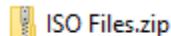


# Organizational Unit with Group Policy Restriction by

Bryce Furrow  
Roderick Oliver

Managing devices over a network oftentimes require domain admin and network engineers to find ways to mitigate potential risk through proper means of hardware security, network security, and user access. This is done successfully through the use of Active Directory, Organizational Units, and Group or User Policies.

1. Download and save the shared files and executables, which were shared for this exercise, to a place that is you can get to easily and quickly.



[ISO Files.zip](#)



*If you have an issue with the executable, you can also follow the links below to easily access the current version of the downloads.*

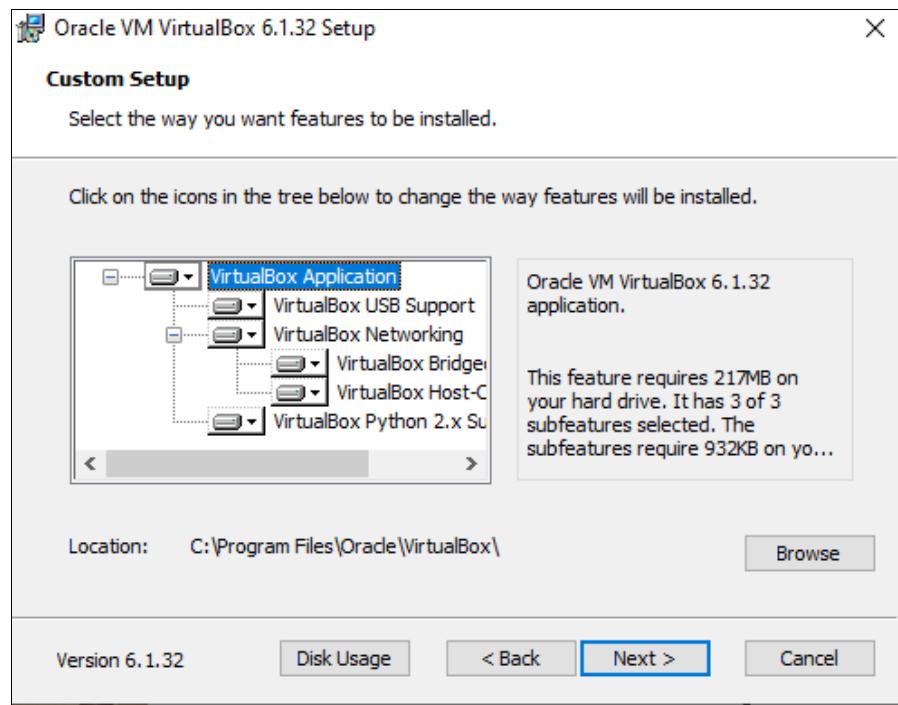
- [Get Windows Server here](#)
- [Get Windows 10 here](#)
- [Downloads – Oracle VM VirtualBox](#)

2. Next, once you have downloaded all of the executables for each of the applications, we will start with install **Oracle VM VirtualBox**. *If you already have VirtualBox setup on your machine, you can skip to step 10.*
3. Once you run the executable the welcome dialog box will load. Press next to proceed, following each of the prompts to move the next screen until the download is complete.

## 1. Install VirtualBox and add Virtual Machines



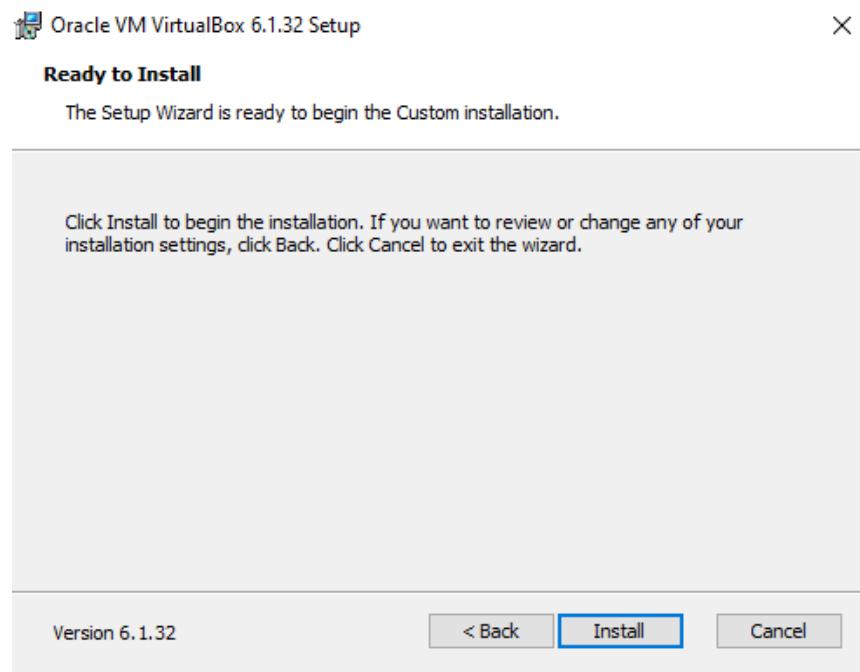
4. Click **Next**.



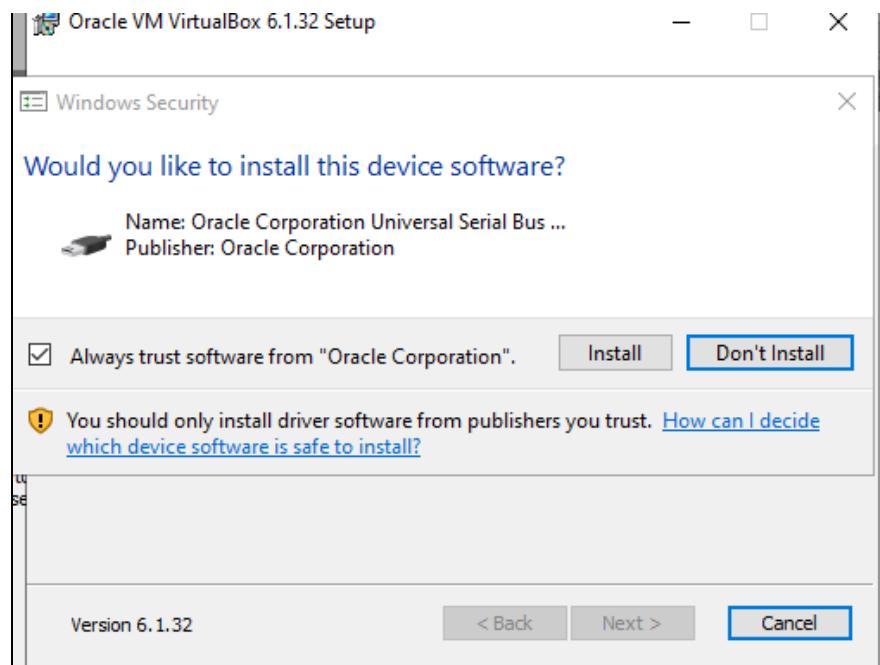
5. Click **Yes**.



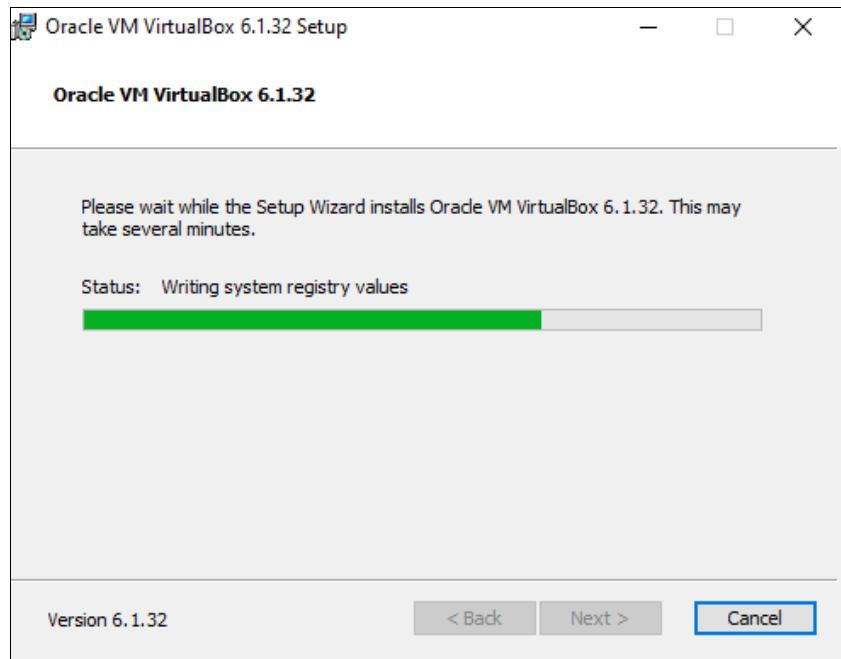
6. Click **Install** to start the installation of VirtualBox.



7. If the Windows Security dialog box asking if you trust the application, select the "**Always trust software from "Oracle Corporation"**", and press **Install**. The install should not take long, and it has completed press **Finish**.



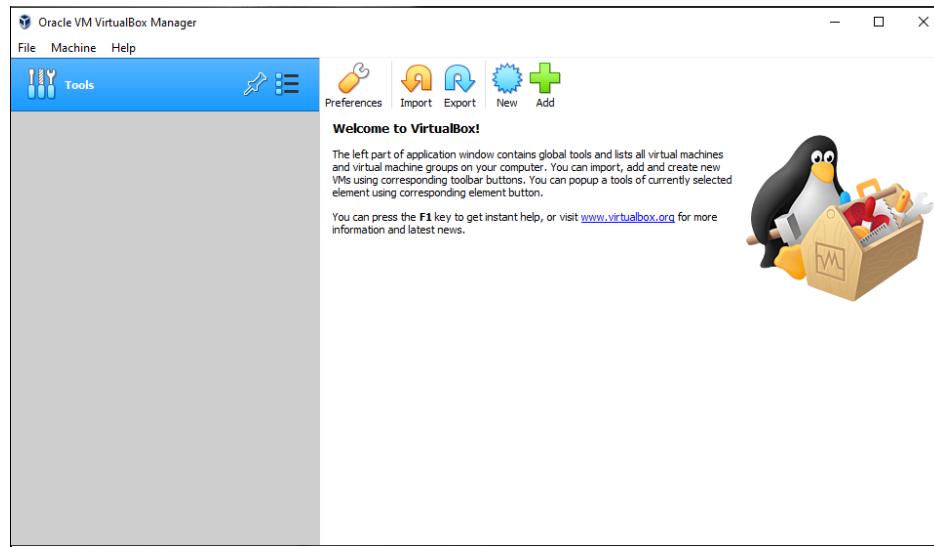
8.



9. Press **Finish**.



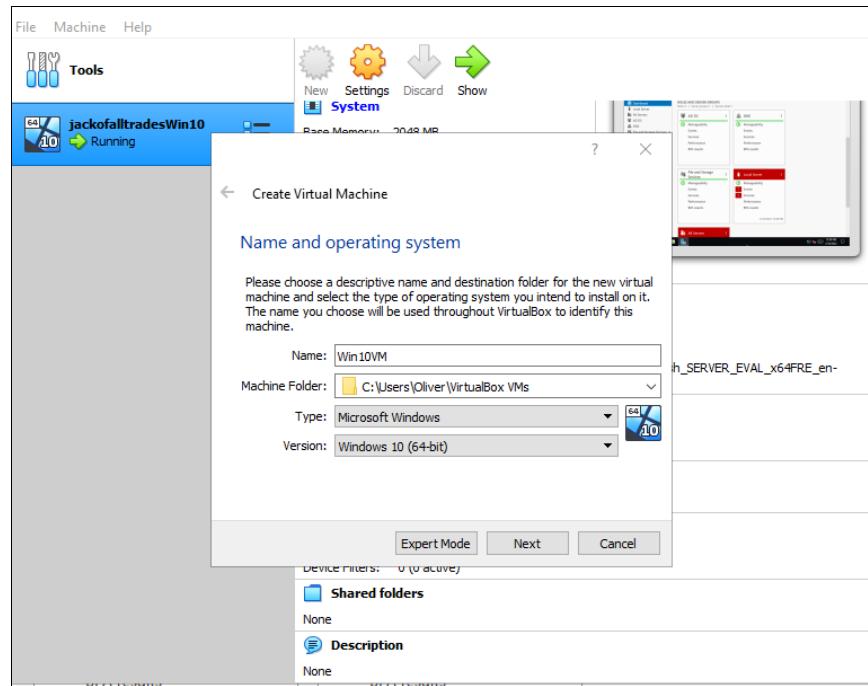
10. Now that VirtualBox is installed on your device, we will setup the Windows 2019 Server on our virtual machine. With VirtualBox opened, click the blue **New** symbol found just above the welcome information.



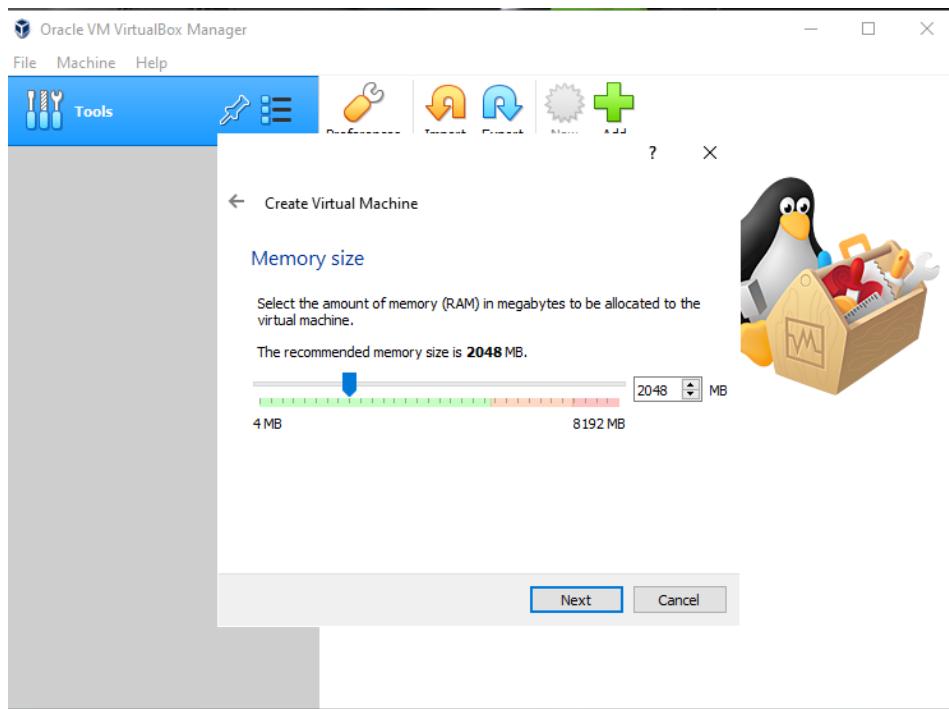
11. Once the **Create Virtual Machine** window appears add the following information in the fields below:

- a. Name: **WinServer**
- b. Version: **Windows 10 (64-bit)**

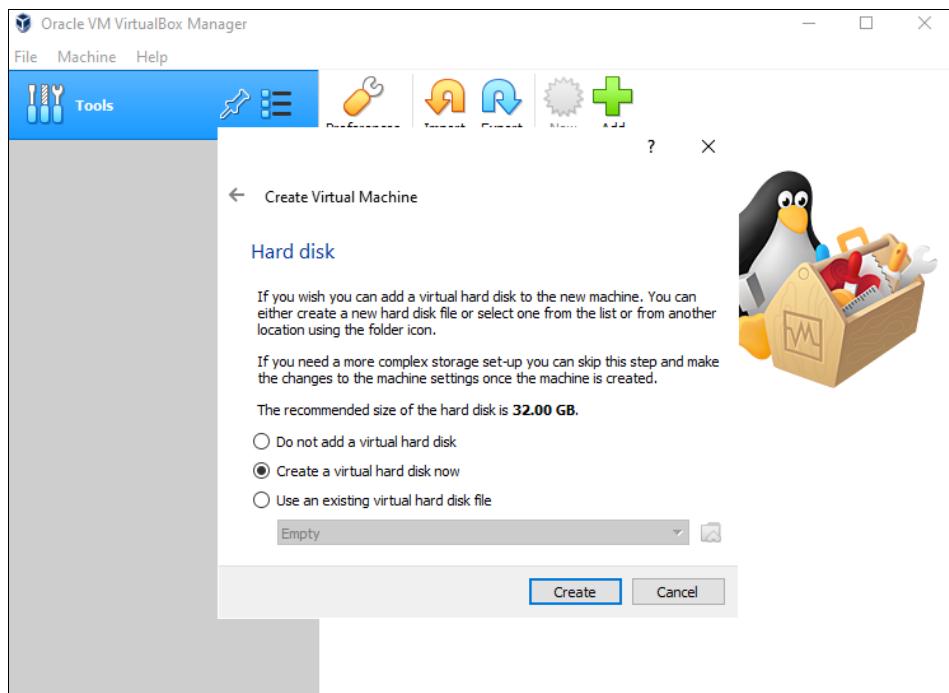
then click **Next**.



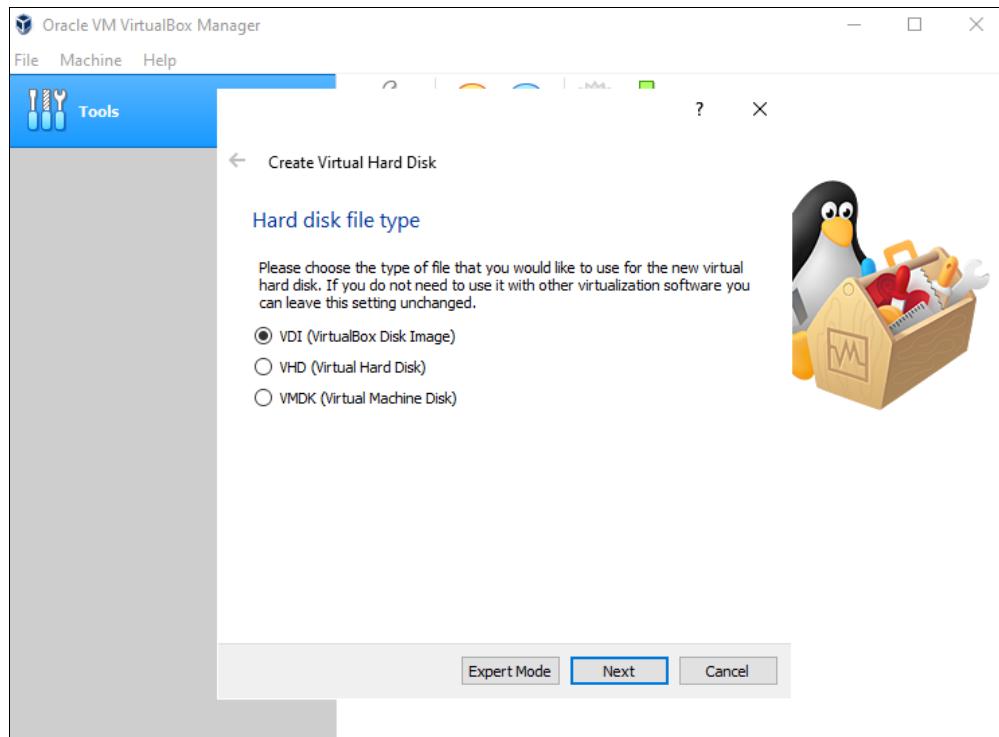
12. Click **Next**.



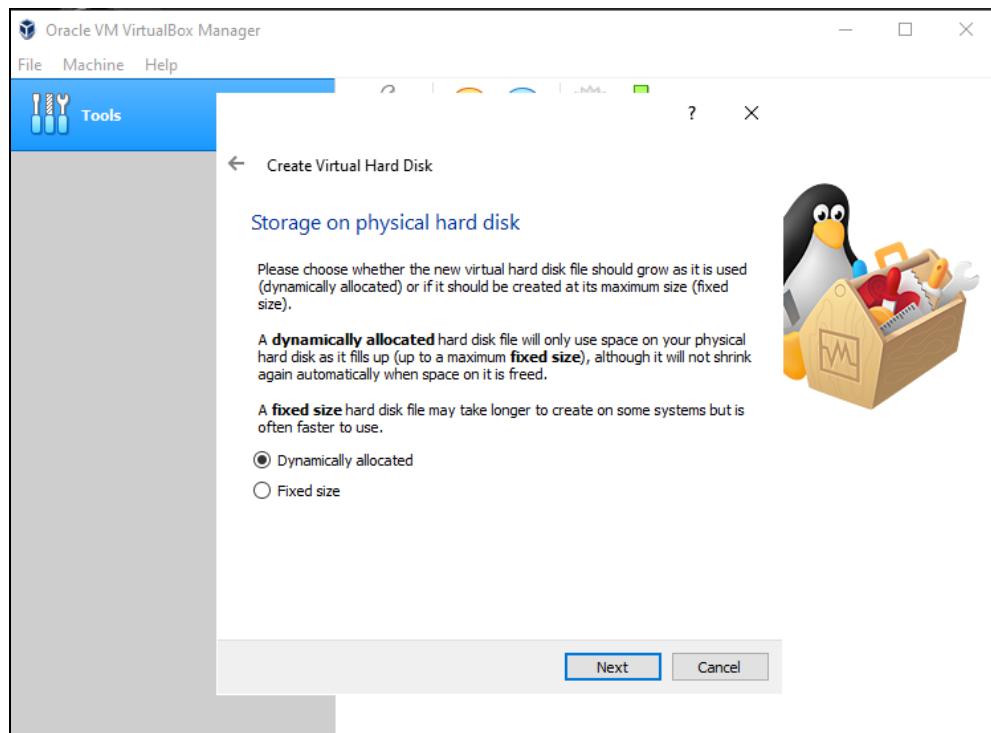
13. Select **Create a virtual hard disk**. Then click **Create**.



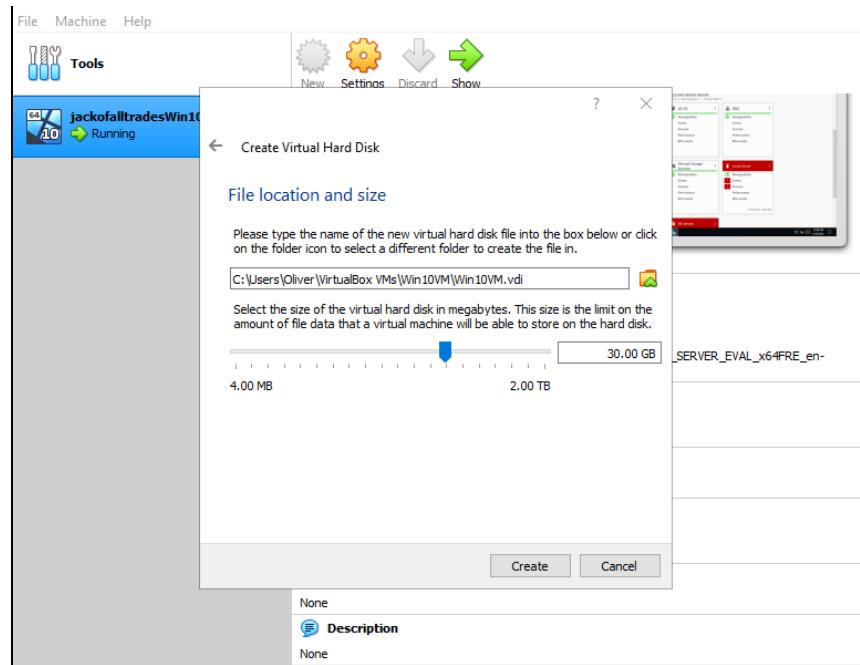
14. Select **VDI (VirtualBox Disk Image)** for the Hard disk file type. Click **Next**.



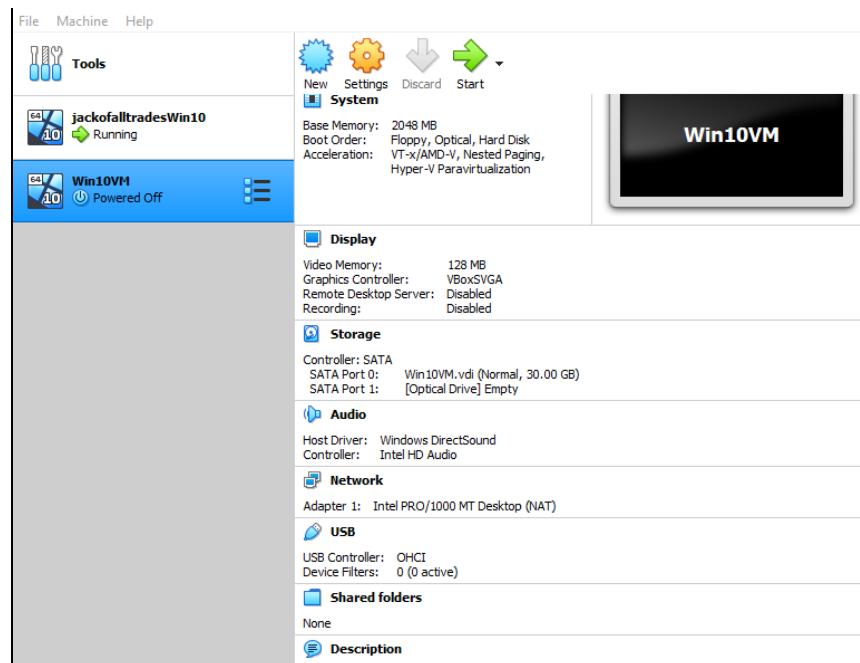
15. Select **Dynamically allocated** for the Storage on physical hard disk. Then click **Next**.



16. Next, for the file location and size, **set the hard disk to 30 GB**. You may be tempted to grant more space, but be aware that the more space you allocate to your virtual machine, the more it will pull on the over all performance of you host machine. When finished, click **Next**.



17. Now the VM is ready for us to install the Windows Server. Click green ➔ arrow just above the word **Start**.



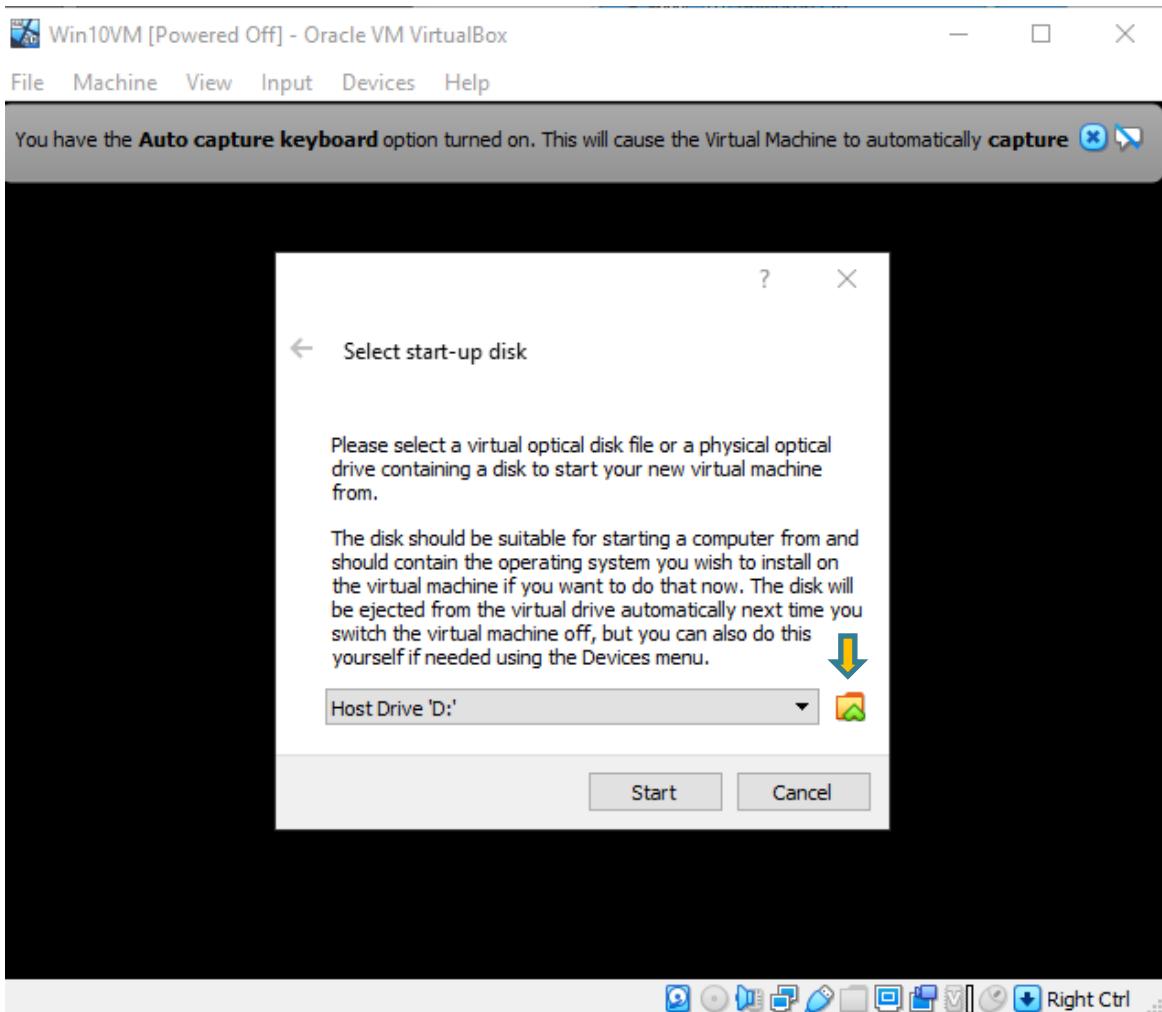
## 2. Install Windows Server 2019 on the new Virtual Machine

18. The VM will attempt to look for a bootable device and the **Select start-up disk** box will load. Here you will navigate to where you saved the ISO files that you downloaded. Click the folder icon with the green up arrow to the right of the box.

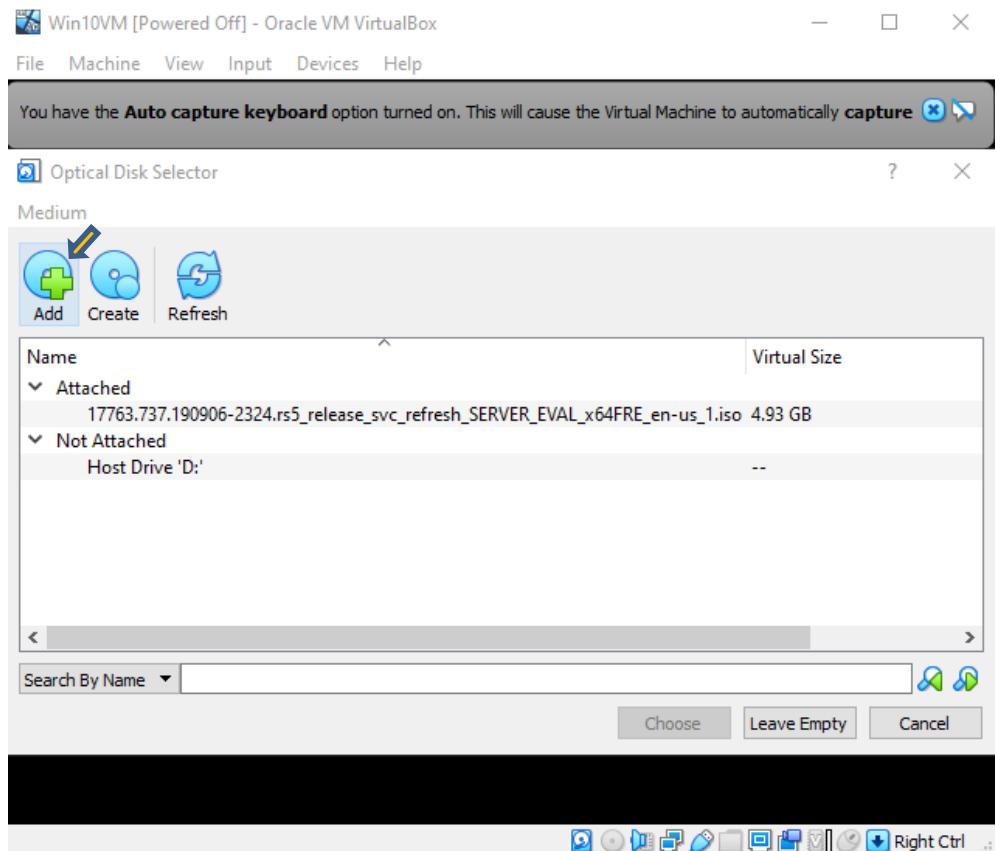
*Additional resources for setting up the Sever & Domain can be found here:*

[How to Setup Active Directory Domain With VirtualBox and Join Computers - Part 1 - Kindson The Genius](#)

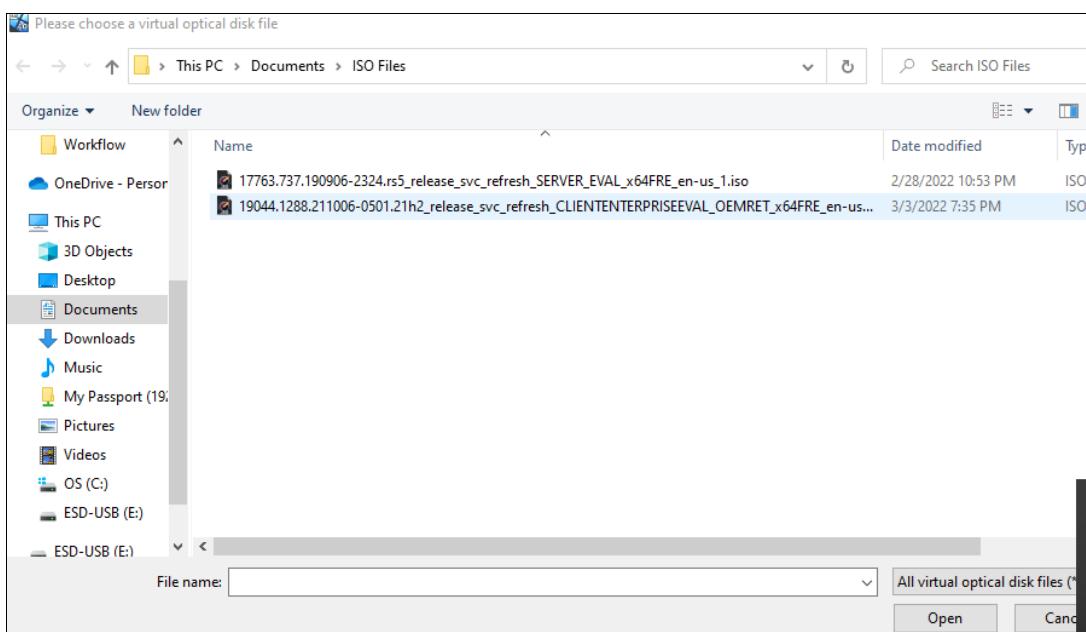
[How to Setup Active Directory Domain With VirtualBox and Join Computers - Part 2 - Kindson The Genius](#)



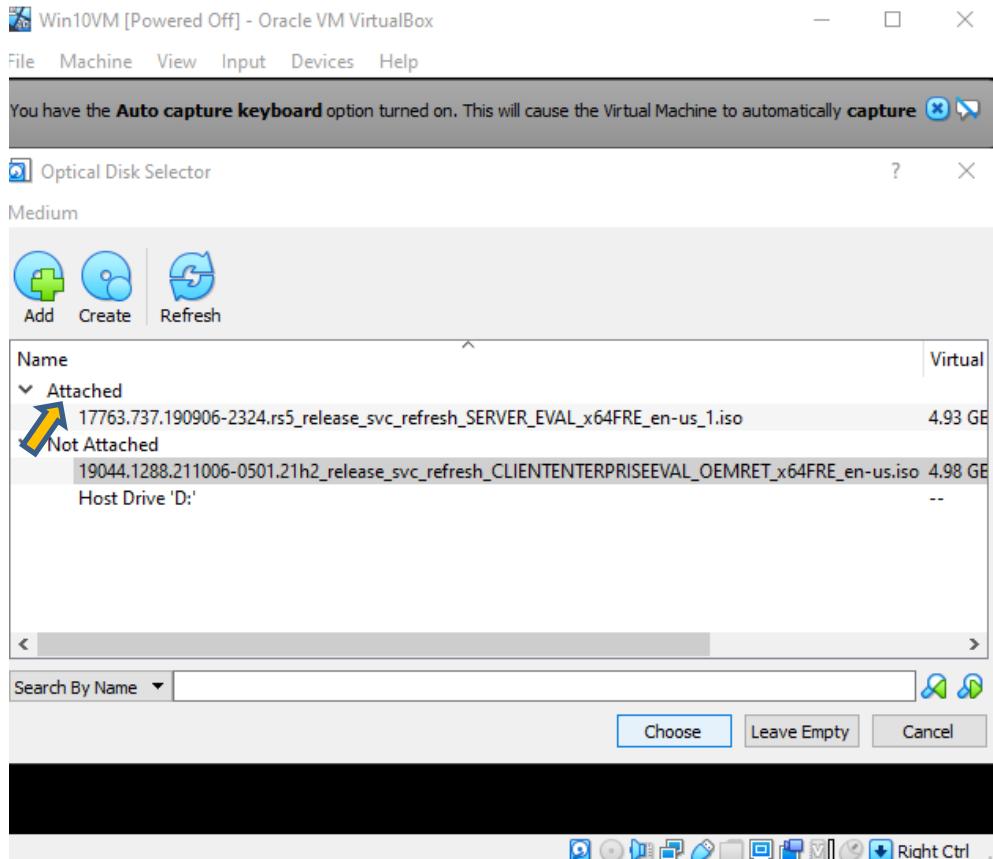
19. In the next few steps, you will navigate to the folder containing your ISOs and we will use to install the server. The Optical Disk Selector may or may not automatically find the folder that houses your ISOs. If not, click the **Add** icon at the top of the screen



20. Navigate to the folder holding your files and then click on the one named **WindowsServer2019.iso**. The name of the files in the image will look different due to the fact that I have renamed the ISOs to make them easier to distinguish between the two.

