

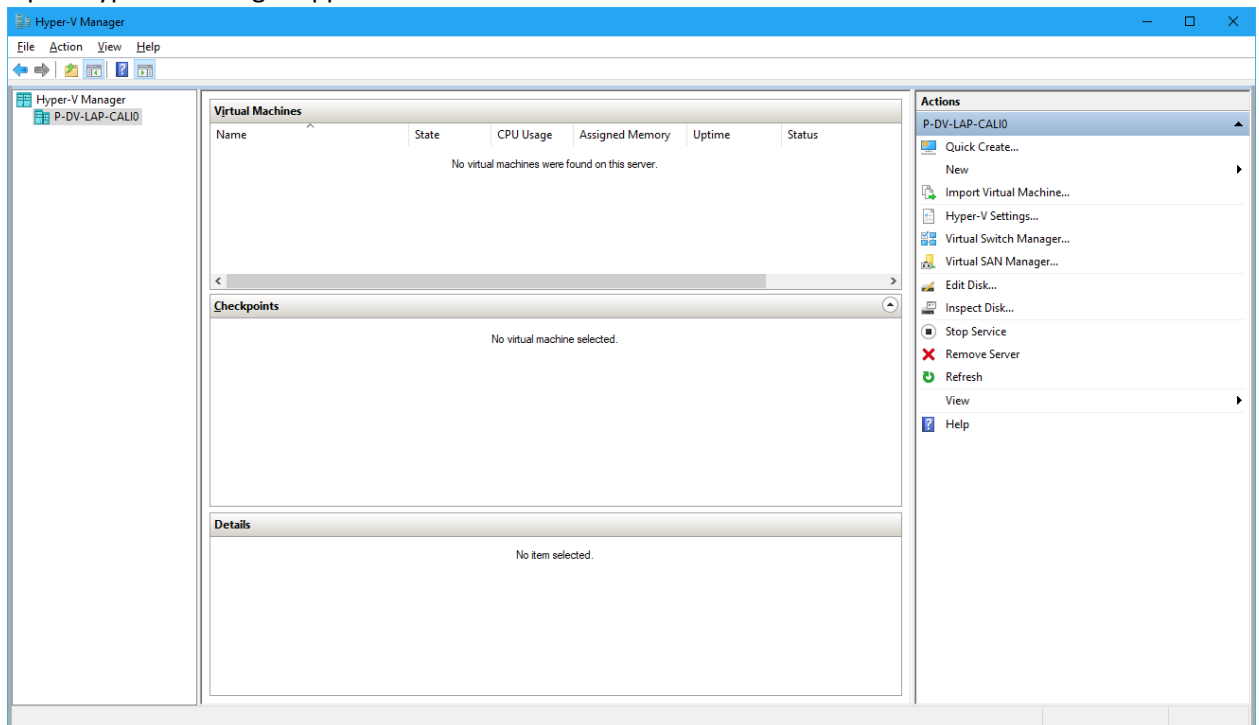
Relativity Dev VM  
Create Windows Base Machine  
Documentation  
[March 31, 2021]

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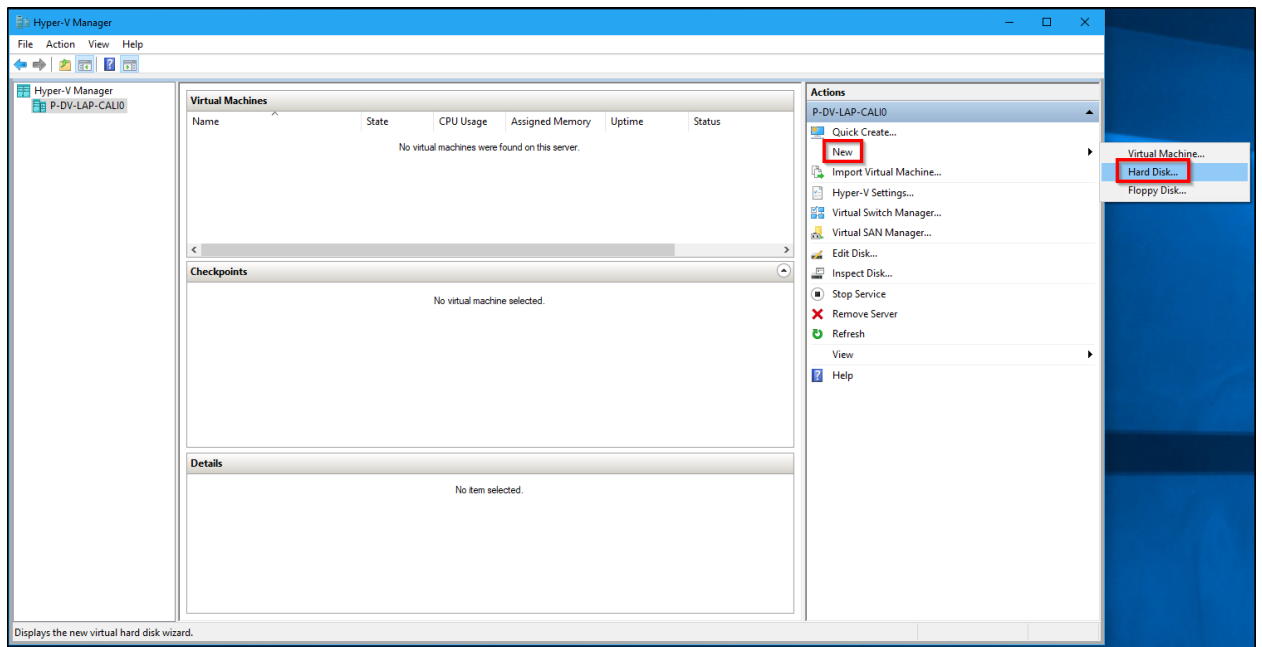
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## 1 Creating the VM

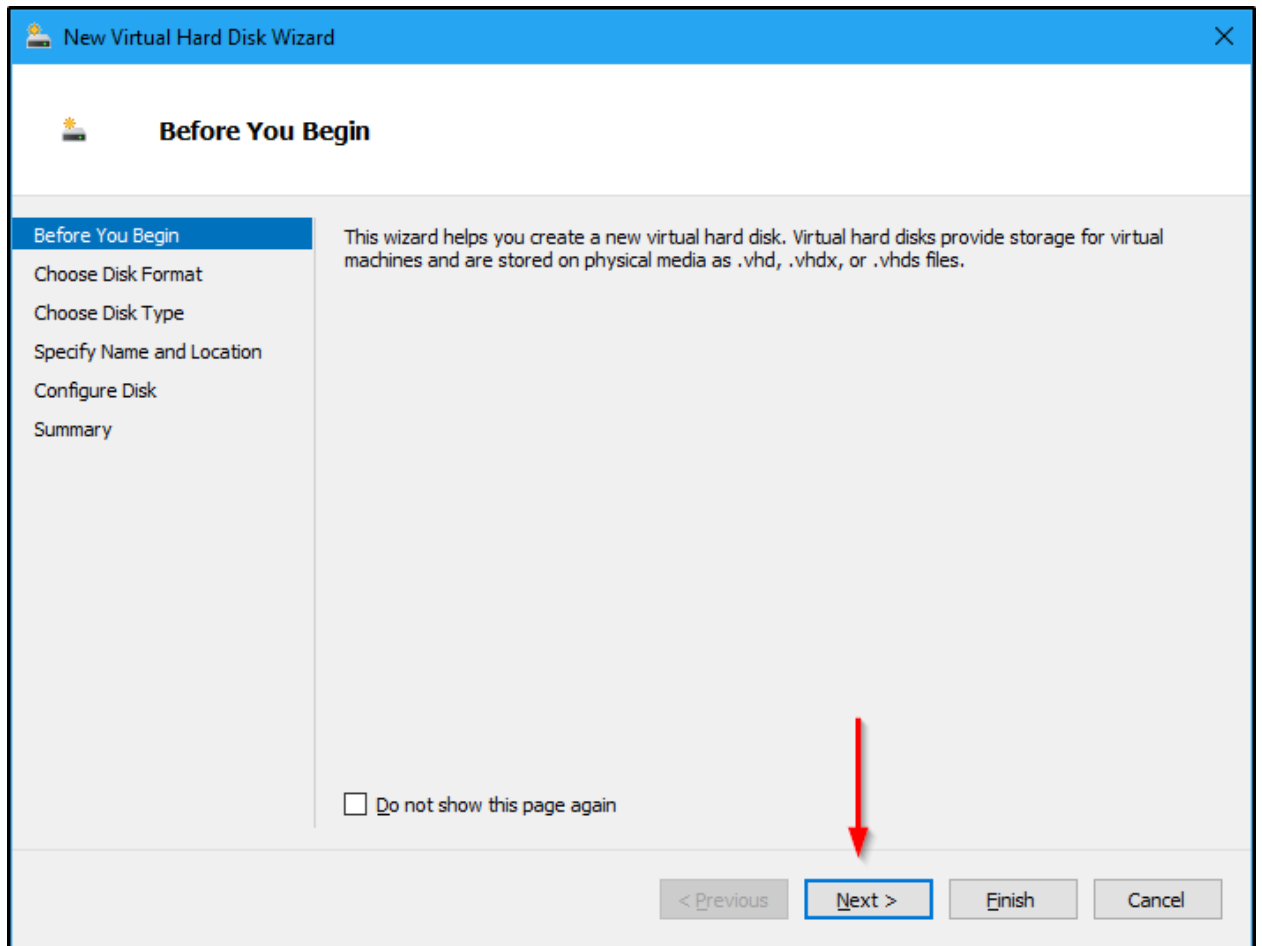
1. Create the following folders on host machine
  - a. S:\DynamicDisk
  - b. S:\DynamicVm\Hyper-V\Virtual Hard Disks
  - c. S:\ISO
2. Download **Windows Server 2016** ISO file at this link - <https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016>
3. Copy the downloaded ISO file to S:\ISO folder
4. Enable Hyper-V on the host machine.
5. Create an **External Hyper-V Virtual Switch** on the host machine. Name the switch as **Default Switch**.
6. Set **PowerShell** to always open with '**Run as Administrator**' permissions.
7. Open Hyper-V Manager application.



