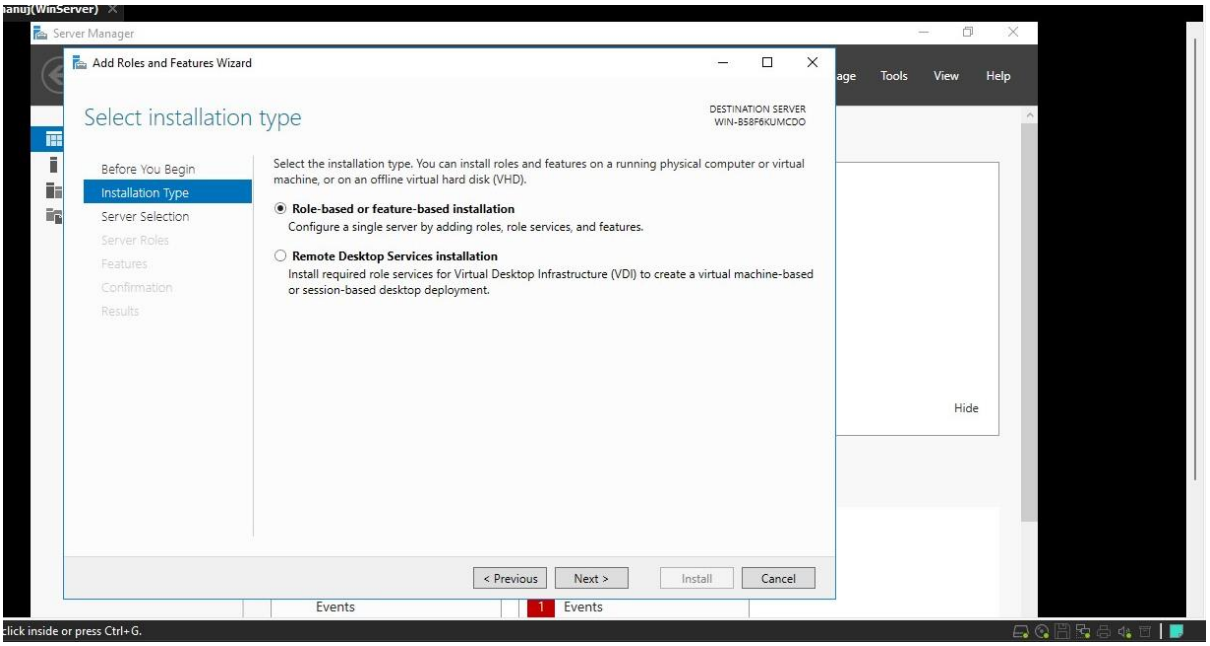
- Within Server Manager Click on **Add Roles and Features**



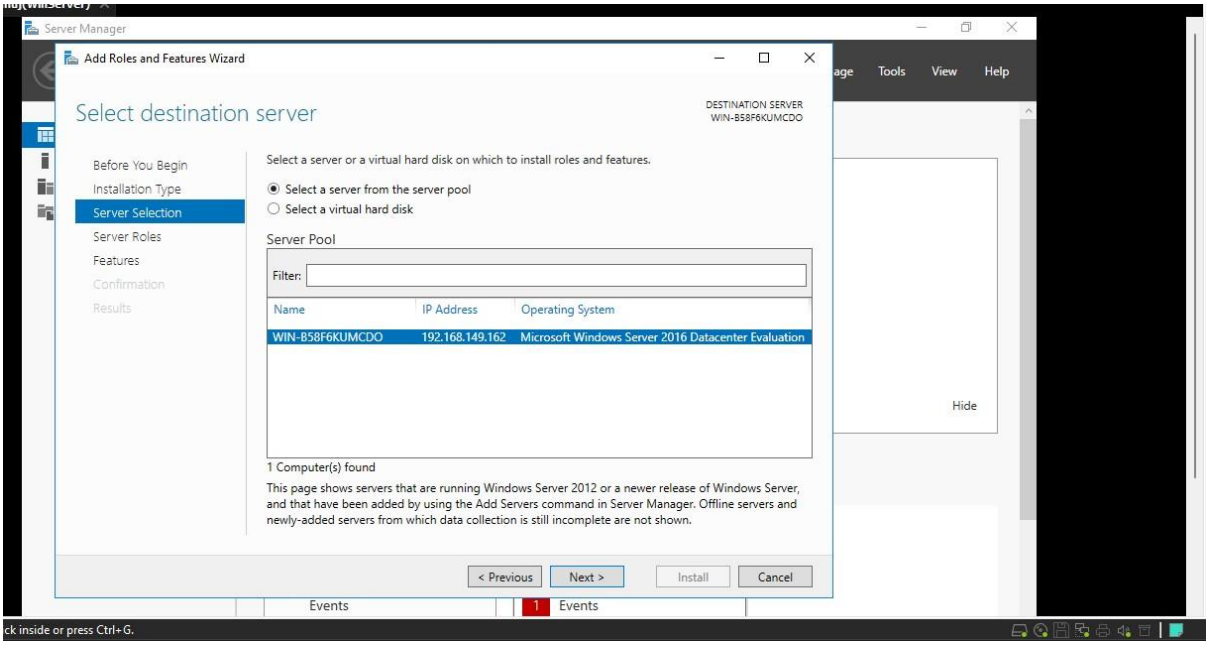
- Click **Next**



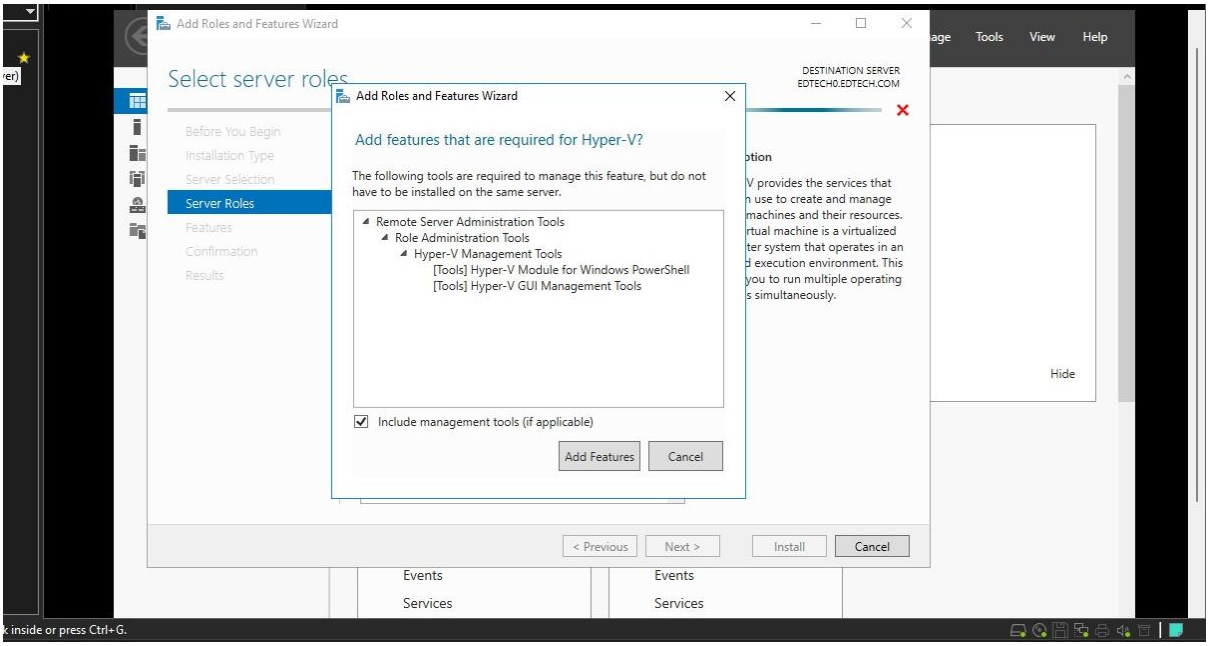
- Make sure **Role-based or Feature-based installation** is selected and Click **Next**



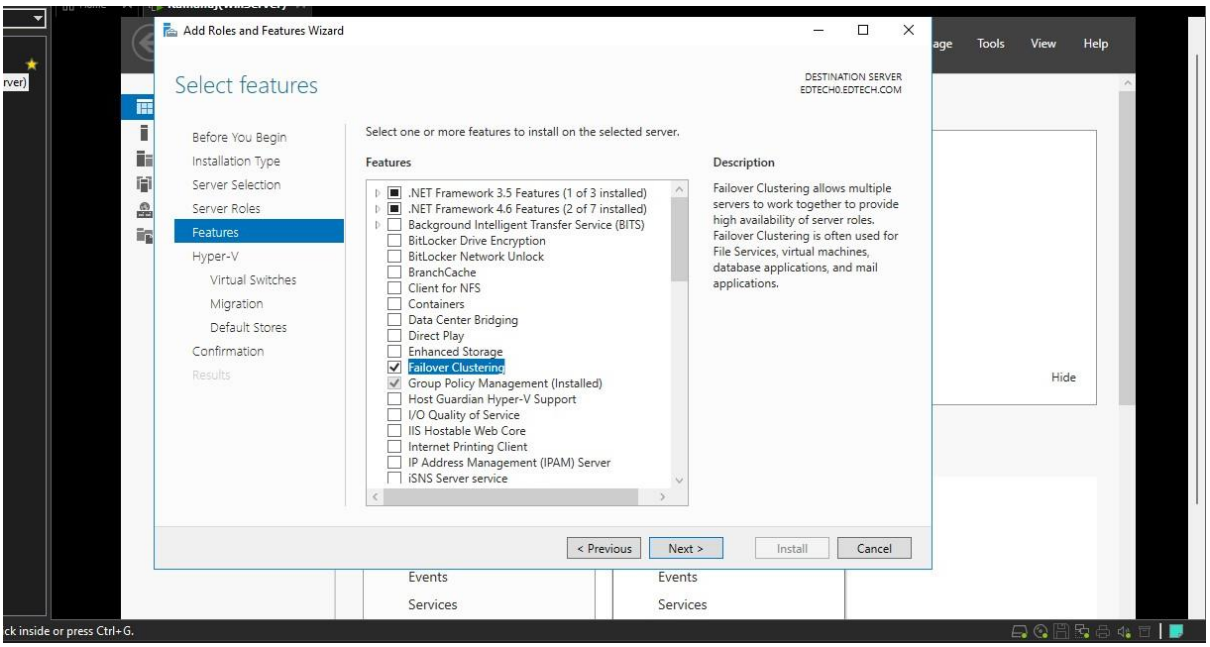
- Keep default settings and Click **Next**



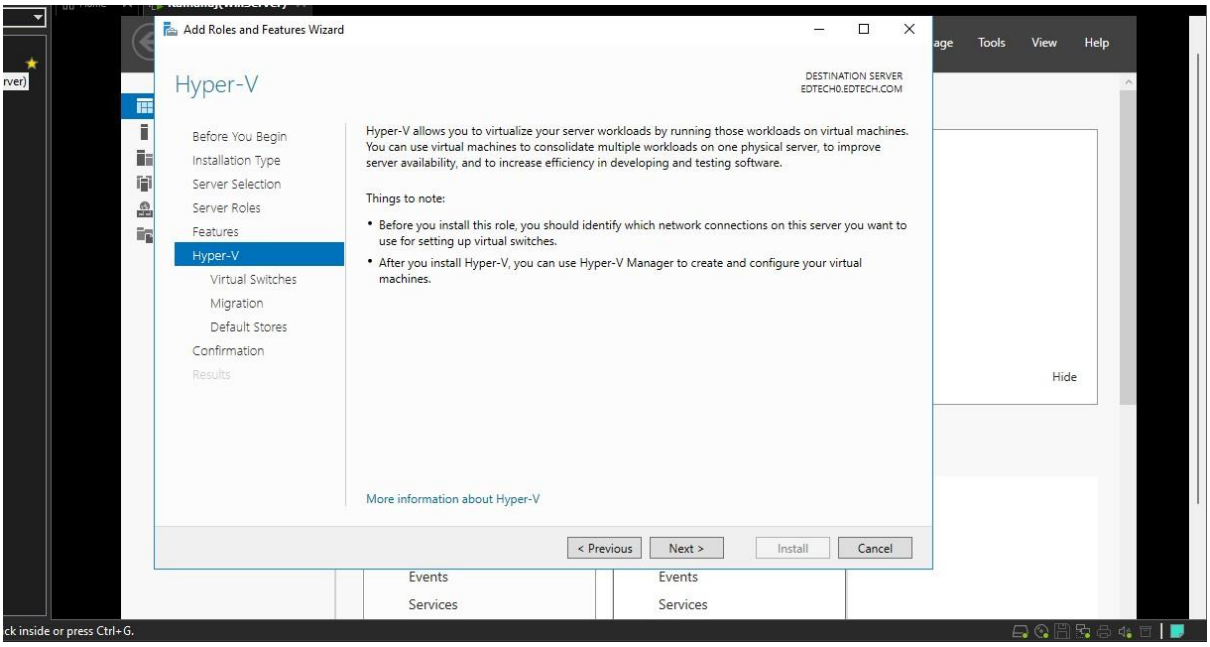
- Select **Hyper-V** and Click **Add Features** and Click **Next**



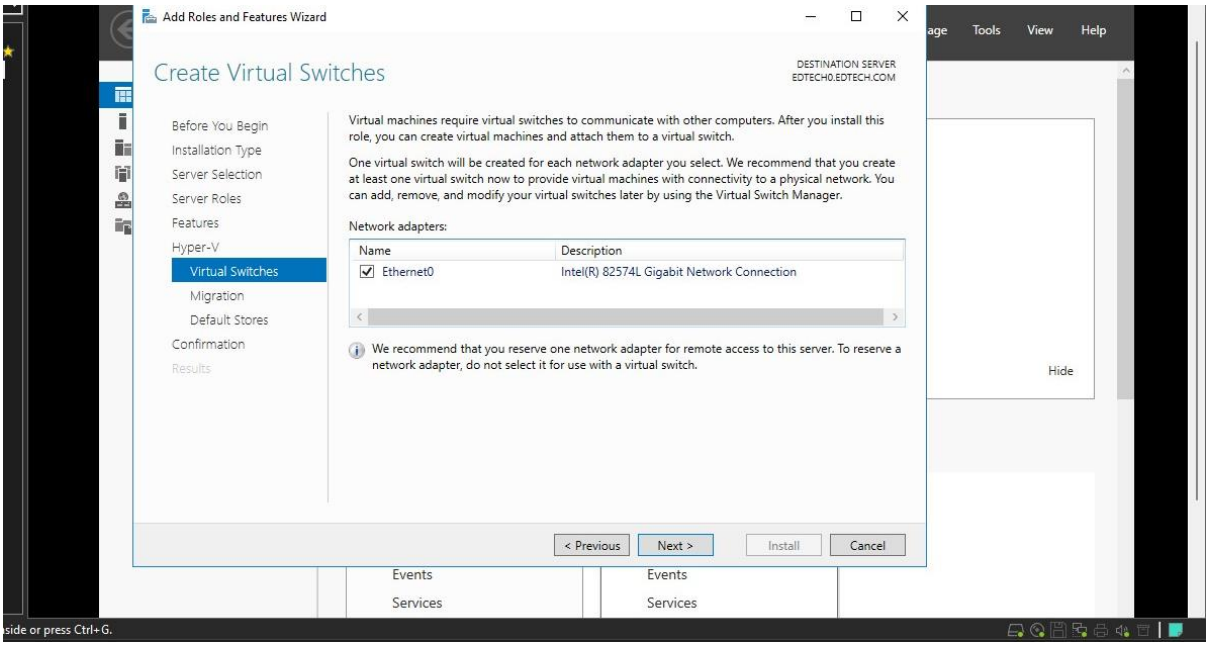
- Select **Failover Clustering** and Click **Add Features** and Click **Next**
- Note: Make sure **Group policy management** is also selected



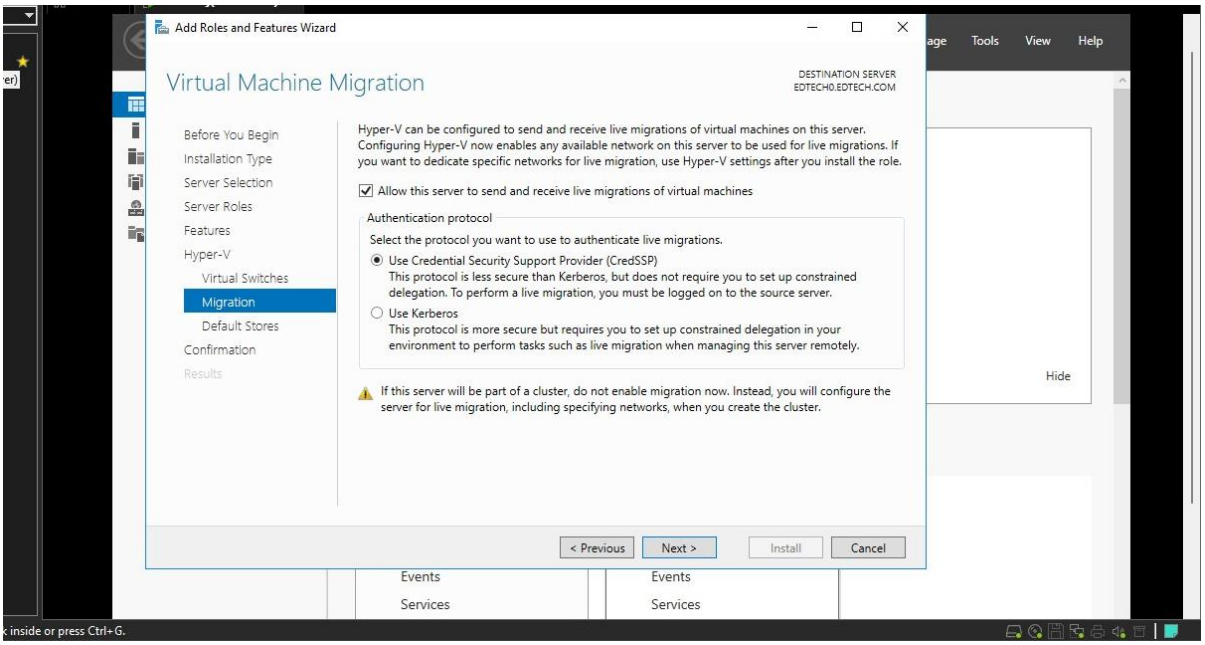
- Keep default settings and Click **Next**



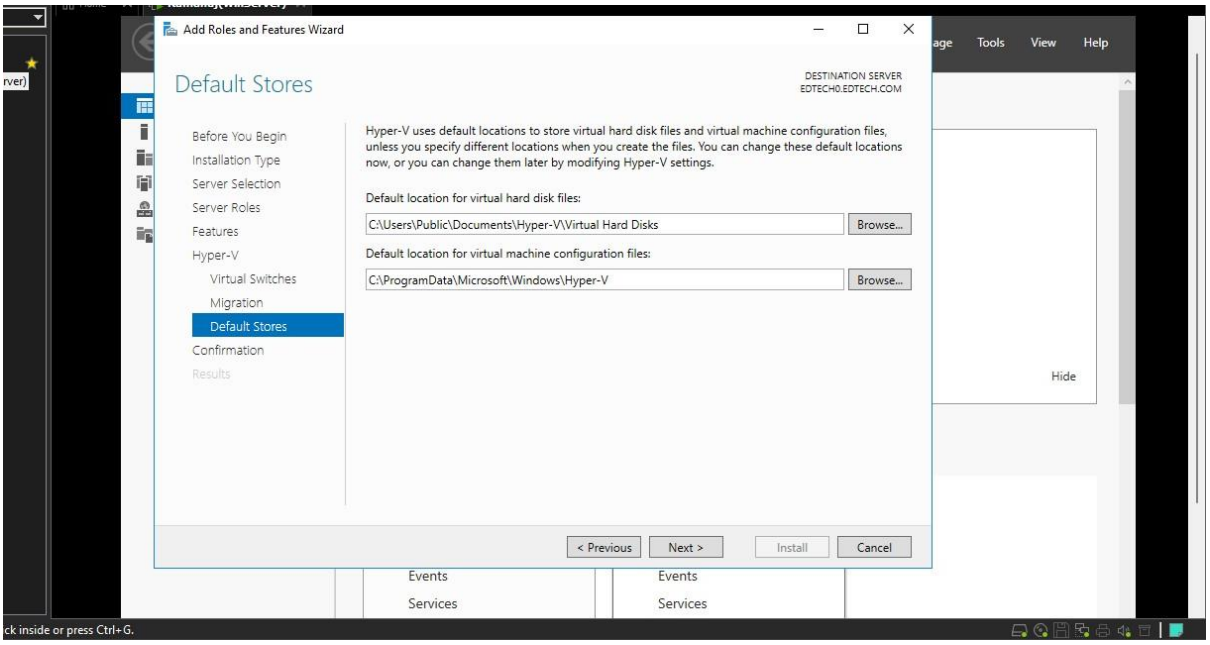
- Select **Ethernet0** and Click **Next**



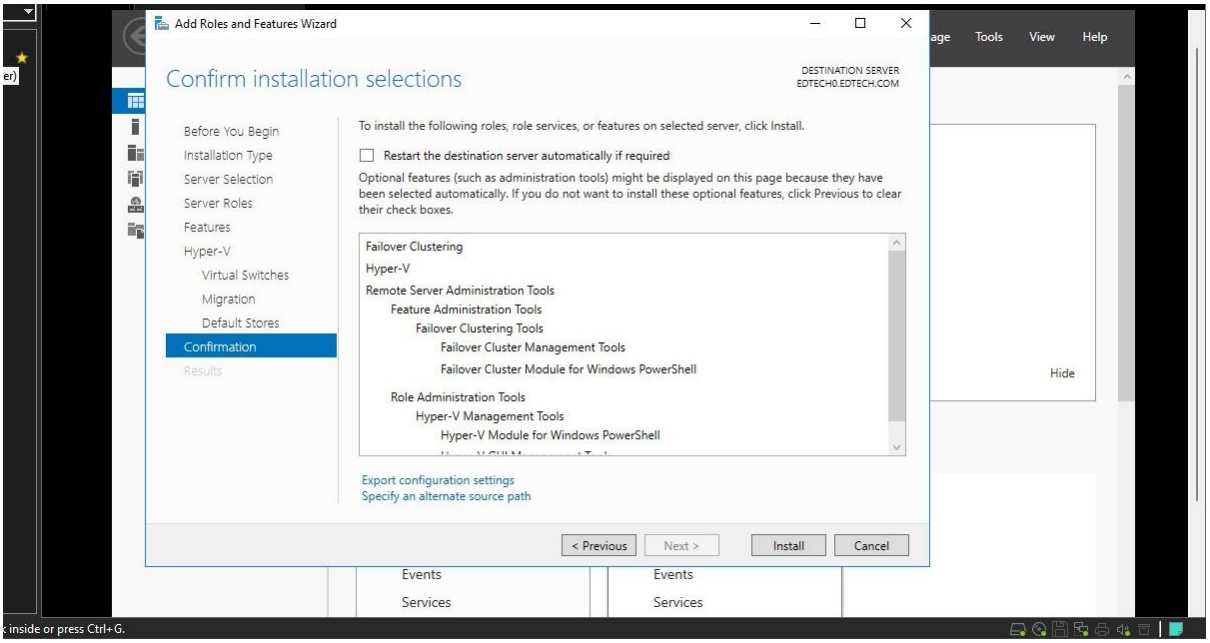
- Select **Allow to server to send and receive Live Migration of virtual machines**



- Keep default setting and Click **Next**

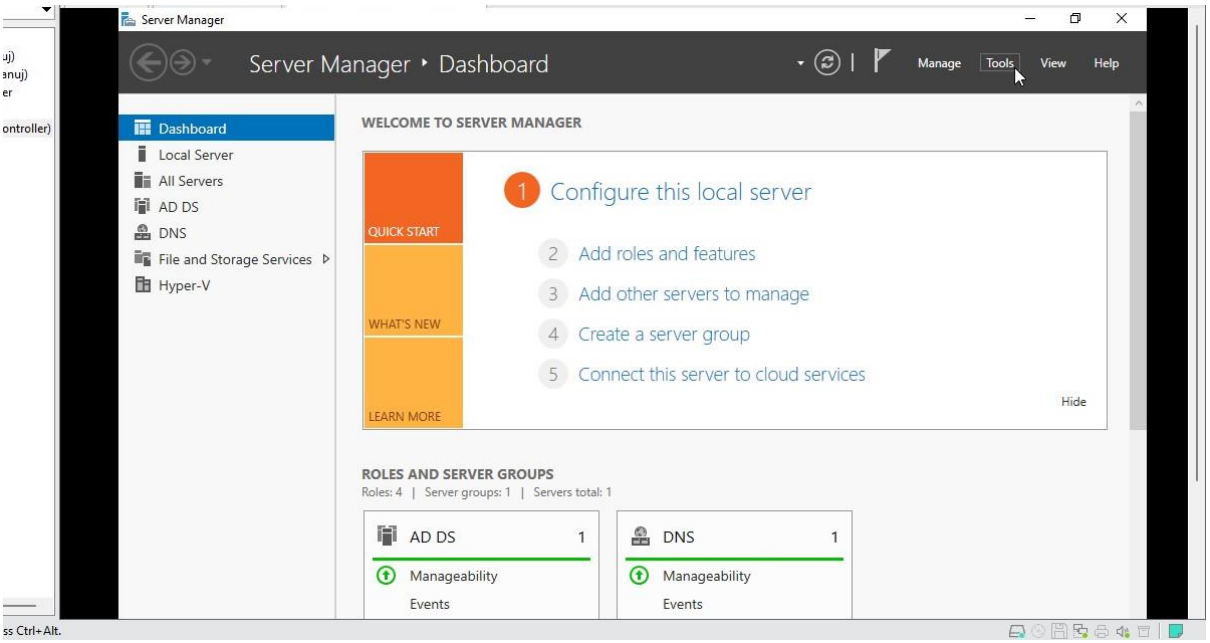


- Click on **Install,** After installation is complete restart the machine for the changes to be taken place.

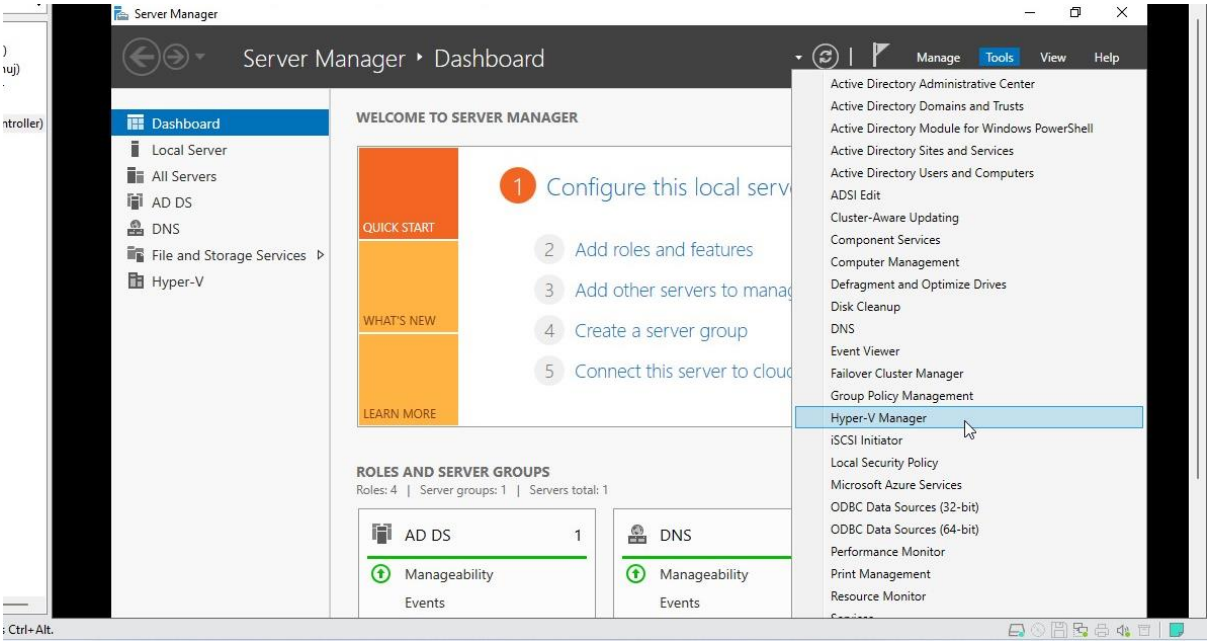


Step 2: Creating a Virtual Machine in Hyper-V

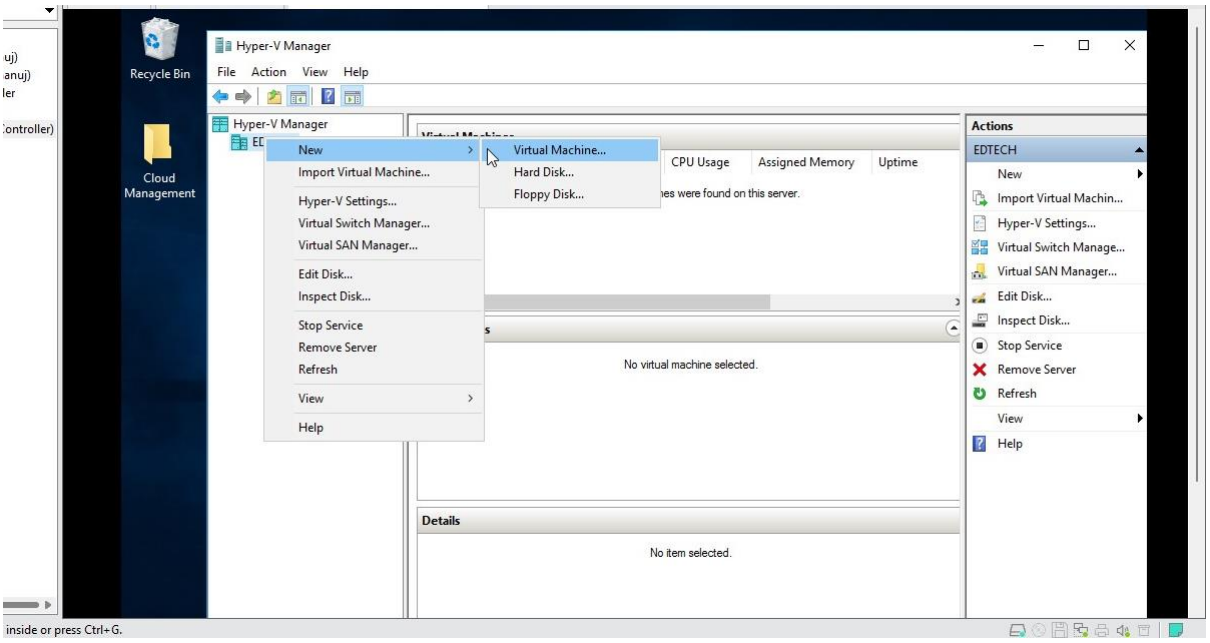
- Within Server Manager Click on **Tools**



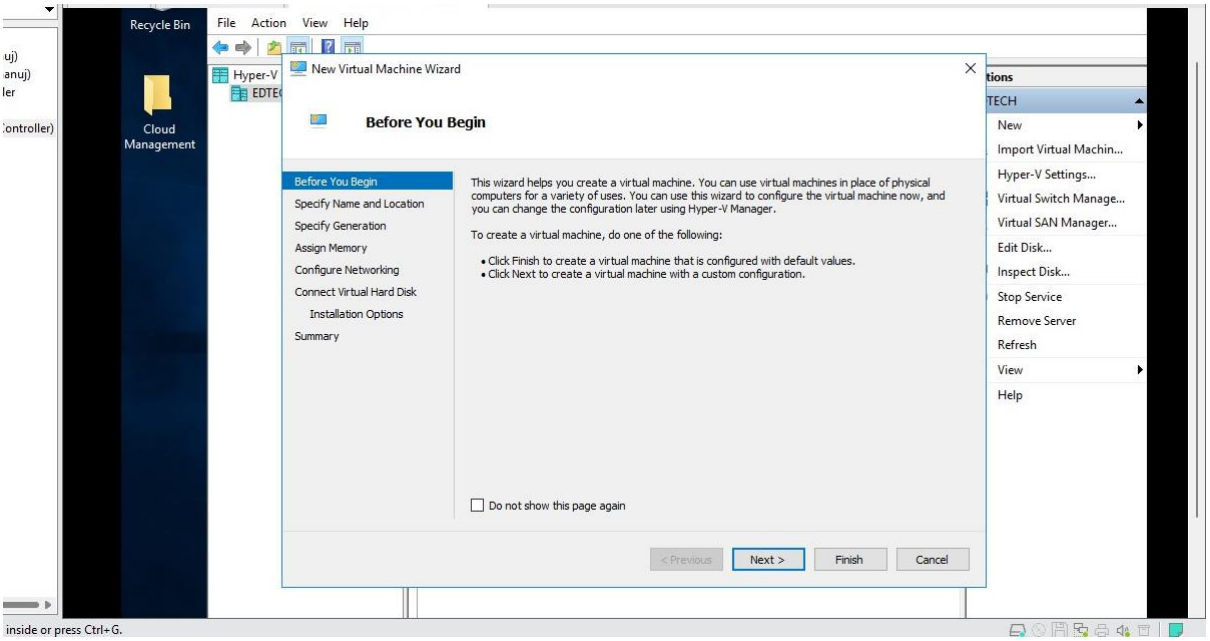
- Select **Hyper-V Manager**



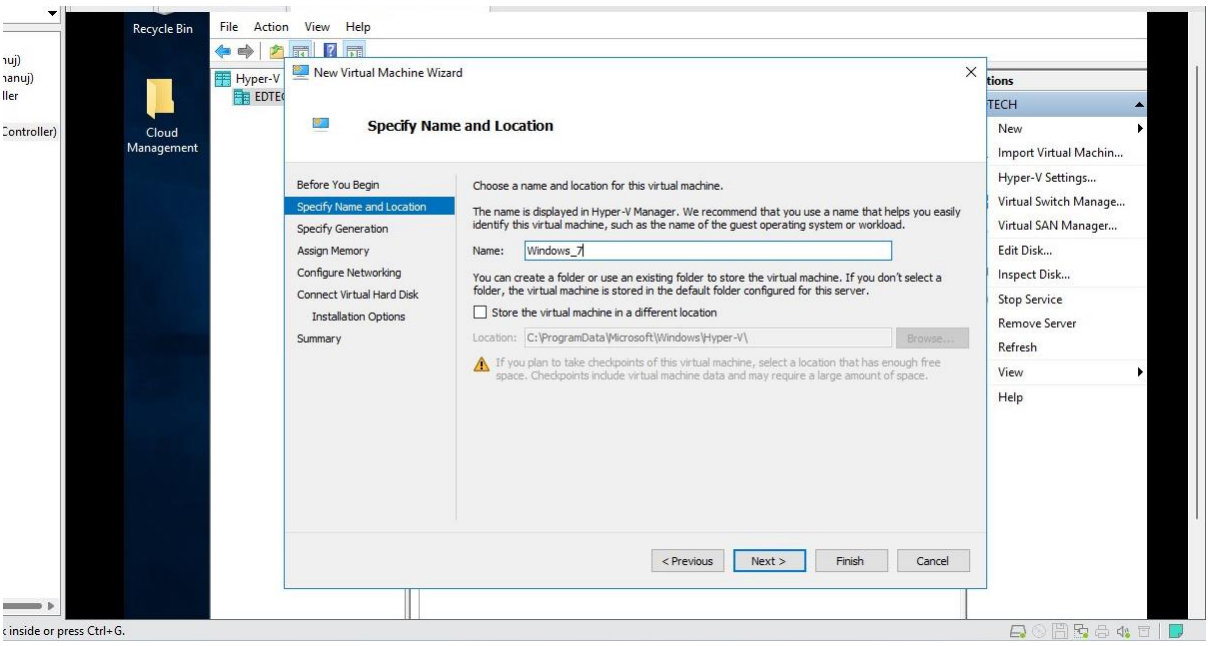
- Within Hyper-V Manager Right-Click on your **Domain Controller** and Select **New** and Click on **Virtual Machine**



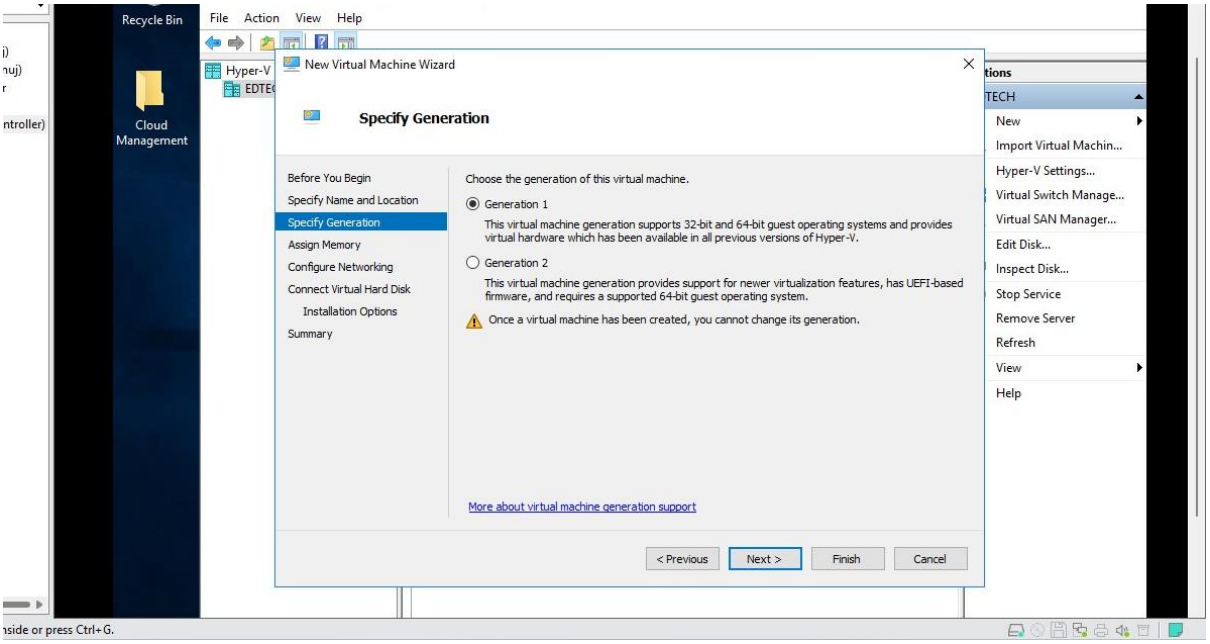
- Click **Next**



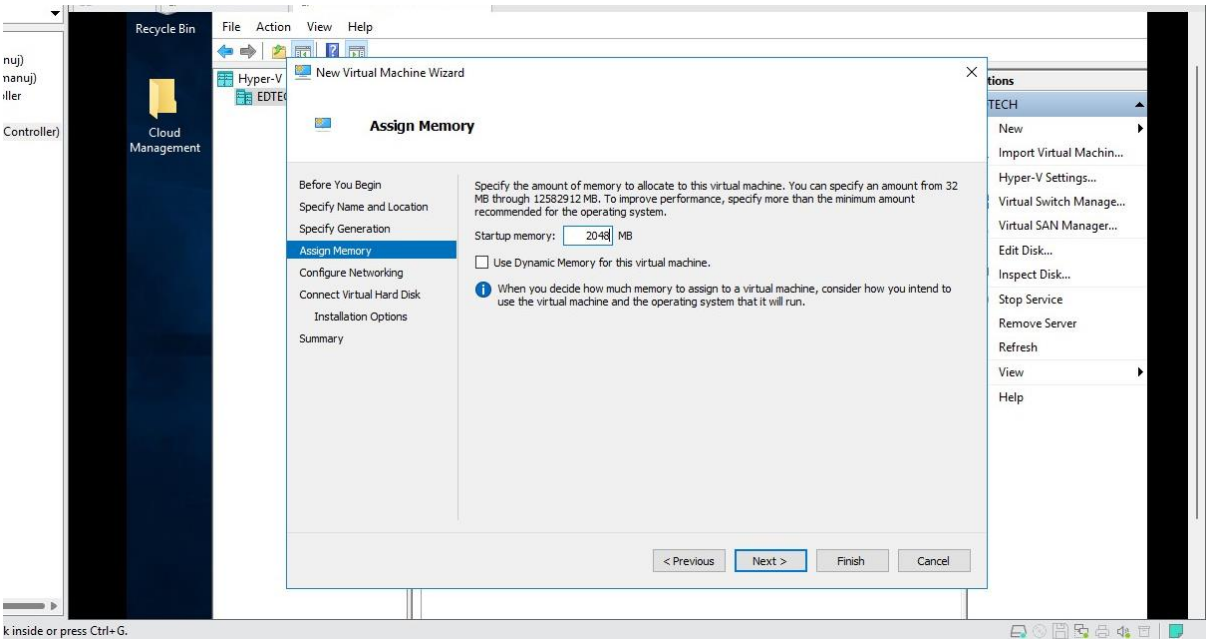
- Name your virtual machine and Click **Next**



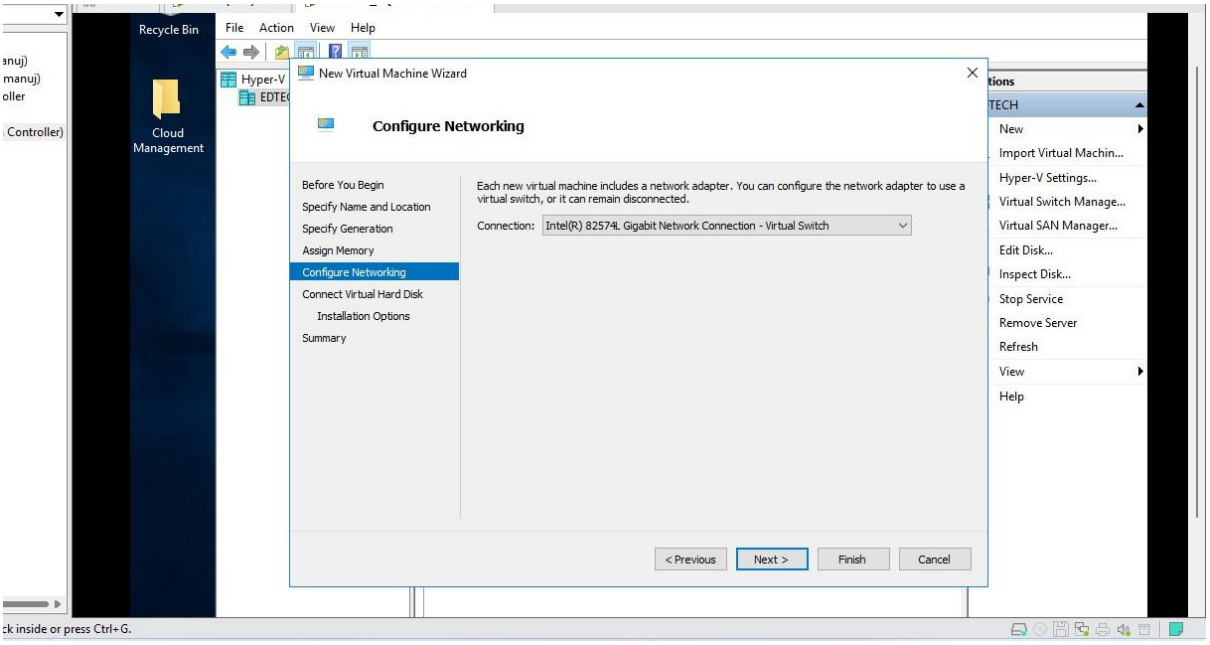
- Select **Generation 1**and Click **Next**



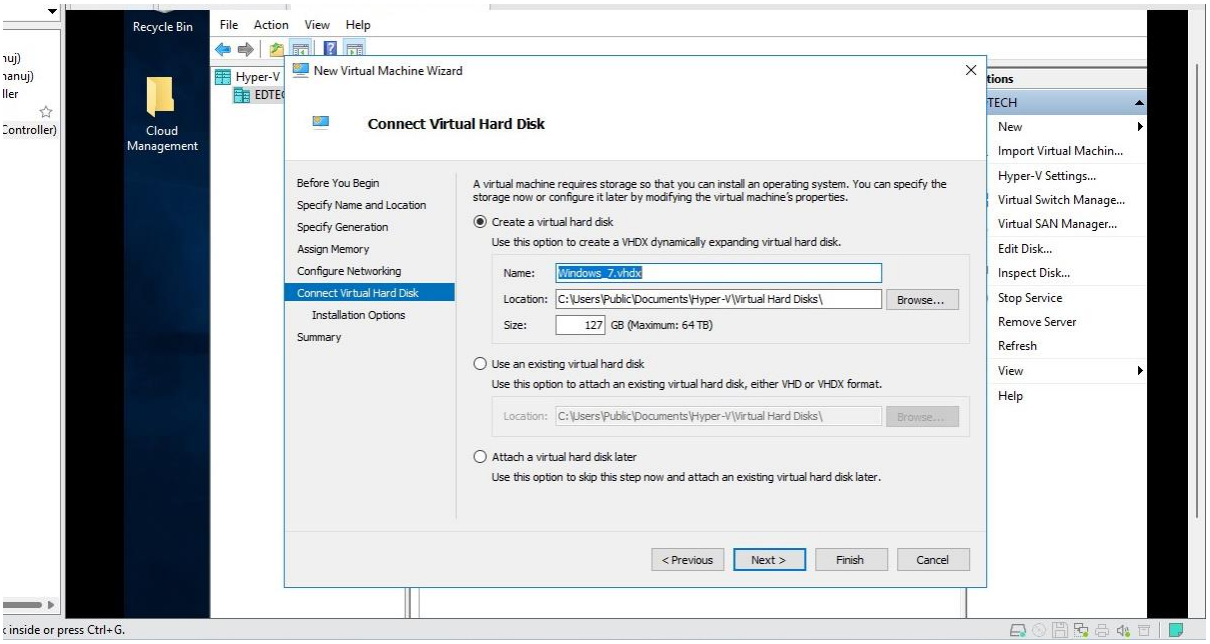
- Select Start-up memory as **2048 MB** and Click **Next**



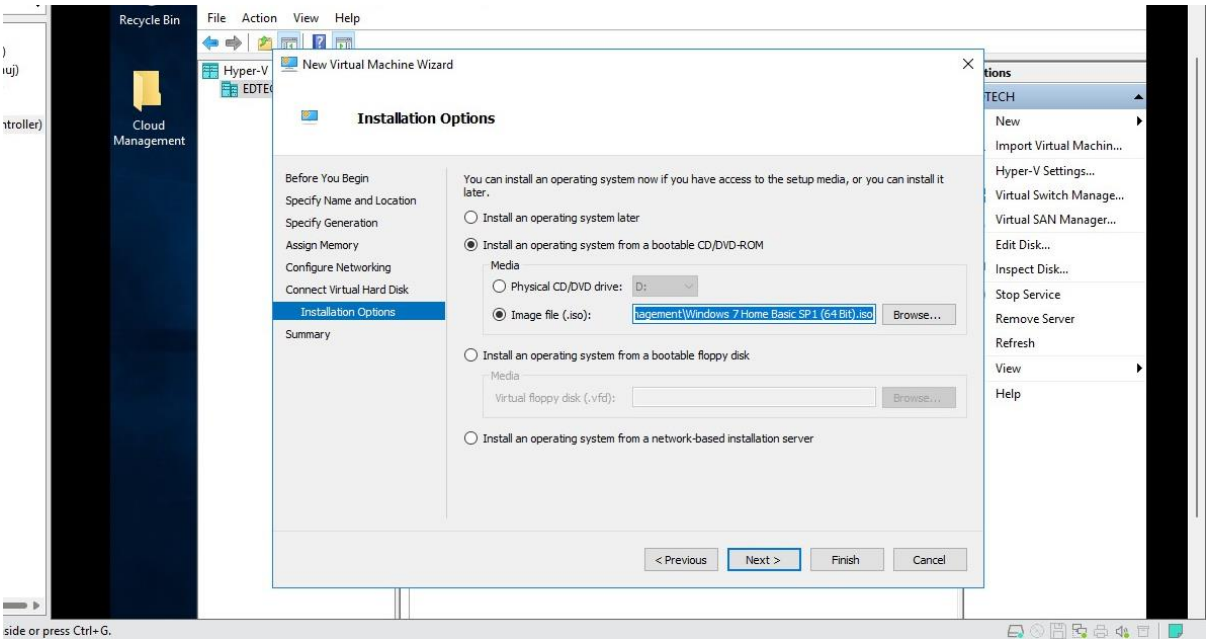
- In Connection Select your **network adapter** (Here it is Intel (R) Gigabit) and Click **Next**



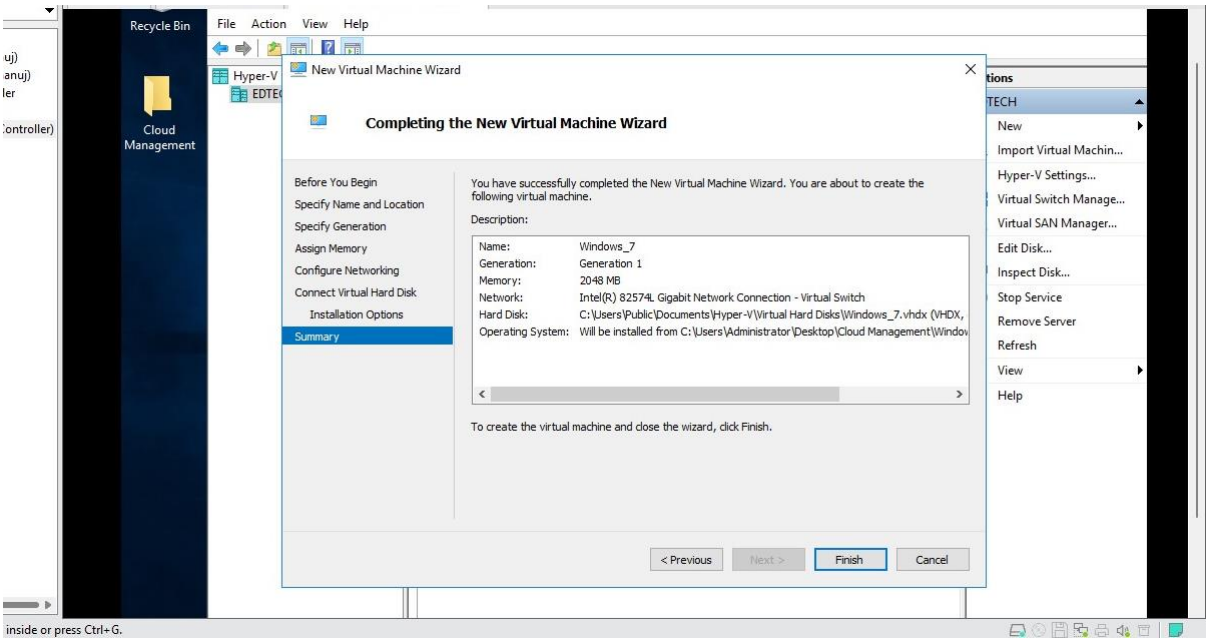
- Keep default values and Click **Next**



- Select **Install an operating system from a bootable CD/DVD ROM** and Click on **Image file** (.iso) and browse for your Windows iso file and Click **Next**



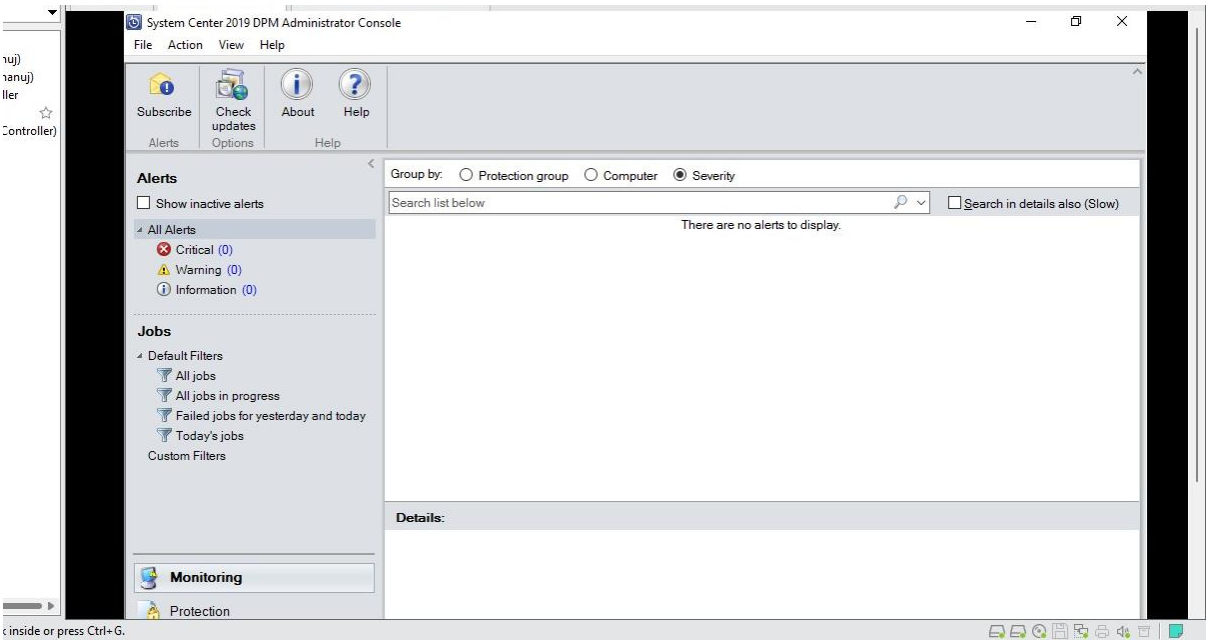
- View the summary of your virtual machine and Click **Next**



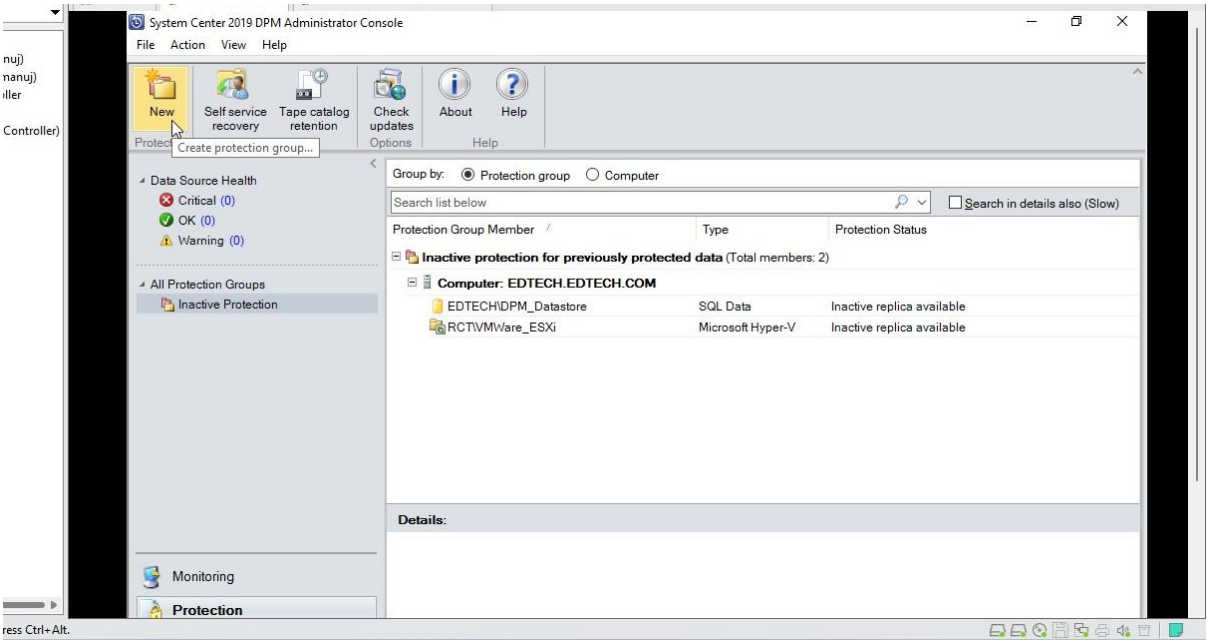
- To ensure it works **Power On** the Machine

Step 3: Creating a Protection Group for your Hyper-V Virtual Machine

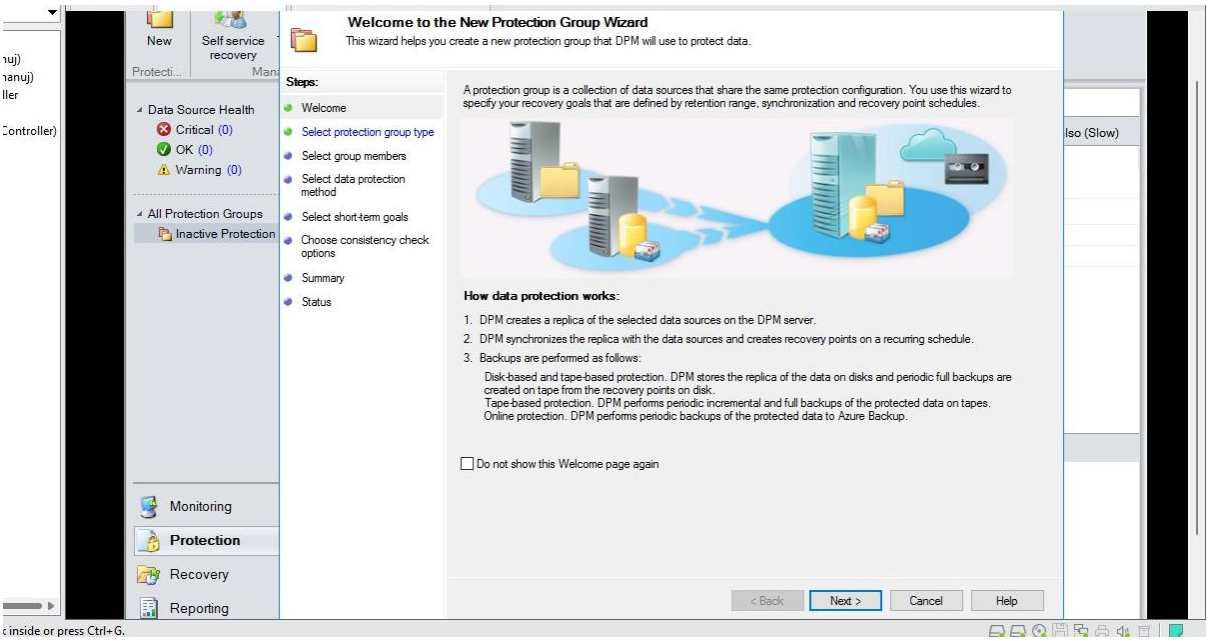
- **Power Off** your Machine and Switch over to the **SCDPM (User)** VM and Open the **DPM manager**



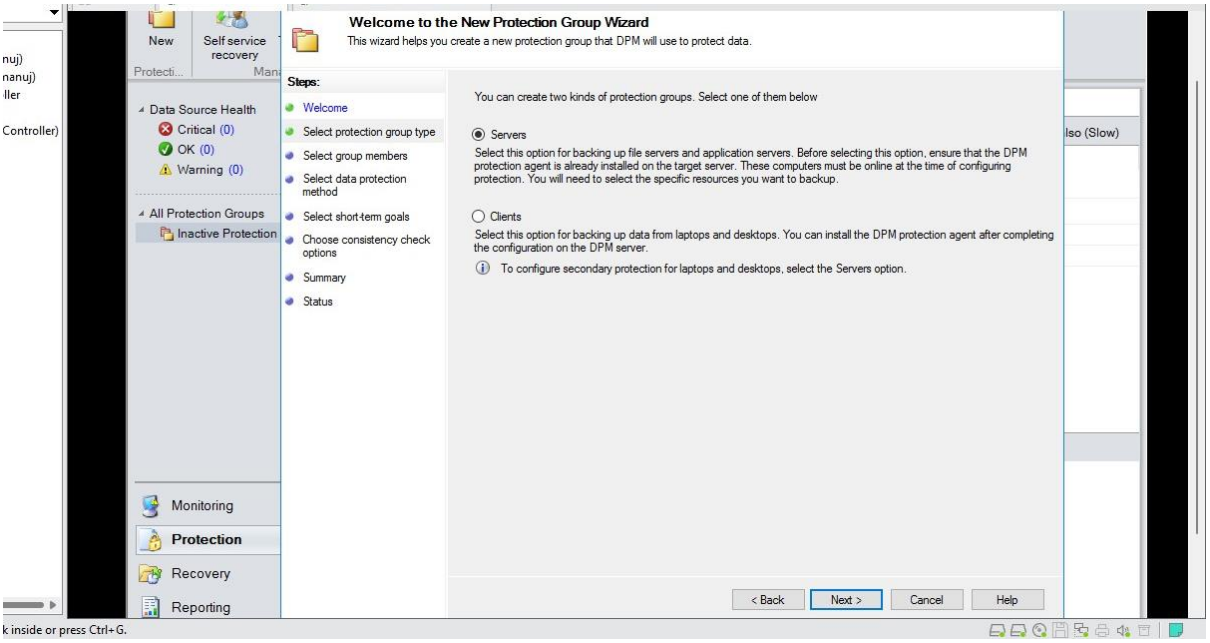
- Click on the **Protection** Tab and Select **New**



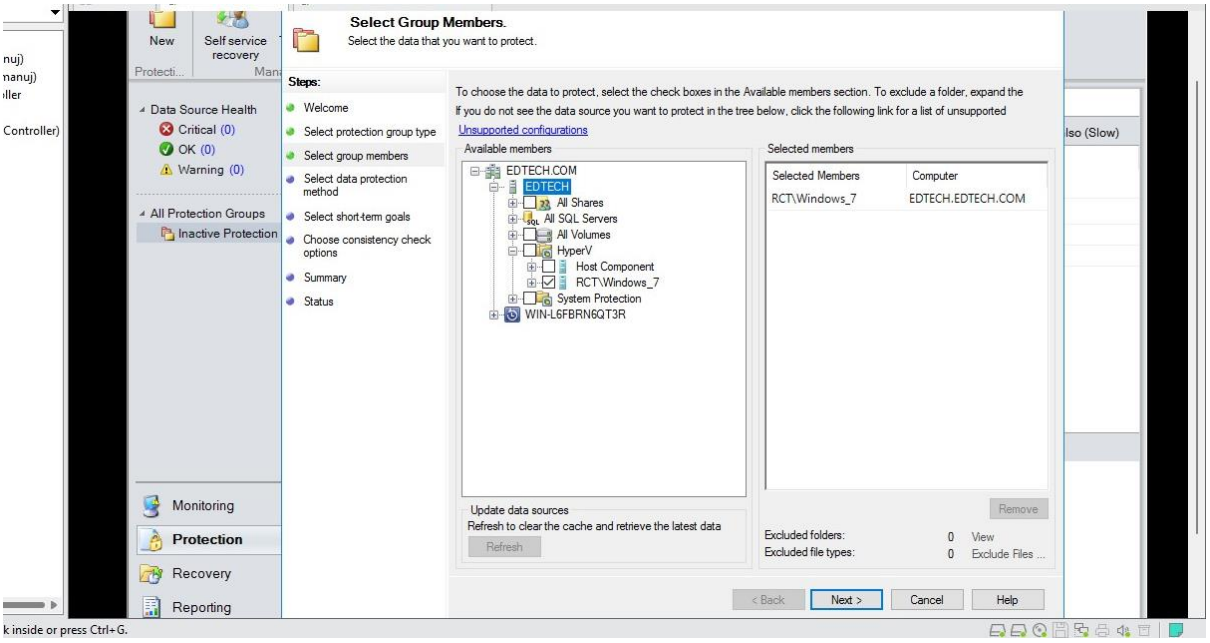
- Click **Next**



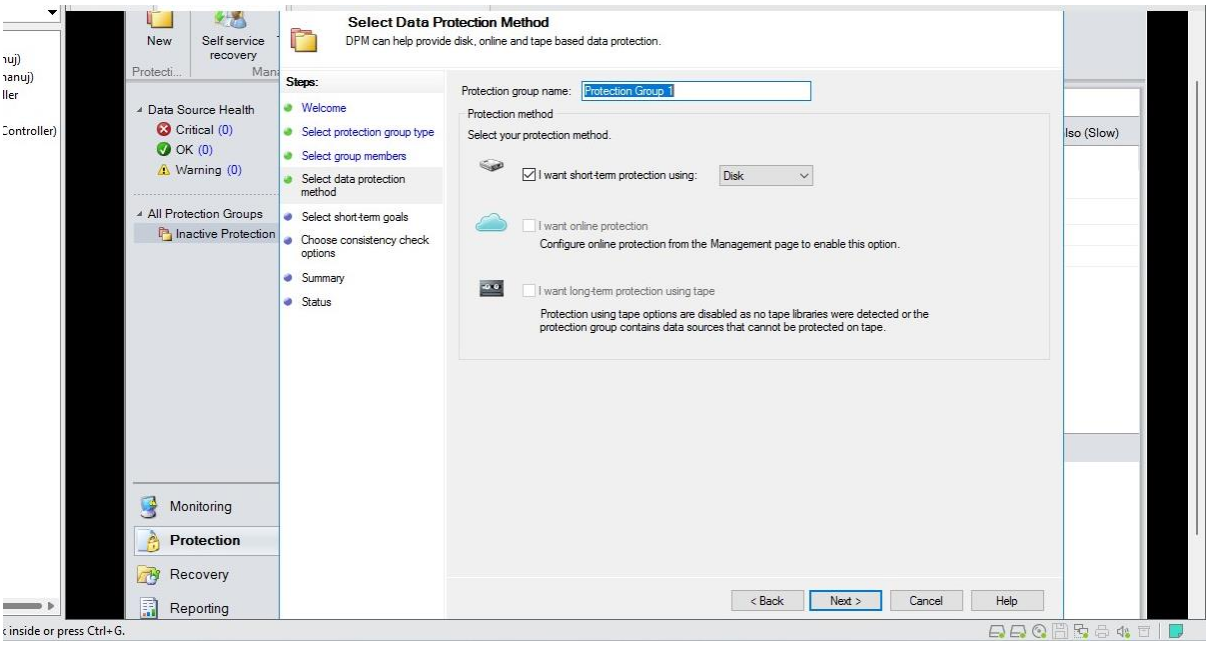
- Select **Servers** and Click **Next**



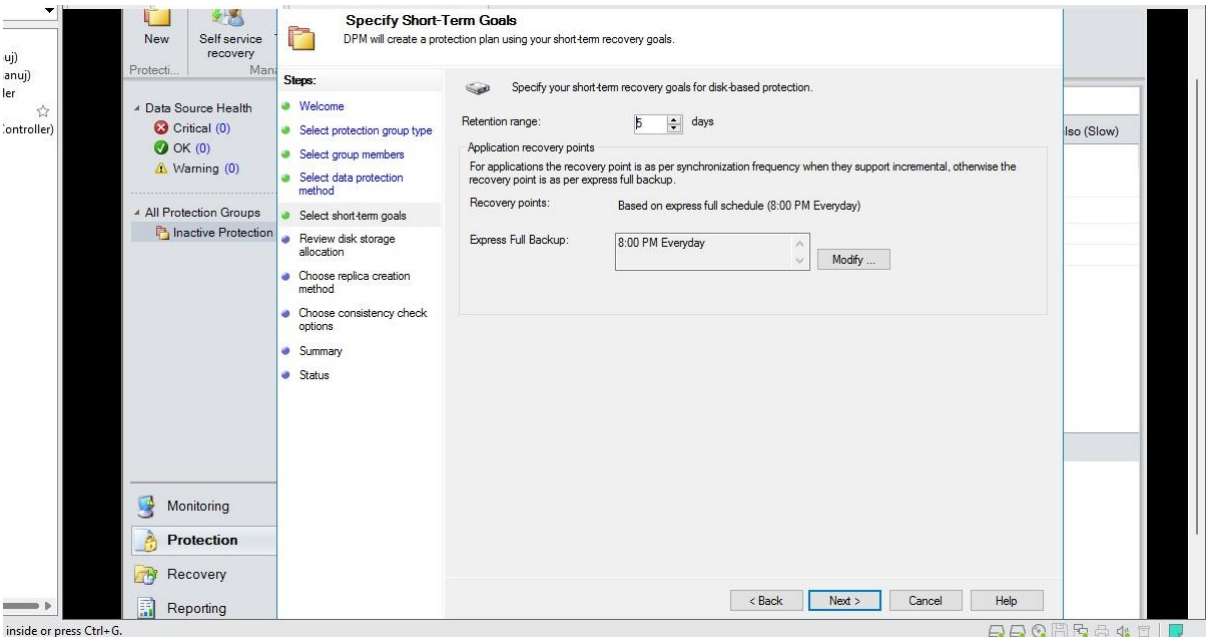
- Select **EDTECH** and Click on **Refresh,** after refresh Open **Hyper-V** and Click on your **virtual machine** (Here it is RCT\Windows_7) and Click **Next**



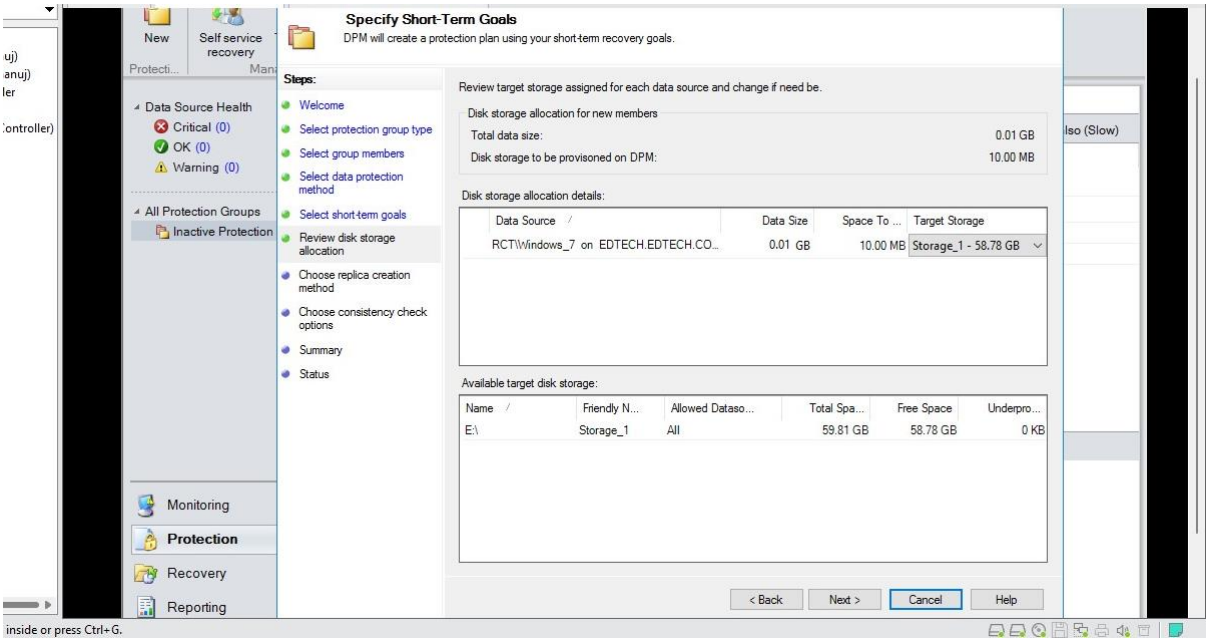
- Name your **Protection Group** and Select **I want short term protection** and Select **Disk** and Click **Next**



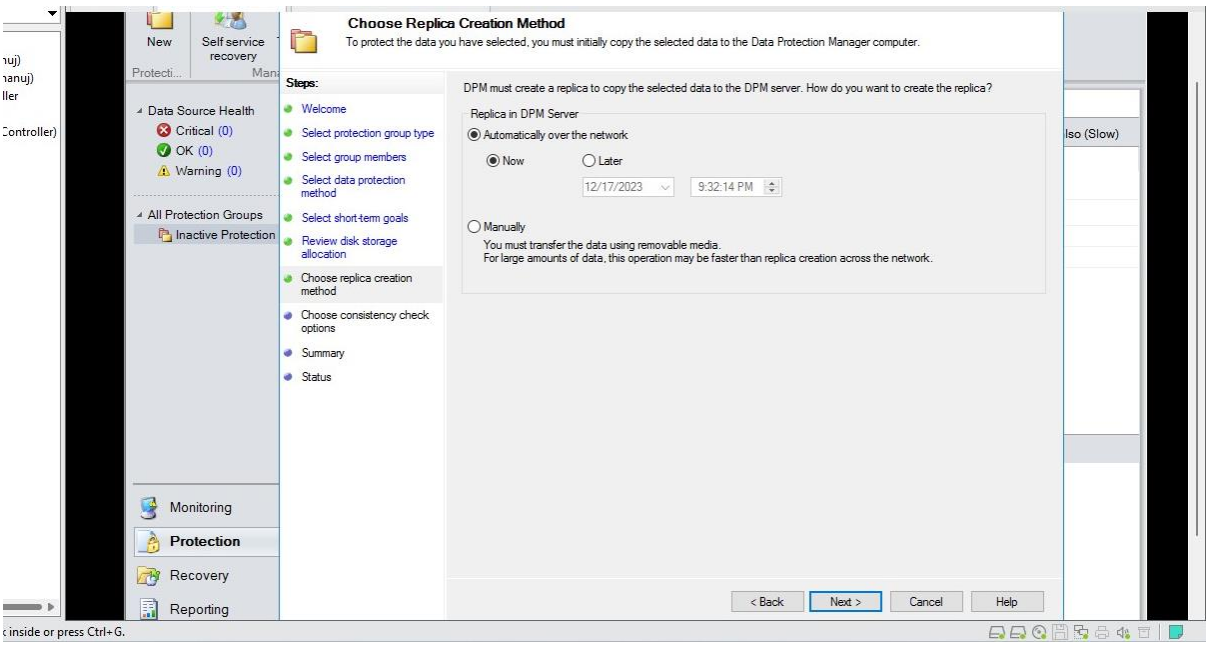
- Keep default values and Click **Next**



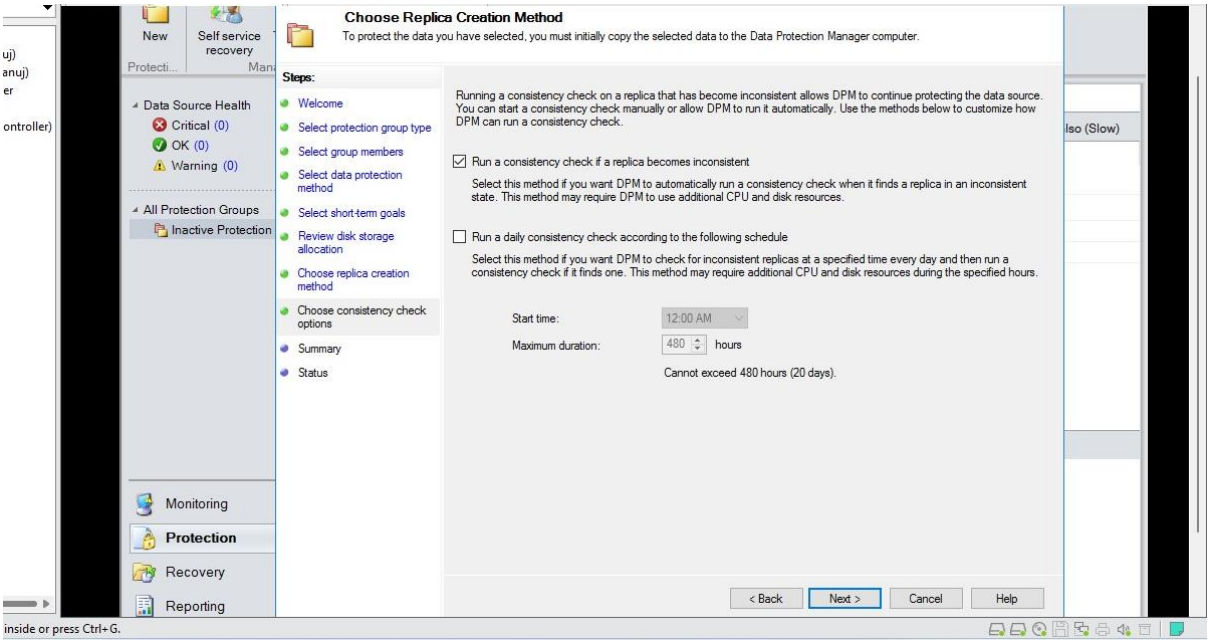
- Click **Next**



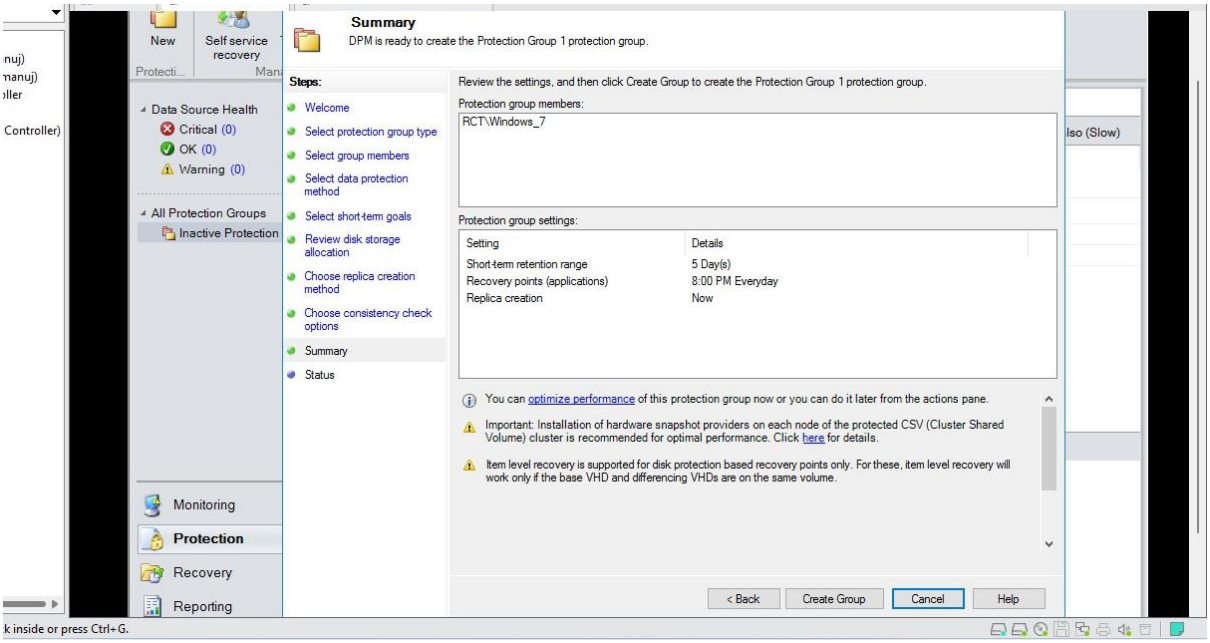
- Click **Next**



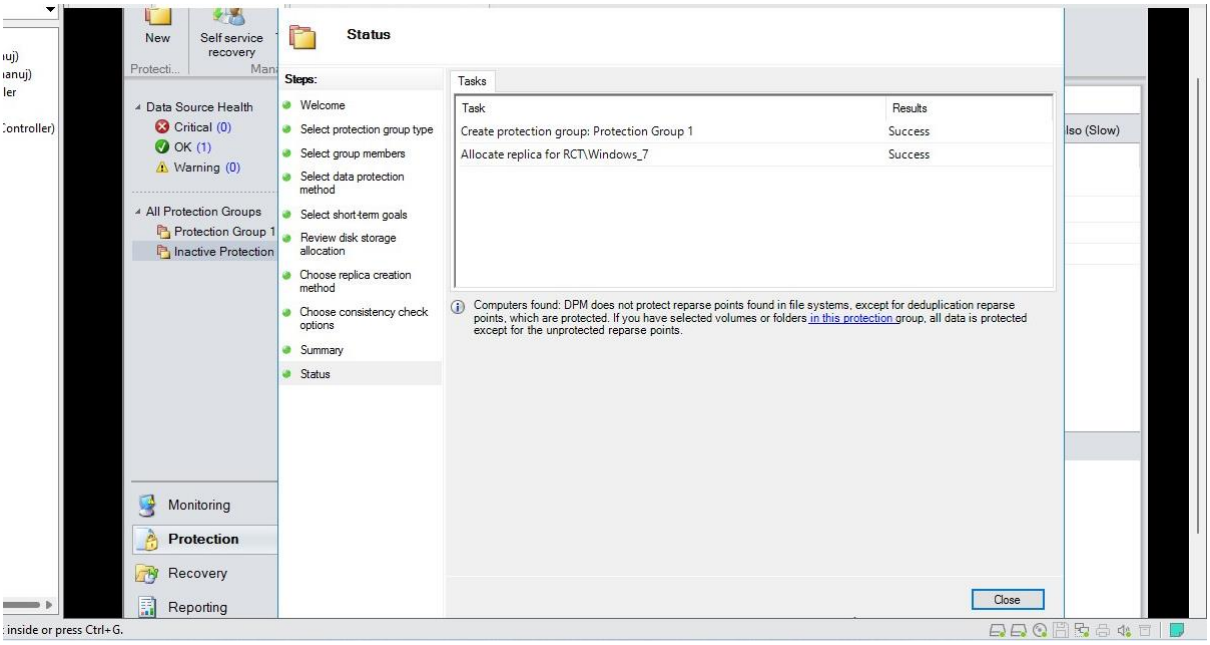
- Select **Run a consistency check if a replica becomes inconsistent** and Click **Next**



