1 POWERSHELL FOR SQL SERVER INCLUDING SQL 2016 BUILD GUIDE

POWERSHELL SCRIPT BUILD

Humongous

Humongous.RonsNotes.Training.Local

- **Domain Controller**
- **Active Directory Domain Services (ADDS)**
- **ADDS Forest**
- **DNS Server**

- OS: Windows Server 2016

- SQL Server 2016
  - Analysis Services
  - Integration Services
  - Reporting Services
- SQL Server Management Studio

HOST PC REQUIREMENTS

- 64-Bit
- Windows 8.1 Pro or Windows 10 Pro or Server 2012 or higher
- 100 GB of free space
- Over 12GB of memory
- A processor capable of Hyper-V
- Hyper-V enabled
- Ability to run as Administrator

SOFTWARE NEEDED

- Download the required folders and corresponding PowerShell scripts
- ISO of Server 2016
- ISO of SQL Server 2016
- SQL Server Management Studio (SSMS)

PHASE 01 HYPER-V SETUP AND FILE STRUCTURE BUILD

Task	Script
Enable Enhanced Mode in Hyper-V	01 BUILD FILE STRUCTURE CREATE VIRTUAL SWITCHES ON HUMONGOUS.PS1
Create Virtual Switches	01 BUILD FILE STRUCTURE CREATE VIRTUAL SWITCHES ON HUMONGOUS.PS1
Build the File Structure	01 BUILD FILE STRUCTURE CREATE VIRTUAL SWITCHES ON HUMONGOUS.PS1

In our tests, this phase took about 5-7 minutes.

In this phase, you will:

- Enable Enhanced Mode in Hyper-V.
- Create Virtual Switches in Hyper-V.
- Build a File Structure.

The PowerShell scripts will use this file structure to automate the build. Therefore, the naming needs to be exact.

We use the same file structure for the licensed and evaluation software build, so some folders may be used in one and not the other.

***IMPORTANT!** You will need to have the latest version of PowerShell (5.1) installed on your host machine. PowerShell 5.1 is installed by default on Server 2016 and Windows 10. If your host machine does not run either of these operating systems, you will need to install PowerShell 5.1 in order to execute these scripts. To download PowerShell 5.1, use the following link:* https://msdn.microsoft.com/en-us/powershell/wmf/5.1/install-configure.

Task: Enable Enhanced Mode in Hyper-V

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Create Virtual Switches

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Build the File Structure

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this phase, you will:

- Utilize a PowerShell script to enable enhanced mode.
- Create virtual switches in Hyper-V.
- Build the file structure to be used throughout the course.

1. Press **Windows** key and enter `Power`.
2. Right-click the **Windows PowerShell ISE** icon, then click **Pin to taskbar**.
3. Press **Esc** to return to the desktop.
4. Navigate down to the taskbar, right-click **Windows PowerShell ISE** icon, right-click the new **Windows PowerShell ISE** icon showing, then click **Run as administrator**.
5. In the **User Account Control** dialog box, click **Yes**.
6. When **Windows PowerShell ISE** opens, review the options and settings available.
7. In **Windows PowerShell ISE**, move up to the menu and click **File\Open…**.
8. In the **Open** dialog box, navigate to the **Single-ServerScripts** folder you downloaded or cloned from the GitHub repository for this RonsNotes.
9. Locate and double-click to open 01 BUILD FILE STRUCTURE CREATE VIRTUAL SWITCHES ON HUMONGOUS.PS1.
10. When the file opens, review the script.
11. Move to the toolbar above and click  to **Run Script**.
12. Review the results noticing **File Explorer** is open, and you are viewing the **RonsNotes** folder.
13. Press the **Windows** key.
14. Enter `Hyper-V Manager`.

15. Right-click the **Hyper-V Manager** icon and click **Pin to taskbar**.
16. Click to open **Hyper-V Manager**, move to the **Actions** pane on the right and click **Hyper-V Settings**.
17. Click **Enhanced Session Mode Policy** and verify there is a check in the **Allow enhanced session mode** check box. If not, place a check in the checkbox, click **Apply** and then click **OK**.
18. Again, click **Hyper-V Settings,** and then click **Enhanced Session Mode** and verify there is a check in the **Use enhanced session mode** check box. If not, place a check in the checkbox, click **Apply** and then click **OK**.

Upon completion, you will have enabled enhanced mode and created virtual switches in Hyper-V, as well as built the file structure.

PHASE 02 CREATE HUMONGOUS VM

Task	Script
Verifying the Correct Files Are in the Proper Location	02 CREATE HUMONGOUS VM.PS1
Creating Virtual Machine | Humongous	02 CREATE HUMONGOUS VM.PS1

In our tests, this phase took approx. 20-30 minutes, but this depends completely on the speed of your hardware.

In this phase, you will:

- Download the installation files.
- Move the VM Specific script folder to the Scripts folder.
- Create the VM.
- Install Server 2016.

This phase creates the virtual machine that we will use. First, the script will create the Virtual Hard Drive (VHDX format).

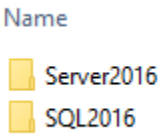
We are assuming you are using evaluation licenses. If not, proceed as is and then at the end you can just convert to MSDN by changing your keys.

After creating the VM, the script will enable Guest Services and start Hyper-V Manager.

Task: Download the ISOs of Server 2016 and SQL Server 2016 to the Created Directories, and the Needed Database Files

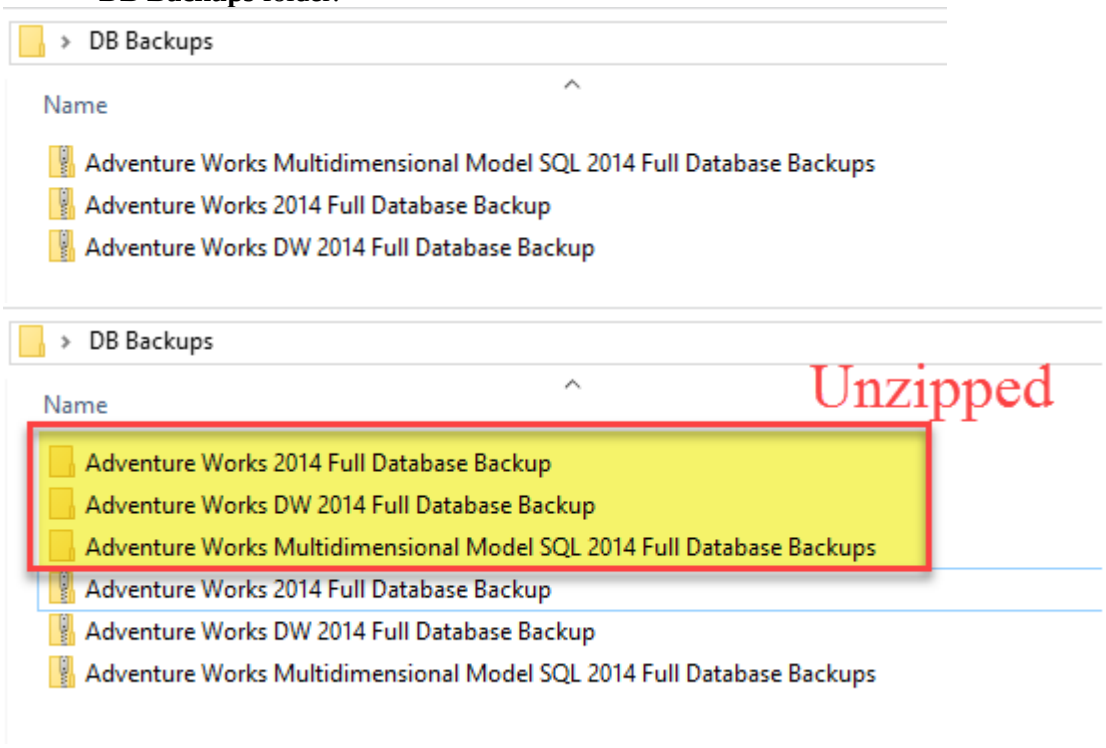
In this task, we will download ISOs for the software we intend to install.

1. Switch back to **File Explorer** and verify you are still viewing **C:\RonsNotes**.
2. Double-click to open the **ISOs** folder, and notice you have two folders listed.



3. Start **Internet Explorer** or the browser of your choice.

4. Using the links provided below:
    - Download the installation files to the appropriate folder (shown above).
    - Download the database files and place them into a folder named `DB Backups`.
        - The files will download as .zip files, which will need to be unzipped within the **DB Backups** folder.



You will need to register in order to download the required ISO files.

- **Server 2016** – https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016
- **SQL Server 2016** - https://www.microsoft.com/en-us/evalcenter/evaluate-sql-server-2016
- **AdventureWorks 2014** - https://msftdbprodsamples.codeplex.com/releases/view/125550
    - Adventure Works 2014 Full Database Backup.zip
    - Adventure Works DW 2014 Full Database Backup.zip
    - Adventure Works Multidimensional Model SQL 2014 Full Database Backups.zip

Upon completion, you will have the file structure built, and the downloaded ISOs placed into the proper locations, and the database files downloaded into the new **DB Backups** folder.

Task: Move The VM Specific Script Folder To The Scripts Folder

In this task, we will move the Script folders to the proper location. As we do not know to what location you downloaded the script folders from GitHib, we will do this move with File Explorer.

1. Locate your downloaded scripts folder.

The scripts can be found on GitHub, in the RonsNotes course-specific repository. (Link below) You can either clone the repository or download the scripts.

2. Double-click to open **Single-ServerScripts**.

3. Using Copy/Paste, copy the **Humongous Scripts** folder and paste it into the **Scripts-Folder** that you created in Phase 01.

Task: Create the VM

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this task, we will create our base VM.

1. Back in **Windows PowerShell ISE**, move up to the menu and click **File\Open…**.
2. In the **Open** dialog box, navigate to the **Single-ServerScripts** folder you downloaded or cloned from the GitHub repository for this RonsNotes.
3. Locate and double-click to open 02 CREATE HUMONGOUS VM.PS1.
4. When the file opens, review the script.
5. Move to the toolbar above and click  to **Run Script**.
6. Switch **to Hyper-V Manager**, and you will see your **Humongous** VM present and running.
7. Right-click on the Humongous VM, then click **Settings** and review the configuration including the attached **Virtual switch** and the **IDE Controller** with the **Server 2016** and the **SQL 2016** ISOs loaded.
8. In the **Settings** dialog box, click **Cancel**.

Task: Install Server 2016

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this task, we will install Server 2016.

 *The following is a manual operation with no scripts being used.*

1. Back in **Hyper-V Manager**, right-click the **Humongous** VM and click **Connect…**.
2. In the **Windows Setup** dialog box, click **Next**.
3. Click **Install now**.
4. In the **Select the operating system you want to install** dialog box, move the selection to the second option **Windows Server 2016 Standard Evaluation (Desktop Experience)**, and click **Next**.
5. In the **Applicable notices and license terms** dialog box, place a check in the **I accept the license terms** check box, and click **Next**.
6. In the **Which type of installation do you want** dialog box, click **Custom: Install Windows only (advanced)**.
7. In the **Where do you want to install Windows** dialog box, click **Next**.
8. Wait for the install to complete.
9. In the **Customize settings** dialog box, enter and confirm `PasswOrd` where P is upper-case and 0 is zero, and then click **Finish**.
10. Log on to the VM using **Cntr+Alt+End**, or by clicking the  icon in the VM toolbar, and entering `PasswOrd` where P is upper-case and 0 is zero.
11. Allow the virtual machine to fully start (wait for **Server Manager** to open).
12. You will see a prompt on the right asking **Do you want to allow your PC to be discoverable by other PCs and devices on this network**, click **Yes**.

     *If the virtual machine remains black, then use Hyper-V Manager to shut down and restart.*

    Optional step:

a. *You can run update on the Humongous server. This will take a long time but it is your choice. We tested this build with Server 2016 as-is without any updates, and it all worked, but this is strictly your call.*
b. *To run an update, open Server Manager, click to select Local Server, then click the corresponding hyperlink to search for and install updates.*

Until we connect the VM to the internet, it will not authenticate, meaning you have ten days to get past that phase of the setup.

13. In **Hyper-V Manager**, right-click the VM and click **Shut Down**.
14. In the **Are you sure you want to shut down …** dialog box, click **Shut Down**.

PHASE 03 SETUP DOMAIN

Task	Script
Enabling Guest Services on the Virtual Machine	03 COPY FILES TO HUMONGOUS.PS1
Starting the Virtual Machine	03 COPY FILES TO HUMONGOUS.PS1
Copying Files to Humongous Server	03 COPY FILES TO HUMONGOUS.PS1
Renaming Humongous	01 RENAME TO HUMONGOUS.PS1
Creating the Domain and Configuring the Forest	02 CREATE DOMAIN.PS1
Create Student as Domain Administrator	03 ADD STUDENT AS DOMAIN ADMIN CREATE OUS AND OTHER ACCOUNTS.PS1
Turn Off Firewall	03 ADD STUDENT AS DOMAIN ADMIN CREATE OUS AND OTHER ACCOUNTS.PS1
Create Organizational Units	03 ADD STUDENT AS DOMAIN ADMIN CREATE OUS AND OTHER ACCOUNTS.PS1
Adding Active Directory Users	03 ADD STUDENT AS DOMAIN ADMIN CREATE OUS AND OTHER ACCOUNTS.PS1

In this phase, you will:

- Enable Guest Services on the Virtual Machine
- Start the Virtual Machine
- Copy Files to Humongous Server
- Rename Humongous
- Create the Domain and Configure the Forest
- Create Student as Domain Administrator
- Turn Off Firewall
- Create Organizational Units
- Add Active Directory Users

Task: Enabling Guest Services on the Virtual Machine

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Starting the Virtual Machine

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Copy files to Humongous Server

- There are no manual instructions for this step.

In this task, we will copy files to the newly created VM.

1. On your host machine, switch to **Windows PowerShell ISE**, move up to the menu and click **File\Open…**.

2. In the **Open** dialog box, navigate to the **Single-ServerScripts** folder you downloaded or cloned from the GitHub repository for this RonsNotes.
3. Locate and double-click to open 03 COPY FILES TO HUMONGOUS.PS1.
4. When the file opens, review the script.
5. Move to the toolbar above and click  to **Run Script**.

Task: Rename Humongous

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Creating the Domain and Configuring the Forest

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Create Student as Domain Administrator

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Turn Off the Firewall

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Create Organizational Units

- If you prefer the manual step-by-step GUI instructions for this task, click here.

Task: Adding Active Directory Users

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this task, we will create the domain.

1. Back in **Hyper-V Manager**, double-click the **Humongous** VM to connect.
2. In the **Display configuration** dialog box, drag the slider all the way to the right (**Large**) and click **Connect**.
3. Log on as **Administrator** by entering `Passw0rd`, where the P is upper-case and the 0 is zero.
4. In **Humongous** VM, open **File Explorer** and navigate to the root of **C:**. Notice the files that were added by the previous script.
5. Right-click 01 RENAME TO HUMONGOUS.PS1, and click **Run with PowerShell**.

    *If you encounter the Execution Policy Change prompt, enter* `Y` *and then press Enter.*
6. The VM will reboot.
7. Log on to the VM using **Cntr+Alt+End**, or by clicking the  icon in the VM toolbar, and entering `Passw0rd` where P is upper-case and 0 is zero.
8. Open **File Explorer** and navigate back to the root of **C:**.
9. Right-click 02 CREATE DOMAIN.PS1, and click **Run with PowerShell**.
   - This will take a little time. Ignore the yellow warnings. They are the same as you would receive if you did this from Add Roles in Server Manager.
   - The VM will reboot and this will also take some time as gpsvc is slow on initial load.
10. Log on as **Administrator** by entering `Passw0rd`, where the P is upper-case and the 0 is zero.
11. Open **File Explorer** and navigate back to the root of **C:**.
12. Right-click 03 ADD STUDENT AS DOMAIN ADMIN CREATE OUS AND OTHER ACCOUNTS.PS1, and click **Run with PowerShell**.

     *If you encounter the Execution Policy Change prompt, enter* `Y` *and then press Enter.*
13. Switch to **Hyper-V Manager**, shut down the VM and then restart.

PHASE 04 SETUP SQL SERVER

In our tests, this phase took approx. 30-40 minutes. There are no scripts utilized in this phase.

In this phase, you will:

- Install SQL Server 2016.
- Install SQL Server Management Studio.

Task: Install SQL Server 2016

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this task, we will install SQL Server 2016.

1. In **Hyper-V Manager**, double-click the **Humongous** VM to connect.
2. At the logon screen, click **Other user** in the lower left corner.
3. In the **User Name** test box enter `Student`, and then enter `PasswOrd`, where the P is upper-case and the 0 is zero.
4. Open **File Explorer**, navigate to the pane on the left and click to select **This PC**.
5. Double-click the drive containing the **SQL2016_x64_ENU** ISO.
6. Double-click **setup**.
7. In the **User Account Control** dialog box, click **Yes**.
8. In the **SQL Server Installation Center** dialog box, click the **Advanced** tab.
9. Click to select **Install based on configuration file**.
10. Navigate to the root of **C:**.
11. Double-click **SQL_Server_Humongous.ini**.

On the following pages, you will click Next until the install page at the end, where you will click Install.

- **Microsoft Update**, click **Next**.
- **Product Updates**, click **Next**.
- **Install Rules**, you will ignore the Computer domain controller warning and click **Next**.
- **Product Key**, click **Next**.
- **License Terms**, place a check in the **I accept the license terms** check box and click **Next**.
- **Feature Selection**, click **Next**.
- **Instance Configuration**, click **Next**.
- **Server Configuration**, enter `PasswOrd` (the 0 is numeric) in the blank text box in the **SQL Server Analysis Services** row and click **Next**..
- **Database Engine Configuration**, click **Next**.
- **Analysis Services Configuration**, click **Next**.
- **Reporting Services Configuration**, click **Next**. *Optional: if you want to configure Reporting Services automatically in Native mode, move the radio button to Install and configure.*

12. In the **Ready to Install** dialog box, click **Install**.
13. Upon Success, click **Close**.

Task: Install SQL Server Management Studio

- If you prefer the manual step-by-step GUI instructions for this task, click here.

In this task, we will install SQL Server Management Studio.

1. Switch to **Server Manager** and click to select **Local Server** tab.
2. Navigate to the **IE Enhanced Security Configuration** setting, and click the corresponding **On** link.
3. Move both radio buttons to **Off**, and click **OK**.

4. Back in the **SQL Server Installation Center**, move to the left pane and click **Installation**.
5. Click **Install SQL Server Management Tools**.

    *If you receive the Internet Explorer settings dialog box, move the radio button to Don't use recommended settings and click OK.*
6. Click the **Download SQL Server Management Studio (Current release for production use)** link.
7. In the prompt, click **Save** (just in case).
8. In the **SSMS has completed** prompt, Click **Run**.
9. In the **Welcome** dialog box, click **Install**.

    *If you encounter a User Account Control dialog box, click Yes.*
10. Upon completion, click **Close**.
11. Switch to **Hyper-V Manager**, shut down the VM and then restart.
12. Connect and log on as **Student** with `Passw0rd`, where the P is upper-case and the 0 is zero.
13. In the taskbar, click the **Windows** icon.
14. Enter `SQL Server Management`, right click **Microsoft SQL Server Management Studio** and click **Pin to taskbar**.
15. Right-click the **SSMS** icon in the taskbar, right-click **SQL Server Management Studio** and click **Run as administrator**.
16. In the **User Account Control** dialog box, click **Yes**.
17. In the **Connect to Server** dialog box, click **Connect**.
18. Minimize **Microsoft SQL Server Management Studio**.
19. Switch to your host machine, navigate to the downloaded database backup files (**DB Backups**), right-click, then click **Copy**.
20. Open **File Explorer** in **Humongous**, navigate to **C:** drive and **Paste**.
21. Double-click to open **DB Backups** folder.
22. Open a new instance of **File Explorer**, navigate to **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup**.
23. In the **you don't currently have permission to access this folder** dialog box, click **Continue**.
24. Back in **DB Backups** folder, double-click to open the **Adventure Works 2014 Full Database Backup** folder.
25. Click to select **AdventureWorks2014.bak**, then right-click the file and click **Copy**.
26. Paste the files in **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup.**
27. Switch back to **DB Backups** folder, double-click to open the **Adventure Works DW 2014 Full Database Backup** folder.
28. Click to select **AdventureworksDW2014.bak**, then right-click the file and click **Copy**.
29. Paste the files in **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup.**
30. Switch back to **Microsoft SQL Server Management Studio**, navigate to the **Object Explorer** pane, right-click **Databases** and click **Restore Database ….**
31. In the **Restore Database** dialog box, click the **Device** radio button and the corresponding ellipses.
32. In the **Select backup devices** dialog box, click **Add**.
33. In the **Locate Backup File- HUMONGOUS** dialog box, notice both files are listed.
34. Double-click **AdventureWorks2014.bak** and in the **Select backup devices** dialog box, click **OK**.
35. In the **Restore Database-AdventureWorks2014** dialog box, click **OK**.
36. In the dialog box stating **Database 'AdventureWorks2014' restored successfully**, click **OK**.

37. Move back to **Microsoft SQL Server Management Studio**, navigate to the **Object Explorer** pane, right-click **Databases** and click **Restore Database ….**
38. In the **Restore Database** dialog box, click the **Device** radio button and the corresponding ellipses.
39. In the **Select backup devices** dialog box, click **Add**.
40. In the **Locate Backup File- HUMONGOUS** dialog box, double-click **AdventureWorksDW2014**.
41. In the **Select backup devices** dialog box, click **OK**.
42. In the **Restore Database-AdventureWorksDW2014** dialog box, click **OK**.
43. In the dialog box stating **Database 'AdventureWorksDW2014' restored successfully**, click **OK**.
44. In the **Object Explorer** pane, expand **Databases** folder and notice you now see both databases listed.
45. In a new instance of **File Explorer**, navigate to **C:\Program Files\Microsoft SQL Server\MSAS13.MSSQLSERVER\OLAP\Backup**.
46. In the **You don't currently have permission to access this folder** dialog box, click **Continue**.
47. Back in **C:\DB Backups**, double-click the **Adventure Works Multidimensional Model SQL 2014 Full Database Backups** folder.
48. Right-click **AdventureWorksDW2014Multidimensional-EE.abf** and click **Copy**.
49. Paste the file into **C:\Program Files\Microsoft SQL Server\MSAS13.MSSQLSERVER\OLAP\Backup**.
50. Switch back to **Microsoft SQL Server Management Studio** and in the **Object Explorer** pane, click **Connect**.
51. In the drop-down, **click Analysis Services….**
52. In the **Connect to Server** dialog box, click **Connect**.
53. In the **Object Explorer** pane, locate the **Databases** folder under **Humongous (Microsoft Analysis Services)**, right-click and click **Restore….**
54. In the **Restore Database** dialog box, move to the **Restore Source** section and click the corresponding **Browse….**
55. In the **Locate Database Files** dialog box, expand the first folder listed, double-click **AdventureWorksDW2014Multidimensional-EE.abf** and click **OK**.
56. In the **Restore Database** dialog box, click **OK**.
57. Upon completion (this may take some time), right-click **Databases** under **Humongous (Microsoft Analysis Services)**, and click **Refresh**.
58. Expand **Databases** under **Humongous (Microsoft Analysis Services)**, expand **AdventureWorksDW2014Multidimensional-EE.abf** and expand **Cubes**.
59. Notice **Adventure Works** is listed.
60. Press the **Windows** key and enter `Powershell`, then right-click and pin the following to the taskbar (if they aren't already pinned):
    - **Windows PowerShell** (64-bit version)
    - **Windows PowerShell ISE** (64-bit version)
61. Back in **SQL Server Management Studio**, in the **Object Explorer** pane, expand **Security**, right-click **Logins** and click **New Login….**
62. In the **Login - New** dialog box, click **Search….**
63. In the **Select User, Service Account, or Group** dialog box, click **Advanced** and then click **Locations**.
64. Verify the selection is **Entire Directory**, and click **OK**.
65. In the **Starts with** text box, enter `SVC_Farm` and click **Find Now**.
66. Click **OK**.
67. In the **Select User, Service Account, or Group** dialog box, click **OK**.
68. In the **Login – New** dialog box, click **OK**.
69. Repeat steps **58-65** for **SVC_Installation**.

70. In the **Object Explorer** pane, expand **Logins,** right click **SVC_Farm** and click **Properties**.
71. In the **Select a page** pane on the left, click **Server Roles**.
72. In the **Login Properties** dialog box, place checks in the **dbcreator** and **securityadmin** check boxes, and click **OK**.
73. Repeat steps **67-69** for **SVC_Installation**.

Lab Files

Switch to your host machine, navigate to the downloaded/cloned repository files, then copy the **Lab Files** folder and paste it into **C:** drive on the **Humongous** virtual machine.

MANUAL STEP-BY-STEP BUILD

PHASE 01 HYPER-V SETUP AND FILE STRUCTURE BUILD

Phase Objective

In this phase, you will enable enhanced mode in Hyper-V Manager, create two virtual switches, and build the file structure.

Phase Topics

In this phase, we will:

- Enable Enhanced Mode in Hyper-V
- Creating Virtual Switches
- Building the File Structure
- Download the ISOs of Server 2016 and SQL Server 2016 to the Created Directories

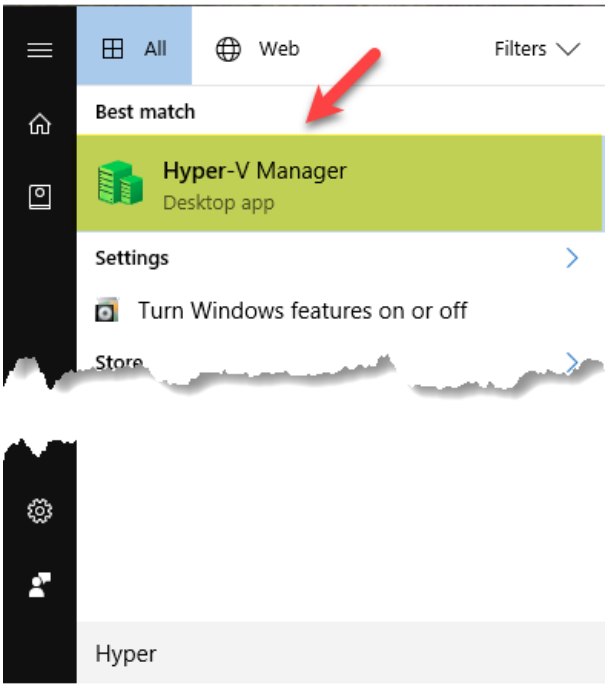
We use the same file structure for the licensed and evaluation software build, so some folders may be used in one and not the other.

Enabling Enhanced Mode in Hyper-V

Task: Pin Hyper-V Manager to the Task Bar on Your Host PC

**Note: there is no PowerShell code block for this task.*

1. Press **Windows** key and enter `Hyper`.
2. Right-click the **Hyper-V Manager** icon, then click **Pin to taskbar**.



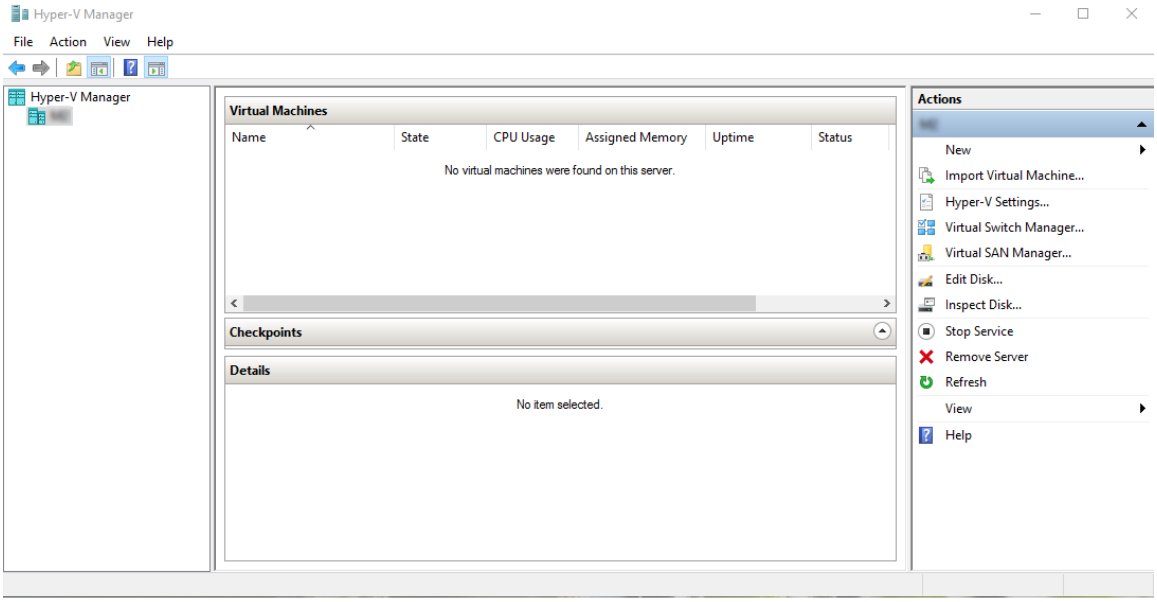
3. Press **Esc** to return to the desktop.

Task: Enable Enhanced Mode in Hyper-V

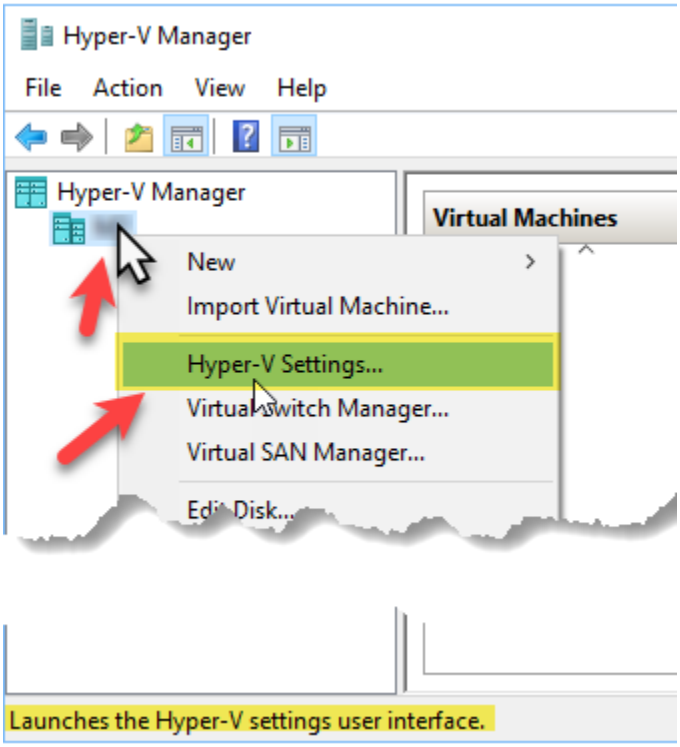
- If you prefer the PowerShell script instructions for this task, click here.

```
Set-VMhost -EnableEnhancedSessionMode $TRUE
```

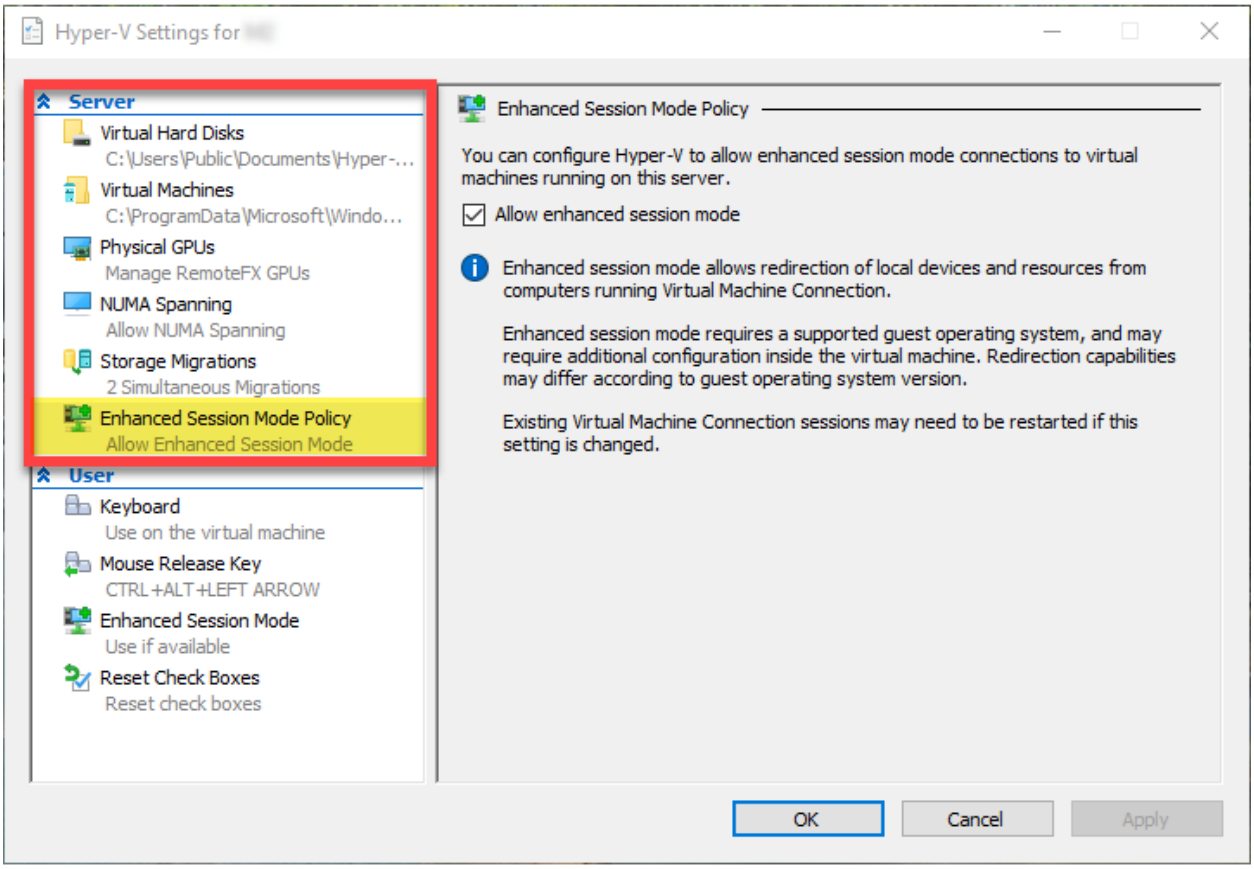
1. Move down to the taskbar, and start **Hyper V Manager**.
2. When **Hyper-V Manager** opens, review the options available.



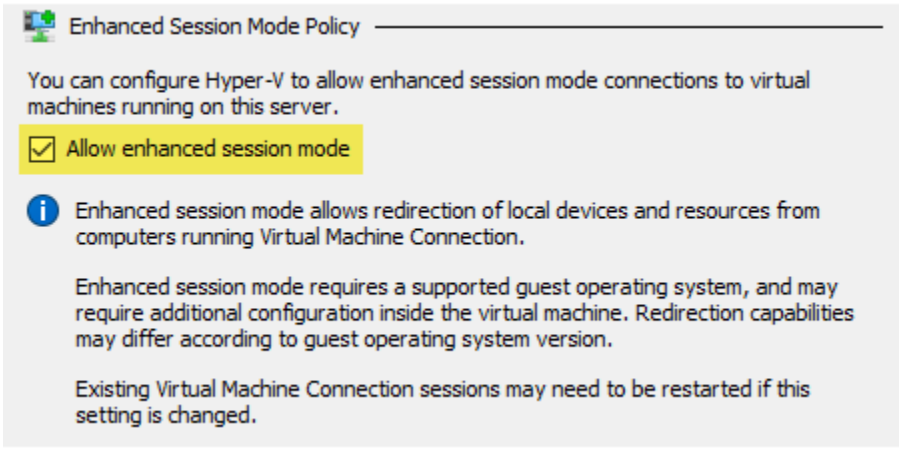
3. Navigate to the pane on the left, right-click the name of the local computer, and click **Hyper-V Settings**.



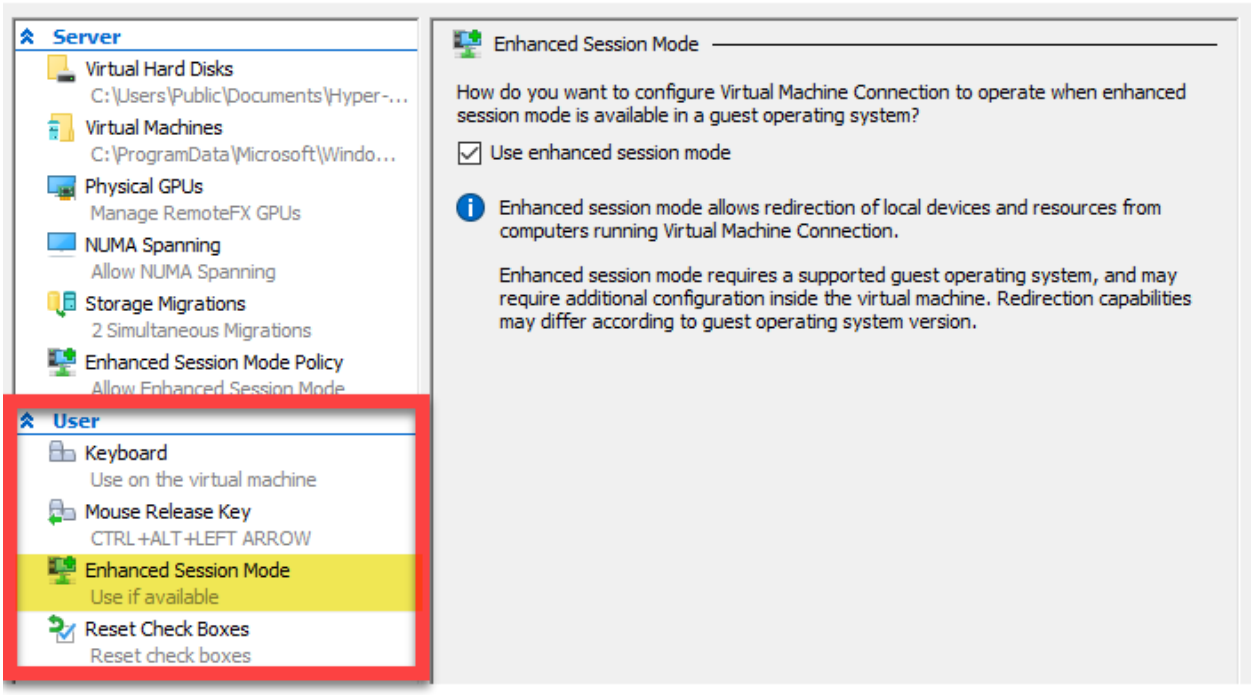
4. When **Hyper-V Settings** opens, move to the pane on the left, locate the **Server** section and click to select **Enhanced Session Mode Policy**.



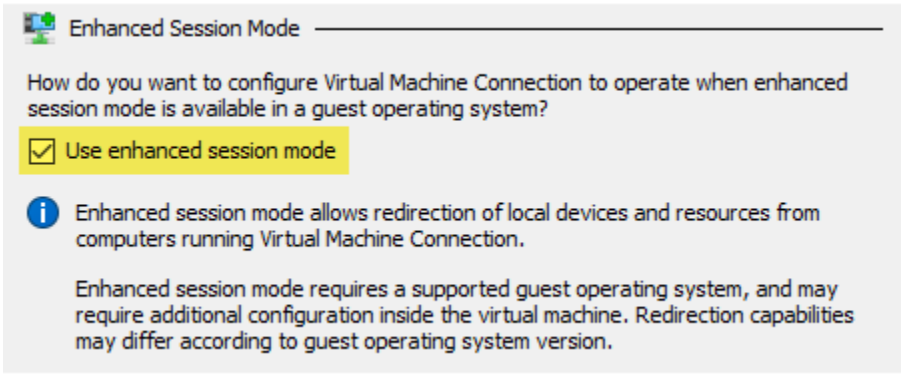
5. Verify there is a check in the **Allow enhanced session mode** check box.



6. If changes were made, click **Apply**.
7. Move to the pane on the left, locate the **User** section and click to select **Enhanced Session Mode Policy**.