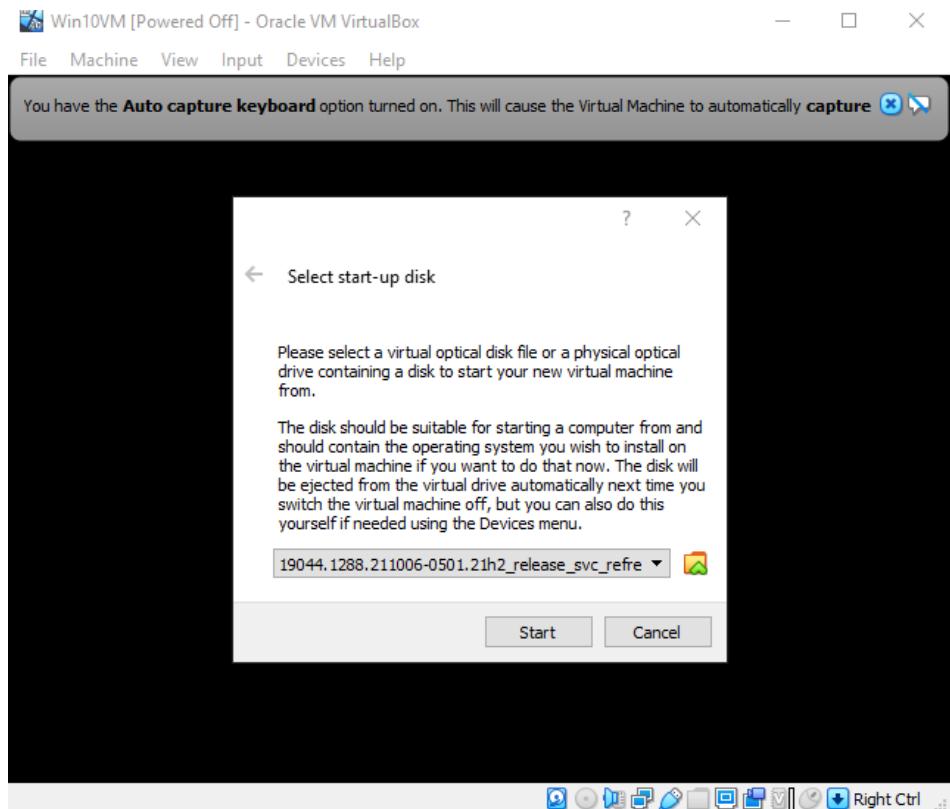


21. Once you have located the iso files, click on the iso you are wanting have load for install, the one with “**SERVER**” in the name. The optical disk is not yet attached for use and will not be so until you select and click **Choose**.

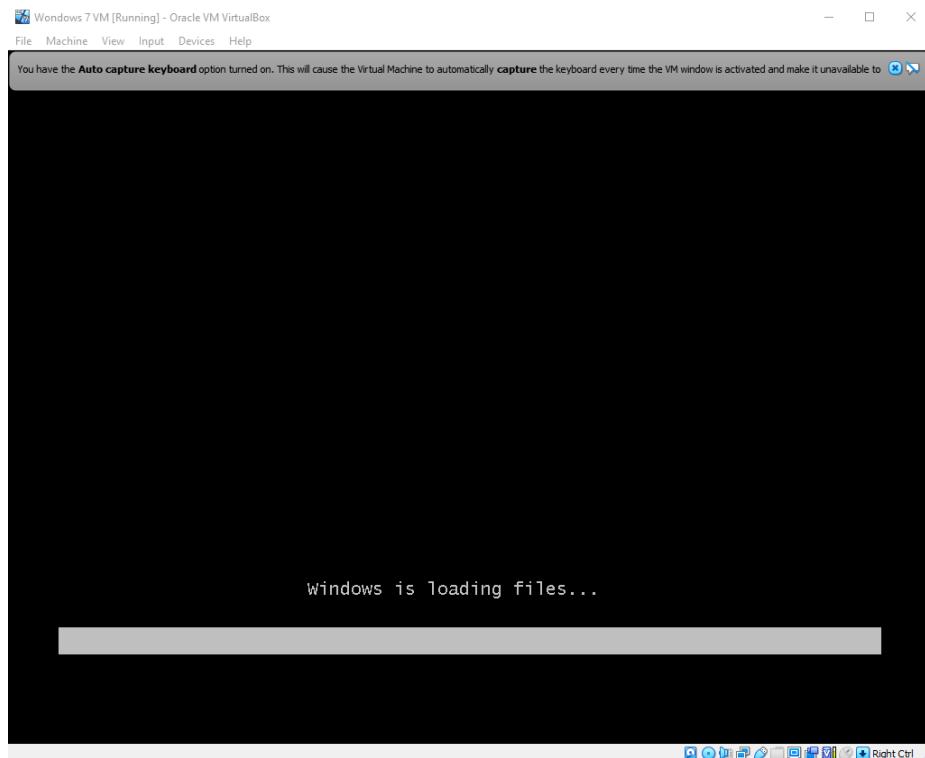


22. After choosing to attach the optical disk, the ISO will appear as a selected file in the **Select start-up disk**, box. Here click **Start** for VirtualBox to start the install of the Windows Server OS.

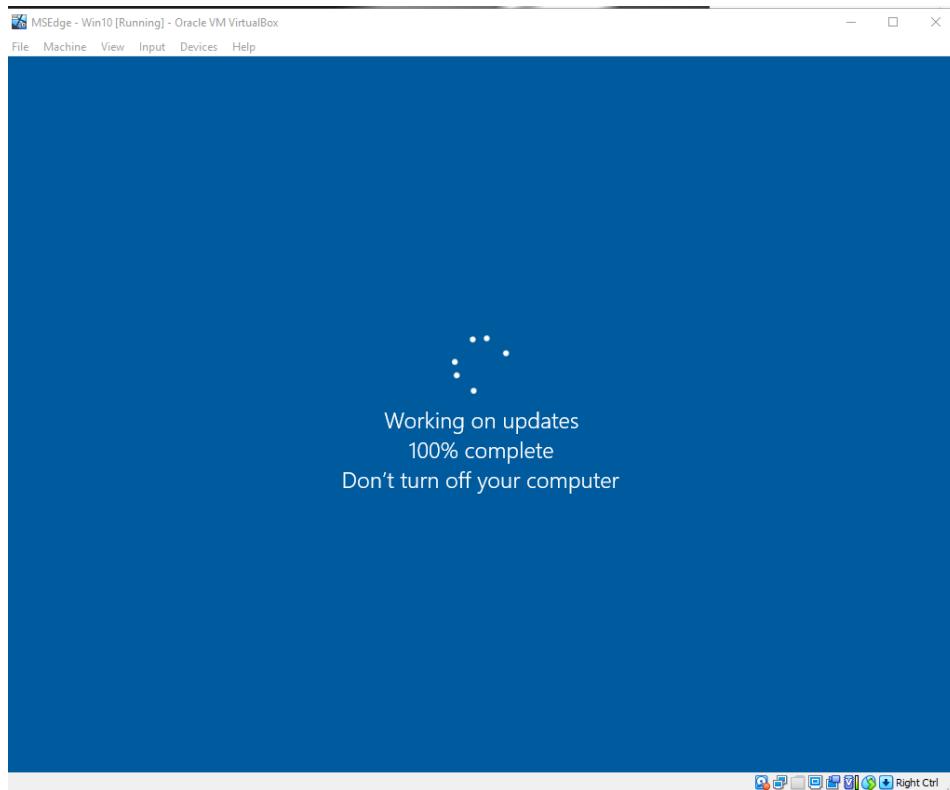
23. Click **Start**.



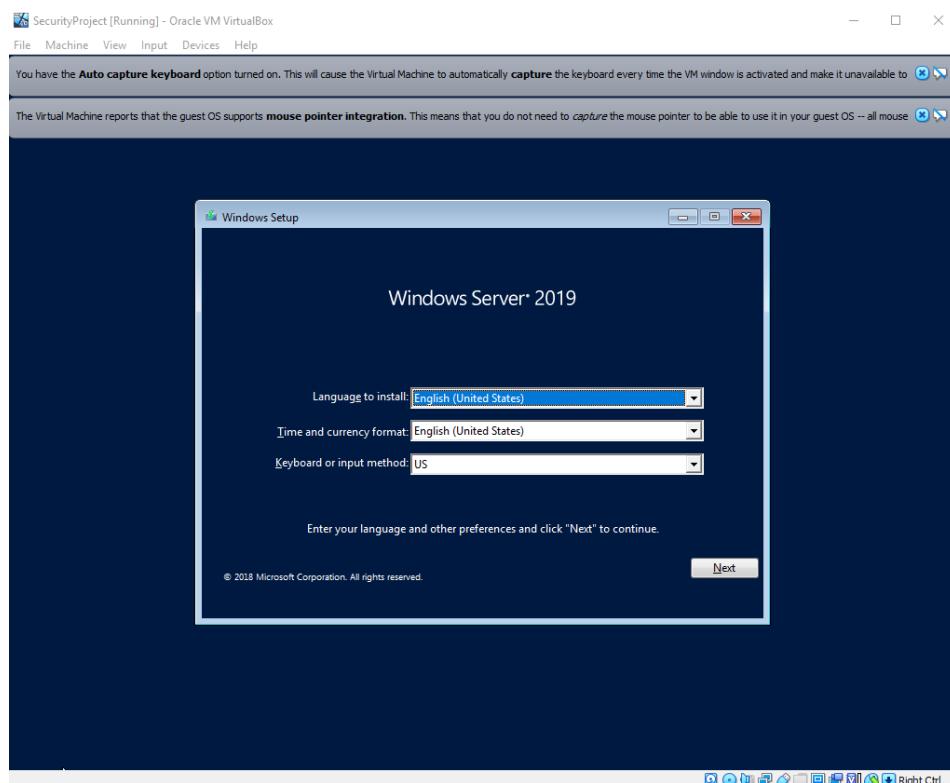
24. Allow Windows a few minutes to load the OS for setup.



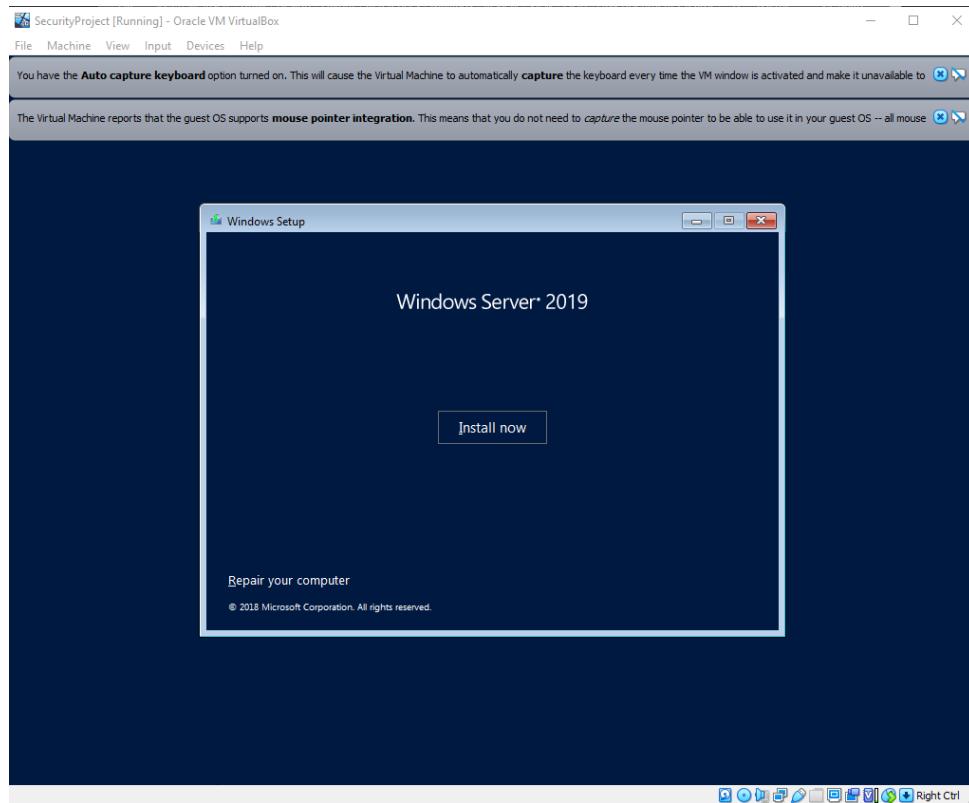
25. **Loading may take a few minutes.**



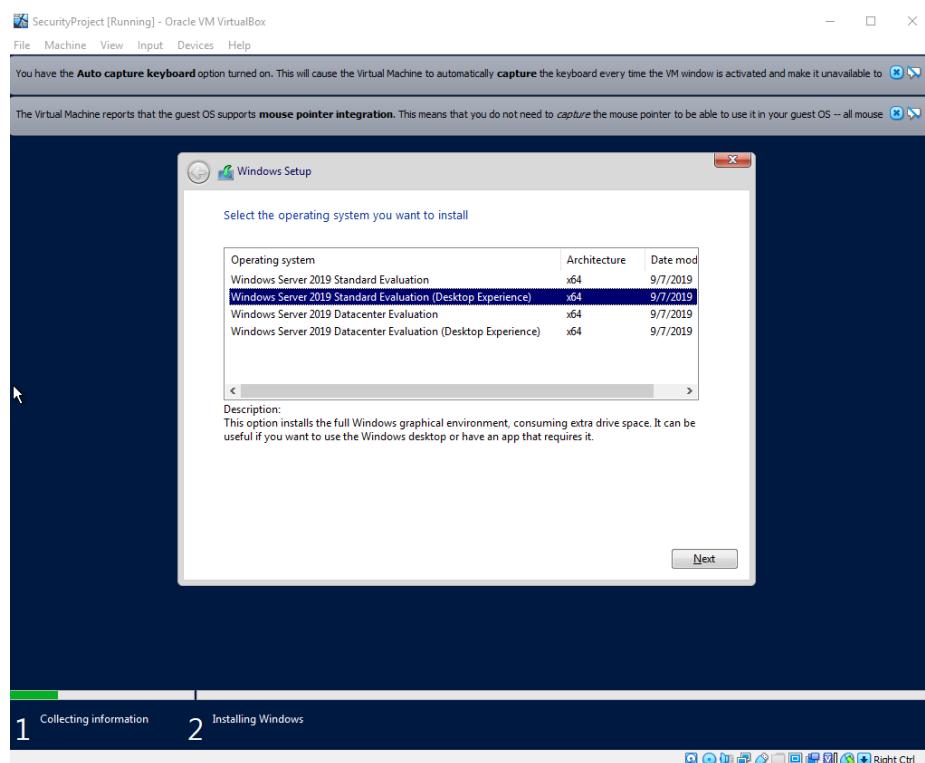
26. Click **Next**.



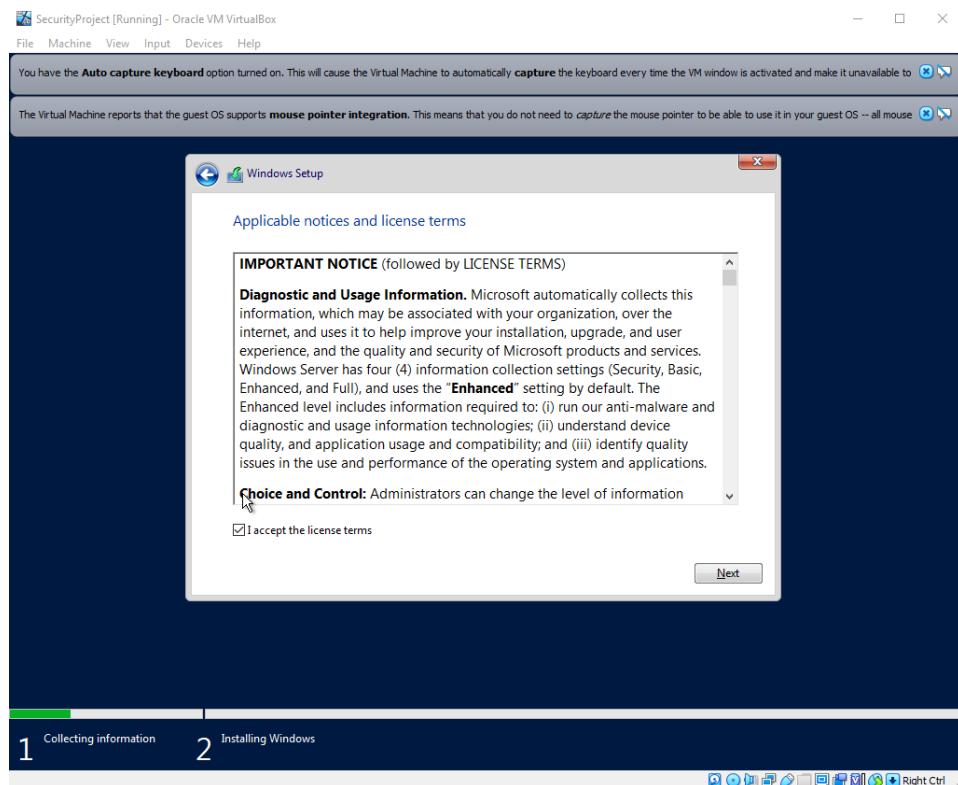
27. Click **Install**.



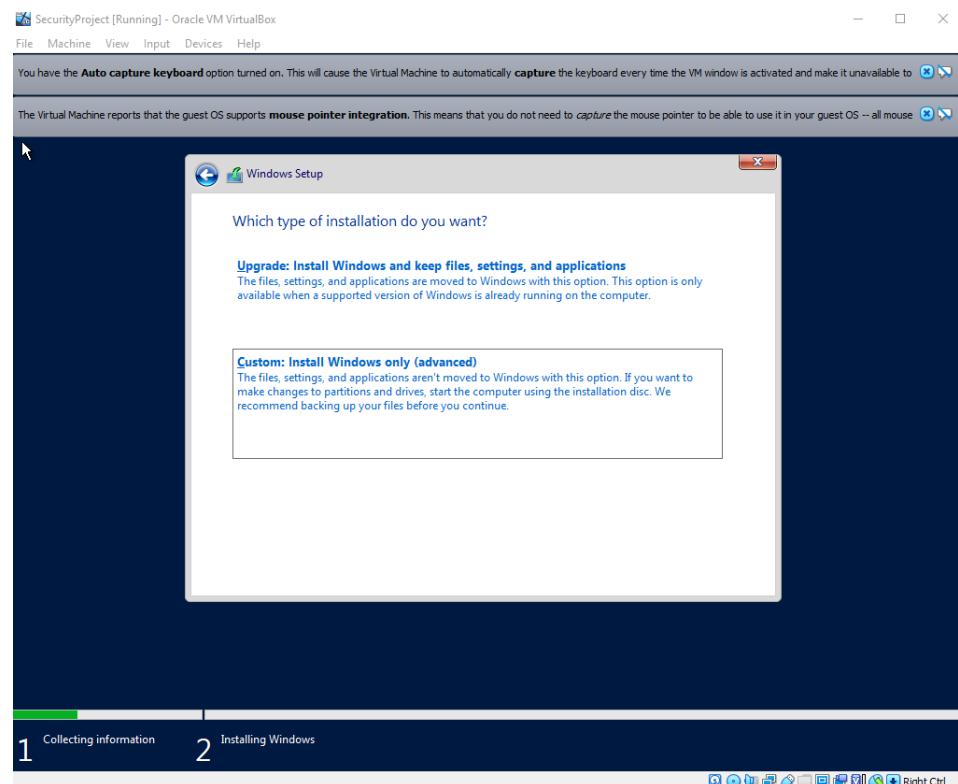
28. Next, select **Windows Server 2019 Standard Evaluation (Desktop Experience)**. Click **Next**.



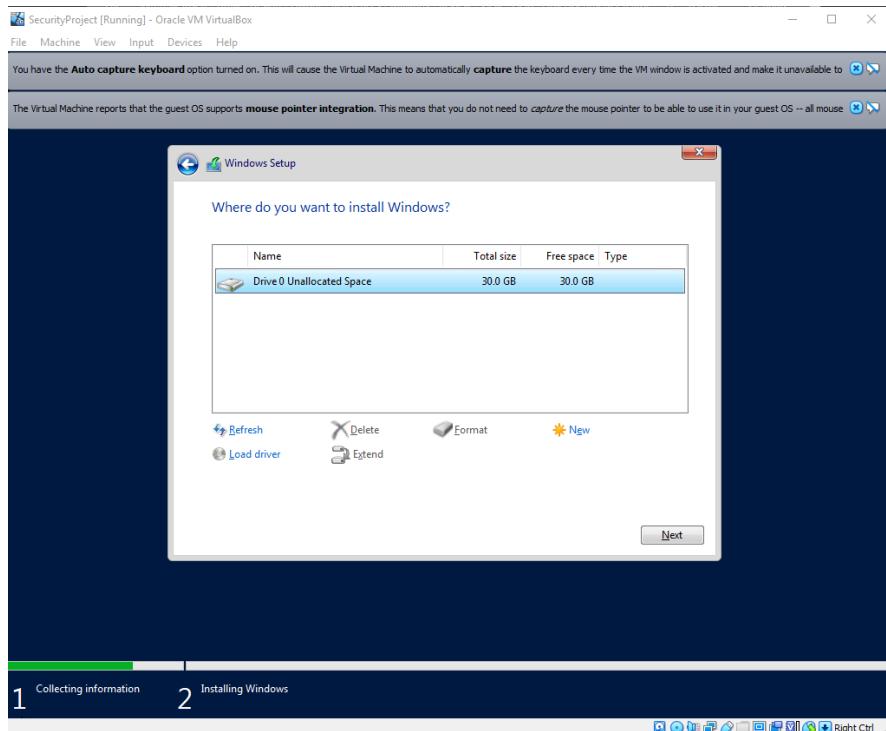
29. Accept the license terms and click **Next**.



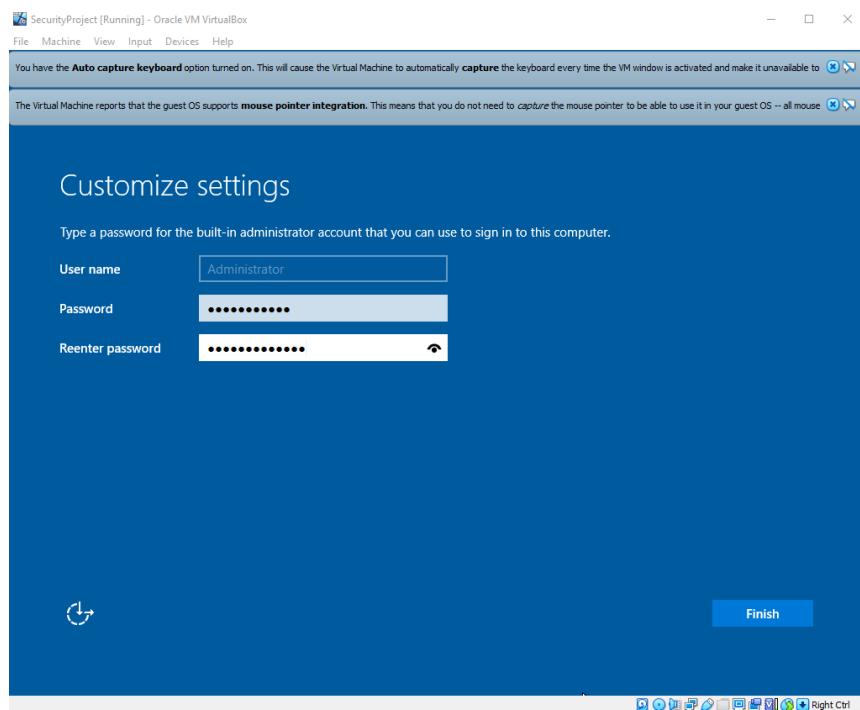
30. Next, select **Custom: Install Windows only (advanced)**.



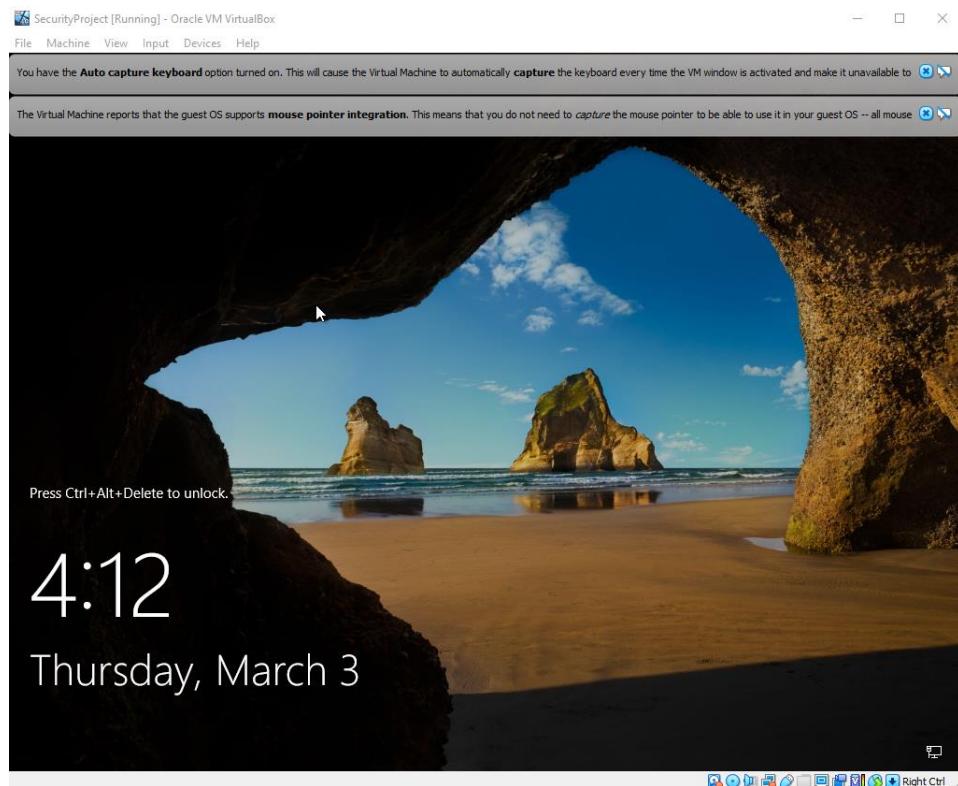
31. Click **Next**.



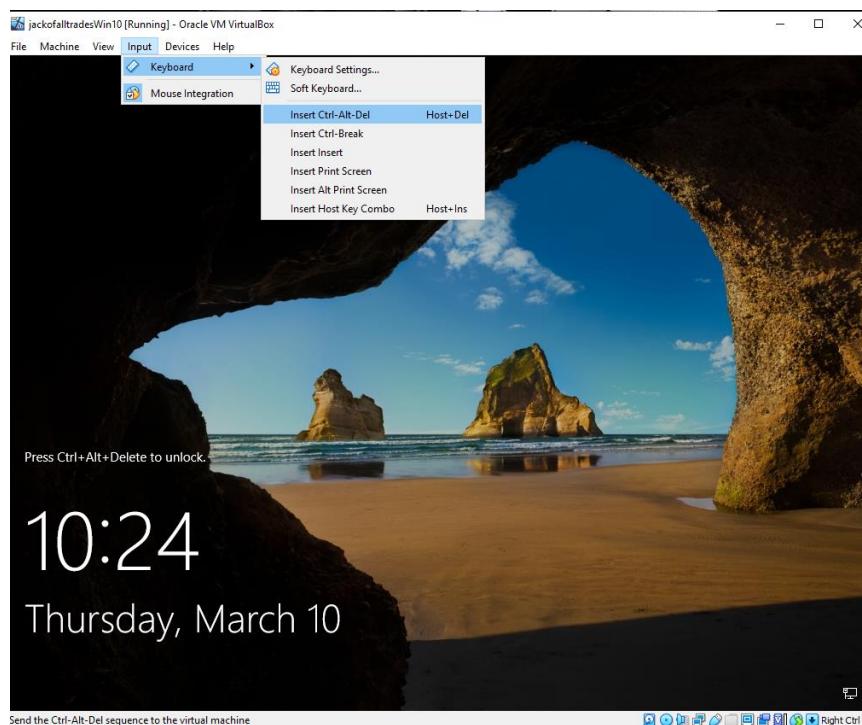
32. In this step you will need to setup a password to initially login into the application. You will eventually change the password to the server later in the setup. ***"Make sure to write down your passwords during this exercise to prevent from having to blow away your VM and reinstall it if you forget the login passwords".***



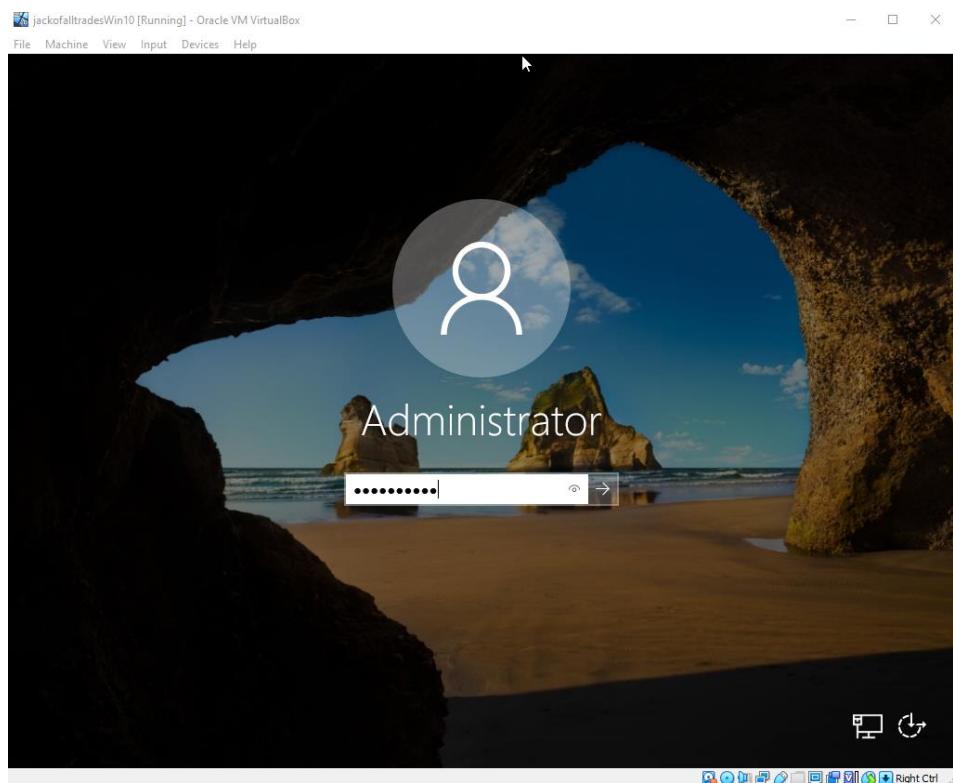
33. After creating your password, the Windows Server login splash screen should appear.



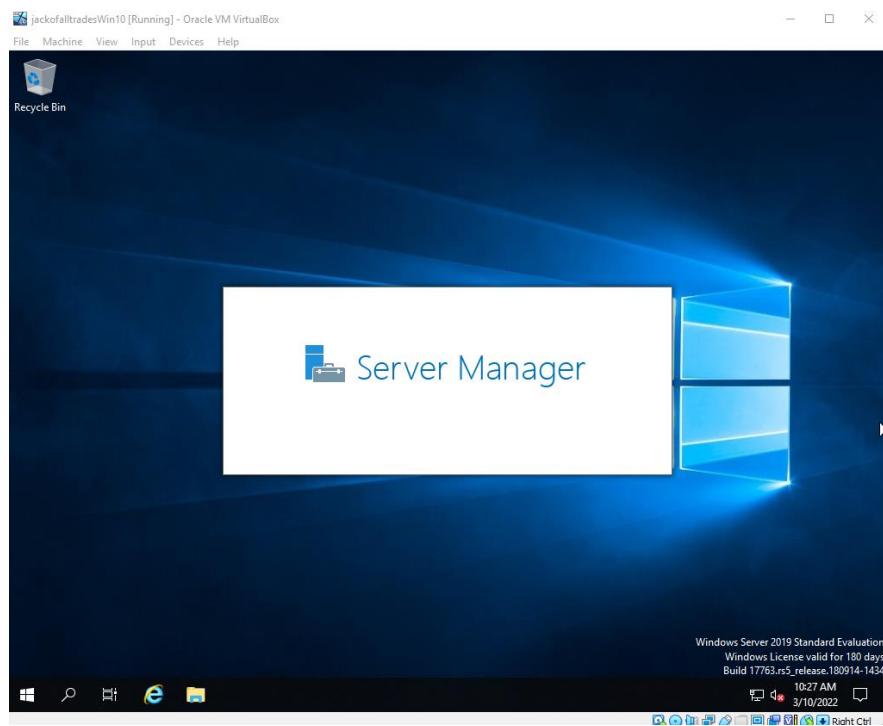
34. At the top of the screen, click **Input** on the virtual machines taskbar and hover over **keyboard** and go over to **Insert Ctrl-Alt-Delete** to send the command to the screen.



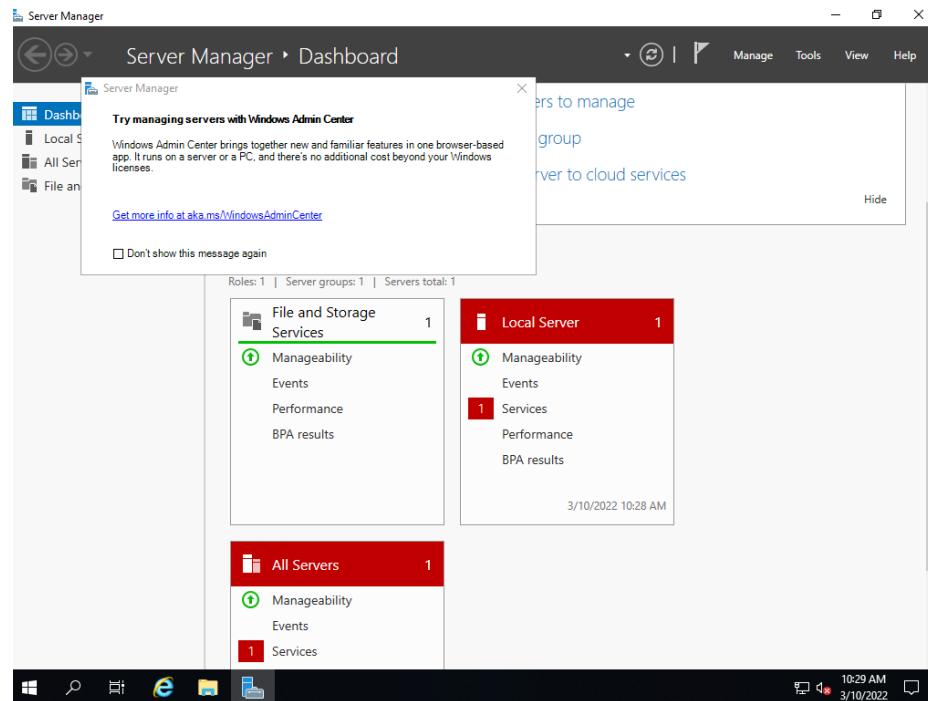
35. Login with the password you initially created.