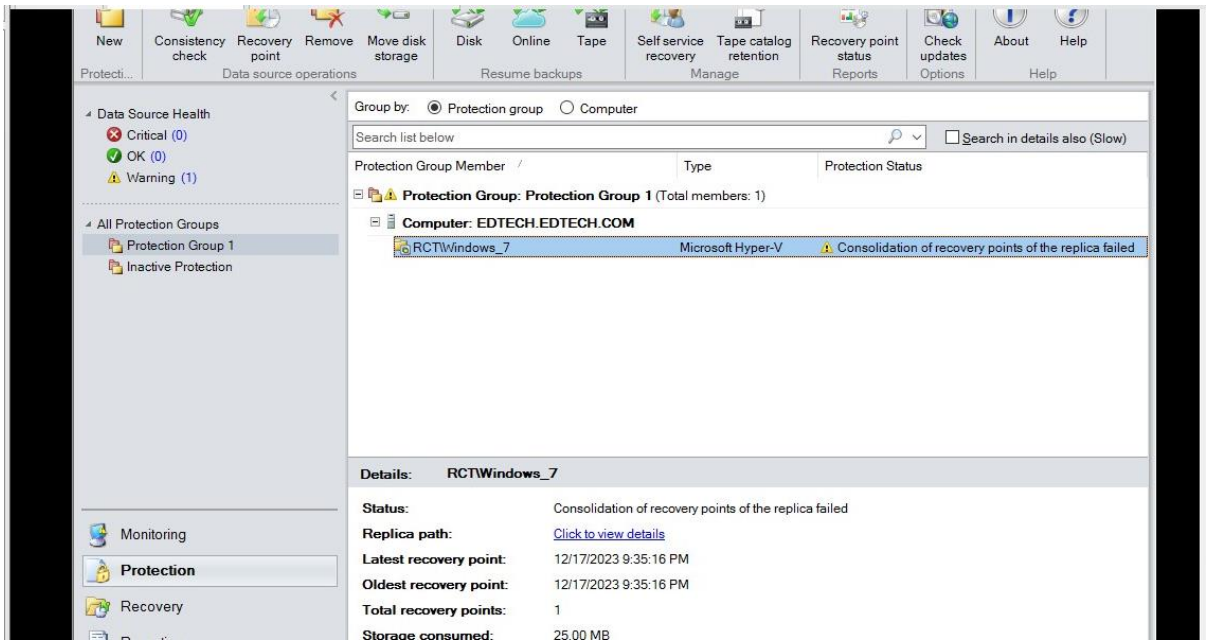
- View the summary of your group and Click **Create Group**



- After your Protection Group has been created, Click **Close**



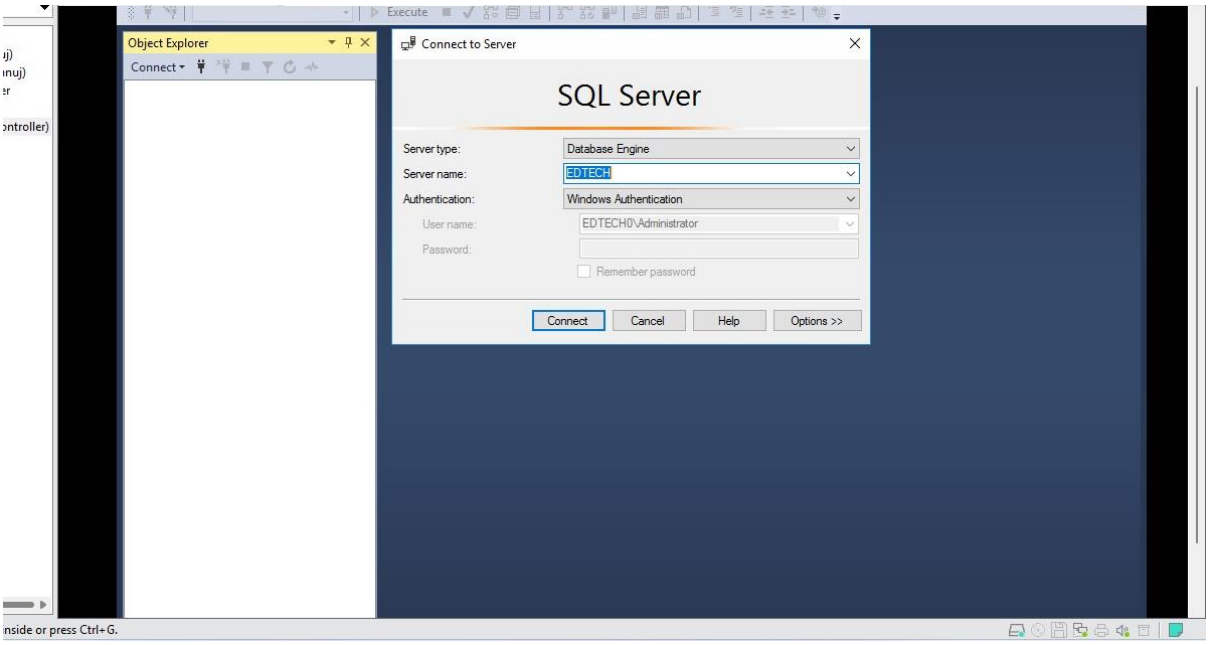
- You can now see that your Protection Group for Hyper-V has been created



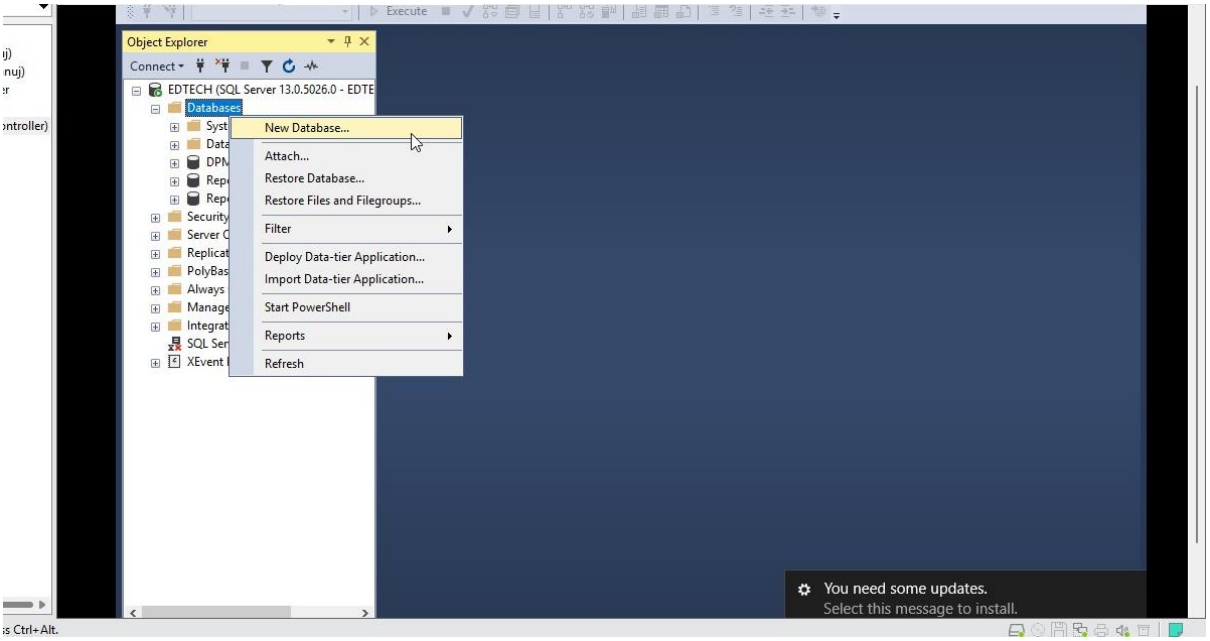
7-B: Back up SQL Server with DPM

Step 1: Create an SQL Database in Domain Controller

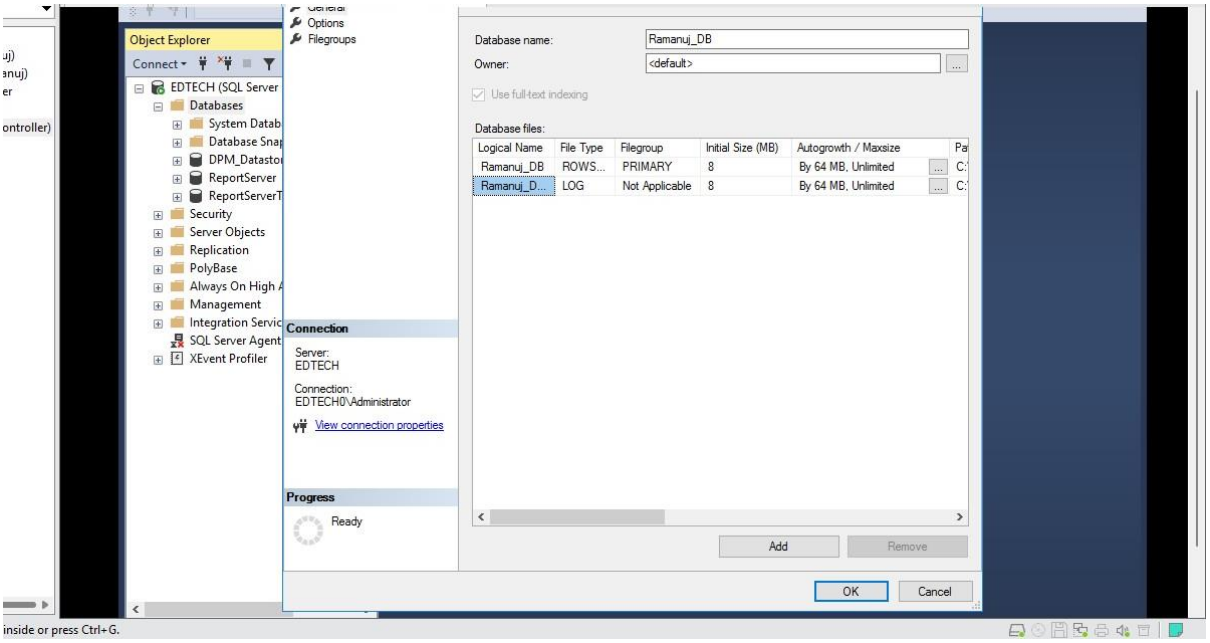
- Open **SQL Server Management Studio 18** and Click **Connect**



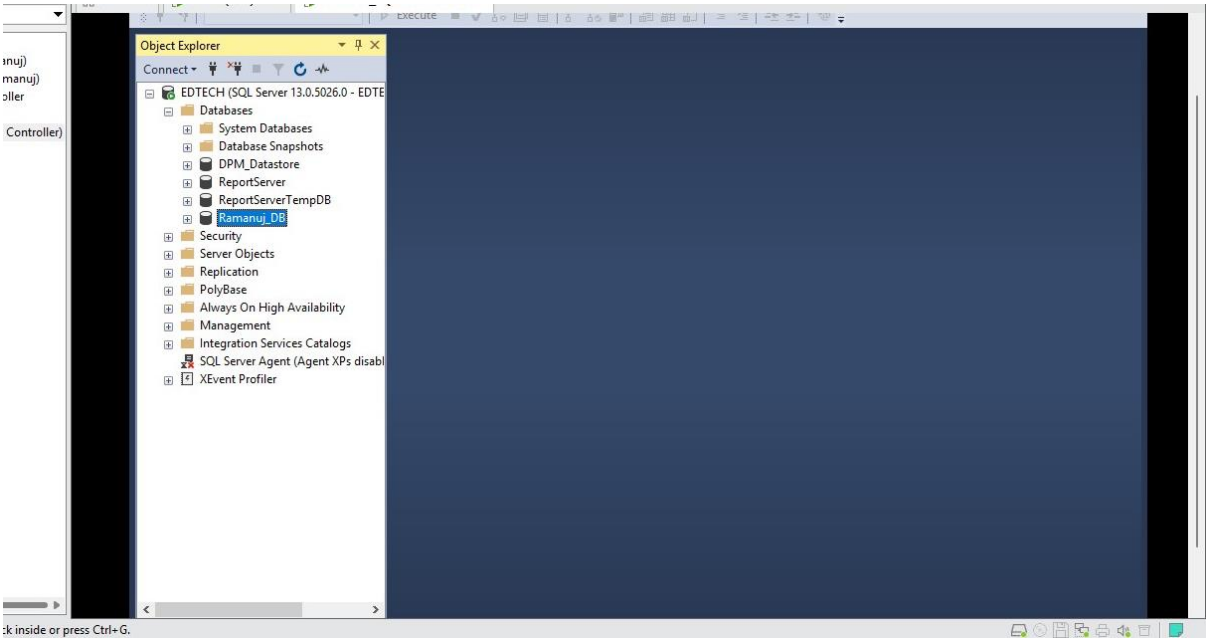
- Now Right Click on **Databases** and Select **New Database**



- Give the database a **name** (Here it is VIQAR_DB) and Click **Ok**

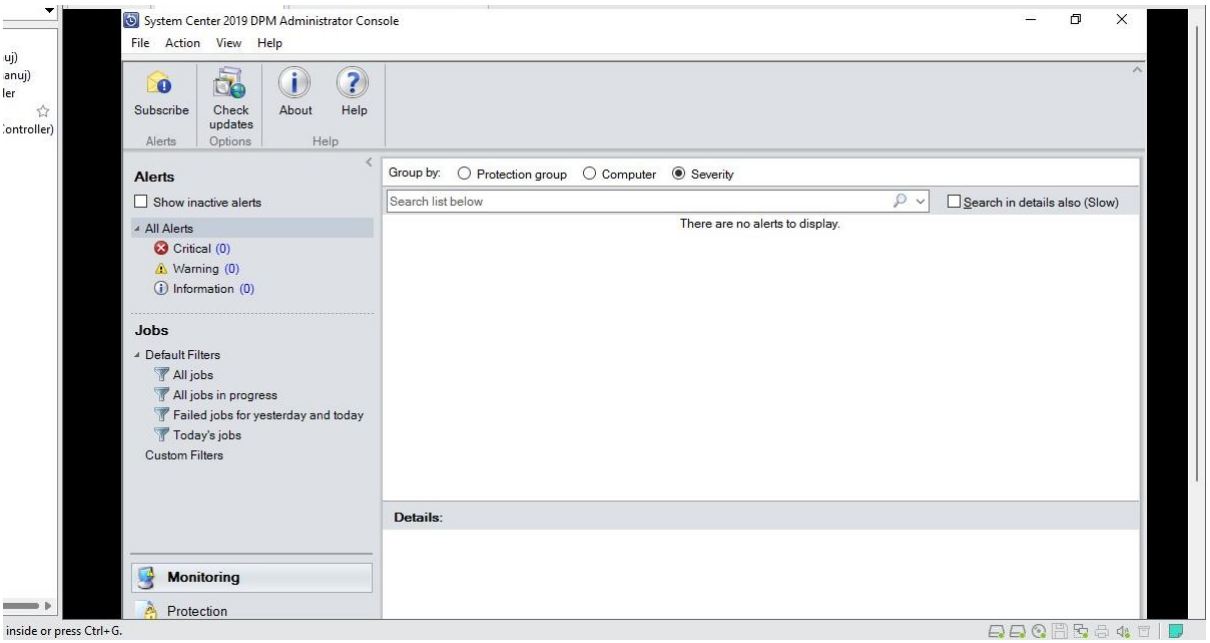


- Your database has been successfully created

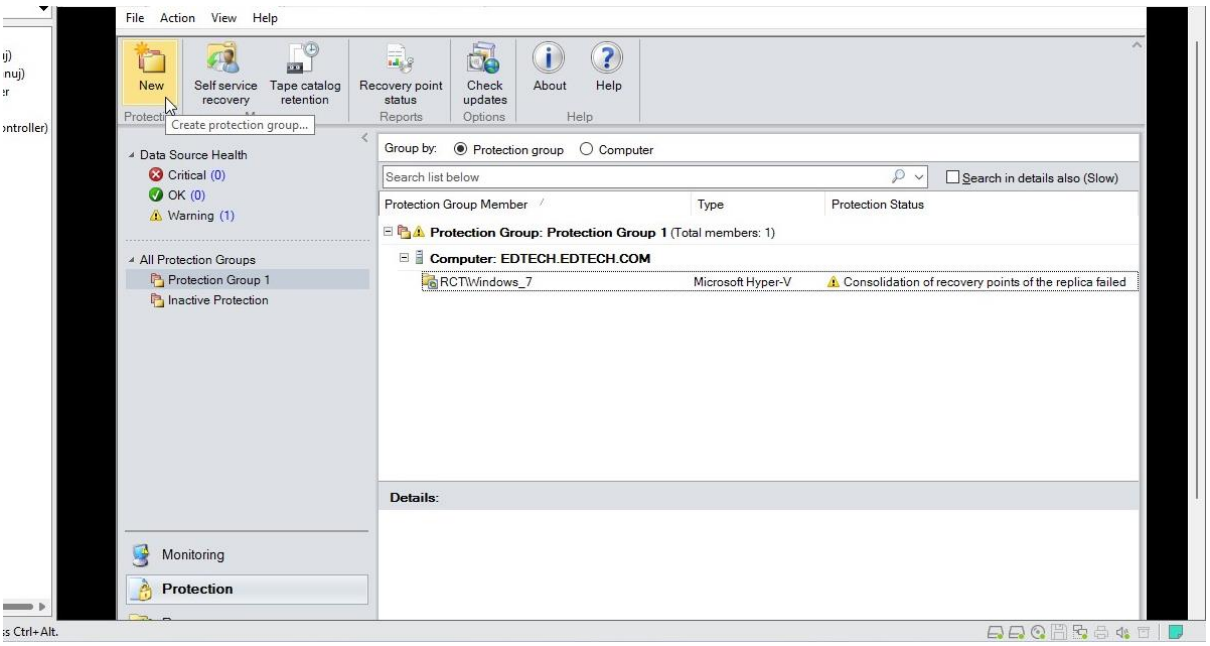


Step 2: Creating a Protection Group for the Newly Created SQL Database

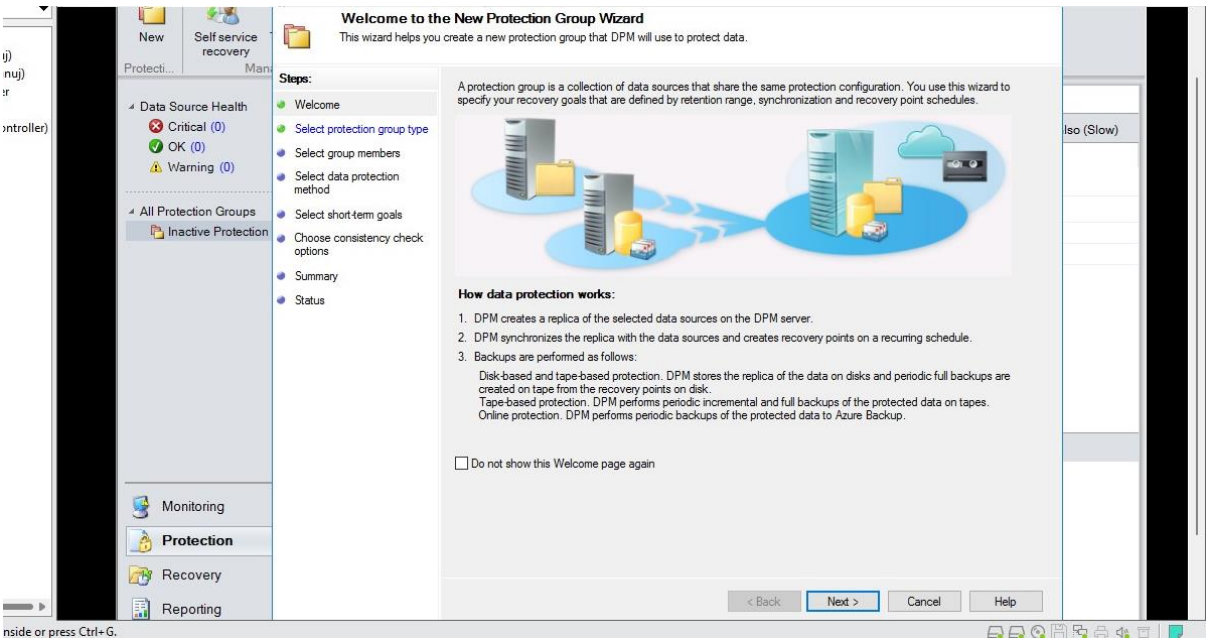
- Switch over to the **SCDPM (User)** VM and Open the **DPM manager**



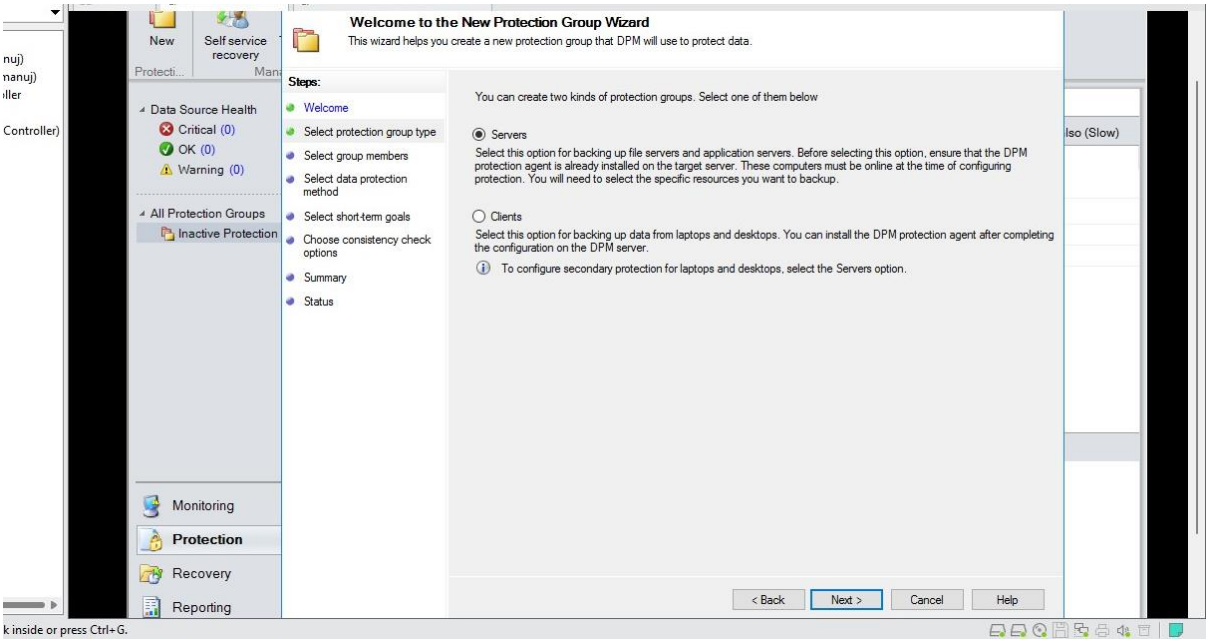
- Click on the **Protection** Tab and Select **New**



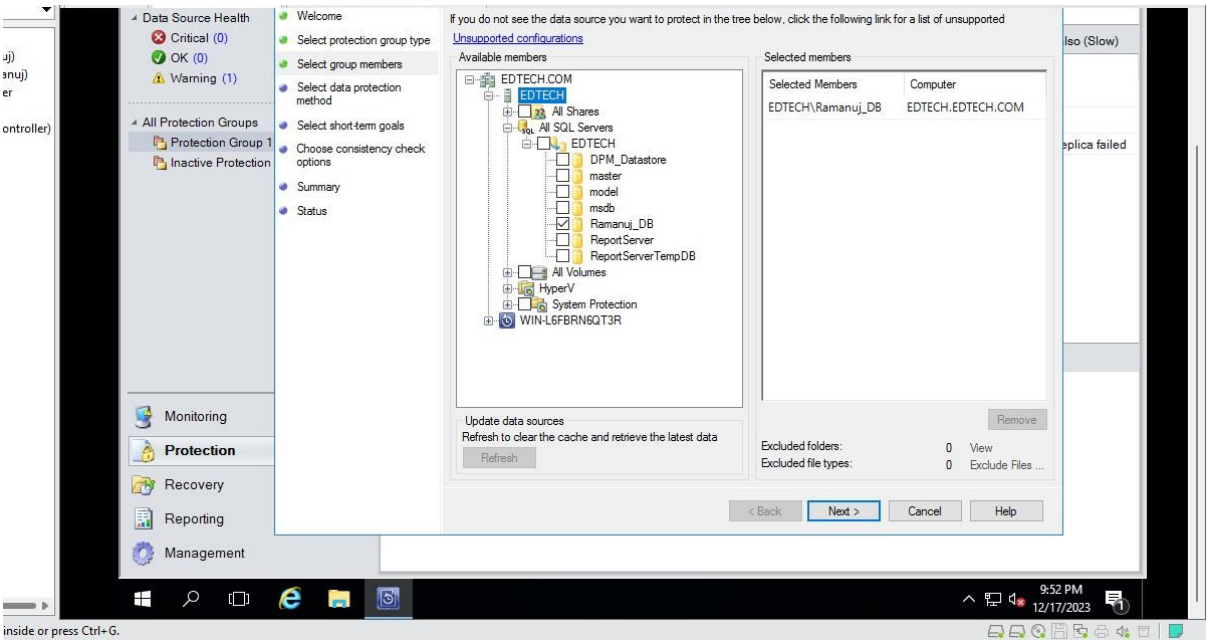
- Click **Next**



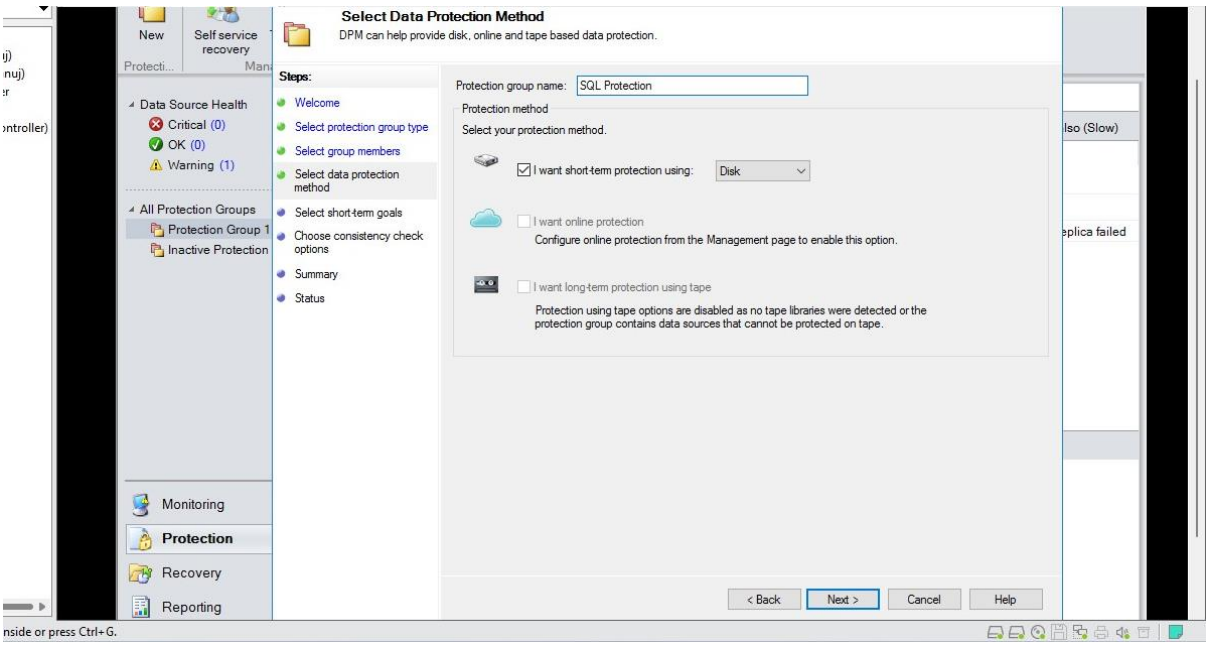
- Select **Servers** and Click **Next**



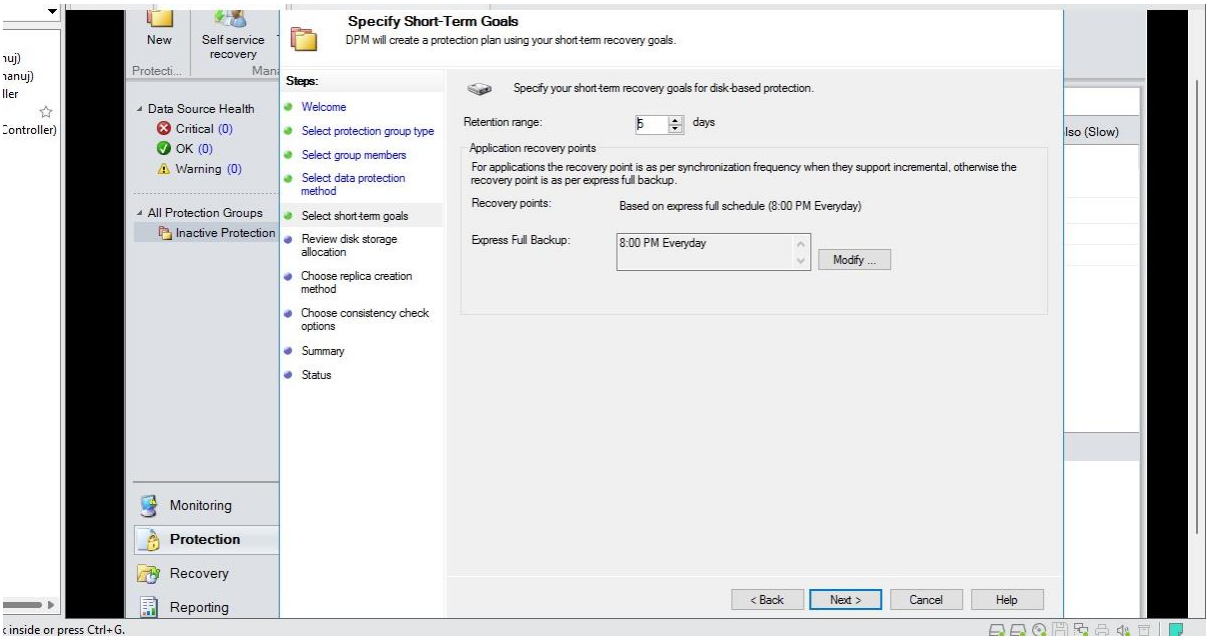
- Select **EDTECH** and Click on **Refresh,** after refresh Open **All SQL Server** and Click on **EDTECH** and Click on your newly created **SQL Database** (Here it is VIQAR_DB) and Click **Next**



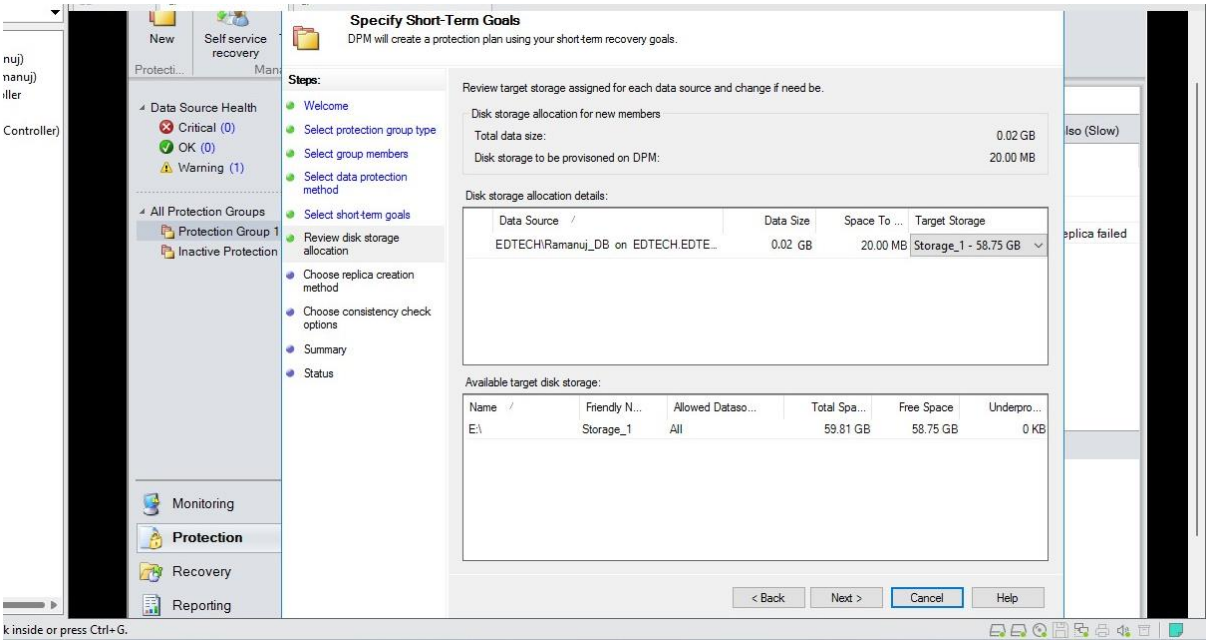
- Name your **Protection Group** (Here it is SQL Protection) and Select **I want short term protection** and Select **Disk** and Click **Next**



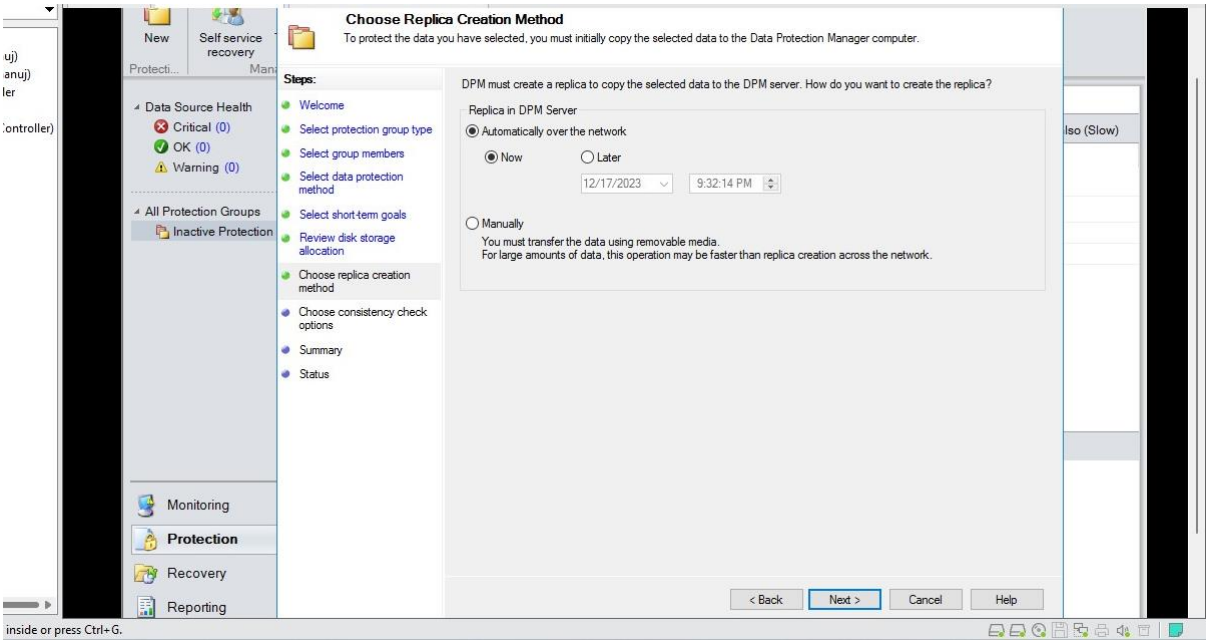
- Keep default values and Click **Next**



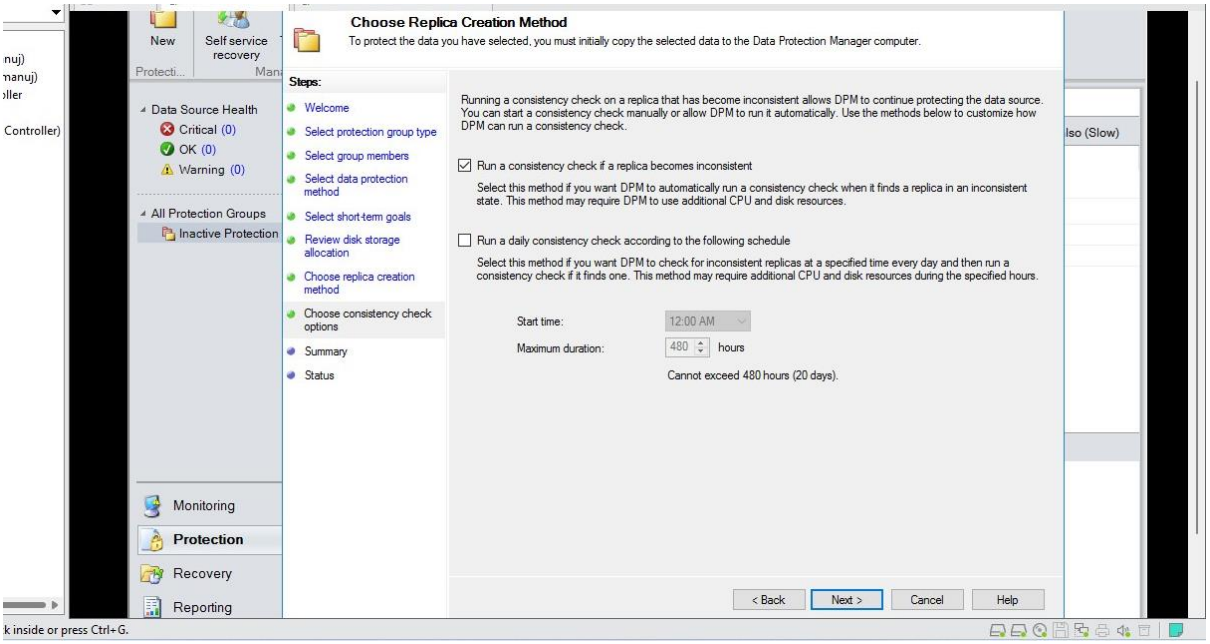
- Click **Next**



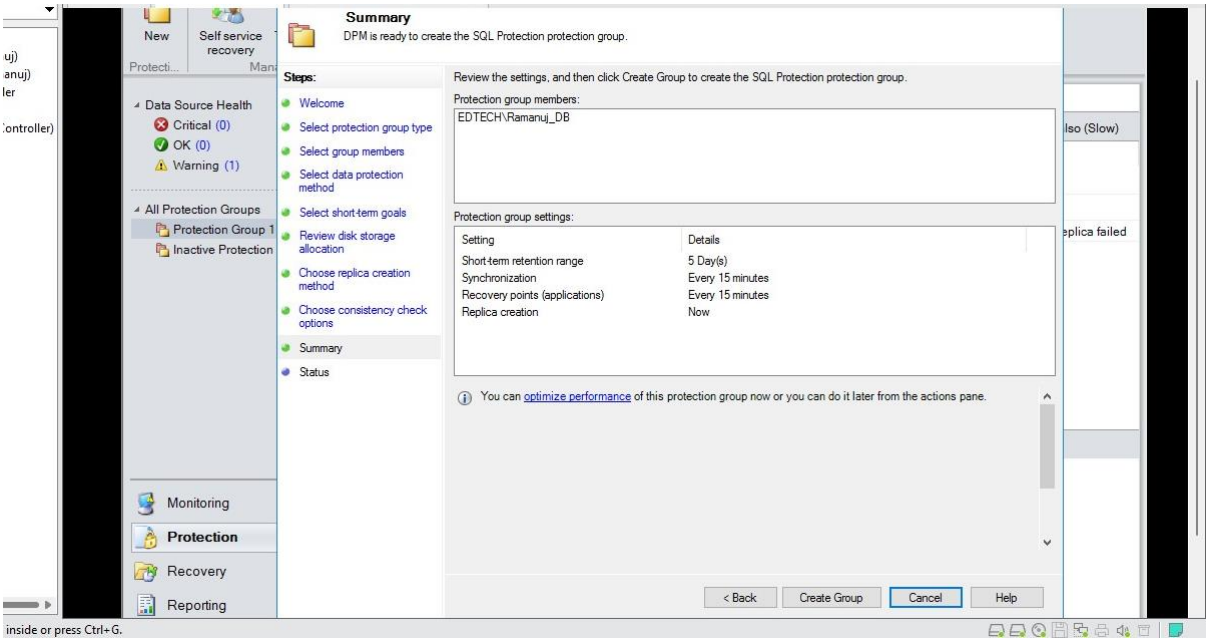
- Click **Next**



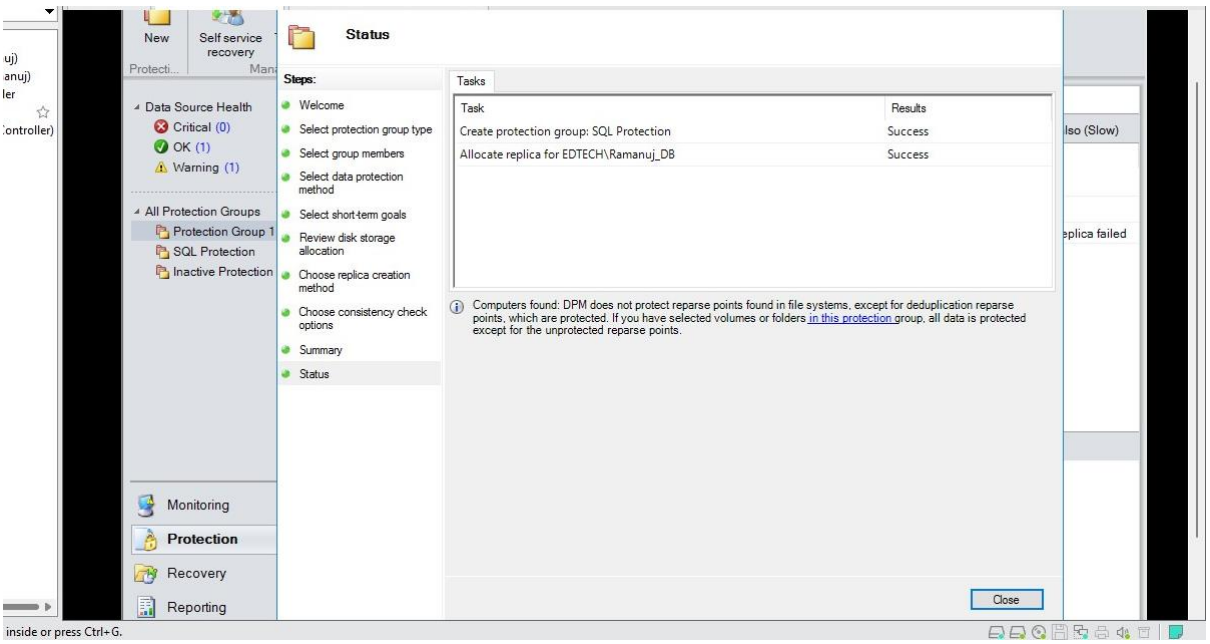
- Select **Run a consistency check if a replica becomes inconsistent** and Click **Next**



- View the summary of your group and Click **Create Group**



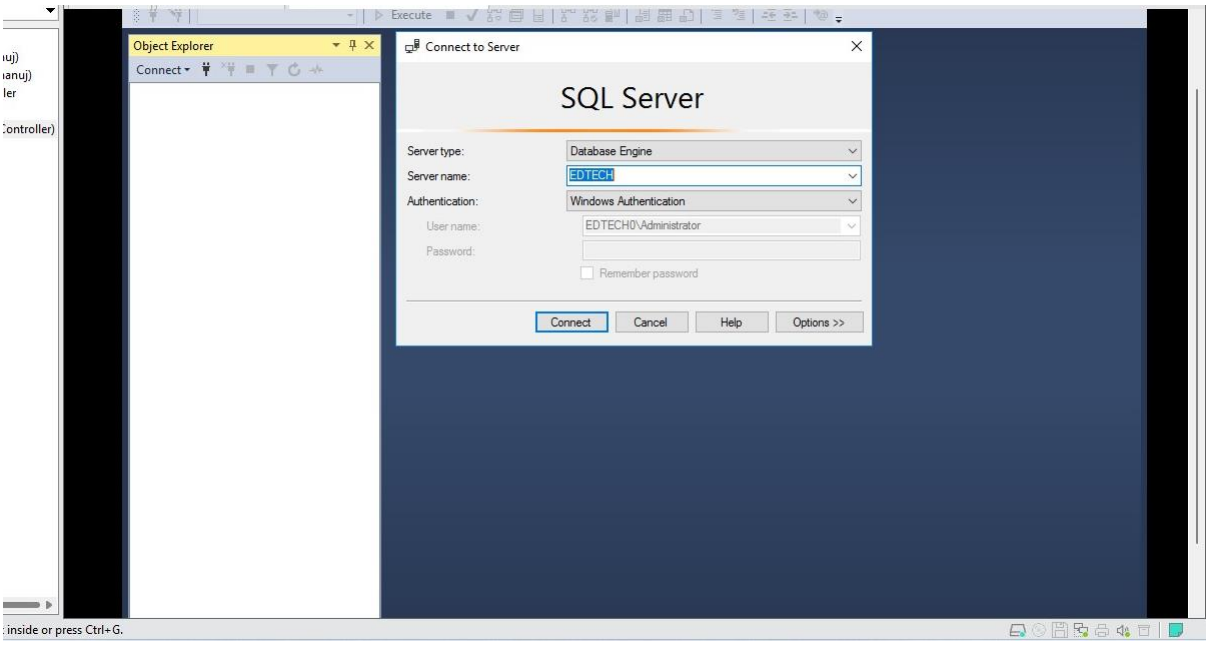
- After it is successfully created Click **Close**



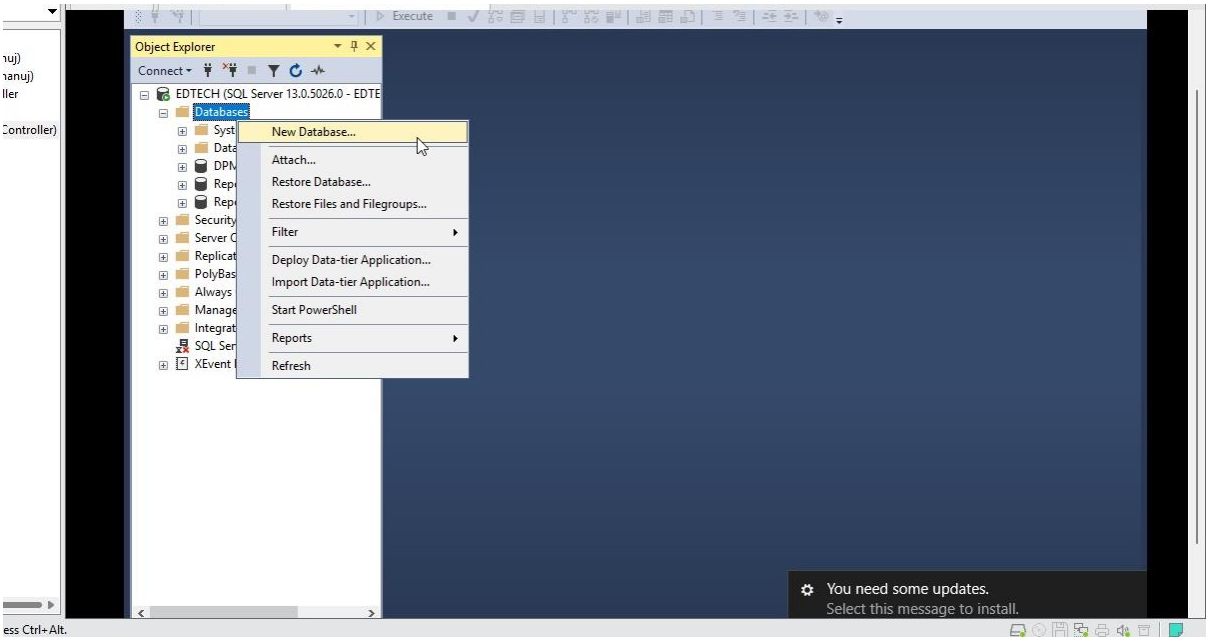
7-C: Back up file data (Database)

Step 1: Create an SQL Database in Domain Controller

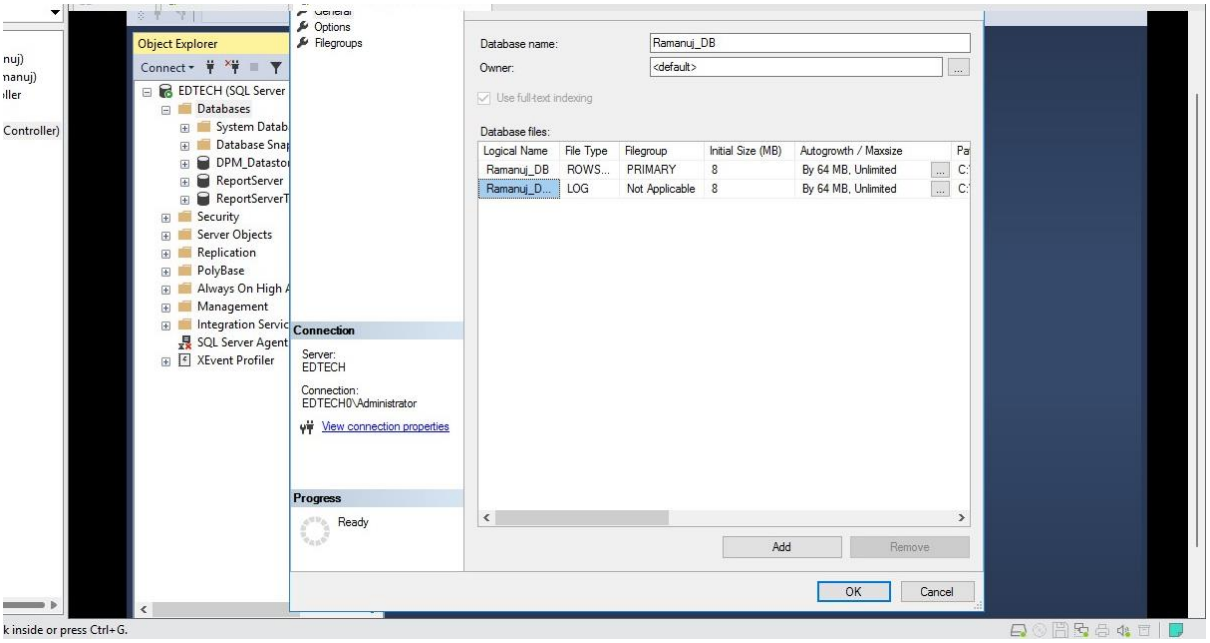
- Open **SQL Server Management Studio 18** and Click **Connect**



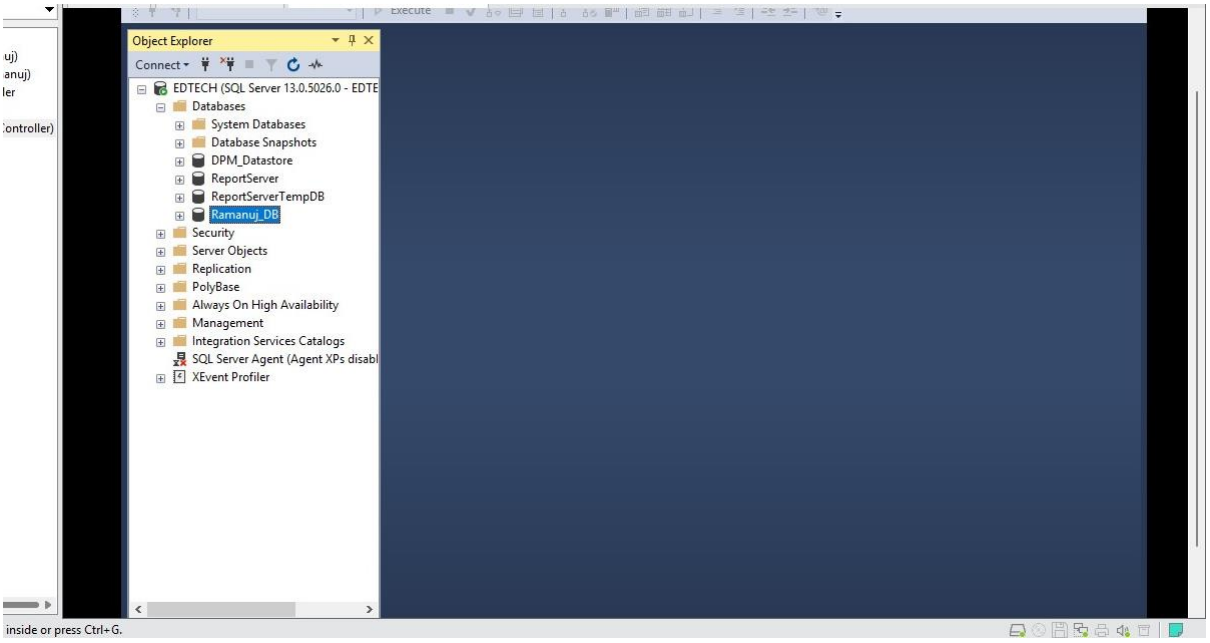
- Now Right Click on **Databases** and Select **New Database**



- Give the database a **name** (Here it is VIQAR_DB) and Click **Ok**

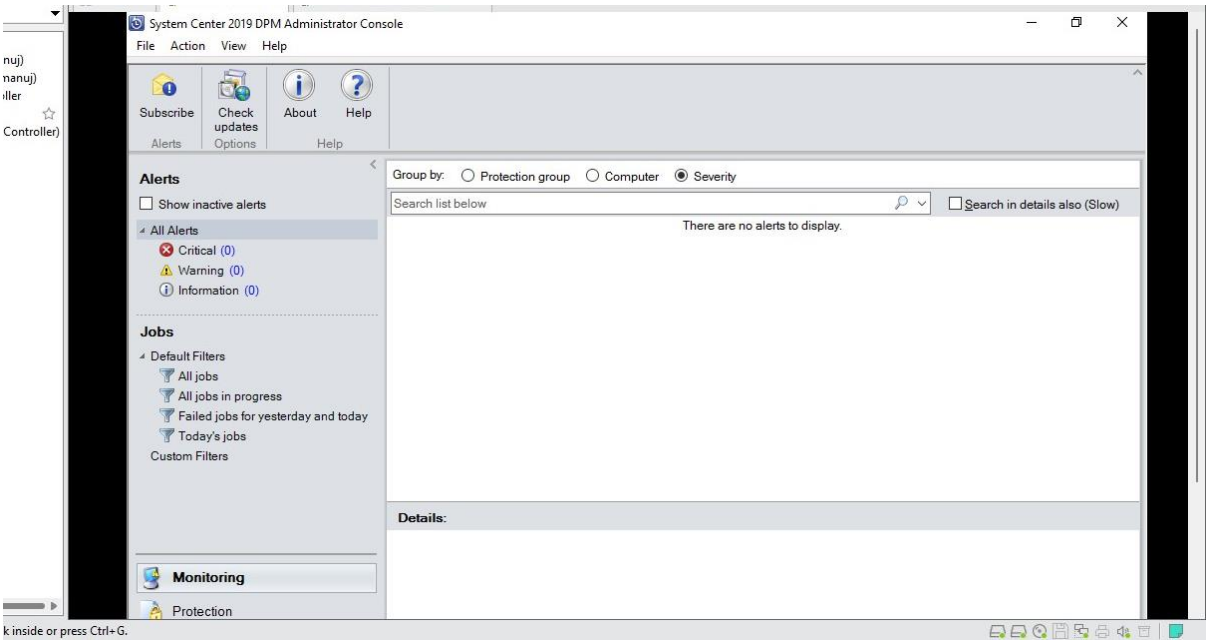


- Your database has been successfully created

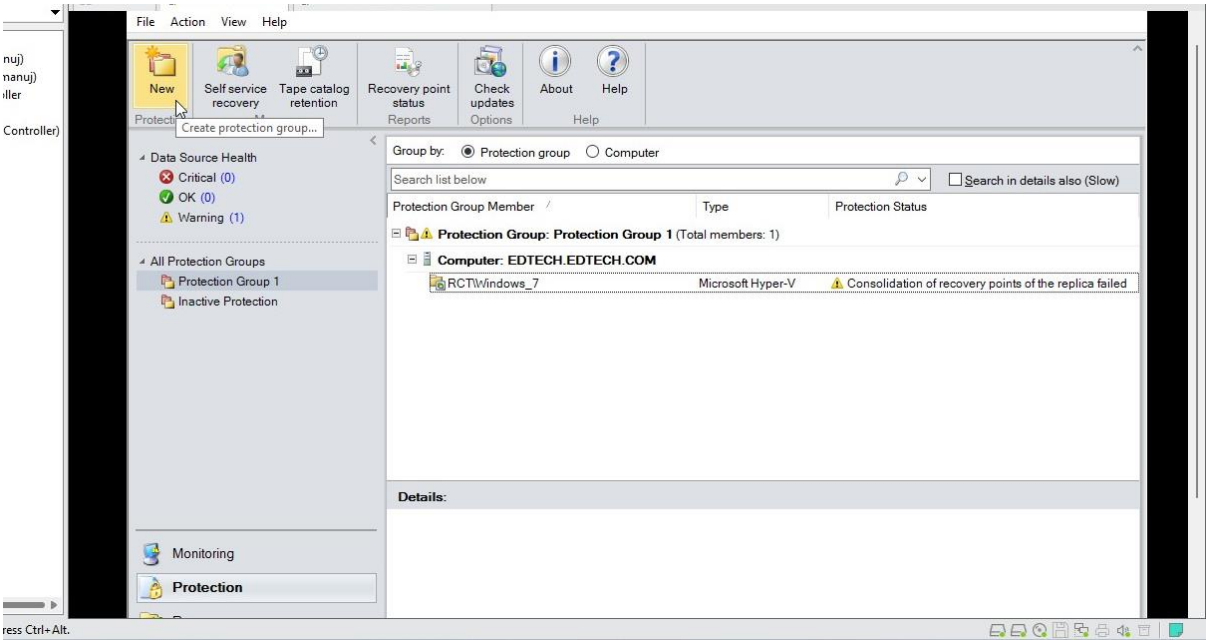


Step 2: Creating a Protection Group for the Newly Created SQL Database

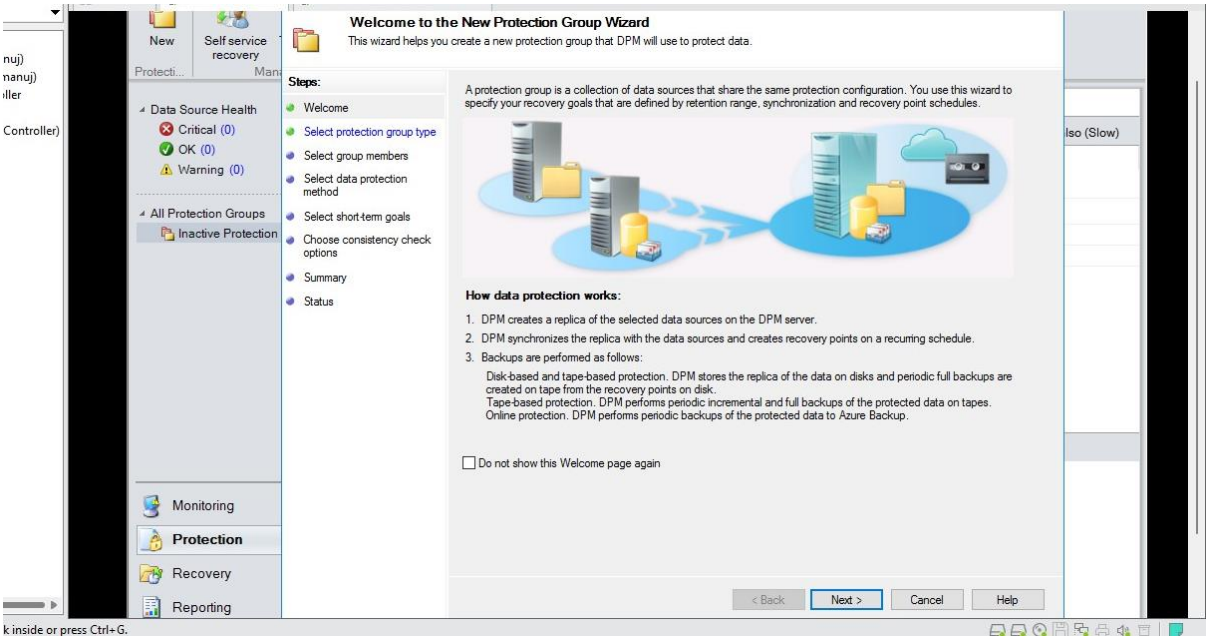
- Switch over to the **SCDPM (User)** VM and Open the **DPM manager**



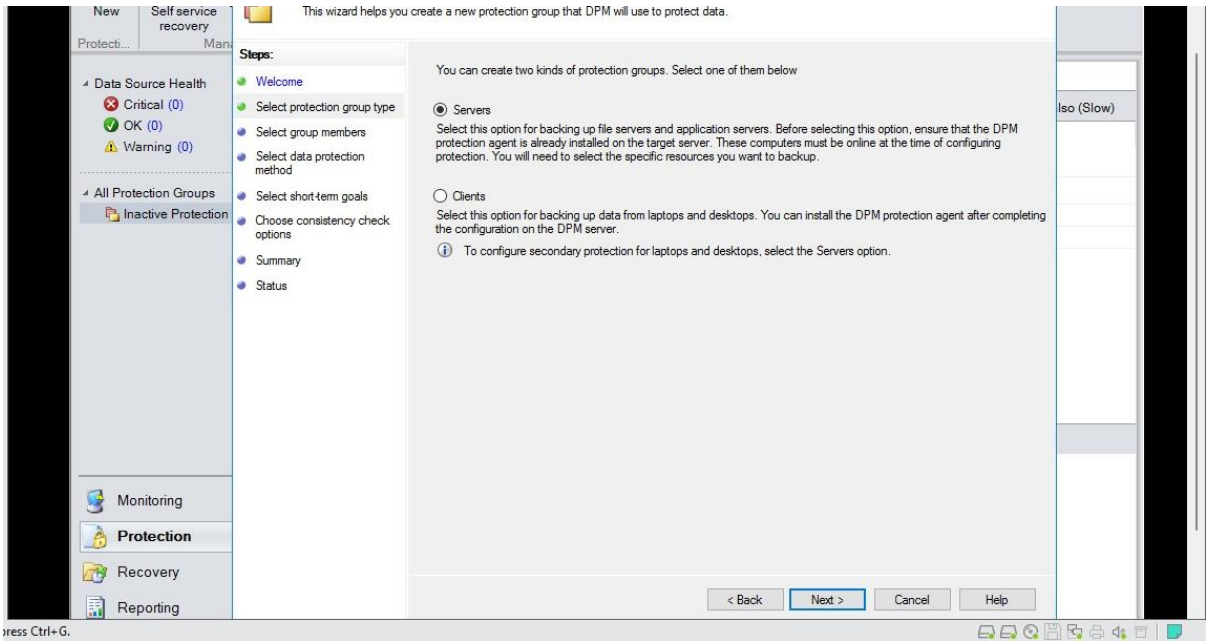
- Click on the **Protection** Tab and Select **New**



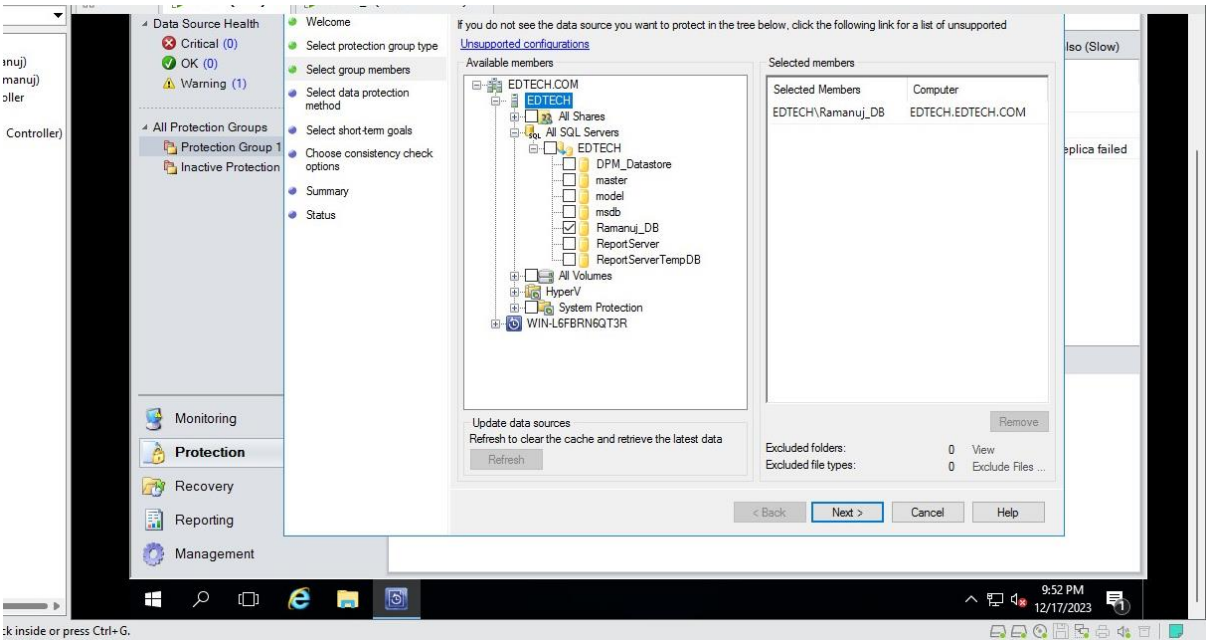
- Click **Next**



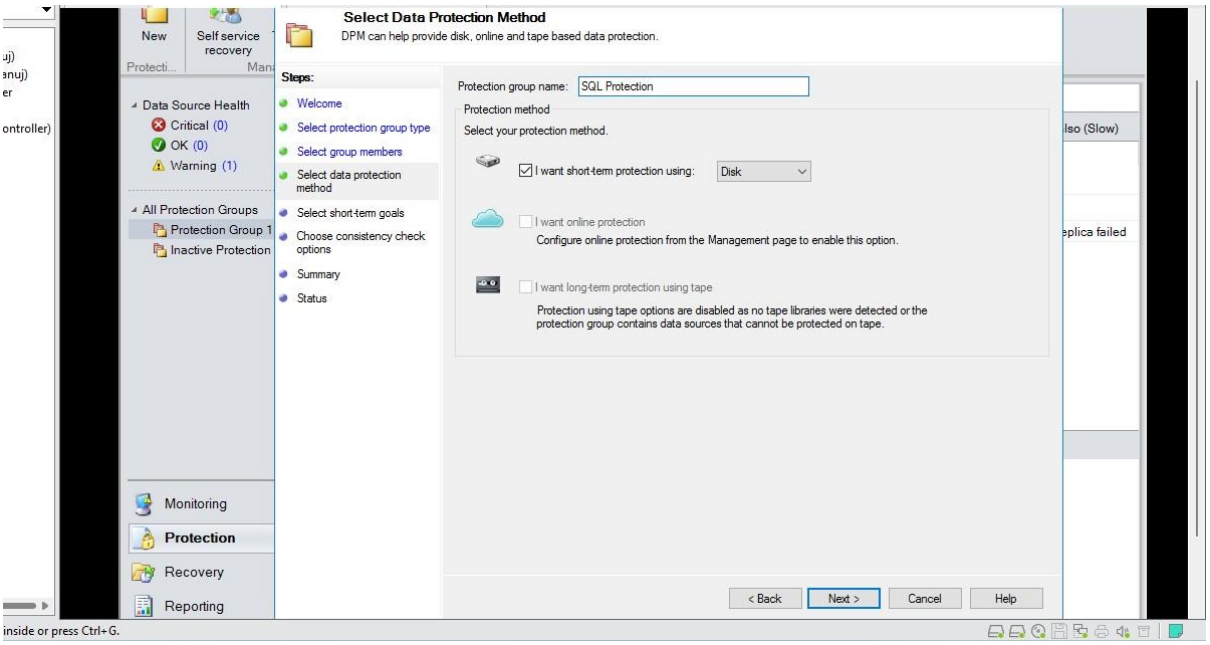
- Select **Servers** and Click **Next**



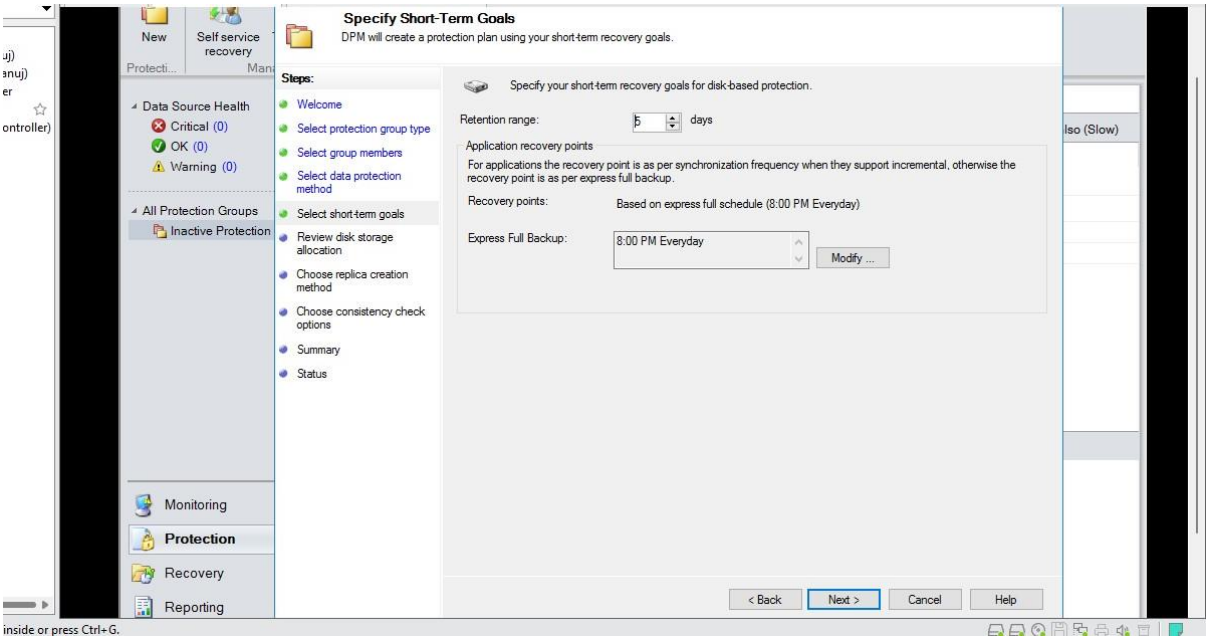
- Select **EDTECH** and Click on **Refresh,** after refresh Open **All SQL Server** and Click on **EDTECH** and Click on your newly created **SQL Database** (Here it is VIQAR_DB) and Click **Next**



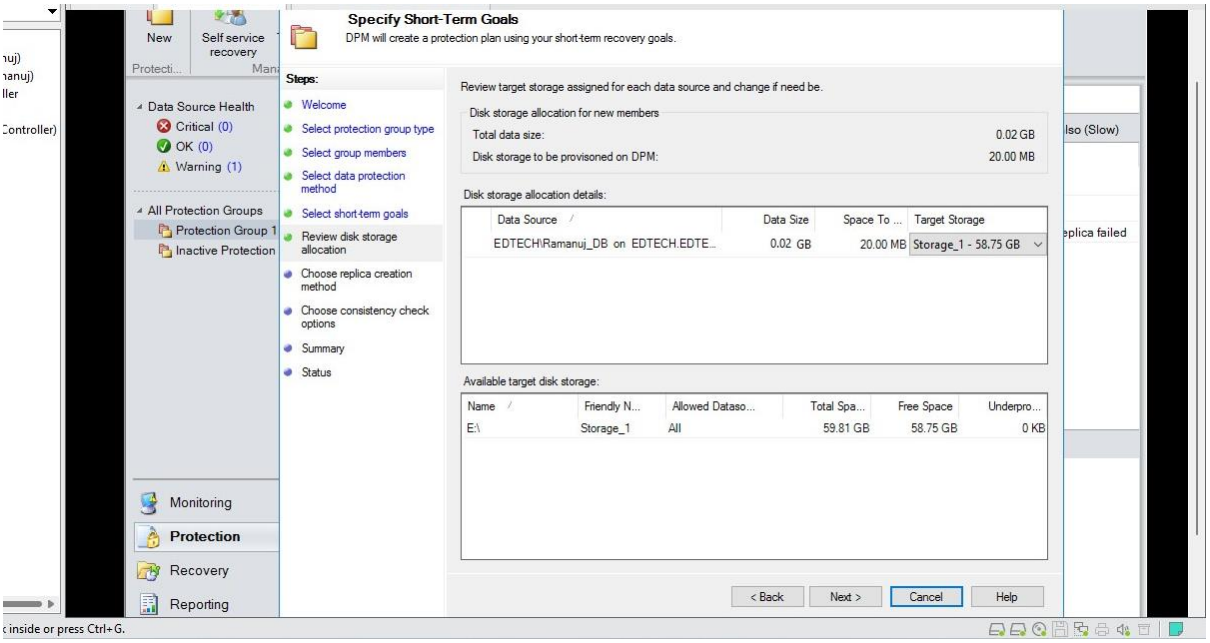
- Name your **Protection Group** (Here it is SQL Protection) and Select **I want short term protection** and Select **Disk** and Click **Next**



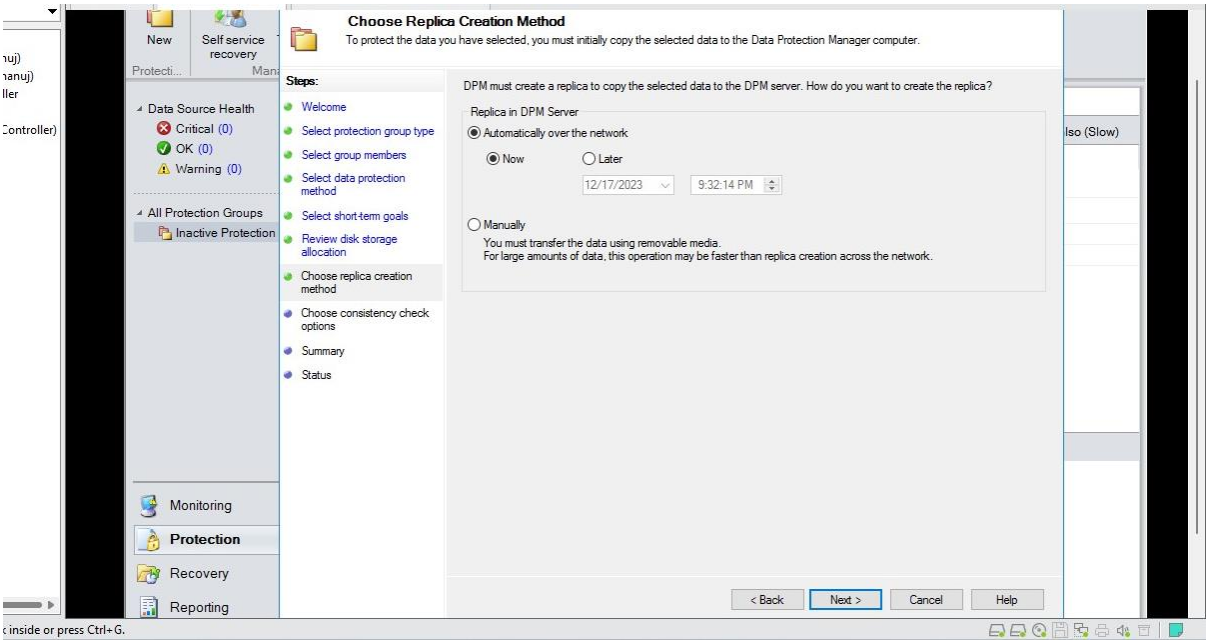
- Keep default values and Click **Next**



