

Classroom Lab Setup Guide



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EC-Council Certified Incident Handler

TM

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Classroom Setup Instructions: ECIH

This document contains setup instructions for the EC-Council Certified Incident Handler (ECIH) course. This class teaches network security techniques. The course requires a standard modular classroom seating configuration, one computer for each student, one computer for the instructor, a dedicated switch, dedicated firewall, and Internet connection.

Before beginning the class, install and configure all computers using the information and instructions that follow.

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Classroom Requirements

This section describes classroom equipment required for the EC-Council Certified Incident Handler course.

Classroom Equipment

The following equipment is required for the general classroom setup:

- Climate control system adjustable within the classroom
- Lighting controls, adjustable within the classroom
- Whiteboard, 3 feet × 6 feet (1m × 2m) or larger
- Markers, whiteboard, assorted colors
- Eraser and whiteboard cleaning liquid
- Easel with flipchart or butcher paper pad, 24 inches × 36 inches
- Felt tip pens, chisel tip (not fine-point)— blue and black required, other colors optional
- Projection screen, 6 feet diagonal measurement (non-reflective whiteboard surface may be substituted)

- Instructor station:
 - Desk, chair, and ergonomic keyboard
 - Power outlet
 - Network jack
 - LCD Projector with minimum 740 × 1280-pixel capability and all connecting cables
- Student station (one for each student)
 - Chair, ergonomic keyboard
 - Workstation, minimum 9 square feet (3 feet × 3 feet) of horizontal workspace
 - Power outlet, one per student station
 - Network jack, one per student station

Hardware

Hardware requirements for instructor, student, and victim computers are identical:

- Intel Core i5 or equivalent CPU with minimum CPU speed of 3.2 GHz
- Minimum 8 GB RAM (16 GB is recommended)
- Hard disk, 500 GB or larger, 7200 RPM or faster
- DVD drive (DVD R/W drive preferred)
- Network adapter (minimum of a 10/100 NIC, but a 10/100/1000 is preferred), full duplex (disable any additional network adapters installed)
- Monitor (minimum requirement is 17-inch LCD)
- Mouse or compatible pointing device, and sound card with amplified speakers
- Internet access

The following additional hardware are also required:

- An unmanaged switch, with sufficient ports to allow connection to all instructor and student workstations, plus at least 5 additional unused ports for connecting additional equipment or for use as “spares.”

Software

All computers in the class require the following software:

- Any Windows or Linux OS capable of running VMware Workstation
- VMware Workstation
- Microsoft Windows Server 2016 R2 Standard (64-bit)

- Microsoft Windows 10 Enterprise (64-bit)
- Ubuntu Linux 18.04 LTS (x64) (downloadable at <https://www.ubuntu.com/download/desktop/thank-you?country=IN&version=18.04.1&architecture=amd64>)
- AlienVault_OSSIM_64bits_5.6.5.iso (downloadable at <https://www.alienvault.com/products/ossim/download>)
- ECIH Essential Tools downloadable from the Aspen portal.

Setup Document Overview

This document provides background information for technical staff responsible for setting up a training room facility for the ECIH course. This guide describes the requirements for the network equipment and computer stations that are installed and configured by the facilities personnel for the training courses.

Training Room Environment

The training room environment consists primarily of the following equipment:

- Instructor's Computer
- Student Workstation

Equipment	Number (Class of 12 Students)	Operating System	Minimum System Requirements
Instructor's Computer	1	Any Windows/Linux OS	Intel Core i5 or equivalent PC with 200 GB free disk space (with two logical partitions C: and D:), minimum of 8 GB RAM, 1 NIC (disable or unplug extras), 17-inch monitor, and compatible mouse
Student Workstations	12	Any Windows/Linux OS	Intel Core i5 or equivalent PC with 200 GB free disk space (with two logical partitions C: and D:), minimum of 8 GB RAM, 1 NIC (disable or unplug extras), 17-inch monitor, and compatible mouse

Instructor's Computer

The instructor's computer must:

- Have VMware Workstation installed
- Have Microsoft Office/Open Office or PowerPoint, Word, and Excel Viewers installed
- Have all ECIH Essential Tools downloaded from Aspen to the hard drive in D:\ECIH-Tools folder for easy access (see [CT#1](#) in Configuration Task section)
- Be running IP protocol
- Make sure that Anti-virus and Windows Firewall is disabled in the host machine.
- Configure Virtual Network in the VMware Virtual Network Editor (see Configuration Task [CT#2](#))
- Be configured with VMware Workstation VMs and guest operating systems as per the following steps.
 - Create and Configure Windows Server 2016 Virtual Machine (see Configuration Task [CT#3](#))
 - Creating a Virtual Machine and Installing Windows Server 2016 R2 Standard Guest OS (see Configuration Task [CT#3.1](#))
 - Changing the Computer Name (see Configuration Task [CT#3.2](#))
 - Configuring Static IP Address (IP: 10.10.10.16, Subnet: 255.255.255.0, Gateway: 10.10.10.2, and DNS: 8.8.8.8) (see Configuration Task [CT#3.3](#))
 - Installing .Net Framework 3.5 (Includes .Net 2.0 and 3.0) (see Configuration Task [CT#3.4](#))
 - Adding IIS (Internet Information Services) roles in Server Manager (see Configuration Task [CT#3.5](#))
 - Turning off IE Enhanced Security in Windows Server 2016 VM (see Configuration Task [CT#3.6](#))
 - Configuring Windows Explorer (see Configuration Task [CT#3.7](#))
 - Turning Off Windows Defender in Windows Server 2016 (see Configuration Task [CT#3.8](#))
 - Mapping ECIH-Tools Folder from Host Machine to Windows Server 2016 VM (see Configuration Task [CT#3.9](#))
 - Installing JRE in Windows Server 2016 VM (see Configuration Task [CT#3.10](#))
 - Installing Web Browsers in Windows Server 2016 VM (see Configuration Task [CT#3.11](#))
 - Installing Notepad++ in Windows Server 2016 VM (see Configuration Task [CT#3.12](#))

- Installing WinRAR in Windows Server 2016 VM (see Configuration Task [CT#3.13](#))
- Installing Adobe Reader in Windows Server 2016 VM (see Configuration Task [CT#3.14](#))
- Installing Office 16 in Windows Server 2016 VM (see Configuration Task [CT#3.15](#))
- Installing MS SQL Server 2017 Express Edition on Windows Server 2016 Virtual Machine (see Configuration Task [CT#3.16](#))
- Configuring the GoodShopping Website Windows Server 2016 (Virtual Machine) (see Configuration Task [CT#3.17](#))
- Configuring the moviescope Website in Windows Server 2016 (Virtual Machine) (see Configuration Task [CT#3.18](#))
- Configuring the Hosts File in Windows Server 2016 (see Configuration Task [CT#3.19](#))
- Installing Active Directory (see Configuration Task [CT#3.20](#))
- Creating and Configuring a User Account in Active Directory (see Configuration Task [CT#3.21](#))
- Installing Wireshark in Windows Server 2016 VM (see Configuration Task [CT#3.22](#))
- Installing dotDefender in Windows Server 2016 VM (see Configuration Task [CT#3.23](#))
- Create and Configure Windows 10 Virtual Machine (see Configuration Task [CT#4](#))
 - Creating a Virtual Machine and Install Windows 10 Guest OS (see Configuration Task [CT#4.1](#))
 - Changing the Computer Name to Windows10 (see Configuration Task [CT#4.2](#))
 - Configuring the static IP address (IP: 10.10.10.10, Subnet: 255.255.255.0, Gateway: 10.10.10.2, and DNS: 10.10.10.16) (see Configuration Task [CT#4.3](#))
 - Adding Windows 10 VM to the Domain (see Configuration Task [CT#4.4](#))
 - Enabling Remote Desktop Connection in Windows 10 VM (see Configuration Task [CT#4.5](#))
 - Turning Off Windows Defender in Windows 10 VM (see Configuration Task [CT#4.6](#))
 - Configuring Windows Explorer in Windows 10 VM (see Configuration Task [CT#4.7](#))
 - Mapping ECIH-Tools Folder from Host Machine to Windows 10 VM (see Configuration Task [CT#4.8](#))
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- Installing Wireshark in Windows 10 VM (see Configuration Task [CT#4.14](#))
- Configuring the Hosts File in Windows 10 VM (see Configuration Task [CT#4.15](#))
- Installing and Configuring FTP in Windows 10 (see Configuration Task [CT#4.16](#))
- Create and Configure Ubuntu Virtual Machine (see Configuration Task [CT#5](#))
 - Configuring the static IP Address (IP: 10.10.10.9, Subnet: 255.255.255.0, Gateway: 10.10.10.2, and DNS: 8.8.8.8) (see Configuration Task [CT#5.1](#))
 - Installing Net Tools in Ubuntu VM (see Configuration Task [CT#5.2](#))
 - Installing Apache in Ubuntu VM (see Configuration Task [CT#5.3](#))
 - Installing open-vm-tools in Ubuntu VM (see Configuration Task [CT#5.4](#))
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 - Installing Suricata in Ubuntu VM (see Configuration Task [CT#5.9](#))
 - Configuring the Hosts File in Ubuntu (see Configuration Task [CT#5.10](#))
 - Installing Nmap in Ubuntu VM (see Configuration Task [CT#5.11](#))
- Install and Configure AlienVault OSSIM (see Configuration Task [CT#6](#))
- Have all the VMs configured as per the Configuration Tasks (see Configuration Task section for details)
- Have an LCD projector connected to the instructor's machine
- The use of ghost images is recommended to reduce setup time if computer failure occurs

Student Workstations

Student workstations must:

- Be installed with VMware Workstation
- Have Microsoft Office/Open Office or PowerPoint, Word, and Excel Viewers installed
- Have all ECIH Essential Tools downloaded from Aspen to the hard drive in D:\ECIH-

Tools folder for easy access (see [CT#1](#) in Configuration Task section)

- Be running IP protocol
- Make sure that Anti-virus and Windows Firewall is disabled in the host machine.
- Configure Virtual Network in the VMware Virtual Network Editor (see Configuration Task [CT#2](#))
- Be configured with VMware Workstation VMs and guest operating systems as per the following steps.
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 - Installing Web Browsers in Windows Server 2016 VM (see Configuration Task [CT#3.11](#))
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 - Installing Adobe Reader in Windows Server 2016 VM (see Configuration Task [CT#3.14](#))
 - Installing Office 16 in Windows Server 2016 VM (see Configuration Task [CT#3.15](#))
 - Installing MS SQL Server 2017 Express Edition on Windows Server 2016 Virtual Machine (see Configuration Task [CT#3.16](#))

- Configuring the GoodShopping Website Windows Server 2016 (Virtual Machine) (see Configuration Task [CT#3.17](#))
- Configuring the moviescope Website in Windows Server 2016 (Virtual Machine) (see Configuration Task [CT#3.18](#))
- Configuring the Hosts file in Windows Server 2016 (see Configuration Task [CT#3.19](#))
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 - Configuring static IP address (IP: 10.10.10.10, Subnet: 255.255.255.0, Gateway: 10.10.10.2, and DNS: 10.10.10.16) (see Configuration Task [CT#4.3](#))
 - Add Windows 10 VM to the Domain (see Configuration Task [CT#4.4](#))
 - Enable Remote Desktop Connection in Windows 10 VM (see Configuration Task [CT#4.5](#))
 - Turnoff Windows Defender in Windows 10 VM (see Configuration Task [CT#4.6](#))
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 - Configuring the Hosts File in Windows 10 VM (see Configuration Task [CT#4.15](#))

- Installing and Configuring FTP in Windows 10 (see Configuration Task [CT#4.16](#))
- Create and Configure Ubuntu Virtual Machine (see Configuration Task [CT#5](#))
 - Configuring static IP address (IP: 10.10.10.9, Subnet: 255.255.255.0, Gateway: 10.10.10.2, and DNS: 8.8.8.8) (see Configuration Task [CT#5.1](#))
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 - Installing Suricata in Ubuntu VM (see Configuration Task [CT#5.9](#))
 - Configuring the Hosts File in Ubuntu (see Configuration Task [CT#5.10](#))
 - Installing Nmap in Ubuntu VM (see Configuration Task [CT#5.11](#))
- Install and Configure AlienVault OSSIM (see Configuration Task [CT#6](#))
- Have all the VMs configured as per the Configuration Tasks (see Configuration Task section for details)

Room Environment

- The room must contain a whiteboard measuring a minimum of 1 yard × 2–3 yards in length (1 meter × 2–3 meters)
- The room should contain an easel and large tablet (optional)
- The room must be equipped with legible black and blue felt tip pens

Classroom Configuration

This classroom is modular. Computers can be added or removed by either row or column to accommodate the needs of each particular class. The following is a sample room setup that provides optimal support. This setup makes it easier for the instructor to access “**troublespots**” and also allows students to break into small and large functional teams.

Student Machines



Student Machines



Instructor



Instructor



Internet



Firewall

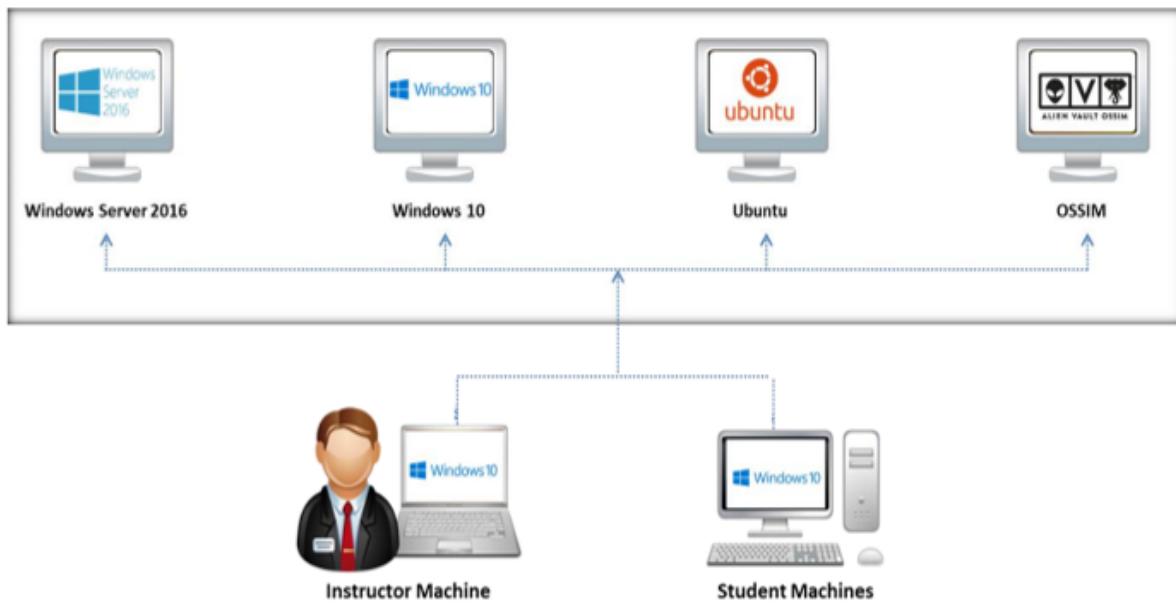


IDS (Optional)



Student Machines

Set up the machines based on the classroom setup diagram. The lab exercises for the students are instructor-led and based on the network security tools in the trainer slides.



Instructor and Student Machine Operating System: Windows 10 (Fully Patched)

Note: In this Lab Setup Manual we have used Windows 10 as the base machine; however, you can use any Operating System compatible with VMware Workstation.

Computer Names

Assign computer names to student machines, such as ECIHSTUDENT1, ECIHSTUDENT2, and ECIHSTUDENT3, to name a few. The instructor's machine should be named INSTRUCTOR.

Instructor Acceptance

Before the training class is scheduled to begin, the instructor will visit the training facility to inspect and accept the setup. The technical contact (System Administrator) for the facility must be available to answer questions and correct any setup issues. Both the instructor and the facility technical contact will ensure completion of the following checklists before the training setup is deemed acceptable.

Firewall Settings

Do not block any ports while accessing the Internet through the firewall. You should be able to ping servers on the Internet.

Blackboard

- Write the following on the top left corner of the blackboard
 - Instructor name: <Name of the instructor>
 - The username/password to log on to the student machine
- Write the following letters in bold at the center of the board

Welcome to ECIH Class!

Instructor Name: Jack Smith

Provide Username / Password to logon to the student machine

Welcome to ECIHv2 Class!

Setup Checklist

The arrangement of items in the setup checklists is designed to allow the process to be completed in the most efficient manner possible and validate that the setup has been done correctly. Before beginning the setup checklist, log off any connected users.

Tick Here	List
<input type="checkbox"/>	Open Network and verify that all classroom computers are visible in Network
<input type="checkbox"/>	Verify that the ECIH tools are on the computer in the ECIH-Tools folder in the D:\ drive
<input type="checkbox"/>	Verify that Internet access is available
<input type="checkbox"/>	Visit https://www.eccouncil.org to check Internet access
<input type="checkbox"/>	Verify that each computer has 200 GB or more free disk space
<input type="checkbox"/>	Verify that Microsoft PowerPoint, Word, and Excel Viewer are installed (or Microsoft Office/Open Office is installed)
<input type="checkbox"/>	Verify whether you can successfully boot Windows Server 2016, Windows 10, Ubuntu, and OSSIM
<input type="checkbox"/>	Verify that all the VMs are configured as per the configuration tasks
<input type="checkbox"/>	Verify that the Instructor computer can project its image through the overhead projector
<input type="checkbox"/>	Verify that the placement of the LCD (overhead) projector is appropriate
<input type="checkbox"/>	Verify that cable wiring is organized and labeled
<input type="checkbox"/>	Verify that student workstations and chair placements are satisfactory
<input type="checkbox"/>	Verify that whiteboard and dry erase markers and erasers are available
<input type="checkbox"/>	Verify that the instructor station is properly organized and oriented
<input type="checkbox"/>	Verify that computers are labeled with client numbers
<input type="checkbox"/>	Verify that EC-Council courseware (Official EC-Council ECIH Box) is available for students
<input type="checkbox"/>	Verify that you have written down the mobile phone number of the facility's technical contact; contact him or her in case of network problems

Instructor Acceptance

The technical contact (System Administrator) for the facility must be available to answer questions and correct any setup issues.

The Instructor will inspect both the classroom and the items covered in the setup checklist(s) to ensure that the classroom and setup meet EC-Council standards. Any deficiencies discovered by the Instructor must be corrected before the scheduled start time for the class.

Assistance

If you have problems or require assistance in setting up the Lab for your ECIH class, please e-mail partnersupport@eccouncil.org

Detailed Configuration Tasks (CT)

CT#1: Download ECIH Tools

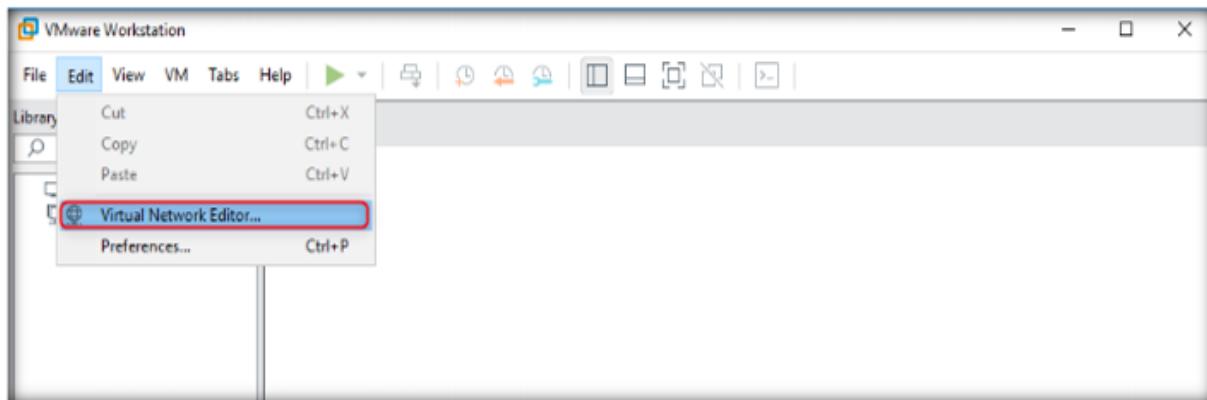
1. Create a folder in Drive **D:** in the host machine and name it **ECIH-Tools**.
2. Log in to your **Aspen** account. (You will see your course listed under **My Courses**.) → Click the **TRAINING** button under the course to access the e-Courseware, Lab Manuals, and Tools in the **Training** area → Click the **Download Tools** tab from the left-hand pane.

Note: If you are an instructor, follow the below instructions to download the **ECIHv2 Tools**.

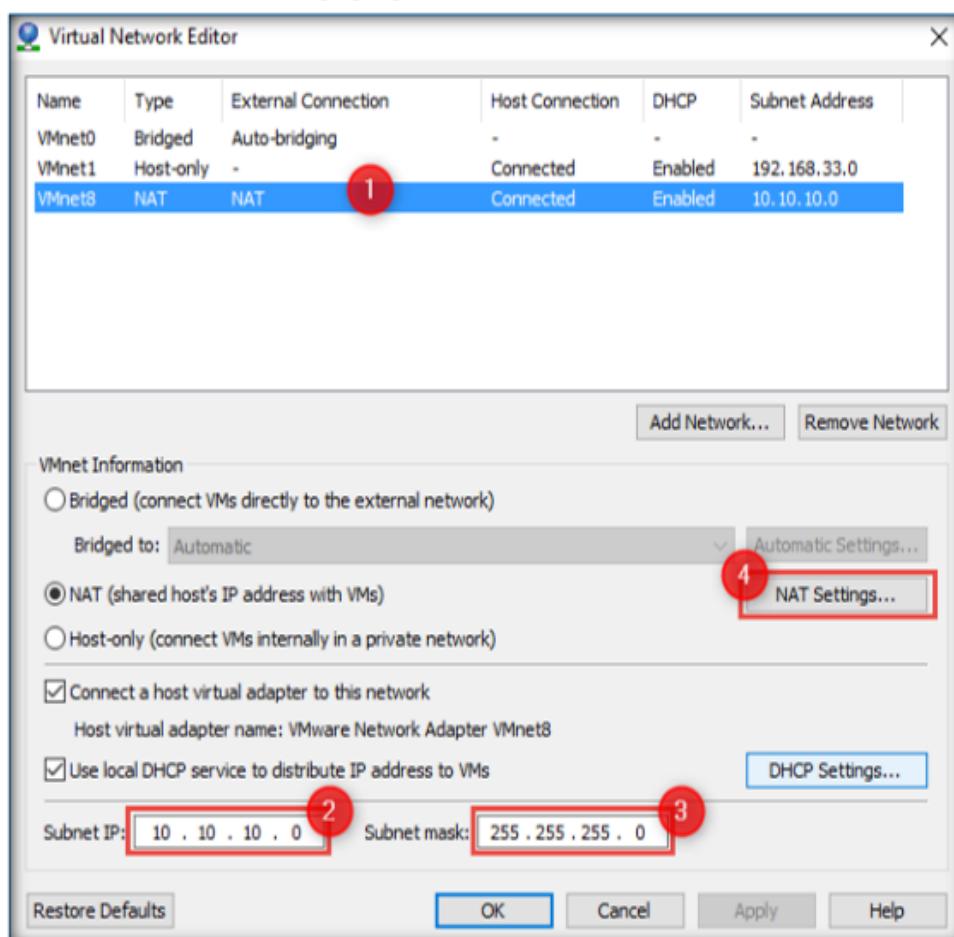
- a. Log in to your **Aspen** account.
 - b. Click **Instructor** drop-down menu and then click **Certified EC-Council Instructor**.
 - c. In the **Certified EC-Council Instructor** page, click **Instructor Materials** from the left-hand pane.
 - d. Under the **Download Instructor Materials** field in the right-hand pane, select **EC-Council Certified Incident Handler v2** from the **Select Instructor Material** drop-down list.
 - e. Click **Download Courseware** from the list.
 - f. The **Courseware - EC-Council Certified Incident Handler v2** page will open in a new tab.
 - g. Scroll down and click the **Download Tools** tab from the left-hand pane.
3. Click the module names from the right-hand pane and download all the **ECIHv2 Tools** files to the **D:\ECIH-Tools** folder.
 4. Right-click the .zip files in the **D:\ECIH-Tools** folder and select the **Extract Here** option.

CT#2: Configuring a Virtual Network in the VMware Virtual Network Editor

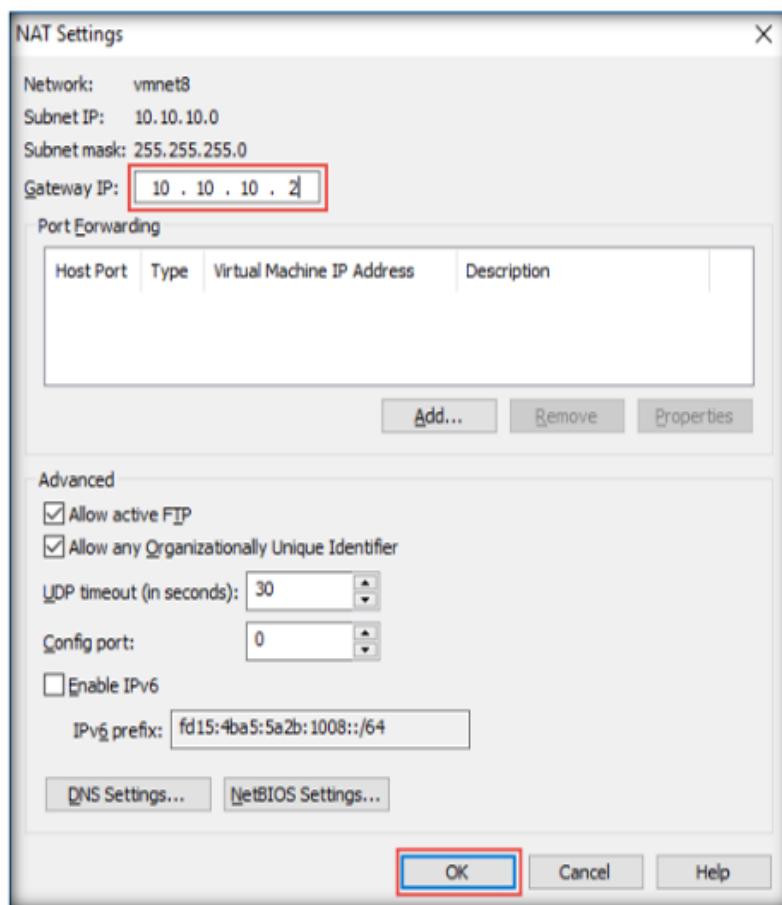
1. Launch **VMware Workstation**.
2. Go to the **Edit** menu and click **Virtual Network Editor**.



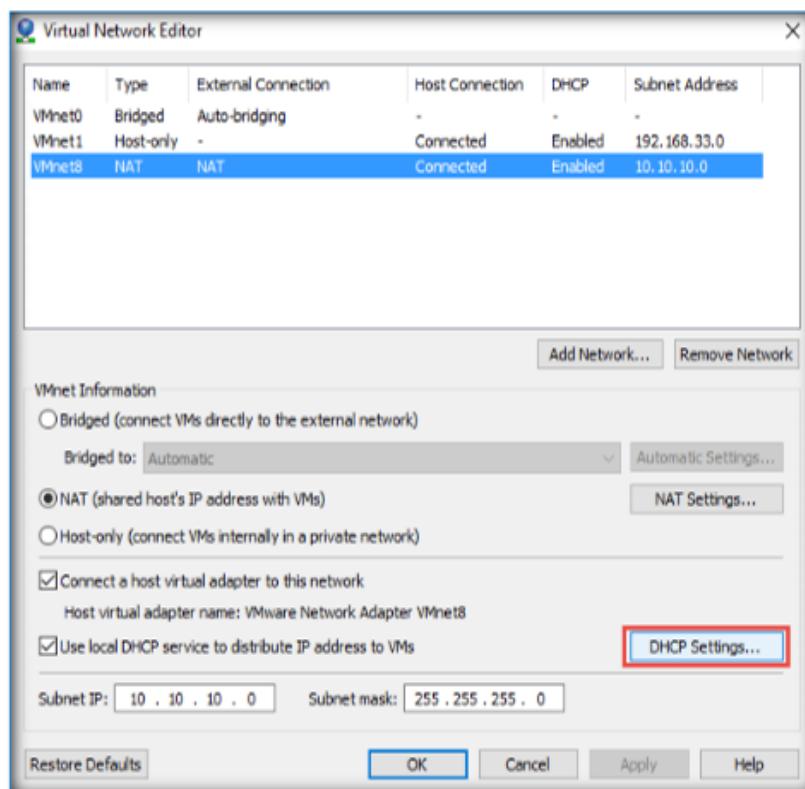
3. Select **VMnet8** NAT network (available in default VMware installation) and define **Subnet IP** as **10.10.10.0**, **Subnet mask** as **255.255.255.0**, and click **NAT Settings**. Click **Yes** on the User Access Control (UAC) pop-up.



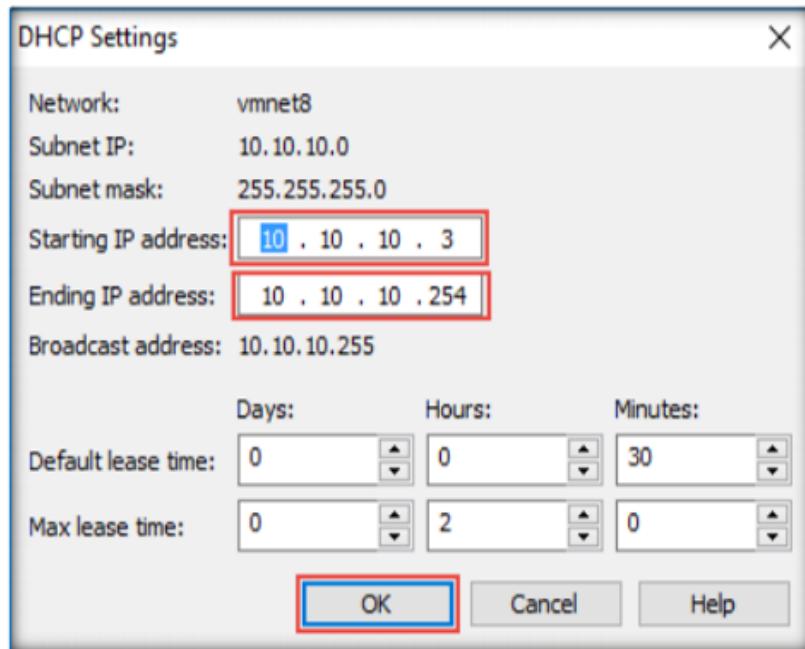
4. Enter **Gateway IP** as **10.10.10.2** and click **OK**.



5. Now, keep **VMnet8** selected and click **DHCP Settings**.



6. In the **DHCP Settings** window, define **Starting IP address** as **10.10.10.3** and **Ending IP address** as **10.10.10.254**. Click **OK**.

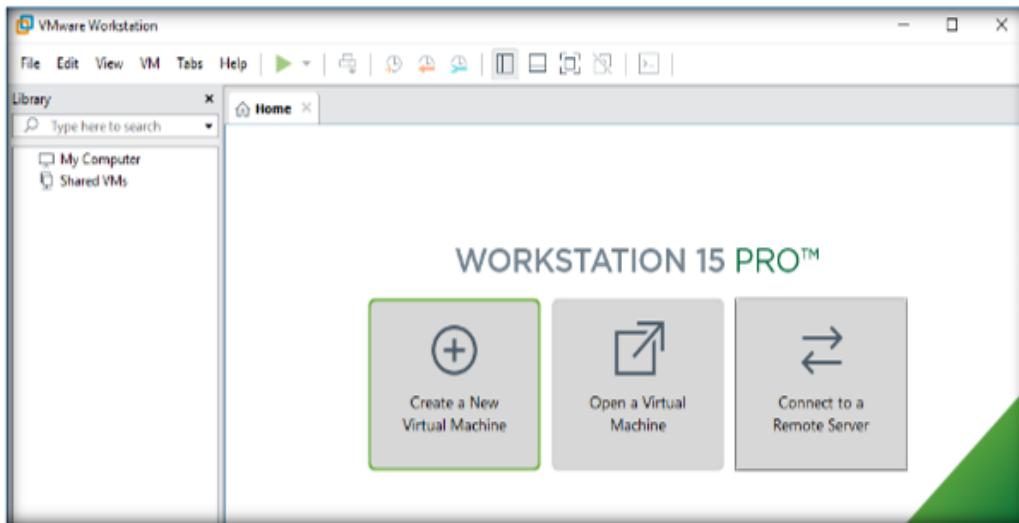


7. Click **Apply** and click **OK** to close the Virtual Network Editor window.

CT#3: Creating and Configuring a Windows Server 2016 Virtual Machine

CT#3.1: Creating a Virtual Machine and Installing Windows Server 2016 R2 Standard Guest OS

1. Launch **VMware Workstation**.
2. Click **Create a New Virtual Machine** (alternatively, select **New Virtual Machine...** from the **File** menu).

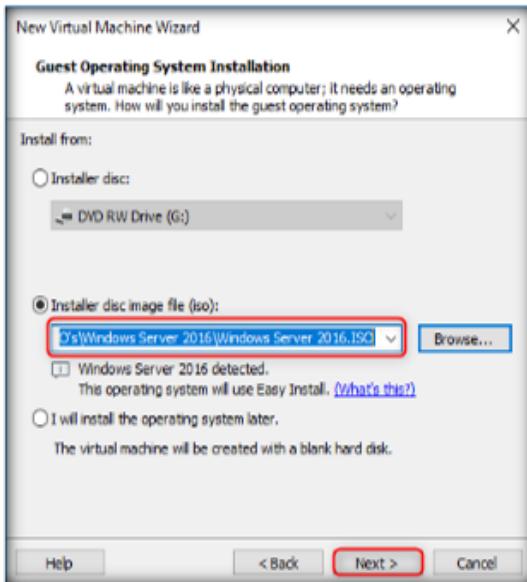


3. In the **New Virtual Machine Wizard**, select **Typical (recommended)** for **What type of configuration do you want?** and click **Next**.



4. Select your guest operating system (OS) in the **Guest Operating System Installation** screen, and then click **Next**:

- o A **Windows Server 2016 R2 Standard** installer DVD disc, or
- o A **Windows Server 2016 R2 Standard** installer disc image file (ISO); browse and select the ISO file.

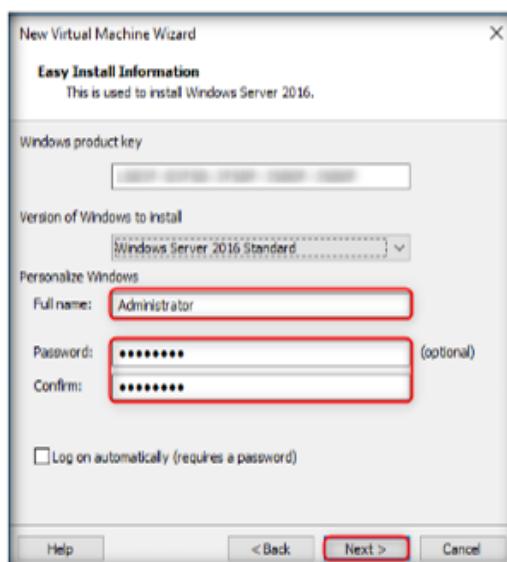


5. If you have a product key, then enter it in the **Windows product key** field. If a product key is not available, then leave the **Windows product key** field empty. Choose **Windows Server 2016 Standard** from the **Version of Windows to install** drop-down menu and create a username (in the program: “full name”) and password. Click **Next**.

Note: In this lab setup, we will use:

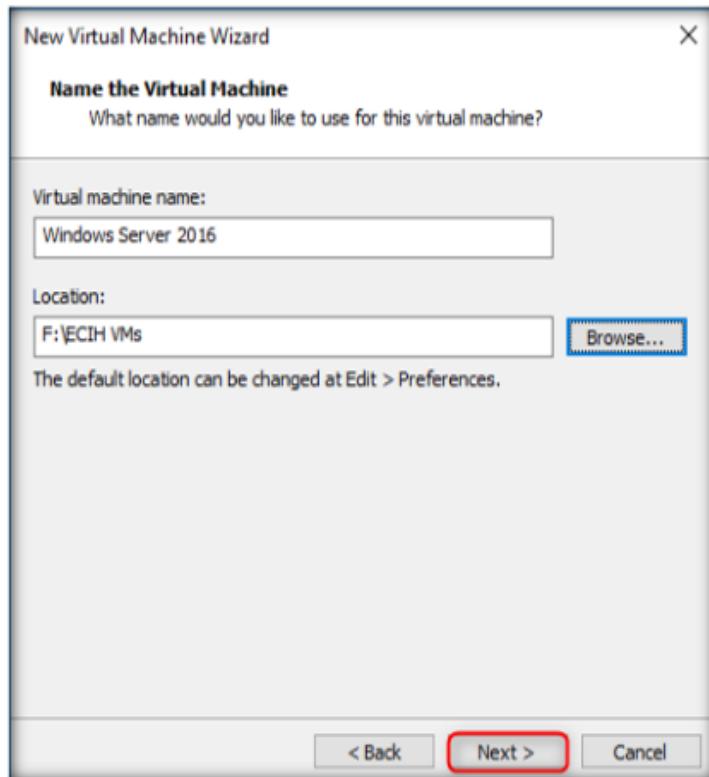
Full name: **Administrator**

Password: **Pa\$\$w0rd**



Note: If product key is not available, then the VMware Workstation pop-up will appear. Click **Yes**.

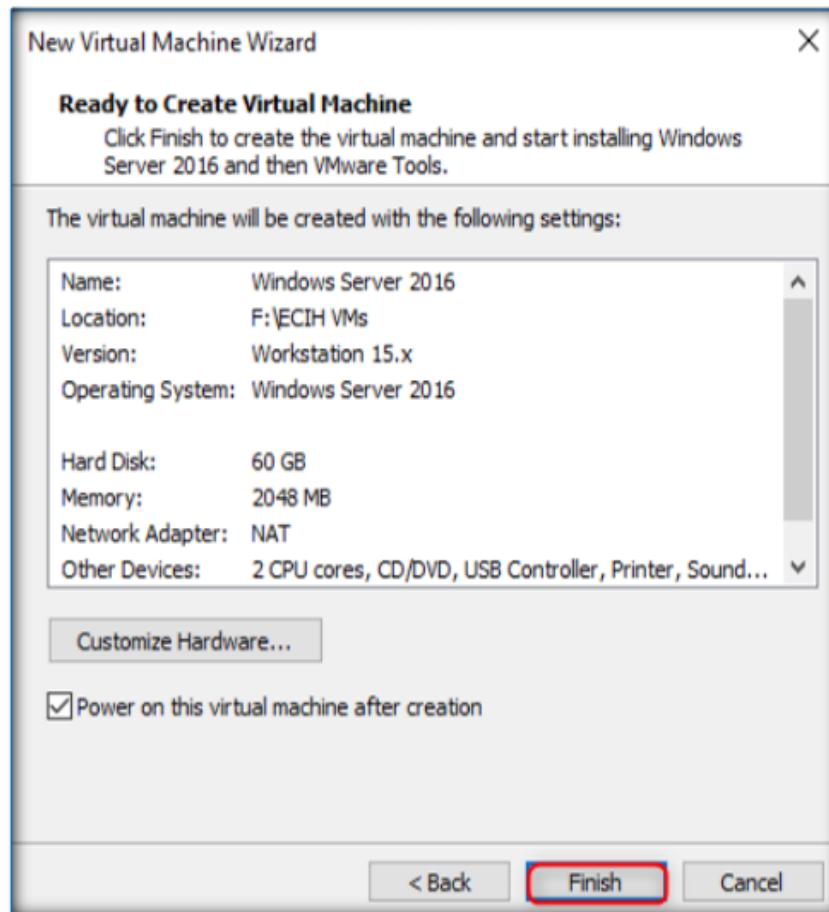
6. Enter a virtual machine name and specify a location in which to save the virtual machine files. Click **Next**.