36. Once you've logged in, the Windows Server Manager application will automatically launch.

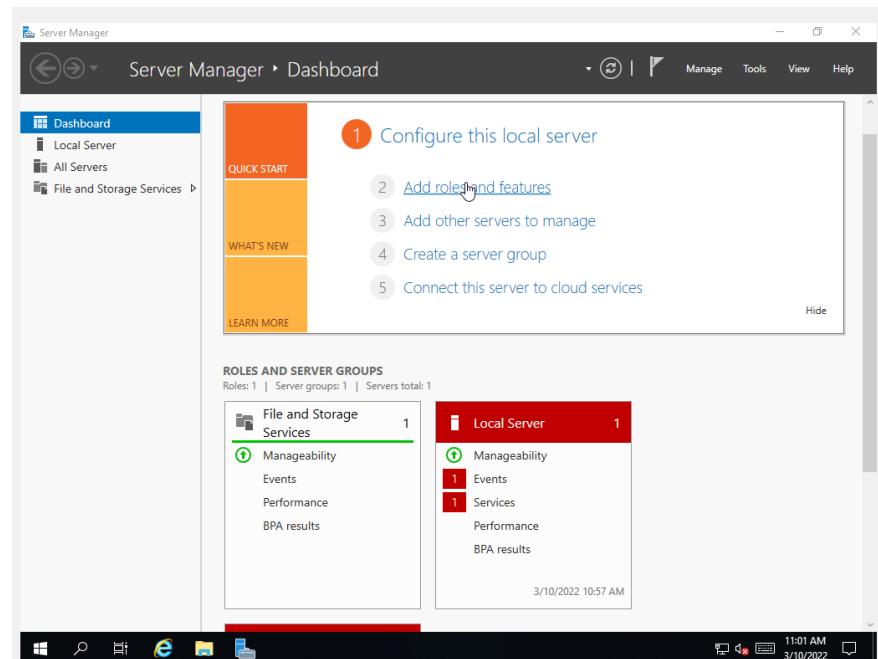


37. After the application has launch, you can click the ***Don't show this message again*** to keep the pop-up box from showing up again.

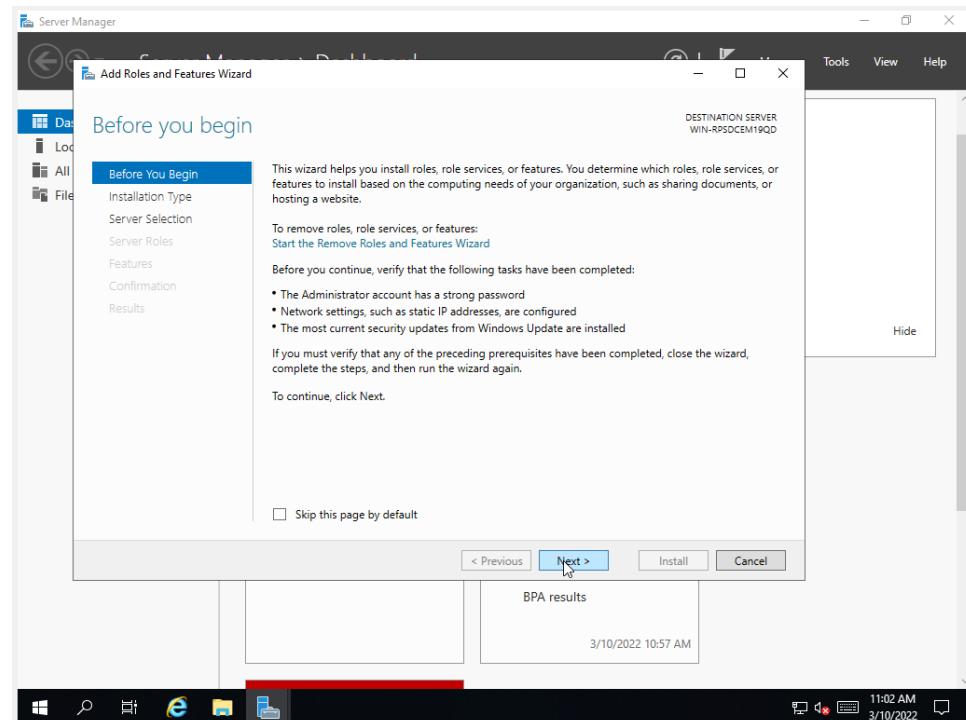


### 3. Configure the Active Directory Services (AD DS)

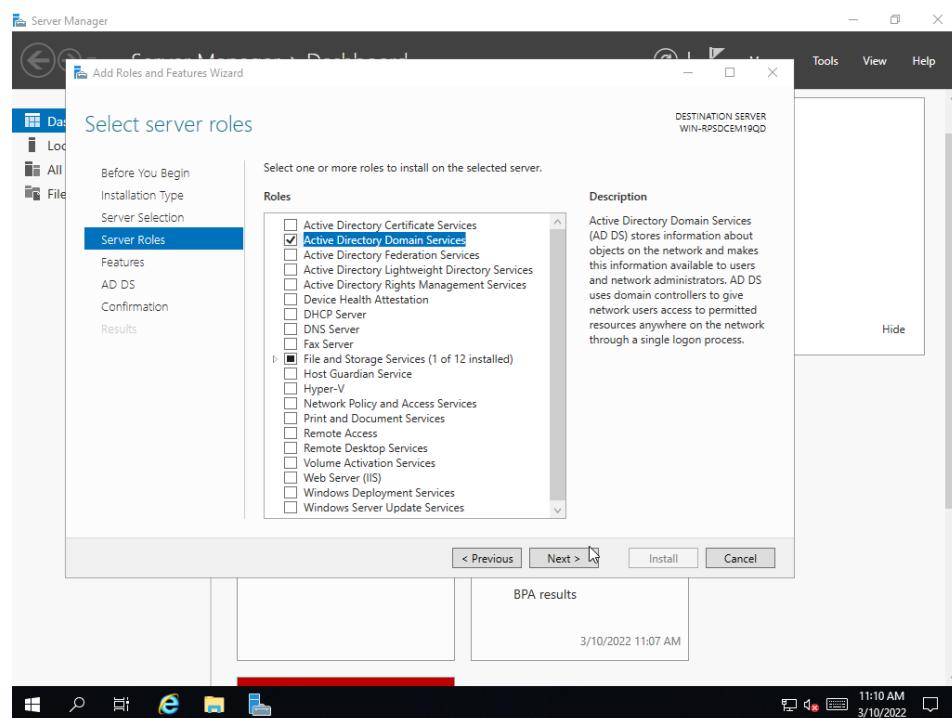
38. Now that the server manager dashboard is loading, will need to ensure the ***Active Directory Domain Services are active***. Under ***Configure this local server*** click ***Add roles and features***.



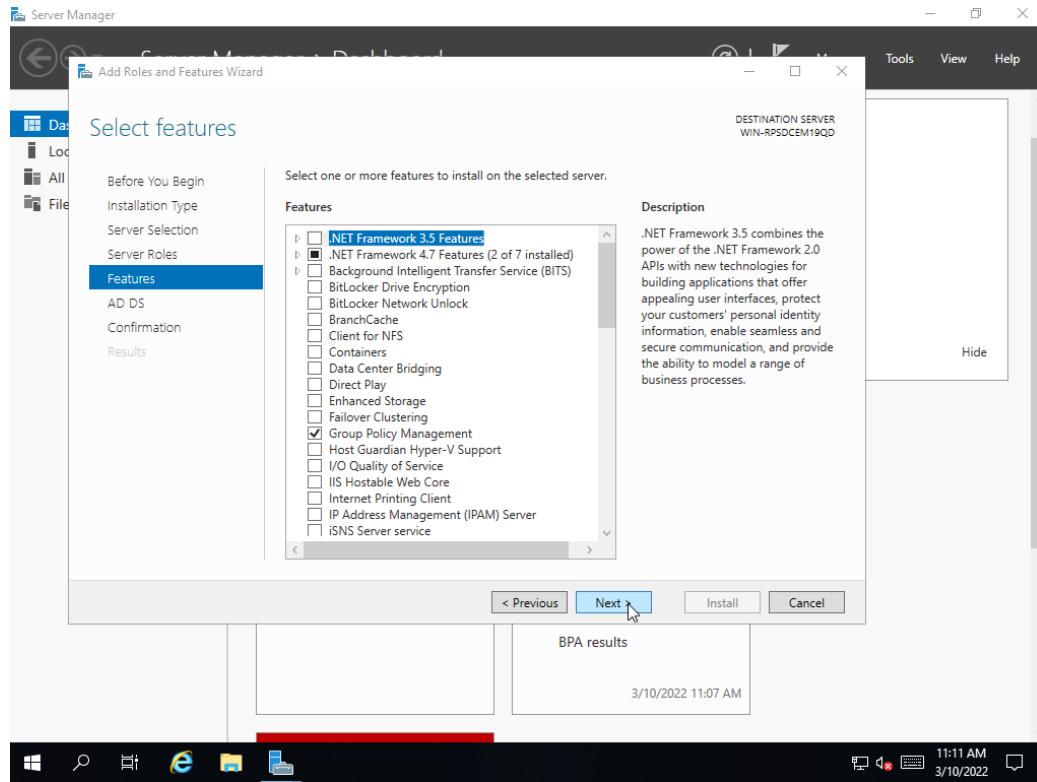
39. The **Add Roles and Features Wizard** will load, here just click **Next** till you see the list of services and roles.



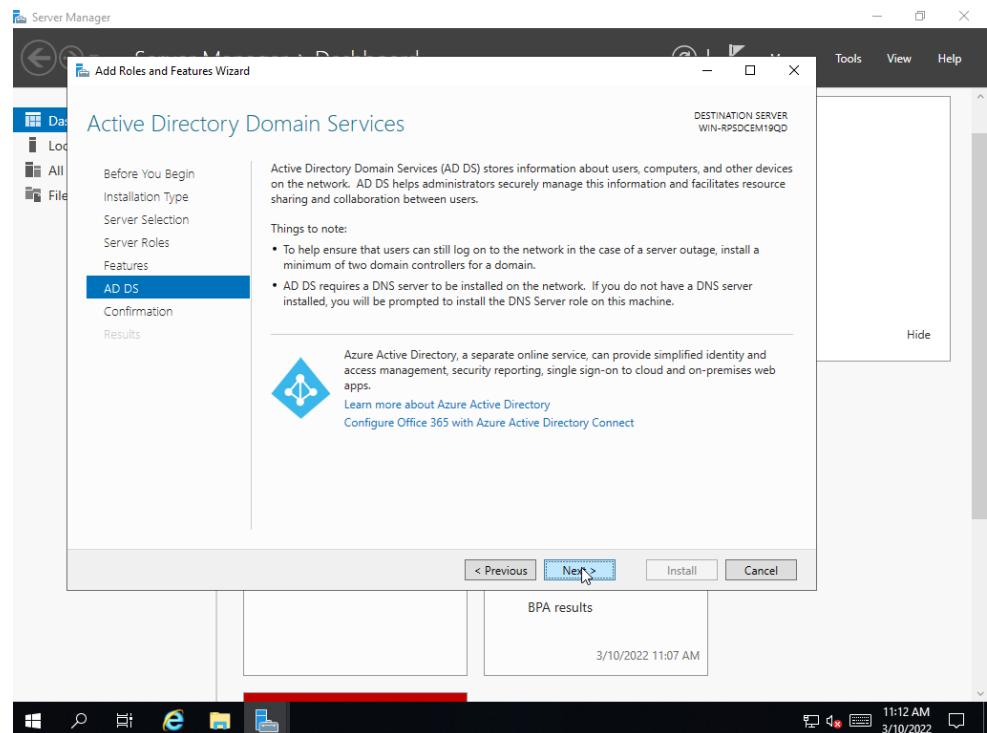
40. Once the list populates, select the box next to **Active Directory Domain Services** and click **Next**.



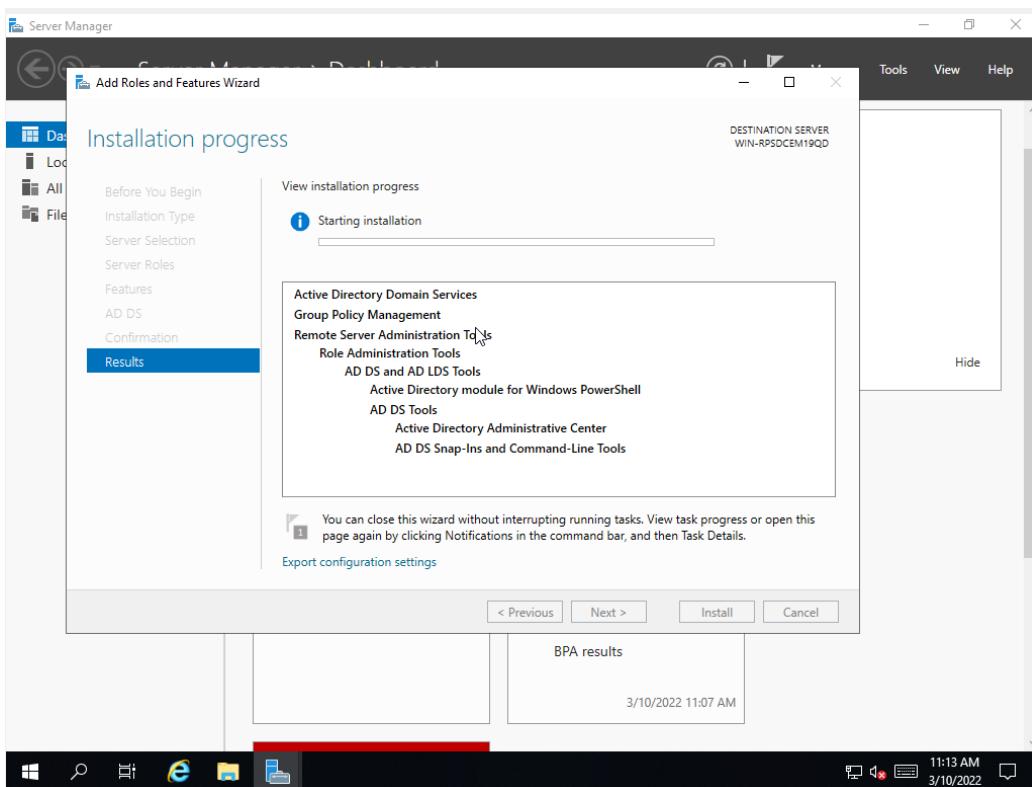
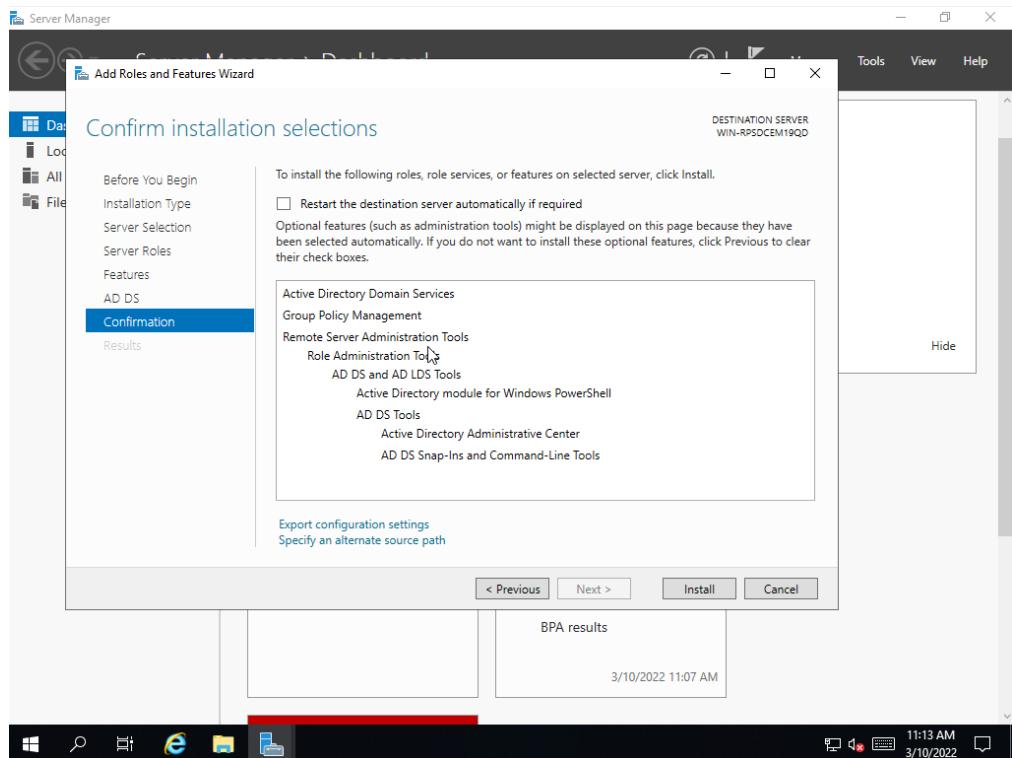
41. Next, for the **Features** select the box next to **Group Policy Management** and click **Next** to continue through the next few steps. You will click through until you complete the install.



42. Click **Next**.

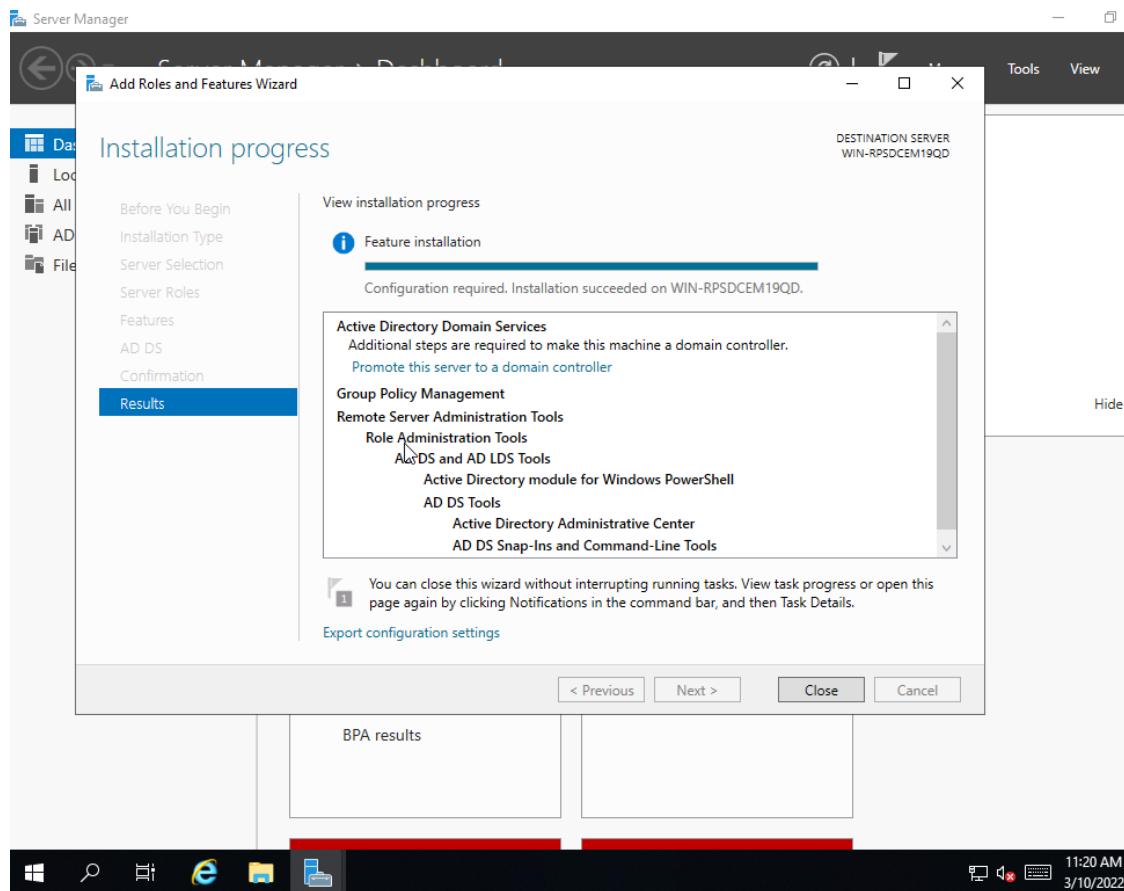


43. Click **Install**.

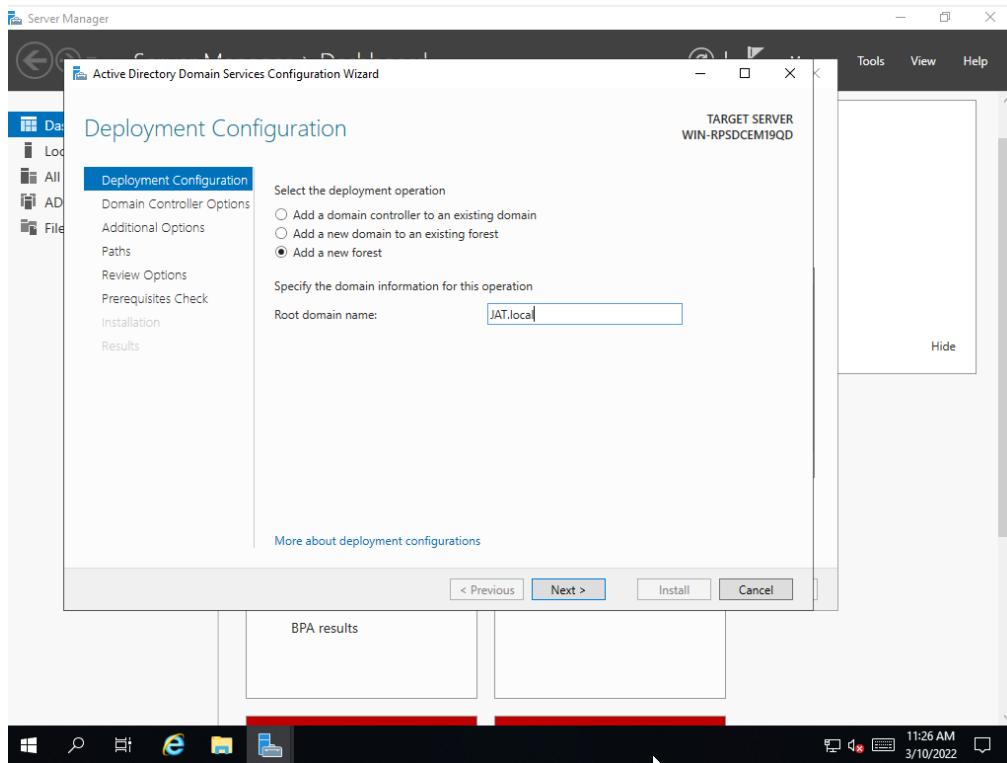


#### 4. Create a Domain and Configure the Domain Controller

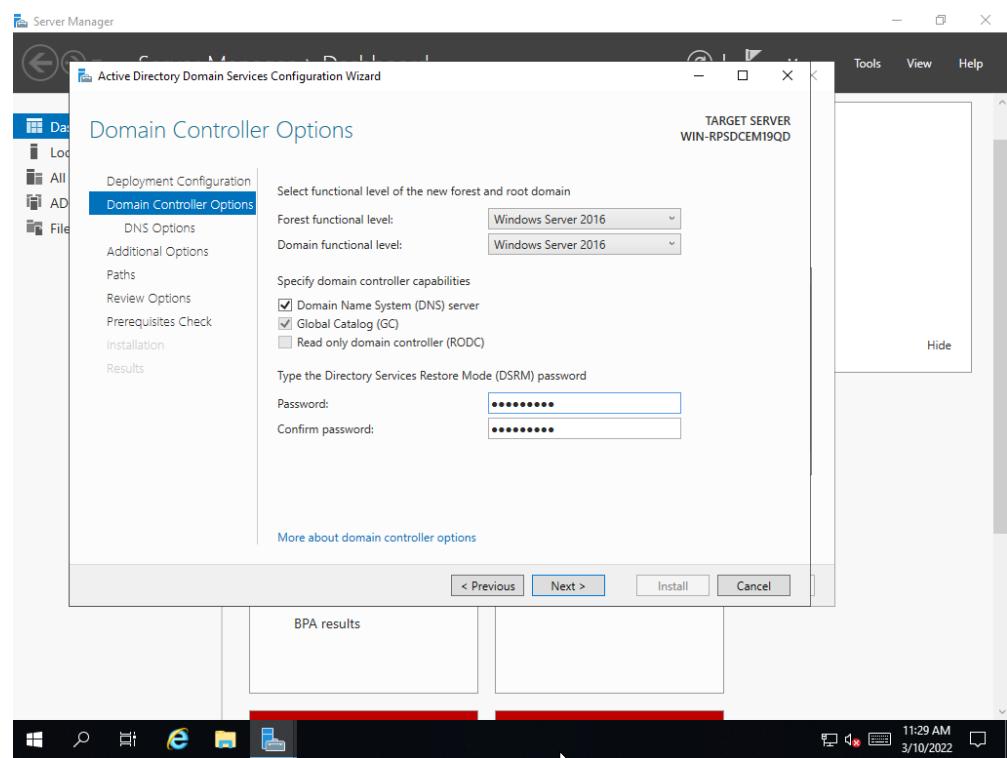
44. Before closing click the blue link "[Promote this server to a domain controller](#)".



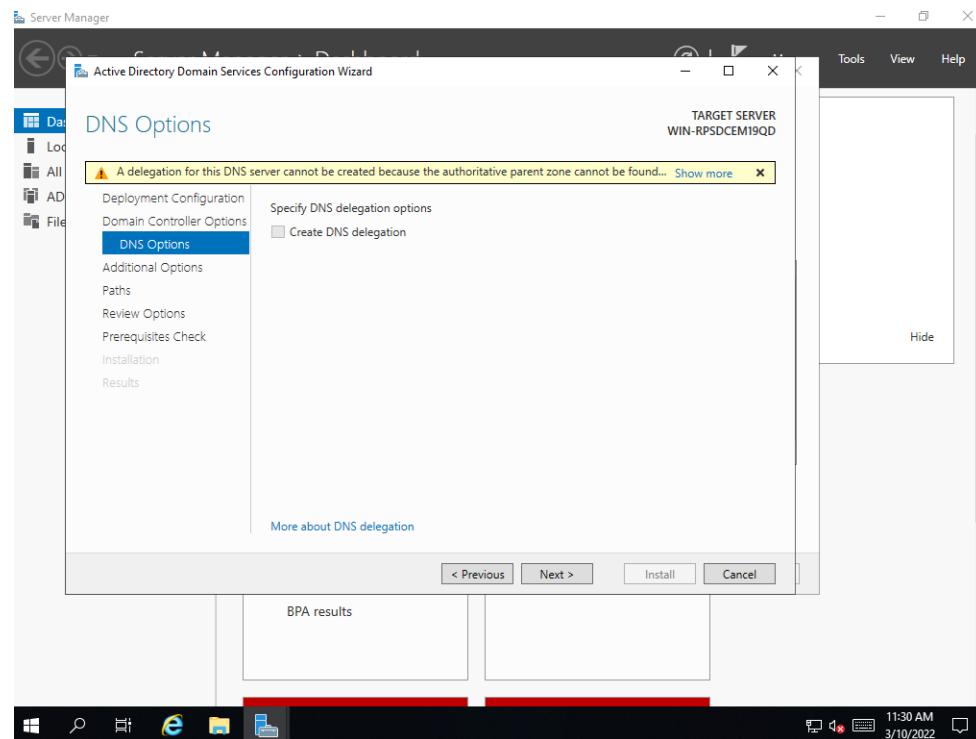
45. Next, click **on Add a new forest** and then enter the name for your domain followed by the suffix **local**. For example, **ABC.local** or **Marvel.local** for our domain we used the abbreviation of our team's name as our domain name. **JAT.local** After typing in your domain name click **Next**.



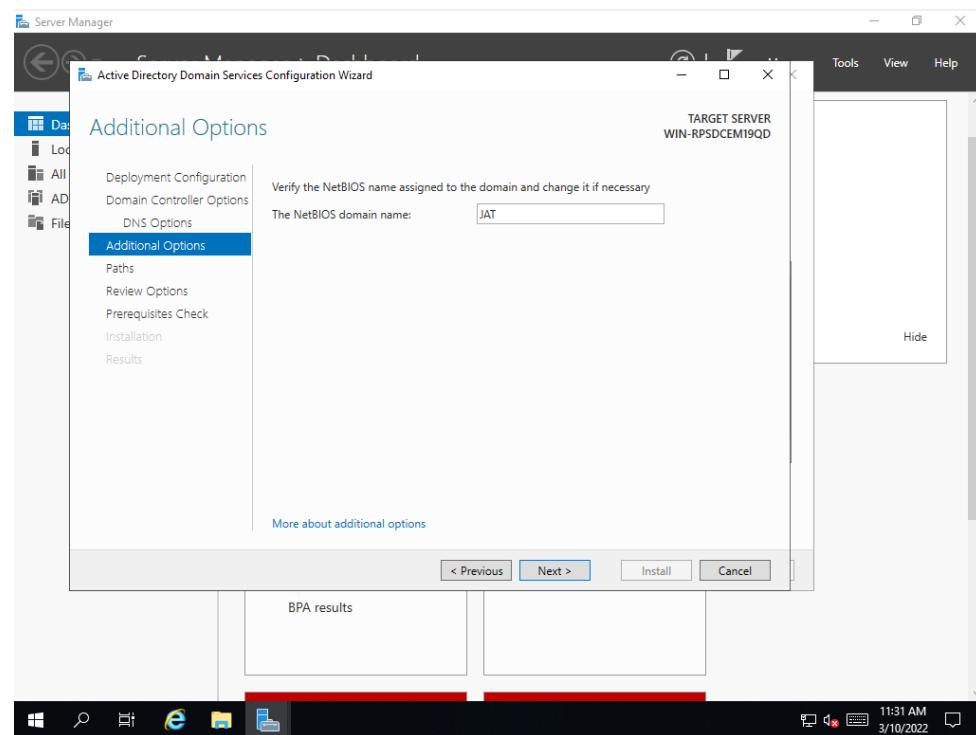
46. The application will require you to create a new password that will be the primary password for logging back into your domain. Click **Next**



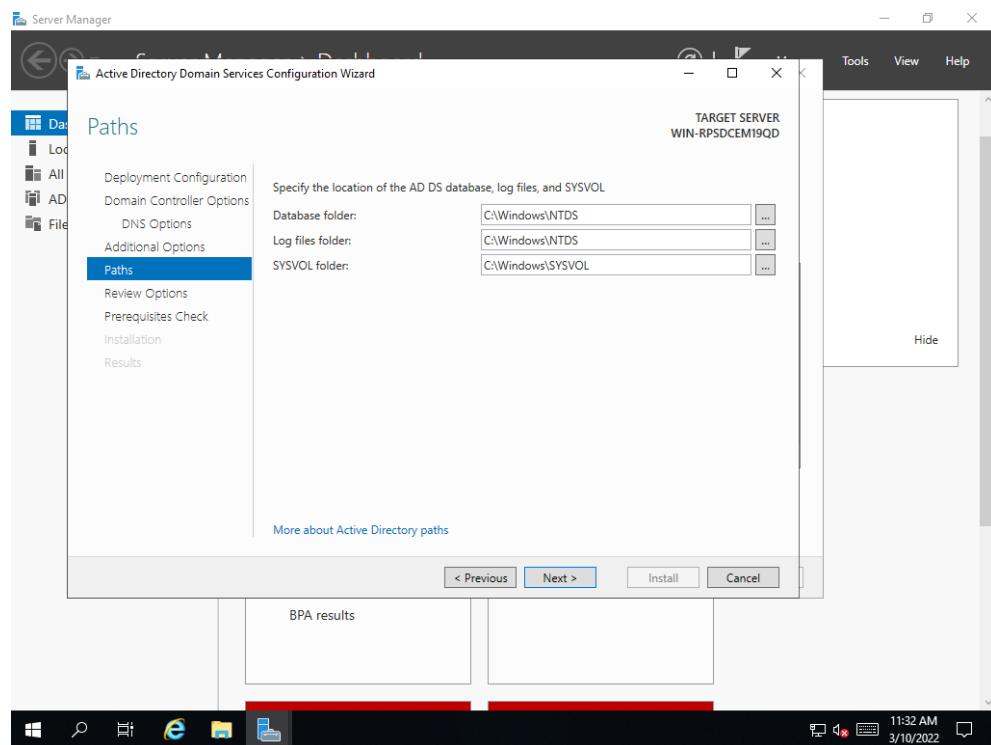
47. At this point the next several steps will be you just clicking through to complete the install. You may encounter a few alerts which is ok. Continue to click through until the install is completely done and the system requires you to restart.



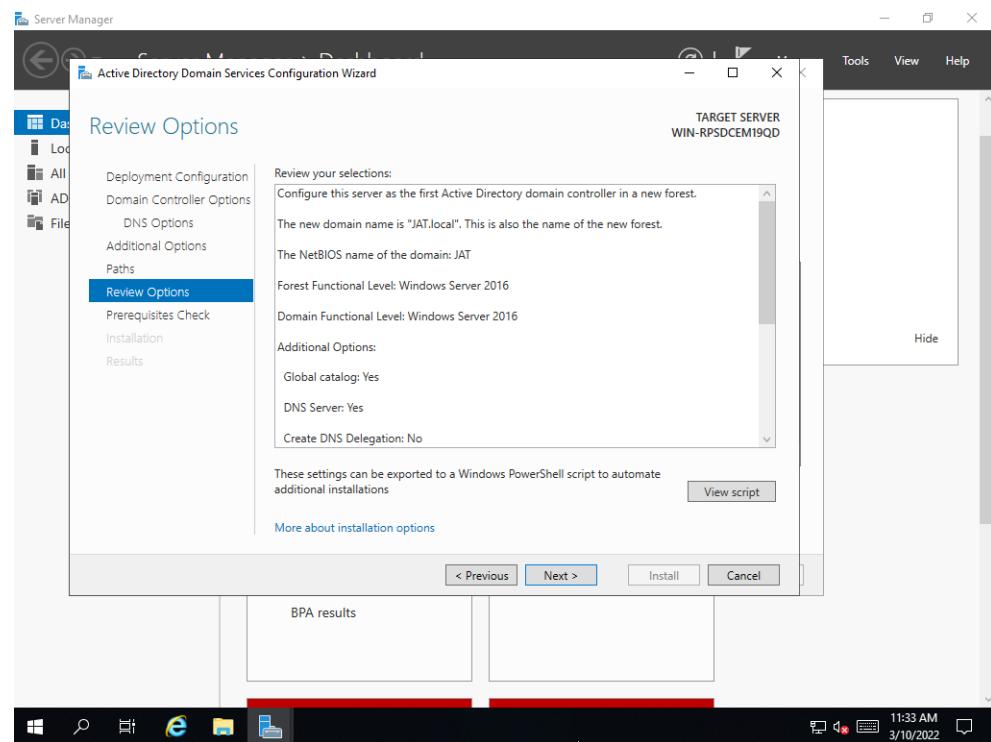
48. Click **Next**. Don't worry about a DNS because the application will choose its own.



