



## SECURITY+ V4 LAB SERIES

### Lab 9: Virtualization and Group Policy Objects (GPO)

Document Version: **2023-02-27**

Material in this Lab Aligns to the Following	
CompTIA Security+ (SY0-601) Exam Objectives	2.2: Summarize virtualization and cloud computing concepts 2.4: Summarize authentication and authorization design concepts
All-In-One CompTIA Security+ Sixth Edition ISBN-13: 978-1260464009 Chapters	10: Virtualization and Cloud Security 12: Authentication and Authorization

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## Introduction

In this lab, you will build a Windows Virtual Machine in Hyper-V and manage it through GPO.



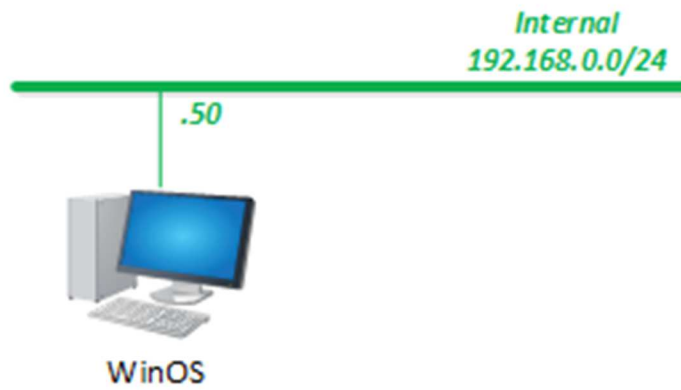
**CAUTION:** This lab activity may take longer due to the installation of an operating system. Please make sure you reserve enough lab time.

## Objective

In this lab, you will perform the following tasks:

- Create a Hyper-V virtual machine
- Understand the GPO

## Lab Topology



## Lab Settings

The information in the table below will be needed in order to complete the lab. The task sections below provide details on the use of this information.

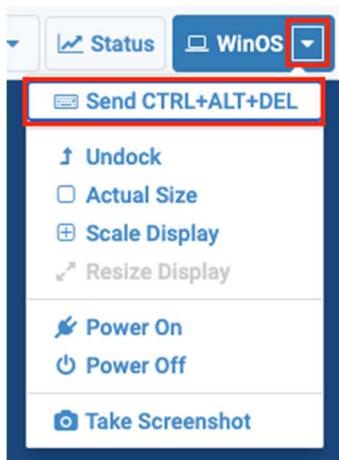
Virtual Machine	IP Address	Account (if needed)	Password (if needed)
WinOS	192.168.0.50	Administrator	NDGlabpass123!

## 1 Creating a Virtual Machine and Install the Operating System

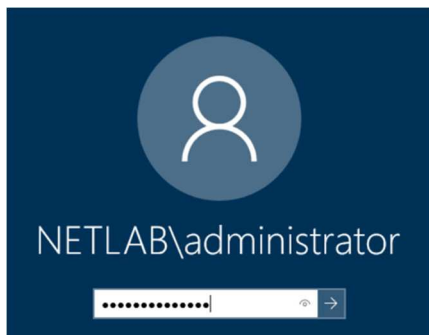
### 1.1 Creating a Virtual Machine Using Hyper-V

In this section, you will load the Firewall configuration file.

1. Click on the **WinOS** tab to access the *WinOS*. Click the dropdown menu and choose the **Send CTRL + ALT + DELETE** option.



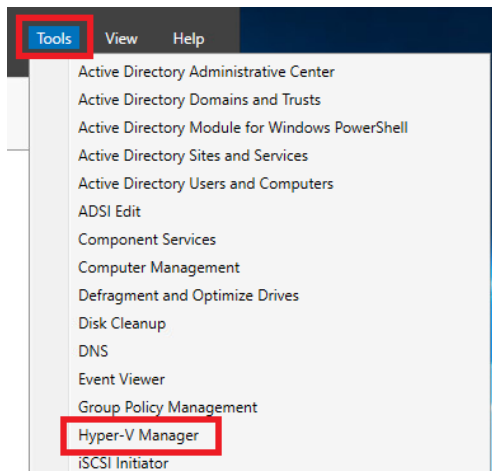
2. Log in as **administrator** using the password **NDGlabpass123!**.



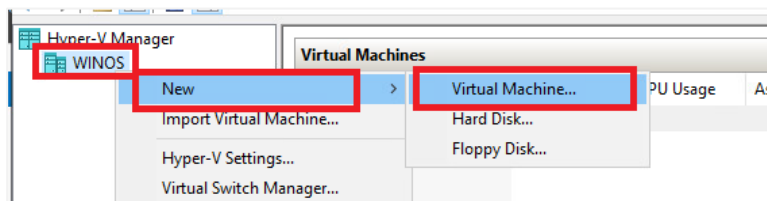
3. Once logged in, click the **Server Manager** icon to launch it.



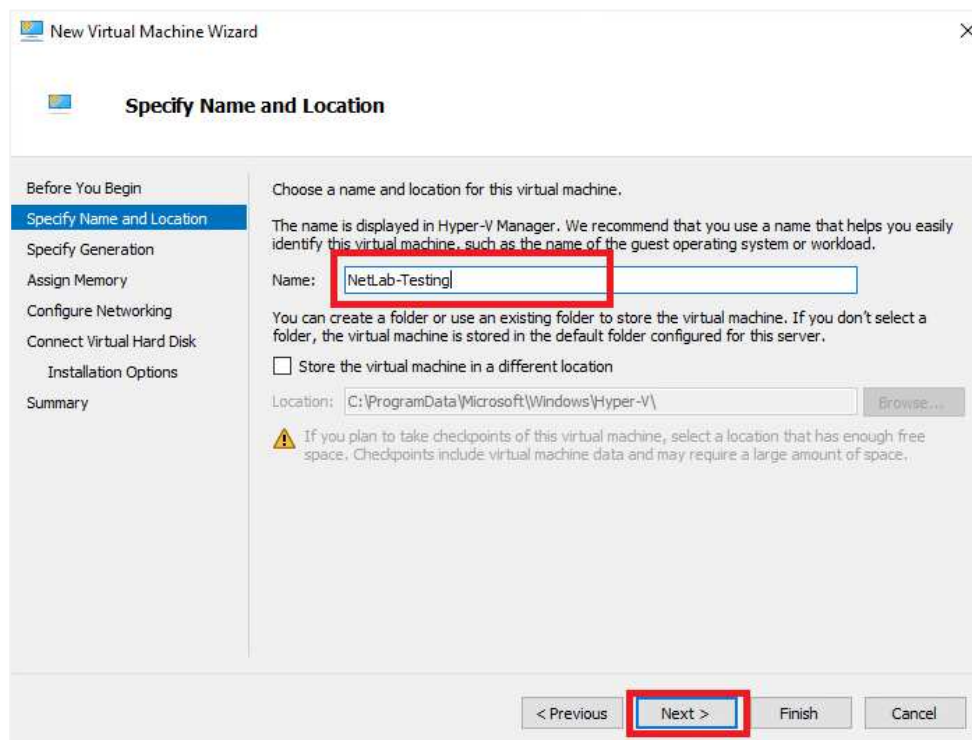
4. In the *Tools* menu, select the **Hyper-V Manager** option.



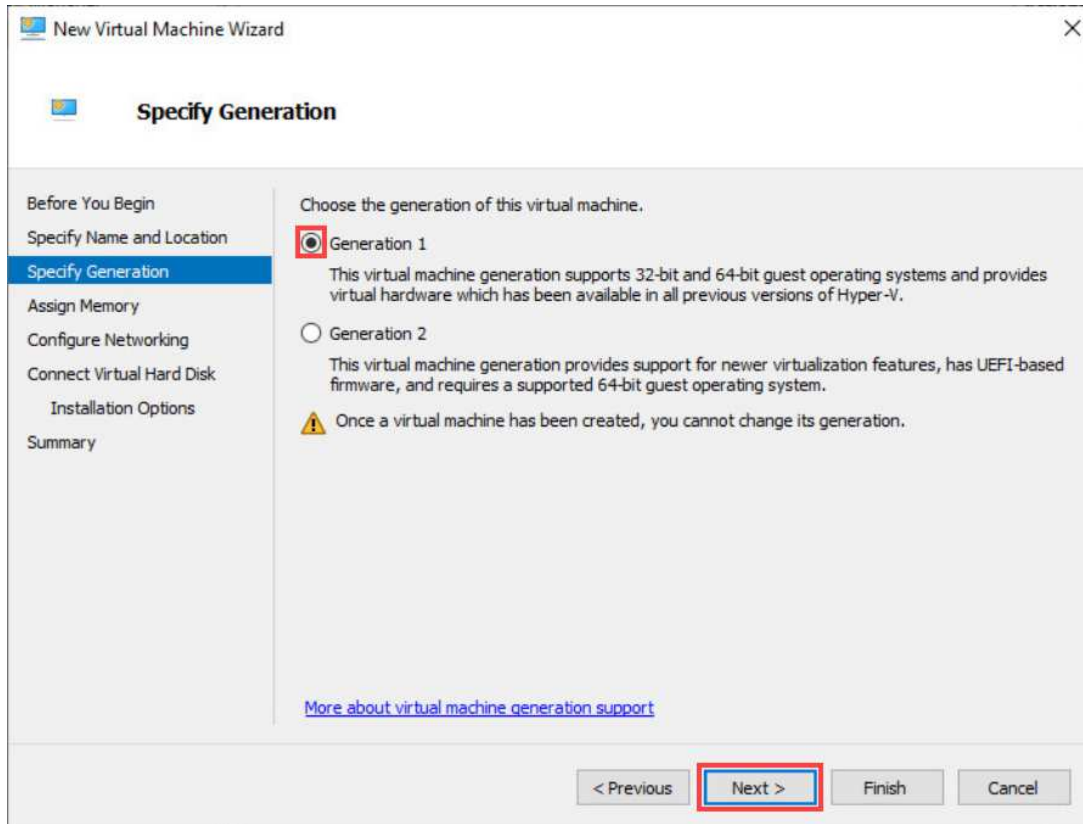
5. The *Hyper-V Manager* will open. Select **WINOS** > **New** > **Virtual Machine**.



6. Type **NetLab-Testing** as the *Name*, click **Next** to continue.

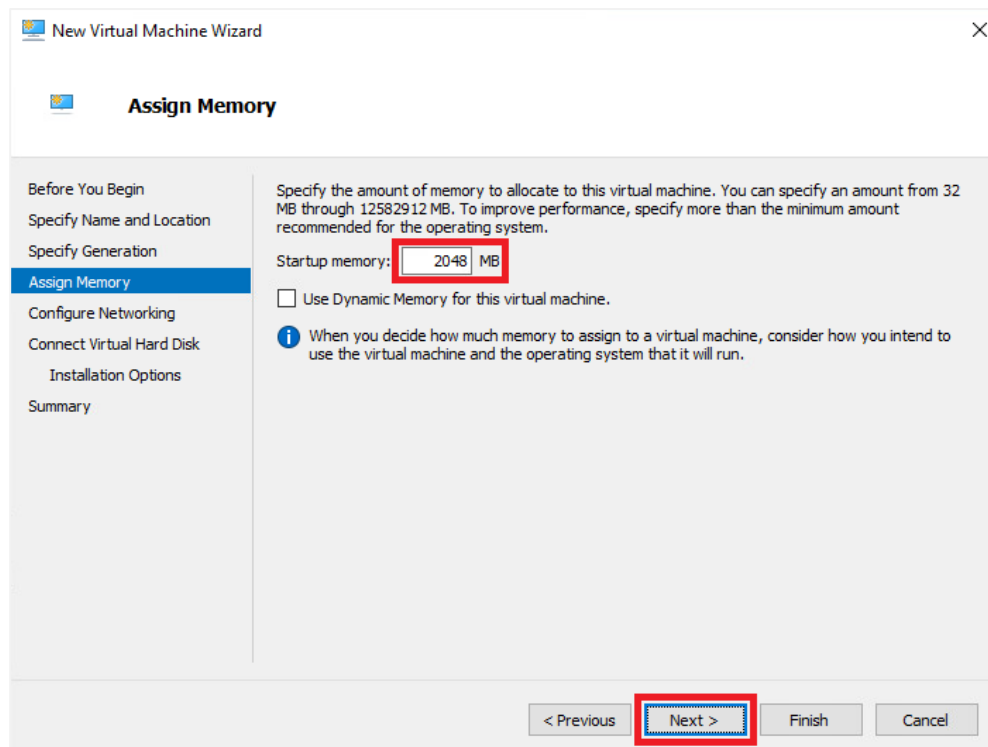


7. At the *Specify Generation* step, click to check the **Generation 1** option. Click **Next** to continue.



The screenshot shows the 'Specify Generation' step of the 'New Virtual Machine Wizard'. The left sidebar lists the steps: 'Before You Begin', 'Specify Name and Location', 'Specify Generation' (highlighted), 'Assign Memory', 'Configure Networking', 'Connect Virtual Hard Disk', 'Installation Options', and 'Summary'. The main area is titled 'Specify Generation' and contains the text 'Choose the generation of this virtual machine.' Below this are two radio button options: 'Generation 1' (selected) and 'Generation 2'. 'Generation 1' is described as supporting 32-bit and 64-bit guest operating systems and providing virtual hardware available in all previous versions of Hyper-V. 'Generation 2' is described as supporting newer virtualization features, having UEFI-based firmware, and requiring a supported 64-bit guest operating system. A warning icon and text state: 'Once a virtual machine has been created, you cannot change its generation.' A link 'More about virtual machine generation support' is at the bottom. The bottom navigation bar has buttons: '< Previous', 'Next >' (highlighted with a red box), 'Finish', and 'Cancel'.

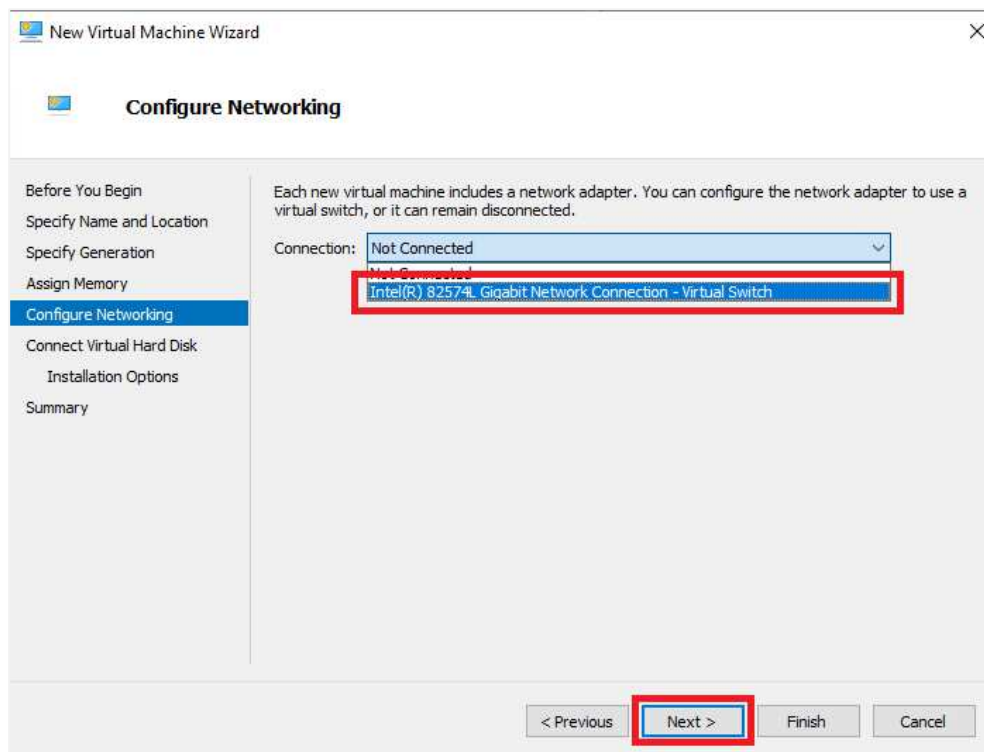
8. In the *Assign Memory* step, change the memory size to 2048 MB. Click **Next** to continue.