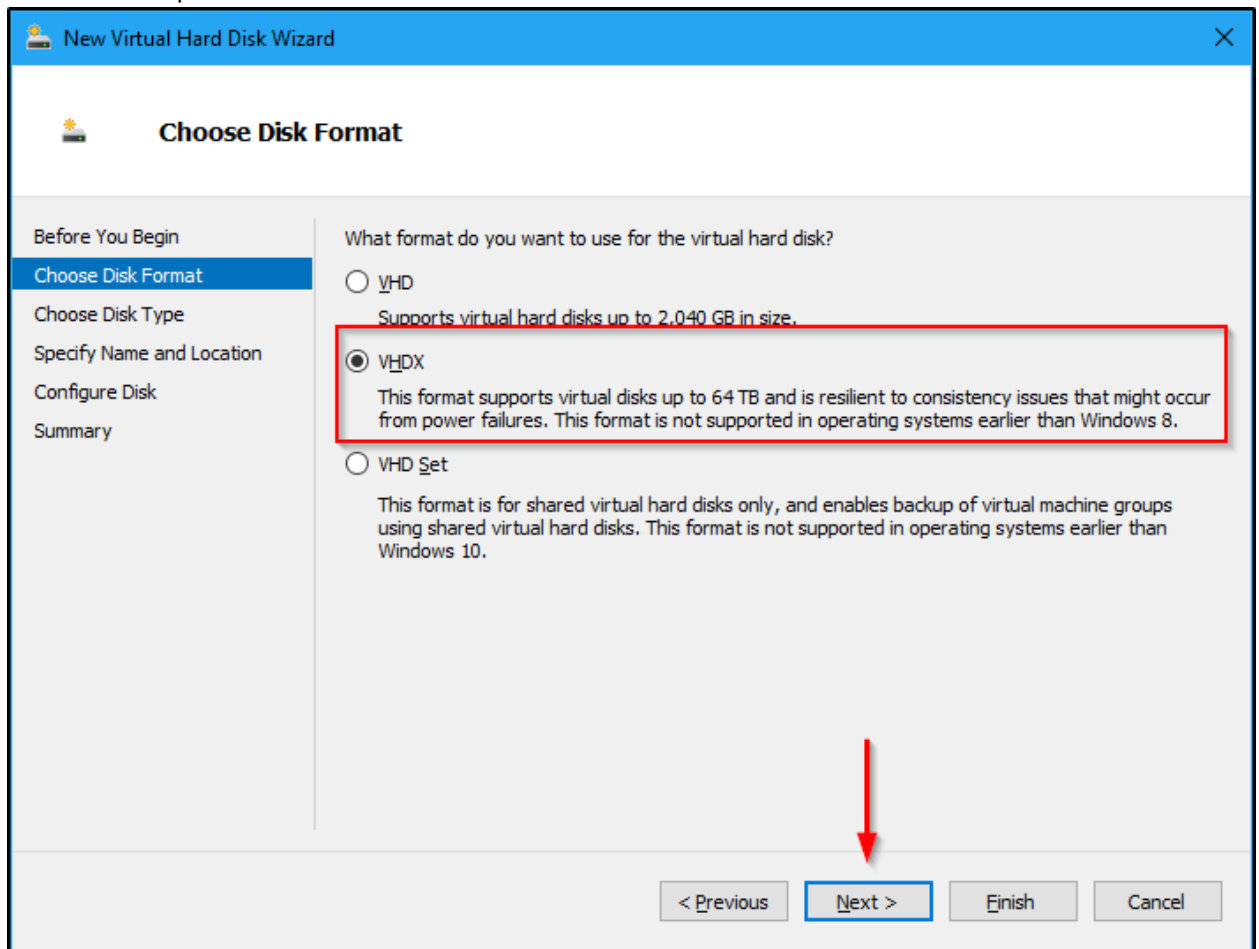
8. From the Actions window on the right side, Select New and then select Hard Disk option



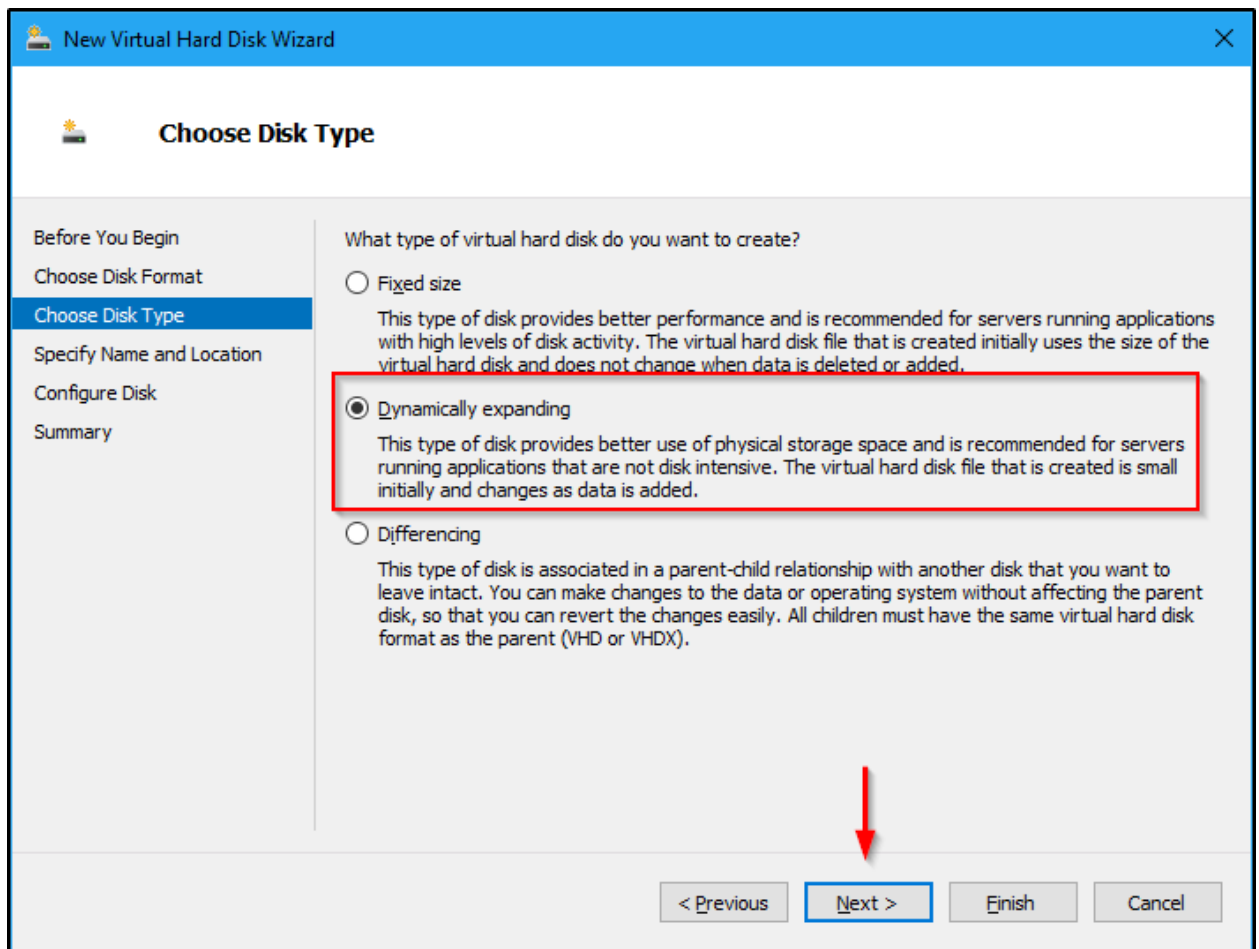
9. Click Next



10. Select VHDX option and click Next



11. Select Dynamically expanding option and click Next



12. Enter a Name and Location for the new Virtual Hard disk and then click Next

New Virtual Hard Disk Wizard

**Specify Name and Location**

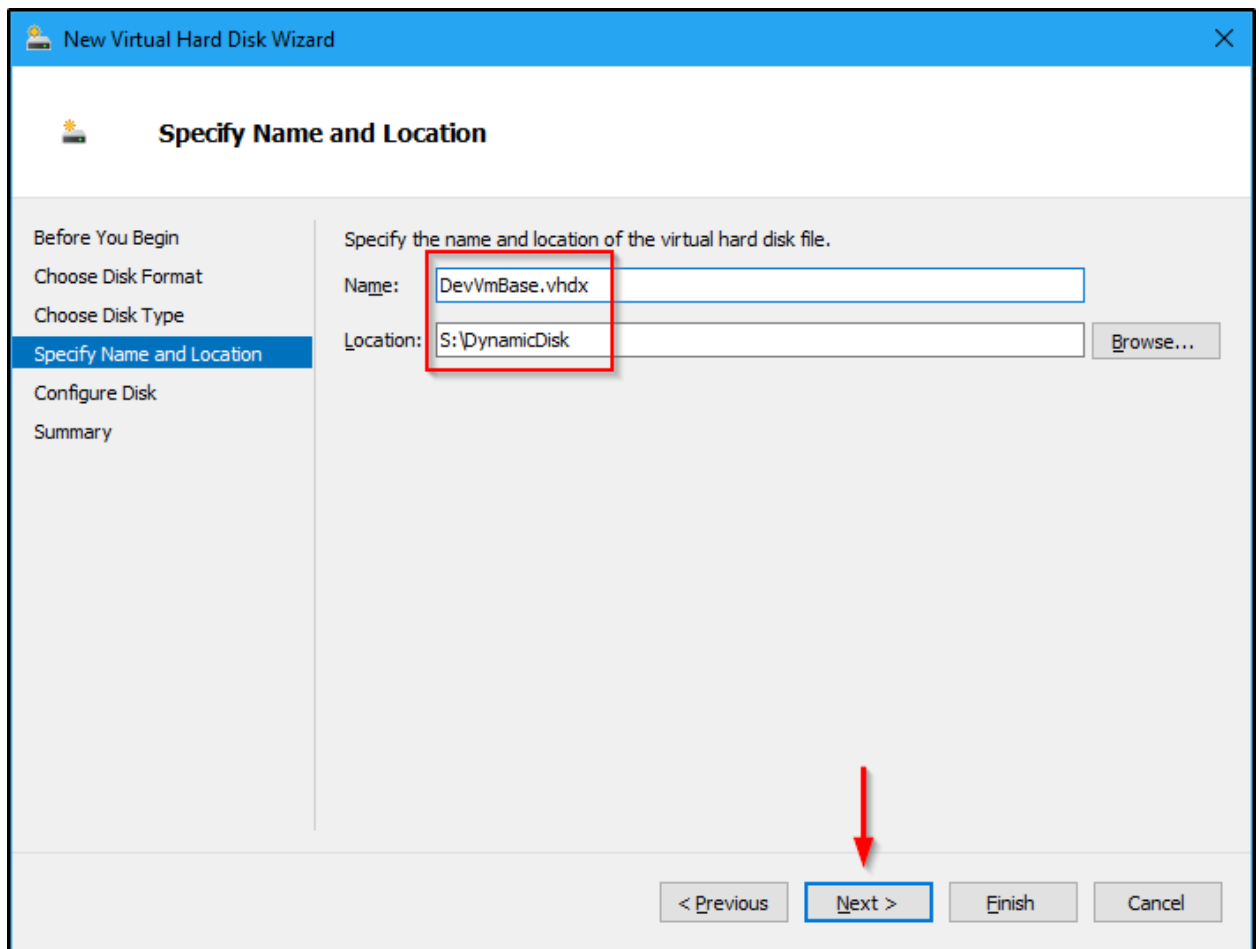
Before You Begin  
Choose Disk Format  
Choose Disk Type  
**Specify Name and Location**  
Configure Disk  
Summary

Specify the name and location of the virtual hard disk file.