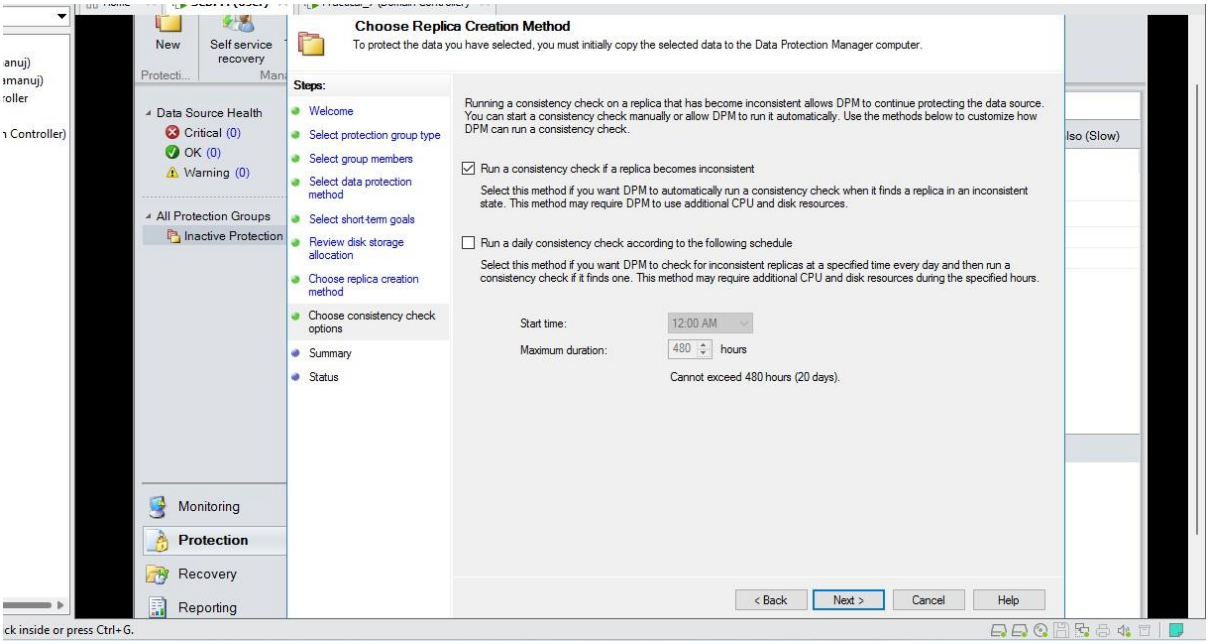
- Click **Next**



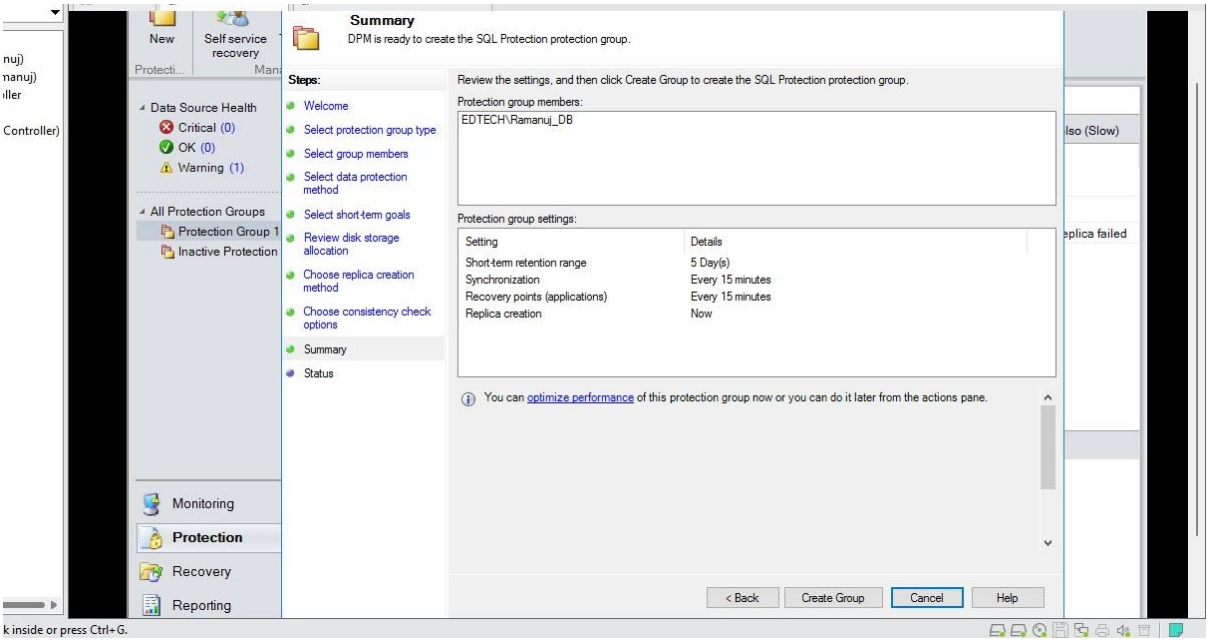
- Click **Next**



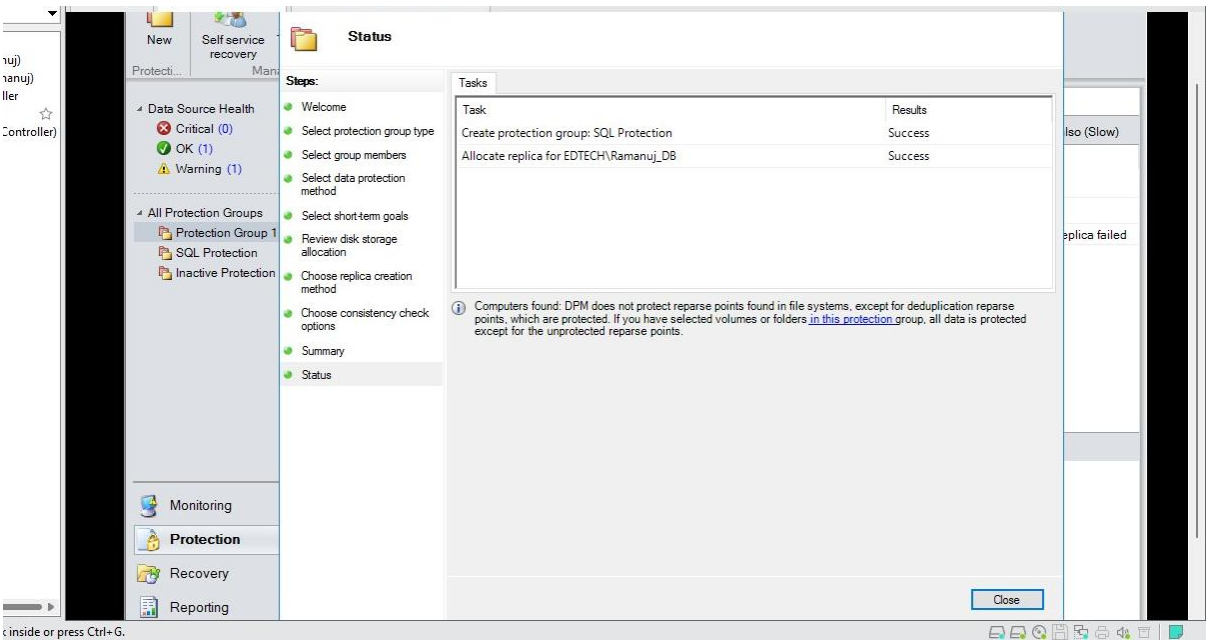
- Select **Run a consistency check if a replica becomes inconsistent** and Click **Next**



- View the summary of your group and Click **Create Group**



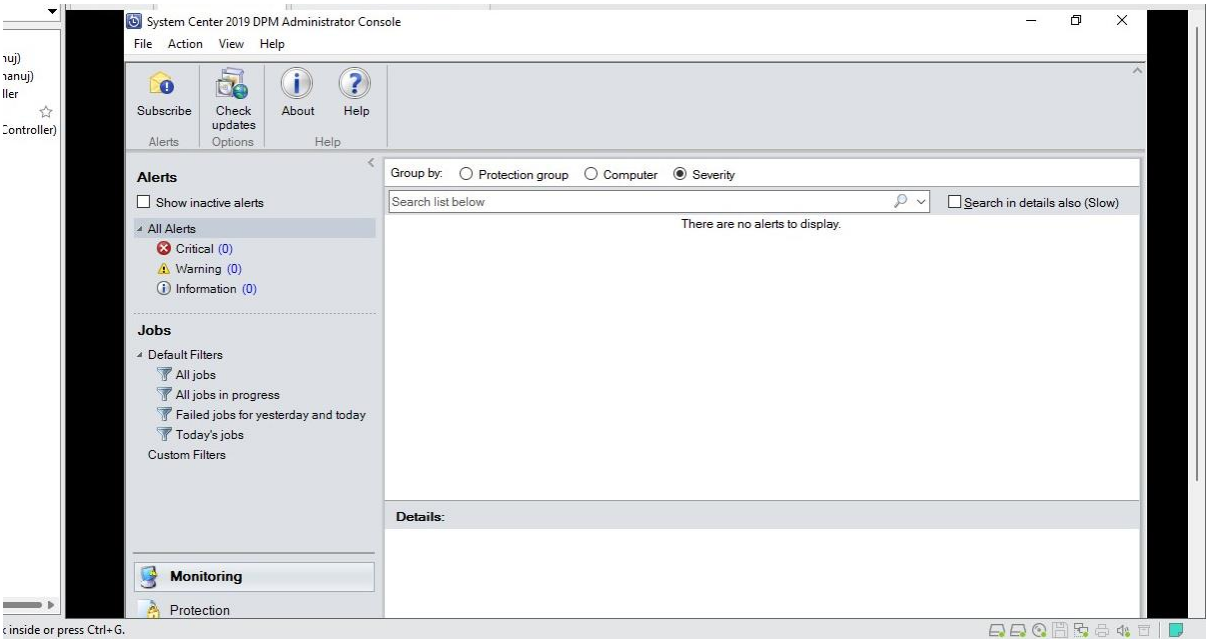
- After it is successfully created Click **Close**



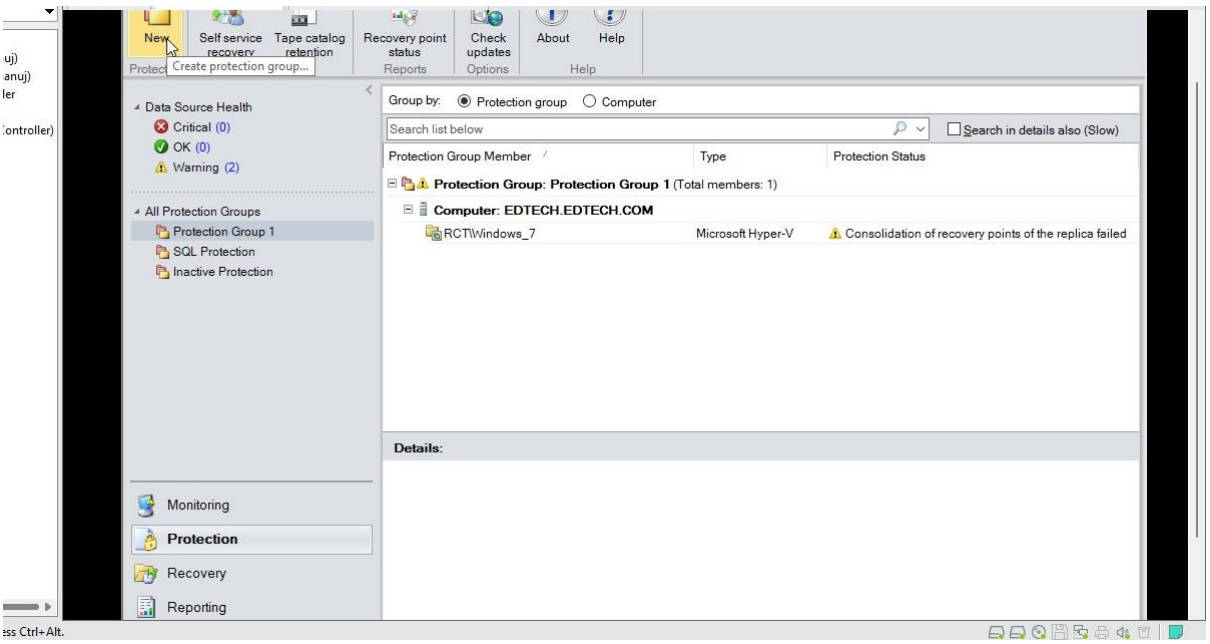
7-D: Backup System State

Step 1: Creating Protection Group for System State

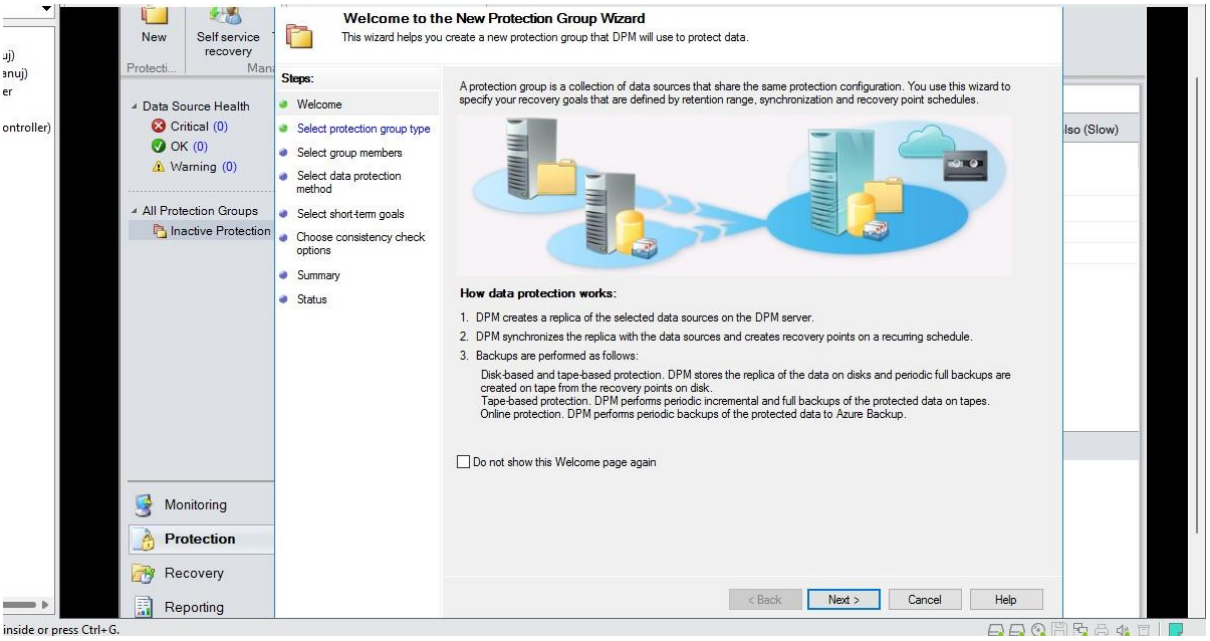
- In the **SCDPM (User)** VM and Open the **DPM manager**



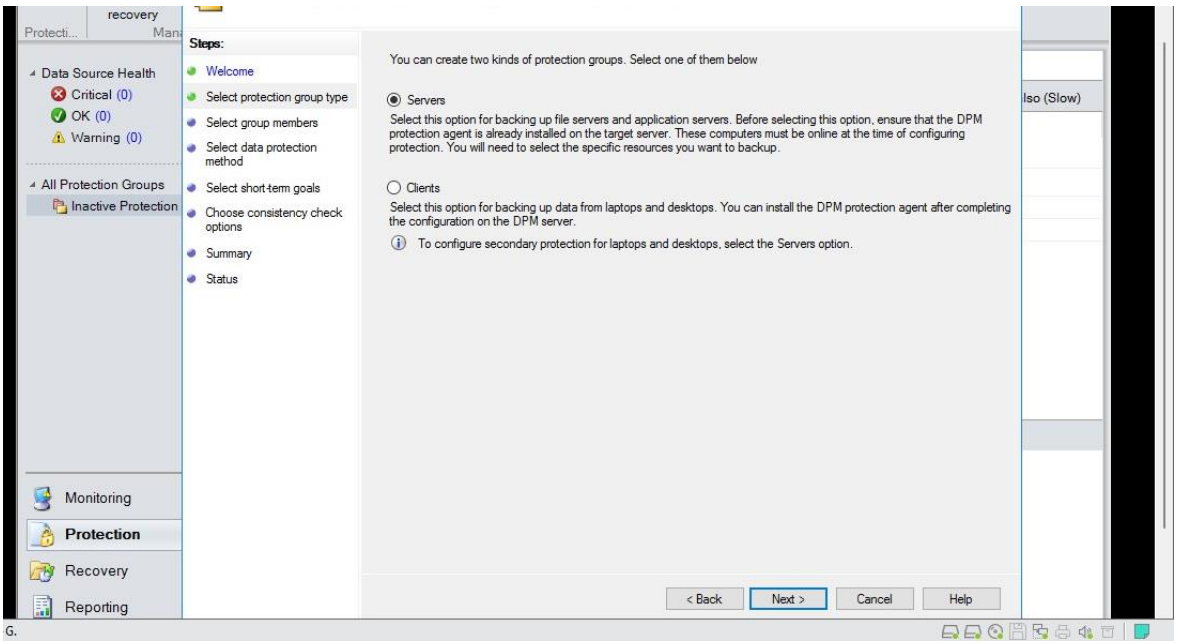
- Click on the **Protection** Tab and Select **New**



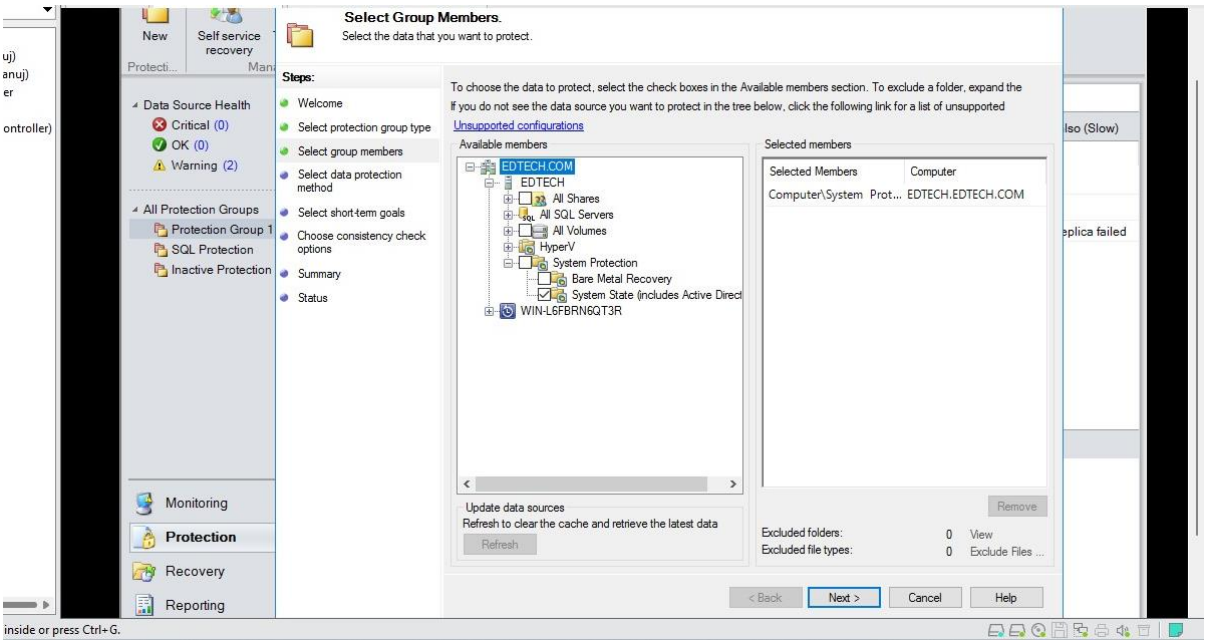
- Click **Next**



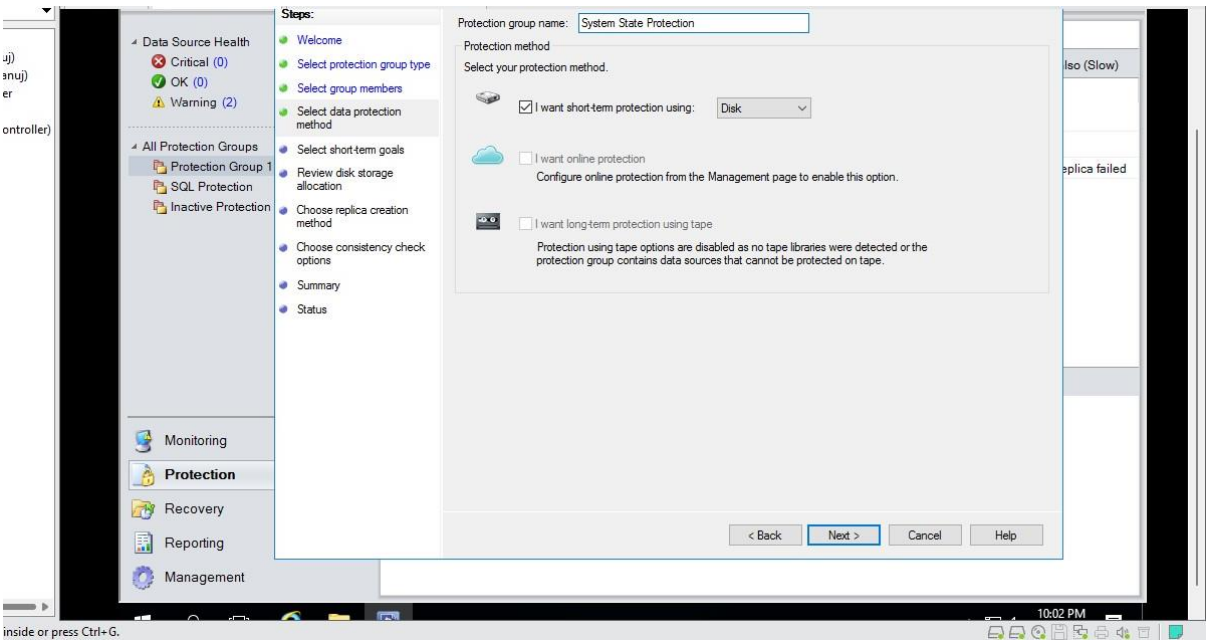
- Select **Servers** and Click **Next**



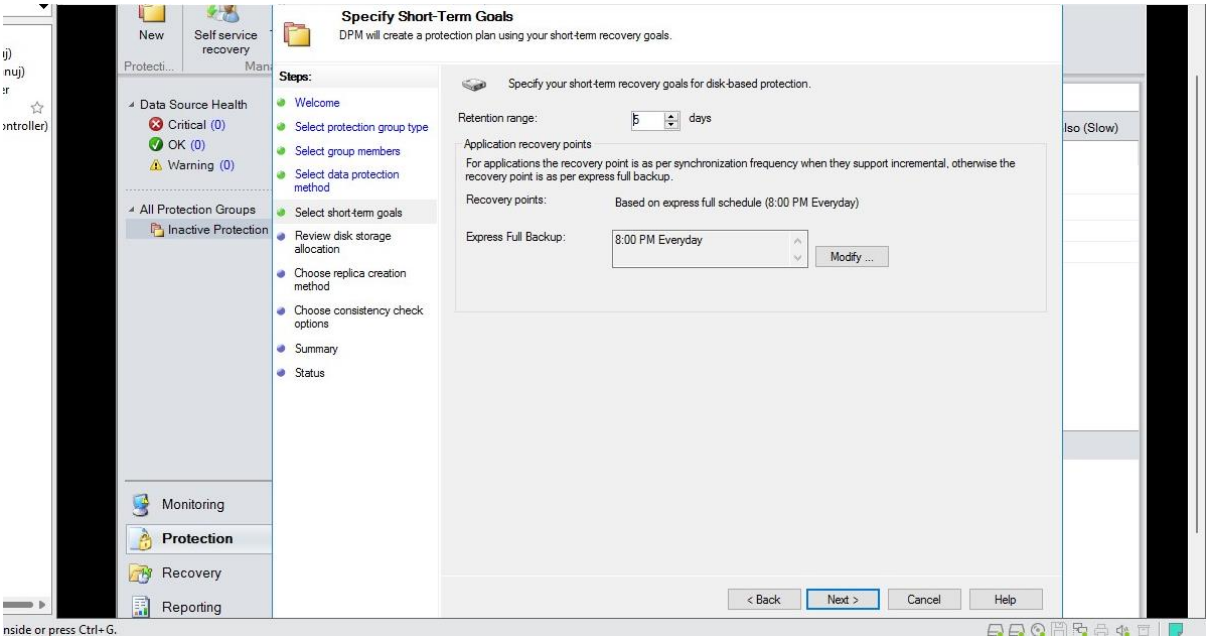
- Select **EDTECH** and Click on **Refresh,** after refresh Open **System Protection** and Click on **System State (including Active Directories)** and Click **Next**



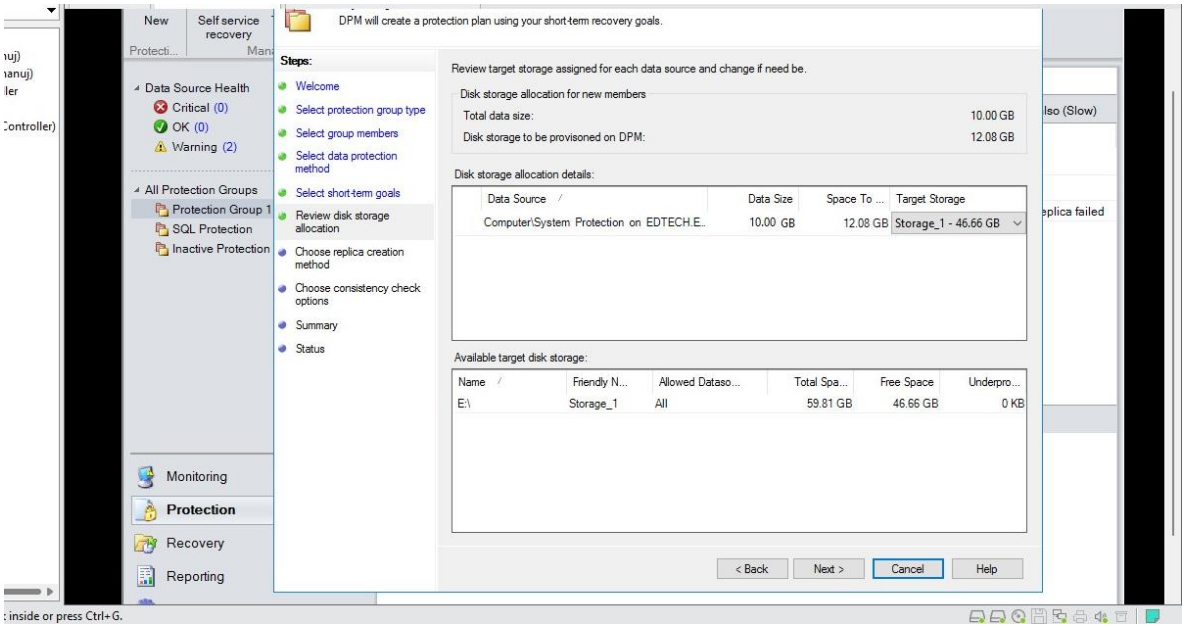
- Name your **Protection Group** (Here it is System State Protection) and Select **I want short term protection** and Select **Disk** and Click **Next**



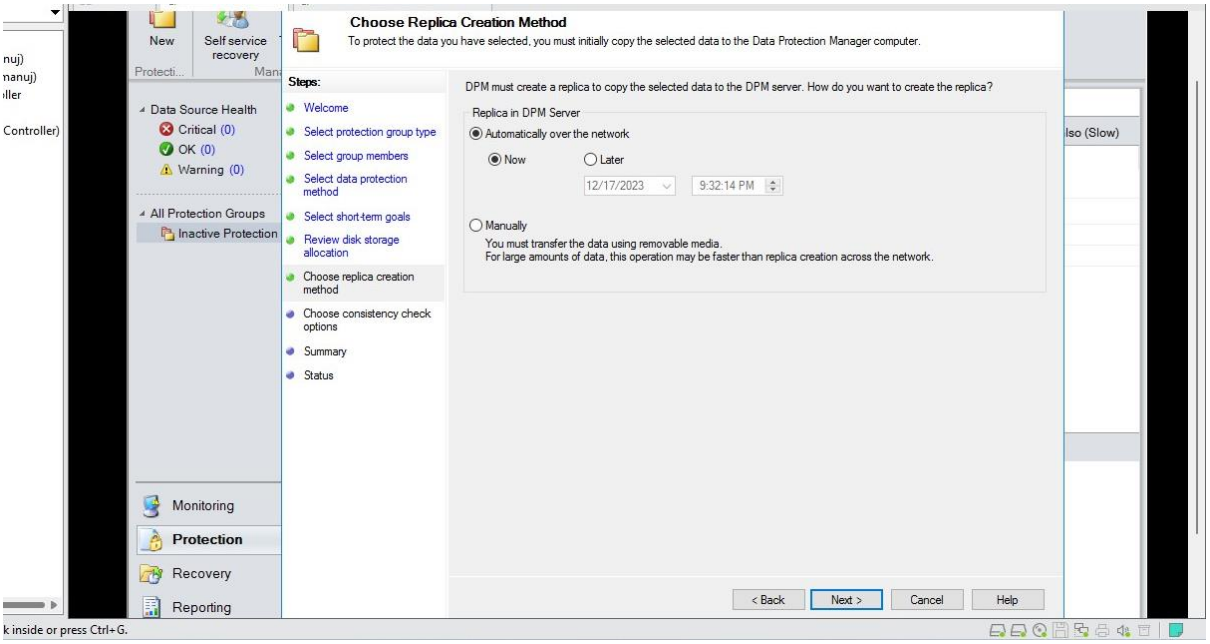
- Keep default values and Click **Next**



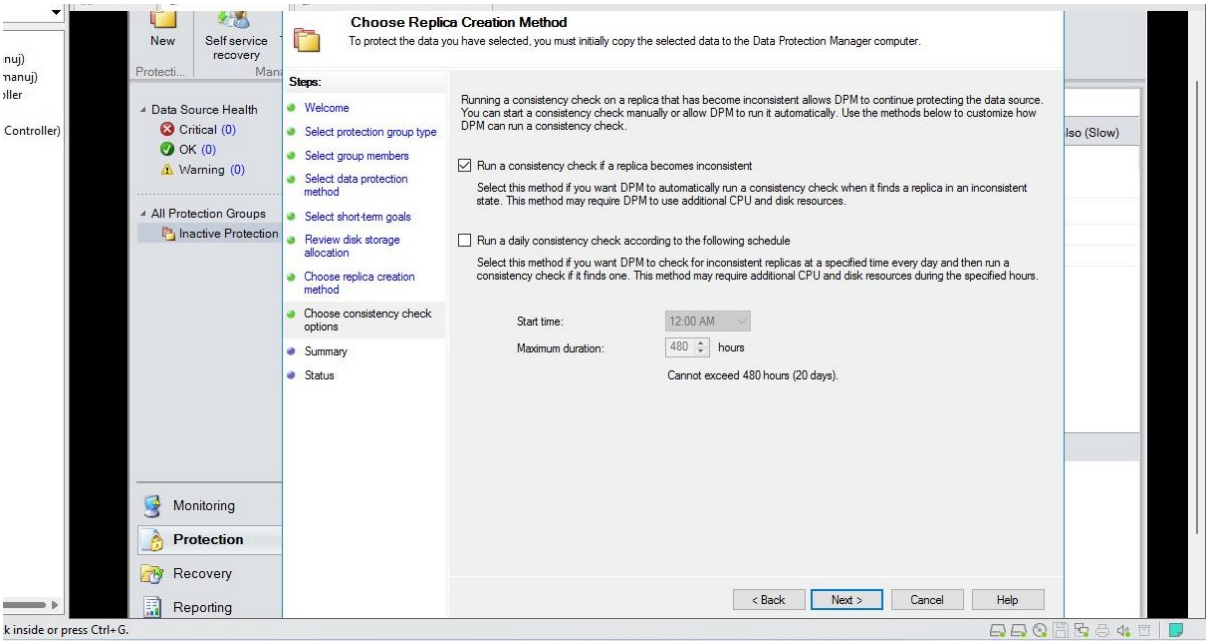
- Click **Next**



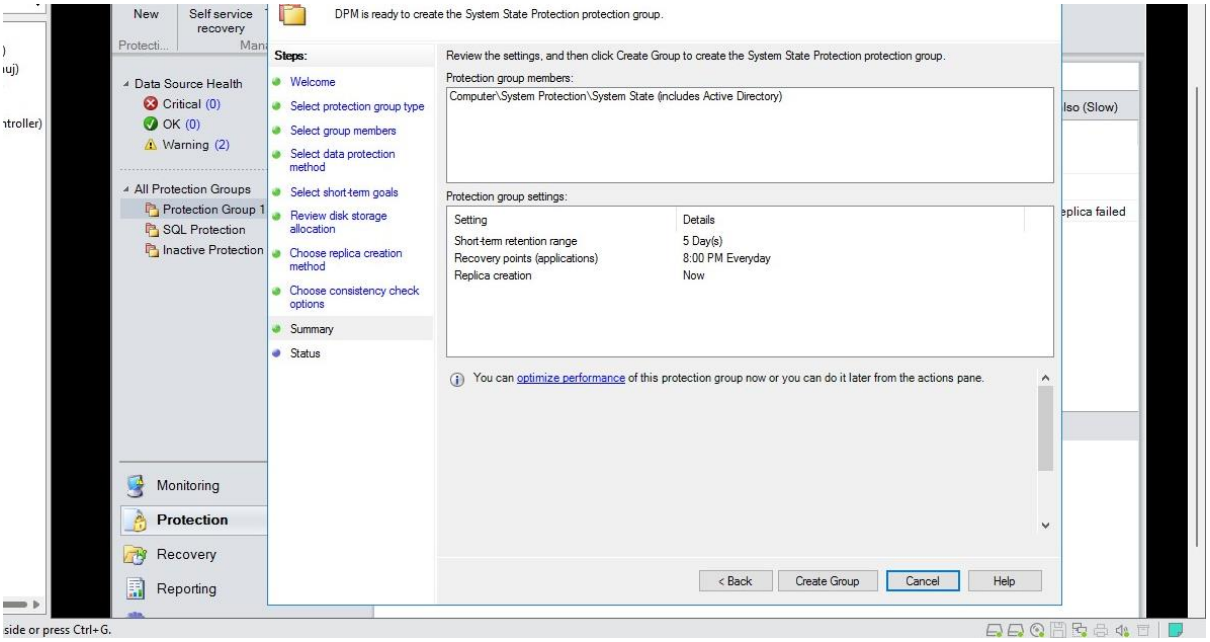
- Click **Next**



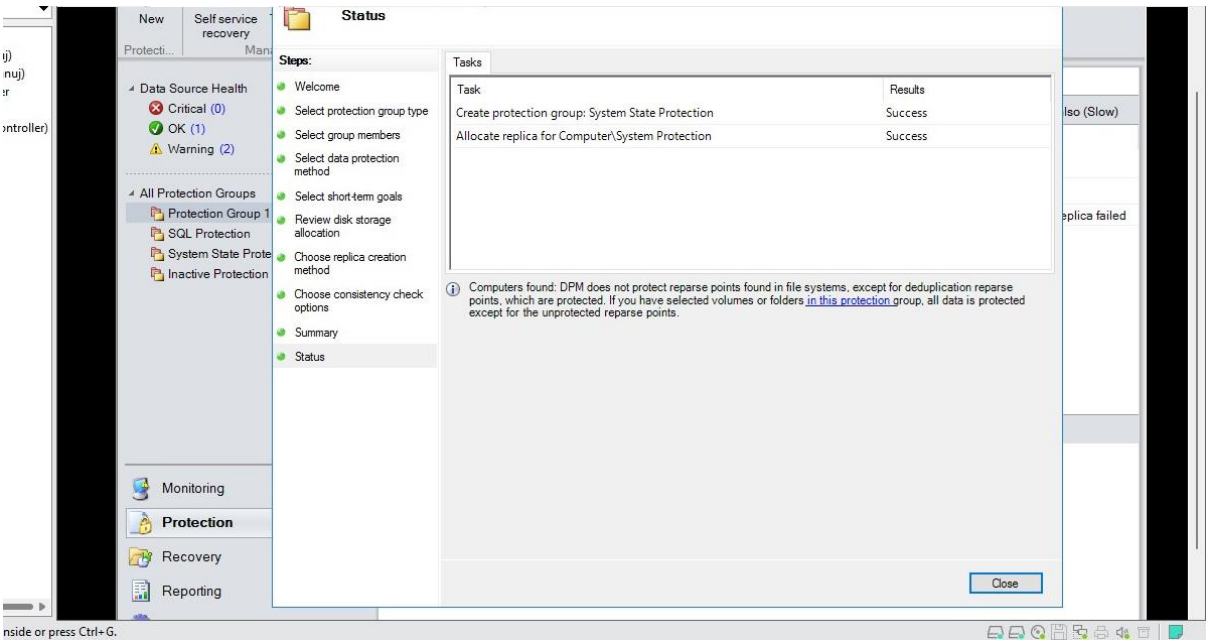
- Select **Run a consistency check if a replica becomes inconsistent** and Click **Next**



- View the summary of your group and Click **Create Group**



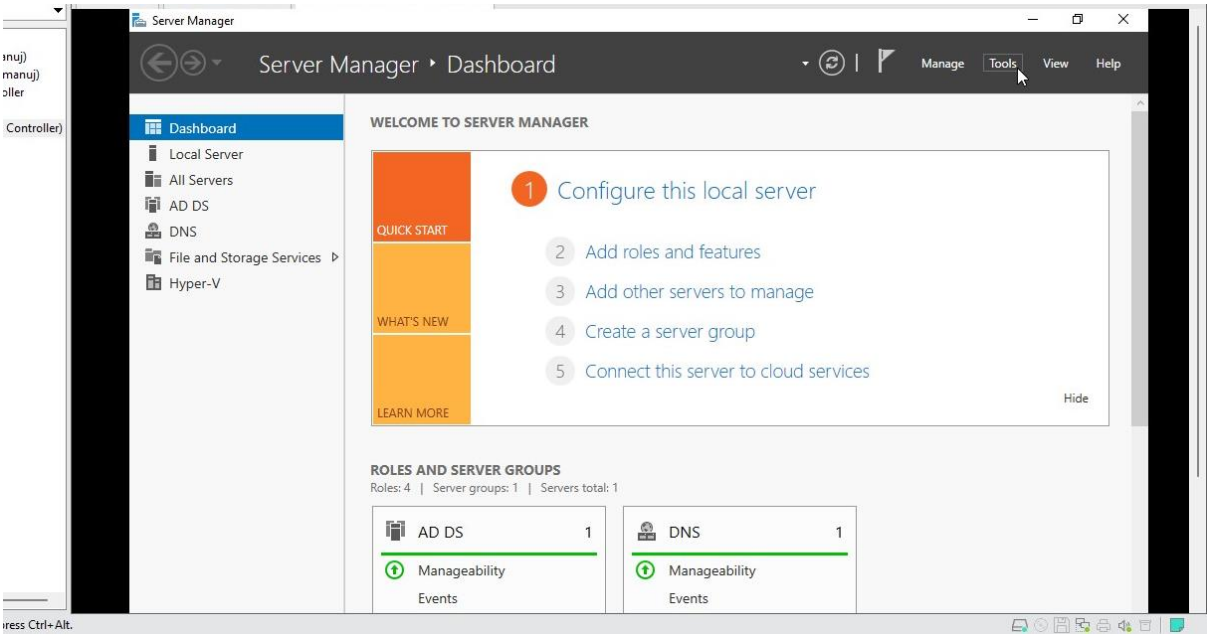
- After it is successfully created Click **Close**



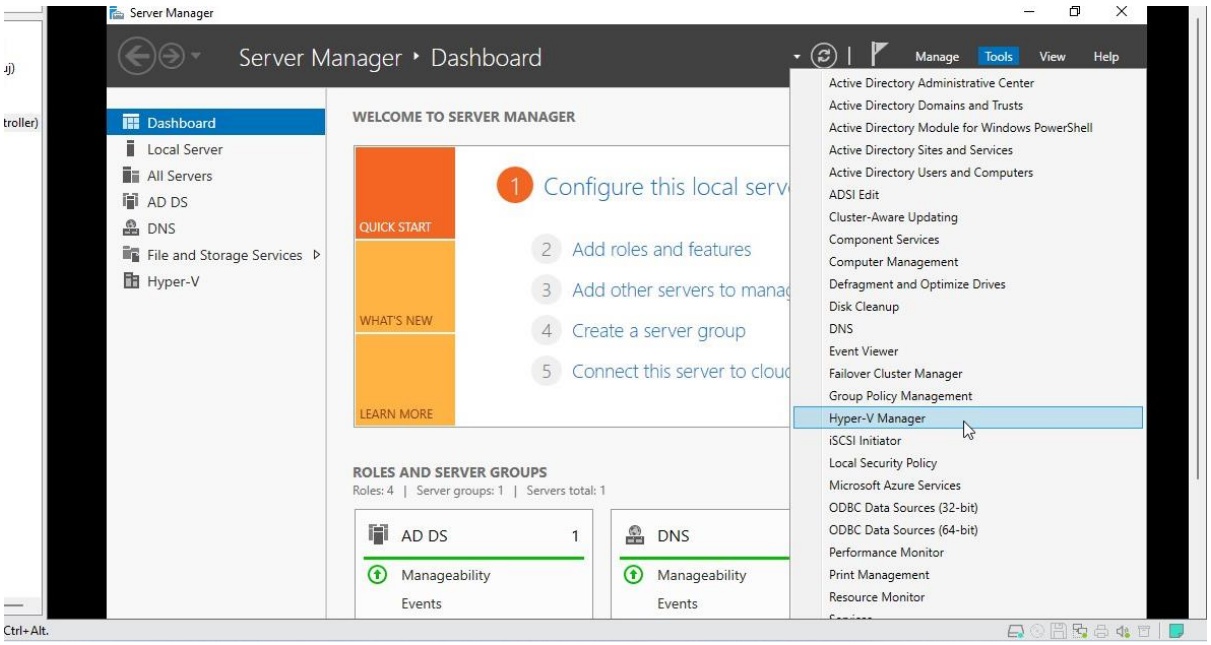
7-E: Backup VMware Servers

Step 1: Creating a VMware Server in Domain Controller

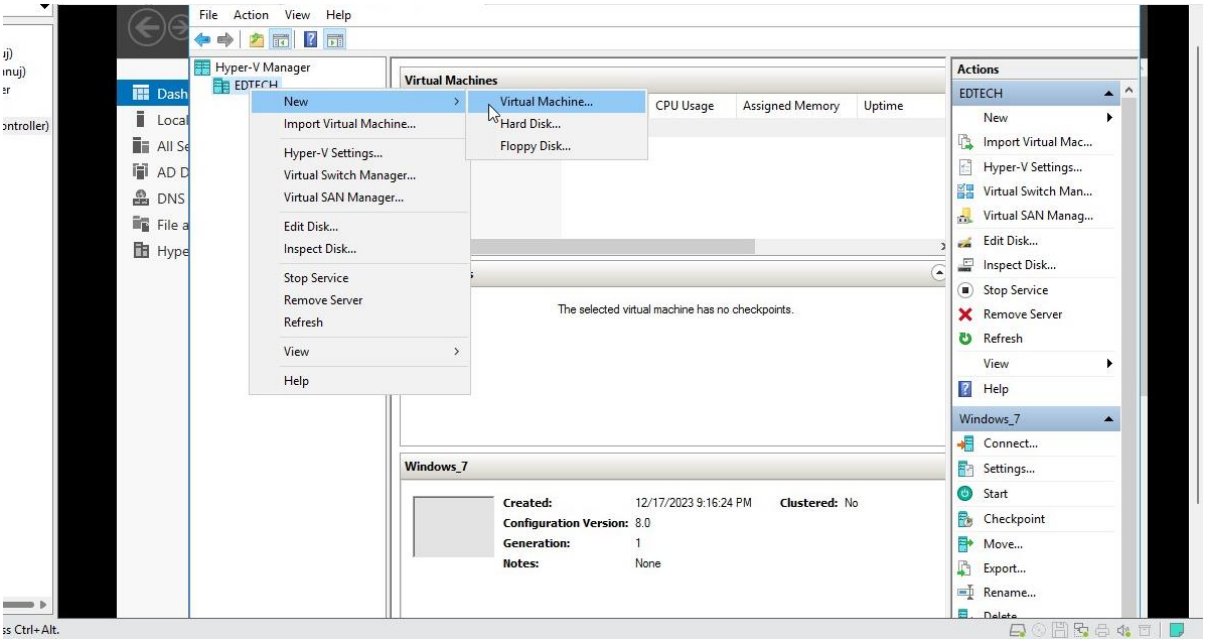
- Within Server Manager Click on **Tools**



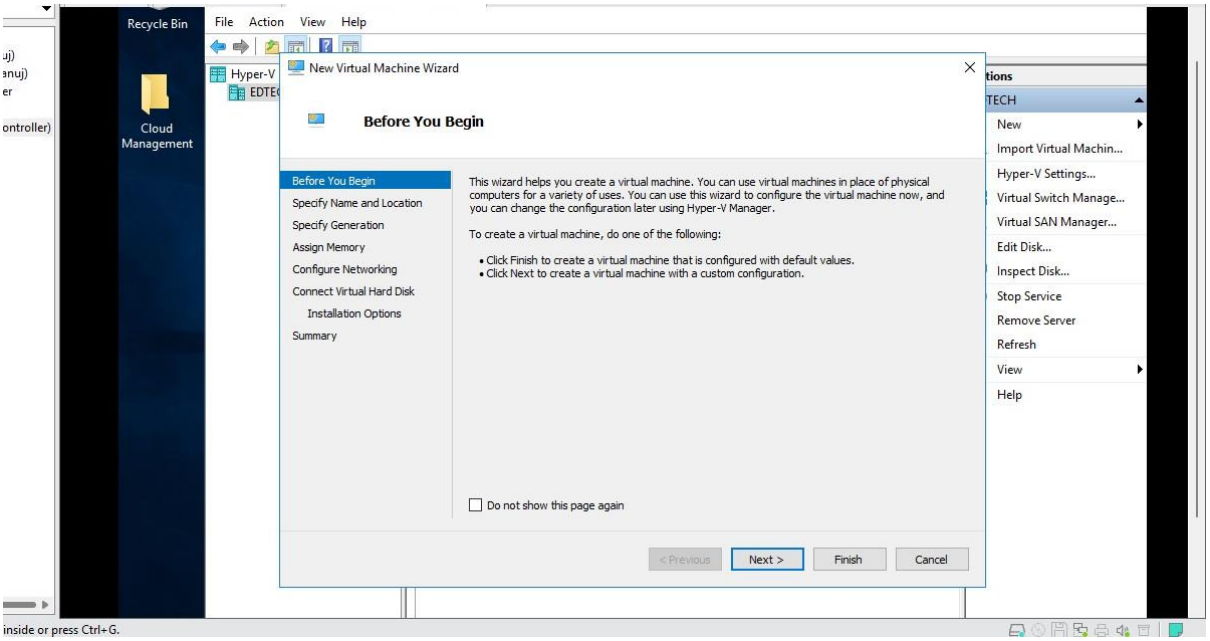
- Select **Hyper-V Manager**



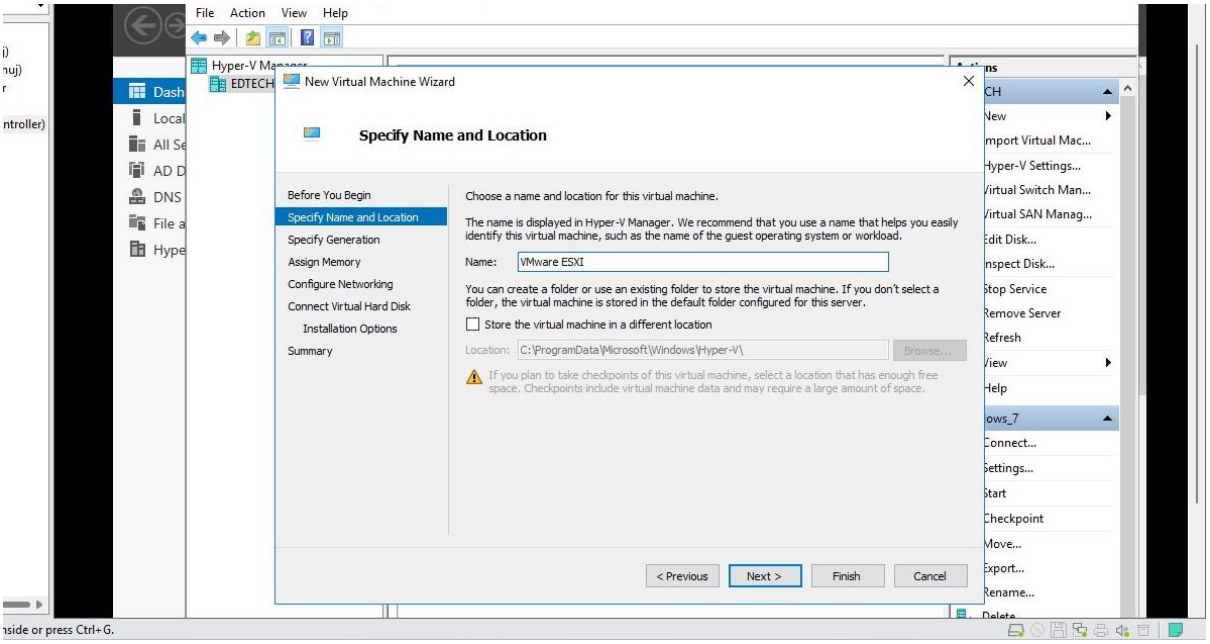
- Within Hyper-V Manager Right-Click on your **Domain Controller** and Select **New** and Click on **Virtual Machine**



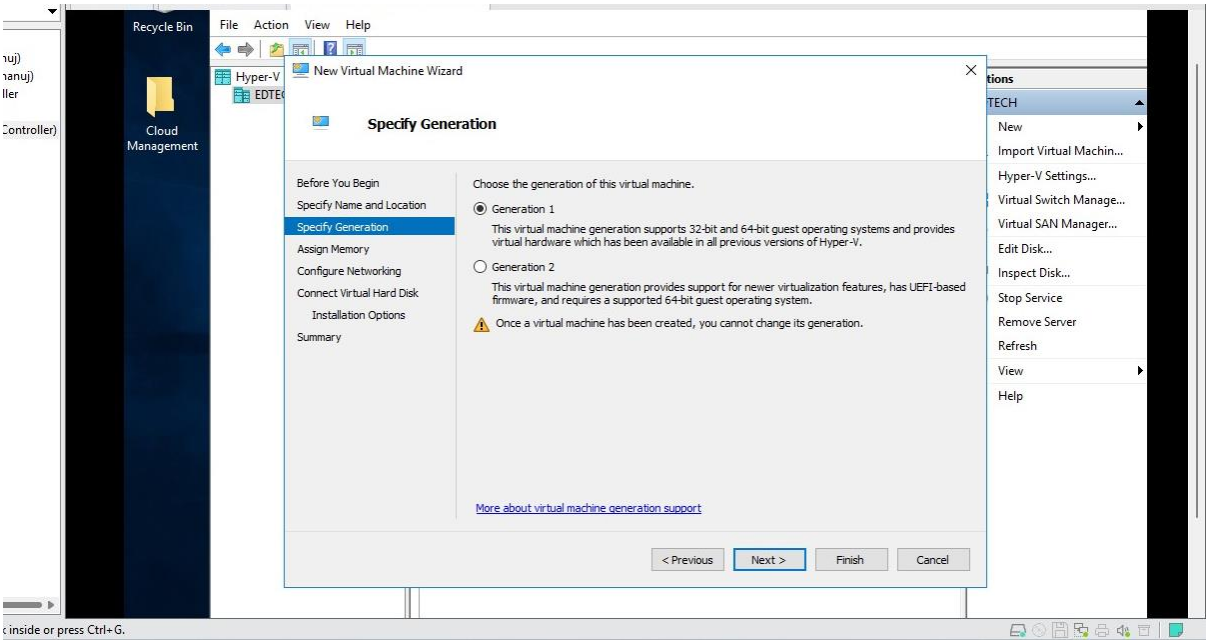
- Click **Next**



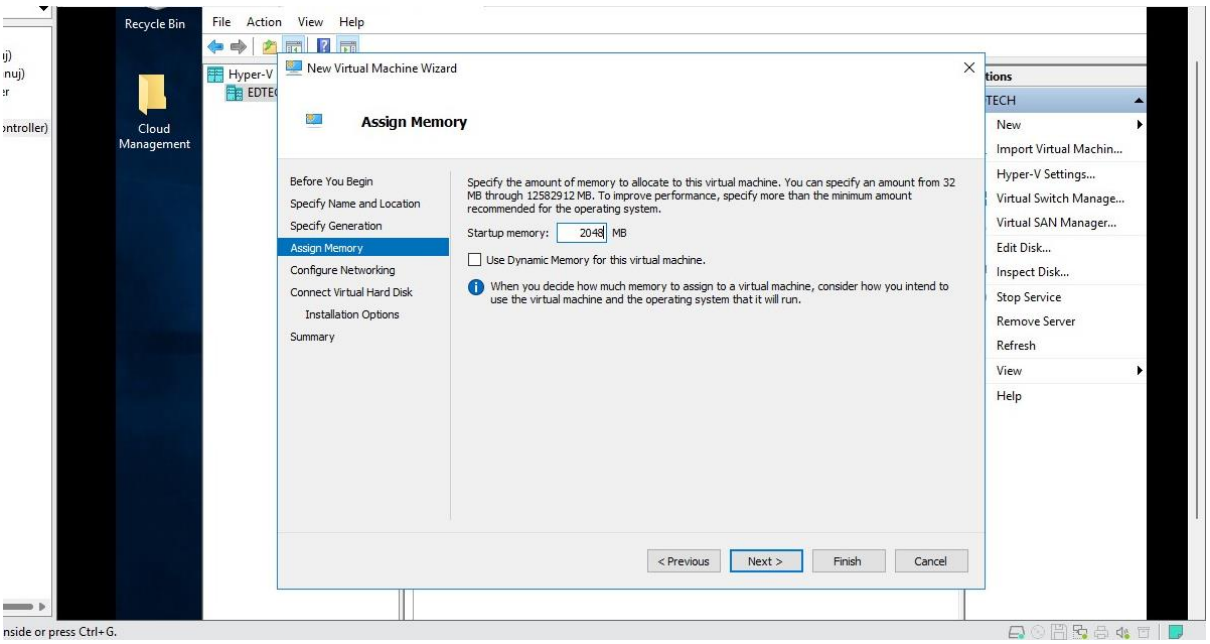
- Name your virtual machine (Here it is VMware ESXI) and Click **Next**



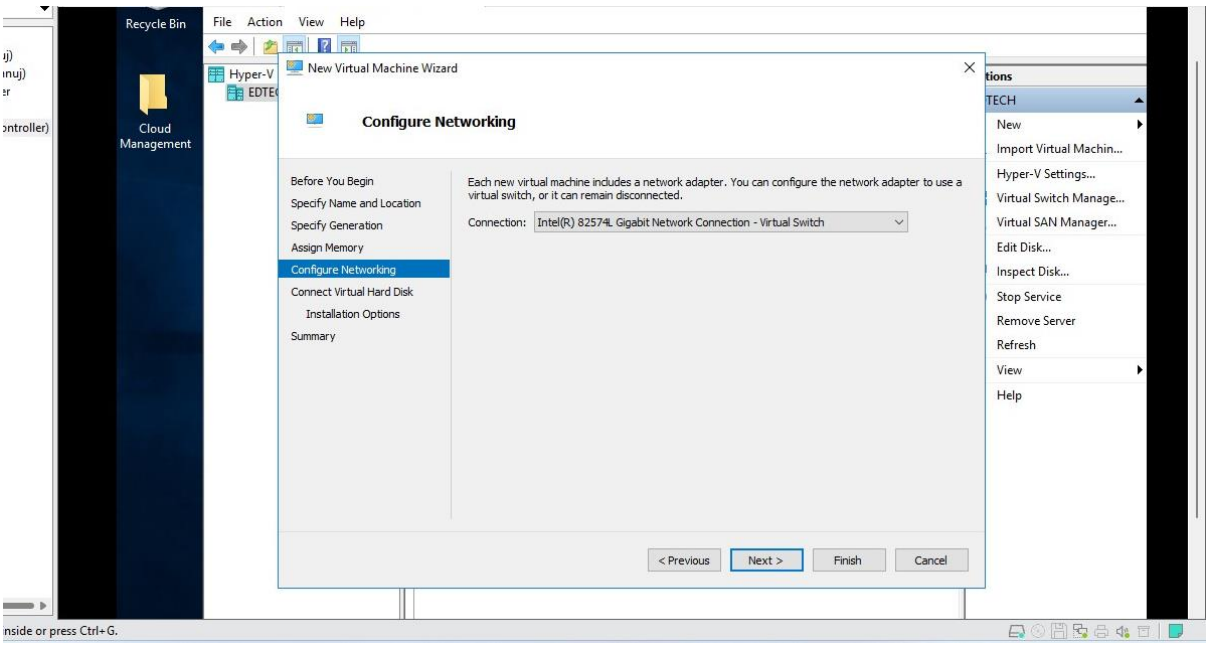
- Select **Generation 1** and Click **Next**



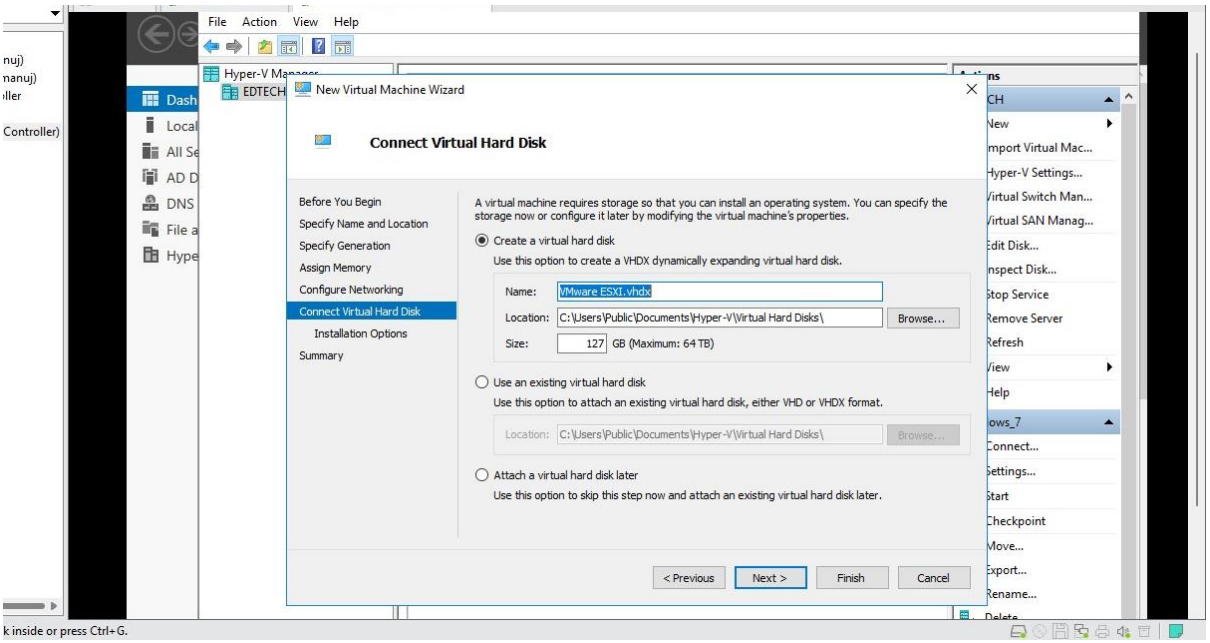
- Select Start-up memory as **2048 MB** and Click **Next**



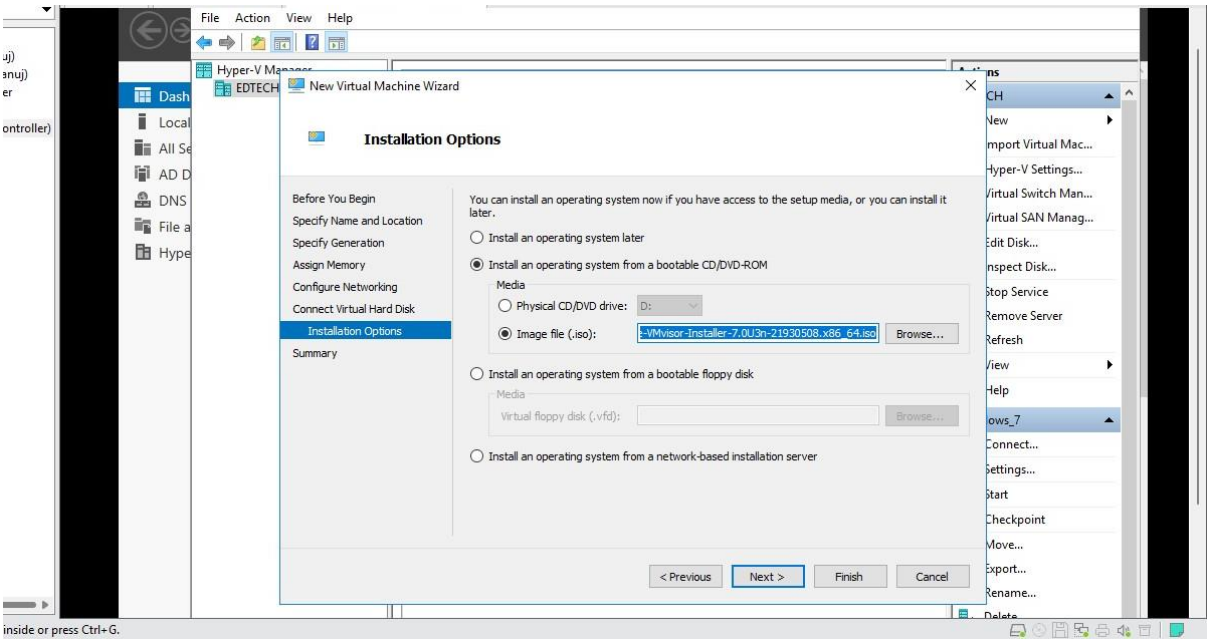
- In Connection Select your **network adapter** (Here it is Intel (R) Gigabit) and Click **Next**



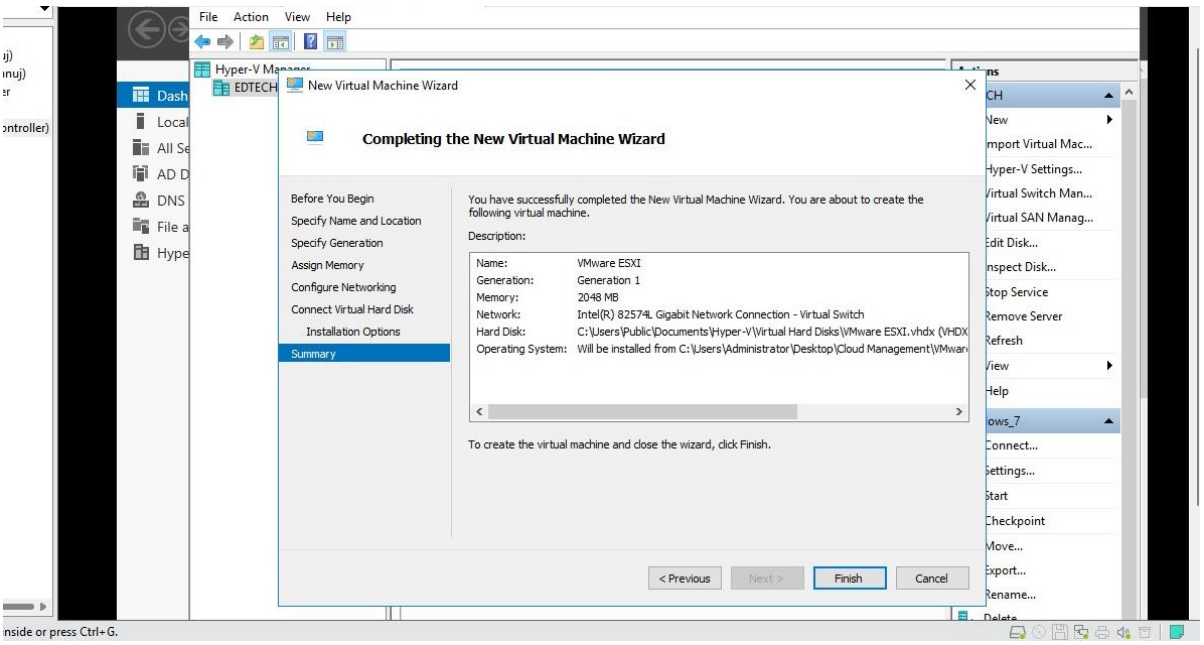
- Keep default values and Click **Next**



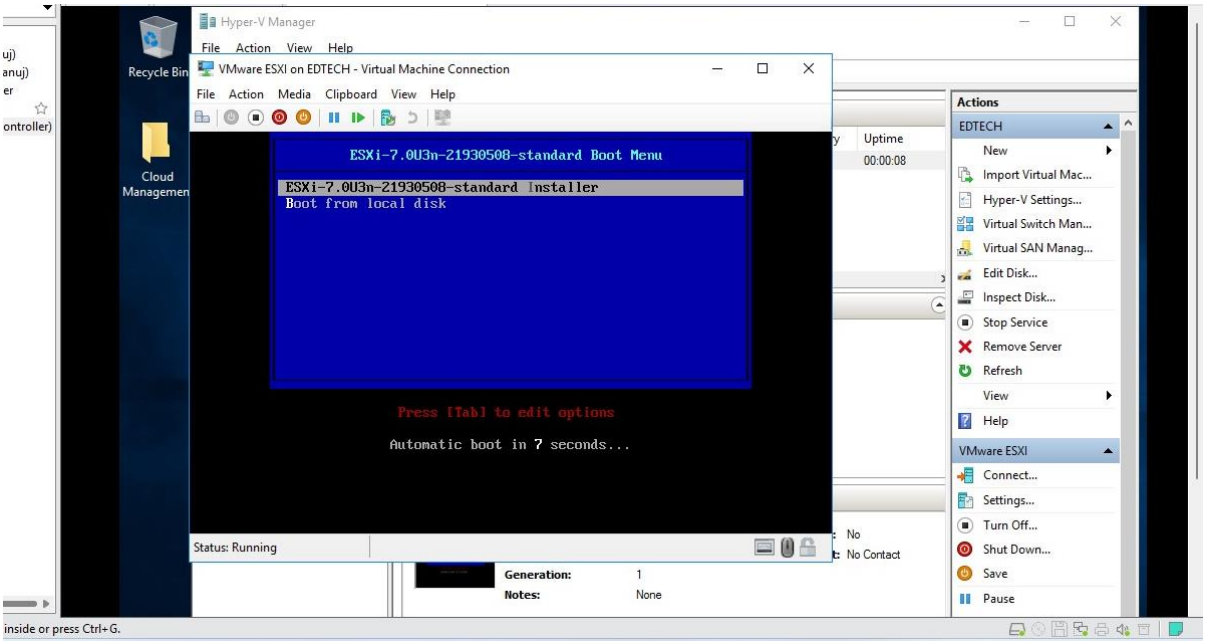
- Select **Install an operating system from a bootable CD/DVD ROM** and Click on **Image file** (.iso) and browse for your VMvisor7 iso file and Click **Next**



- View the summary of your virtual machine and Click **Next**

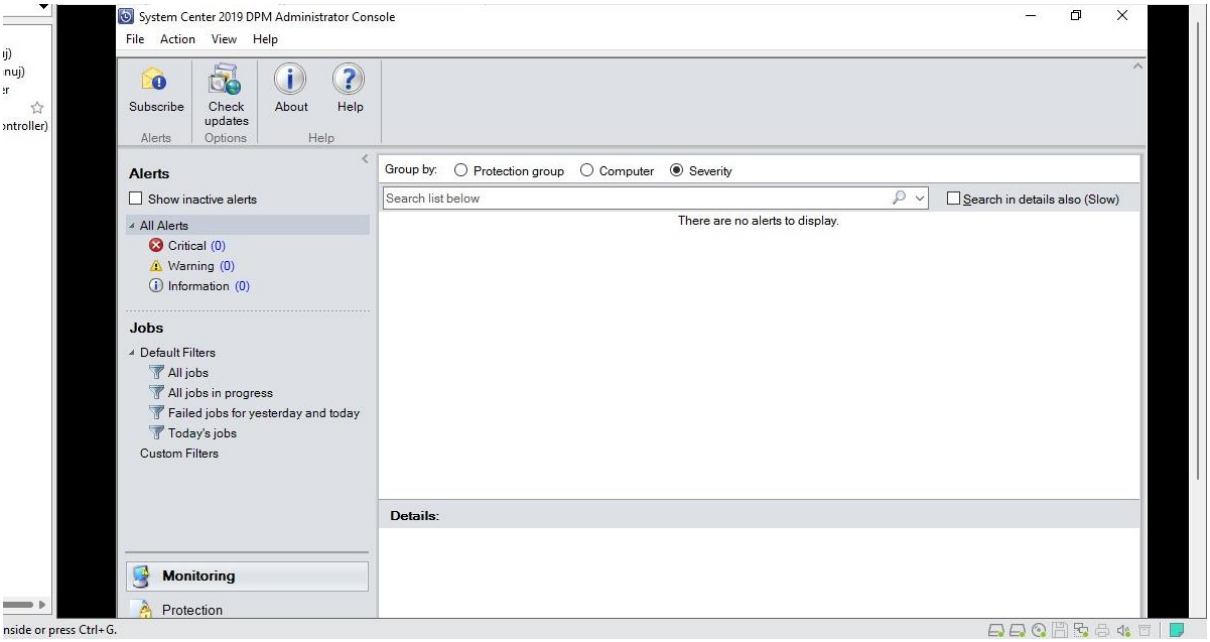


- To ensure it works **Power On** the Machine

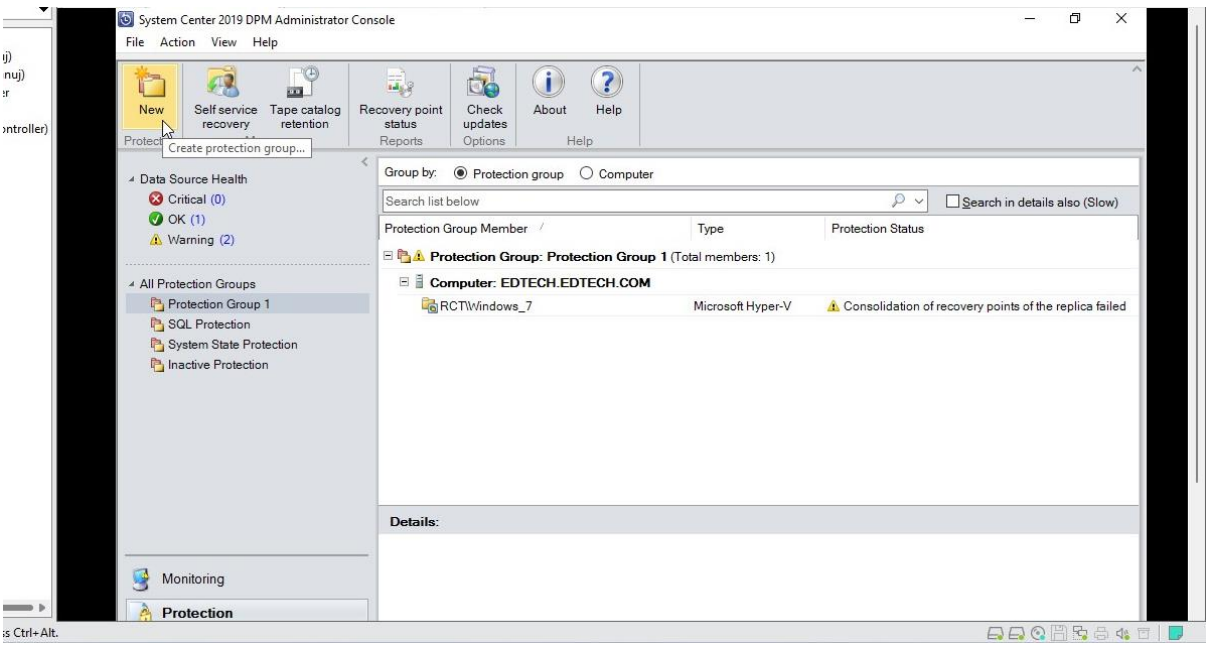


Step 2: Creating a Protection Group for the VMware Server

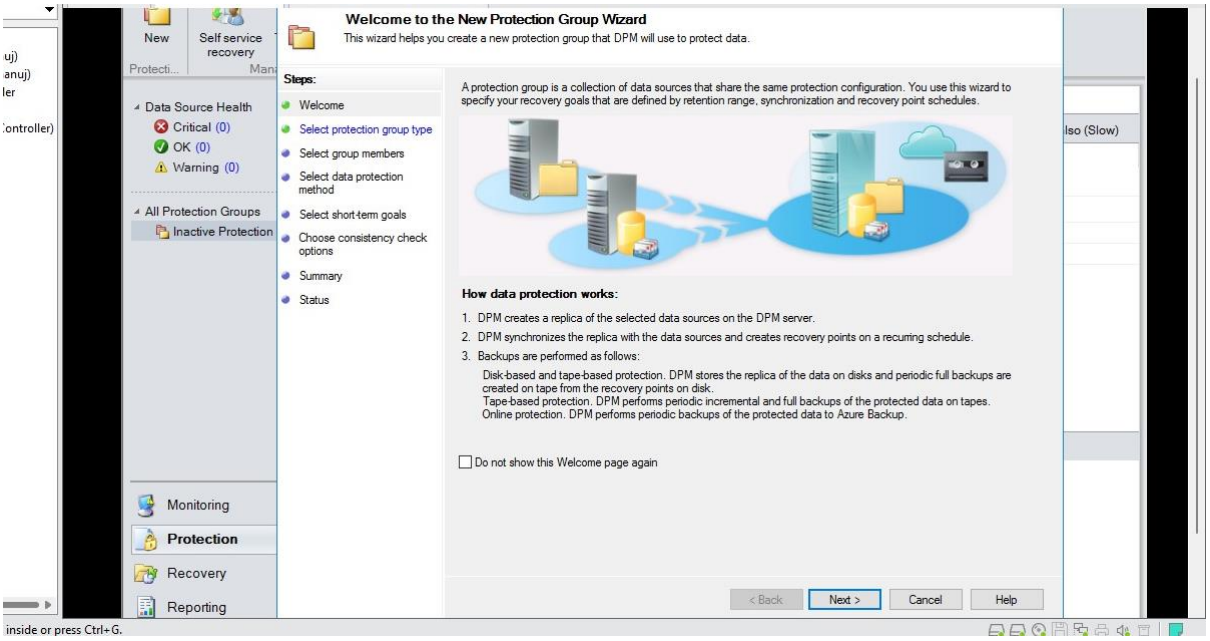
- Power off your VMware Server and Switch over to the **SCDPM (User)** VM and Open the **DPM manager**



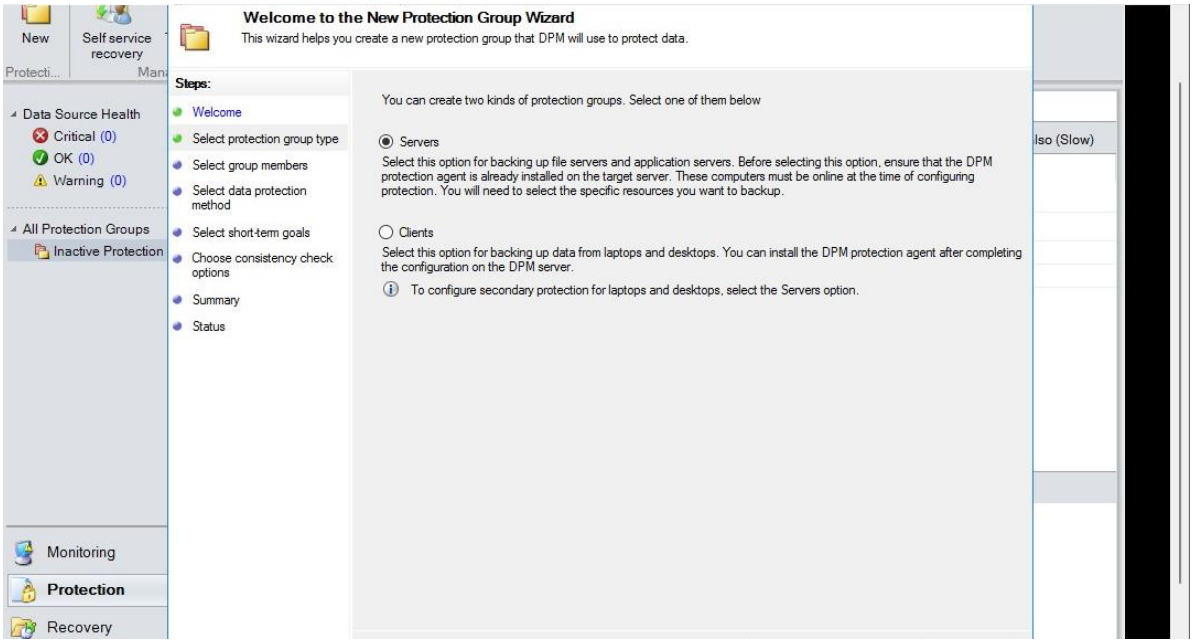
- Click on the **Protection** Tab and Select **New**