8. Verify there is a check in the **Use enhanced session mode** check box.



9. If changes were made, click **Apply**.
10. Click **OK**.

Creating Virtual Switches

Virtual switches provide a way for a virtual machine to connect to a physical network. There are three types:

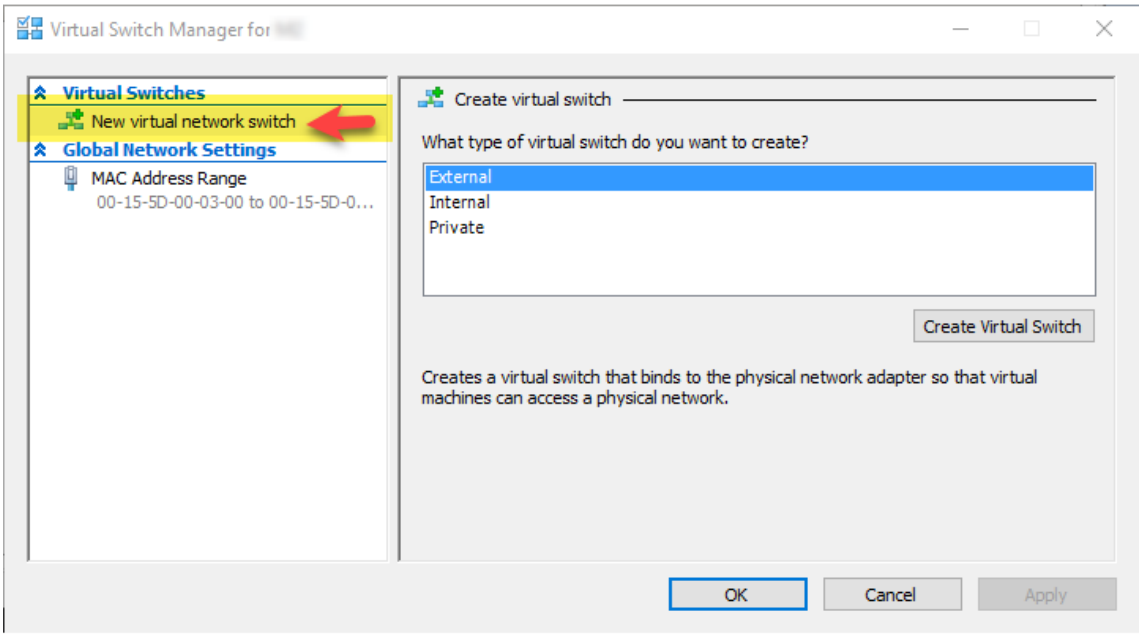
- External Network
- Internal Network
- Private Network

Task: Create Virtual Switches

- If you prefer the PowerShell script instructions for this task, click here.

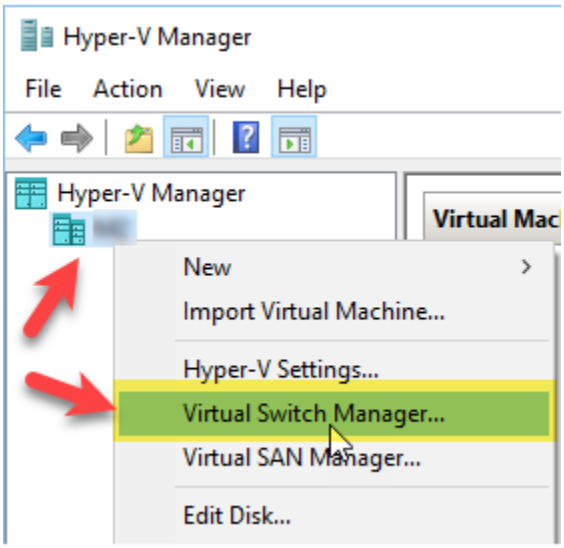
```
#TASK: CREATE VIRTUAL SWITCHES
Function Create-vmSwitches{
$ExistSwitchPrivate  = get-VMSwitch -SwitchType Private -Name "VMPrivateNetwork"
-ErrorAction SilentlyContinue

If (!($ExistSwitchPrivate)) {
New-VMSwitch "VMPrivateNetwork" -SwitchType Private
}

$ExistExternalSwitch =  Get-VMSwitch -Name "VMExternalNetwork" -SwitchType
External -ErrorAction SilentlyContinue
$ExistExternalSwitch
$NAdapterName = Get-NetAdapter -Physical
If (!($ExistExternalSwitch)) {
New-VMSwitch -Name "VMExternalNetwork" -NetAdapterName $NAdapterName.Name
}}

Create-vmSwitches
```

1. Navigate to the pane on the left, right-click the name of the local computer, and click **Virtual Switch Manager**.
2. When **Virtual Switch Manager** opens, select **New virtual network switch**.

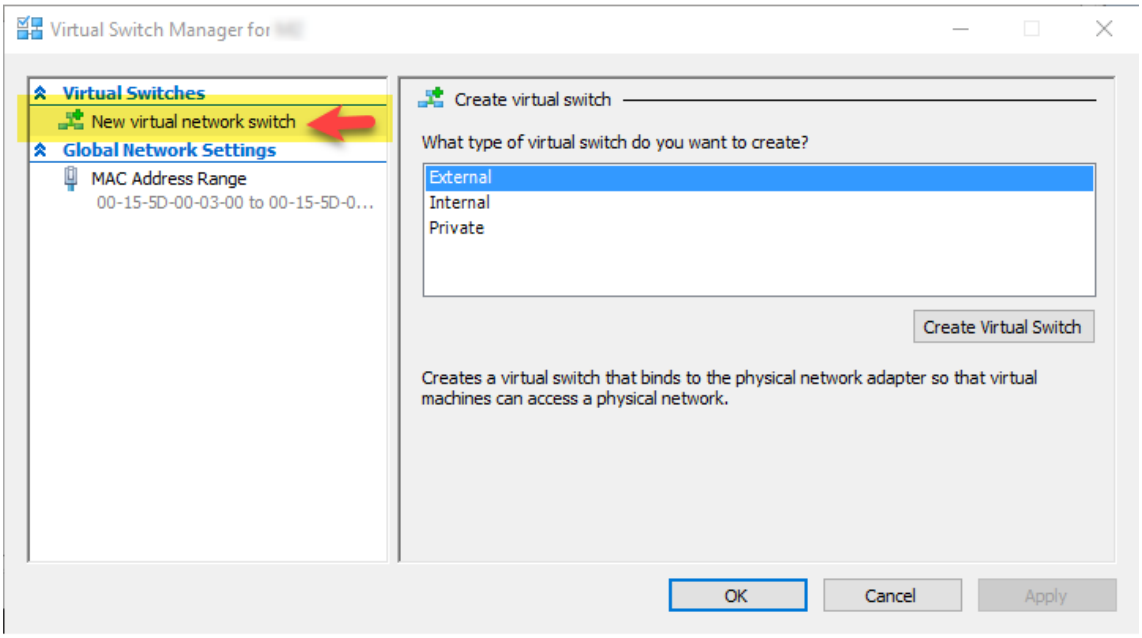


3. Move to the **What type of virtual switch do you want to create** setting and click to select **Private**.
4. Click **Create Virtual Switch**.
5. Move to the **Name** text box and name the switch `VMPrivate` (or whatever you prefer).
6. Make sure it is connected to the **Private** network.

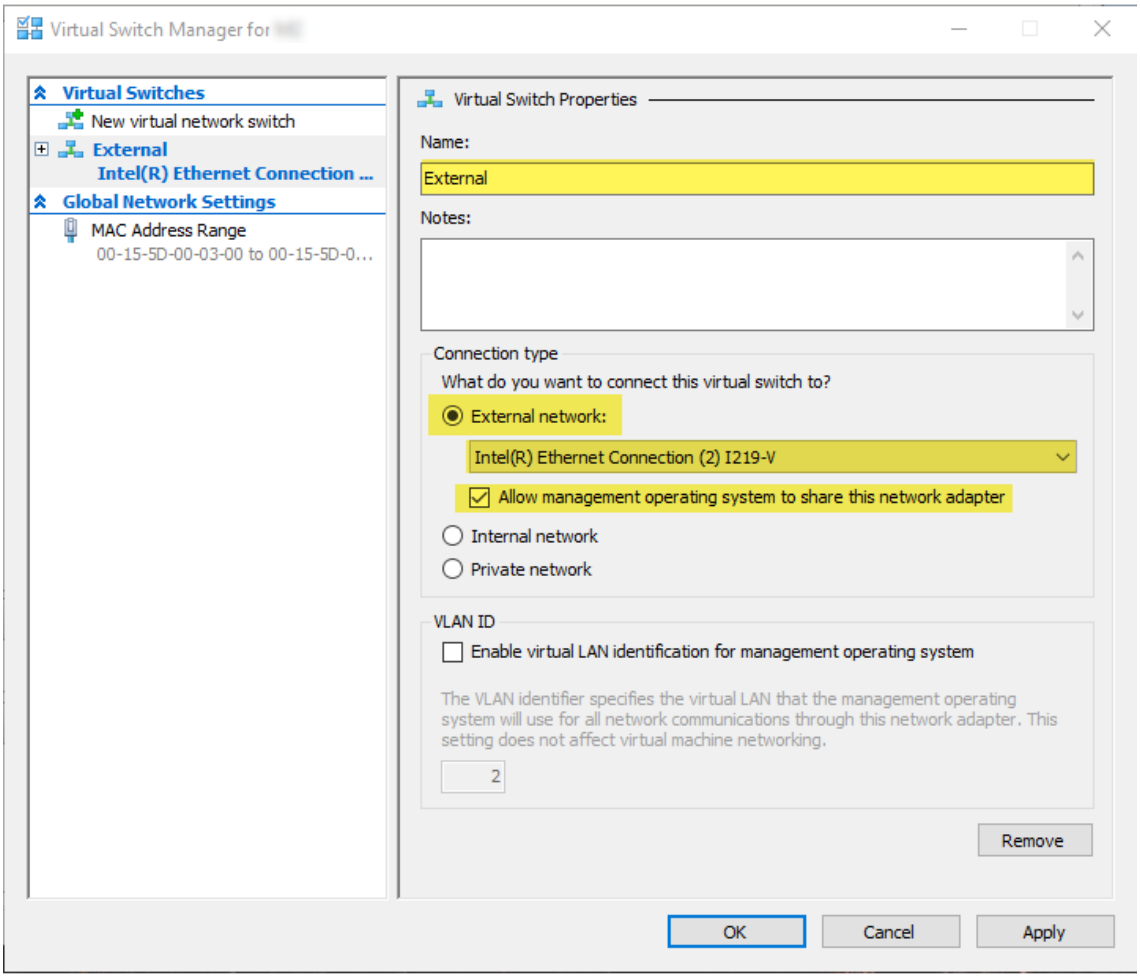
7. Click **Apply**.
8. Click **OK**.
9. Navigate to the pane on the left, right-click the name of the local computer, and click **Virtual Switch Manager**.



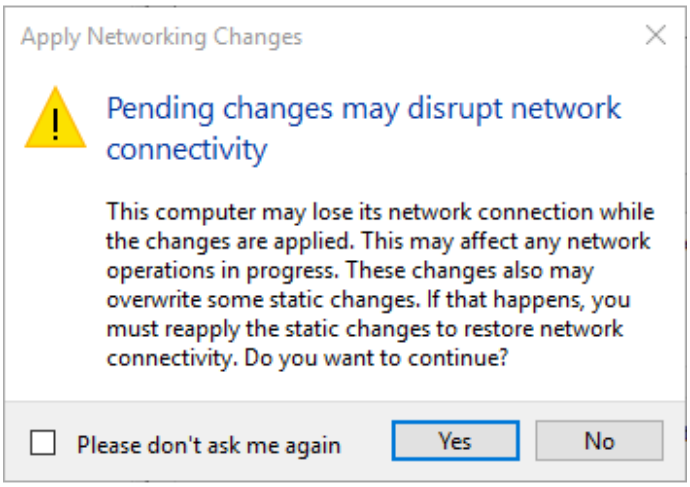
10. When **Virtual Switch Manager** opens, select **New virtual network switch**.



11. Move to the **What type of virtual switch do you want to create** setting and click to select **External**.
12. Click **Create Virtual Switch**.
13. Move to the **Name** text box and name the switch `VMExternal` (or whatever you prefer).
14. Make sure it is connected to the **External** network, and that your physical Network Interface Card shows in the corresponding setting.
15. Place a check in the **Allow management operating system to share this network adapter**.



16. Click **Apply**.
17. In the **Apply Networking Changes** dialog box advising **This computer may lose its network connection while the changes are applied**, click **Yes**.



18. Click **OK**.

Building the File Structure

Task: Build the File Structure

- If you prefer the PowerShell script instructions for this task, click here.

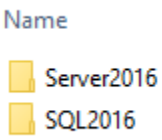
```
#TASK: BUILD THE FILE STRUCTURE
Function Build-FileStructure{

If(!( Test-Path c:\RonsNotes\ISOs\Server2016\)){
New-Item C:\RonsNotes\ISOs\Server2016\ -ItemType directory -ErrorAction
SilentlyContinue}

If(!( Test-Path c:\RonsNotes\ISOs\SQL2016\)){
New-Item C:\RonsNotes\ISOs\SQL2016\ -ItemType directory -ErrorAction
SilentlyContinue}

<#If(!( Test-Path c:\RonsNotes\ISOs\Sharepoint2016\)){
New-Item C:\RonsNotes\ISOs\Sharepoint2016\ -ItemType directory -ErrorAction
SilentlyContinue}#>

If(!( Test-Path c:\RonsNotes\Labs\)){
New-Item C:\RonsNotes\Labs\ -ItemType directory -ErrorAction
SilentlyContinue}

If(!( Test-Path c:\RonsNotes\Script_Folders\)){
New-Item C:\RonsNotes\Script_Folders\ -ItemType directory -ErrorAction
SilentlyContinue}

#Upon completion, File Explorer will be open showing the RonsNotes folder
contents.
ii C:\RonsNotes
} #End
Build-FileStructure
```

1. Start **File Explorer**.
2. Navigate to **C:/**.
3. Create a new folder and name the folder **RonsNotes**.
4. Double-click to open **RonsNotes** folder, and create three more folders:
    - ISOs
    - Labs
    - Script_Folders
5. Double-click to open **ISOs** folder, and create two more folders:
    - Server2016
    - SQL2016
6. Back out of the **ISOs** folder, and leave **File Explorer** open.

Task: Download the ISOs of Server 2016 and SQL Server 2016 to the Created Directories, and the Needed Database Files

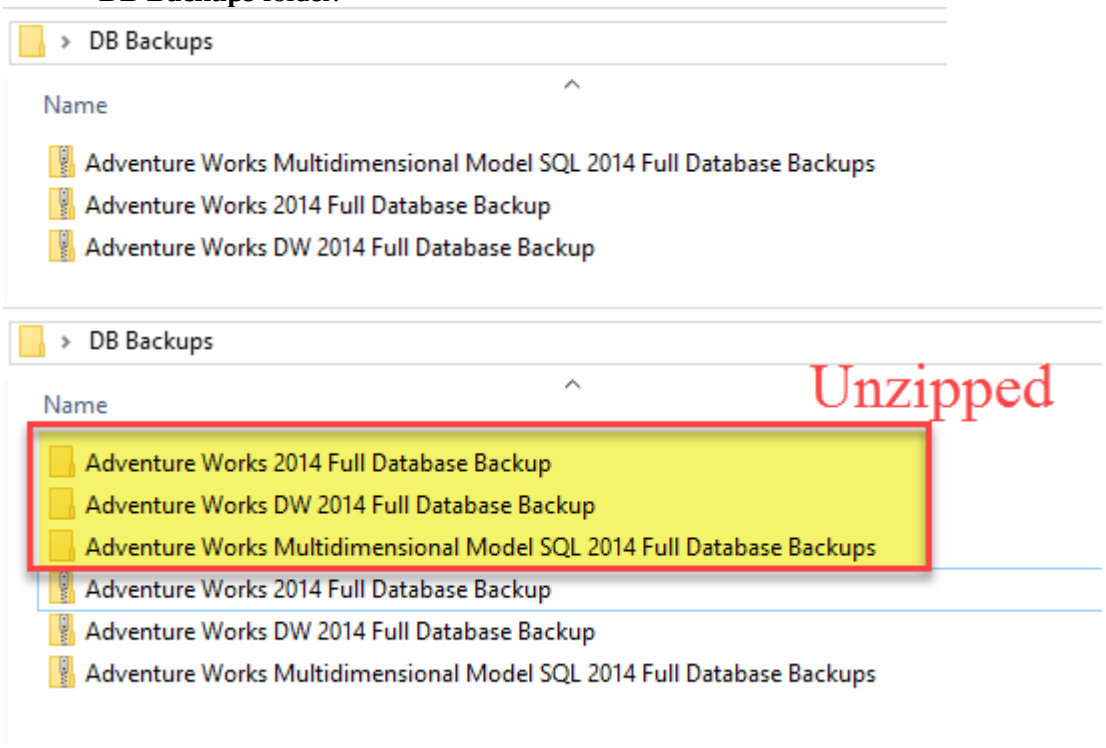
In this task, we will download ISOs for the software we intend to install.

5. Switch back to **File Explorer** and verify you are still viewing **C:\RonsNotes**.
6. Double-click to open the **ISOs** folder, and notice you have two folders listed.



7. Start **Internet Explorer** or the browser of your choice.

8. Using the links provided below:
    - Download the installation files to the appropriate folder (shown above).
    - Download the database files and place them into a folder named `DB Backups`.
        - The files will download as .zip files, which will need to be unzipped within the **DB Backups** folder.



You will need to register in order to download the required ISO files.

- **Server 2016** – https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016
- **SQL Server 2016** - https://www.microsoft.com/en-us/evalcenter/evaluate-sql-server-2016
- **AdventureWorks 2014** - https://msftdbprodsamples.codeplex.com/releases/view/125550
    - Adventure Works 2014 Full Database Backup.zip
    - Adventure Works DW 2014 Full Database Backup.zip
    - Adventure Works Multidimensional Model SQL 2014 Full Database Backups.zip

Upon completion, you will have the file structure built, and the downloaded ISOs placed into the proper locations, and the database files downloaded into the new **DB Backups** folder.

PHASE 02 CREATE VIRTUAL MACHINES AND INSTALL SERVER 2016

Phase Objective

This phase creates the virtual machine. First, we will create the Virtual Hard Drive (VHDX format), then we will install Server 2016. We are assuming you are using evaluation licenses. If not, proceed as is, then at the end, you can just convert to MSDN by changing your keys.

After creating the virtual machine, we will enable Guest Services, then install Server 2016.

Phase Topics

- Verifying the Correct Files Are in the Proper Location

- Creating the Virtual Machine
- Installing Windows Server 2016

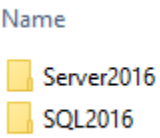
Verifying the Correct Files Are in the Proper Location

Task: Verifying the Correct Files Are in the Proper Location

- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: VERIFYING THE CORRECT FILES ARE IN THE PROPER LOCATION
Function Test-CorrectFiles {
# Test for the moving of the correct images to the expected location else fail

$ISOSvr2016 = Get-ChildItem C:\RonsNotes\ISOs\Server2016\ | %{$_.Name} -
ErrorAction inquire # ASK
$ISOSql = Get-ChildItem C:\RonsNotes\ISOs\SQL2016\ | %{$_.Name} -ErrorAction
inquire # ASK
#$IMGSharePoint2016 = Get-ChildItem C:\RonsNotes\ISOs\Sharepoint2016\ | %{$_.Name}
-ErrorAction inquire # ASK

If ($ISOSvr2016 -eq "14393.0.160715-1616.RS1_RELEASE_SERVER_EVAL_X64FRE_EN-
US.ISO")
{Write-Host "Expected version of ISO for Server 2016 in expected location" -
ForegroundColor Green}
Else {Write-Host "Wrong or missing Server 2016 ISO. 14393.0.160715-
1616.RS1_RELEASE_SERVER_EVAL_X64FRE_EN-US.ISO expected Correct to continue " -
ForegroundColor Red; Read-Host -Prompt "Any key to continue" }

If ($ISOSQL -eq "SQLServer2016-x64-ENU.iso")
{Write-Host "Expected version of IMG for SQLServer 2016 in expected location" -
ForegroundColor Green}
Else {Write-Host "Wrong or missing SQL 2016 ISO. SQLServer2016-x64-ENU.iso
expected. Correct to continue " -ForegroundColor Red ;  Read-Host -Prompt "Any key
to continue"}

<#If ($IMGSharePoint2016 -eq "officeserver.img")
{Write-Host "Expected version of IMG for SharePoint Svr 2016 in expected location"
-ForegroundColor Green}
Else {Write-Host "Wrong or missing SharePoint.IMG. officeserver.img expected.
Correct to continue " -ForegroundColor Red ;  Read-Host -Prompt "Any key to
continue"}#>

Write-host "*******"
Write-host "*******"
Write-host "*******"
Write-host "*******"

} #END
Test-CorrectFiles
```

1. Switch to **File Explorer**.
2. Navigate to **C:\RonsNotes\ISOs**.
3. Notice you have two folders listed.



4. Verify you have the following file(s) in the corresponding folder.

Folder	***File Name***
Server2016	14393.0.160715-1616.RS1_RELEASE_SERVER_EVAL_X64FRE_EN-US.ISO
SQL2016	SQLServer2016-x64-ENU.iso

Creating the Virtual Machine

We will walk through configuring the virtual machine.

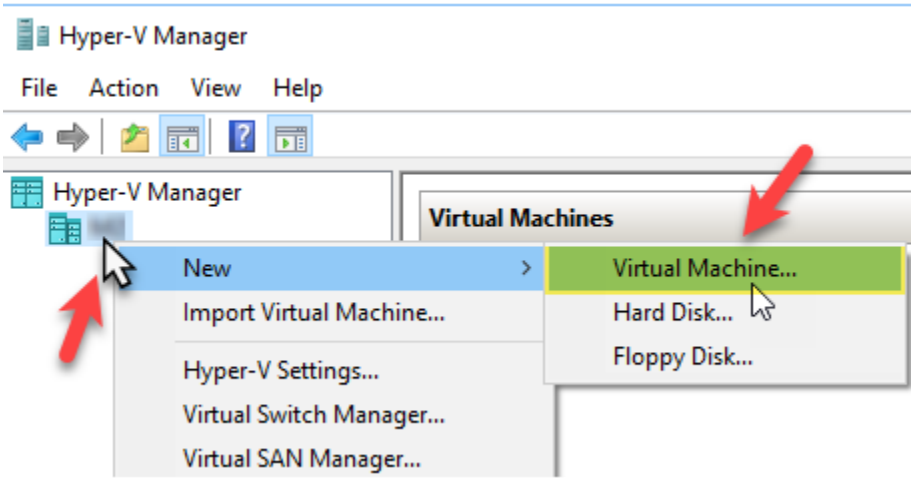
It is important to note that the finalized folder structures created by Hyper-V Manager will be slightly different if you've run the PowerShell script version to create the virtual machines.

Task: Create Humongous Virtual Machine

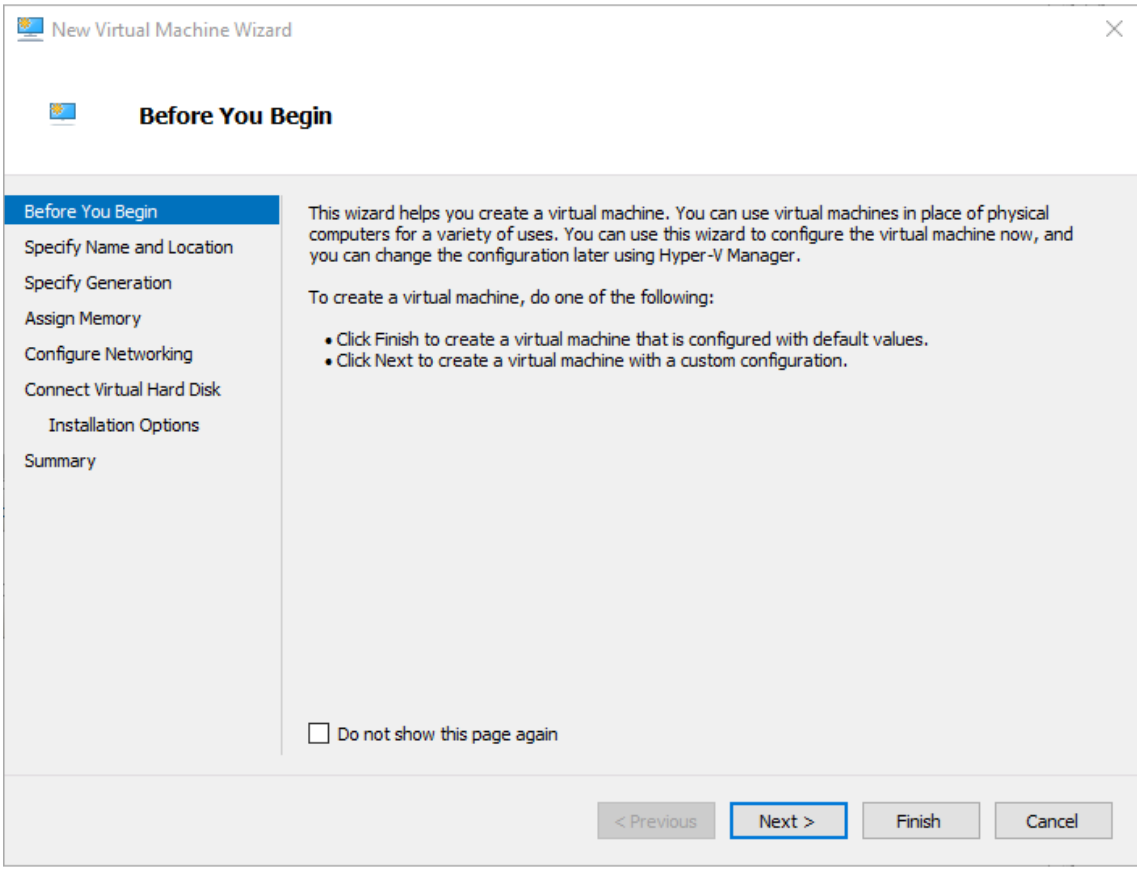
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: CREATE HUMONGOUS
Function Create-Humongous {
$VMName = "Humongous"
New-VHD  -Path "C:\RonsNotes\VM_Drives\Humongus\Humongus.vhdx" -SizeBytes 80GB -
Dynamic
New-vm -Name $VMName -MemoryStartupBytes 4GB  -VHDPath
"C:\RonsNotes\VM_Drives\Humongus\Humongus.vhdx" -BootDevice IDE -SwitchName
"VMExternalNetwork"
Set-VMDvdDrive -VMName $VMName -ControllerNumber 1 -ControllerLocation 0 -Path
C:\RonsNotes\ISOs\Server2016\14393.0.160715-
1616.RS1_RELEASE_SERVER_EVAL_X64FRE_EN-US.ISO
Set-vm $VMName -ProcessorCount 4
Add-VMDvdDrive -VMNAME $VMName -ControllerNumber 1 -ControllerLocation 1 -Path
C:\RonsNotes\ISOs\SQL2016\SQLServer2016-x64-ENU.iso
Start-VM  $VMName
} #END
Create-Humongous
```

1. In **Hyper-V Manager**, right-click on the name of your server, and select **New | Virtual Machine…**.

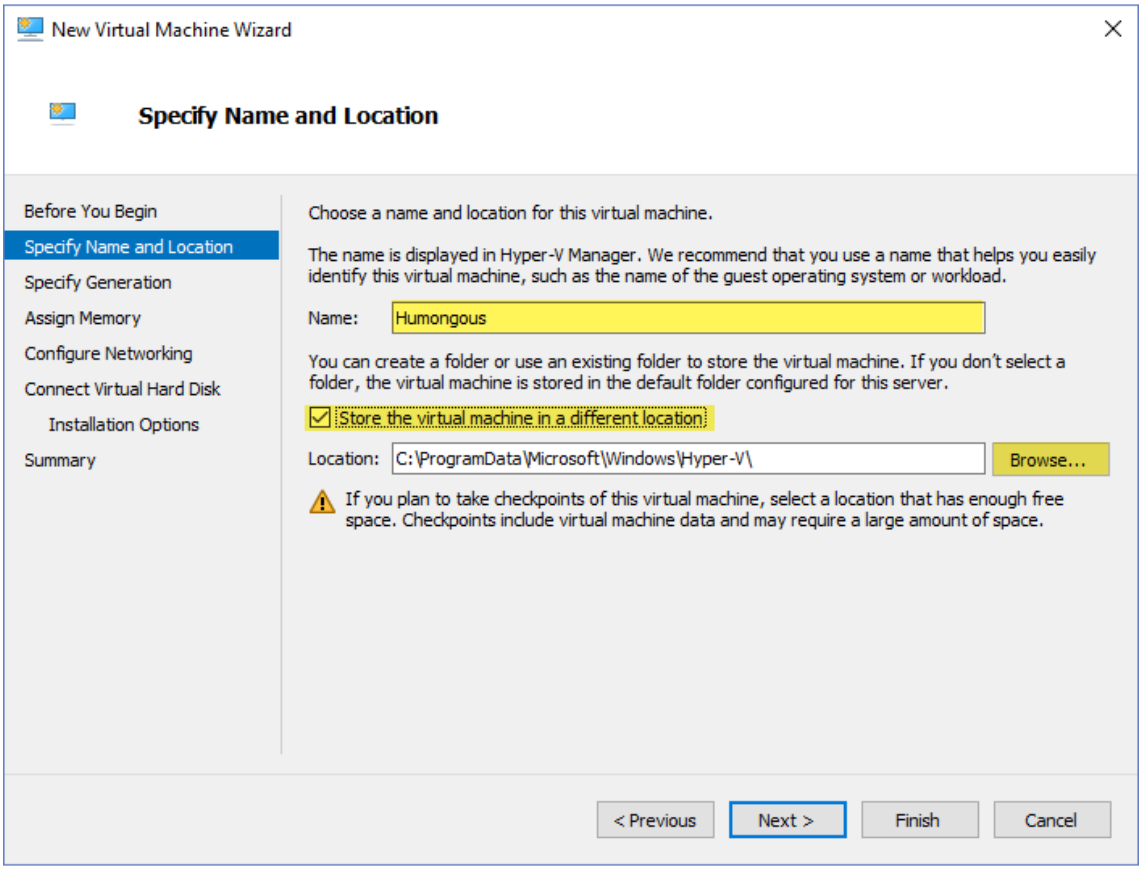


2. When the **New Virtual Machine Wizard** opens, view the message in the **Before You Begin** section, then click **Next**.

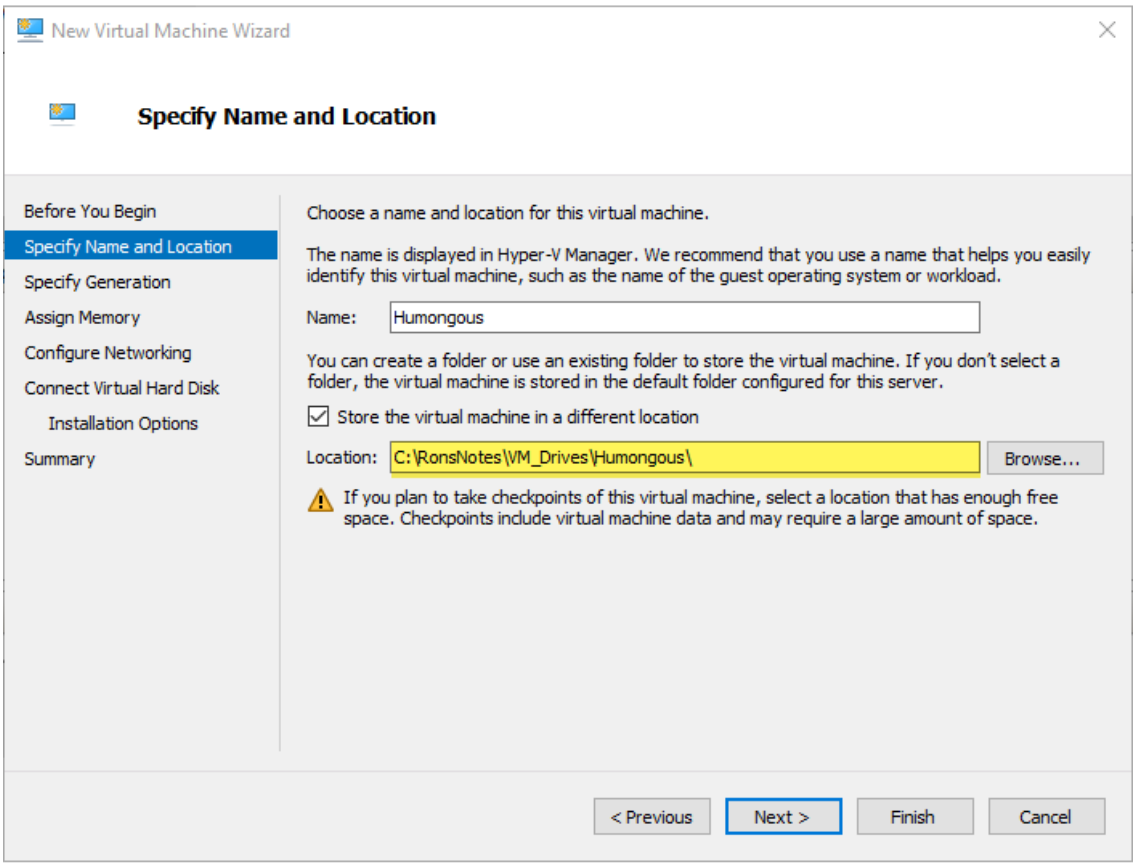


3. Navigate to the **Name** text box and enter `Humongous`.
4. Place a check in the **Store the virtual machine in a different location** check box.

5. Click the corresponding **Browse…**.

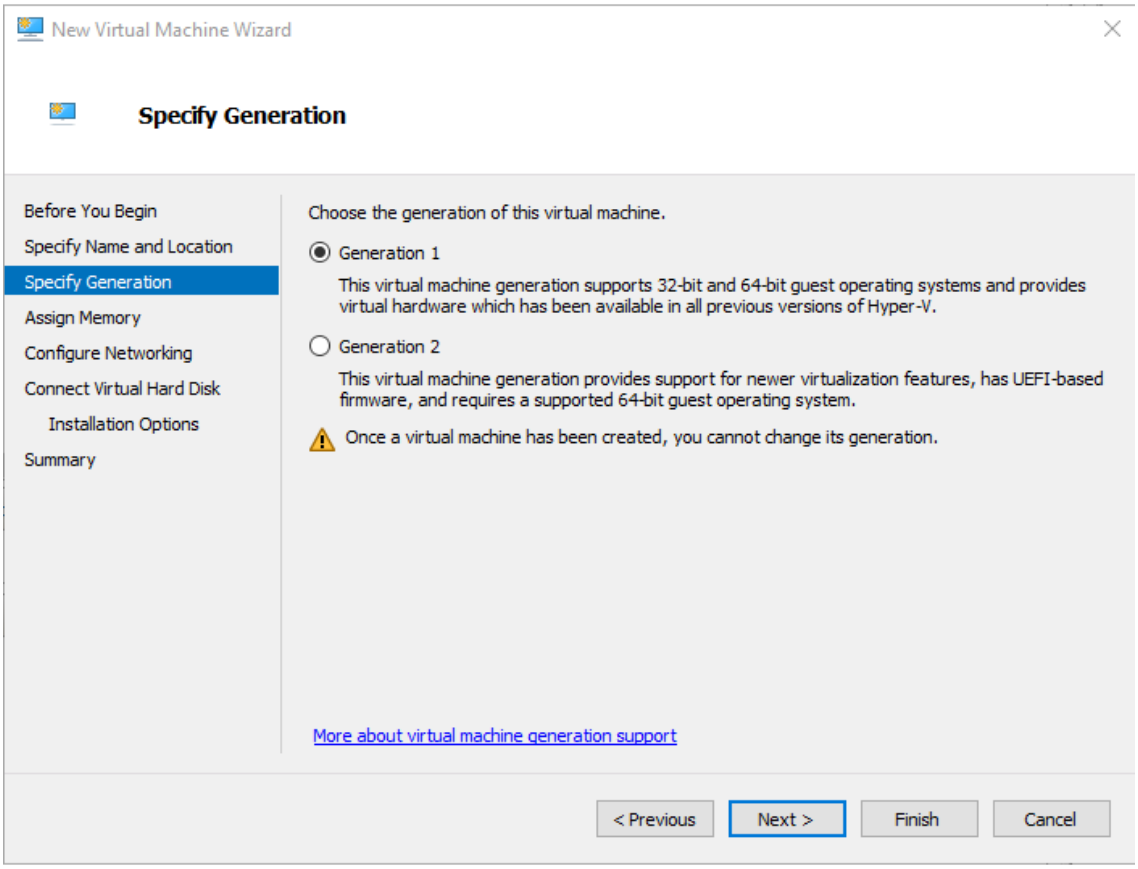


6. In the **Select Folder** dialog box, navigate to **C:\RonsNotes**.
7. Within the **RonsNotes** folder, create a new folder named `VM_Drives`.
8. Double-click to open **VM_Drives** folder.
9. Within the **VM_Drives** folder, create a new folder named `Humongous`.
10. Double-click to open **Humongous** folder.
11. Click **Select Folder**, then review your settings.



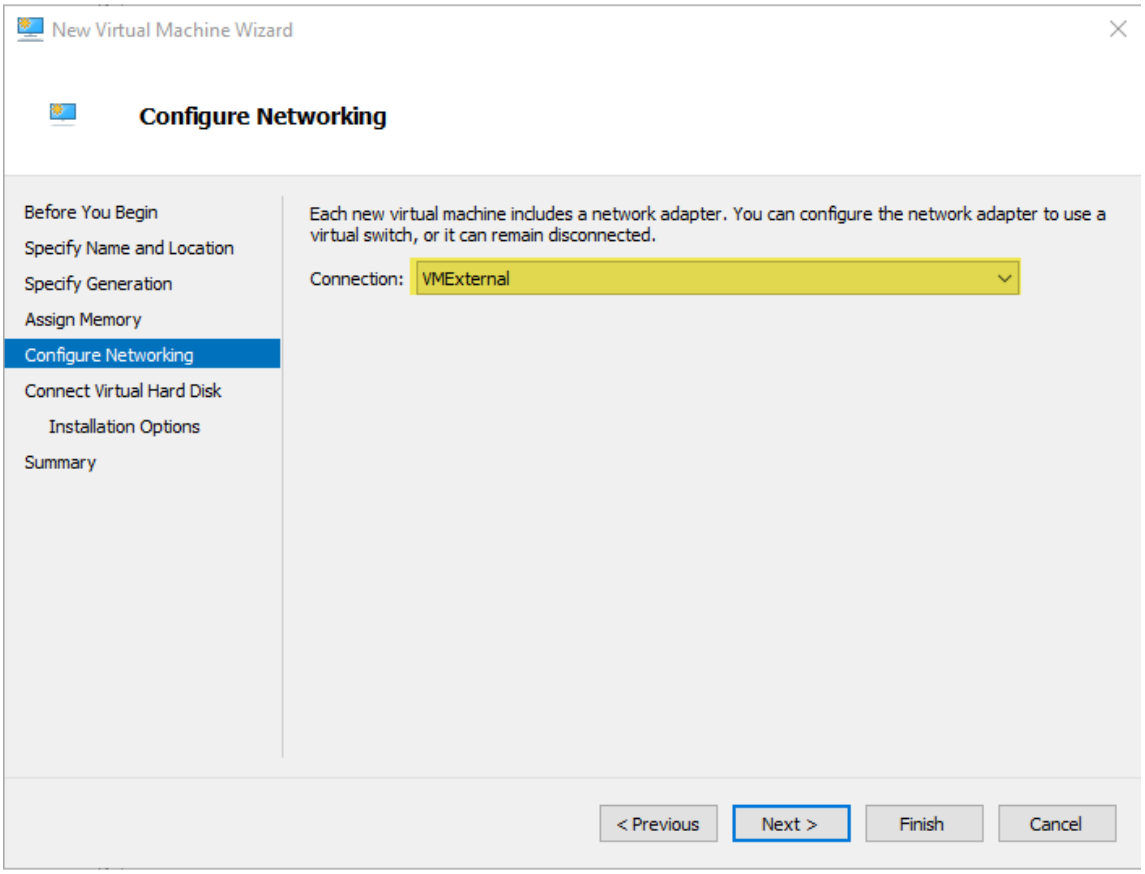
12. Click **Next.**

13. In the **Specify Generation** dialog box, review the settings, then click **Next**.



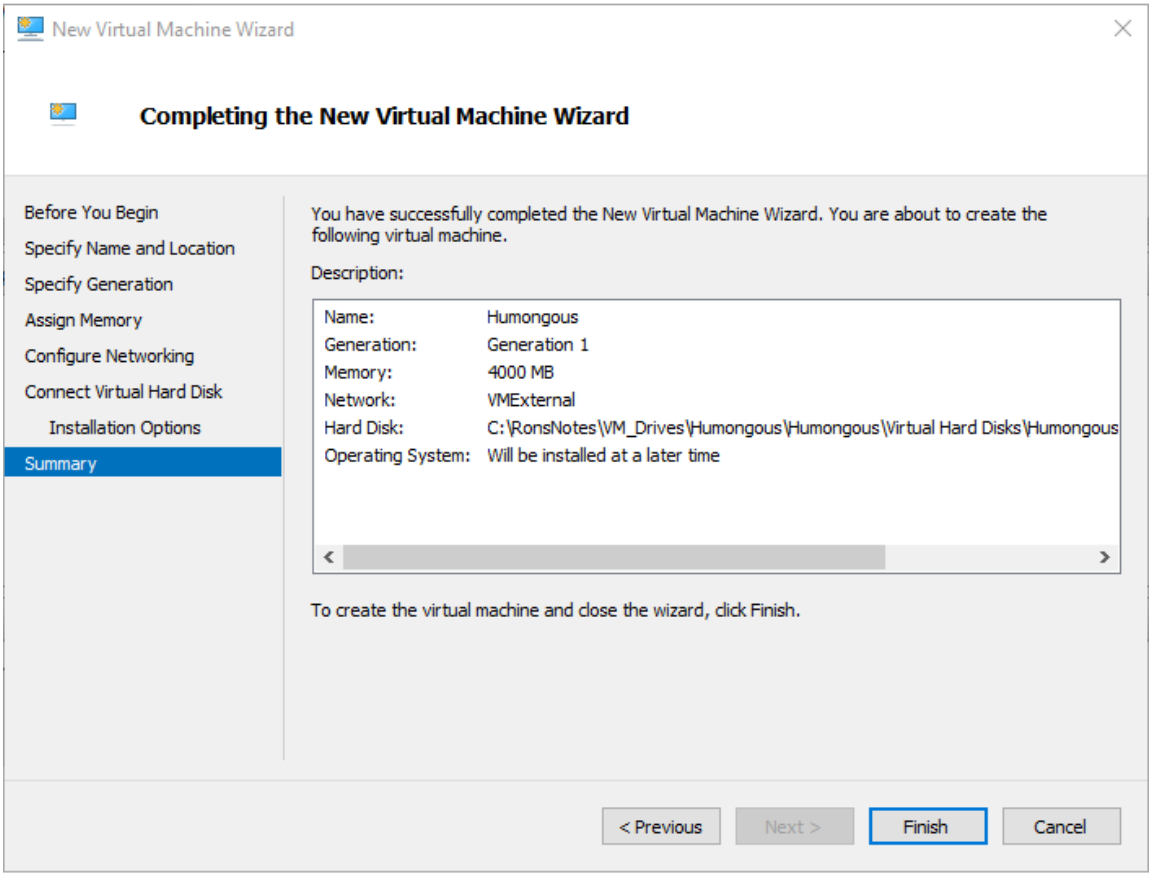
14. In the **Assign Memory** dialog box, set the **Startup memory** to 4000**MB**.
15. Verify there is a check in the **Dynamic Memory** check box.
16. Click **Next**.