Name: DevVmBase.vhdx

Location: S:\DynamicDisk Browse...

< Previous **Next >** Finish Cancel



13. Enter the desired size in GB and then click Next

New Virtual Hard Disk Wizard

**Configure Disk**

Before You Begin  
Choose Disk Format  
Choose Disk Type  
Specify Name and Location  
**Configure Disk**  
Summary

You can create a blank virtual hard disk or copy the contents of an existing physical disk.

☒ Create a new blank virtual hard disk  
Size:  GB (Maximum: 64 TB)

☐ Copy the contents of the specified physical disk:

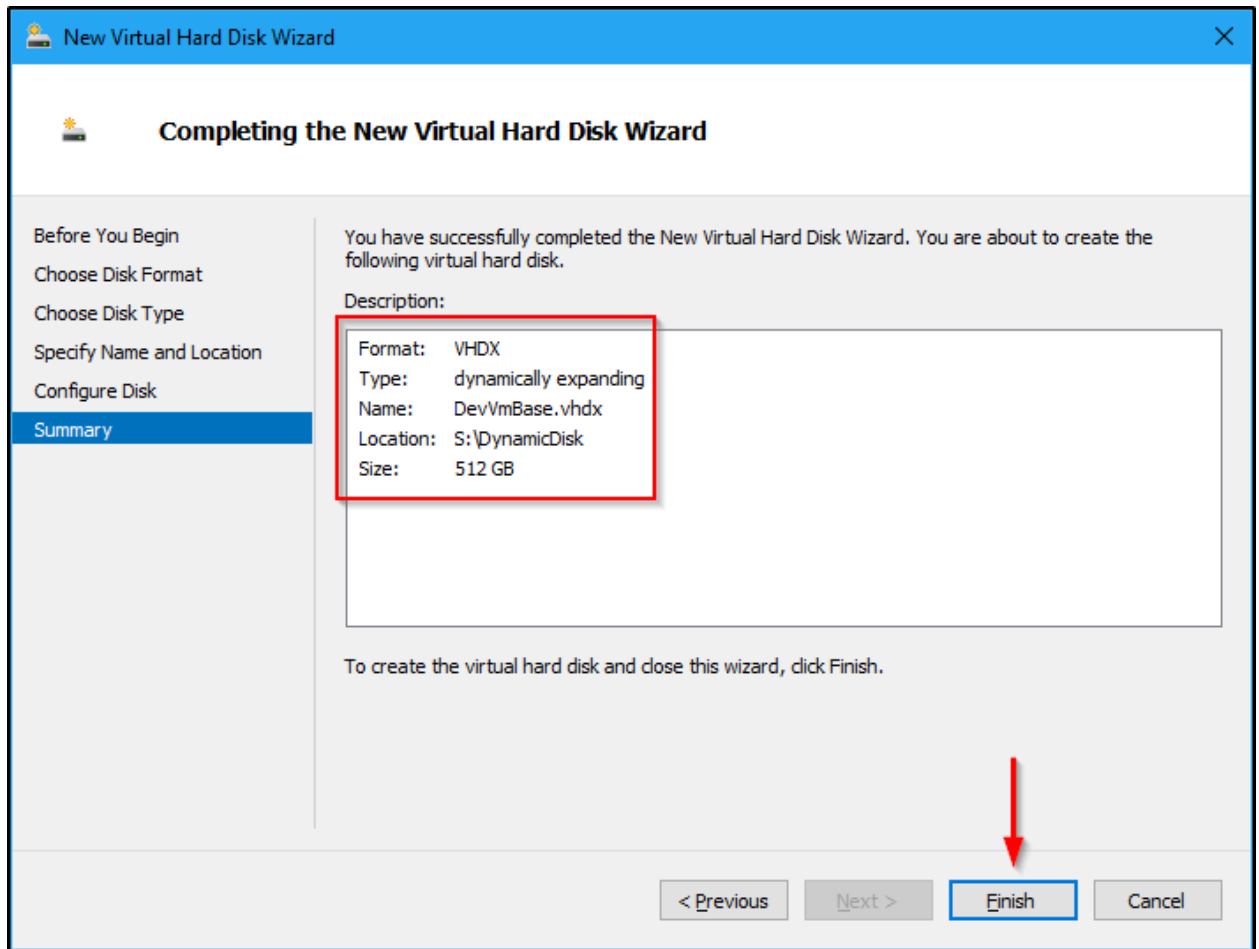
Physical Hard Disk	Size
\\.\PHYSICALDRIVE0	1907 GB

☐ Copy the contents of the specified virtual hard disk  
Path:  Browse...

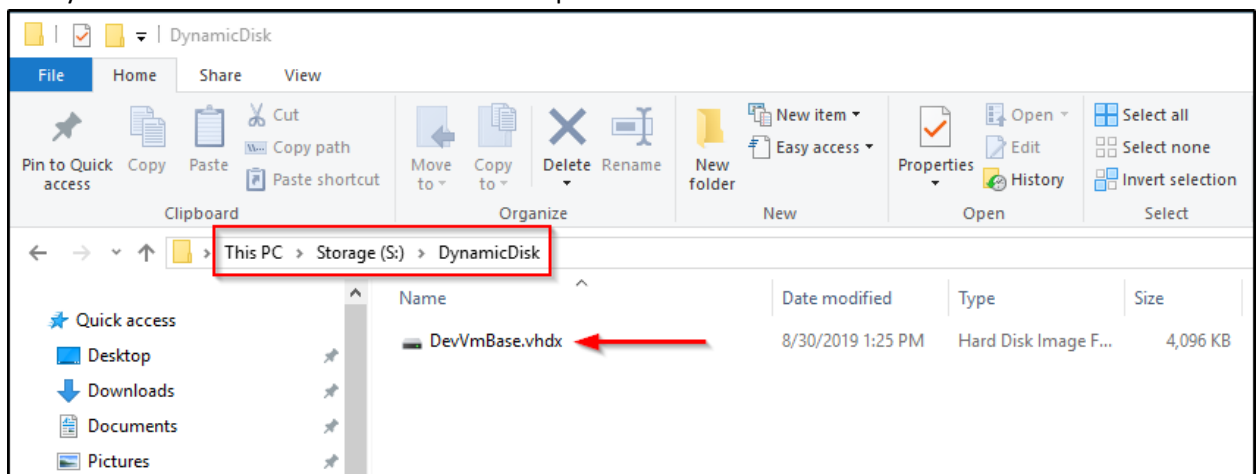
< Previous **Next >** Finish Cancel

14. Click Finish

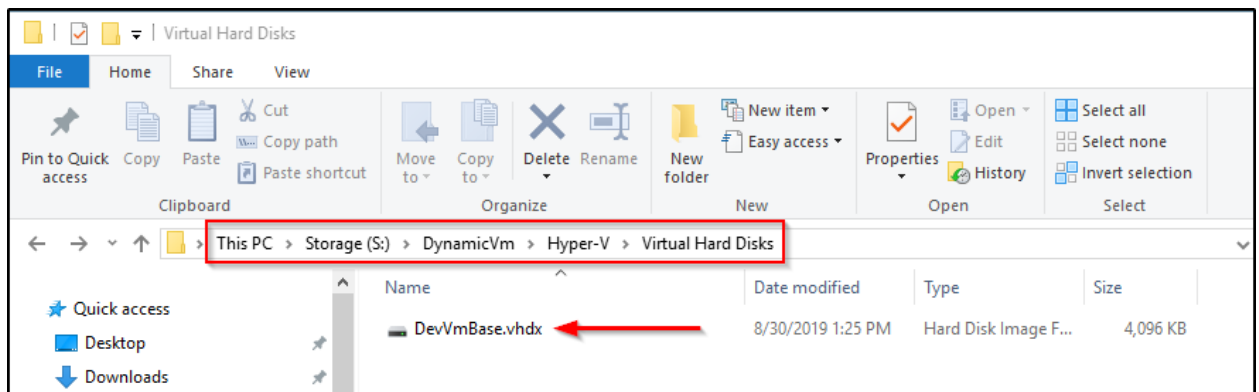




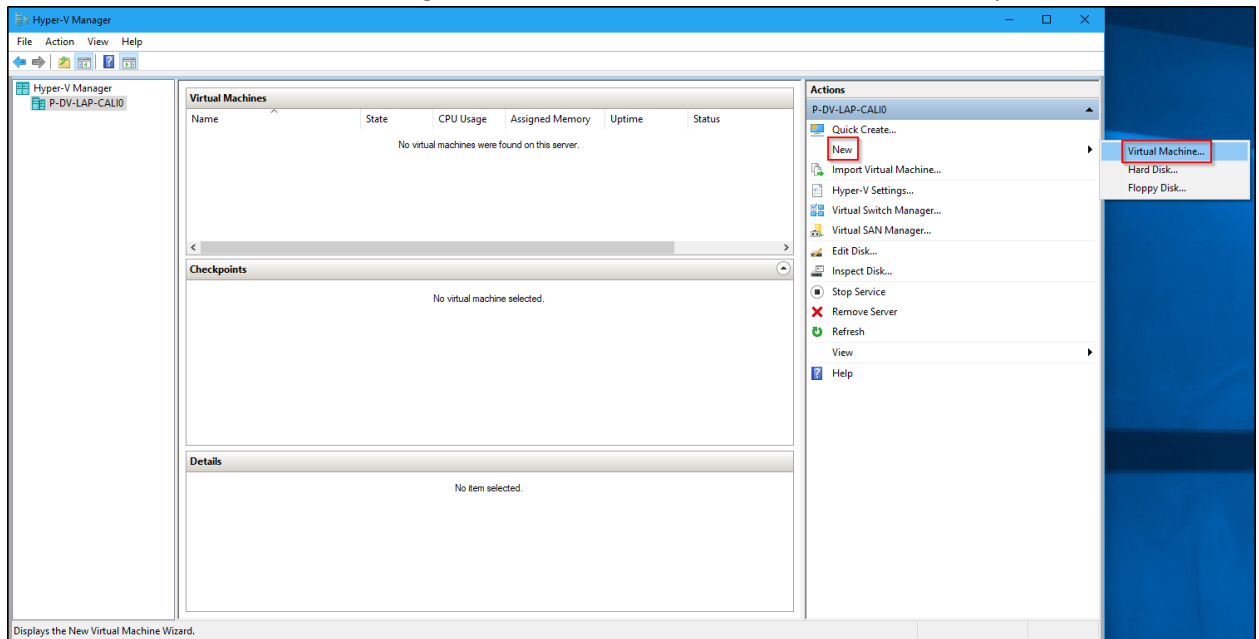
15. Verify if the Virtual Hard disk is created in the provided location.