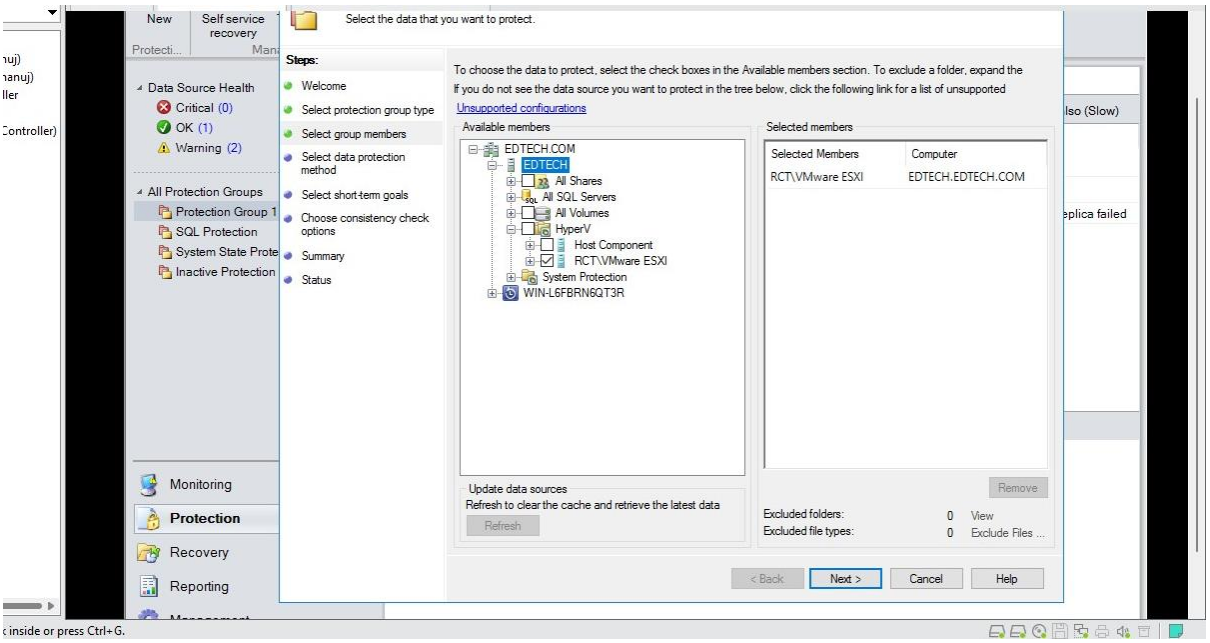
- Click **Next**



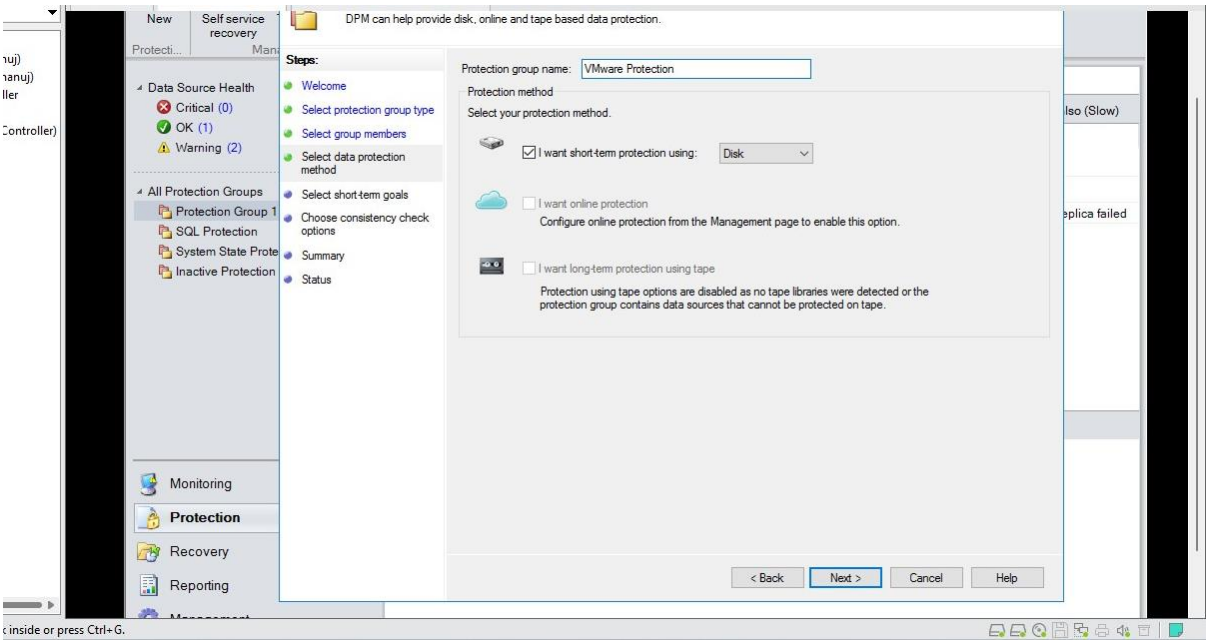
- Select **Servers** and Click **Next**



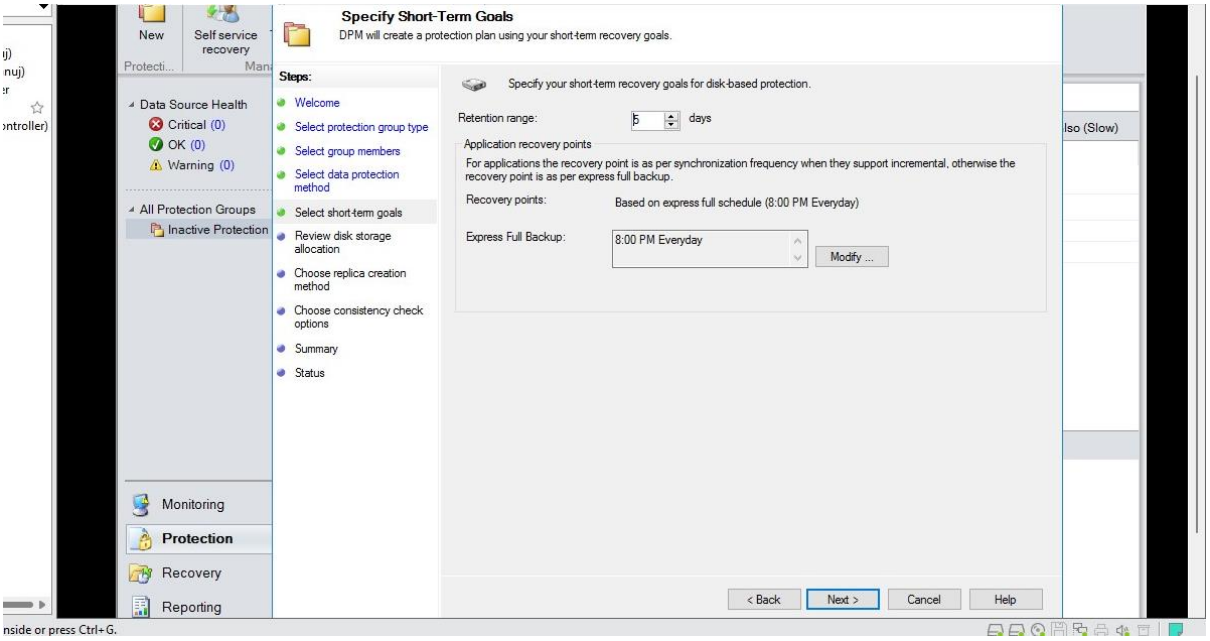
- Select **EDTECH** and Click on **Refresh,** after refresh Open **Hyper-V** and Click on your **virtual machine** (Here it is RCT\VMware ESXi) and Click **Next**



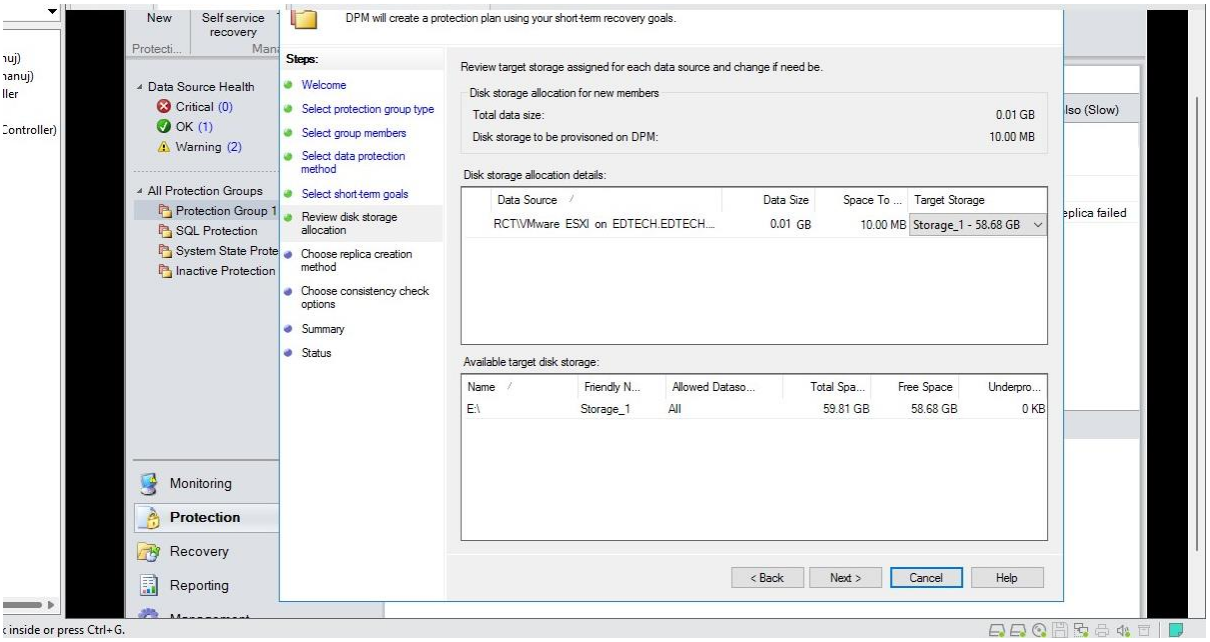
- Name your **Protection Group** (Here it is VMware Protection) and Select **I want short term protection** and Select **Disk** and Click **Next**



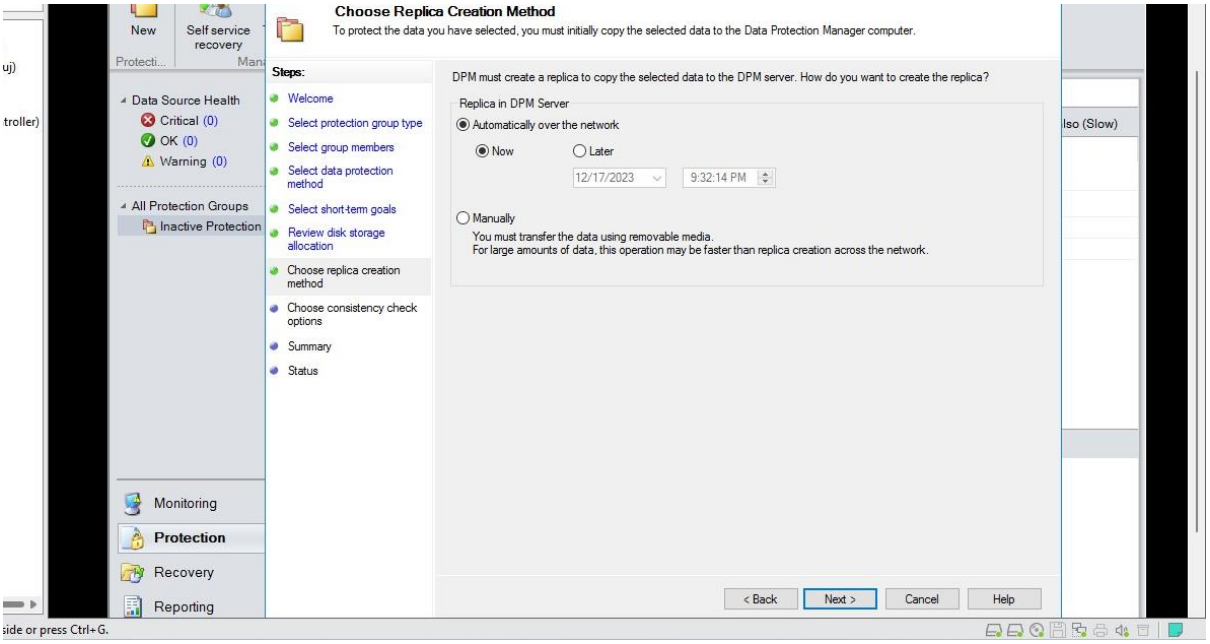
- Keep default values and Click **Next**



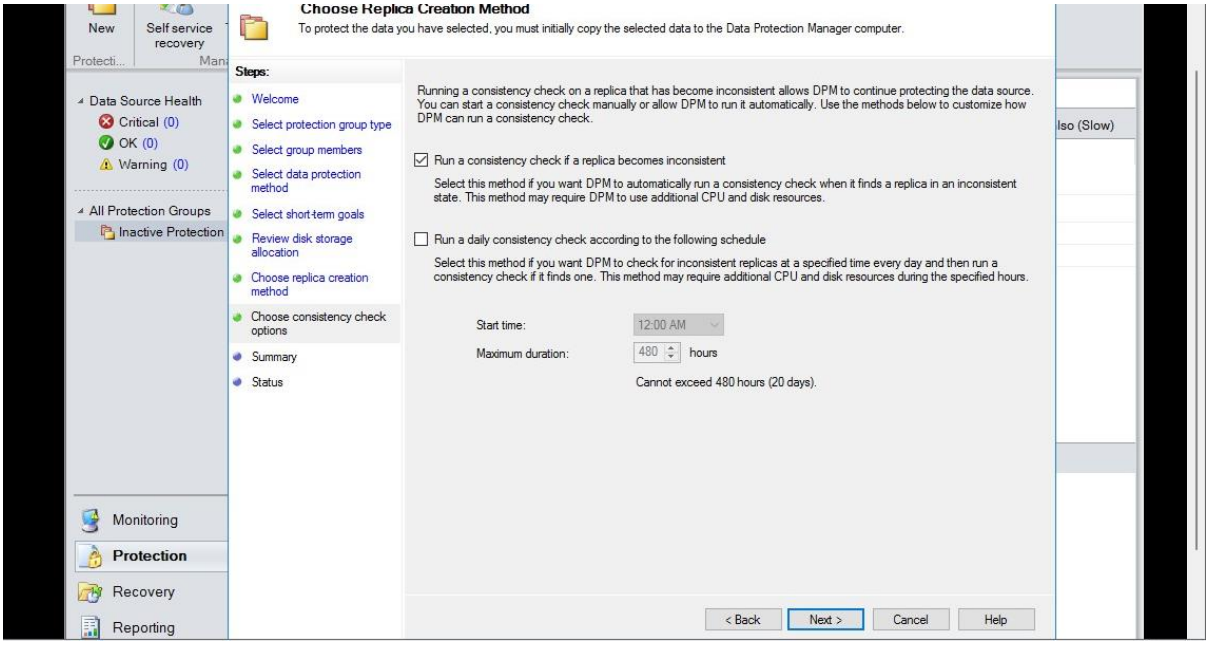
- Click **Next**



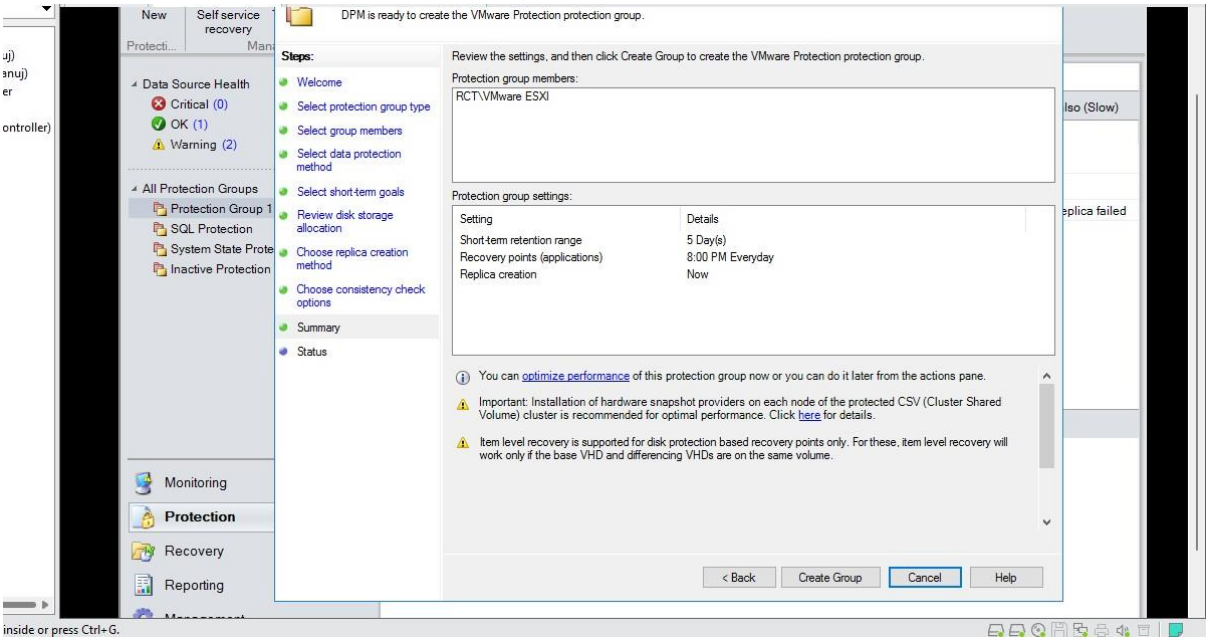
- Click **Next**



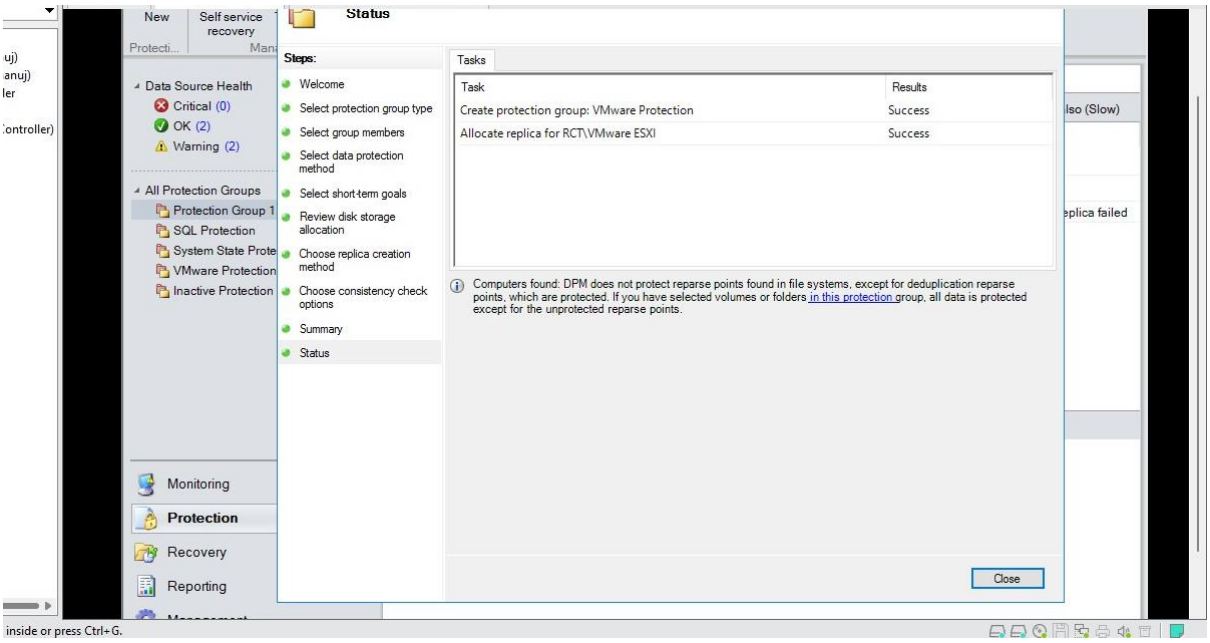
- Select **Run a consistency check if a replica becomes inconsistent** and Click **Next**



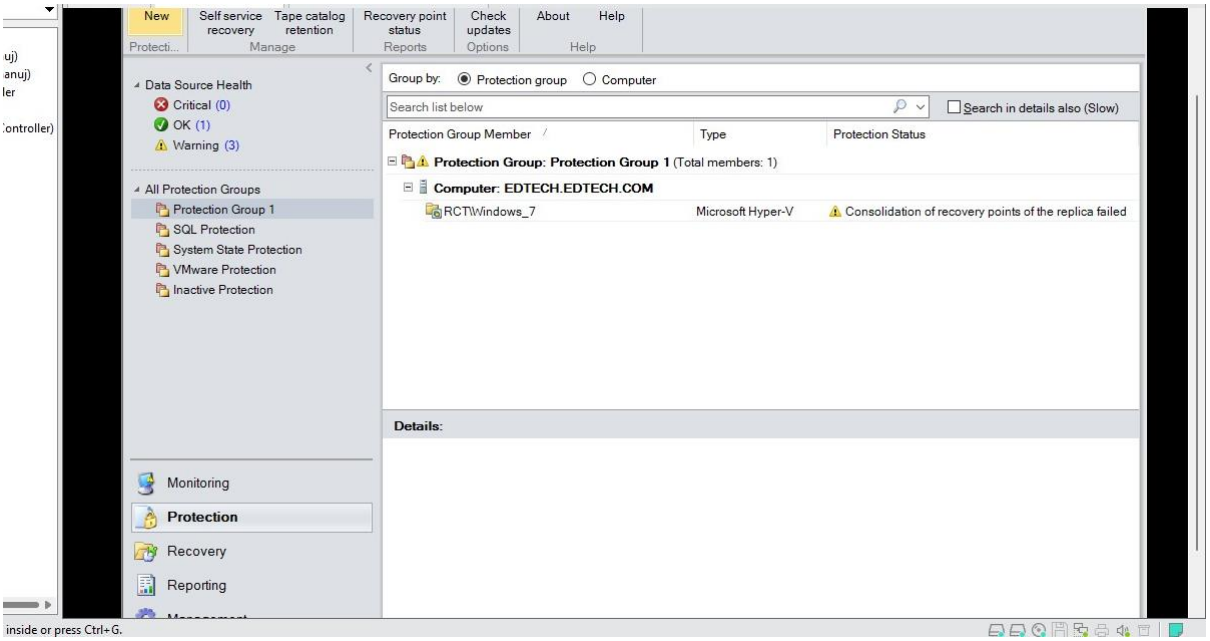
- View the summary of your group and Click **Create Group**



- After it is successfully created Click **Close**



- Now all your Protection Groups have been created successfully



Practical: 8

Aim: Managing Services with Configuration manager and Designing a Hierarchy of sites using Microsoft End Point Configuration Manager

Writeup:

Pre-requisites:

Domain Controller (Here Domain Controller Name: **Winser (New)**)

User Server (Here User Server Name: **SCCM_USER PRACTICAL 8**)

System Center Configuration Manager

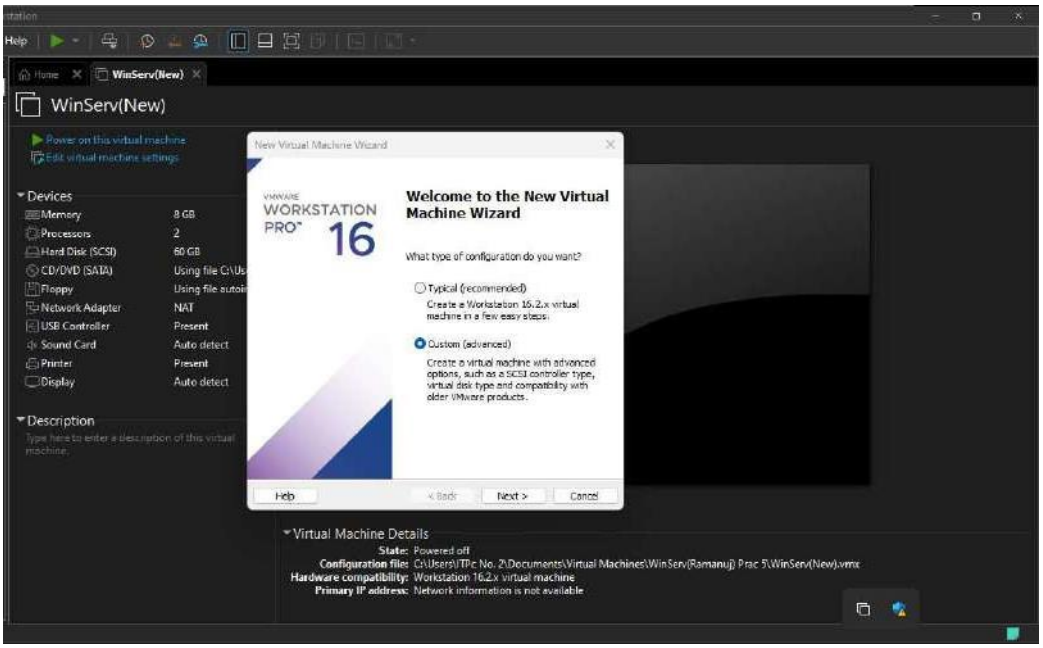
SQL Server 2016

MS SQL Management Studio

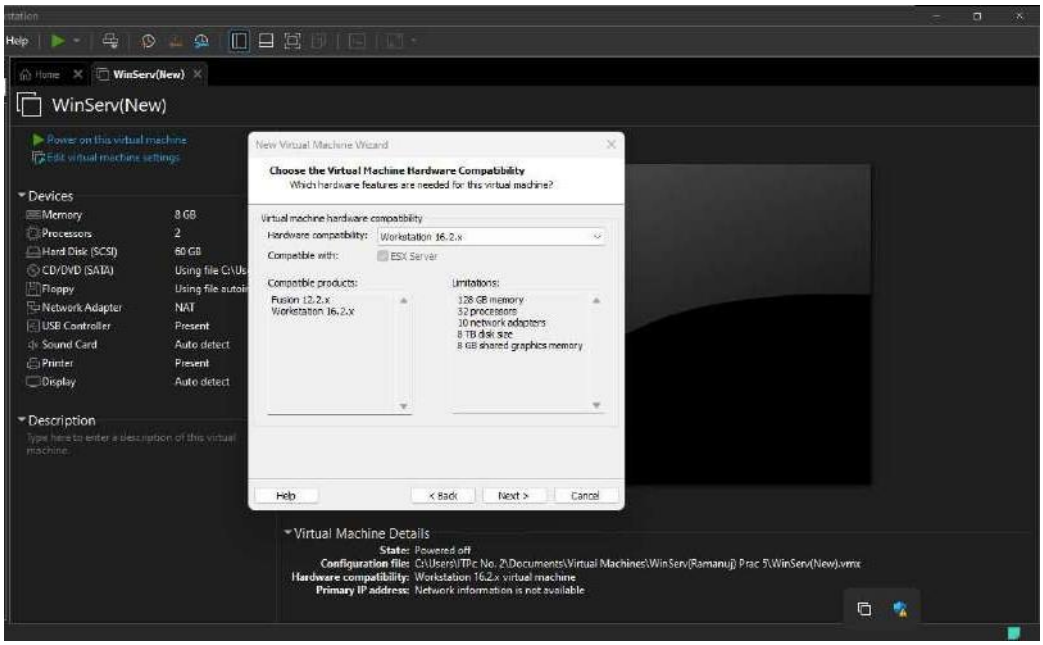
Windows ADK 1903 and Windows PE add-on

Step 1: Step 1: We will be using the same Domain Controller created in Practical 2 and only have to create a new User VM.

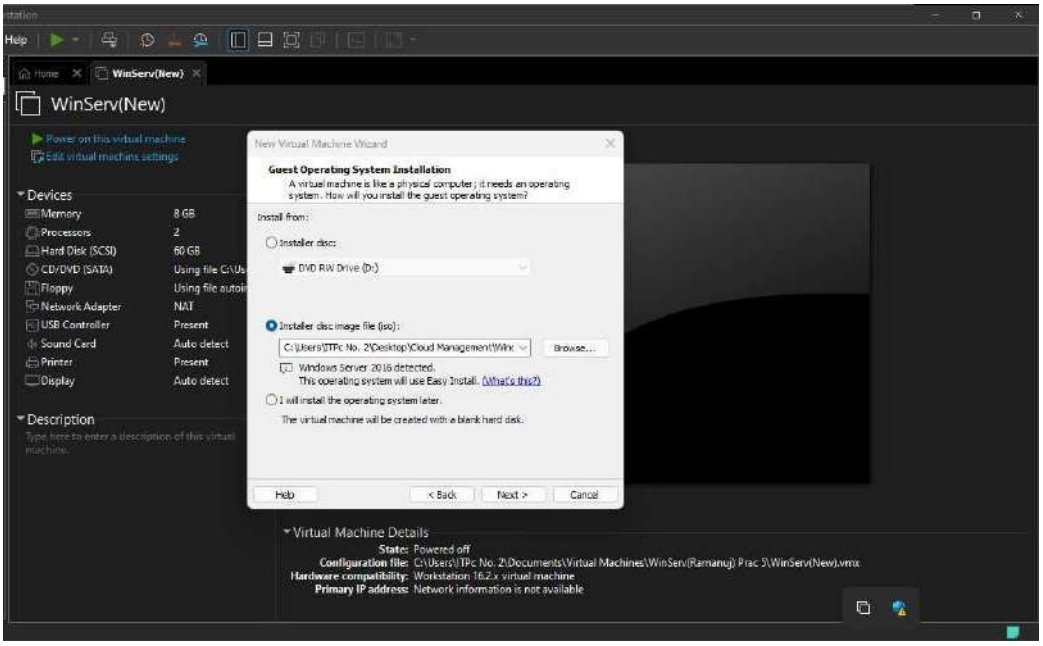
- Open VMware Workstation and **Click on Create a New Virtual Machine.**
- Select **Custom** and **Click on Next.**



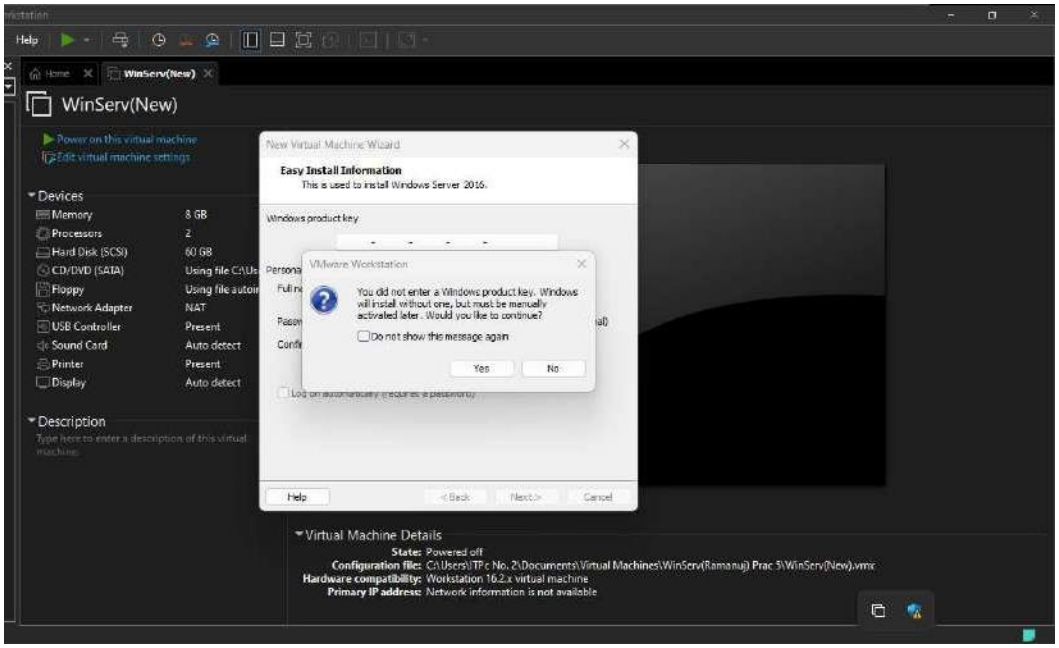
- **Keep default values** and **Click Next**



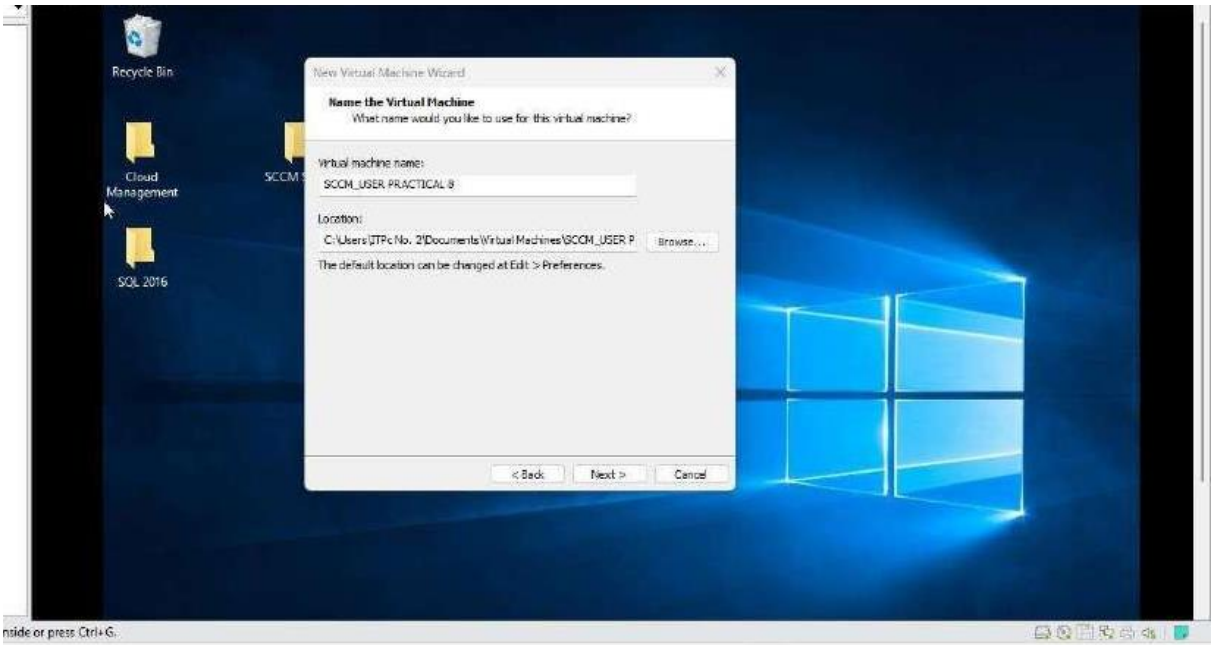
- **Select** Installer disc image file (iso): **Click on Browser** and **Select Windows Server 2016 and Click on Next**



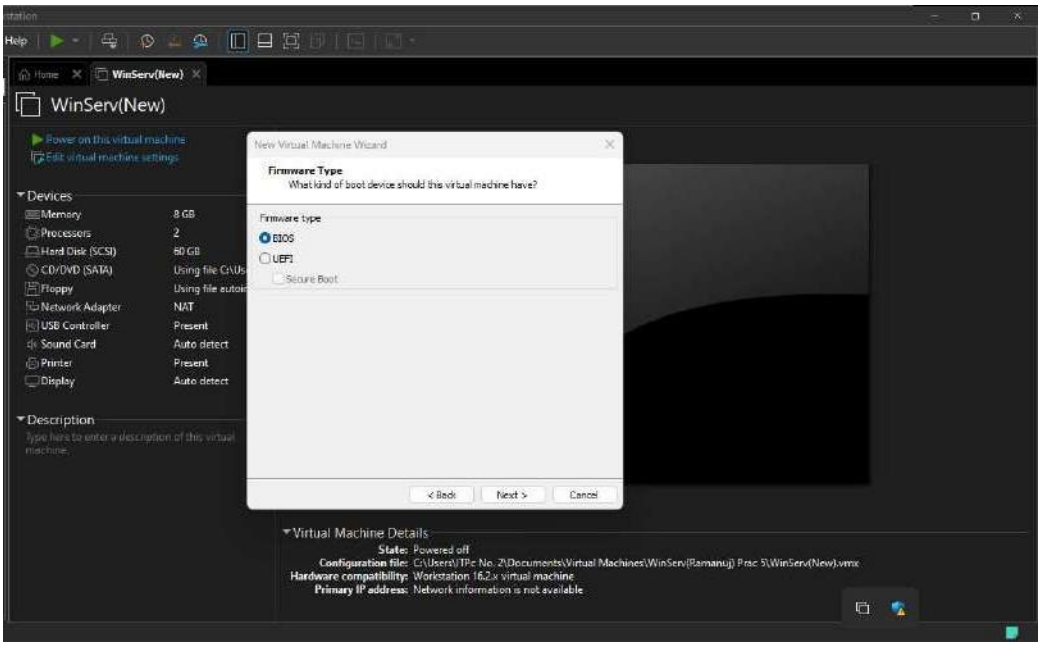
- **Click Yes** and **Click on Next**



- **Give Virtual Machine Name** (Here it is **SCCM_USER PRACTICAL 8)** and **Click on Next**

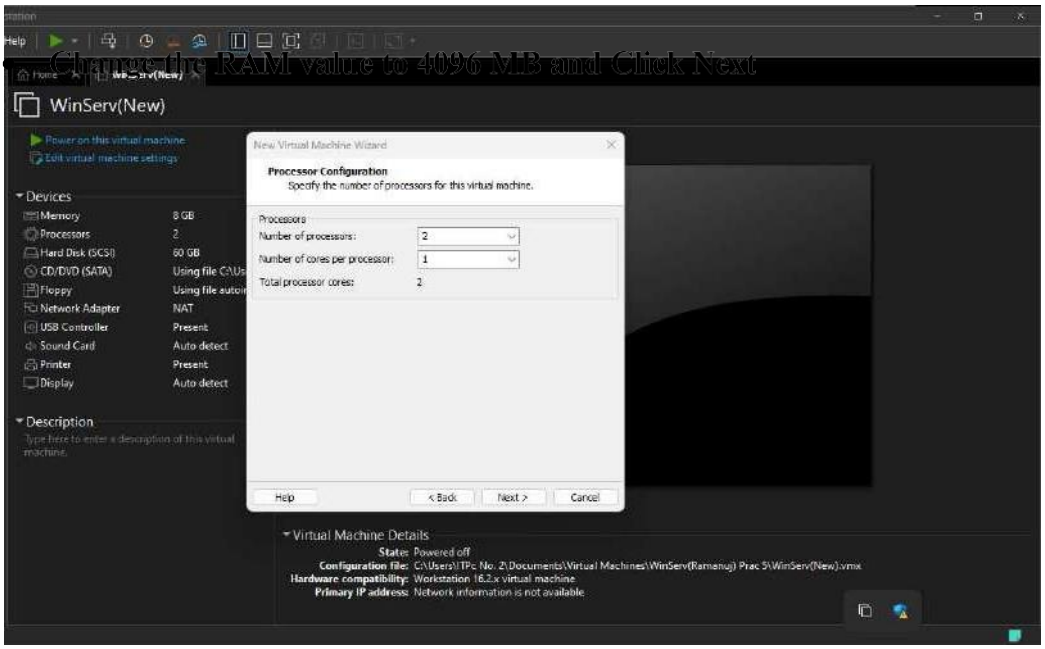


- **Select BIOS** and **Click on Next**

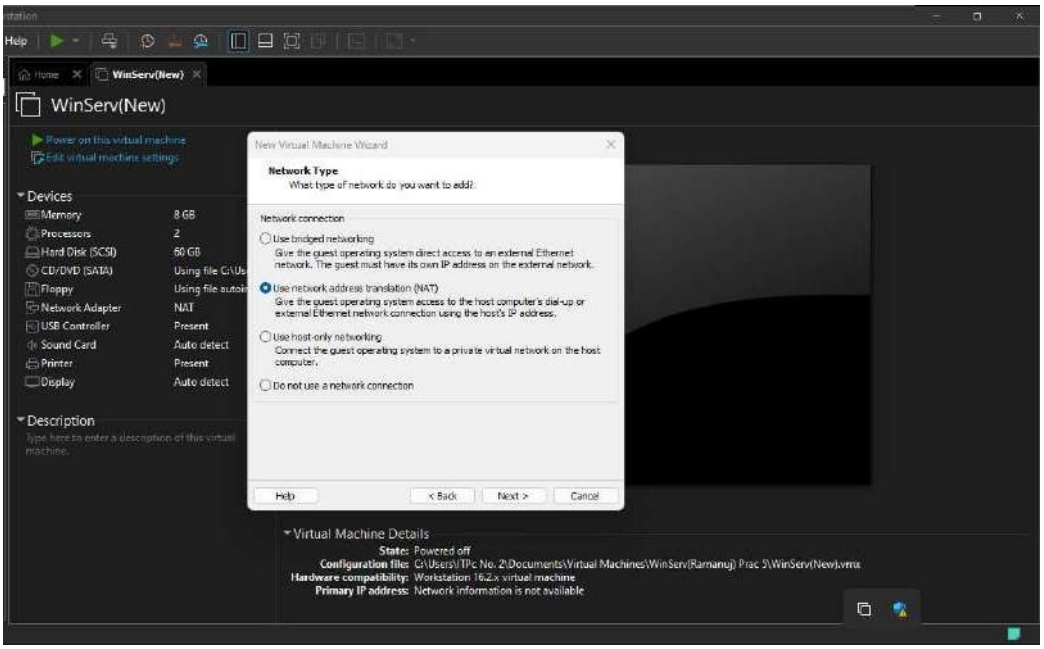


- **Keep default values** and **Click on Next**

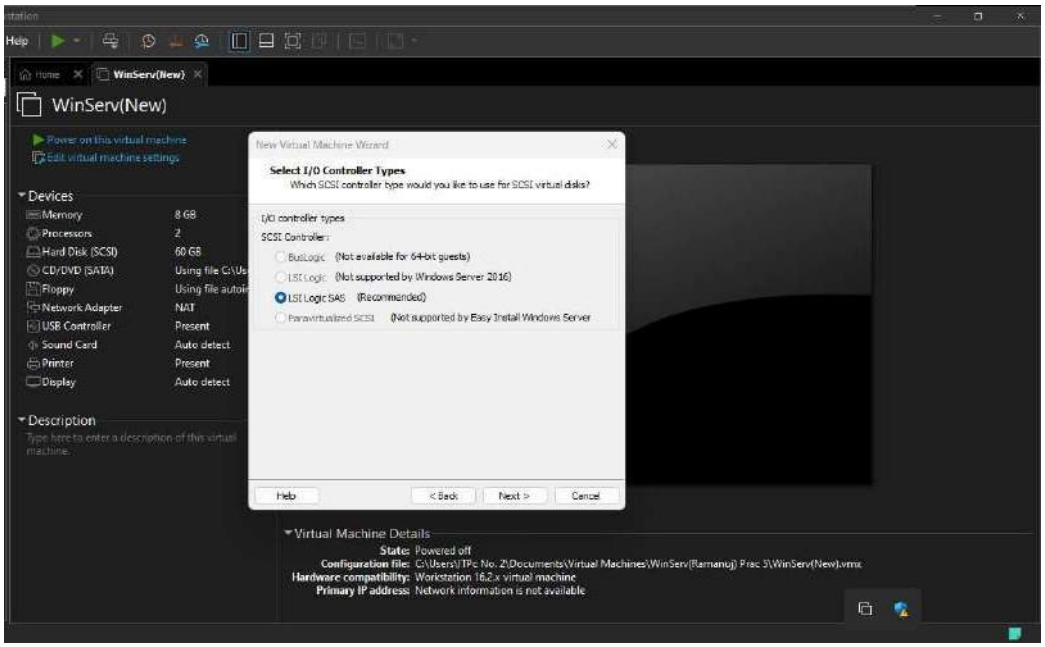
- **Change the RAM value to 4096 MB and Click Next**



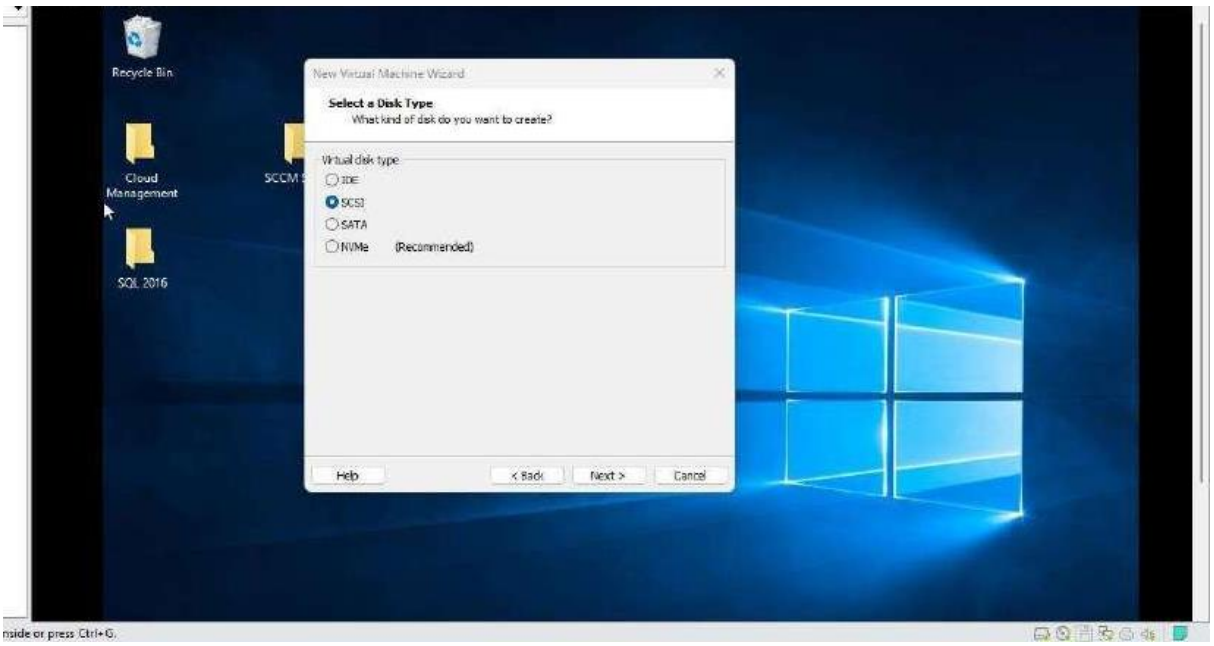
- **Keep default values** and **Click on Next**



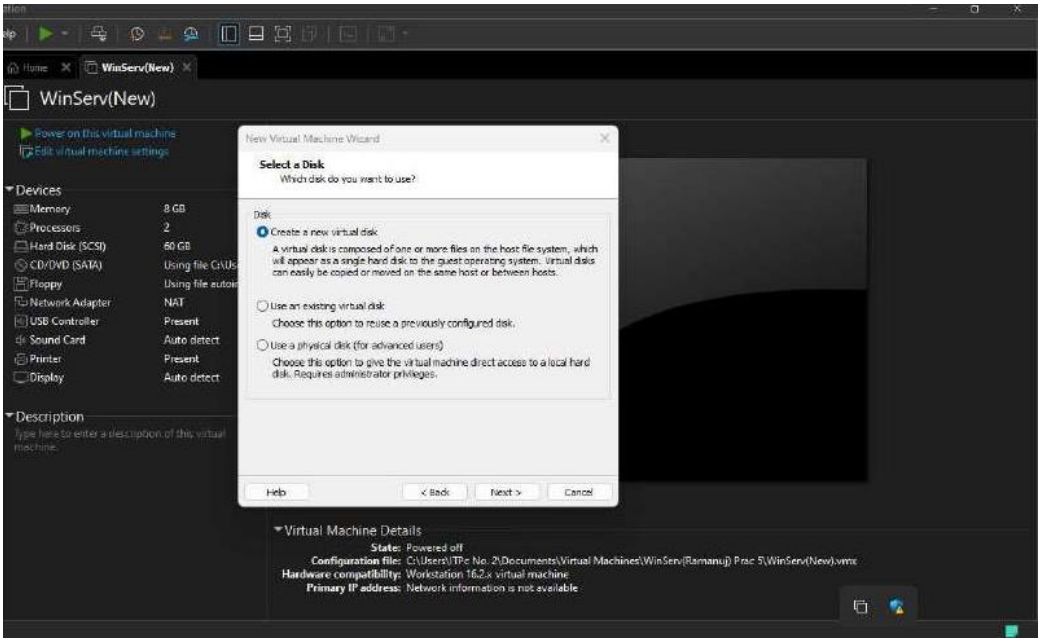
- **Keep default values** and **Click on Next**



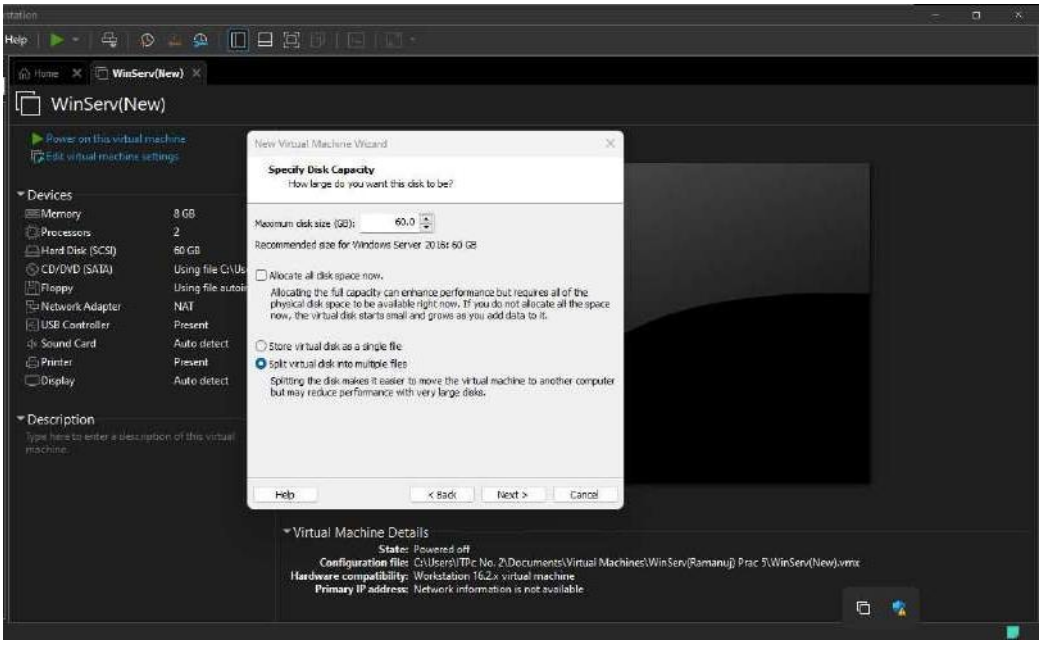
- Select **SCSI** and **Click on Next**



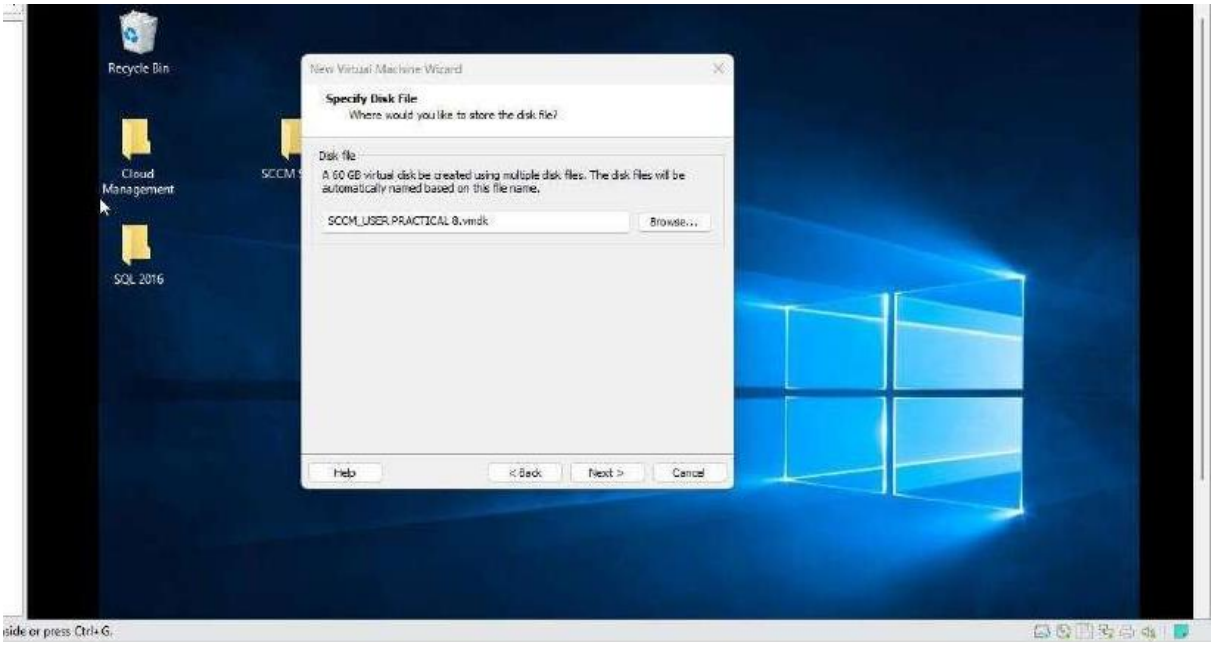
- **Keep default values** and **Click on Next**



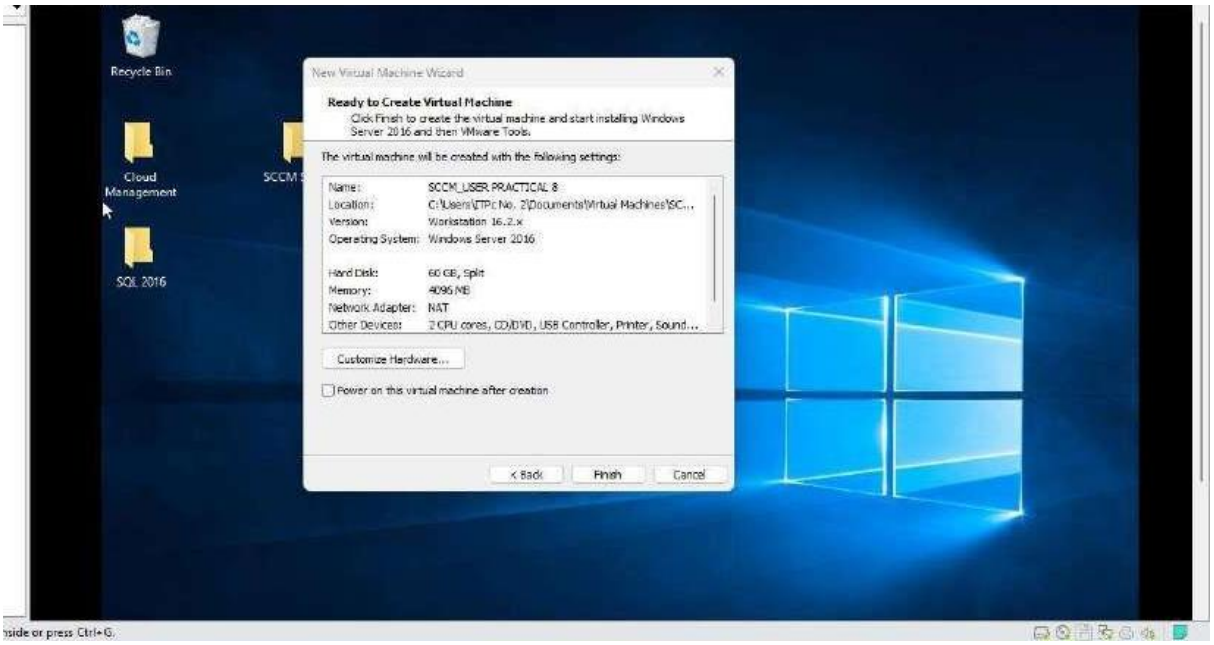
- **Keep default values** and **Click on Next**



- **Keep default values** and **Click on Next**



- **Click on Finish**

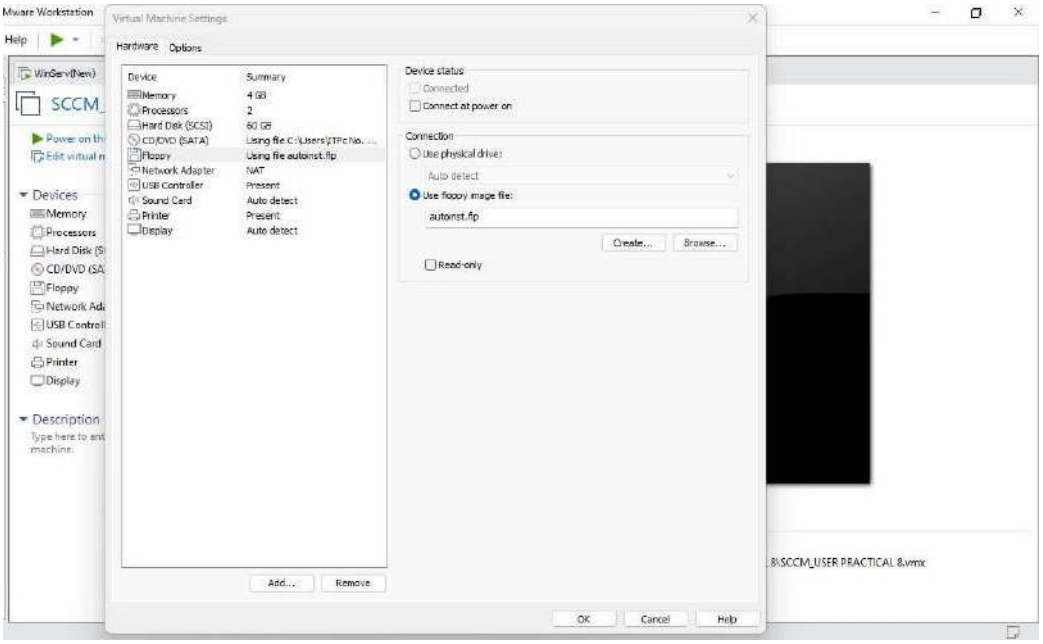


- Your **Virtual Machine** Has Been Created

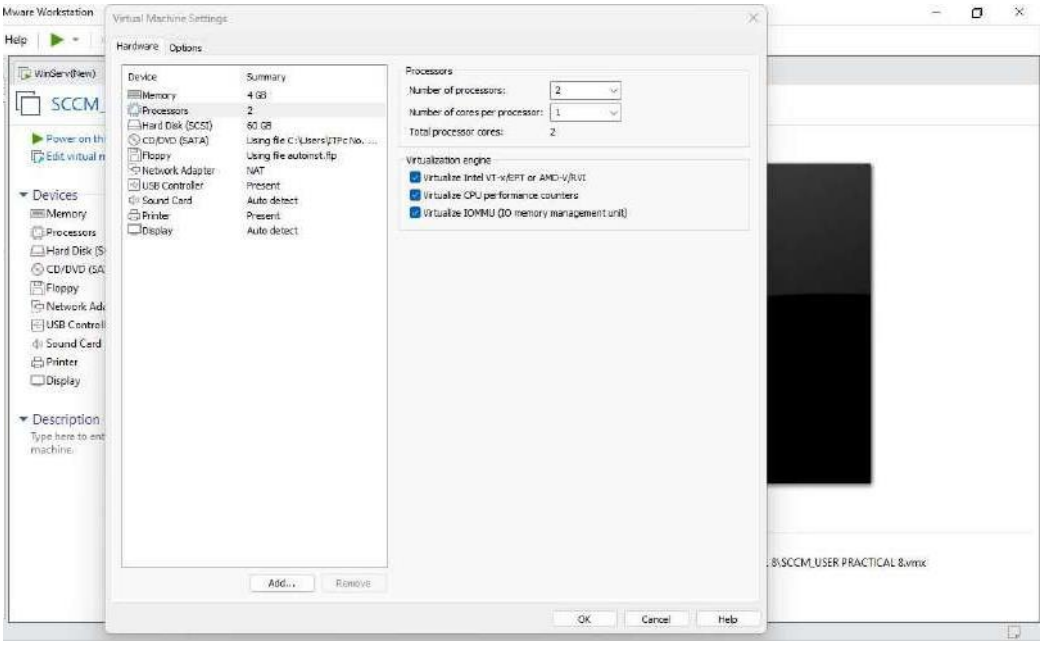
Step 2: Before **Power on this virtual machine** a few changes need to be in this **virtual machine settings.**

- **Click on Edit virtual machine settings**

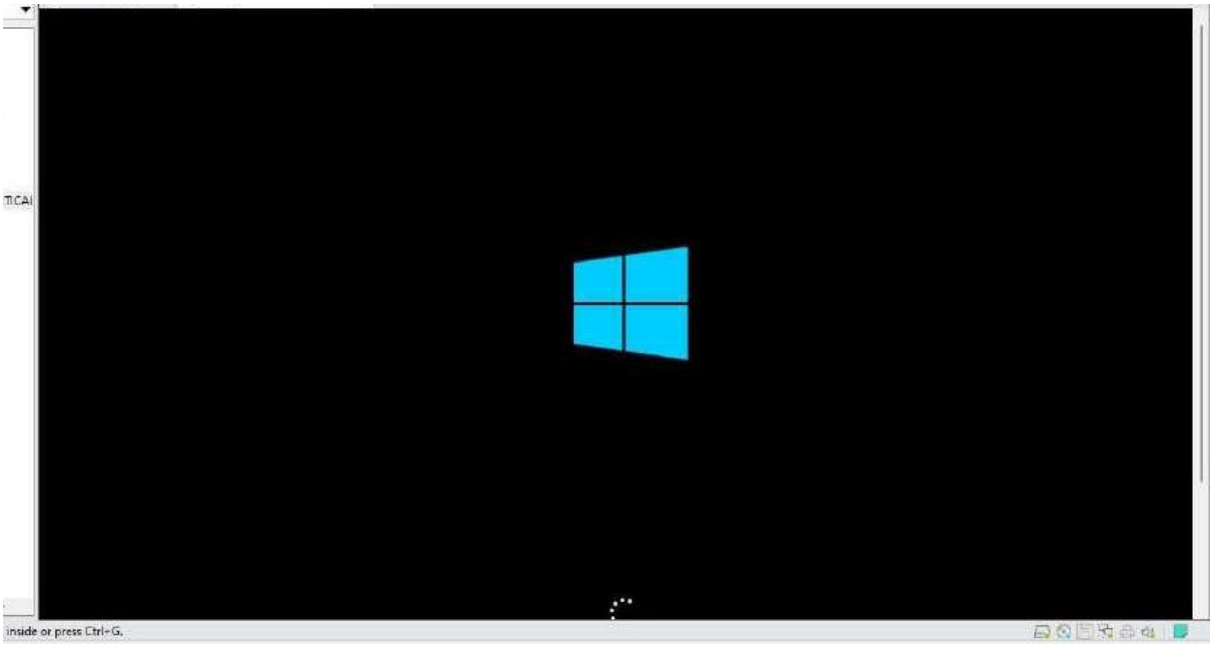
- **Within virtual machine settings Select Floppy and Un-Click Connect on Power on** and **Click on OK**



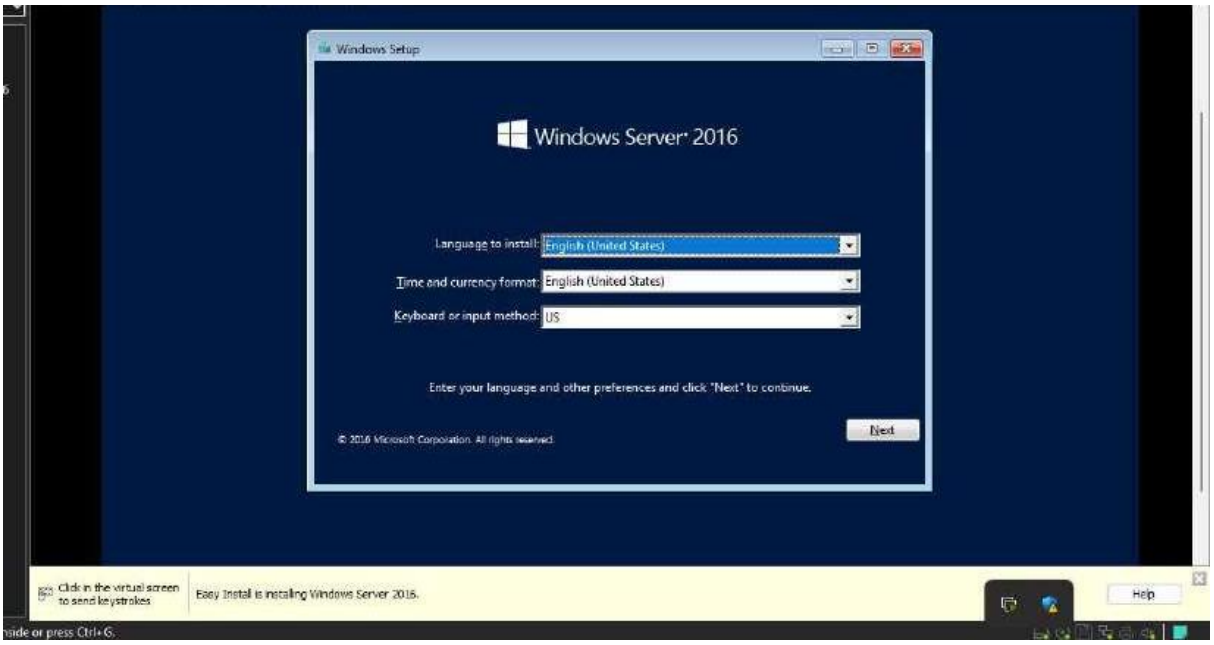
- **Click on Processors Within Virtualization engine Check following features and Click on Ok**



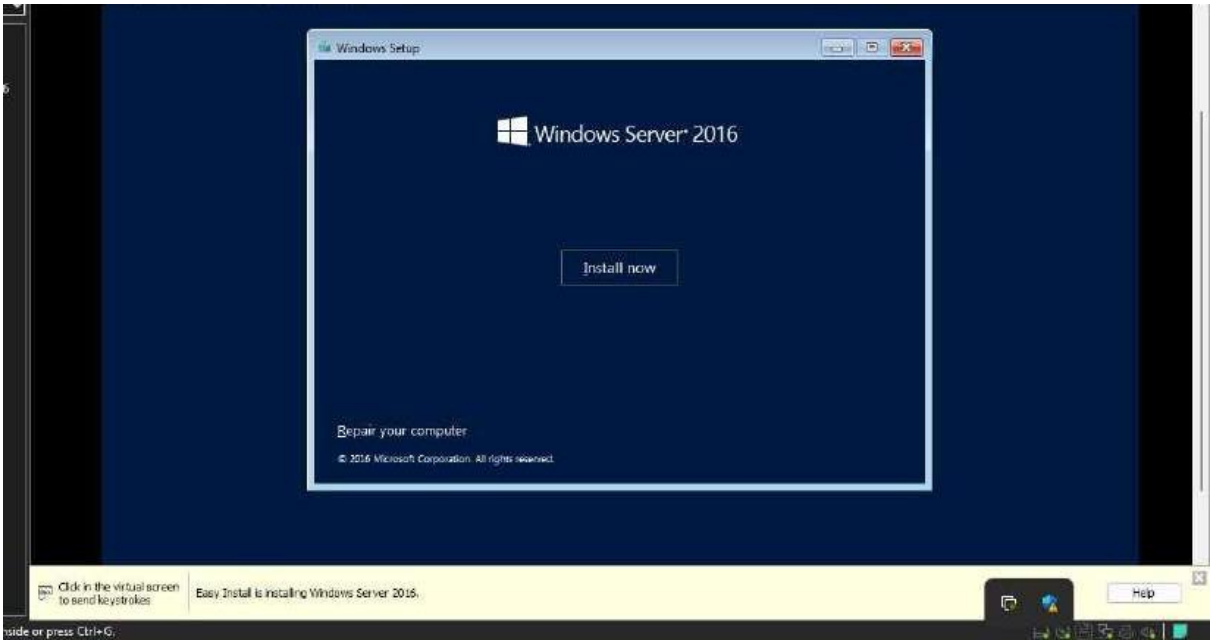
- **Now Power On your virtual machine**



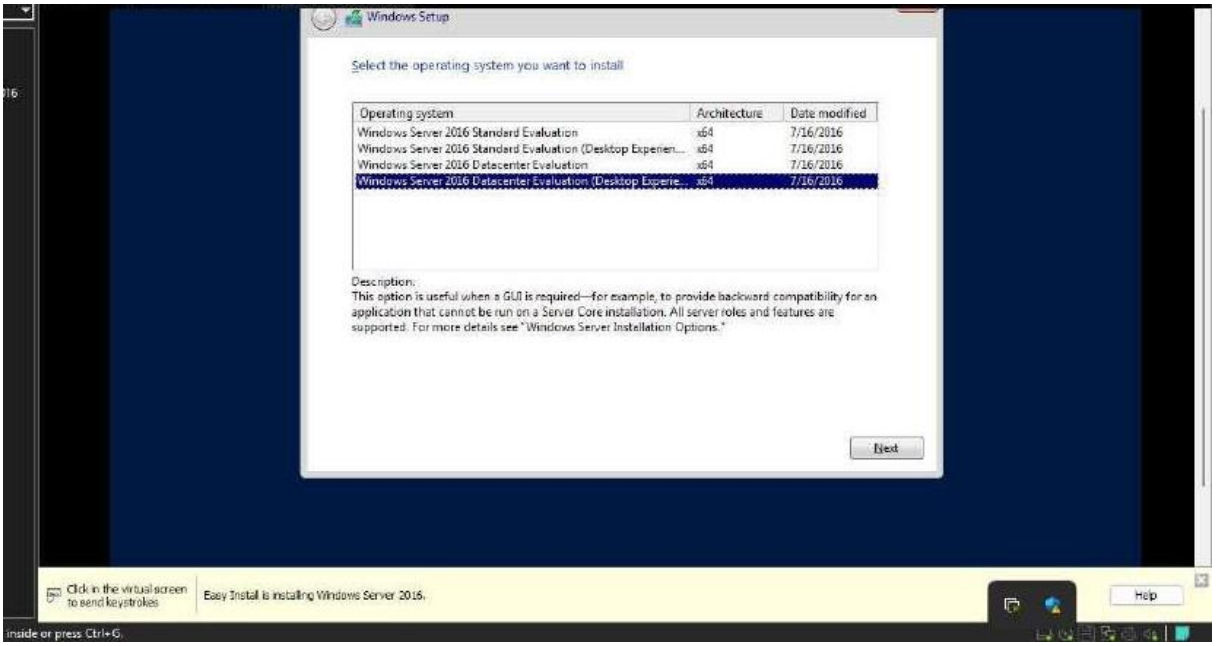
- **Click on Next**



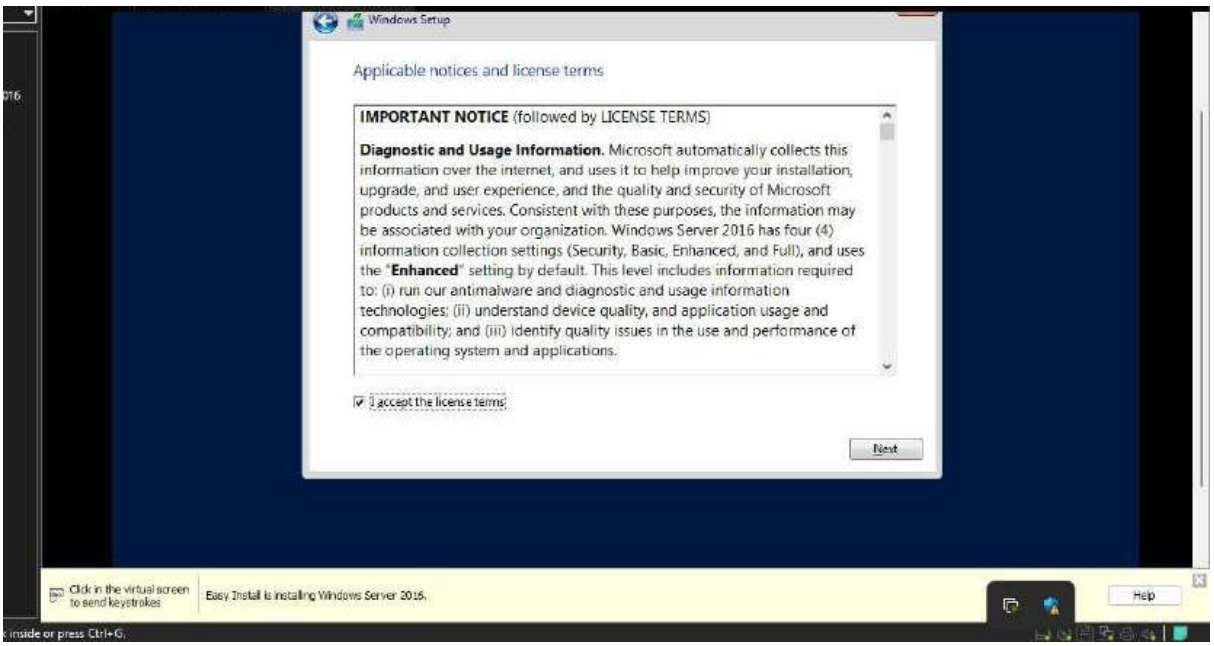
- **Click on Install Now**



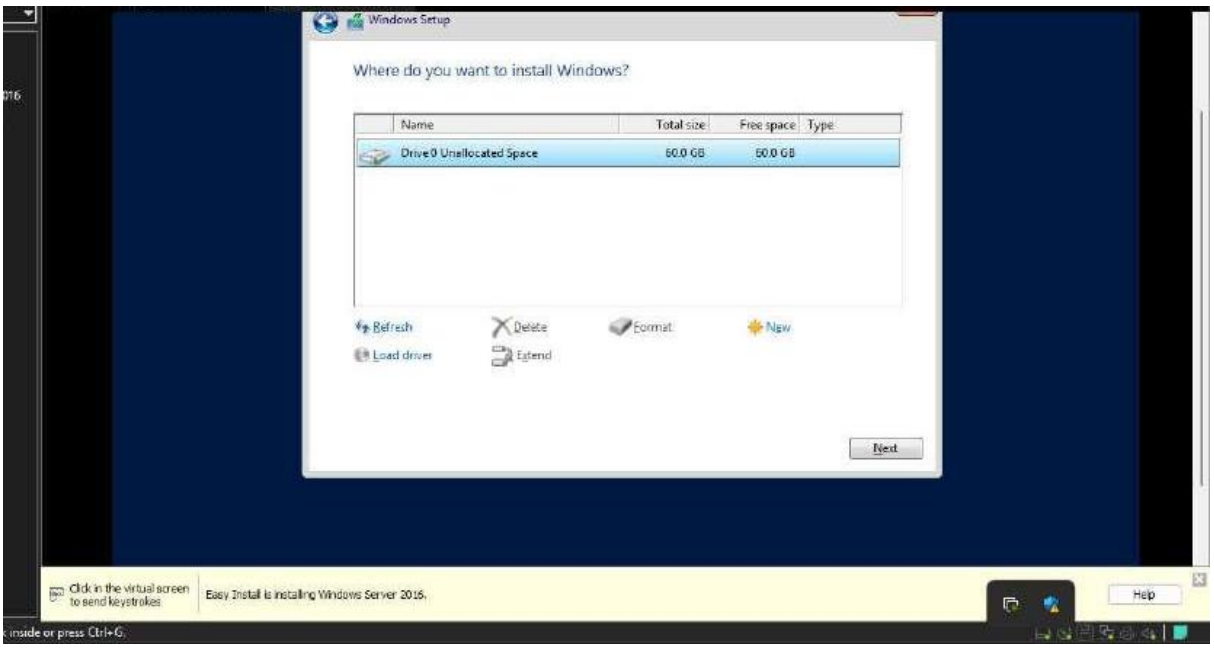
- **Select Window Server 2016 Datacenter Evaluation (Desktop Experience)** and **Click on Next**



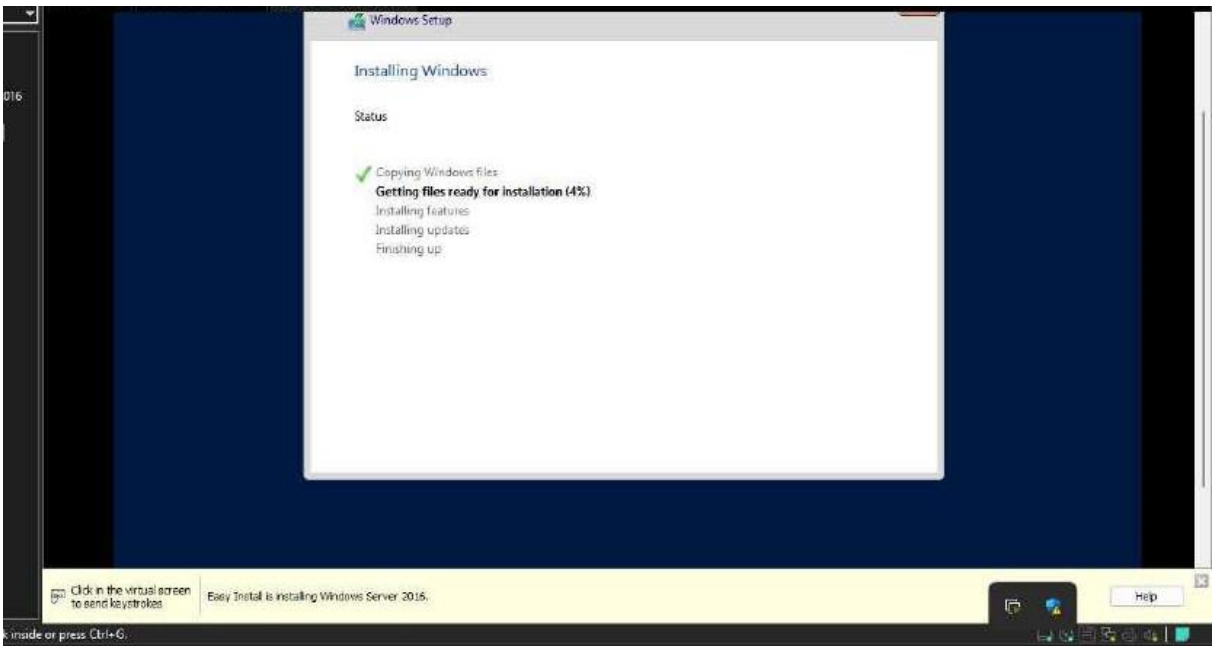
- **Select I accept the license** and **Click on Next**