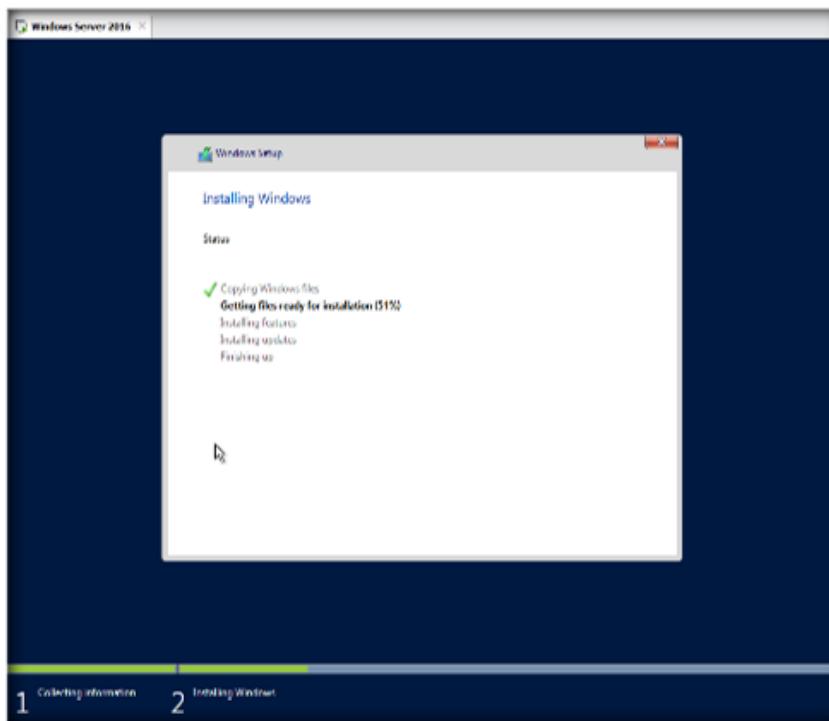
7. Establish the virtual machine's disk size and select whether you would like to store the virtual disk as a single file or split the virtual disk into 2GB files. Click **Next**.



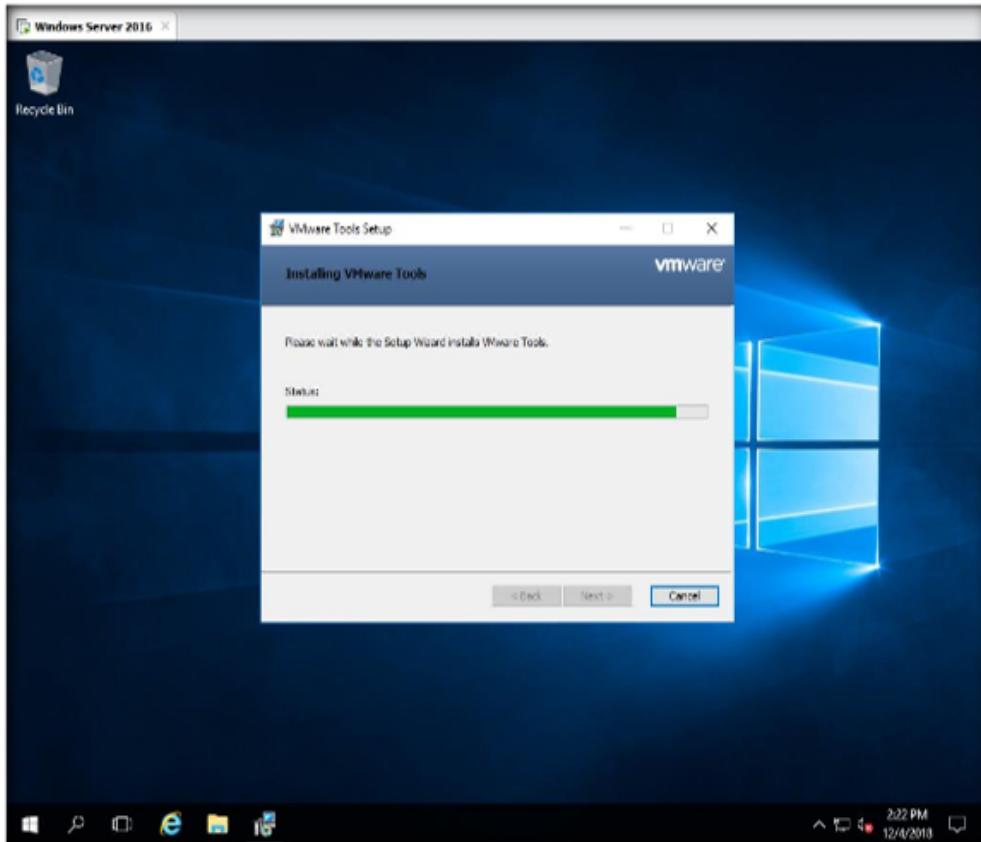
8. **Verify** the other configuration settings for your virtual machine.
9. Click **Finish**.



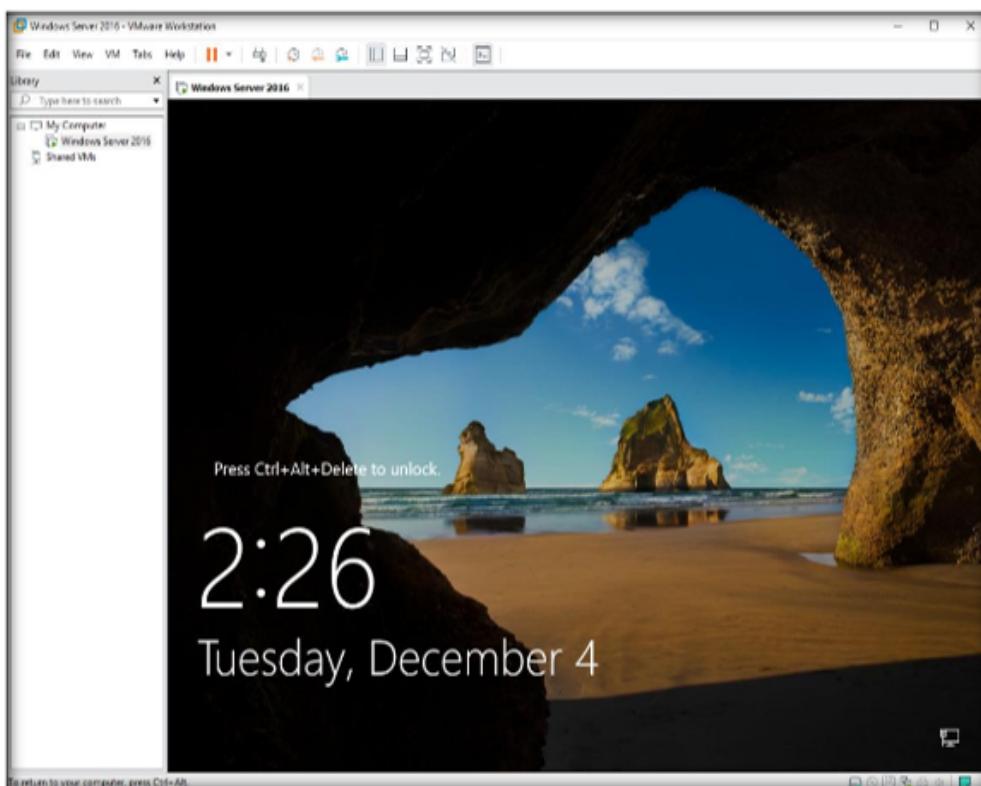
10. When the virtual machine is powered on, the OS installation starts.



11. The VMware Workstation will also start the VMware Tools installation. **Restart** the machine when prompted to restart your virtual machine after the Tools installation is complete.

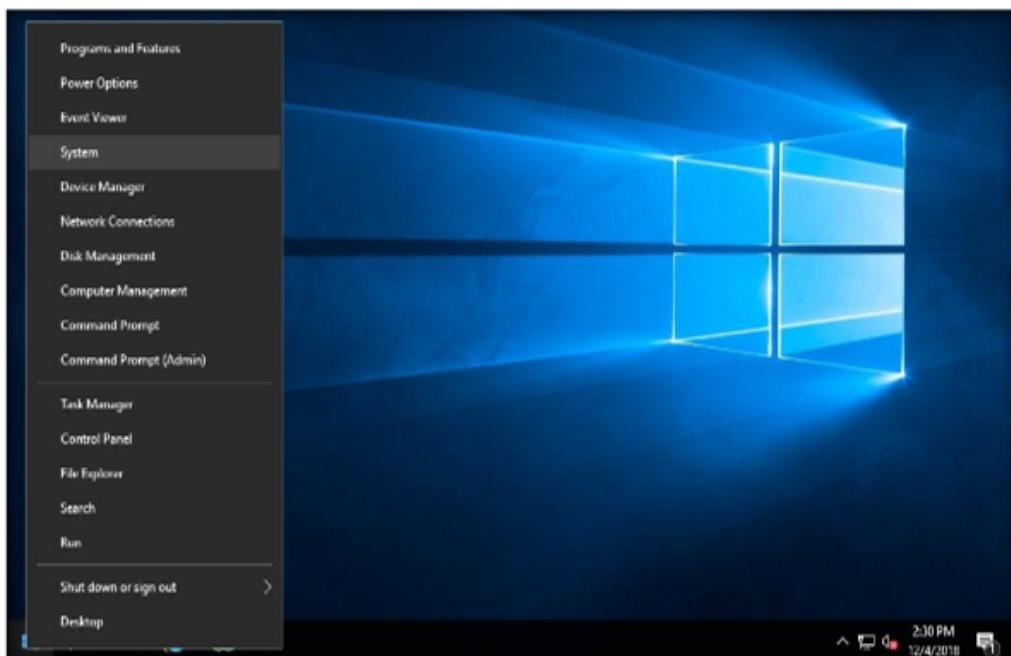


12. The **Windows Server 2016** VM will be ready after the system restarts.

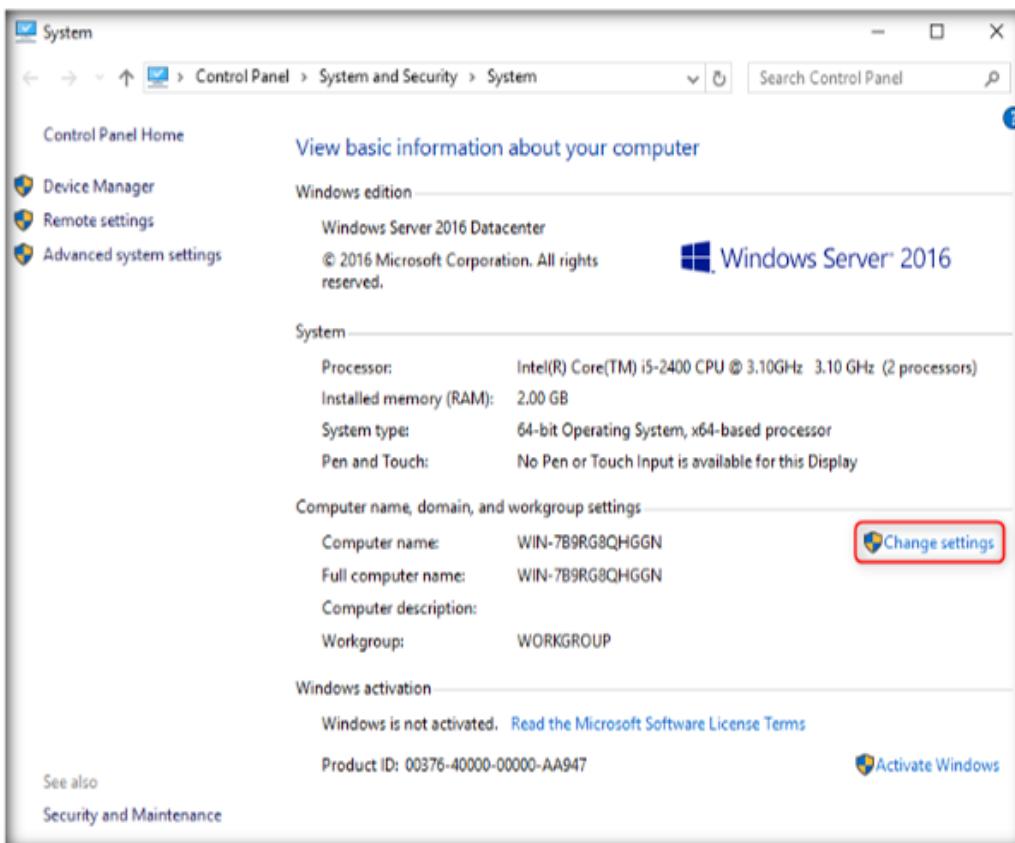


CT#3.2: Changing the Computer Name

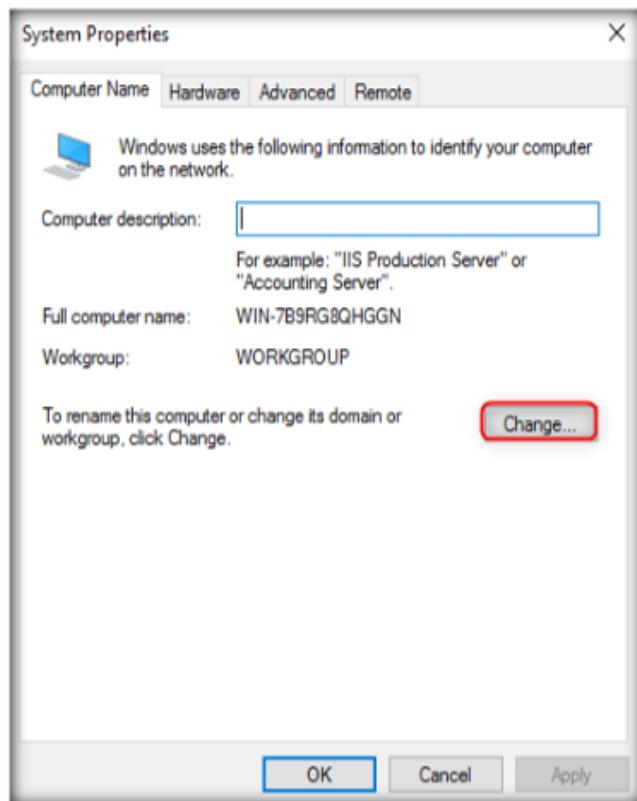
1. Log in to **Windows Server 2016** VM as Administrator.
2. Close the **Server Manager** window.
3. Right-click the **Start** icon and click on **System**.



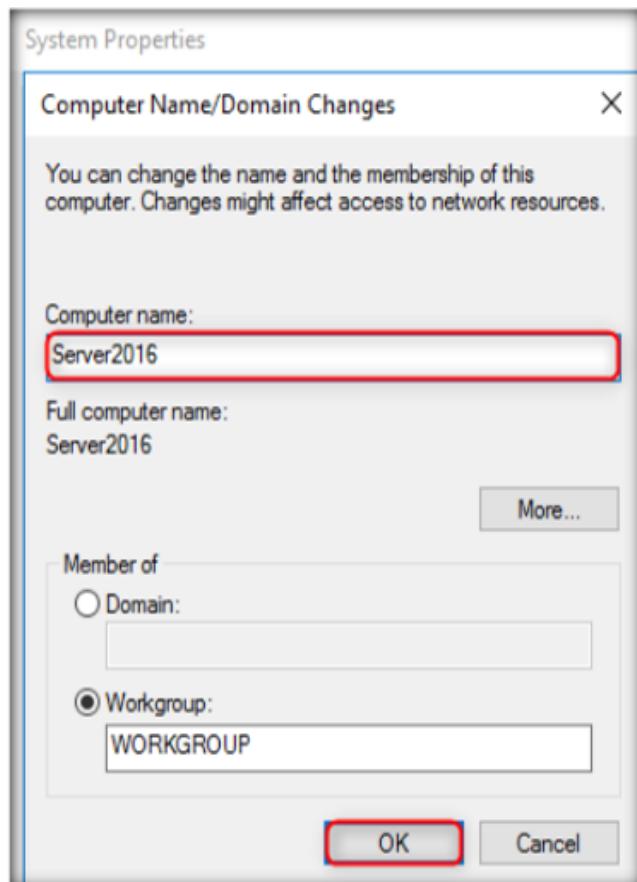
4. In the **System** window, click **Change settings**.



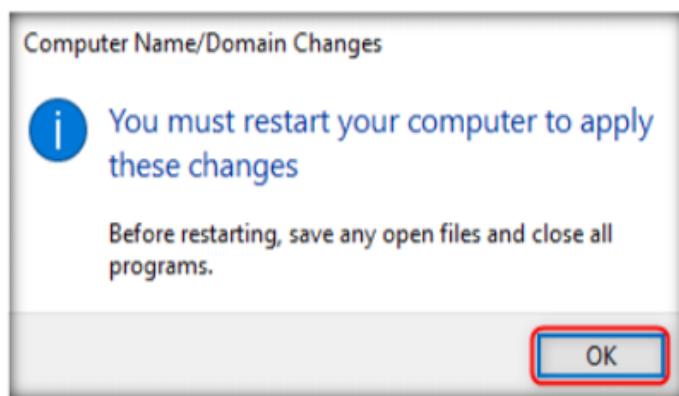
5. In the **Computer Name** tab of the **System Properties** window, click **Change**.



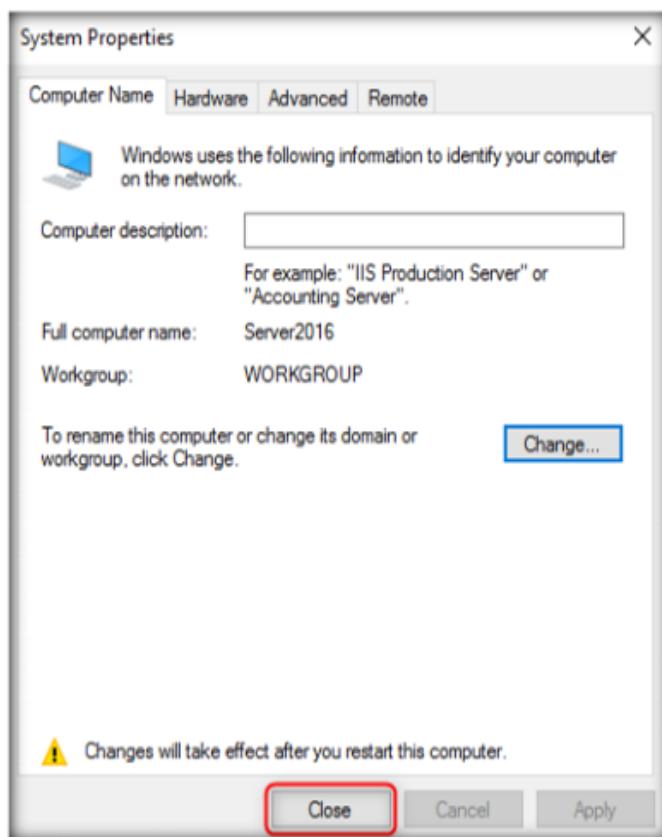
6. In the **Computer Name** field enter **Server2016** and click **OK**.



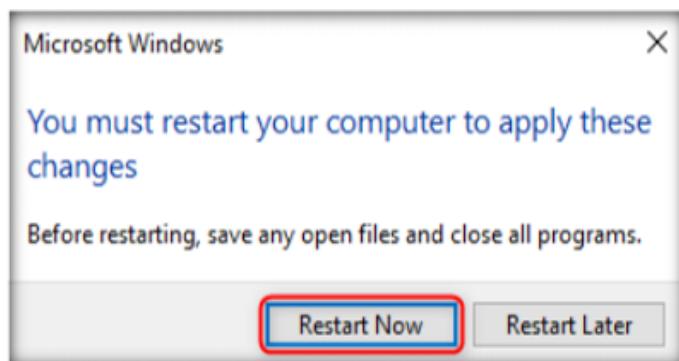
7. When prompted to restart the system, click **OK**.



8. You will be returned to the **System Properties** window. Click **Close**.

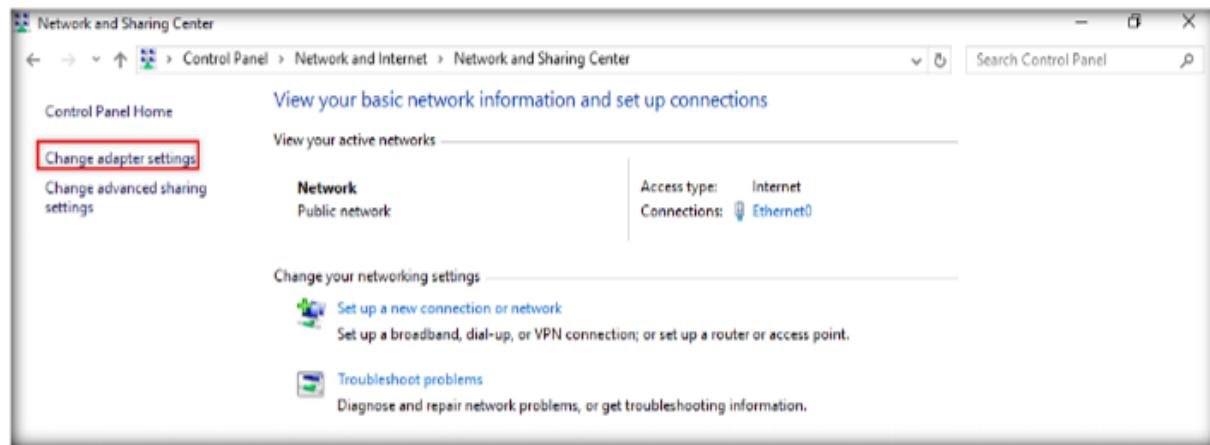


9. You will be prompted to restart the system. Click **Restart Now**.

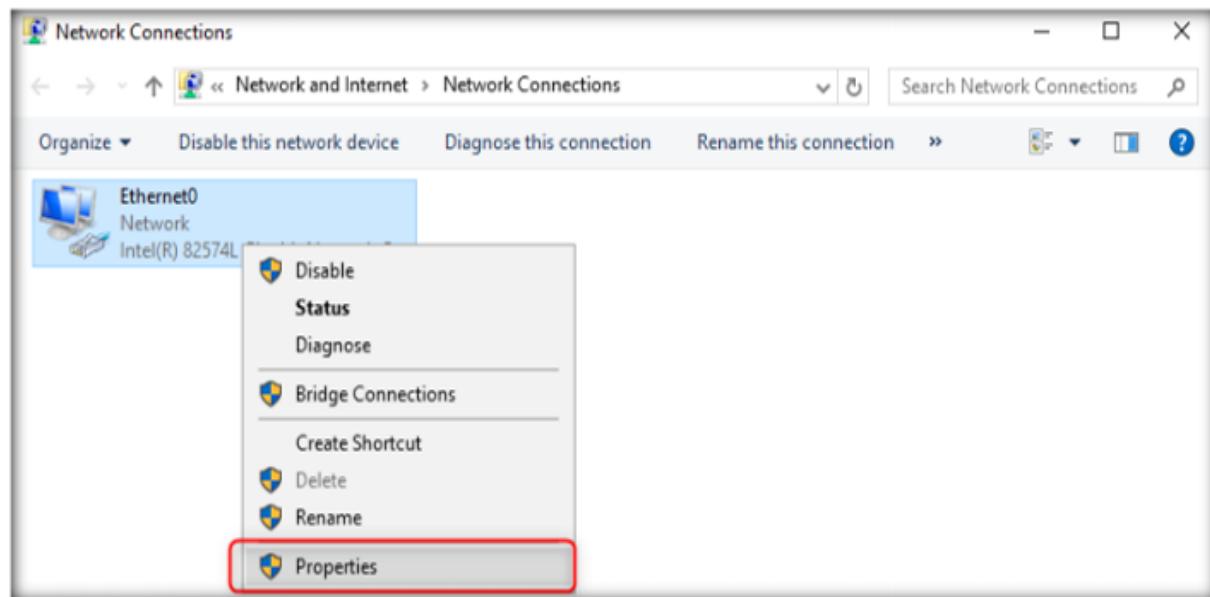


CT#3.3: Configuring a Static IP Address

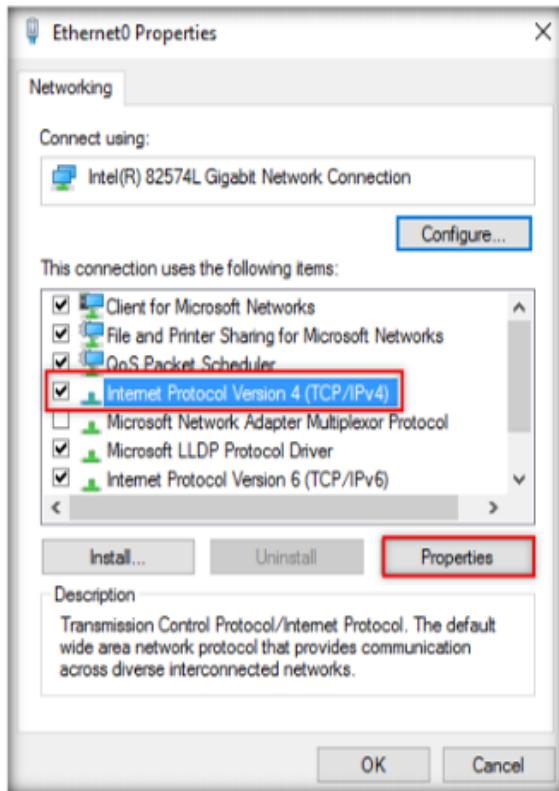
- Once the Machine is restarted, log in to the **Windows Server 2016** VM, and close the **Server Manager** window.
- Navigate to **Control Panel** → **Network and Internet** → **Network and Sharing Center**, and click **Change adapter settings**.



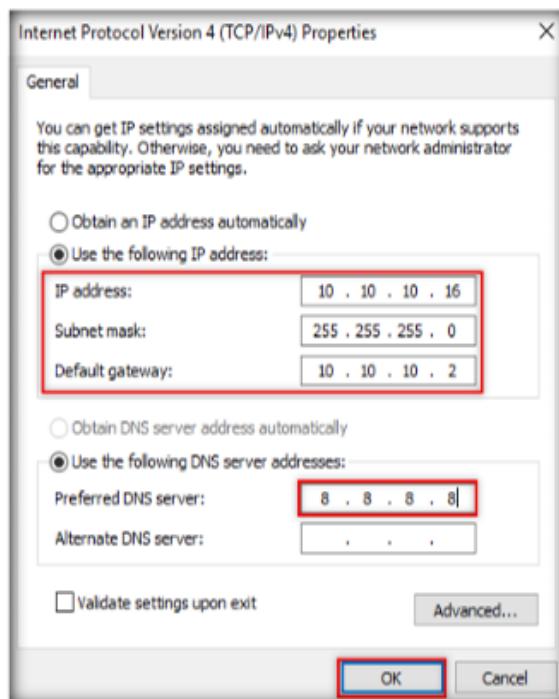
- Right-click on the available network adapter in the **Network Connections** window and then click **Properties**.



4. In the adapter properties window, select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.

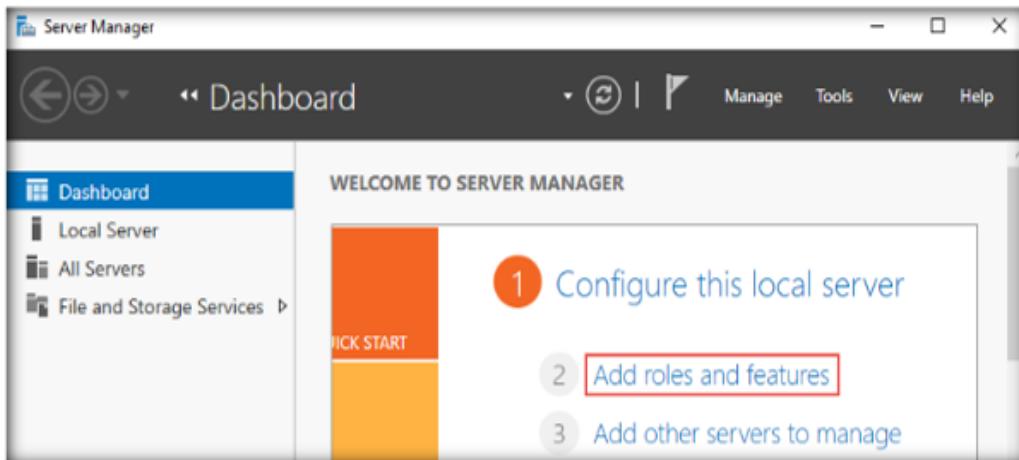


5. In the **Internet Protocol Version 4 (TCP/IPv4) Properties** window, make the configuration changes (**IP address: 10.10.10.16**, **Subnet mask: 255.255.255.0**, **Default gateway: 10.10.10.2**, **Preferred DNS server: 8.8.8.8**) as shown in the screenshot below and click **OK**. Close all the windows that were opened.

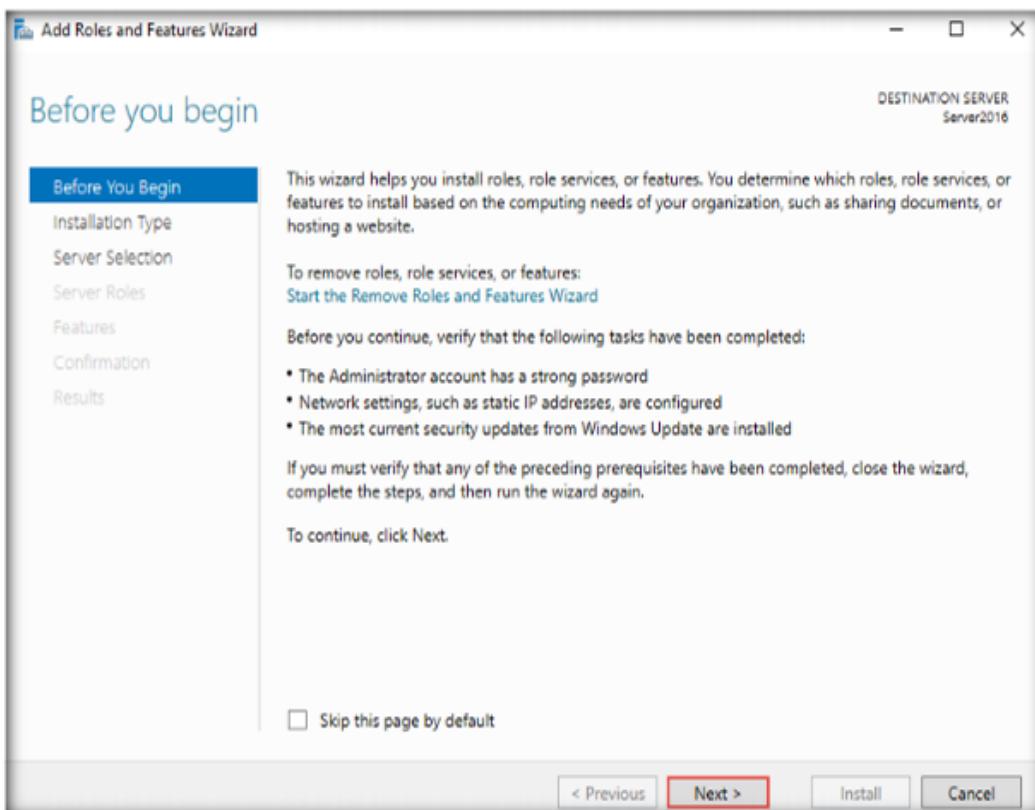


CT#3.4: Installing .Net Framework 3.5 (Includes .Net 2.0 and 3.0)

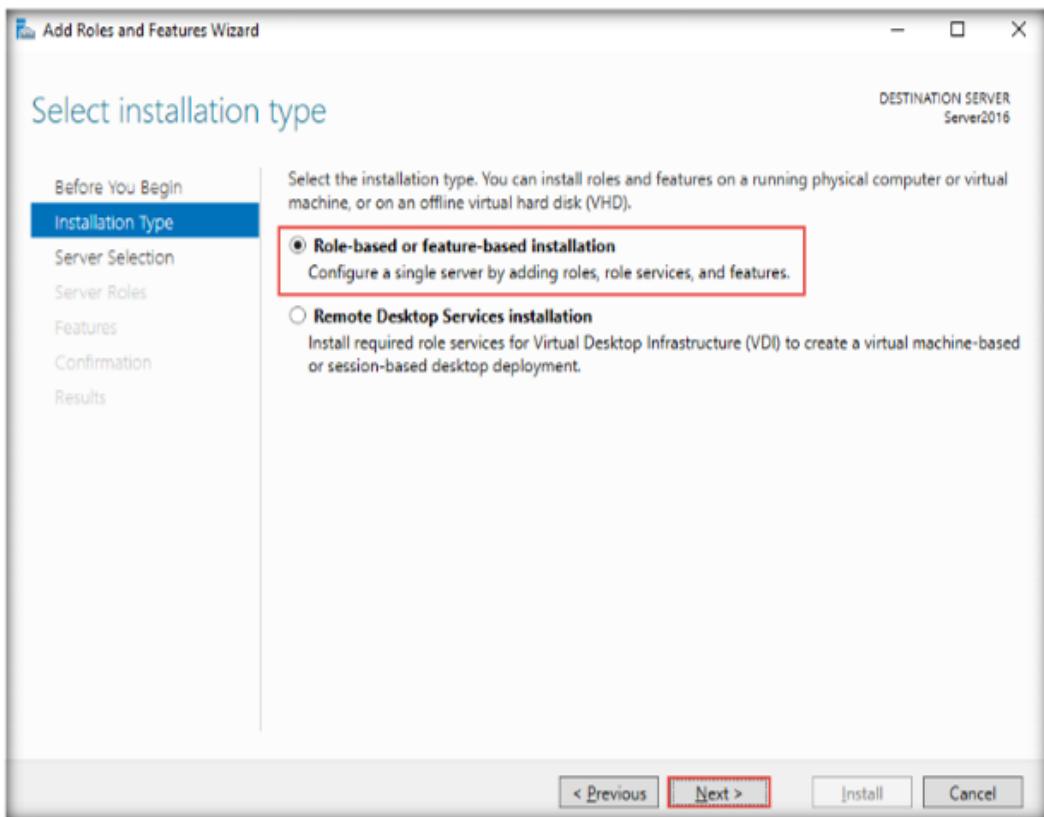
1. Launch **Server Manager** from the Start menu apps in **Windows Server 2016** VM and click **Add roles and features** (as shown in the screenshot below).



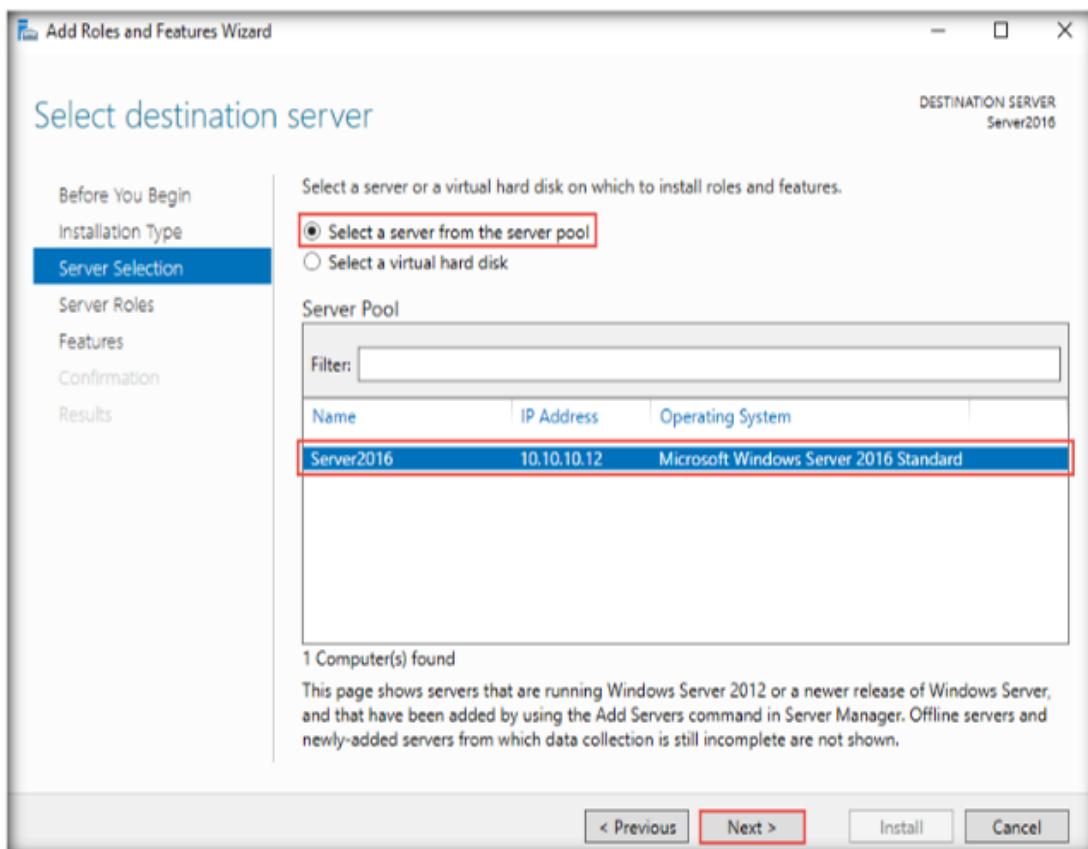
2. The **Add Roles and Features Wizard** will appear. By default, the **Before You Begin** section will be selected. Click **Next**.