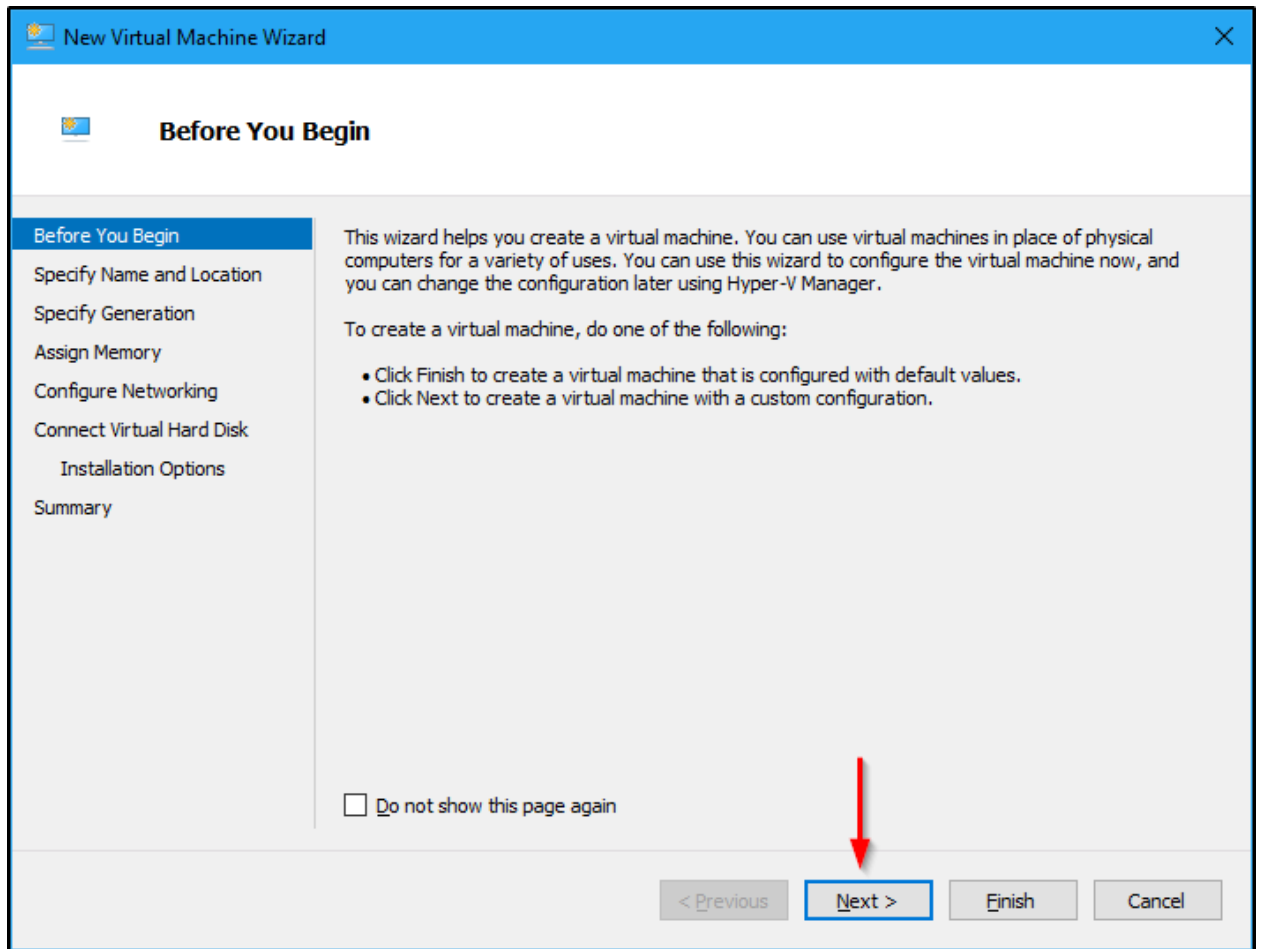
16. Copy the just created Virtual Hard disk from "S:\DynamicDisk\DevVmBase.vhdx" to "S:\DynamicVm\Hyper-V\Virtual Hard Disks\DevVmBase.vhdx" location.



17. From the Actions window on the right side, Select New and then select Hard Disk option



18. Click Next



19. Provide a name and a location for the new Virtual machine

New Virtual Machine Wizard

## Specify Name and Location

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Summary

Choose a name and location for this virtual machine.

The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.

Name: DevVmBase

You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.

☒ Store the virtual machine in a different location

Location: S:\DynamicVm\Hyper-V

Browse...

⚠ If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.

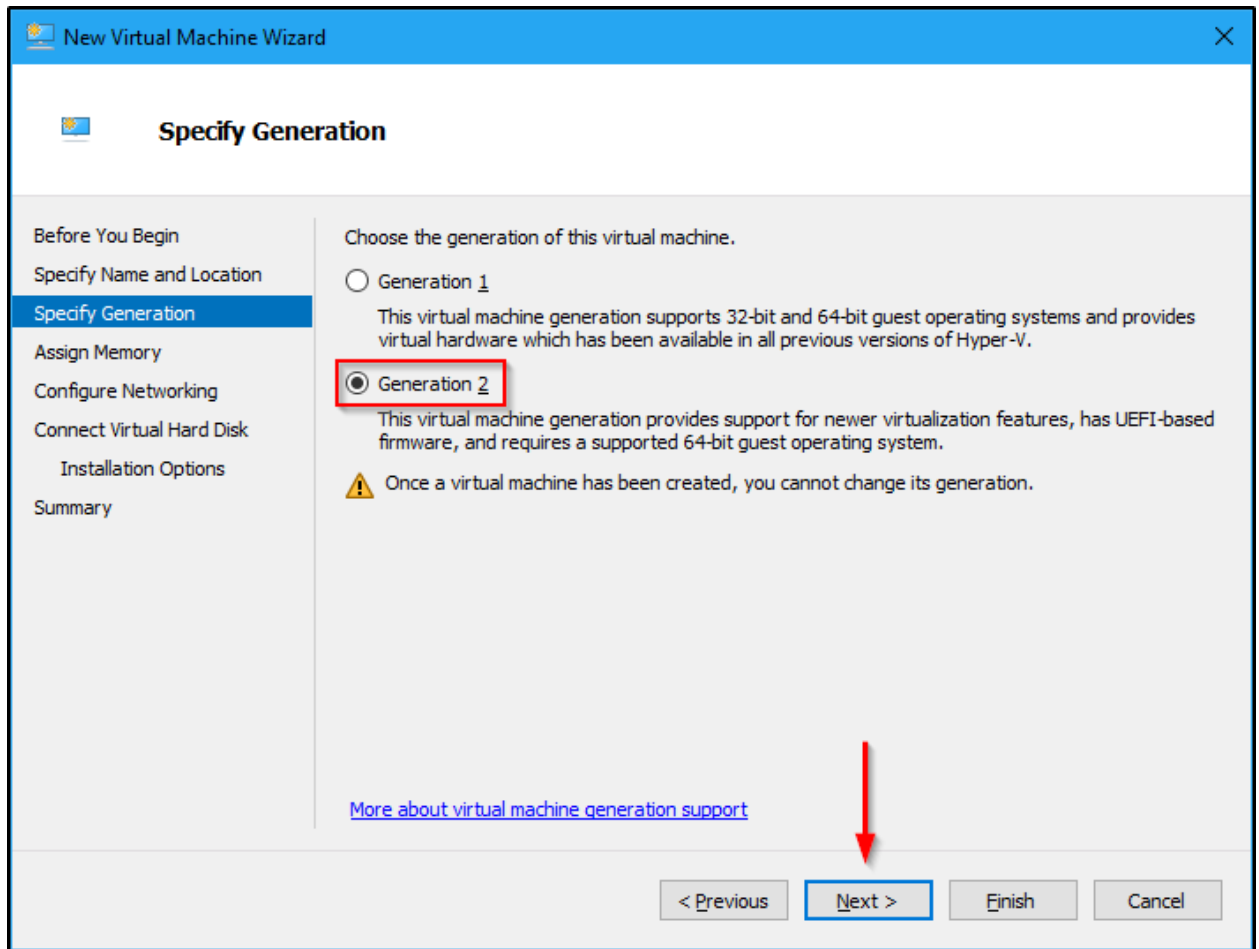
< Previous

Next >

Finish

Cancel

20. Pick Generation 2 and click Next



21. Provide the necessary memory and select Next. Also uncheck Dynamic Memory option.

New Virtual Machine Wizard

## Assign Memory

Before You Begin  
Specify Name and Location  
Specify Generation  
**Assign Memory**  
Configure Networking  
Connect Virtual Hard Disk  
Installation Options  
Summary

Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 12582912 MB. To improve performance, specify more than the minimum amount recommended for the operating system.