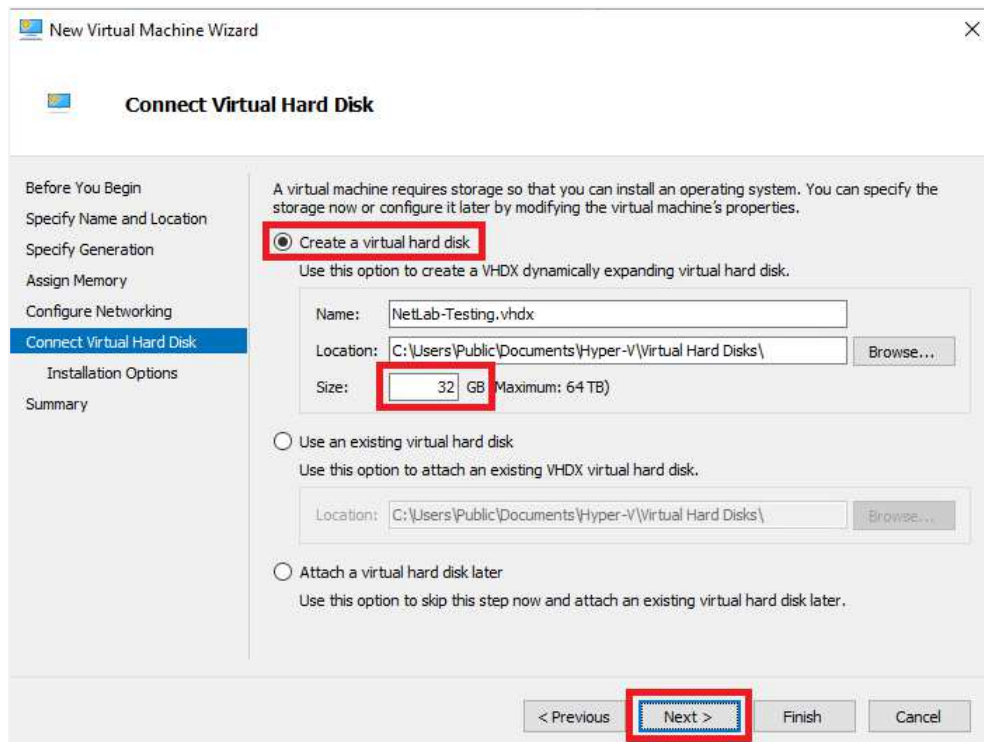
The screenshot shows the 'Assign Memory' step of the 'New Virtual Machine Wizard'. The left sidebar lists the steps: 'Before You Begin', 'Specify Name and Location', 'Specify Generation', 'Assign Memory' (highlighted), 'Configure Networking', 'Connect Virtual Hard Disk', 'Installation Options', and 'Summary'. The main area is titled 'Assign Memory' and contains the text 'Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 12582912 MB. To improve performance, specify more than the minimum amount recommended for the operating system.' Below this is a text box labeled 'Startup memory:' with the value '2048' entered and 'MB' as the unit (the entire input field is highlighted with a red box). There is an unchecked checkbox 'Use Dynamic Memory for this virtual machine.' and an information icon with text: 'When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.' The bottom navigation bar has buttons: '< Previous', 'Next >' (highlighted with a red box), 'Finish', and 'Cancel'.



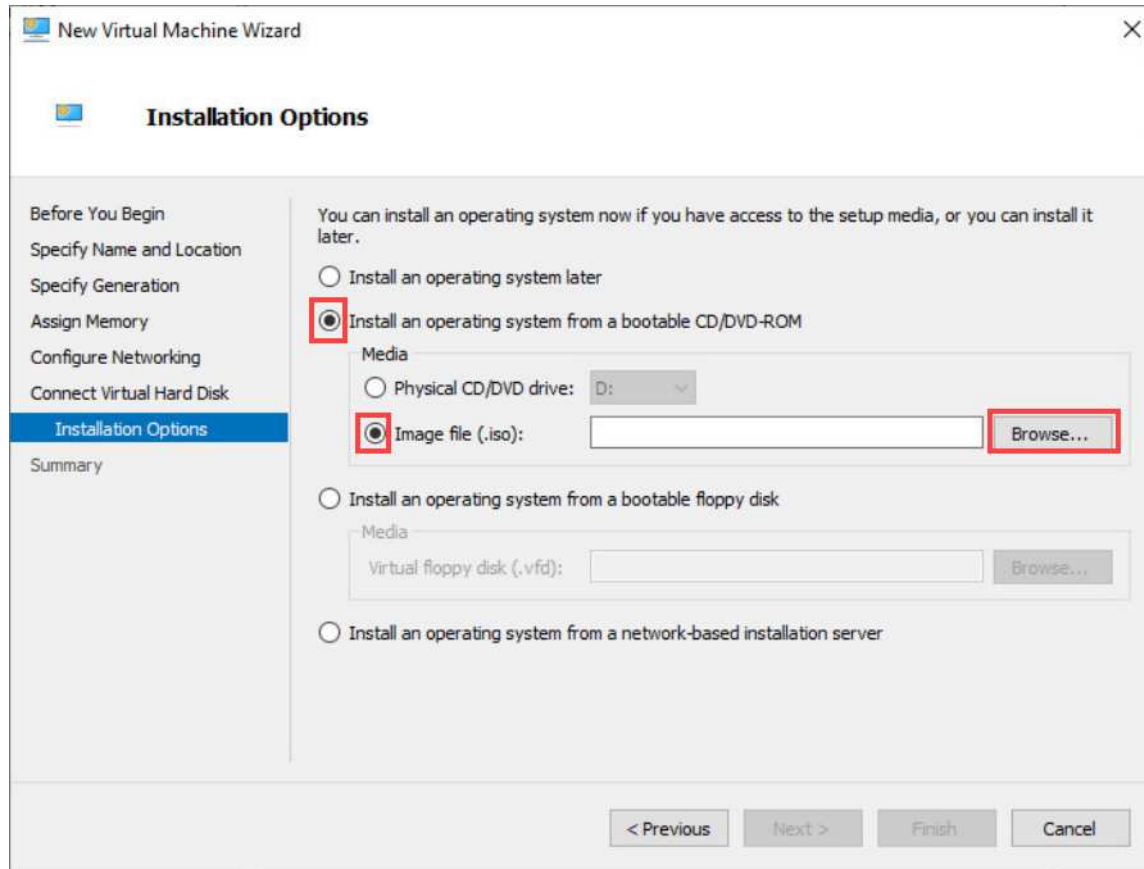
9. In the *Configure Networking* step, click the dropdown menu to choose the option that starts with **Intel(R) 82574L**. Click **Next** to continue.



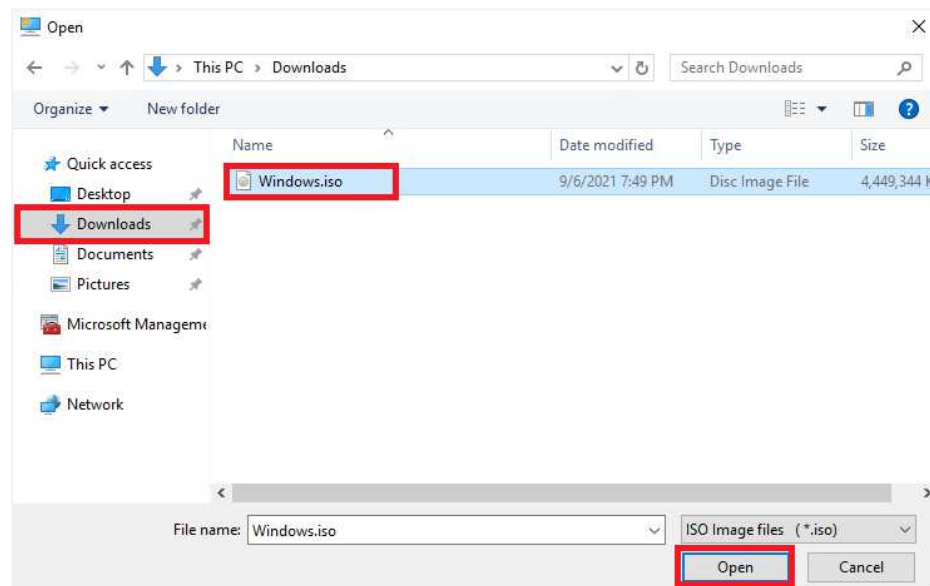
10. In the *Connect Virtual Hard Disk* step, make sure you have the **Create a virtual hard disk** option checked, then change the size to 32 GB.



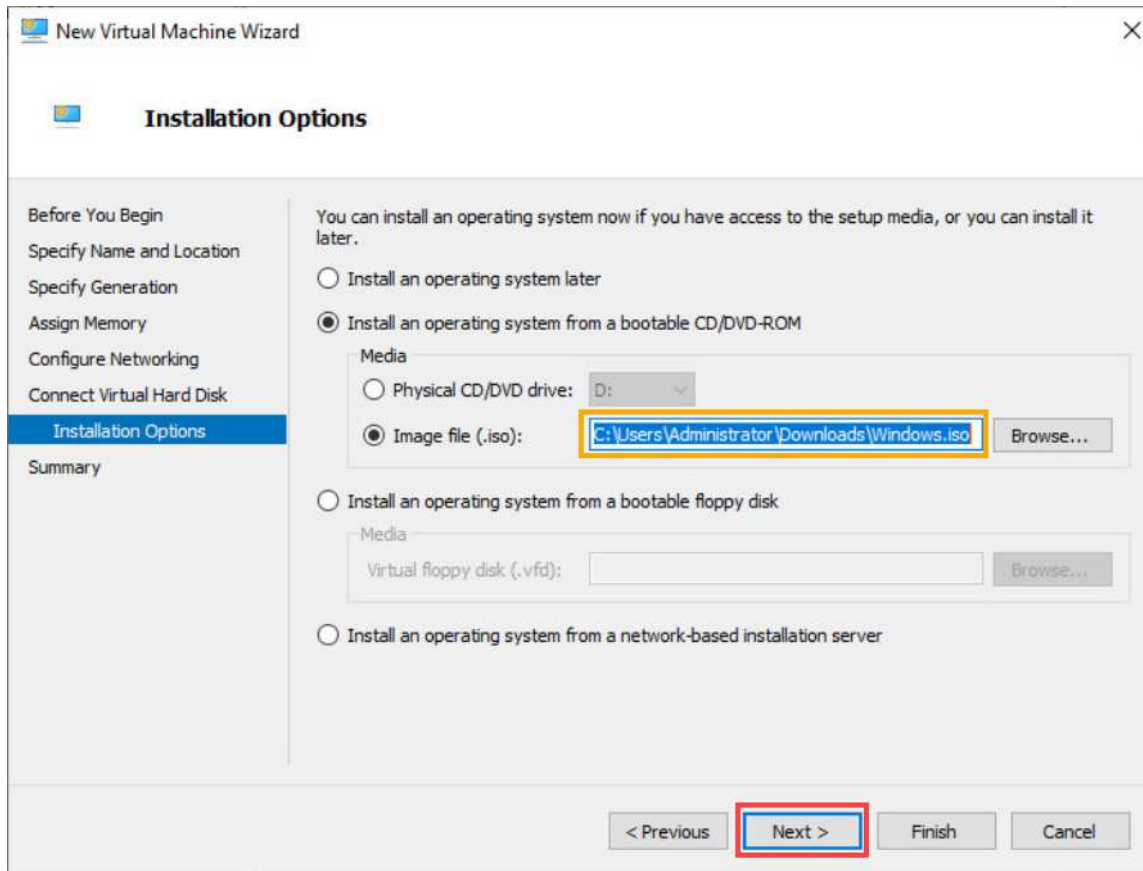
11. In the *Installation Options* step, we will check the **Install an operating system from a bootable CD/DVD-ROM** option followed by selecting the **Image file (.iso)** option, then click the **Browse** button.



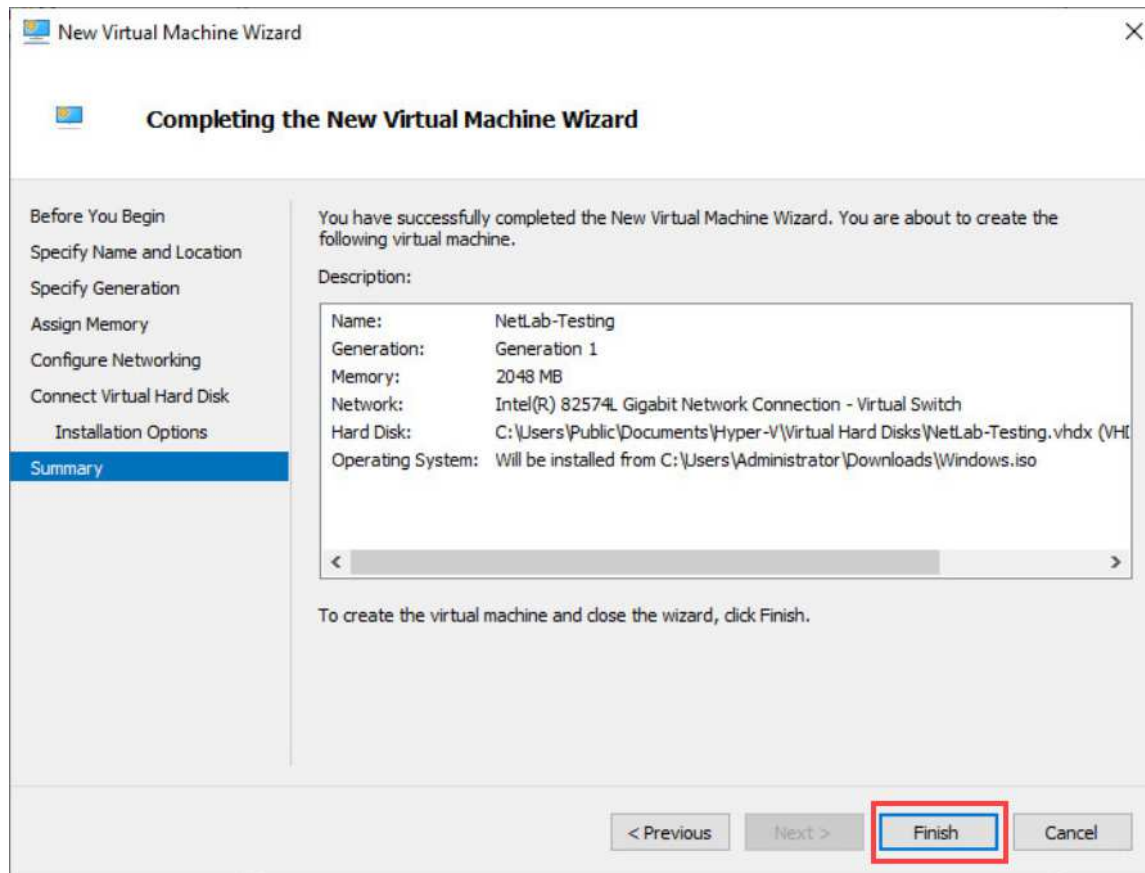
12. In the pop-up window, click **Downloads** in the quick access pane, then click the **Windows.iso** file. At the bottom, click the **Open** button.



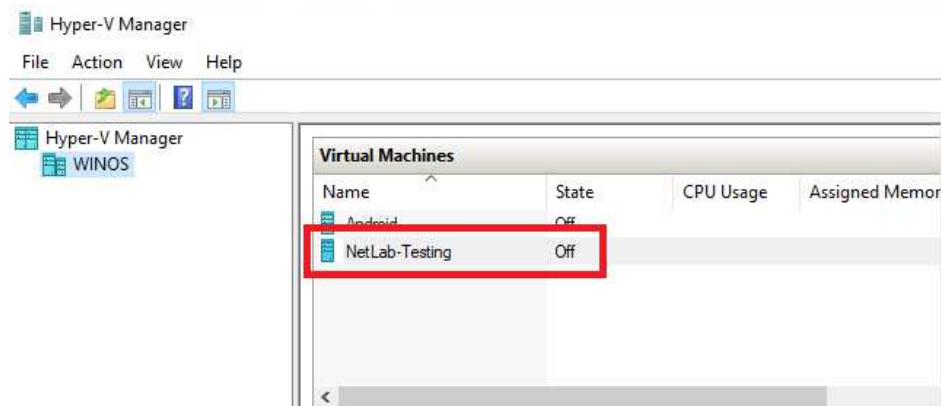
13. When you are back at the *Installation Options* step, double-check that *Windows.iso* is selected, then click **Next** to continue.