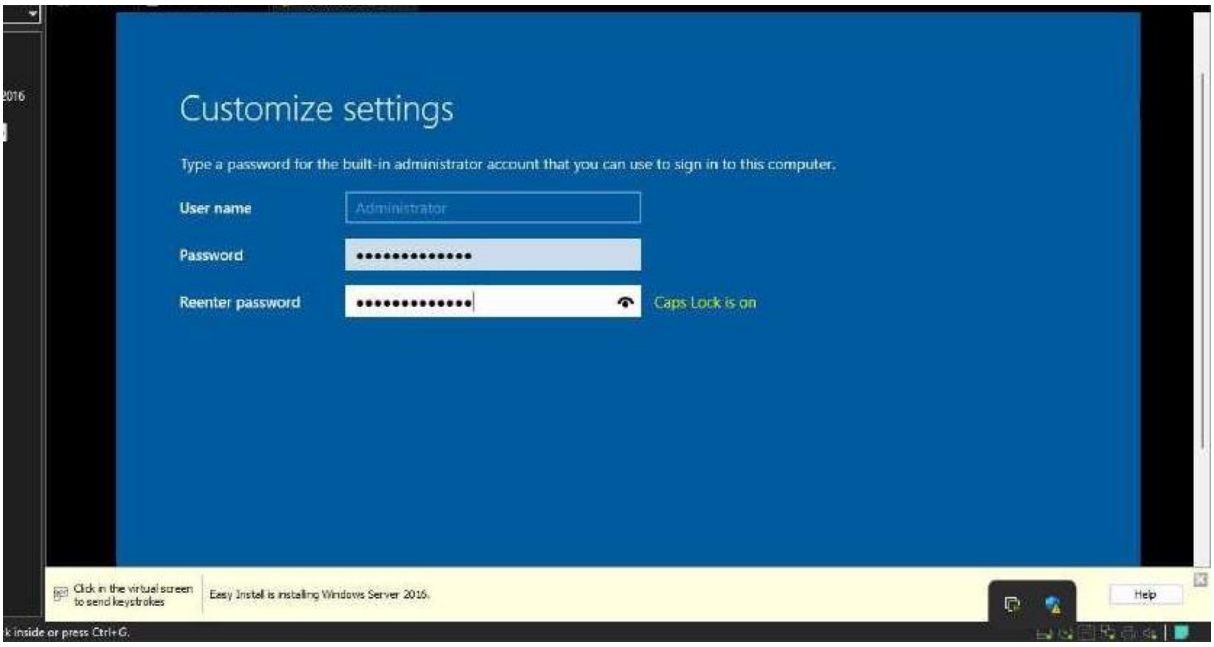
- **Keep default settings** and **Click on Next**



- **Windows Server will begin installing**

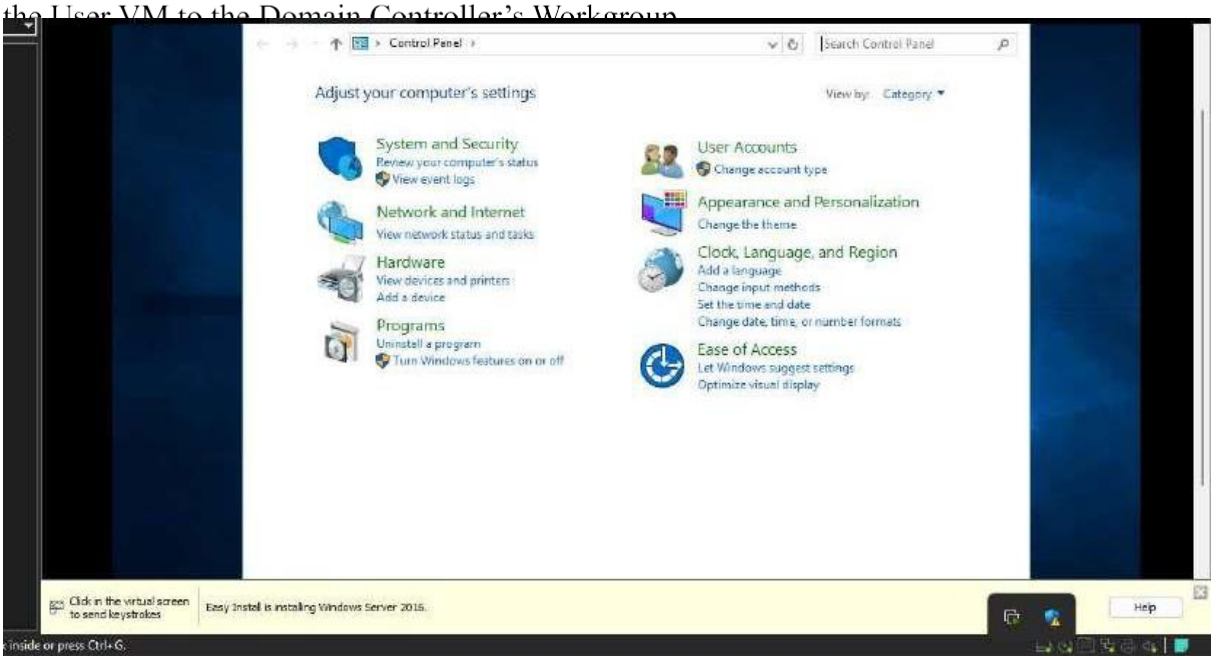


- **After installation type in a password for the Windows Server and Click Finish**

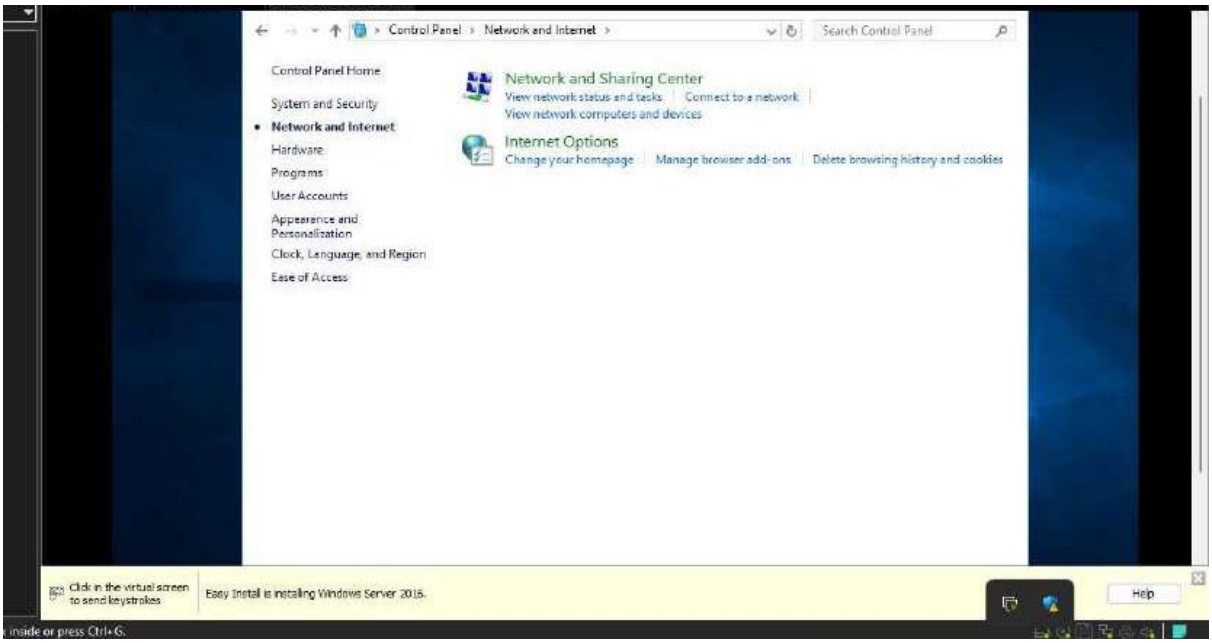


- Your Windows Server has now been successfully created

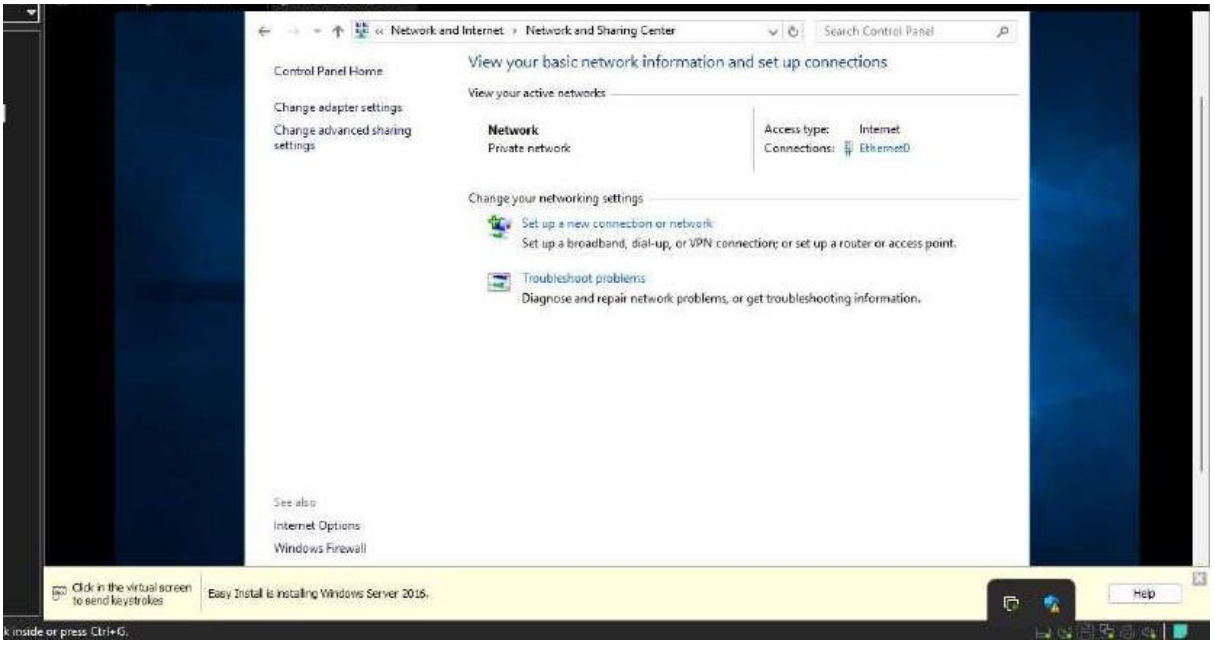
Step 3: Establishing a connection with the User VM and Domain Controller by connecting the User VM to the Domain Controller's Workgroup



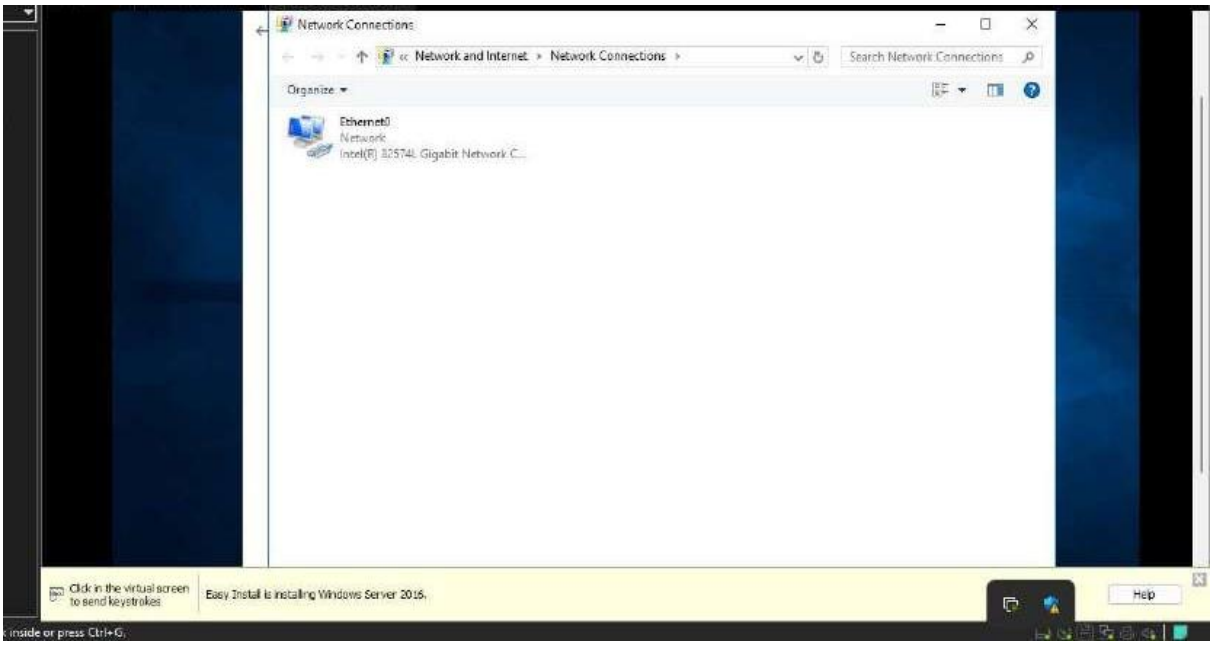
- **Click on Network** and **Sharing Center**



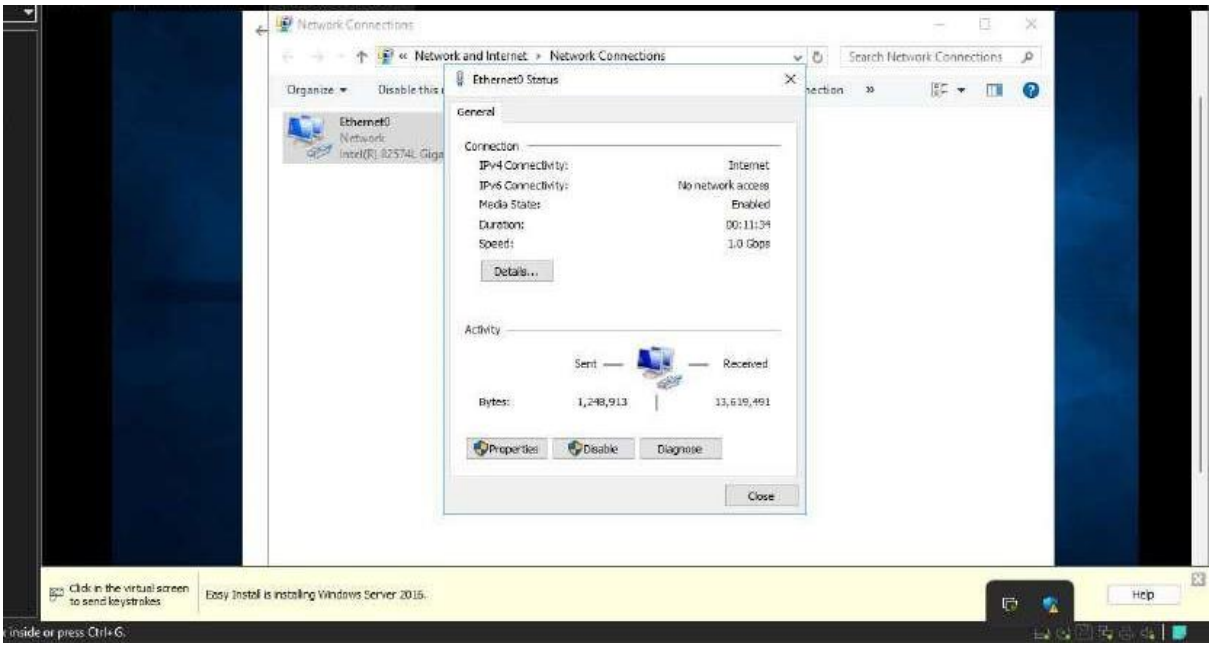
- **Click on Change adapter settings**



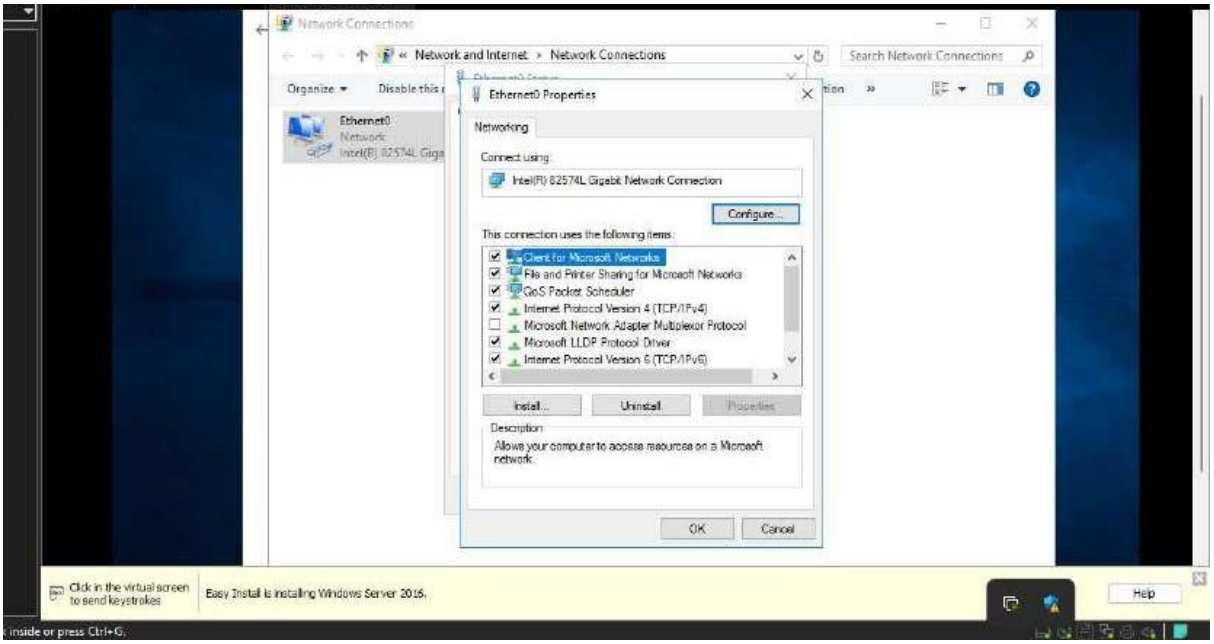
- Right **Click on Ethernet0** and **Select Properties**



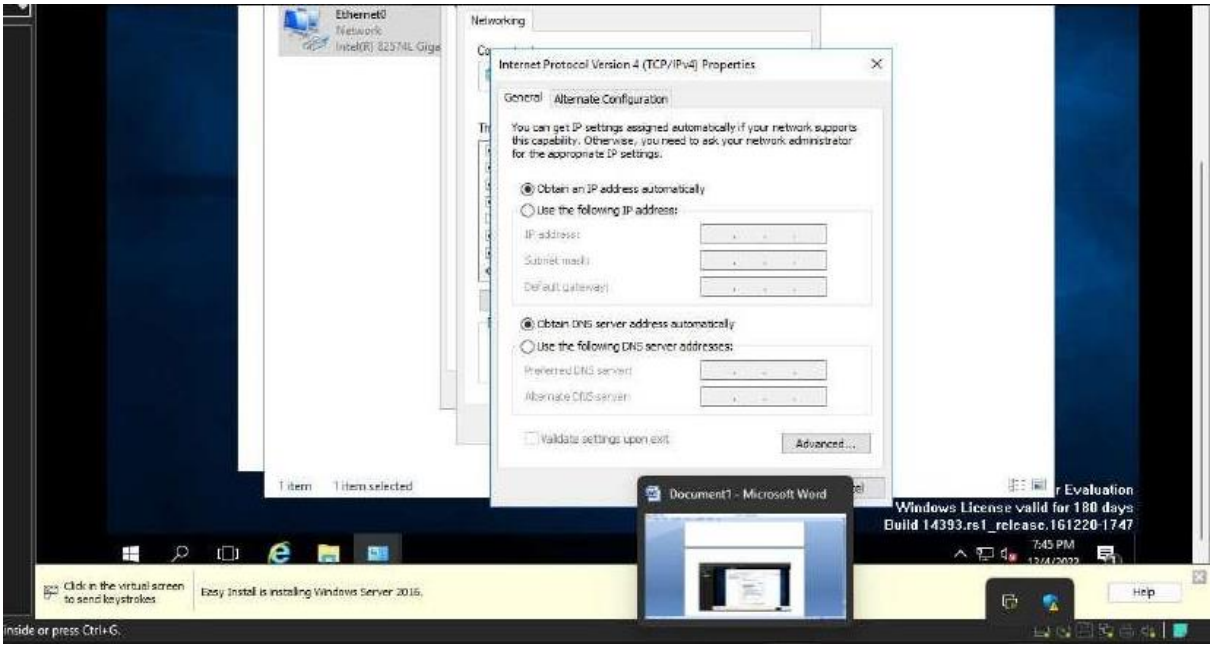
- Within **Ethernet0 Status Click on Properties**



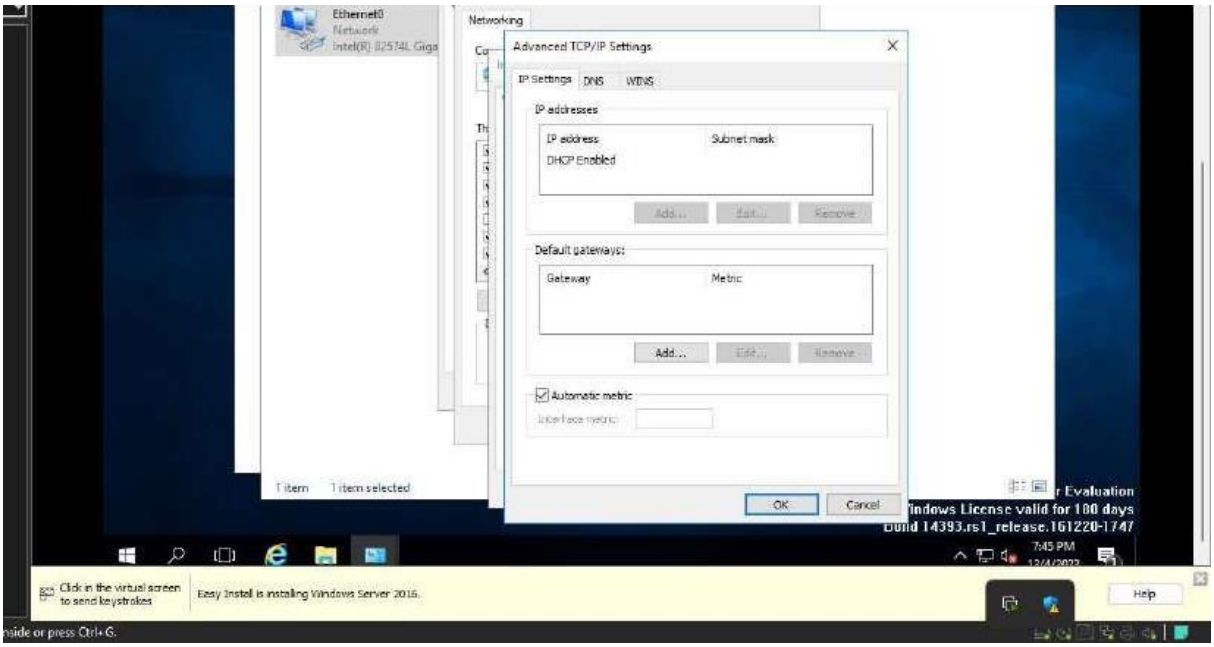
- **Click on Internet Protocol Version 4**



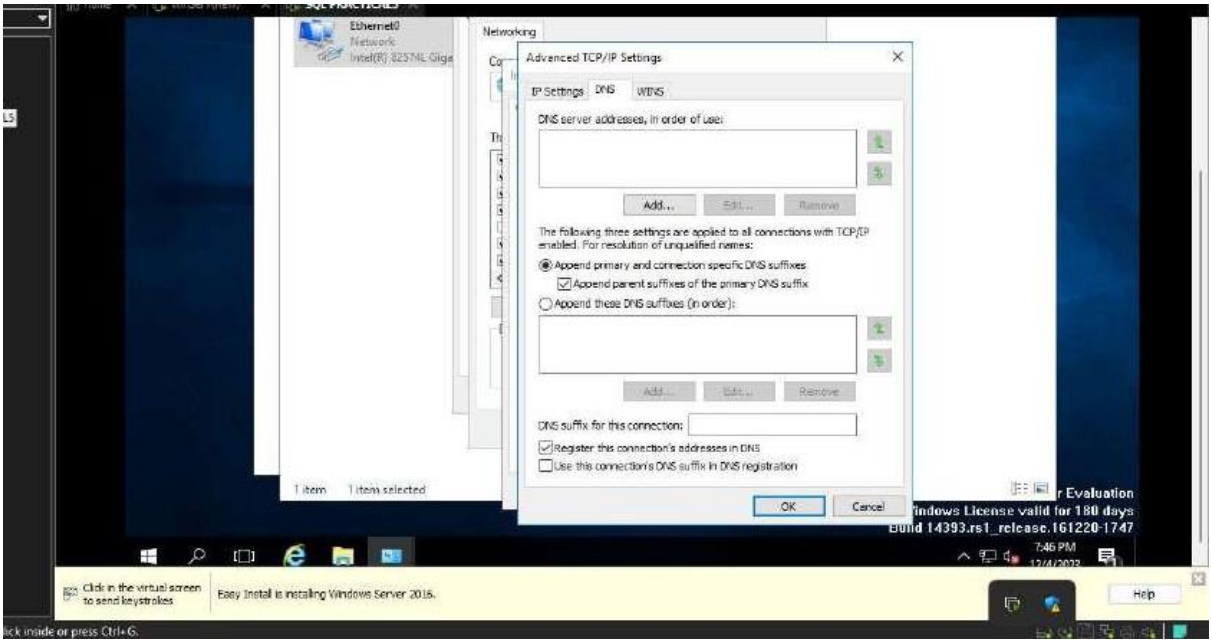
- **Click on Advanced**



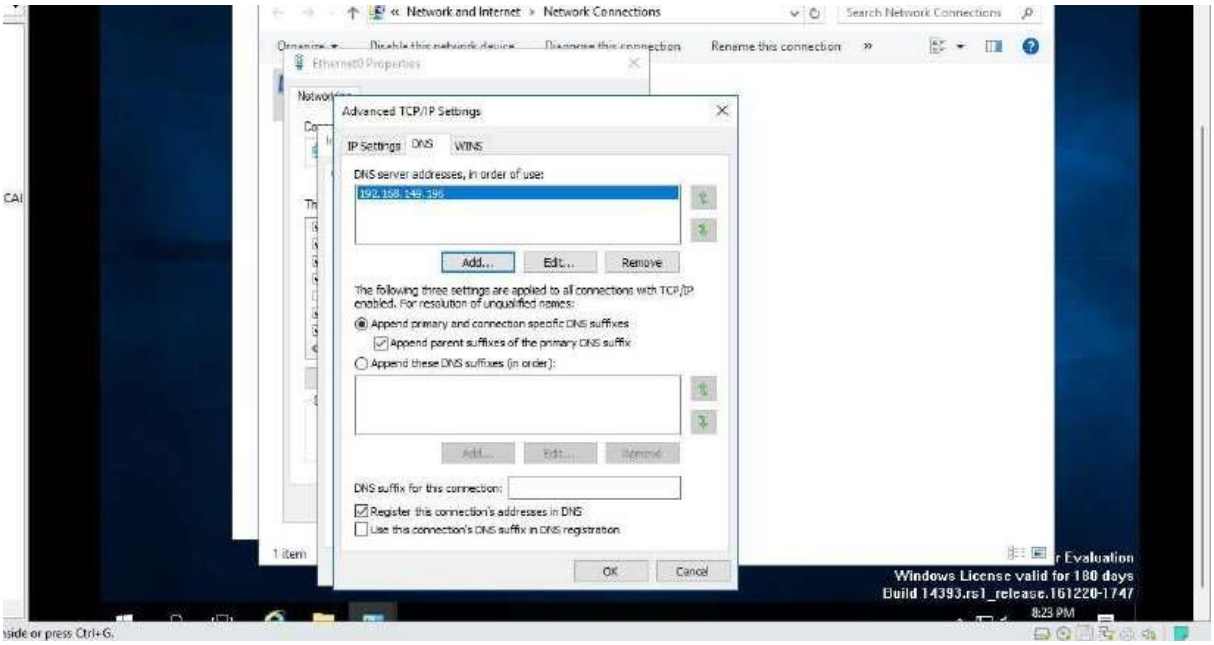
- **Click on DNS**



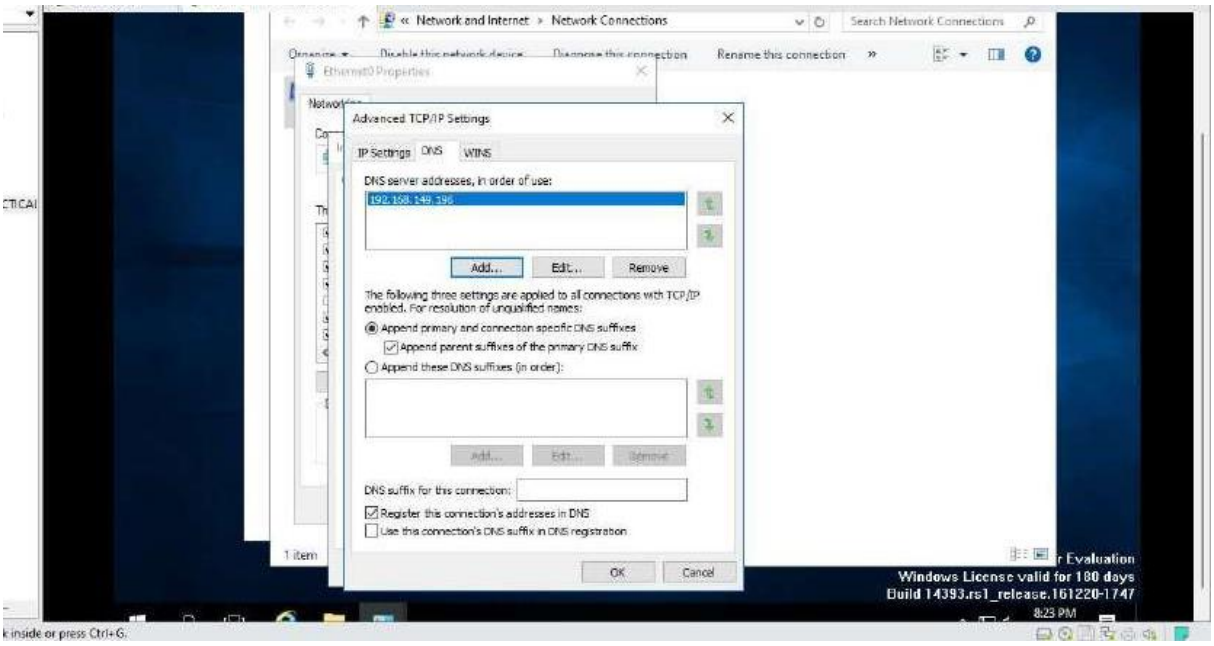
- **Click on Add**



- **Add** the IP Address of the Domain Controller and **Click Ok**

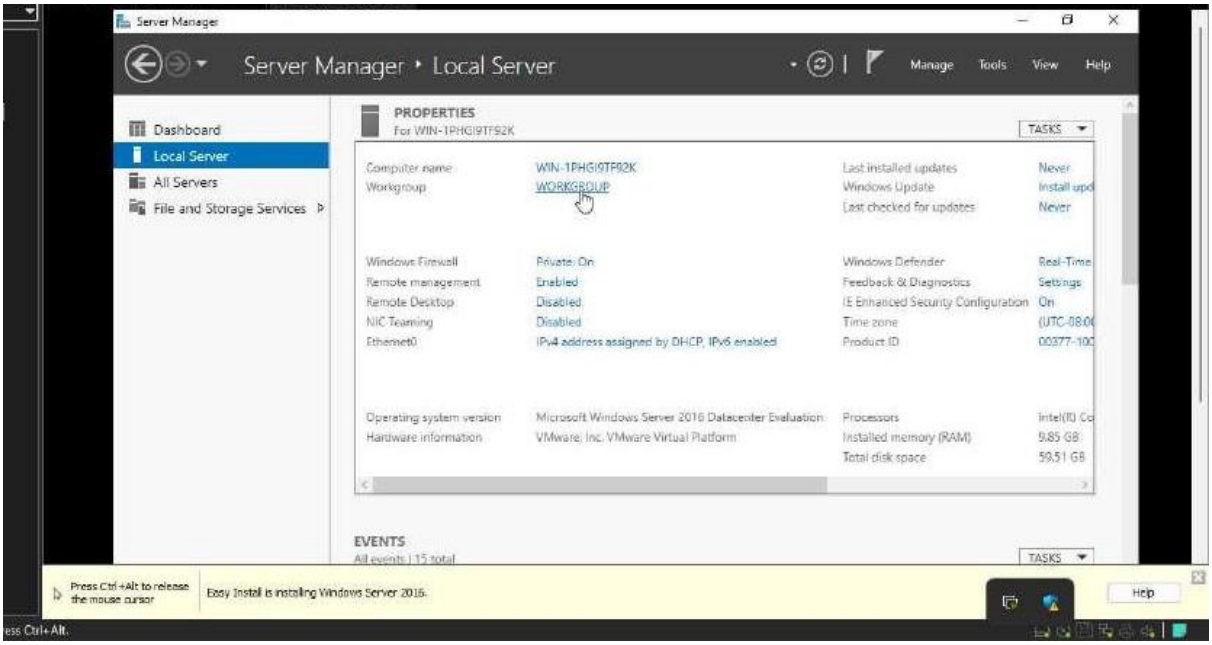


- **Click on Ok**

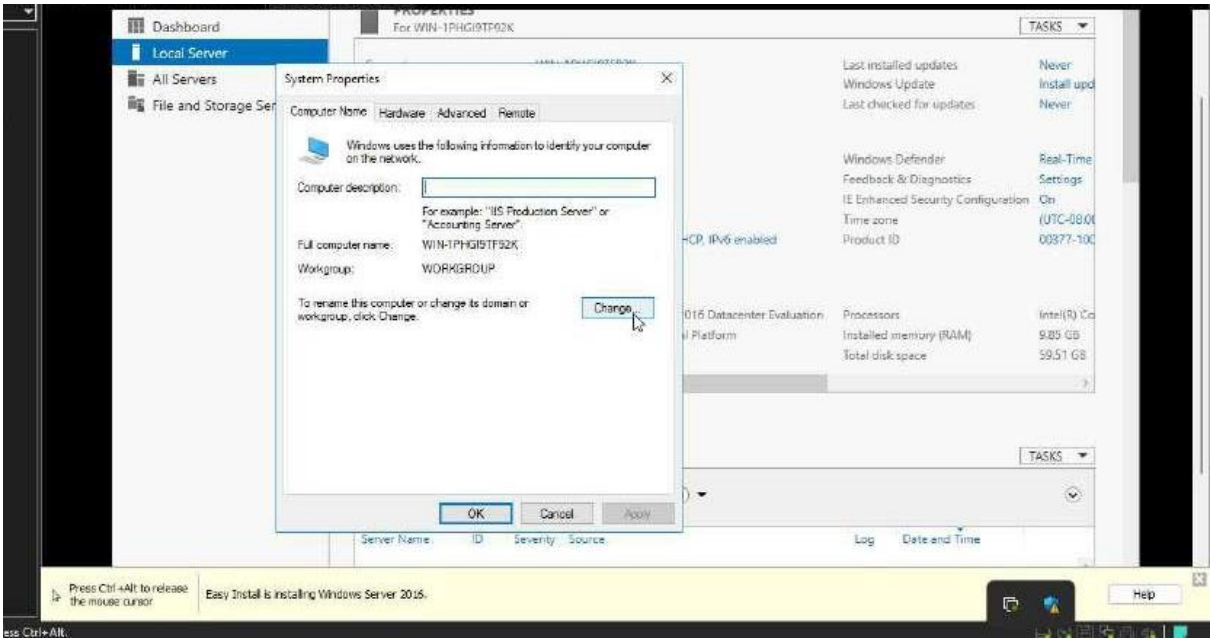


- Now Exit out of **network settings** and **Click on Server Manager**

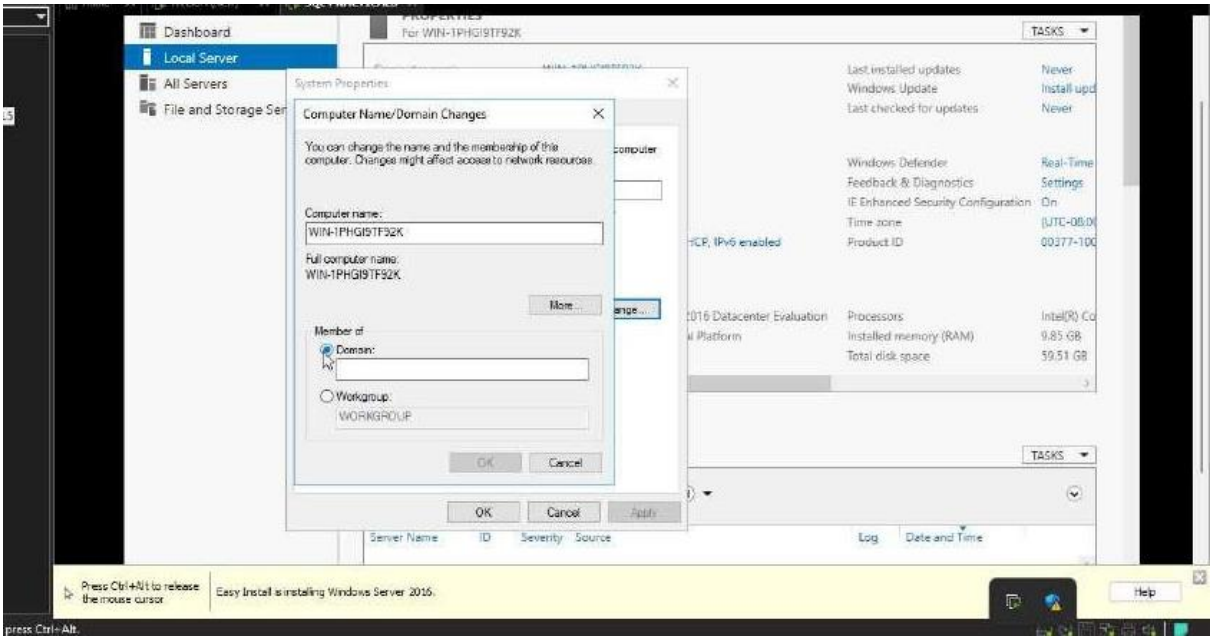
- Within **Server Manger Click on Local Server** and **Select Workgroup**



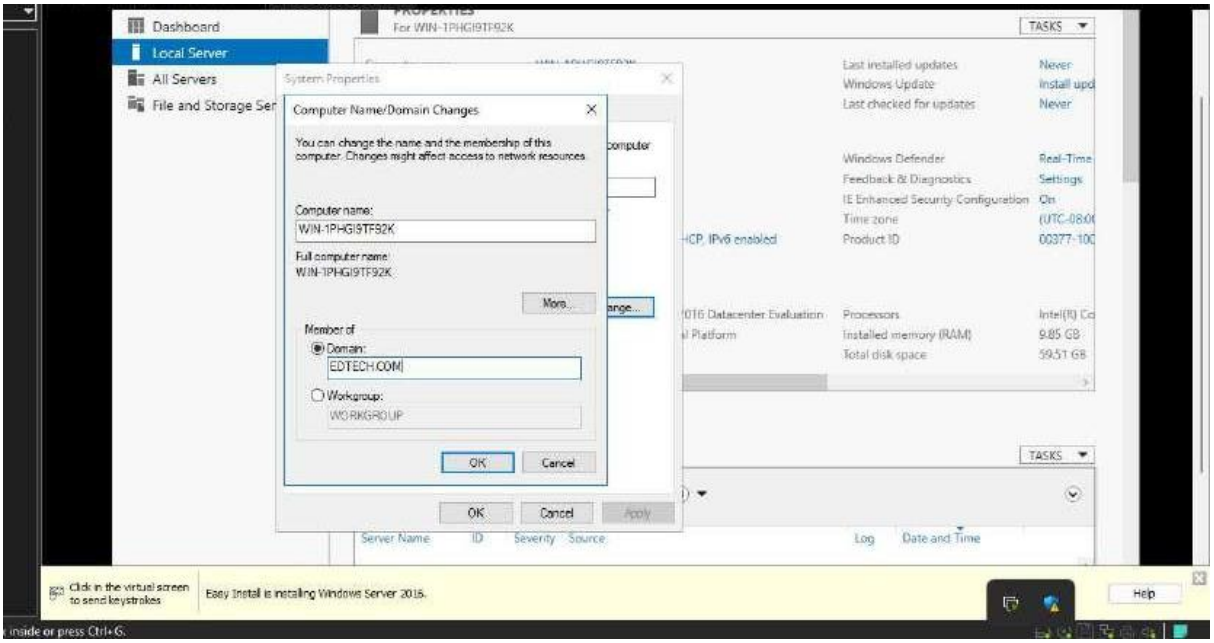
- **Click on Change**



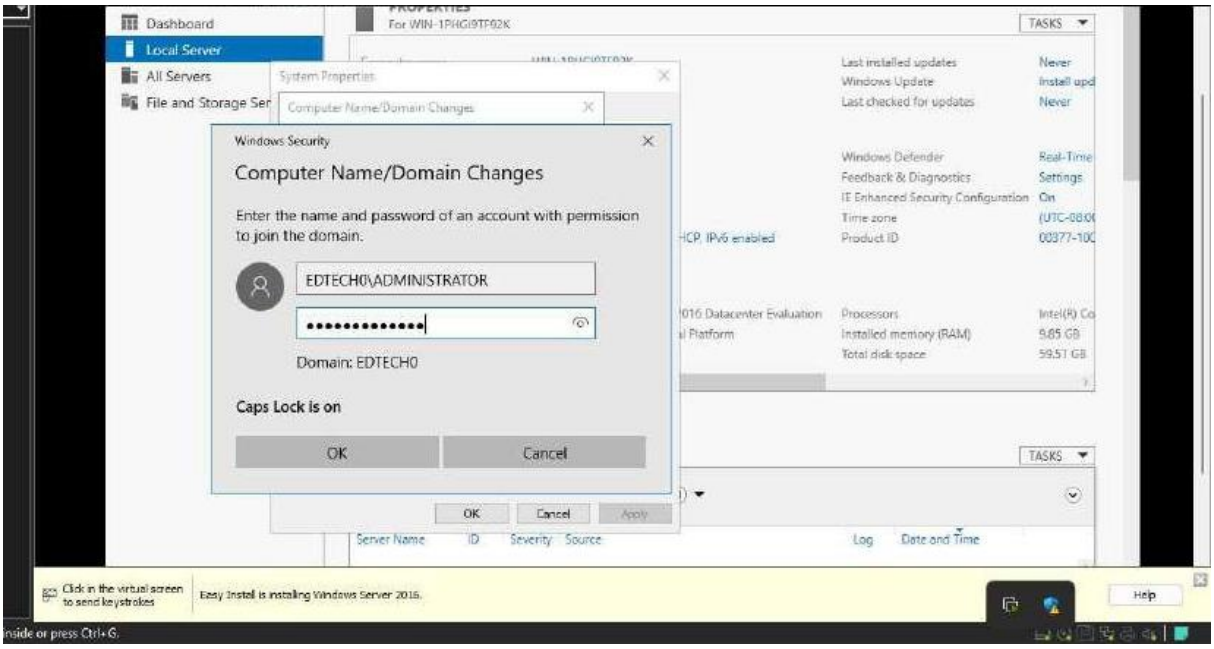
- **Click on Domain**



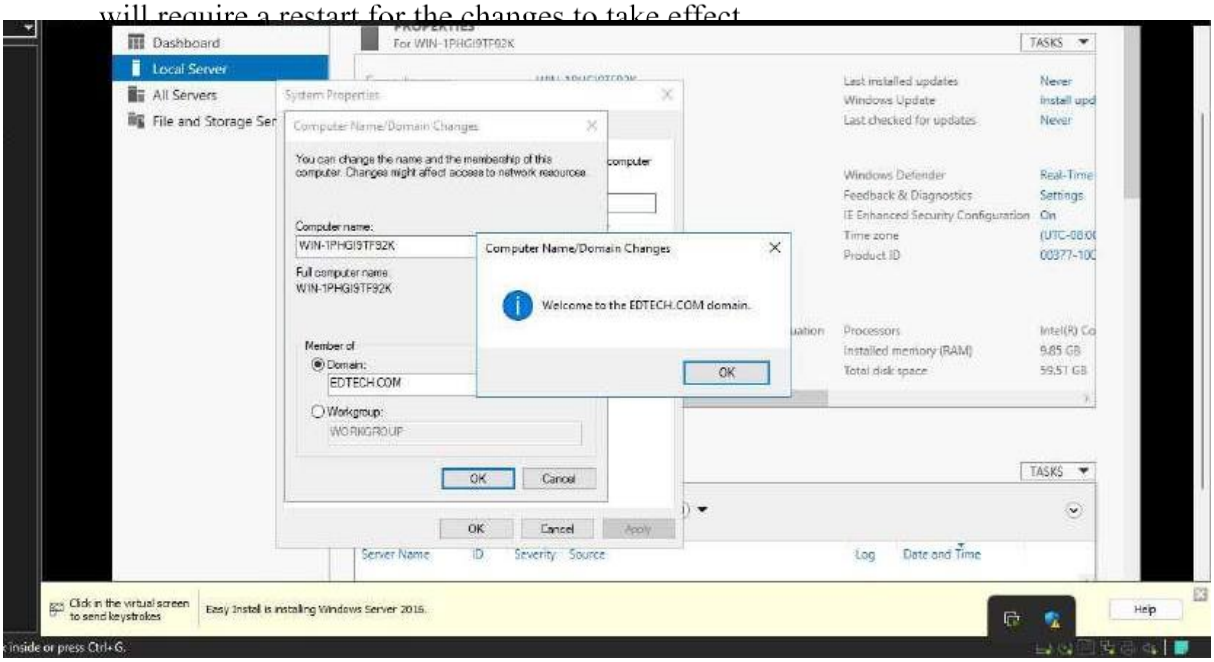
- Type the **Domain name (here it is EDTECH.COM)** and **Click Ok**



- **Enter the credentials of the Domain Controller and Click on Ok**

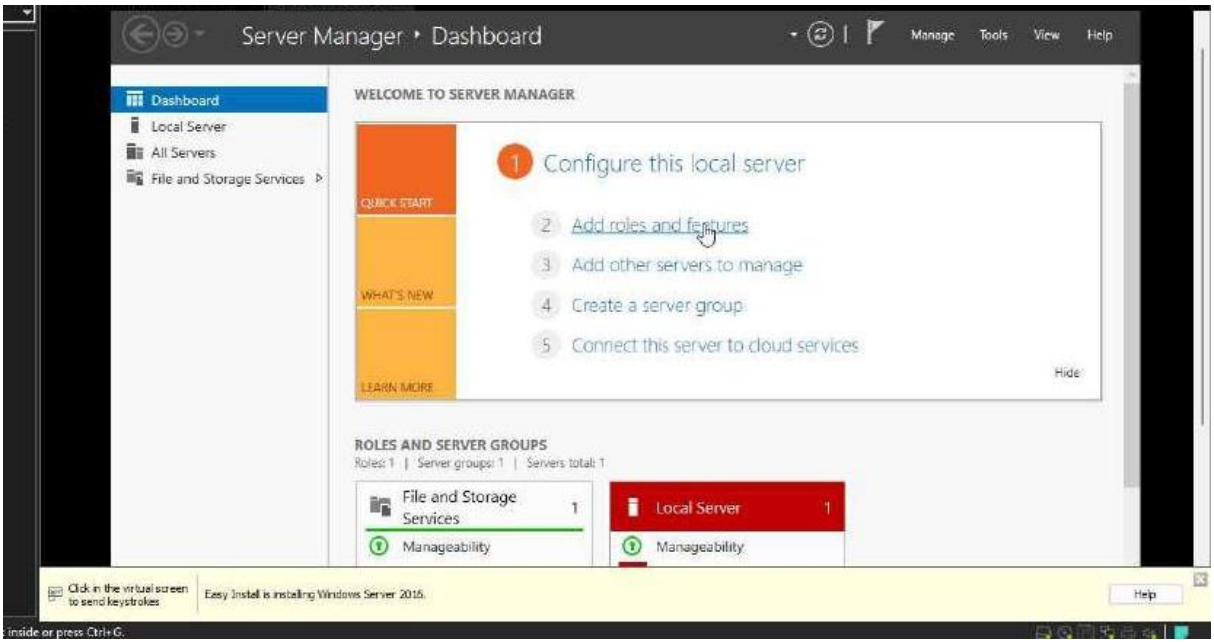


- The User VM is now in the same Domain as the Domain Controller and the system will require a restart for the changes to take effect

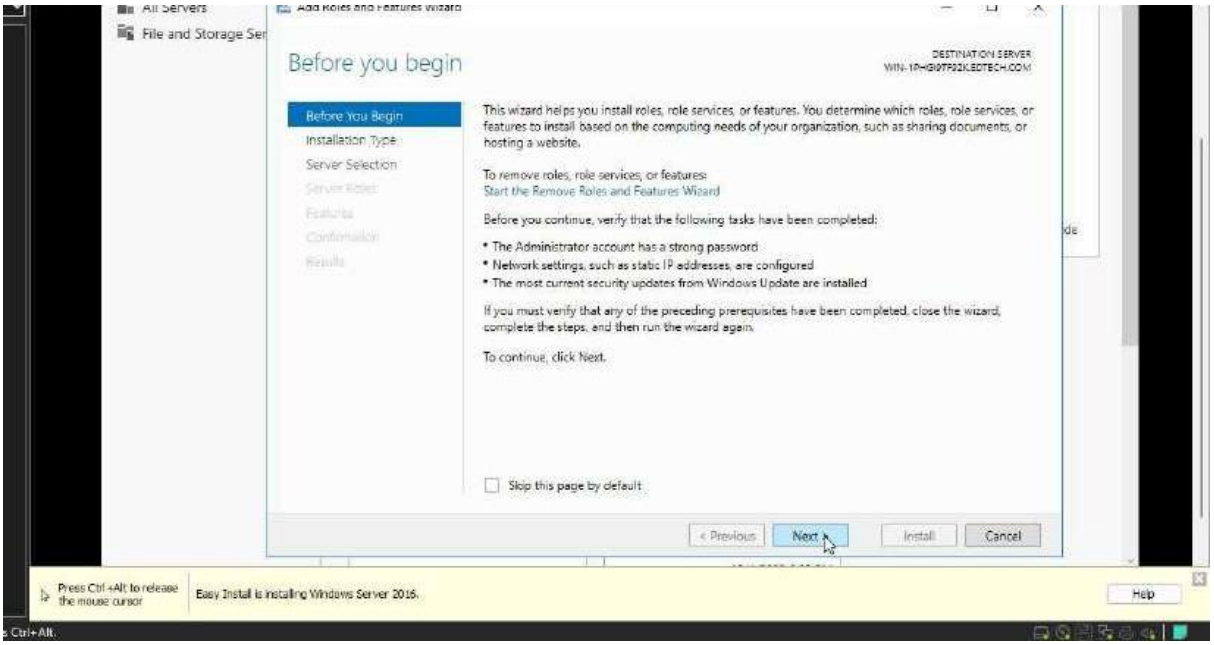


Step 4: Creation of **User (SCCM_USER PREACTICAL 8)**

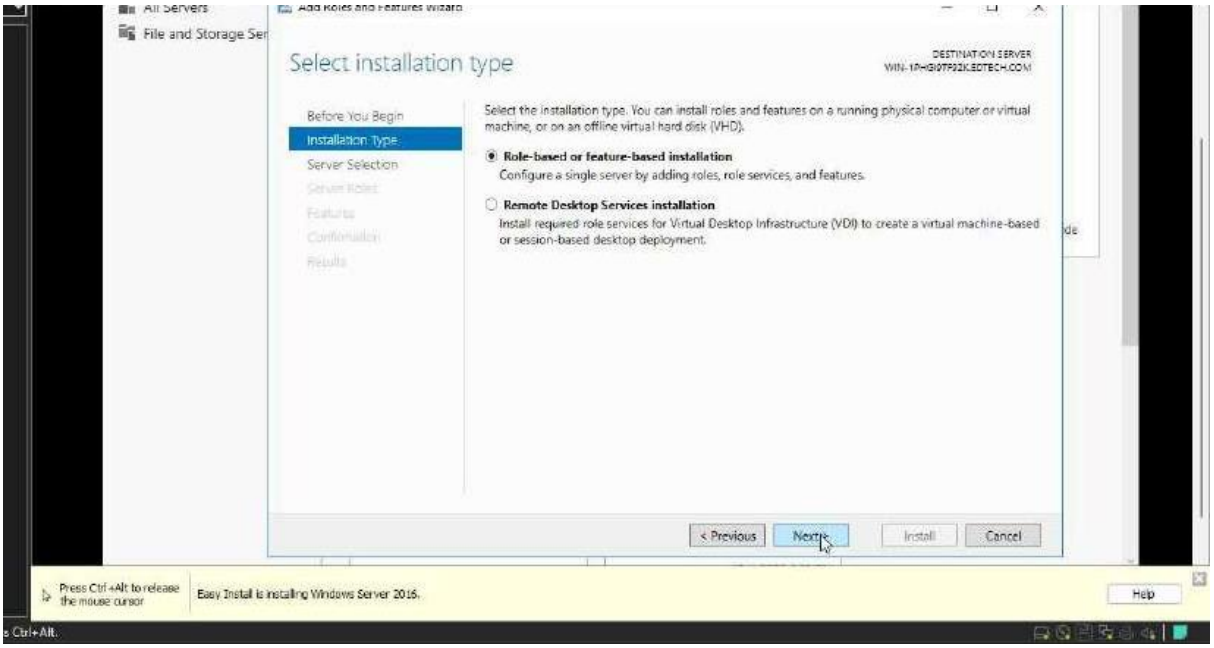
- To create a **User** first we require the **Active Directory Domain Service** which can be added through the **Server Manager**
- **Open Server Manager** and **Click on Add Roles and Features**



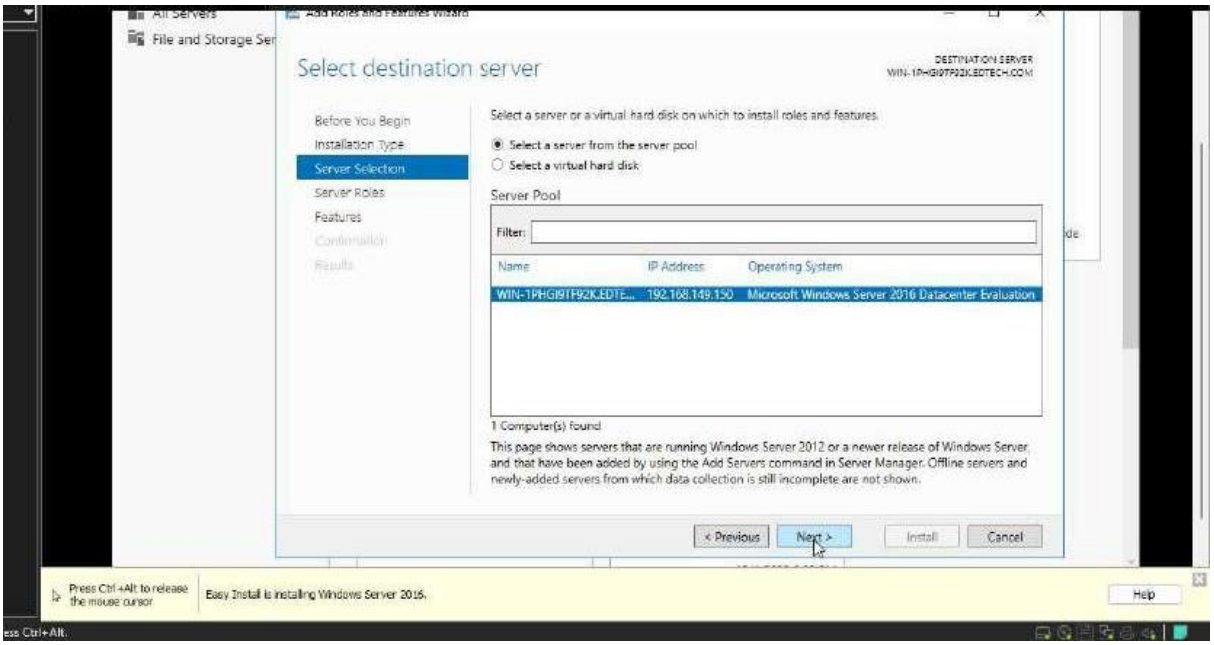
- **Click on Next**



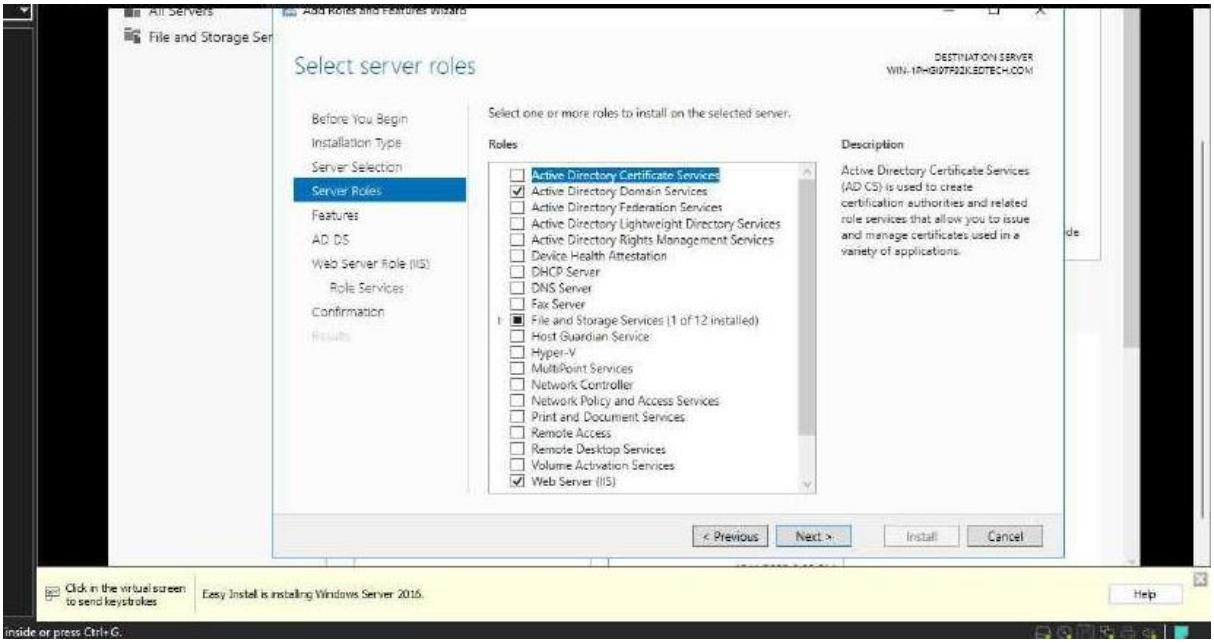
- Select **Role-based or Feature-based installation** and **Click Next**



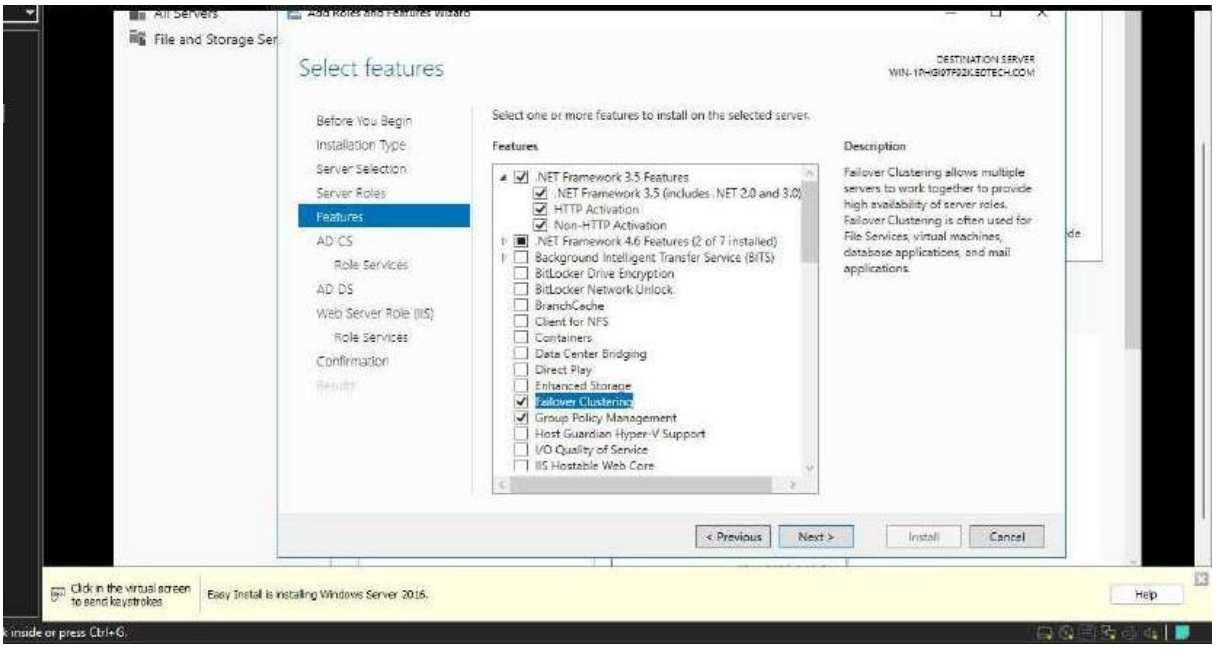
- **Keep default settings** and **Click on Next**



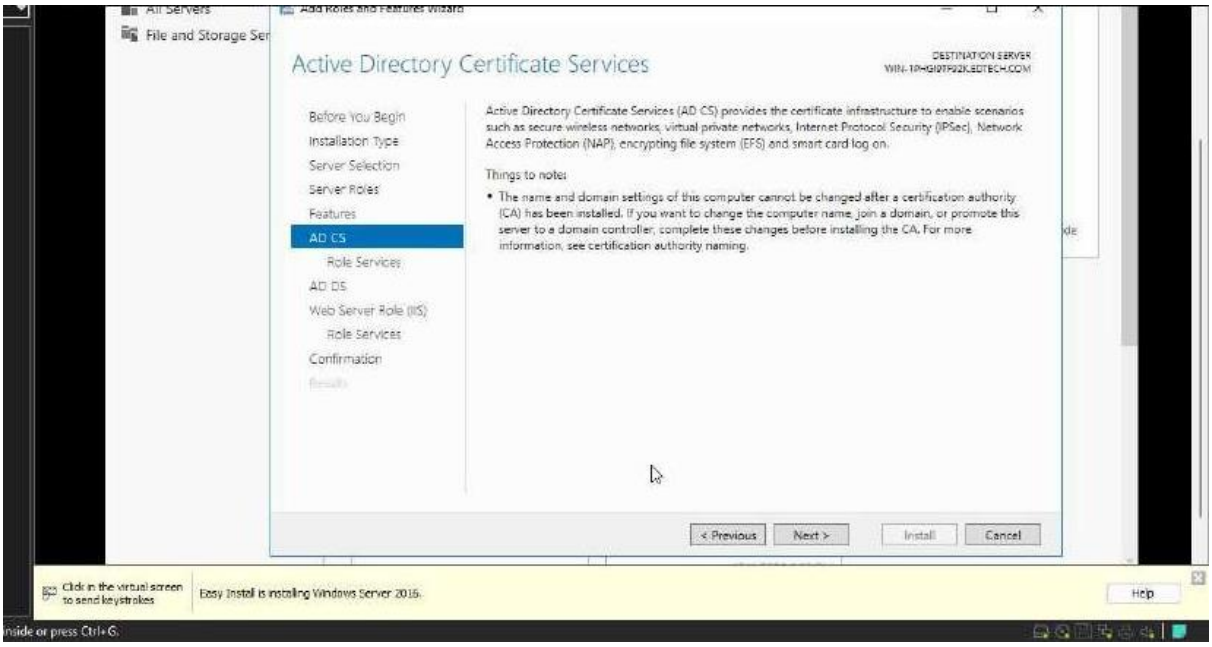
- **Select Active Directory Domain Service** and **Click on Add Feature** and **Click on Next**



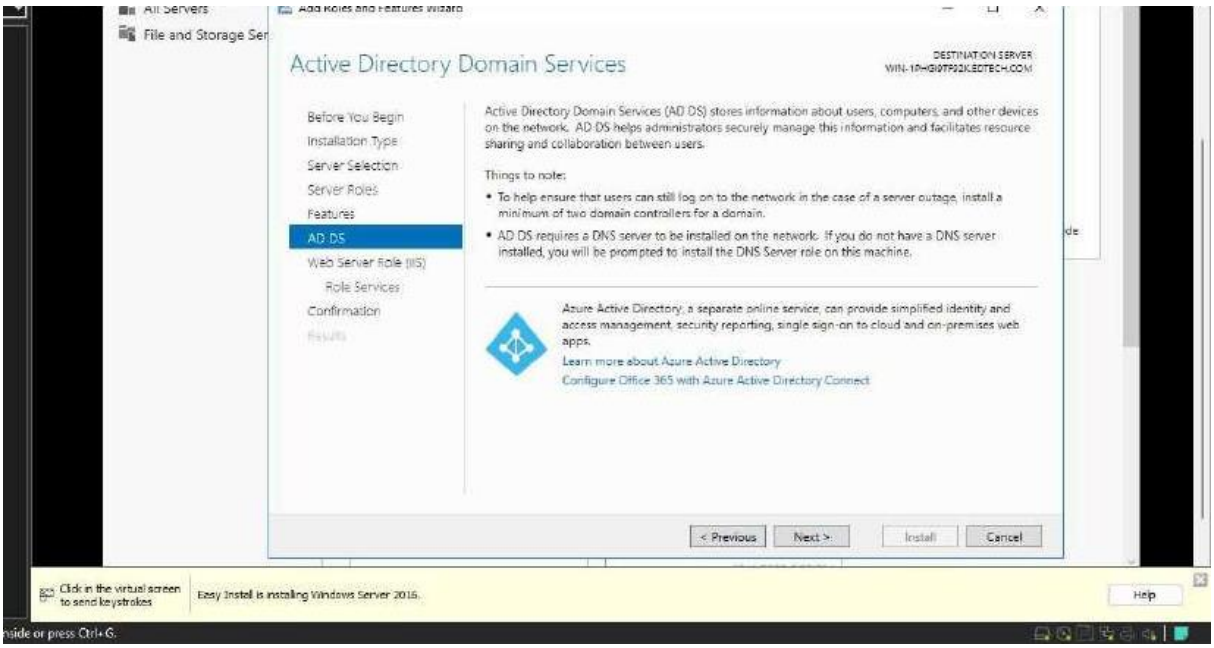
- **Select** the following feature and **Click on Next**



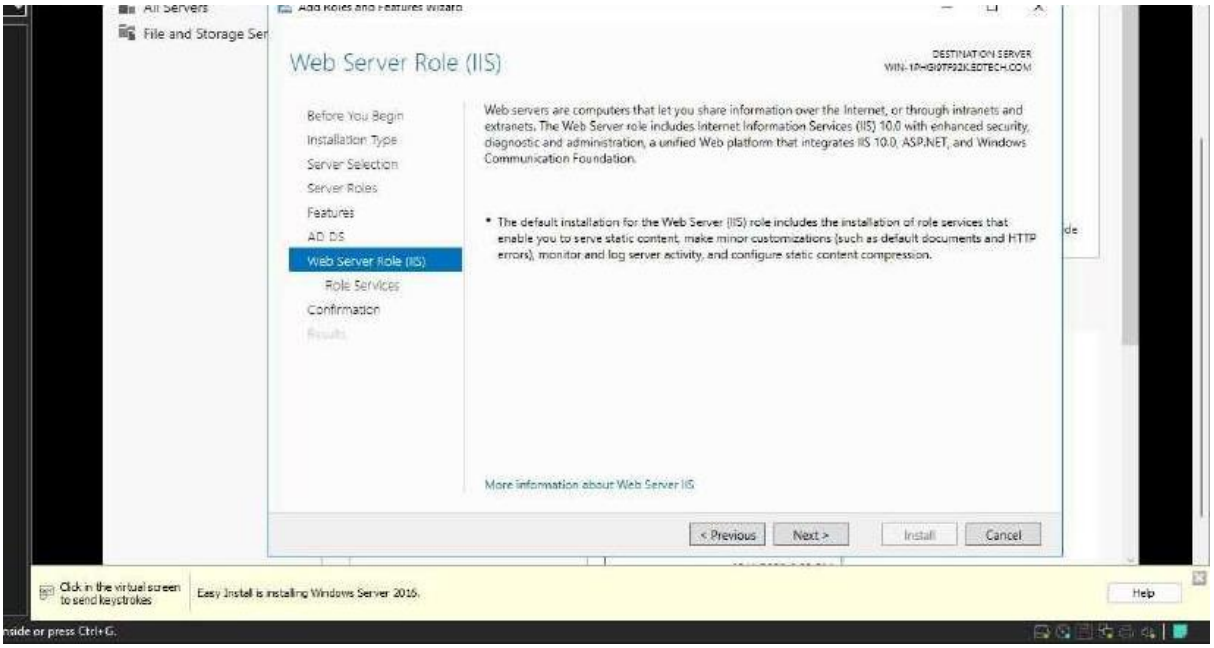
- **Click on Next**



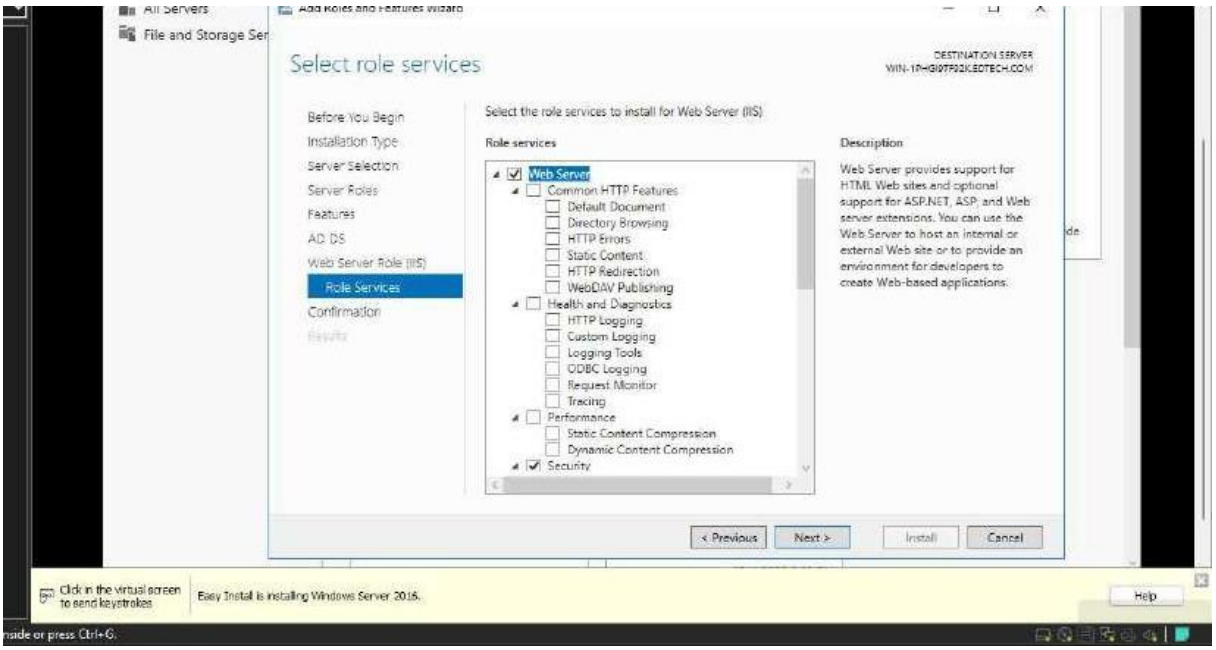
- **Click on Next**



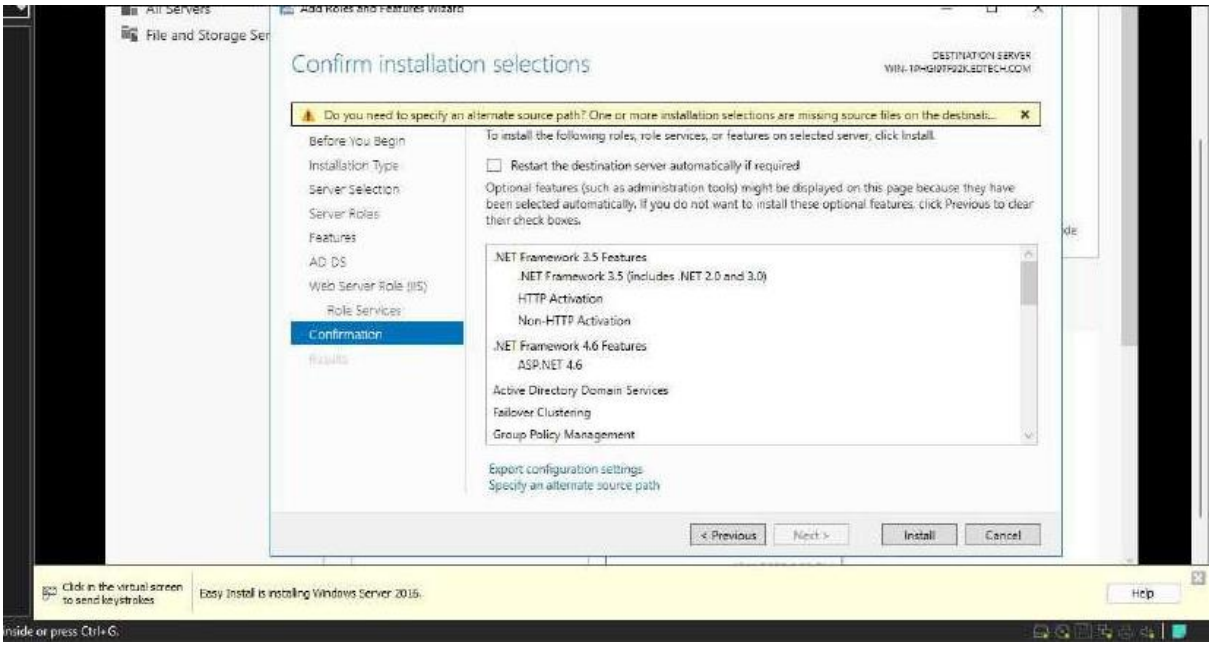
- **Click on Next**



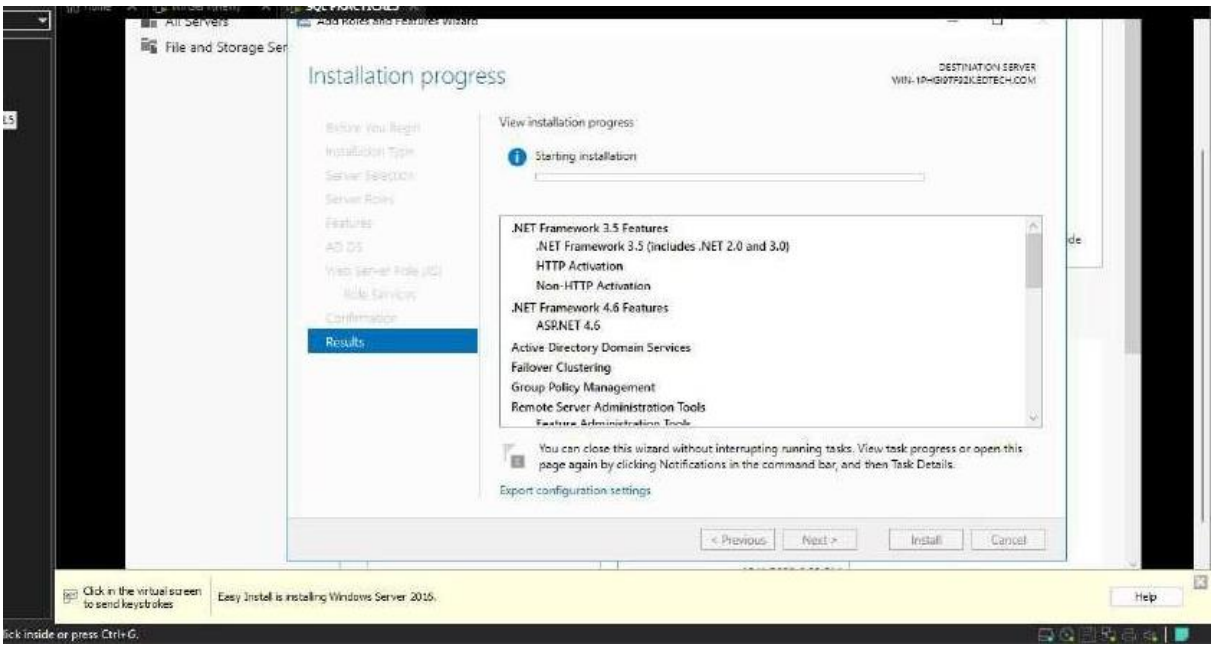
- **Click on Next**



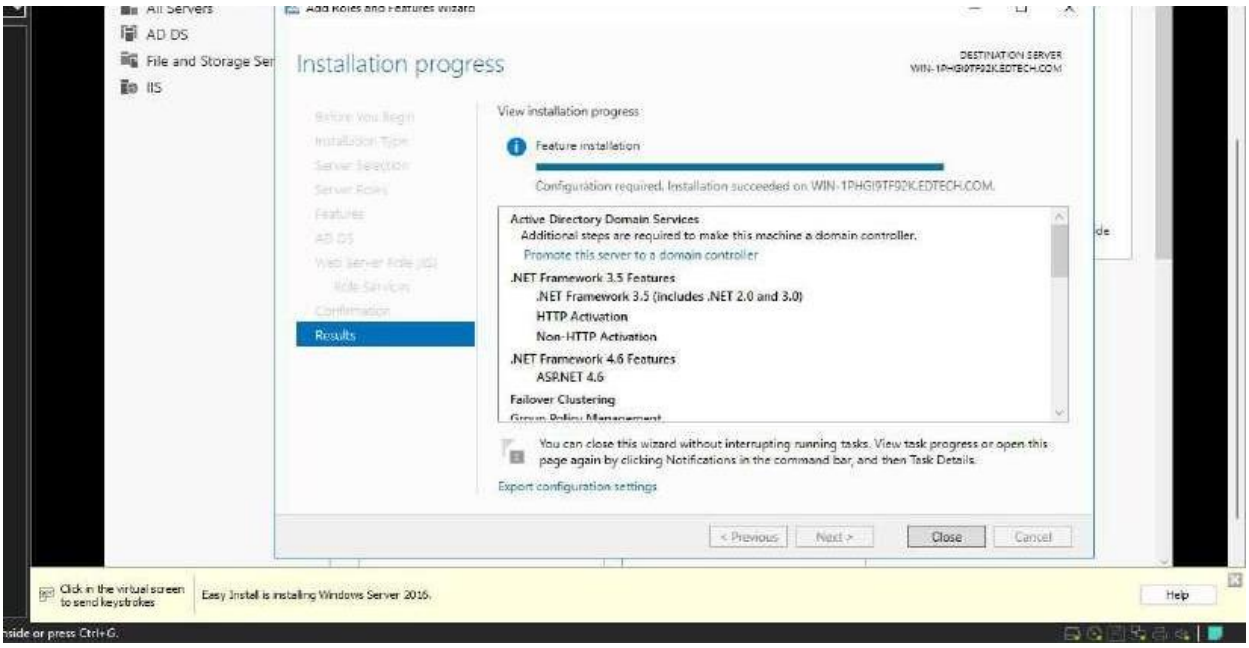
- **Click on Install**



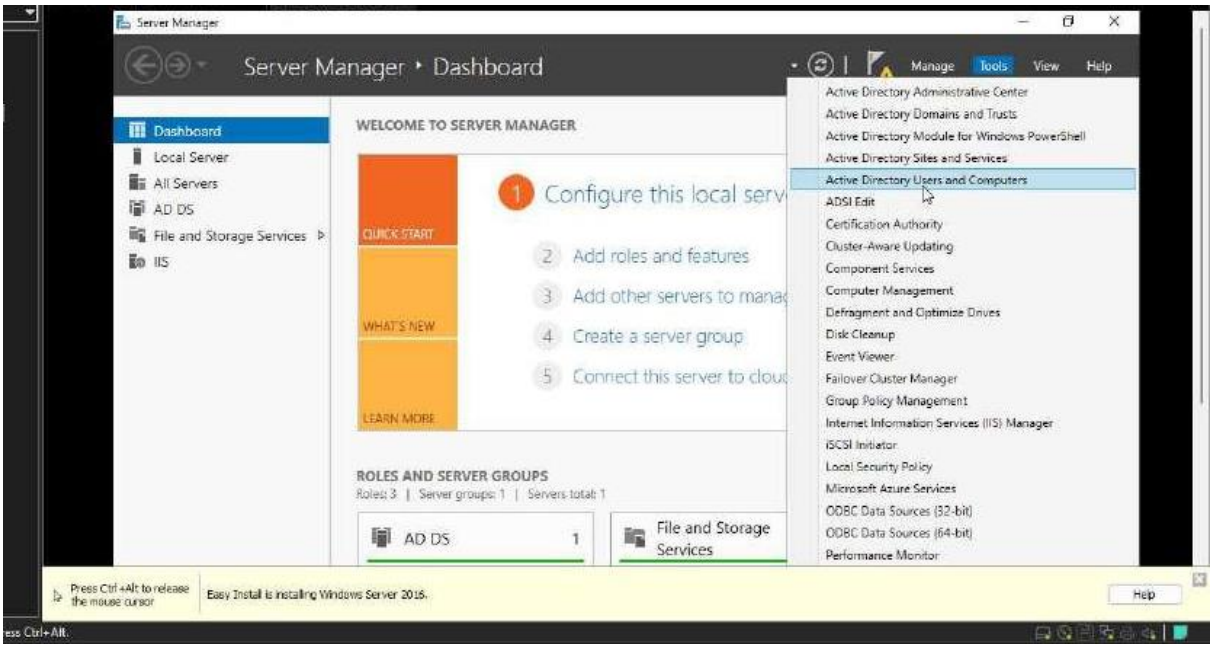
- **Installation Process Start**



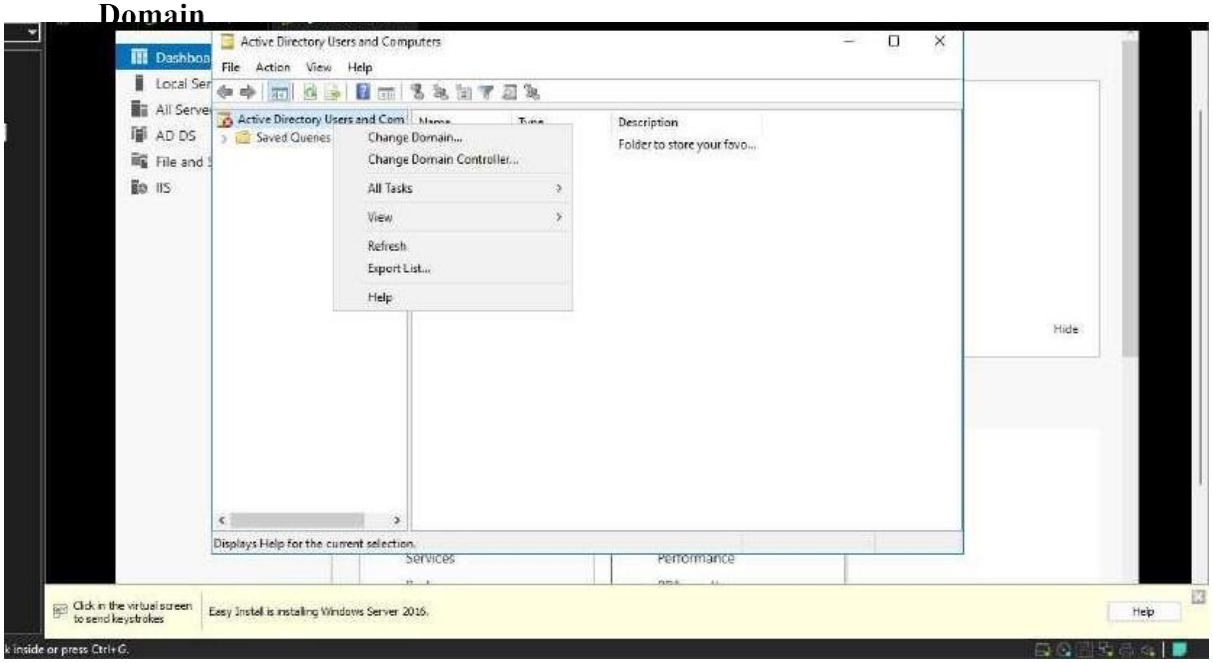
- **After Installation Click on Close**



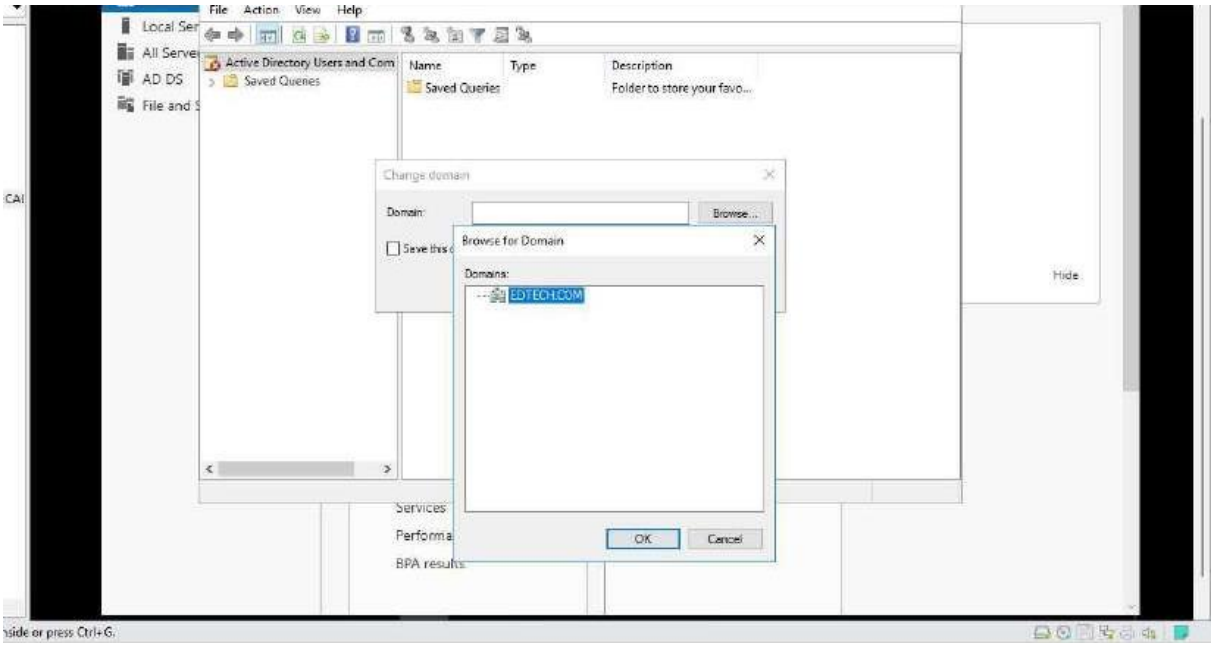
- After installation, within **Server Manager Click on Tools** and **Select Active Directory User and Computers**