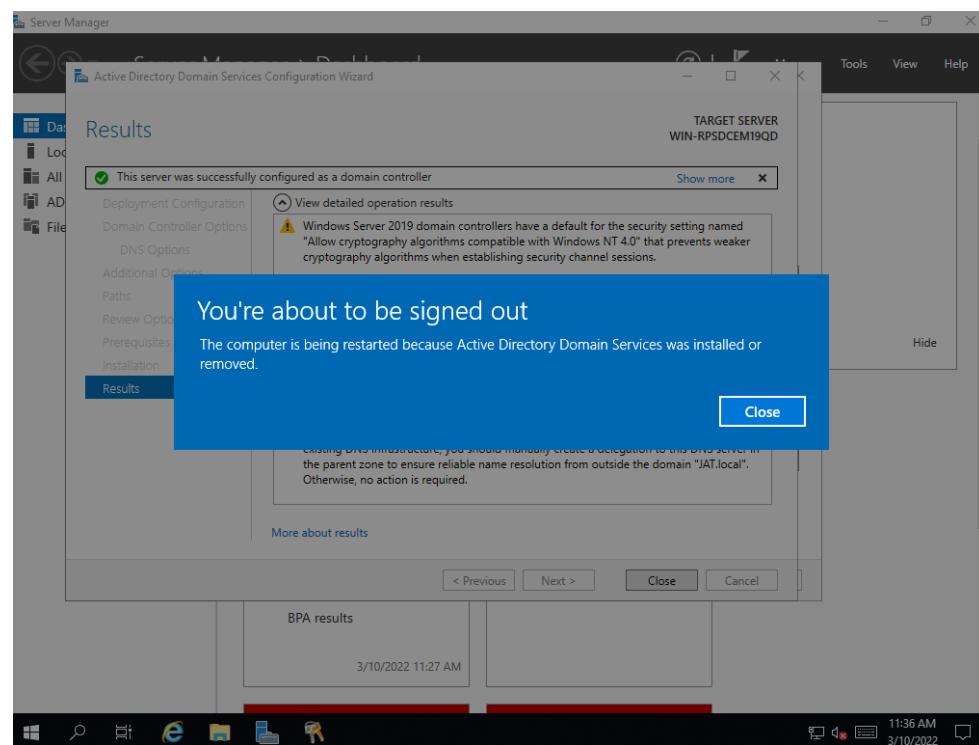
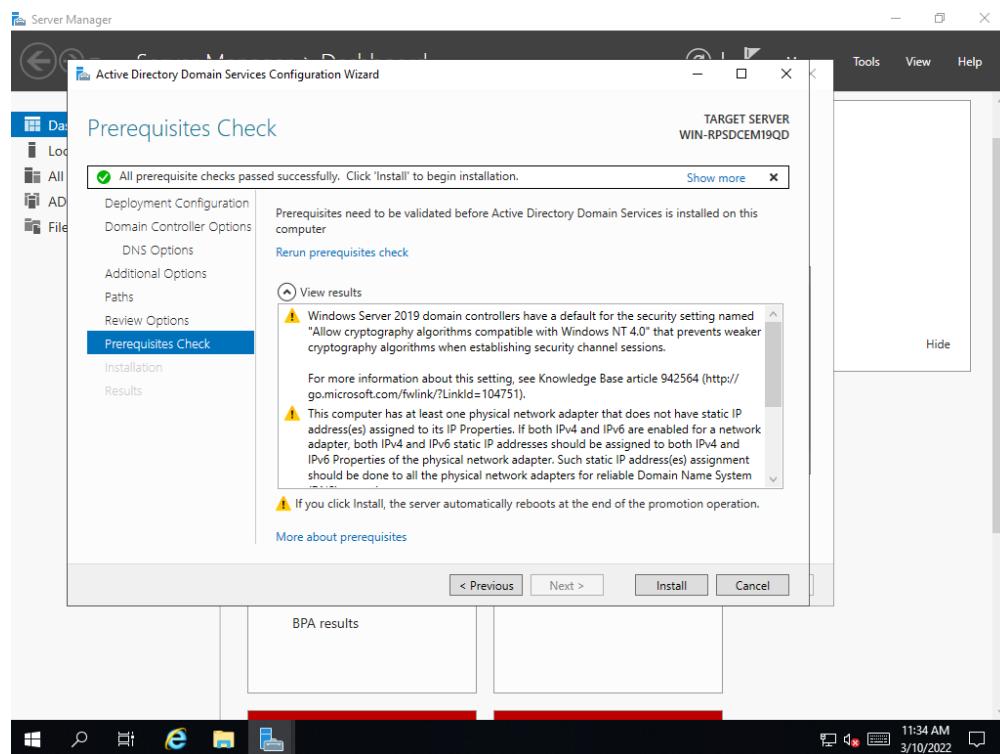
49. Click **Next**.



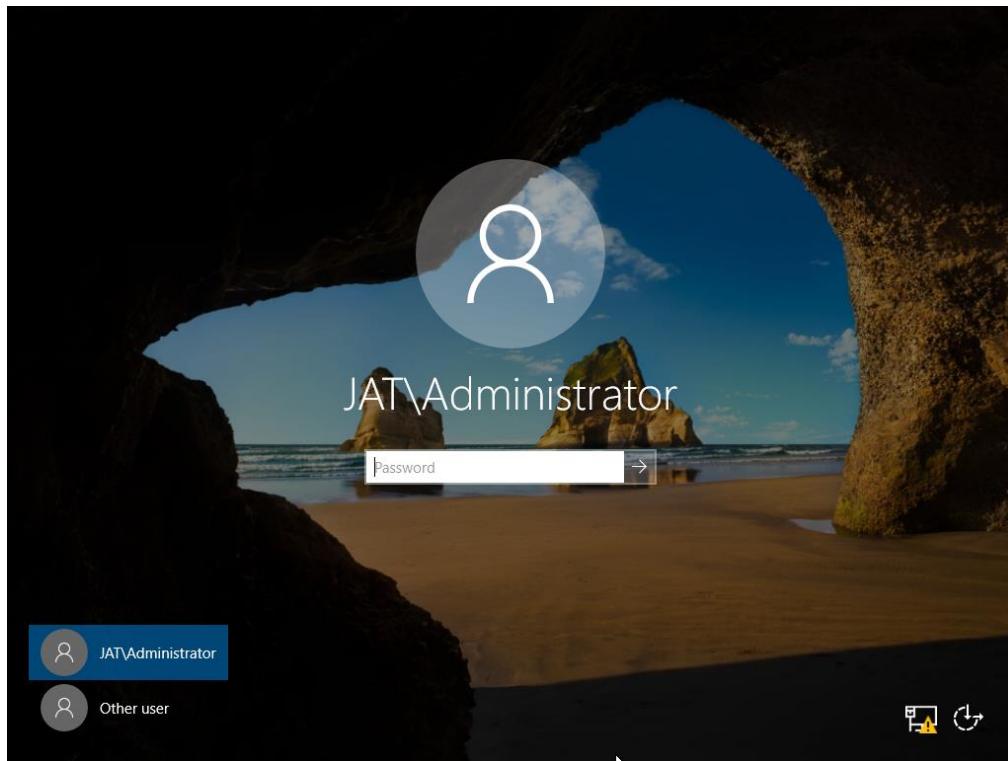
50. Click **Next**.



51. Click **Install**. Once the install finishes allow the system to restart.

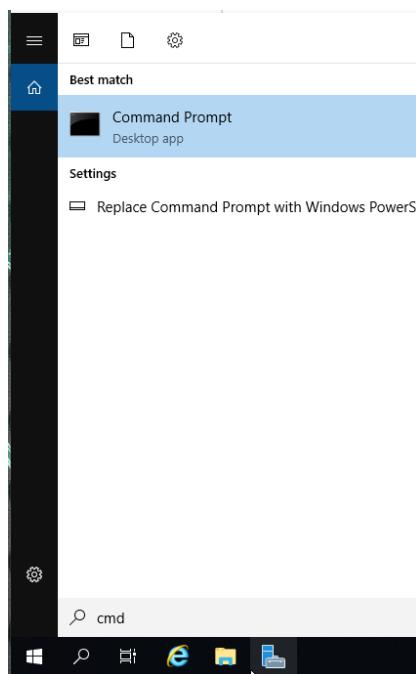


52. Once the machine has restarted, you can now login into your account using the new password you created in the server manager console.



53. Now log back into your server and go to the lower right of the screen and type in “**cmd**” and then click on the “**Command Prompt**” option to open it.

54.



55. Once the window opens, type in “**ipconfig /all**” in the command window and press enter. Look for the **IPv4** IP address and save it for using in a later step. “**Note**”, your server IP address may be different than the one in the example.

```
C:\Users\Administrator>ipconfig /all

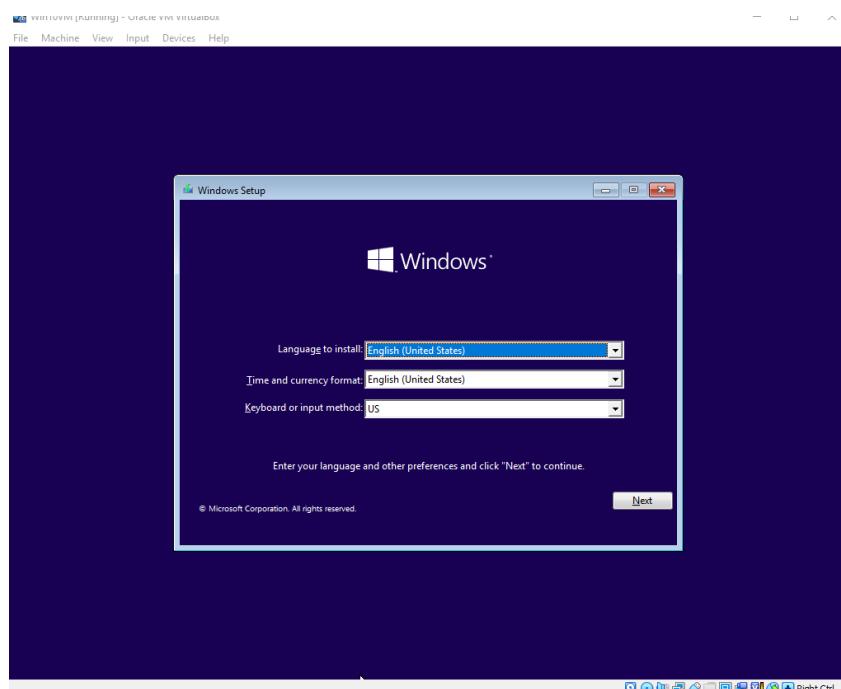
Windows IP Configuration

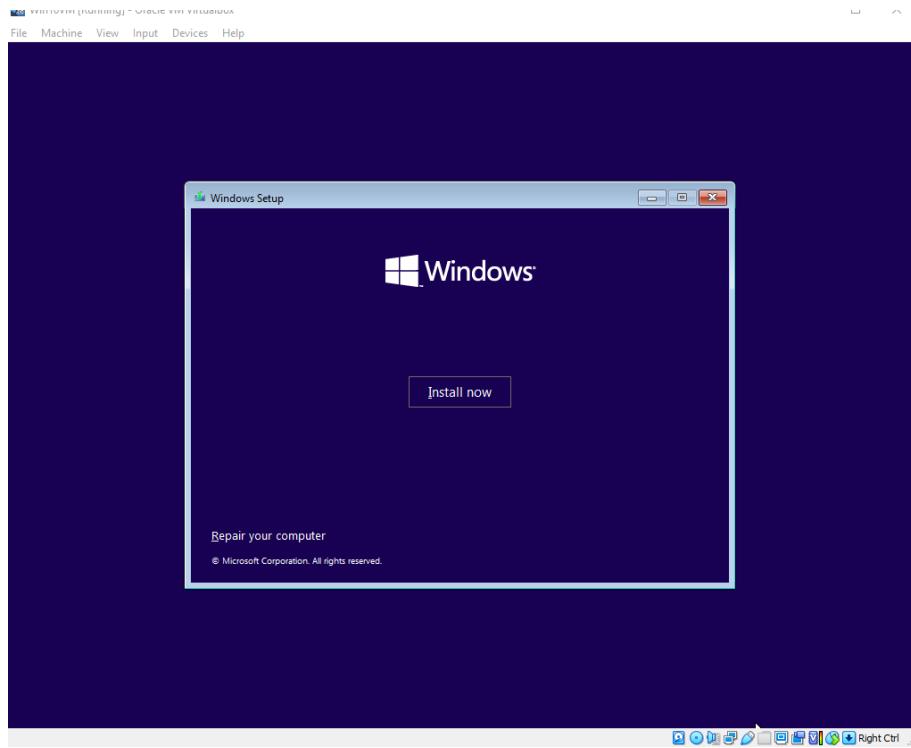
Host Name . . . . . : WIN-RPSDCEM19QD
Primary Dns Suffix . . . . . : JAT.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . :
                                lan

Ethernet adapter Ethernet:

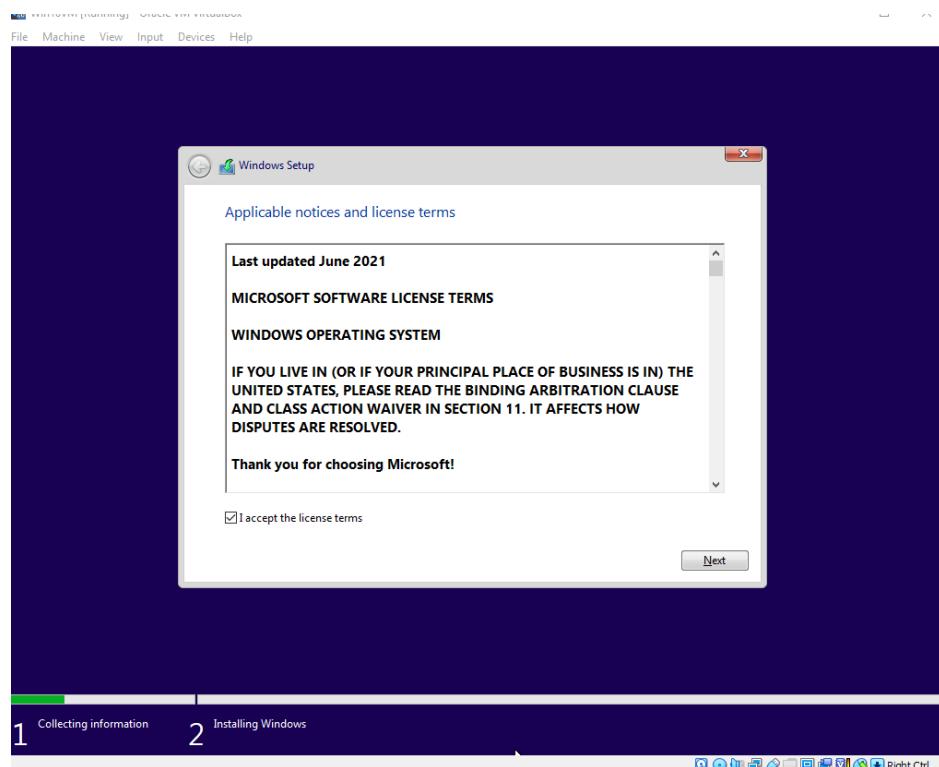
    Connection-specific DNS Suffix . : lan
    Description . . . . . : Intel(R) PRO/1000 MT Desktop A
    Physical Address. . . . . : 08-00-27-62-53-27
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . . : Yes
    IPv4 Address. . . . . : 192.168.1.14(Preferred)
                                . . . . .
```

56. **At this point we can install the Window 10 virtual machine. Here you will repeat the setup as performed in Steps 10 - 23. There is no need to close the server at this time.**

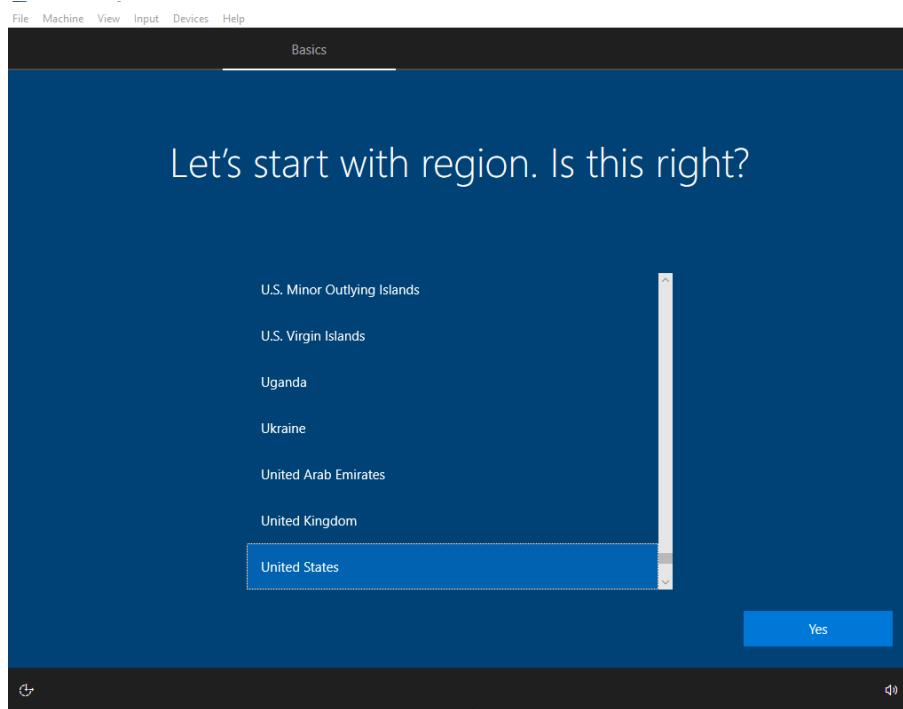




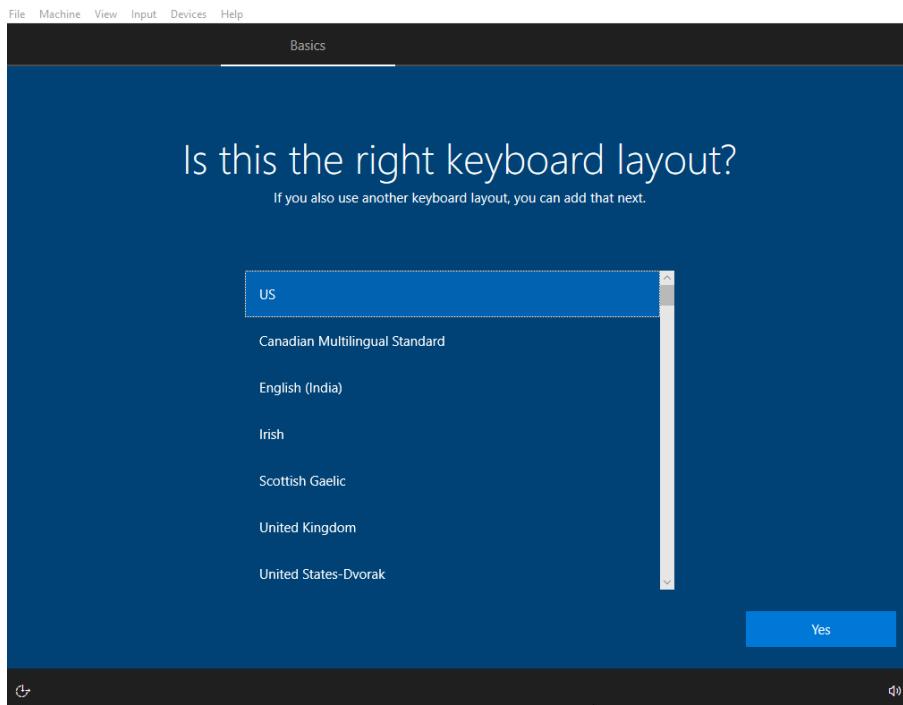
57. Click **Next**.



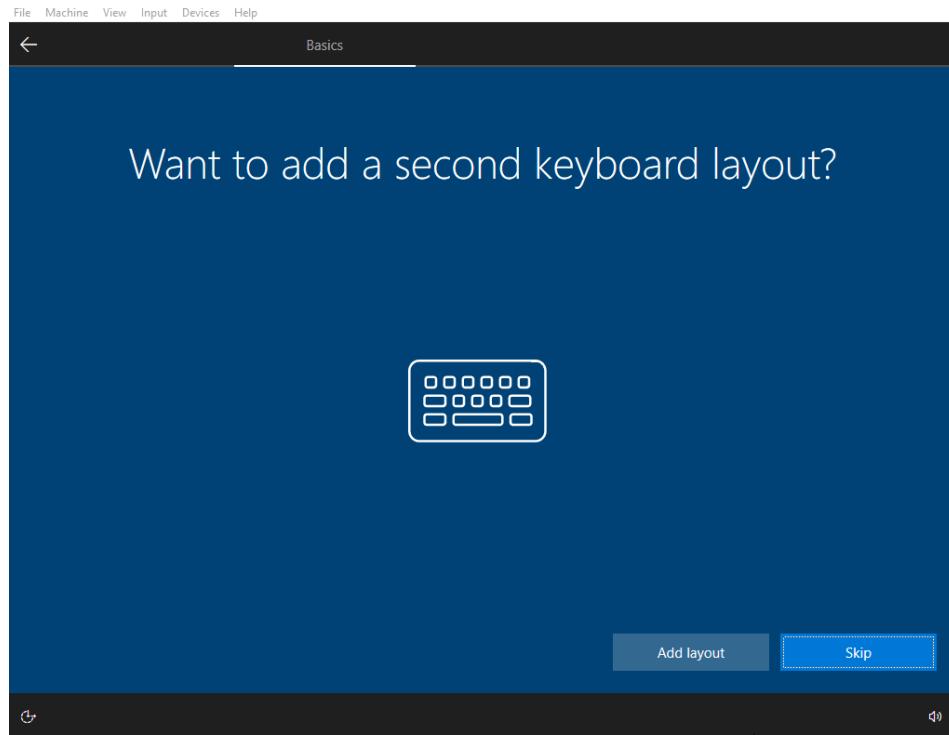
58. Choose your region of choice and click **Yes**.



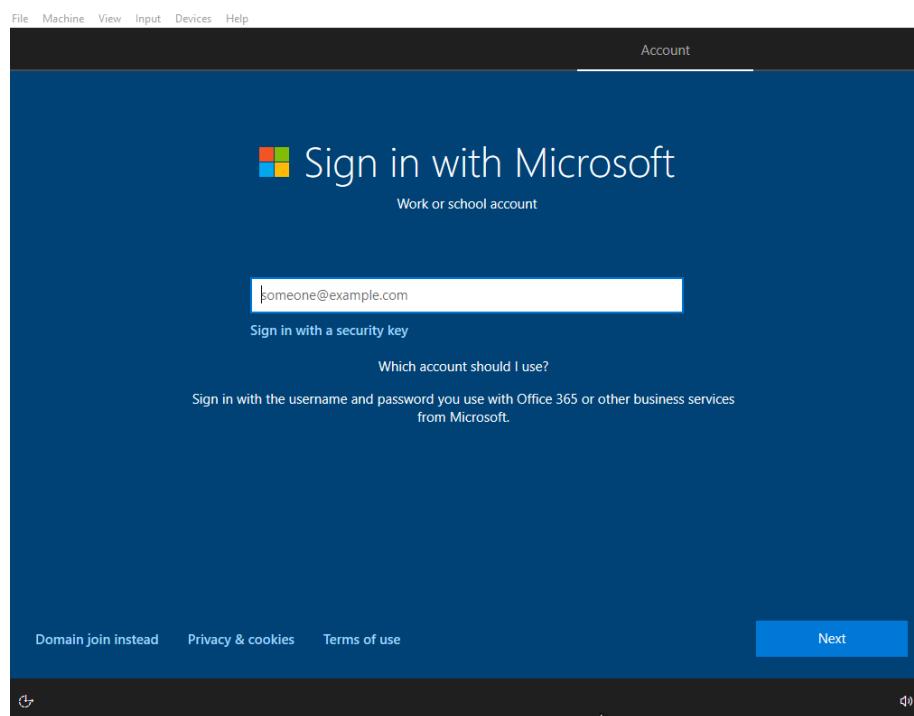
59. Next choose your keyboard layout and click **Yes**.



60. Click **Skip** to the option to add a second keyboard layout.

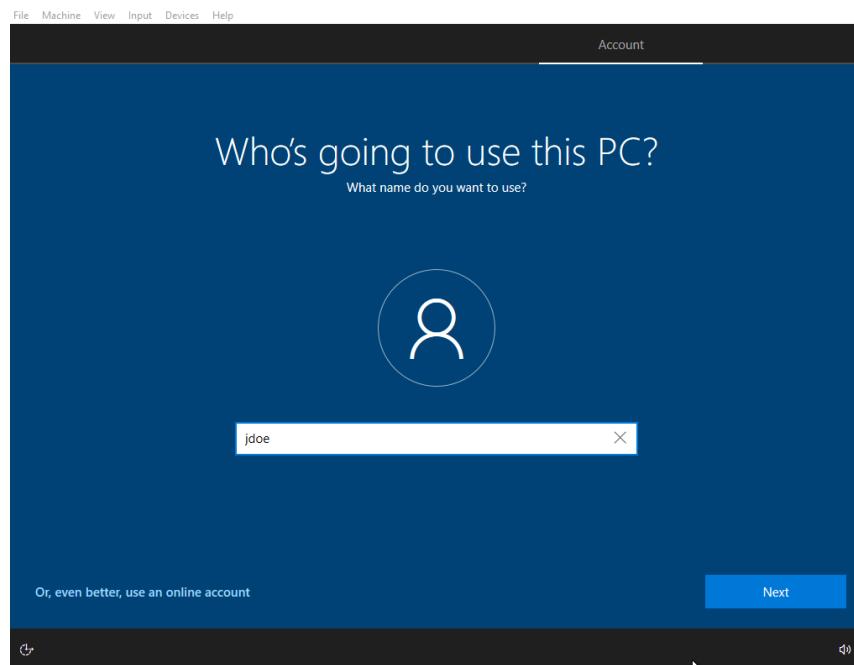


61. Because we are building a user from scratch there is no need to use a normal Microsoft account to sign in.

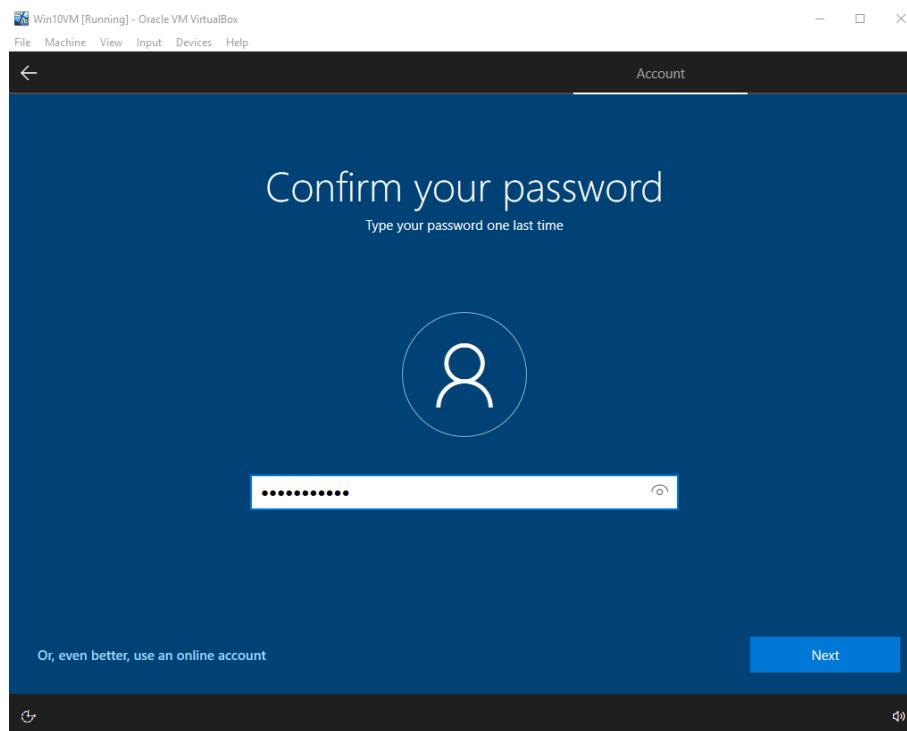


62. Next you will create a standard user account to login to the computer by pressing "**Domain join instead**". If you would like you can choose to use this name again when we create the domain

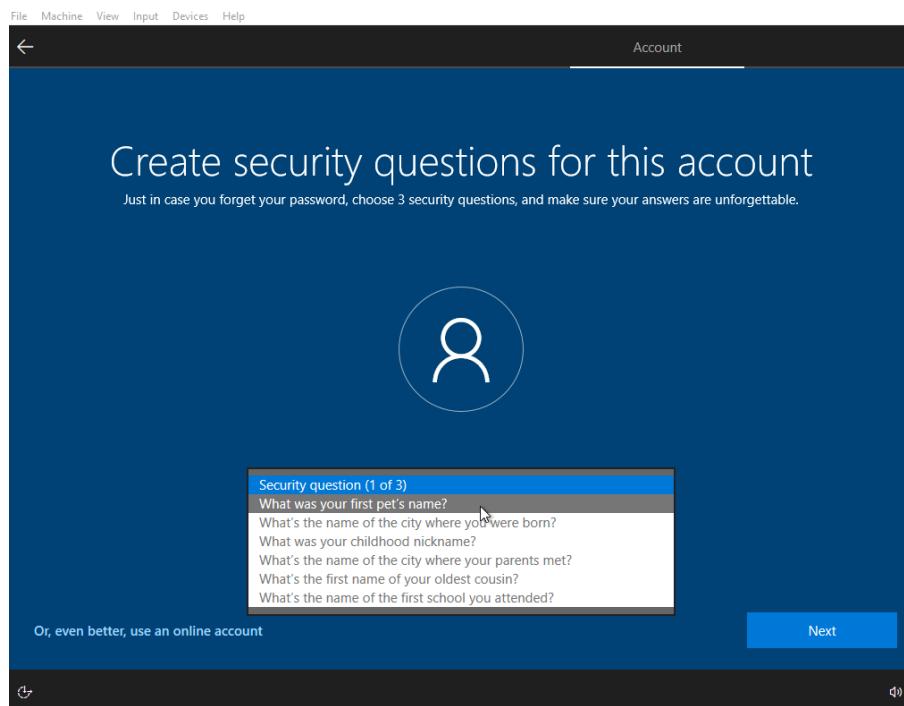
admin if you'd like. **Remember to save your password somewhere for you to reference the if it isn't a simple password that you won't forget.**



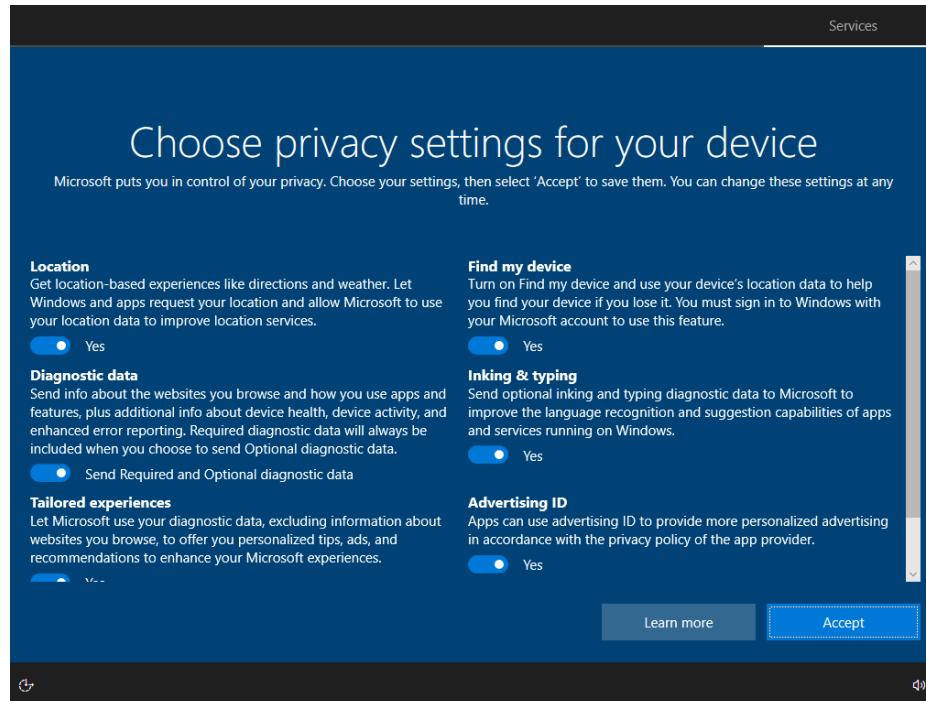
63. After confirming your password to get into the Win10 machine, you will be prompted for recovery questions. I suggest creating these questions to aid you in being able to get into your computer if you forget the password. This user is only a temporary one and won't be needed later.

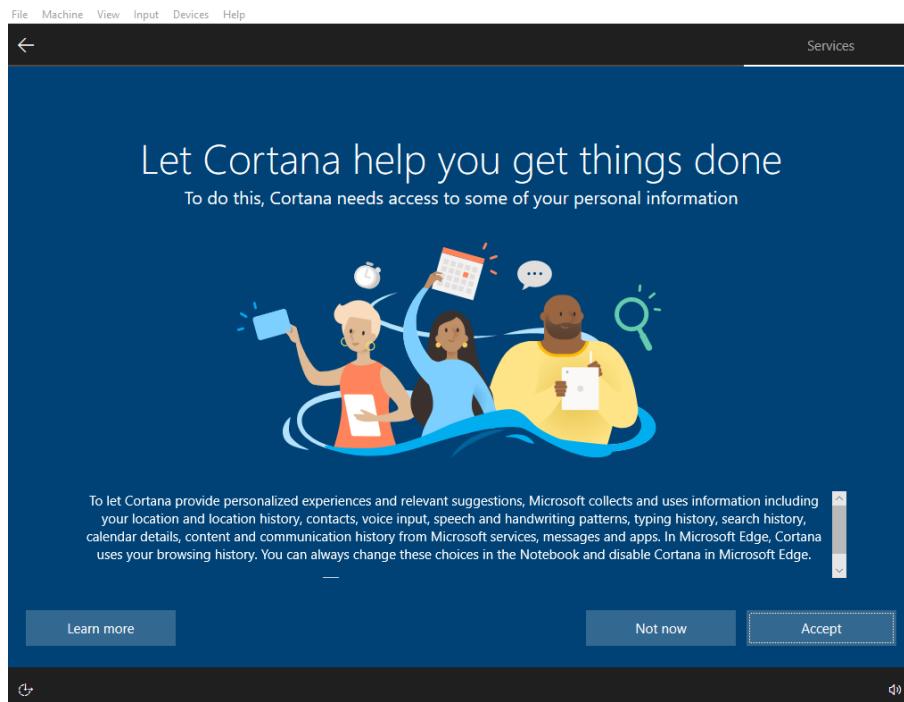


64. Click **Next**.



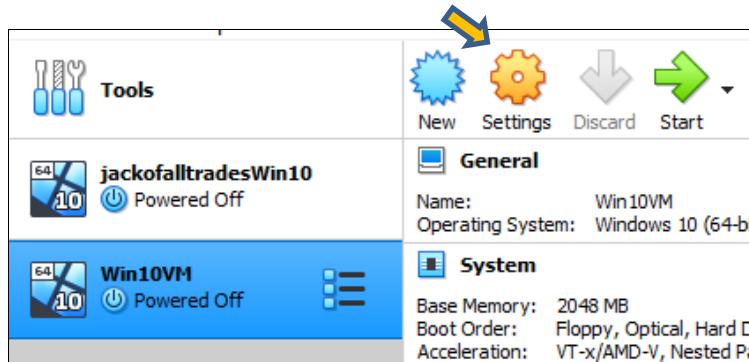
65. Click **Accept** through the next few screens.