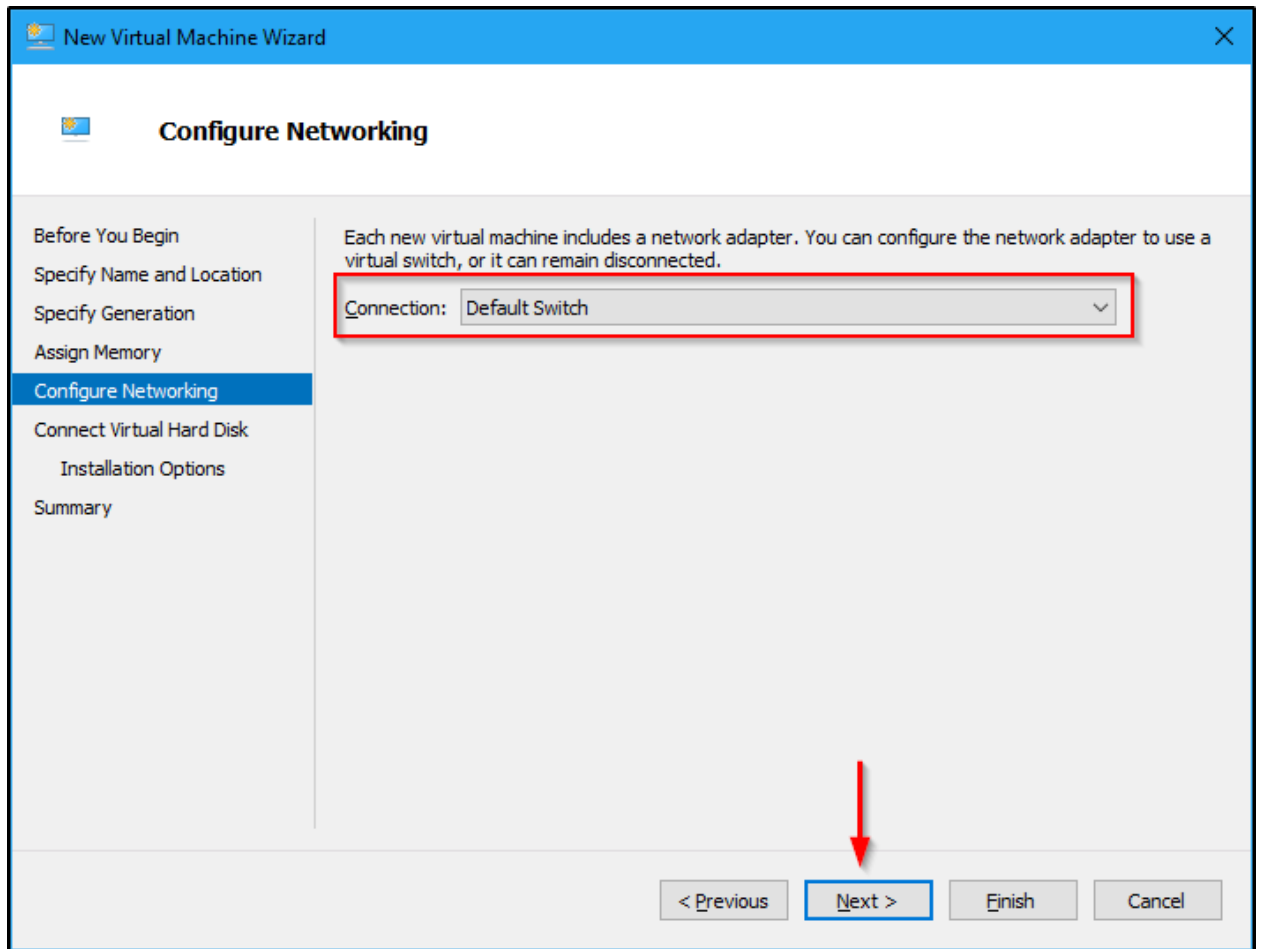
Startup memory:  MB

☐ Use Dynamic Memory for this virtual machine.

**i** When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.

< Previous **Next >** Finish Cancel

22. Select a Virtual Switch and click Next



23. Select the Dynamic Virtual Hard Disk we created previously and select Next

New Virtual Machine Wizard

### Connect Virtual Hard Disk

Before You Begin  
Specify Name and Location  
Specify Generation  
Assign Memory  
Configure Networking  
**Connect Virtual Hard Disk**  
Summary

A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.

☐ Create a virtual hard disk  
Use this option to create a VHDX dynamically expanding virtual hard disk.

Name: DevVmBase.vhdx  
Location: S:\DynamicVm\Hyper-V\DevVmBase\Virtual Hard Disks\ Browse...  
Size: 127 GB (Maximum: 64 TB)

☒ Use an existing virtual hard disk  
Use this option to attach an existing VHDX virtual hard disk.

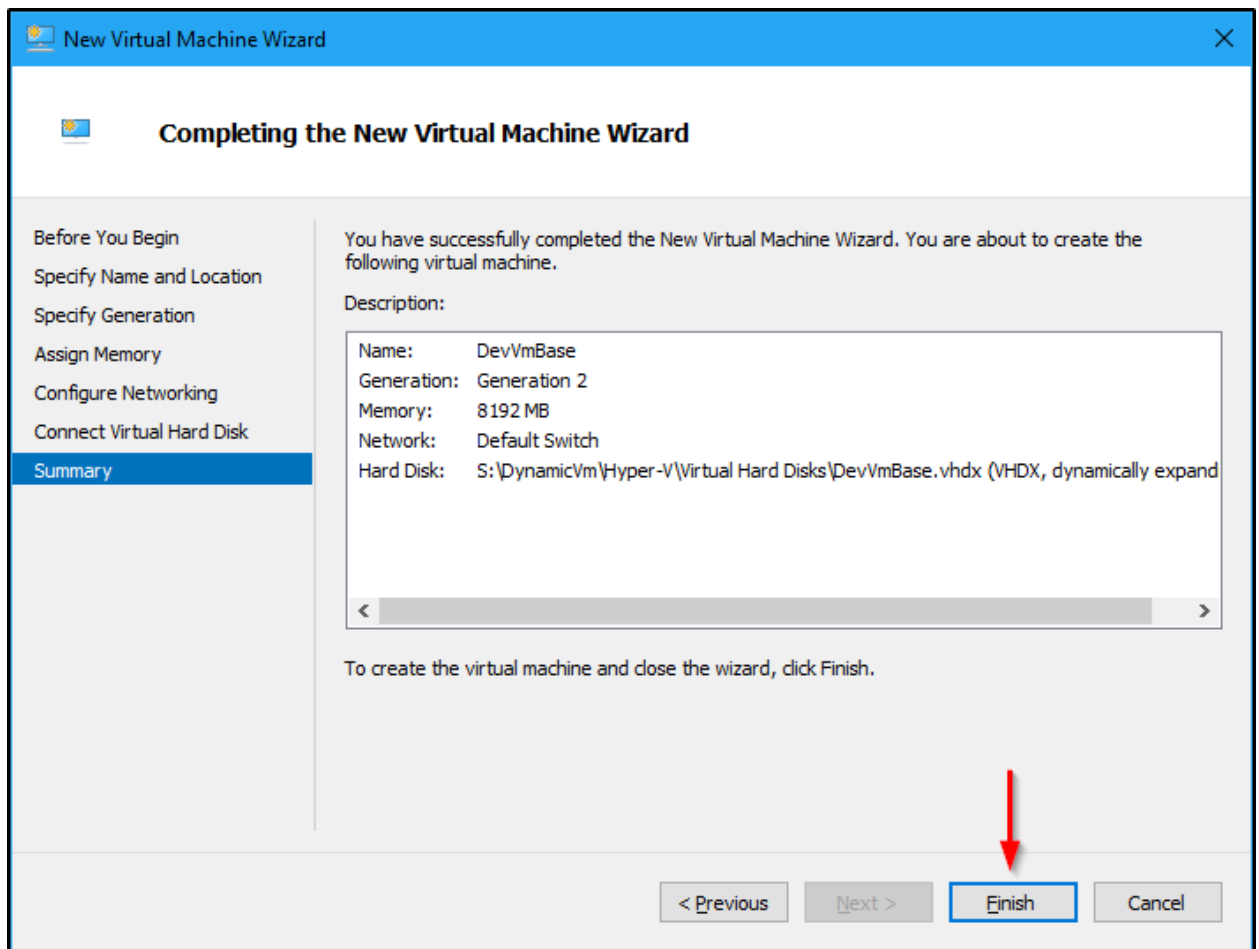
Location: S:\DynamicVm\Hyper-V\Virtual Hard Disks\DevVmBase.vhdx Browse...

☐ Attach a virtual hard disk later  
Use this option to skip this step now and attach an existing virtual hard disk later.