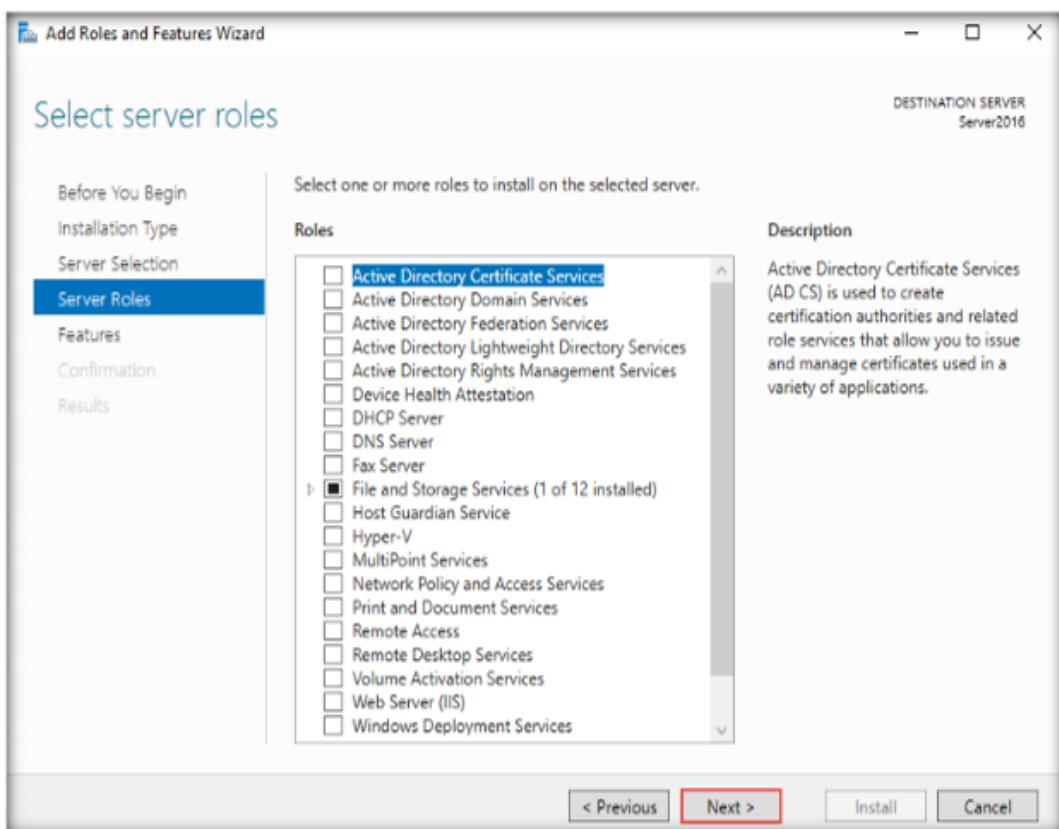
3. In the **Installation Type** section, leave the selection on default and click **Next**.



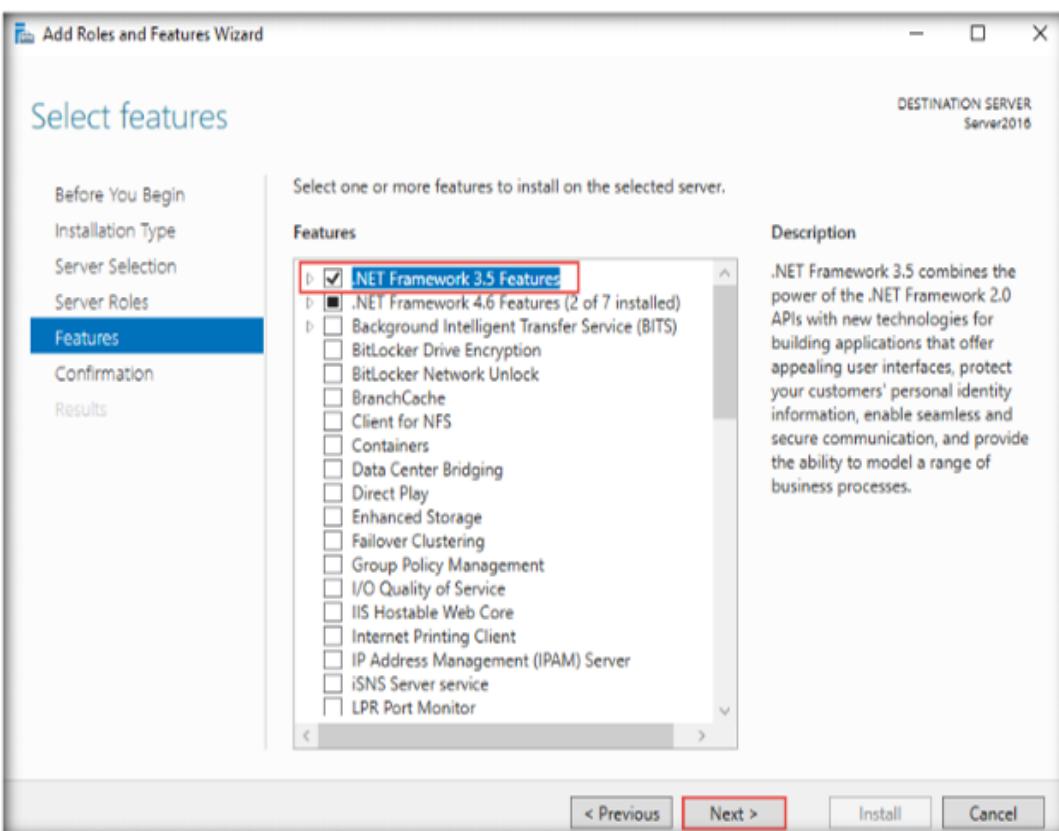
4. In the **Server Selection** section, leave the settings on default and click **Next**.



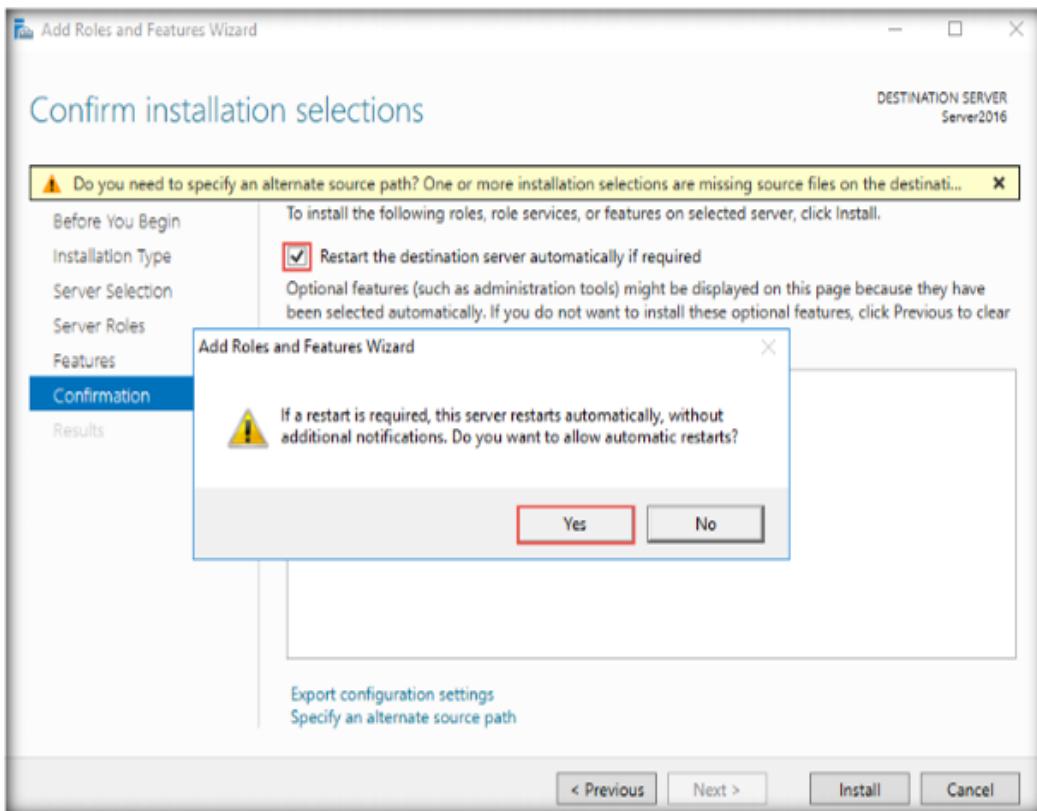
5. In the **Server Roles** section, click **Next**.



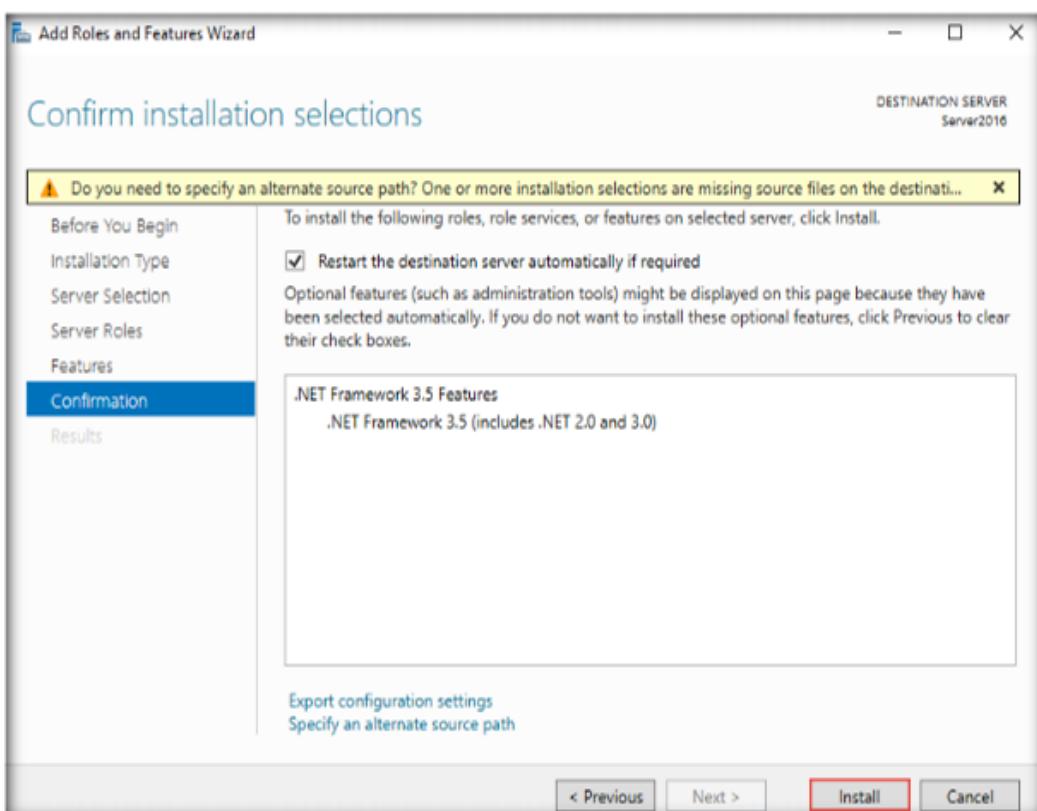
6. In the **Features** section, check the **.NET Framework 3.5 Features** check box, and click **Next**.



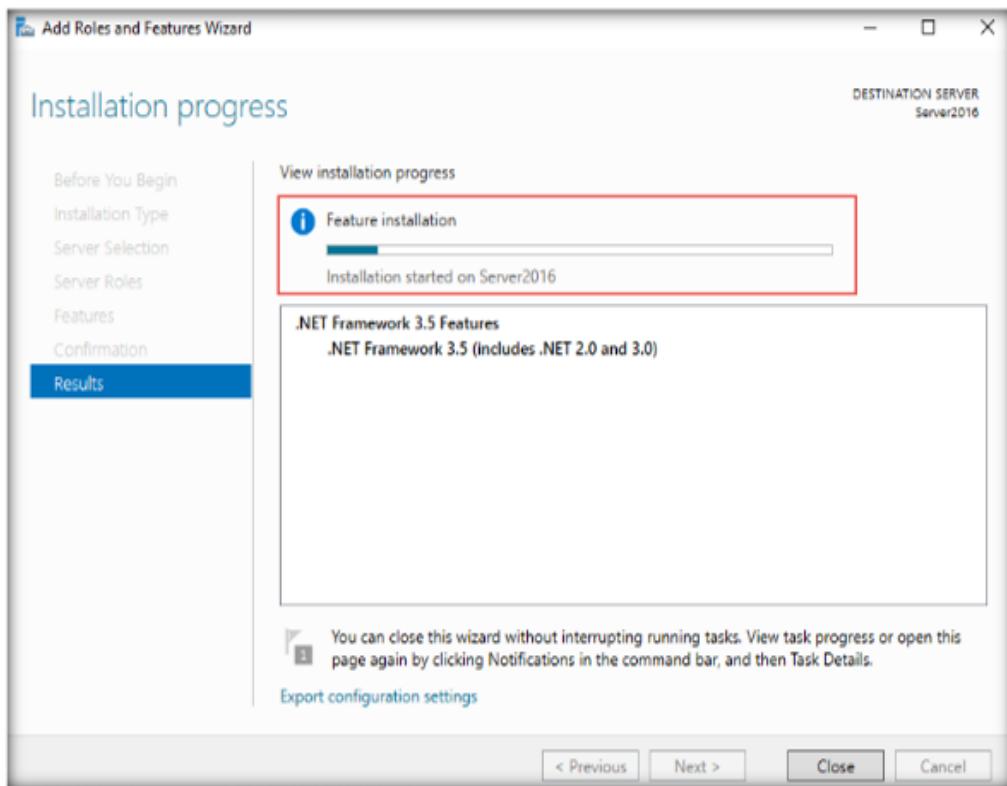
7. In the **Confirmation** section, check the **Restart the destination server automatically if required** option. The **Add Roles and Features Wizard** pop-up will appear. Click **Yes**.



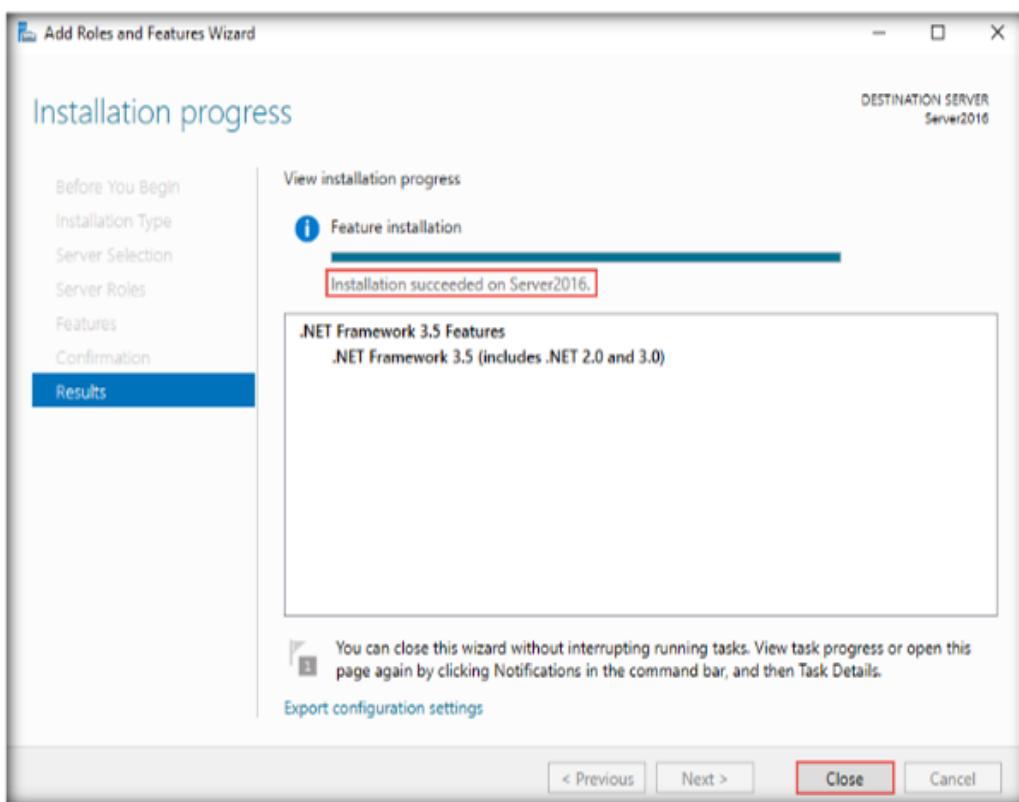
8. Click the **Install** button to proceed with the selected features installation.



9. Wait until the installation is completed.

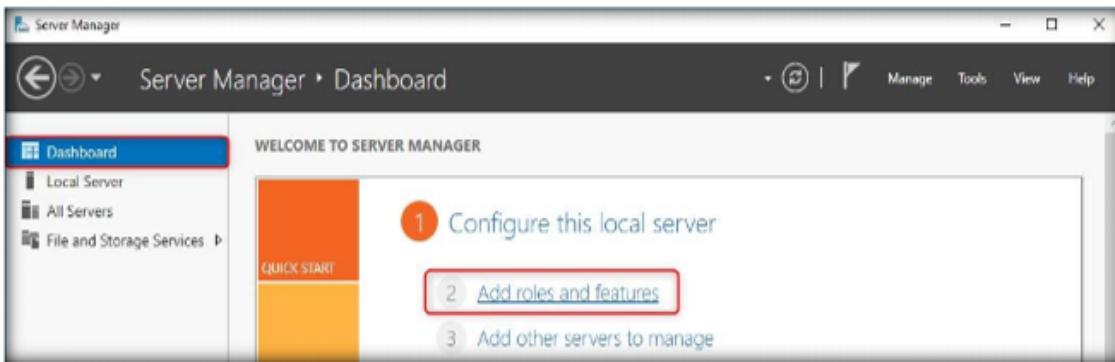


10. Once the installation is completed, you will see the message **Installation succeeded on Server2016** (as shown in the screenshot below). Click **Close**. If a restart is required, then restart the machine.

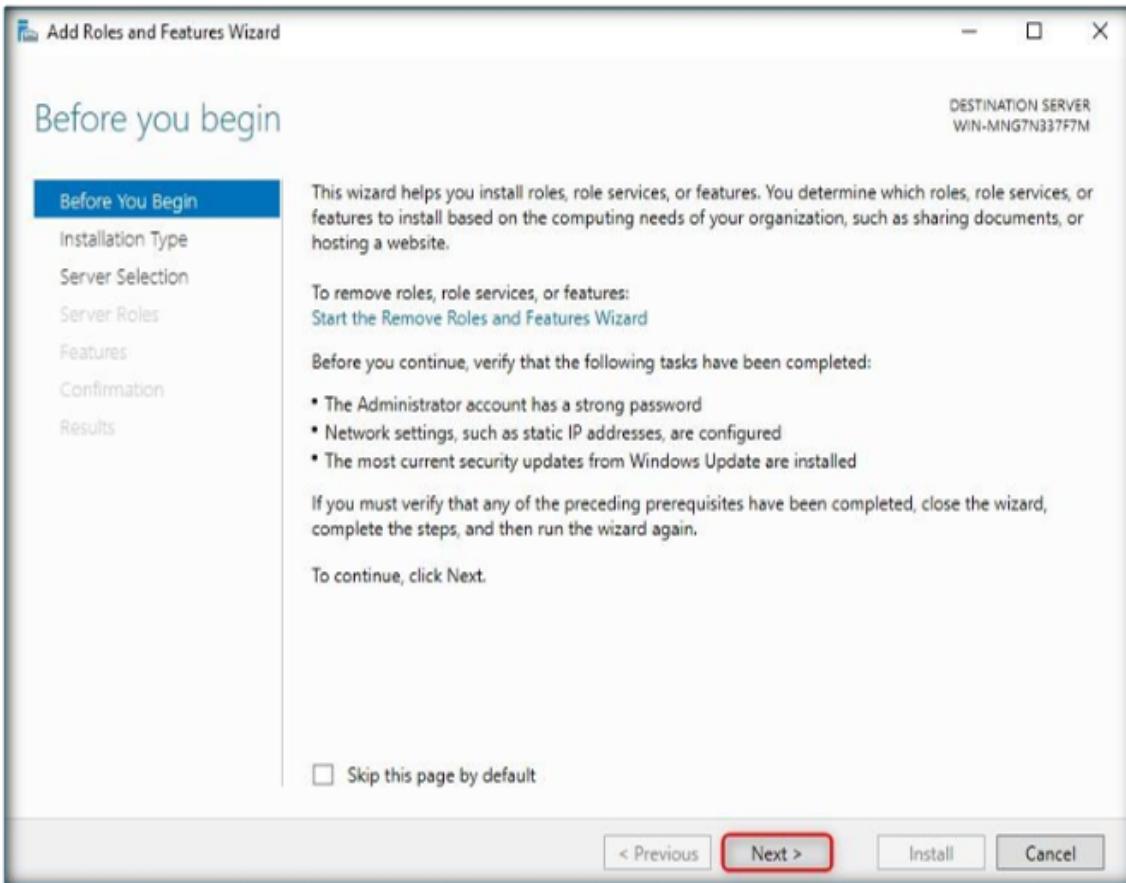


CT#3.5: Adding IIS (Internet Information Services) roles in Server Manager

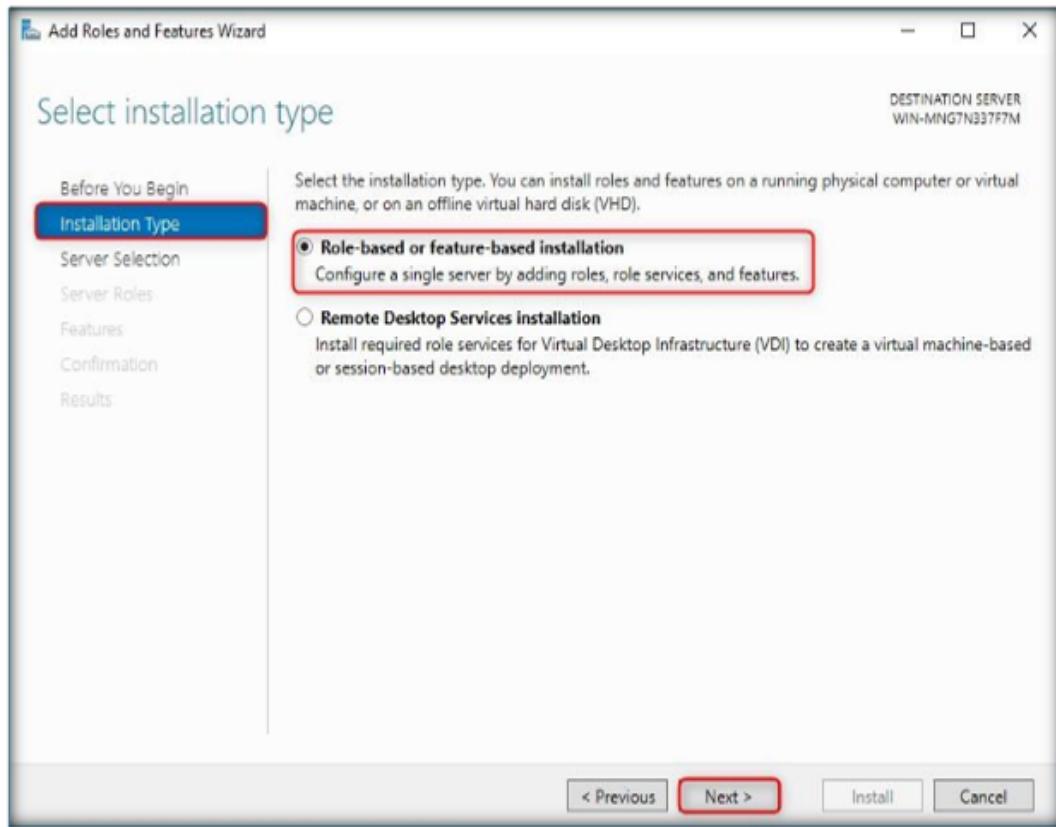
1. Add **Internet Information Services (IIS)** roles in **Server Manager**.
2. To open **Server Manager**, click **Start → Server Manager App**.
3. In the **Server Manager Dashboard**, click **Add roles and features**.



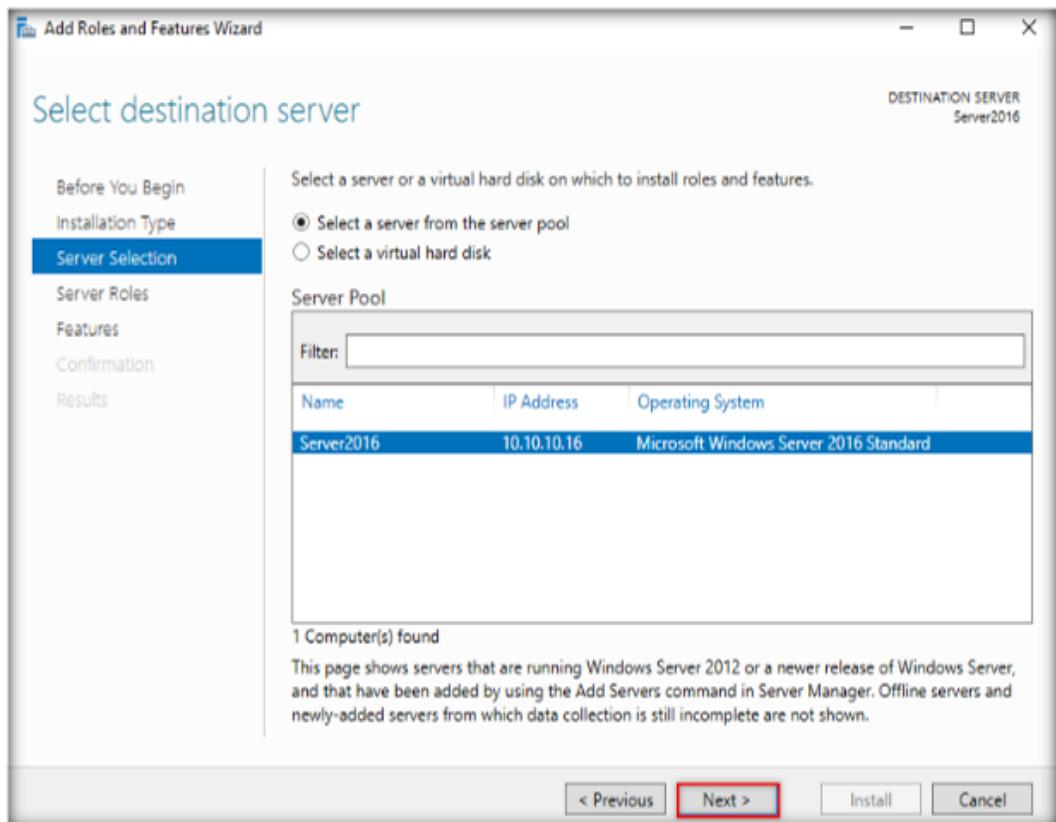
4. The add **Roles and Features Wizard** will appear. Click **Next**.



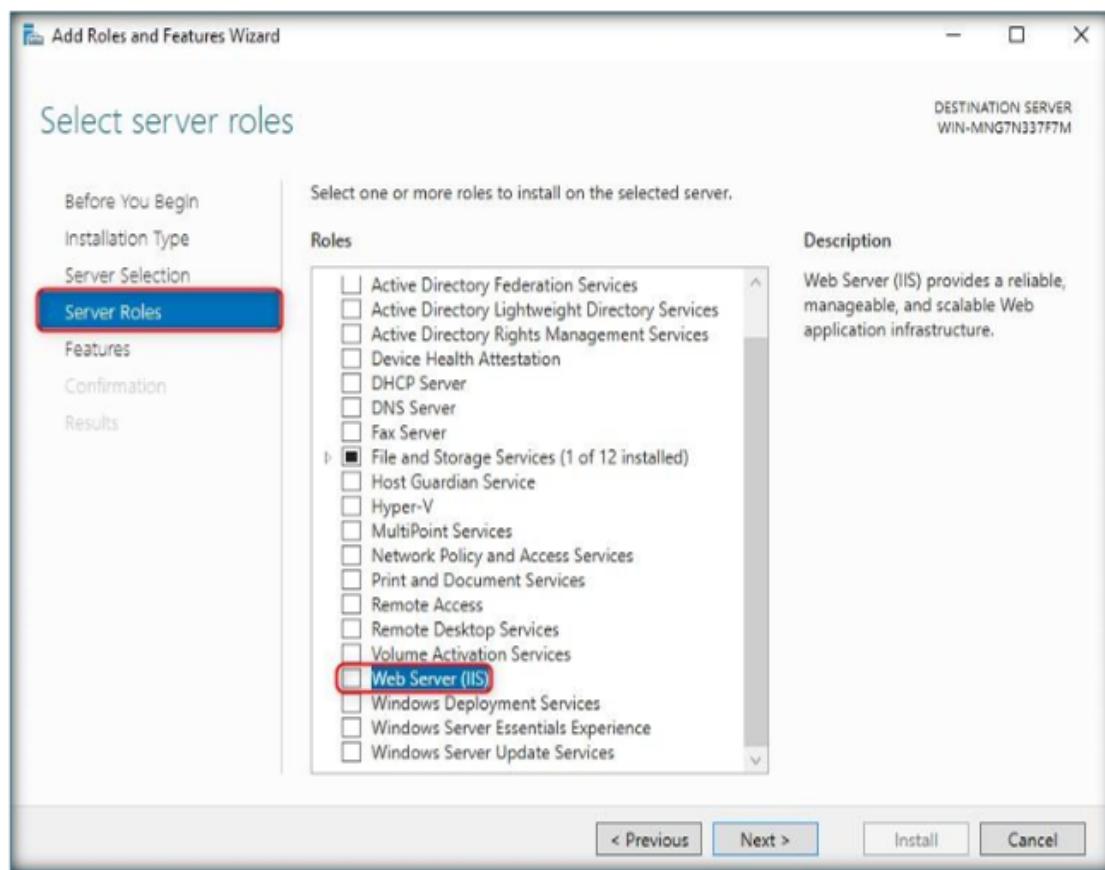
5. In the **Installation Type** section of the wizard, select the **Role-based or feature-based installation** radio button and click **Next**



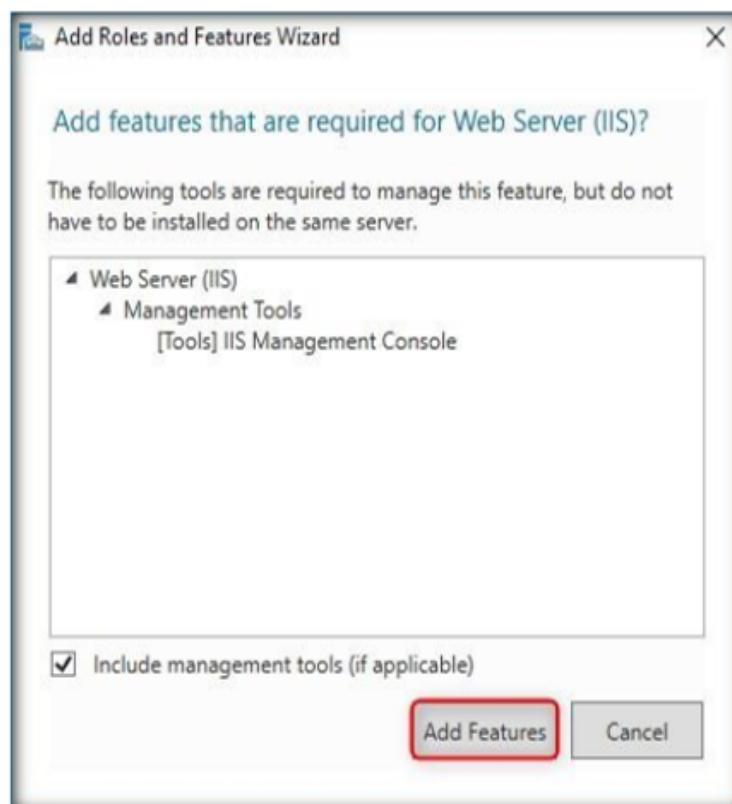
6. In the **Server Selection** section, leave the selections on default and click **Next**.



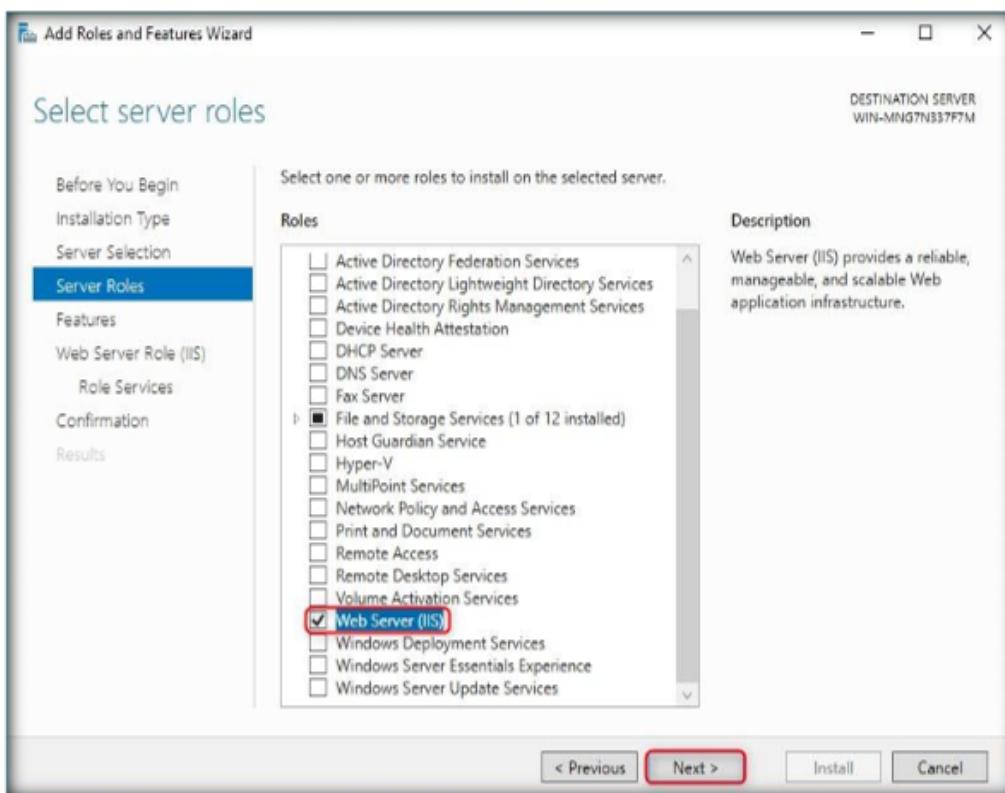
7. The **Server Roles** section will appear. Click the check box of the **Web Server (IIS)** role.



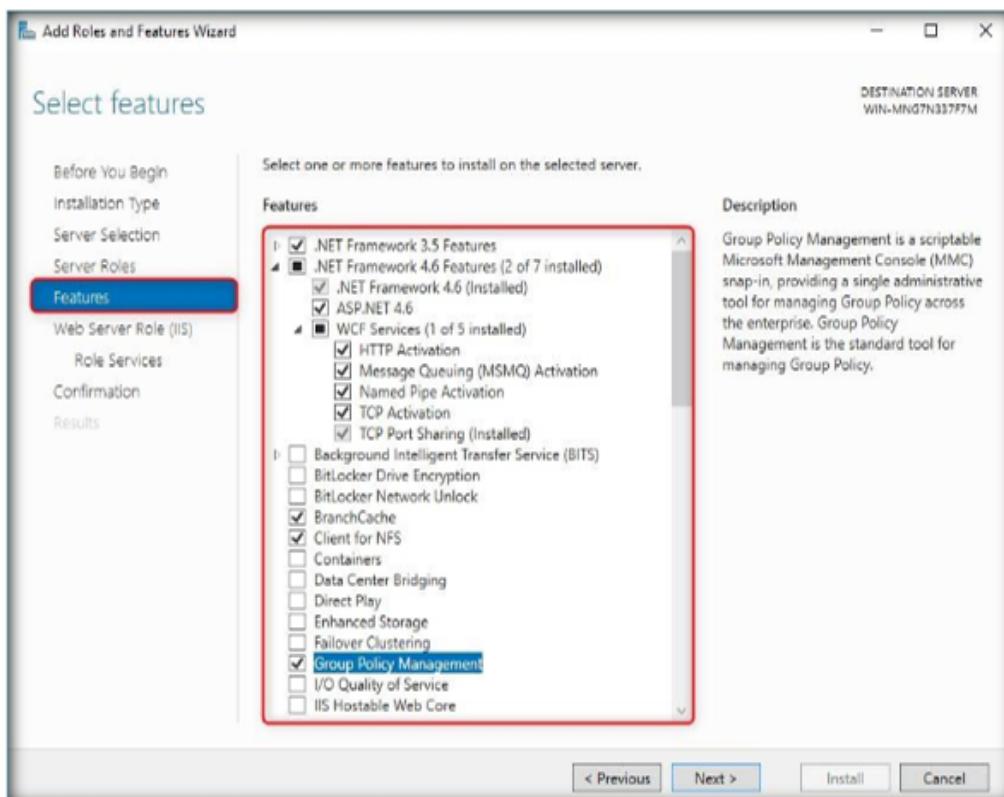
8. The **Add Roles and Features wizard** window will appear. Click **Add Features**.



9. In the **Server Roles** section, the **Web Server (IIS)** option will be checked. Click **Next**.

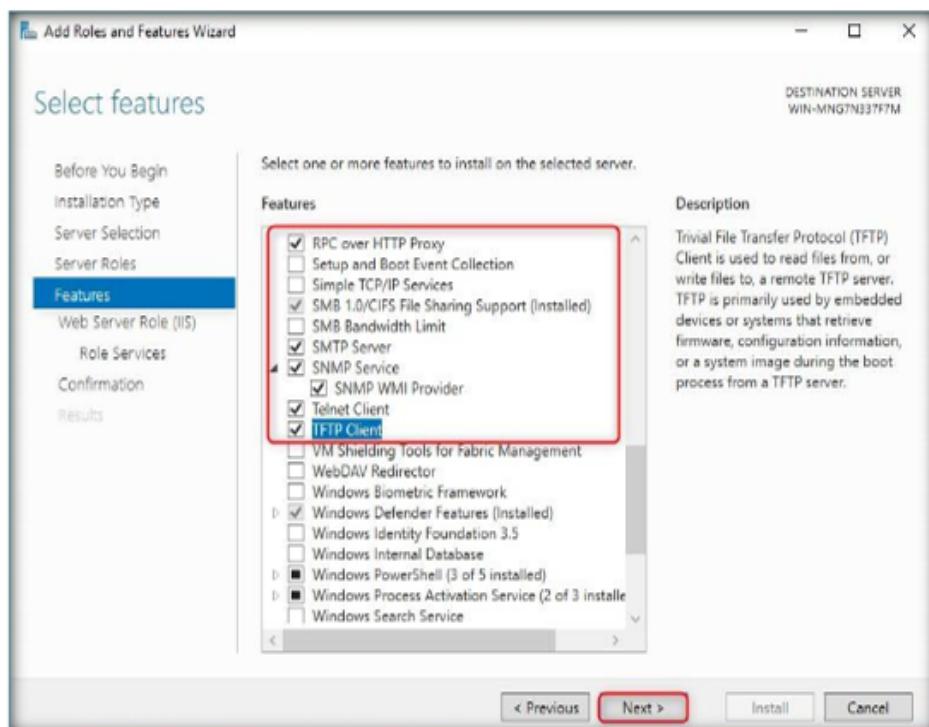


10. The **Features** section will appear. Check the options for **.NET Framework 3.5**, **Branch Cache**, **CGI**, **Client for NFS**, and **Group Policy Management**, as well as all the options under **.NET Framework 4.6**.