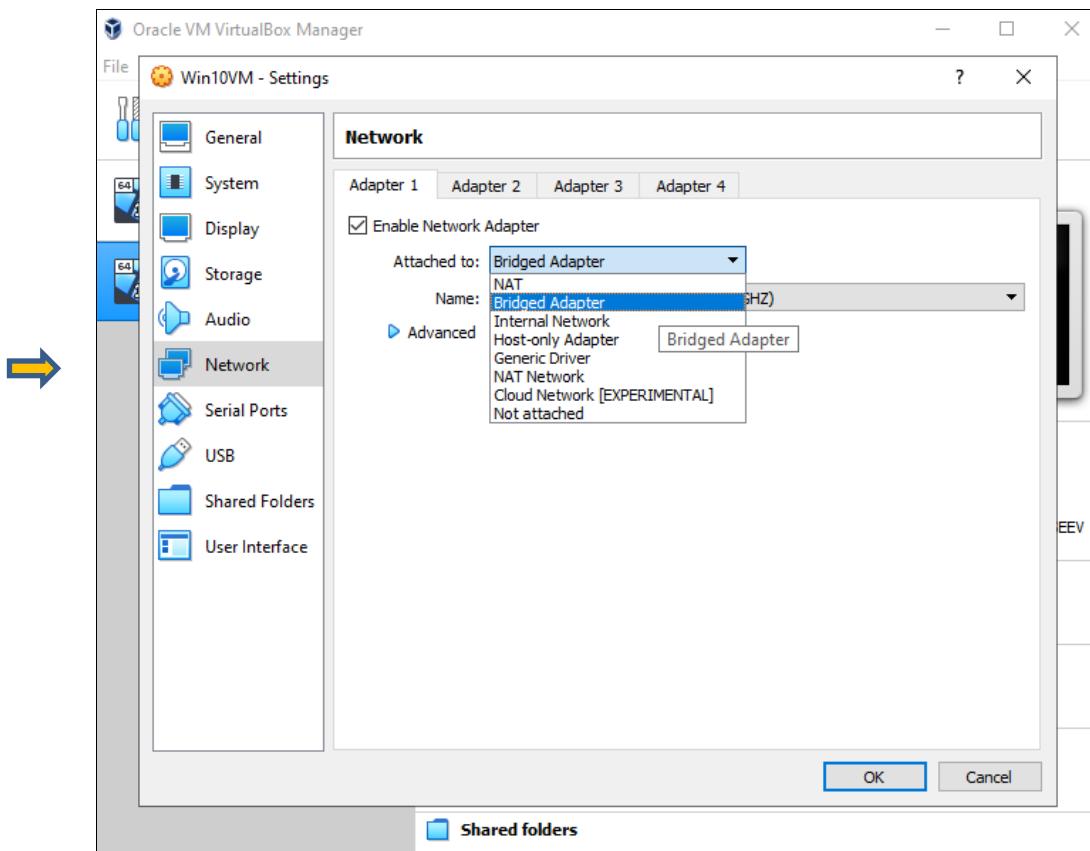




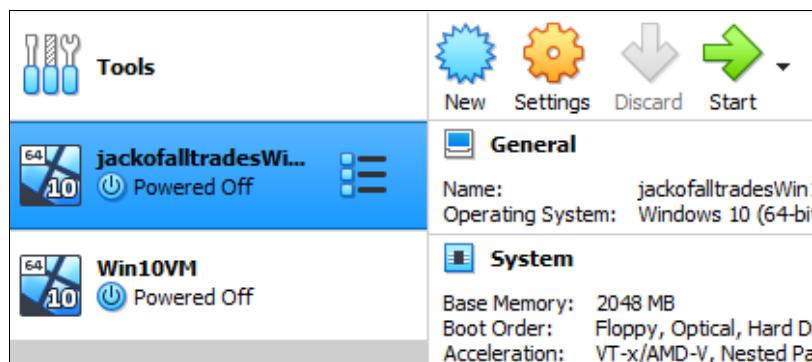
## *Configure the Network Connections*

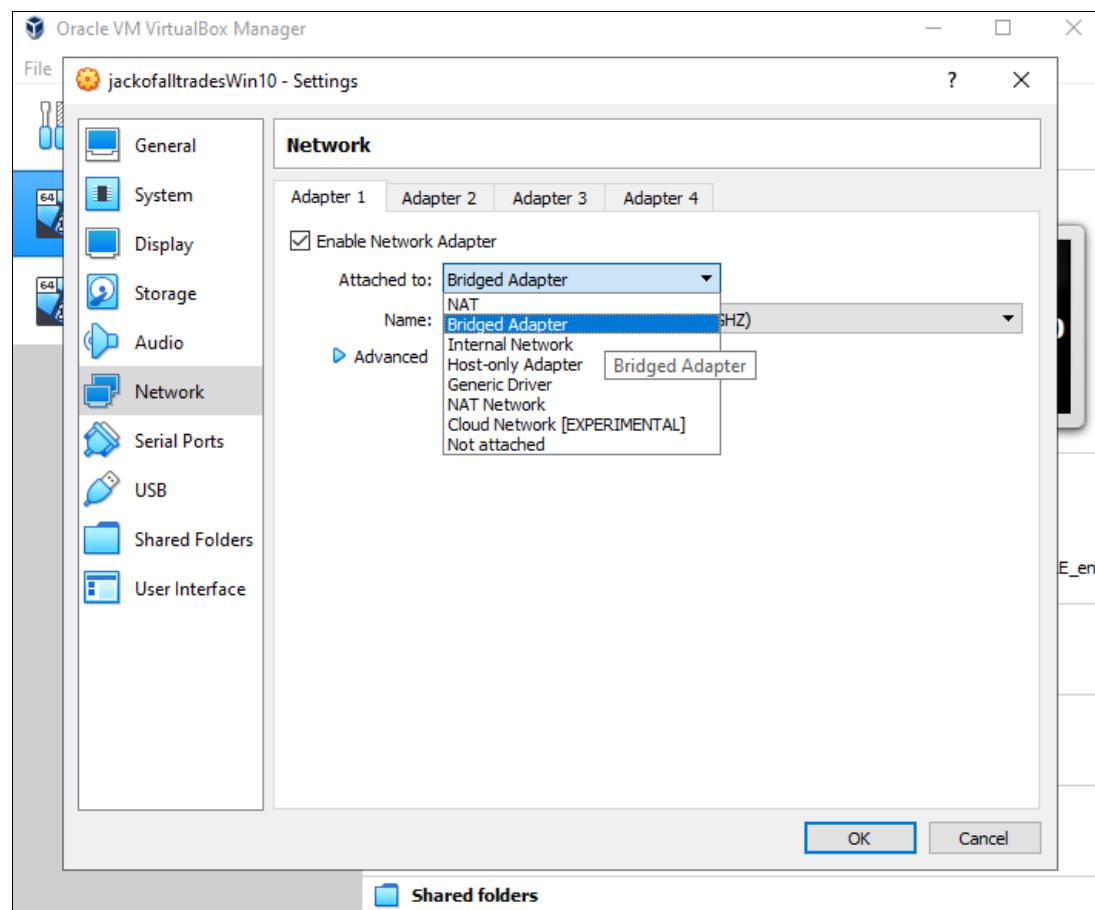
66. **Important!** Now that you have setup Windows Server and your Windows 10 VM, you will need to ensure the bridge adapter is setup under the network settings for both machines. To find this setting you will need to go to the VirtualBox Manager



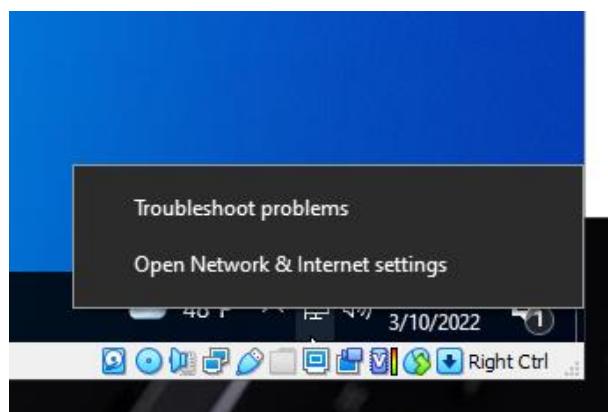


67. Next, repeat the previous step now on the Windows Server VM.

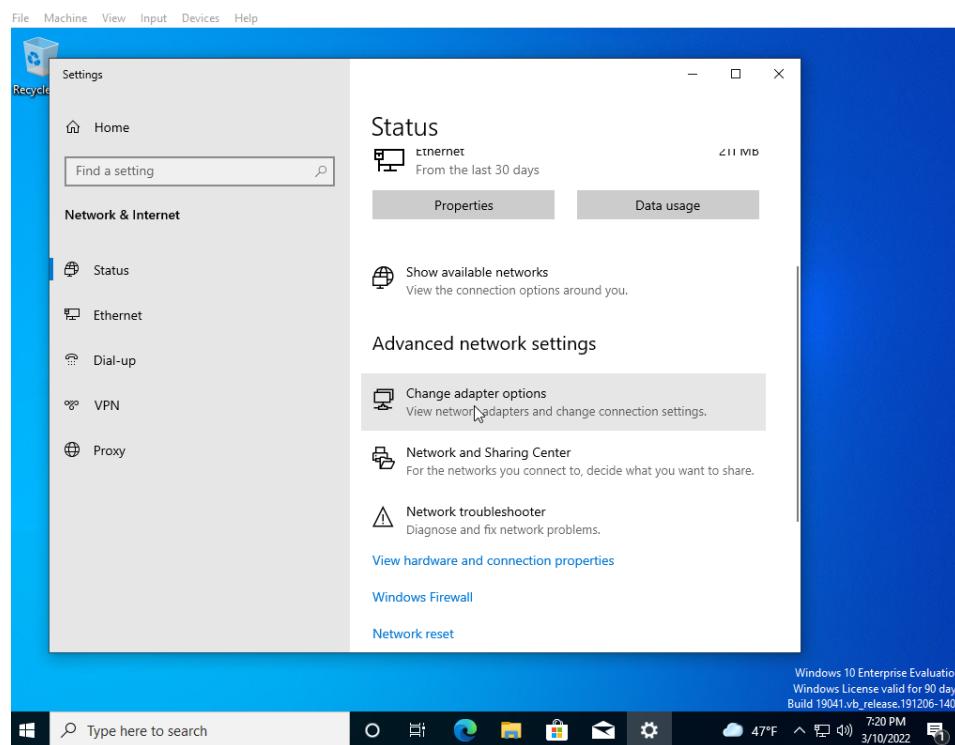




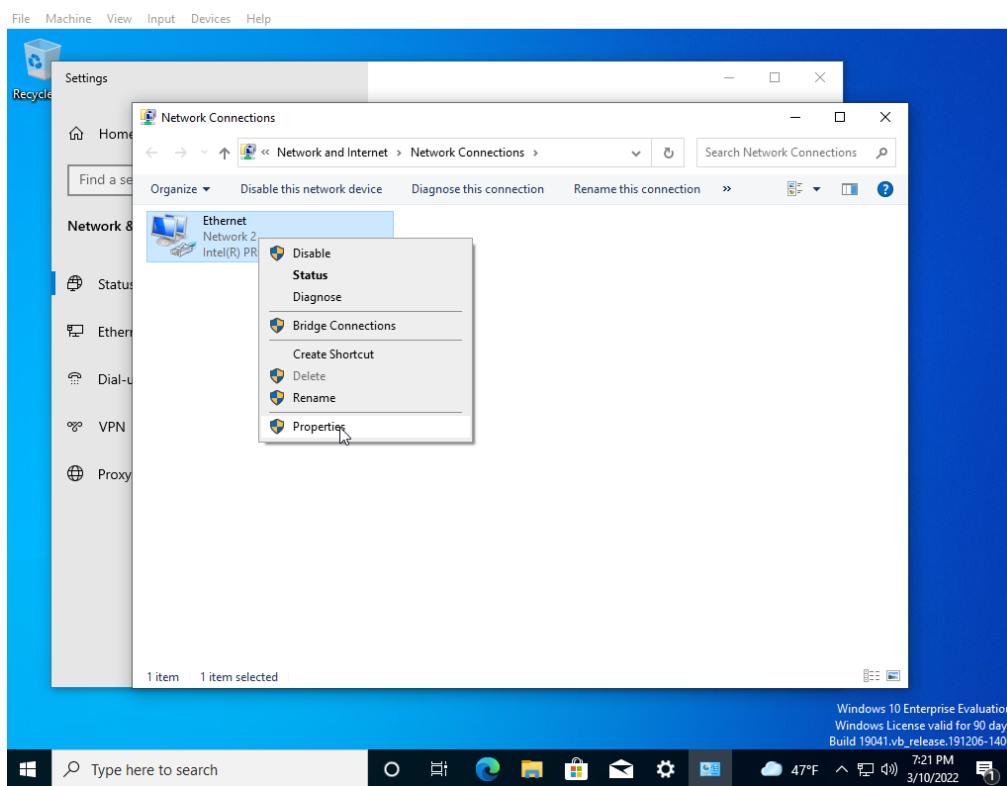
68. Now that you've configured both VMs
69. Now you will need to go to the lower right of the screen and click on the wireless icon to find the selection for "***Open Network & Internet settings.***"



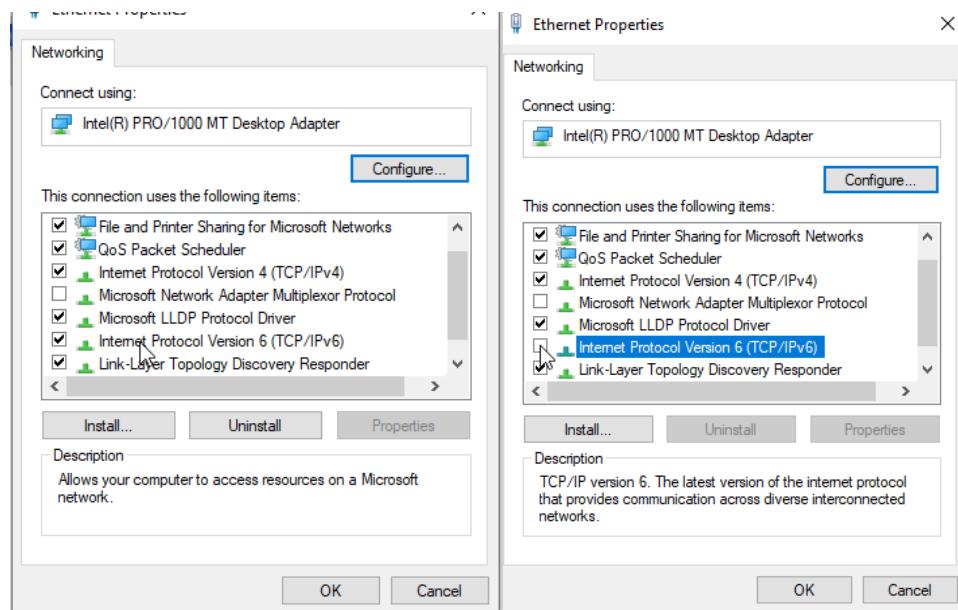
70. Once the settings screen is populated, select “**Change adapter options**”.



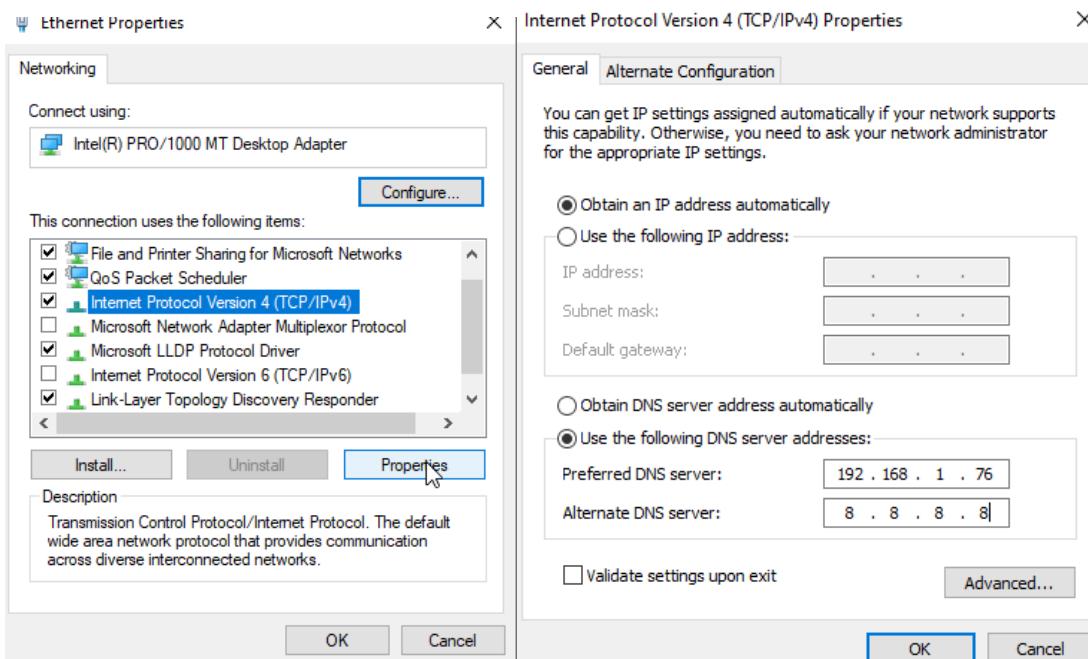
71. Next, look for your Ethernet adapter and **right click** to reveal a list of options. Click on “**Properties**”.



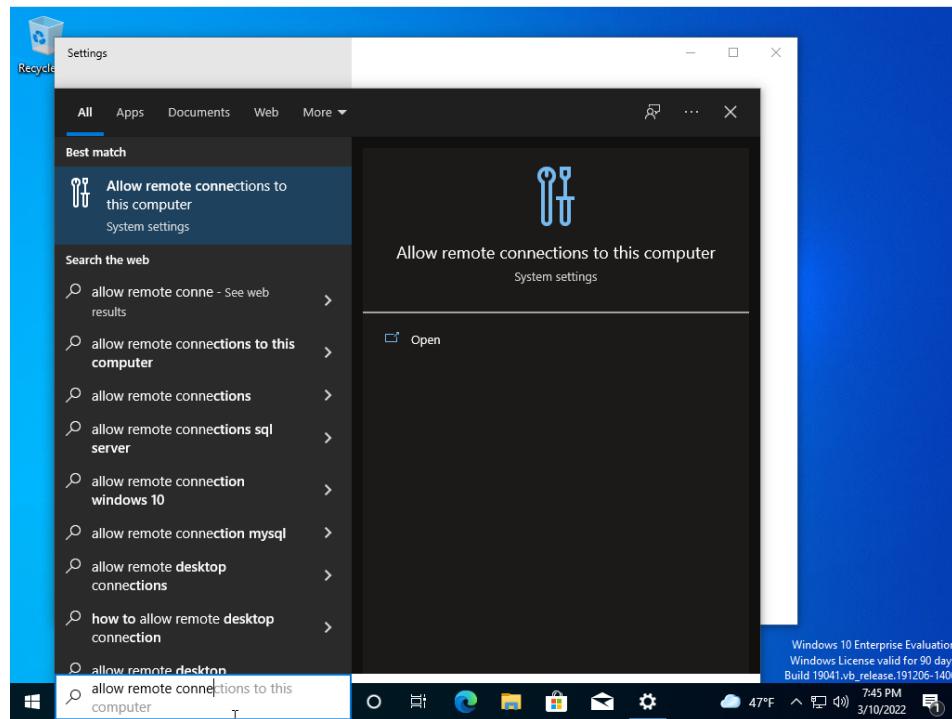
72. Next, look for the option “***Internet Protocol Version 6 (TCP/IPv6)***” and uncheck the box next to it.



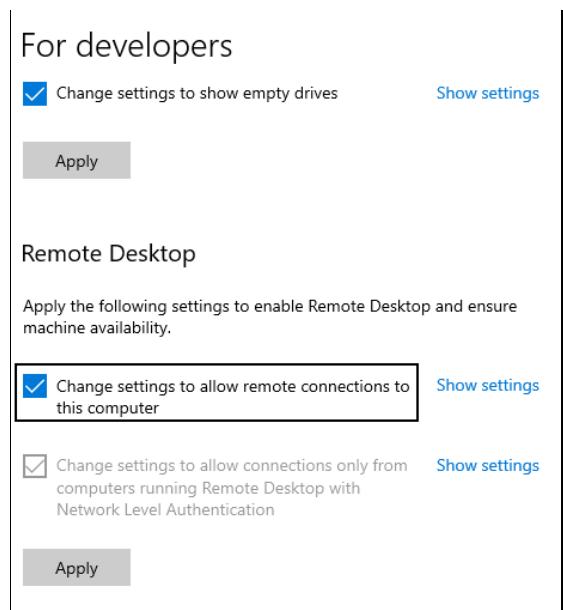
73. Next, look for the “***Internet Protocol Version 4 (TCP/IPv4)***” and click “***Properties***” and on the “***General Tab***” go to the option “***Use the following DNS server addresses***” and type in the IP address of the server you setup in the box next to “***Preferred DNS server:***” and **8.8.8.8** in the box next to “***Alternate DNS server:***”.



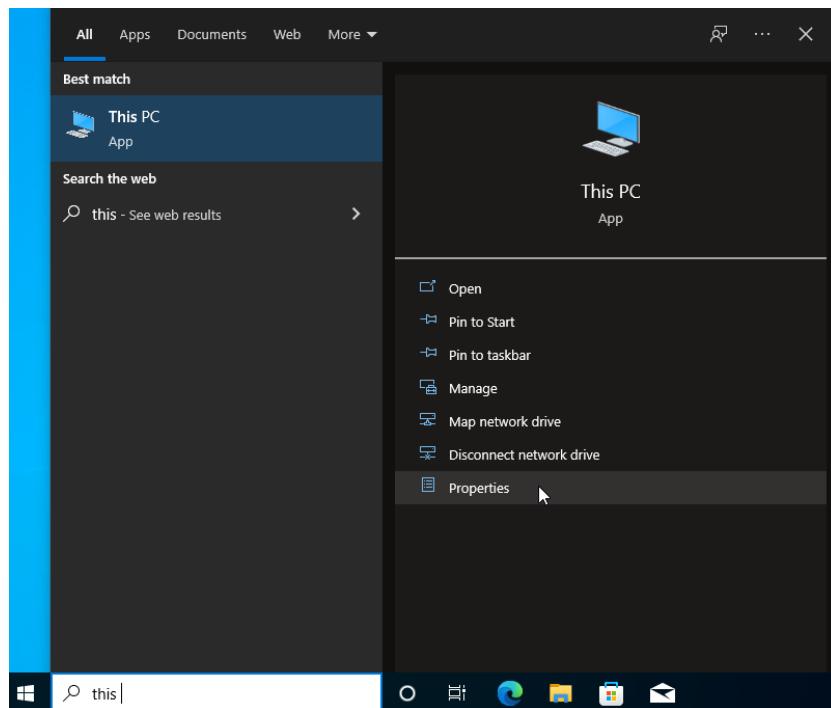
74. After making the changes, click ok and go back to your desktop and go to the search box in the lower left of the screen again and type in “***allow remote connections to this computer***” find the option and open it.



75. Once the window “***For Developers***” open up, click on “***Show settings***” of the “***Change settings to allow remote connections to this computer***”.



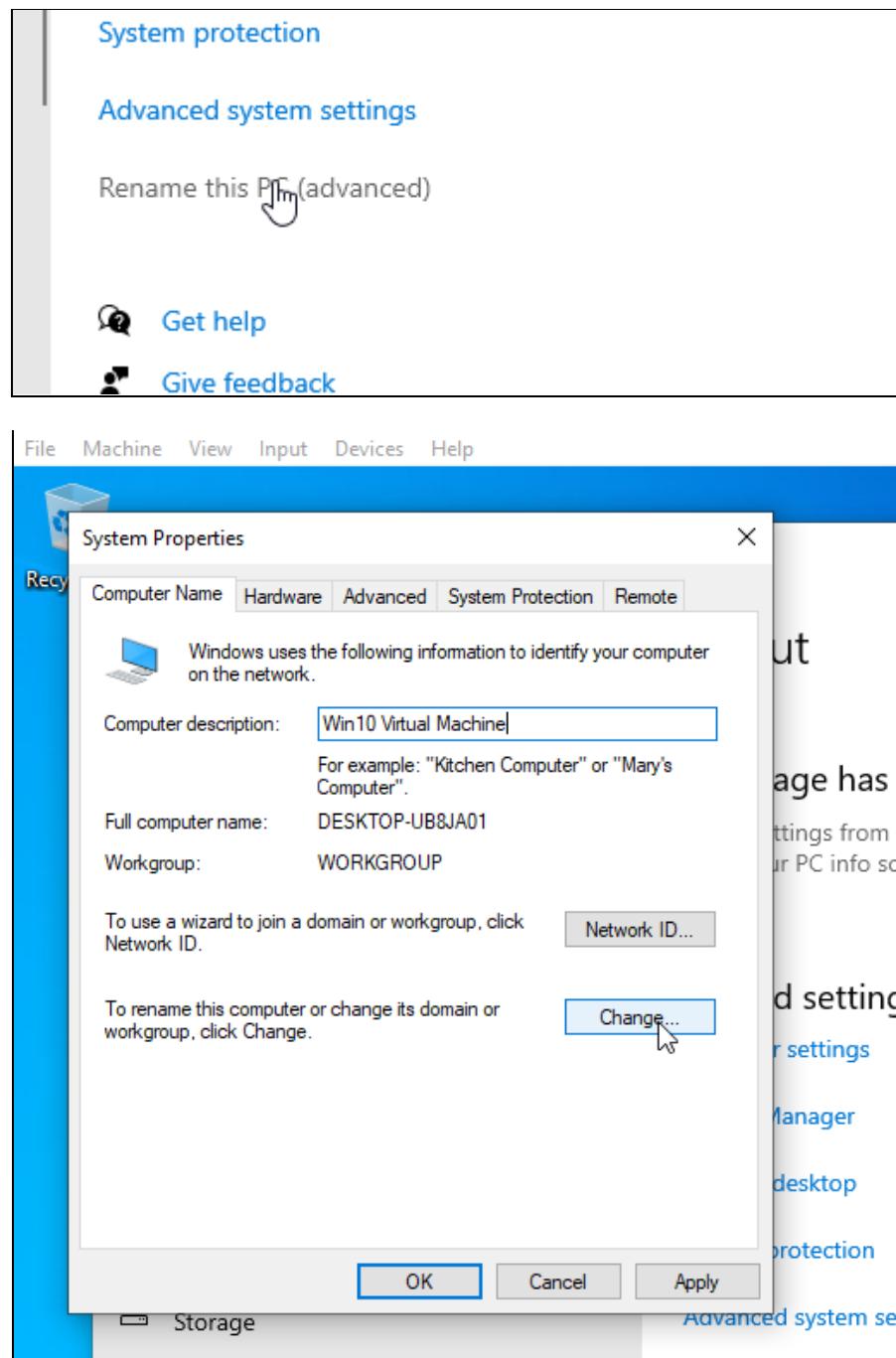
76. Now you will change the computer name add it to the domain. You will need to go back to search and ***search*** for this pc to get to the ***PC*** properties.



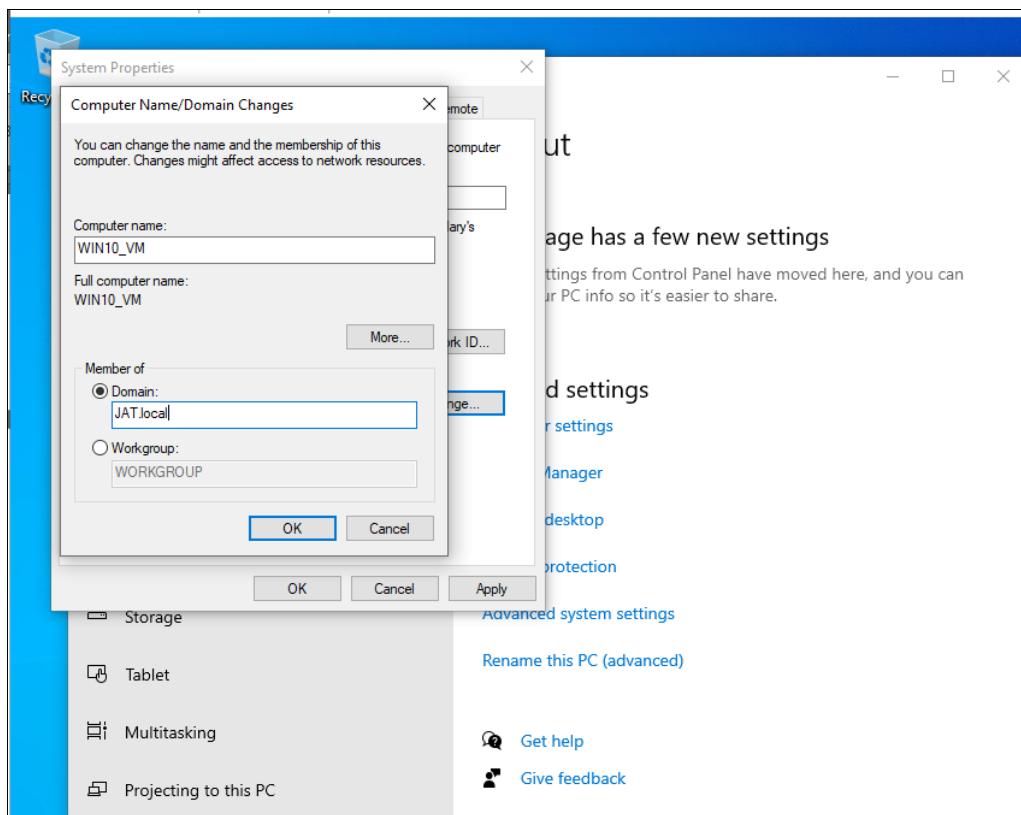
77. Once the "**About**" window populates, you will need to navigate to "**Rename this PC**".



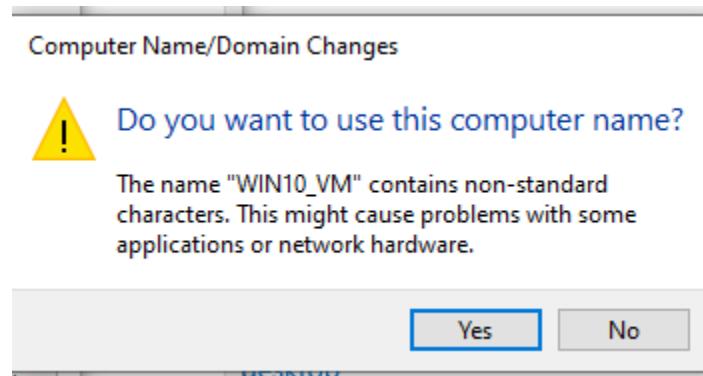
78. Next you will need to click the option “**Rename this PC (advanced)**” to open up the “**System Properties**” window, make the computer description to “**Win 10 Virtual Machine**” and click “**Change...**”



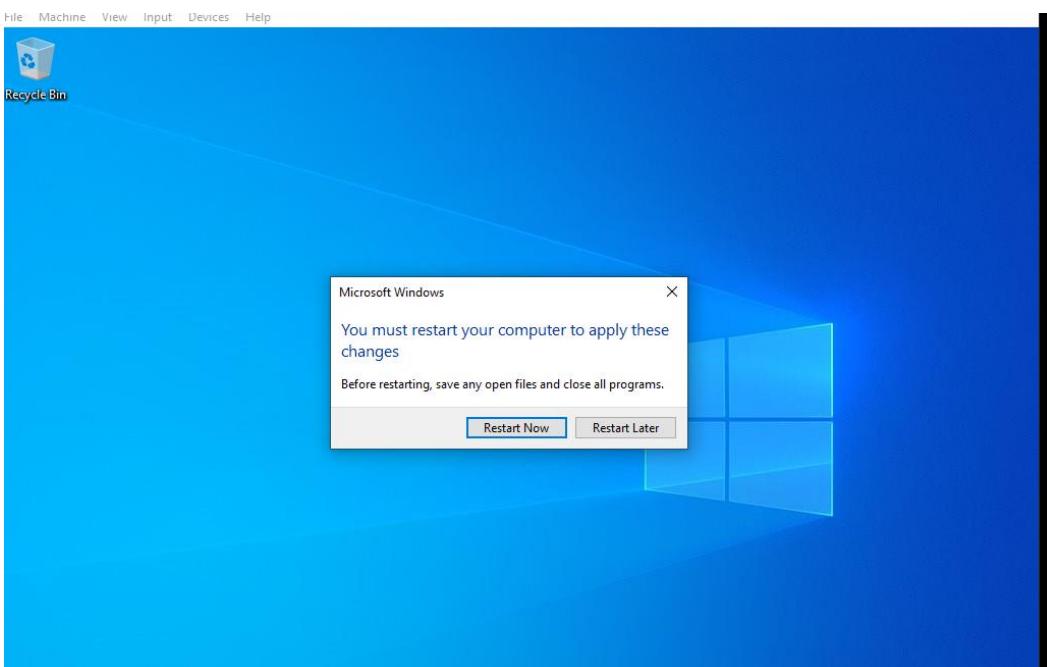
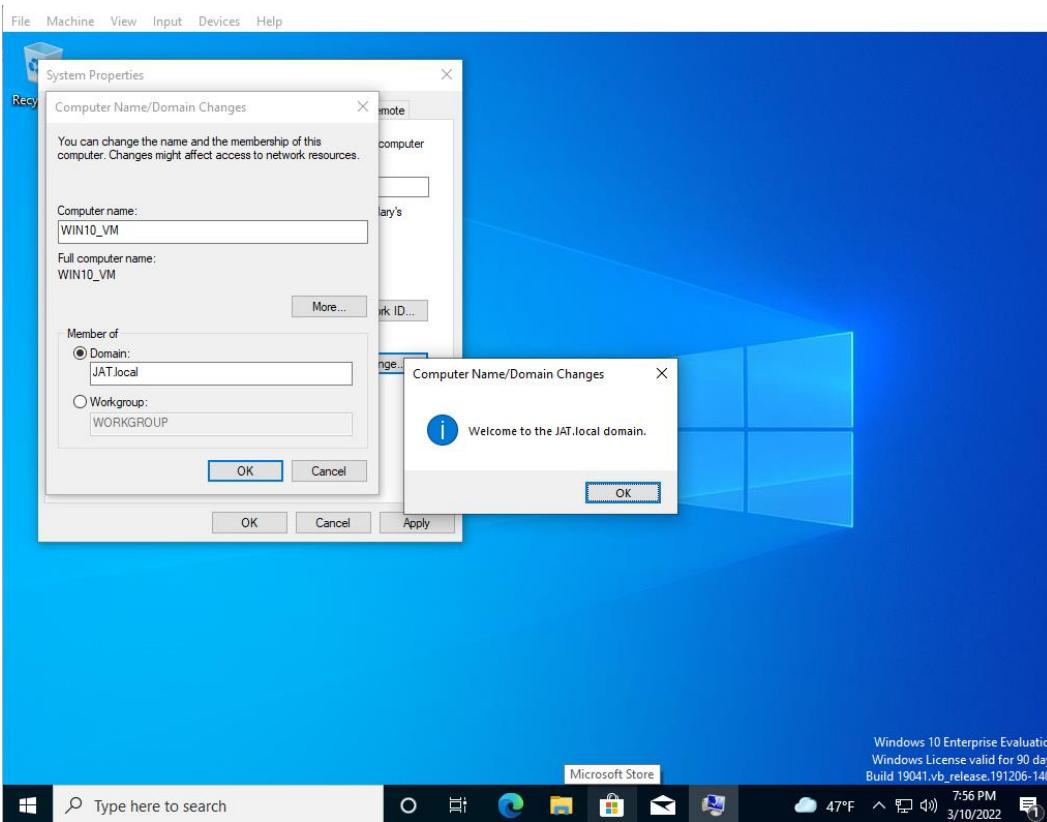
79. Next, you will need to change the “**Computer name:**” to **WIN10\_VM** and then you will need to go down to **Member of** and click the radio button next to **Domain** and type in the name of your Domain controller, **JAT.local**.



80. A message box will populate asking “**do you want to use this computer name**” click **yes**.

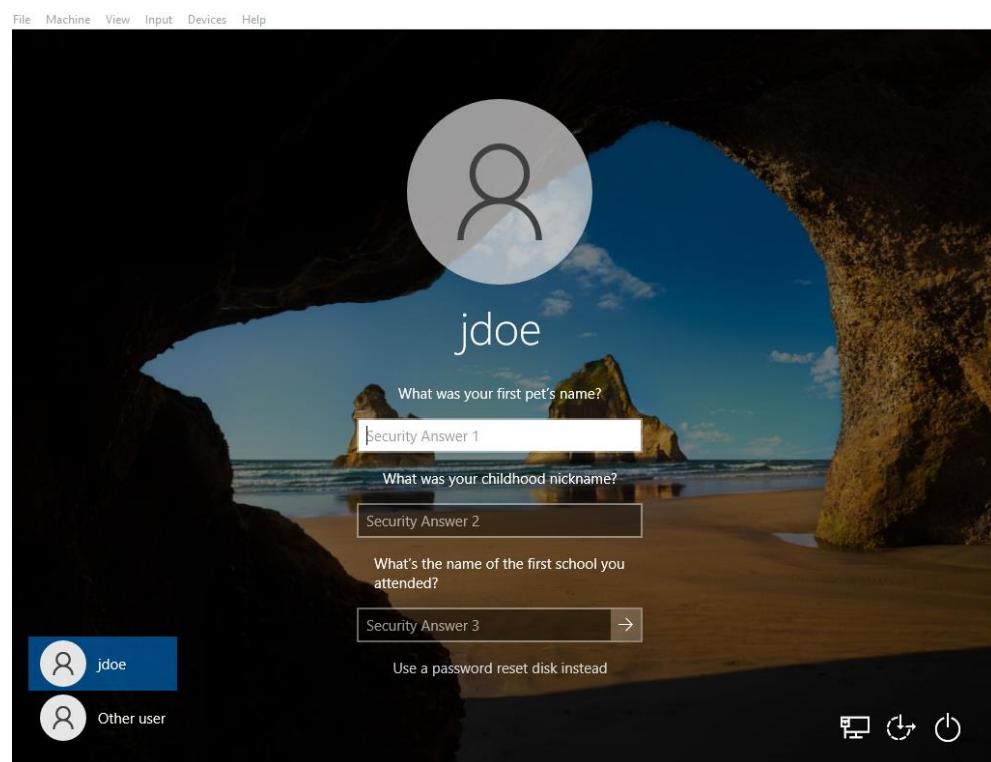
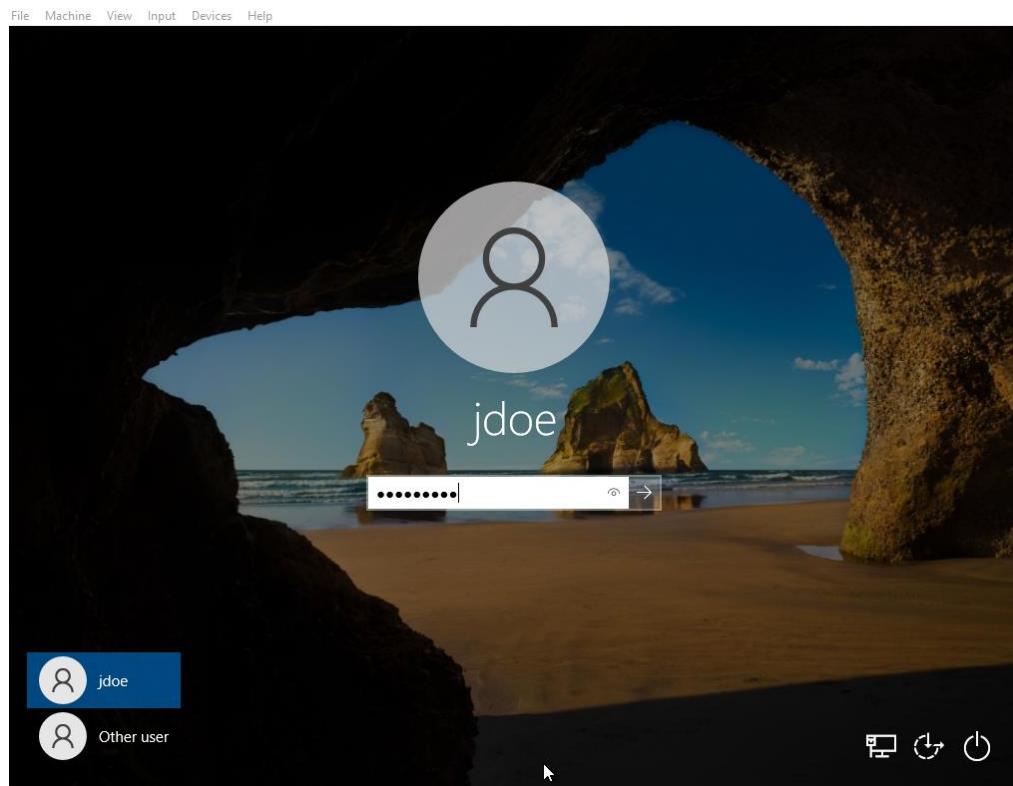


81. Click **OK** after you have received the confirmation that your computer has been added to the domain. Your machine will be asked to restart, click “**Restart Now**”.