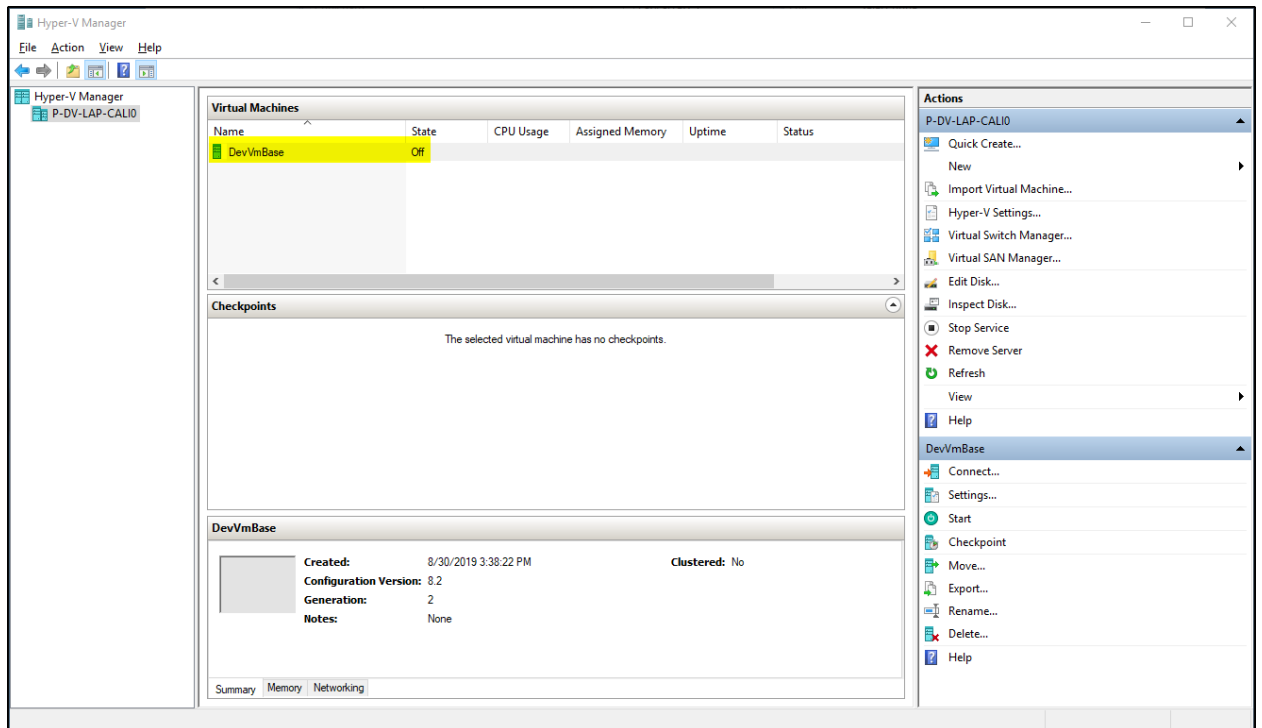
< Previous Next > Finish Cancel

24. Click Finish



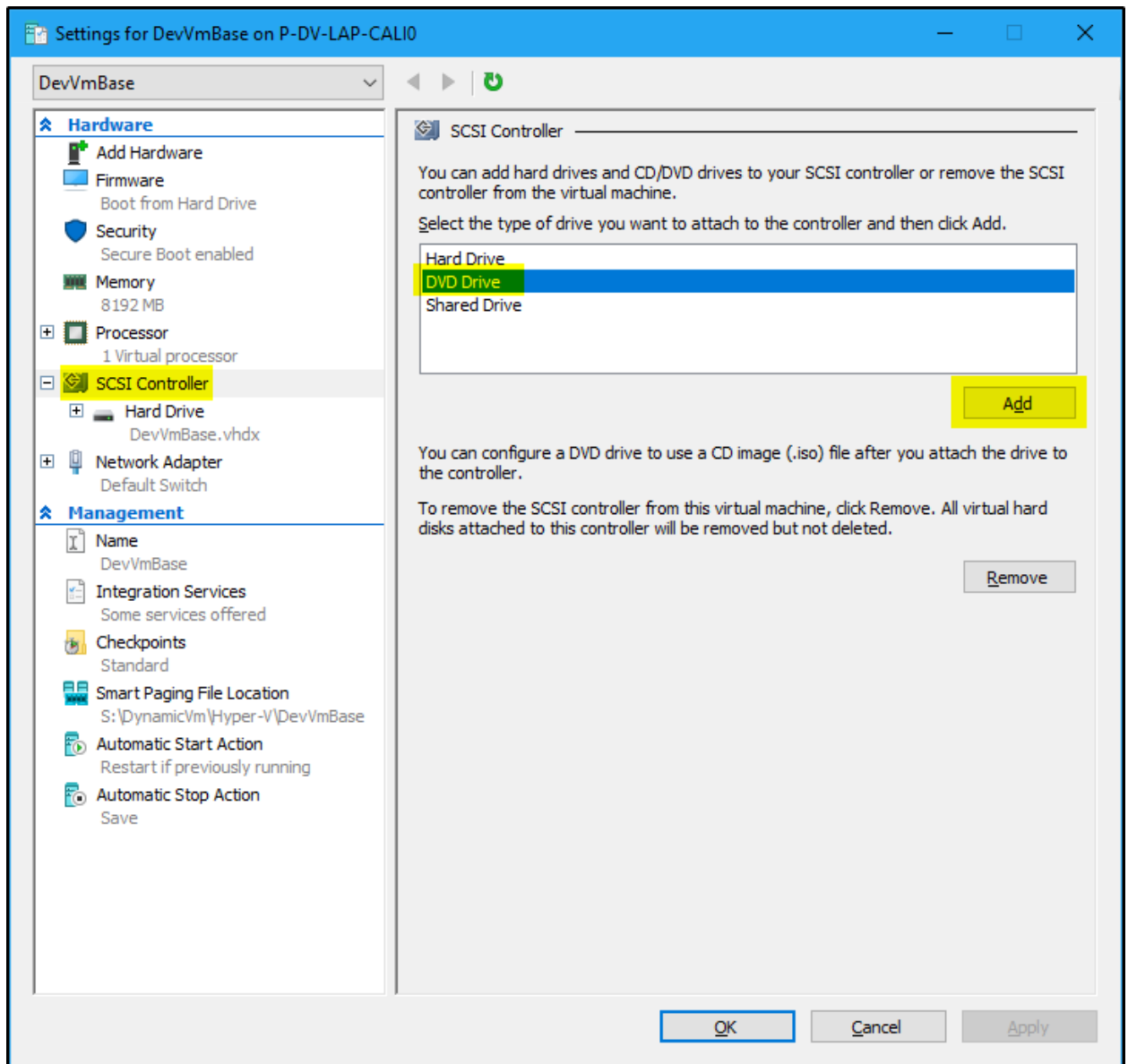


25. Confirm the VM is created

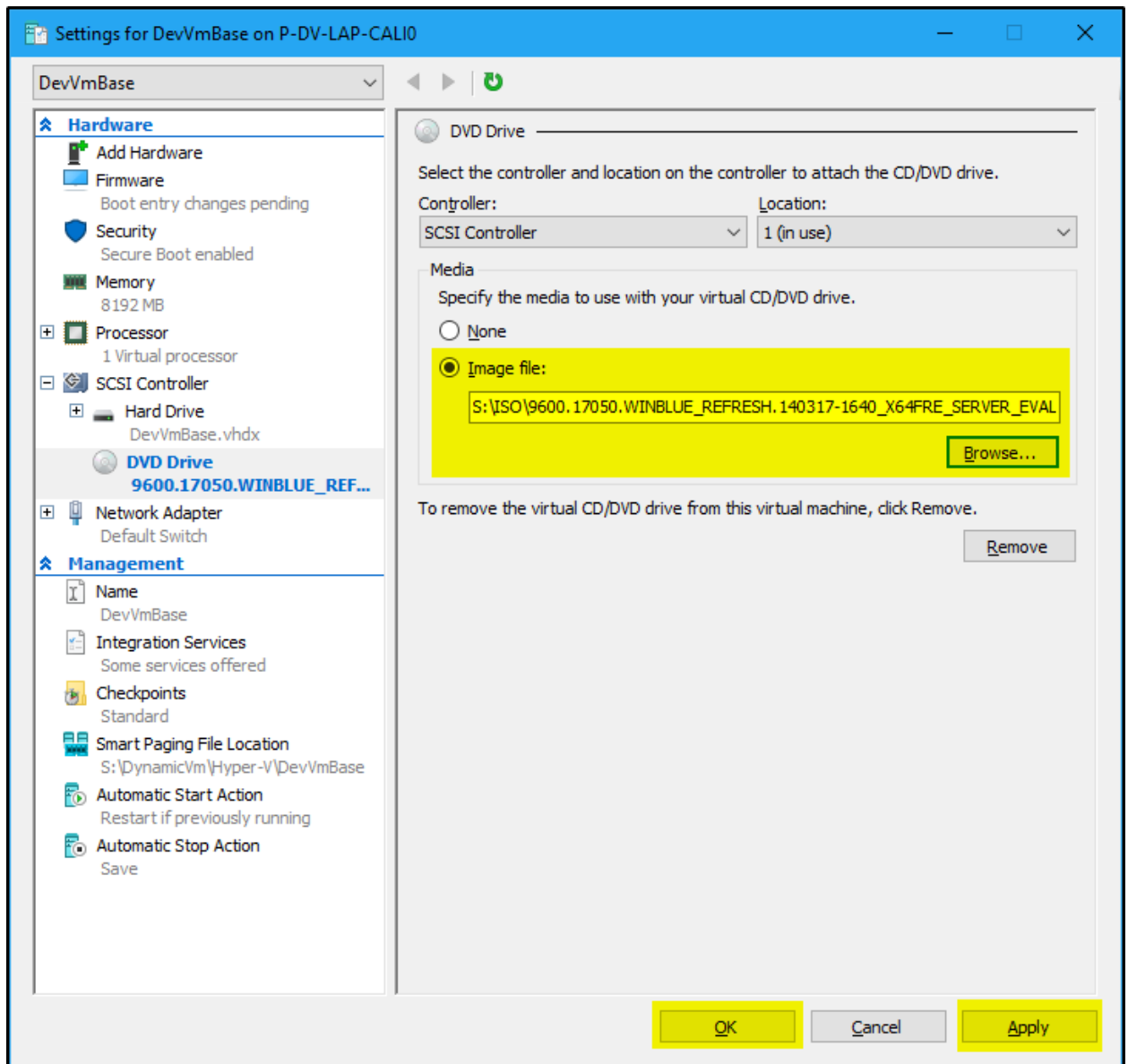


26. Right click on the VM and select Settings

27. Under SCSI Controller settings, select DVD Drive and click Add

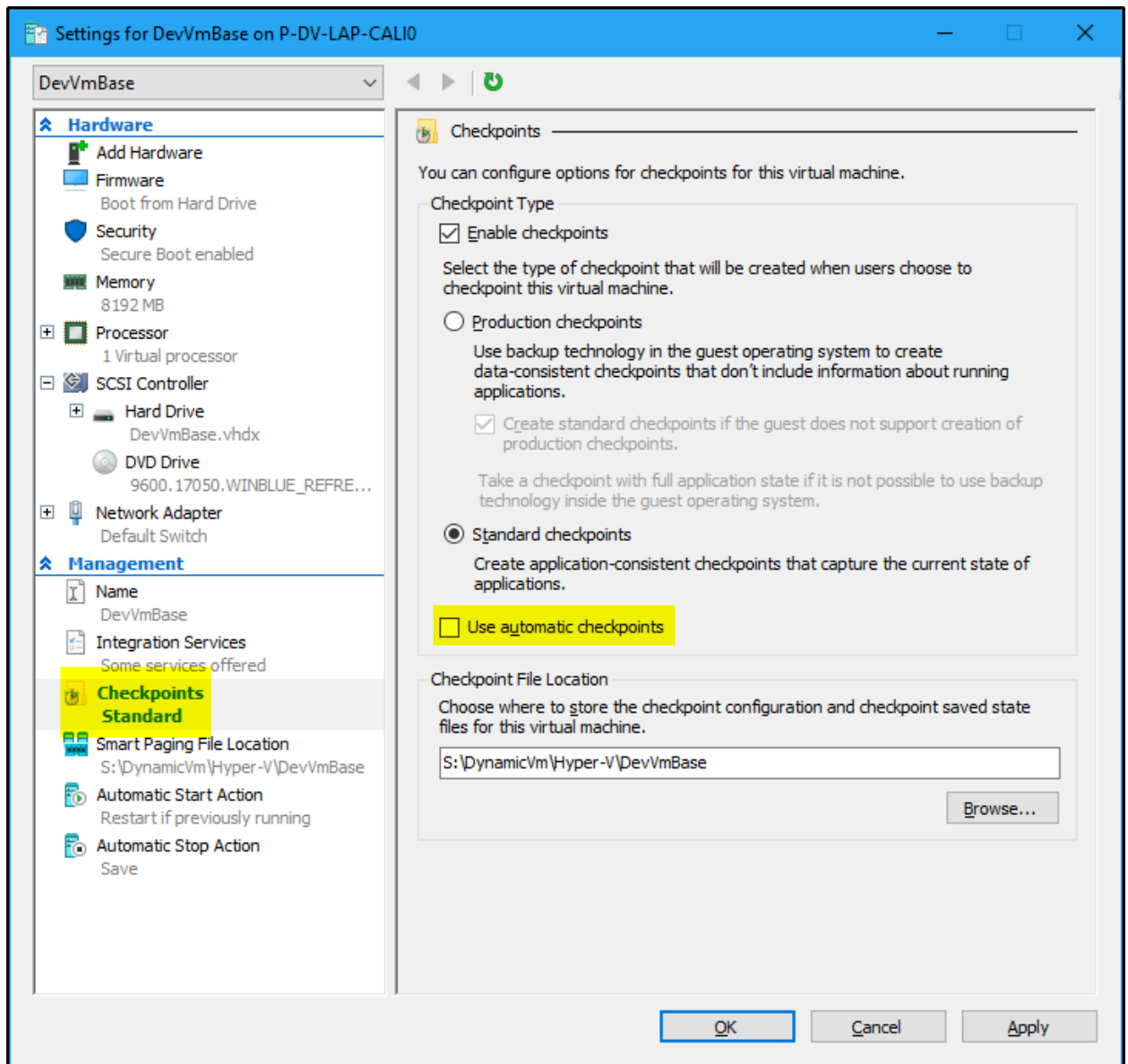