14. In the *Summary* step, click the **Finish** button.



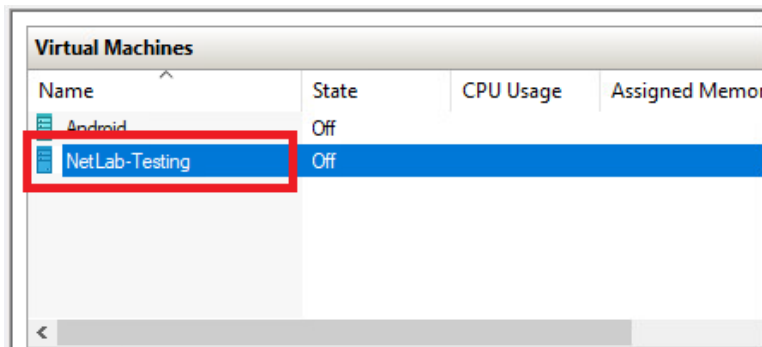
15. You should be seeing a *NetLab Testing* VM showing up in the *Hyper-V Manager* window. Leave the window open and proceed to the next section.



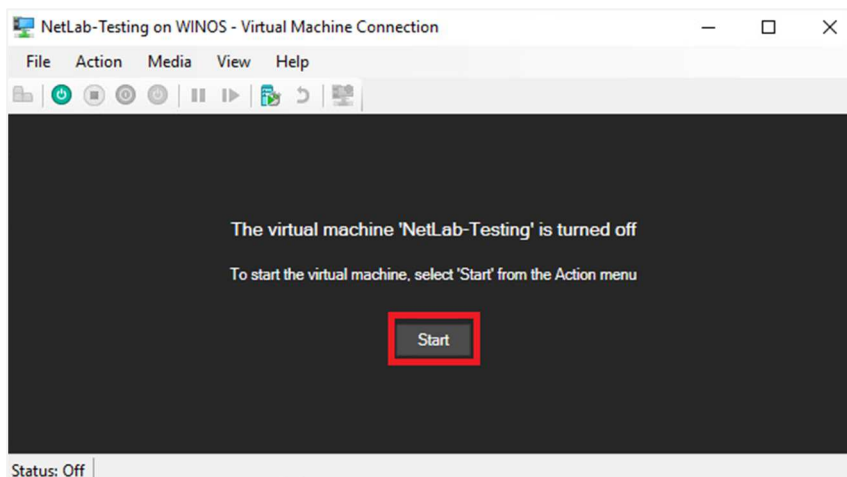
## 1.2 Install the Operating System

In this section, you will install the *Windows 10* operating system in the *Hyper-V Manager* and join a domain.

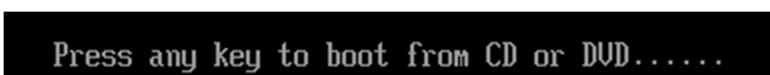
1. While you are in the *Hyper-V Manager*, double-click the **NetLab-Testing** virtual machine.



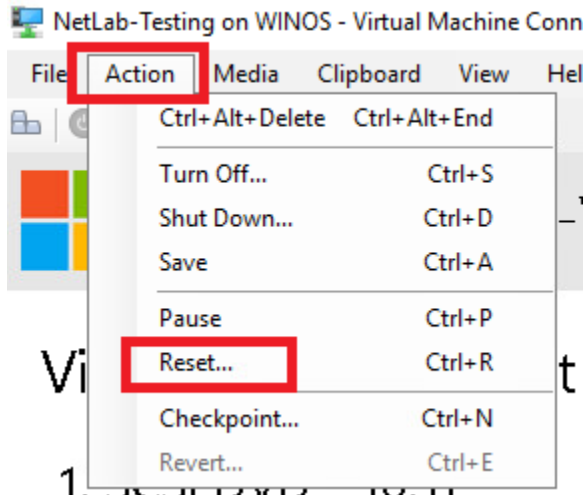
2. A window pops up; this is the screen of your virtual machine. We will operate inside this window to install the *Windows 10* operating system. Click the **Start** button to boot up the system.



Immediately, you would want to click in the window and then **press any key** on your keyboard to boot from the installation image.



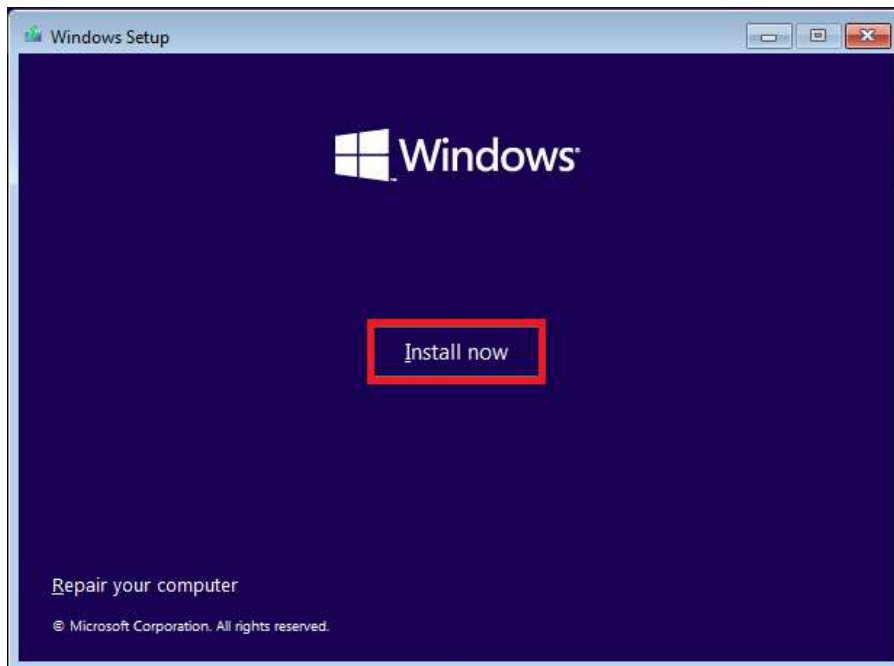
3. If you miss the chance to press the key the first time. You can click the **Action** menu and **Reset** the machine to retry. When asked, *Are you sure...* click the **Reset** button.



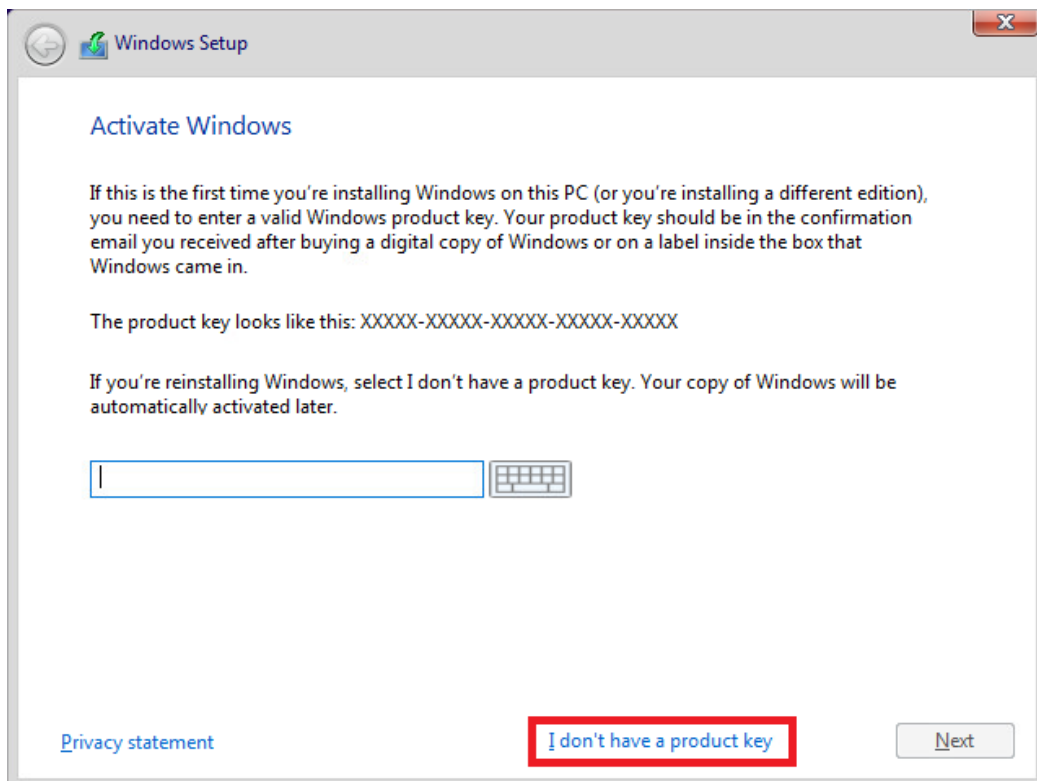
4. Once the ISO is booted, you will see the *Windows Setup* window like below. Leave everything to its default setting and click the **Next** button. You may want to maximize the window to full screen to have a better interaction with the VM.



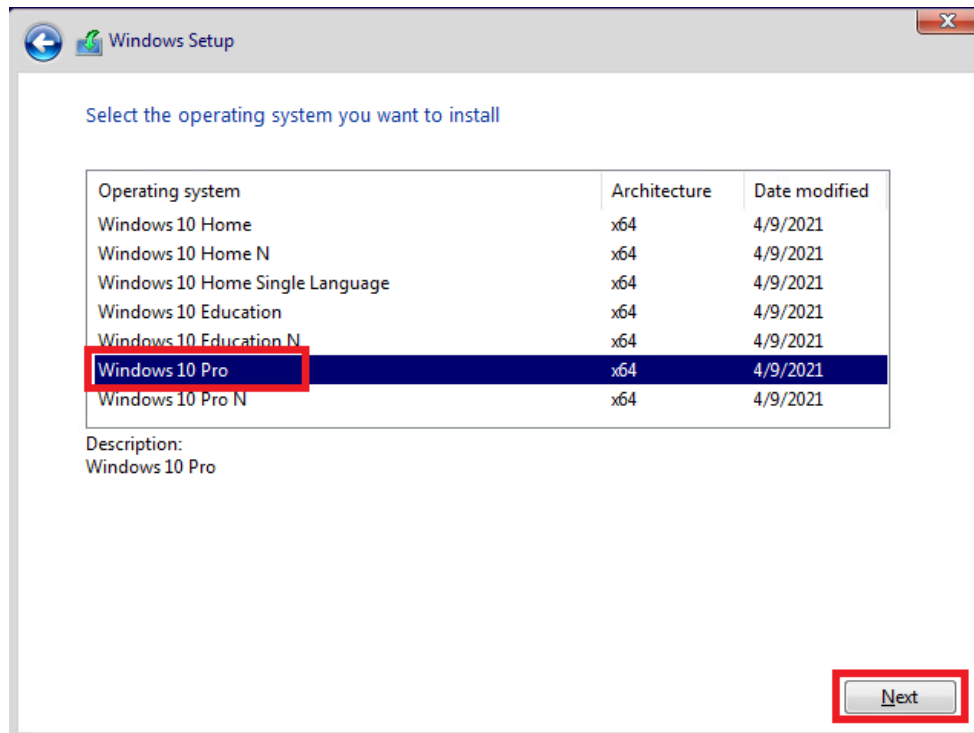
5. On the next screen, click the **Install Now** button.



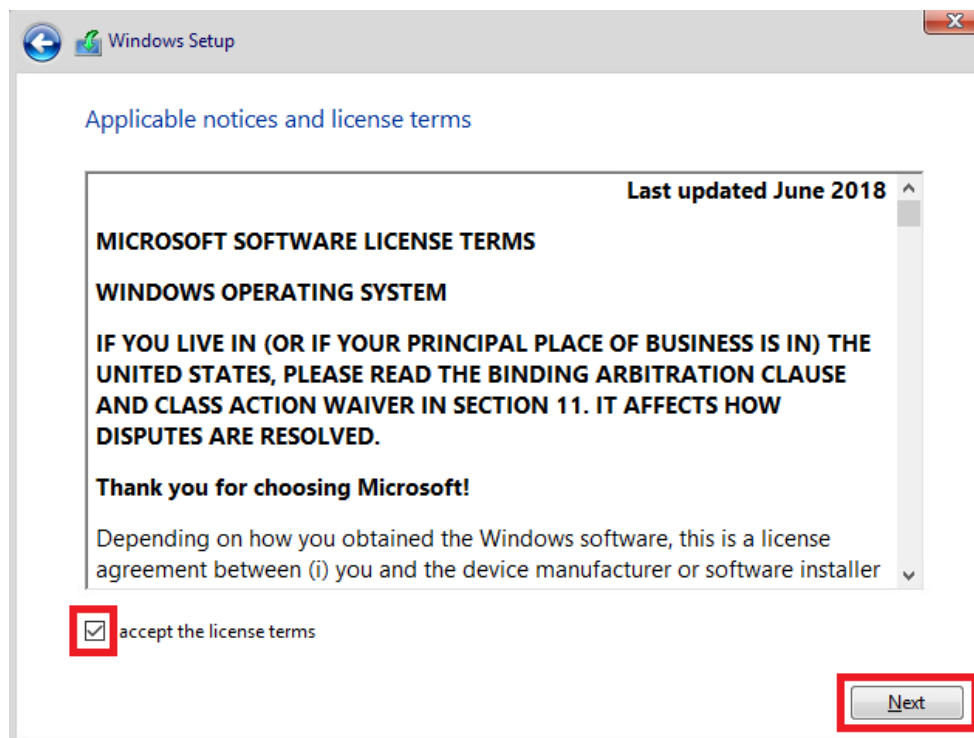
6. Click **I don't have a product key** on this screen.