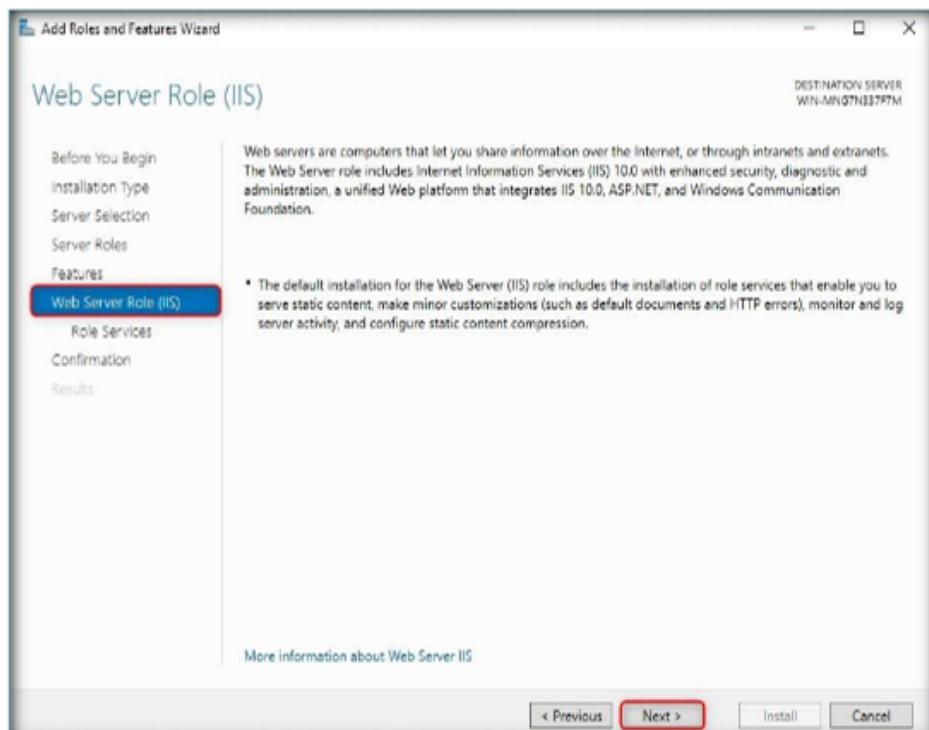


11. Scroll down the section and check the **RPC over HTTP Proxy, SMTP Server, SNMP WMI Provider** under **SNMP Service feature**, **Telnet Client**, and **TFTP Client** roles. Click the **Add Features** button if you get a prompt for the features to be added while selecting a few of the features.

12. Click **Next**.

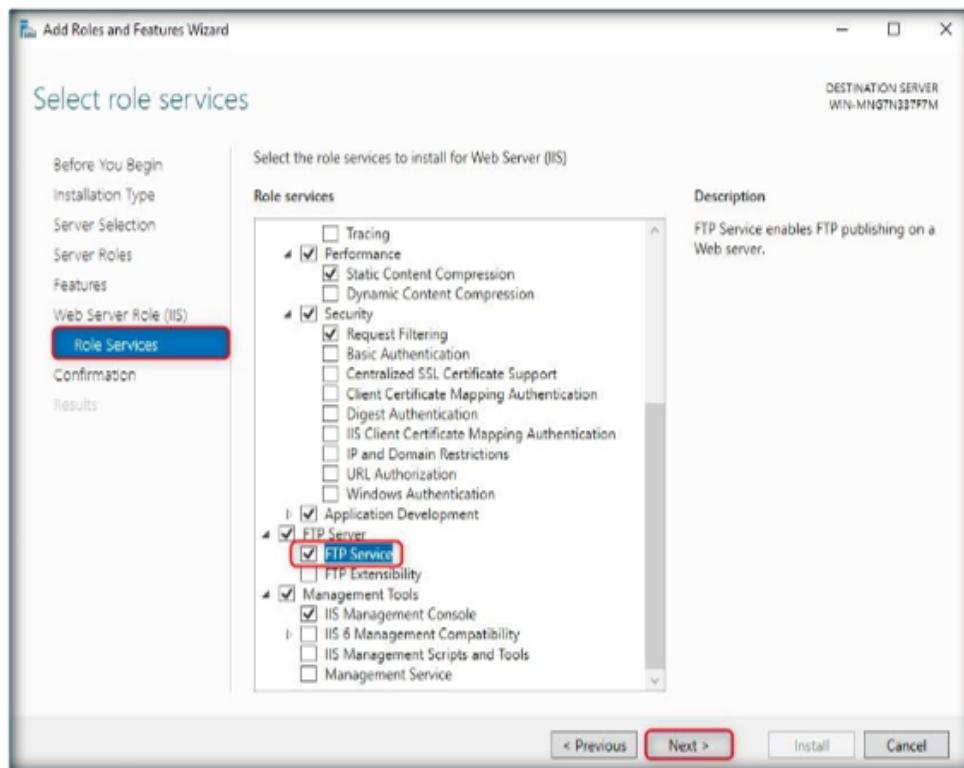


13. The **Web Server Role (IIS)** section will appear in the wizard. Click **Next**.

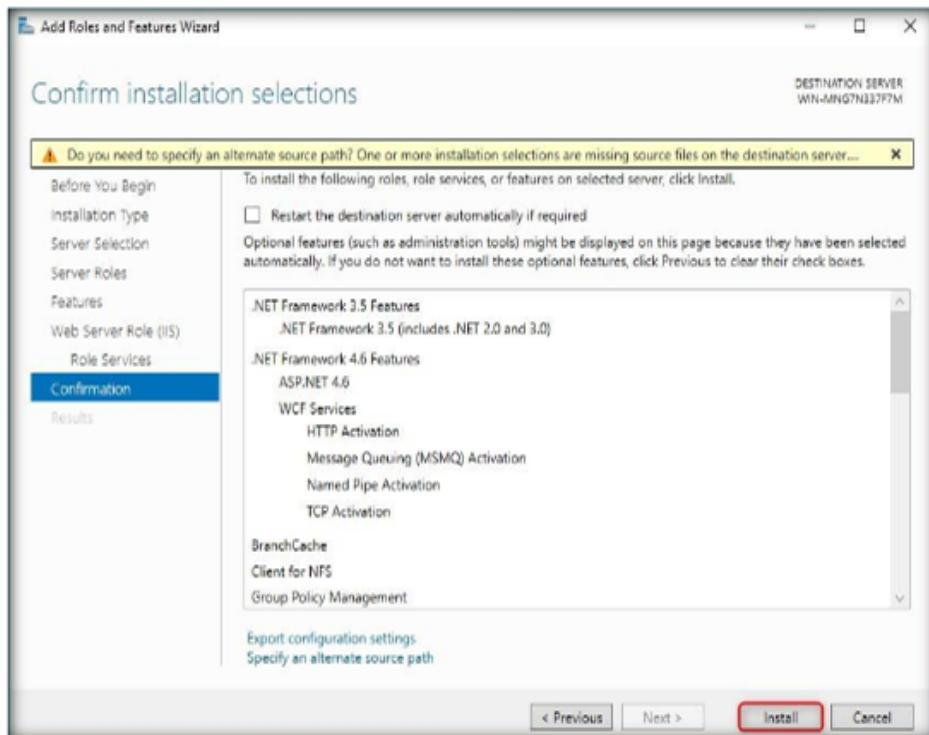


14. The **Role Services** section will appear in the wizard. Scroll down the options beneath **Role services** and check **FTP Service** under the **FTP Server** role.

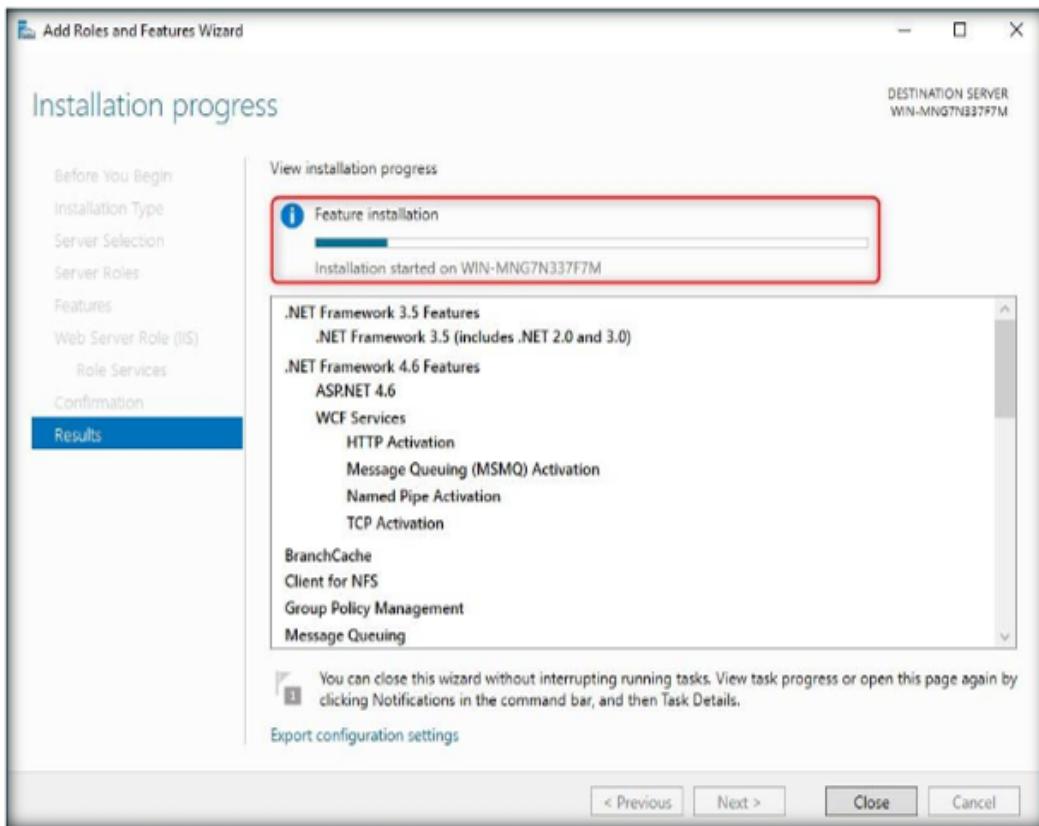
15. Click **Next**.



16. The **Confirmation** section will appear in the wizard. Click **Install** (ignore the warning under the Custom installation selections wizard).



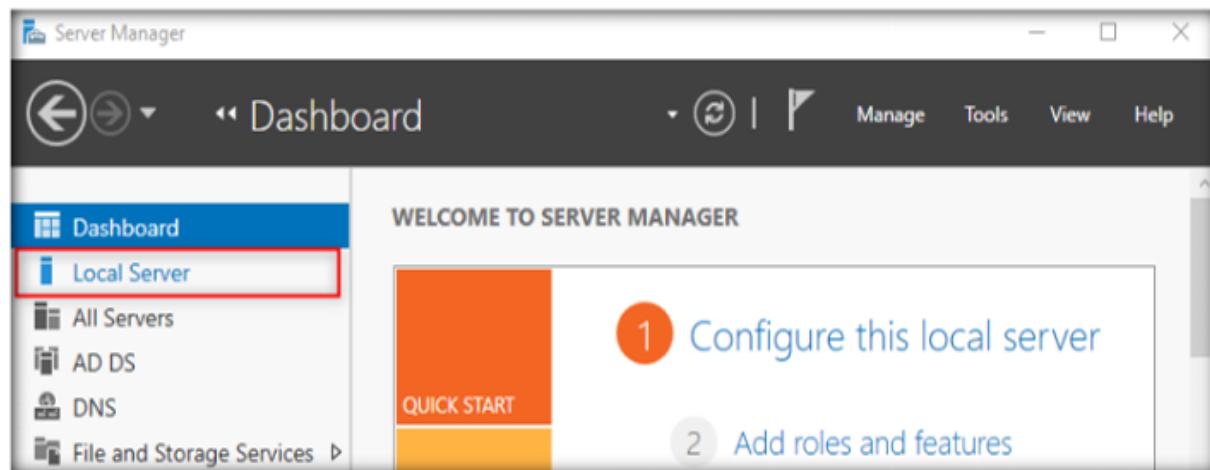
17. In the **Add Roles and Features Wizard**, **View installation progress** will show the installation progress of the features. The installation of the selected roles will take a while to complete.



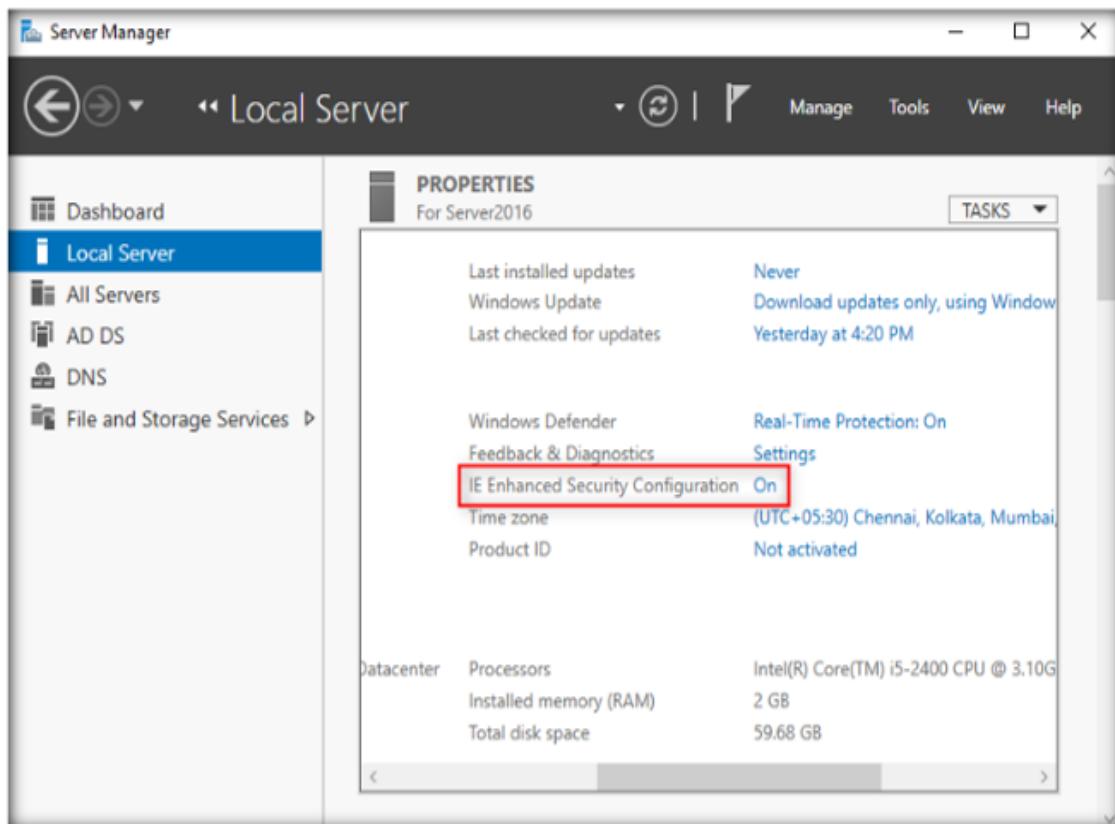
18. After the installation is complete, click **Close** and restart the machine.

CT#3.6: Turning off IE Enhanced Security in Windows Server 2016 VM

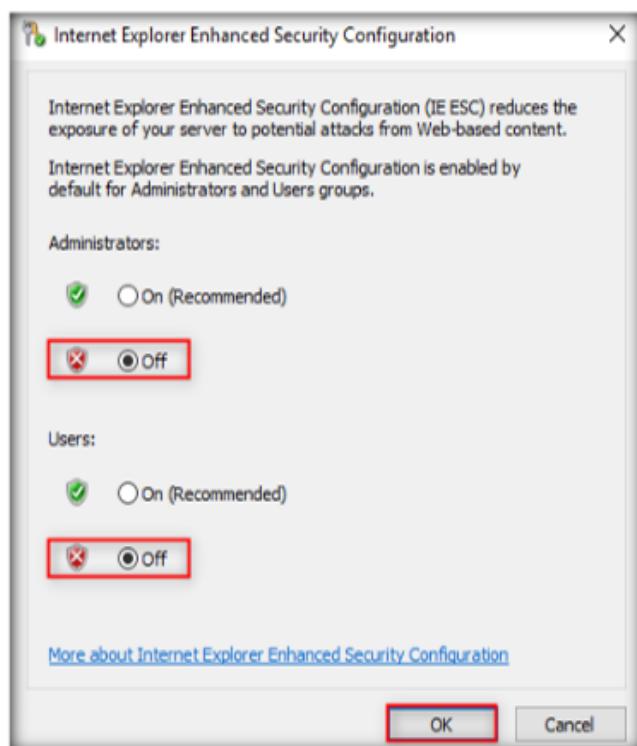
1. Launch **Server Manager** in **Windows Server 2016** VM, and click on **Local Server**.



2. Under **Properties**, click on **IE Enhanced Security Configuration**.

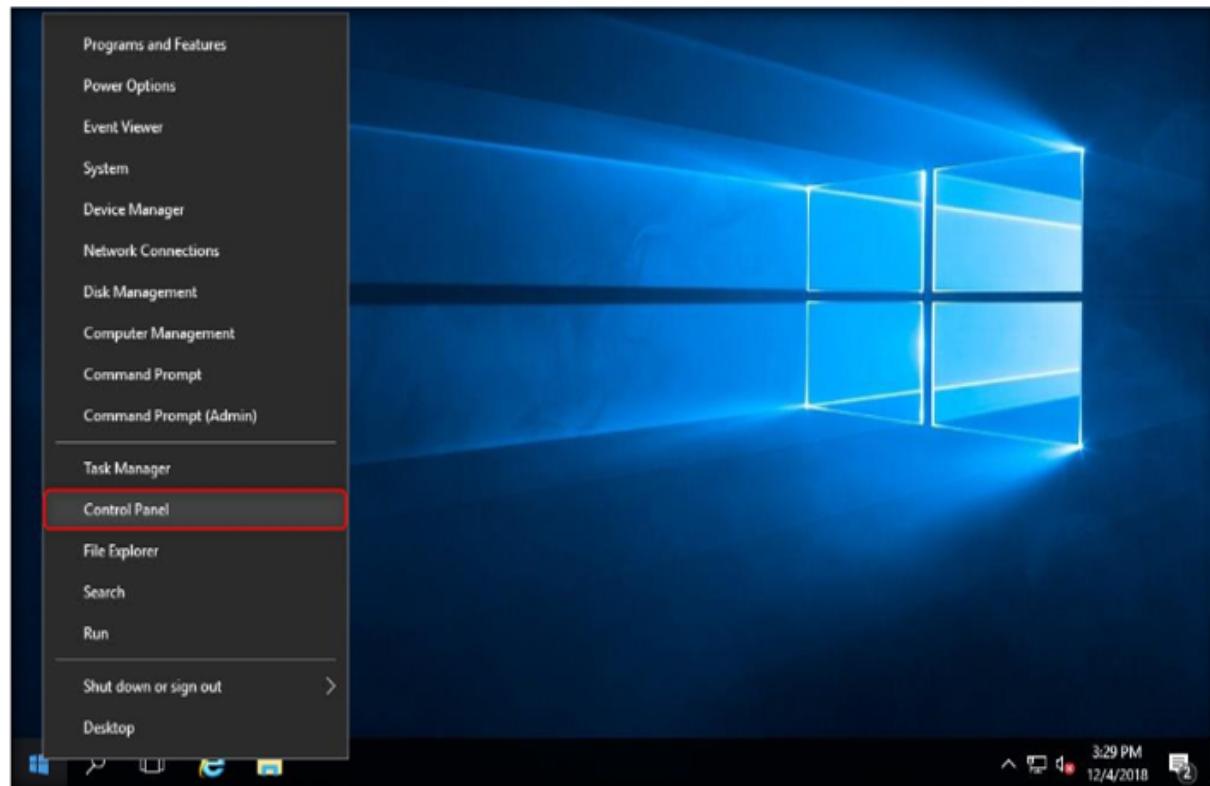


3. The **Internet Explorer Enhanced Security Configuration** window will appear. Select **Off** for both **Administrators** and **Users** and click **OK**.

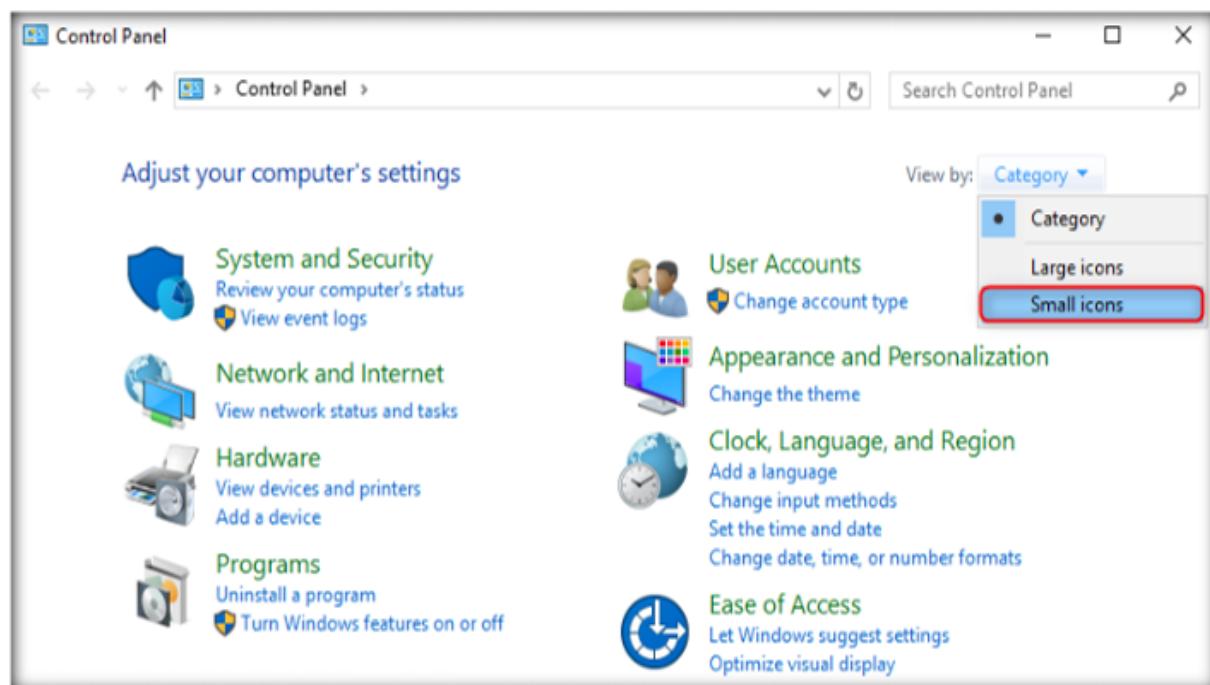


CT#3.7: Configuring Windows Explorer

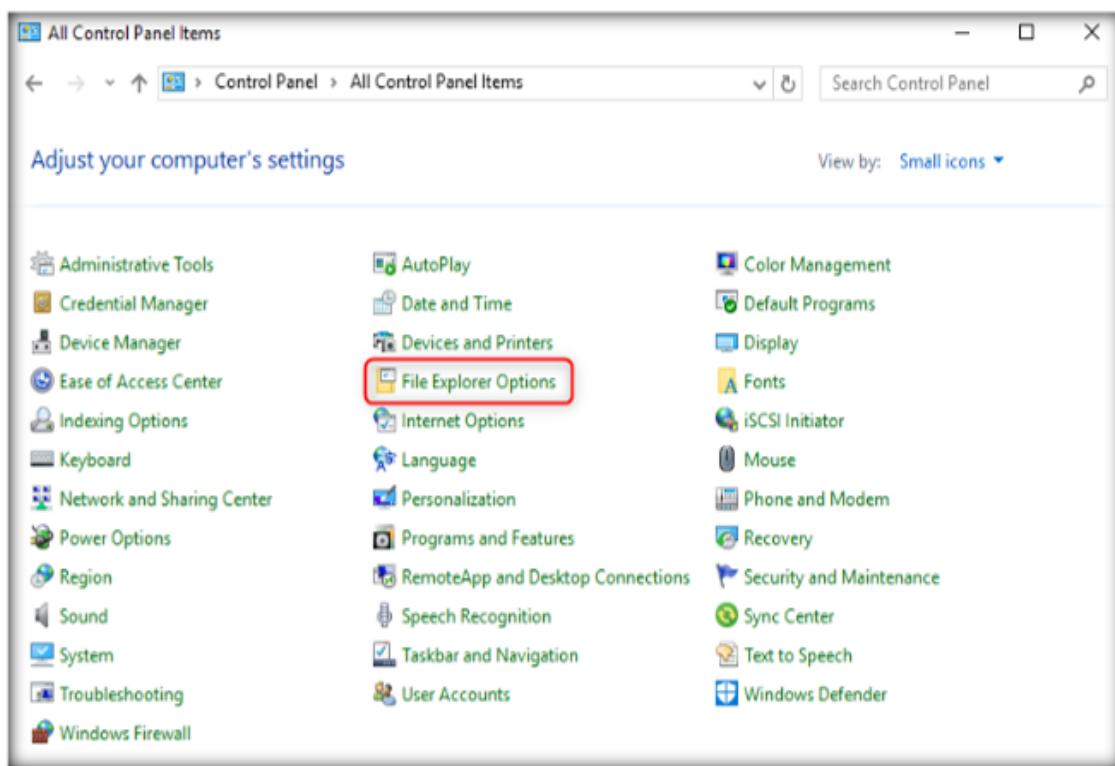
1. Click **Start → Control Panel**.



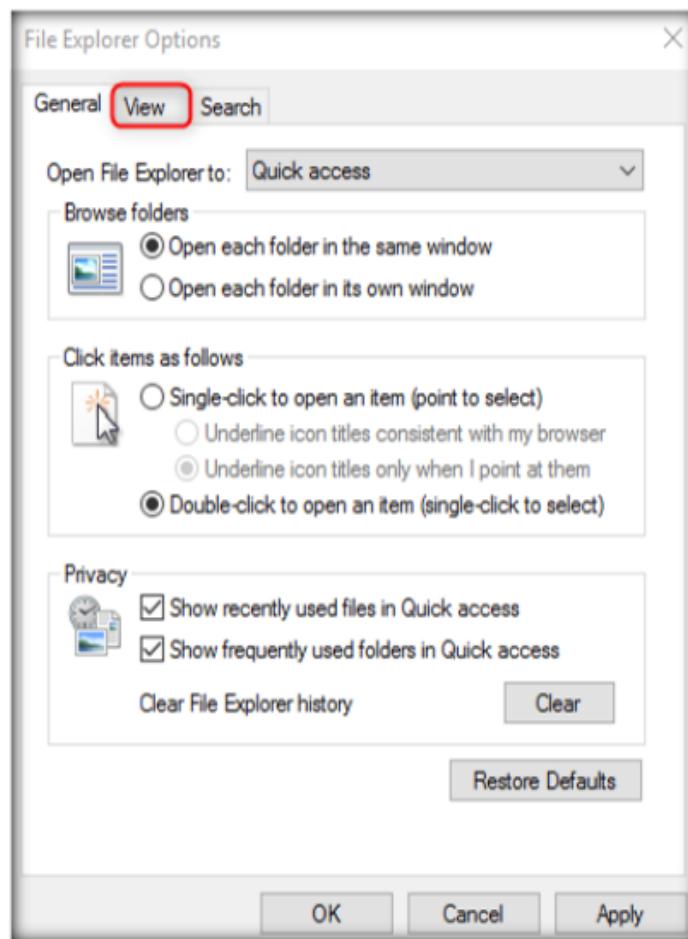
2. The **Control Panel** will appear on the screen. Select **Small icons** from the **Category** drop down list to see all the control panel options.



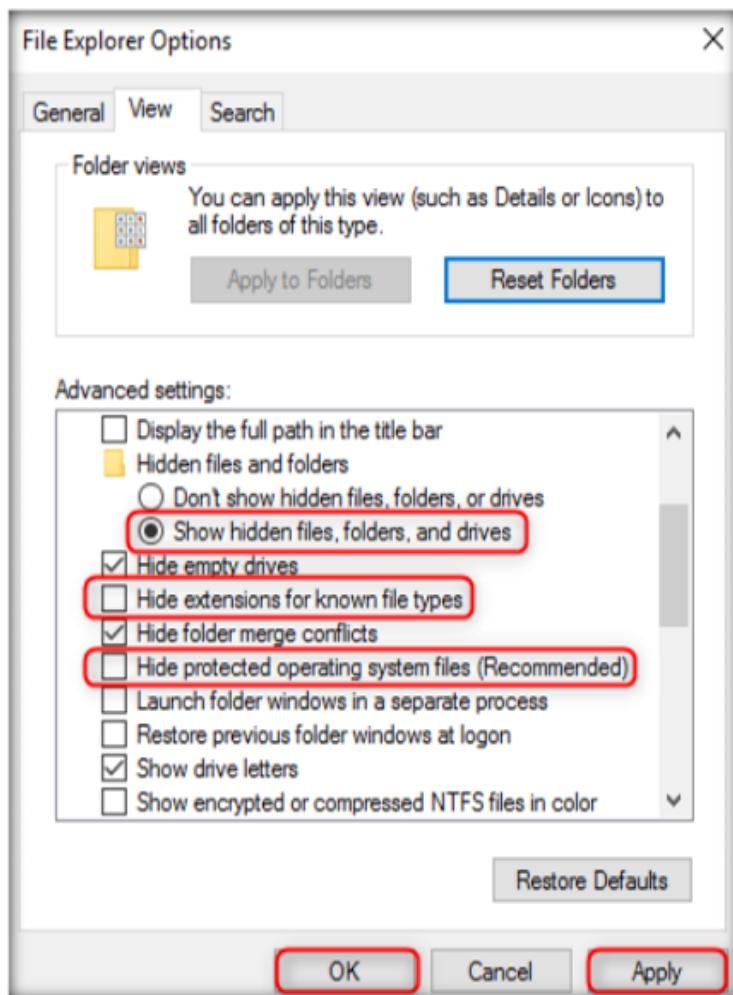
3. Click **File Explorer Options**.



4. The **File Explorer Options** window will appear. Click the **View** tab.



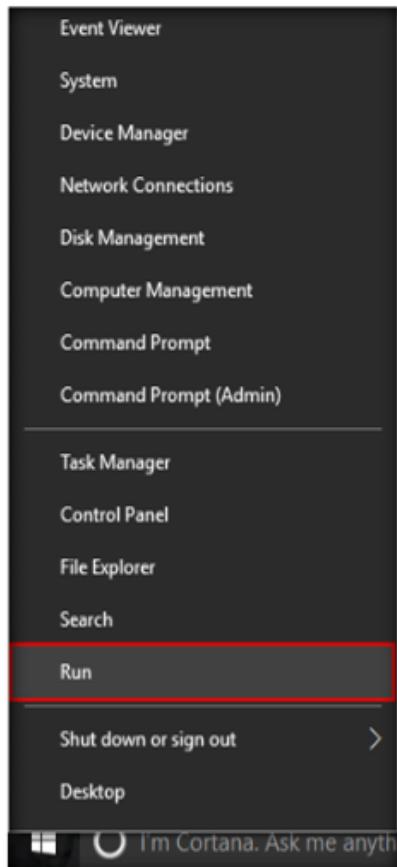
5. In the **Advanced Settings** section, under **Hidden files and folders**, check **Show hidden files and folders**, uncheck **Hide extensions for known file types**, and uncheck **Hide protected operating system files (Recommended)**. Click **Apply** and then click **OK**.



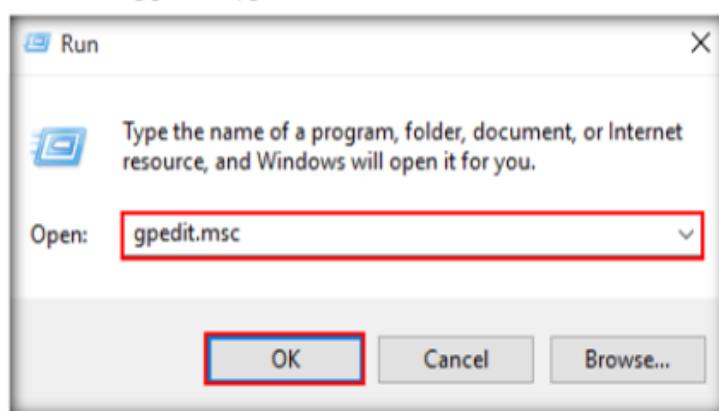
CT#3.8: Turning Off Windows Defender in Windows Server 2016

Note: This is for the purpose of a demonstration; however, in real-time, it is standard practice to enable Windows Defender for Network Security.

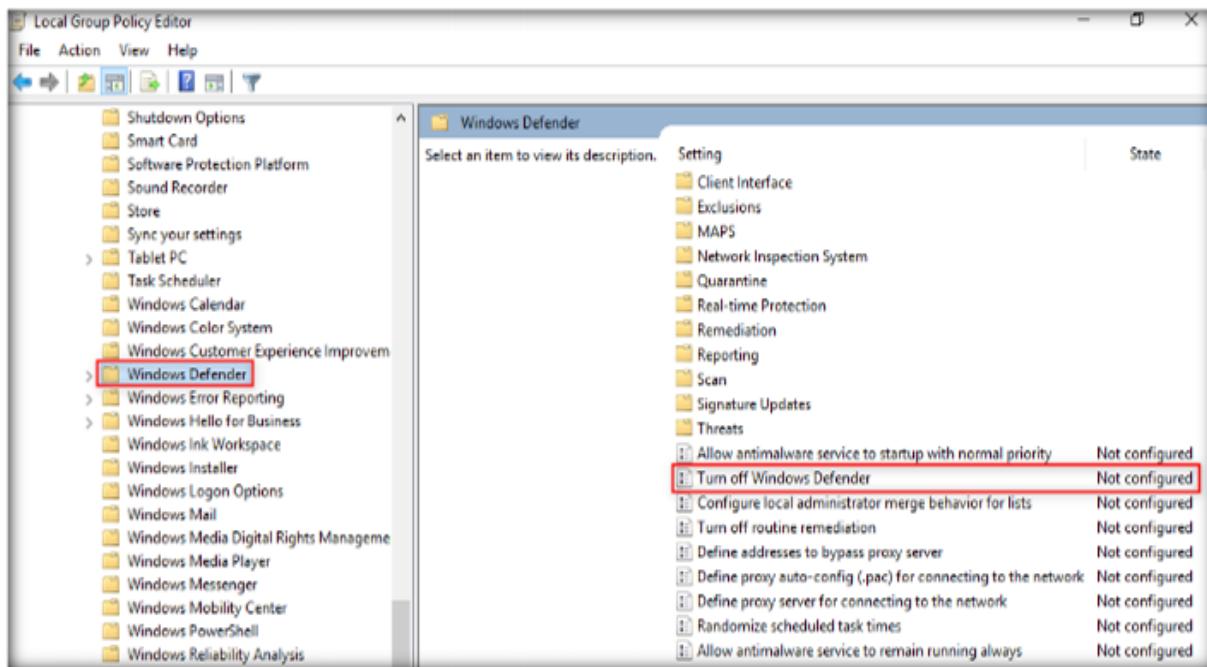
1. Right-click the **Start** icon in the lower-left corner of the **Desktop** and click **Run**.



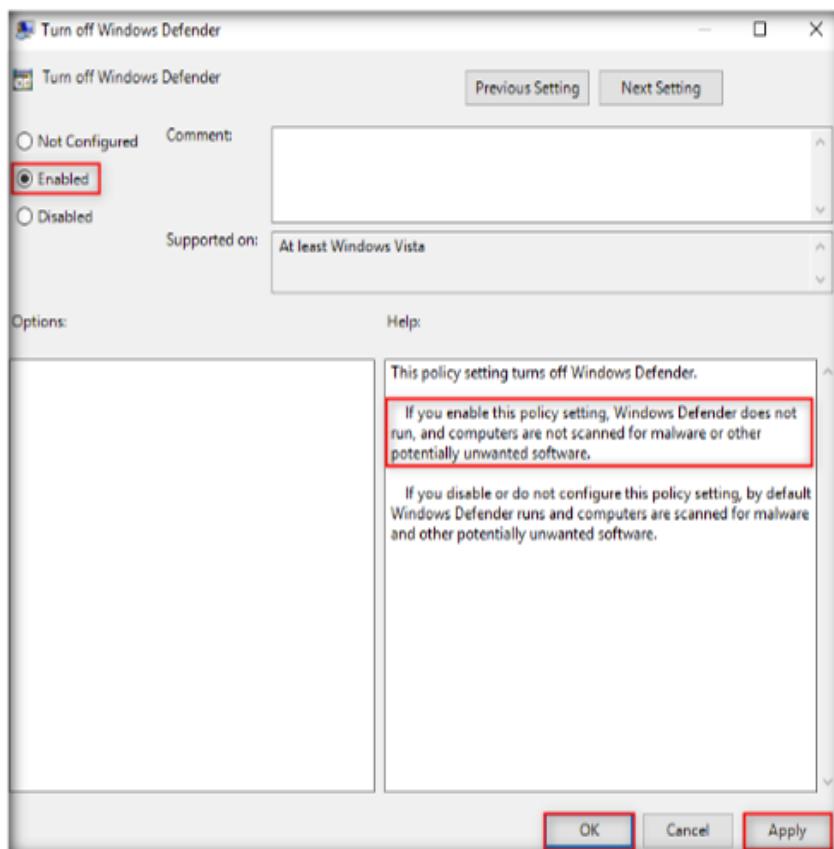
2. The **Run** window will appear. Type **gpedit.msc** in the **Open** field and click **OK**.



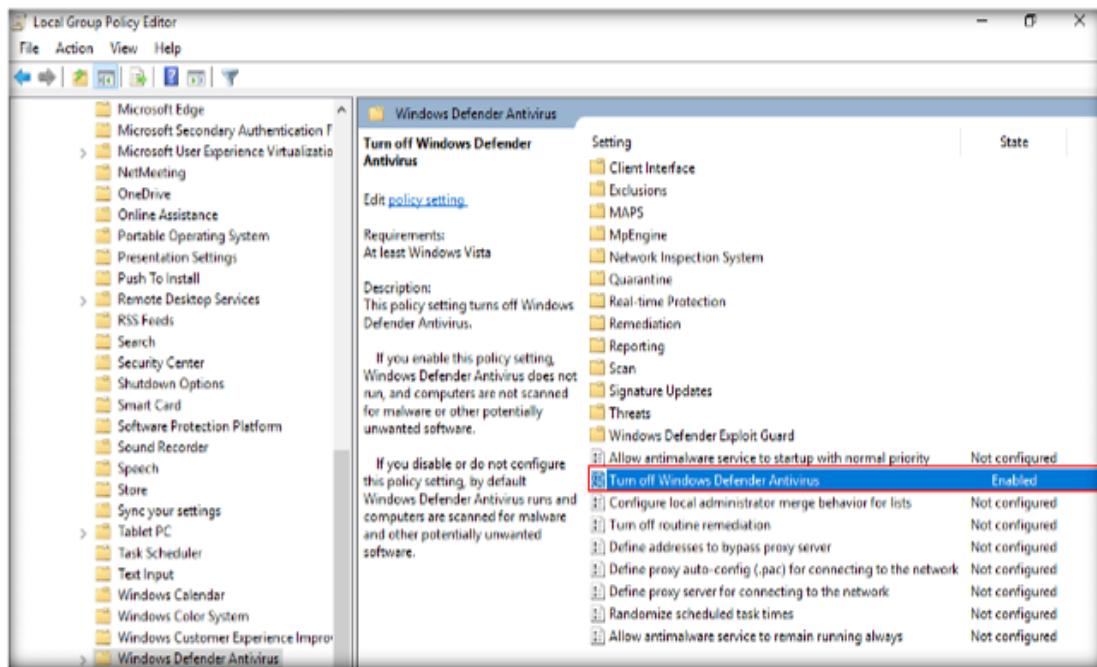
3. The **Local Group Policy Editor** window will appear. In the left pane, navigate to **Computer Configuration** → **Administrative Templates** → **Windows Components** → **Windows Defender**. Double-click the **Turn off Windows Defender** policy in the right pane of the window (as shown in the screenshot below).