17. In the **Configure Networking** dialog box, move to the **Connection** setting, use the corresponding drop-down arrow and click to connect to the **VMExternal** adapter.



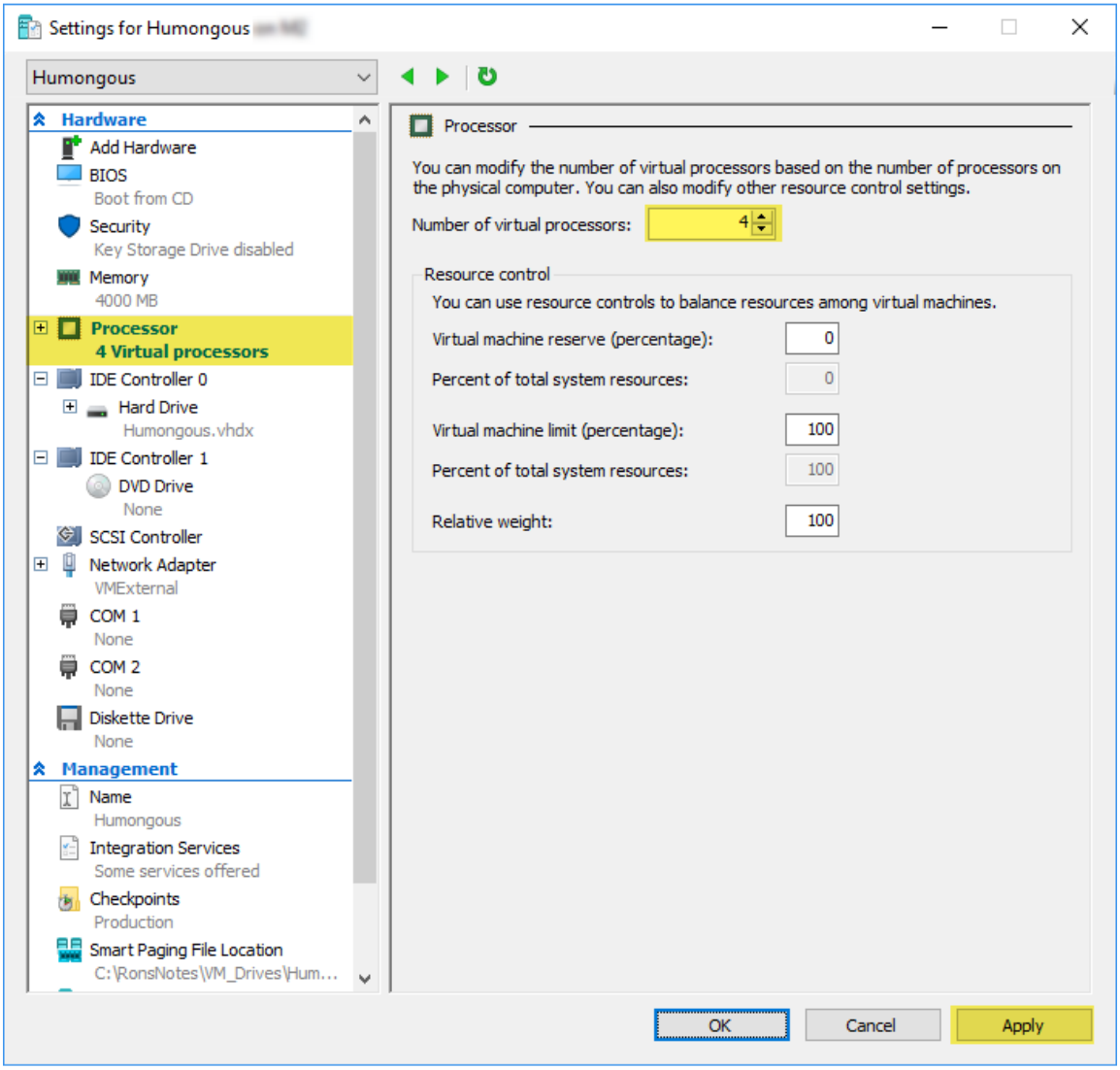
18. Click **Next**.
19. In the **Connect Virtual Hard Disk** dialog box, change the **Size** of the virtual hard disk to 80**GB**.
20. Click **Next.**
21. In the **Installation Options** dialog box, review the settings and leave the radio button to **Install an operating system later** selected.
22. Click **Next**.

23. In the **Completing the New Virtual Machine Wizard** dialog box, review the settings, then click **Finish**.

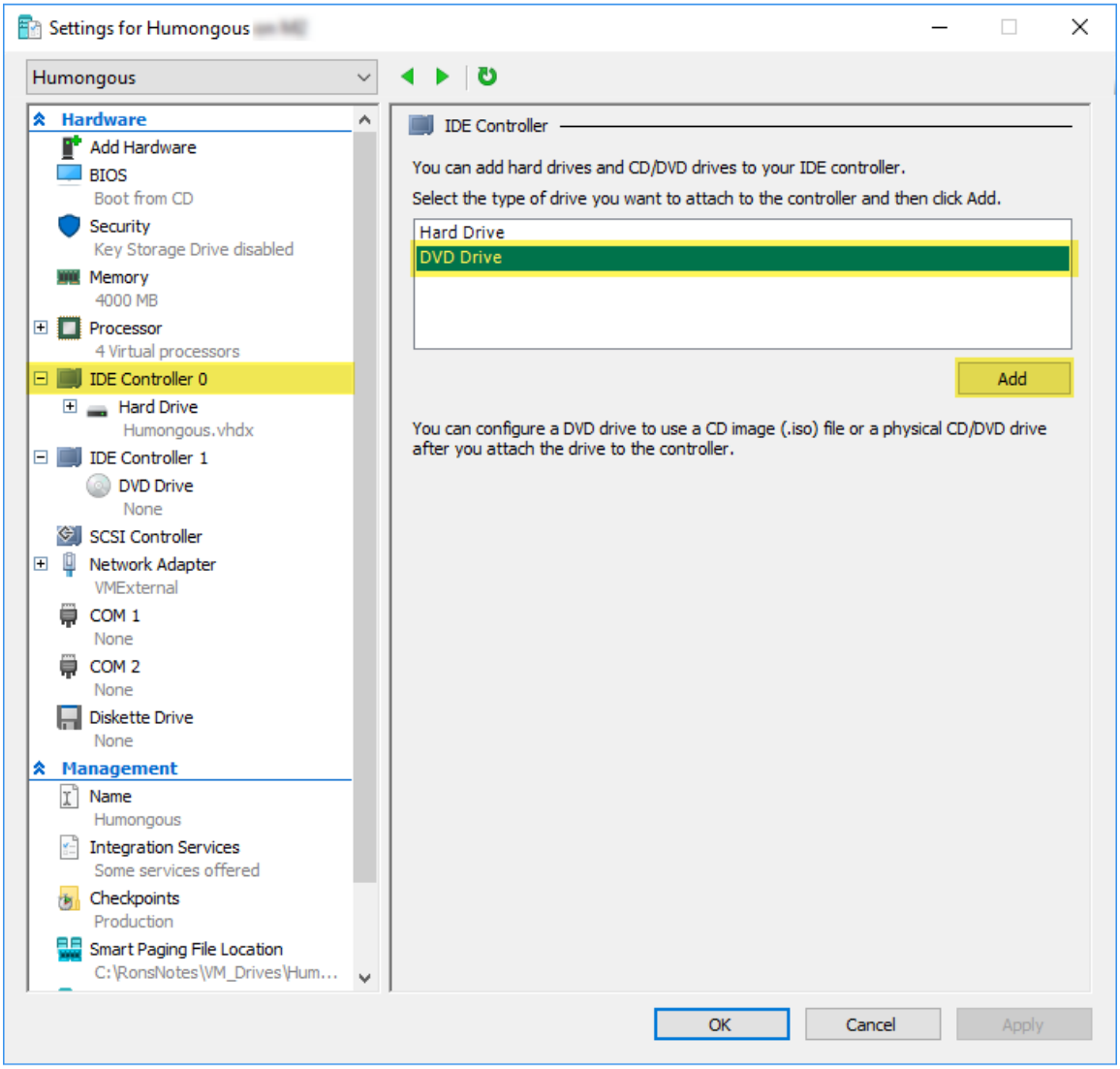


24. In **Hyper-V Manager**, click to select **Humongous** virtual machine, then right-click the machine and select **Settings…**.
25. When **Settings for Humongous …** dialog box opens, review the options available.
26. Navigate to the pane on the left, then locate and click to select **Processor** tab.
27. Verify the **Number of virtual processors** is set to **4**.

28. If changes were made, click **Apply**.

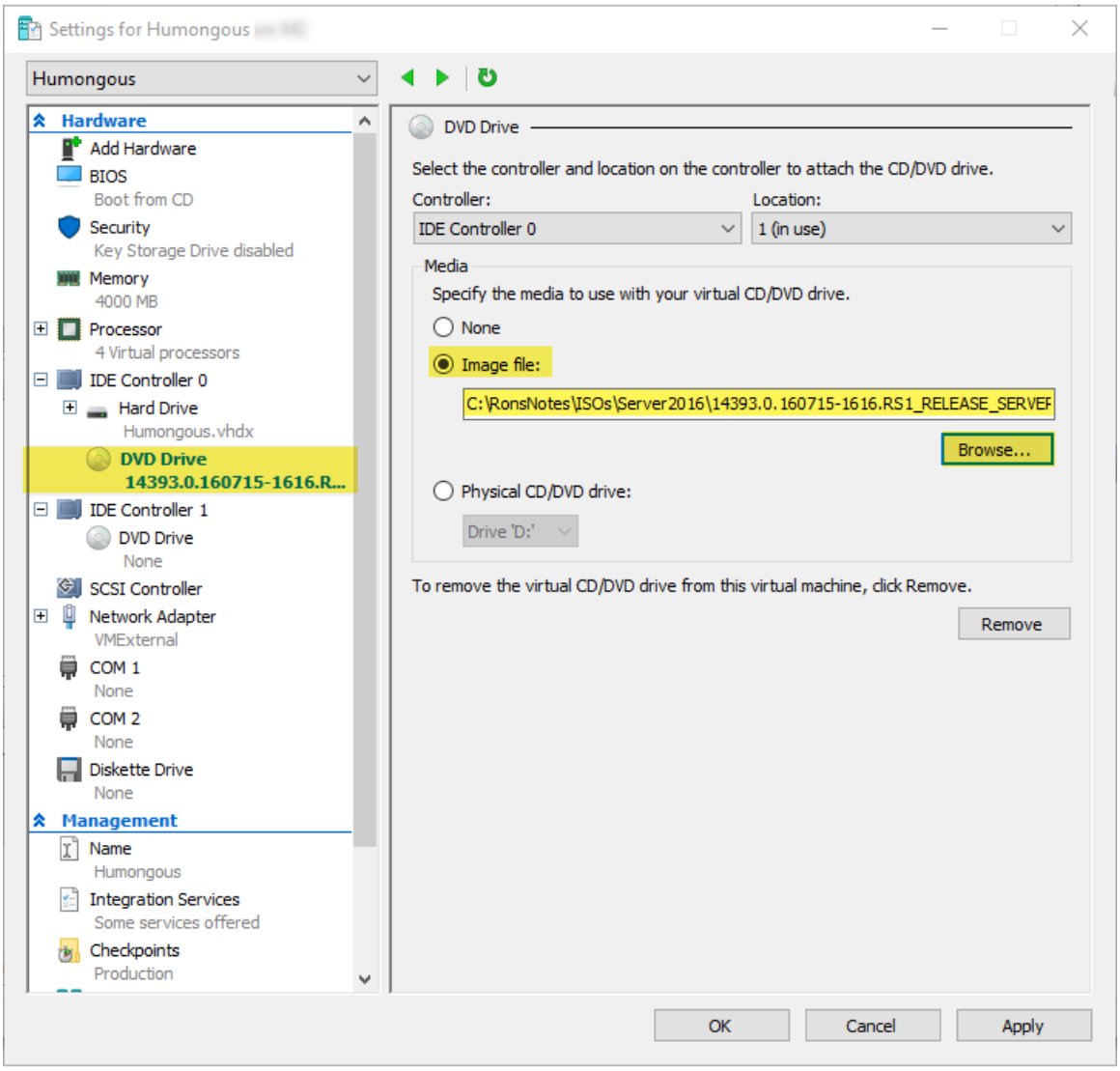


29. Move back to the pane on the left and click to select **IDE Controller 0**.
30. Locate the **Select the type of drive you want to attach to the controller**… setting, click to select **DVD Drive**, then click **Add**.

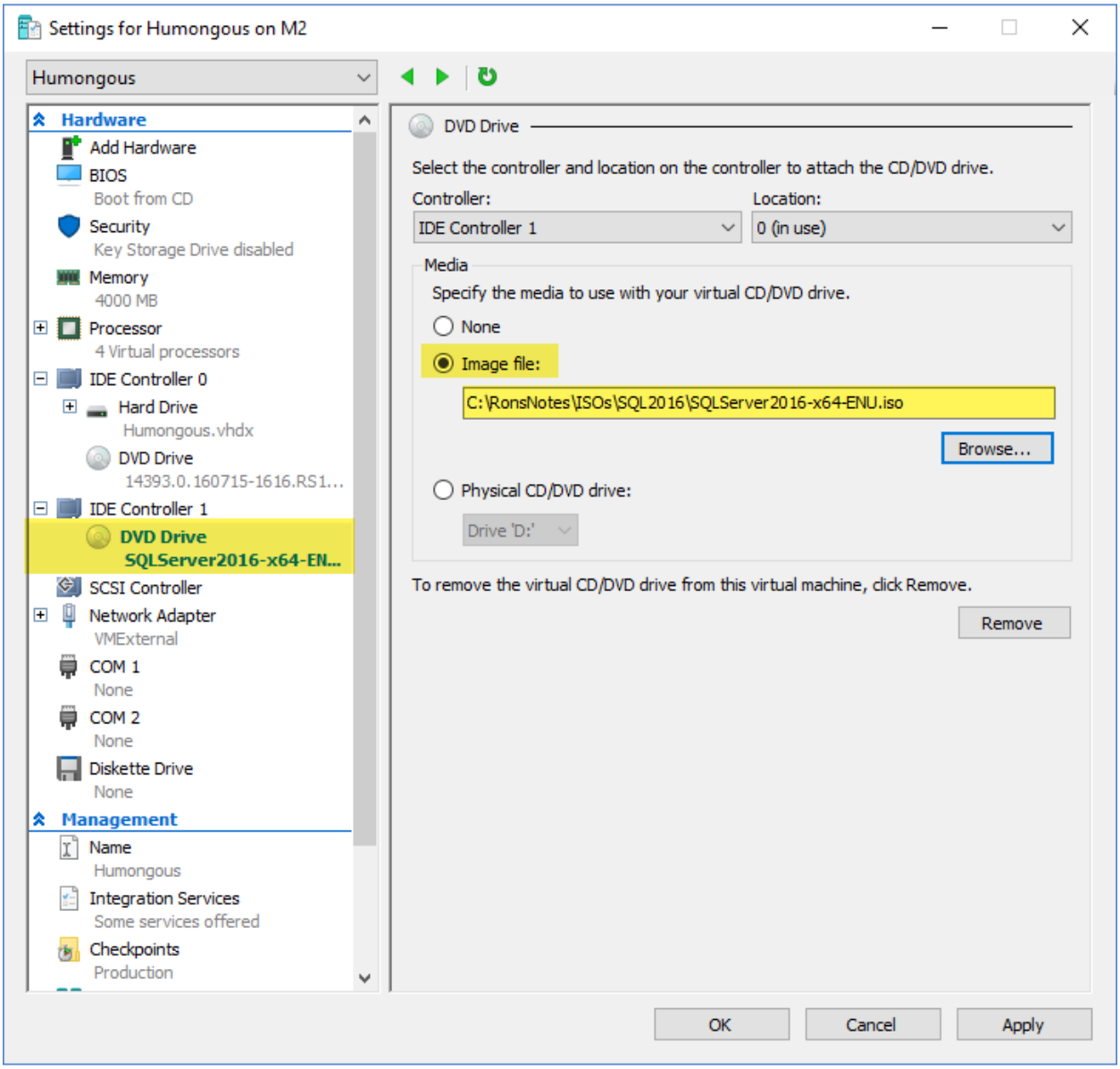


31. Click the radio button to select an **Image file**, then click the corresponding **Browse…**.
32. In the **Open** dialog box, navigate to **C:\RonsNotes\ISOs\Server2016** and double-click the installation ISO.

33. Back in **Settings for Humongous**… dialog box, review the settings.



34. Click **Apply**.
35. Move back to the pane on the left and click to select **DVD Drive** below **IDE Controller 1**.
36. Click the radio button to select an **Image file**, then click the corresponding **Browse…**.
37. In the **Open** dialog box, navigate to **C:\RonsNotes\ISOs\SQL2016** and double-click the installation ISO.
38. Back in **Settings for Humongous**… dialog box, review the settings.



39. Click **Apply**.
40. Click **OK**.

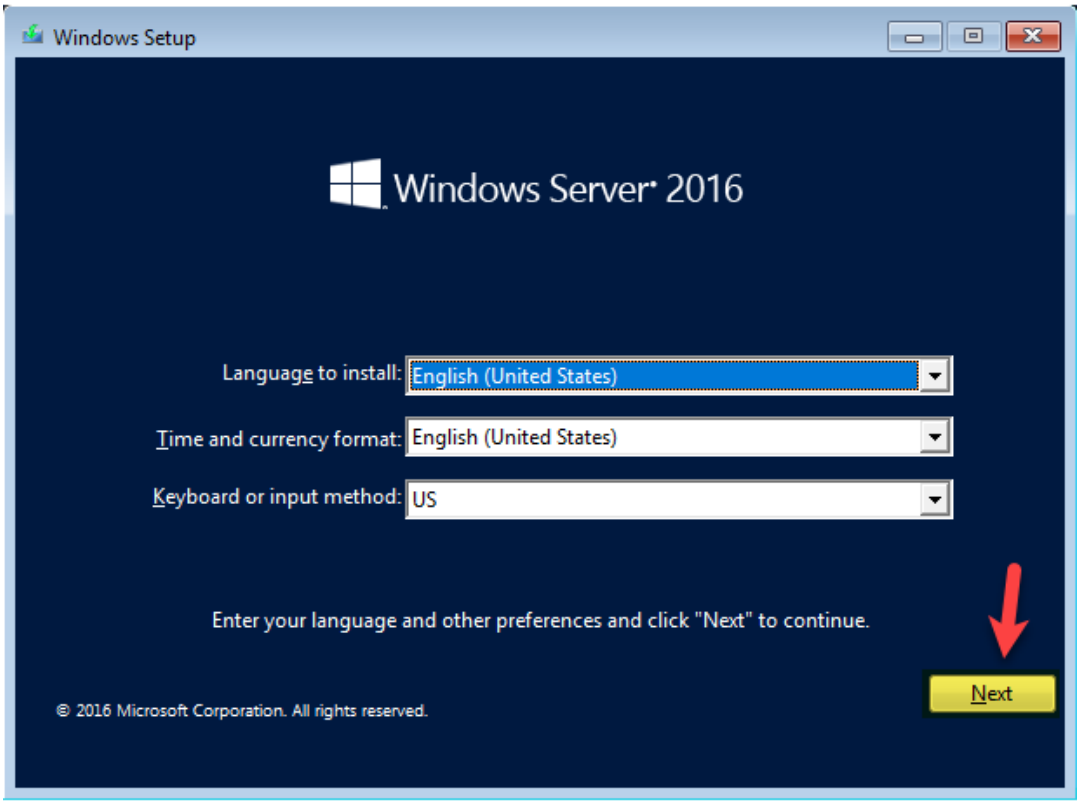
Installing Windows Server 2016

Note: there is no equivalent to this task in PowerShell.

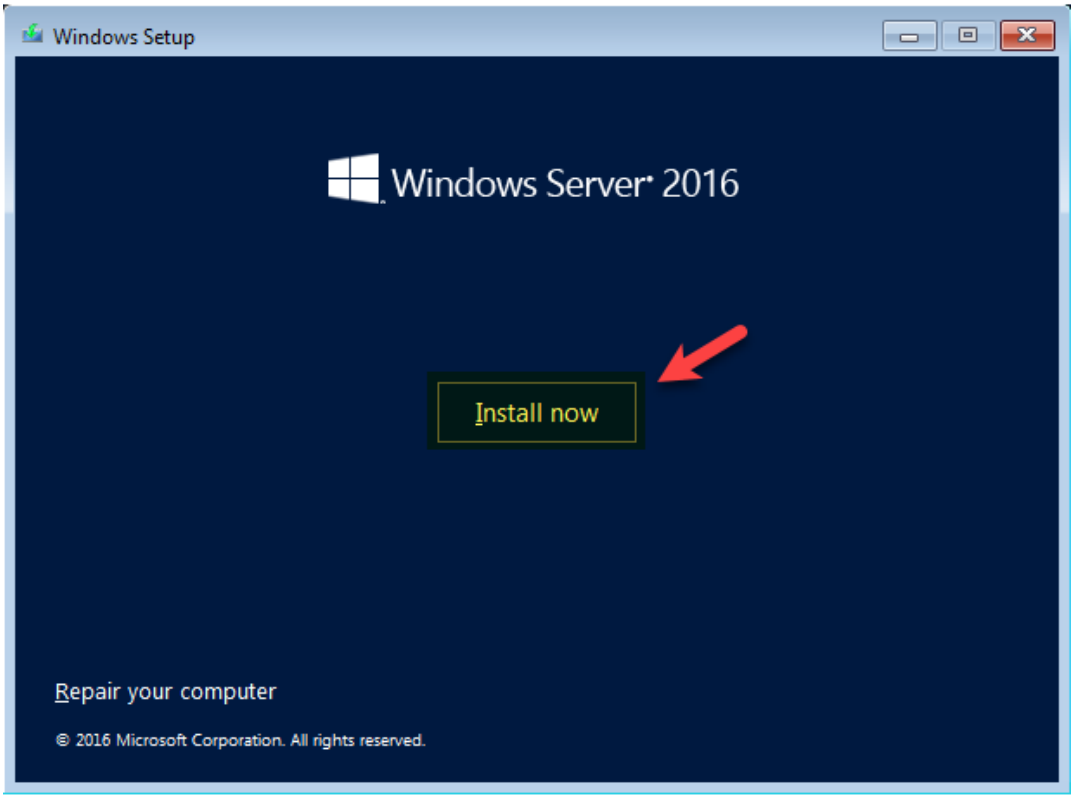
Task: Install Server 2016

1. Right-click the virtual machine (**Humongous**), then click **Start**.
2. Again, right-click the virtual machine (**Humongous**), then click **Connect**.

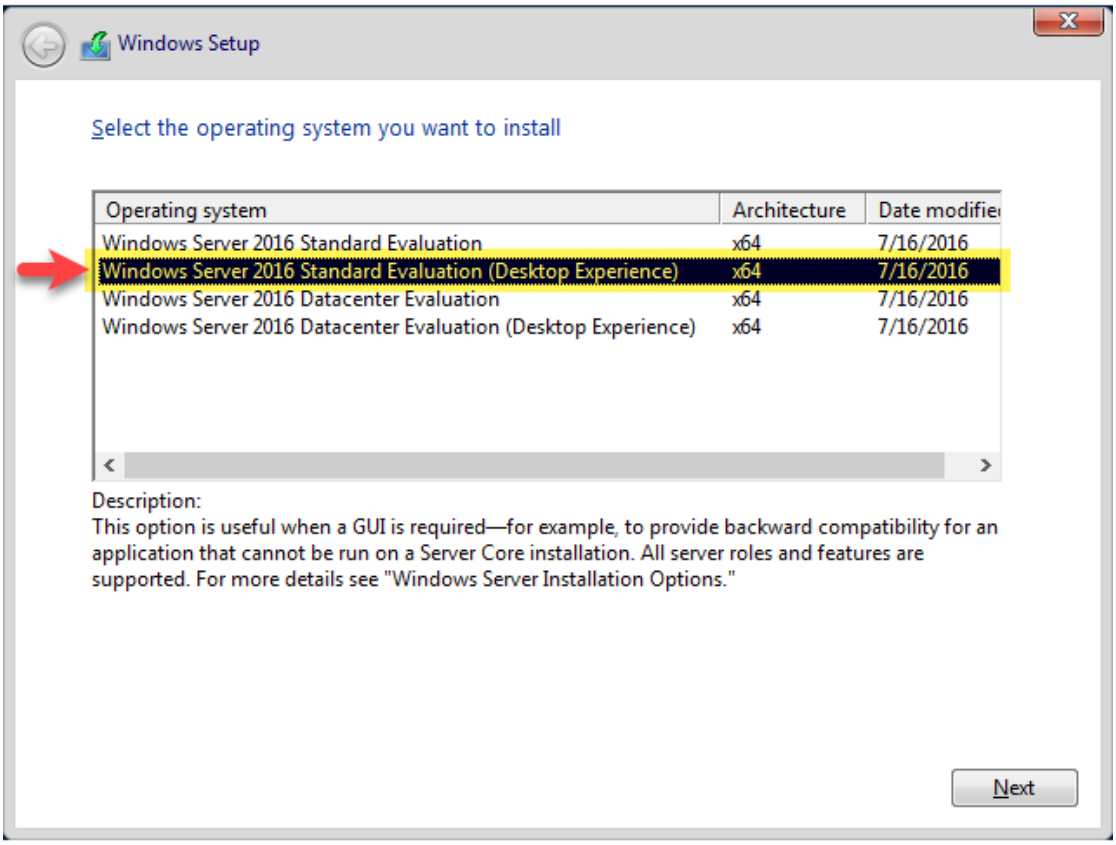
3. In the **Windows Setup** dialog box, review the settings, then click **Next**.



4. Click **Install now**.

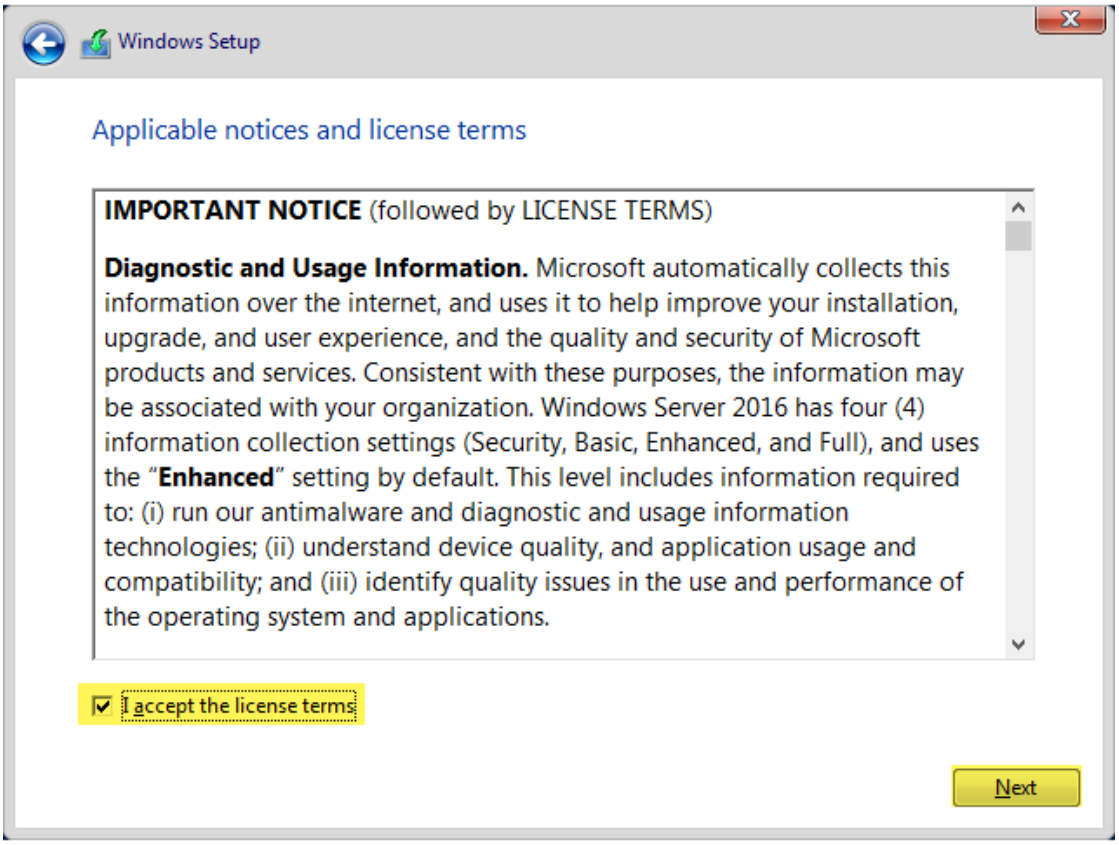


5. In the **Select the operating system you want to install** dialog box, click to select the second option **Windows Server 2016 Standard Evaluation (Desktop Experience)**.

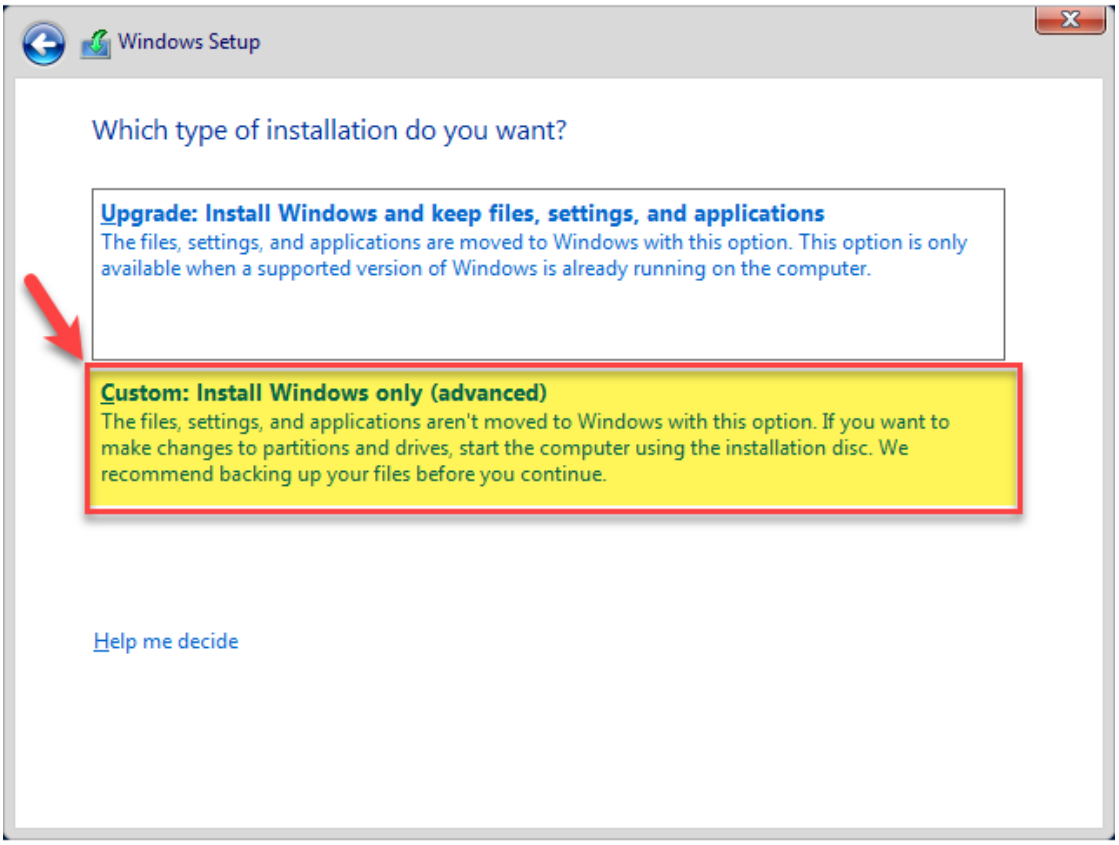


6. Click **Next**.

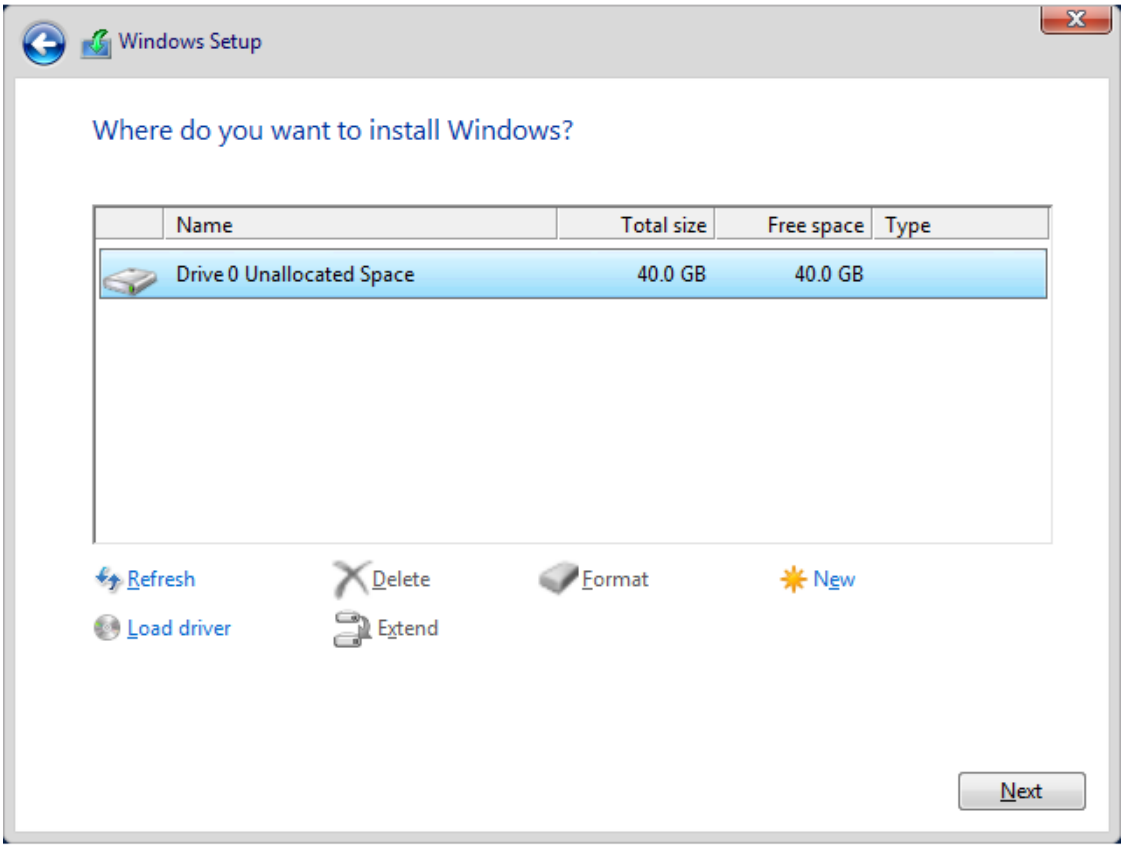
7. Accept the license, then click **Next**.



8. In the **Which type of installation do you want** dialog box, click to select **Custom: Install Windows only (advanced)**.

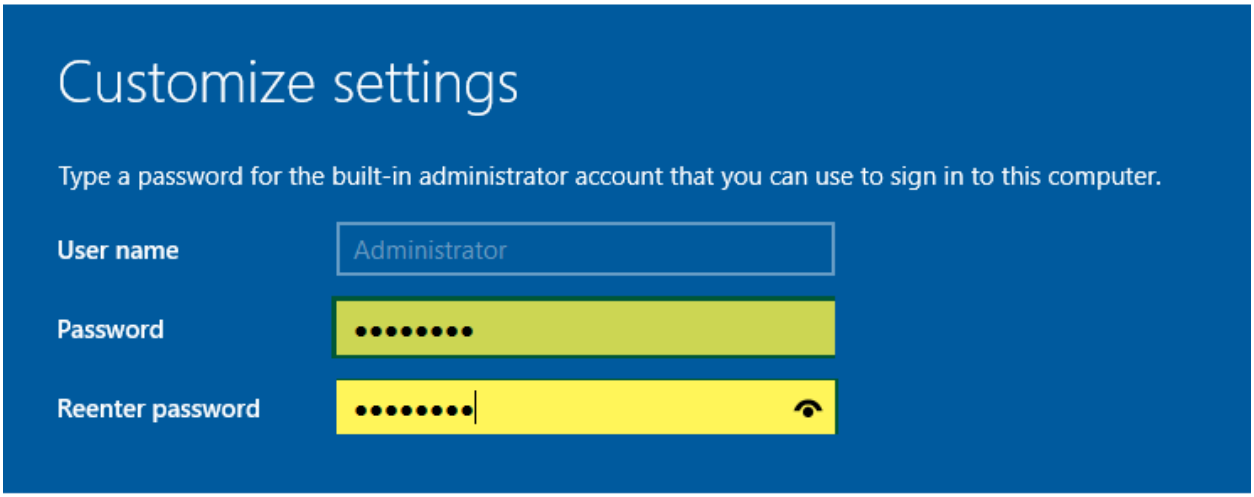


9. When the **Where do you want to install Windows** dialog box opens, review the settings, then click **Next**.



10. Wait for installation to complete.
11. In the **Customize settings** prompt, move to the **Password** text box and enter `PasswOrd`, then reenter the same in the **Reenter password** text box.

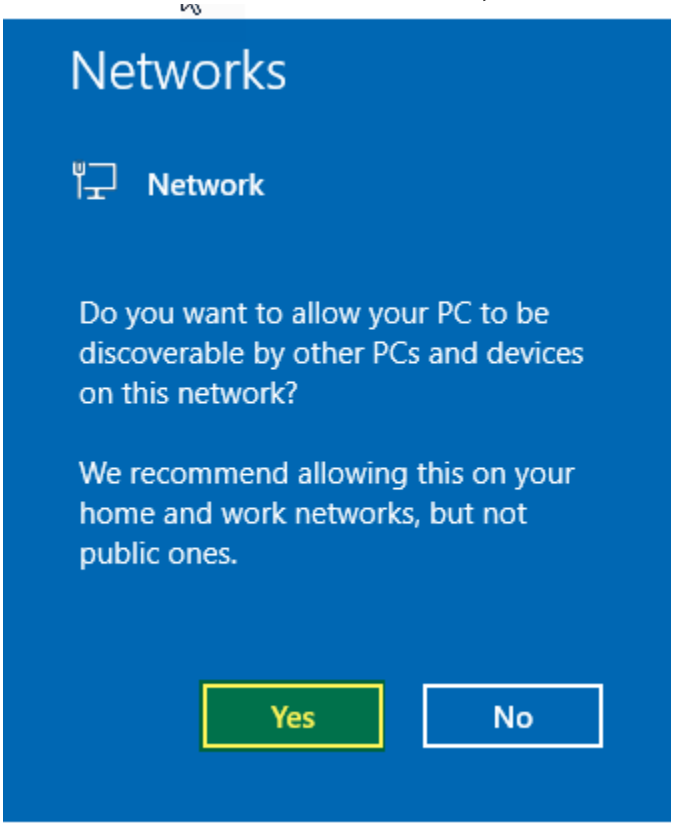
The 0 is numeric.