7. On the next screen, click to select **Windows 10 Pro**, then click the **Next** button.

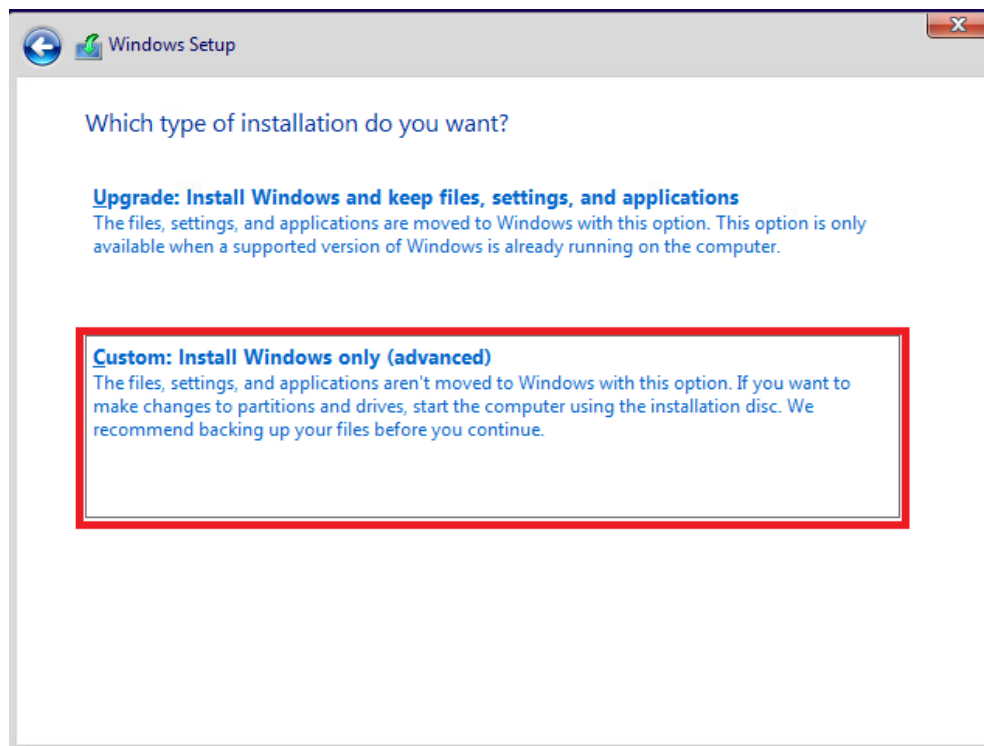


8. Check to **accept the license terms**, then click the **Next** button to continue.

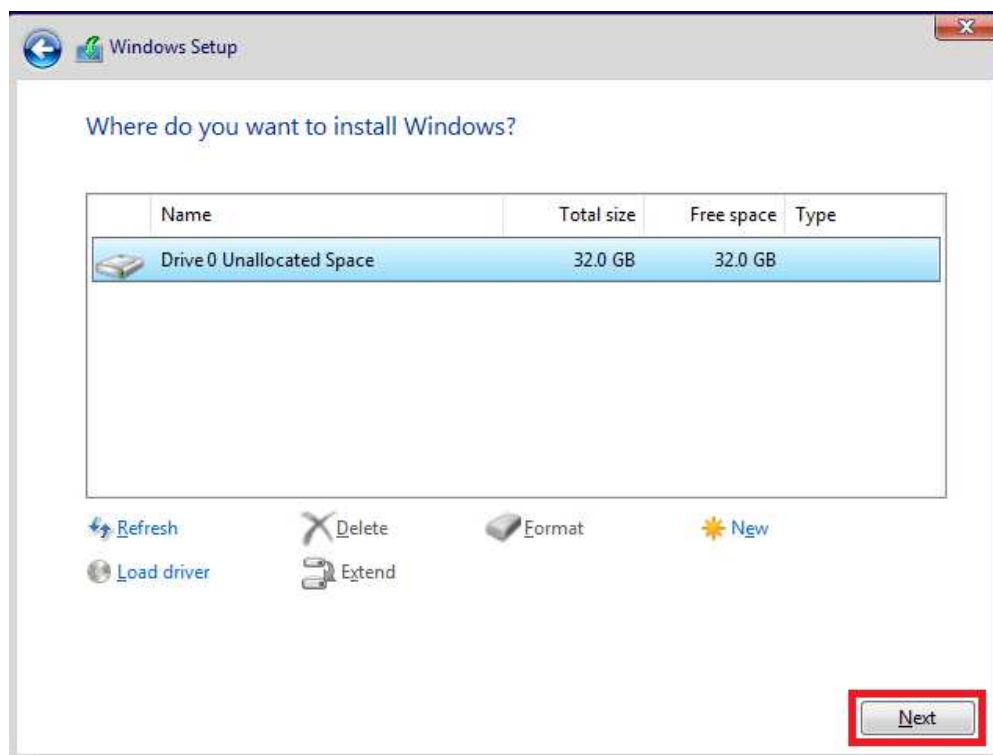




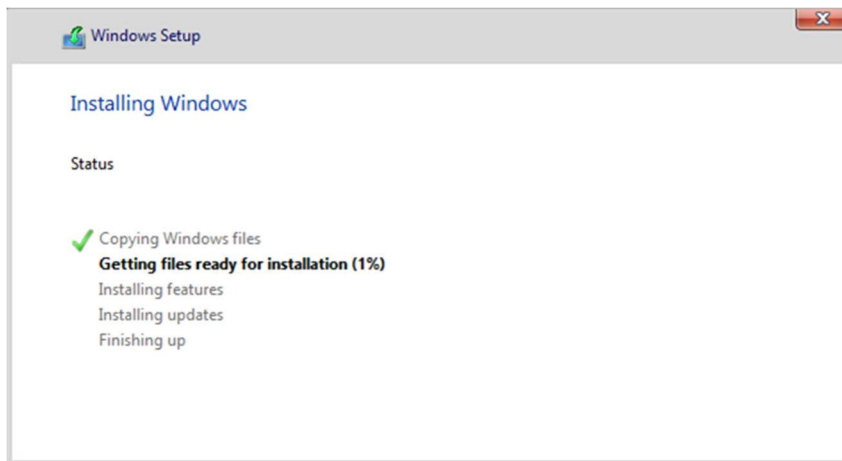
9. Then, click to choose the option **Custom: install Windows only (advanced)**.



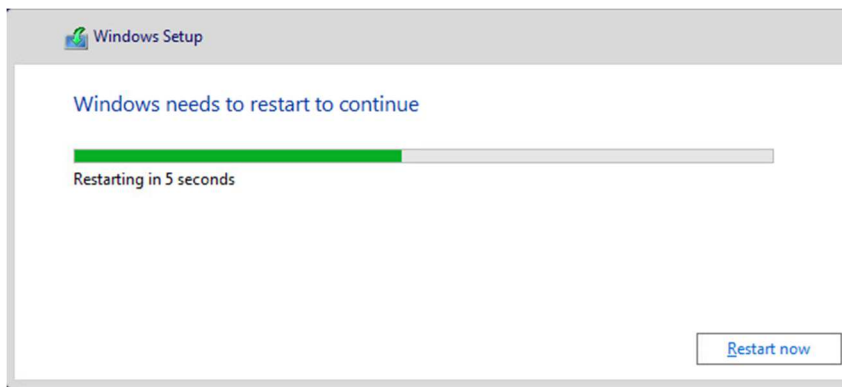
10. Click the **Next** button on this screen.



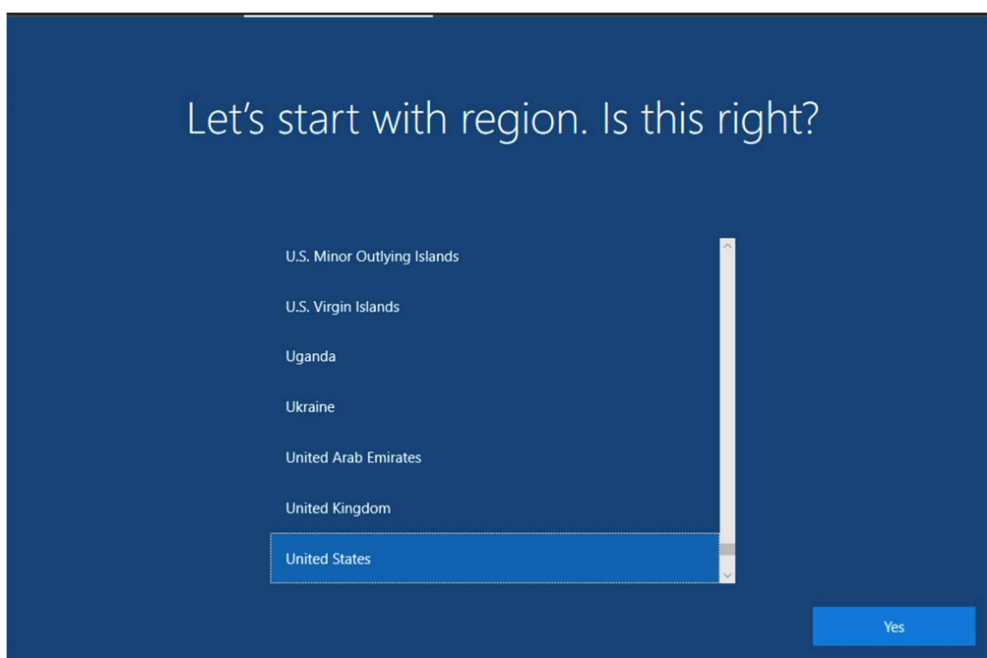
11. The program will then format the disk and install Windows. The installation process may take a while, so please be patient.



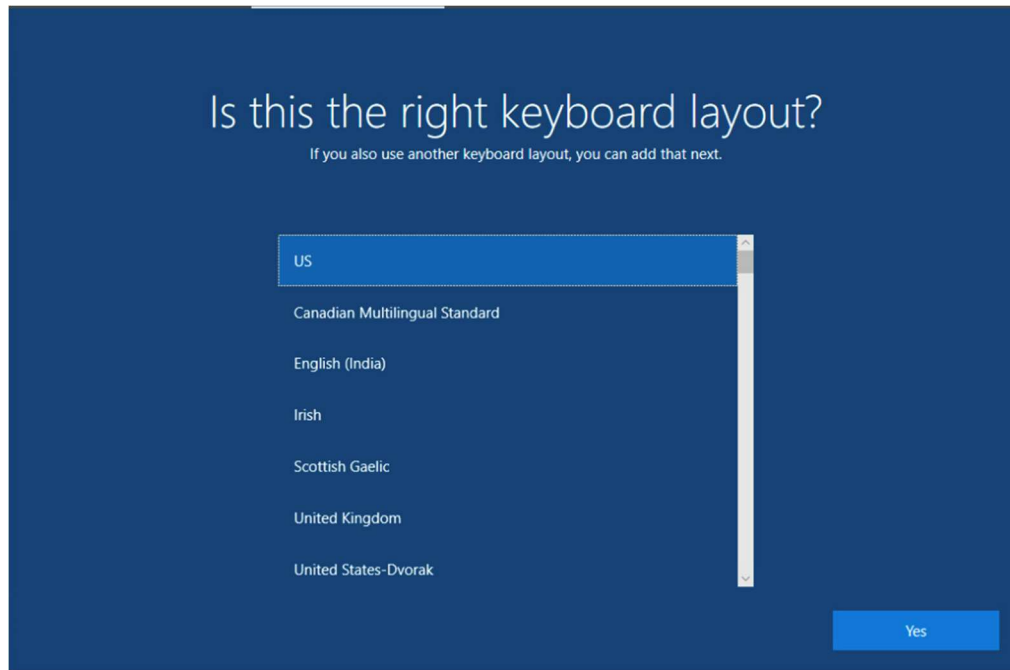
12. The VM will restart itself once completed.



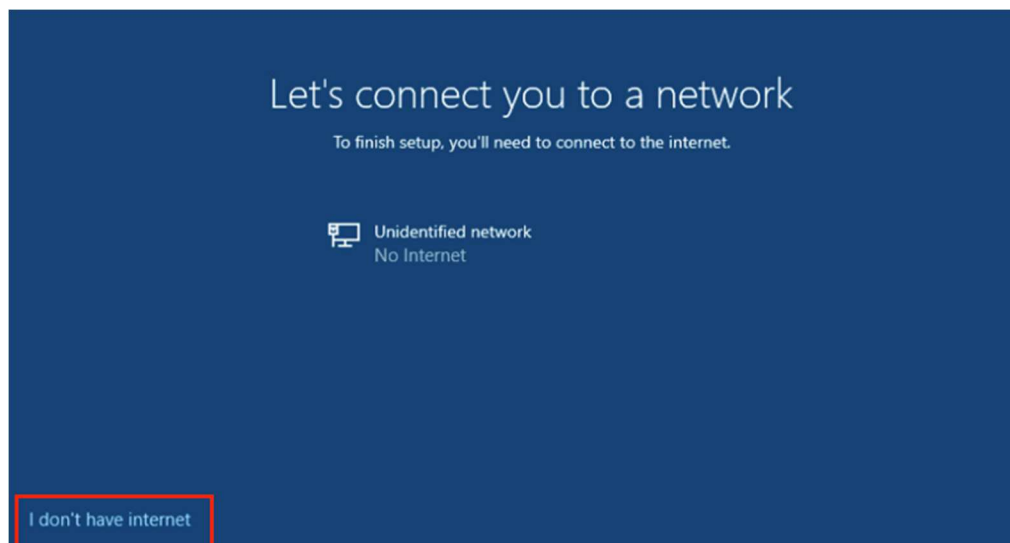
13. After the reboot, answer **United States** on this screen. Click **Yes** to continue.



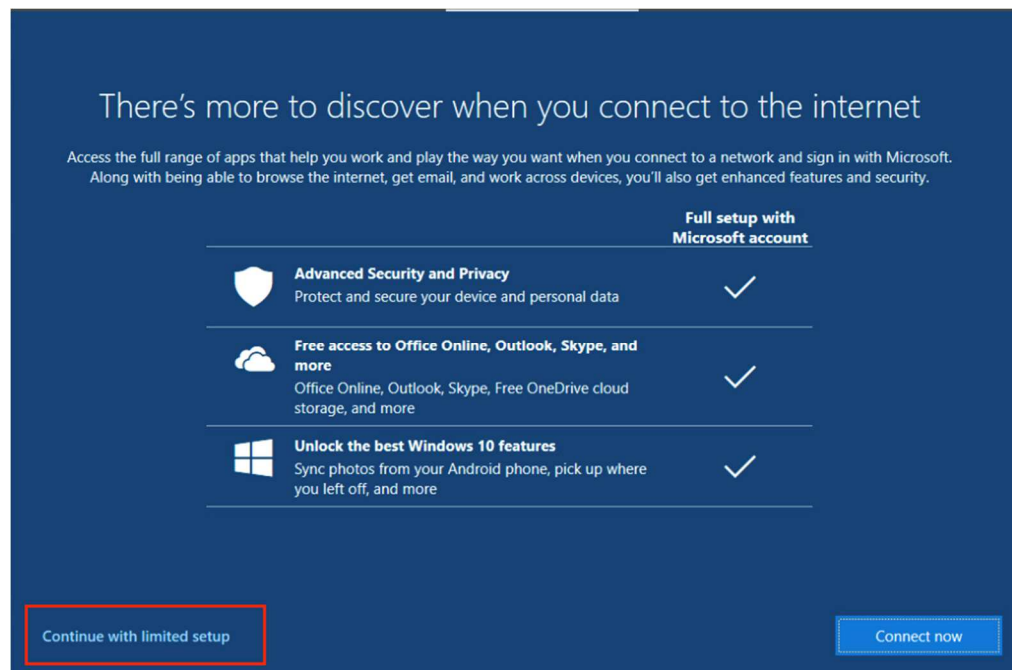
14. Select the **US** keyboard layout at this screen and click **Yes** to continue. If it prompts to add a secondary keyboard layout, click **Skip**.



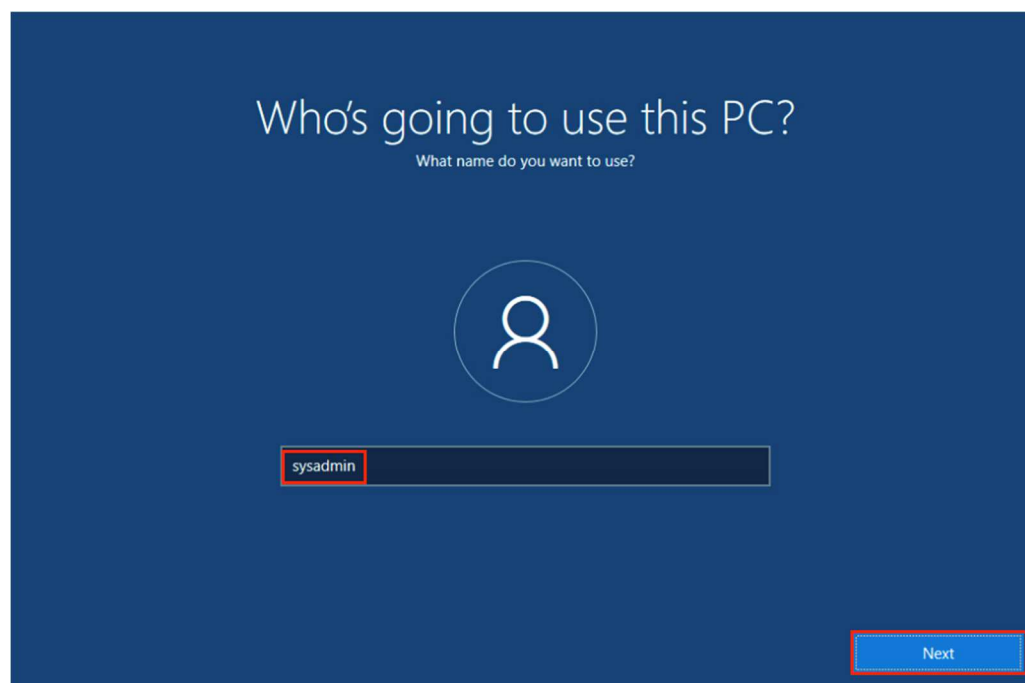
15. The setup program will start the network initializing process. After a few minutes, this process will fail (because we do not have internet access). Click the option where it says **I don't have internet**.