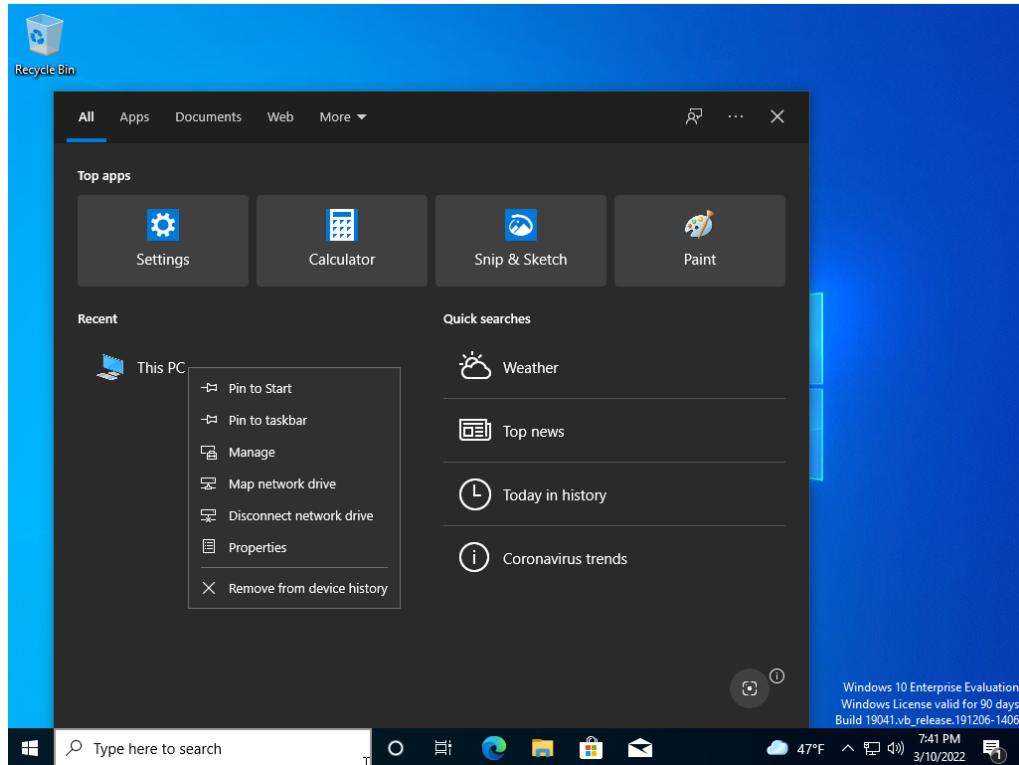


82. Next try logging into your virtual machine with login you created when you setup the machine.  
You can try changing the password if you'd like and you should see the security questions you

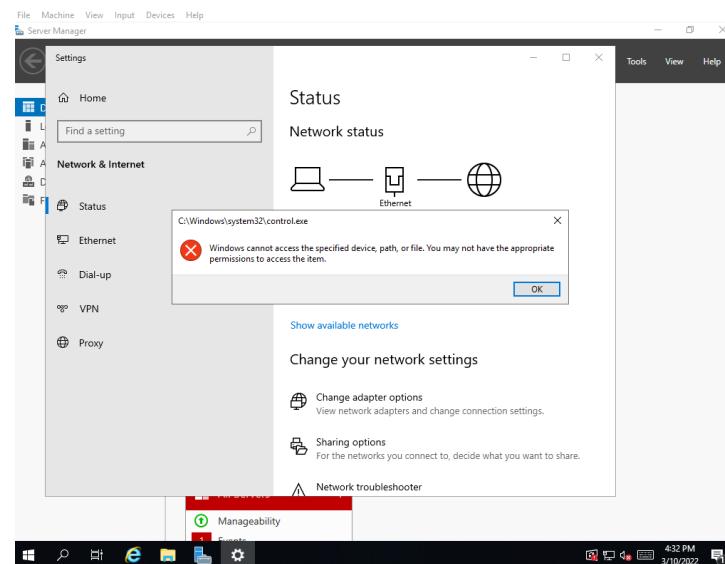
created during setup. This will signify that you are using a local account login and not the domain login.

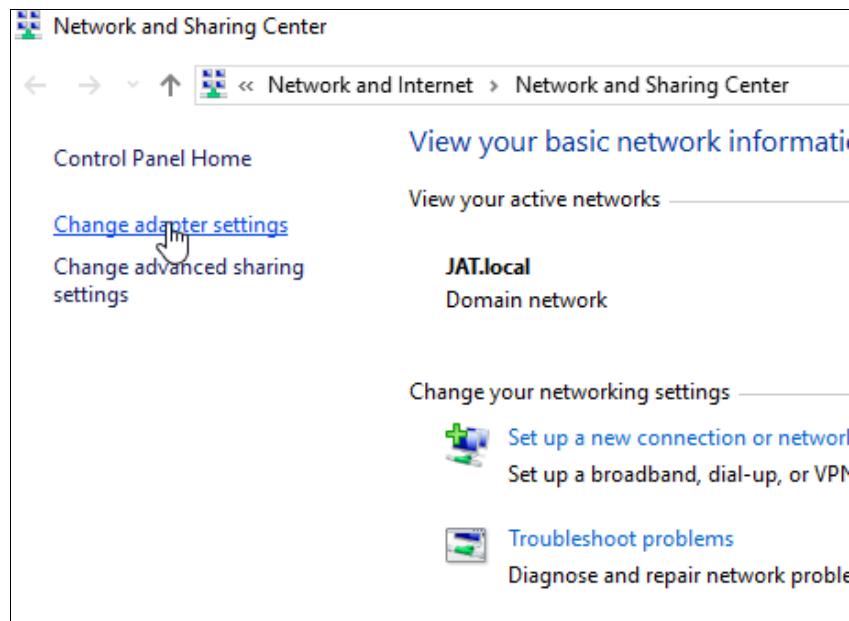
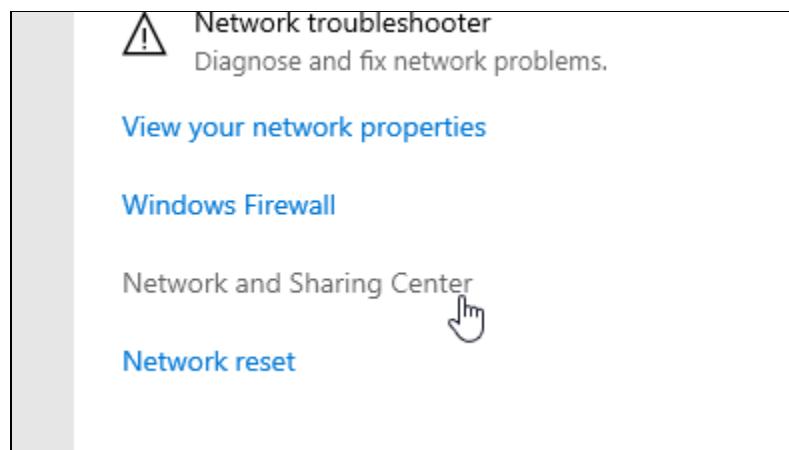


83. You can reset the password if you'd like to **P@\$\$w0rd** or you can choose to login to verify the machine is not part of the domain.

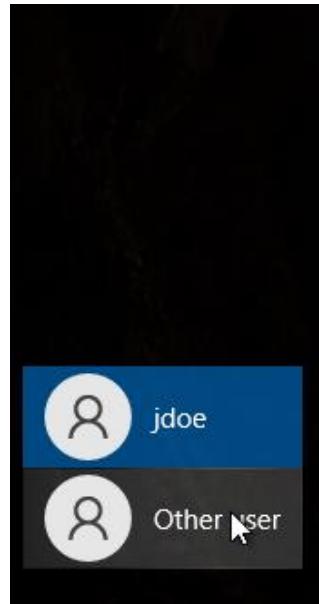
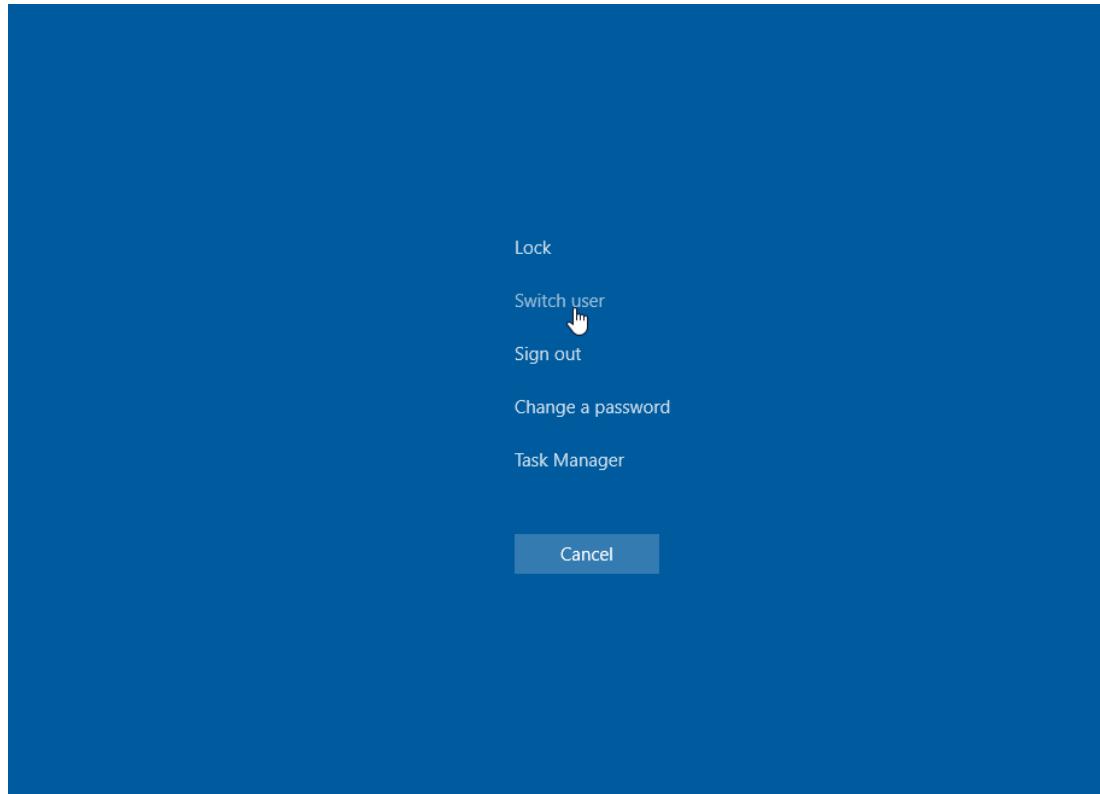


84. Next, go back to the lower right corner of your screen and right-click the wireless icon to go back to the network & internet settings and click the "**Network and Sharing Center**" to display the network & domain settings. If you get a message window, click ok and try going to the option again. You should now see that your computer is part of the JAT.local domain.

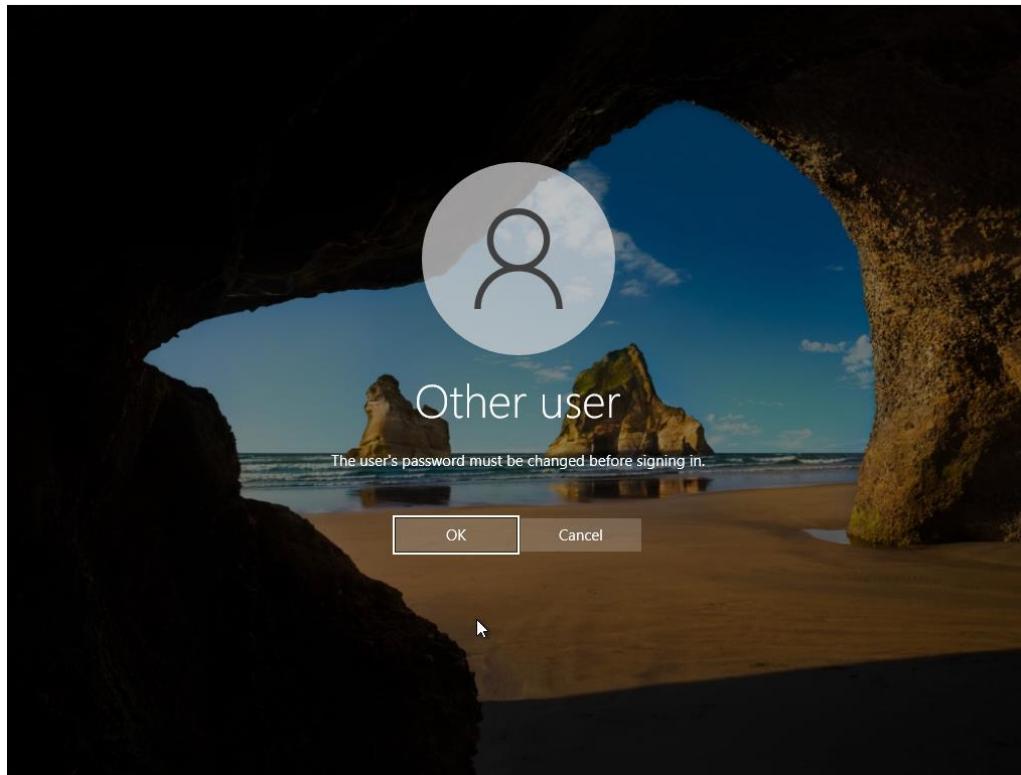
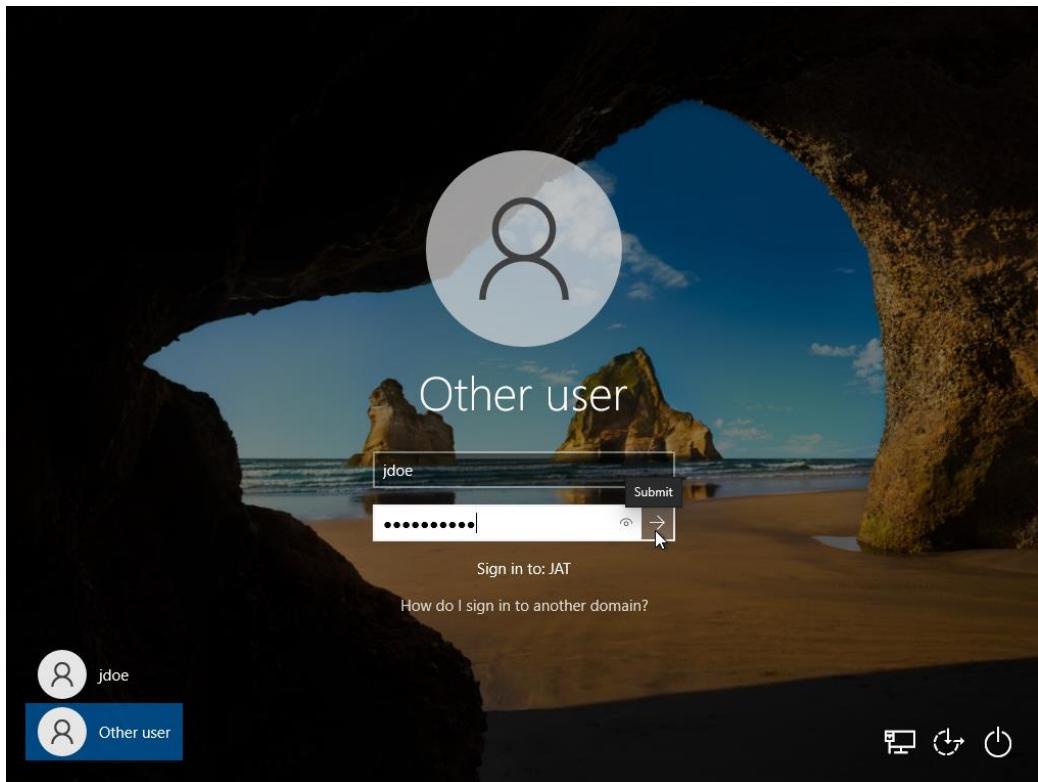


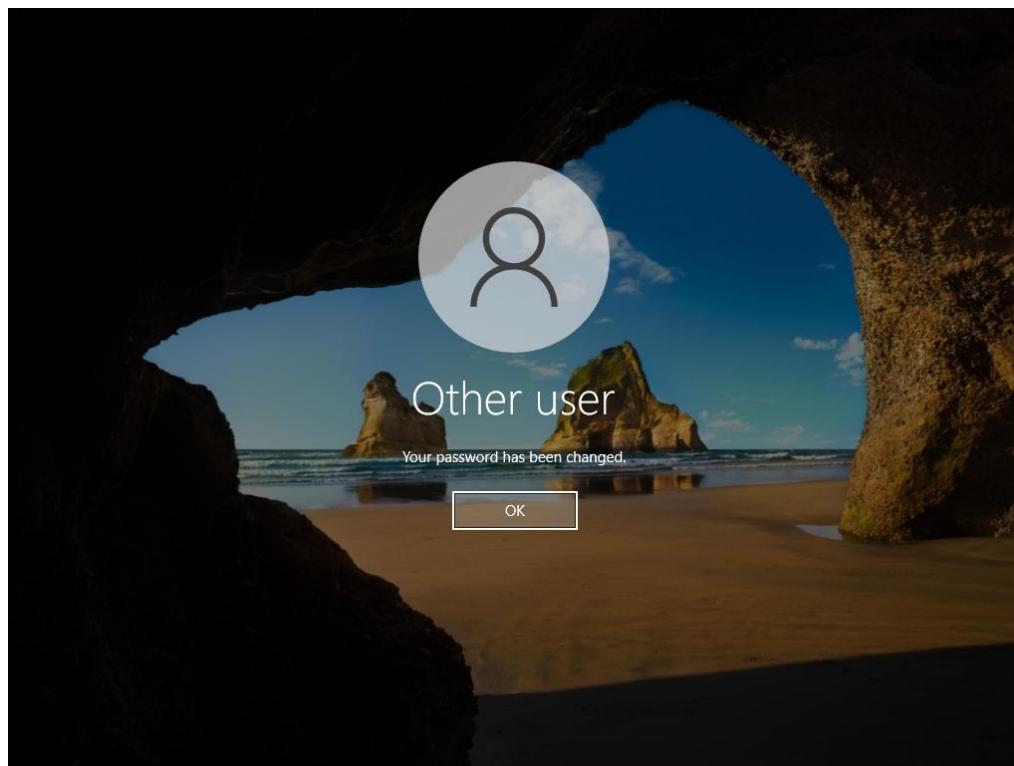
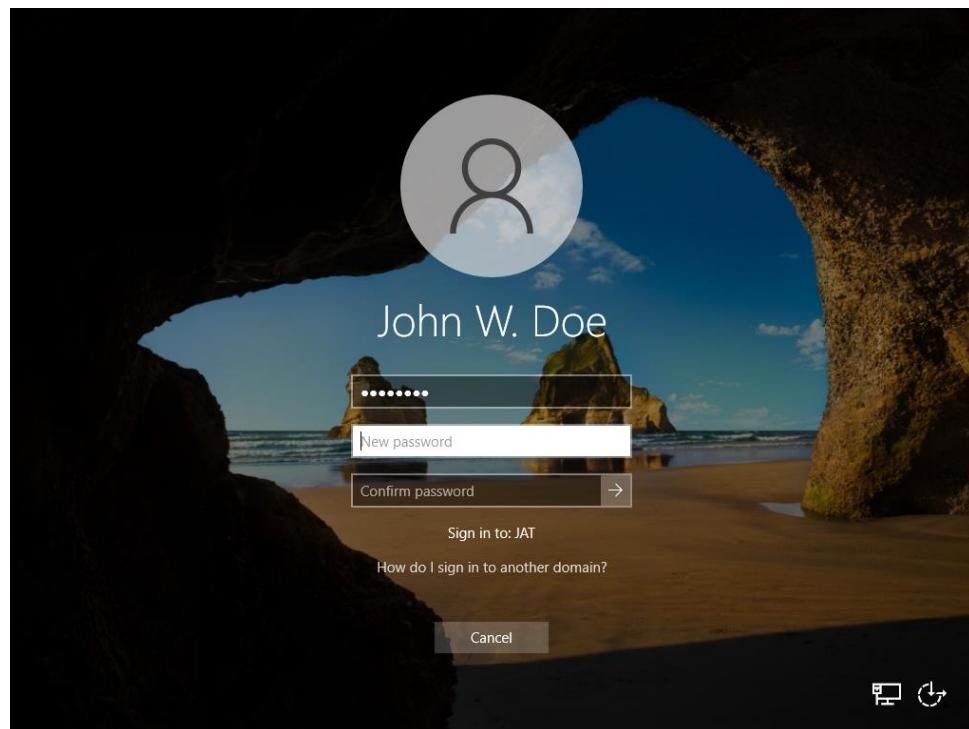


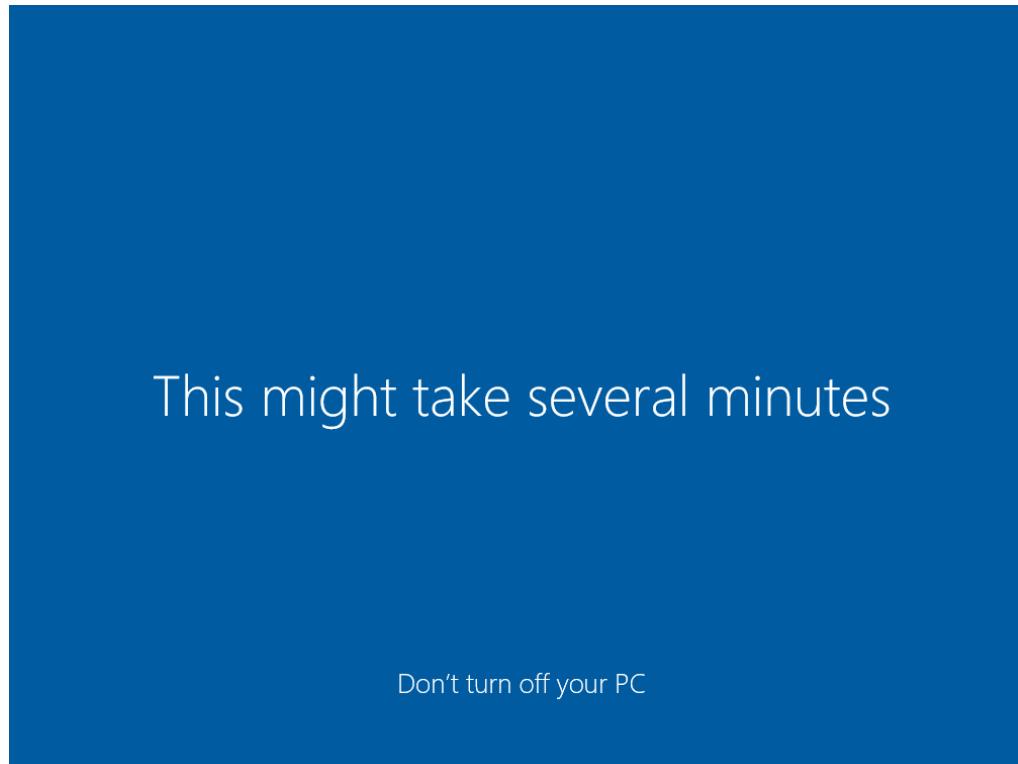
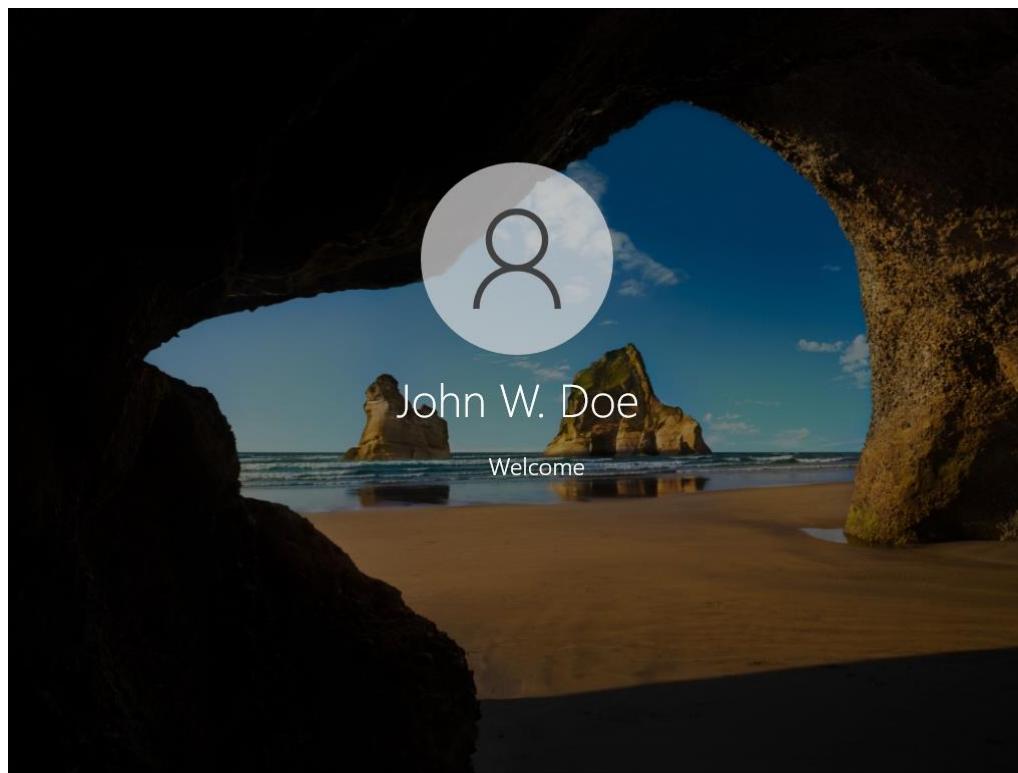
85. Next, send a “**Ctrl+Alt+Delete**” command and switch the user to login with the jdoe account you created in your domain server.



86. The next few screenshots will confirm that you are attempting to log into the correct domain and that you have successfully updated your password and can now log into your active directory account.





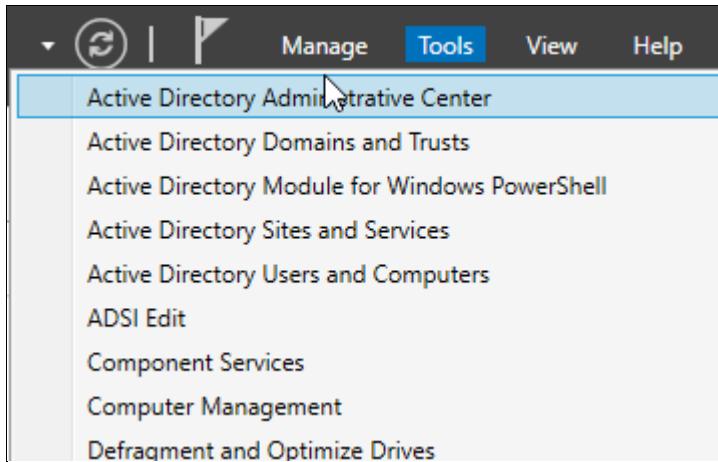


#### 4. Creating Organizational Units and Group Policy to test in (AD DS)

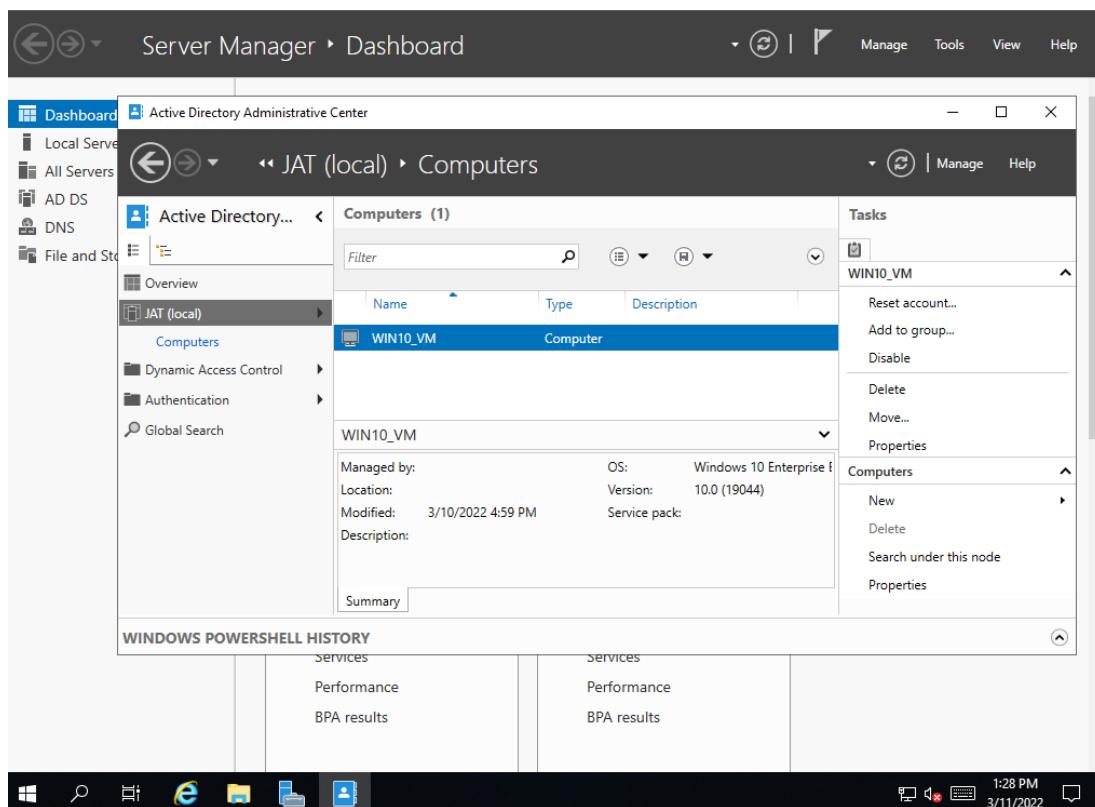
An additional resource for setting up OUs can be found here:

[\(494\) How to Create OU, Users and Groups on Active Directory 2019 - YouTube](#)

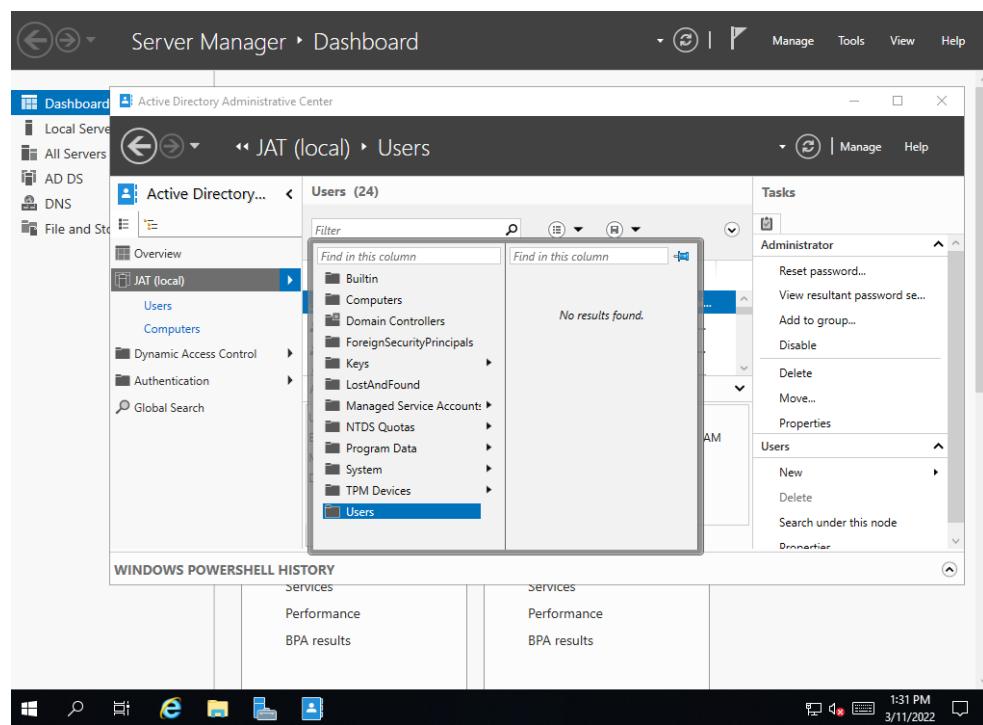
87. Next, if you would like to view the users you created previously, log back into your server and go the “Active Directory Administrative Center”.

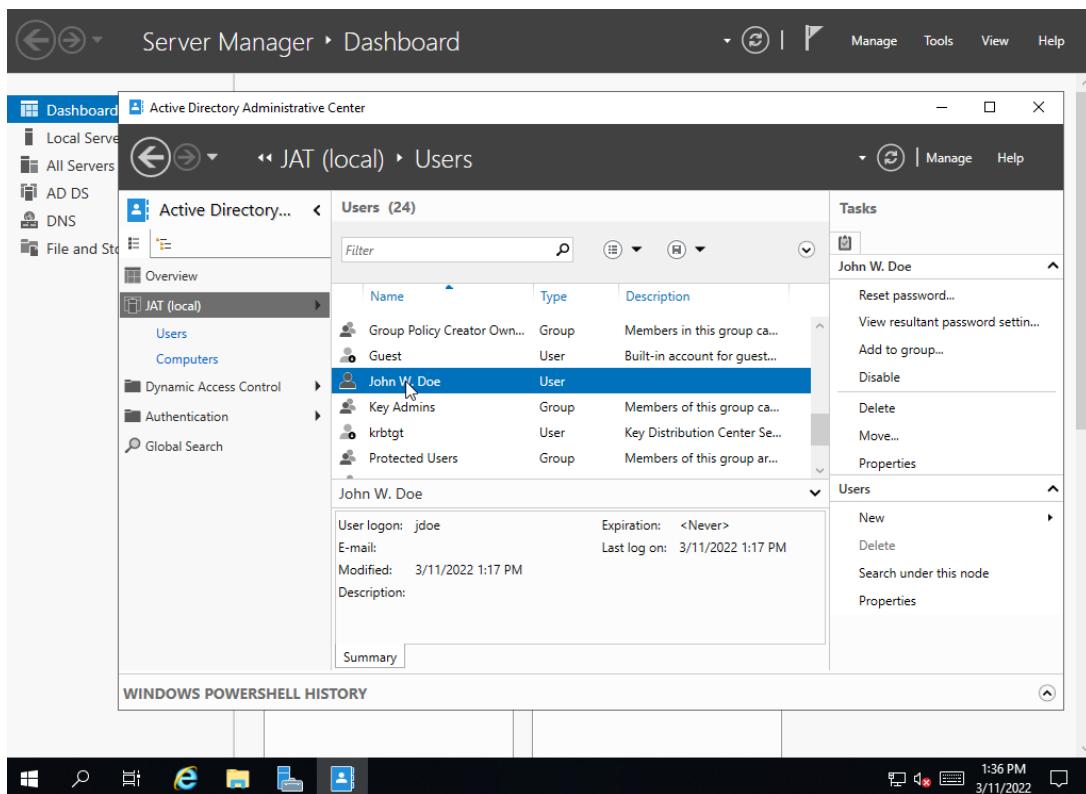


88. Next, under **Overview**, click to expand the list next to **JAT (local)**. Here you will find the computer you added to the domain.