28. Select the ISO Image file you previously downloaded and click Apply. Then click Ok.

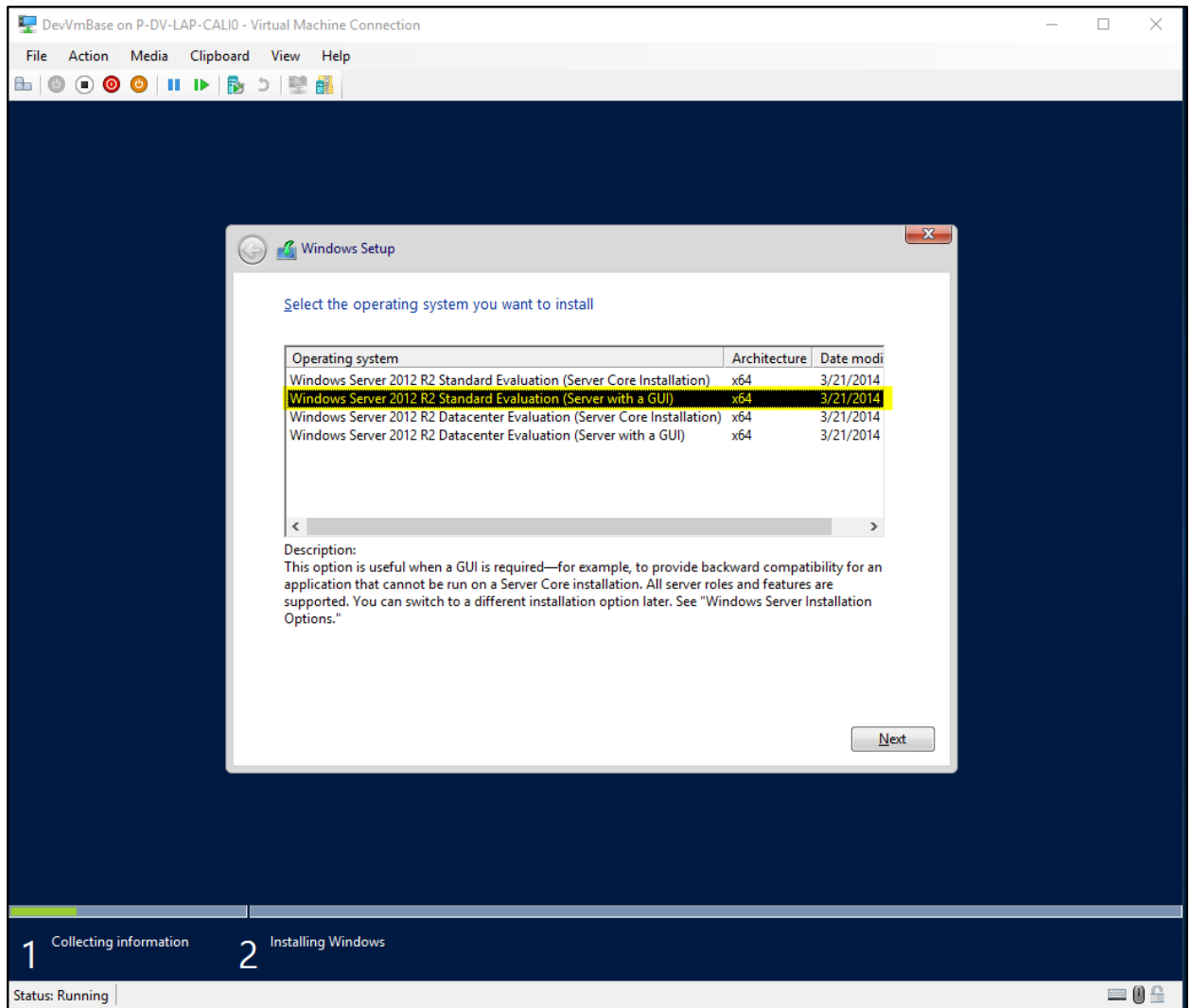


29. Then Click Ok

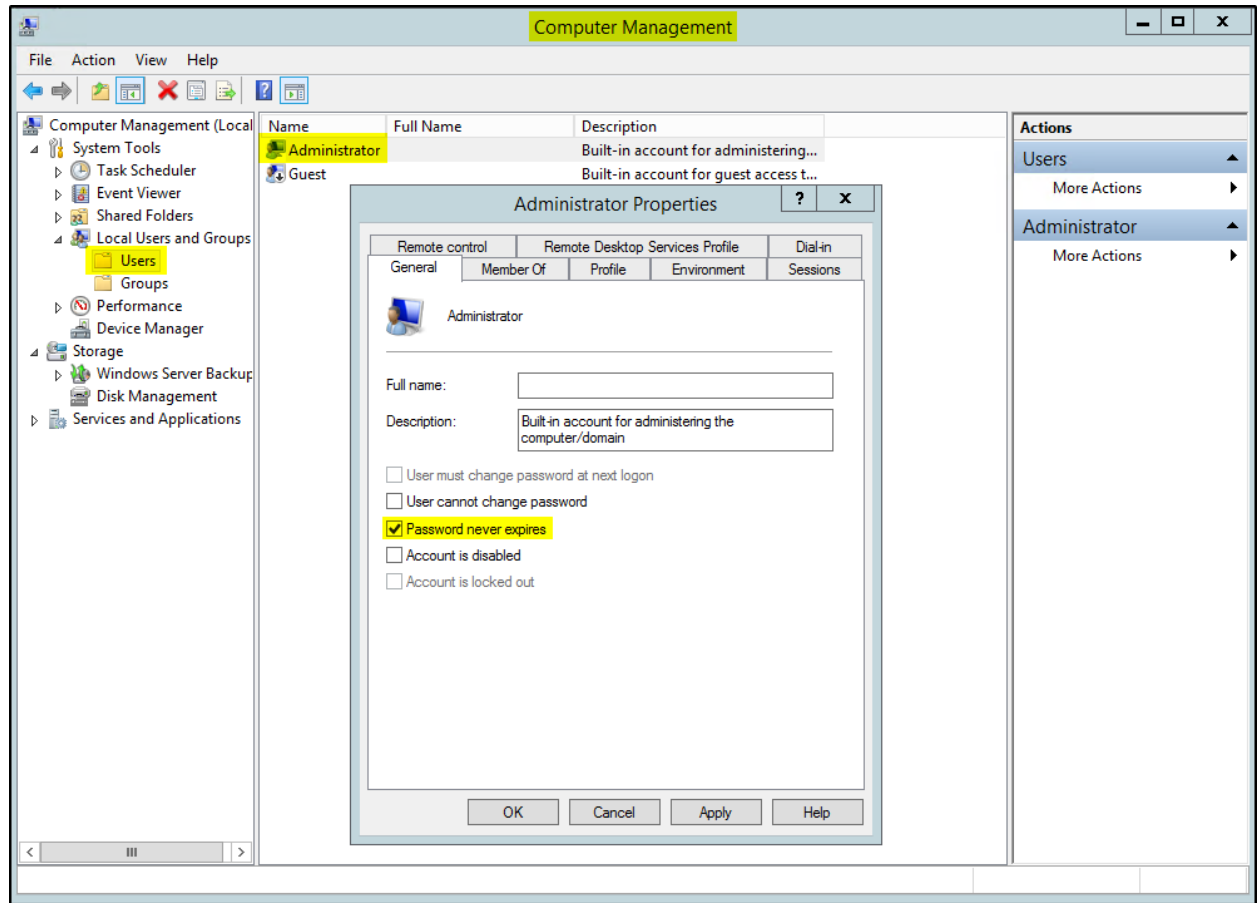
30. Also in the VM settings, turn off Automatic Checkpoints option.



31. Next right click on the VM and start it.
32. During Windows Server OS installation, Choose the **Windows Server 2012 R2 Standard Evaluation (Server with a GUI)** option.