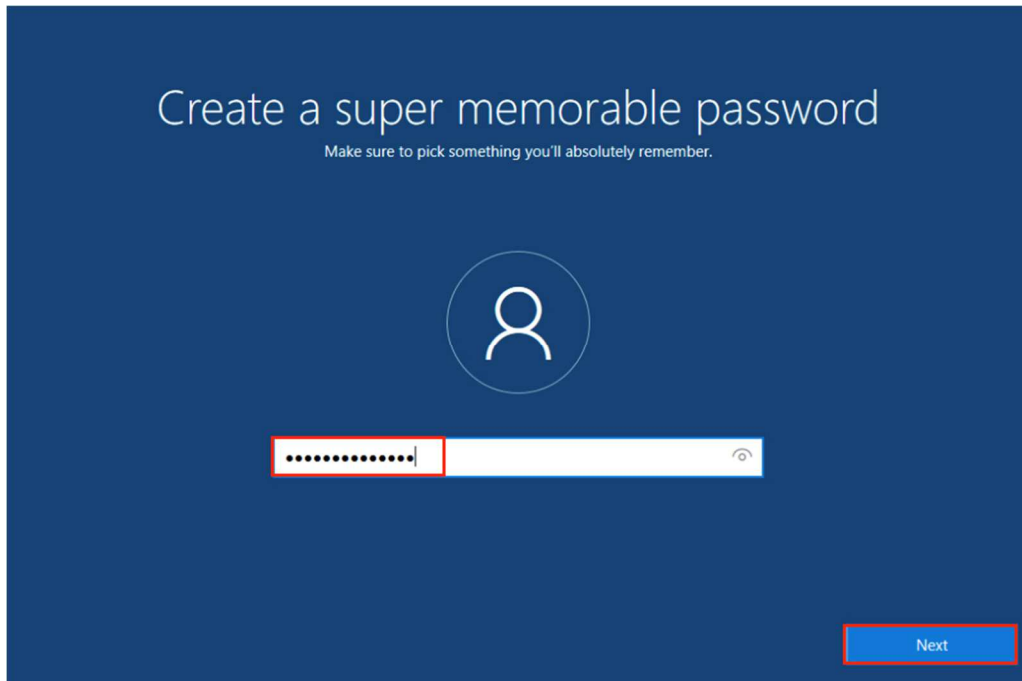
16. Select **Continue with limited setup** at this screen.



17. Type **sysadmin** to create a user and click **Next** to continue.




18. Type **NDGlabpass123!** as the password, then click **Next**. Type the same password again to confirm it at the next screen. Click **Next** to continue.



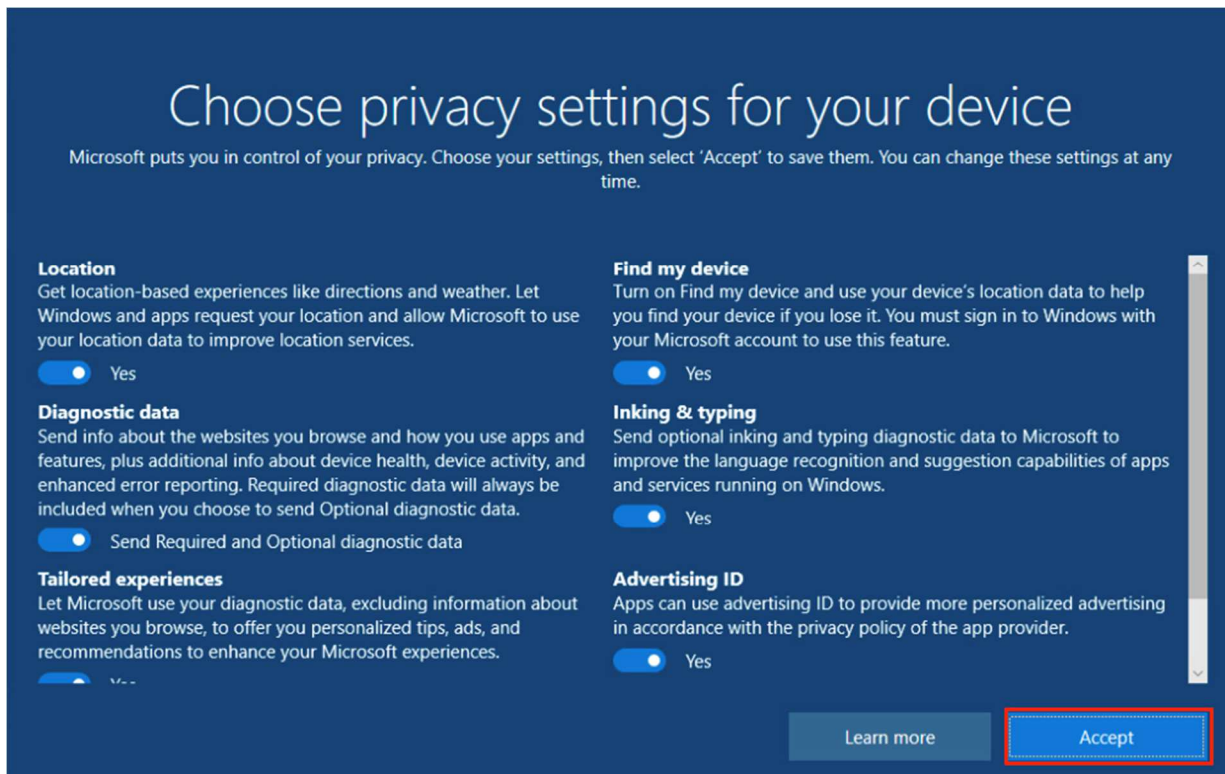
Create a super memorable password

Make sure to pick something you'll absolutely remember.



Next

19. Set 3 security questions and provide your answers. When at the following screen, simply click **Accept** to proceed.



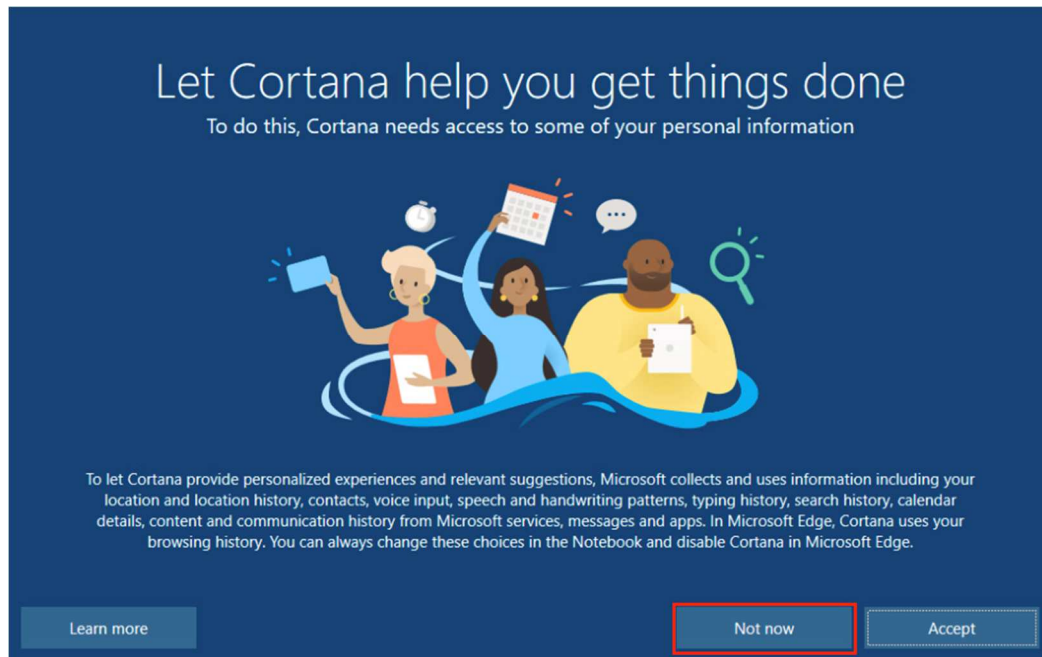
Choose privacy settings for your device

Microsoft puts you in control of your privacy. Choose your settings, then select 'Accept' to save them. You can change these settings at any time.

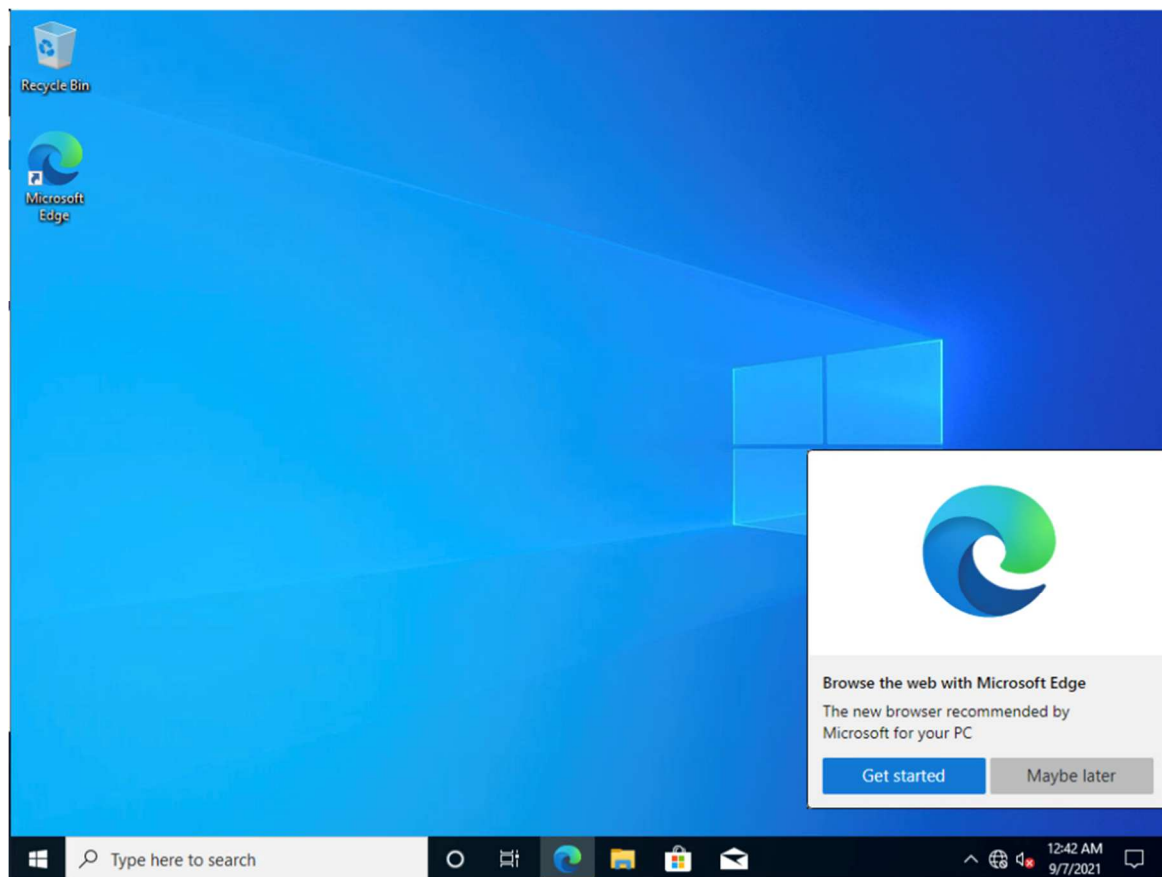
<p><b>Location</b></p> <p>Get location-based experiences like directions and weather. Let Windows and apps request your location and allow Microsoft to use your location data to improve location services.</p> <p><input checked="" type="checkbox"/> Yes</p>	<p><b>Find my device</b></p> <p>Turn on Find my device and use your device's location data to help you find your device if you lose it. You must sign in to Windows with your Microsoft account to use this feature.</p> <p><input checked="" type="checkbox"/> Yes</p>
<p><b>Diagnostic data</b></p> <p>Send info about the websites you browse and how you use apps and features, plus additional info about device health, device activity, and enhanced error reporting. Required diagnostic data will always be included when you choose to send Optional diagnostic data.</p> <p><input checked="" type="checkbox"/> Send Required and Optional diagnostic data</p>	<p><b>Inking &amp; typing</b></p> <p>Send optional inking and typing diagnostic data to Microsoft to improve the language recognition and suggestion capabilities of apps and services running on Windows.</p> <p><input checked="" type="checkbox"/> Yes</p>
<p><b>Tailored experiences</b></p> <p>Let Microsoft use your diagnostic data, excluding information about websites you browse, to offer you personalized tips, ads, and recommendations to enhance your Microsoft experiences.</p> <p><input checked="" type="checkbox"/> Yes</p>	<p><b>Advertising ID</b></p> <p>Apps can use advertising ID to provide more personalized advertising in accordance with the privacy policy of the app provider.</p> <p><input checked="" type="checkbox"/> Yes</p>

Learn more Accept

20. At the Cortana screen, click **Not now**.



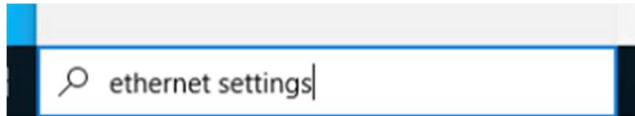
21. Let it run. Once finished, you'll see we have successfully installed the *Windows 10* operating system on a virtual machine. Click **Maybe Later** at the lower-right corner. We are not going to use *Edge* now.



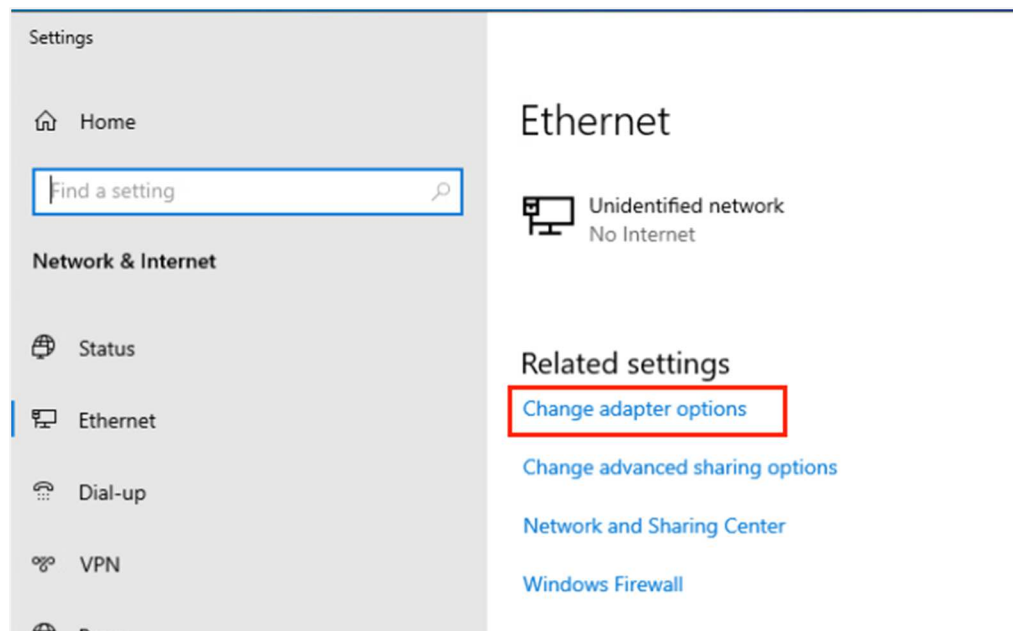
## 2 Join a Domain and Apply Group Policy

### 2.1 Joining a Domain

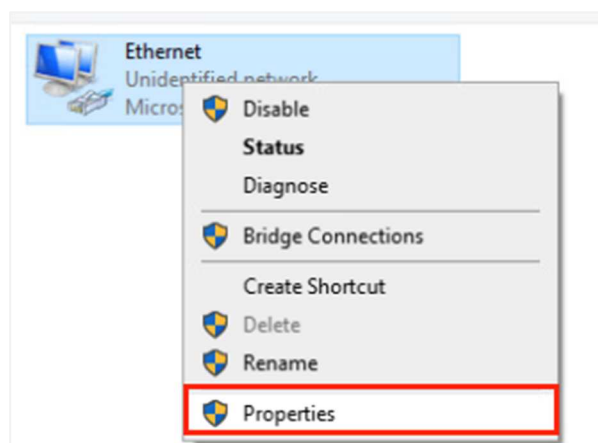
1. Click the **Type here to search** area on the taskbar, type **ethernet settings**, and press **Enter**.



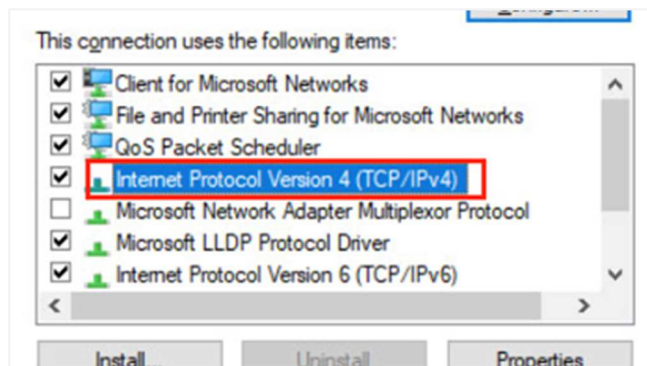
2. Then, click **Change adapter options** on the right side.