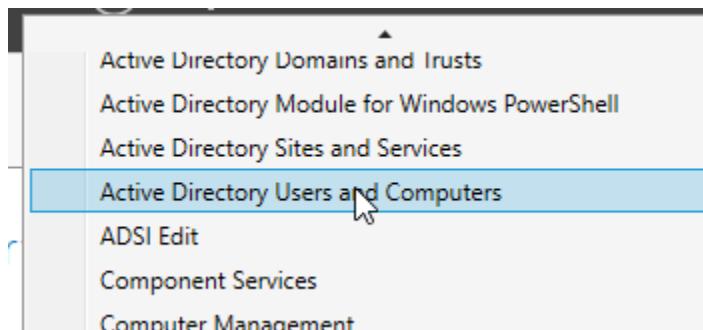


89. Next you will need to go back to the list of options and scroll down to **Users** to verify that your domain user is in the list.

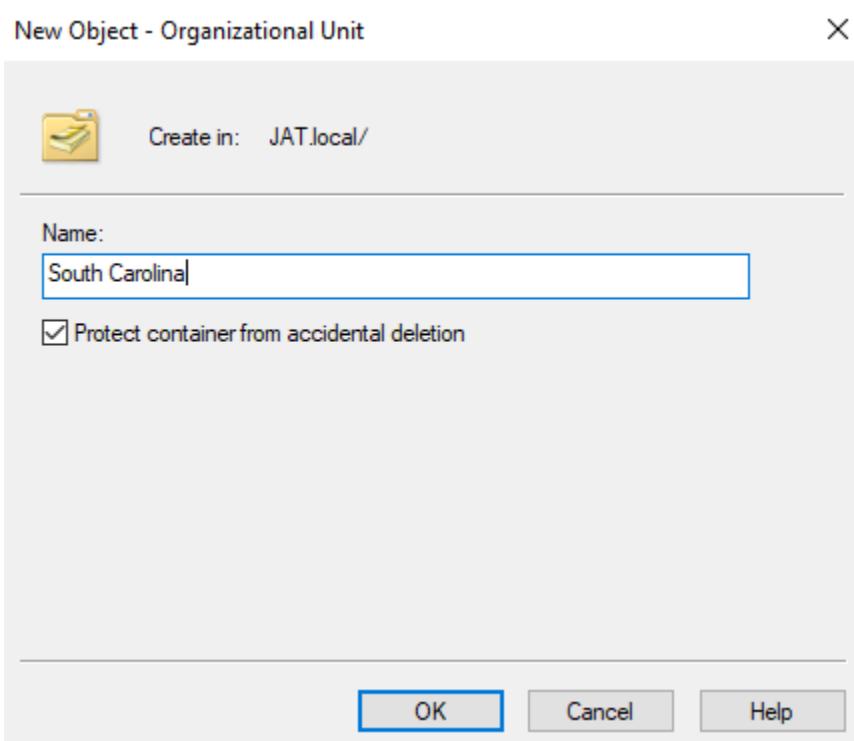
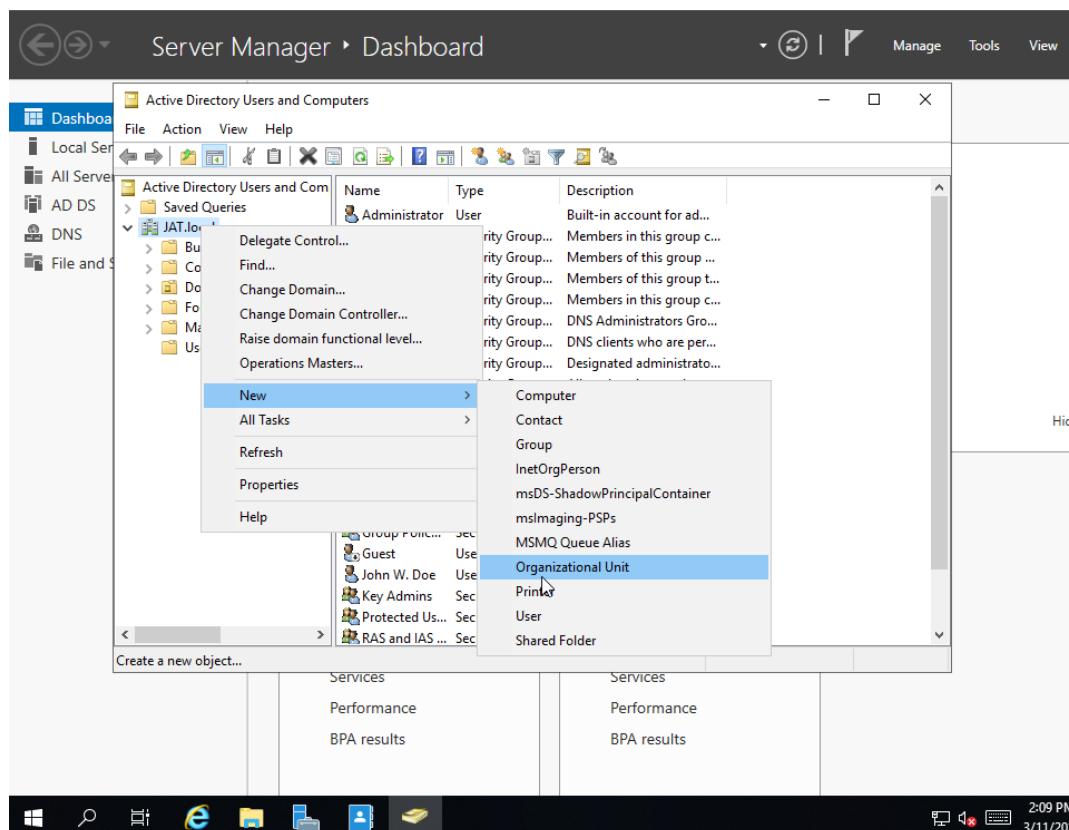


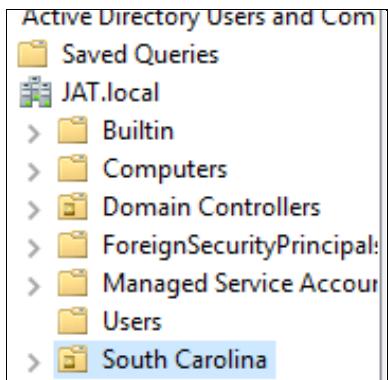


90. **Moving forward**, go back to tools at the top of the Server Manager Dashboard and then select “Active Directory Users and Computers” from the list. This will then open up the window that is identical to what we did in our group policy assignment in class.



91. Next, while hovering over the domain controller **JAT.local** and right-click then go to new. Then go to **Organizational Unit**, click the option and then name the OU **South Carolina** and click **OK**. You will then see the OU in the list of folders underneath your domain controller.

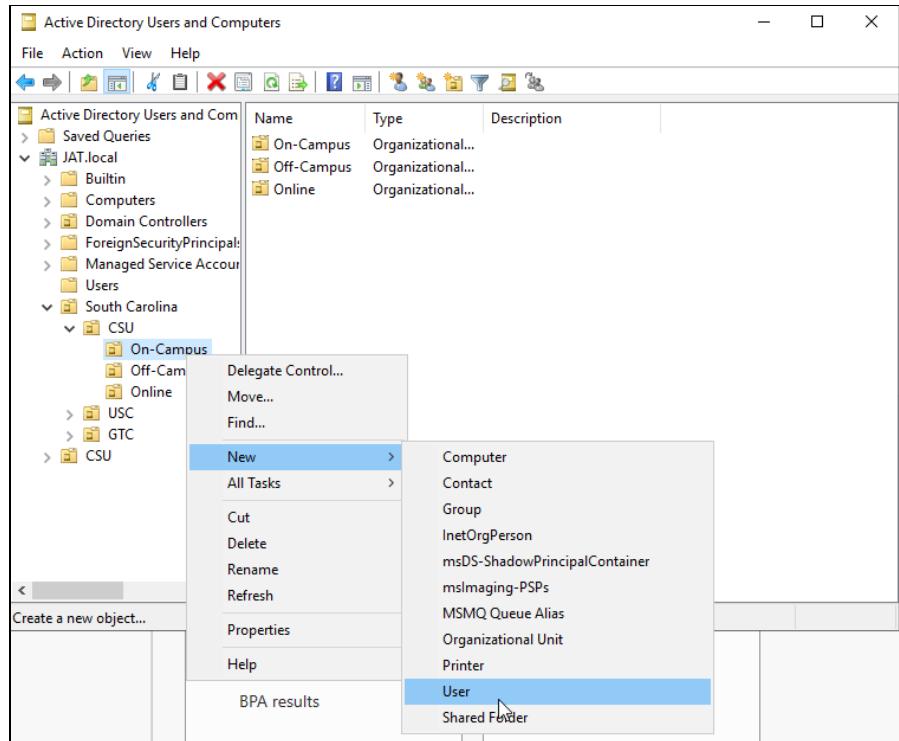




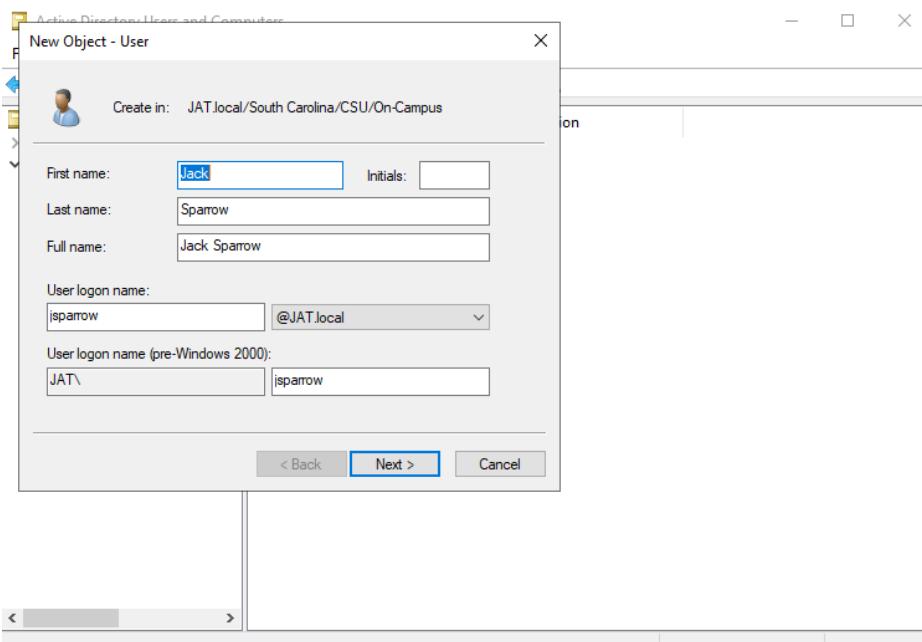
92. Now that the OU is created, click **South Carolina** and then go to the top of the page and click on folder icon, (third icon from the left), to create the **CSU**, **GTU**, and **USC**, OUs within the South Carolina OU as seen below. You will also need to create three more OU for **On-Campus**, **Off-Campus**, and **Online**.

The screenshot shows the 'Active Directory Users and Computers' window again. The 'South Carolina' OU is selected. A context menu is open above the tree view, showing five icons: 'New Object' (highlighted), 'New Container', 'New Sub-Container', 'Delete', and 'Properties'. Below the tree view, the 'South Carolina' container now contains three sub-OUs: 'CSU', 'USC', and 'GTC'. A 'New Object - Organizational Unit' dialog box is open in the foreground, showing the path 'Create in: JAT.local/South Carolina/CSU'. The 'Name:' field contains 'On-Campus' and the 'Protect container from accidental deletion' checkbox is checked. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

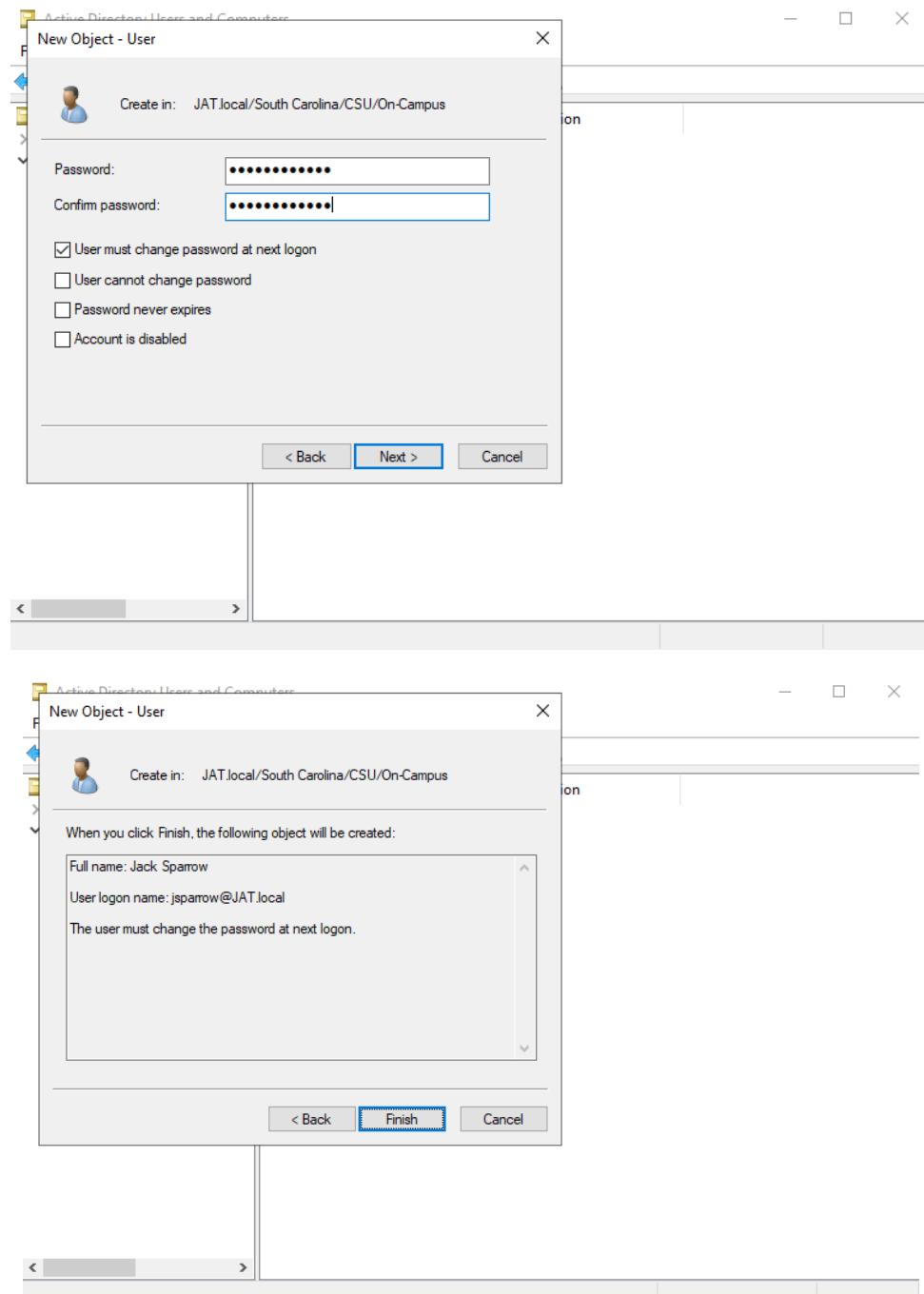
93. Next you will create a user under one of the sub-OUs as seen in the screenshot. One under each OU under CSU. You will need to click on the OU of your choice and then right-click, go to **New, User**, and click to access the next window. You can give each of them unique names of your choosing. I have chosen to use names of moving Disney characters.



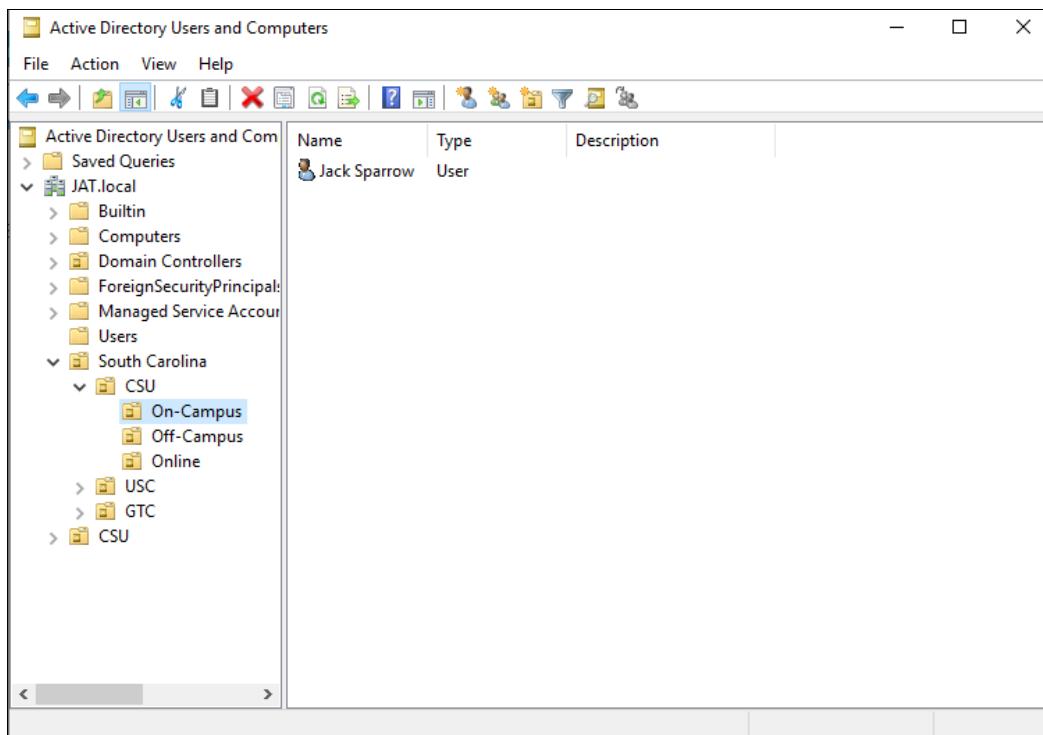
94. Create the new object for the user with the display name and username that will appear when the user first login and click **Next**.



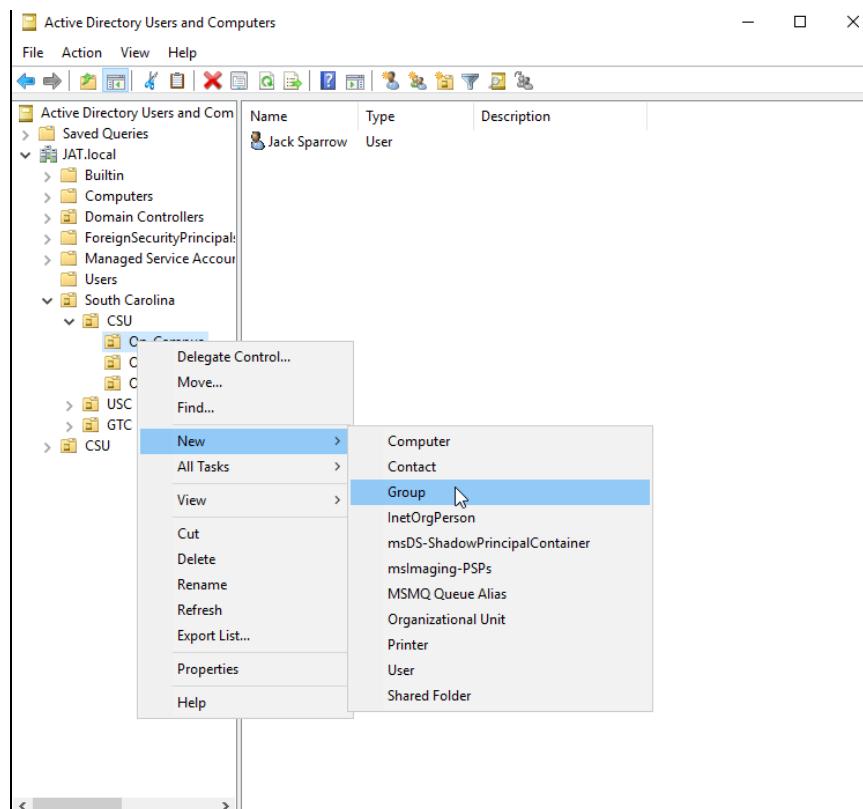
95. Next, you will have the option to create a first-time login password. Here you will make user “**User must change password at next logon**”. You will need to make sure this is a strong password and can use it for ever user logging onto the domain for the first time. You can make the password to be “**4U2Ch@ng3me**”. Click **Next** and then **Finish**.



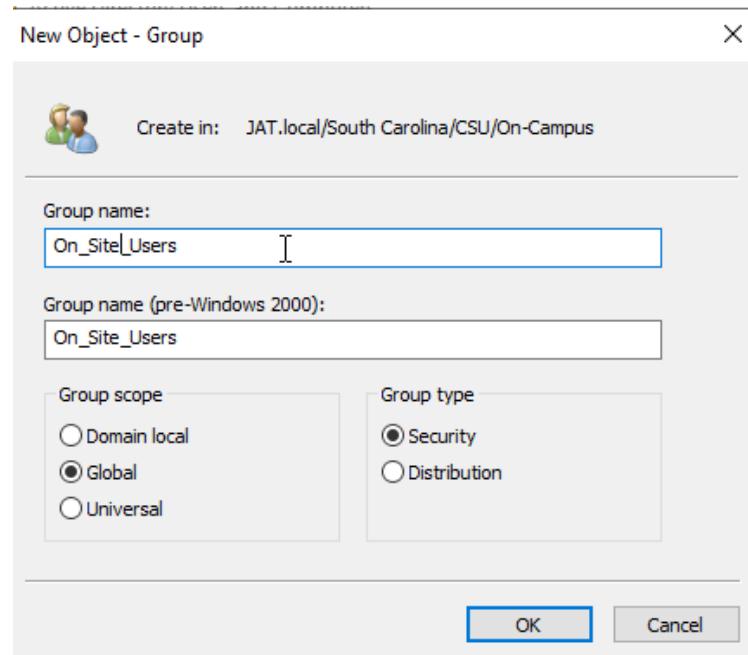
96. Now when you click on your OUs, you should see all the users you have created.



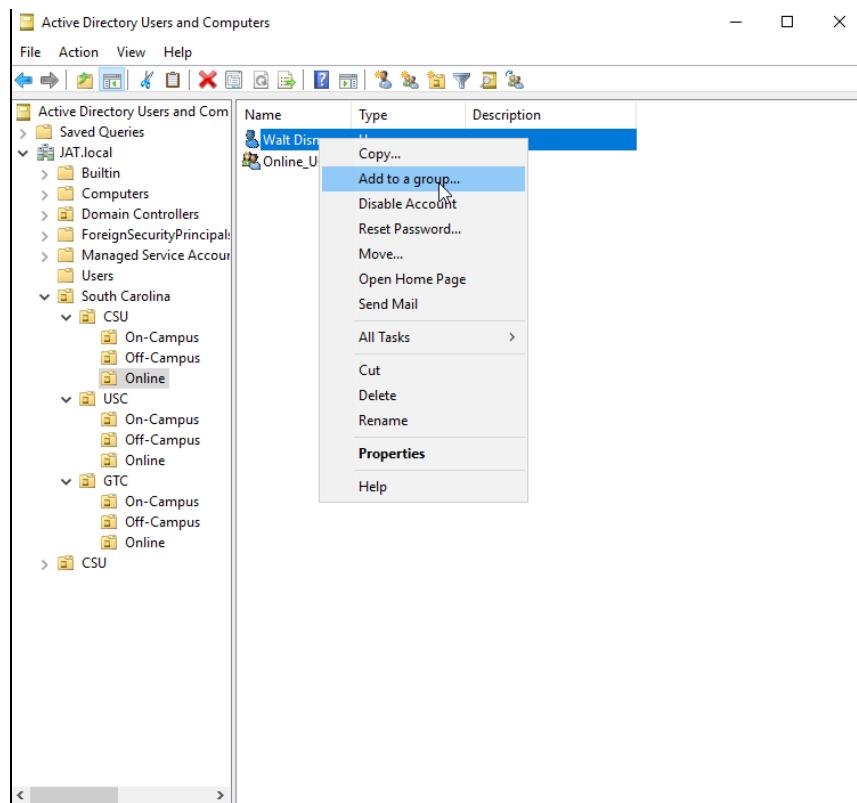
97. Now you will create a group for each of the sub-OUs to add your users to. For the On-Campus, Off-Campus, and Online, OUs you will follow the new couple of steps. You will follow the same steps as creating an OU.



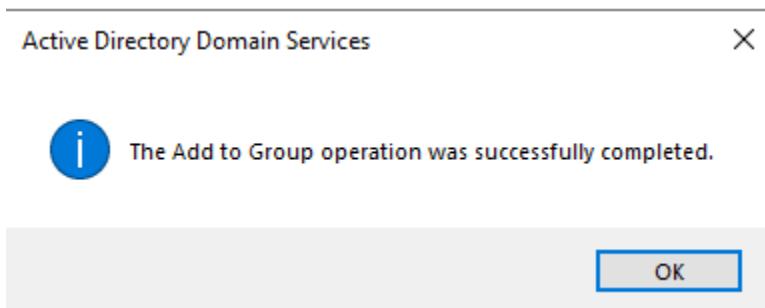
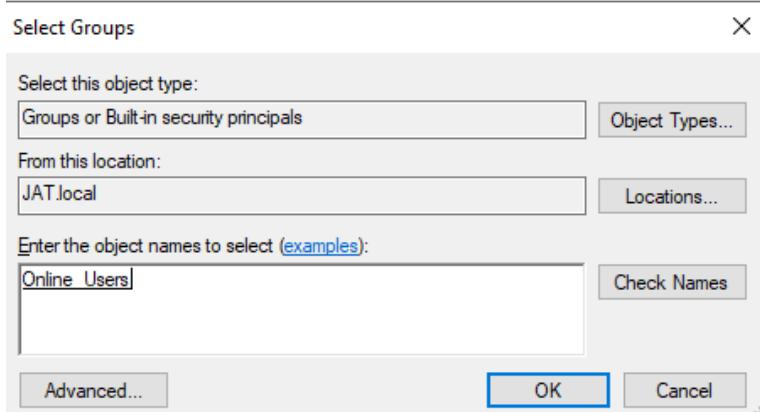
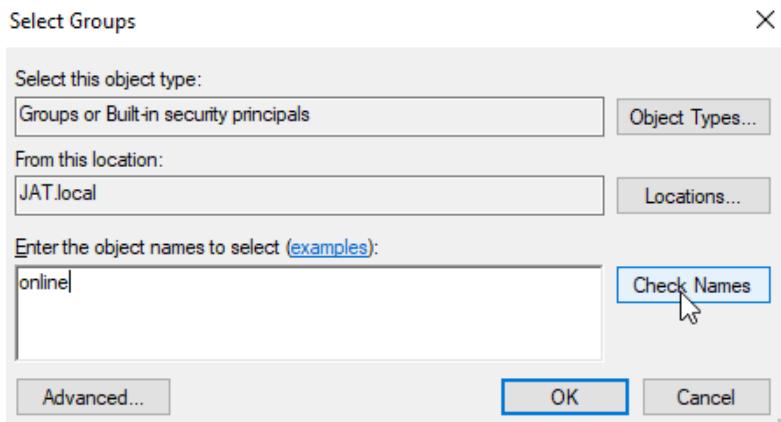
98. Ensure that **Global** is set under Group Scope and **Security** under Group type.



99. Next you will right click each user you created and then add one to each group you've created.



100. Under “**Enter the object names to select (examples):**” type in the name of the group and then click **Check Names** to search for the proper group and then click **OK** once your name appears in the box.



101. You can now see that the user Walt Disney is a member of the “**Online\_Users Security Group**”.

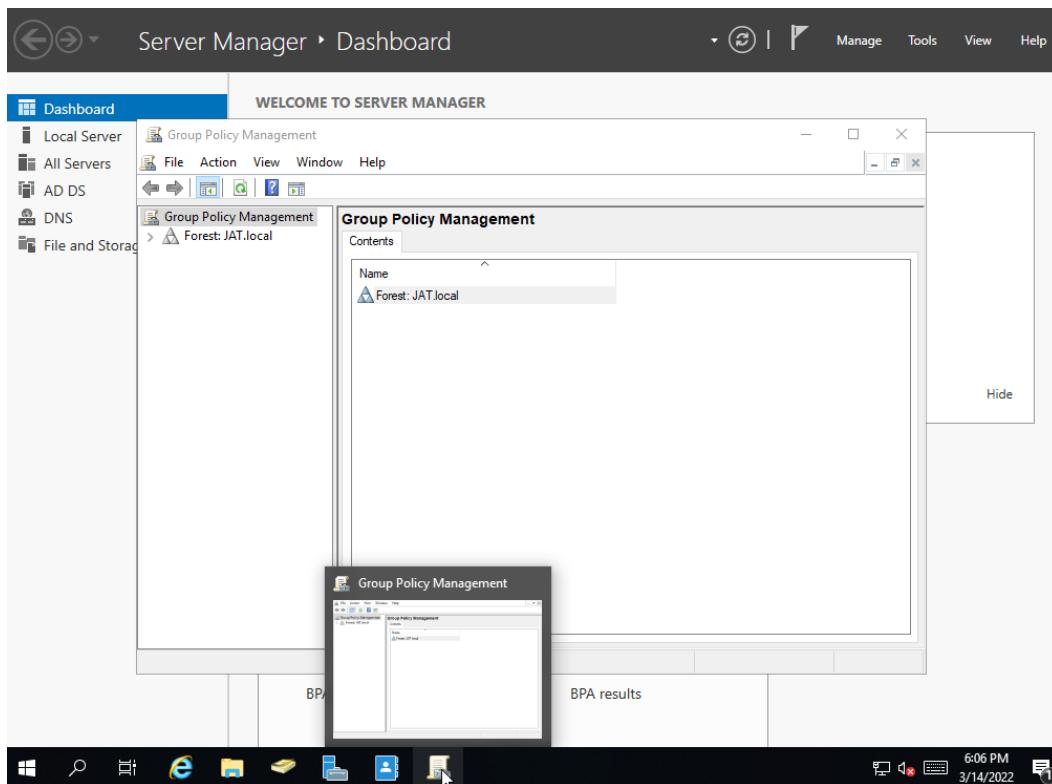
The screenshot shows the Active Directory Users and Computers (ADUC) interface. On the left, a navigation pane displays the organizational unit (OU) structure under 'JAT.local': 'Saved Queries', 'JAT.local' (expanded to show 'Builtin', 'Computers', 'CSU', 'Domain Controllers', 'ForeignSecurityPrincipal!', 'Managed Service Account', and 'South Carolina'), and 'South Carolina' (expanded to show 'CSU' which contains 'Off-Campus', 'On-Campus', and 'Online'). On the right, a table lists users and security groups. One user, 'Walt Disney', is listed under the 'Online' OU.

Name	Type	Description
Online_Users	Security Group...	
Walt Disney	User	

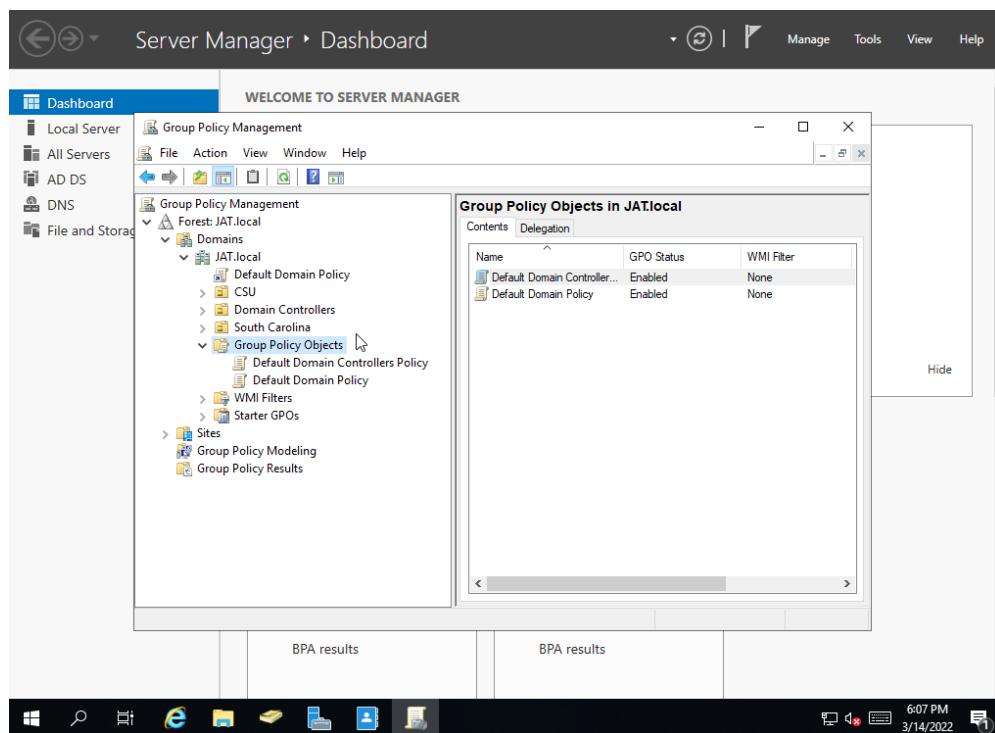
102. Next we will create a group policy to test that the OUs work as they should. You will need to go back to the **Server Manager Dashboard > Tools > Group Policy Management**.