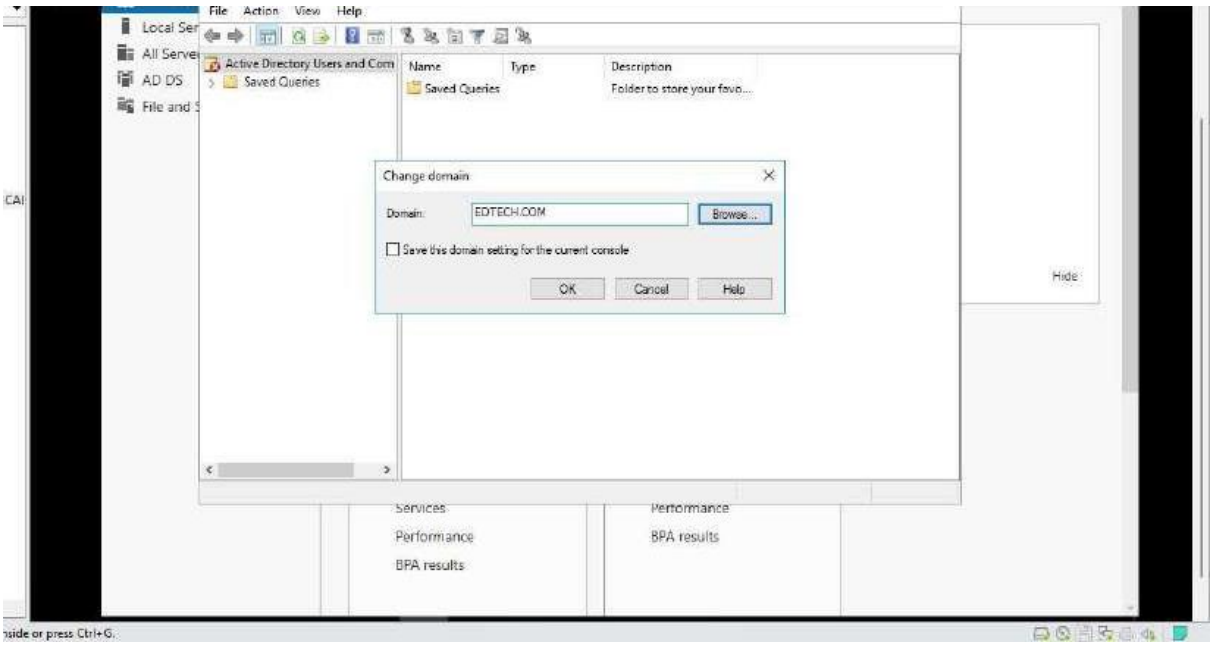
- Within **Active Directory Users and Computers, Click on Action** and **Select Change Domain**



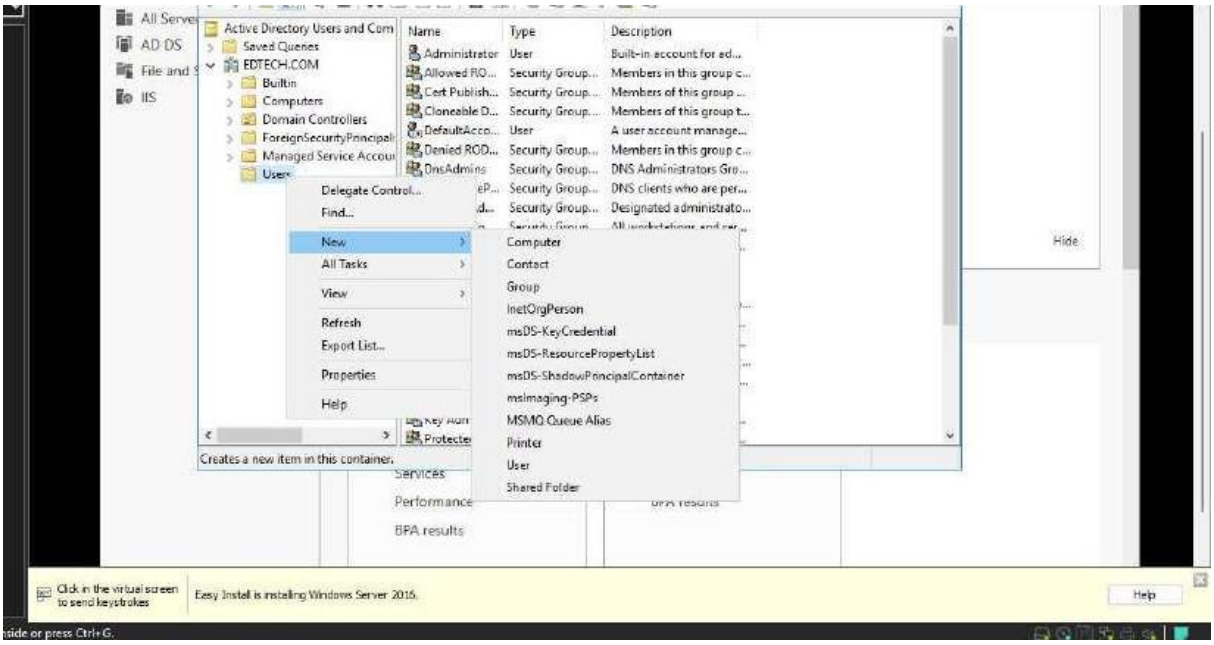
- **Click on Browse** and **Select** the **Domain Controller** (Here it is **EDTECH.COM)** and **Click Ok**



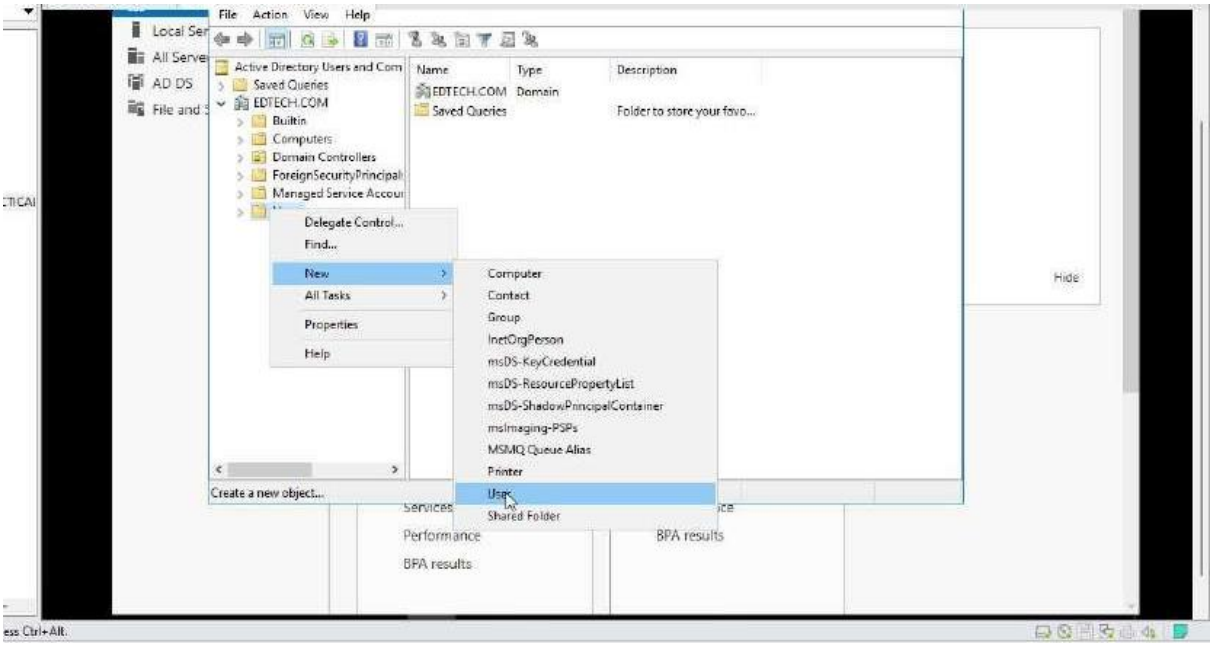
- **Click on OK**



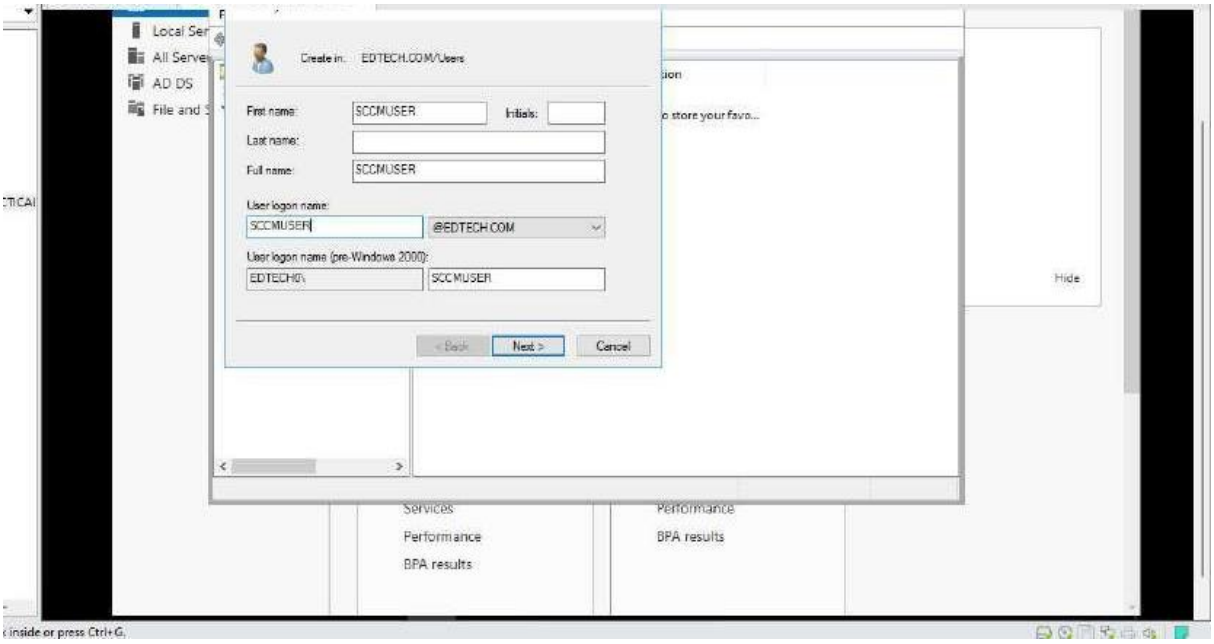
- Now the **Domain Controller** will be added, **Click on the Domain Controller** and **Click on Users**



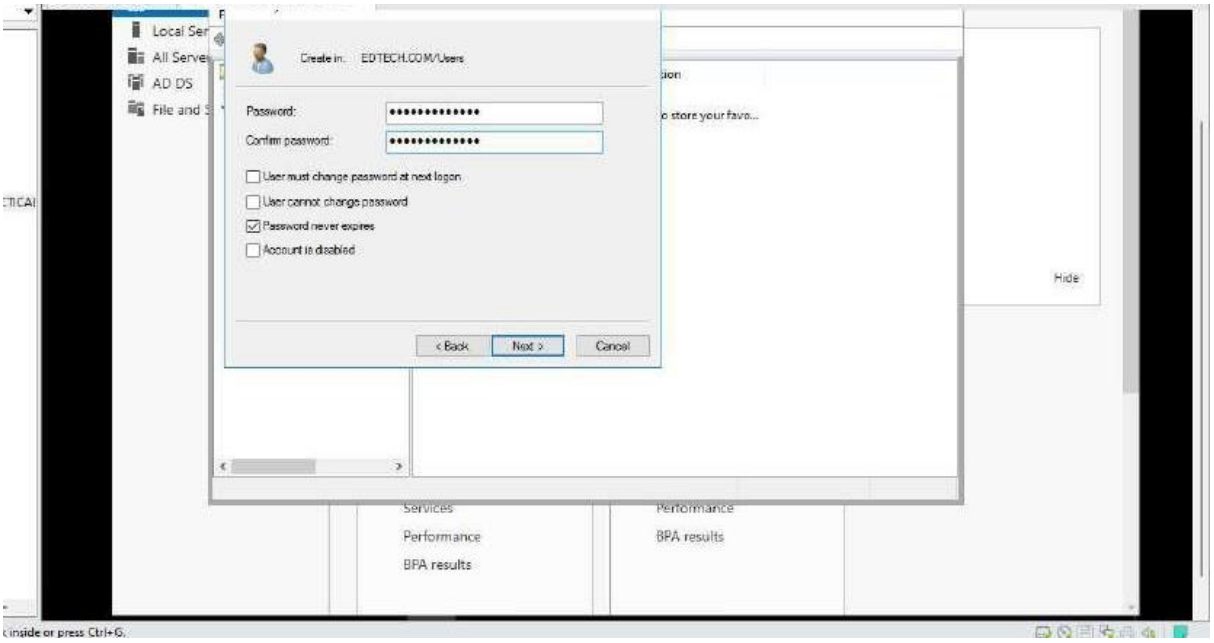
- Right **Click on Users** and **Click New** and **User**



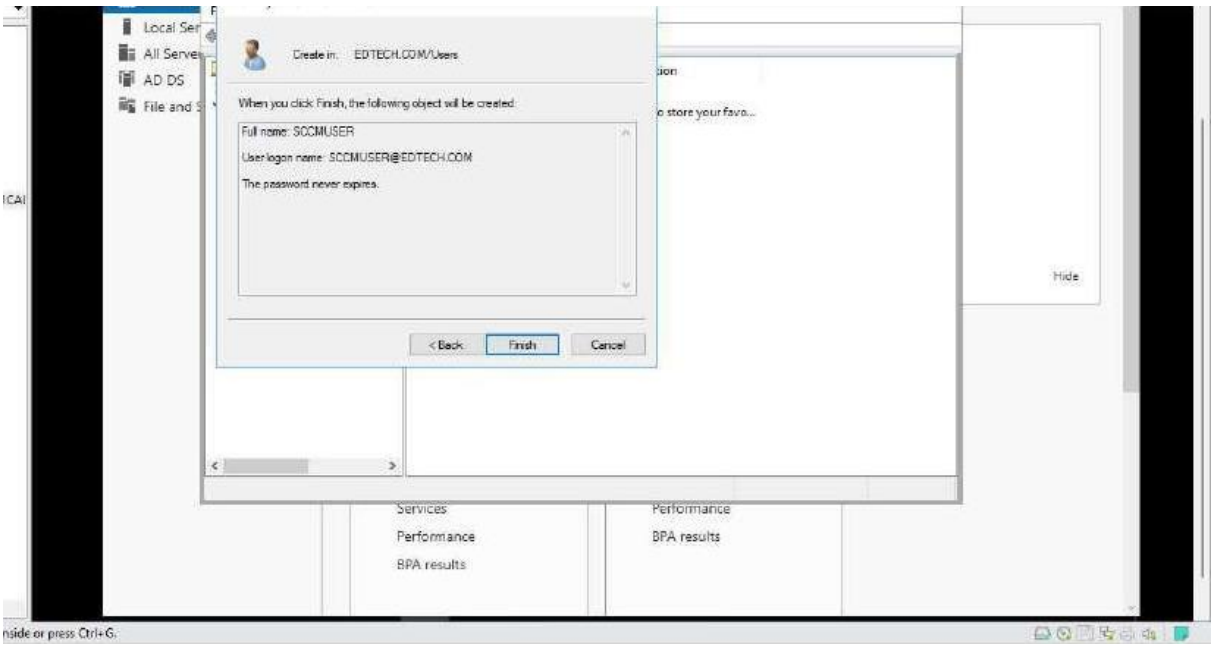
- **Type in a new User name (**here it is **SCCMUSER)** and **Click Next**



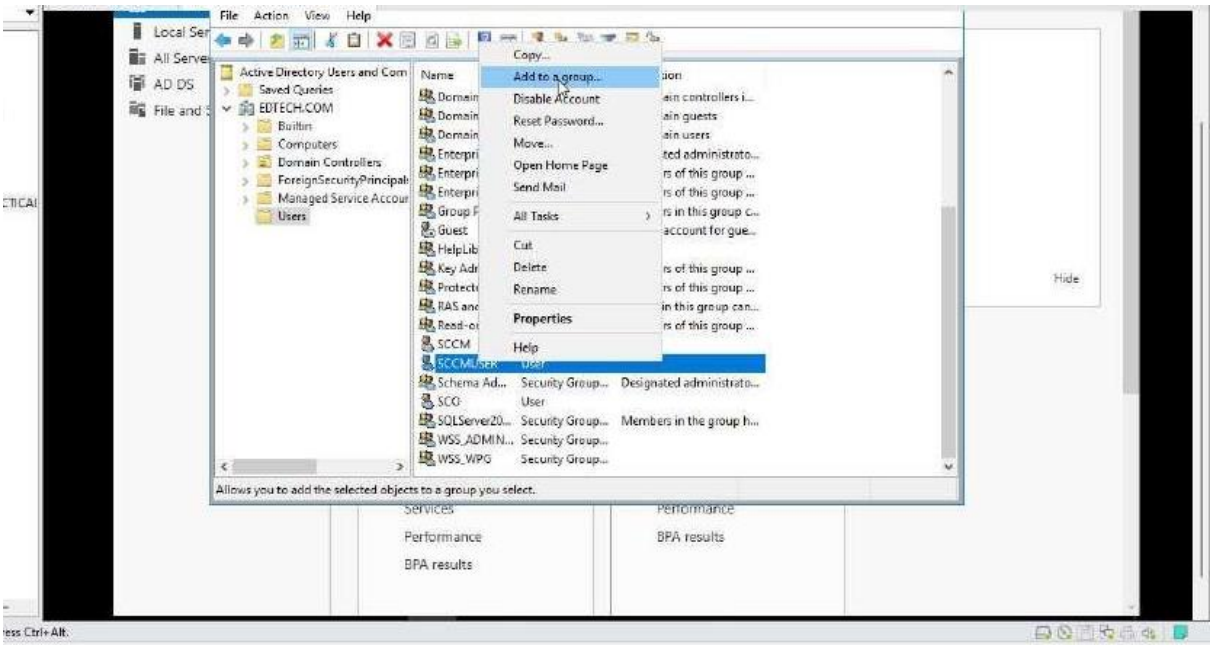
- **Type in a password** and **Select Password never expires** and **Click Next**



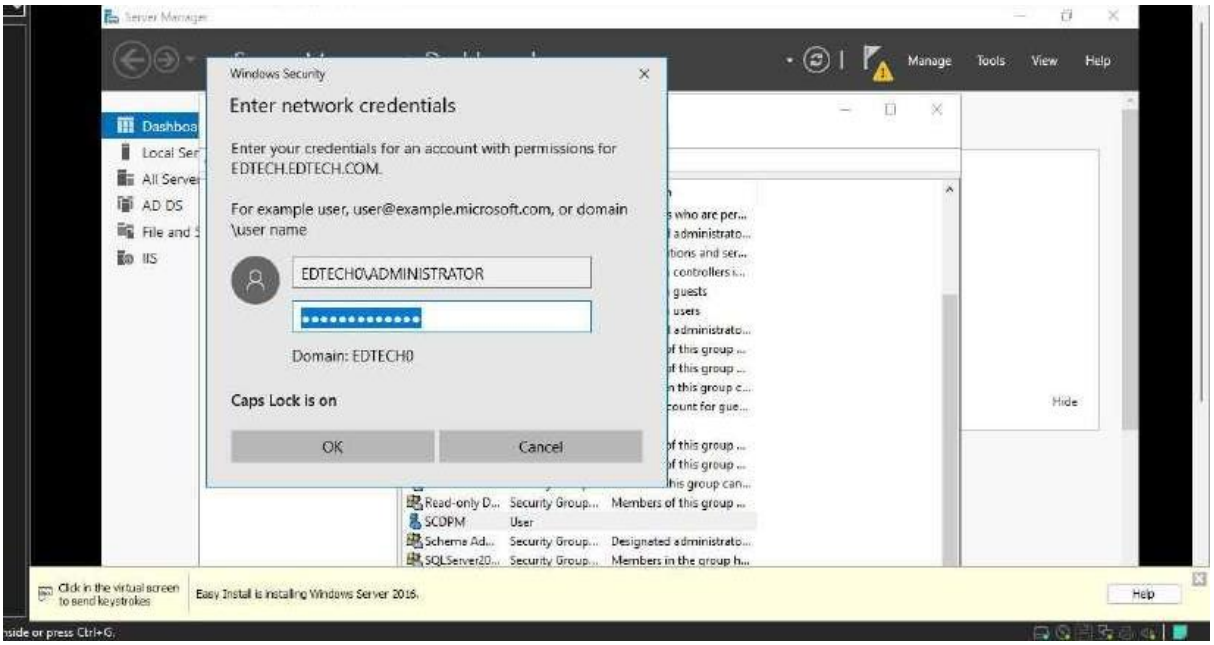
- **Click on Finish**



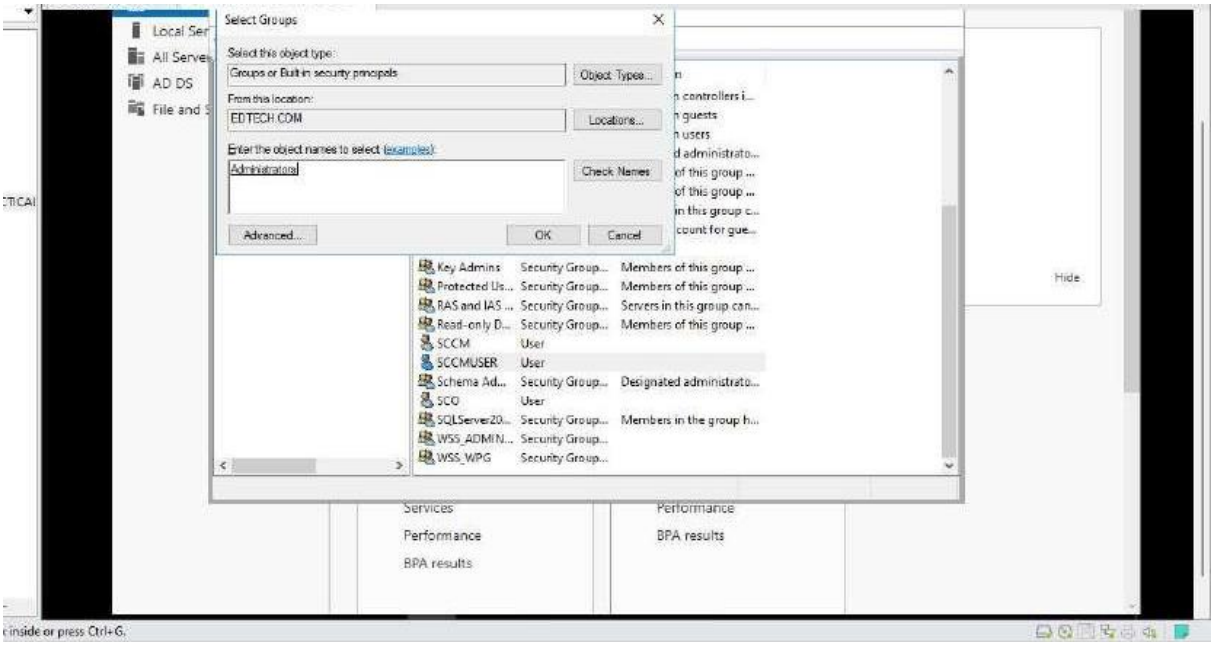
- **Add** the **User** to the **Domain Group, Right Click on SCCMUSER and Select Add to a group**



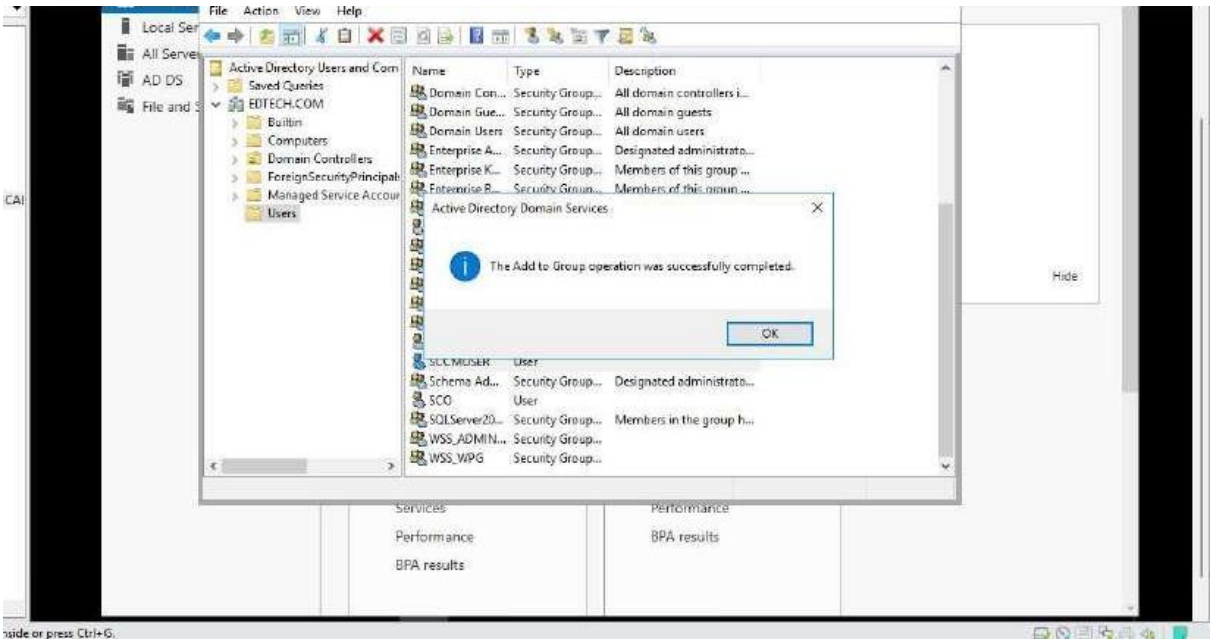
- Enter your credentials for an account with permissions for **EDTECH.EDTECH.COM**



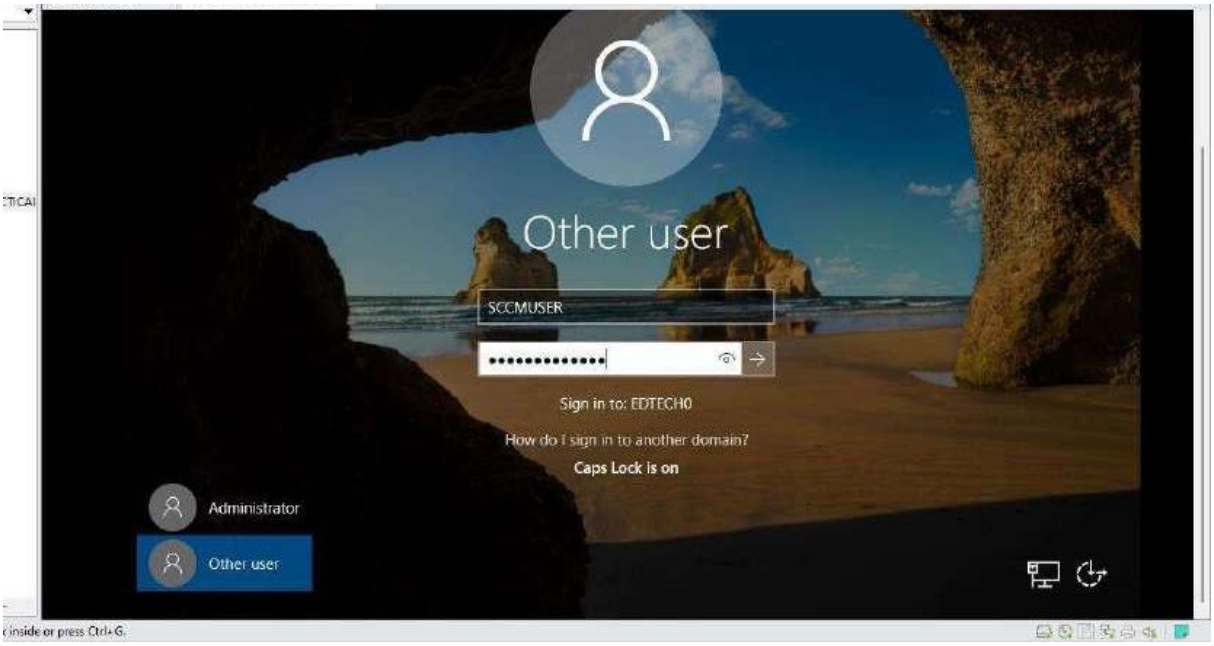
- Type in **Administrator** and **Click on Check Names** and **Click on Ok**



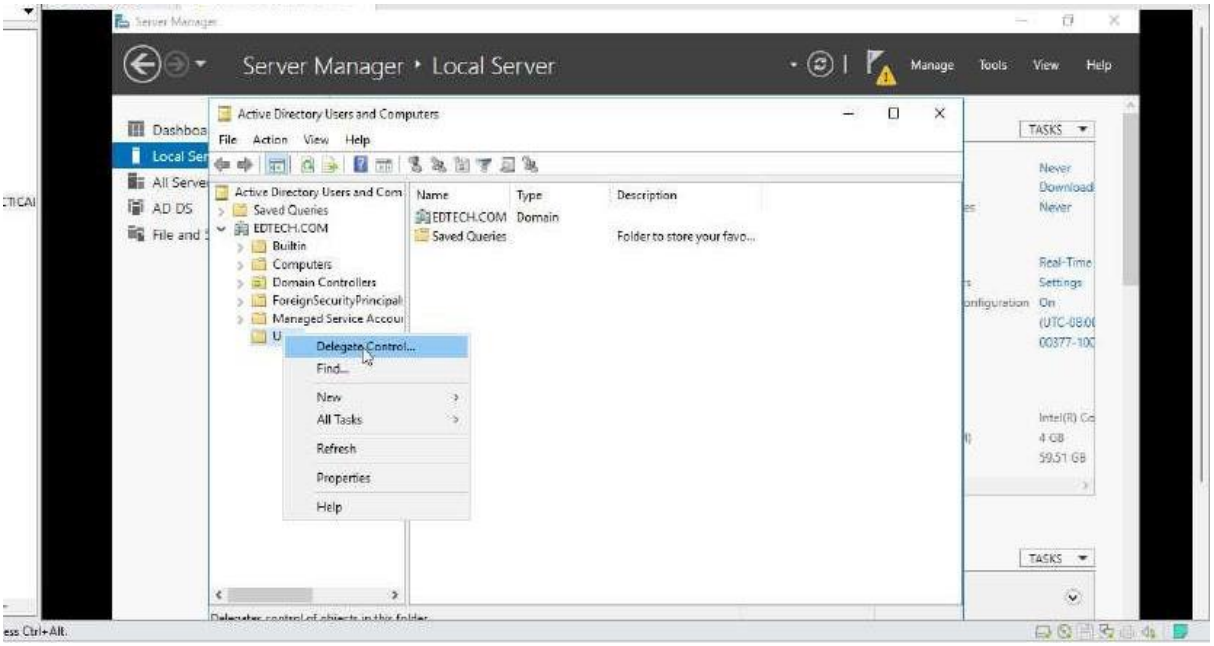
- **Click on OK**



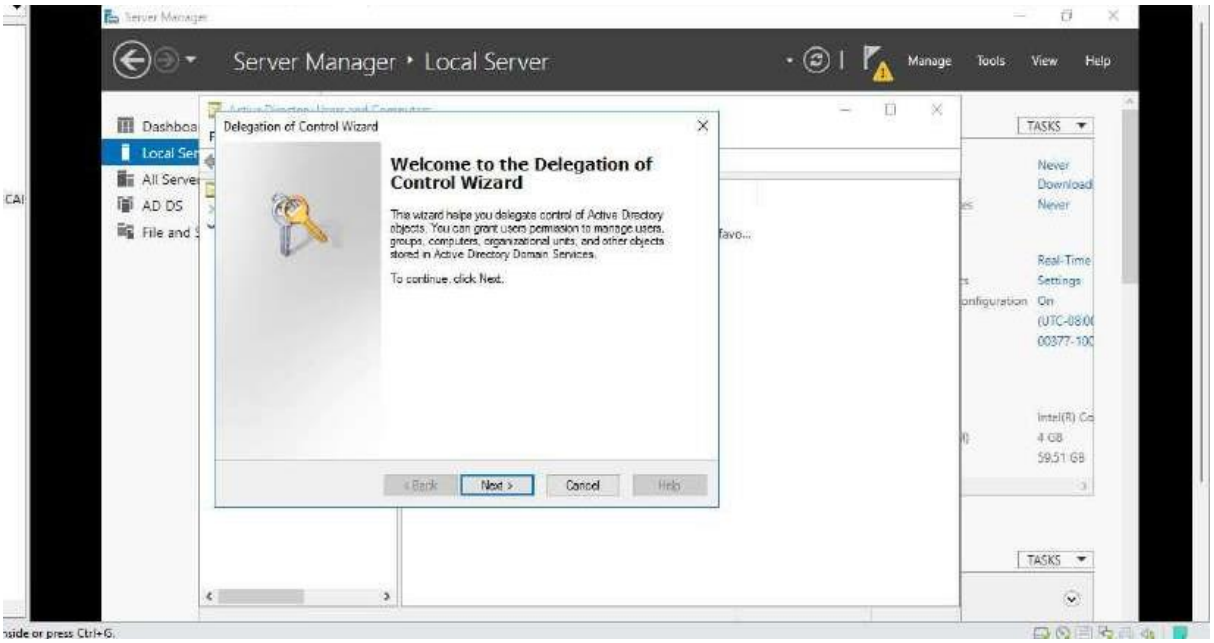
- **Now Login as SCCMUSER**



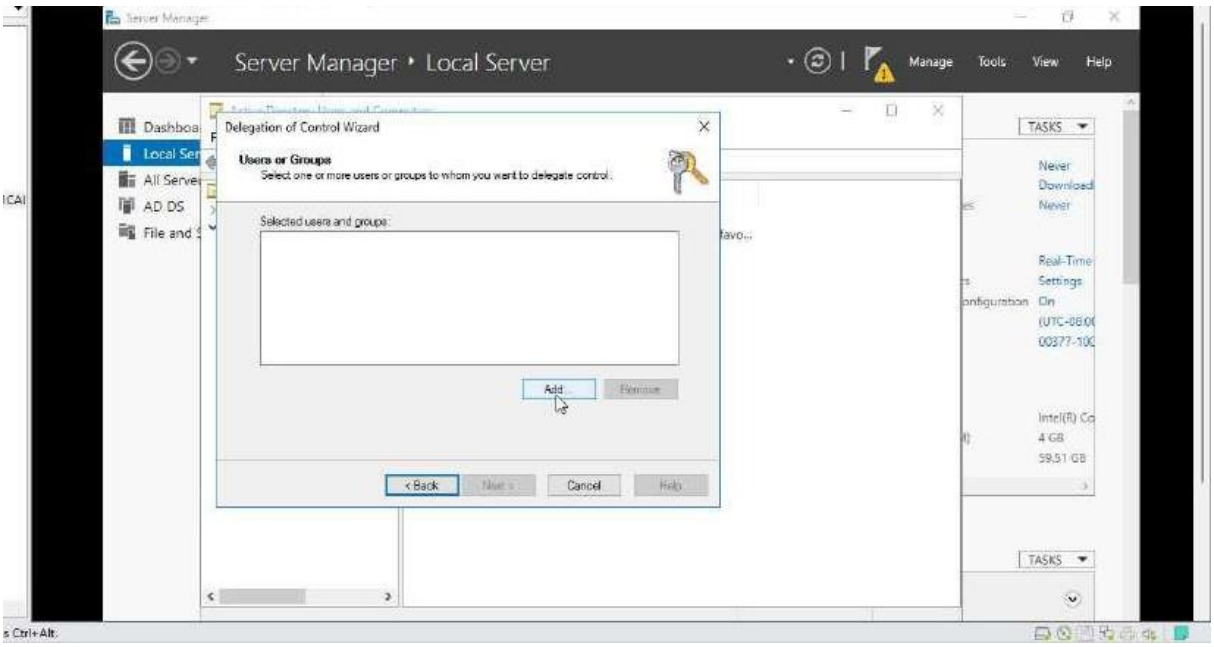
- **Now Right-Click on Users** and **Select Delegate Control**



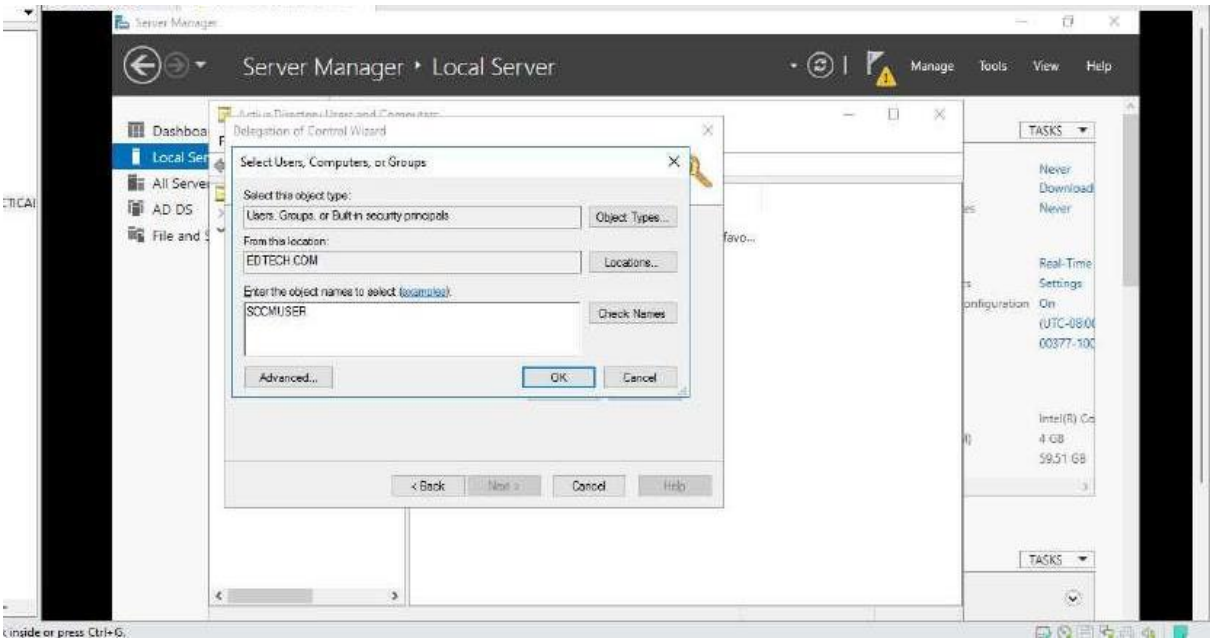
- **Click on Next**



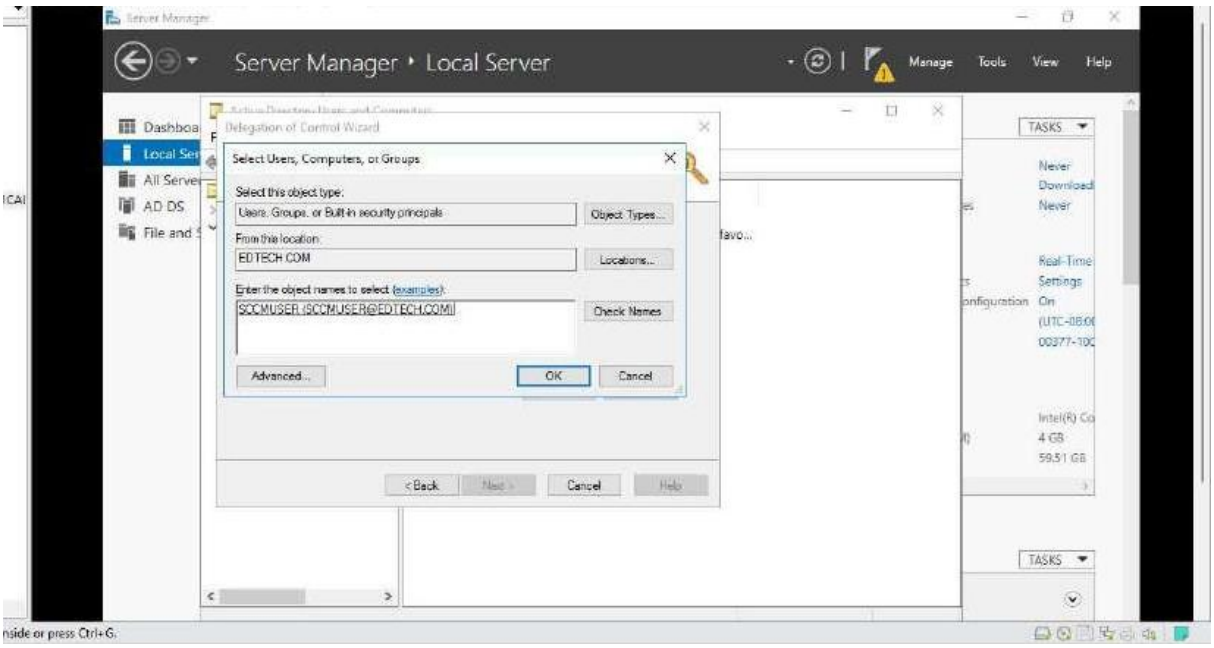
- **Click on Add**



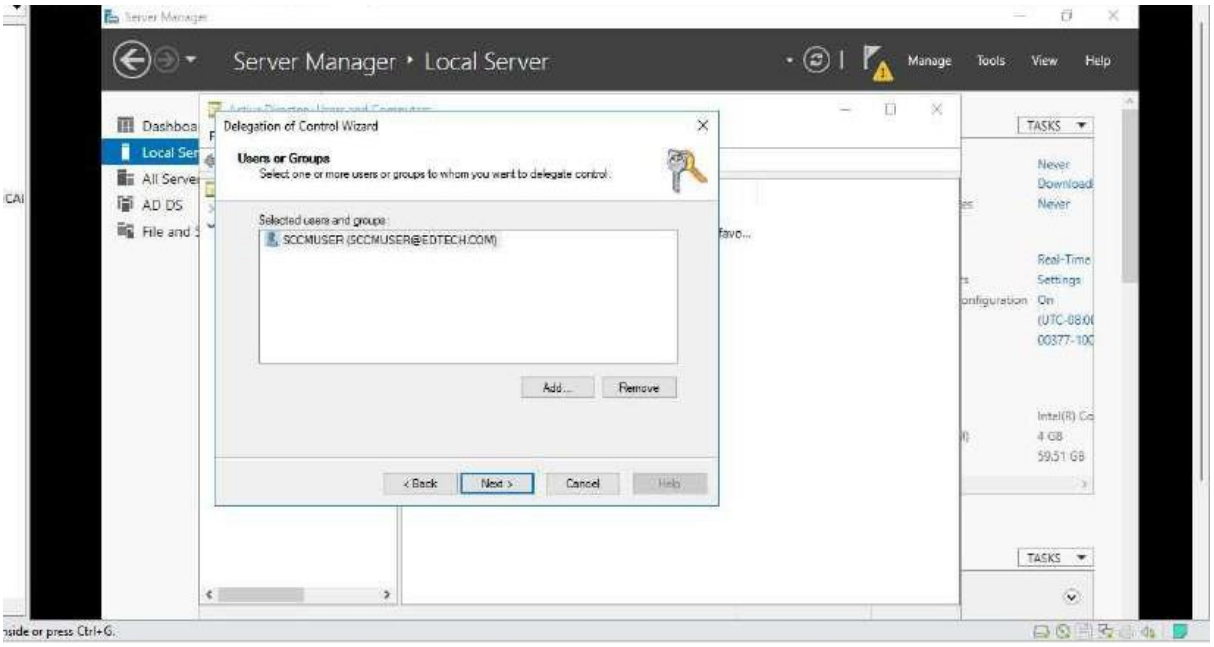
- **Type SCCMUSER** and **Click on Check Names**



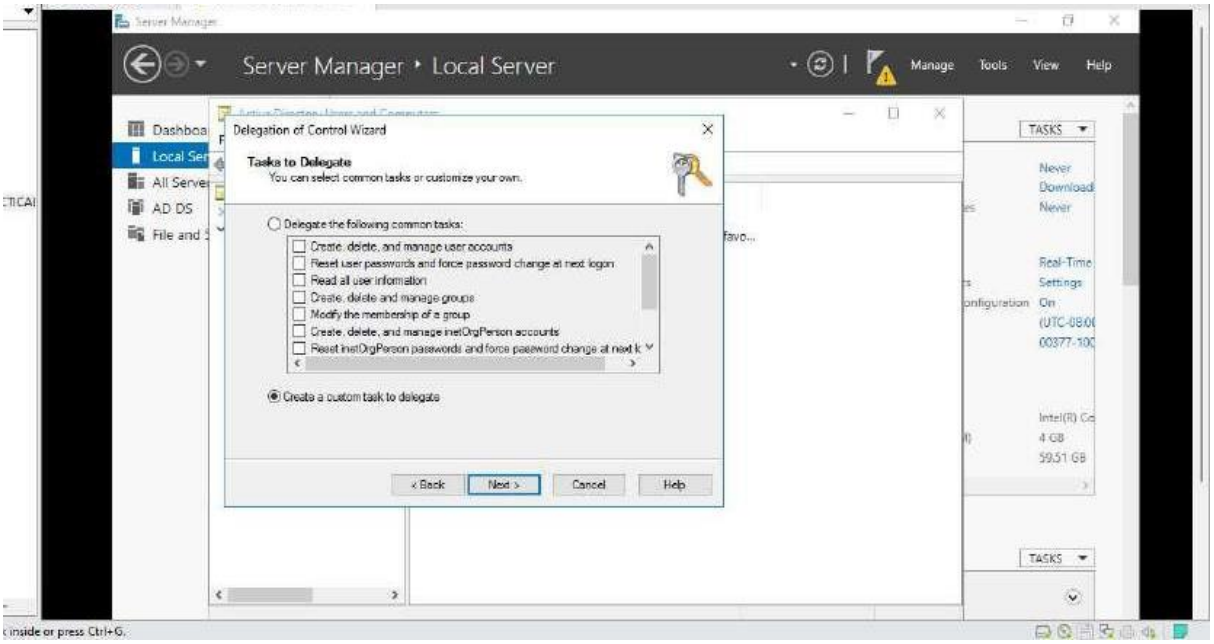
- **Click on Ok**



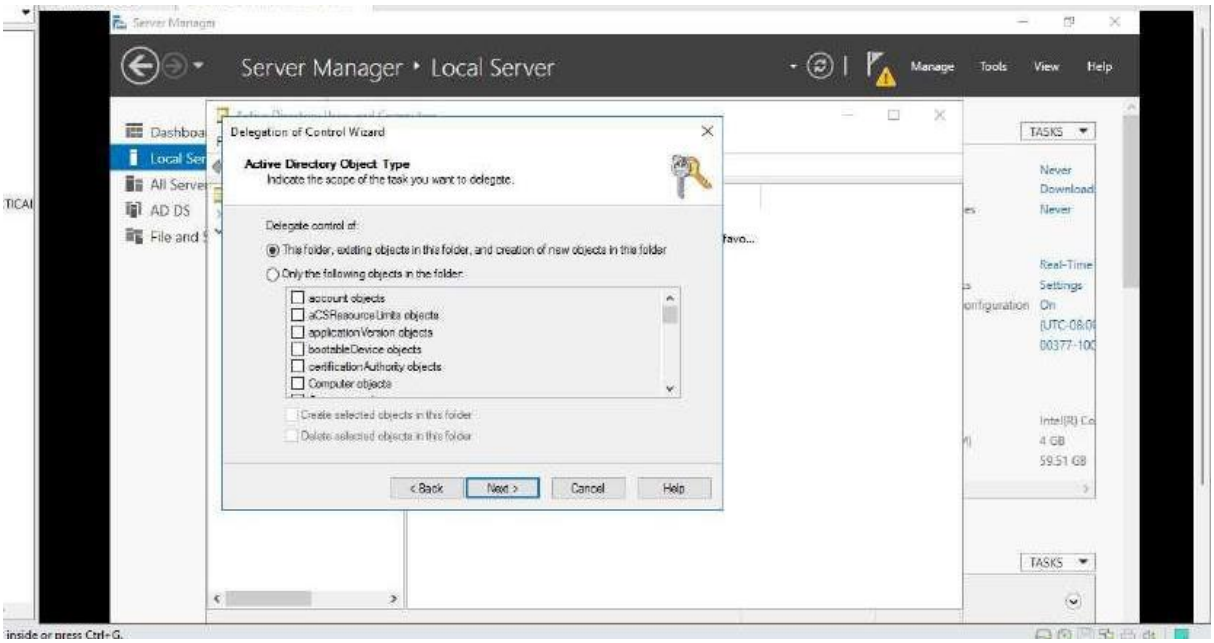
- **Click on Next**



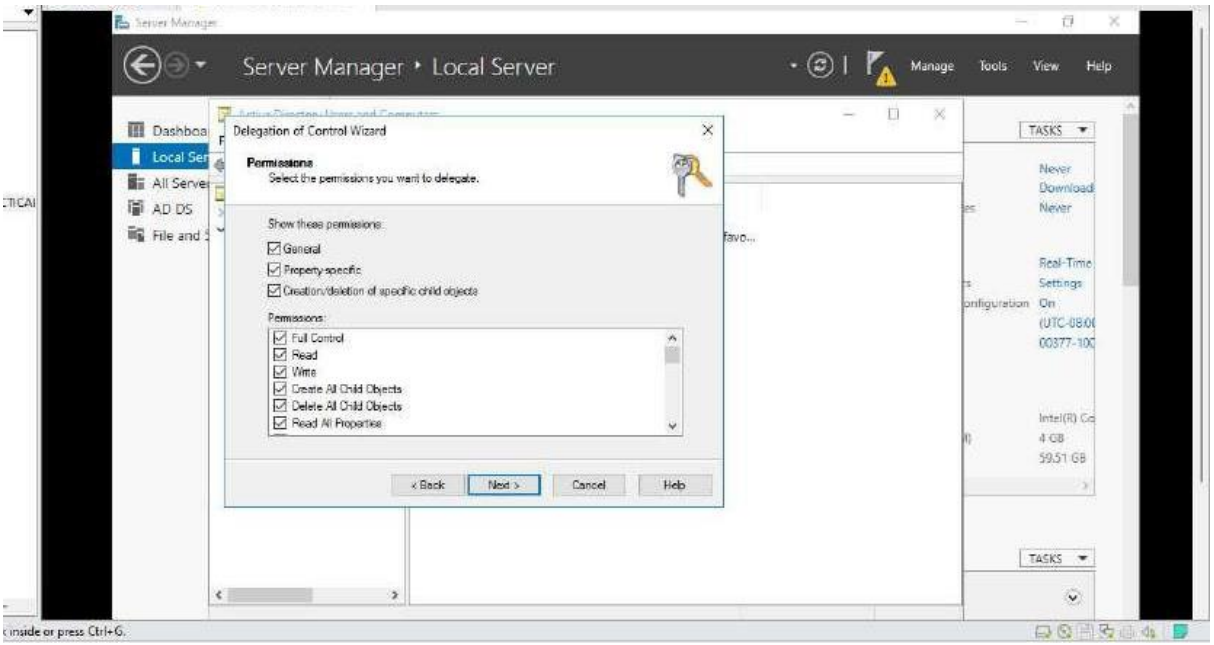
- **In the Task to Delegate, select Create a custom task to delegate click Next.**



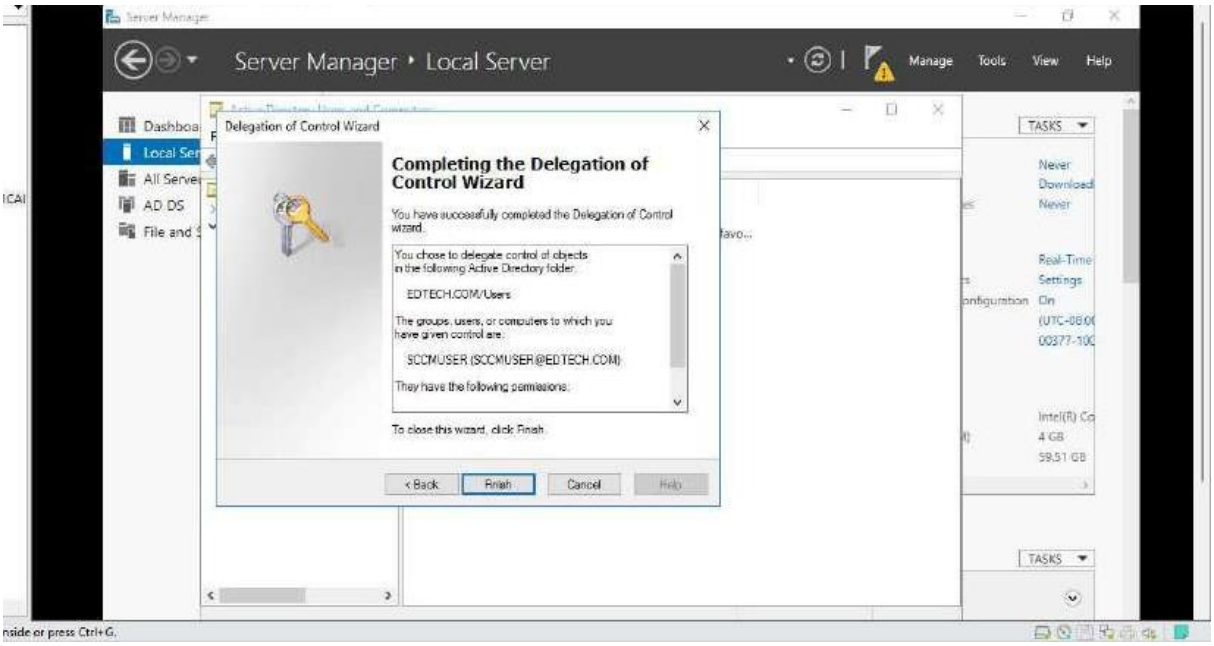
- In the Active Directory Object Type select **This folder, existing objects in this folders, and creation of new objects in this folder** and **click Next.**



- Tick on the 3 permissions **General, Property-specific and Creation/deletion of specific child objects. Under Permissions tick on Full Control** and **click Next.**

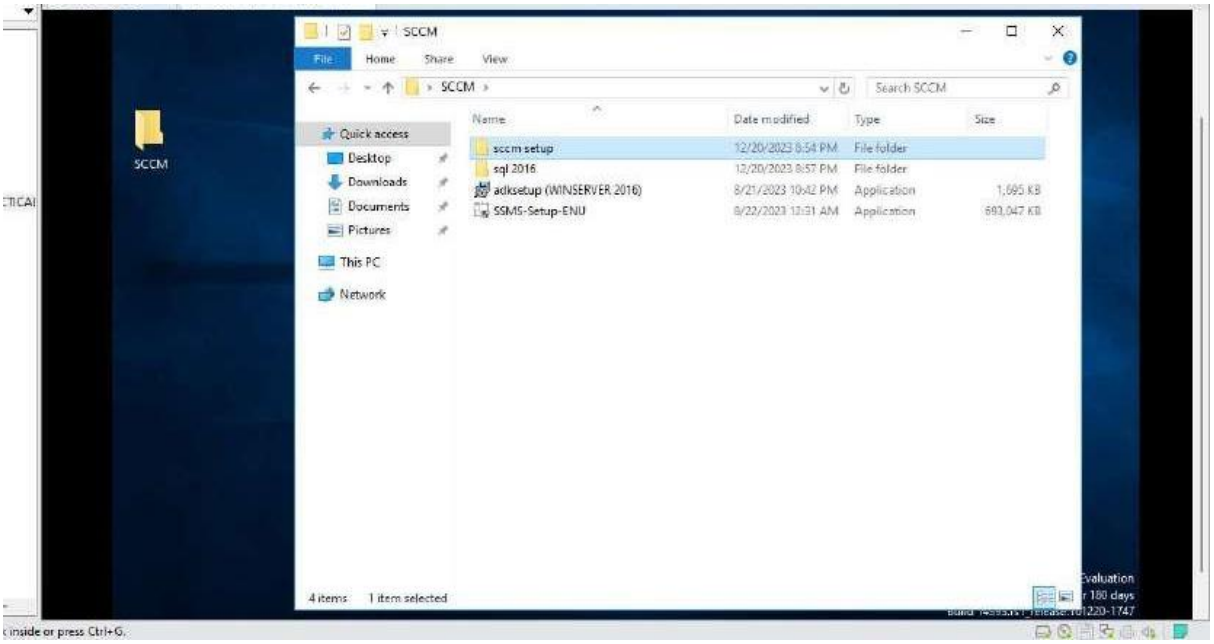


- **Click Finish** to close the wizard.

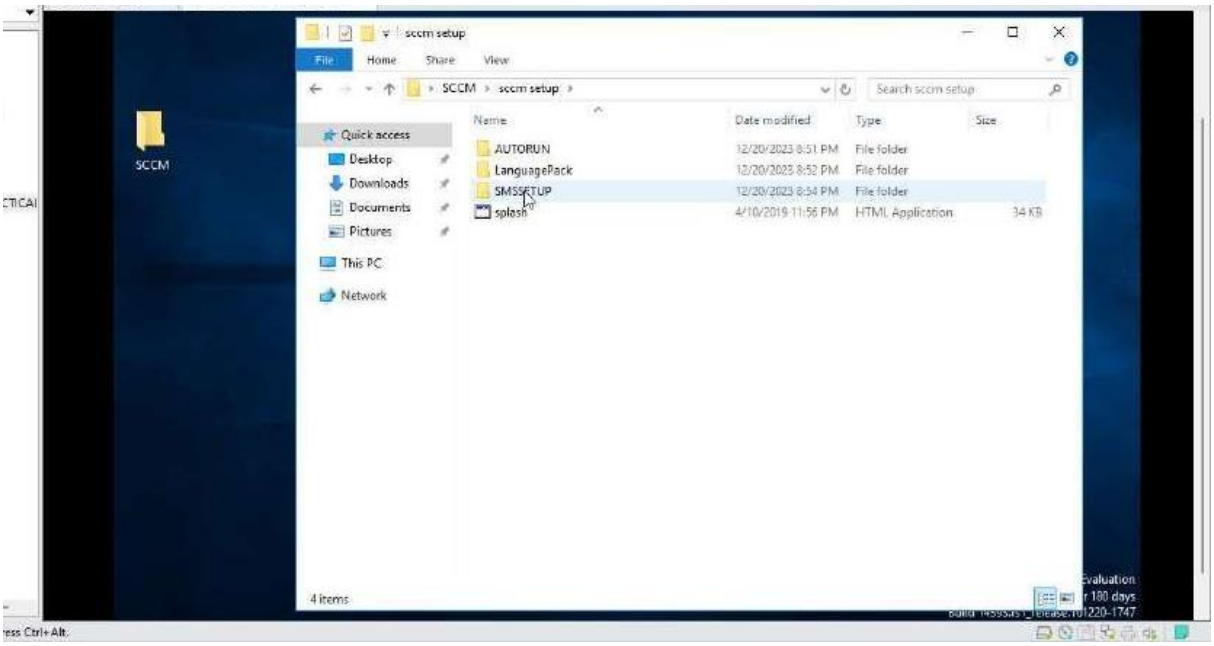


Step 5: Extending Active Directory Schema for SCCM_USER PRACTICAL 8

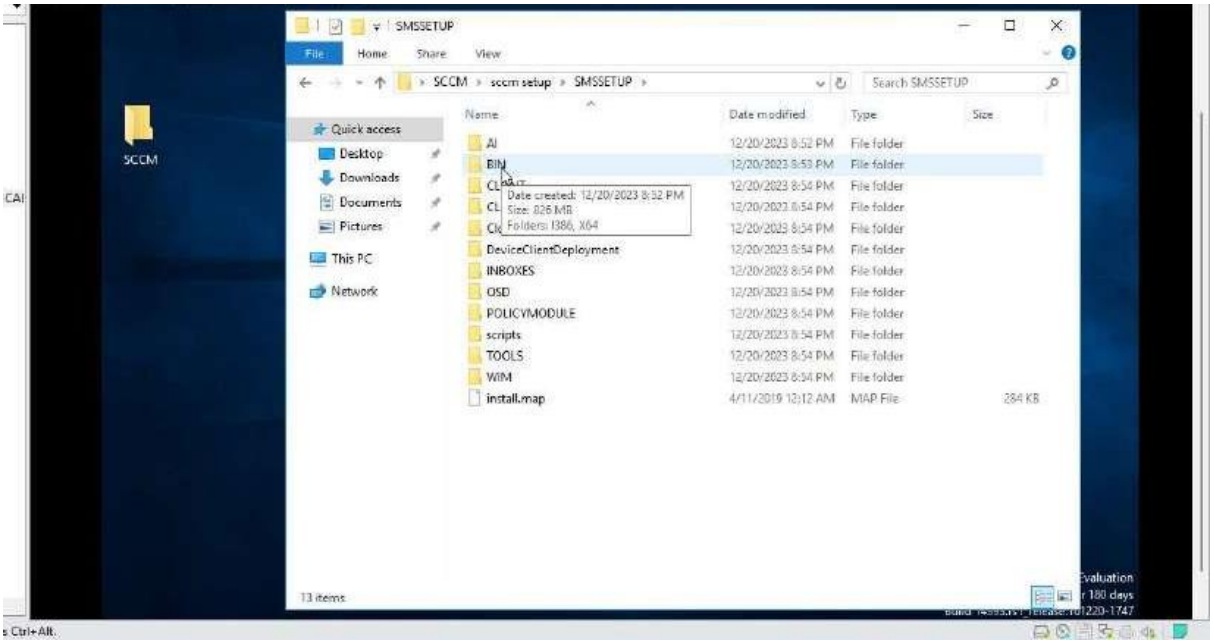
- Open you **SCCM Folder** and **Select the sccm setup Folder**



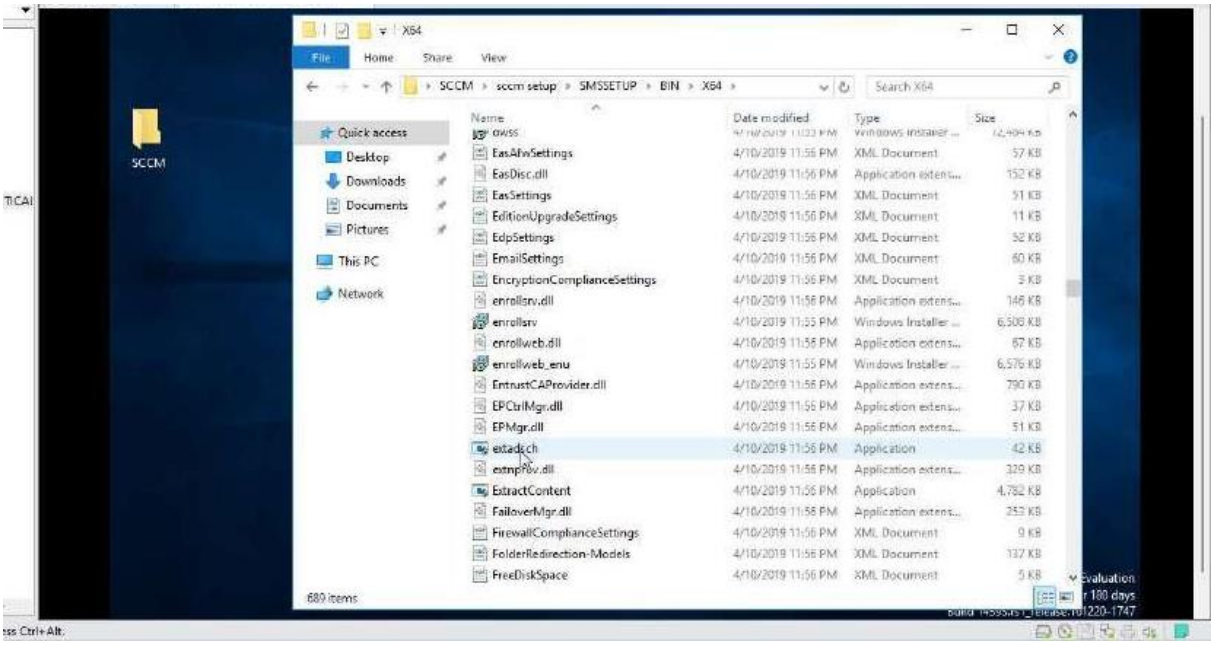
- Open **SMSSETUP**



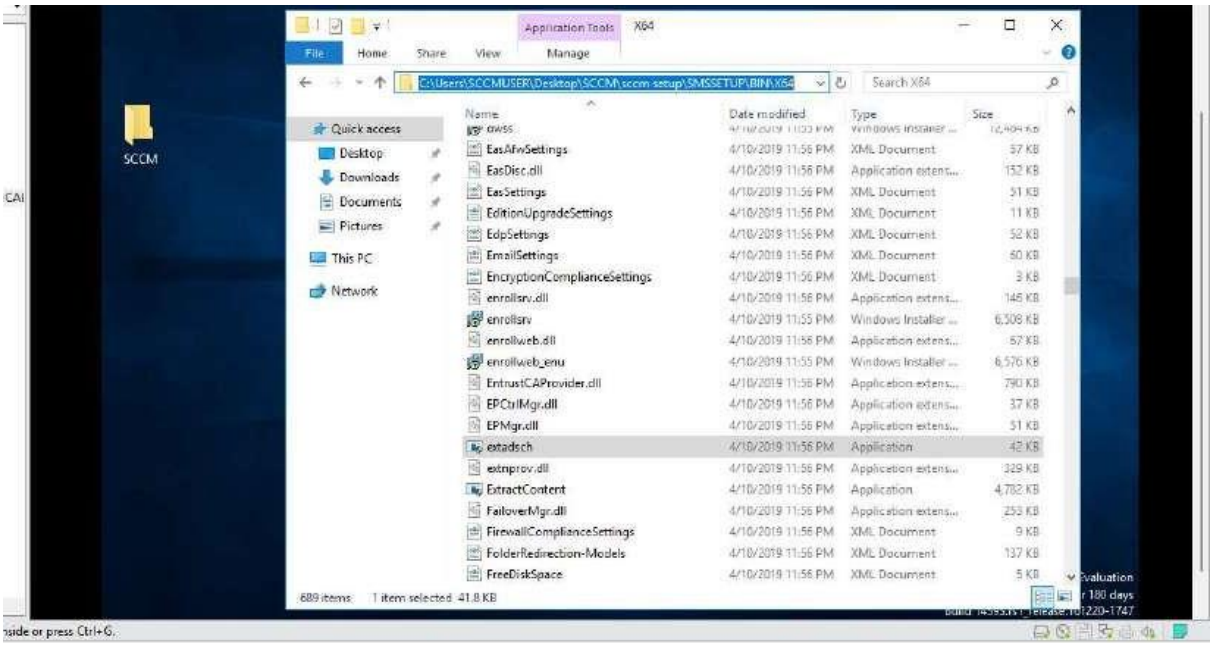
- **Click on BIN**



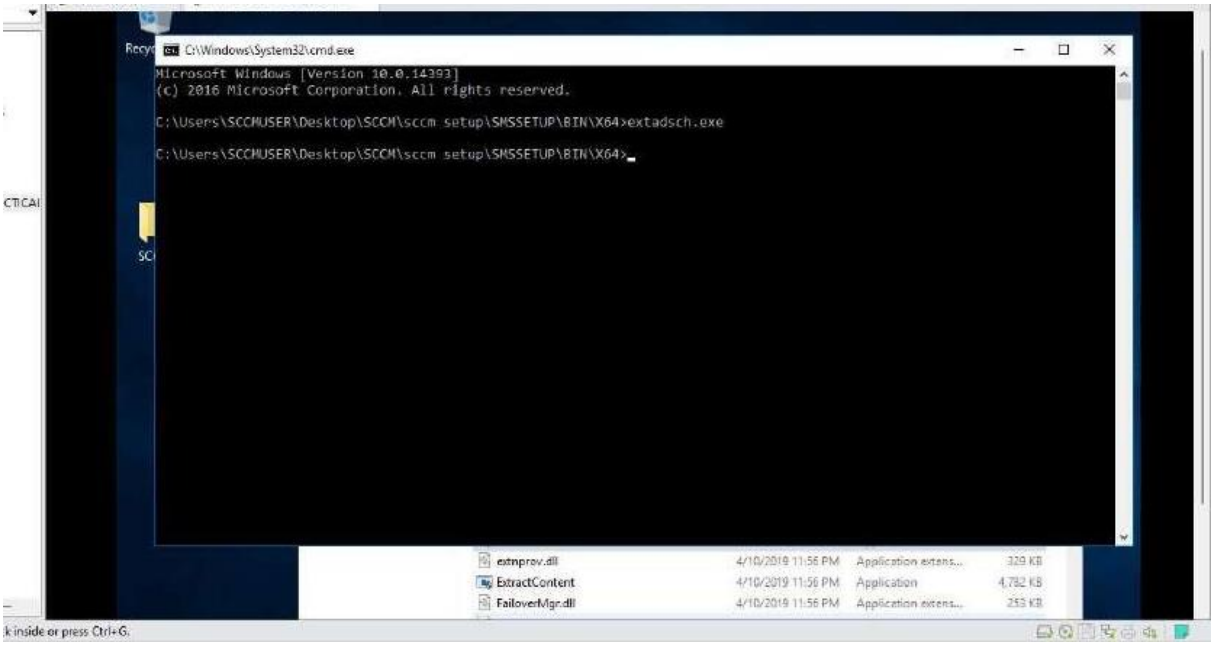
- **Within BIN Select the x64 folder, Now within the x64 folder Select Extadsch.exe**