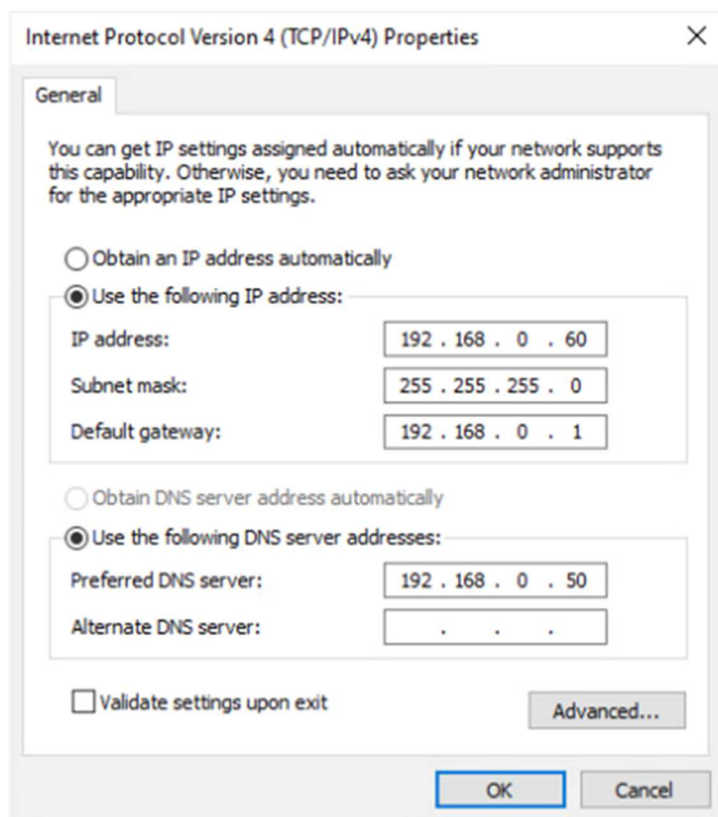
3. In the new window, right-click on the **Ethernet** adapter and select the **Properties** option.



4. In the pop-up window, double-click the **Internet Protocol Version 4 (TCP/IPv4)** to open the IPV4 properties window.

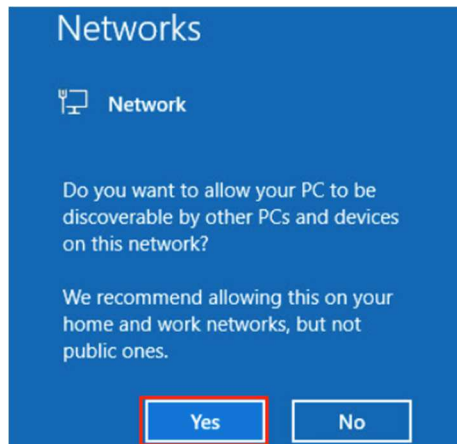


5. Select the button for **Use the following IP address**, then type the information as shown in the screenshot below. Click **OK** when finished. Click **OK** again to confirm.

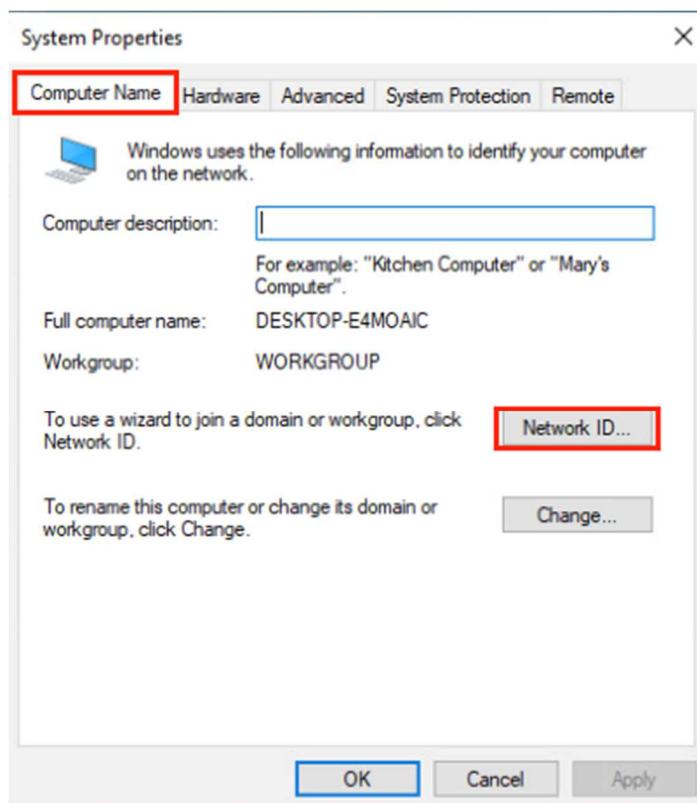




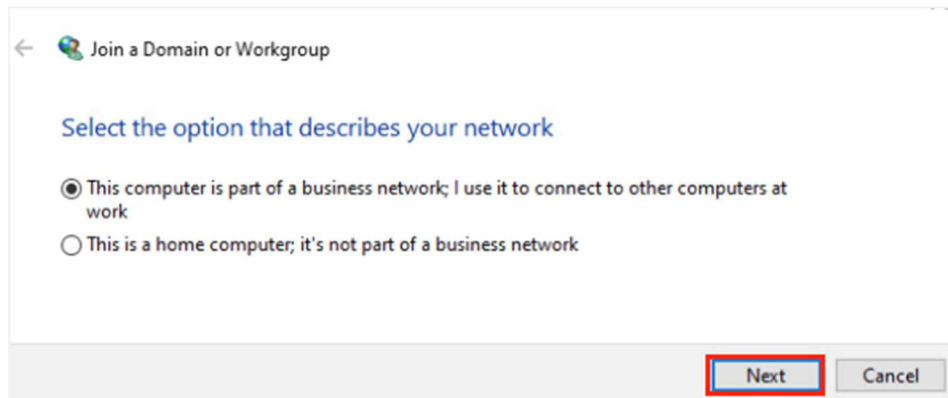
- On the right side of the screen, if prompted to allow the PC to be discovered, answer **Yes**.



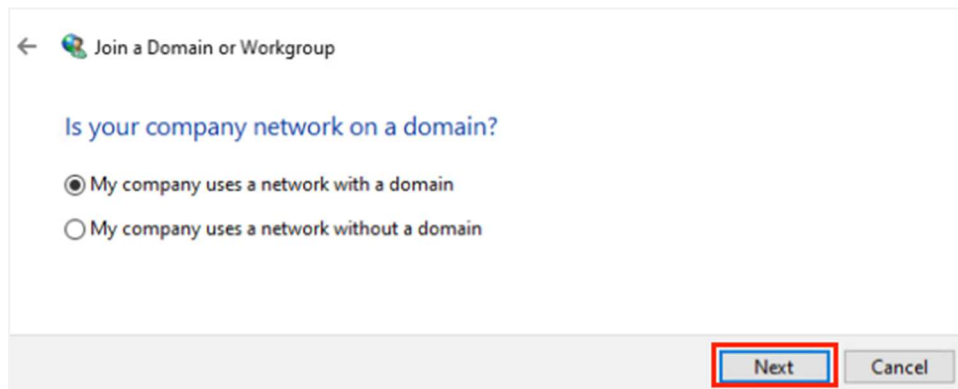
- Close all opened windows.
- Once again, click the **Type here to search** area on the taskbar. Type **advanced system settings** and press **Enter**. The *System Properties* window will appear. Click the **Computer Name** tab, then click the **Network ID...** button.



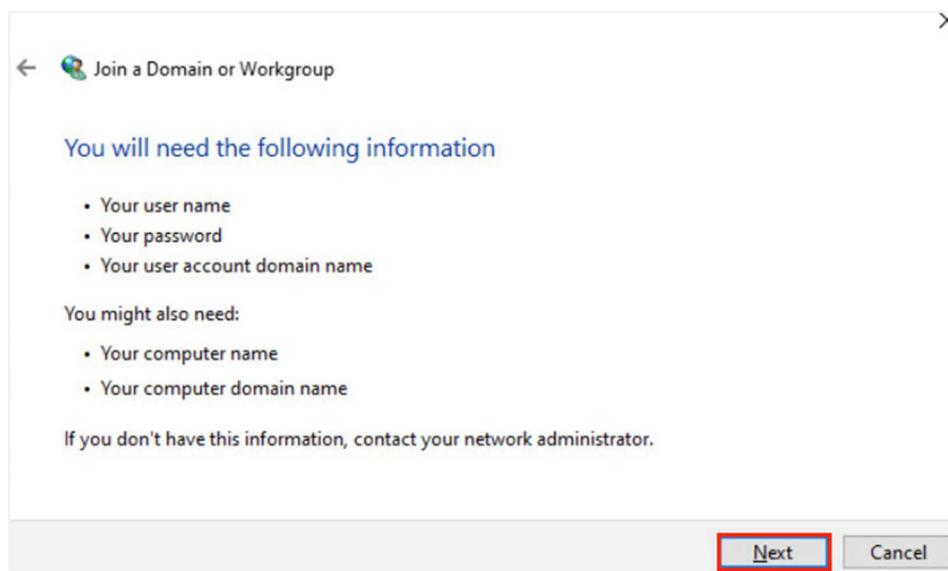
9. On the *Select the option that describes your network* window, leave the default setting and click **Next** to continue.



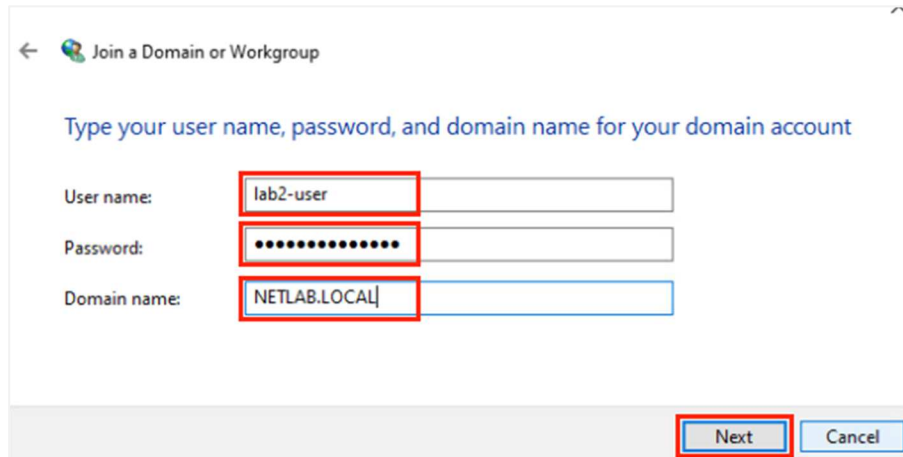
10. On the *Is your company network on a domain* window, leave the default setting and click **Next** to continue.



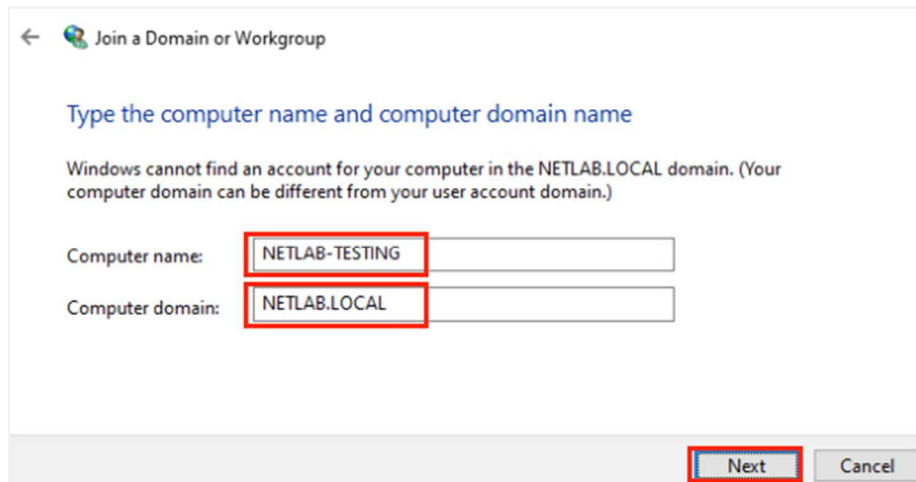
11. On the *You will need the following information* window, click **Next**.



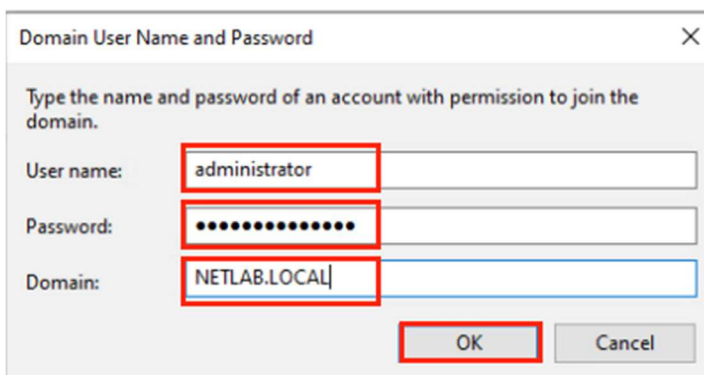
12. In the next step, we will be using the *lab2-user* account to join the domain. Type *lab2-user* as the *User name*, and *NDGlabpass123!* as the *Password*, then *NETLAB.LOCAL* as the *Domain name*. Click **Next** once finished.



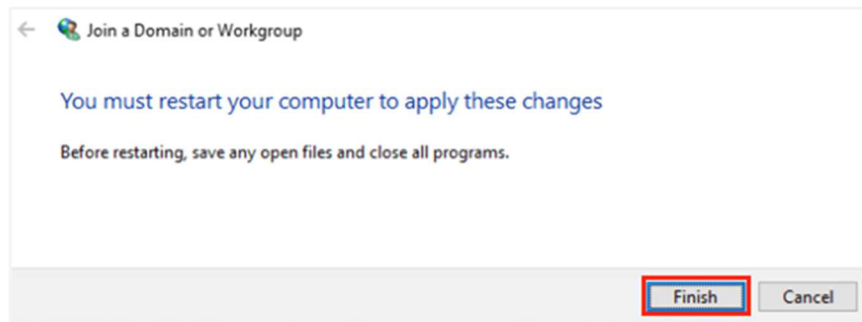
13. On the new screen, we will change the *Computer name* to *NETLAB-TESTING* and *Computer domain* to *NETLAB.LOCAL*. Click **Next** to continue.



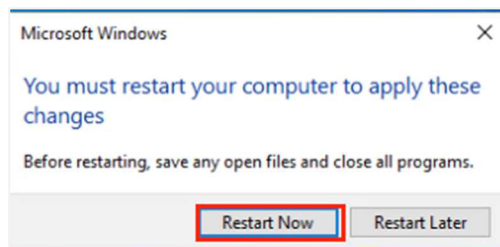
14. Next, type *administrator* for *User name*, *NDGlabpass123!* for *Password*, and *NETLAB.LOCAL* as the *Domain*. Click **OK** to proceed.