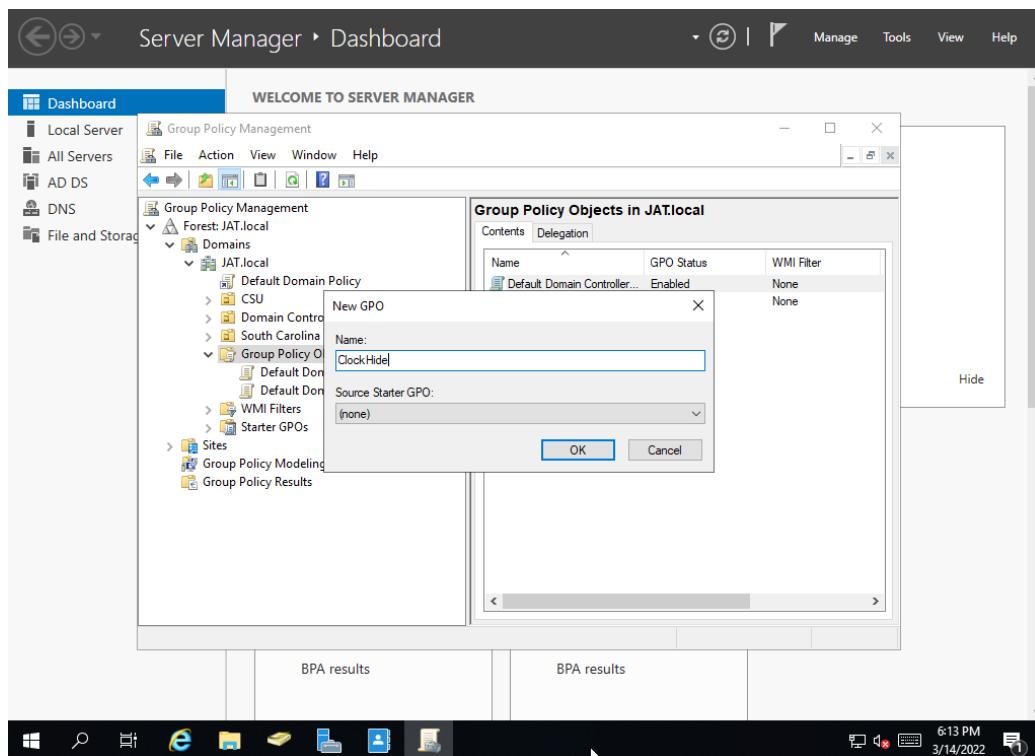
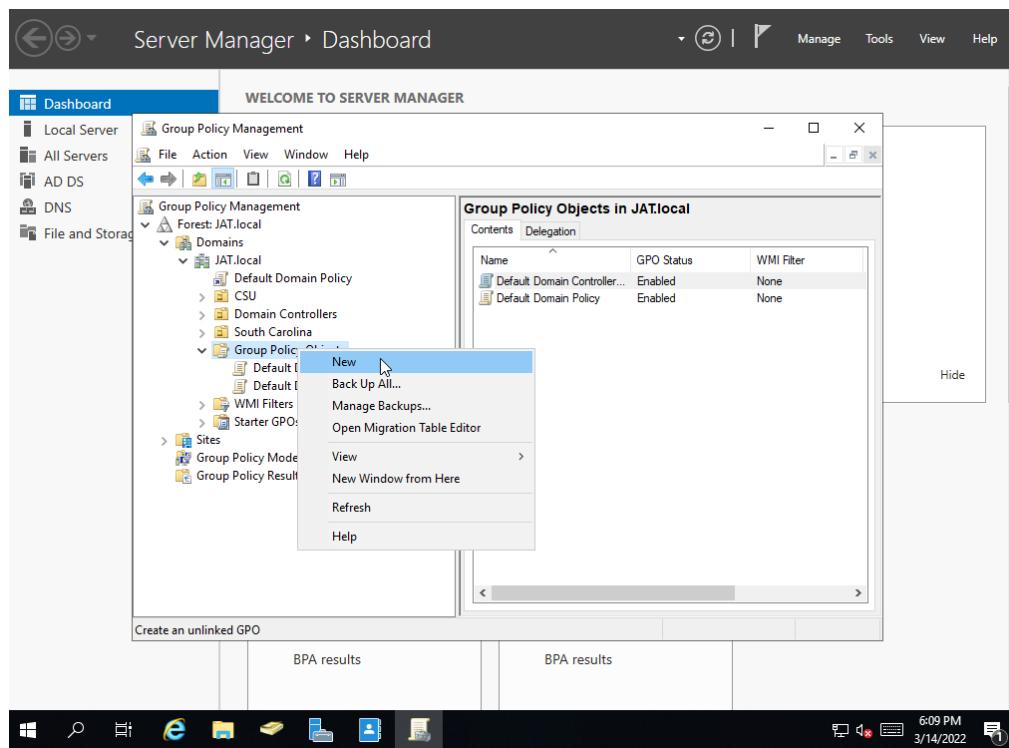
The screenshot shows the Windows Server Manager Dashboard. The left sidebar has 'Dashboard' selected. The main area features a 'WELCOME TO SERVER MANAGER' section with 'QUICK START' and 'WHAT'S NEW' buttons, and a numbered list from 1 to 5: 'Configure this local server', 'Add roles and features', 'Add other servers to manage', 'Create a server group', and 'Connect this server to cloud'. Below this is a 'ROLES AND SERVER GROUPS' section showing 'Roles: 3 | Server groups: 1 | Servers total: 1'. Two boxes are shown: 'AD DS' (with 'Manageability', 'Events', 'Services', 'Performance', and 'BPA results') and 'DNS' (with 'Manageability', 'Events', 'Services', 'Performance', and 'BPA results'). On the right, a 'Tools' menu is open, listing various management tools. The 'Group Policy Management' option is highlighted with a blue selection bar.

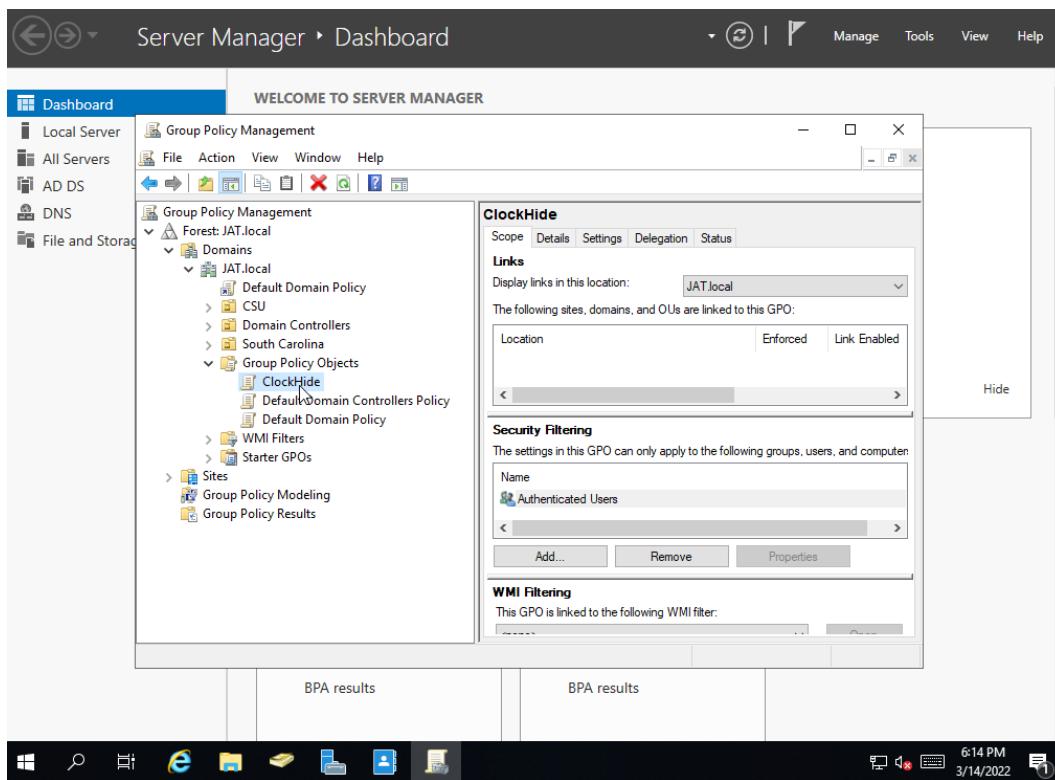
103. Once you select this option, click on the icon at that appears on the taskbar to open up the Group Policy Management window.



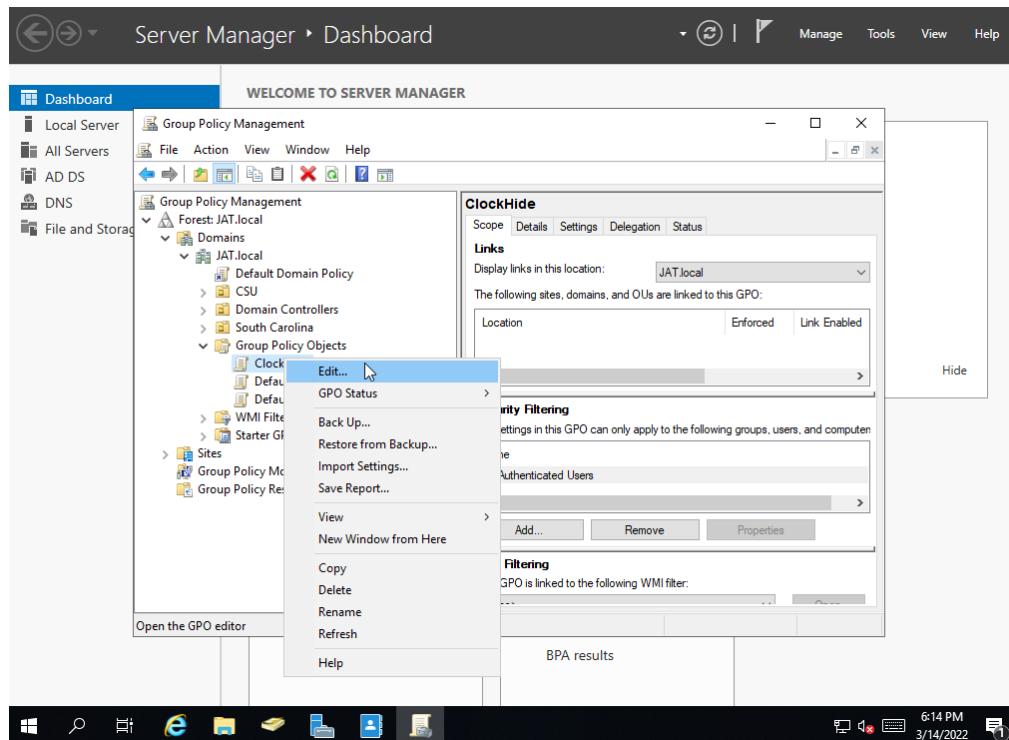
104. Once the window load you will see your forest for JAT.local. You will need to go down to the Group Policy Objects and expand it. Here you will need to **take a screenshot** of the existing policies. Then you will right click on the GPO folder and follow the next few steps to create a “*ClockHide*” policy.



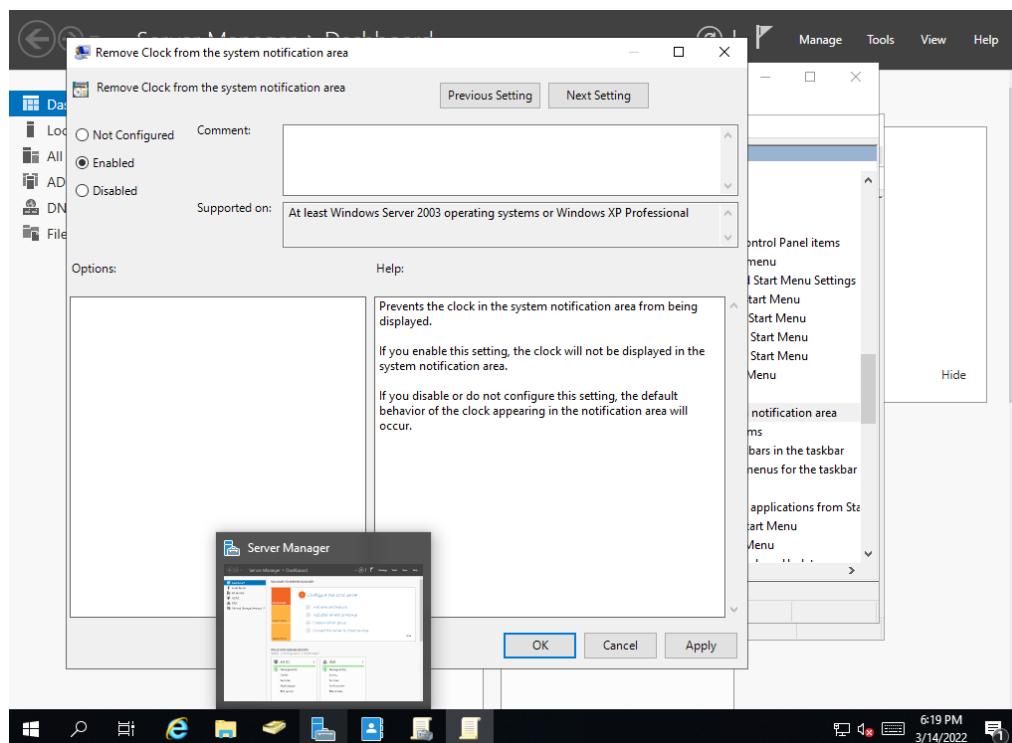
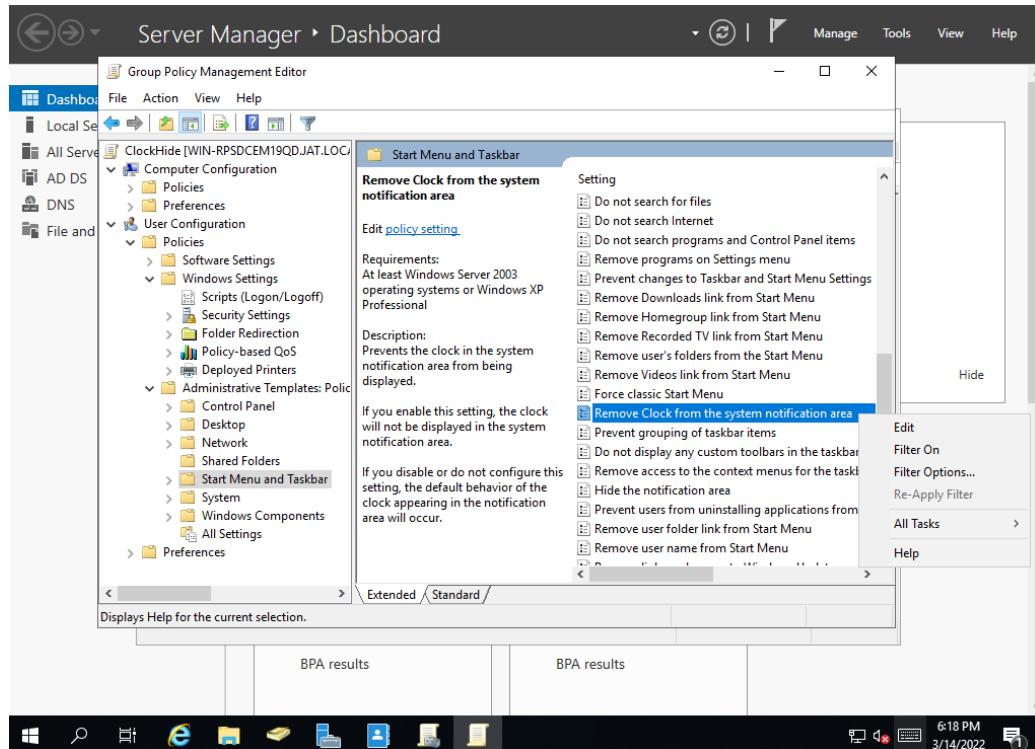




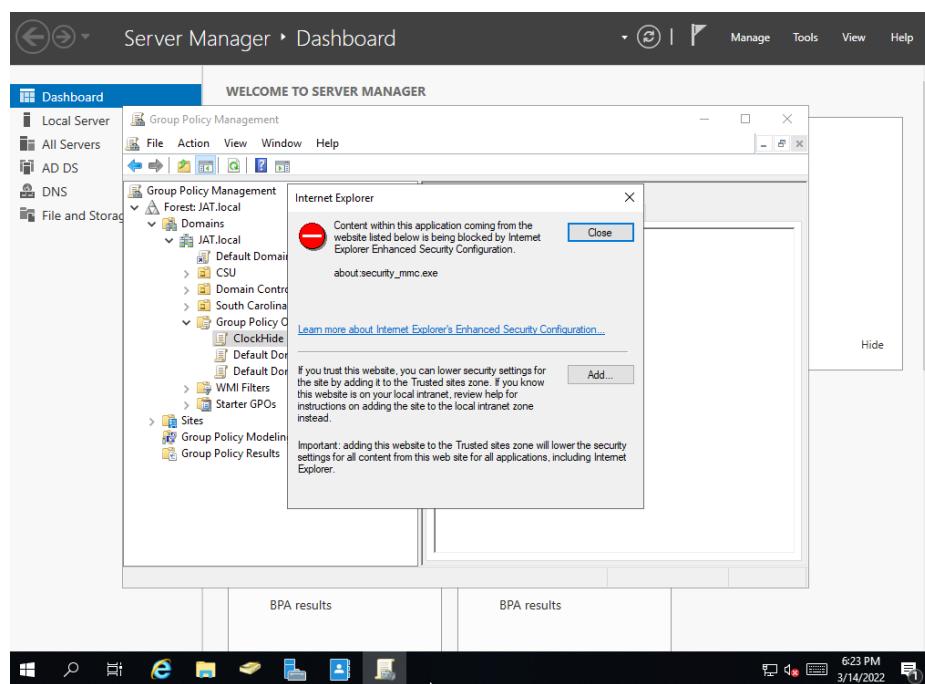
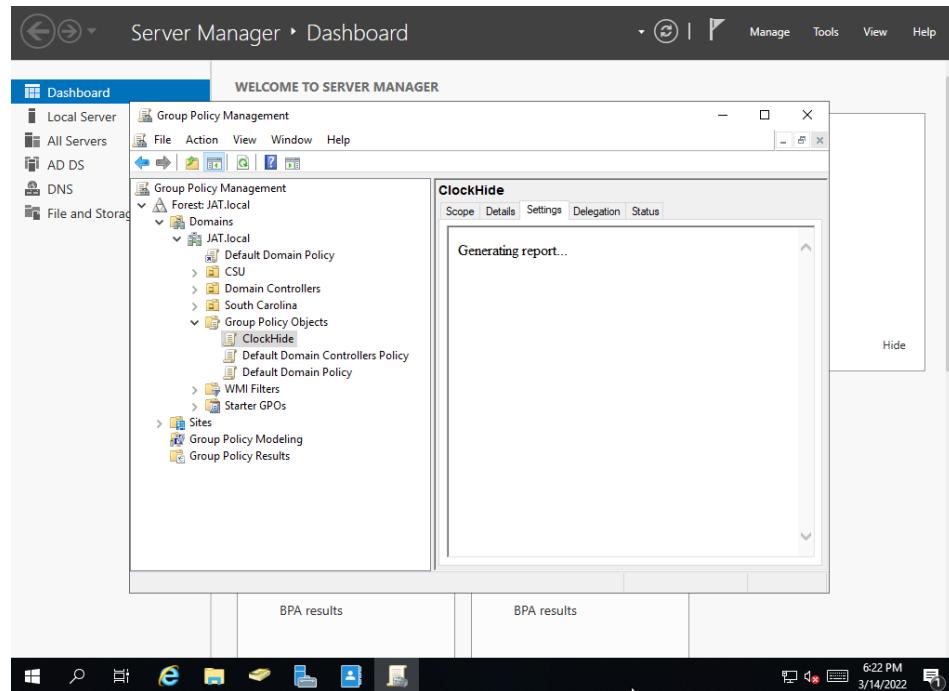
105. Now that the policy is created, **take another screenshot** of the new policy for later, and then you will need to right-click it to add a specific control in the policy and click edit.

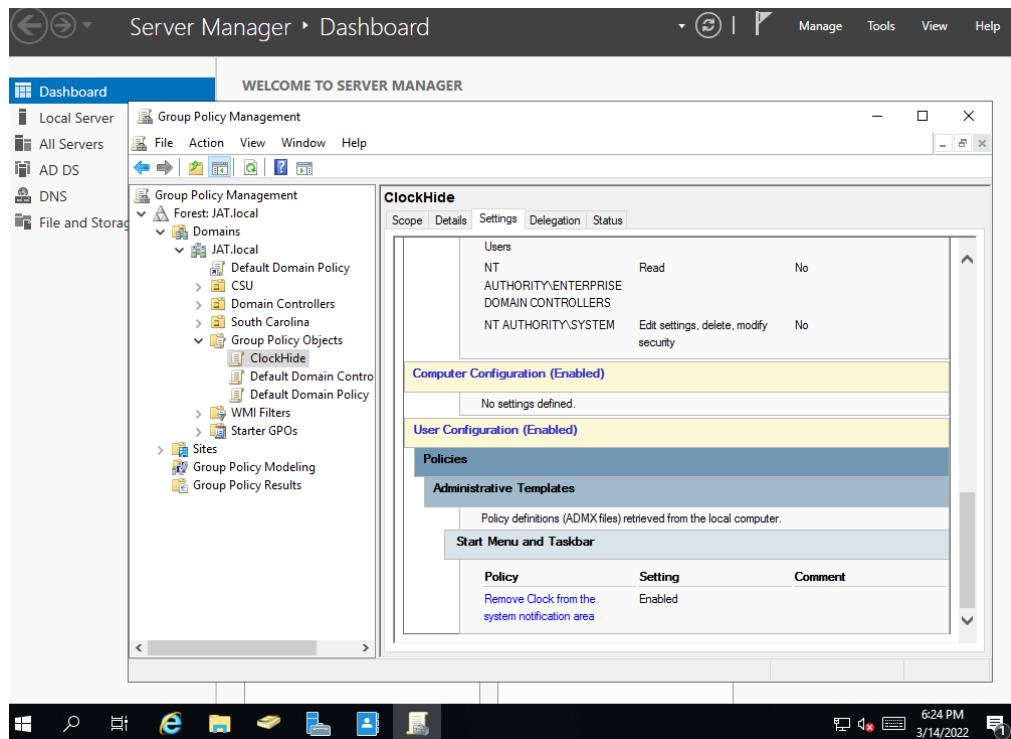


106. Once the Group Policy Management Editor opens, drill down “**User Configuration > Policies > Administrative Templates: Policy definitions...**”. Next click on the “**Start Menu and Taskbar**” to reveal all of the settings managed under this folder. Find the “**Remove Clock from the system notification area**” and the click **Edit**. And then makes sure the radio button “**Enabled**” is selected and then click **OK**.

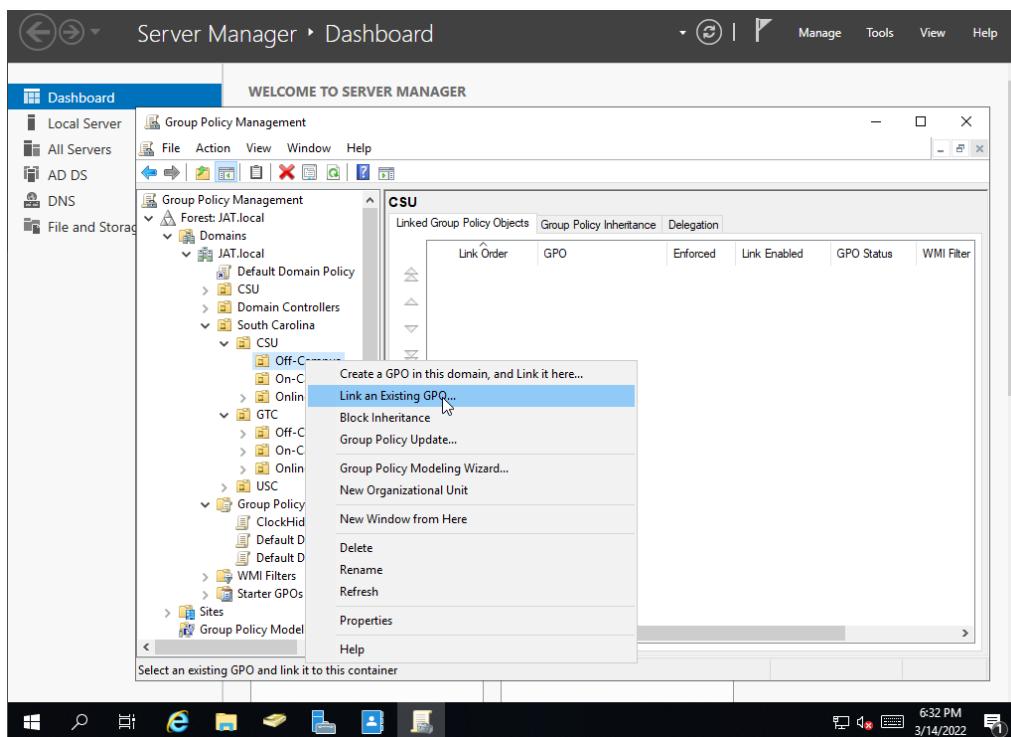


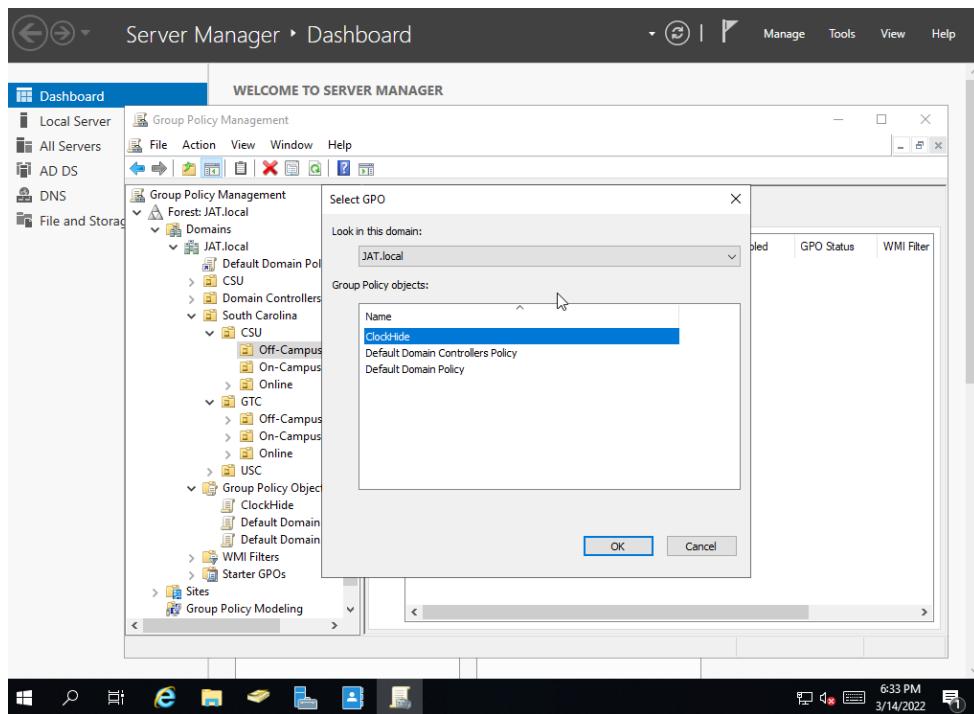
107. Now the policy is generating. Close the Internet Explorer window if it pops up. You will now see that the policy settings have been successfully added as in the screenshot below in the next few steps.





108. Next, you will need to link the GPO to one of the OUs. In this case you will link it to the Off-Campus OU found under the CSU OU. First navigate to the OU, right-click, and then click the “***Link an existing GPO...***”. When the ***Select GP*** window opens, select the ***ClockHide*** from the list and click ***OK***.

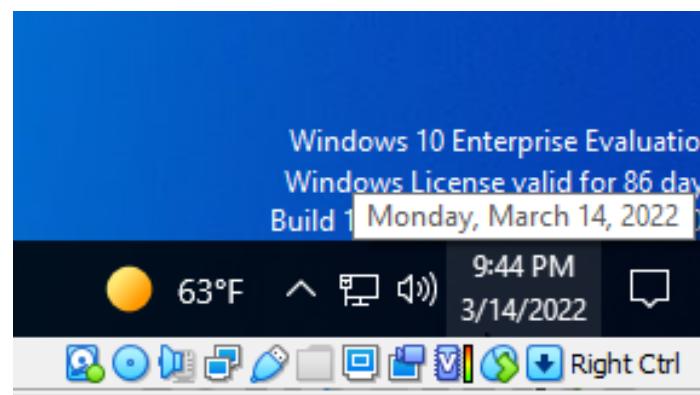
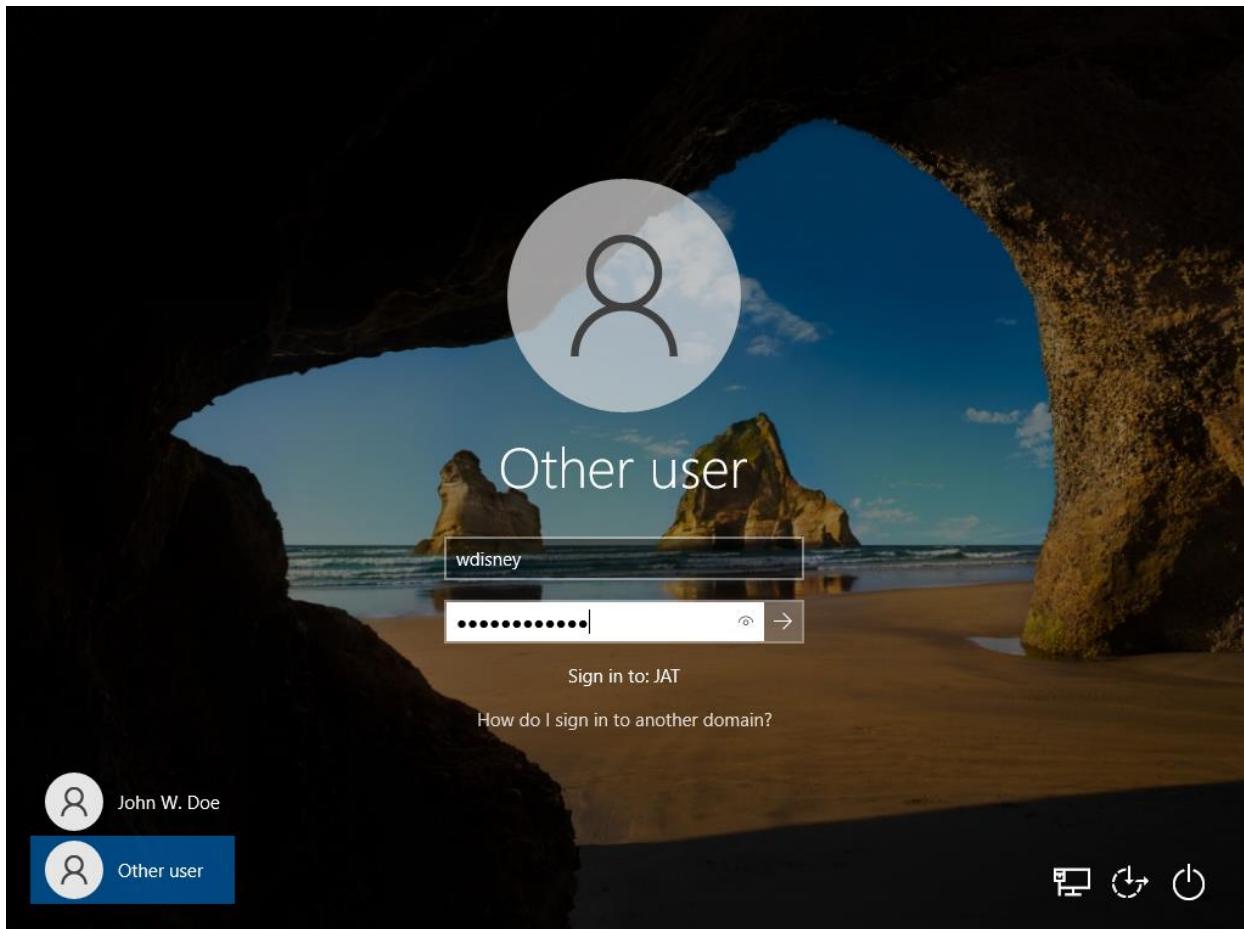




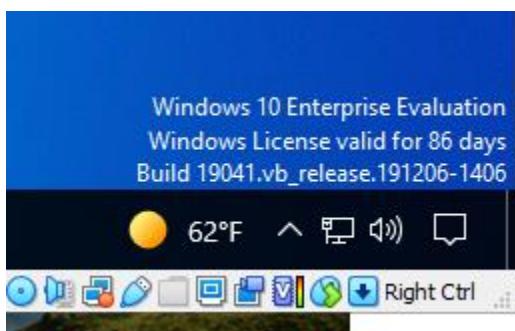
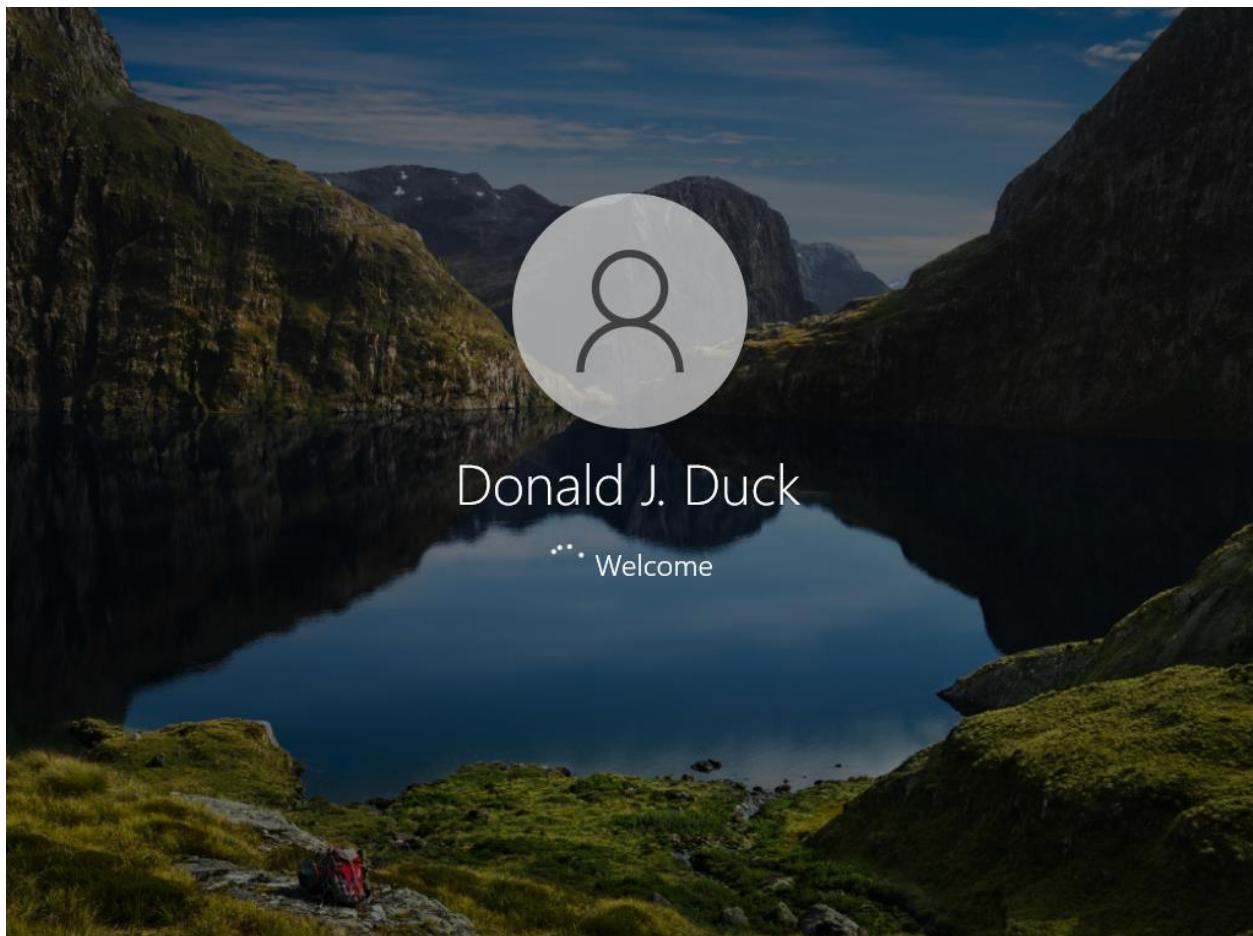
109. Now that the policy setting is linked to the OU you can now see it in the display window to the right. If you double-click it you will see all other OUs the policy is linked to.

Linked Group Policy Objects		Group Policy Inheritance		Delegation	
Link Order	GPO	Enforced	Link Enabled	GPO Status	WMI Filter
1	ClockHide	No	Yes	Enabled	None

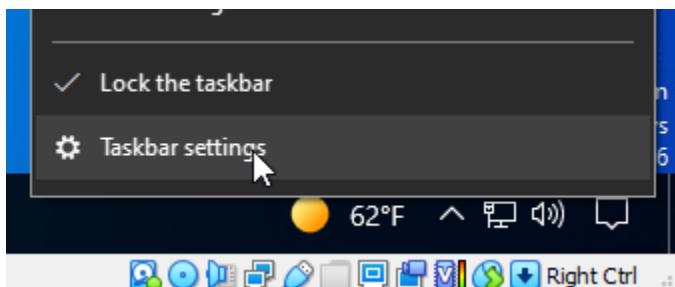
110. Now what you will need to do is login as a user that the policy does not affect and look see if the clock appears at the bottom of the screen as seen in the screenshot below.



111. Next you will need to switch the user and log in as the user who the policy applies to and you should see that the clock is not appearing for that user. If you were already signed in as that user, you may have to log off as that user and sign back in.



112. Now that you see that the policy applies, right click on the taskbar and got to the Taskbar settings. Here you will scroll down to the “Turn system icons on or off” and you should see that the option is greyed out for turning on the clock. Here you will **take your third screenshot** of the clock settings.



## Taskbar

Combine taskbar buttons

Always, hide labels

[How do I customize taskbars?](#)

## Notification area

[Select which icons appear on the taskbar](#)

[Turn system icons on or off](#)

## Multiple displays

*This should be your last screenshot.*

## Turn system icons on or off

	Clock	<input type="checkbox"/> On
	Volume	<input checked="" type="checkbox"/> On
	Network	<input checked="" type="checkbox"/> On

1. What are the three main design structures for OUs in business?
2. What is the difference between creating multiple OUs with the same name versus creating multiple groups with the same name?
3. Can a user be a part of multiple groups? Can one apply different group policies at different levels of an OU?
4. Place screenshots here captured during the exercise:
  - a. Screenshot #1
  - b. Screenshot #2
  - c. Screenshot #3