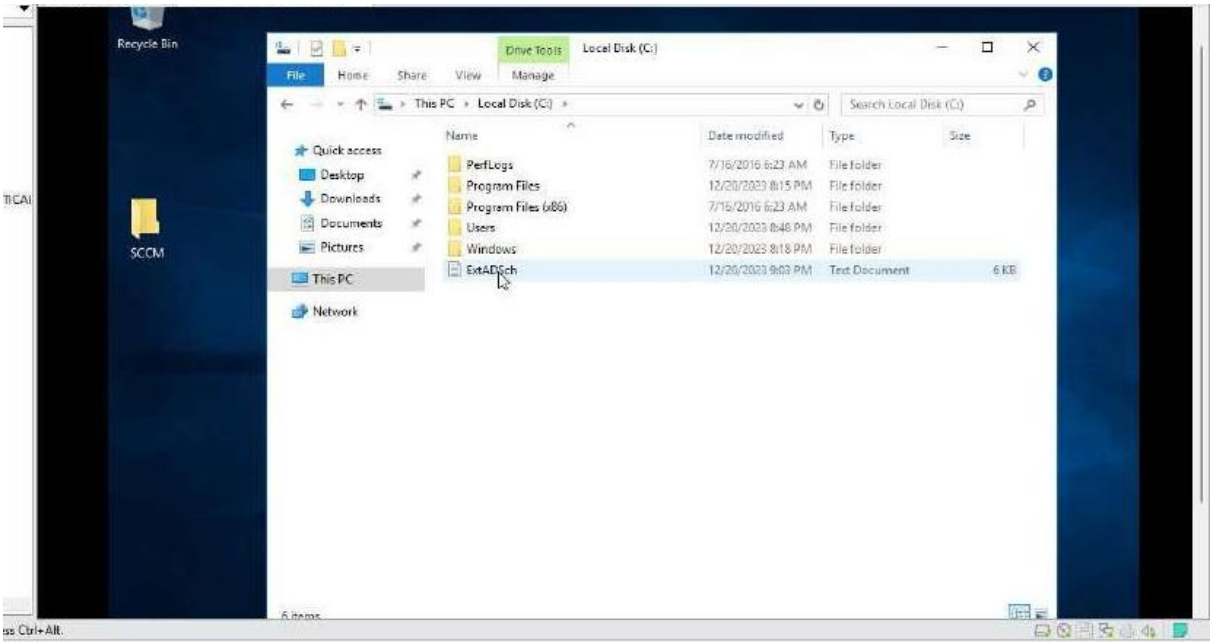
- **Type CMD**



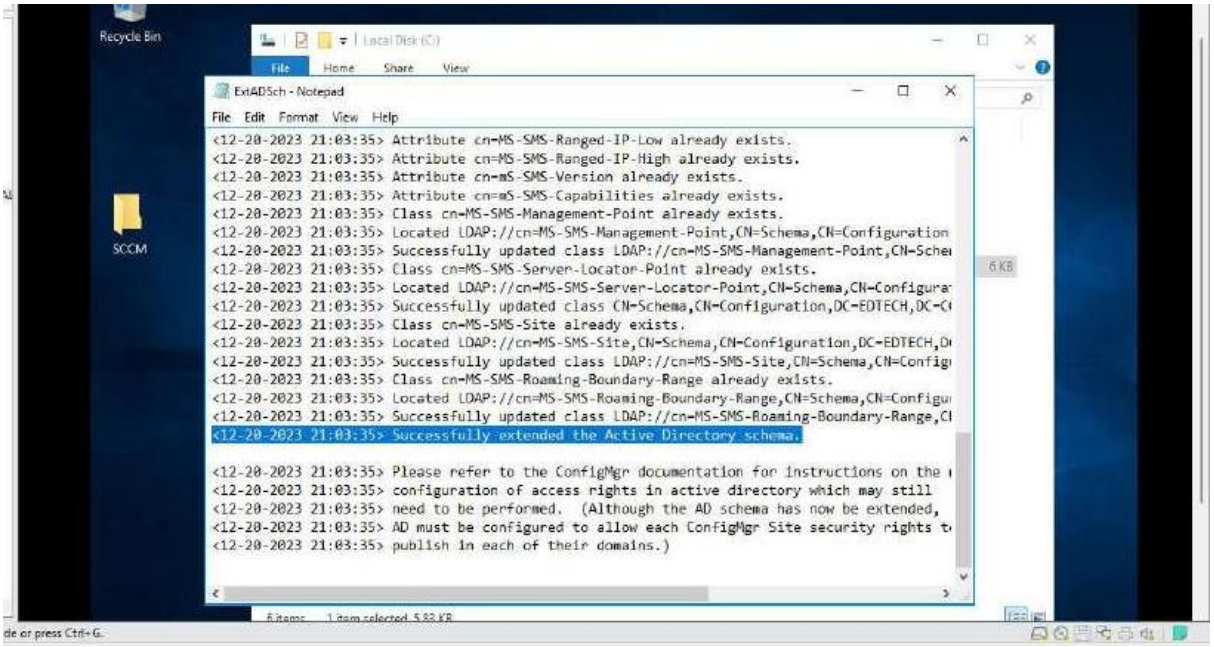
- **Open the file using command prompt**



- **To confirm the extension, go to your C: Directory and Open the ExtADSch.txt file**

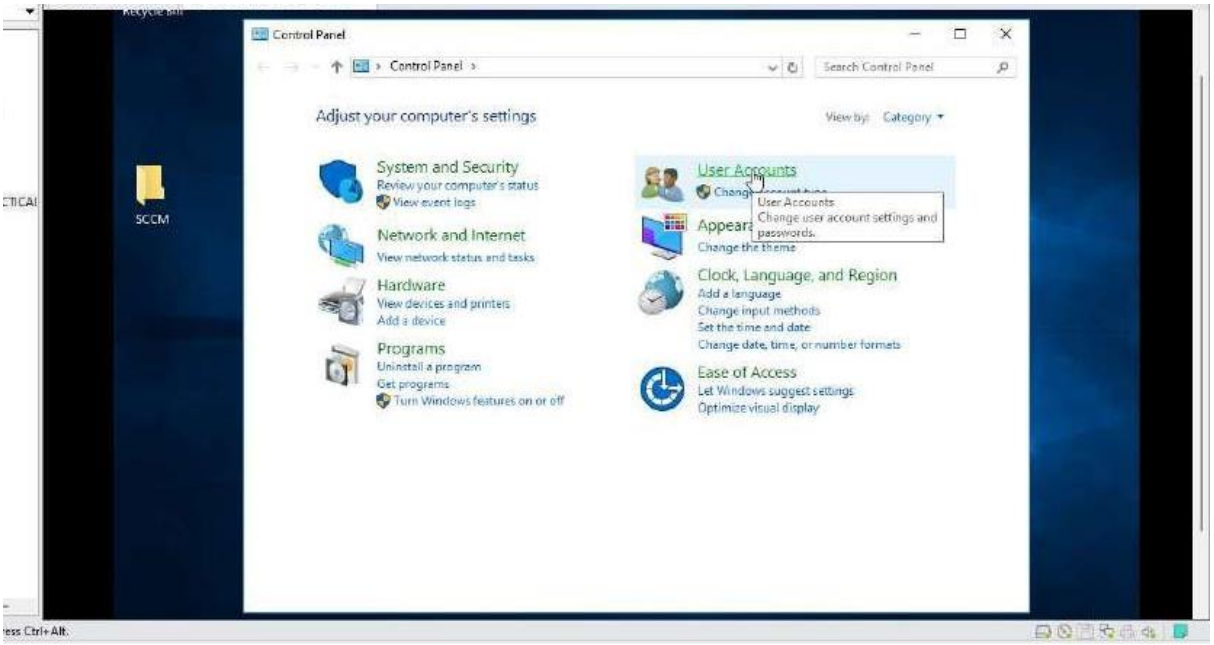


- **when you open ExtADSch file, you'll find the line: Successfully extended the Active Directory schema.**

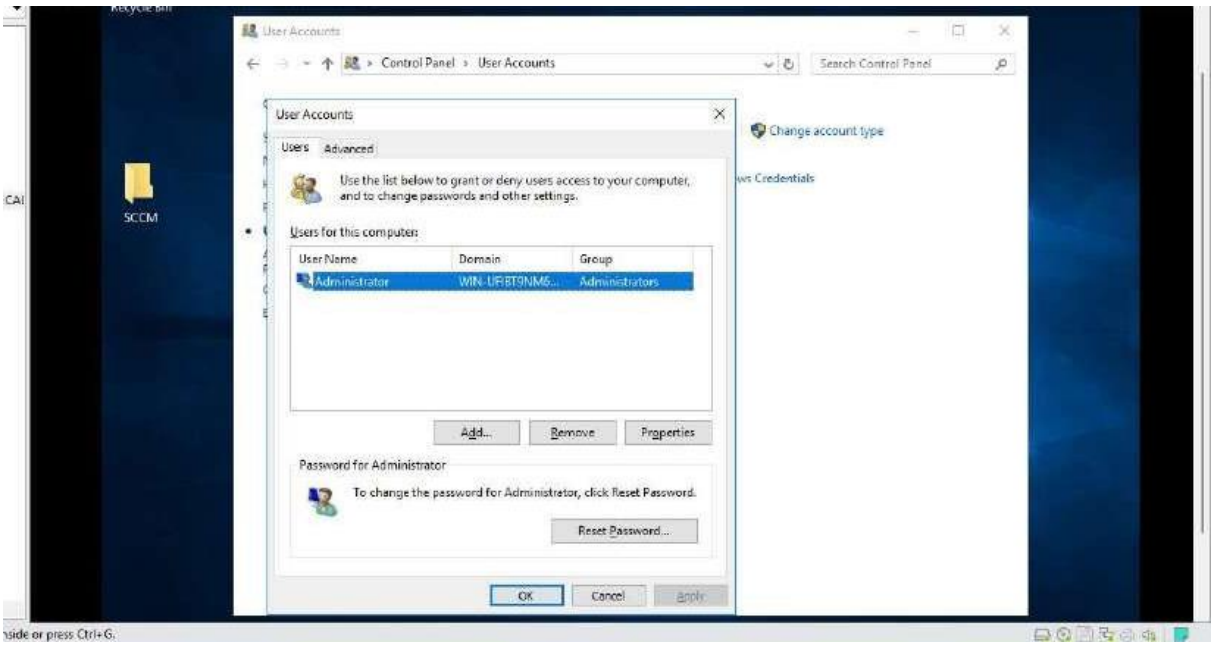


Step 6: Upgrade your current user with Administrative Rights

- Open **Control Panel** and **Click on User Account**

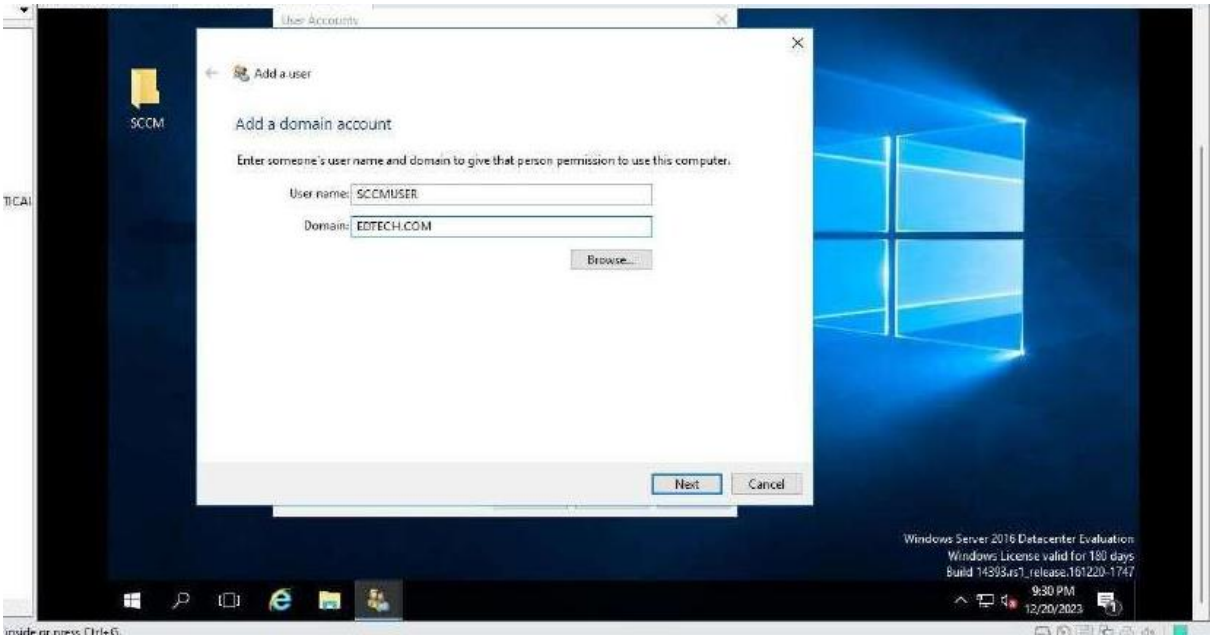


- **Click on Add**



- **Enter User Name Here User Name Type SCCM**
- **Enter Domain Name Here Domain Name EDTECH.COM**

- **Click on Next**

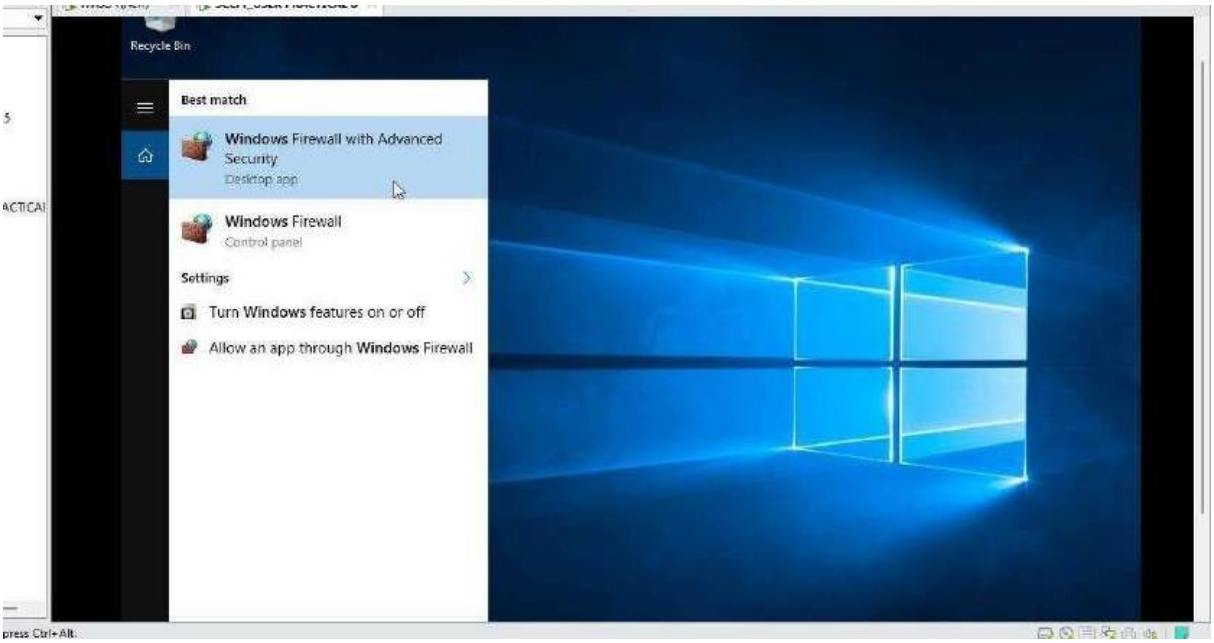


- **Click on Finish**

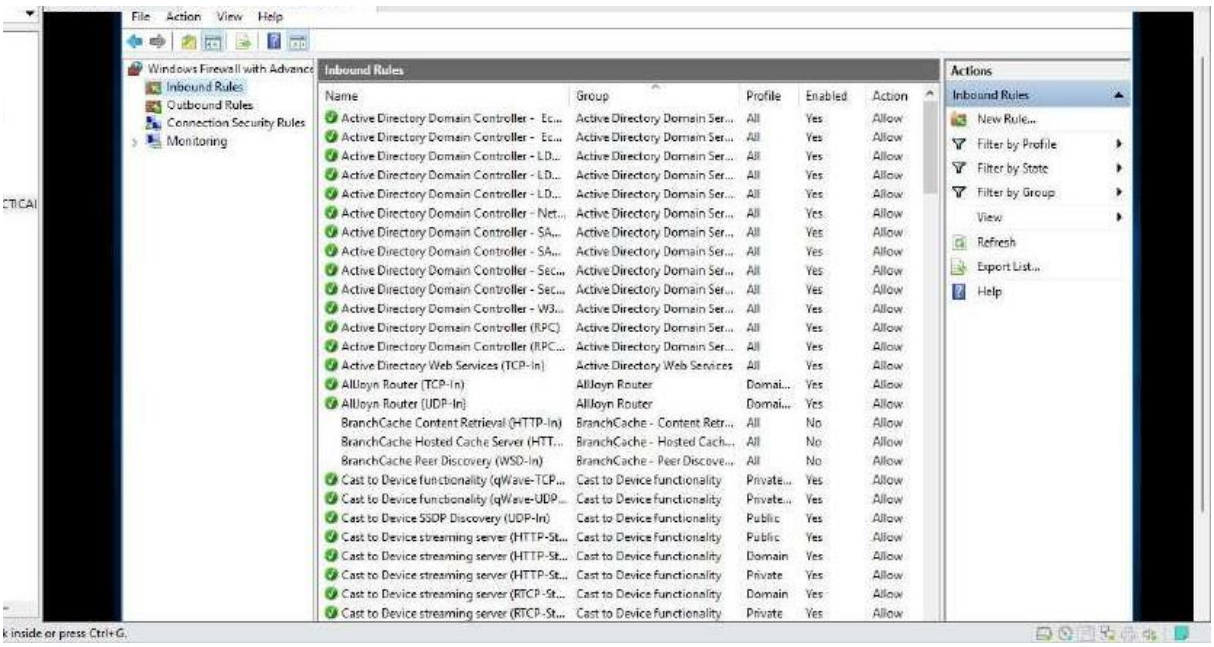
Note: After Upgrade your current user with Administrative Rights login with EDTECH.COM\SCCMUSER

Step 7: Configure Windows Firewall

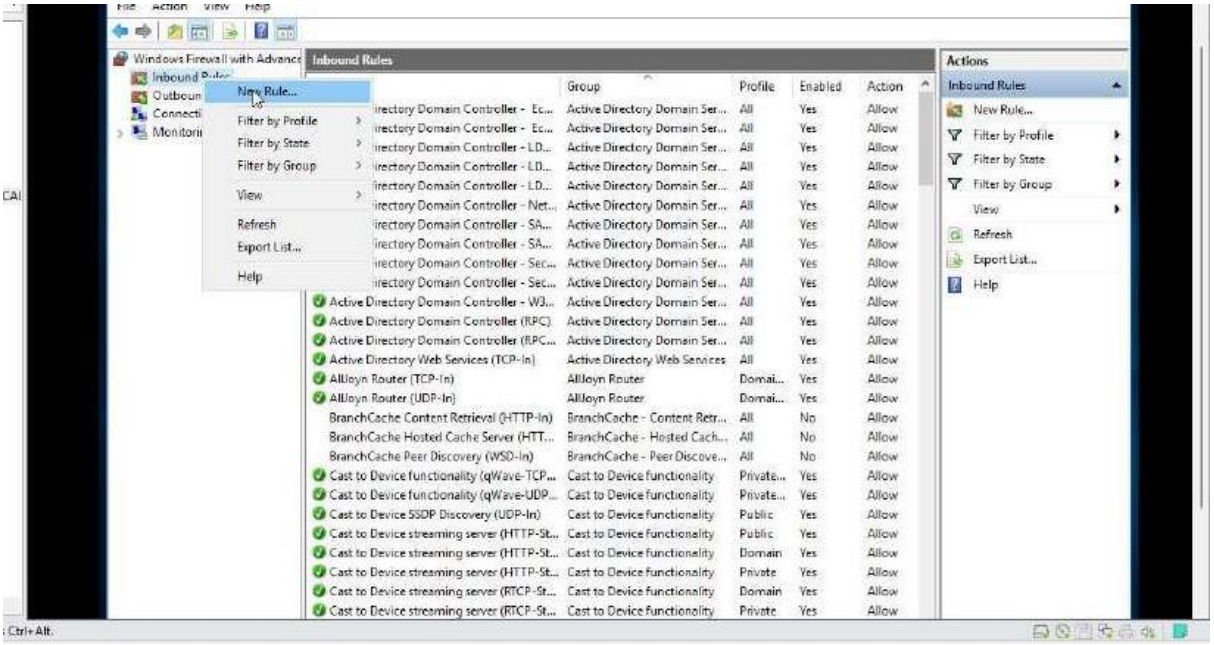
- Open **Windows Firewall with Advanced Security**



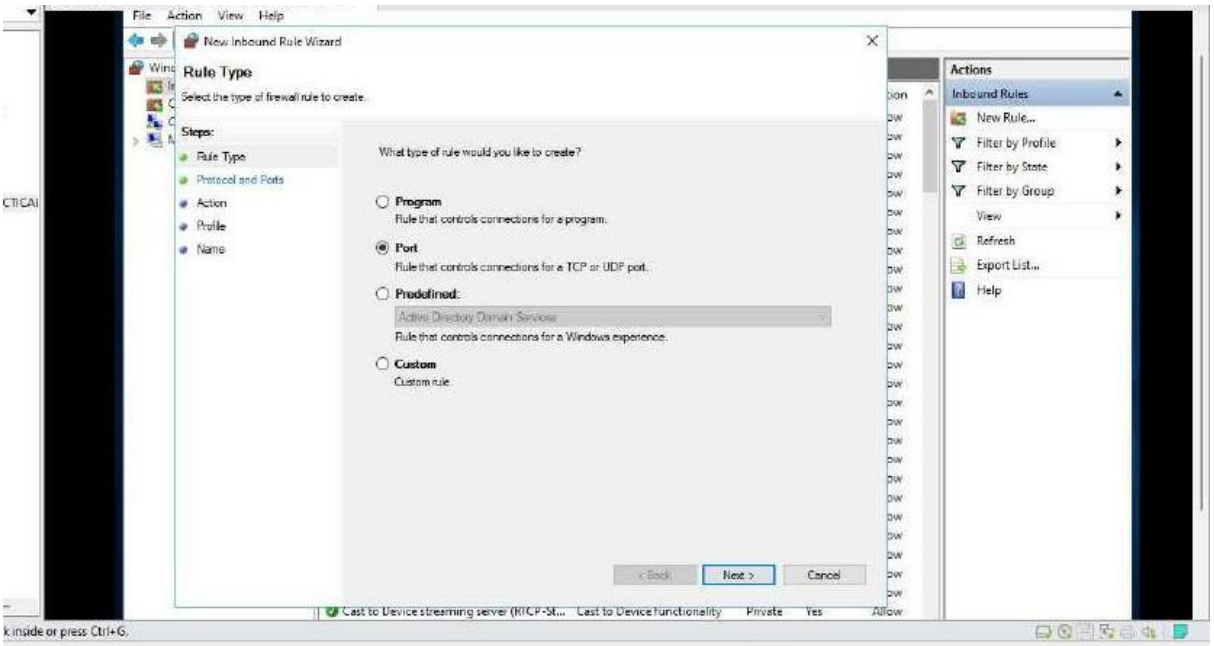
- **Click on Inbound Rules**



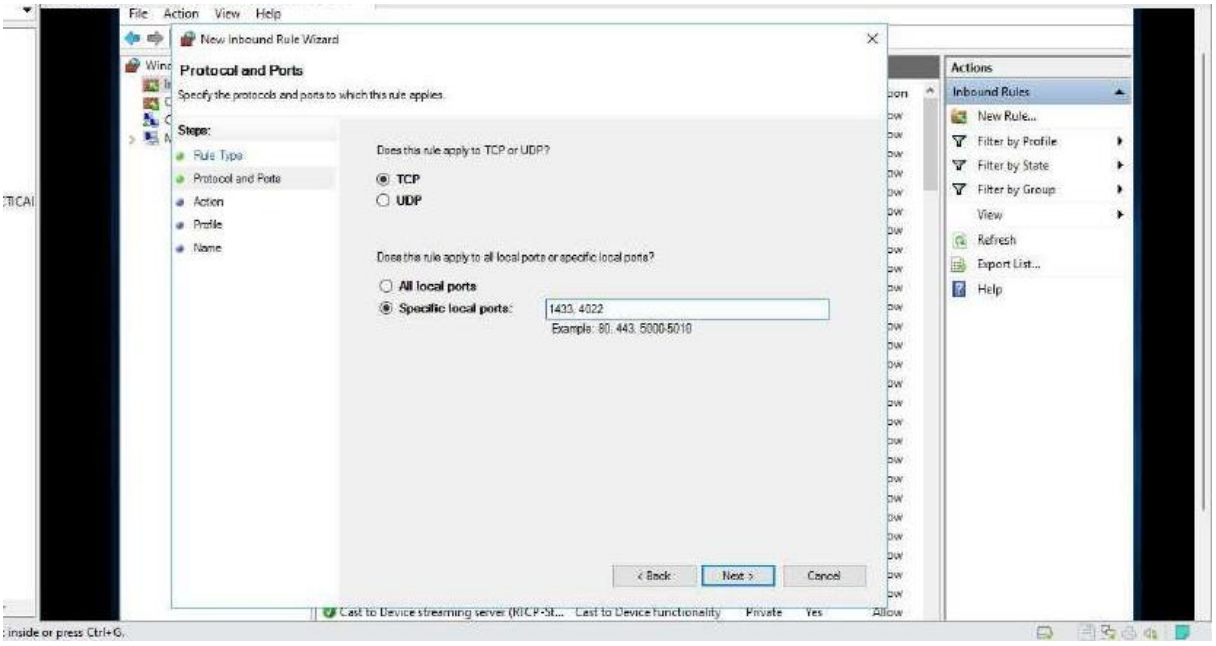
- **Right-Click on Inbound Rule and Select New Rule**



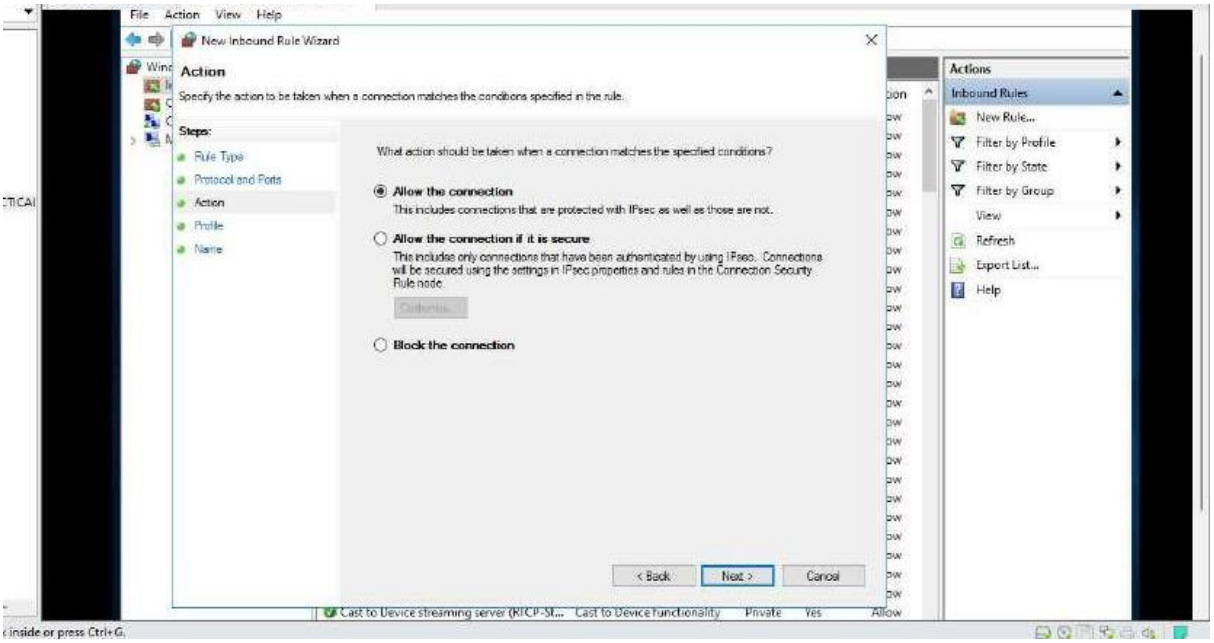
- **Select Port** and **Click on Next**



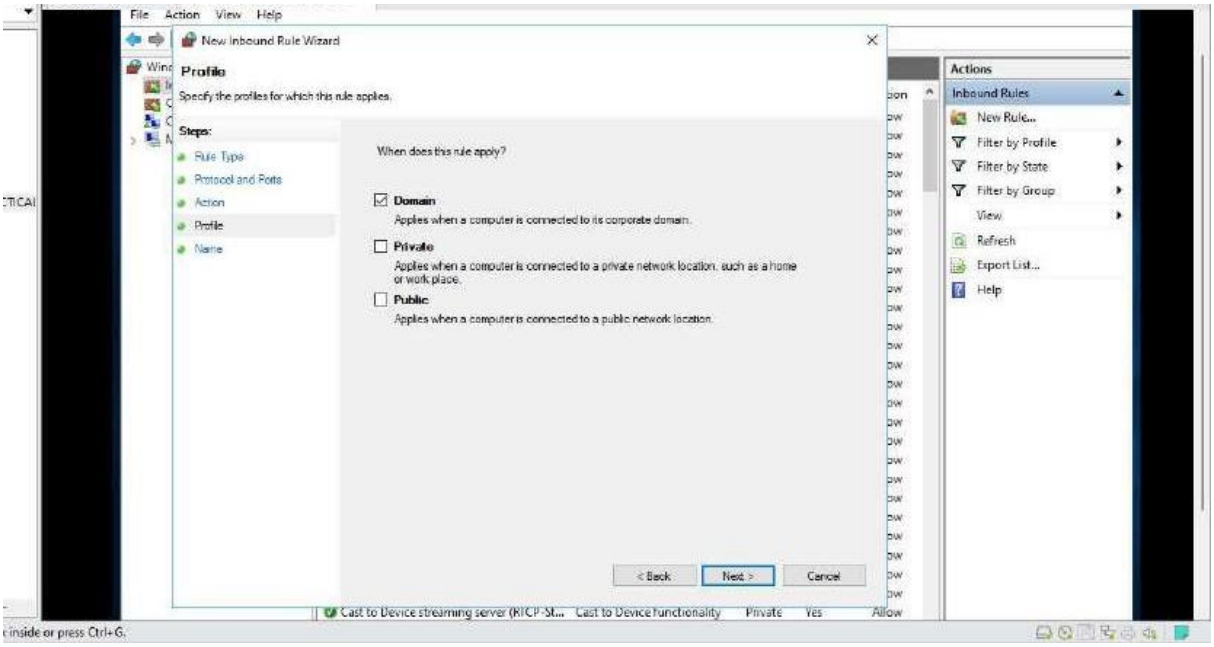
- In the Protocol and Ports dialog box, **select TCP.** Select Specific local ports, and then type port numbers **1433** for SQL Server default instance and **4022** for Inter-site communications use the SQL Server Service Broker. **Click Next.**



- In the Action dialog box, select **Allow the connection,** and then **click Next.**



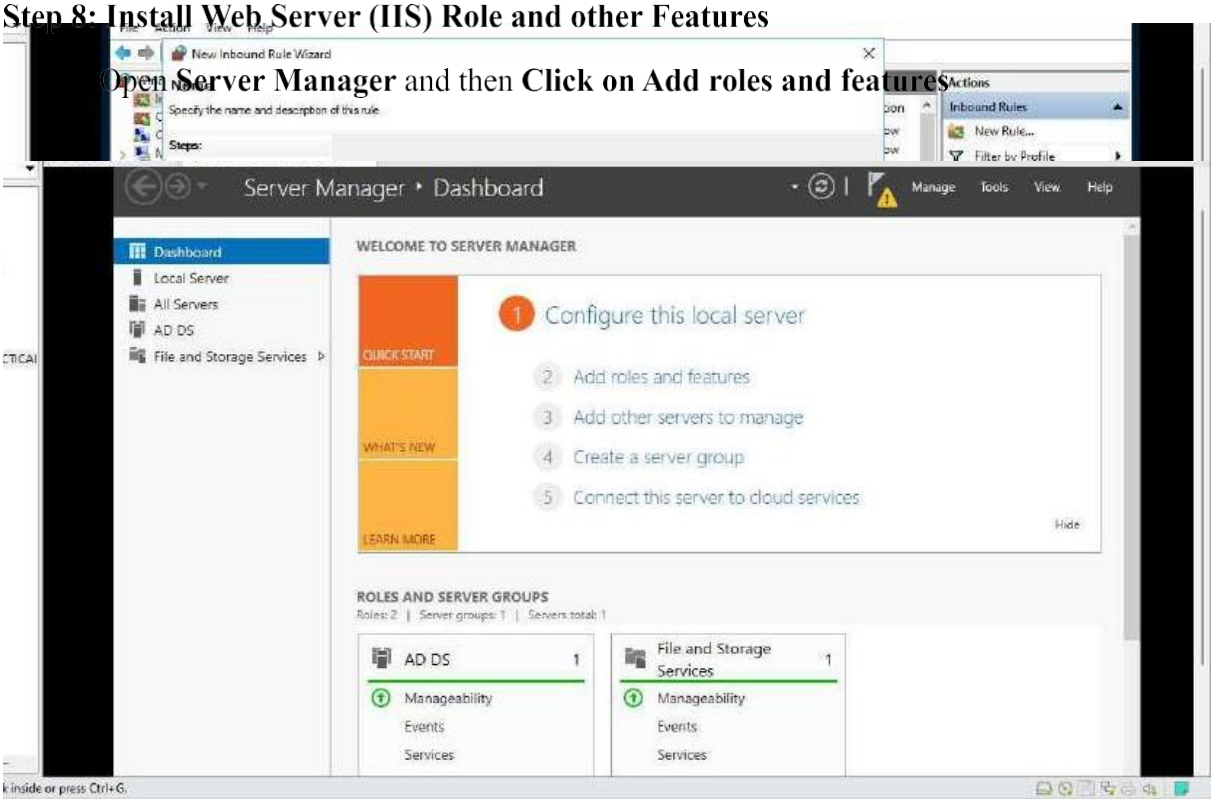
- In the Profile dialog box, **select Domain** and then **click Next.**



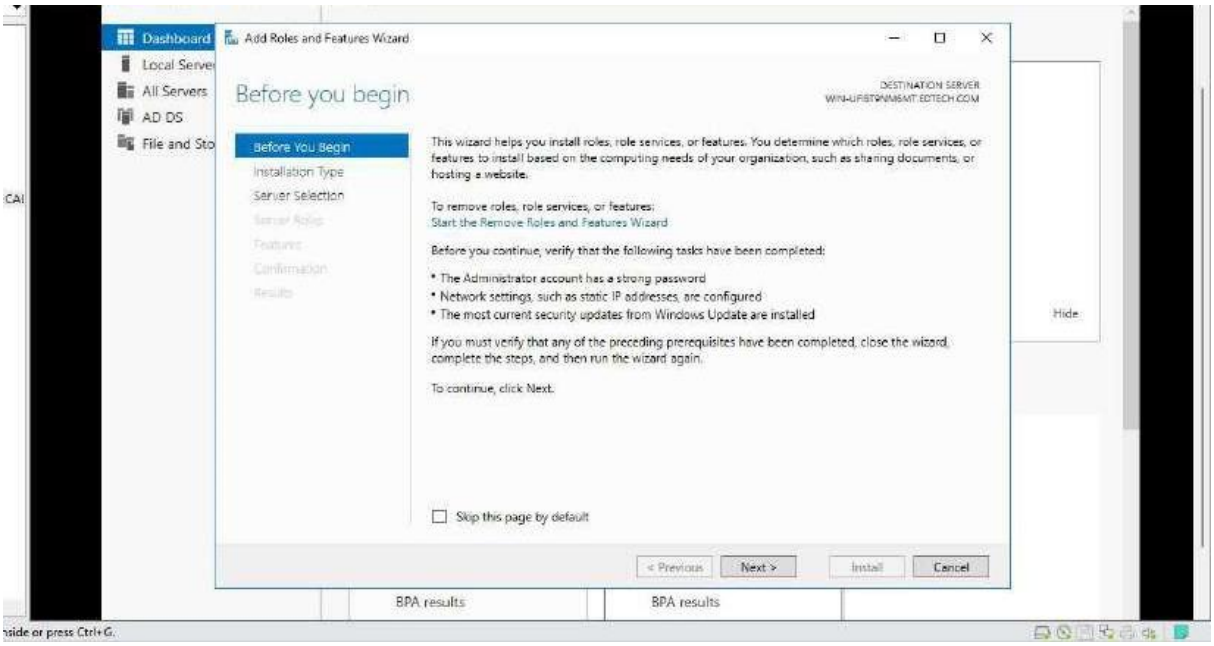
- In the Name dialog box, type a profile name,like **SQL ports for ConfigMgr** and then **click Finish.**

Step 8: Install Web Server (IIS) Role and other Features

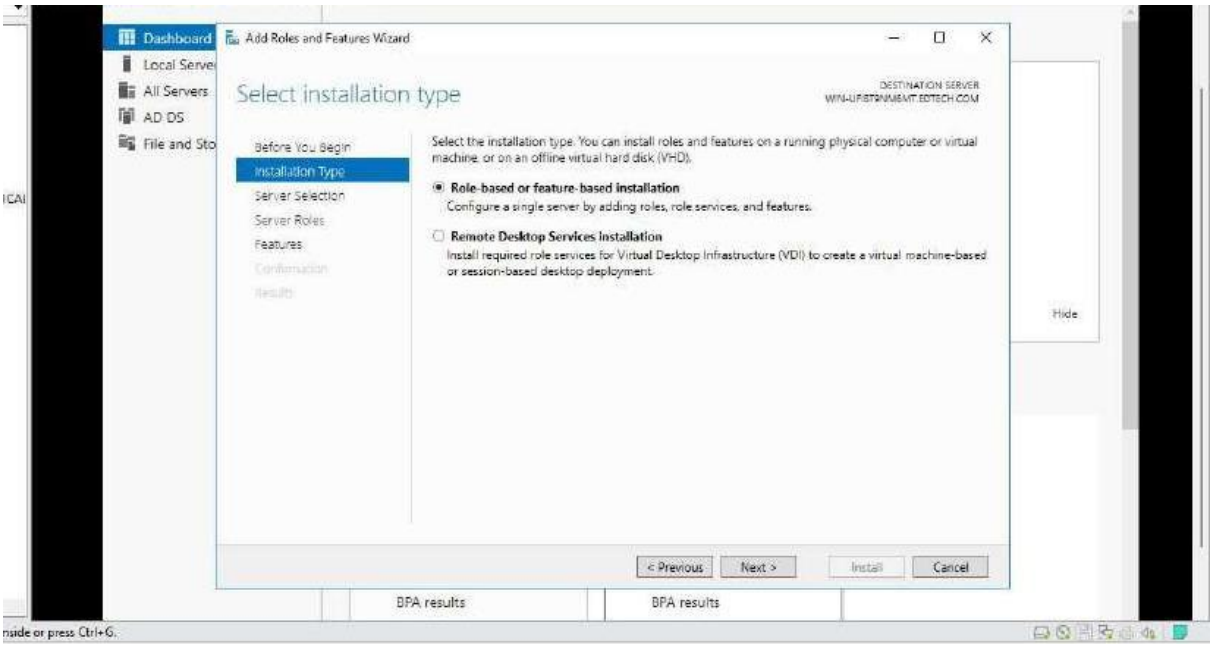
Open **Server Manager** and then **Click on Add roles and features**



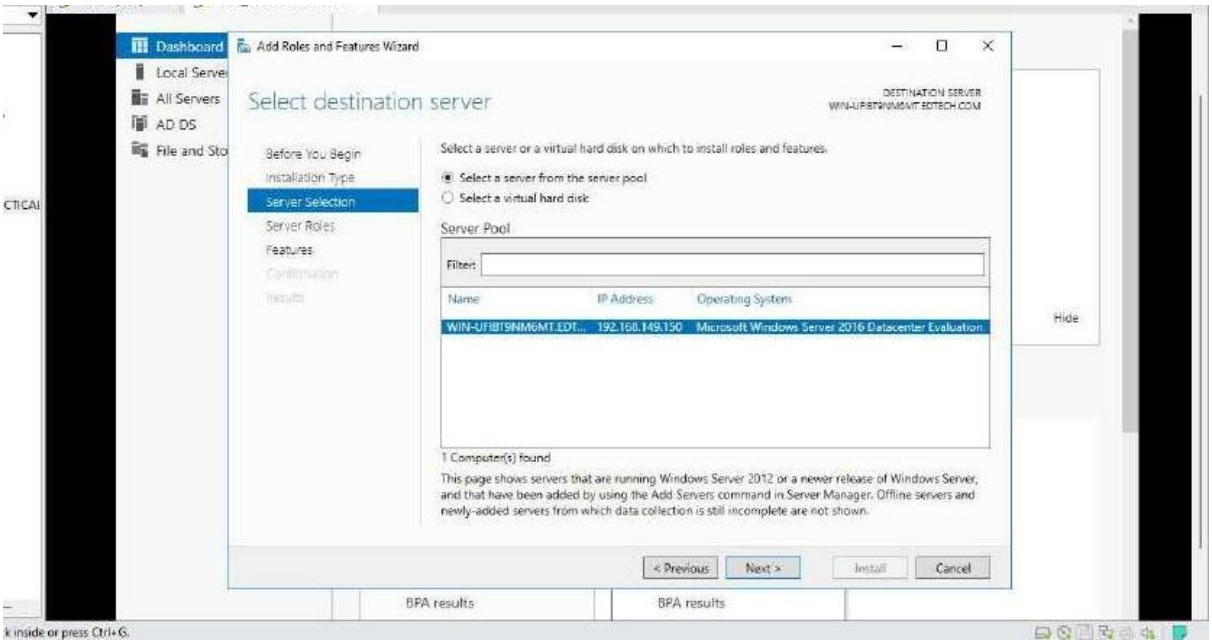
- **Click Next**



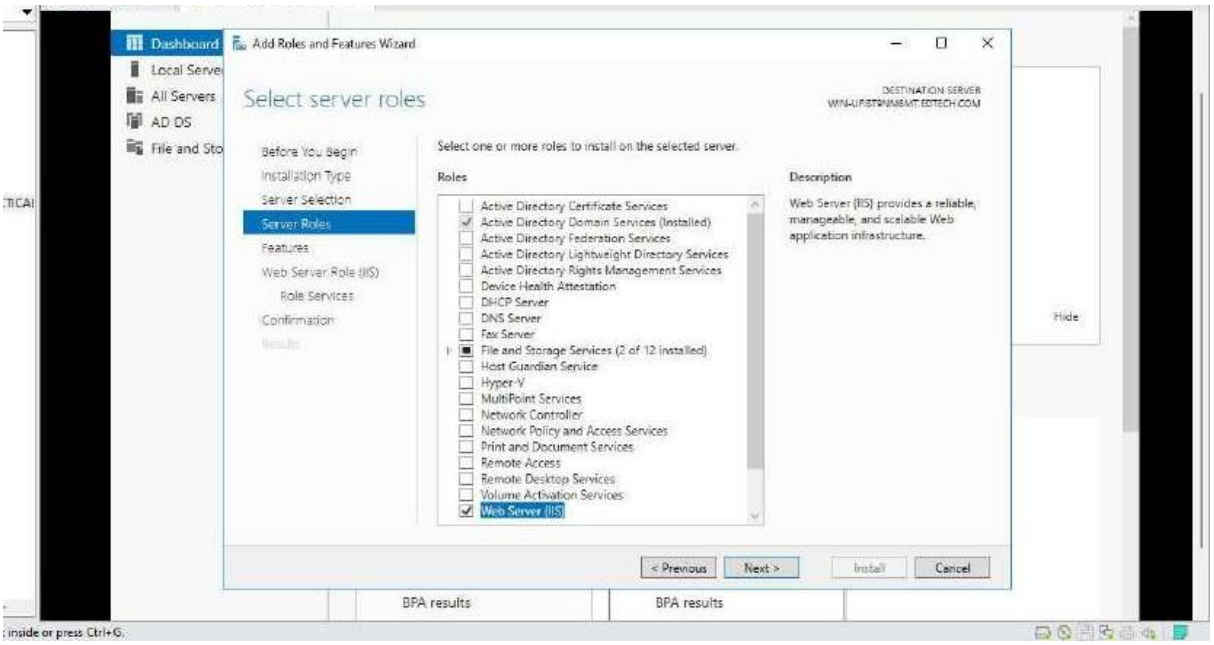
- Select **Role-based or Feature-based installation** and **Click Next**



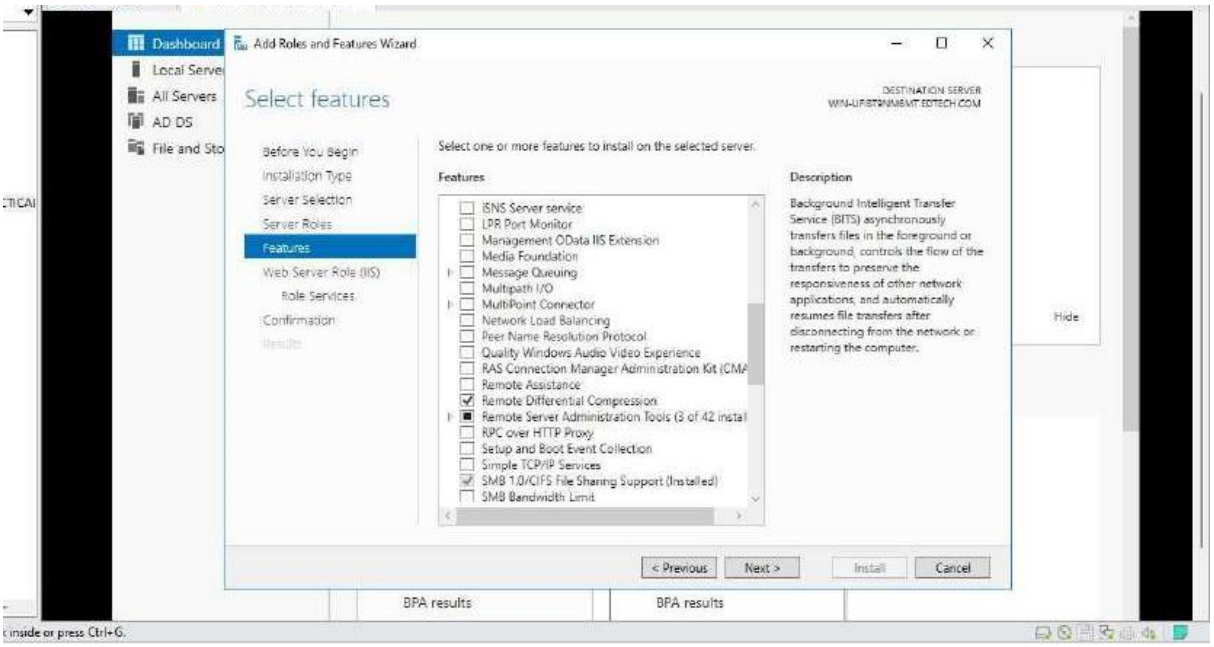
- **Keep default values** and **Click Next**



- **Select Web Server (IIS)** and **Click Add Feature** and **Click Next**

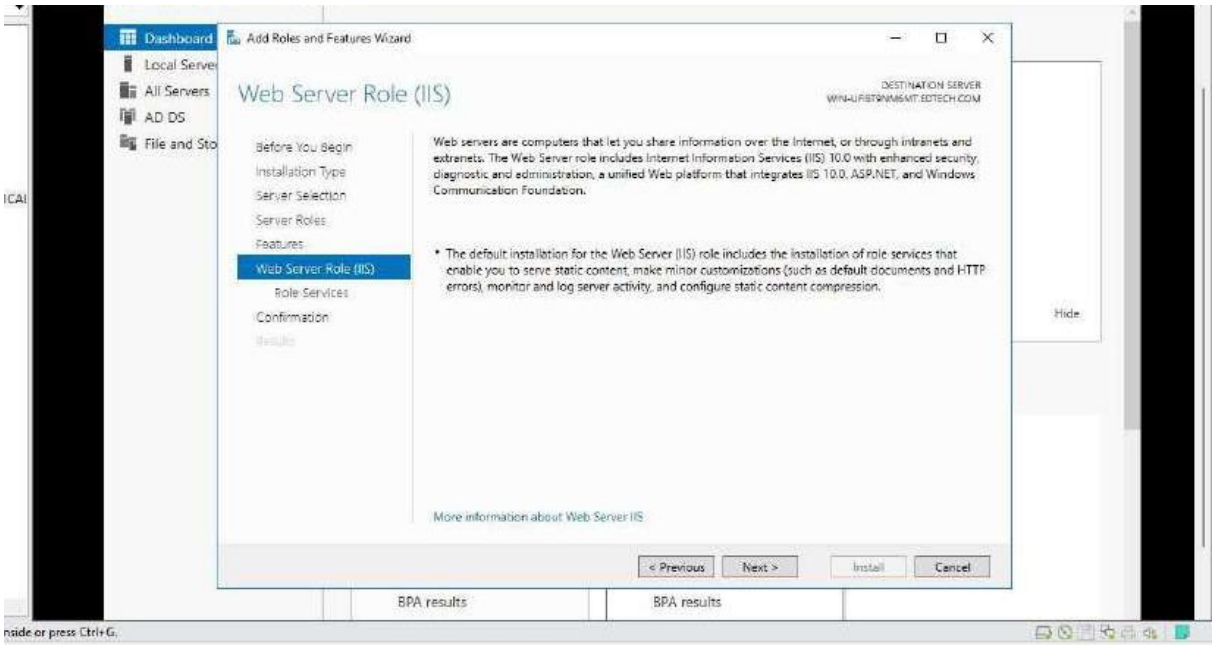


- **Select .NET Framework 3.5** and **Background Intelligent Transfer Service (BITS)** and **Remote Differential Compression Click Next**



Performance: Static Content Compression
Security: Windows Authentication
Application Development: .NET Extensibility 3.5, 3.5, ASP.NET 4.7, ISAPI Extensions, ISAPI Filters .NET Extensibility 4.7, ASP.NET

- **Click Next**



-

Health and Diagnostics: HTTP logging, Logging tools, Request Monitor Tracing, Tracing
Common HTTP Features: Default Document, Directory Browsing, HTTP Errors Static Content, HTTP Redirection
In the Web Server Role (IIS) > Role Services select the following:

Web Server

Web Server (IIS)

- **Remote Differential Compression**
- **Web Server (IIS)**

Management Tools

IIS Management Console

IIS 6 Management Compatibility: IIS 6 Metabase Compatibility, IIS 6 WMI Compatibility

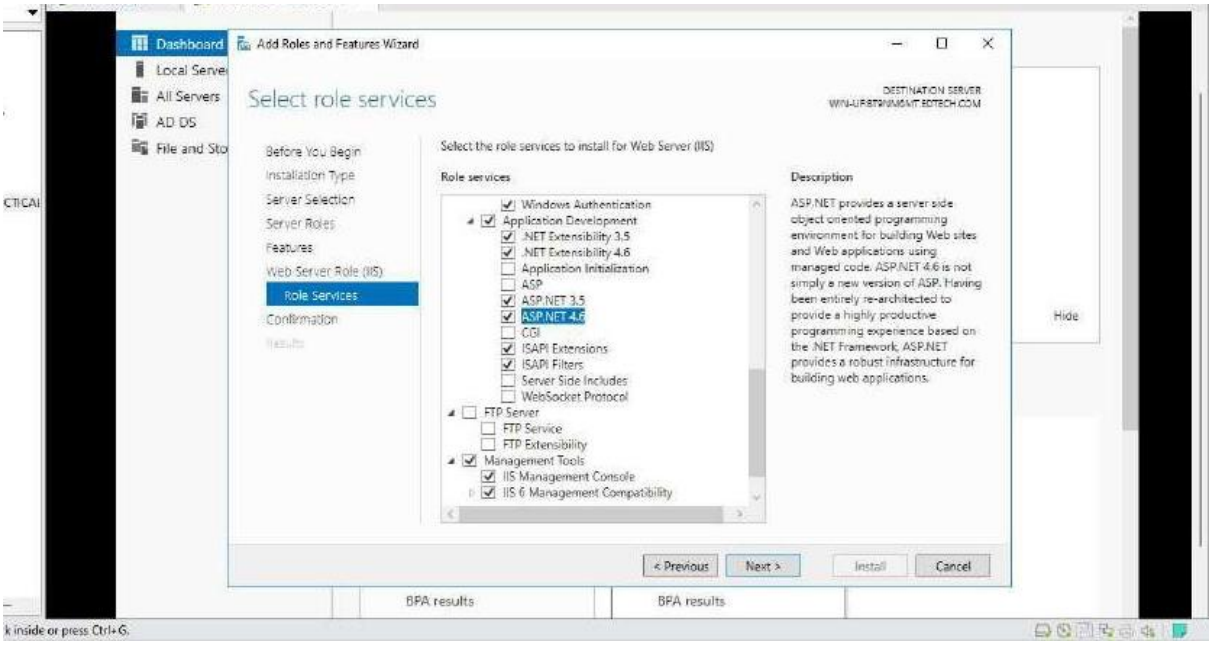
IIS Management Scripts and Tools

NET Framework 3.5 Features

.NET Framework 4.7 Features

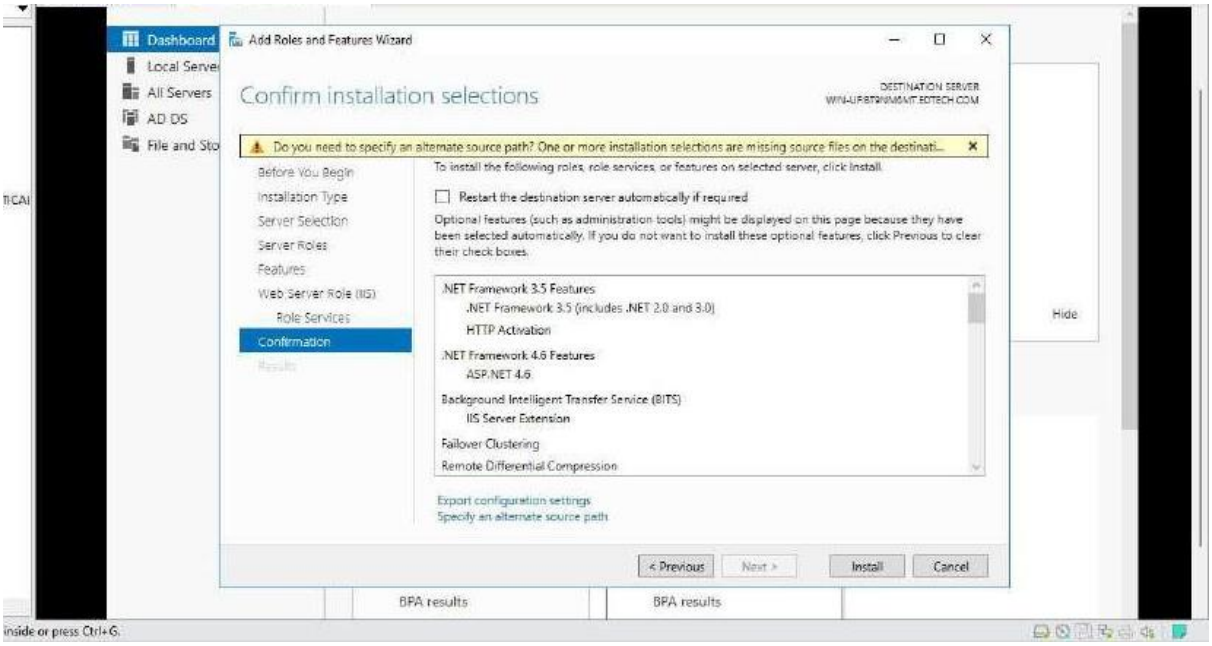
- In the **Add Roles and Feature Wizard > Confirm installation selection page, review the**
- **Roles and Features selected:**
- **Background Intelligent Transfer (BITS)**

After Selecting Above Feature Click on Next

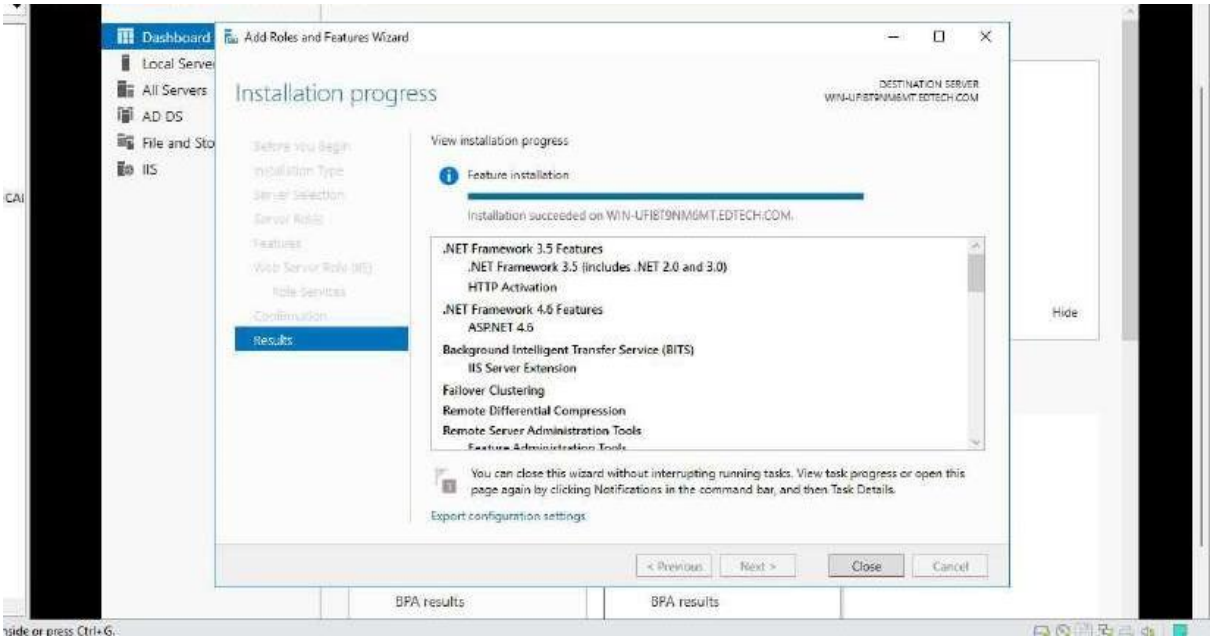


-

- **Click Install**

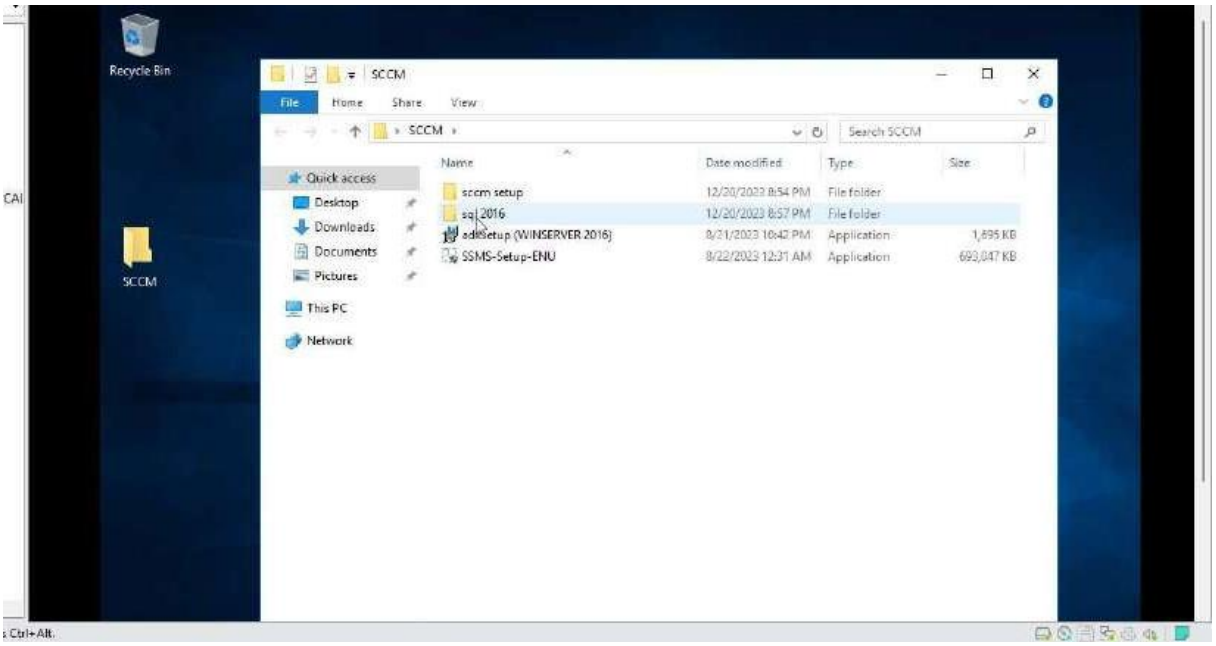


After the Installation of feature Click on Close

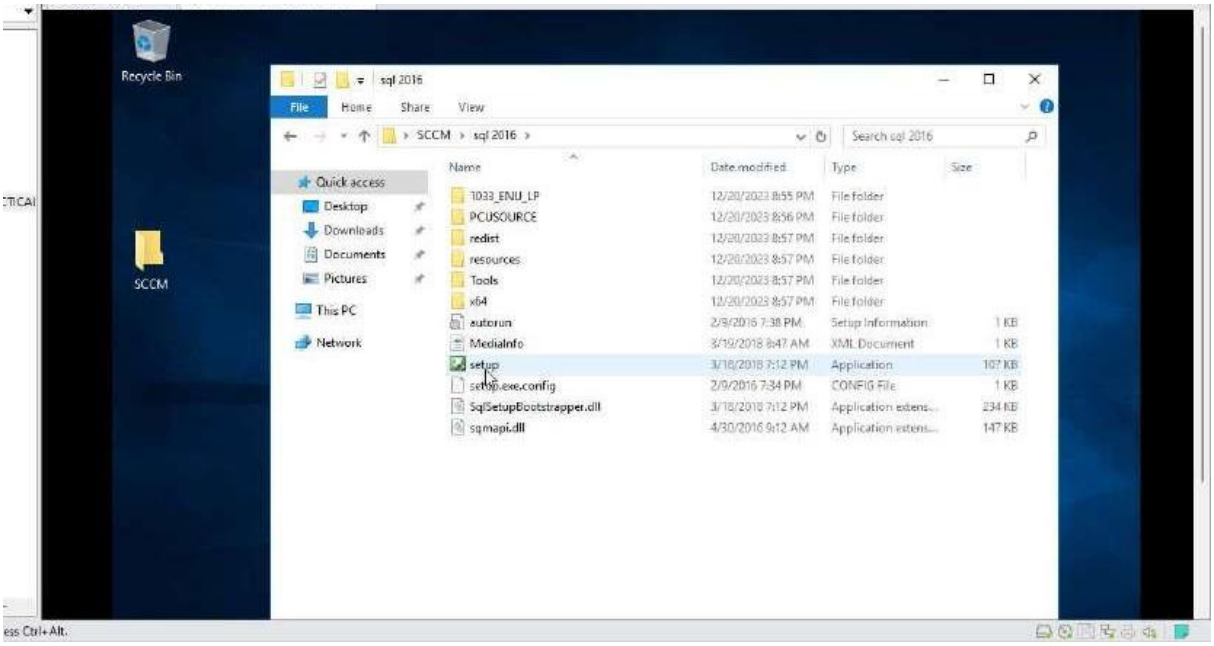


Step 9: Installing and Configuring SQL Server 2016

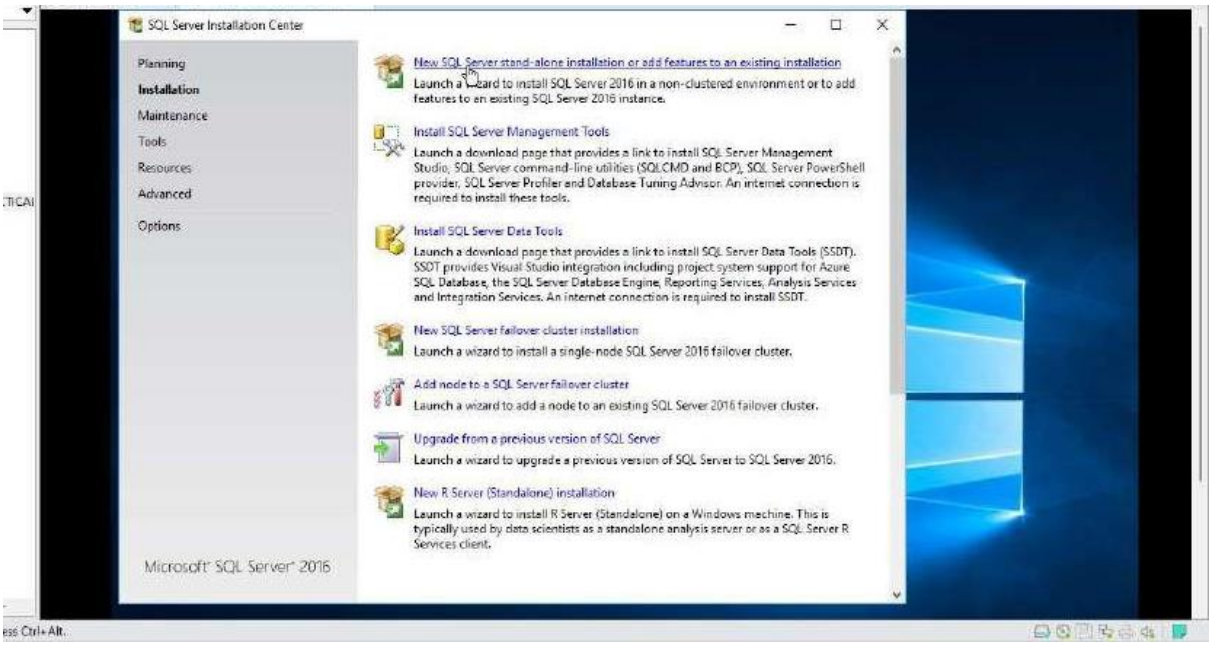
- Open your **sql 2016 folder**



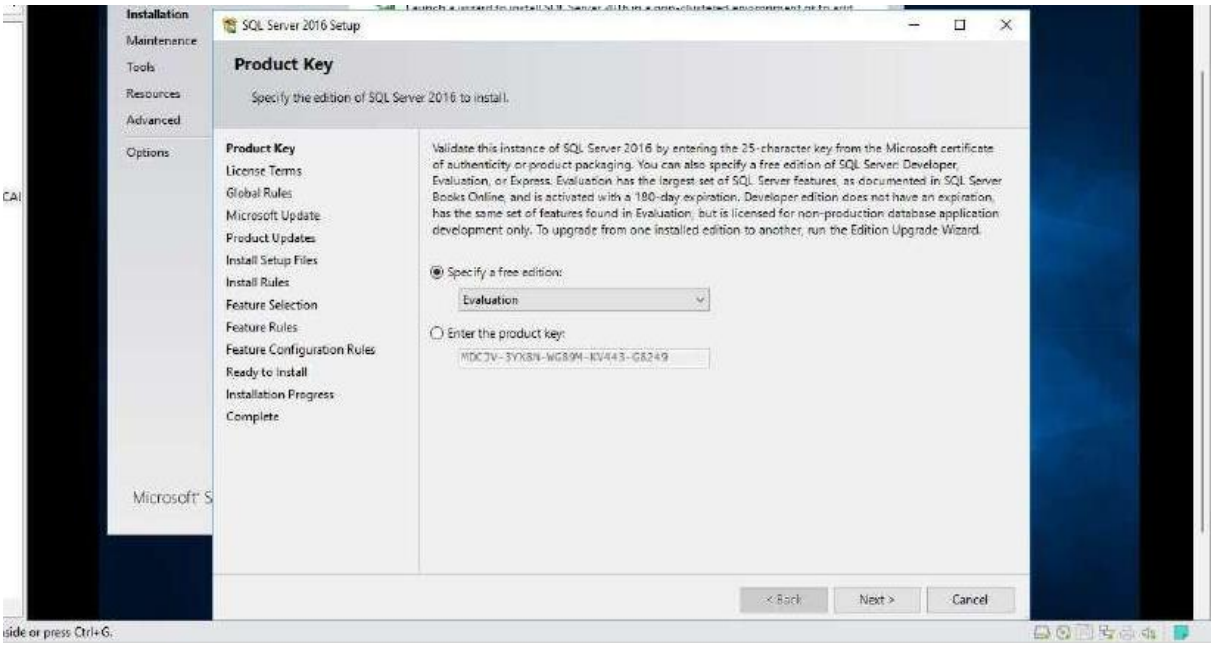
- **Click on setup**



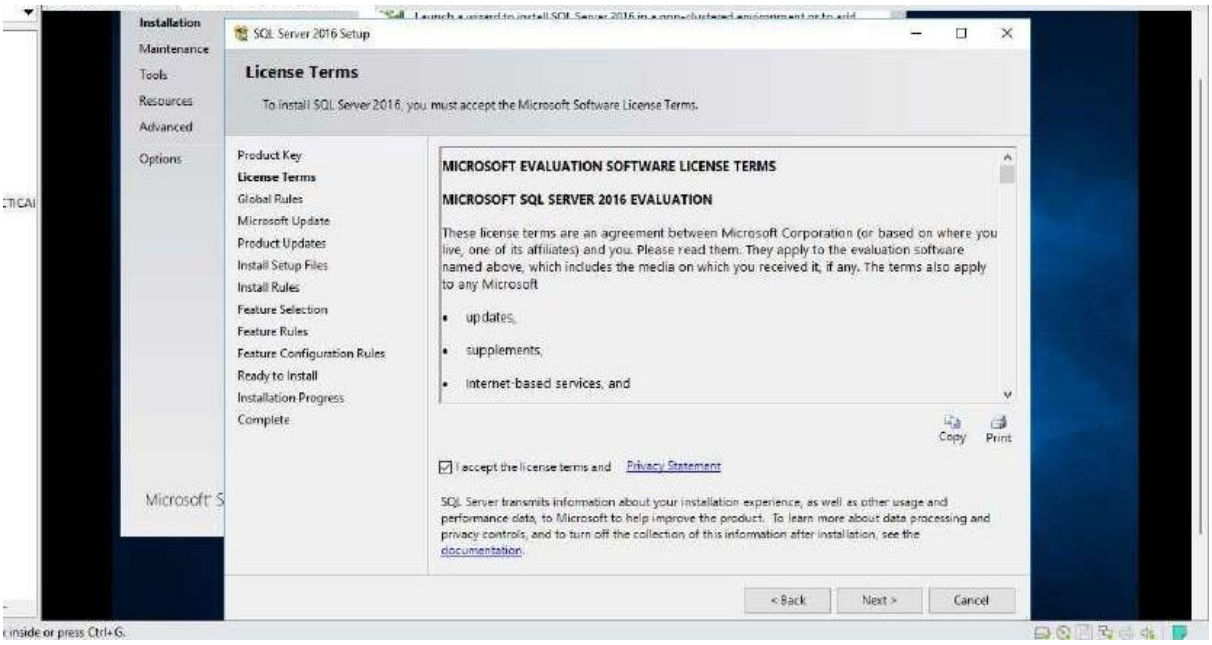
- **Click on Installation** and **Select New SQL Server stand-alone installation**



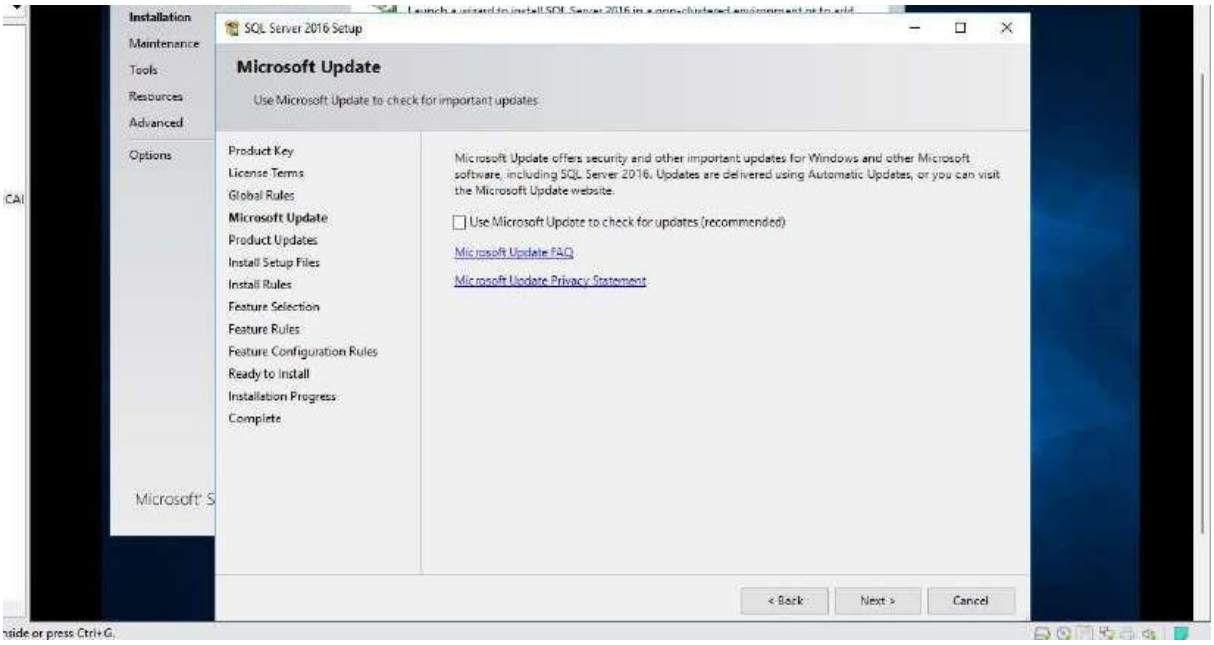
- **Select Specify a free edition** and **Click on Evaluation** and **Click Next**



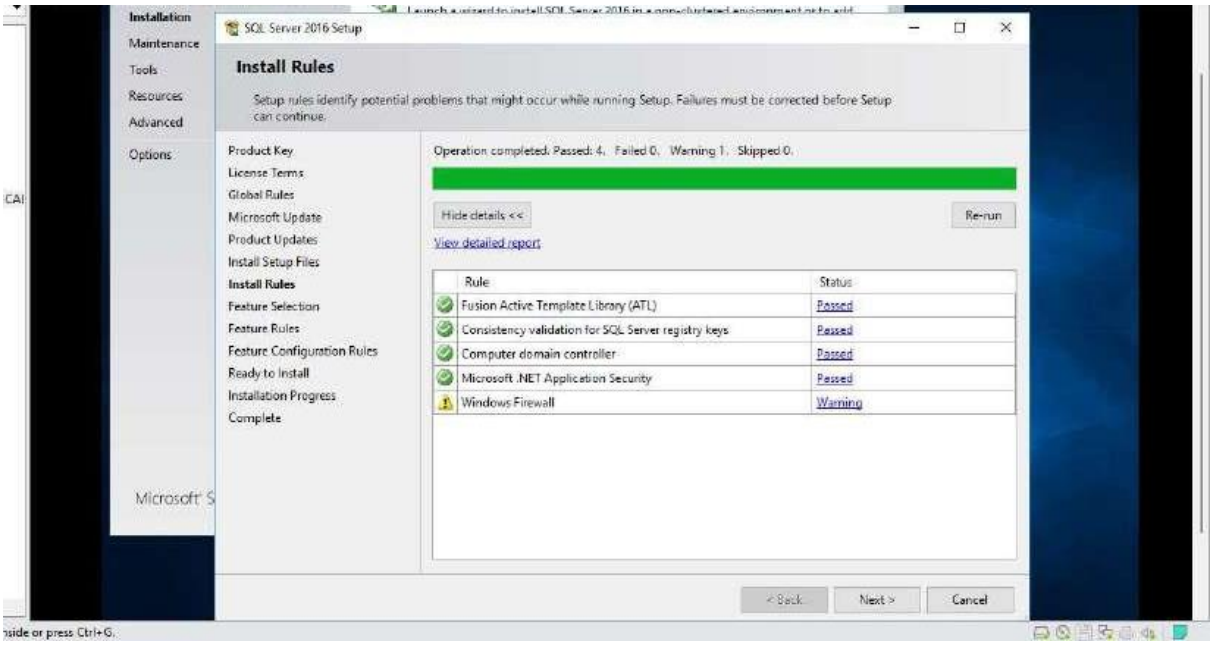
- **Select I accept these license terms** and **Click Next**