12. Navigate to the lower-right and click **Finish**.

13. Log on to the virtual machine by utilizing the key sequence of **Ctrl+Alt+End**, or by clicking on the **Ctrl+Alt+Delete** icon ( ) in the toolbar.
14. Enter `PasswOrd` into the **Password** prompt to log in as **Administrator**.

15. Allow the virtual machine to fully start (wait for **Server Manager** to open).
16. You will see a prompt on the right asking **Do you want to allow your PC to be discoverable by other PCs and devices on this network**, click **Yes**.



If the virtual machine remains black, then use Hyper-V Manager to shut it down, then restart it.

Optional step:

a. *You can run update on the virtual machine server. This will take a long time as you need to do it on all of them. We have tested this build with Server 2016 as-is, without any updates, and it all worked, but this is strictly your call.*
b. *To run an update, open Server Manager, click to select Local Server, then click the corresponding hyperlink to search for and install updates.*

Note. Until we connect these VMs to the internet they will not authenticate meaning you have ten days to get past that phase of the setup.

17. Once Windows Server 2016 is installed successfully, switch to **Hyper-V Manager**, right-click the virtual machine (**Humongous**), then click **Shut Down…**.
18. In the dialog box asking, **Are you sure you want to shut down the operating system in the selected virtual machines(s)**, click **Shut Down**.

PHASE 03 DOMAIN SETUP

Phase Objective

In this phase, we will copy files to the virtual machine, then configure the network adapters and build a domain.

Phase Topics

- Enabling Integration Services
- Copying Files to the Individual Virtual Machines
- Renaming the Virtual Machine
- Creating the Domain
- Building out the Domain

Enabling Guest Services on the Virtual Machine

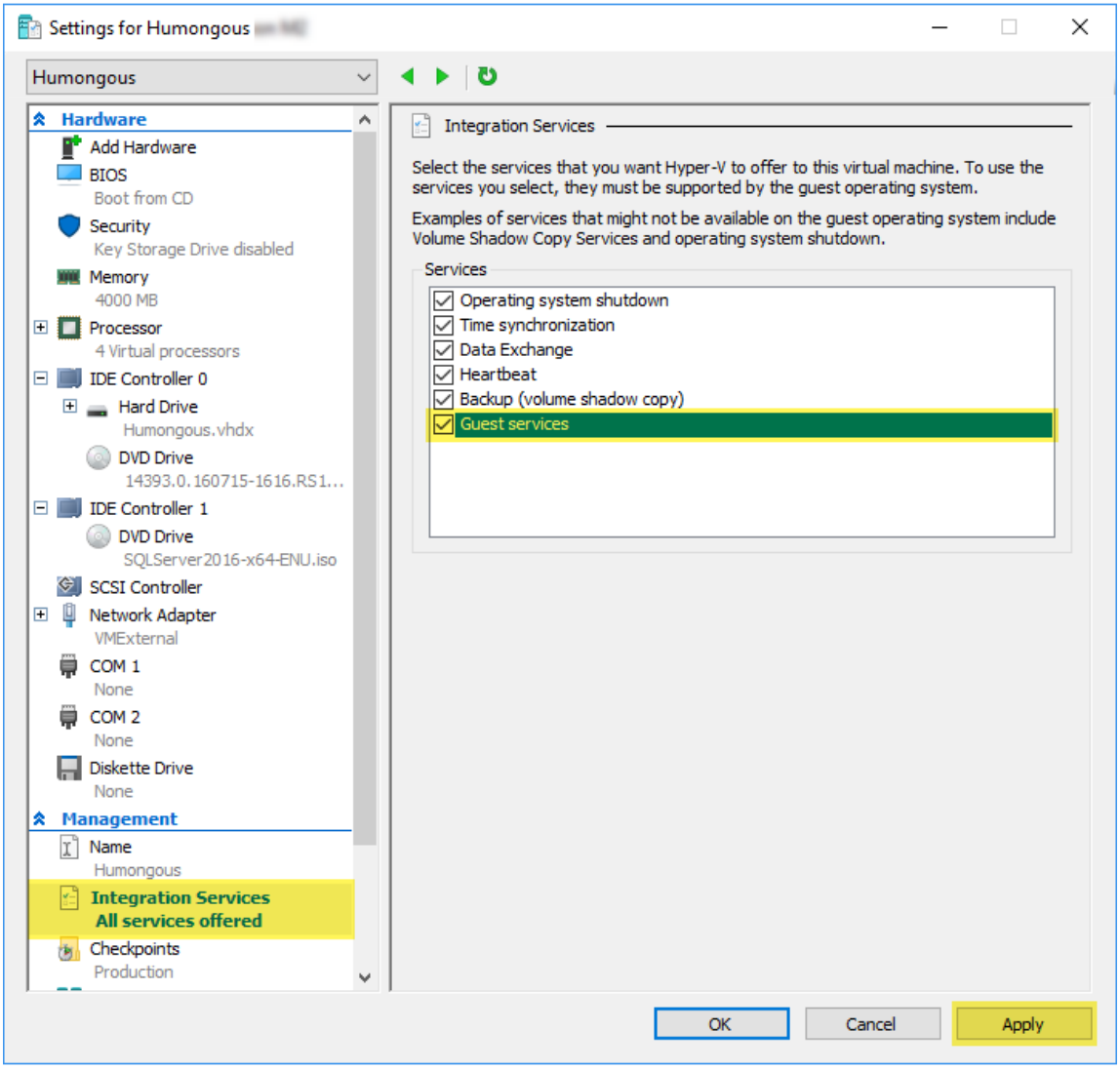
Task: Enabling Guest Services on the Virtual Machine

- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: ENABLING GUEST SERVICES ON THE VIRTUAL MACHINE
$VMName = "Humongous"
Enable-VMIntegrationService -VMName $VMname -Name "Guest Service Interface"
```

1. In **Hyper-V Manager**, click to select **Humongous**, then right-click the virtual machine and select **Settings…**.
2. Move to the pane on the left, then locate and click to select **Integration Services** tab.

3. Verify there is a check in the **Guest services** check box.



4. If changes were made, click **Apply**.
5. Click **OK**.

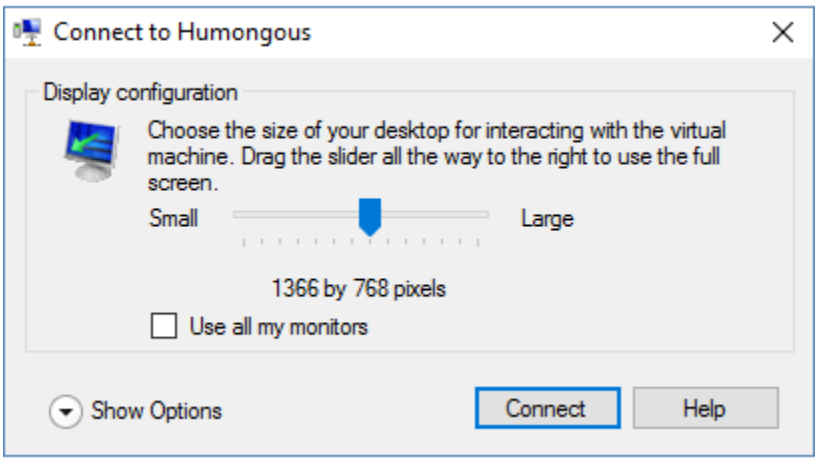
Renaming the Virtual Machine

Task: Renaming the Virtual Machine

- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: RENAMING THE VIRTUAL MACHINE
Rename-Computer -NewName Humongous -Restart -Force
```

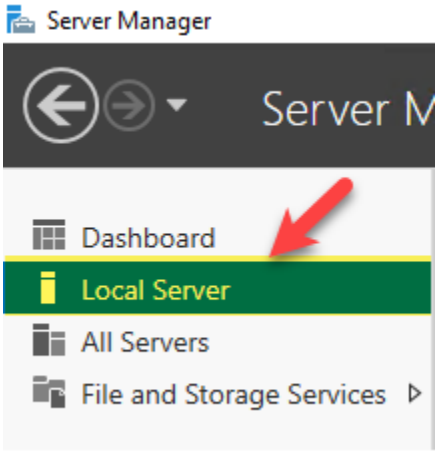
1. Switch to **Hyper-V Manager**.
2. Right-click **Humongous** virtual machine, then click **Start**.
3. Again, right-click **Humongous** virtual machine, then click **Connect**.
4. In **Connect to Humongous** dialog box, review the options available, then click **Connect**.



5. Log on to the virtual machine by utilizing the key sequence of **Ctrl+Alt+End**, or by clicking on the **Ctrl+Alt+Delete** icon ( ) in the toolbar.
6. Enter `Passw0rd` into the **Password** prompt to log in as **Administrator**.

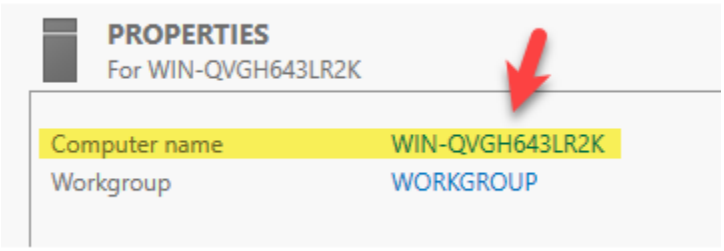
7. Allow the virtual machine to fully start (wait for **Server Manager** to open).

8. When **Server Manager** opens, navigate to the pane on the left and click **Local Server**.

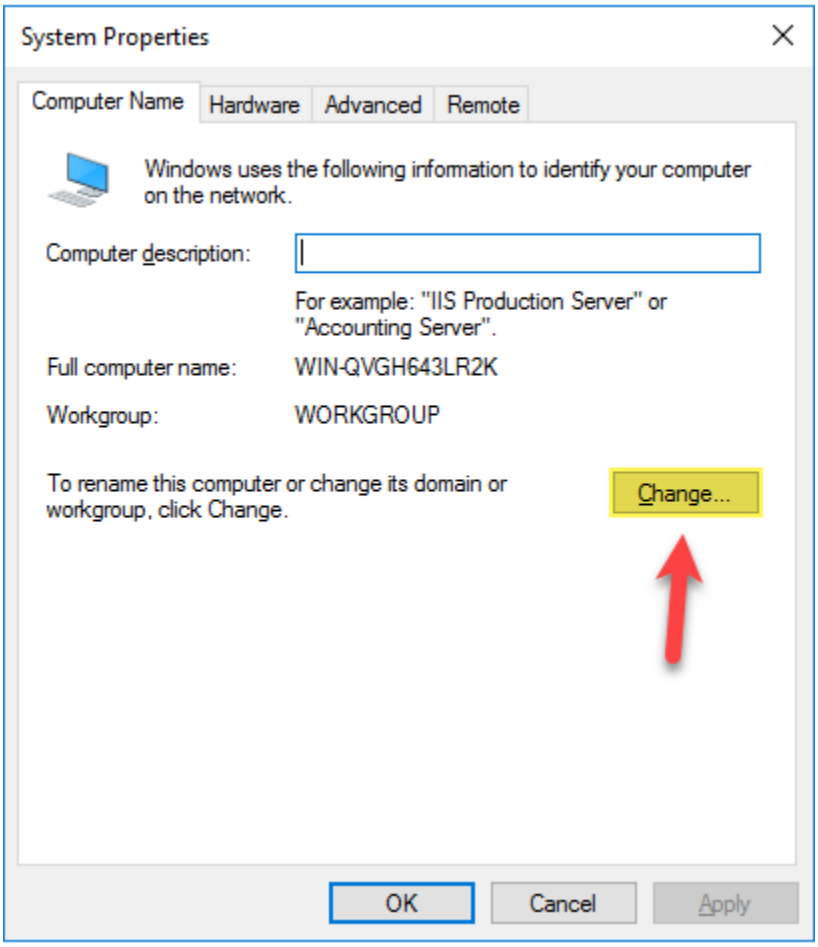


9. Locate the **Computer name** setting, note the current name, then click the corresponding link.

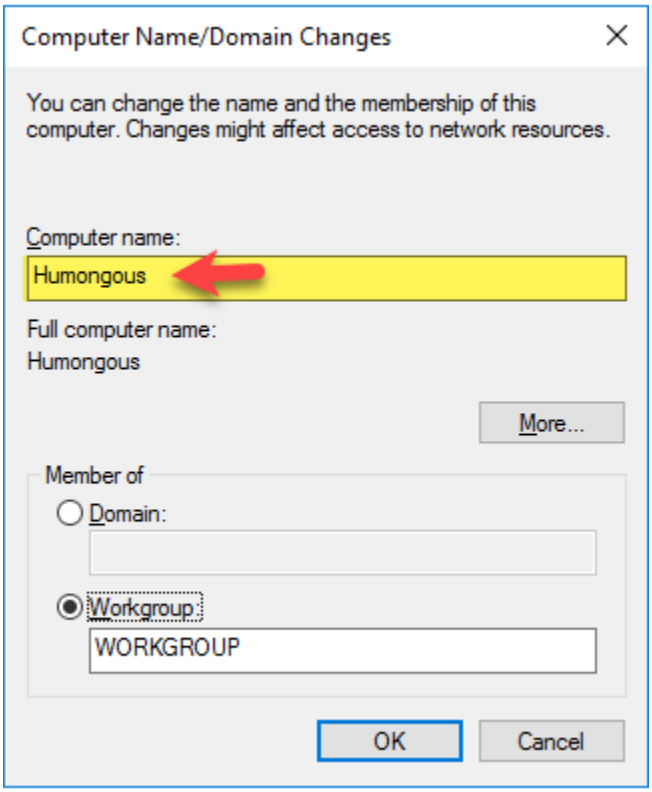
Note: your computer name will not directly match the one shown below.



10. In the **System Properties** dialog box, click **Change…**.



11. When the **Computer Name/Domain Changes** dialog box opens, move to the **Computer name** text box and enter `Humongous`.



12. Click **OK**.
13. In the dialog box advising **You must restart your computer to apply these changes**, click **OK**.
14. Click **Close**.
15. In the dialog box advising **You must restart your computer to apply these changes**, click **Restart Now**.
16. Wait for the machine to reboot.
17. Log on to the virtual machine by utilizing the key sequence of **Ctrl+Alt+End**, or by clicking on the **Ctrl+Alt+Delete** icon ( ) in the toolbar.
18. Enter `Passw0rd` into the **Password** prompt to log in as **Administrator**. *(The 0 is numeric.)*
19. Allow the virtual machine to fully start (wait for **Server Manager** to open).
20. When **Server Manager** opens, navigate to the pane on the left and click **Local Server**.
21. Locate the **Computer name** setting and note the current name.

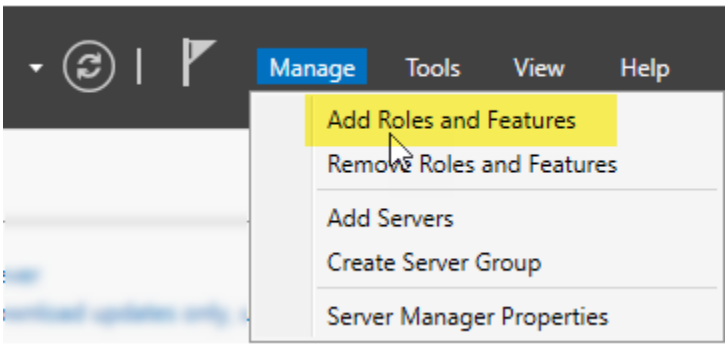
Creating the Domain and Configuring the Forest

Task: Creating the Domain

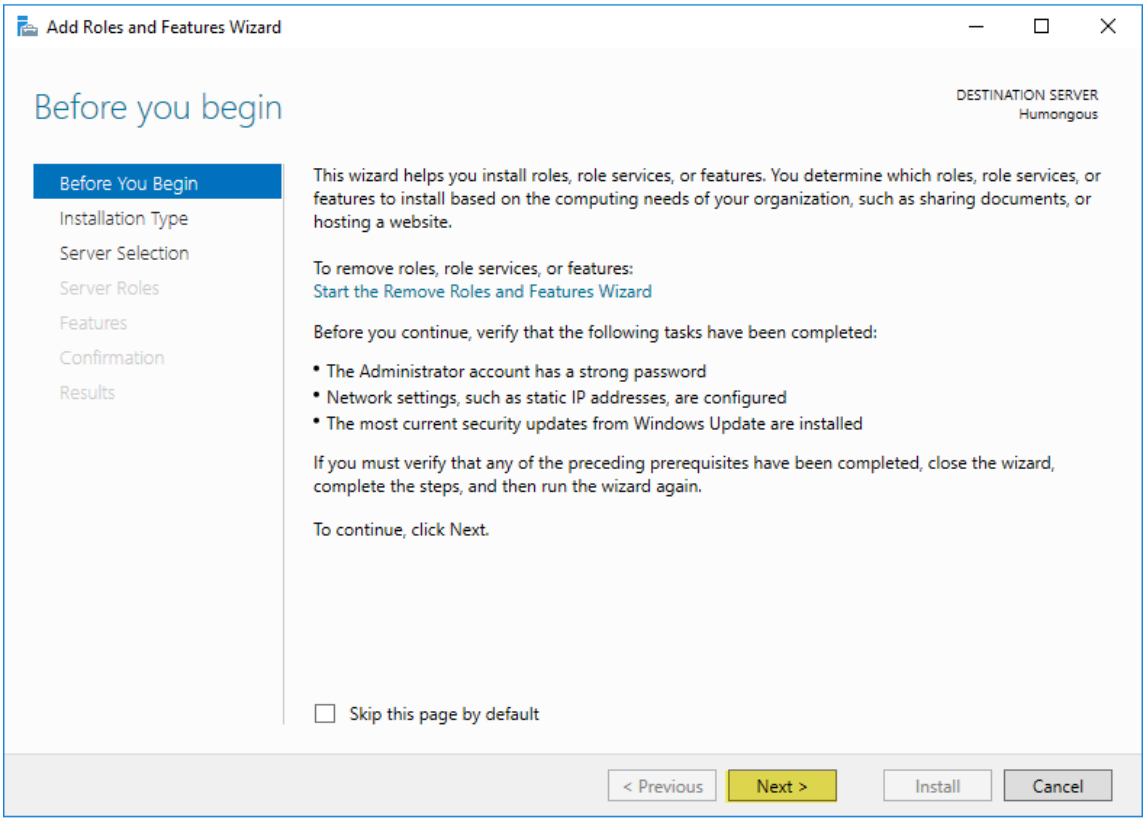
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: CREATING THE DOMAIN
Install-windowsfeature -name AD-Domain-Services -IncludeManagementTools
$domain_Name = "RonsNotes.training.local"
$secure_string_pwd = ConvertTo-SecureString "Passw0rd" -asplaintext -Force
```

1. Switch back to **Humongous** virtual machine.
2. In **Server Manager**, navigate up to the menu in the upper-right and click **Manage** | **Add Roles and Features**.

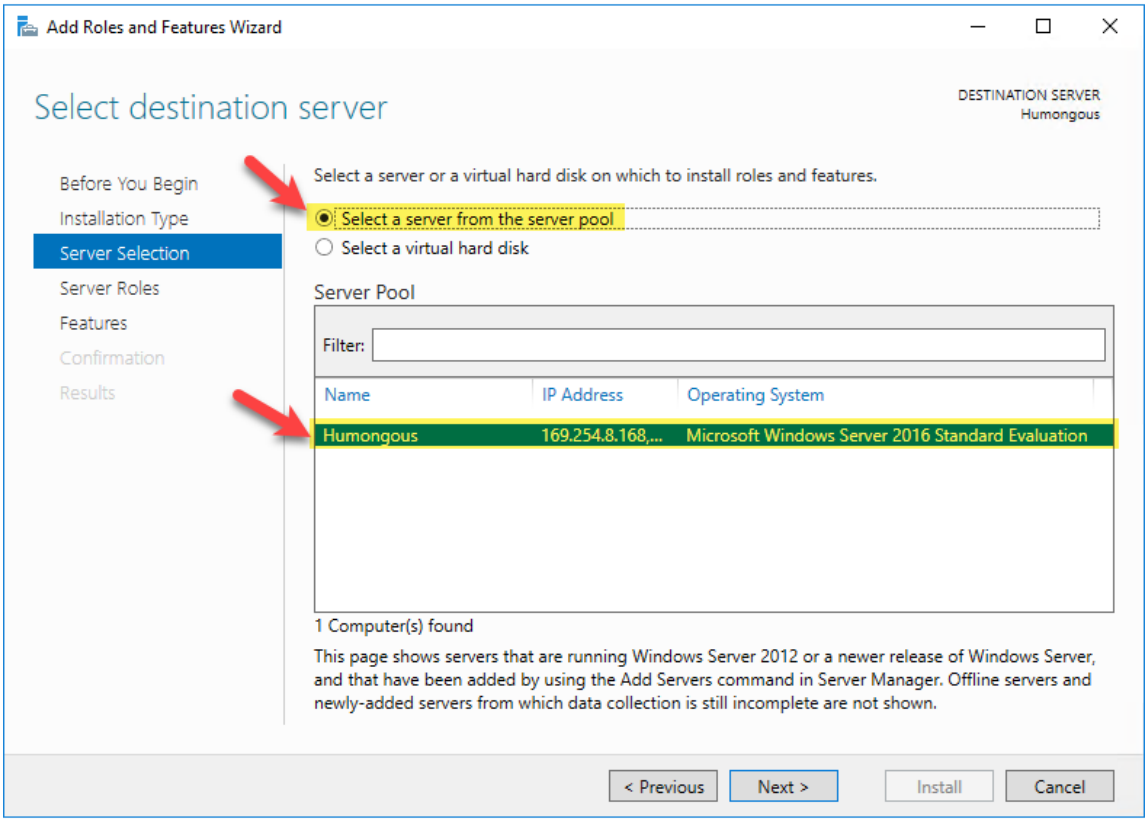


3. In the **Add Roles and Features Wizard** dialog box, review the information given, then click **Next**.

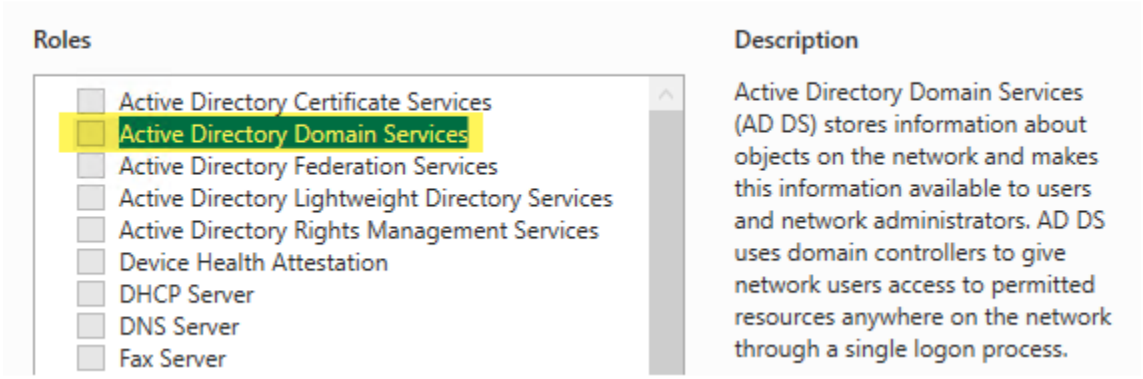


4. In the **Select installation type** dialog box, review the options available, then leave **Role-based or feature-based installation** selected and click **Next**.

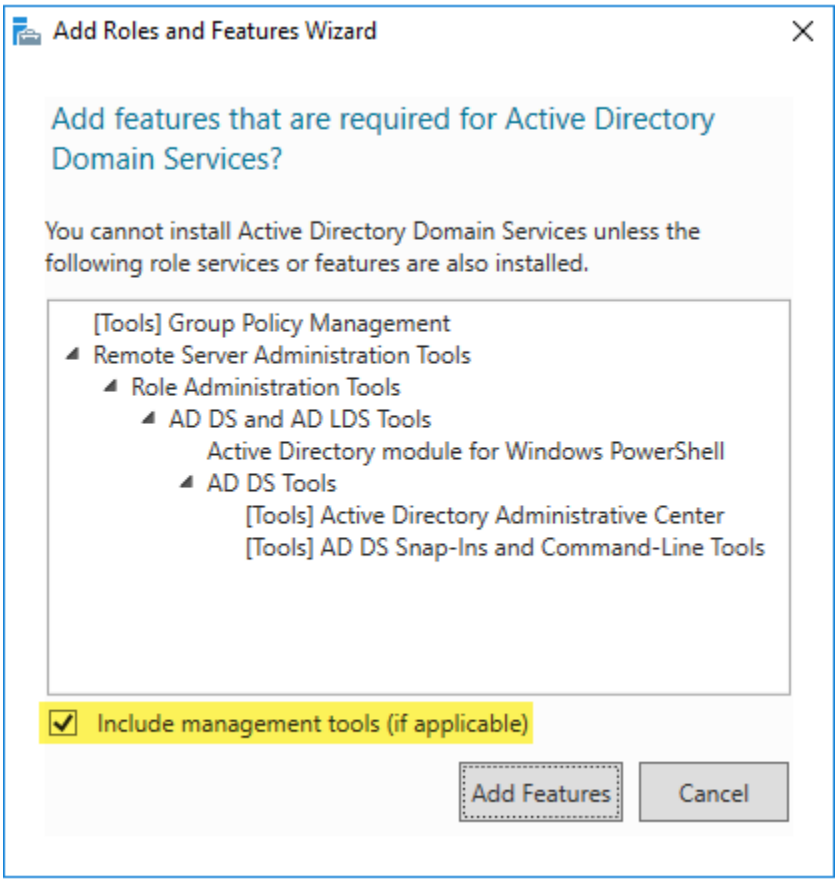
5. When the **Select destination server** dialog box opens, review the options available, then leave the settings as they are (**Humongous** selected) and click **Next**.



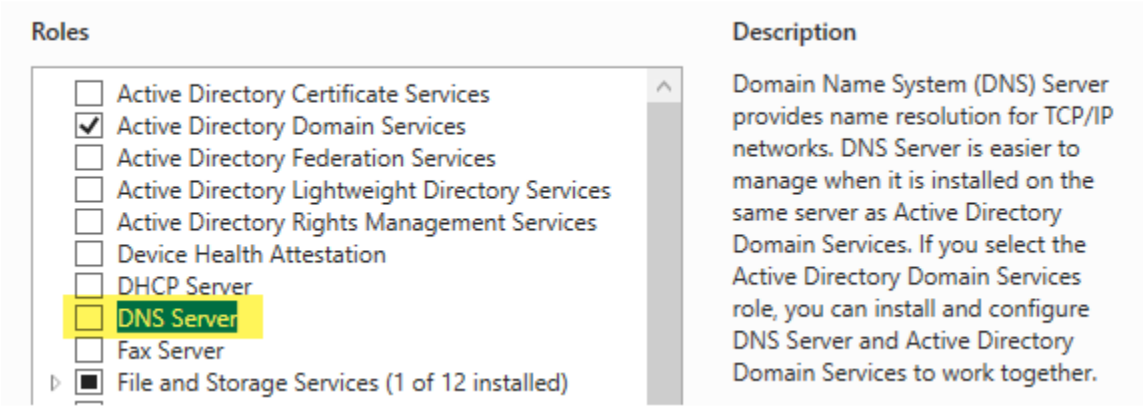
6. In the **Select server roles** dialog box, review the options available, then move to the **Roles** section and place a check in the **Active Directory Domain Services** check box.



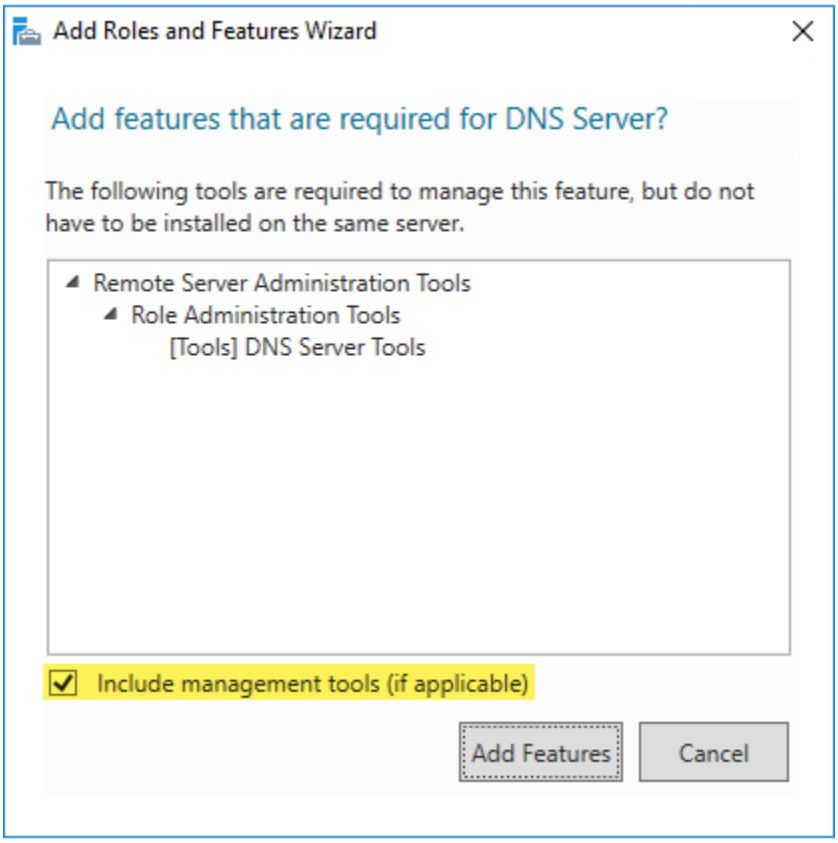
7. When the **Add features that are required for Active Directory Domain Services** dialog box appears, verify there is a check in the **Include management tools (if applicable)** check box.



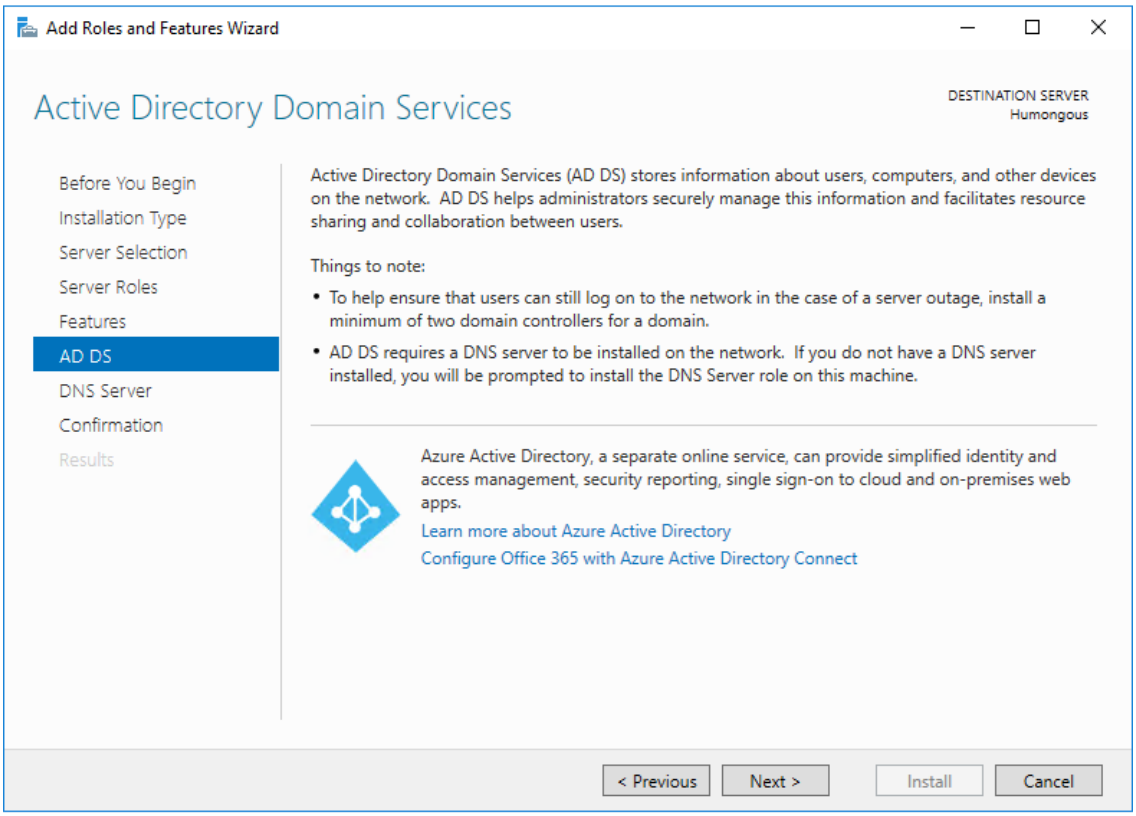
8. Click **Add Features**.
9. Move back to the **Roles** section and place a check in the **DNS Server** check box.



10. When the **Add features that are required for DNS Server** dialog box appears, verify there is a check in the **Include management tools (if applicable)** check box.

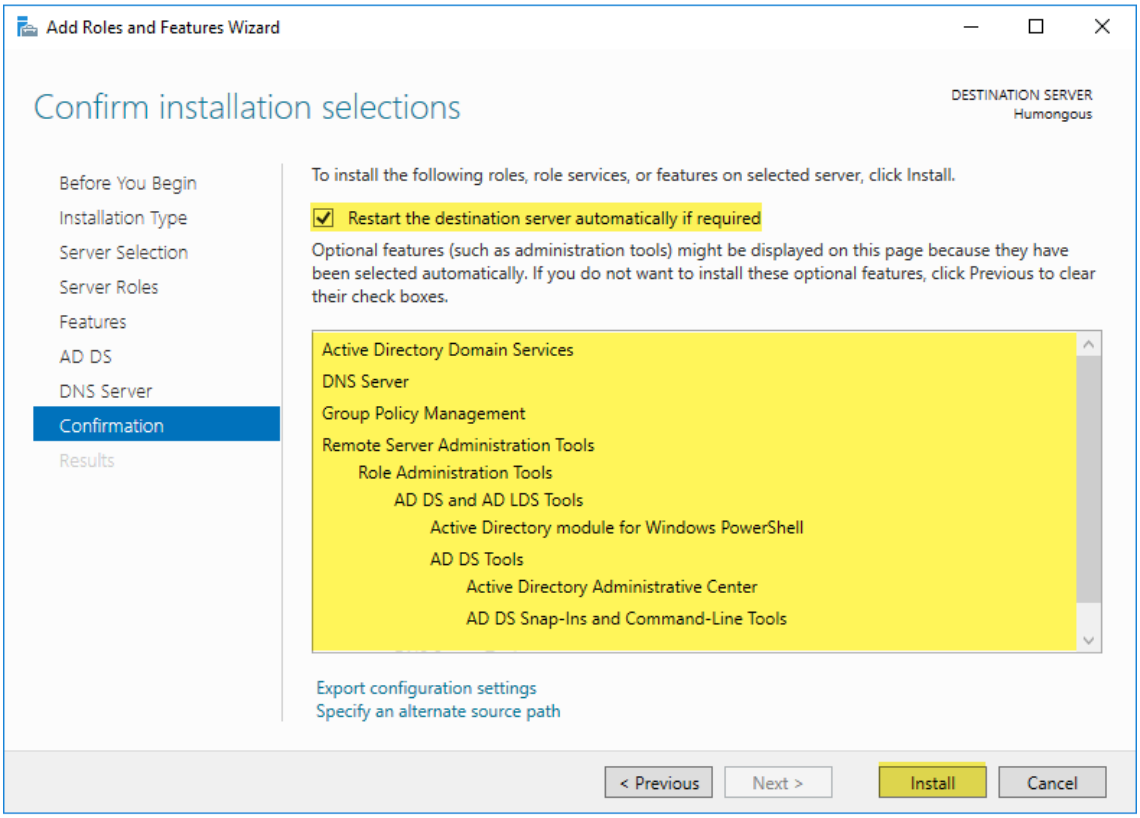


11. Click **Add Features**.
12. Click **Next**.
13. In the **Select features** dialog box, review the options available, then click **Next**.
14. When the **Active Directory Domain Services** dialog box appears, review the information given, then click **Next**.

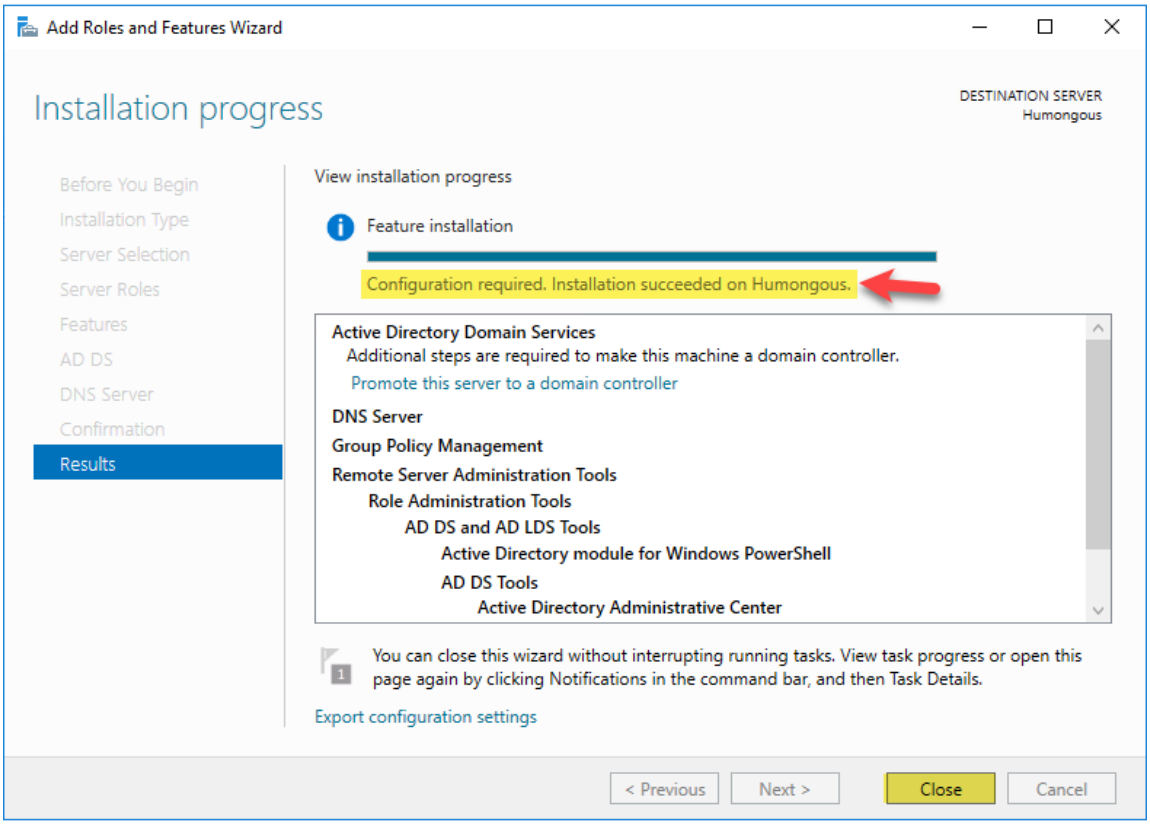


15. In the **DNS Server** dialog box, review the information given, then click **Next**.
16. In the **Confirm installation selections** dialog box, review the settings.
17. Place a check in the **Restart the destination server automatically if required** check box.
18. In the **Add Roles and Features Wizard** dialog box asking **Do you want to allow automatic restarts**, click **Yes**.

19. Back in **Confirm installation selections** dialog box, click **Install**.



20. Upon success, you will see a message advising that **Installation succeeded on Humongous**, then click **Close**.



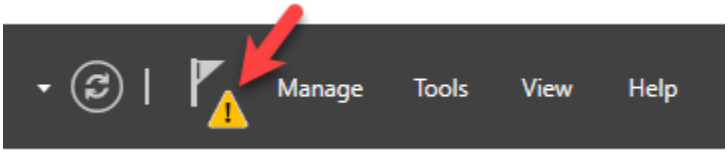
21. If the virtual machine does not reboot, manually reboot the machine.

Task: Configuring the Forest

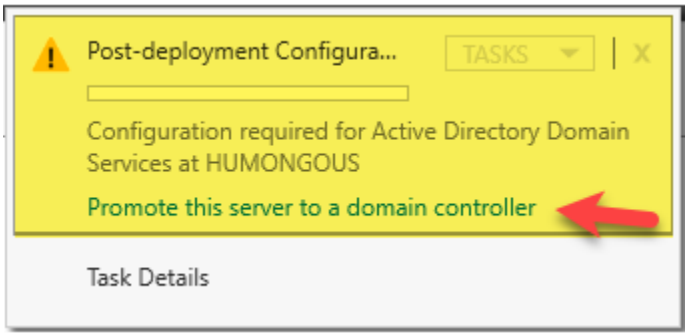
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: CONFIGURING THE FOREST
Install-ADDSForest -DomainName $domain_Name -SkipPreChecks -InstallDns:$true
-DomainNetbiosName RonsNotes -SafeModeAdministratorPassword
$secure_string_pwd -Force
```

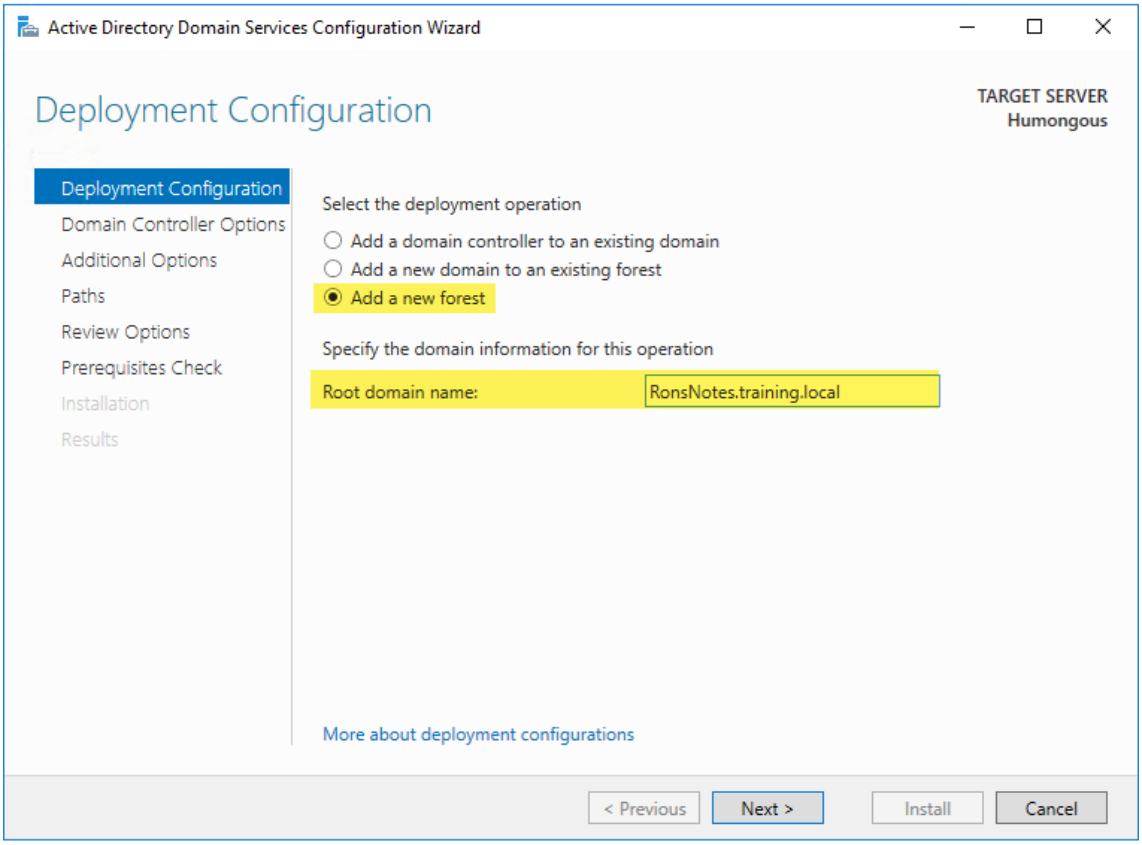
1. Once the machine comes back up from the reboot, back in **Server Manager**, notice a yellow warning in the upper-right.