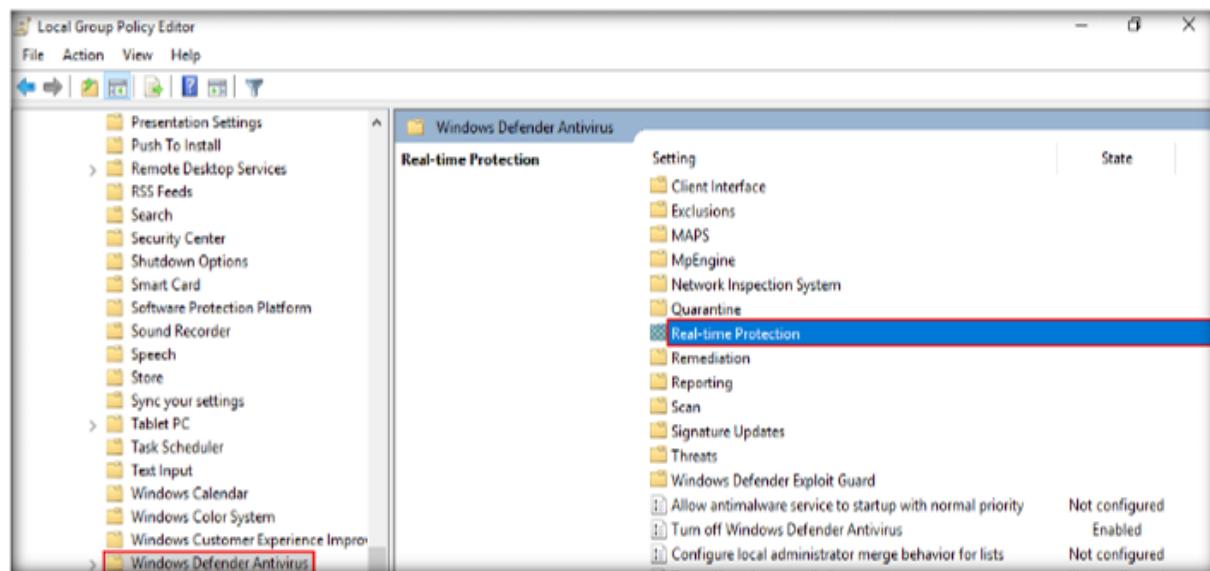
4. The **Turn off Windows Defender** window will appear. Select the **Enabled** radio button and click **Apply** and **OK** to turn off Windows Defender.



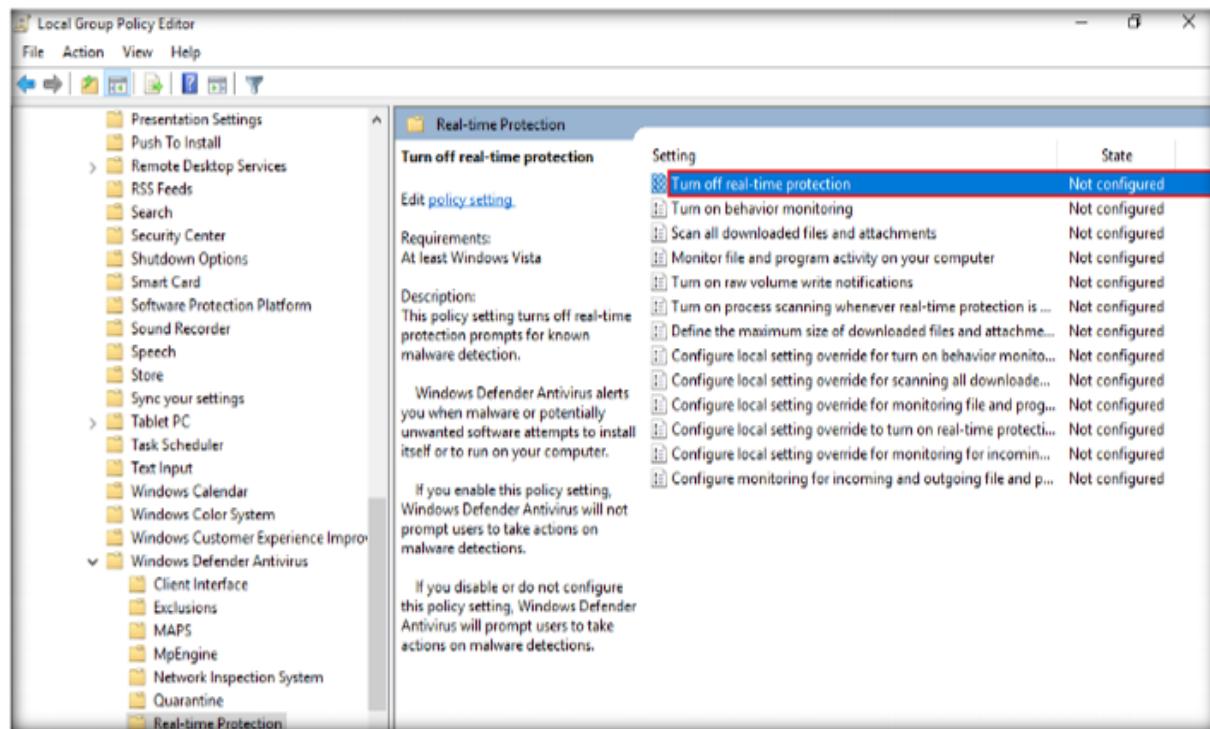
5. Windows Defender Antivirus will be turned off (as shown in the screenshot below).



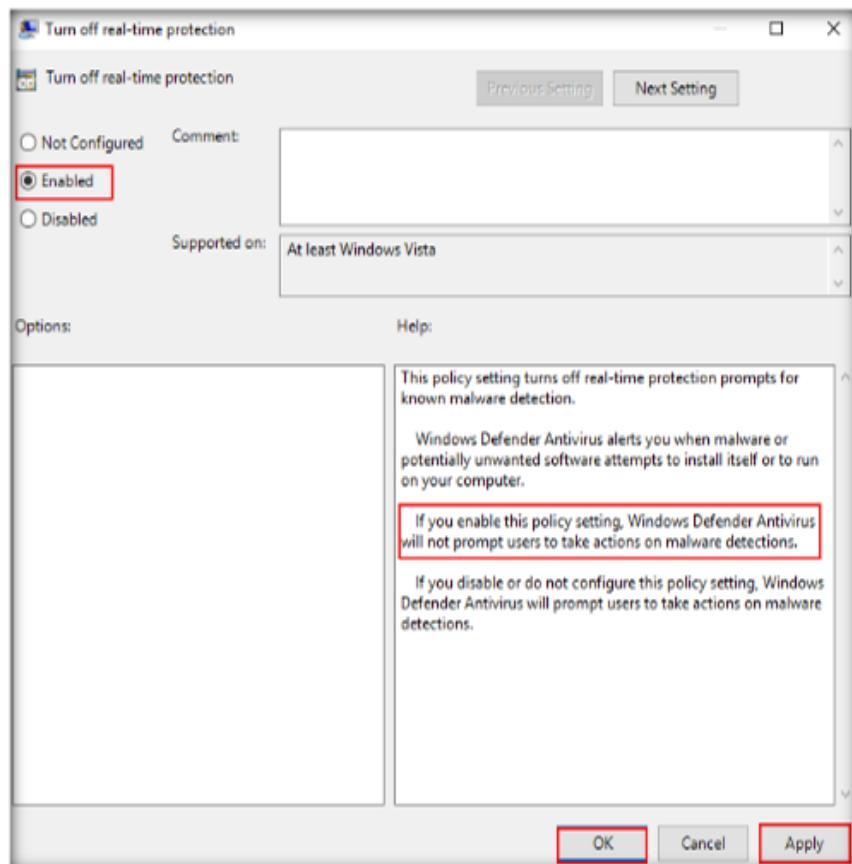
6. Double click **Real-time Protection** in the right-hand pane.



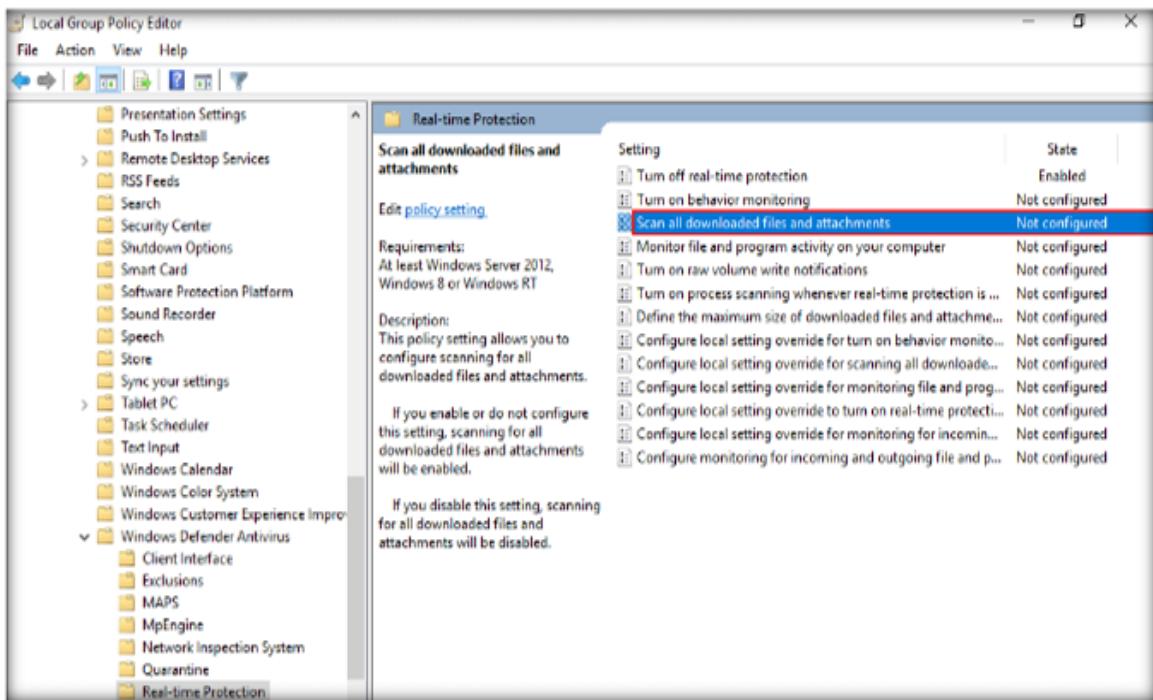
7. Double-click **Turn off real-time protection** policy.



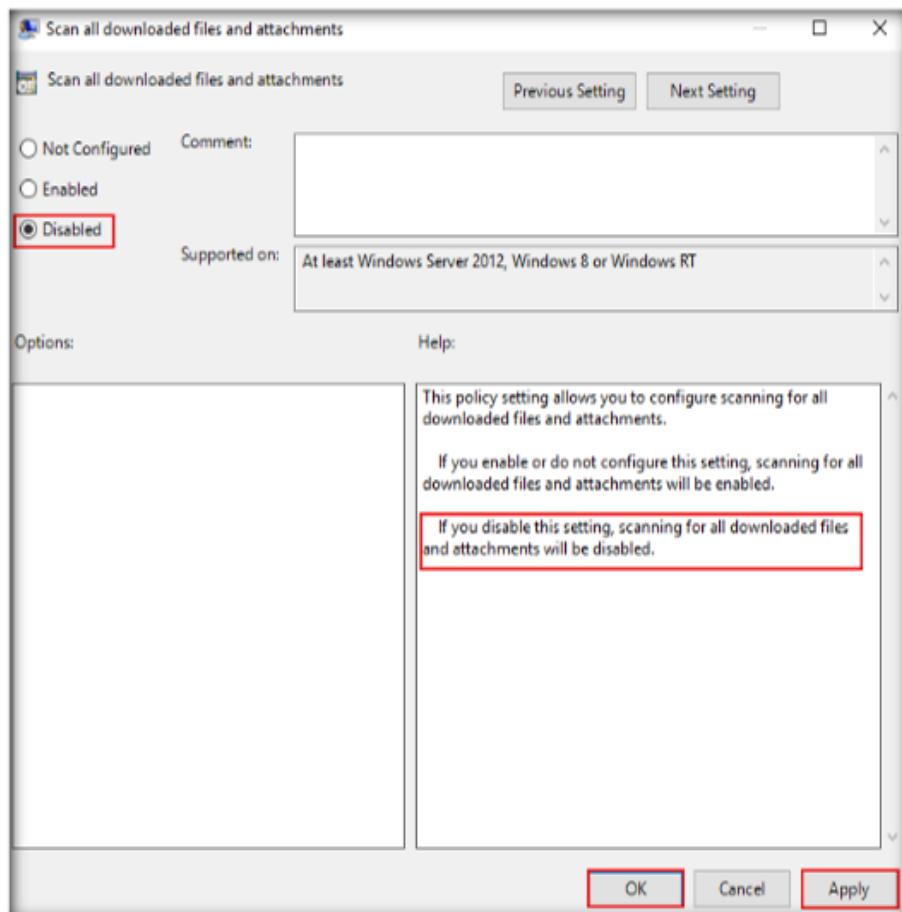
8. The **Turn off real-time protection** policy window will appear. Select the **Enabled** radio button and click **Apply** and **OK**.



9. Double-click the **Scan all downloaded files and attachments** policy.



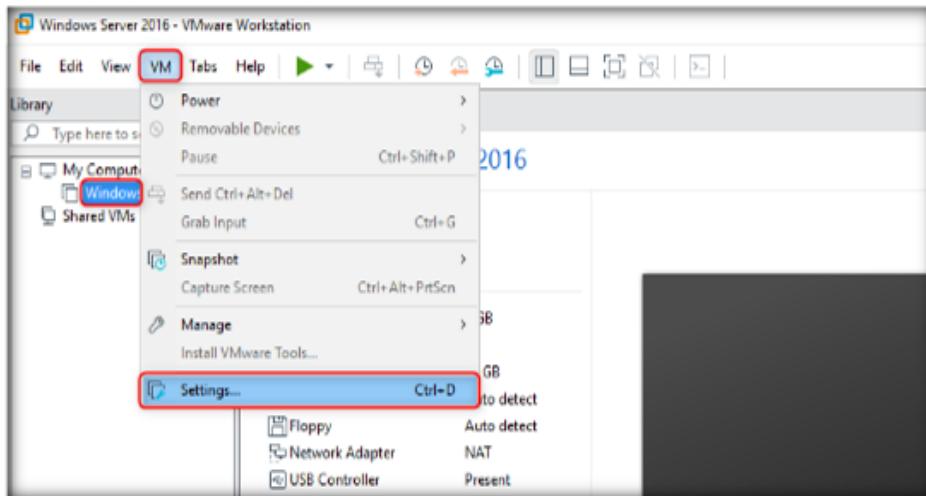
10. The **Scan all downloaded files and attachments** policy window will appear. Select the **Disabled** radio button and click **Apply** and **OK**.



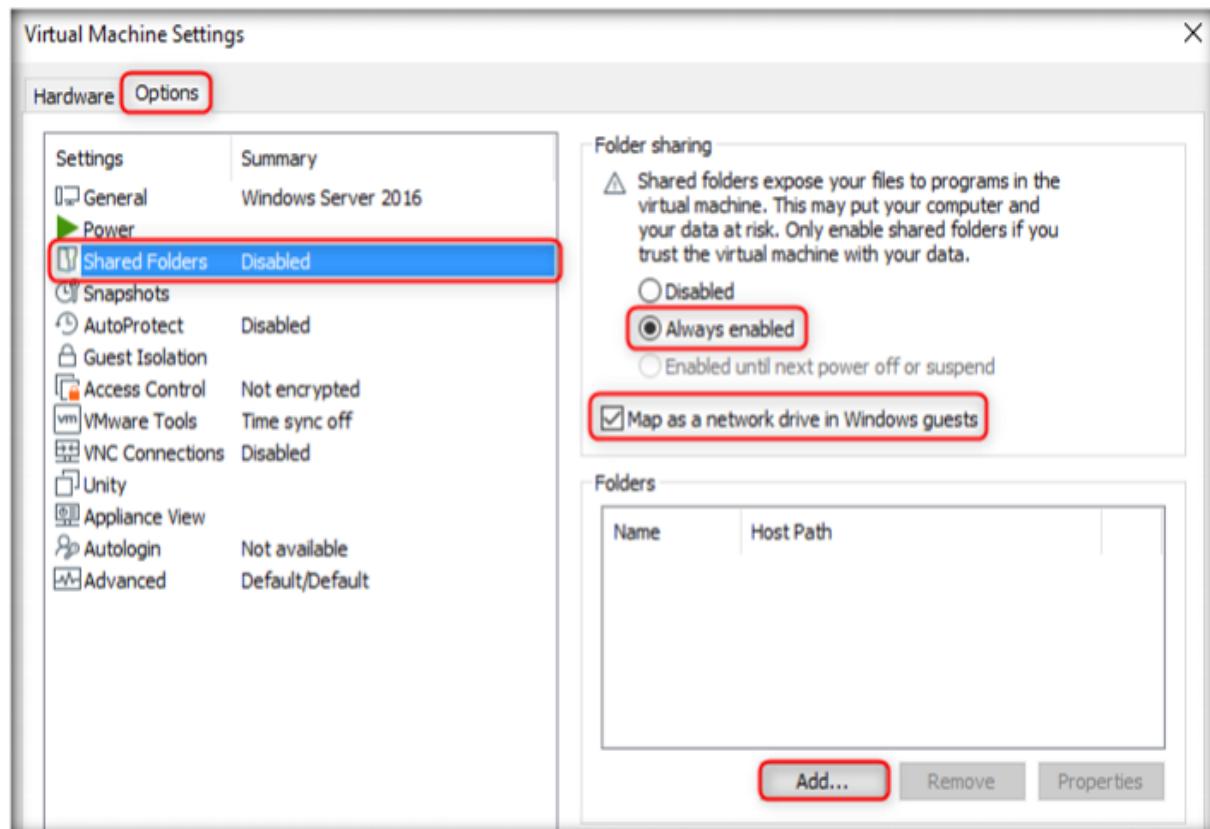
11. Close all the windows that were open.

CT#3.9: Mapping the ECIH-Tools Folder from the Host Machine to the Windows Server 2016 VM

1. First, make sure that all the **Windows Server 2016** virtual machines are turned off.
2. Select the VM from the left pane, go to the **VM** menu, and click **Settings**.



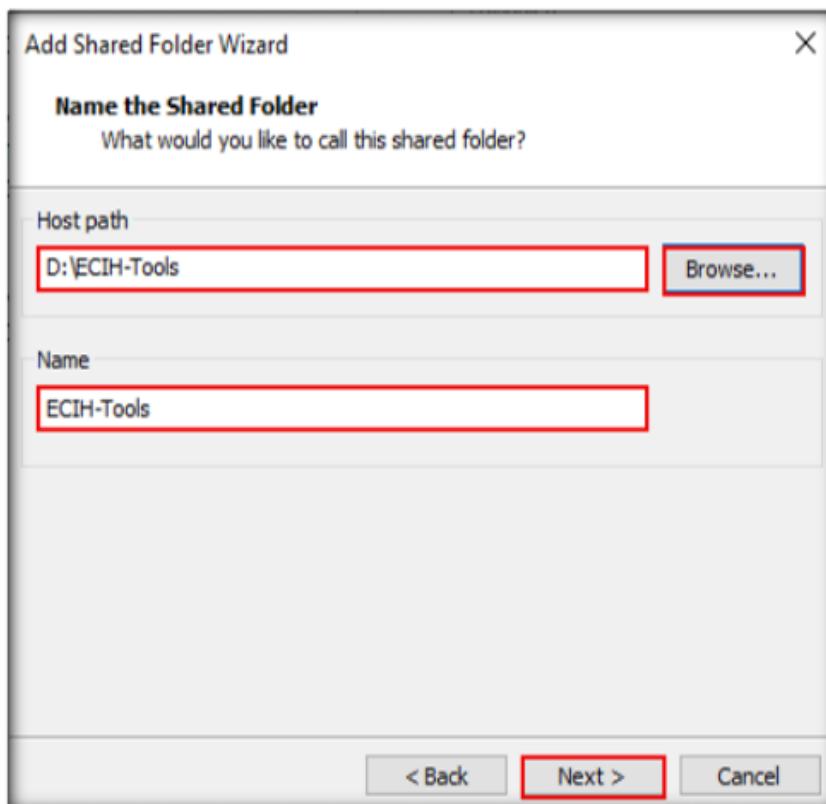
3. Go to the **Options** tab in the **Virtual Machine Settings** window. Select **Shared Folders** from the left-hand pane, check the **Always enabled** radio button, check **Map as a network drive in Windows guests**, and click **Add**.



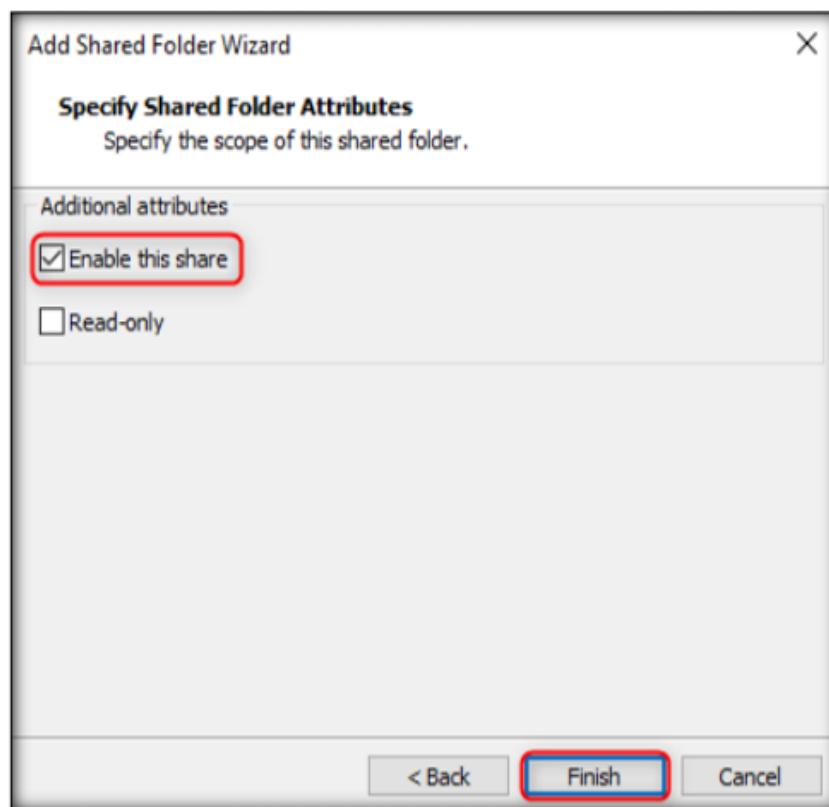
4. Click **Next** in the **Welcome to the Add Shared Folder Wizard**.



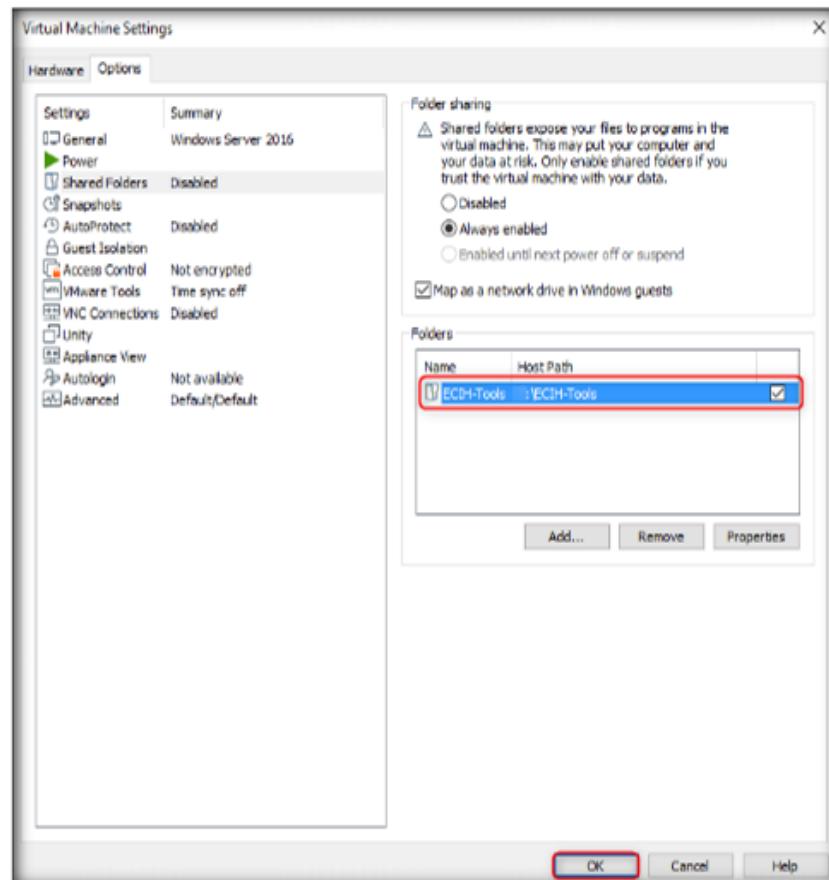
5. **Browse** to the **ECIH-Tools** directory in your host system and click **Next**.



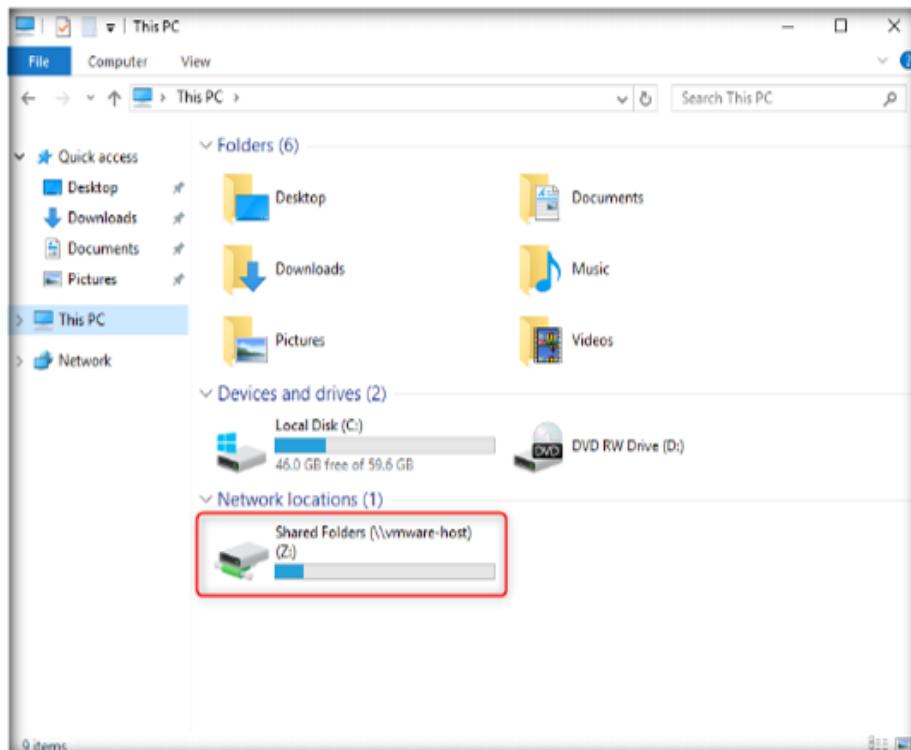
6. Make sure that the **Enable this share** checkbox is selected and click **Finish**.



7. The shared folder will be added as shown below:

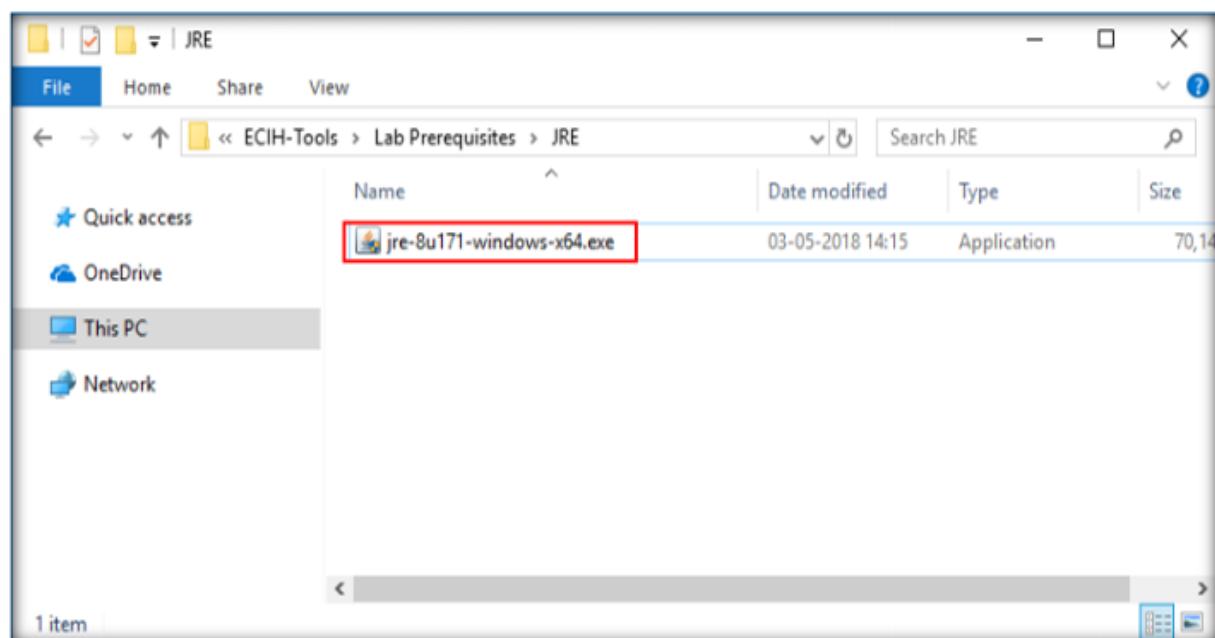


8. Launch the **Windows Server 2016** virtual machine and log in as **Administrator**. Close the **Server Manager** window and open **File Explorer**. **Shared Folders** will appear in the **Windows Explorer**.



CT#3.10: Installing JRE in the Windows Server 2016 VM

1. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\JRE** in **Windows Server 2016** VM and double-click **jre-8u171-windows-x64**. If a user control dialogue box appears, then click **Yes**.



2. The **Java Setup - Welcome** window will appear. Click **Install** to start the installation.



3. After installation, the **Java Setup - Complete** window will appear. Click **Close**.



CT#3.11: Installing Web Browsers in the Windows Server 2016 VM

1. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\Web Browsers** in the **Windows Server 2016** VM.
2. Open the **Web Browsers** folder.
3. Follow **wizard-driven** installation steps and install **Firefox** and **Chrome** web browsers.
4. You can also download the **latest** versions of the web browsers from respective **vendors**.

CT#3.12: Installing Notepad++ in the Windows Server 2016 VM

1. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\Notepad++** in the **Windows Server 2016** VM.
2. Open the **Notepad++** folder and double-click **npp.7.5.4.Installer.exe**.
5. Follow the wizard-driven installation steps to install Notepad++.
6. You can also download the latest version of Notepad++ from its vendor site.

CT#3.13: Installing WinRAR in the Windows Server 2016 VM

1. Navigate to the **Z:\ECIH-Tools\Lab Prerequisites\WinRAR** folder.
3. Double click on **winrar-x64-550.exe** to begin the installation.
4. The **WinRAR setup** window will appear.
5. In the **WinRAR 5.50** setup window, click **Install**.
6. Complete the **install** by choosing **defaults** throughout the installation process.
7. After completing the installation, the installation **location** of the WinRAR files window will open **automatically**.
8. **Close** the window.

CT#3.14: Installing Adobe Reader in the Windows Server 2016 VM

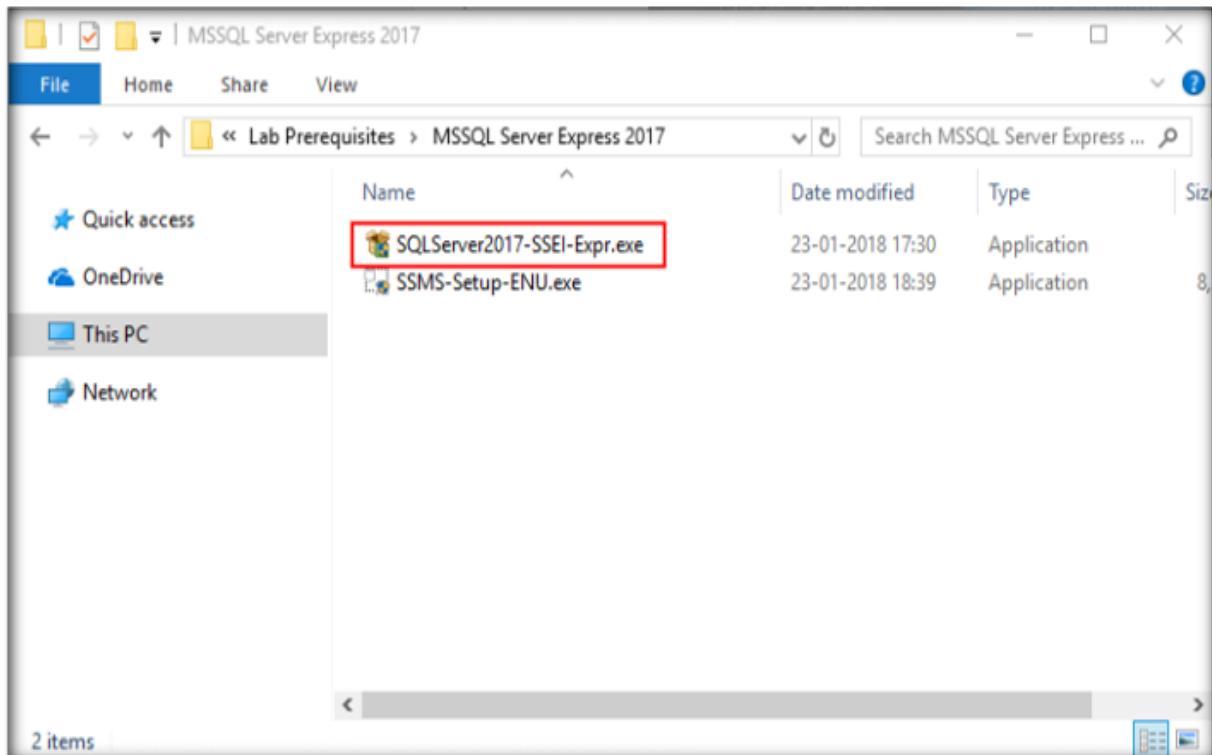
1. Log in to VMs as Administrator.
2. Navigate to the **Z:\ECIH-Tools\Lab Prerequisites\Adobe Reader** folder.
3. Alternatively, you may download the latest version of **Adobe Reader** from the **Adobe** website.
4. Double-click **readerdc_en_ka_cra_install.exe** to begin the installation.
5. Follow the wizard-driven installation steps and **complete** the install by choosing the **default** options throughout the installation process.
6. Similarly install in the **Windows 10** VM.

CT#3.15: Installing Office 16 in the Windows Server 2016 VM

1. Log in to your Windows Server 2016 and Windows 10 VMs as Administrator.
2. If you already have Office 16 installed, then use it; otherwise, download the **Office 16** trial version from the Microsoft website.

CT#3.16: Installing MS SQL Server 2017 Express Edition on the Windows Server 2016 VM

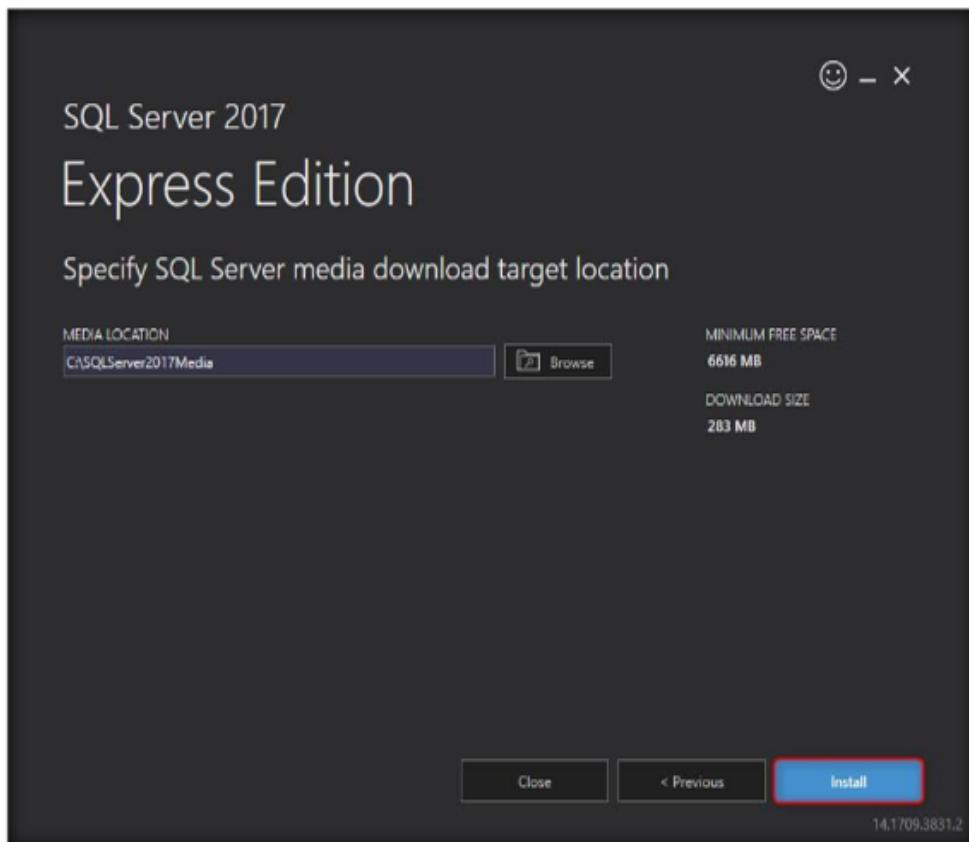
1. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\MSSQL Server Express 2017** and double-click **SQLServer2017-SSEI-Expr.exe**.