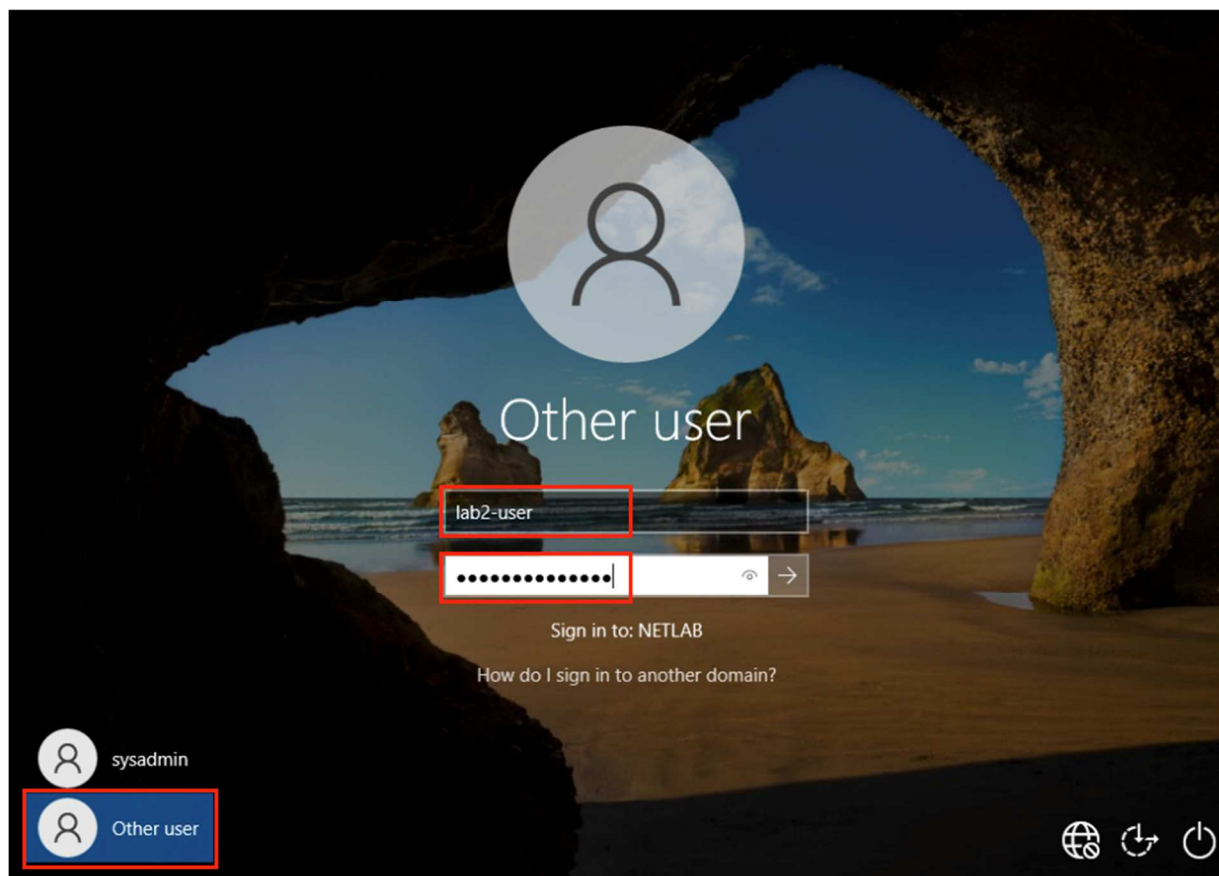
15. After a few seconds, the screen will prompt to restart the computer. Click **Finish**.



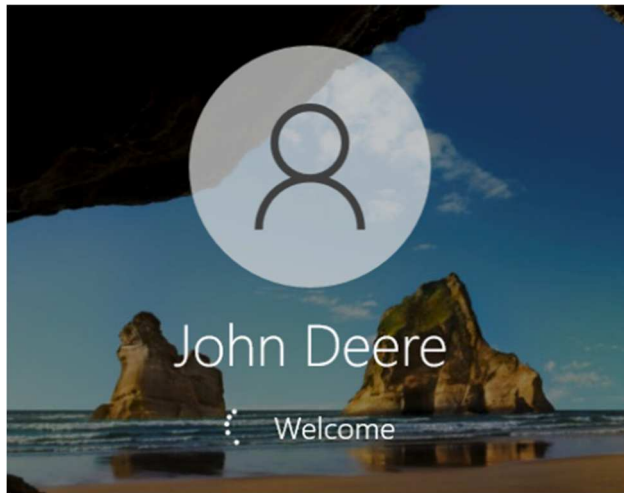
16. Click **OK** in the *System Properties* window and then click **Restart Now**.



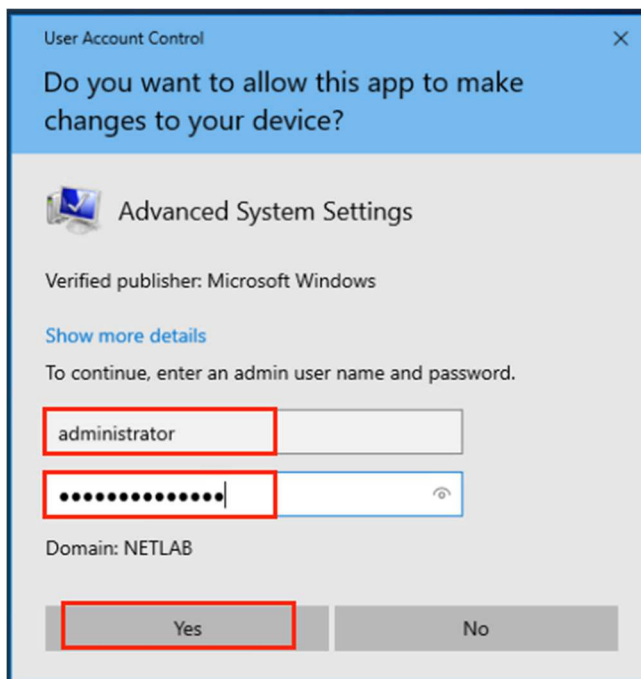
17. After the restart, double-click the welcome screen, and the login page will appear. We will log in as the domain user. Click **Other user** in the lower-left corner. Then, type `lab2-user` as the username, `NDGlabpass123!` as the password. Press **Enter** to log in.



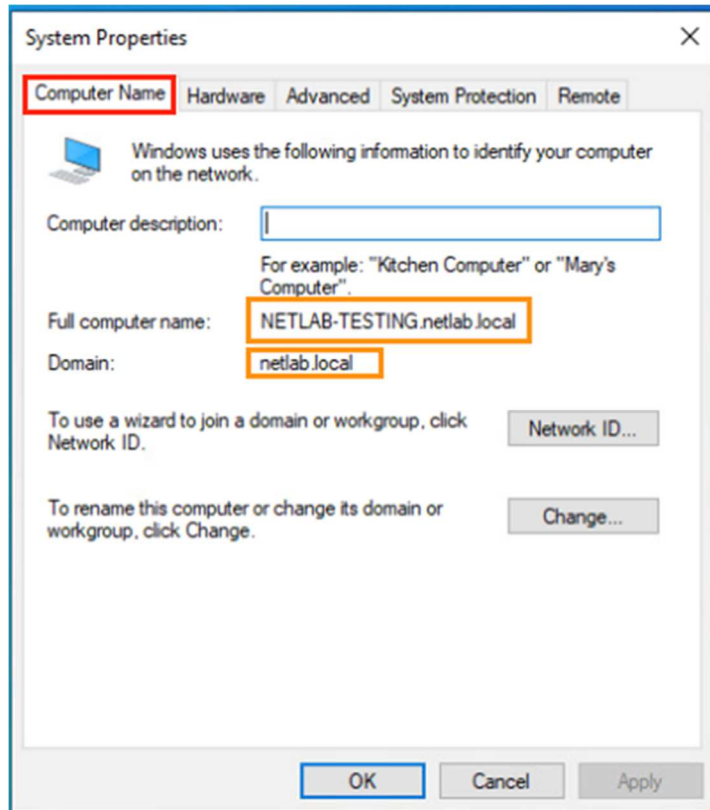
18. You will see the user *John Deere* is being logged in. The login will create a user account on the local machine and then do the initialization again. After a few minutes, you will see the desktop.



19. Once more, click the **Type here to search** area on the taskbar. Type **advanced system settings** and press **Enter**. When prompted for the admin user name and password, type **administrator** as the user name and **NDGlabpass123!** as the password. Click **Yes** to proceed.



20. In the *System Properties* window, click the **Computer Name** tab. Notice the *Full computer name* is shown as *NETLAB-TESTING.netlab.local*, and the domain is showing as *netlab.local*. This means you have successfully joined *Windows 10* to the domain.

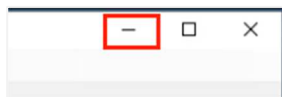


21. Click **Cancel** to exit the window.

## 2.2 Apply Group Policy

*Group Policy* is used to enforce enterprise customized settings. In this section, we will configure a very simple *Group Policy* rule to show how it's done.

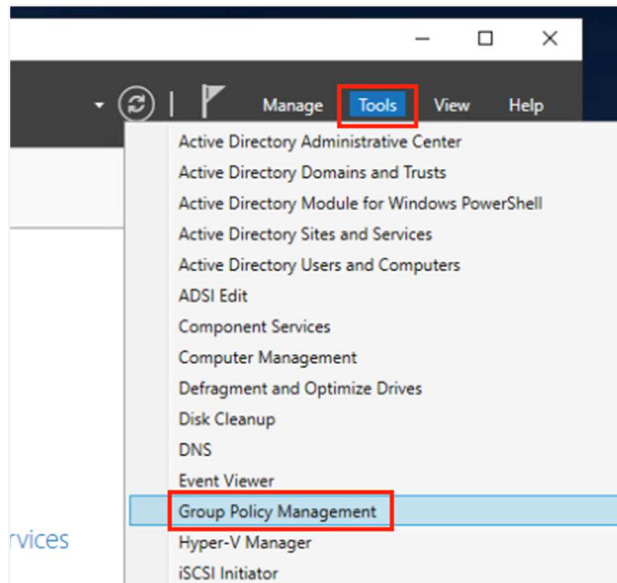
1. Click the button next to the square to minimize the *Windows 10* virtual machine window. You should see the *Hyper-V manager*; use the same method to minimize this window, too.



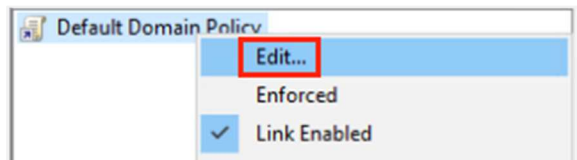
2. You should have the *Server Manager* window up right now. If not, click the *Server Manager* icon on the taskbar to open it.



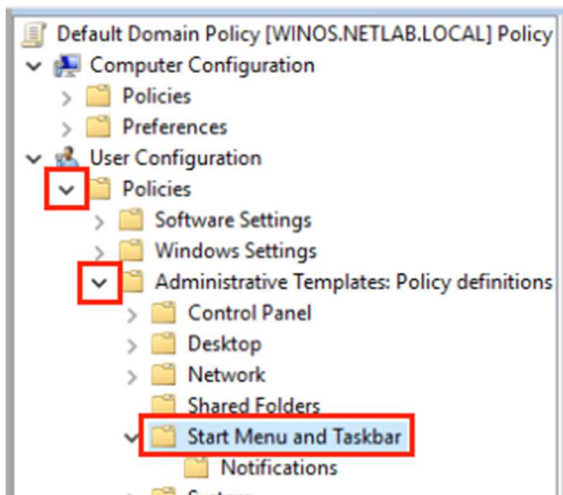
3. In the *Server Manager* window, go to the upper-right corner, click the **Tools** menu and select **Group Policy Management**.



4. The Group Policy Management window will appear. Right-click on the **Default Domain Policy**, select **Edit...**

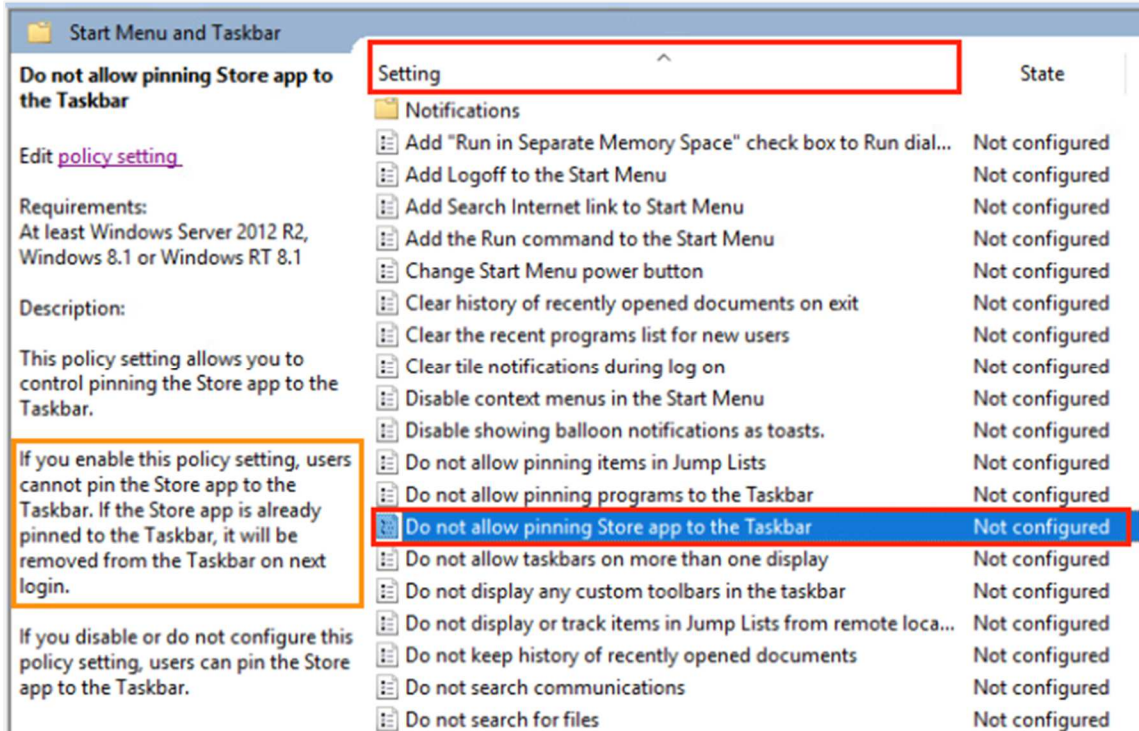


5. This will bring up the *Group Policy Management Editor*. In the editor window, under *User Configuration*, click to expand **Policies > Administrative Templates: Policy definition**, then click on **Start Menu and Taskbar**.





6. To the right side, click on the column heading **Setting** once, to order the settings in alphabetical order. Then, find and click to select **Do not allow pinning Store app to the Taskbar**. Notice the instructions for this setting are shown on the left side. One of them states, *If you enable this policy, users cannot pin the Store app to the Taskbar. If the Store app is already pinned to the Taskbar, it will be removed from the Taskbar on next login.*



**Start Menu and Taskbar**

**Do not allow pinning Store app to the Taskbar**

Edit [policy setting](#)

**Requirements:**  
At least Windows Server 2012 R2, Windows 8.1 or Windows RT 8.1

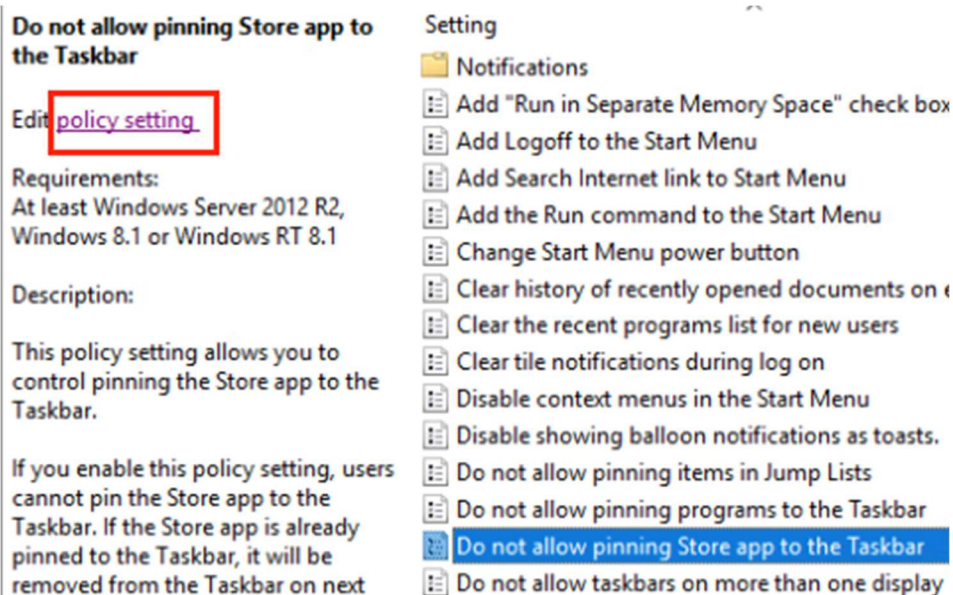
**Description:**  
This policy setting allows you to control pinning the Store app to the Taskbar.

If you enable this policy setting, users cannot pin the Store app to the Taskbar. If the Store app is already pinned to the Taskbar, it will be removed from the Taskbar on next login.