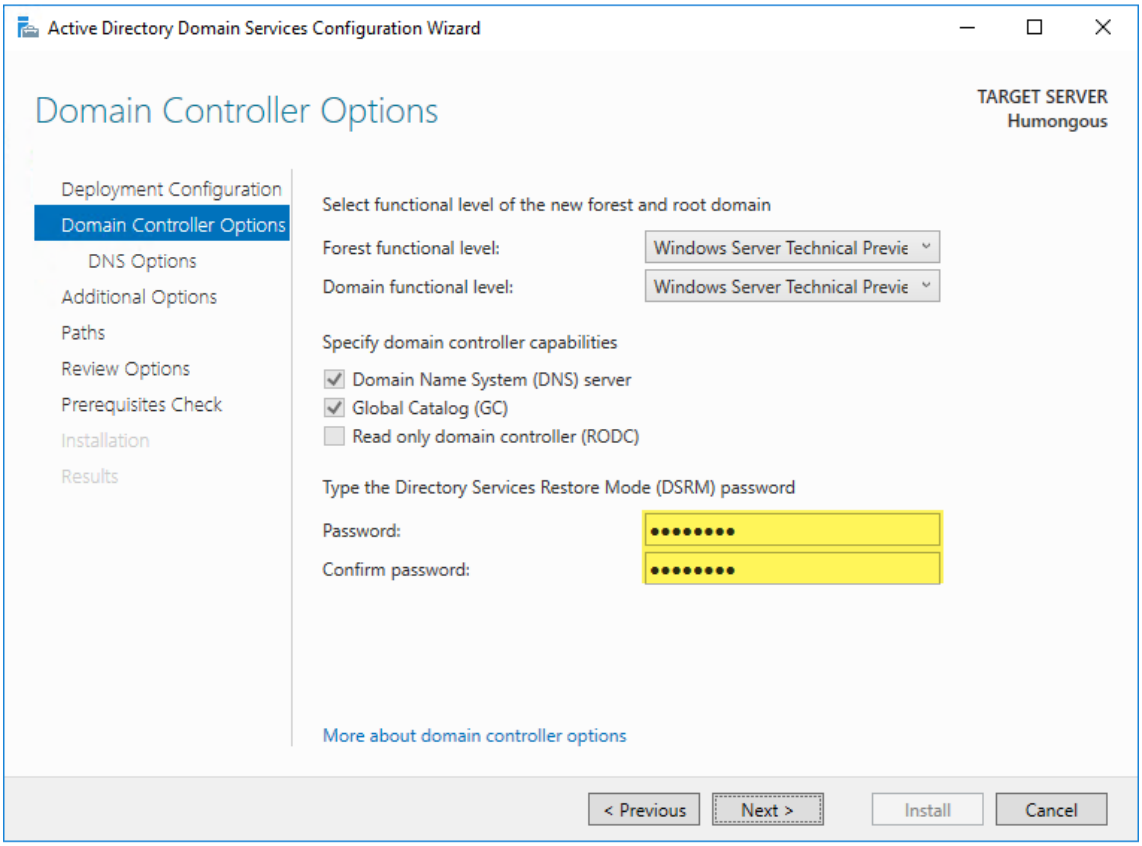
2. Click the flag, then review the information given and click the **Promote this server to a domain controller** link.



3. In the **Deployment Configuration** dialog box, review the options available, then click the radio button to **Add a new forest**.
4. Move to the **Root domain name** text box and enter `RonsNotes.training.local`.

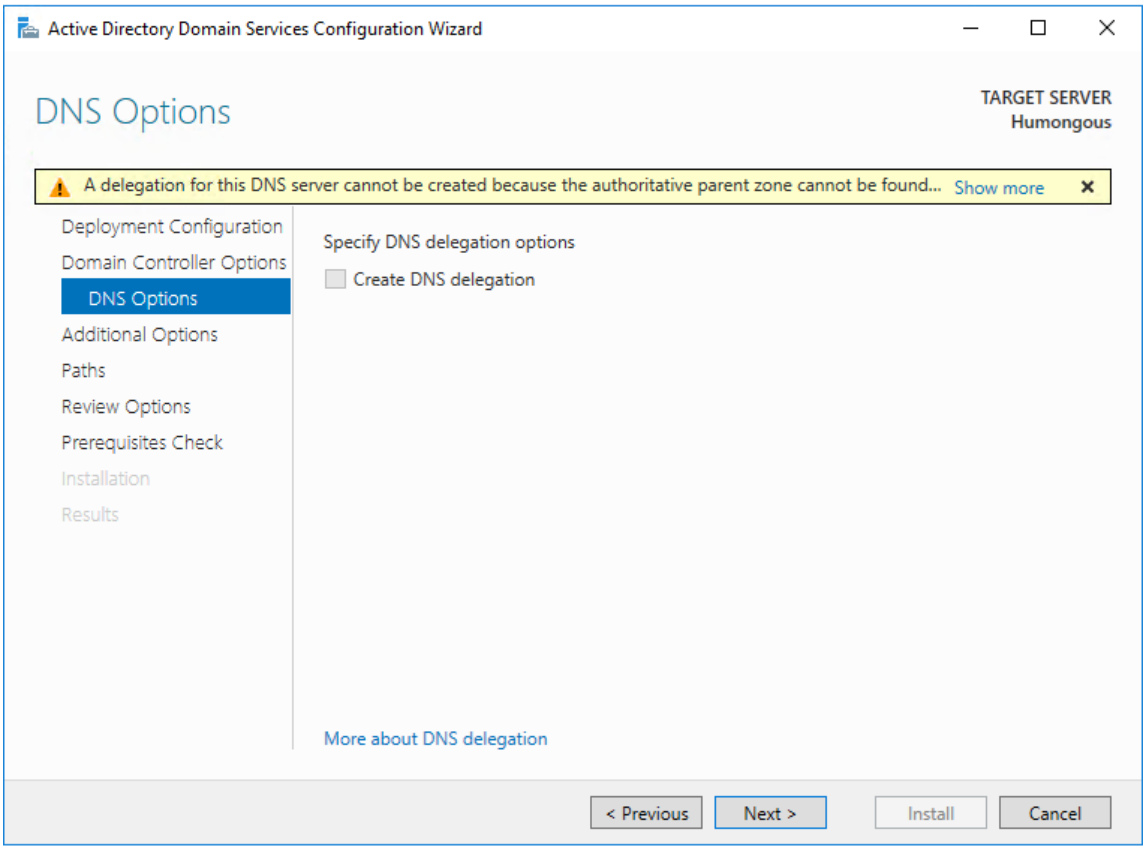


5. Click **Next**.
6. In the **Domain Controller Options** dialog box, review the current settings.
7. Move to the **Password** text box and enter `Passw0rd`. *(The 0 is numeric.)*
8. Confirm `Passw0rd` in the **Confirm password** text box. *(The 0 is numeric.)*

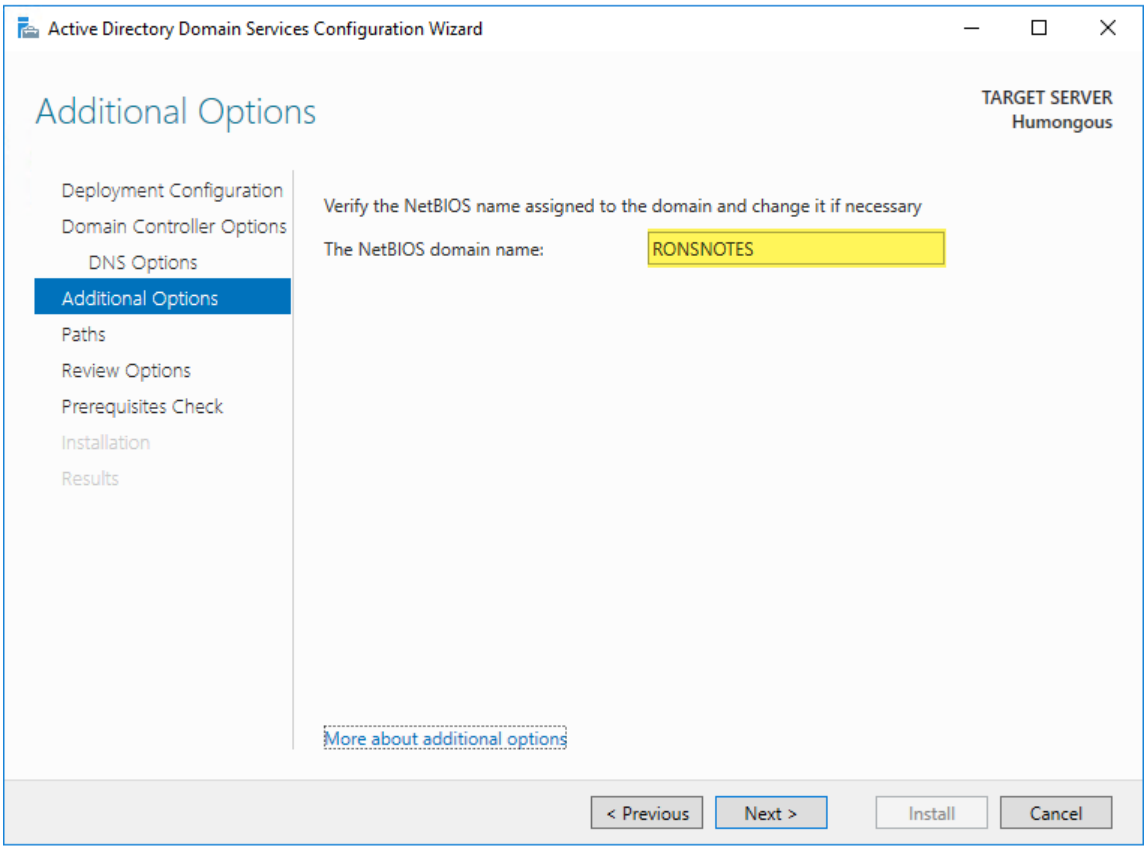

Active Directory Domain Services Configuration Wizard
Domain Controller Options
TARGET SERVER
Humongous
Deployment Configuration
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results
Select functional level of the new forest and root domain
Forest functional level:
Windows Server Technical Previe
Domain functional level:
Windows Server Technical Previe
Specify domain controller capabilities
Domain Name System (DNS) server
Global Catalog (GC)
Read only domain controller (RODC)
Type the Directory Services Restore Mode (DSRM) password
Password:
Confirm password:
More about domain controller options
< Previous
Next >
Install
Cancel

9. Click **Next**.

10. In the **DNS Options** dialog box, review the information given, then click **Next**.

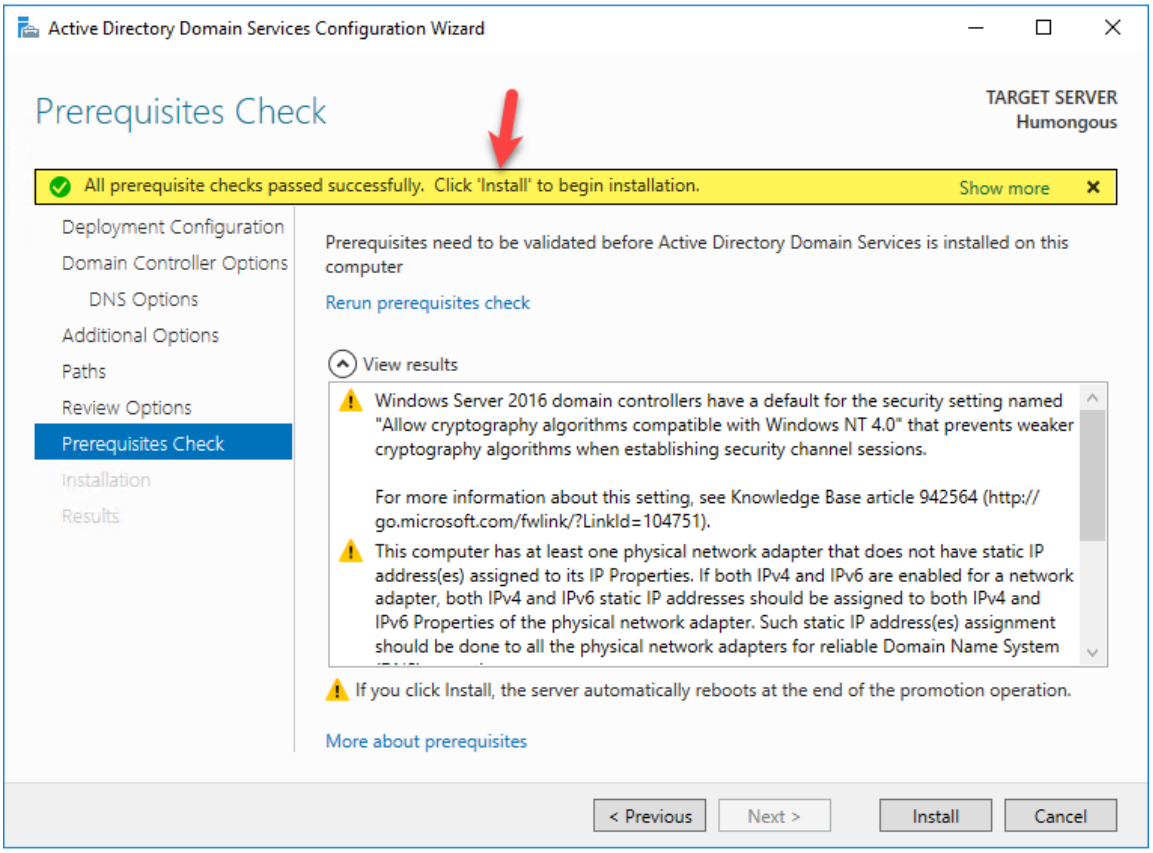


11. In the **Additional Options** dialog box, review the settings, then click **Next**.



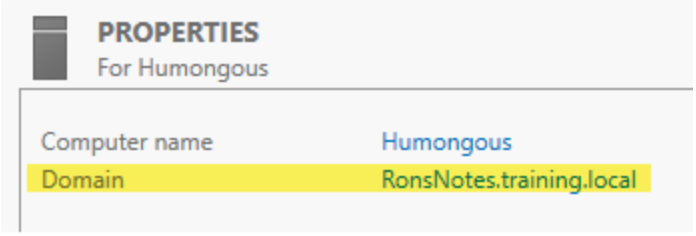
12. In the **Paths** dialog box, review the settings, then click **Next**.
13. In the **Review Options** dialog box, review the settings then click **Next**.

14. In the **Prerequisites Check** dialog box, wait for the message to indicate that **All prerequisite checks passed successfully**, then click **Install**.



15. When the **Installation** dialog box appears, wait for installation to complete. Upon success, the virtual machine will restart.
16. When **Humongous** virtual machine starts back up, log on to the virtual machine by utilizing the key sequence of **Ctrl+Alt+End**, or by clicking on the **Ctrl+Alt+Delete** icon ( ) in the toolbar.
17. Enter `Passw0rd` into the **Password** prompt to log in as **Administrator**.

18. Allow the virtual machine to fully start (wait for **Server Manager** to open).
19. When **Server Manager** opens, navigate to the pane on the left and click **Local Server**.
20. Locate the **Domain** setting and note the current domain.

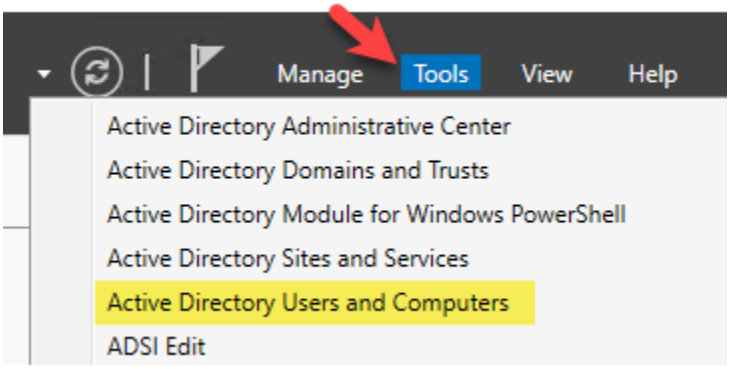


Task: Create Student as Domain Administrator

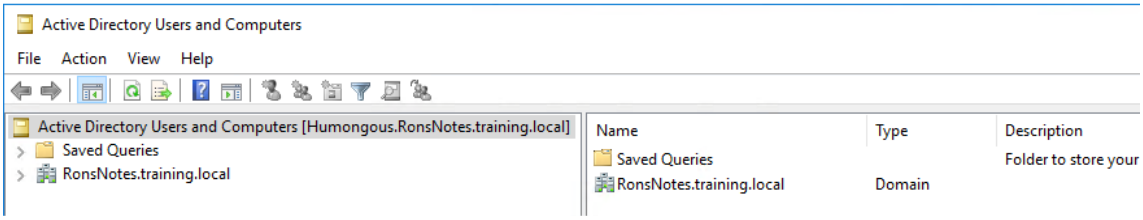
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: CREATE STUDENT AS DOMAIN ADMINISTRATOR
New-ADUser -SamAccountName 'Student' -AccountPassword (ConvertTo-SecureString
PasswOrd -AsPlainText -Force) -UserPrincipalName 'Student' -DisplayName 'Student'
-Name 'Student' -Enabled $true
Add-ADGroupMember -Identity 'Enterprise admins' Student
Add-ADGroupMember -Identity 'Domain Admins' Student
```

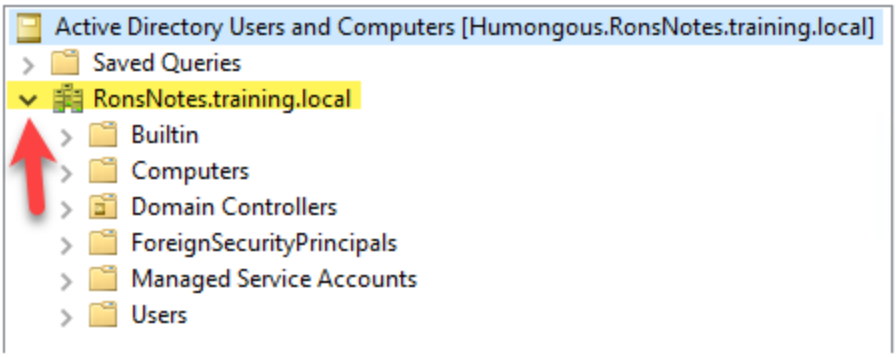
1. In **Humongous**, navigate up to the menu in the upper-right and click **Tools | Active Directory Users and Computers**.



2. When **Active Directory Users and Computers** opens, review the options available.

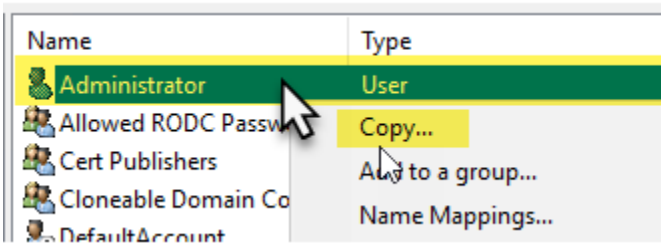


3. Move to the pane on the left and expand **RonsNotes.training.local**.

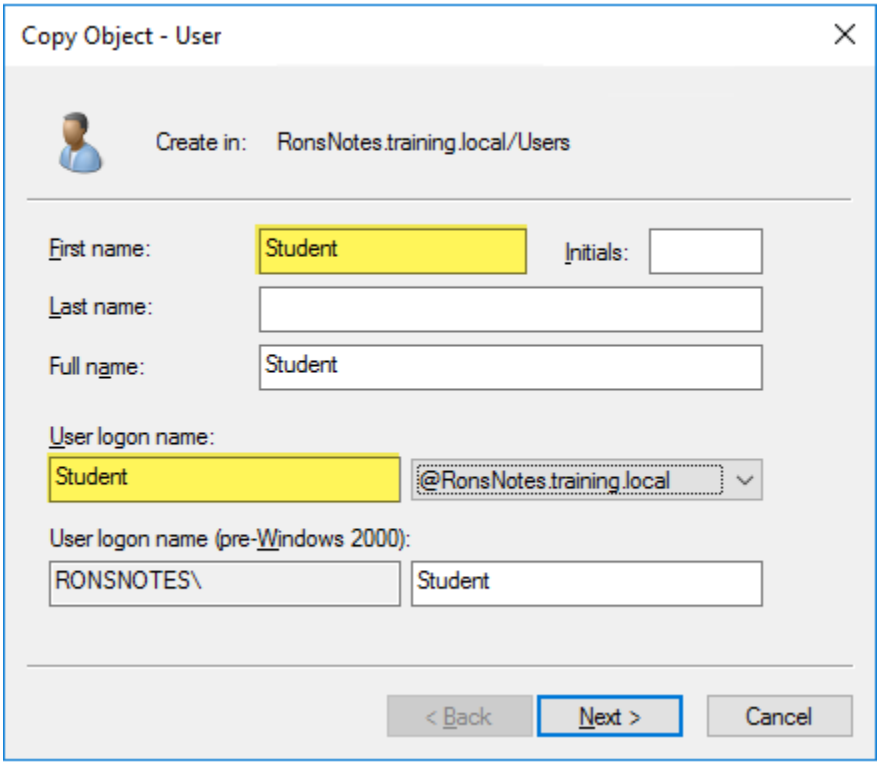


4. Click to select the **Users** folder.

5. Move to the section in the center, right-click **Administrator** and click **Copy…**.

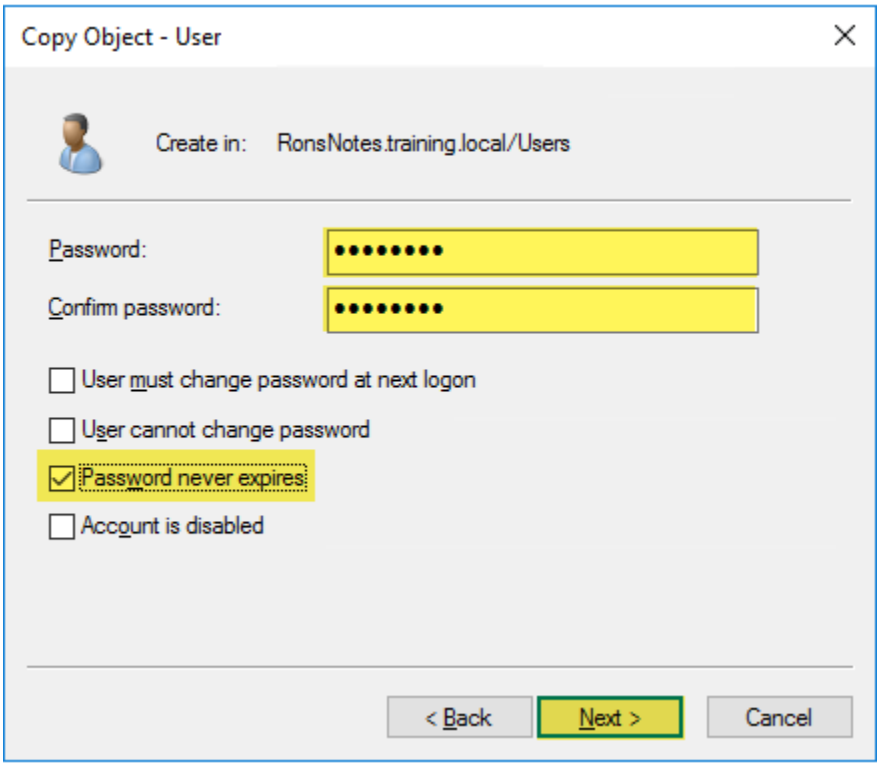


6. In the **Copy Object – User** dialog box, move to the **First name** text box and enter `Student`.
7. Navigate to the **User logon name** text box and enter `Student`.



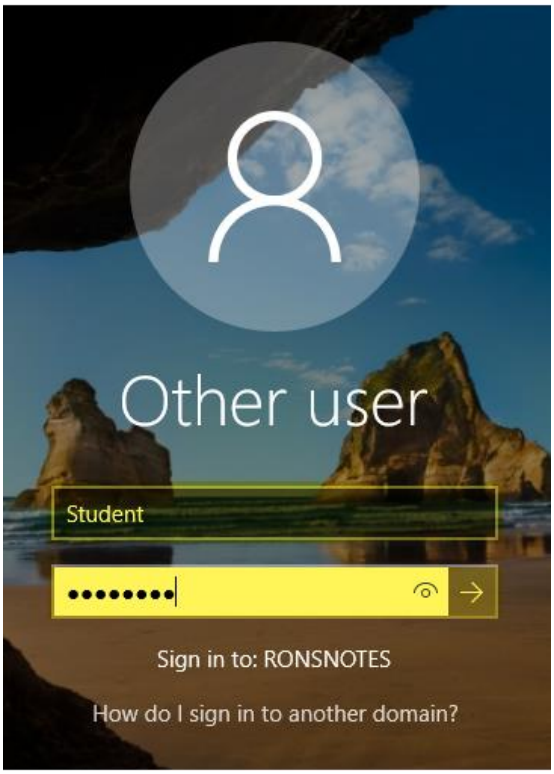
8. Click **Next**.
9. Move to the **Password** text box and enter `Passw0rd`. *(The 0 is numeric.)*
10. Move to the **Confirm password** text box and enter `Passw0rd`. *(The 0 is numeric.)*

11. Verify there is a check in the **Password never expires** check box.



12. Click **Next**.
13. Click **Finish** and notice that **Student** is now listed at the bottom of the list.
14. Close **Active Directory Users and Computers**.
15. Press **Ctrl+Alt+End**.
16. Click **Sign out**.
17. Press **Ctrl+Alt+End**.
18. Navigate to the lower-left and click **Other user**.
19. Move to the **User name** text box and enter `Student`.

20. In the **Password** text box enter `Passw0rd`.



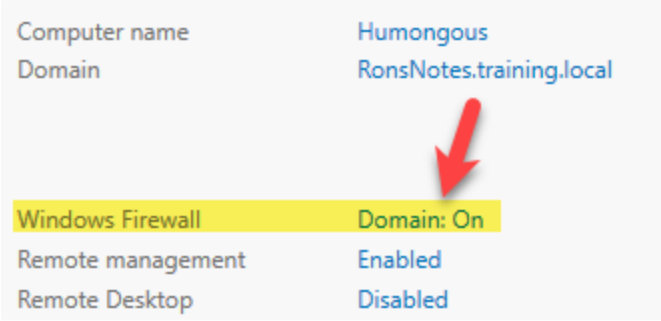
21. Allow the virtual machine to fully start (wait for **Server Manager** to open).

Task: Turn Off the Firewall

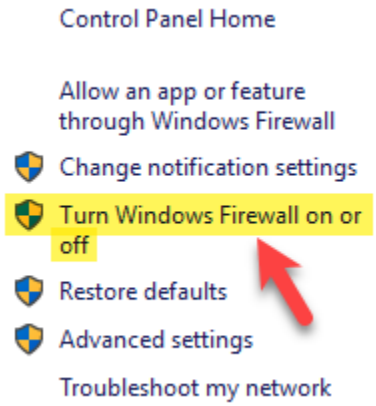
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: TURN OFF THE FIREWALL
Set-NetFirewallProfile -Profile domain,Public,Private -Enabled False
```

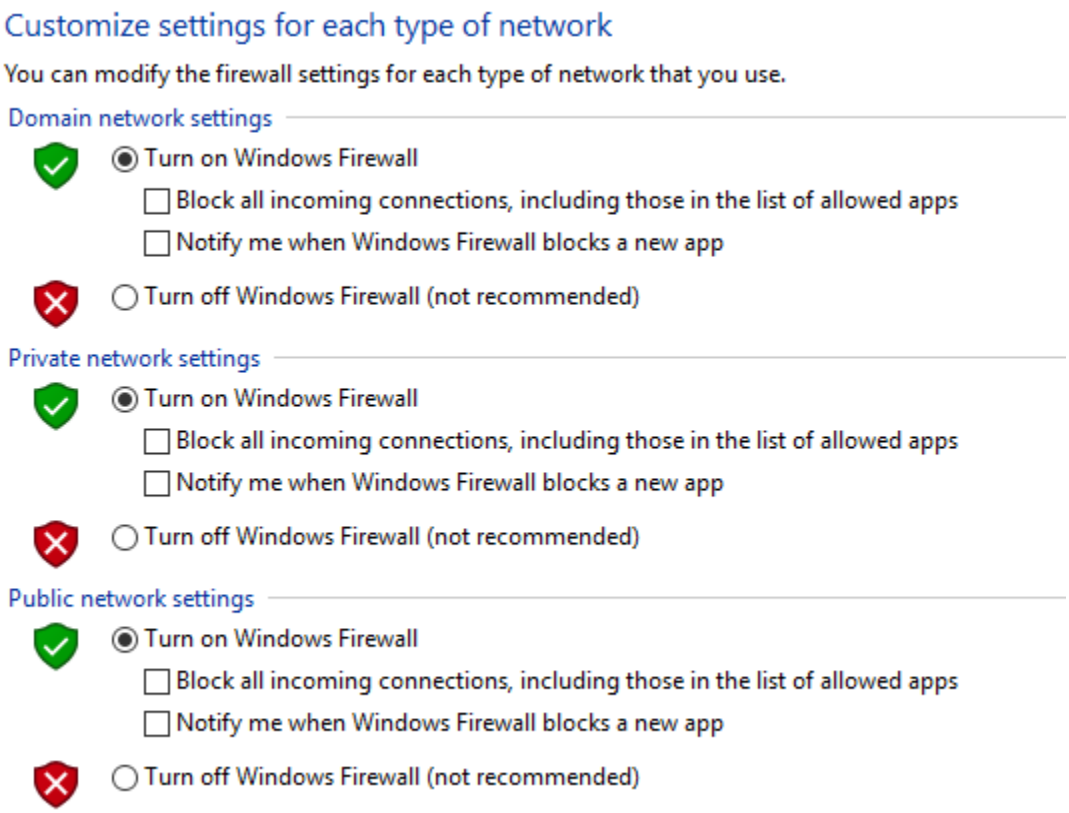
1. Connect to the virtual machine and log in as **Student**.
2. When **Server Manager** opens, move to the pane on the left and click **Local Server** tab.
3. Move to the **Properties** section in the center, locate the **Windows Firewall** setting and click the **Domain: On** link.



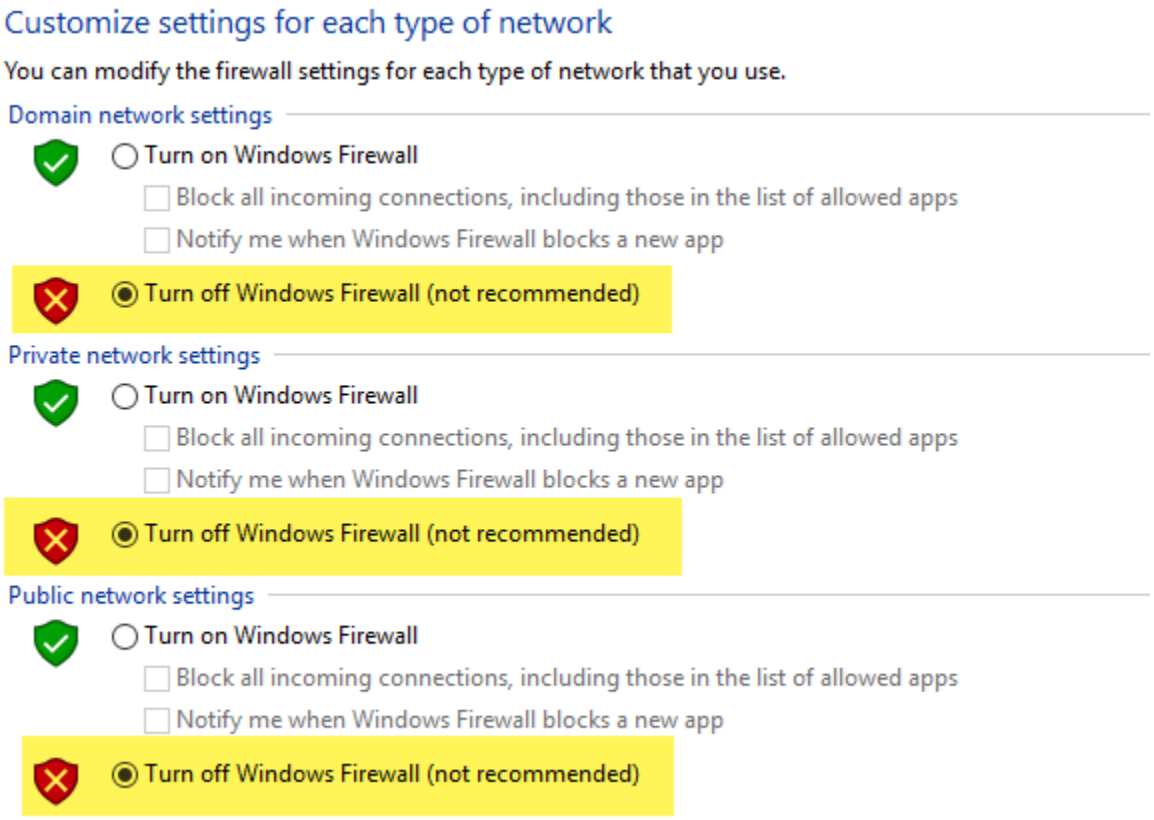
4. Navigate to the pane on the left and click **Turn Windows Firewall on or off**.



5. When **Customize settings for each type of network** opens, review the current settings.



6. Click the radio button to **Turn off Windows Firewall** for all three network settings:
    - Domain
    - Private
    - Public



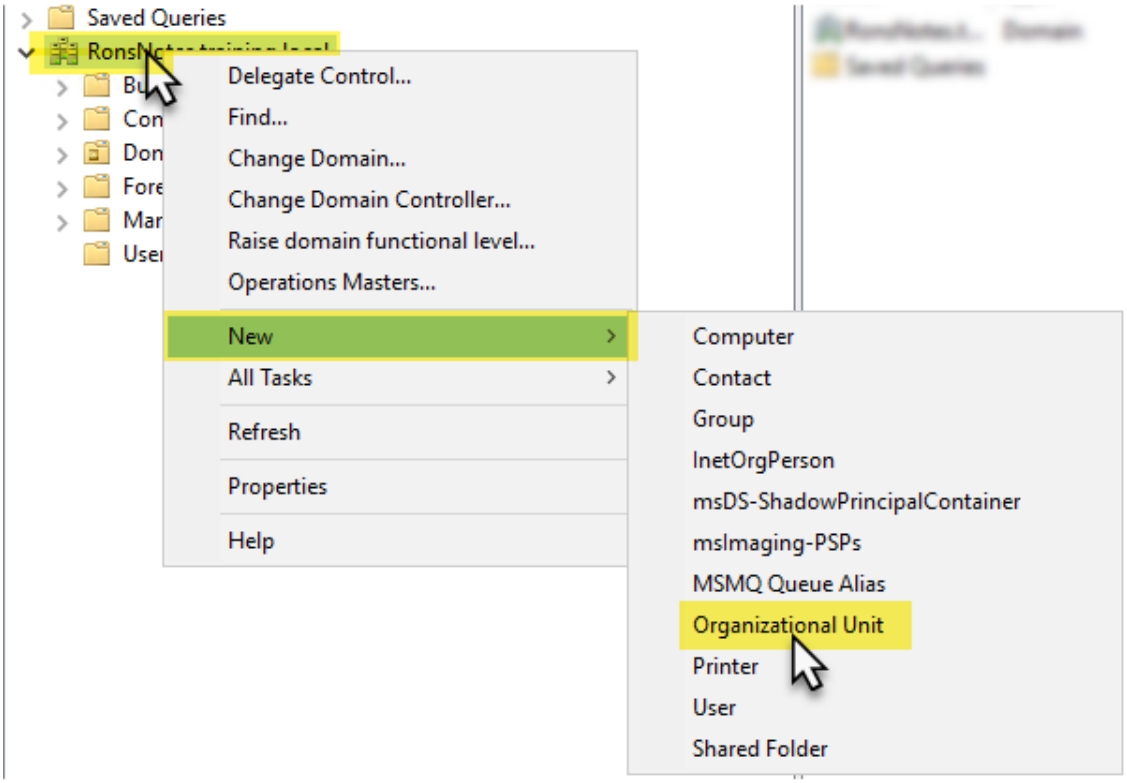
7. Click **OK**.
8. Close **Control Panel**.