33. After the OS installation is successful, **Eject** the OS disk.
34. Share the host machine internet connection with the VM. (share it to **Default Switch**)
35. Change Computer Name and Description to **DevVmBase**
  - a. Restart your VM
36. **Windows Explorer**
  - a. Show hidden files
  - b. Show extension for known file types
37. **Taskbar**
  - a. Set to Never combine labels
38. Open Computer Management
  - a. For Administrator user, set the **password to never expires**



39. In **Server Manager** application
  - a. Turn off **Firewall** (for Domain, Private and Public profiles)
  - b. Enable **Remote Management**
  - c. Enable **Remote Desktop** connections
    - Add current user (DevVmBase/Administrator) under **Select Users** button
  - d. Remove **IPv6** for the **Ethernet** Network Adapter.
    - Right click on the Ethernet Adapter and uncheck **Internet Protocol Version 6 (TCP/IPv6)**
  - e. Turn **IE Enhanced Security Configuration** Off.
    - Both for Administrators and Users
  - f. Change **Windows Time zone** to **Central (US & Canada)** and turn **On** the **Set time zone automatically** setting.
40. Change PowerShell Execution Policy to Unrestricted by running the following command in PowerShell

Set-ExecutionPolicy Unrestricted

41. Set **PowerShell** to always **Run as Administrator**
42. Change **User Account Control** settings to **Never Notify**.
43. **Windows Updates**

- a. Turn on Automatic Updates.
- b. Install all available updates
- 44. Create **C:\Software\_Install** folder.
- 45. Ninite
  - a. Use **Ninite.com** for the following
    - 7 zip
    - Chrome
    - Notepad++
    - Visual Studio Code
    - WinDirStat
  - b. **Rename** the exe to Ninite.exe
  - c. **Copy** the Ninite.exe to this path on the VM - "**C:\Software\_Install\Ninite.exe**"
  - d. Also set Ninite to update software using Task Scheduler  
(<https://www.groovypost.com/howto/ninite-install-update-programs-automatically/>)
    - Set it to **run automatically** when the user **Logs in to the system**.
- 46. Download the following installers and copy to the **C:\Software\_Install** folder on the VM and install them.
  - a. Adobe Reader – Latest
  - b. Java JDK – Latest (Don't do Ninite JDK install)
- 47. SQL Server Management Studio - Latest
- 48. Visual Studio 2015 Remote Debugger - Latest and x64
- 49. Visual Studio 2017 Remote Debugger - Latest and x64
- 50. Visual Studio 2019 Remote Debugger - Latest and x64
- 51. Office 2010 Service Pack 2 (Install Office 2010 first)
- 52. Check the **PowerShell version** on the VM by running the following command

#### Get-Host | Select-Object Version

- a. If the installed PowerShell version is not 5.1.x.x, Install **PowerShell 5.1**
  - Download and install [Win8.1AndW2K12R2-KB3191564-x64.msu](https://www.microsoft.com/en-us/download/details.aspx?id=54616) file at this link - <https://www.microsoft.com/en-us/download/details.aspx?id=54616>
  - Restart VM.
- 53. Check the .NET version **installed** on the VM is .NET **4.6.2** by running the following command in PowerShell. The value should be True.

Get-ChildItem 'HKLM:\SOFTWARE\Microsoft\NET Framework Setup\NDP\v4\Full\' | Get-ItemPropertyValue -Name Release | Foreach-Object { \$\_ -ge 394802 }

Reference: [https://docs.microsoft.com/en-us/dotnet/framework/migration-guide/how-to-determine-which-versions-are-installed#ps\\_a](https://docs.microsoft.com/en-us/dotnet/framework/migration-guide/how-to-determine-which-versions-are-installed#ps_a)

- a. If the installed .NET version is not .NET 4.6.2 or higher, Install **.NET 4.6.2**
  - Download and install - <https://www.microsoft.com/en-us/download/details.aspx?id=53344>



- Restart VM.

54. Install .Net 4.6.2 Developer Pack

- a. Download link - <https://www.microsoft.com/en-us/download/details.aspx?id=53321>

55. Delete any Install files from the **C:\Software\_Install** (except for **Ninite** file) and **Recycle Bin** folders.

56. In Hyper-V Manager, turn off **Enable Dynamic Memory** settings

57. Setup **WinRM**

- a. Run the following commands in PowerShell

```
Get-NetFirewallPortFilter | ?{$_.LocalPort -eq 5985 } | Get-NetFirewallRule | ?{ $_.Direction -eq "Inbound" -and $_.Profile -eq "Public" -and $_.Action -eq "Allow" } | Set-NetFirewallRule -RemoteAddress "Any"
```

```
winrm quickconfig -q
```

```
winrm set winrm/config/winrs '@{MaxMemoryPerShellMB="512"}'
```

```
winrm set winrm/config '@{MaxTimeoutms="1800000"}'
```

```
winrm set winrm/config/service '@{AllowUnencrypted="true"}'
```

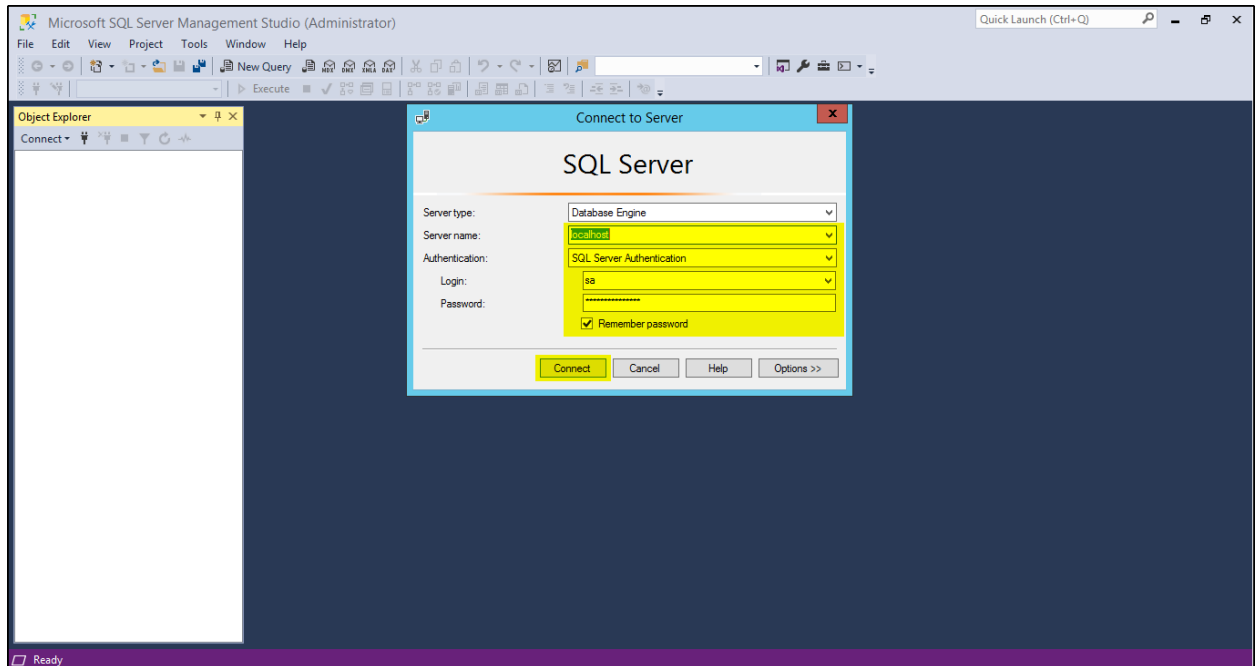
```
winrm set winrm/config/service/auth '@{Basic="true"}'
```

```
Start-Service WinRM
```

```
set-service WinRM -StartupType Automatic
```

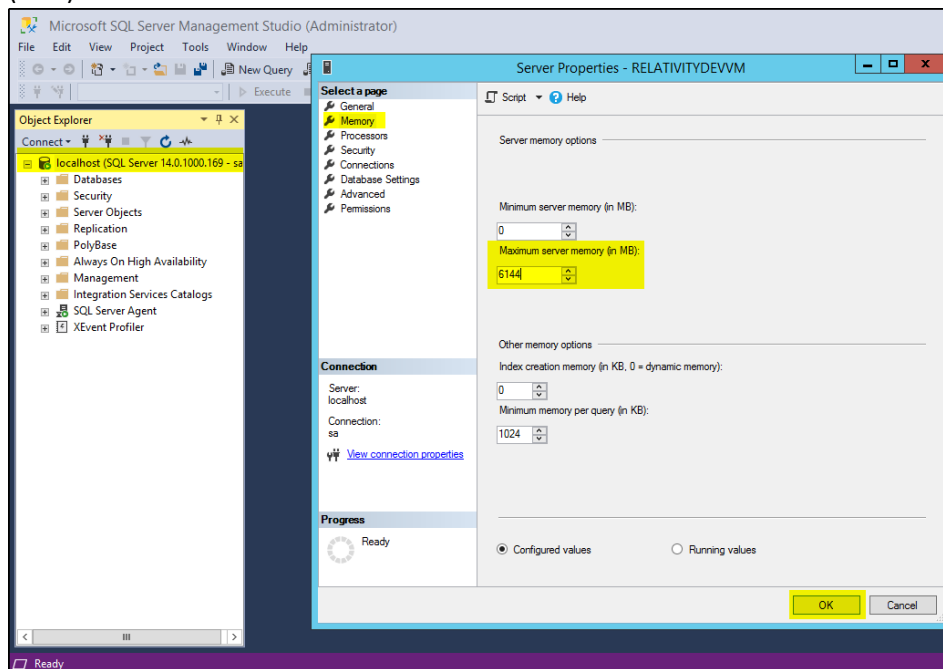
58. Login into **SQL Server Management Studio** with **sa** login

- a. Select **Remember Password** option and click **Connect** to verify credentials are correct and are saved.



b. Change **Max allowed memory for SQL server**.

- Right click on the server name (localhost) and select Properties
- Go to memory settings and change **Maximum server Memory** (in MB) value to 6144 (6GB)



- Click OK
- Restart the VM

59. Create a Relativity Login page Bookmark in Chrome

60. Delete all Desktop icons except for Recycle Bin.

61. Pin the following Applications to Taskbar

- Server Manager

- b. PowerShell
- c. Windows Explorer
- d. Chrome
- e. Visual Studio 2015 Remote Debugger
- f. Visual Studio 2017 Remote Debugger
- g. Visual Studio 2019 Remote Debugger
- h. Services
- i. Task Manager
- j. SQL Server Management Studio
- k. Notepad++

62.

## 2 Chef Recipes to Run

1. Chef - pre\_windows\_create\_default\_folders
2. Chef - pre\_windows\_install\_nuget\_provider
3. Chef - pre\_windows\_change\_computer\_name
4. Chef - windows\_disable\_firewall
5. Chef - windows\_set\_explorer\_properties
6. Chef - windows\_give\_background\_processes\_priority
7. Chef - windows\_set\_auto\_login
8. Chef - windows\_install\_software
9. Chef - windows\_add\_programs\_to\_taskbar
10. Chef - pre\_relativity\_install\_windows\_features\_and\_services
11. Chef - pre\_relativity\_create\_shared\_folders
12. Chef - pre\_relativity\_install\_sqlserver
13. Chef - pre\_relativity\_install\_servicebus

## 3 Creating Base Image Box file

1. Reset Windows Server License to 180 days
2. Change Hardware resources to 2 cores and 8GB RAM before exporting
3. Export VM
4. Convert to .box file

## 4 When Upgrading Base Image

1. Follow the instructions in "Relativity Dev VM - Upgrade Windows Base Machine - Documentation.docx" document

## 5 Adding Environment Variables

1. On the VM, right click on the windows button in the bottom right and click *System*
2. Next click *Advanced system settings*

3. Choose *Environment Variables...*
4. To add a new variable, click *New...*
5. The variable name should be: devvm\_default\_password
6. The variable value should be the default devvm password
7. Next add a variable named devvm\_installer\_files\_path
8. The variable value should be the path to the devvm installer files
9. Click Ok in the New System Variable window and Ok in the System Properties window