If you disable or do not configure this policy setting, users can pin the Store app to the Taskbar.

Setting	State
Notifications	
Add "Run in Separate Memory Space" check box to Run dial...	Not configured
Add Logoff to the Start Menu	Not configured
Add Search Internet link to Start Menu	Not configured
Add the Run command to the Start Menu	Not configured
Change Start Menu power button	Not configured
Clear history of recently opened documents on exit	Not configured
Clear the recent programs list for new users	Not configured
Clear tile notifications during log on	Not configured
Disable context menus in the Start Menu	Not configured
Disable showing balloon notifications as toasts.	Not configured
Do not allow pinning items in Jump Lists	Not configured
Do not allow pinning programs to the Taskbar	Not configured
<b>Do not allow pinning Store app to the Taskbar</b>	<b>Not configured</b>
Do not allow taskbars on more than one display	Not configured
Do not display any custom toolbars in the taskbar	Not configured
Do not display or track items in Jump Lists from remote loca...	Not configured
Do not keep history of recently opened documents	Not configured
Do not search communications	Not configured
Do not search for files	Not configured

7. Let's enable this policy setting. In the upper-left corner, click **policy setting**.



**Do not allow pinning Store app to the Taskbar**

Edit [policy setting](#)

**Requirements:**  
At least Windows Server 2012 R2, Windows 8.1 or Windows RT 8.1

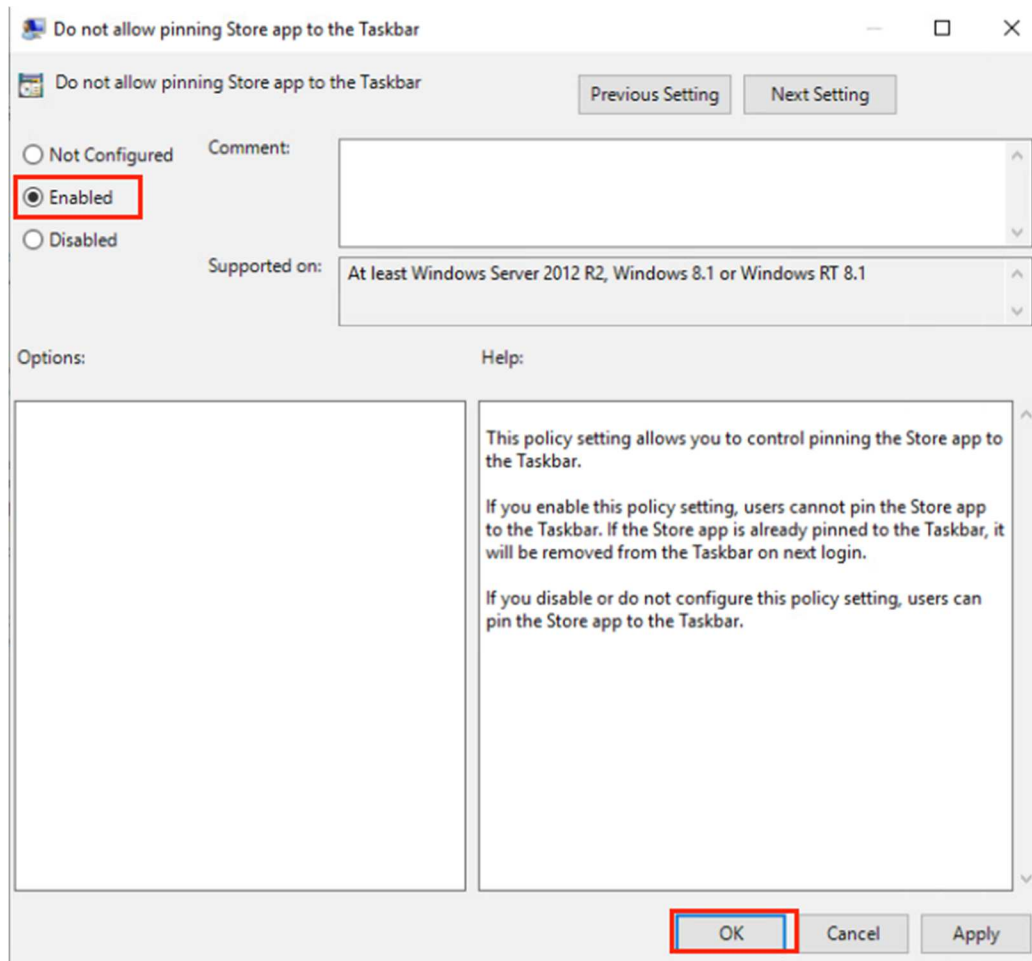
**Description:**  
This policy setting allows you to control pinning the Store app to the Taskbar.

If you enable this policy setting, users cannot pin the Store app to the Taskbar. If the Store app is already pinned to the Taskbar, it will be removed from the Taskbar on next login.

Setting
Notifications
Add "Run in Separate Memory Space" check box
Add Logoff to the Start Menu
Add Search Internet link to Start Menu
Add the Run command to the Start Menu
Change Start Menu power button
Clear history of recently opened documents on exit
Clear the recent programs list for new users
Clear tile notifications during log on
Disable context menus in the Start Menu
Disable showing balloon notifications as toasts.
Do not allow pinning items in Jump Lists
Do not allow pinning programs to the Taskbar
<b>Do not allow pinning Store app to the Taskbar</b>
Do not allow taskbars on more than one display



8. In the new window, click to check the **Enabled** radio button. Click **OK** to continue.

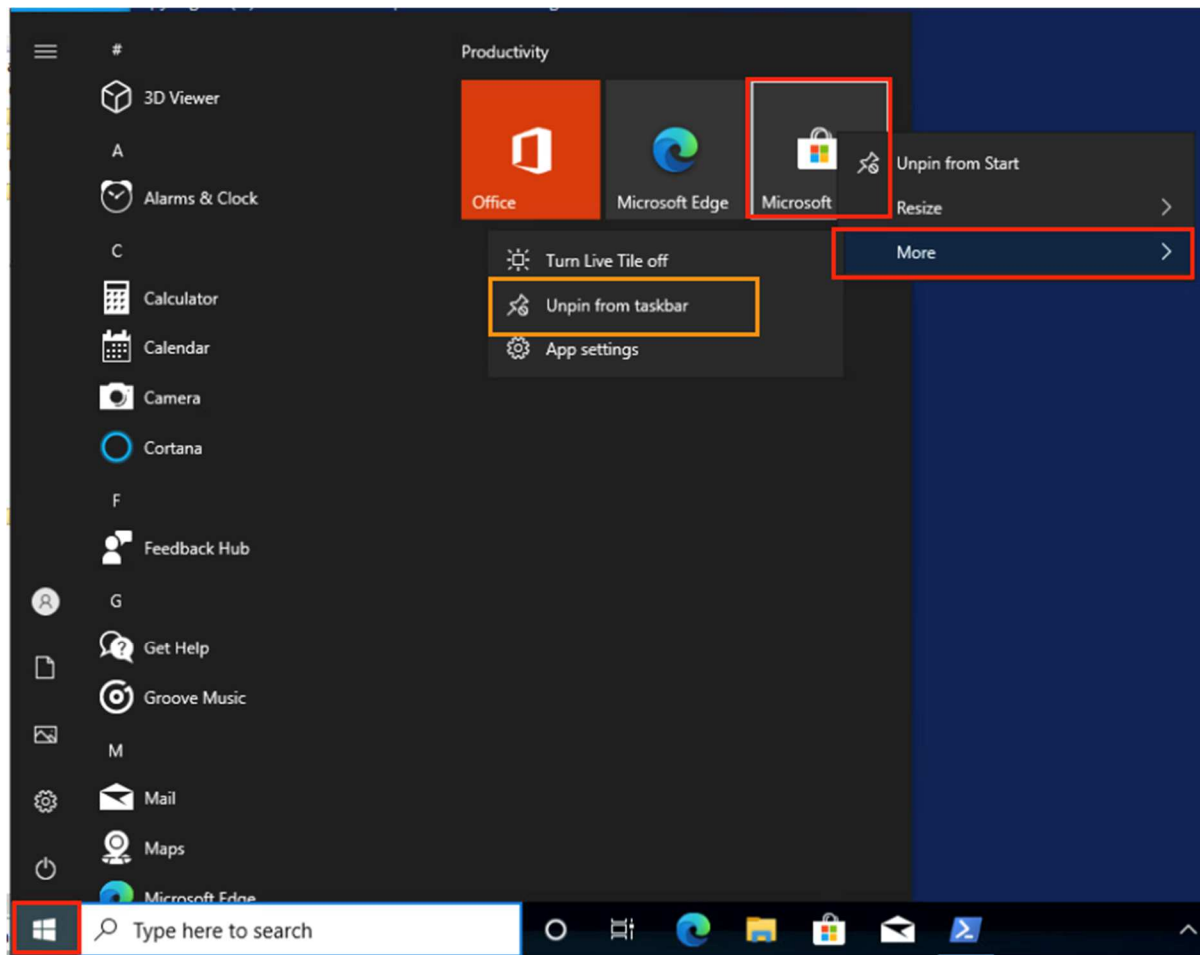


9. Now, we will apply this policy to the *Windows 10* virtual machine to test the *Group Policy*. In the taskbar, click to show the virtual machine window.



10. If you were logged out, log back in as *John Deere*, enter **NDGLabpass123!** as the password.

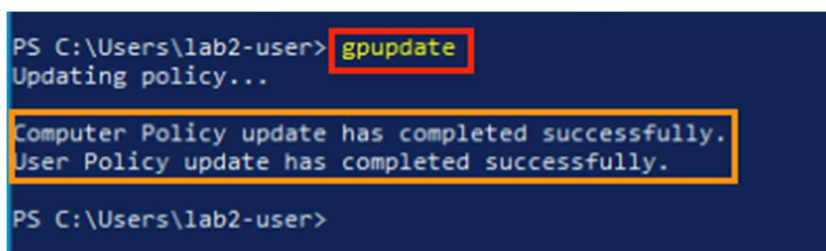
11. Before we apply the group policy, let's first click the **Windows** icon in the lower-left corner. Then right-click on the **Microsoft Store** icon, then hover the mouse on **More**. We will see there is an option to *Unpin from taskbar*. This indicates the ability to modify the settings for Microsoft Store.



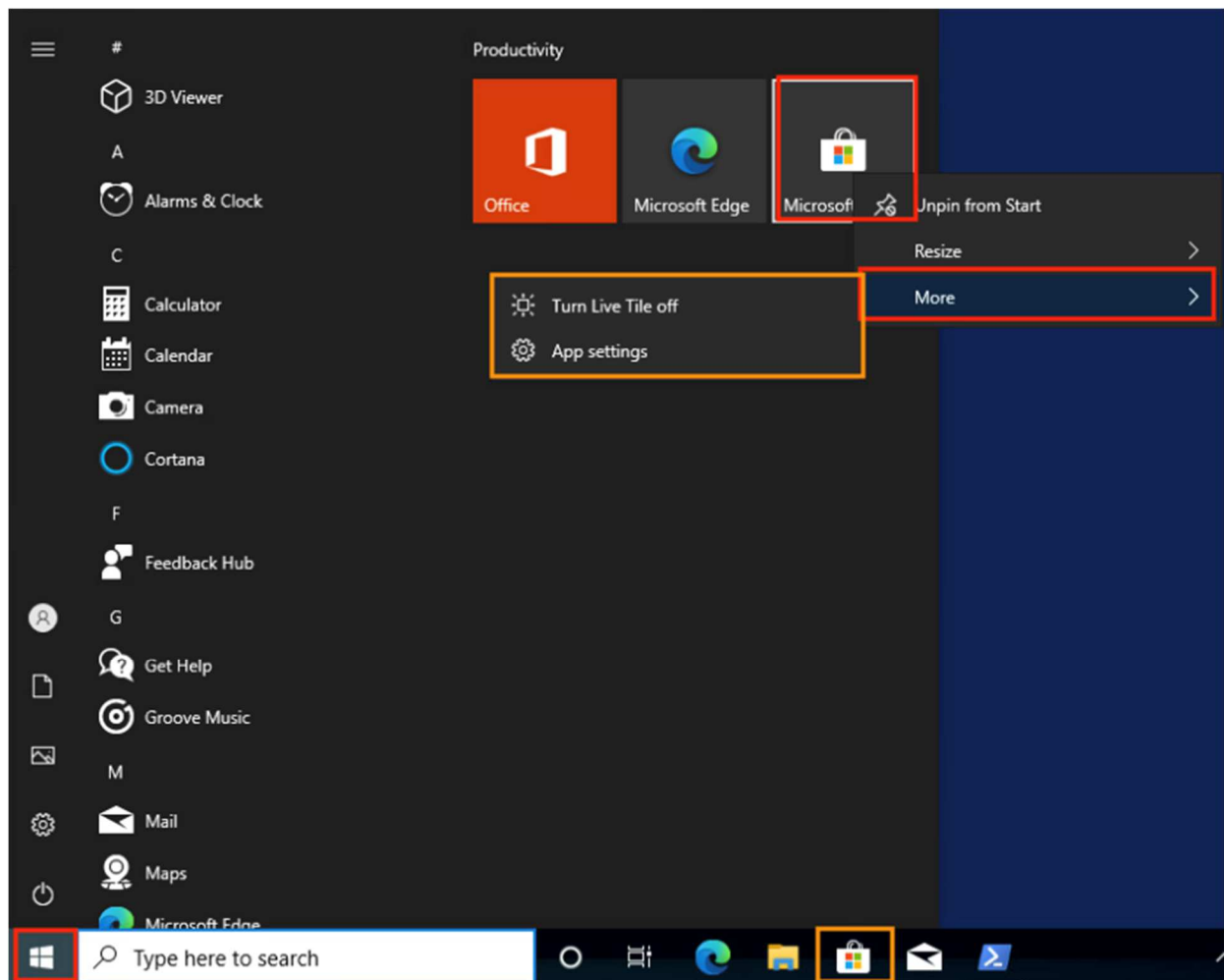
12. Next, click the **Type here to search** area on the taskbar, type `powershell`, then press **Enter**.



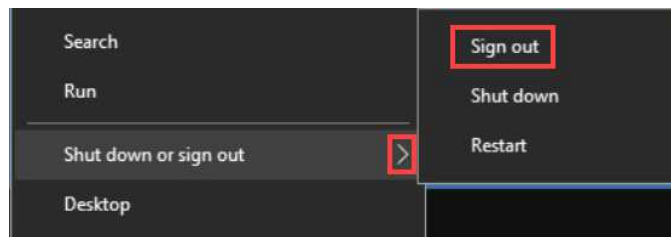
13. In the *PowerShell* window, type `gpupdate`, then press **Enter** to run the command. This will force an update to the *Group Policy* immediately. Otherwise, the *Group Policy* will update itself in the next update cycle. When it's done, you will see two successful messages; one is for *Computer Policy*, and the other is for *User Policy*.



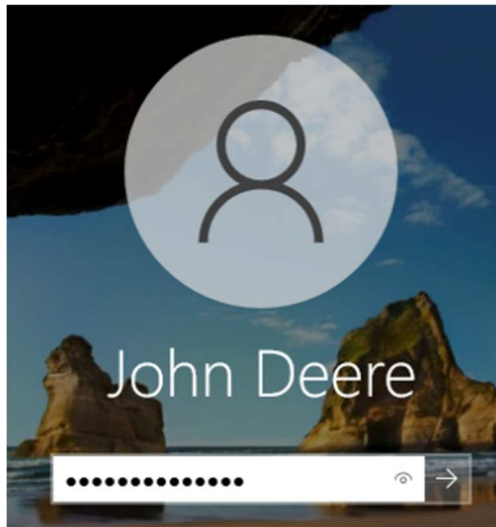
14. Now the *Group Policy* is up to date, we want to observe the difference between before and after. So, let's repeat everything in step 11. Notice the *Unpin from taskbar* option is gone. However, we still have the *Store icon* showing in the taskbar. If you remember, the instruction says it will be removed after the next login. So, let's check it by logging out and then logging back in.



15. Right-click the Windows **Start** button and select **Shut down or sign out** > **Sign out**.



16. Log back in using the password NDGLabpass123! .



17. Once you are logged in, you will see that the *Store icon* is removed from the taskbar.



18. The lab is now complete; you may end the reservation.