Task: Create Organizational Units

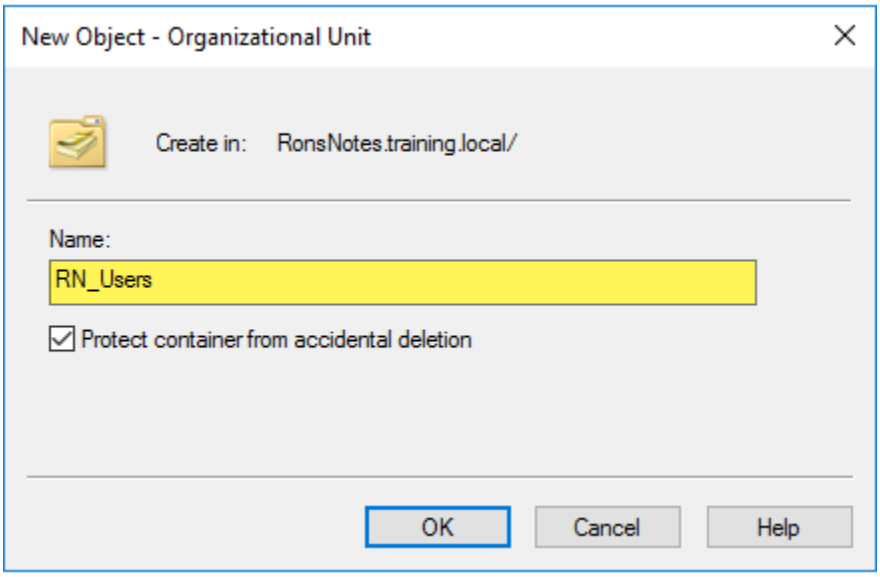
- If you prefer the PowerShell script instructions for this task, click here.

```
#TASK: CREATE ORGANIZATIONAL UNITS
Function Create-OUs{
New-ADOrganizationalUnit -Name Sharepoint_Svrs -Path "DC=RonsNotes, DC=Training,
DC=Local"
New-ADOrganizationalUnit -Name SQL_Svrs -Path "DC=RonsNotes, DC=Training,
DC=Local"
New-ADOrganizationalUnit -Name RN_Users -Path "DC=RonsNotes, DC=Training,
DC=Local"
New-ADOrganizationalUnit -Name SP_Owners -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name SP_Members -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name SP_Visitors -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name SP_Designers -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name SP_Approvers -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name Svc_Accounts -Path "OU=RN_Users, DC=RonsNotes,
DC=Training, DC=Local"
New-ADOrganizationalUnit -Name SQLDba -Path "DC=RonsNotes, DC=Training, DC=Local"
}
Create-OUs
```

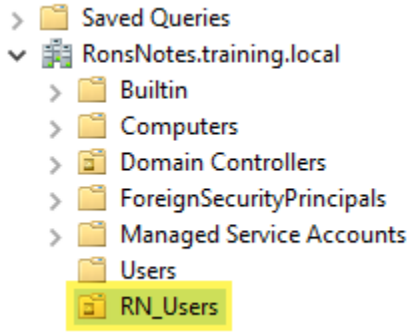
1. Navigate up to the menu in the upper-right and click **Tools | Active Directory Users and Computers**.
2. When **Active Directory Users and Computers** opens, review the options available.
3. Move to the pane on the left and expand **RonsNotes.training.local**.
4. Right-click **RonsNotes.training.local**, then click **New | Organizational Unit**.



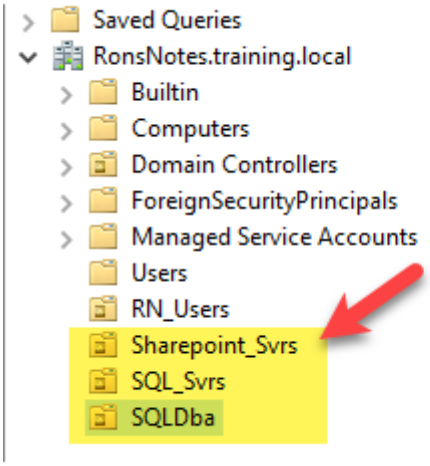
5. In the **New Object – Organizational Unit** dialog box, move to the **Name** text box and enter `RN_Users`.



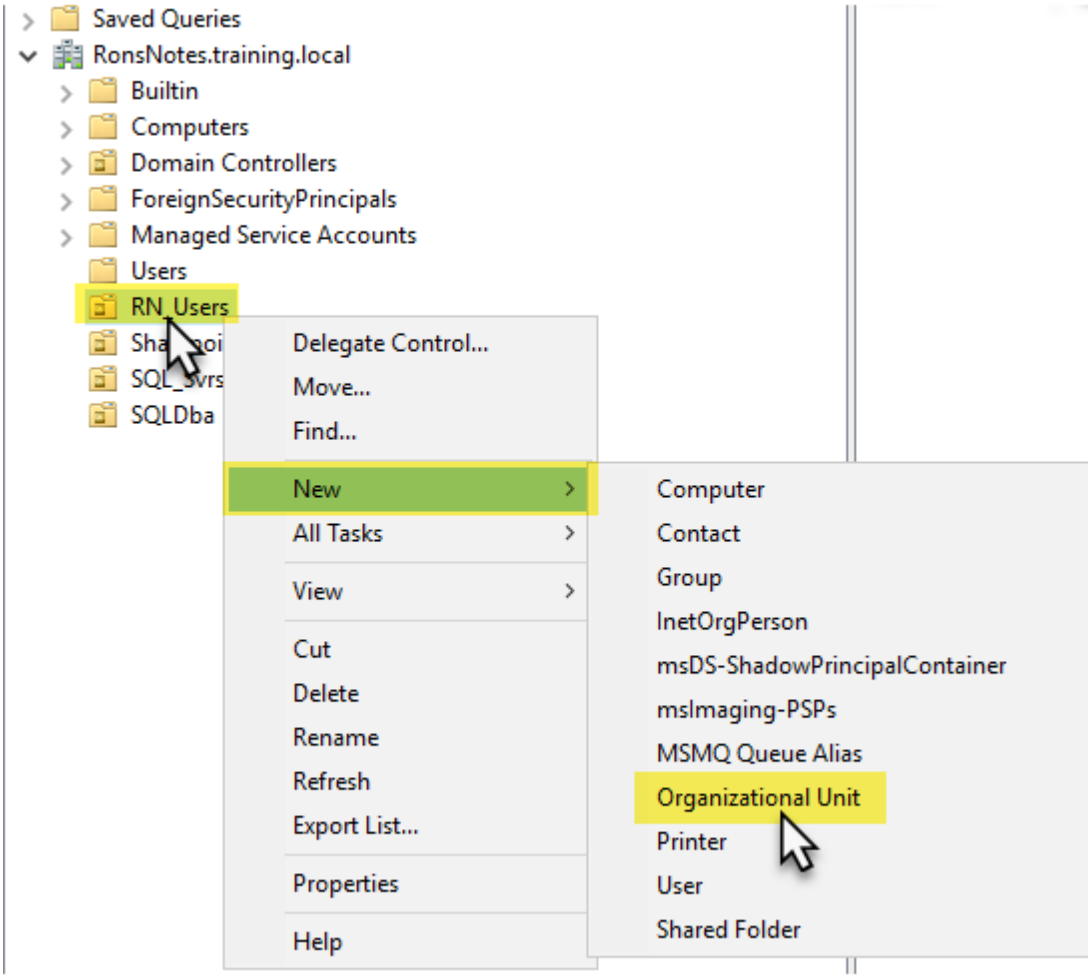
6. Review the remaining settings, then click **OK**.
7. Notice back in the pane on the left you now see **RN_Users** listed.



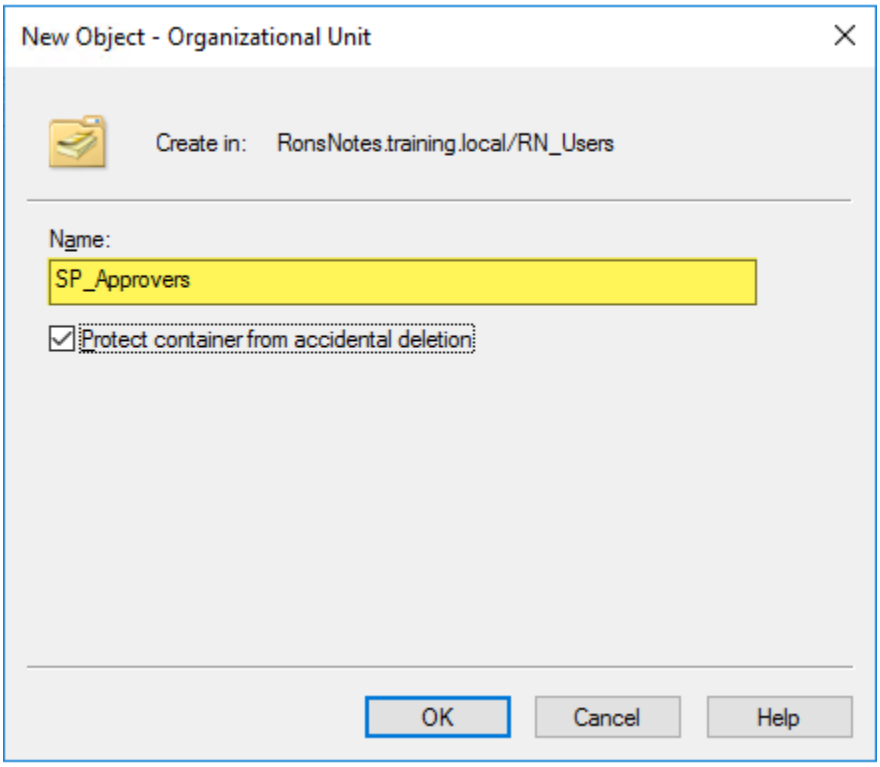
8. Repeat the last three steps to create the following additional Organizational Units:
    - Sharepoint_Svrs
    - SQL_Svrs
    - SQLDba



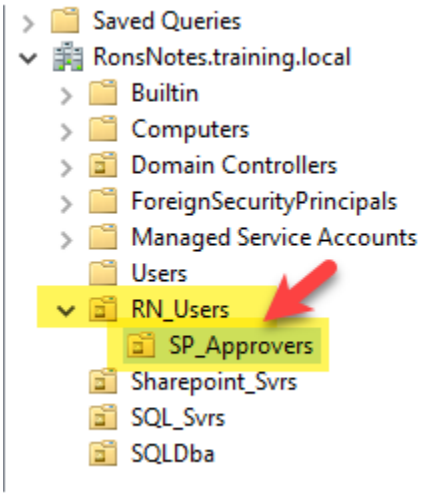
9. Click to select **RN_Users**, then right-click **RN_Users**, and click **New | Organizational Unit**.



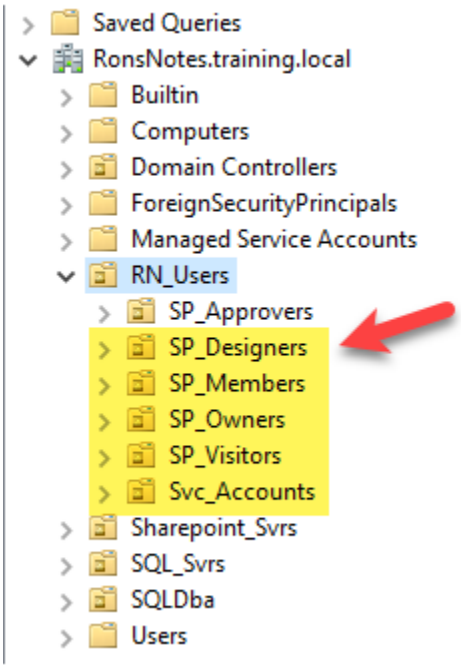
10. In the **New Object – Organizational Unit** dialog box, move to the **Name** text box and enter `SP_Approvers`.



11. Review the remaining settings, then click **OK**.
12. Notice back in the pane on the left you now see **SP_Approvers** listed under **RN_Users**.



13. Repeat the last three steps to create the following additional Organizational Units within the existing **RN_Users** organizational unit:
    - SP_Designers
    - SP_Members
    - SP_Owners
    - SP_Visitors
    - Svc_Accounts

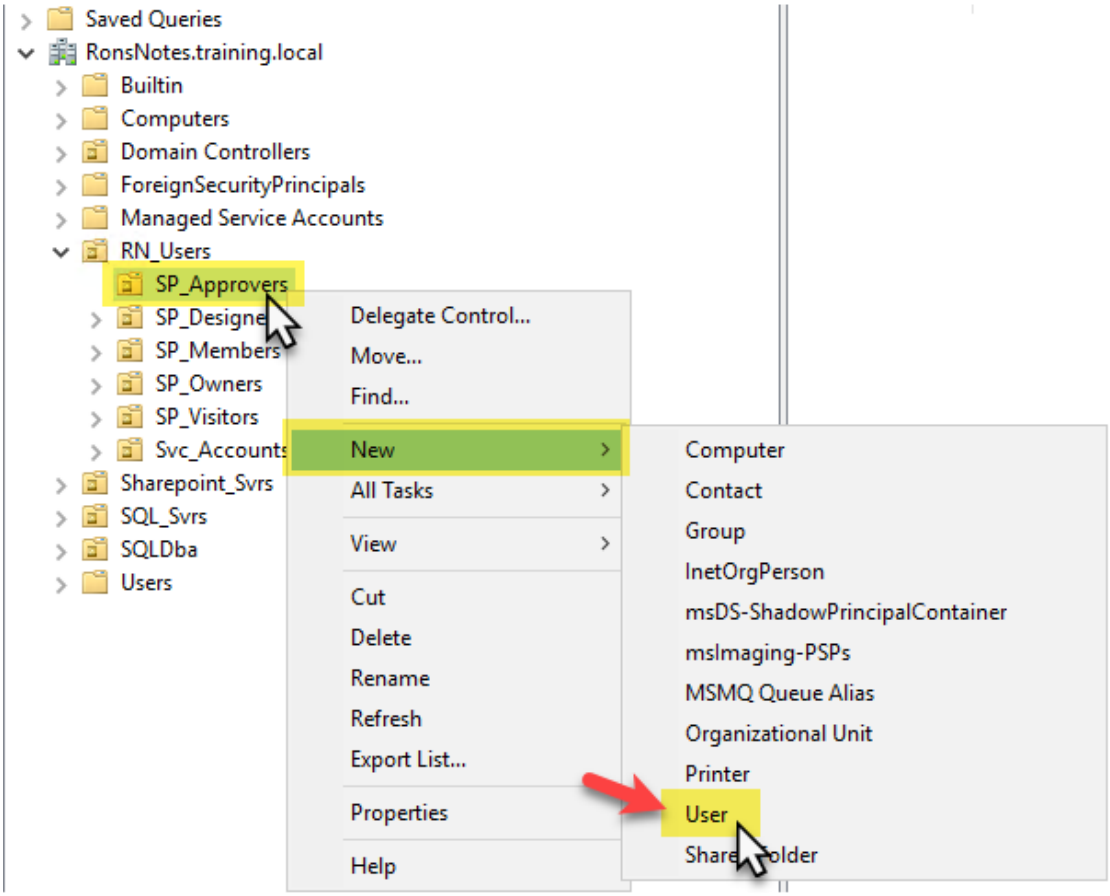


Task: Adding Active Directory Users

- If you prefer the PowerShell script instructions for this task, click here.

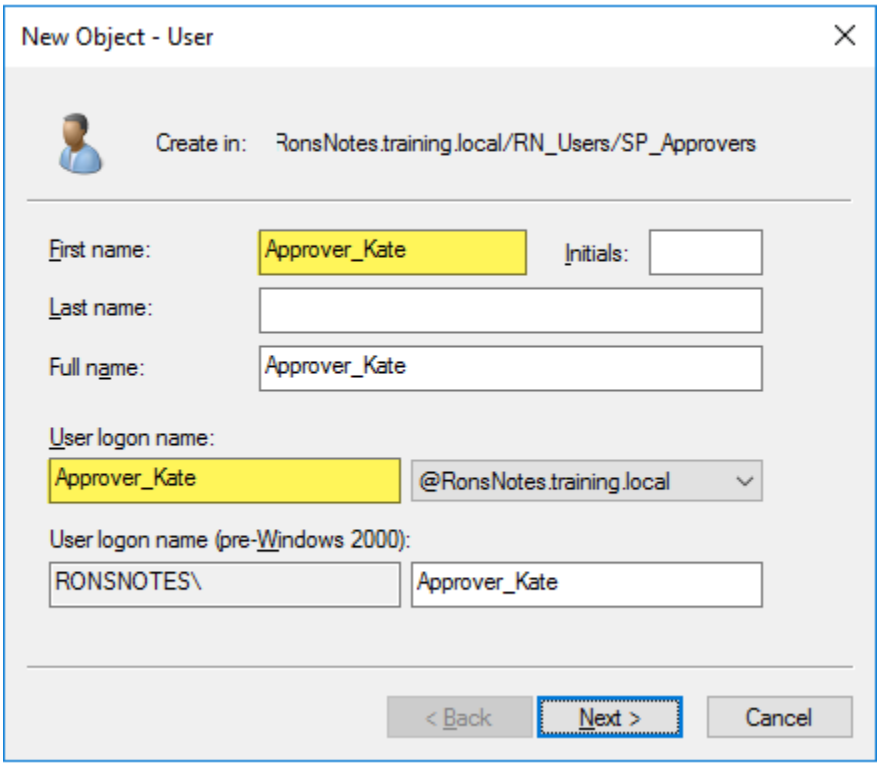
```
#TASK: ADDING ACTIVE DIRECTORY USERS
Function Create-AdUserAccounts {
$Password = (ConvertTo-SecureString -AsPlainText "P@ssw0rd" -Force )
$SvcAccountOU = "OU=SVC_Accounts,OU=RN_Users,DC=RonsNotes, DC=Training, DC=Local"

New-ADUser -Name SVC_Farm -SamAccountName SVC_Farm -AccountPassword $Password  -
ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_WebSvcAccount -SamAccountName SVC_WebSvcAccount -
AccountPassword $Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -
Enabled $true
New-ADUser -Name SVC_App -SamAccountName SVC_App -AccountPassword $Password  -
ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_Profile -SamAccountName SVC_Profile -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_Search -SamAccountName SVC_Search -AccountPassword $Password
-ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_Installation -SamAccountName SVC_Installation -
AccountPassword $Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -
Enabled $true
New-ADUser -Name SVC_Sync -SamAccountName SVC_Sync -AccountPassword $Password  -
ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_Content -SamAccountName SVC_Content -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_superReader -SamAccountName SVC_superReader -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_Unattend -SamAccountName SVC_Unattend -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name SVC_DBA -SamAccountName SVC_DBA -AccountPassword $Password  -
ChangePasswordAtLogon $false -Path $SvcAccountOU -Enabled $true
New-ADUser -Name Designer_Bobbie -SamAccountName Designer_Bobbie -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path
"OU=SP_Designers,OU=RN_Users,DC=RonsNotes, DC=Training, DC=Local"  -Enabled $true
New-ADUser -Name Approver_Kate -SamAccountName Approver_Kate -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path
"OU=SP_Approvers,OU=RN_Users,DC=RonsNotes, DC=Training, DC=Local"  -Enabled $true
New-ADUser -Name Member_Sam -SamAccountName Member_Sam -AccountPassword $Password
-ChangePasswordAtLogon $false -Path "OU=SP_Members,OU=RN_Users,DC=RonsNotes,
DC=Training, DC=Local"  -Enabled $true
New-ADUser -Name Owner_Ron -SamAccountName Owner_Ron -AccountPassword $Password
-ChangePasswordAtLogon $false -Path "OU=SP_Owners,OU=RN_Users,DC=RonsNotes,
DC=Training, DC=Local"  -Enabled $true
New-ADUser -Name Visitor_Carlos -SamAccountName Visitor_Carlos -AccountPassword
$Password  -ChangePasswordAtLogon $false -Path
"OU=SP_Visitors,OU=RN_Users,DC=RonsNotes, DC=Training, DC=Local"  -Enabled $true
New-ADUser -Name SQLDba -SamAccountName SQLDba -AccountPassword $Password  -
ChangePasswordAtLogon $false -Path "OU=SQLDba,DC=RonsNotes, DC=Training,
DC=Local"  -Enabled $true
}
Create-AdUserAccounts
```

1. Click to select **SP_Approvers**, then right-click **SP_Approvers**, and click **New | User**.



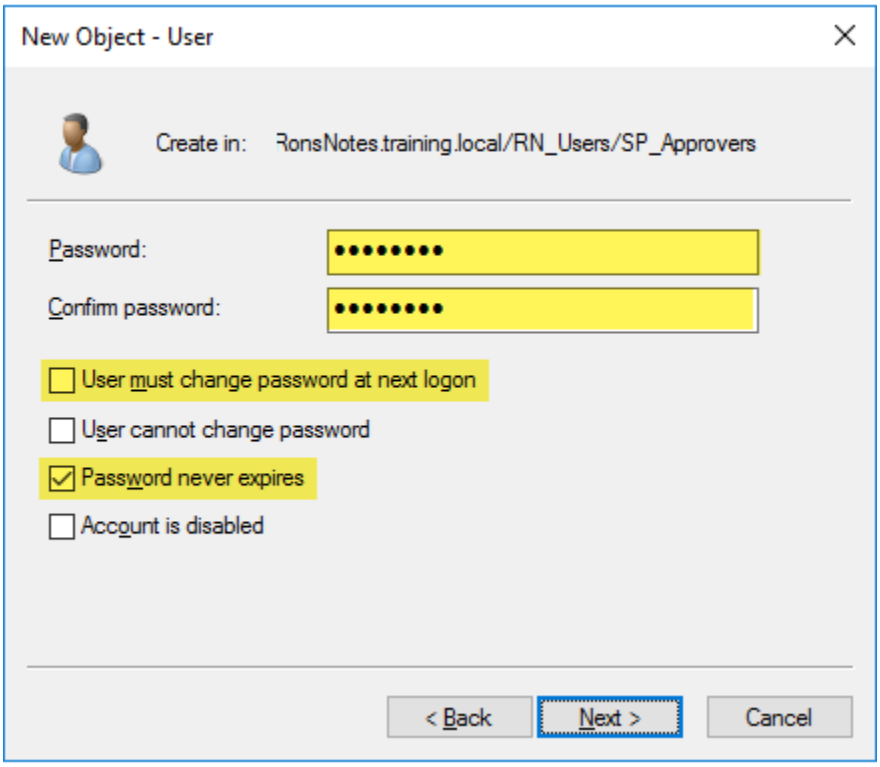
2. In the **New Object – User** dialog box, move to the **First name** text box and enter `Approver_Kate`.

3. Navigate to the **User logon name** text box and enter `Approver_Kate`.

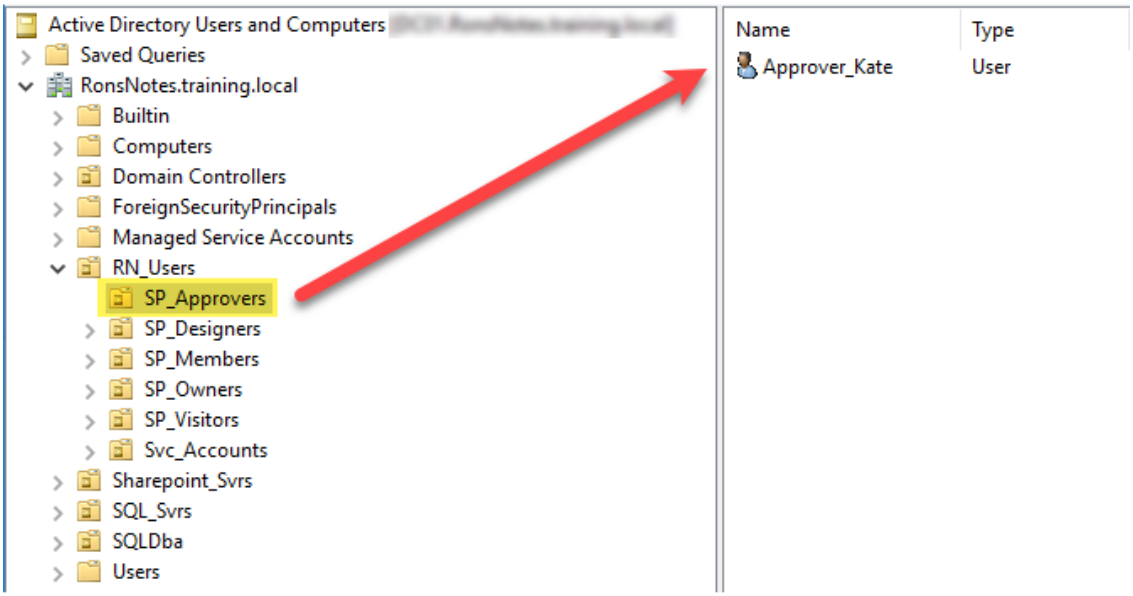


4. Click **Next**.
5. Move to the **Password** text box and enter `Passw0rd`. *(The 0 is numeric.)*
6. Move to the **Confirm password** text box and enter `Passw0rd`. *(The 0 is numeric.)*

7. Clear the check from the **User must change password at next logon**.
8. Verify there is a check in the **Password never expires** check box.



9. Click **Next**.
10. Click **Finish** and notice that **Approver_Kate** is now listed in the center section.



11. Repeat the prior ten steps to create the following users in the corresponding places.

Location	***Name***
RN_Users | SP_Approvers	*Approver_Kate (COMPLETED ABOVE)*
RN_Users | SP_Designers	Designer_Bobbie
RN_Users | SP_Members	Member_Sam

RN_Users | SP_Owners	Owner_Ron
RN_Users | SP_Visitors	Visitor_Carlos
RN_Users | Svc_Accounts	SVC_Farm
RN_Users | Svc_Accounts	SVC_WebSvcAccount
RN_Users | Svc_Accounts	SVC_App
RN_Users | Svc_Accounts	SVC_Profile
RN_Users | Svc_Accounts	SVC_Search
RN_Users | Svc_Accounts	SVC_Installation
RN_Users | Svc_Accounts	SVC_Sync
RN_Users | Svc_Accounts	SVC_Content
RN_Users | Svc_Accounts	SVC_superReader
RN_Users | Svc_Accounts	SVC_Unattend
RN_Users | Svc_Accounts	SVC_DBA
SQLDba	SQLDba

12. Close **Active Directory Users and Computers**.
13. Minimize **Humongous**.

PHASE 04 SETUP SQL SERVER

Phase Objective

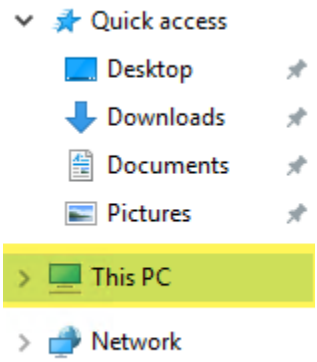
In this phase, we will set up SQL Server on the virtual machine. Phase Topics

- Install SQL Server 2016
- Install SQL Server Management Studio

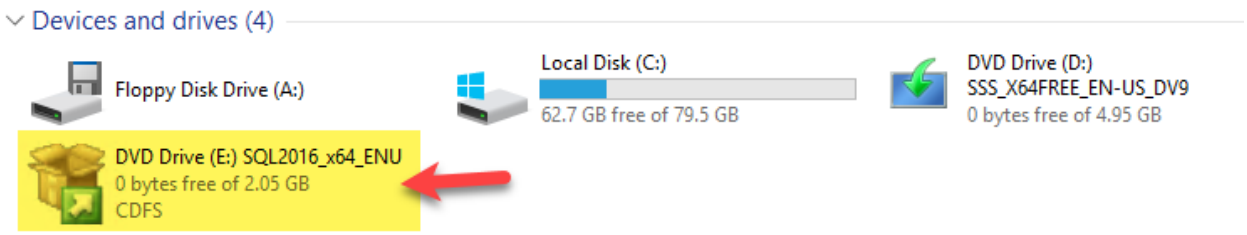
Task Install SQL Server 2016

There is no PowerShell script equivalent to this task, however, if you'd rather install SQL Server using an .ini file, click here *to switch to the PowerShell version of this task.*

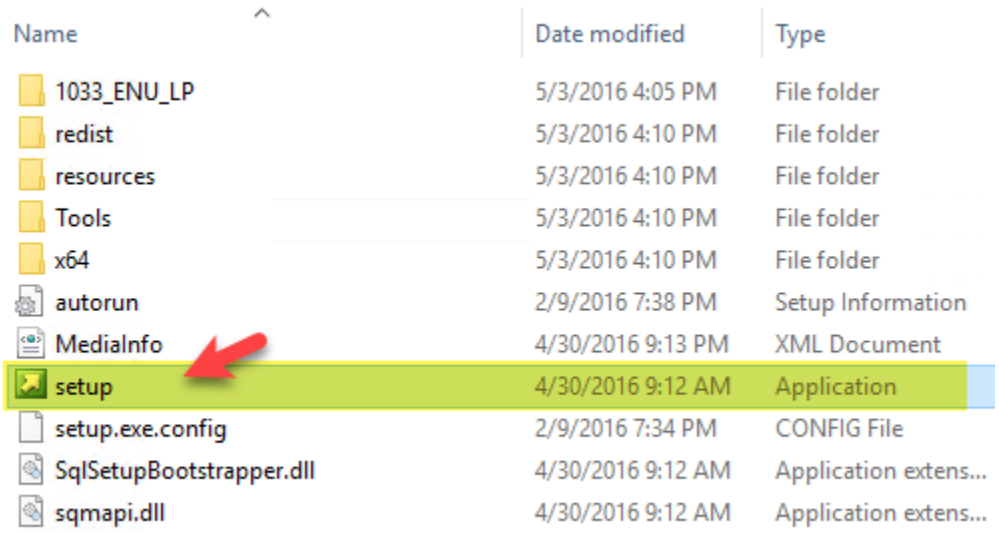
1. In **Hyper-V Manager**, click to select **Humongous**, then right-click the virtual machine and select **Start**. *(If it isn't already started.)*
2. Double-click the **Humongous** virtual machine, then click **Connect**.
3. At the logon screen, click **Other user** in the lower-left corner, then log in as **Student**.
4. Start **File Explorer**.
5. Navigate to the pane on the left and click to select **This PC**.



6. Double-click **E:** drive.

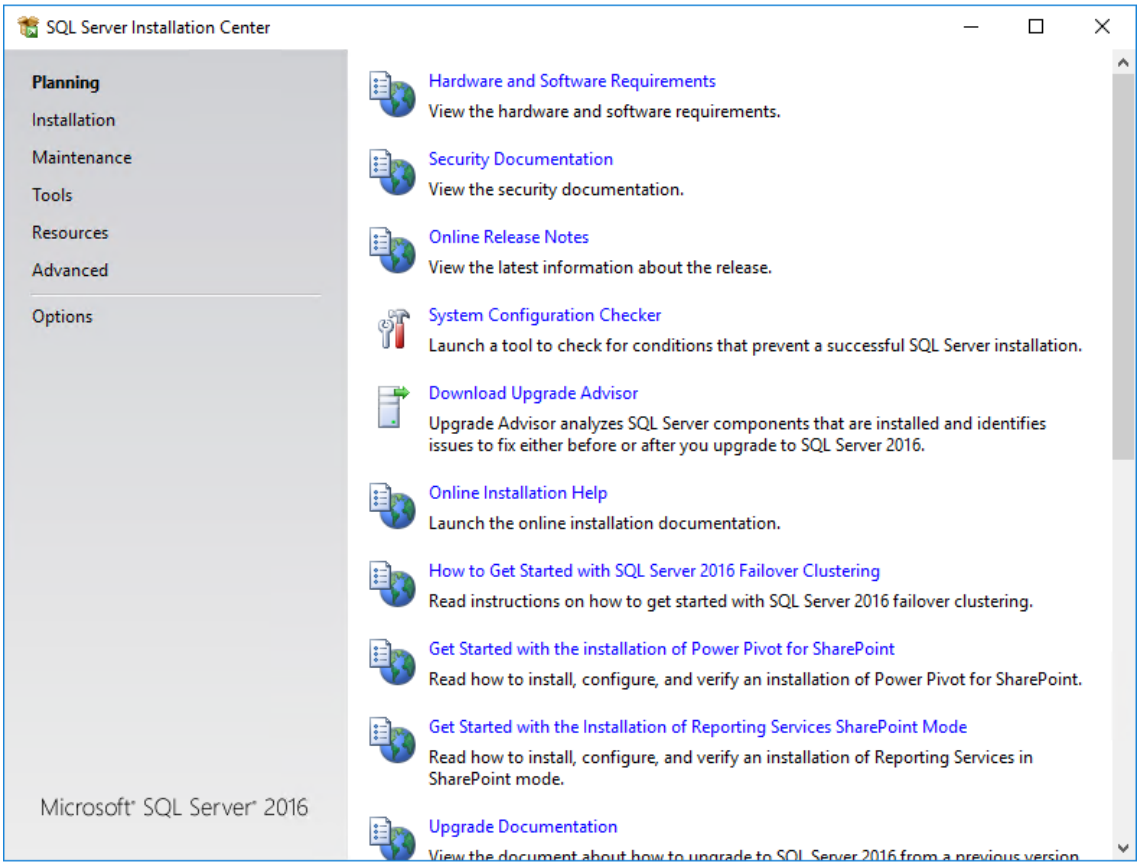


7. When the list of files appears, locate and double-click **Setup**.exe.

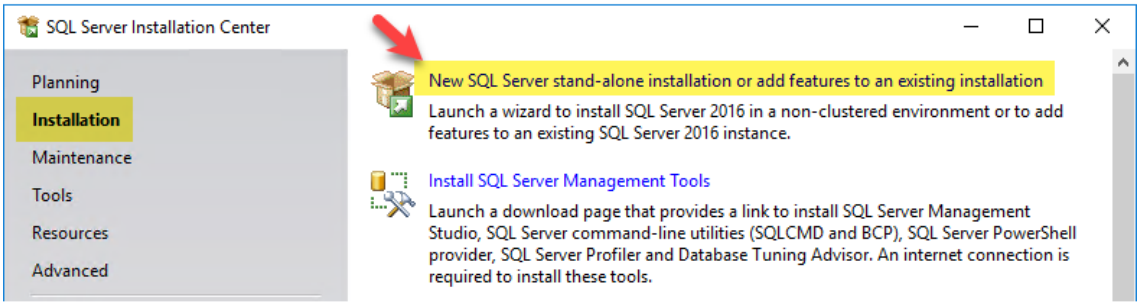


8. In the **User Account Control** dialog box, click **Yes**.

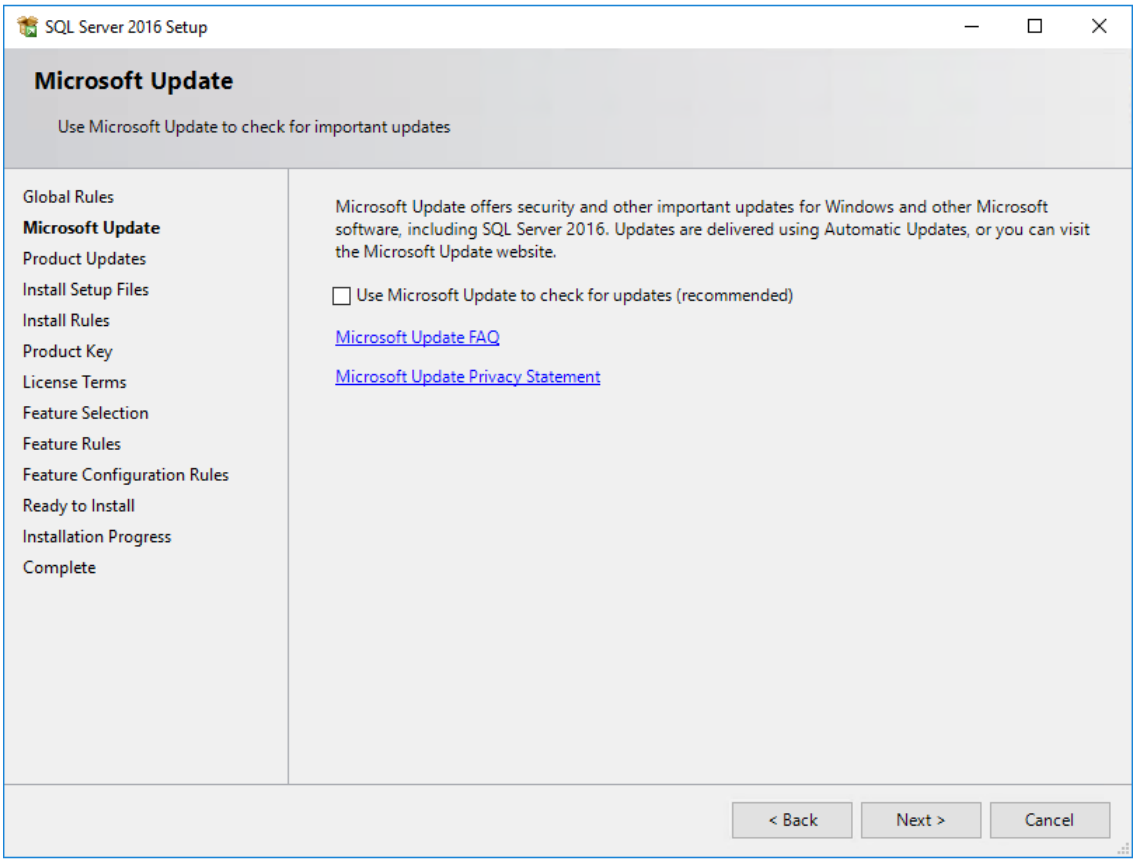
9. In the **SQL Server Installation Center** dialog box, review the options available.



10. Navigate to the pane on the left and click **Installation**.
11. Click the link for a **New SQL Server stand-alone installation or add features to an existing installation**.

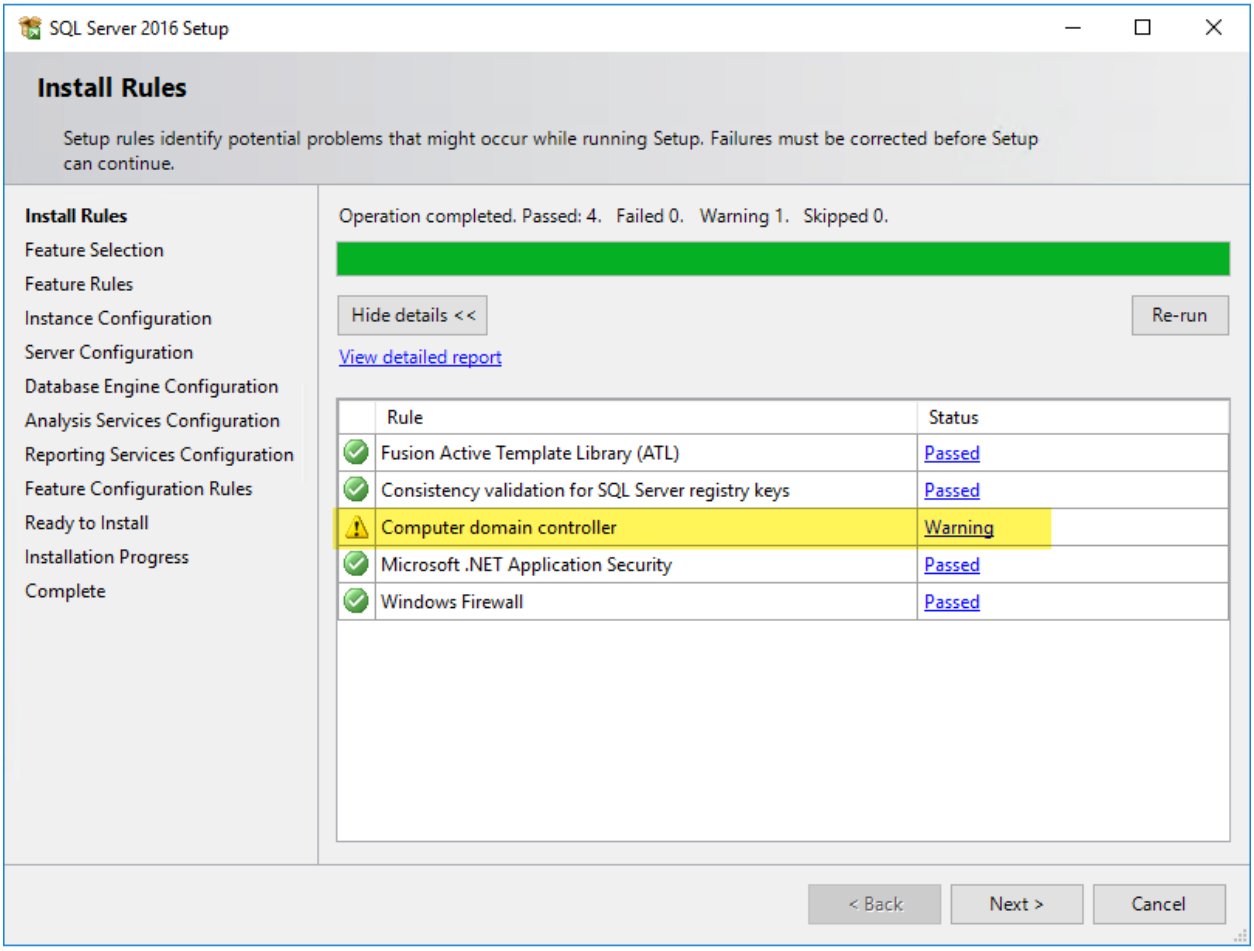


12. In the **Microsoft Update** dialog box, click **Next**.

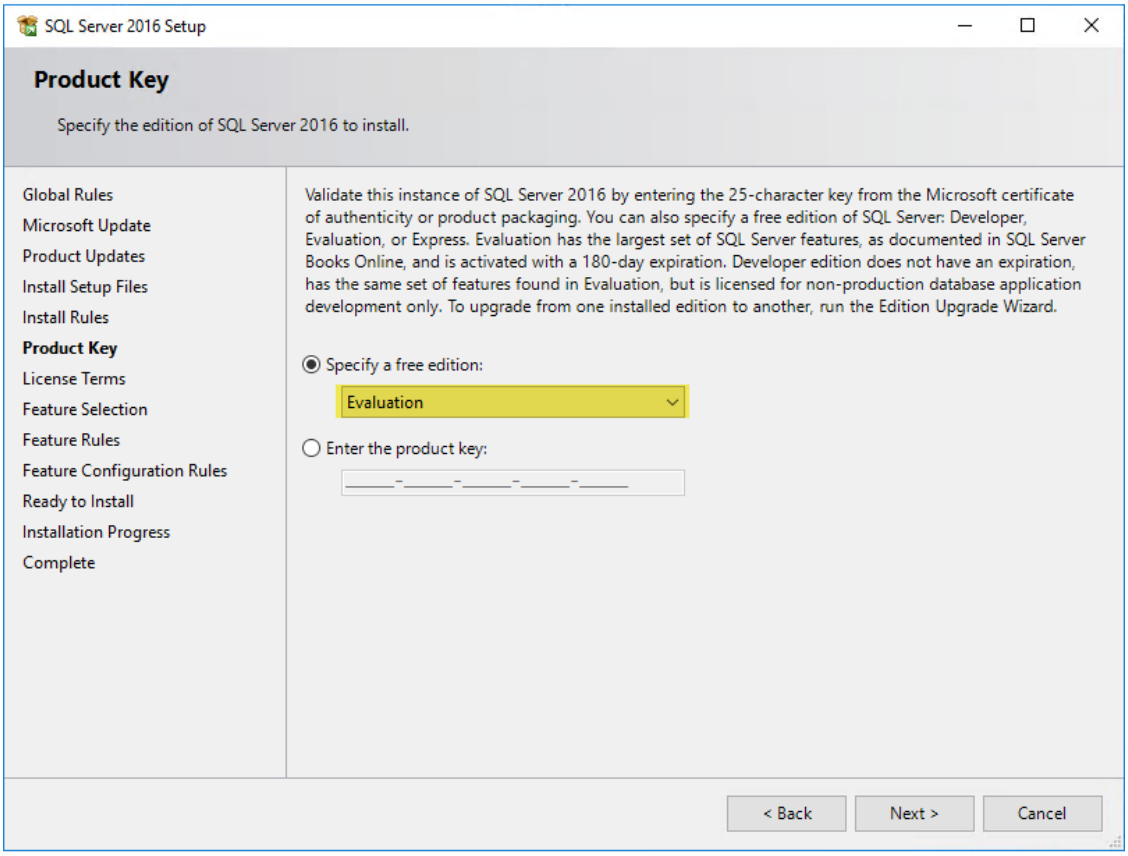


If you encounter a Product Updates dialog box, click Next.