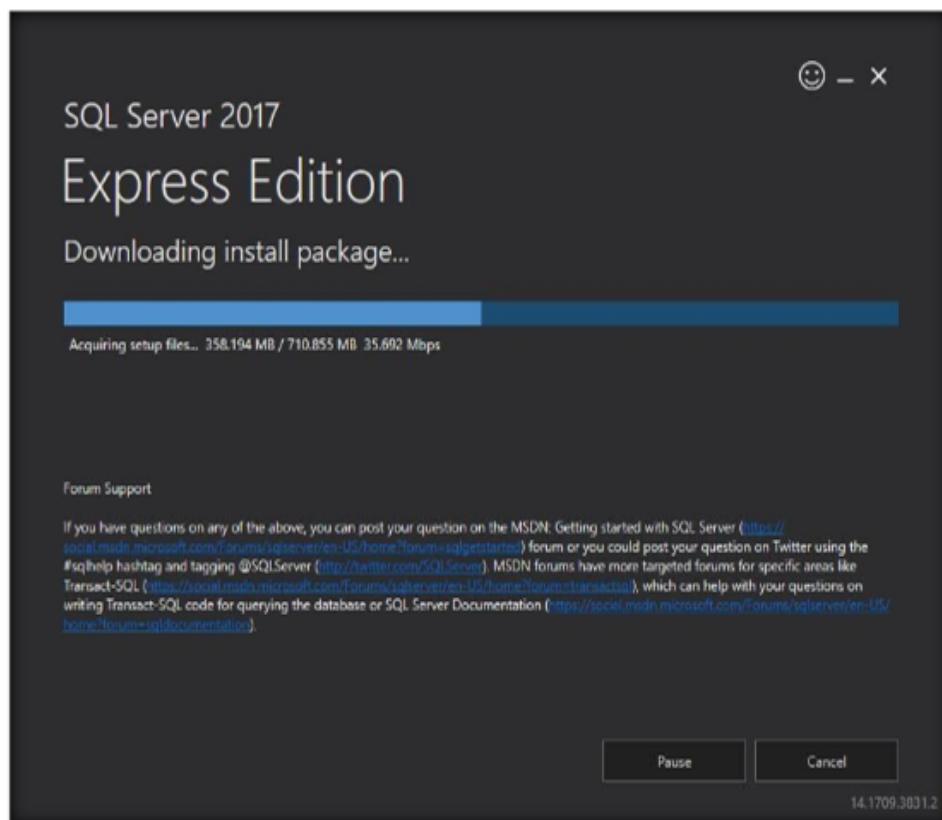
2. If a **User Account Control** pop-up appears, click **Yes**.
3. The **SQL Server 2017** window will appear. Click **Custom**.



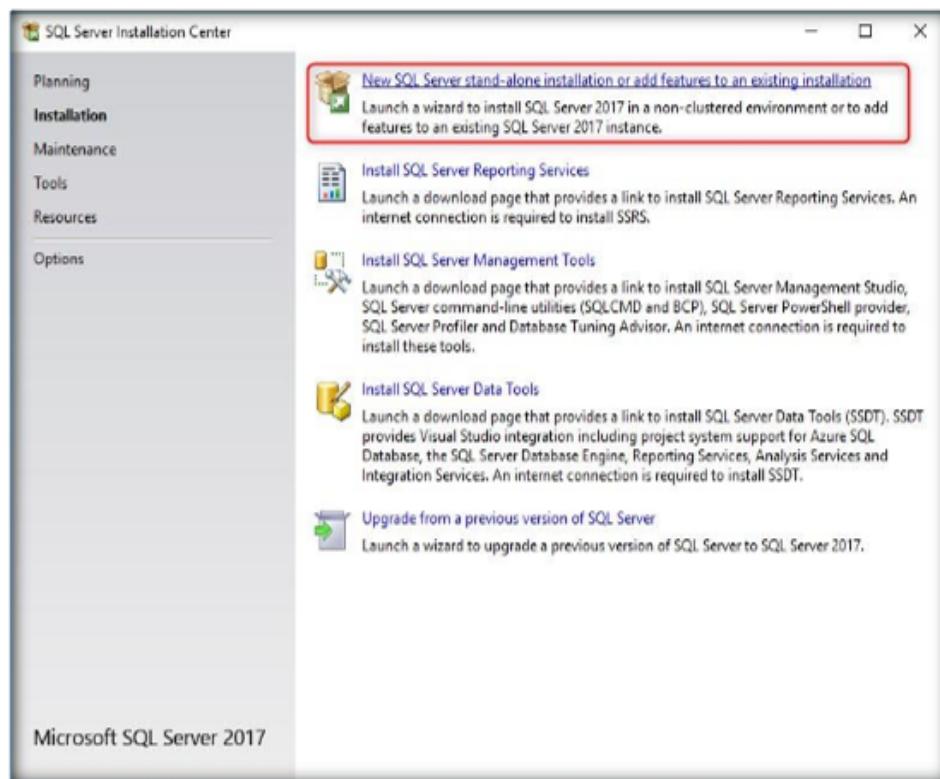
4. The Specify SQL Server media download target location section will appear. Click **Install**.



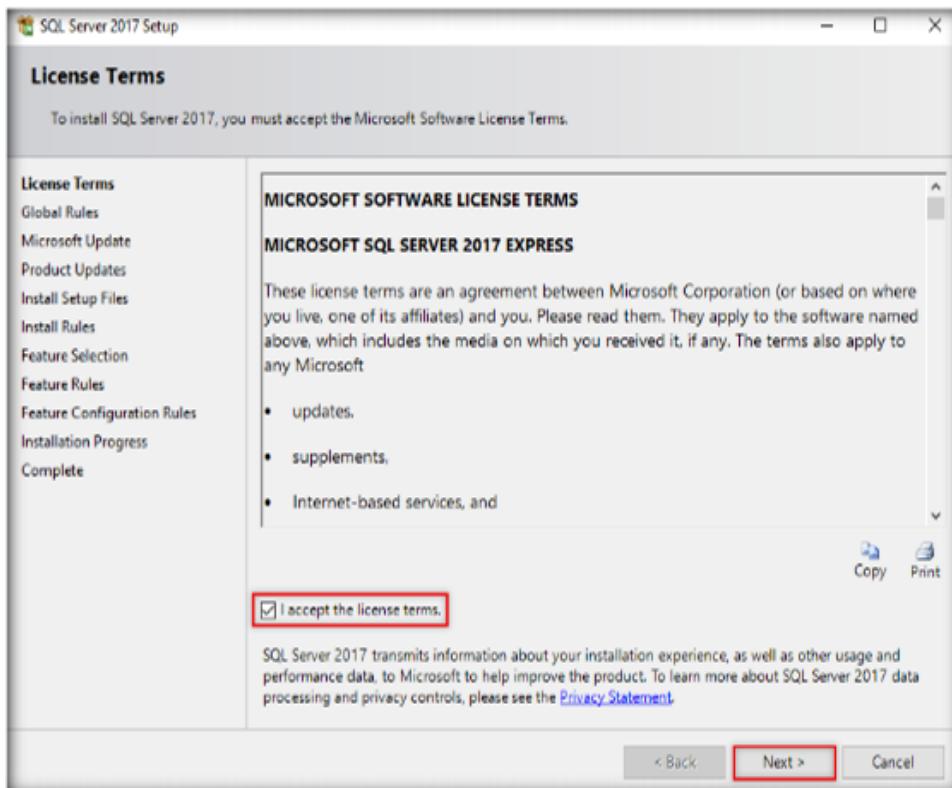
5. The program will start downloading the setup files. Wait for the Installation Center to launch.



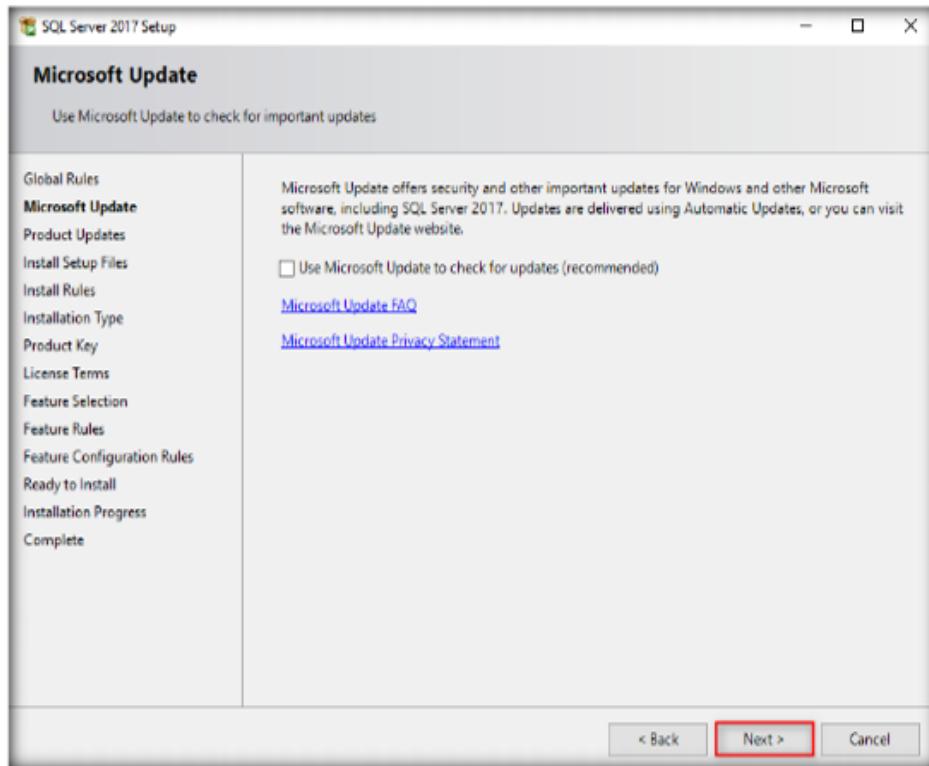
6. **SQL Server Installation Center** window will appear with the **Installation** section displayed by default. Click **New SQL Server stand-alone installation or add features to an existing installation** and wait for a few moments.



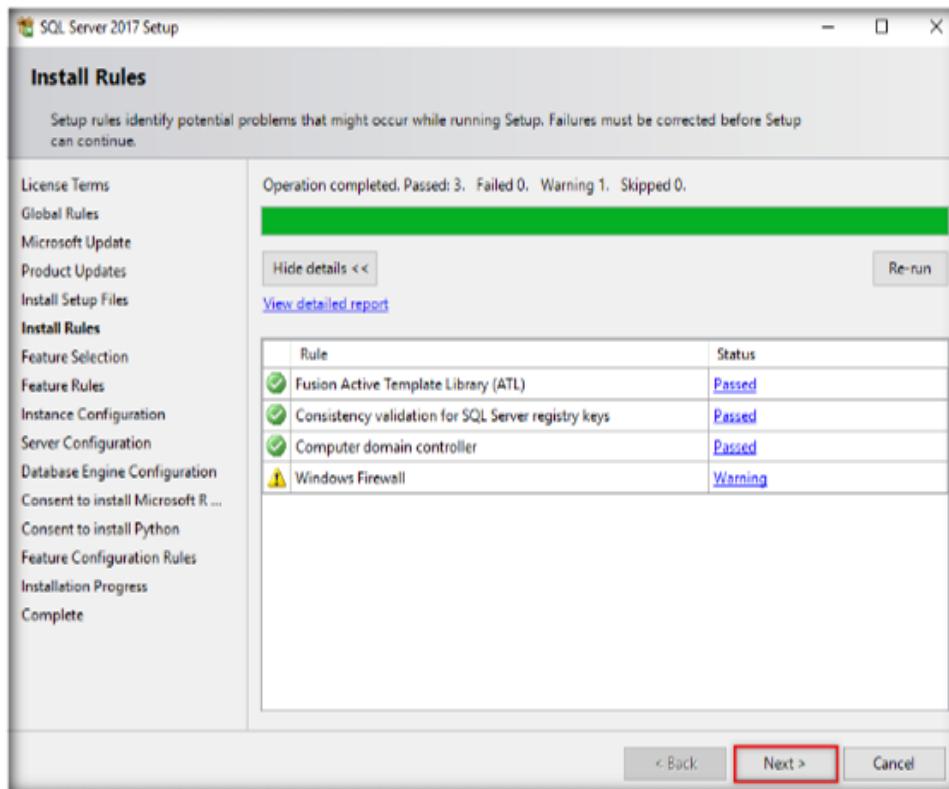
7. The **License Terms** wizard will appear. Check **I accept the license terms** option and click **Next**.



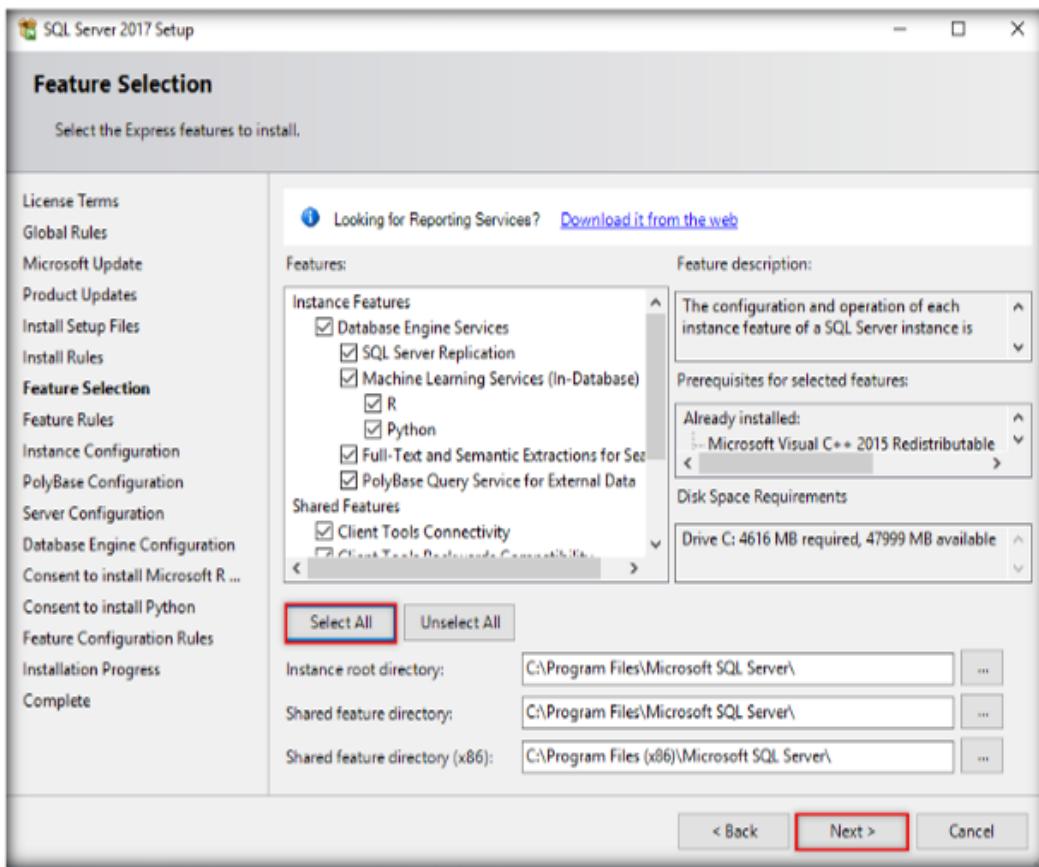
8. The **Microsoft Update** section of the **SQL Server 2017 Setup** window will appear. Click **Next**.



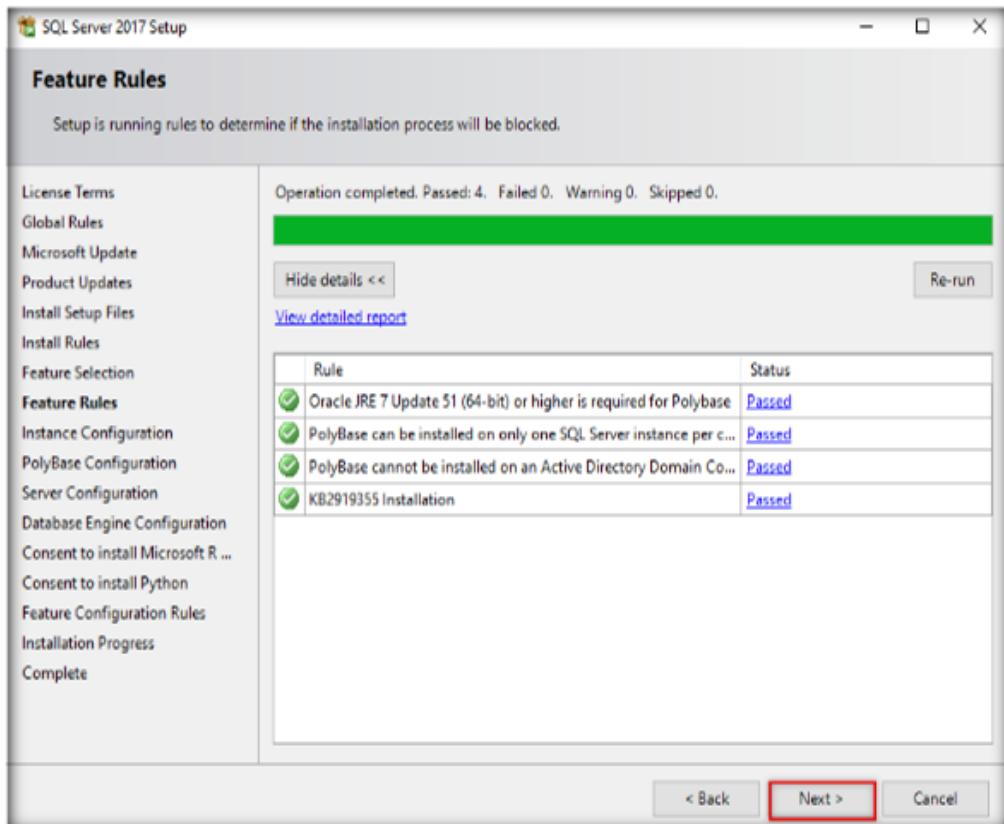
9. **Install Rules** verifies the system state of your computer before Setup continues. After verification is finished, click **Next**.



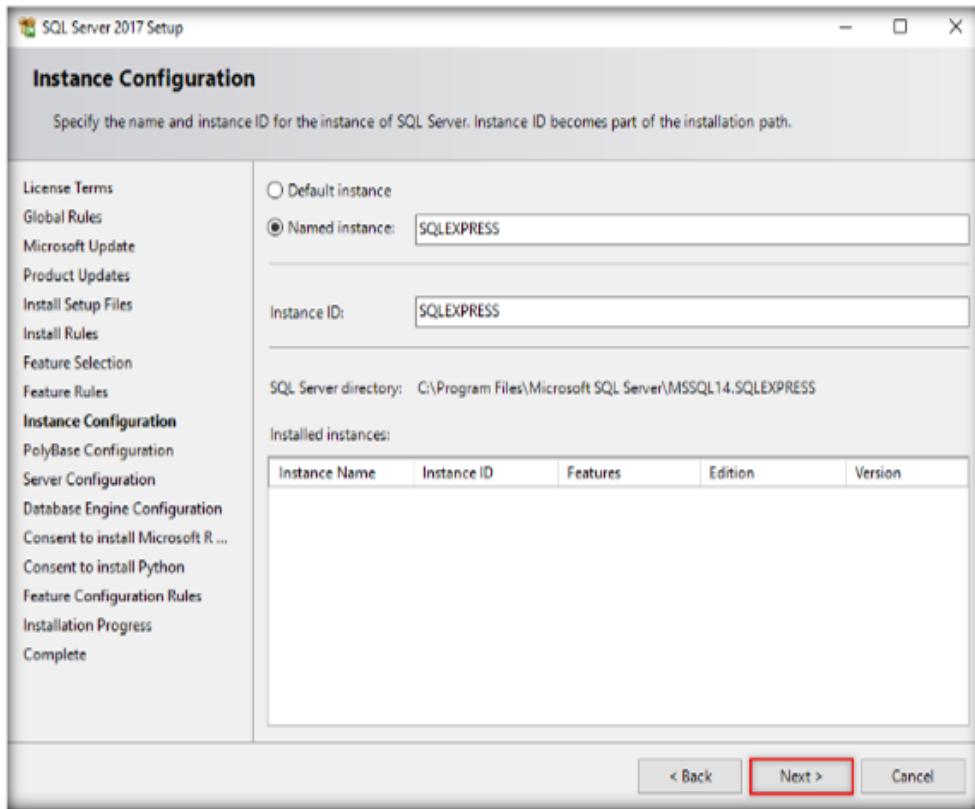
10. In the **Feature Selection** wizard, click the **Select All** option and click **Next**.



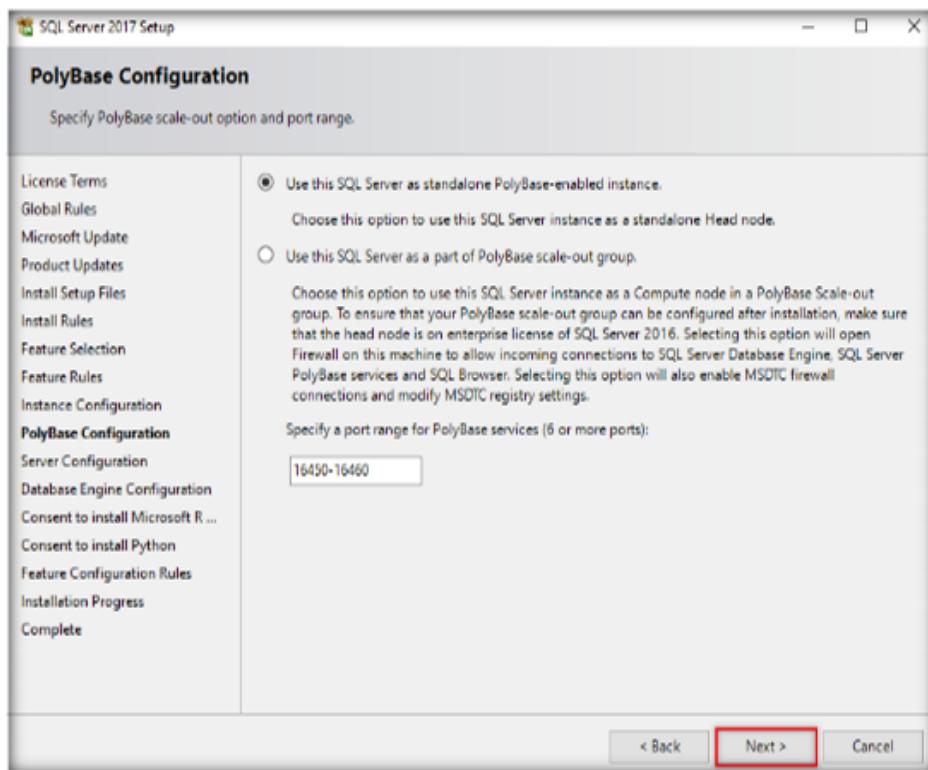
11. Click **Next** in the **Feature Rules** wizard if all tests passed.



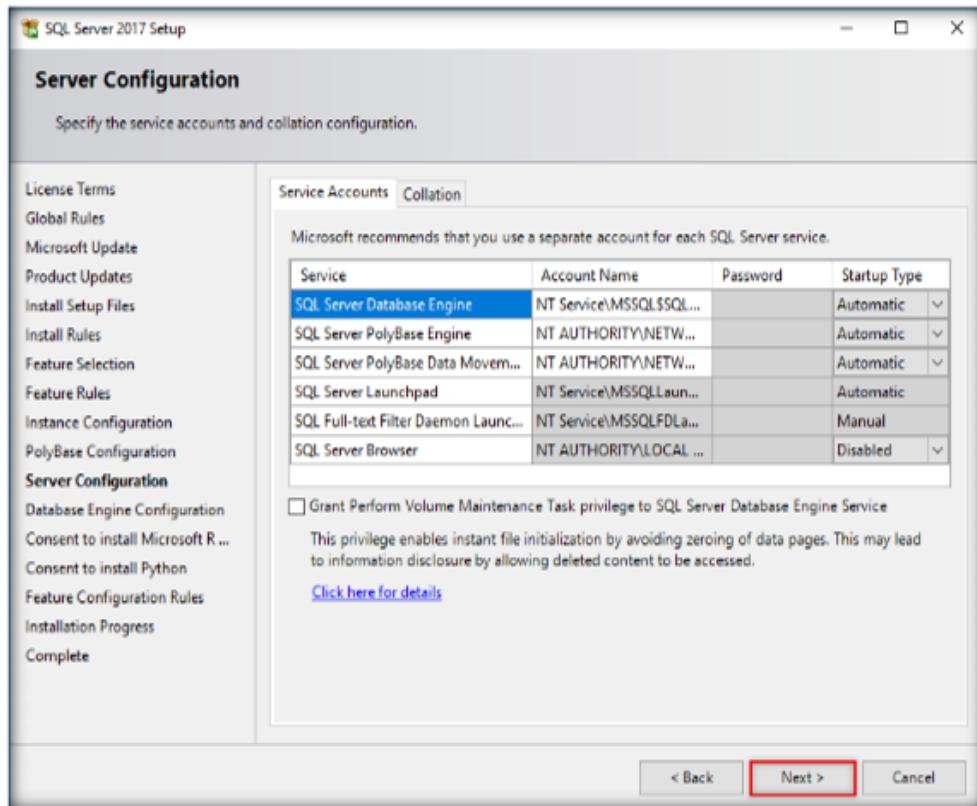
12. In the **Instance Configuration** section, check that **Named instance** is specified, leave the **Instance ID** and **Instance root directory** options set to default, and click **Next** to continue.



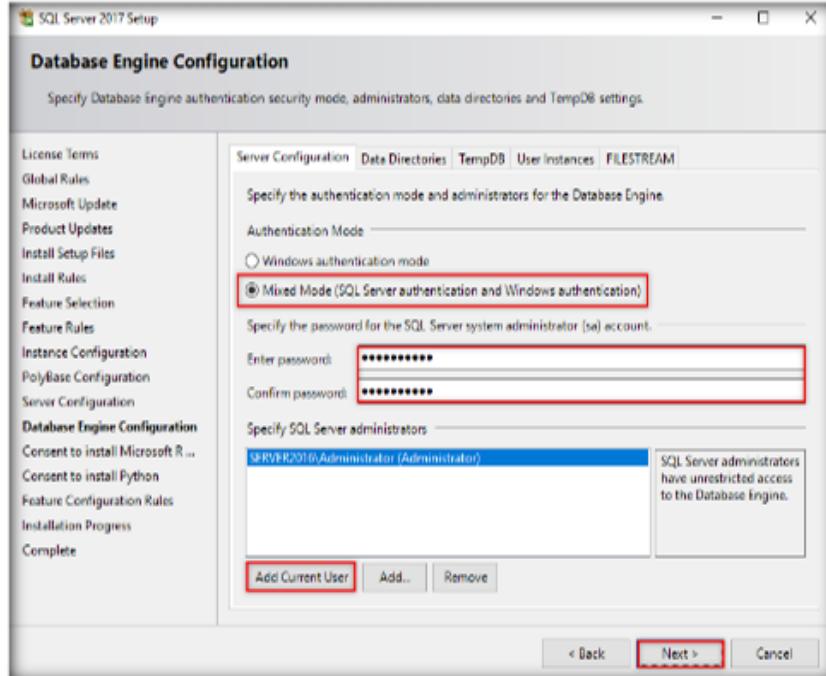
13. The **PolyBase Configuration** section will appear. Select **Use this SQL Server as standalone PolyBase-enabled instance** option and click **Next**.



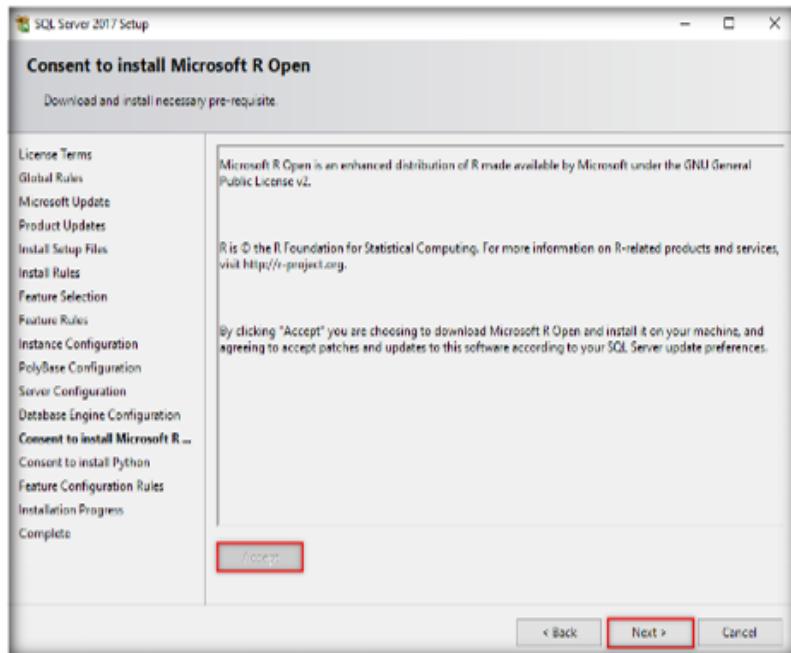
14. The **Server Configuration** section will appear. Leave the **Account Name** and **Password** columns set to default and click **Next**.



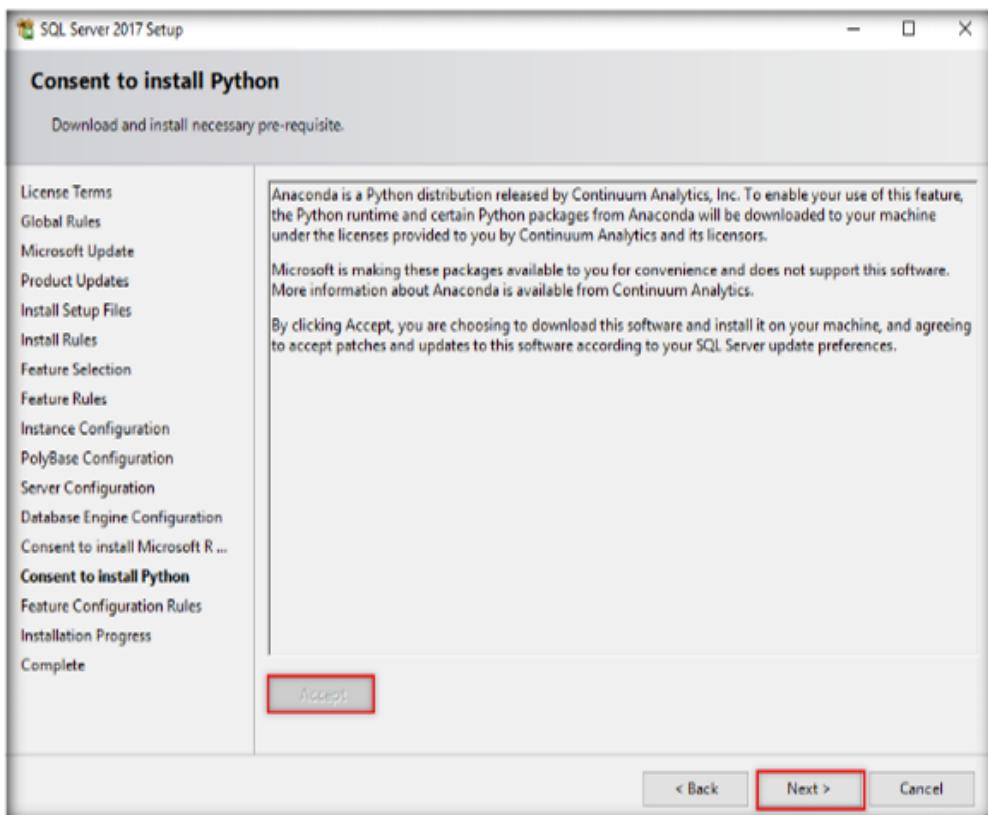
15. The **Database Engine Configuration** section will appear. Select the **Mixed Mode (SQL Server authentication and Window authentication)** radio button and input the password **qwert@123** in both the **Enter password** and **Confirm password** text fields.
16. Click the **Add Current User** button. You will be added as the user (here, **Administrator**). This will be displayed under **Specify SQL Server administrators**. Click **Next**.



17. The **Consent to install Microsoft R Open** section will appear. Click the **Accept** button.
18. In the **Consent to install Microsoft R Open** section, wait for the **Next** button to be active and then click it.

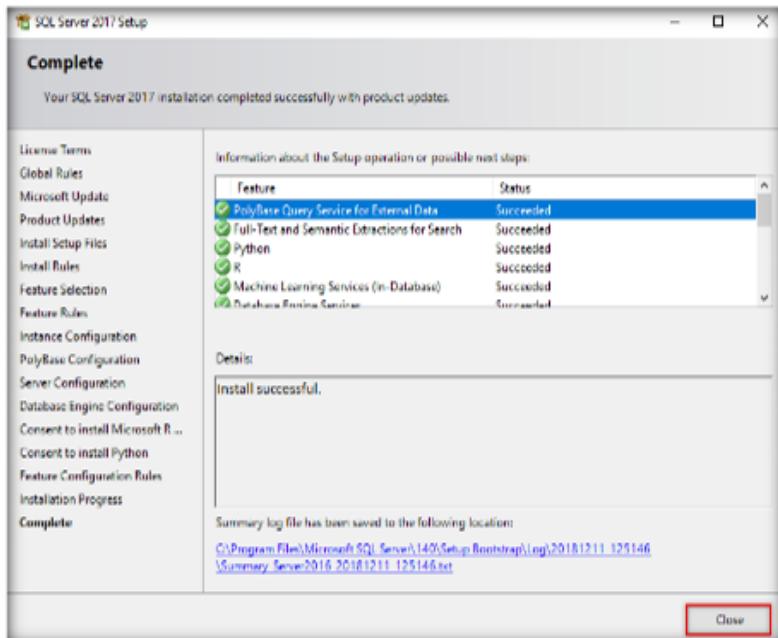


19. The **Consent to install Python** section will appear. Click the **Accept** button.
20. In the **Consent to install Python** section, wait for the **Next** button to be active and then click it.

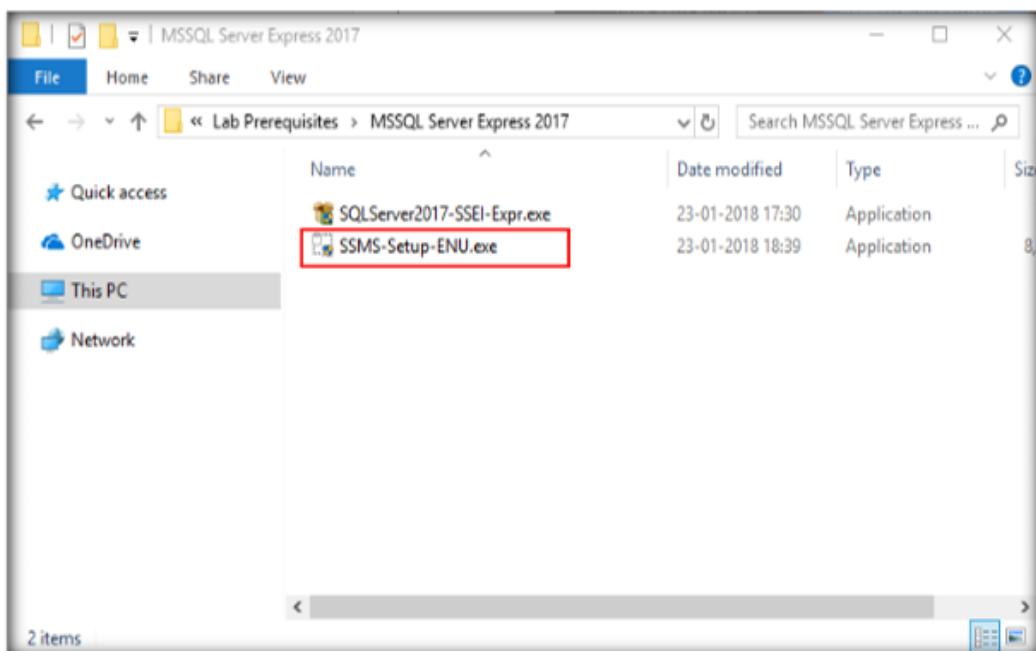


21. The setup will start to install the SQL server, showing you the progress in the Installation Progress section.
22. Wait for the installation to complete.
23. The Complete window will appear, providing a link that redirects you to the location of the summary log file for the installation and other important notes.
24. Click **Close** to finish the installation setup.

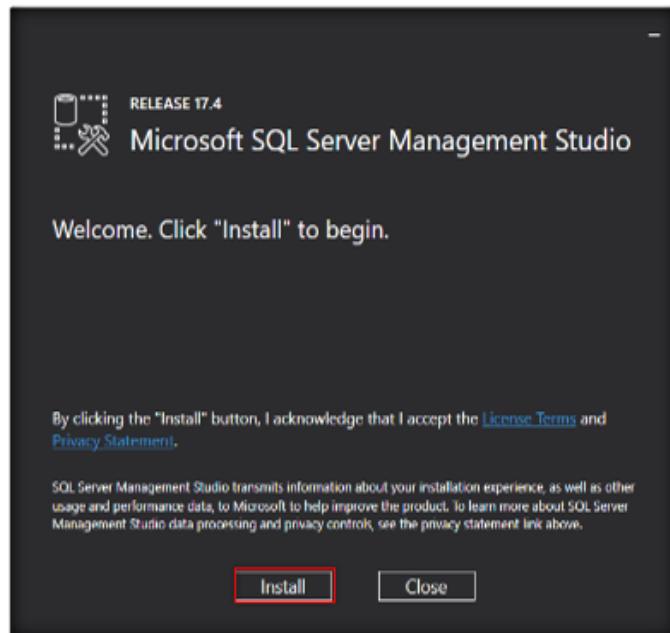
Note: If the **Restart** pop-up appears, click **OK** to restart.



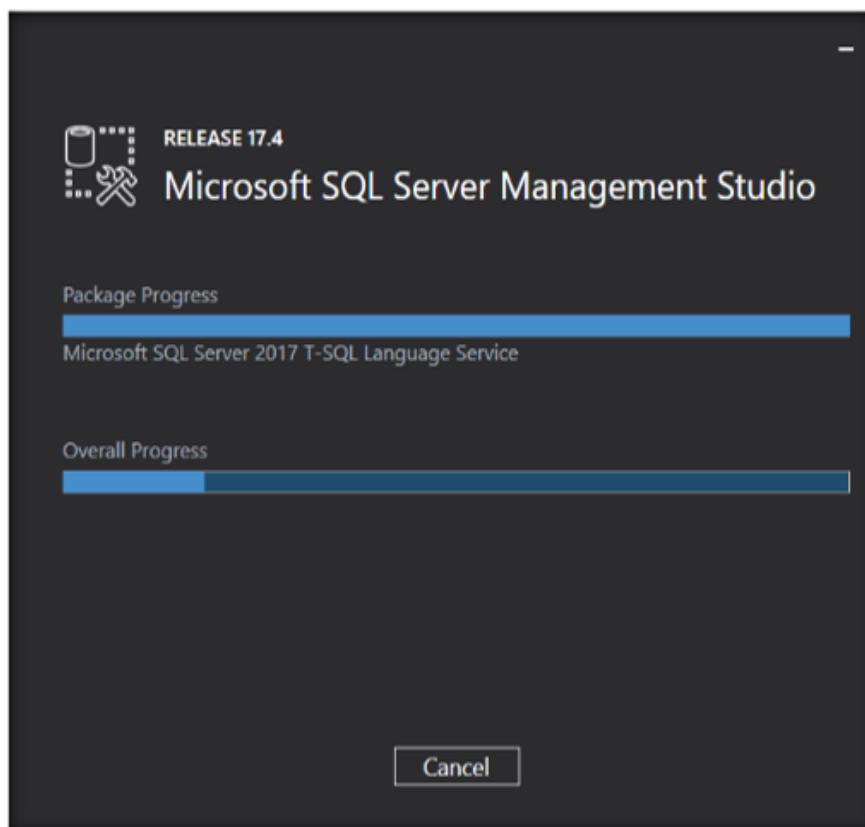
25. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\MSSQL Server Express 2017** and double-click **SSMS-Setup-ENU.exe**.