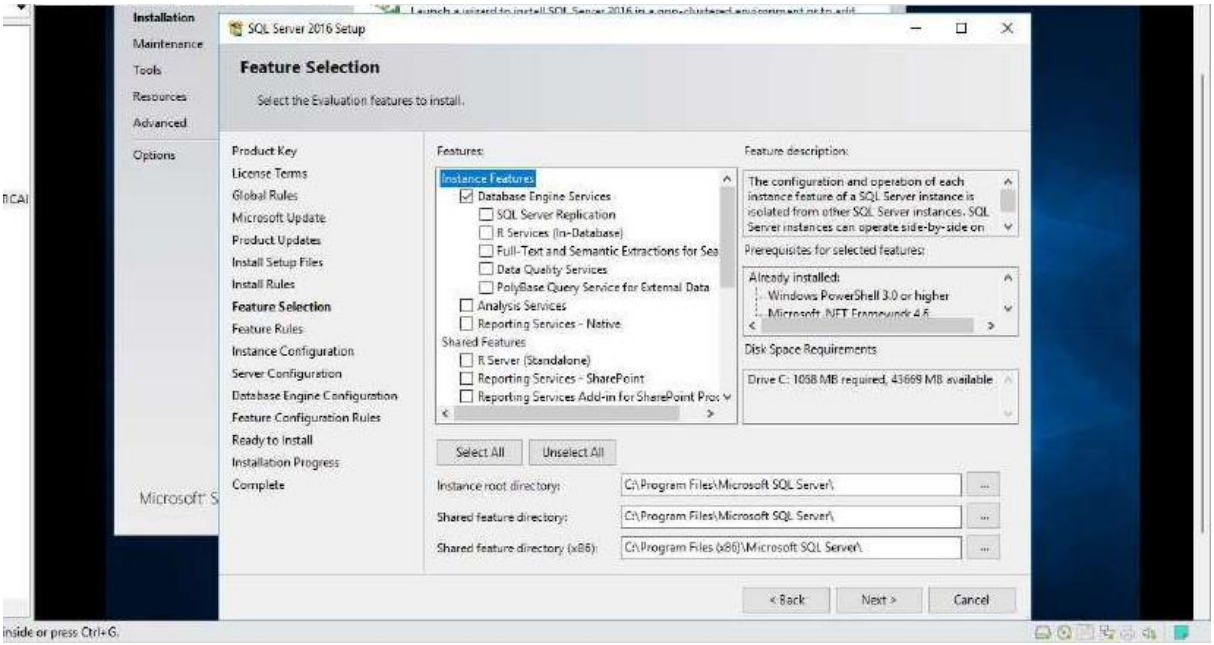
- **Click Next**



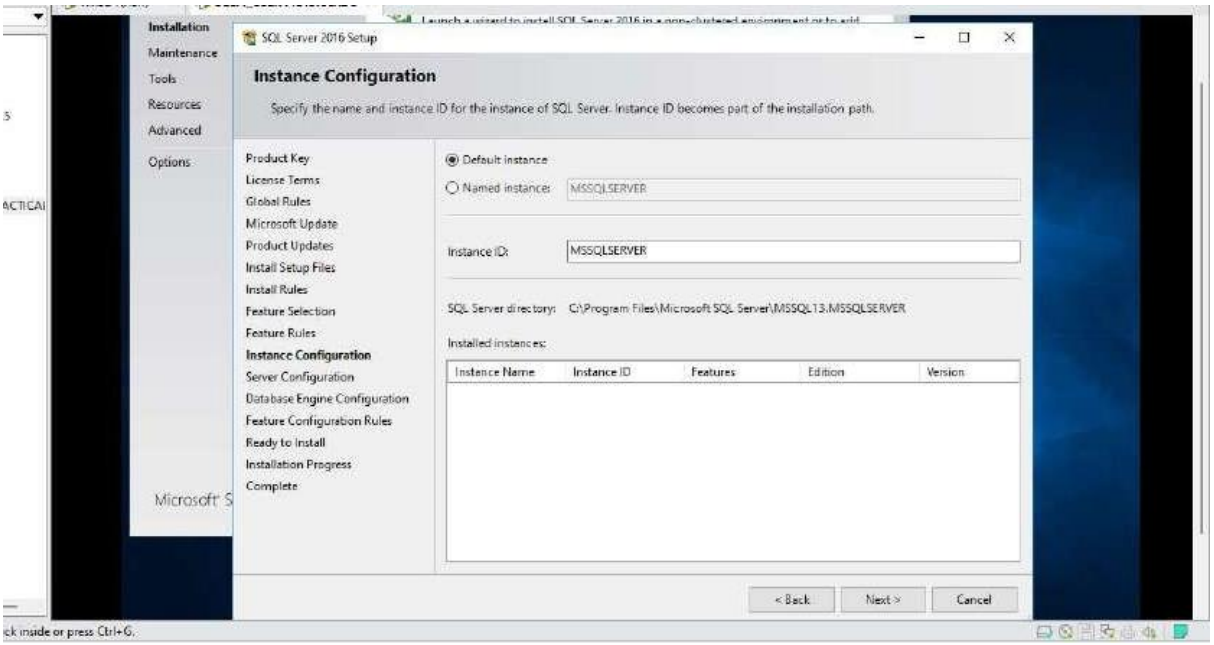
- **Click Next**



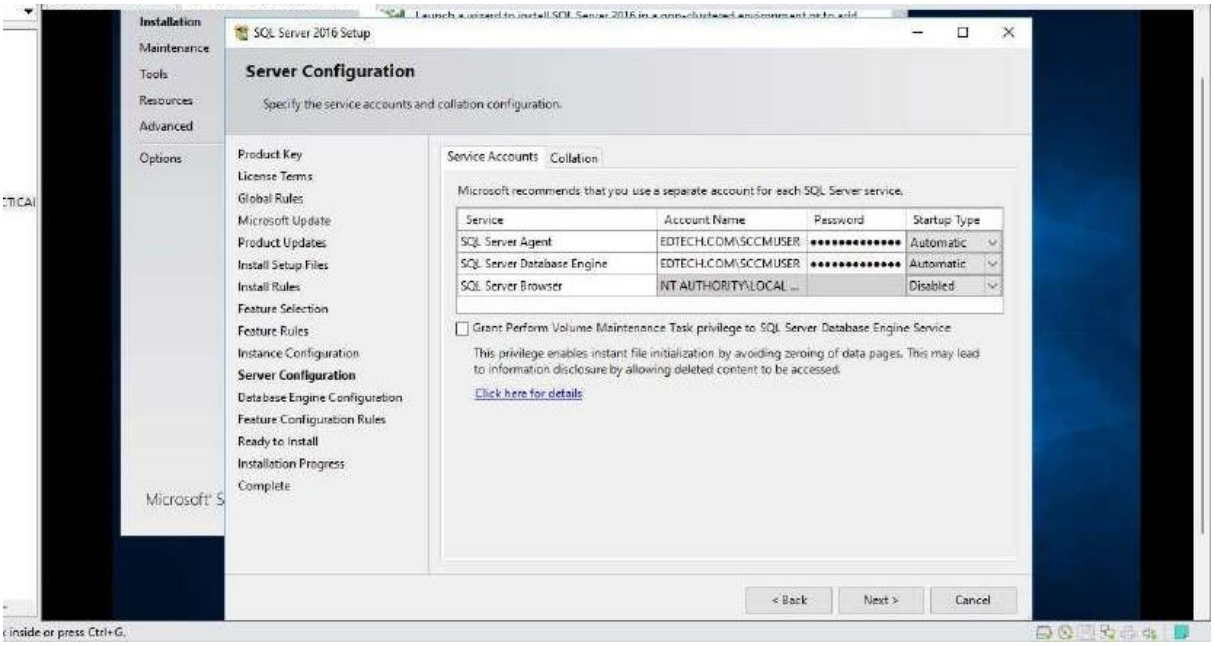
- **In Feature Selection Click on Database Engine Services** and **Click Next**



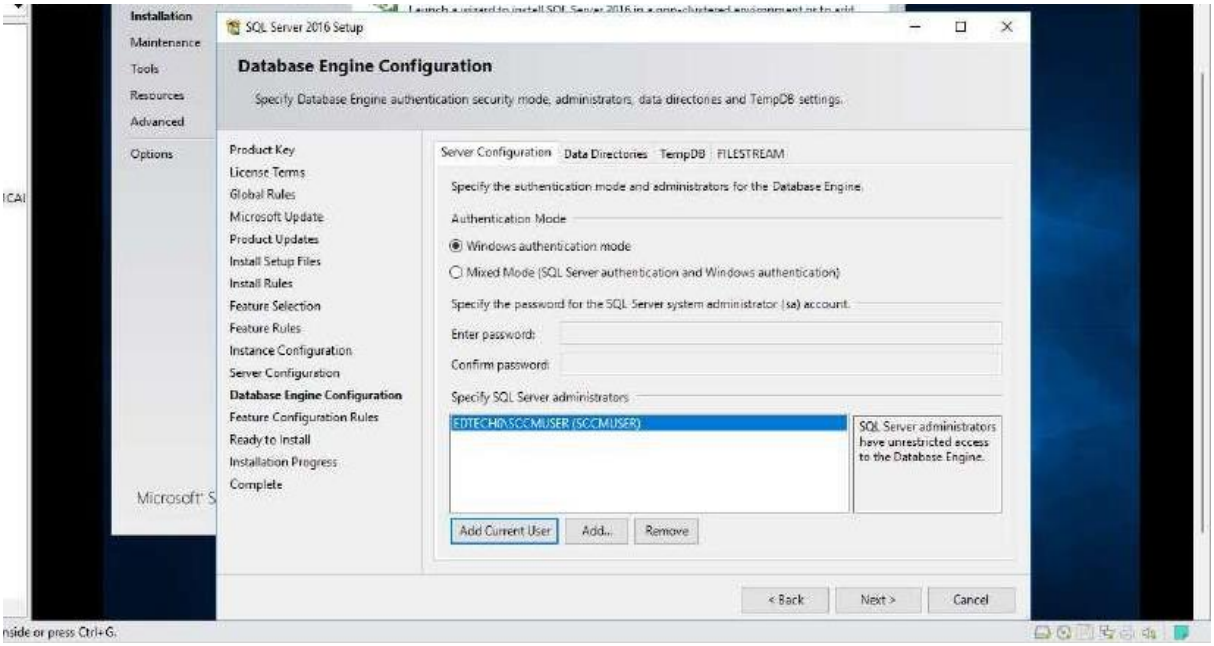
- **Keep default values and Click Next**



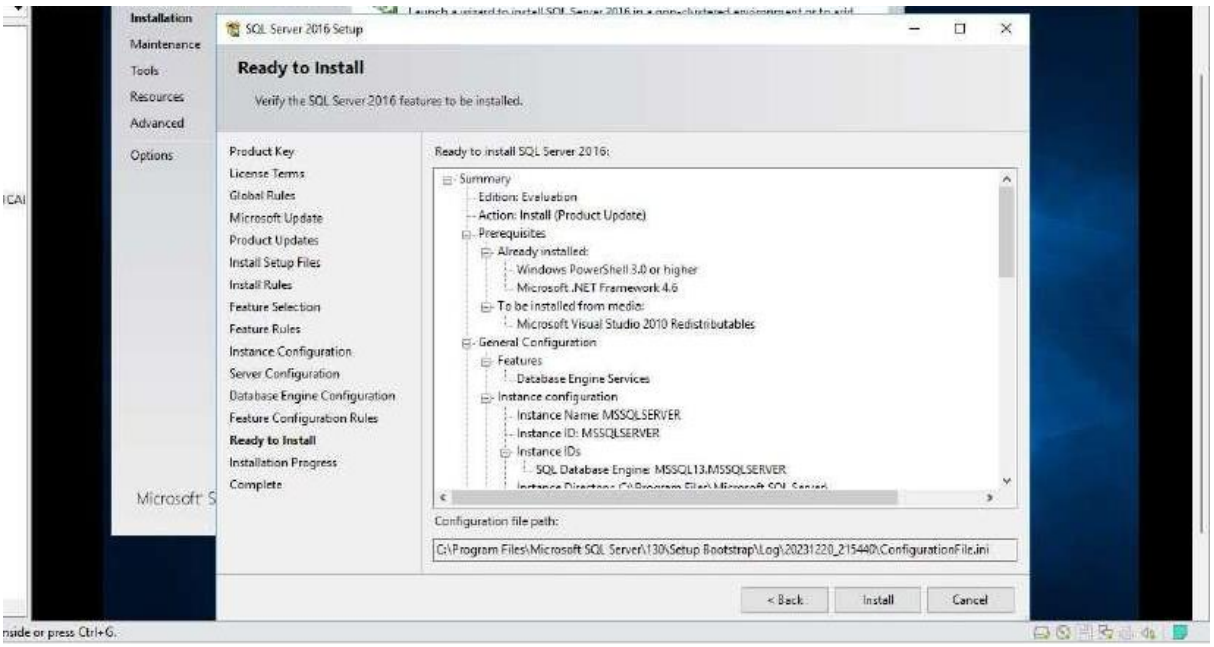
- **Type in the credentials of your User account** (Here User account name: **EDTECH.COM\SCCMUSER**) **and Click Next**



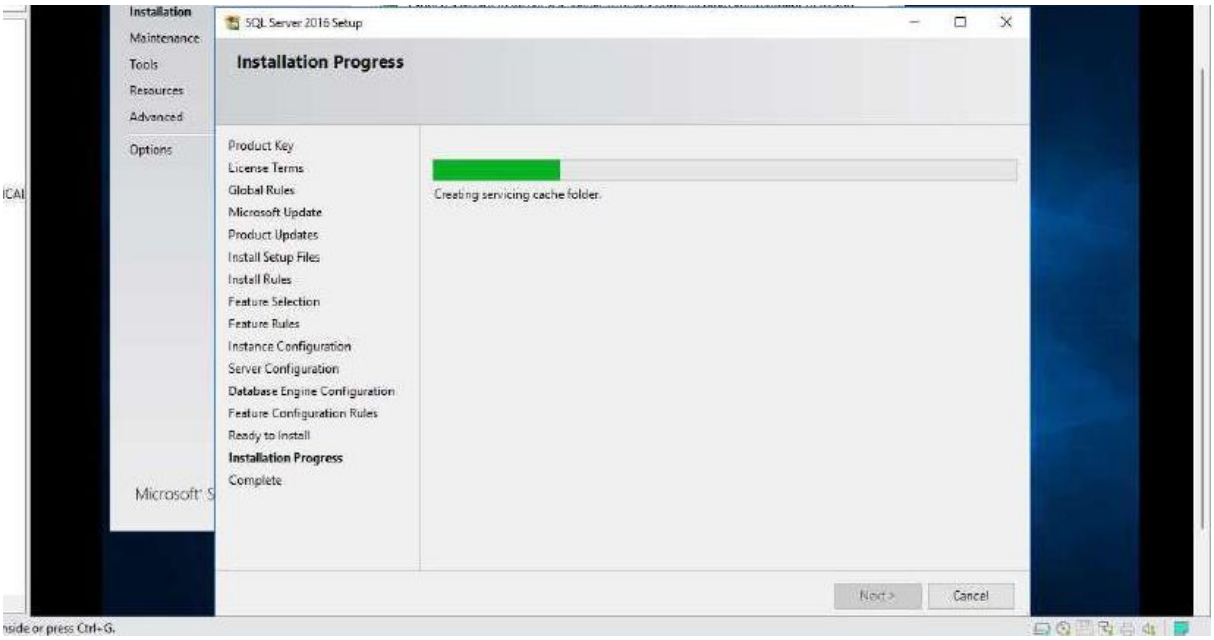
- **Click on Add Current User** and **Click Next**



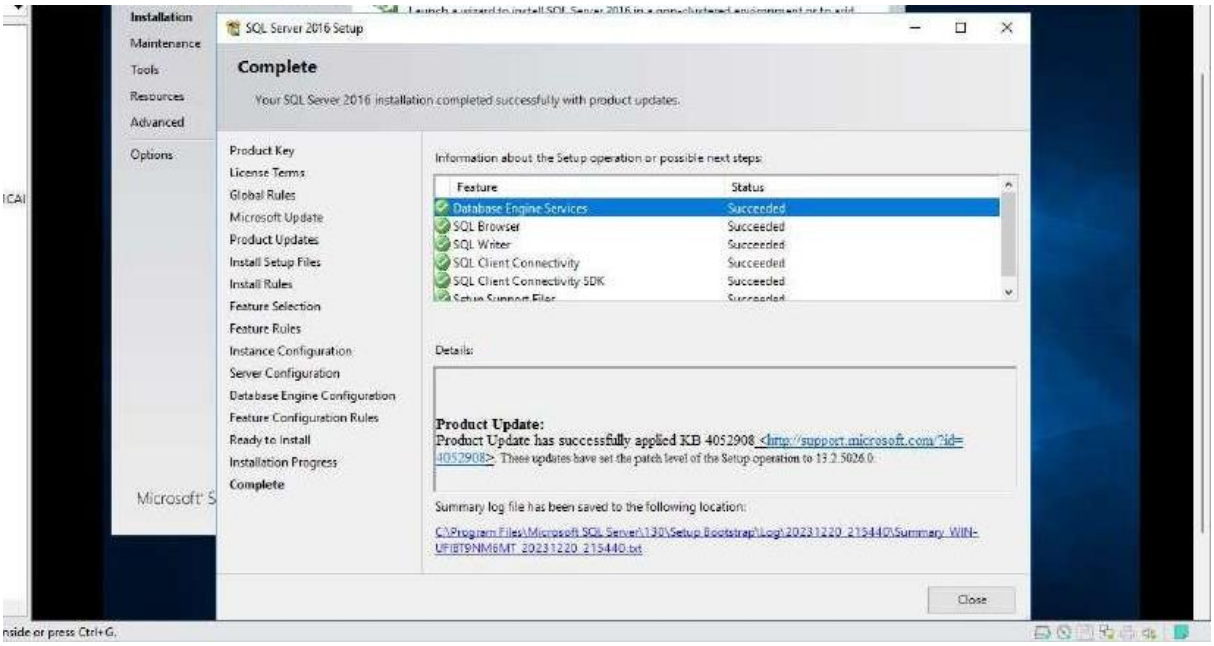
- **Click Install**



- **Installation start**

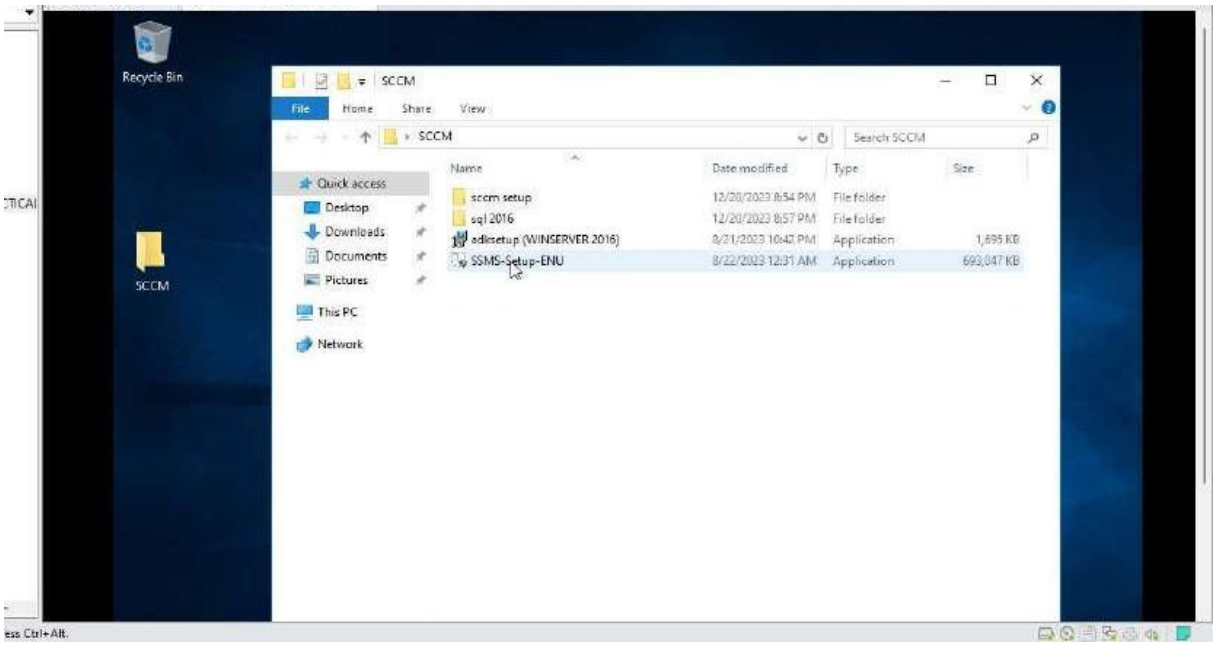


- **Click Close**

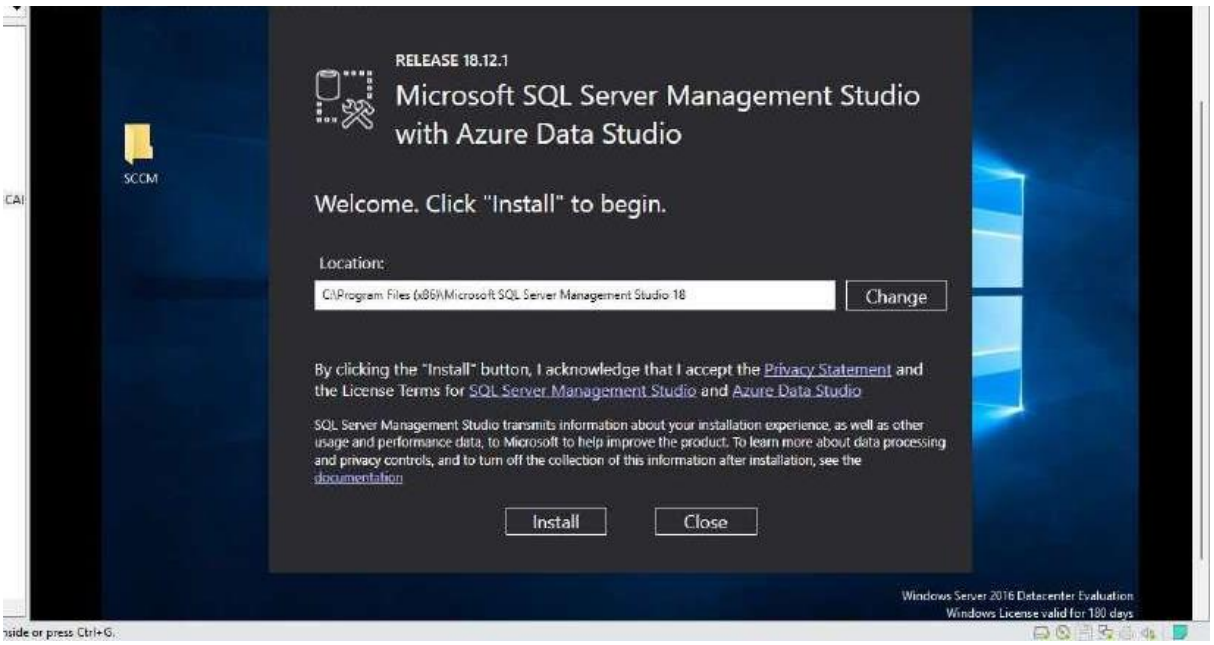


Step 10: Installing SQL Server Management Studio 18

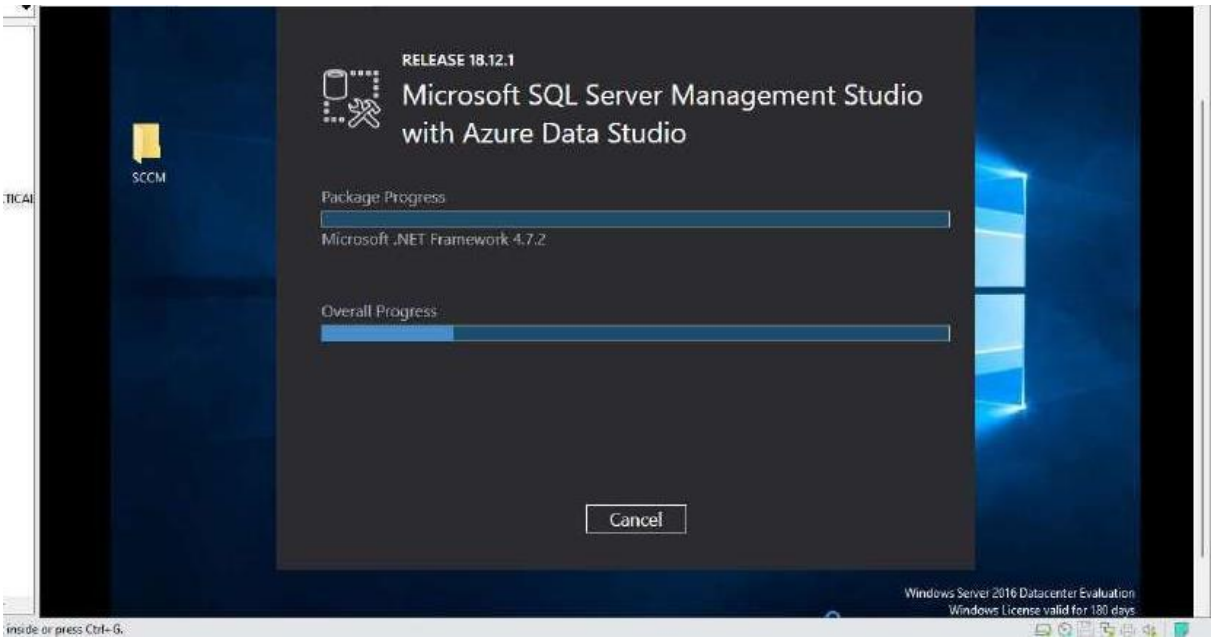
- **Within Your SCCM Folder Double-Click on SSMS-Setup-ENU**



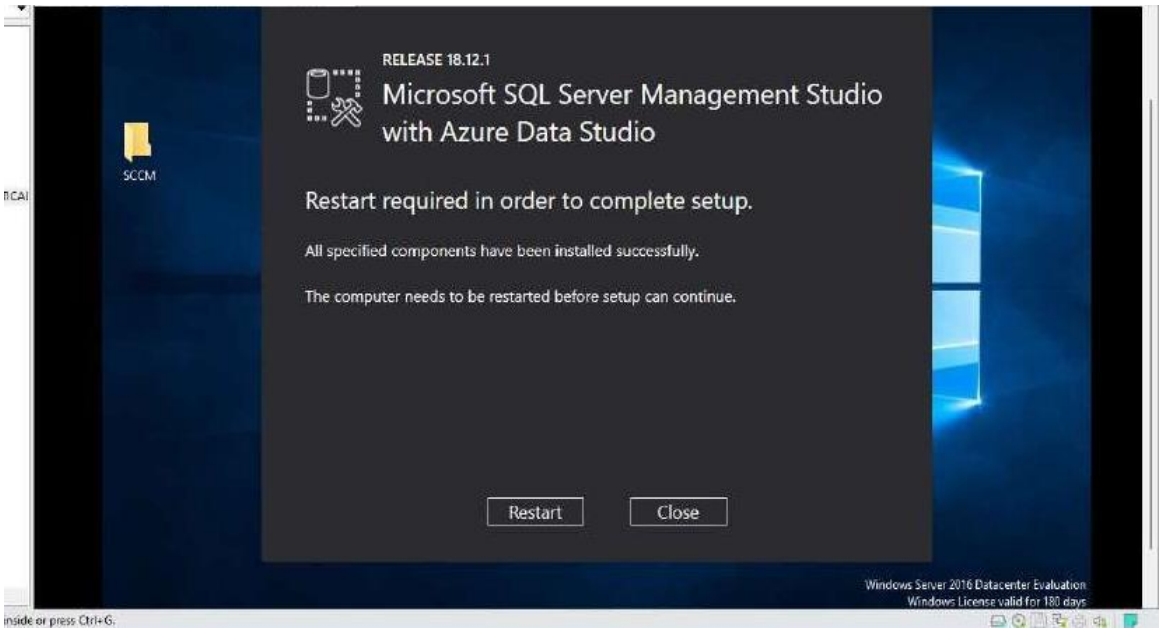
- **Click Install**



- **It will start installing necessary file**

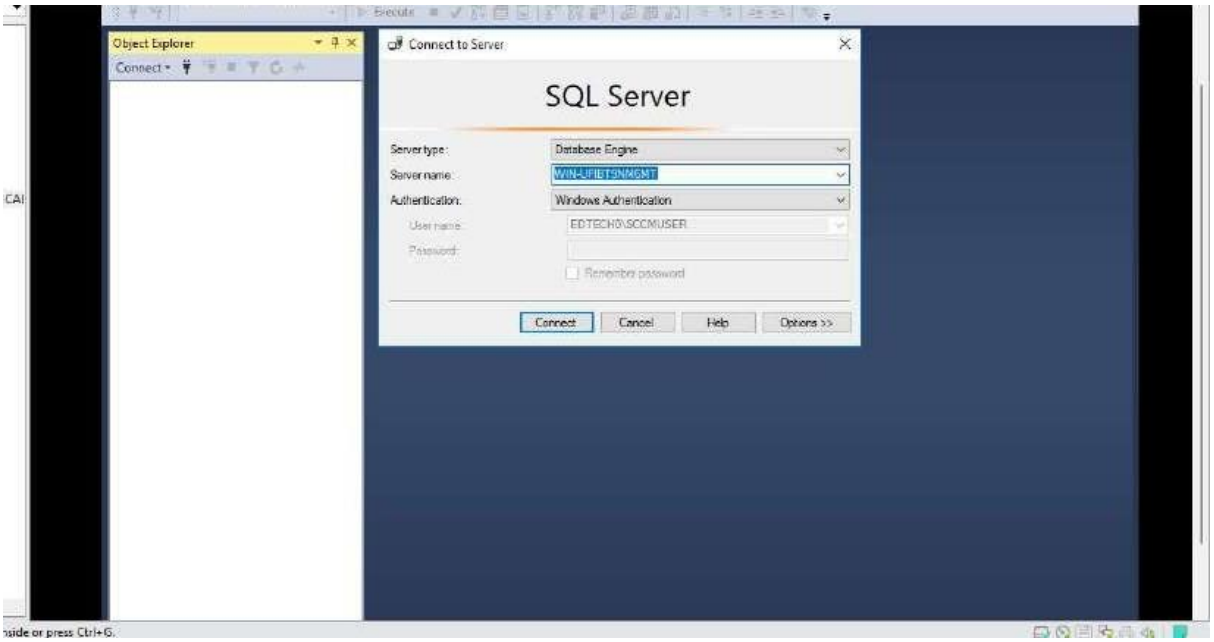


- **Click on Restart**

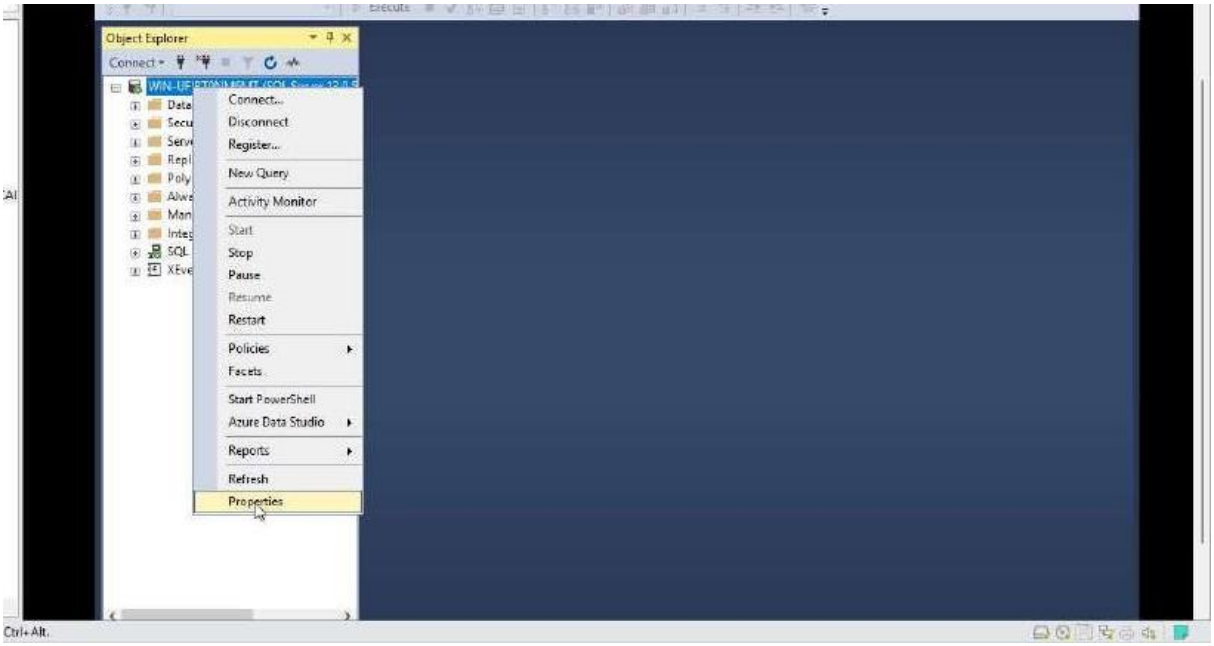


- **Open Microsoft SQL Server Management Studio 18**

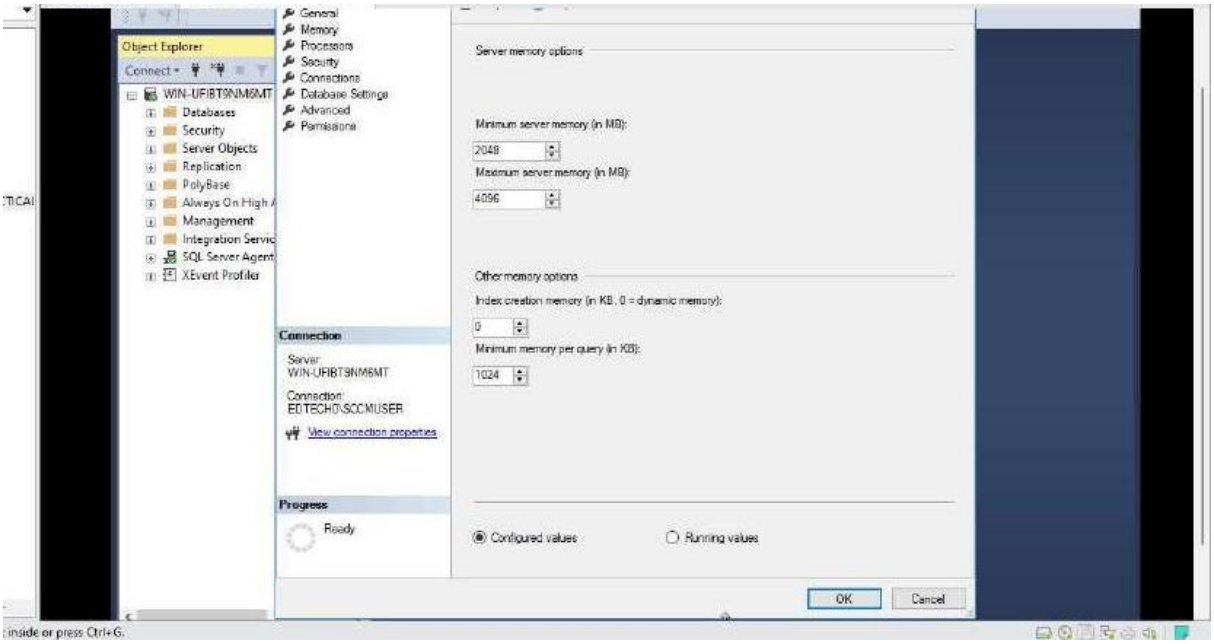
- **After restarting the system Launch SQL Server Management Studio 18 and Click Connect**



- **Right-click on the WIN-UFIBT9NM6MT (SQL Server)** and **select Properties.**

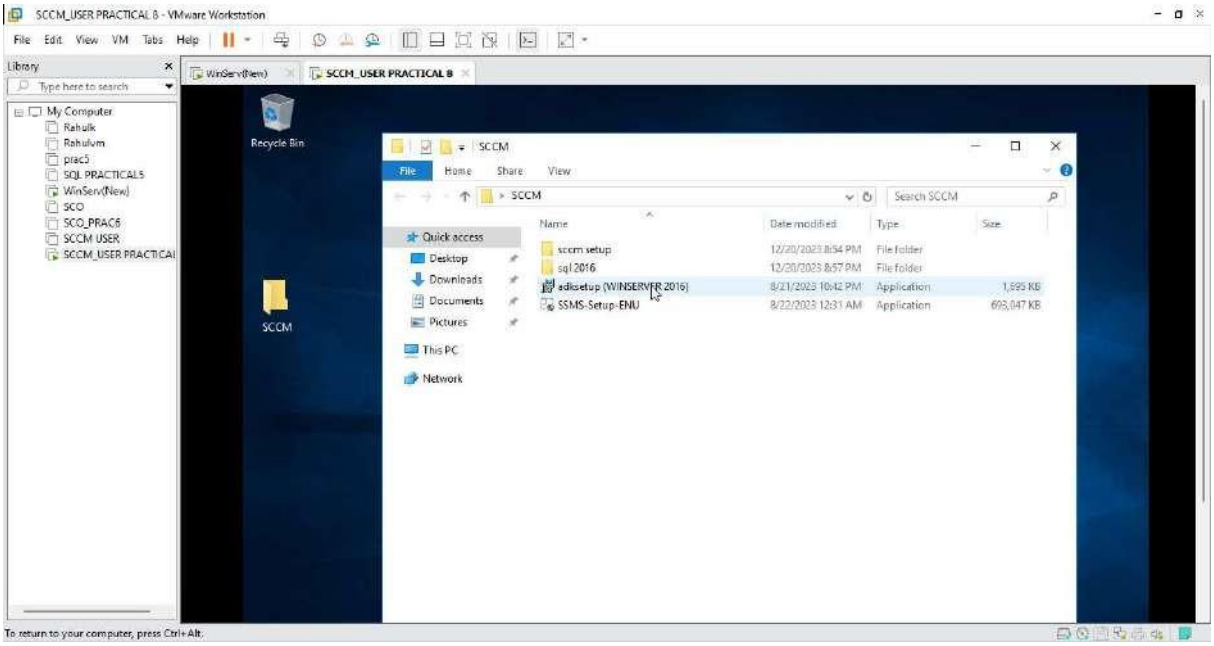


- **Select Memory and Edit the Minimum Server Memory to 2048 MB and the Maximum Server Memory to 4096 MB and Click Ok**

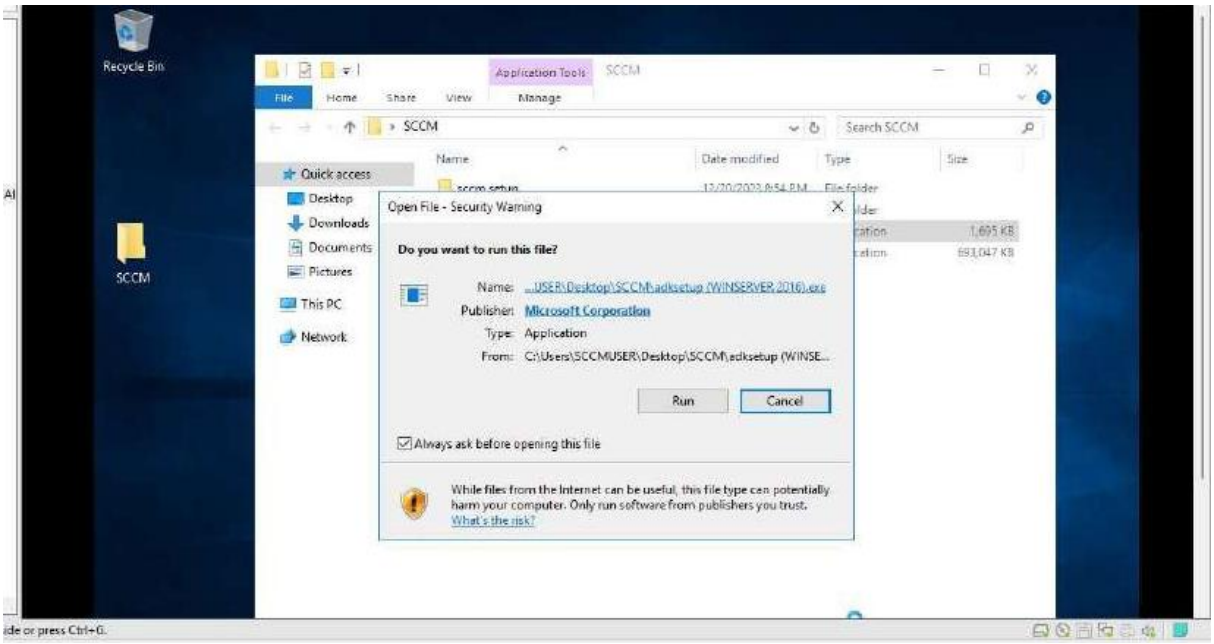


Step 11: Windows ADK Installation

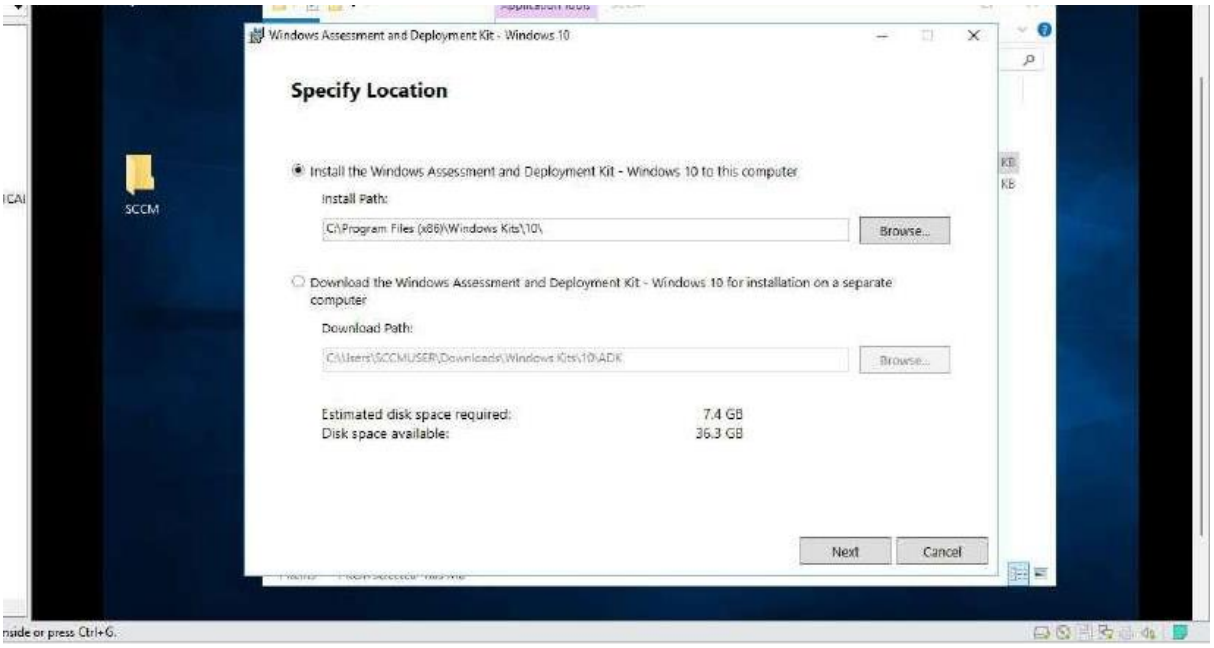
- Open SCCM Folder and then **Double-Click on adksetup**



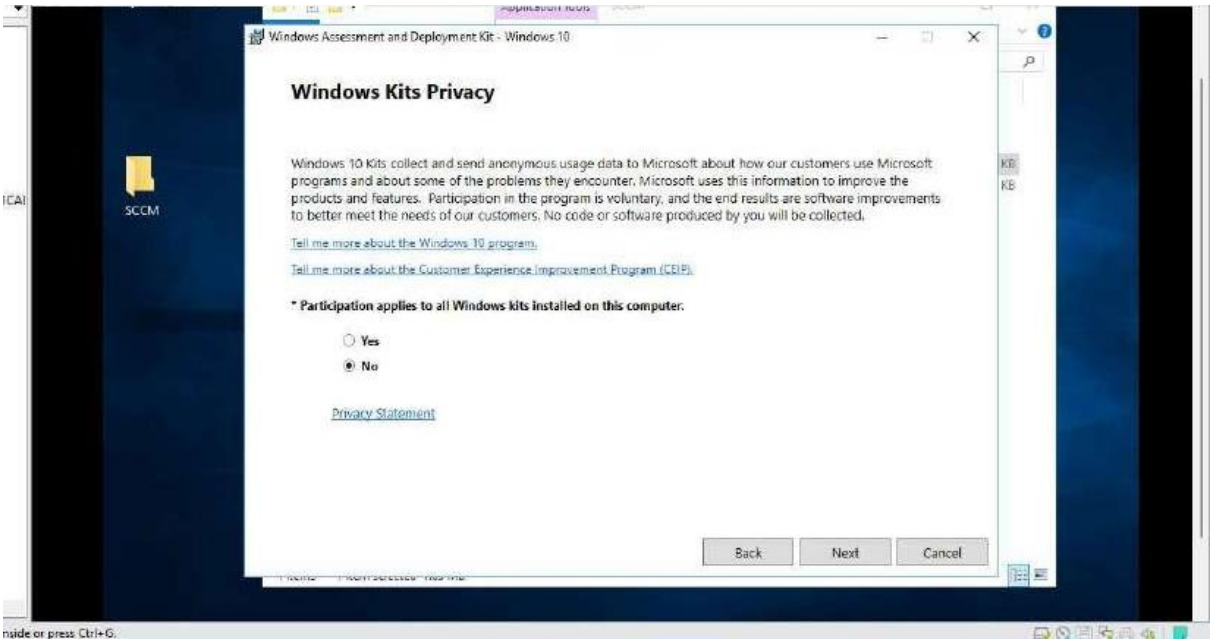
- **Click on Run**



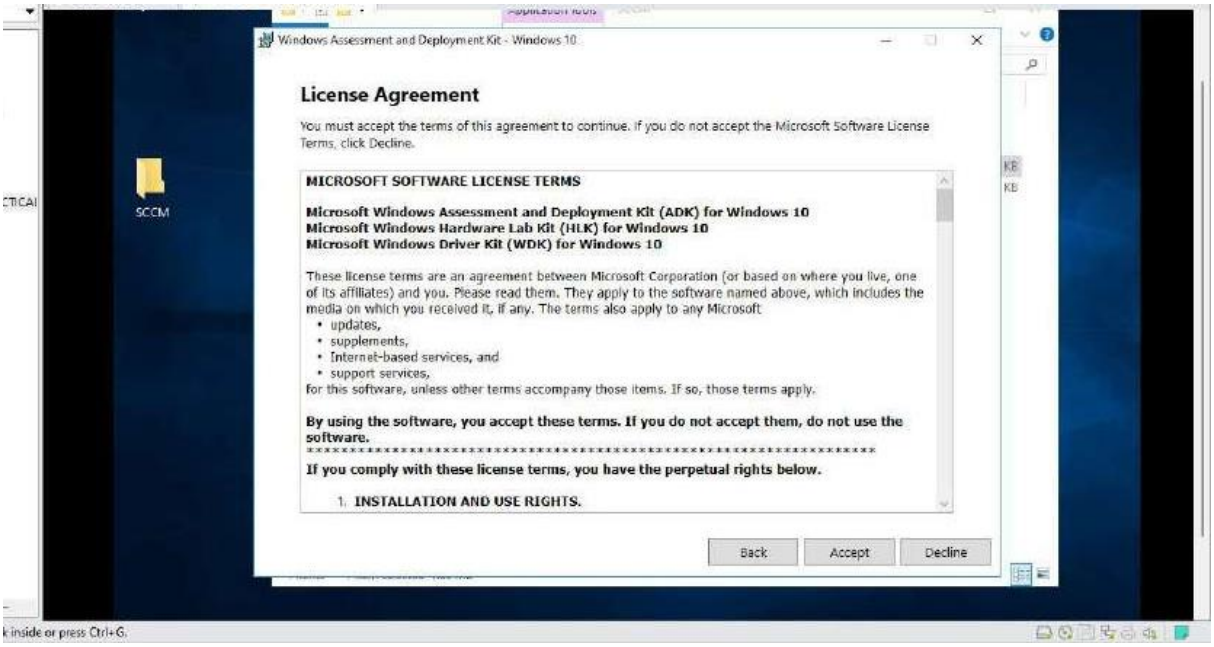
- **Click on Next**



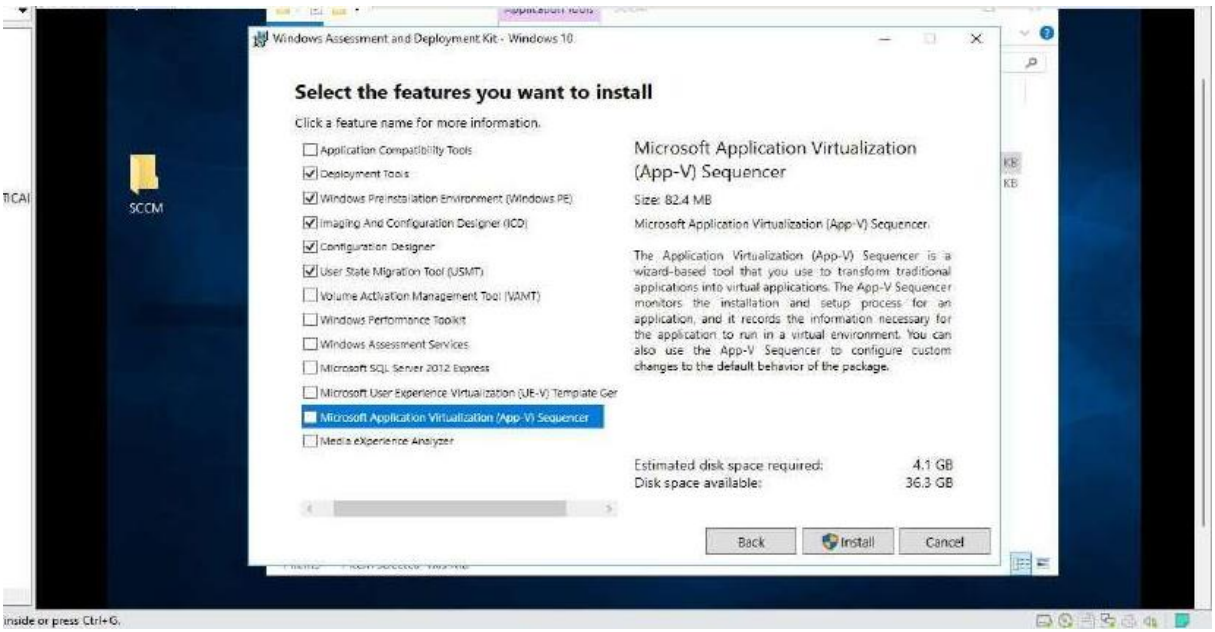
- **Select No and then Click on Next**



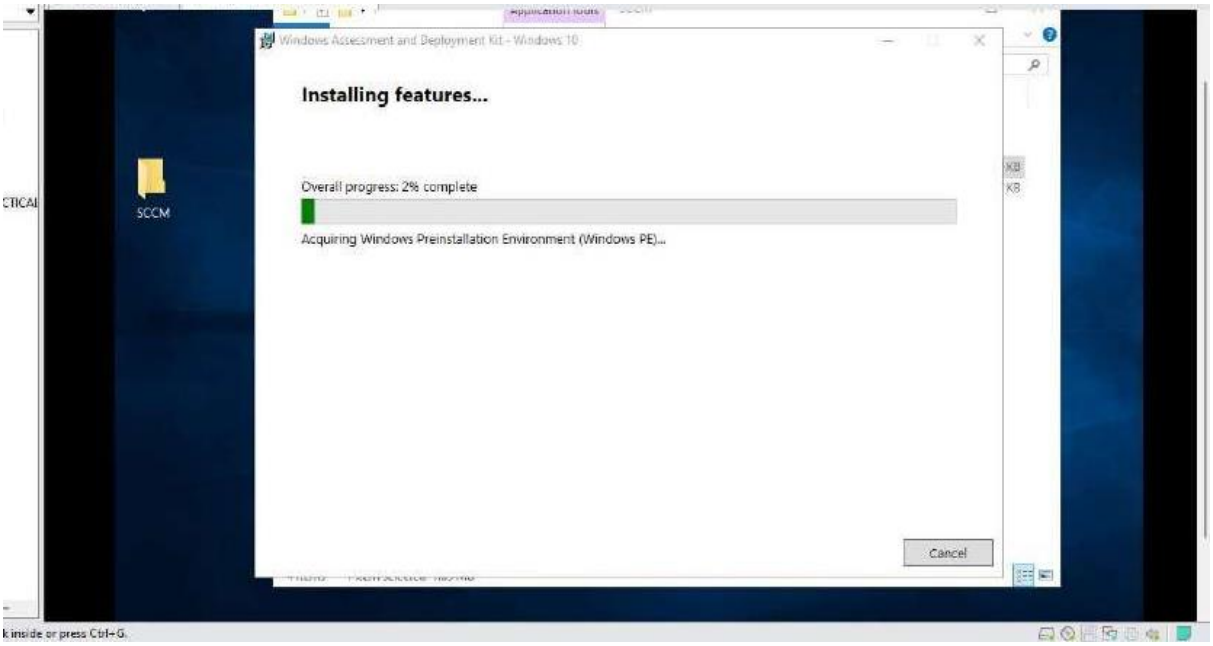
- **Click on Accept** and then **Click Next**



- Select the Following features **(Deployment Tools, Imaging and Configuration Designer, Configuration Designer and User State Migration Tool)** and **Click Install**



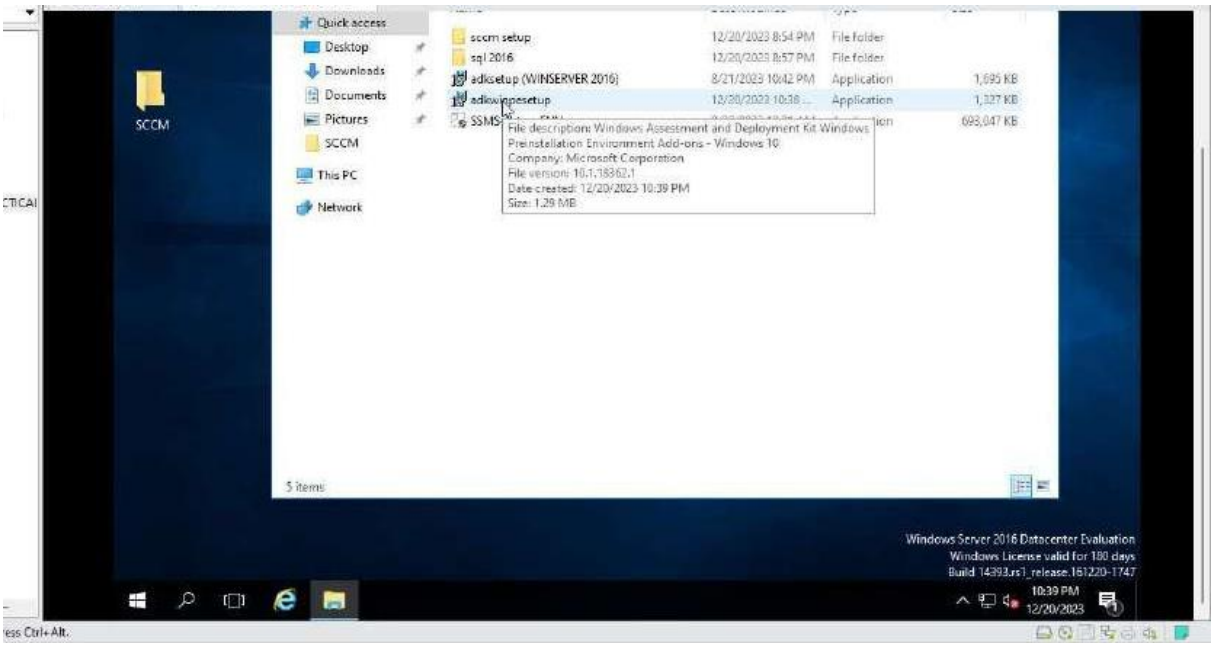
- It will start installing features



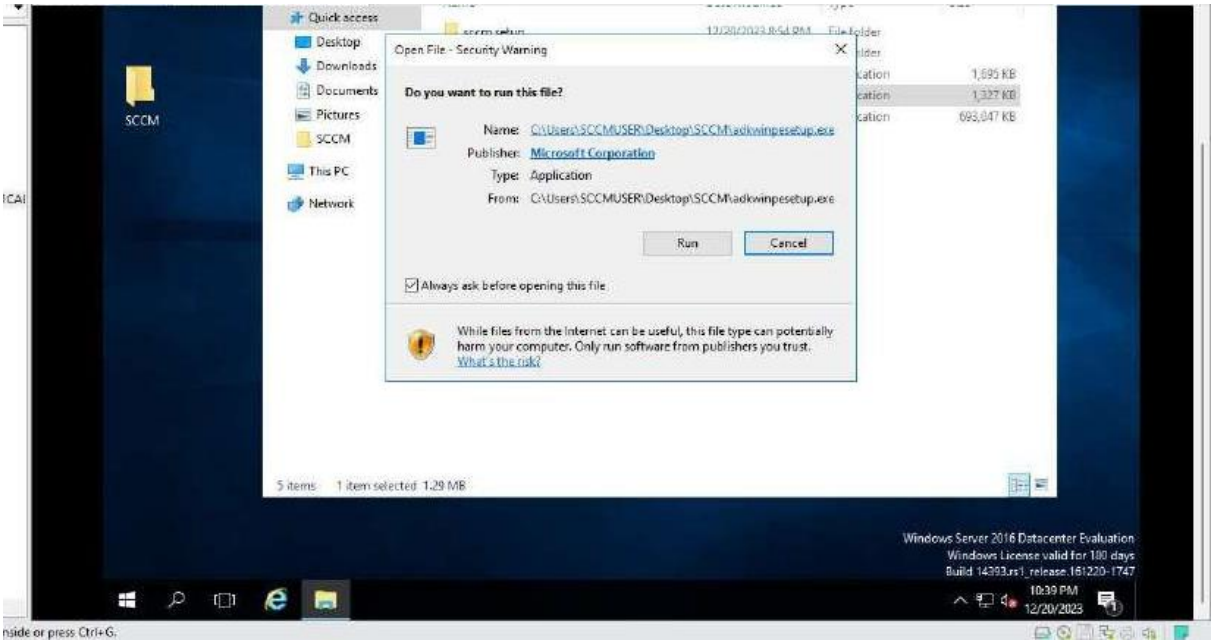
- You'll get the Welcome screen to Windows 10 ADK once the installation is completed. **Click Close to finish the installation.**

Step 12: Installing Windows PE add-on

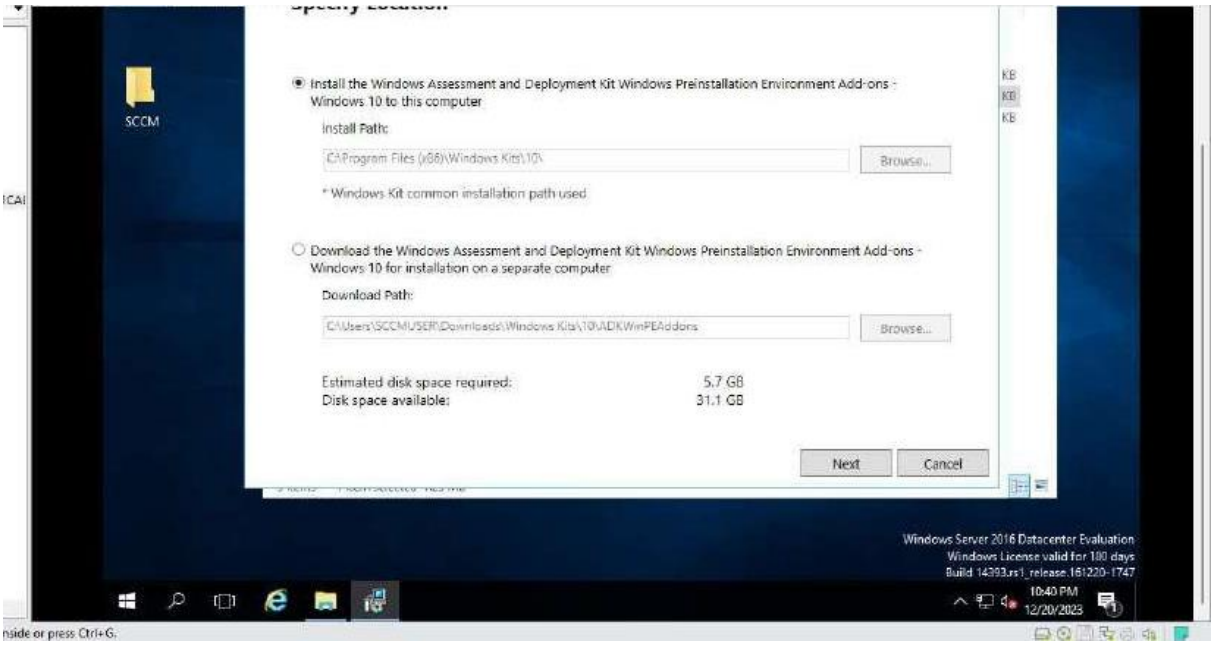
- Open SCCM Folder and then **Double-Click on adkwinpesetup**



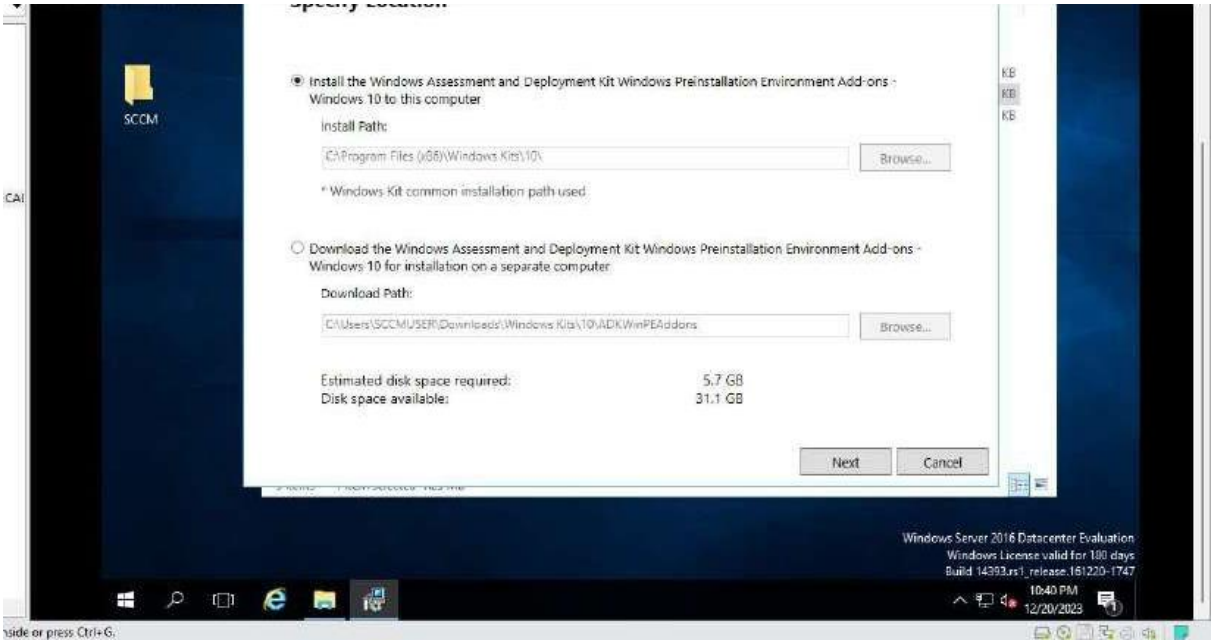
- **Click Run**



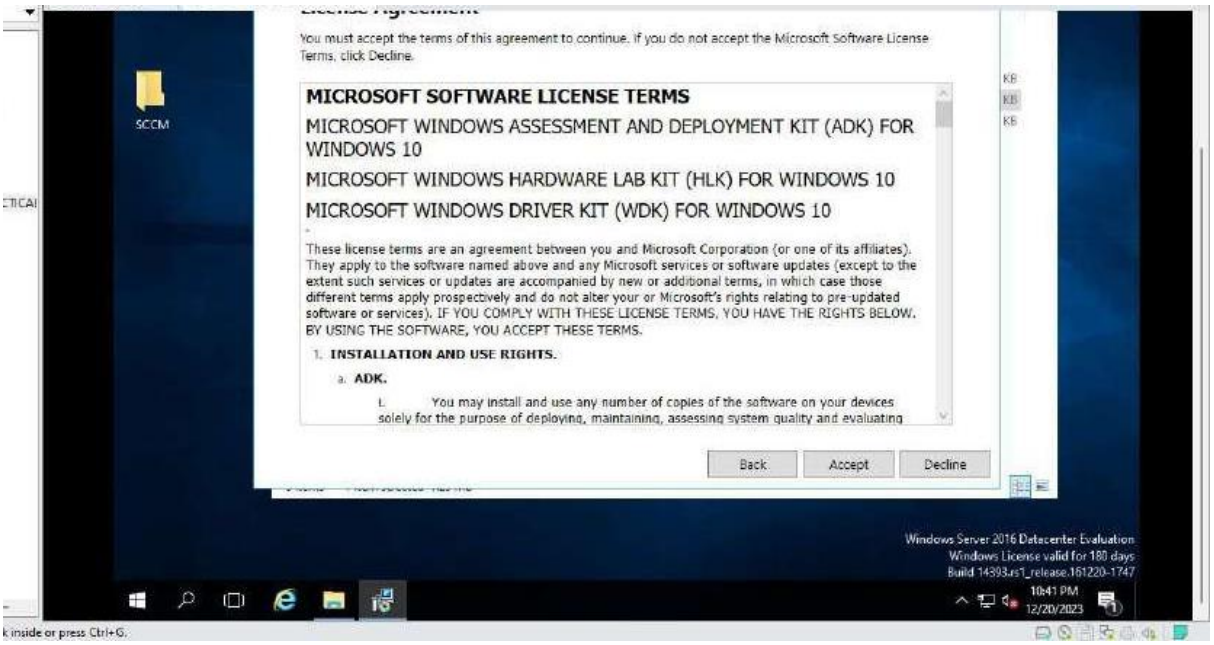
- **Click Next**



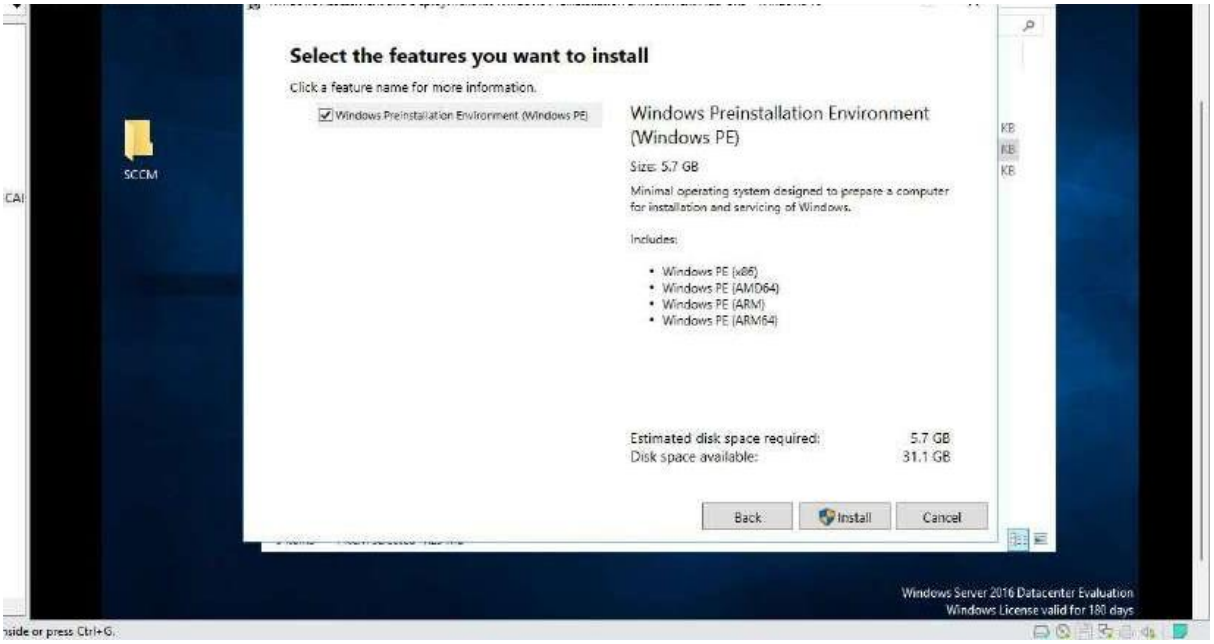
- **Select No** and then **Click Next**



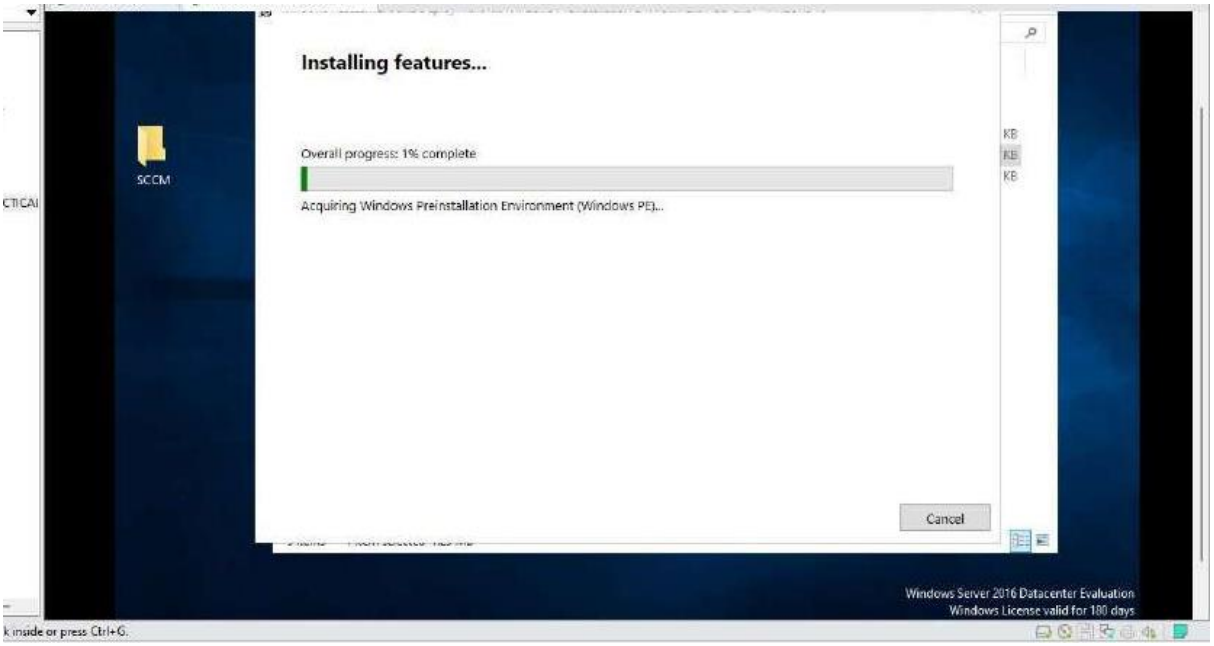
- **Click Accept**



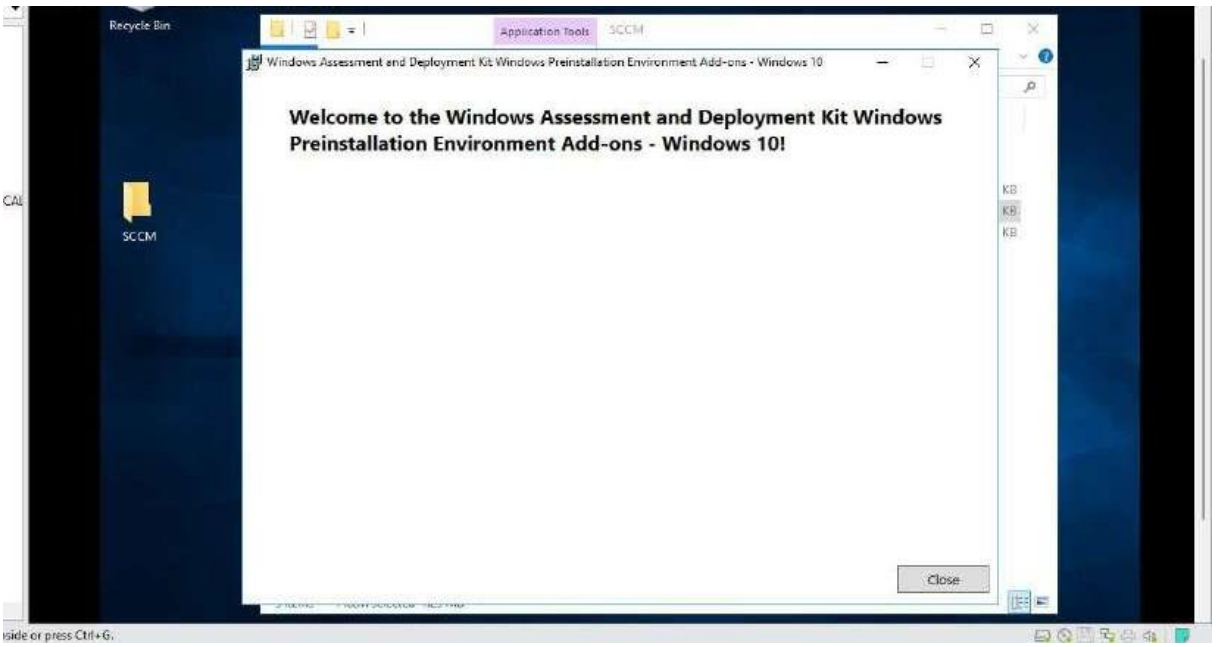
- **Click on Install**



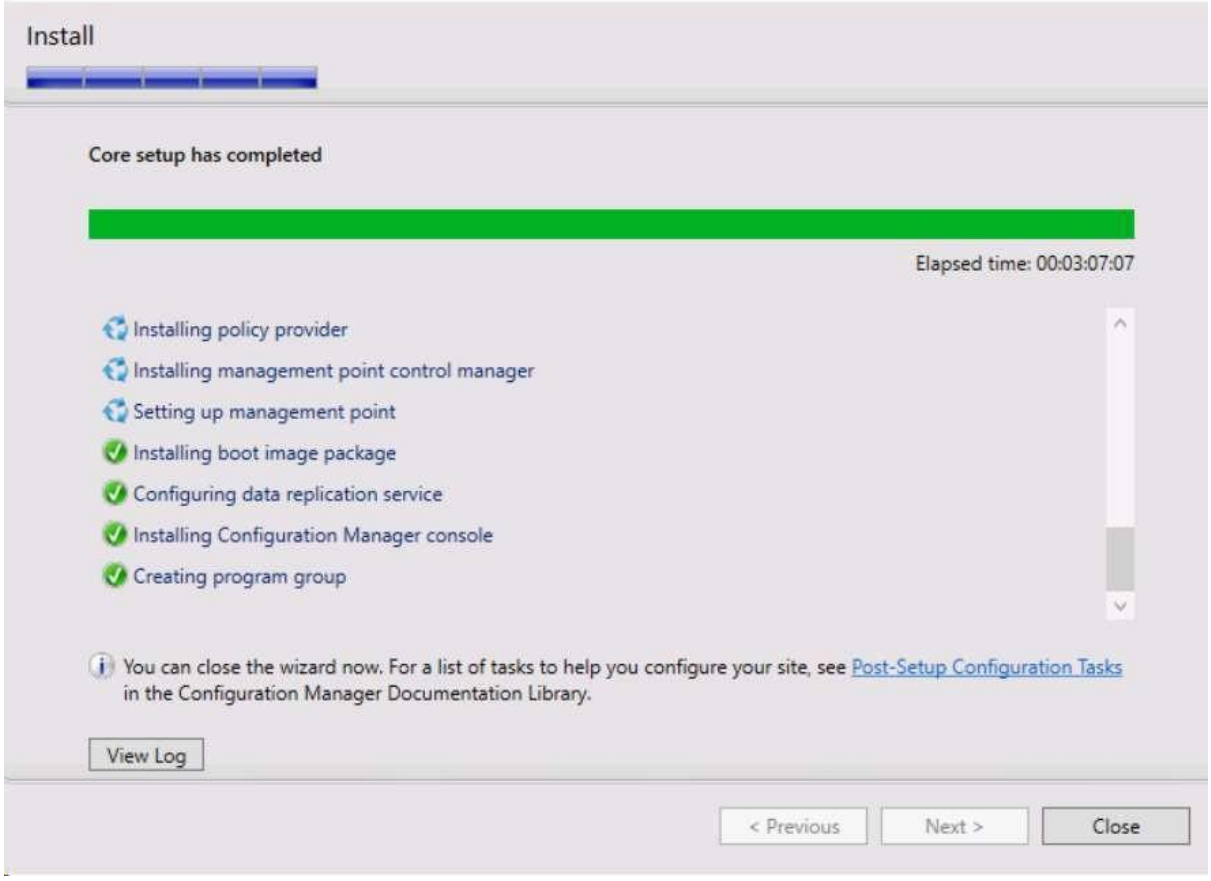
- It will start installing features



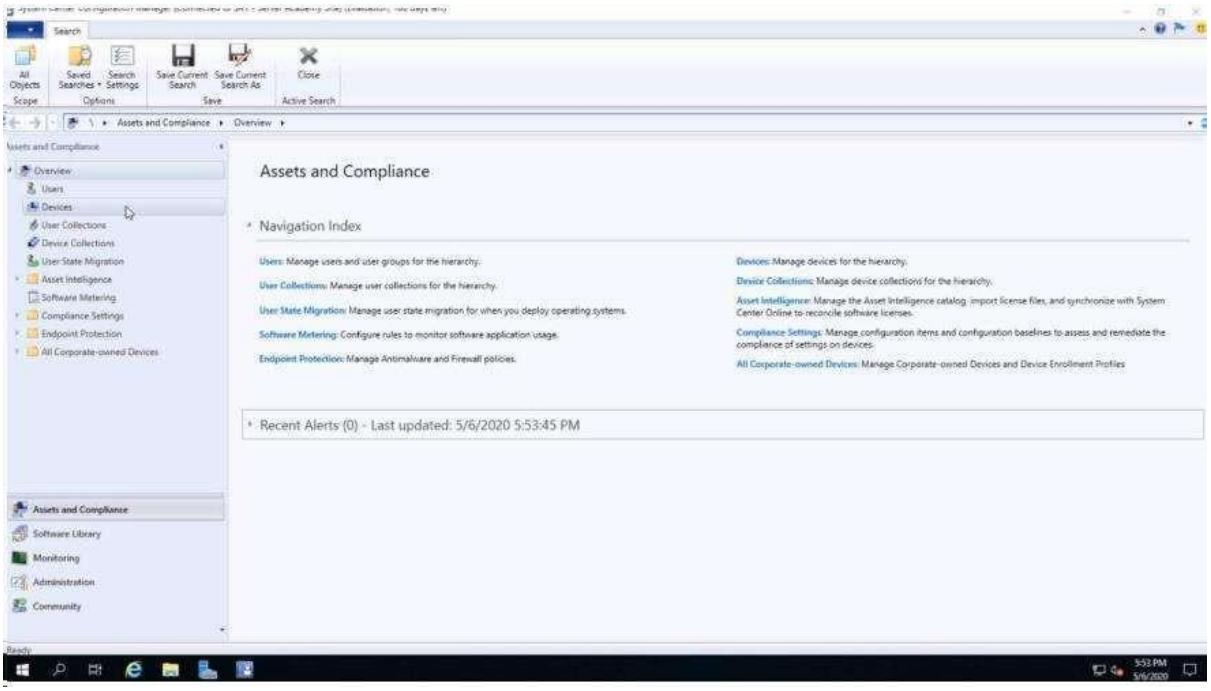
- **Click on Close**



After Setting up Click **Install,** Once the installation is complete Click on **Close**



Now it show on the SCCM Dashboard



THE END