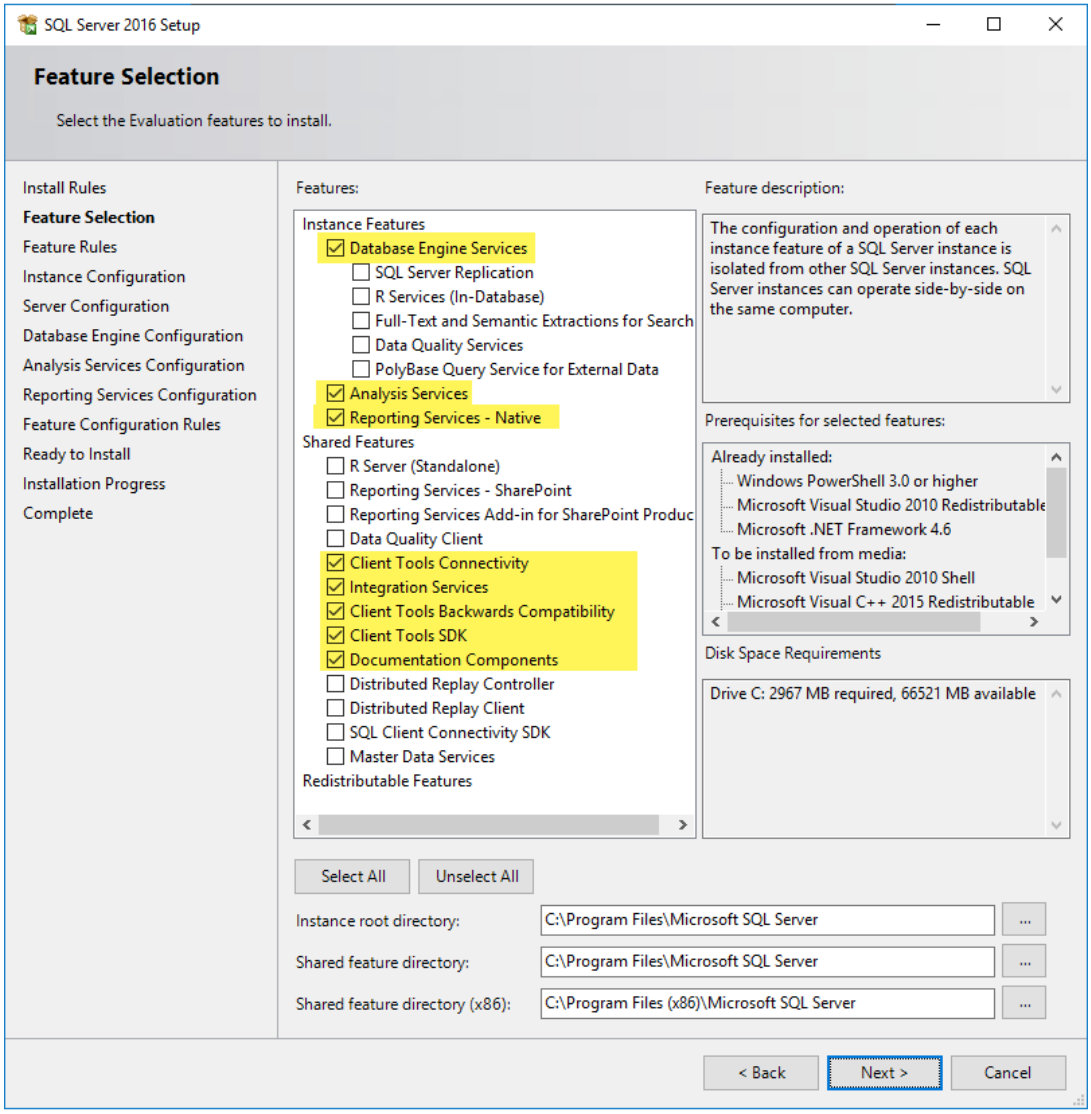
13. When the **Install Rules** dialog box opens, ignore the **Computer domain controller Warning**, then click **Next**.



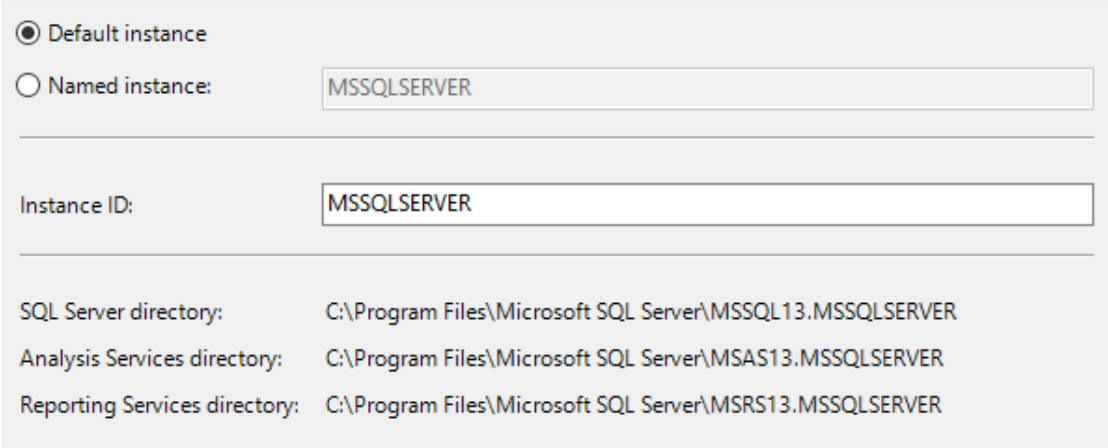
14. In the **Product Key** dialog box, verify **Evaluation** is selected, then click **Next**.



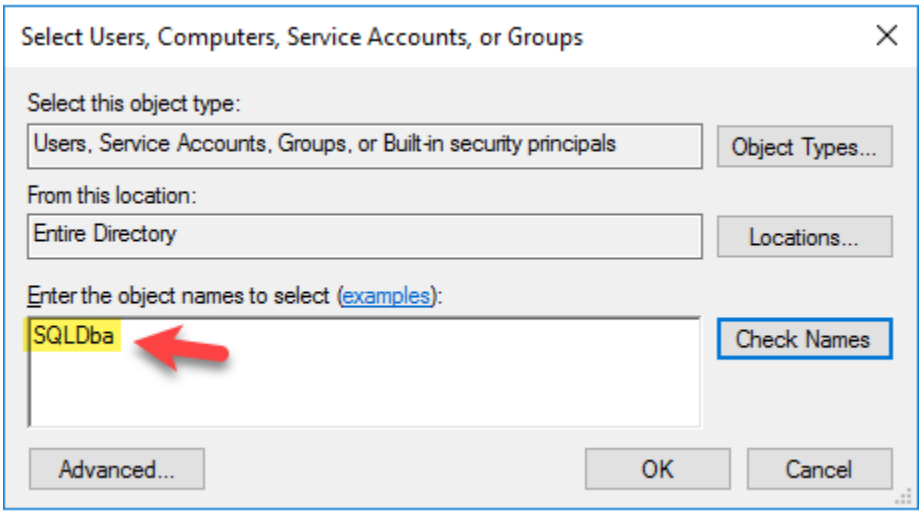
15. In the **License Terms** dialog box, place a check in the **I accept the license terms** check box and click **Next**.
16. In the **Feature Selection** dialog box, place a check in the following check boxes:
    - Database Engine Services
    - Analysis Services
    - Reporting Services – Native
    - Client Tools Connectivity
    - Integration Services
    - Client Tools Backwards Compatibility
    - Client Tools SDK
    - Documentation Components



17. Click **Next**.
18. In the **Instance Configuration** dialog box, leave the **Default instance** settings as they are, and click **Next**.

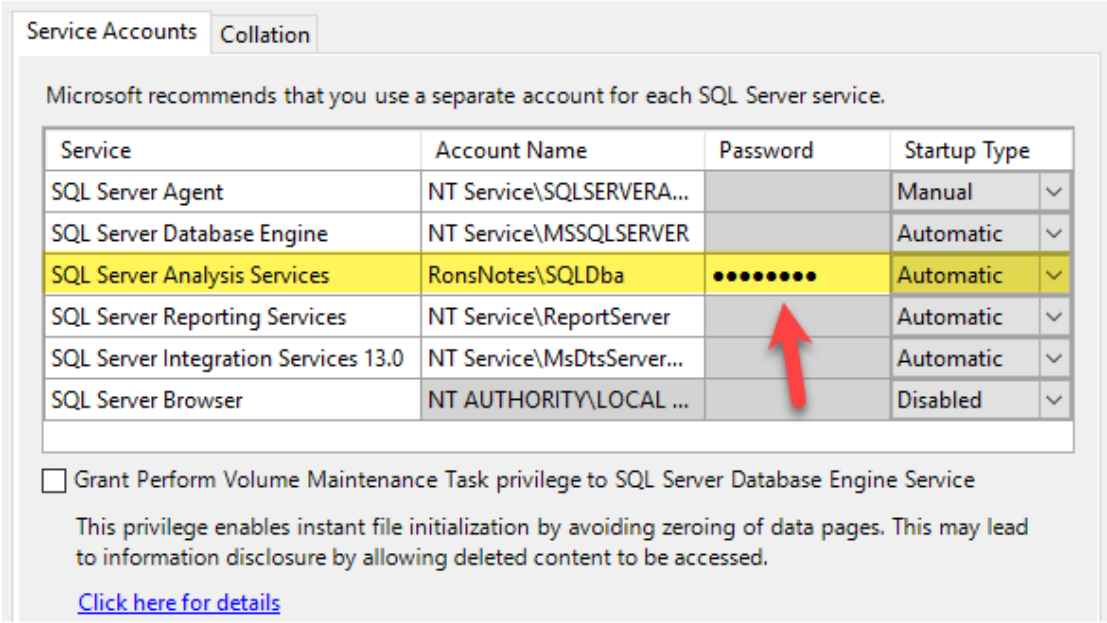


19. In the **Server Configuration** dialog box, move to the **SQL Server Analysis Services** row, click into the empty **Account Name** text box, use the corresponding drop-down arrow, then click **<<Browse…>>**.
20. In the **Select Users, Computers, Service Accounts, or Groups** dialog box, move to the **Enter the object names to select** text box and enter `SQLDba`.



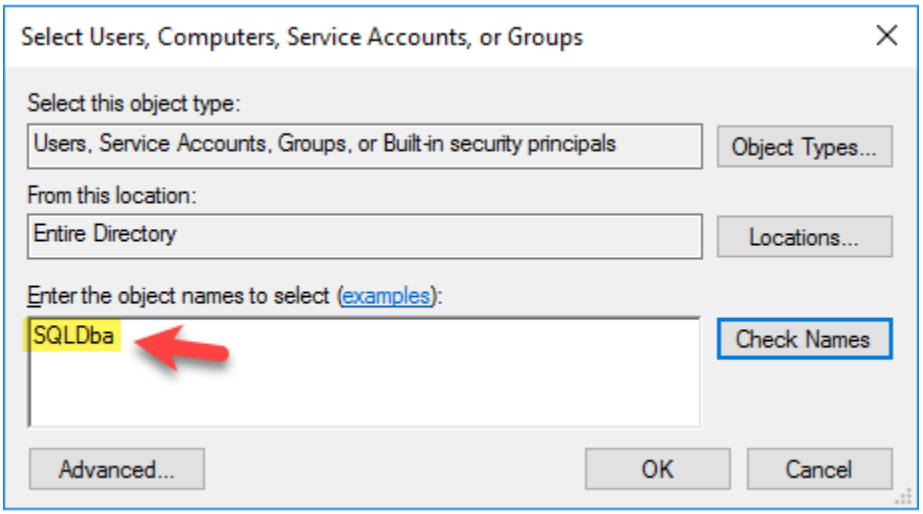
21. Click **Check Names** and notice **SQLDba** is now underlined.
22. Click **OK**.
23. Click into the corresponding empty **Password** text box and enter `Passw0rd`.

In Passw0rd, the 0 is numeric.



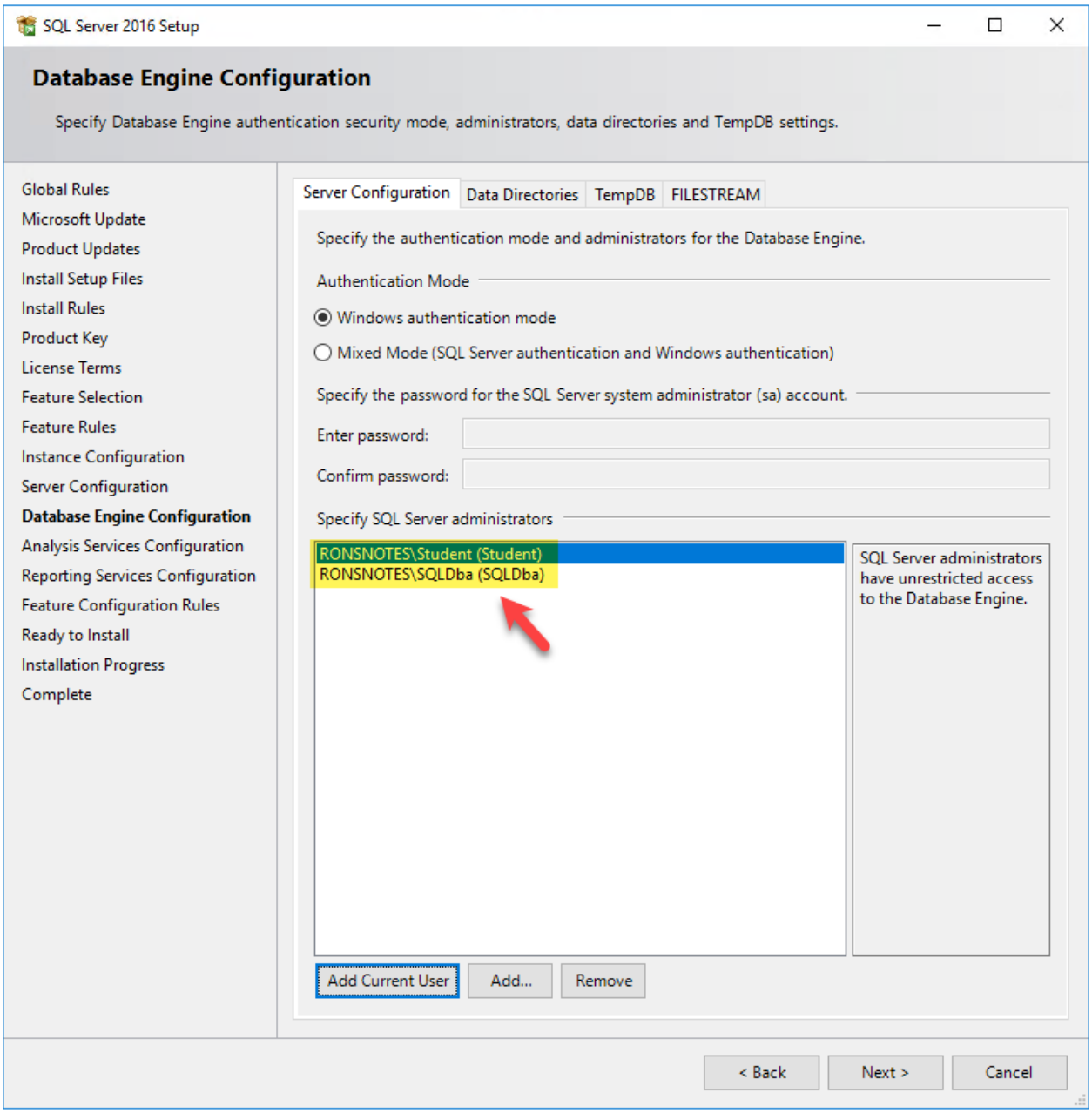
24. Click **Next**.
25. In the **Database Engine Configuration** dialog box, review the current settings.
26. Click **Add Current User**.
27. Notice you now see **RONSNOTES\Student (Student)** listed in the **Specify SQL Server administrators** text box.

28. Click **Add…**.
29. In the **Select Users, Computers, Service Accounts, or Groups** dialog box, move to the **Enter the object names to select** text box and enter `SQLDba`.



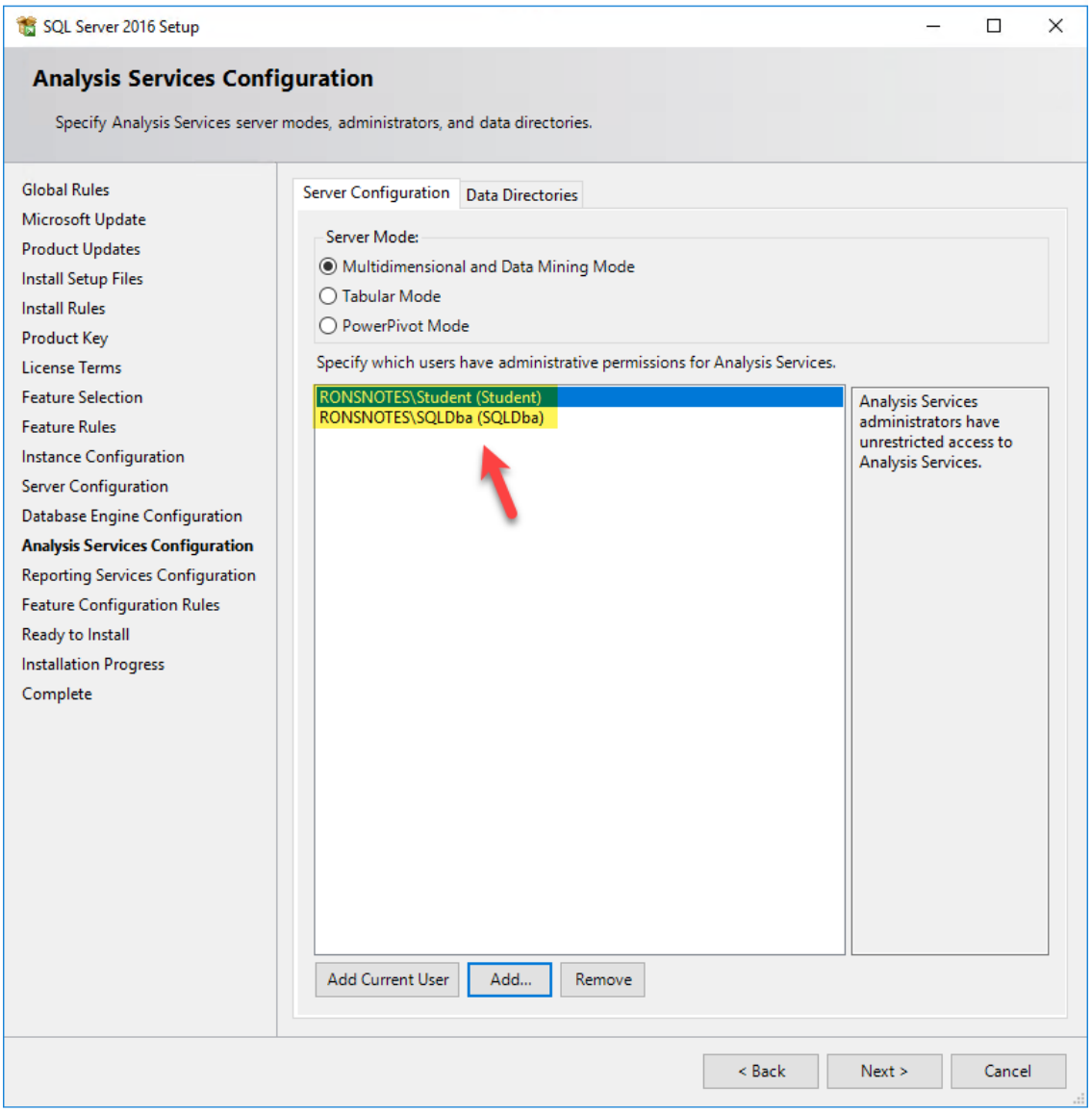
30. Click **Check Names** and notice **SQLDba** is now underlined.
31. Click **OK**.

32. Notice you now see **RONSNOTES\SQLDba (SQLDba)** listed in the **Specify SQL Server administrators** text box.
    At this point you should show two administrators:
    - *RONSNOTES\Student (Student)*
    - *RONSNOTES\SQLDba (SQLDba)*



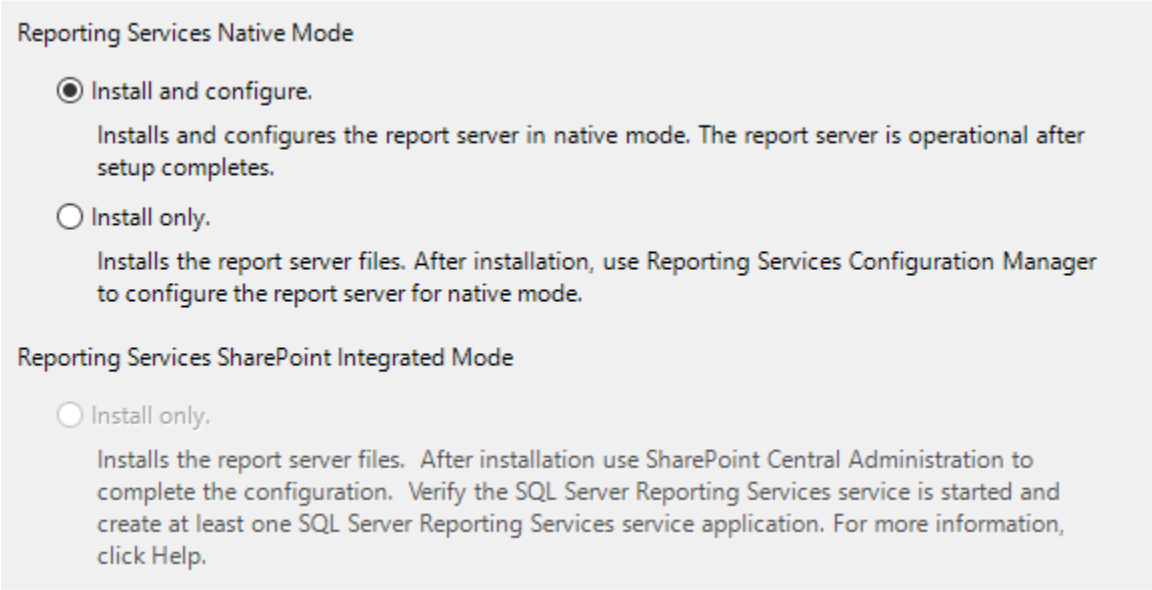
33. Click **Next**.
34. In the **Analysis Service Configuration** dialog box, review the current settings.
35. Click **Add Current User**.
36. Notice you now see **RONSNOTES\Student (Student)** listed in the **Specify which users have administrative permissions for Analysis Services** text box.
37. Click **Add…**.

38. In the **Select Users, Computers, Service Accounts, or Groups** dialog box, move to the **Enter the object names to select** text box and enter `SQLDba`.
39. Click **Check Names** and notice **SQLDba** is now underlined.
40. Click **OK**.
41. Notice you now see **RONSNOTES\SQLDba (SQLDba)** listed in the **Specify which users have administrative permissions for Analysis Services** text box.
    At this point you should show two administrators:
    - *RONSNOTES\Student (Student)*
    - *RONSNOTES\SQLDba (SQLDba)*



42. Click **Next**.

43. In the **Reporting Services Configuration** dialog box, review the settings, then click **Next**.

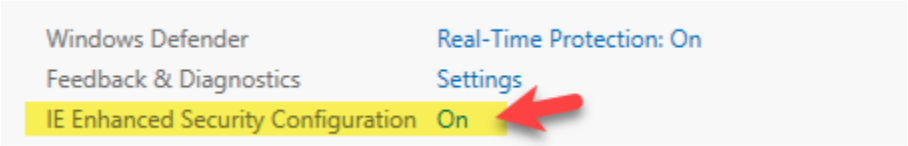


44. Click **Next**.
45. In the **Ready to Install** dialog box, click **Install**.
46. Upon **Success**, click **Close**.

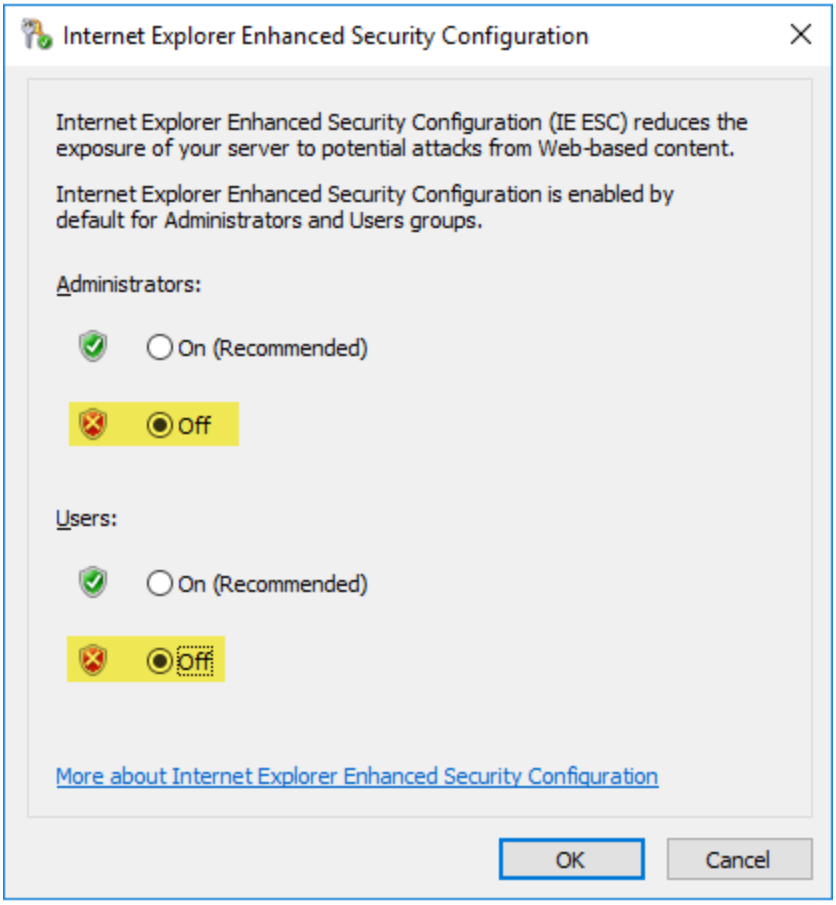
Task: Install SQL Server Management Studio

There is no PowerShell script equivalent to this task.

1. Switch to **Server Manager**.
2. Navigate to the pane on the left and click to select the **Local Server** tab.
3. Locate the **IE Enhanced Security Configuration** setting and click the corresponding **On** link.

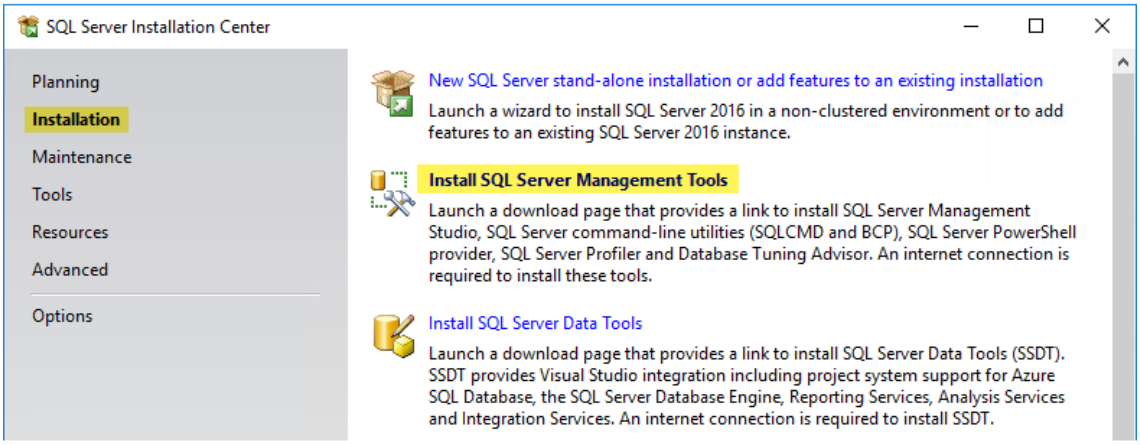


4. Click the **Off** radio button for both **Administrators** and **Users**.



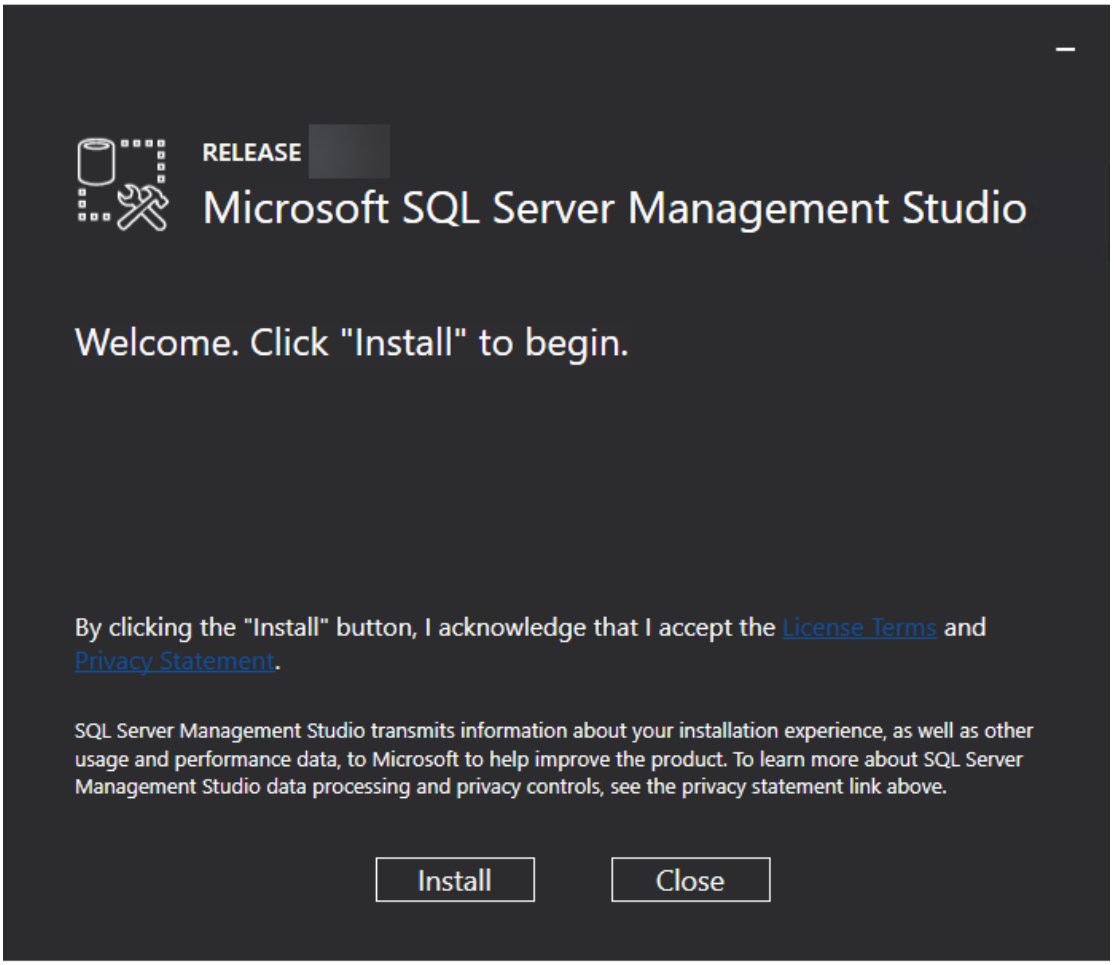
5. Click **OK**.
6. Switch back to the **SQL Server Installation Center**, move to the pane on the left and click **Installation**.
7. Click **Install SQL Server Management Tools** link.

If you receive the Internet Explorer settings dialog box, move the radio button to Don't use recommended settings and click OK.

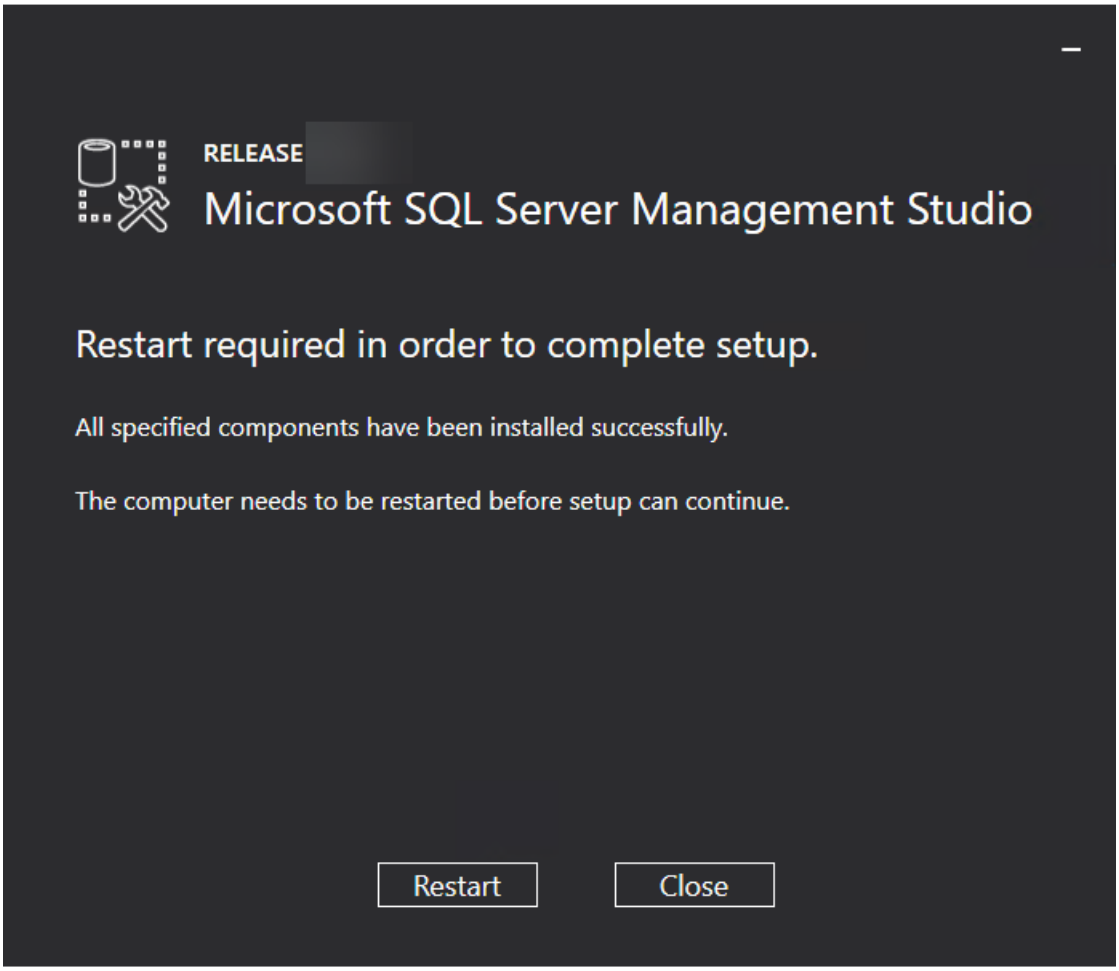


8. Click the **Download SQL Server Management Studio** (**Current release for production use**) link.

9. In the prompt below asking **Do you want to run or save SSMS-Setup-ENU.exe**, click **Save** (just in case).
10. Wait for the download to complete.
11. Once the download completes, move to the **SSMS-Setup-ENU.exe download has completed** prompt, and click **Run**.
12. In the **Welcome** dialog box, review the information, then click **Install**.

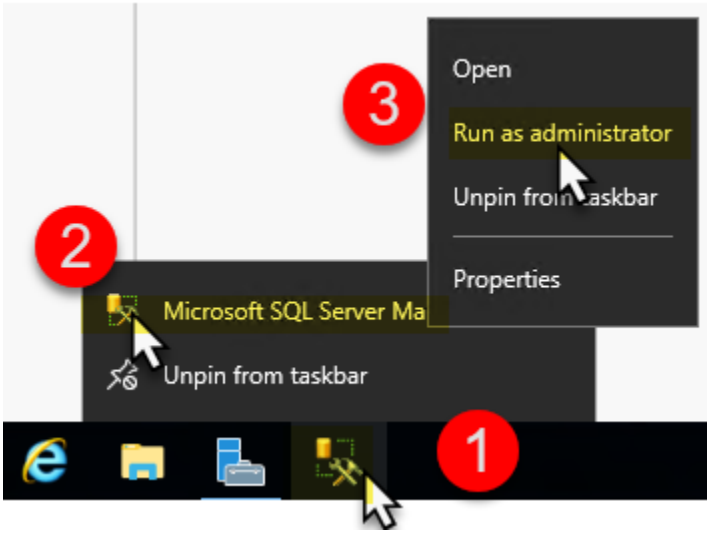


13. Once the installation completes, you will see a **Restart required in order to complete setup** dialog box, click **Restart**.

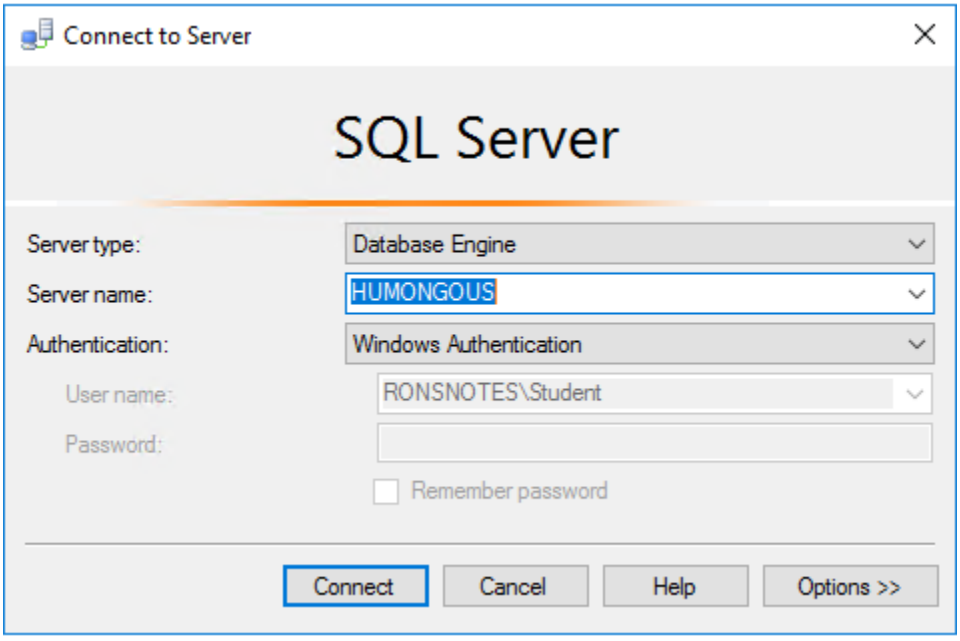


14. When the virtual machine comes back up, click **Other user** in the lower-left corner, then log in as **Student**.
15. Press the **Windows** key, then enter SQL.
16. Right-click **Microsoft SQL Server Management Studio**, then click **Pin to taskbar**.
17. Press **Esc** to return to desktop view.