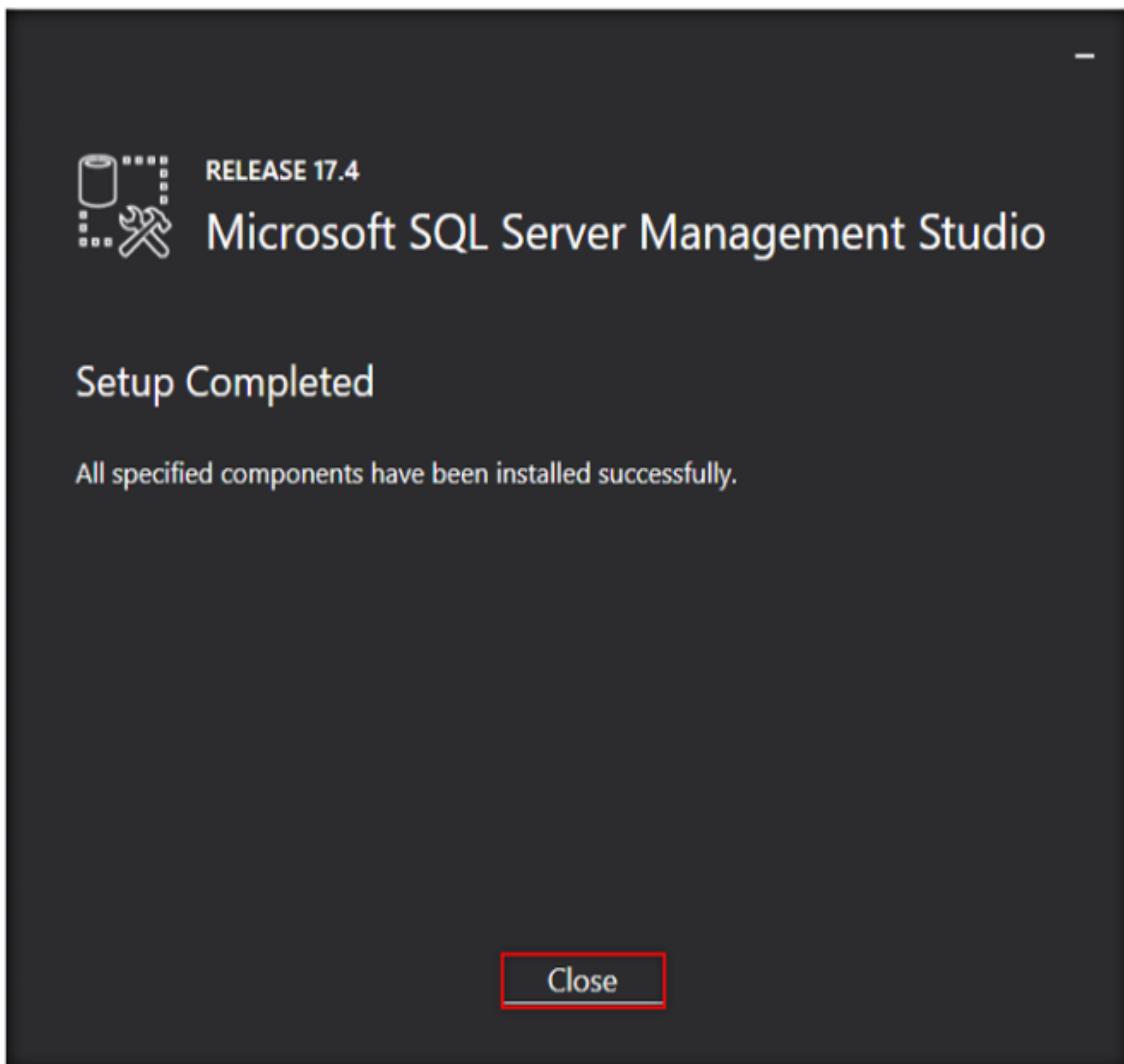
26. The **Microsoft SQL Server Management Studio** welcome screen will appear. Click **Install** to begin the setup.



27. **Microsoft SQL Server Management Studio** begins the setup. Wait for the setup to finish.



28. The **Microsoft SQL Server Management Studio Setup Completed** screen will appear. Click **Close** to finish.



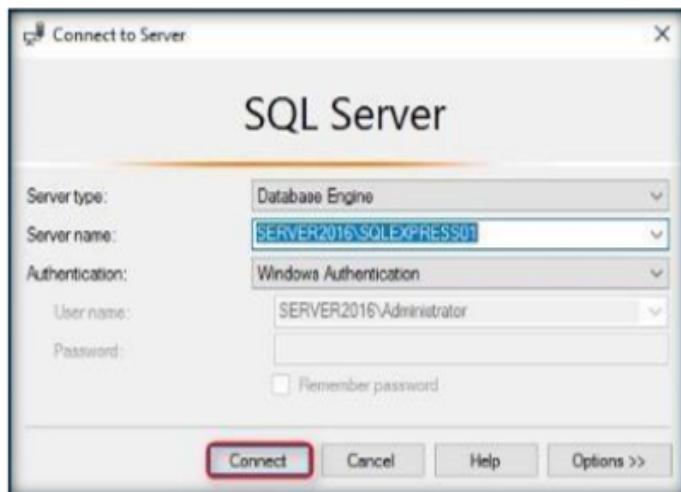
29. Close the **SQL Server Installation Center** window.

Important Note:

To execute the **XP command shell scripts** in the ECIH demo websites, you need to run the below query in your **SQL Server Management Studio**; otherwise, the XP command shell labs exercises will not work properly.

1. To launch SQL Server Management Studio, click the **Windows** icon in the lower-left corner of the screen.
2. The **Start** menu will appear. Click the **SQL Server Management Studio** icon in order to launch the application.
3. The main window of the **SQL Server Management Studio** will appear along with a **Connect to Server** dialog-box.
4. Ensure that the name of the Windows machine is pre-written in the **Server name** field and click **Connect**.

5. If the server name is not already written, then navigate to **Control Panel → All Control Panel Items → System**, make a note of the machine's name (written in the **Computer name** field), and write the machine's name in the **Server name** field of the **Connect to Server** dialog-box.



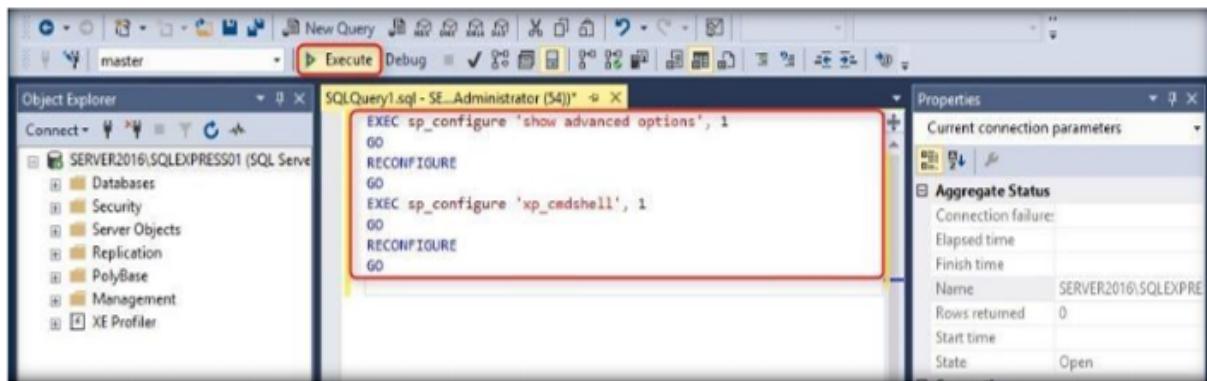
6. When the server is connected, click the **New Query** button in menu bar.



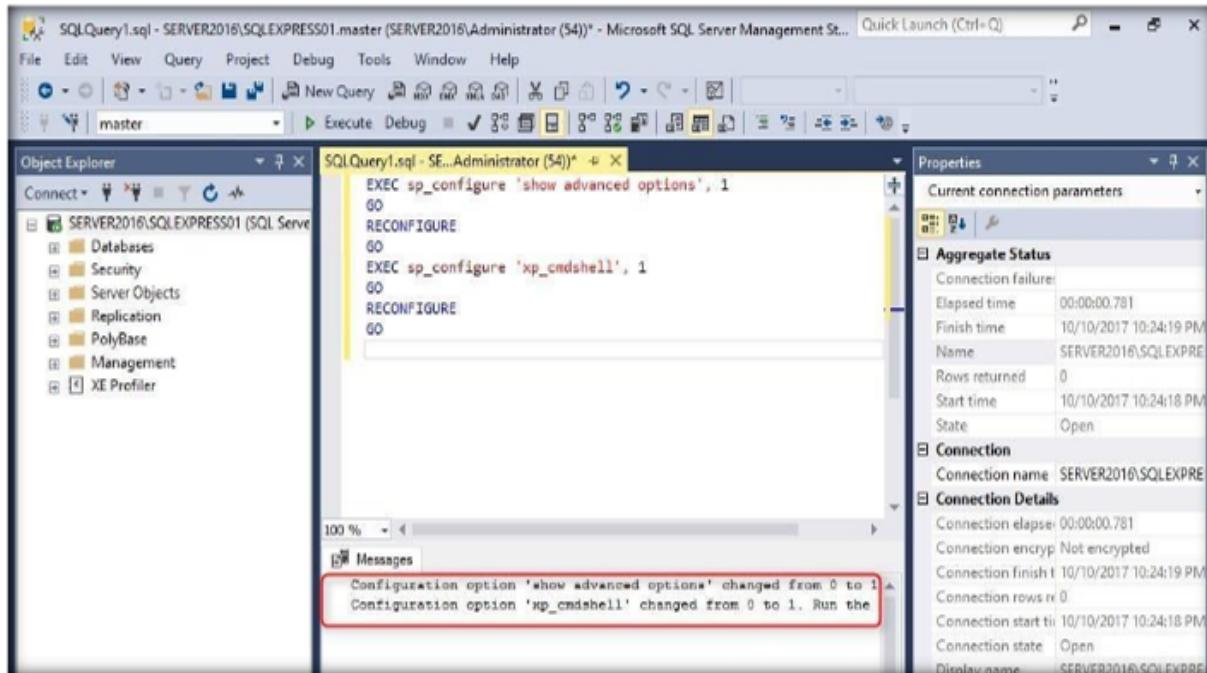
7. The **SQL Query** window will appear in the right-hand pane of the window.
8. In this query page, type the below **query**:

```
EXEC sp_configure 'show advanced options', 1
GO
RECONFIGURE
GO
EXEC sp_configure 'xp_cmdshell', 1
GO
RECONFIGURE
GO
```

When you are done typing the query, click the **Execute** button.



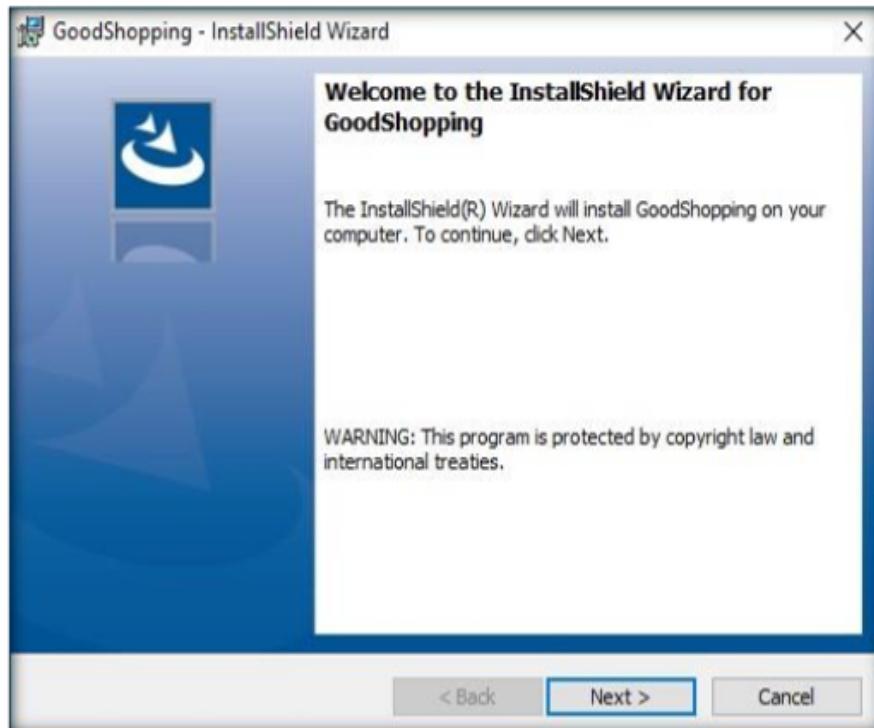
9. After the query is **executed successfully**, close **SQL Server Management Studio**.



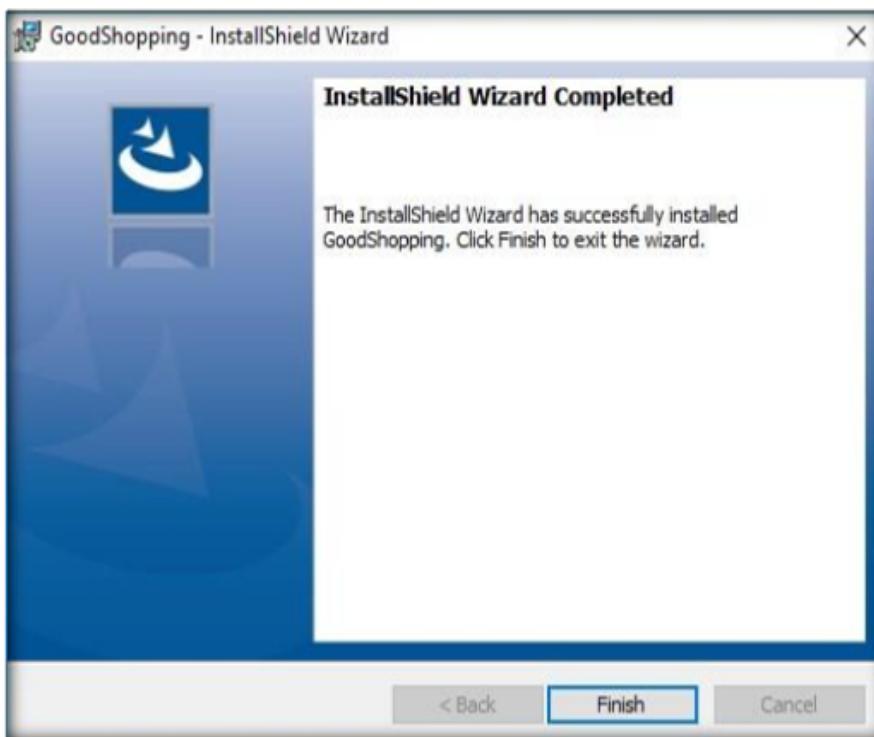
10. If prompted to save the query, click **No** and **exit** from **SQL Server Management Studio**.

CT#3.17: Configuring the GoodShopping Website Windows Server 2016 (VM)

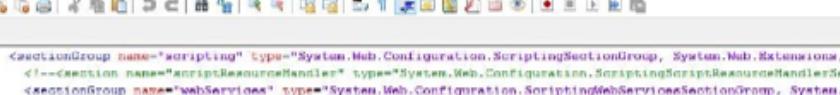
1. Navigate to **Z:\ECIH-Tools\Lab Prerequisites\Websites**.
2. Open the **GoodShopping** folder. Double-click on **setup.exe** and follow the wizard-driven installation steps.



3. After completing the installation, click **Finish**.



4. Open the **GoodShopping** folder from **C:\inetpub\wwwroot\GoodShopping** and open the **Web.config** file in **notepad++** or in **notepad**.
 5. Scroll down to the **connectionstring** tag, enter your machine's name as **data source=[Provide Your Host Machine Name]**, and provide a user ID after **user id=sa** **Password=qwerty@123**.



The screenshot shows the Notepad++ interface with the file "Web.config" open. The code is as follows:

```
<sectionGroup name="scripting" type="System.Web.Configuration.ScriptingSectionGroup, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35">
    <!--<section name="scriptResourceHandler" type="System.Web.Configuration.ScriptingResourceHandlerSection, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35"/-->
    <sectionGroup name="webServices" type="System.Web.Configuration.ScriptingWebServicesSectionGroup, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35">
        <!--<section name="jsonSerialization" type="System.Web.Configuration.ScriptingJsonSerializationSection, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35"/-->
        <section name="profileService" type="System.Web.Configuration.ScriptingProfileServiceSection, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35">
            <section name="authenticationService" type="System.Web.Configuration.ScriptingAuthenticationServiceSection, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35">
                <section name="roleService" type="System.Web.Configuration.ScriptingRoleServiceSection, System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35"/>
            </section>
        </sectionGroup>
    </sectionGroup>
</configSections>
<appSettings />
<connectionStrings>
    <add name="shopConnectionString" connectionString="user id=sapassword=qwerty123;data source=SQDW-013\SQLEXPRESS02\data;"/>
</connectionStrings>
<exensus.veh>
```

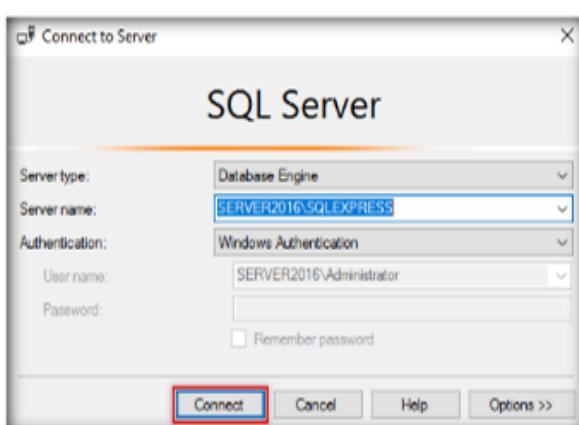
6. Save the file and close it.
 7. Open the **GoodShopping** folder from **C:\inetpub\wwwroot\GoodShopping** and open the **Default.aspx.cs** file in **notepad++** or in **notepad**.
 8. Scroll down to **line no. 24** and replace localhost with the IP address of the **Windows Server 2016** virtual machine (i.e., the IP address of the machine where you are hosting the website).



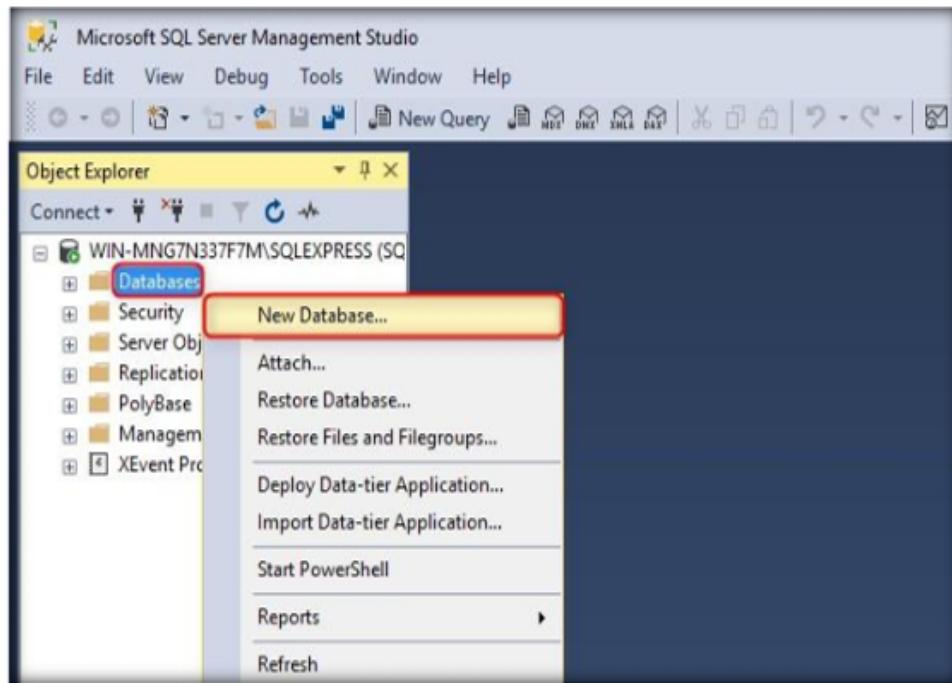
```
*C:\inetpub\wwwroot\GoodShoppe\Default.aspx.cs - Notepad++ *
File Edit Search View Encoding Languages Settings Tools Macro Run Plugins Window ?
Default.aspx.cs
11  using System.Web.UI.WebControls;
12  using System.Xml.Linq;
13  using System.IO;
14  using System.Net.Mail;
15
16  public partial class SRC_oceanplaza_Default : System.Web.UI.Page
17  {
18      protected void Page_Load(object sender, EventArgs e)
19      {
20          if (Request.QueryString["cookie"] != null)
21          {
22              string cookie = Request.QueryString["cookie"].ToString();
23              SendMail(cookie);
24              Response.Write("Sorry, This site is not available.  
Please click <a href='http://10.10.10.16/moviescan/abc");
25      }
26  }
```

Note: The IP address of the **Windows Server 2016** machine may vary in your lab environment.

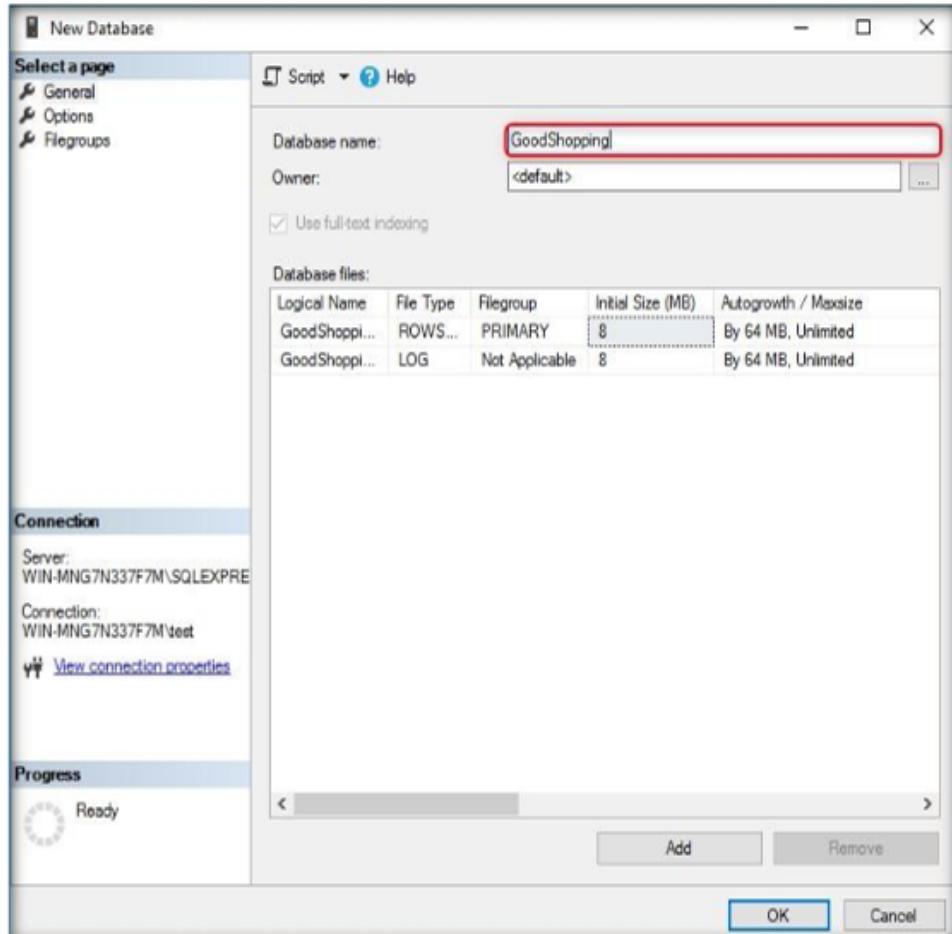
9. **Save** the file and **close** it.
 10. Now Launch **SQL Server 2017 Management Studio** click **Connect**



11. In the **Microsoft SQL Server Management Studio** window, right-click on **Databases** and select **New Database...**

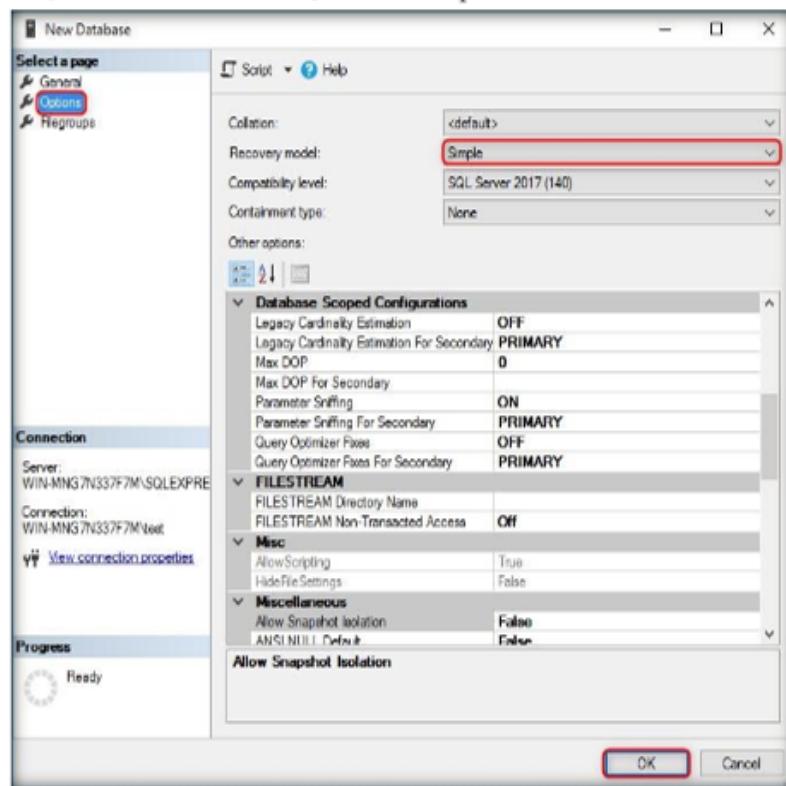


12. The **New Database** window will appear. Specify **Database name** as **GoodShopping**.



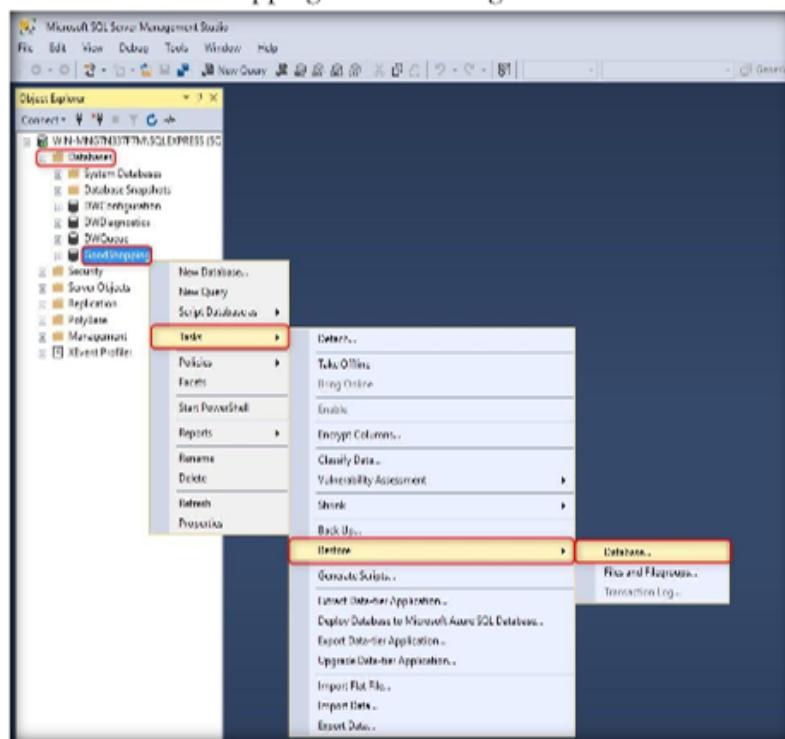
13. Select **Options** from the left-hand pane.

14. Select **Simple** from the **Recovery model** drop-down list and click **OK**.

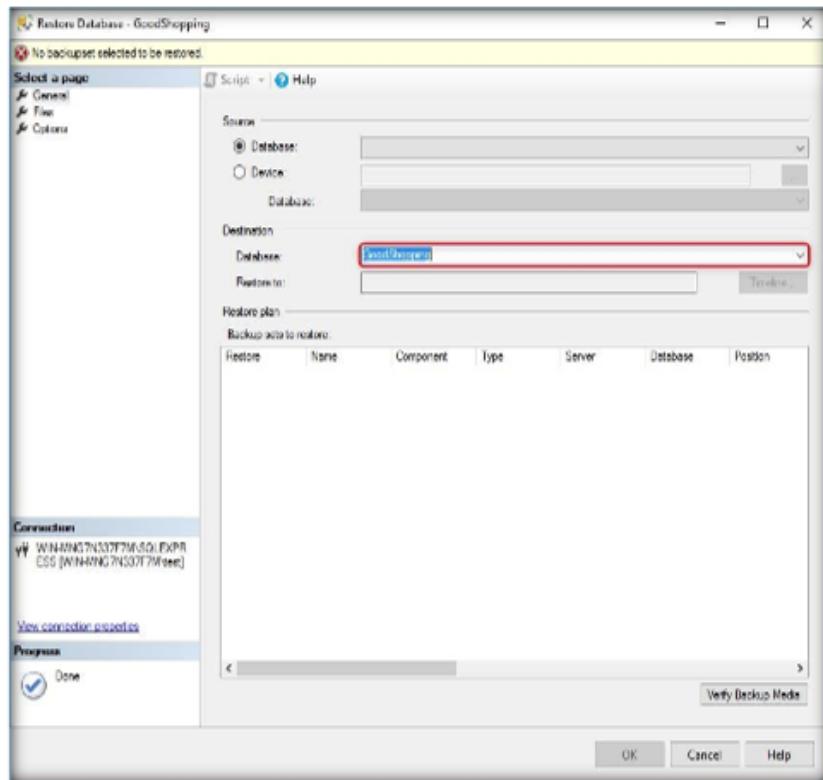


15. Now expand the **Databases** node. The **GoodShopping** database folder will appear under the **Object Explorer** section, which implies that the GoodShopping database has been **successfully** created.

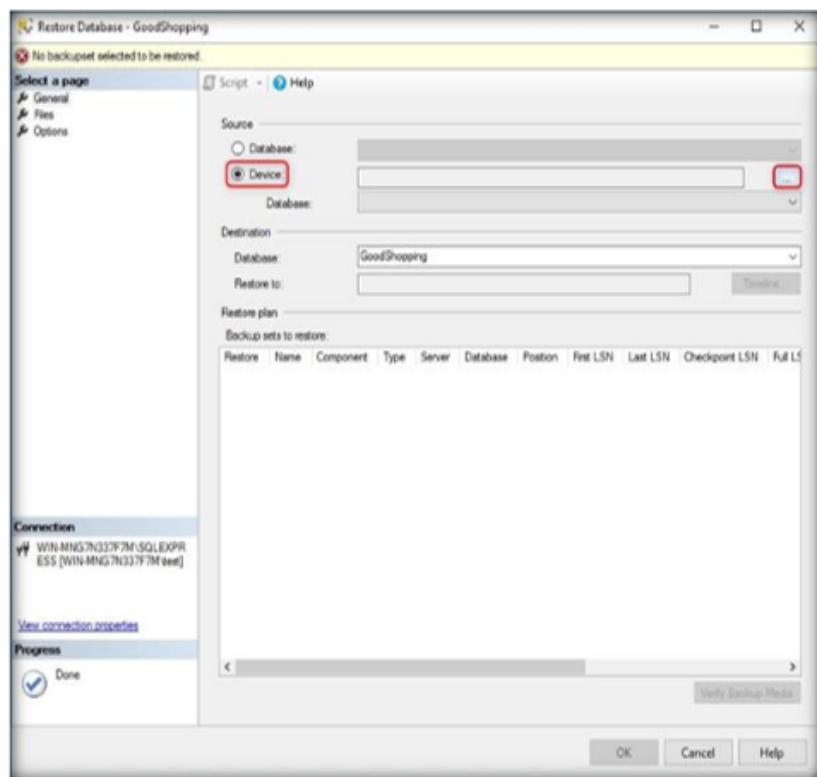
16. **Right-click** on the GoodShopping database and go to **Tasks → Restore → Database...**



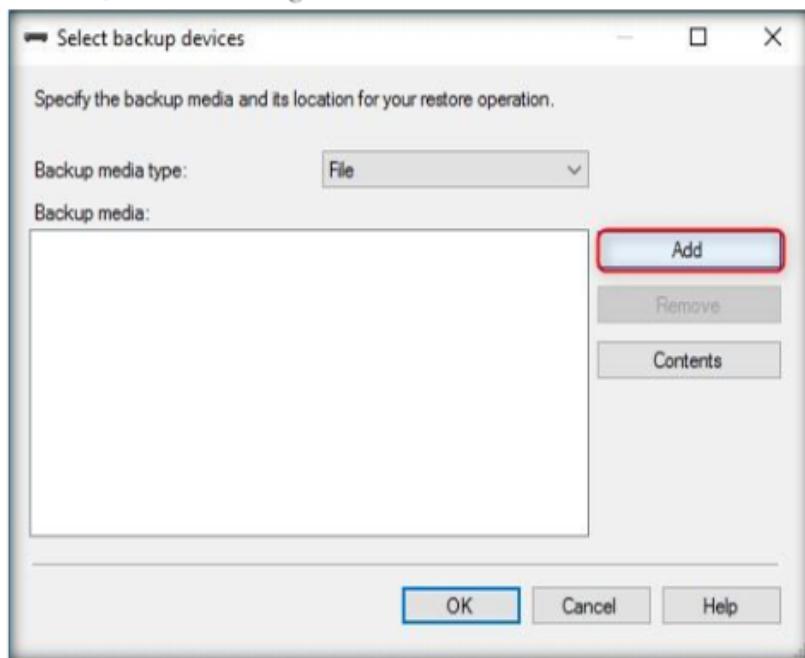
17. **Restore Database – GoodShopping** window will appear, displaying the database name (**GoodShopping**) in the **Database** field under the **Destination** section.



18. Click the **Device** radio button under the **Source** section and click the button located parallel to **Device** field.