18. Right-click the **Microsoft SQL Server Management Studio** icon in the taskbar, right-click the new **SQL Server Management Studio** icon showing, and click **Run as administrator**.

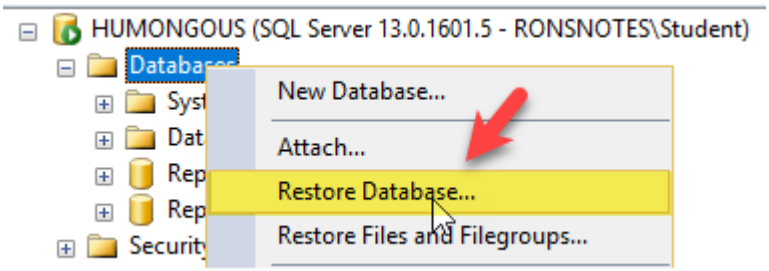


19. In the **User Account Control** dialog box, click **Yes**.
20. In the **Connect to Server** dialog box, review the current settings, then click **Connect**.

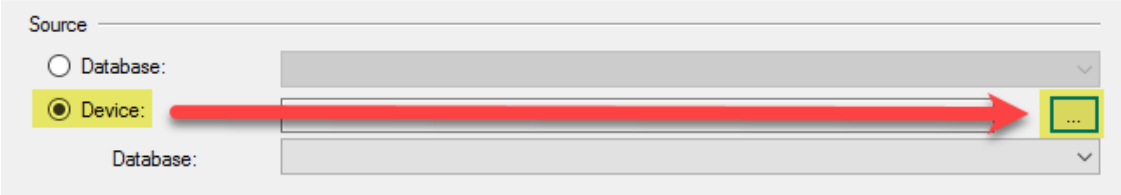


21. Minimize **Microsoft SQL Server Management Studio**.
22. Switch to your host machine and navigate to the downloaded database backup files (**DB Backups** folder).
23. Right-click the **DB Backups** folder, then click **Copy**.
24. Switch to **Humongous** virtual machine.
25. Open **File Explorer** and navigate to **C:**.
26. Paste in the **DB Backups** folder.
27. Double-click to open **DB Backups** folder.
28. Open a new instance of **File Explorer**, navigate to **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup**.

29. In the **you don't currently have permission to access this folder** dialog box, click **Continue**.
30. Back in **DB Backups** folder, double-click to open the **Adventure Works 2014 Full Database Backup** folder.
31. Click to select **AdventureWorks2014.bak**, then right-click the file and click **Copy**.
32. Paste the files in **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup.**
33. Switch back to **DB Backups** folder, double-click to open the **Adventure Works DW 2014 Full Database Backup** folder.
34. Click to select **AdventureworksDW2014.bak**, then right-click the file and click **Copy**.
35. Paste the files in **C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Backup.**
36. Switch back to **Microsoft SQL Server Management Studio**, navigate to the **Object Explorer** pane, right-click **Databases** and click **Restore Database ….**

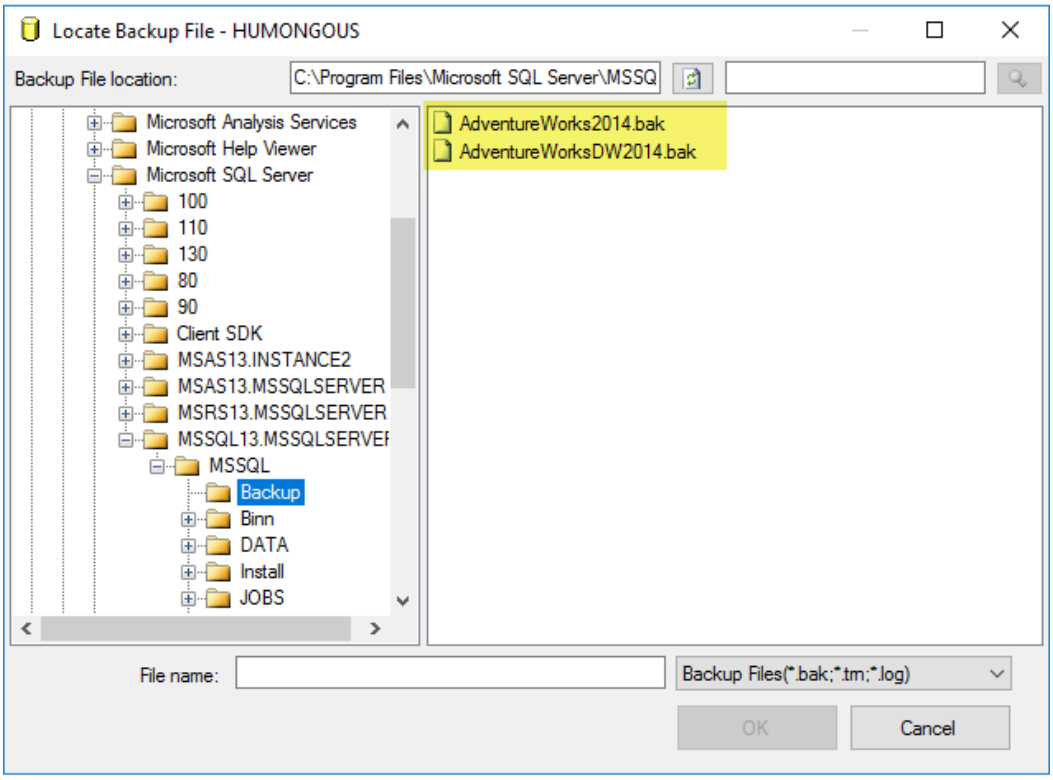


37. In the **Restore Database** dialog box, click the **Device** radio button and the corresponding ellipses.

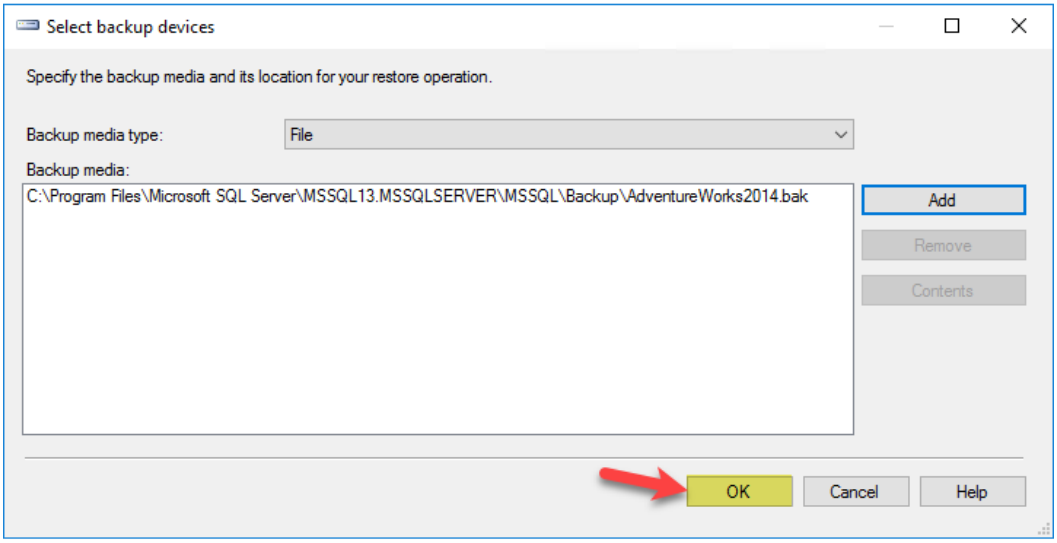


38. In the **Select backup devices** dialog box, click **Add**.

39. In the **Locate Backup File- HUMONGOUS** dialog box, notice both files are listed.

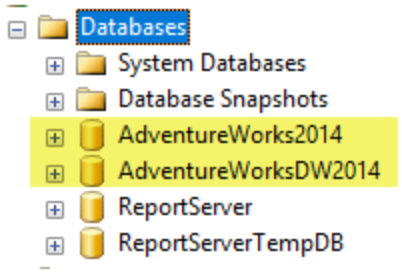


40. Double-click **AdventureWorks2014.bak** and in the **Select backup devices** dialog box, click **OK**.

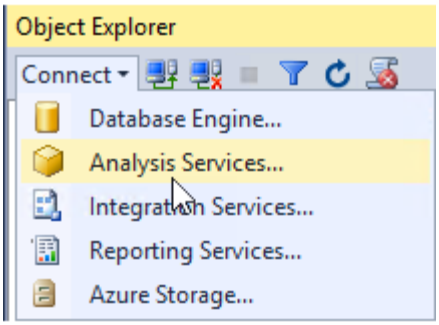


41. In the **Restore Database-AdventureWorks2014** dialog box, click **OK**.
42. In the dialog box stating **Database 'AdventureWorks2014' restored successfully**, click **OK**.
43. Move back to **Microsoft SQL Server Management Studio**, navigate to the **Object Explorer** pane, right-click **Databases** and click **Restore Database ….**
44. In the **Restore Database** dialog box, click the **Device** radio button and the corresponding ellipses.
45. In the **Select backup devices** dialog box, click **Add**.
46. In the **Locate Backup File- HUMONGOUS** dialog box, double-click **AdventureWorksDW2014**.

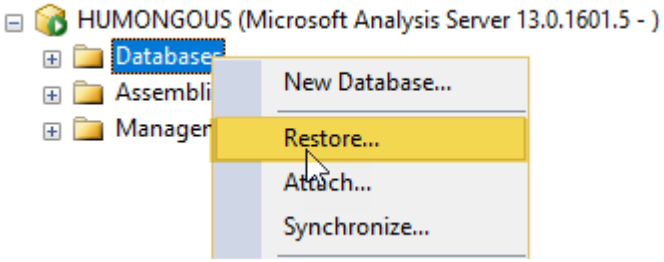
47. In the **Select backup devices** dialog box, click **OK**.
48. In the **Restore Database-AdventureWorksDW2014** dialog box, click **OK**.
49. In the dialog box stating **Database 'AdventureWorksDW2014' restored successfully**, click **OK**.
50. In the **Object Explorer** pane, expand **Databases** folder and notice you now see both databases listed.



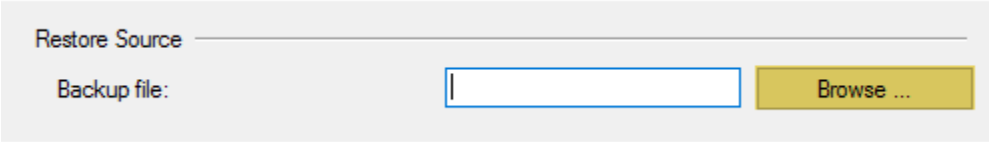
51. In a new instance of **File Explorer**, navigate to **C:\Program Files\Microsoft SQL Server\MSAS13.MSSQLSERVER\OLAP\Backup**.
52. In the **You don't currently have permission to access this folder** dialog box, click **Continue**.
53. Back in **C:\DB Backups**, double-click the **Adventure Works Multidimensional Model SQL 2014 Full Database Backups**folder.
54. Right-click **AdventureWorksDW2014Multidimensional-EE.abf** and click **Copy**.
55. Paste the file into **C:\Program Files\Microsoft SQL Server\MSAS13.MSSQLSERVER\OLAP\Backup**.
56. Switch back to **Microsoft SQL Server Management Studio** and in the **Object Explorer** pane, click **Connect**.
57. In the drop-down, **click Analysis Services…**.



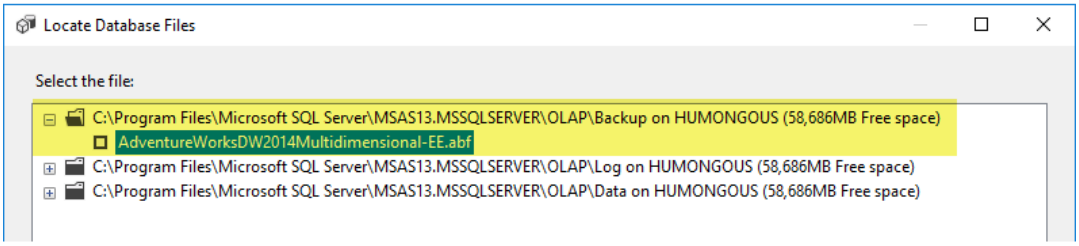
58. In the **Connect to Server** dialog box, click **Connect**.
59. In the **Object Explorer** pane, locate the **Databases** folder under **Humongous (Microsoft Analysis Services)**, right-click and click **Restore…**.



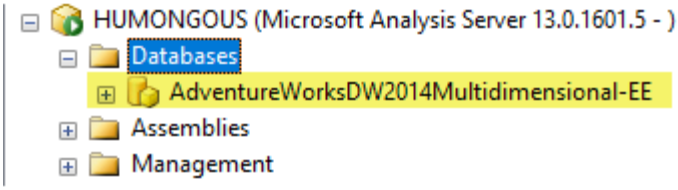
60. In the **Restore Database** dialog box, move to the **Restore Source** section and click the corresponding **Browse…**.



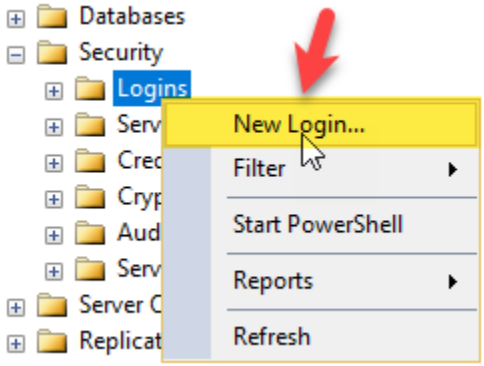
61. In the **Locate Database Files** dialog box, expand the first folder listed, double-click **AdventureWorksDW2014Multidimensional-EE.abf** and click **OK**.



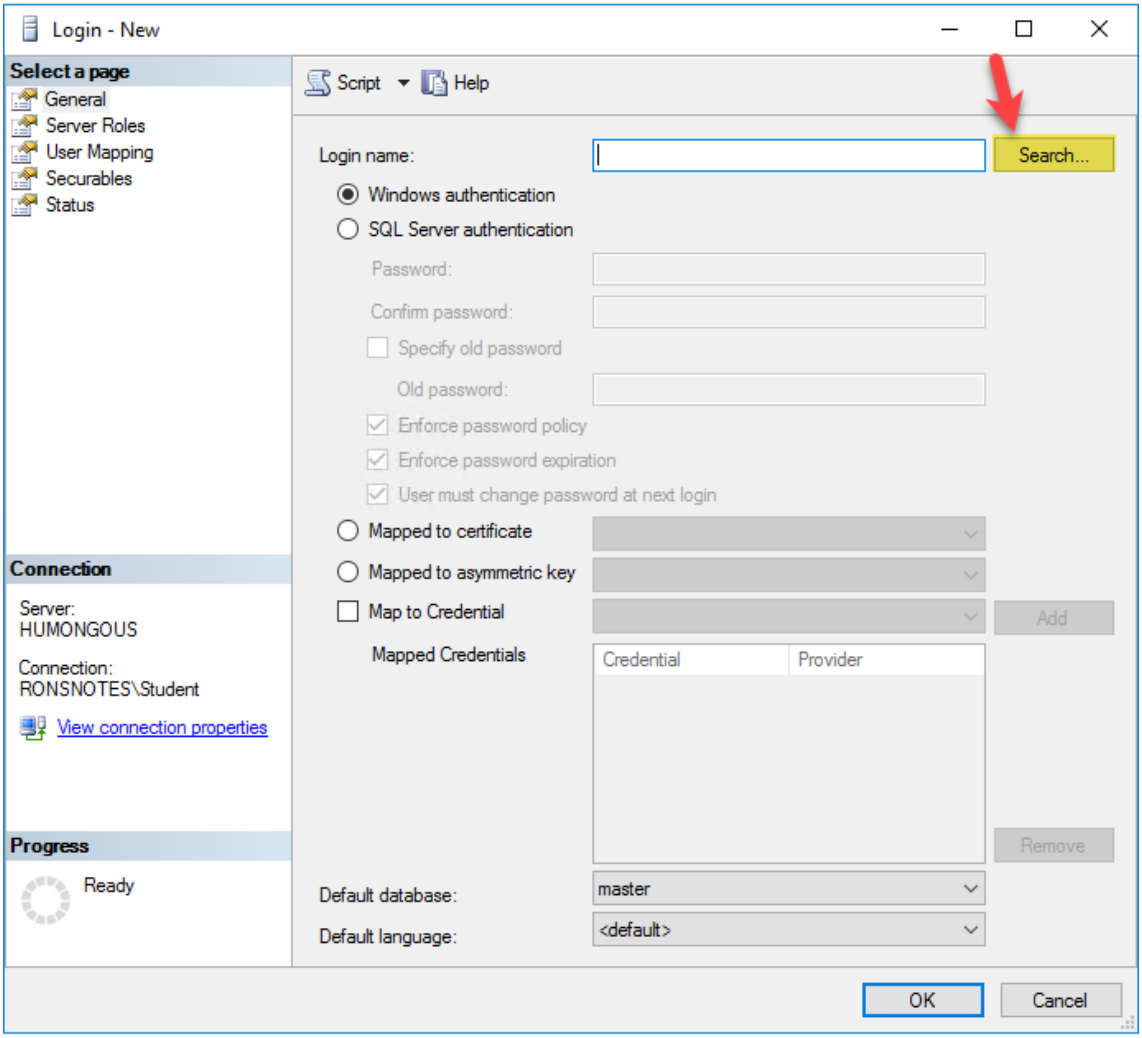
62. Back in the **Restore Database** dialog box, click **OK**.
63. Upon completion (this may take some time), right-click **Databases** under **Humongous (Microsoft Analysis Services)**, and click **Refresh**.
64. Expand **Databases** under **Humongous (Microsoft Analysis Services)**, expand **AdventureWorksDW2014Multidimensional-EE.abf** and expand **Cubes**.
65. Notice **Adventure Works** is listed.



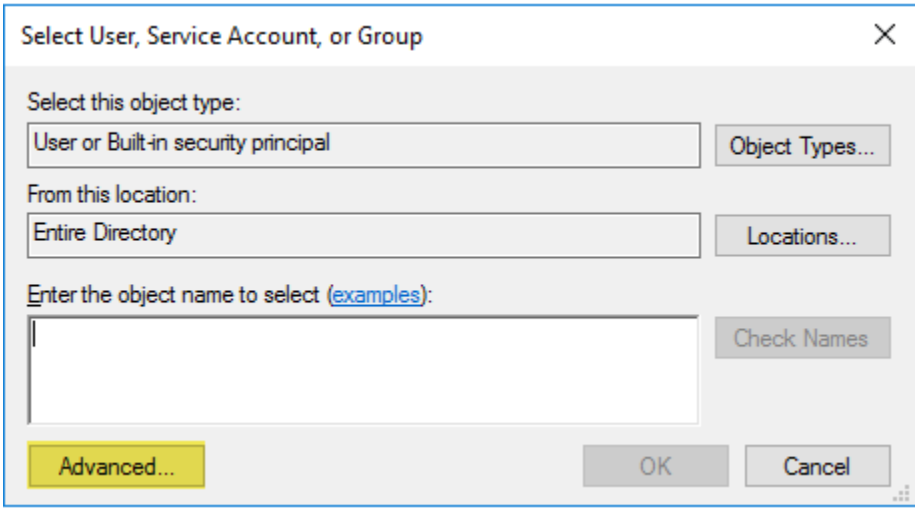
66. In the **Object Explorer** pane on the left, expand **Security** folder.
67. Right-click **Logins** and click **New Login…**.



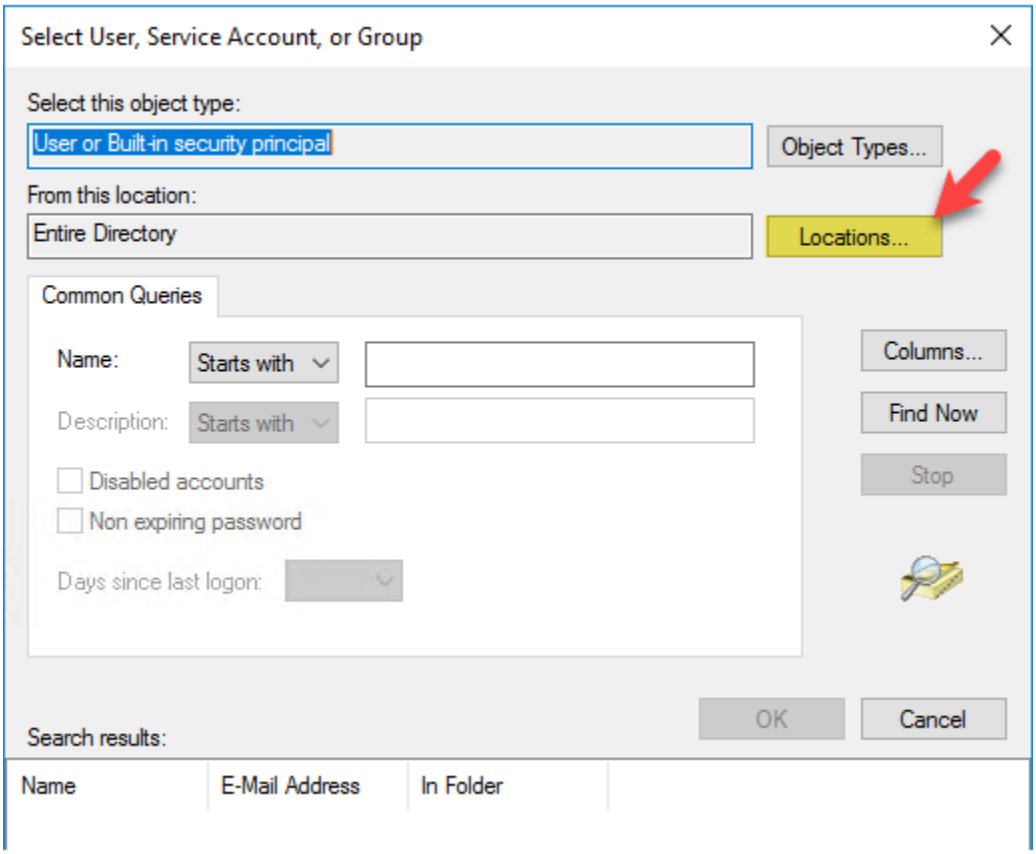
68. In the **Login - New** dialog box, click **Search…**.



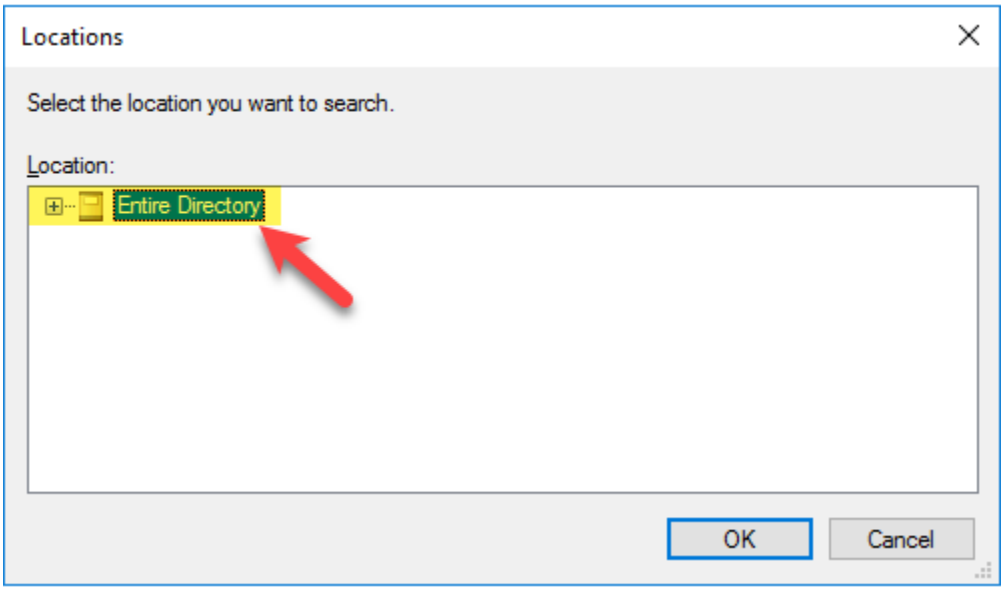
69. In the **Select User, Service Account, or Group** dialog box, click **Advanced…**.



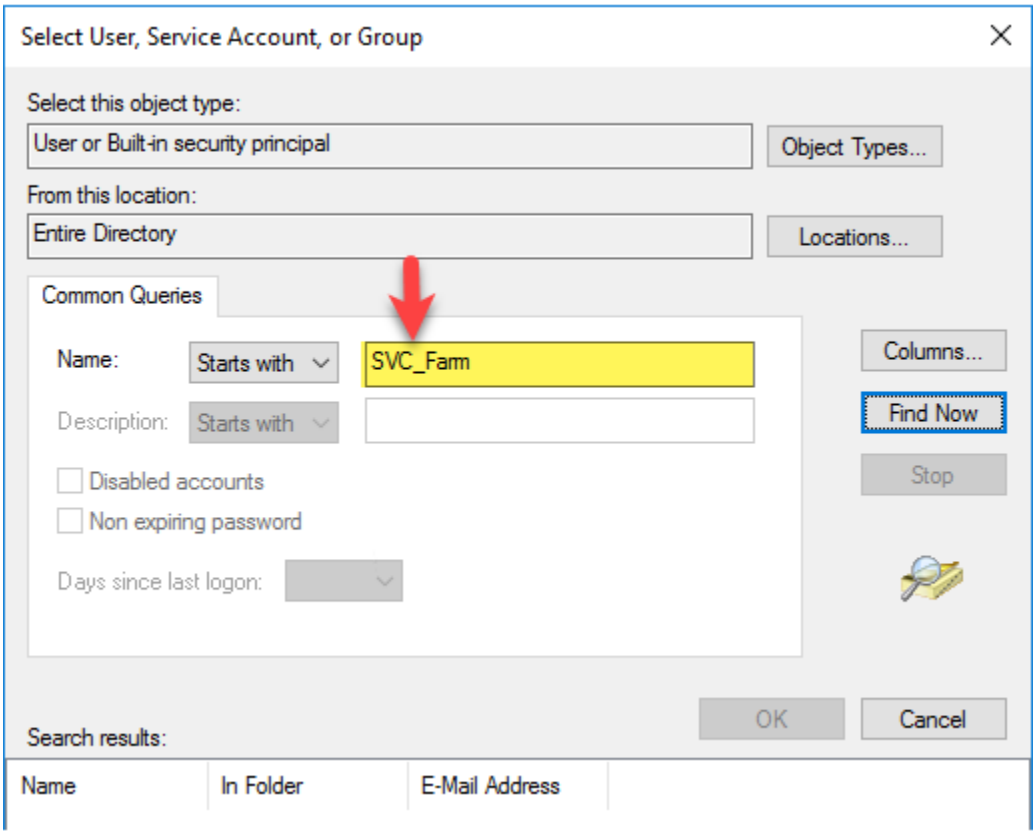
70. Click **Locations…**.



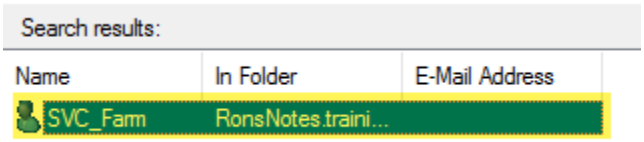
71. In the **Locations** dialog box, verify **Entire Directory** is selected, then click **OK**.



72. In the **Select User, Service Account, or Group** dialog box, move to the **Starts with** setting and enter `SVC_Farm` into the corresponding text box.

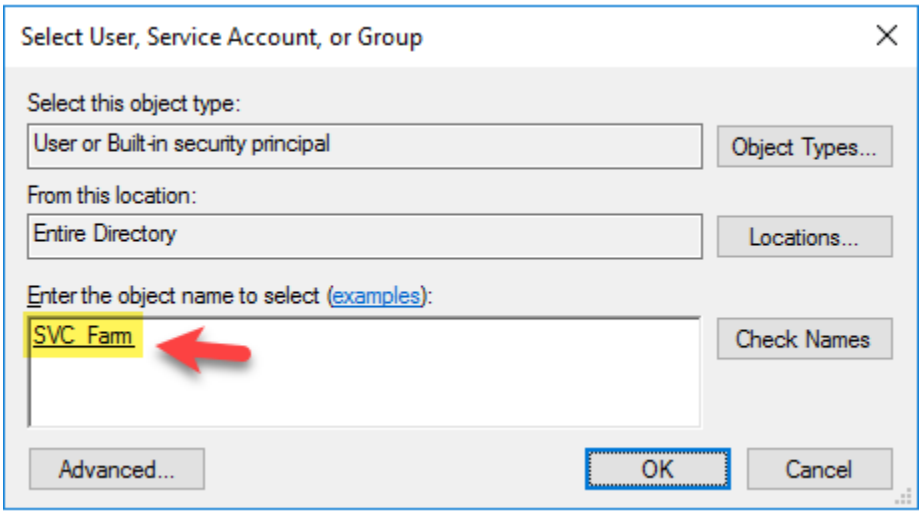


73. Click **Find Now**.
74. Notice you now see **SVC_Farm** listed below in the **Search results**.

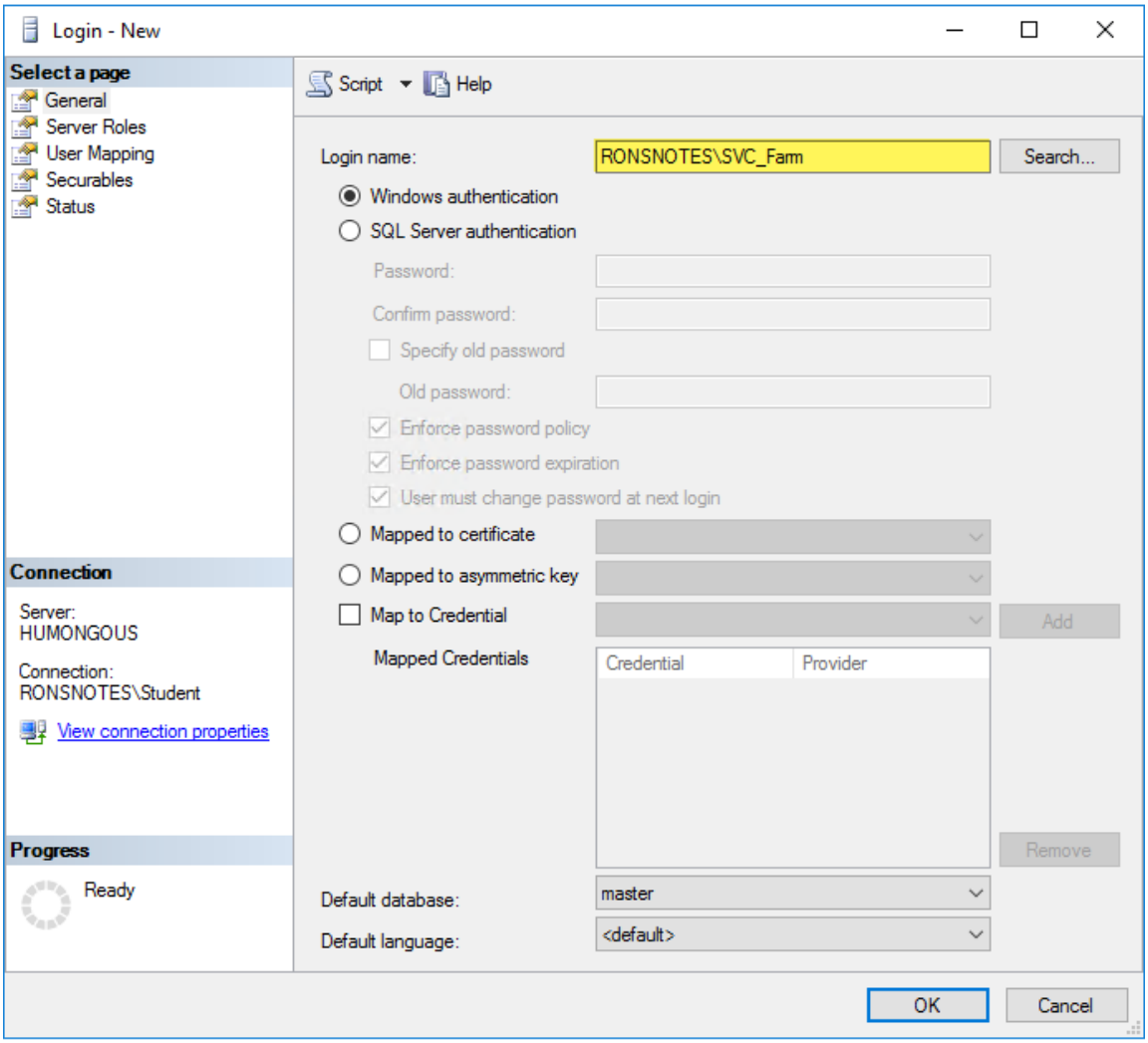


75. Click **OK**.

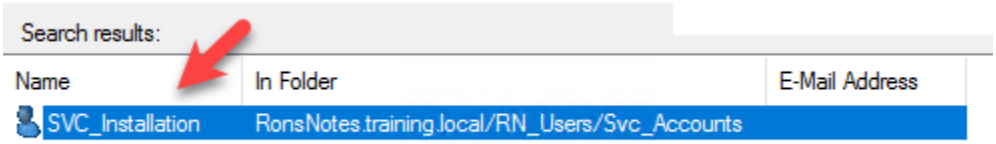
76. Back in the **Select User, Service Account, or Group** dialog box, review the results.



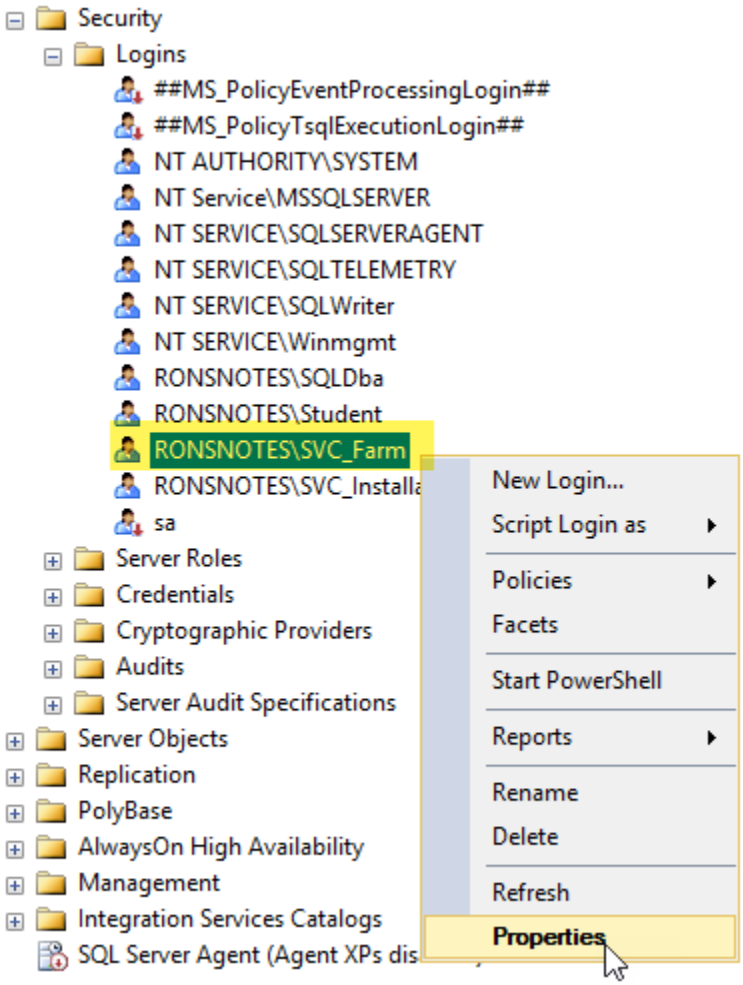
77. Click **OK**.
78. Back in the **Login – New** dialog box, review the results, then click **OK**.



79. Repeat the prior twelve steps to create a login for **SVC_Installation**.

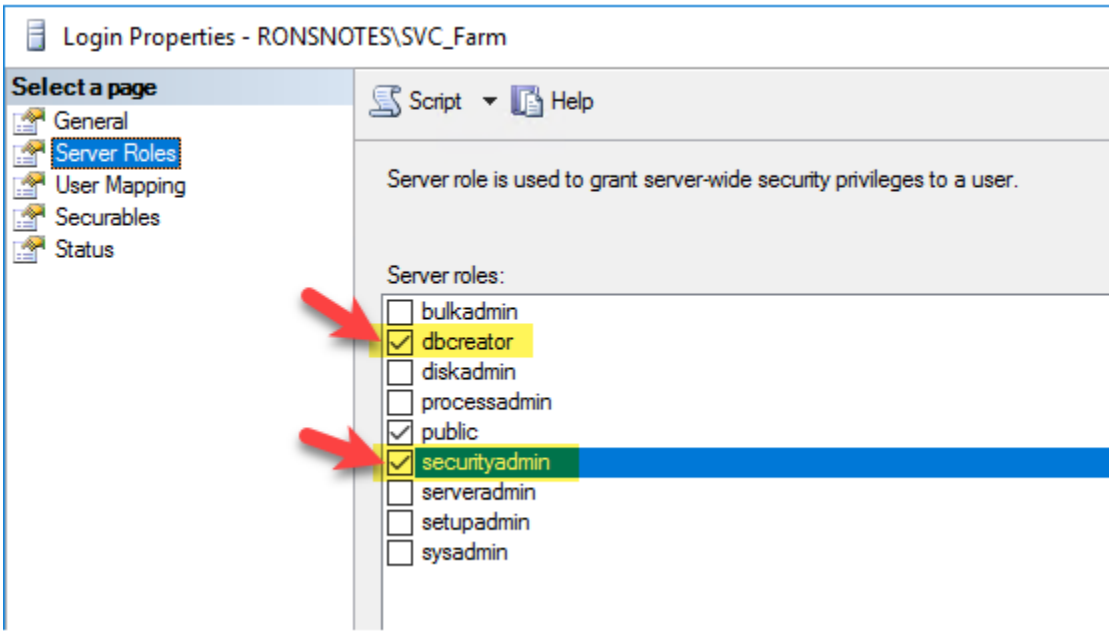


80. Move back to the **Object Explorer** pane on the left and expand **Logins** folder.
81. Right-click **RONSNOTES\SVC_Farm** and click **Properties**.

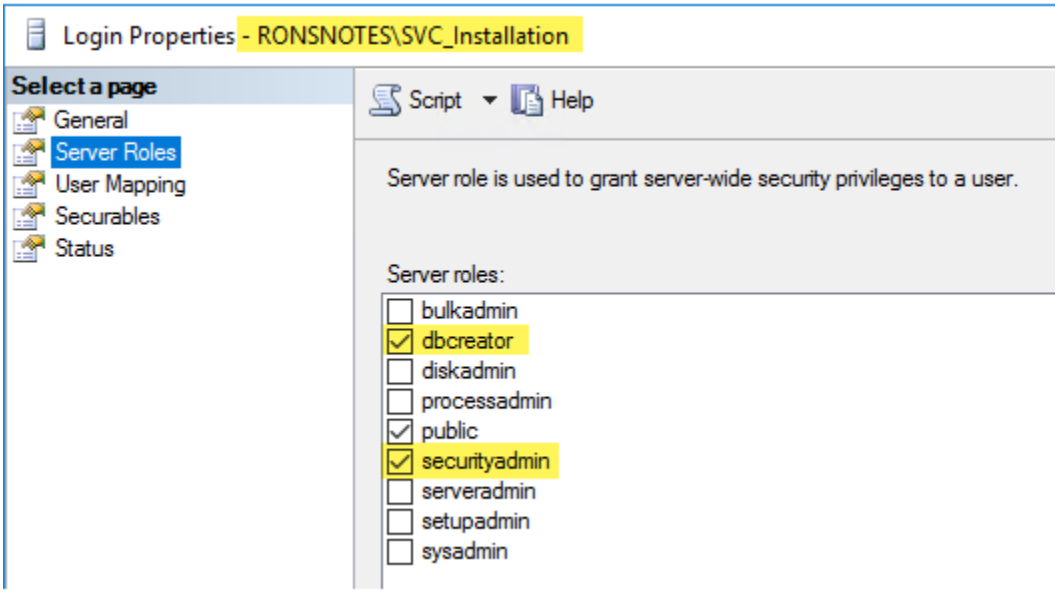


82. When the **Login Properties – RONSNOTES\SVC_Farm** dialog box opens, review the settings and options available.
83. Move to the pane on the left and click **Server Roles**.

84. Navigate to the **Server roles** setting and place a check in both the **dbcreator** and **securityadmin** check boxes.



85. Click **OK**.
86. Repeat the last five steps for **SVC_Installation**.



87. Close **SSMS**.
88. Restart the virtual machine.
89. When the virtual machine comes back up, log on as **Student**.

Lab Files

Switch to your host machine, navigate to the downloaded/cloned repository files, then copy the **Lab Files** folder and paste it into **C:** drive on the **Humongous** virtual machine.