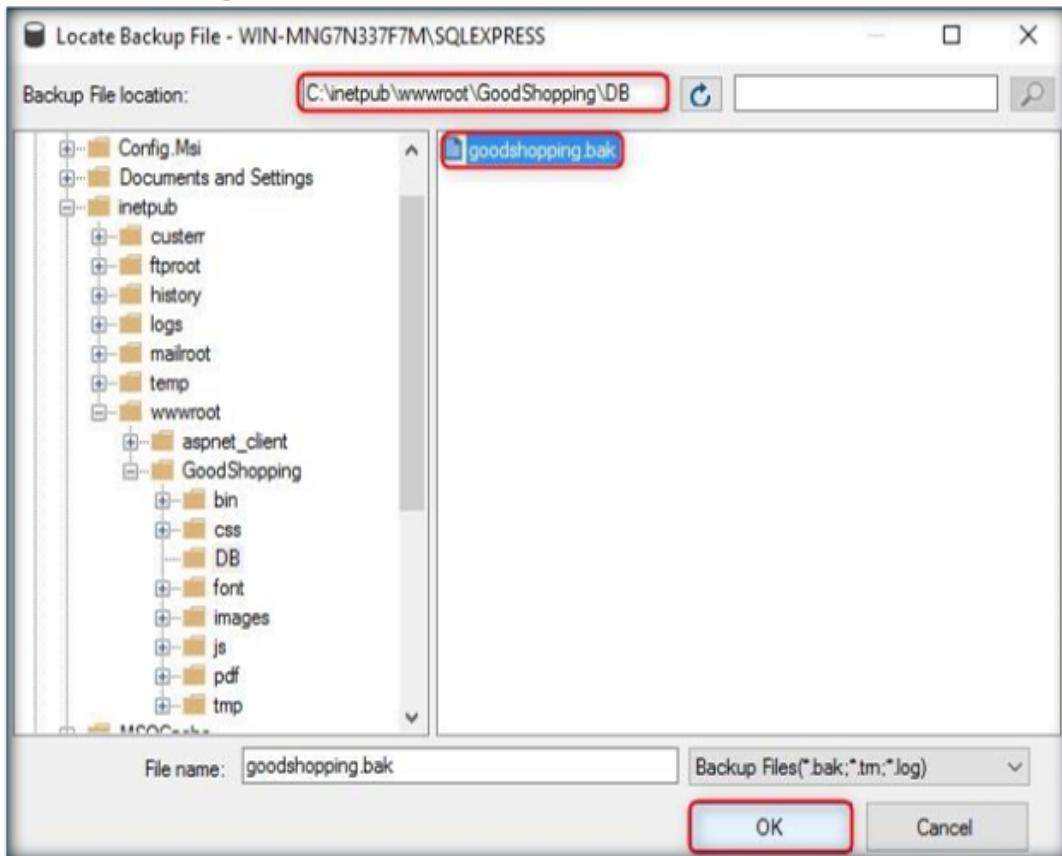


19. Select the **backup devices** dialog-box and click **Add**.



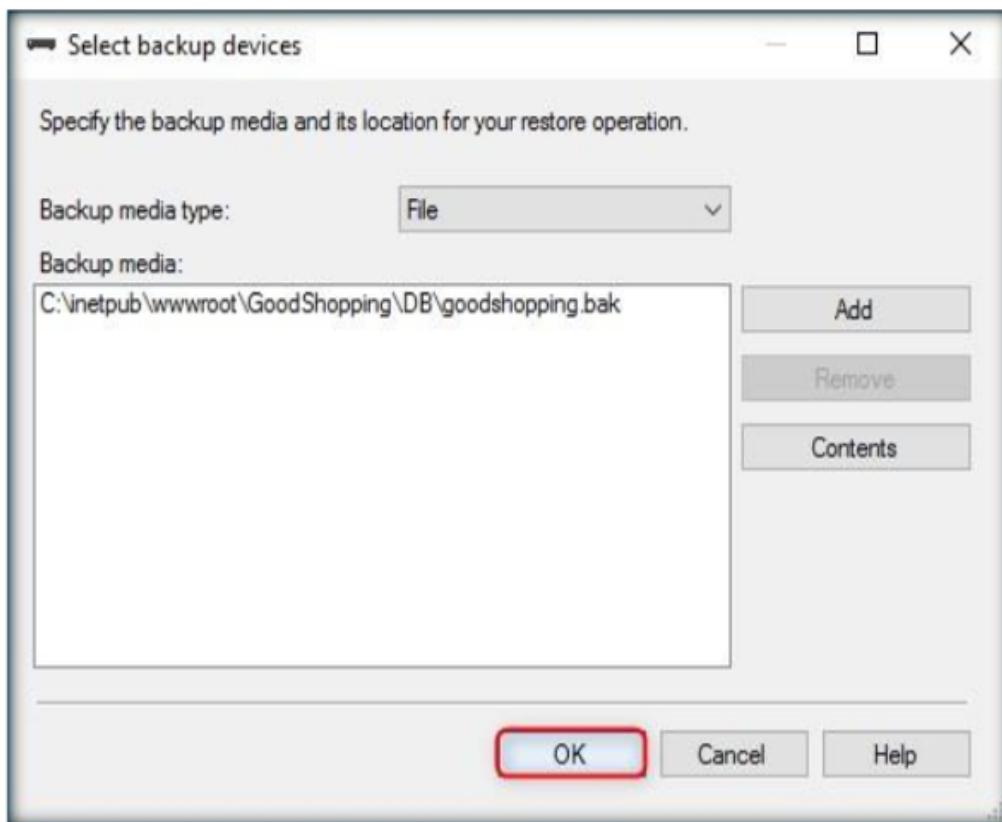
20. Navigate to the backup file (**goodshopping.bak**) located in
C:\inetpub\wwwroot\GoodShopping\DB

21. Select the backup file and then click **OK**. The **Locate Backup File** window will close.

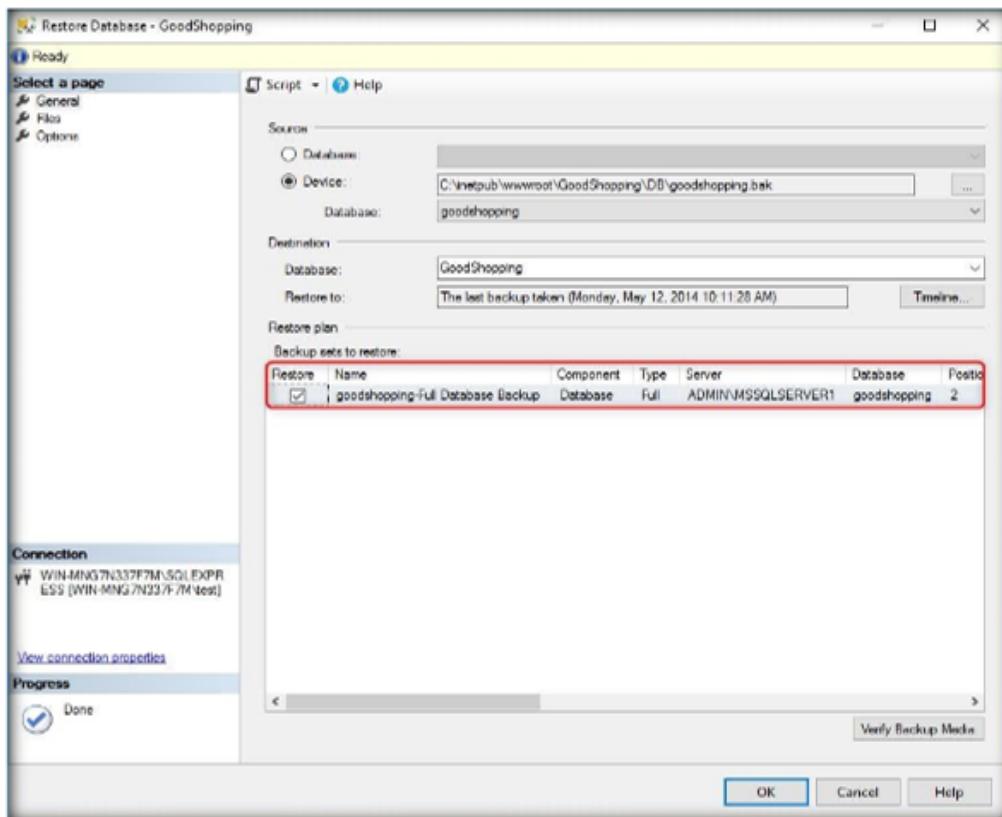


22. Under the Backup media section, the location of the **goodshopping.bak** website will be listed.

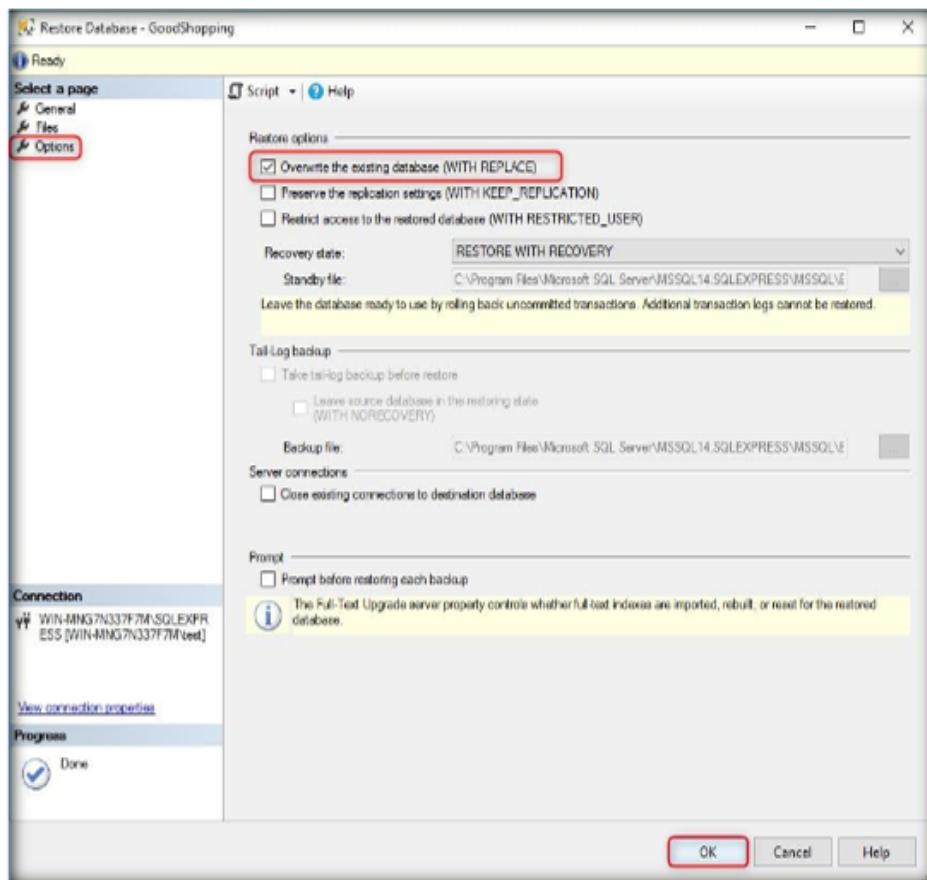
23. Click **OK**. The select backup devices window will exit.



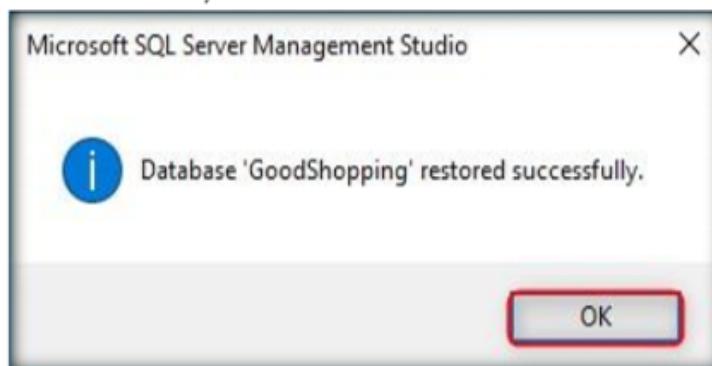
24. You will observe that the backup file has been successfully added. Ensure that the backup file is checked.



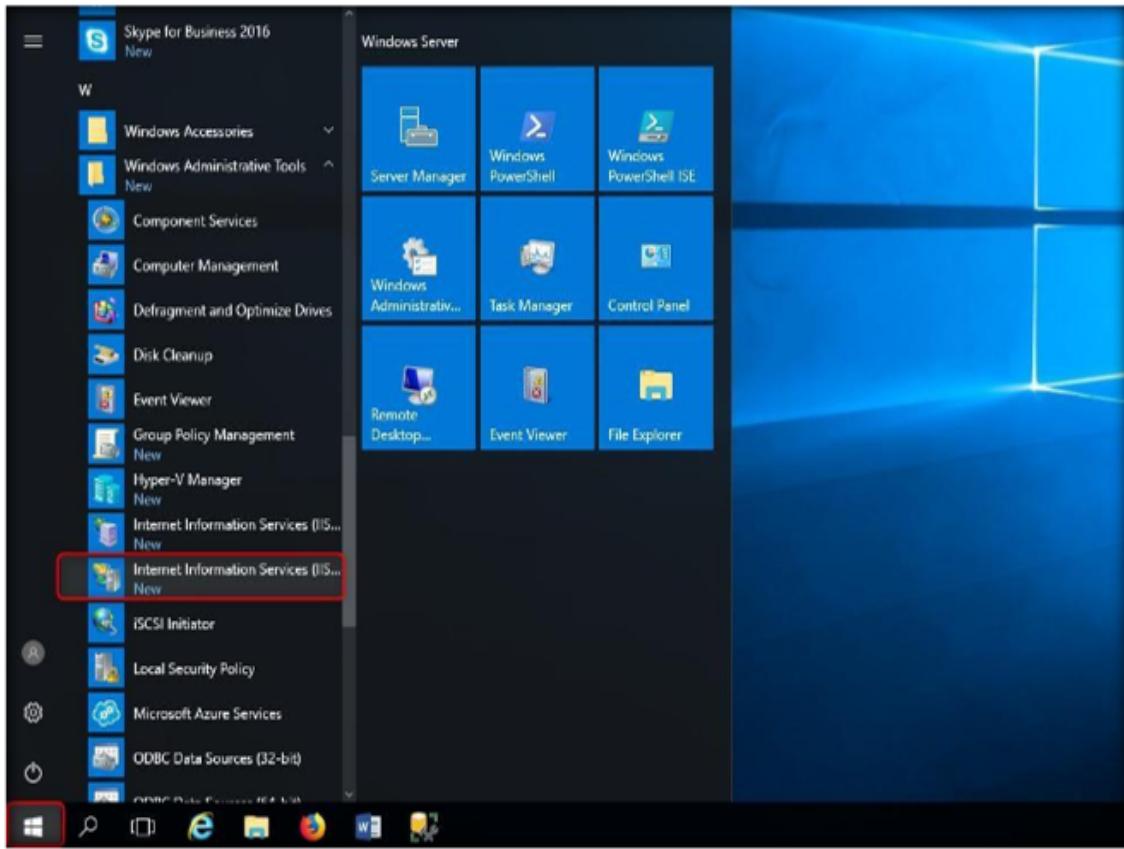
25. Click **Options** in the left-hand pane, check **Overwrite existing database (WITH REPLACE)** under **Restore options** section, and click **OK**.



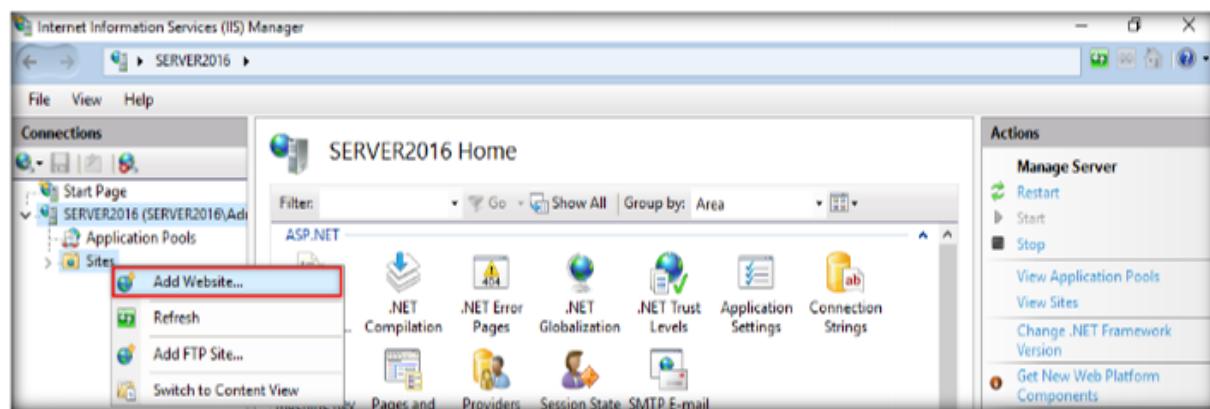
26. The **Microsoft SQL Server Management Studio** pop-up will appear, stating that the database has been successfully created. Click **OK**.



27. You have successfully **restored** the **database** of GoodShopping in your machine. The GoodShopping website is now hosted in your local machine. Next, click the **Start** menu button and then click **Windows Administrative Tools** → **Internet Information Services (IIS) Manager**.

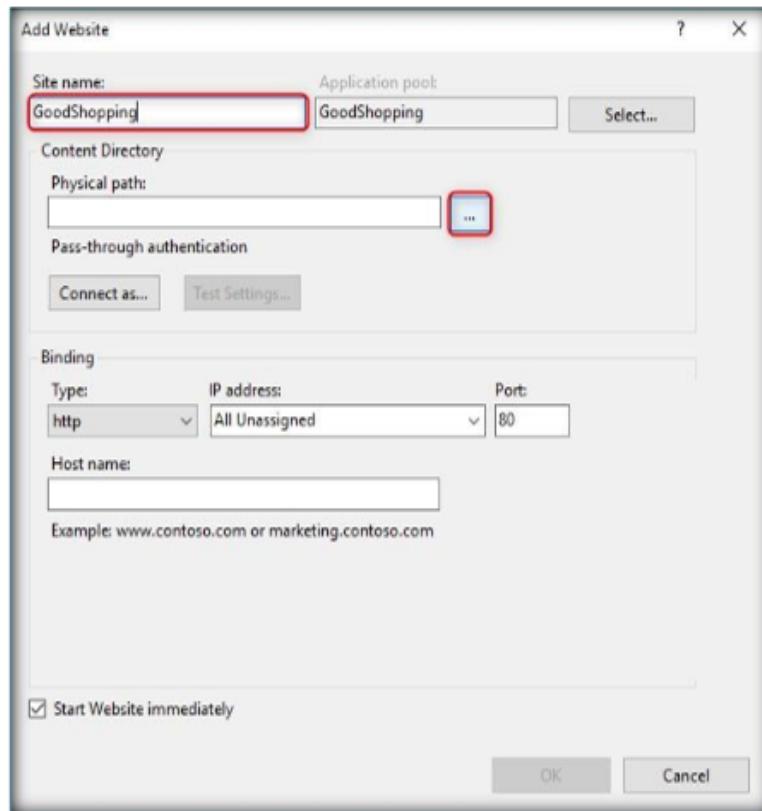


28. The **Internet Information Services (IIS) Manager** main window will appear, now in the left-hand pane of the window. Expand **Machine Name**, right-click **Sites**, and click **Add Website...** from the context menu.



29. The **Add Website** wizard will appear. Type the **Site name:** field and click the **Browse** button near the **Physical path:** section.

30. Next, we will be installing the GoodShopping site. We will therefore write **GoodShopping** in the **Site name:** field.

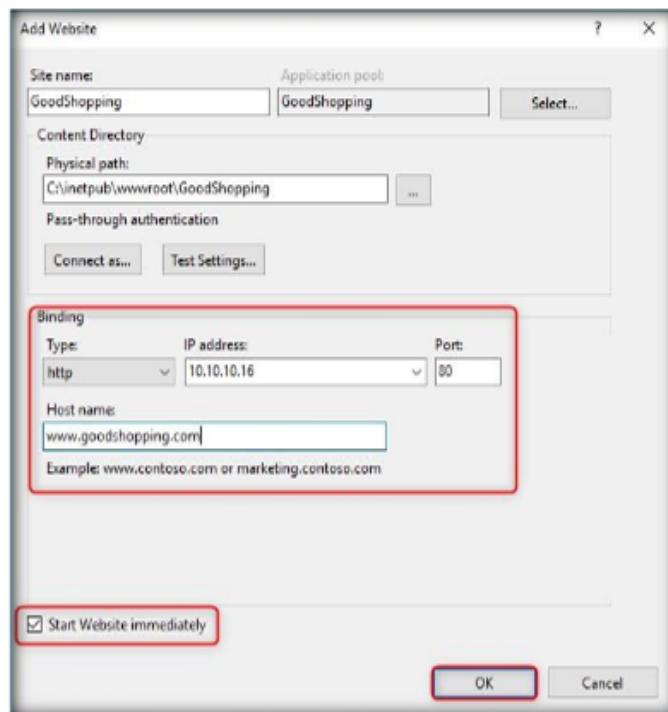


31. The **Browse For Folder** pop-up will appear. Navigate to **C:\inetpub\wwwroot** and choose the **GoodShopping** folder. Click **OK**.



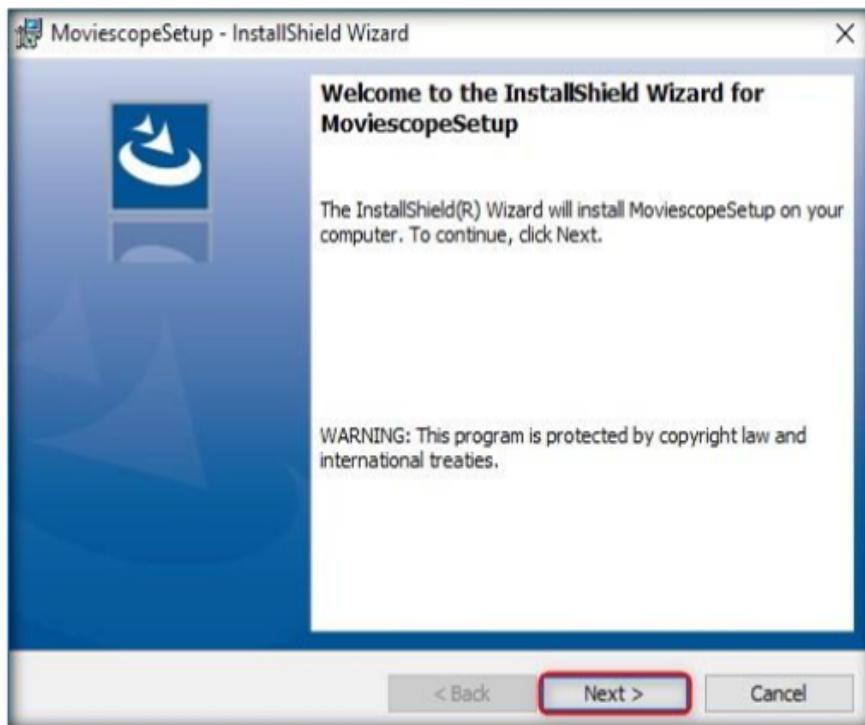
32. Under the **Binding** section, choose **http** in the **Type:** field. Choose the **Host machine IP address** from the **IP address:** field and choose **80** in **Port:** field.

33. Type **www.goodshopping.com** in the **Hostname:** field, make sure that **Start Website immediately** is checked, and click **OK**.

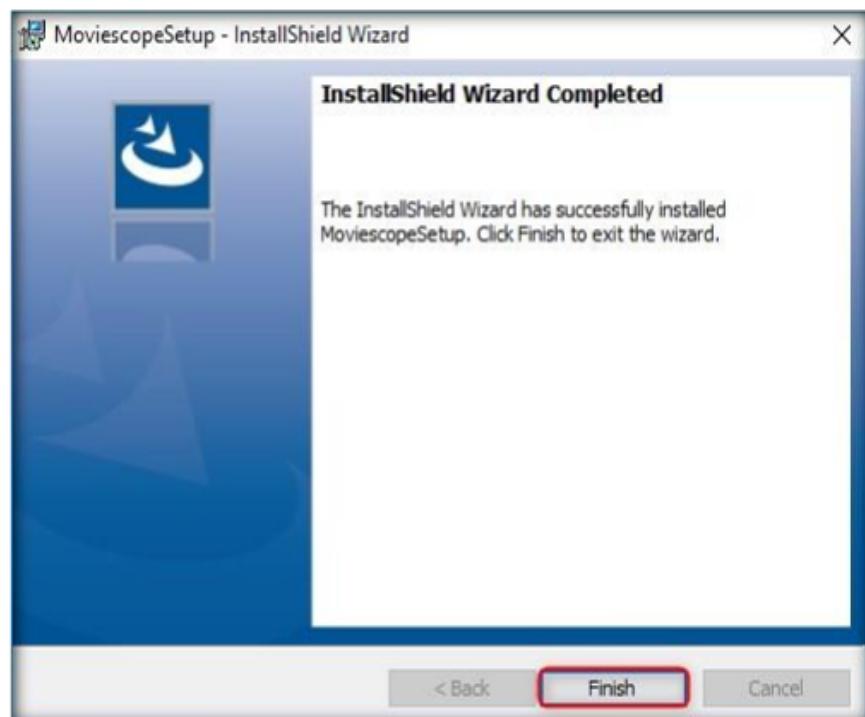


CT#3.18: Configuring the moviescope Website in Windows Server 2016 (VM)

1. Open Z:\ECIH-Tools\Lab Prerequisites\Websites.
2. Open the **moviescope** folder. Double-click on **Moviescope.exe** and follow the wizard-driven installation steps to install.



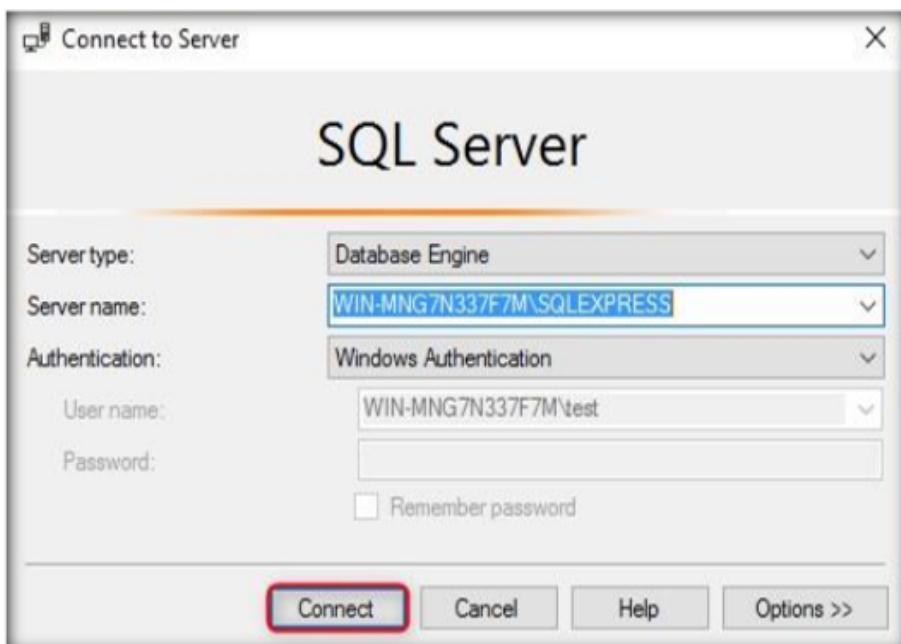
3. After completing the installation, click **Close**.



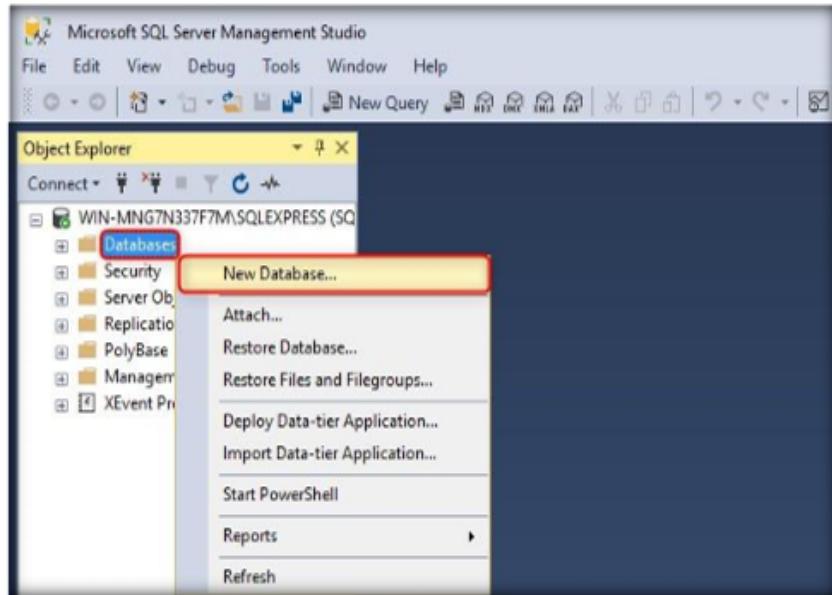
4. Open the **moviescope** folder from **C:\inetpub\wwwroot\moviescope** and open the **Web.config** file in **notepad++** or in notepad.
5. Scroll down to the **connectionstring** tag in **line no. 26**, enter your machine's name in **data source=[Provide Your Host Machine Name]**, provide a user ID after **User ID=sa**, and provide a password after **Password=qwerty@123**.

The screenshot shows the Notepad++ application window with the file "Web.config" open. The code editor displays XML configuration settings. On line 26, there is a `<add name="movieConnectionString" connectionString="user id=sa;password=qwerty@123;data source=SDDW-013\SQLEXPRESS502;dat` line, which is highlighted with a red rectangle. The rest of the configuration code is visible above and below this line.

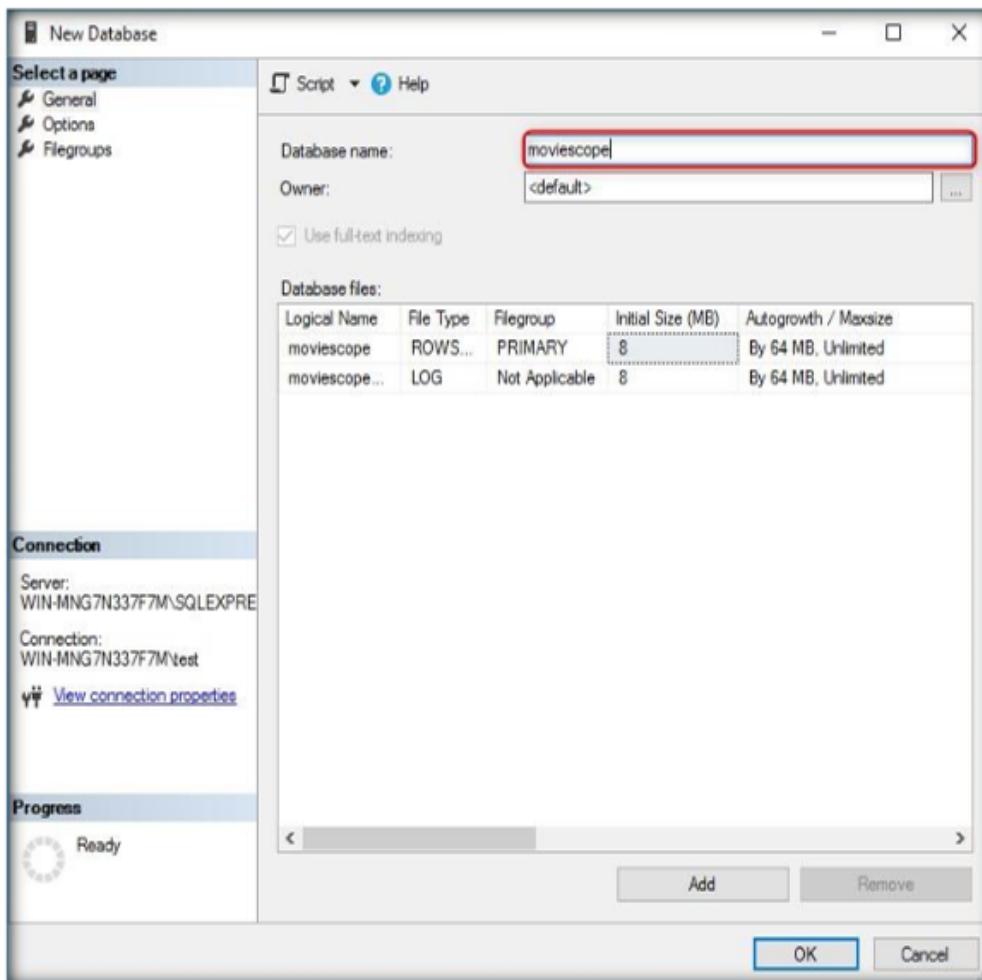
6. **Save and close** the file.
7. Launch **SQL Server 2017 Management Studio** and click **Connect** to connect to the SQL Server.



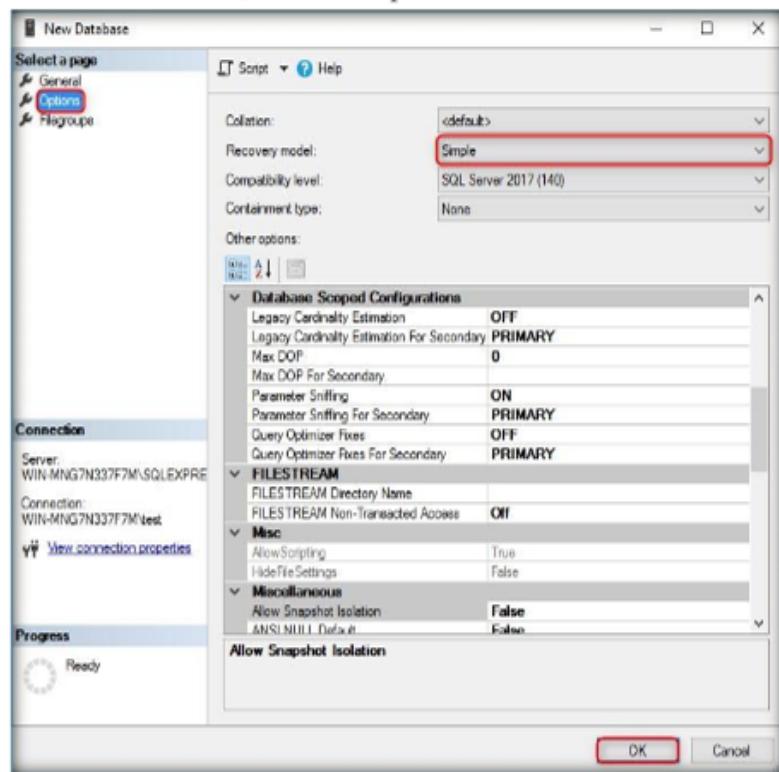
8. The **Microsoft SQL Server Management Studio** window will appear, as shown in the below screenshot.
9. Right-click **Databases** and select **New Database...**



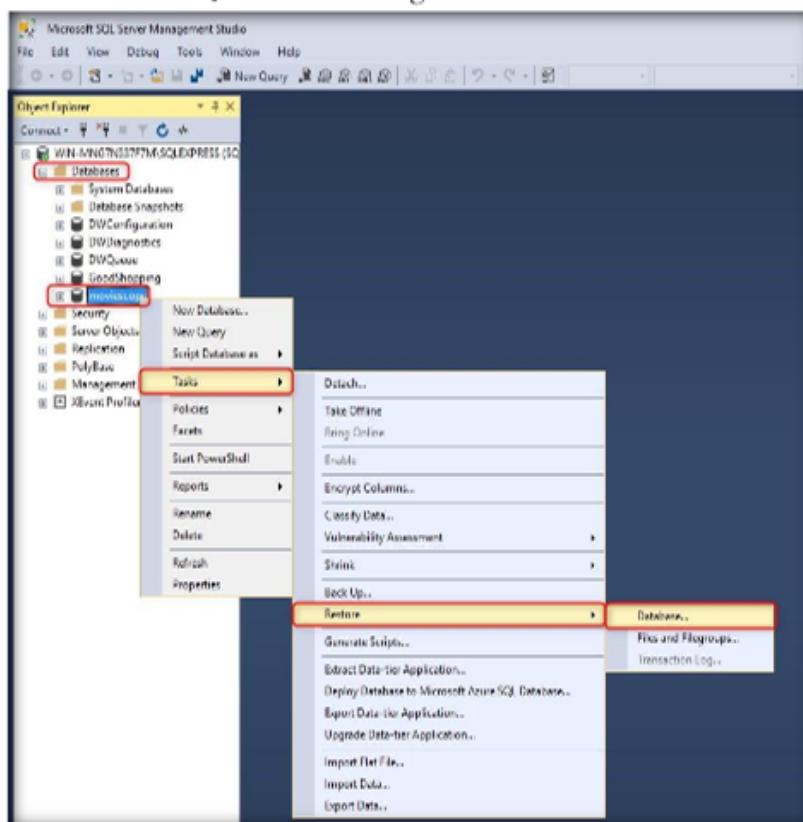
10. The **New Database** window will appear. Specify **Database name** as **moviescope**.



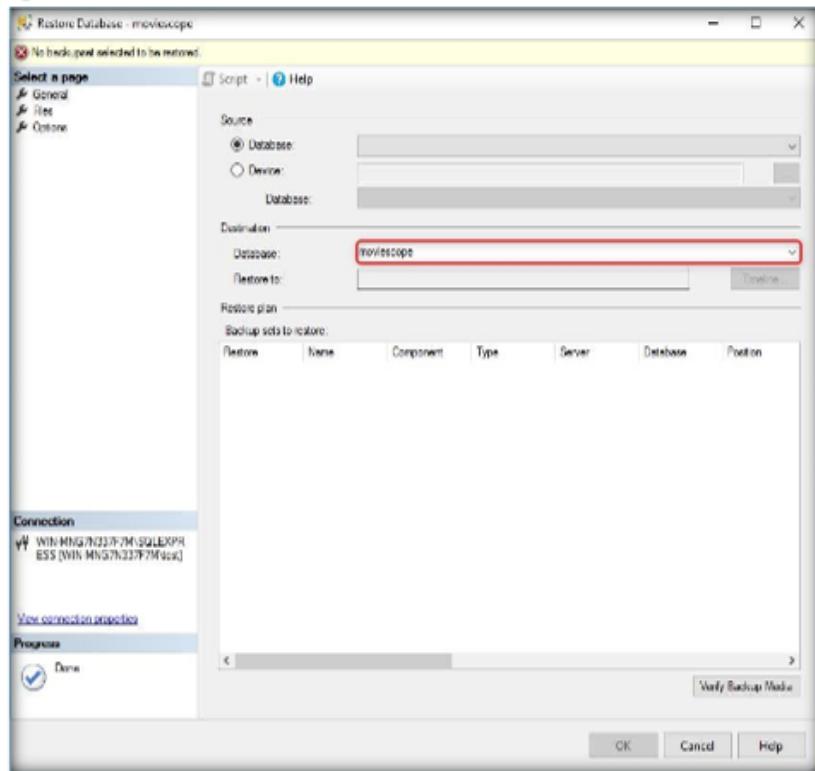
11. Select **Options** from the left-hand pane.
12. Select **Simple** from the **Recovery model** drop-down list and click **OK**.



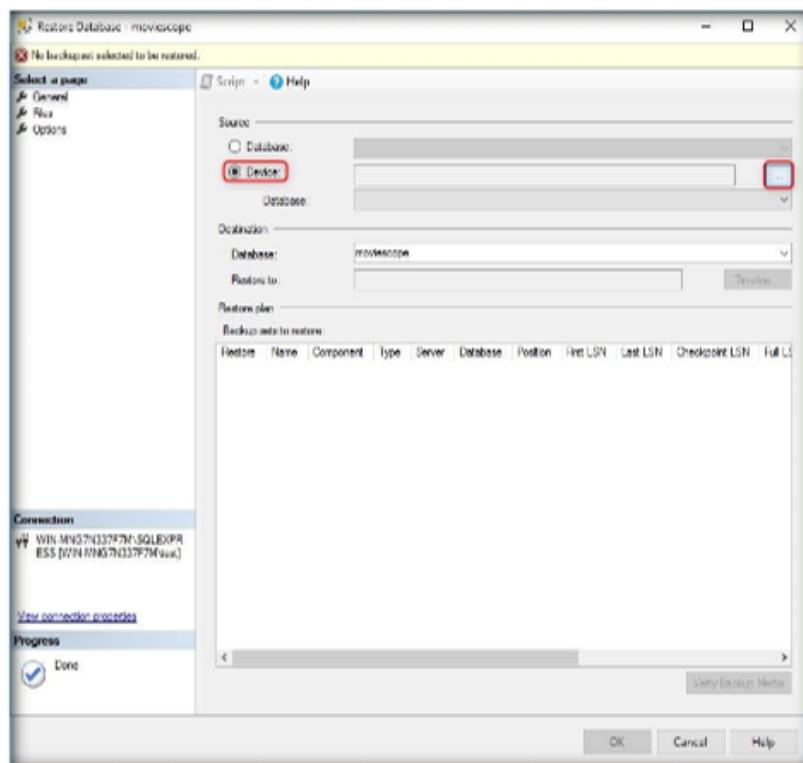
13. Expand the **Databases** node. The **moviescope** database folder will appear under the **Object Explorer** section, which implies that the **moviescope** database has been successfully created.
14. Right-Click on **moviescope** database and go to **Tasks → Restore → Database...**



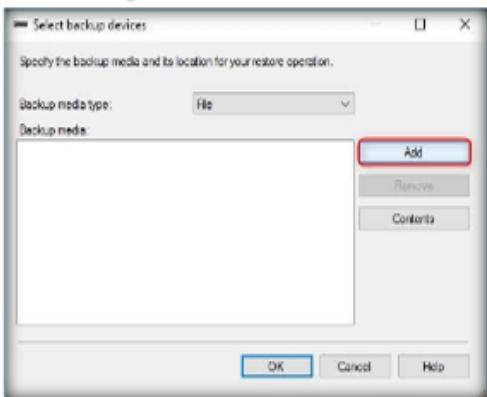
15. The **Restore Database - moviescope** window will appear, displaying the database name moviescope in the **Database** field under the **Destination** section.



16. Click the **Device** radio button under **Source** and click the  button located parallel to the **Device** field.

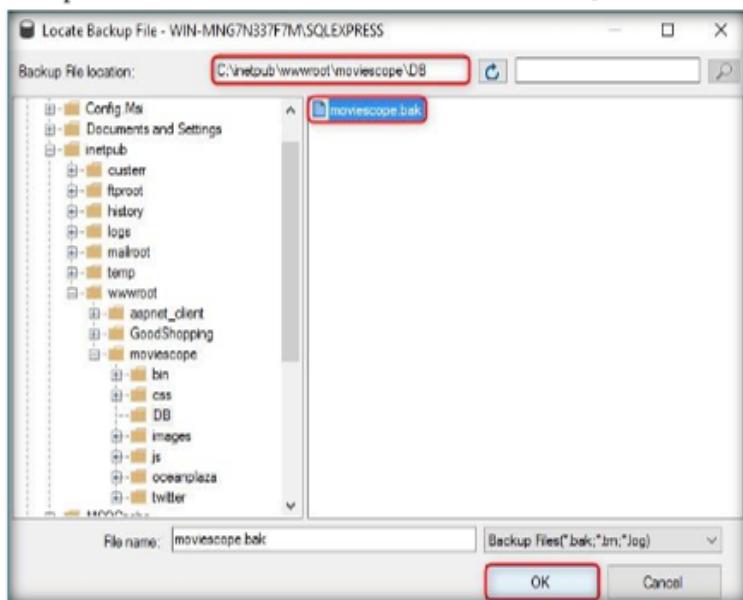


17. Select the **backup devices** dialog-box and click **Add**.



18. Navigate to the backup file (**moviescope.bak**) located in
C:\inetpub\wwwroot\moviescope\DB

19. Select the backup file and then click **OK**. The **Locate Backup File** window will exit.



20. Under the Backup media section, the location of **moviescope.bak** website will be listed.
21. Click **OK**. The Select backup devices window will exit.

