

CSG2132 Workshop 8

In this workshop, you will:

1. Configure Windows Server as an iSCSI target server
2. Create a virtual disk from a storage pool and share it with the network

Before you commence this workshop make sure you have logged into your assigned CSG2132_ED_TR3_2023 virtual machine via RDP (see Workshop 6) and have Hyper-V started.

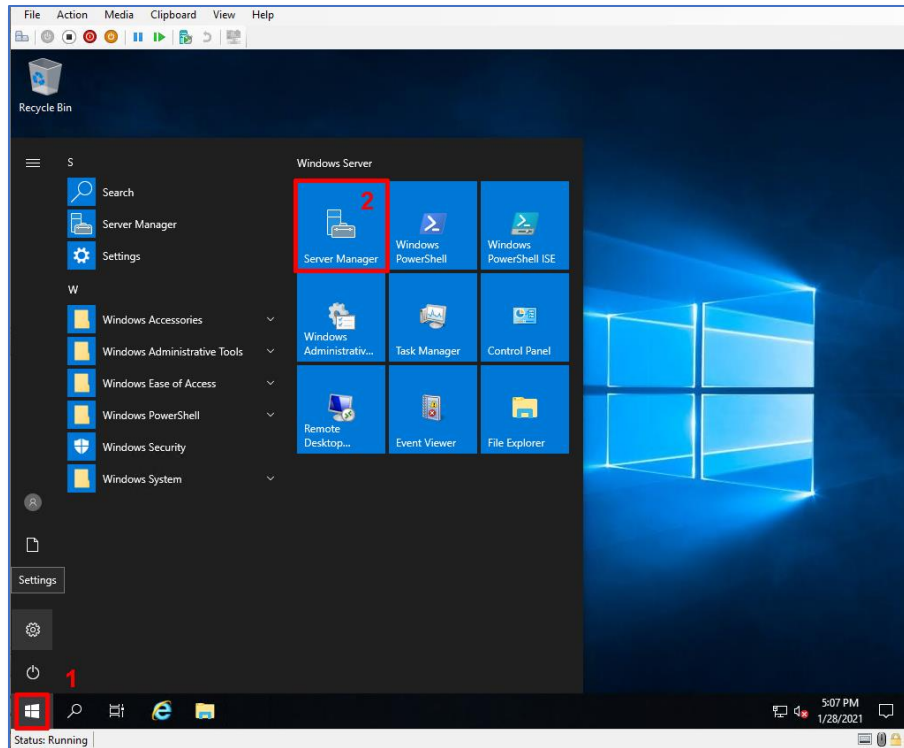
IMPORTANT:

- As you implement the instructions that follow, be aware that specific device names and paths may vary in your particular VM instance; be sure to adjust as necessary
- If you encounter any technical issues, feel free to consult [Microsoft's official documentation](#) to find solutions
- To implement the instructions that follow, it is essential that both of the Windows Server 2022 instances you have created have full network connectivity, as discussed in Workshop 6
- As you complete the instructions that follow, take a screenshot of every step of the setup and configuration process you complete using the Windows Snipping Tool, which you can find on the task bar of your Azure Windows Server VM. You will require all of the screenshots to complete Assignment 3.

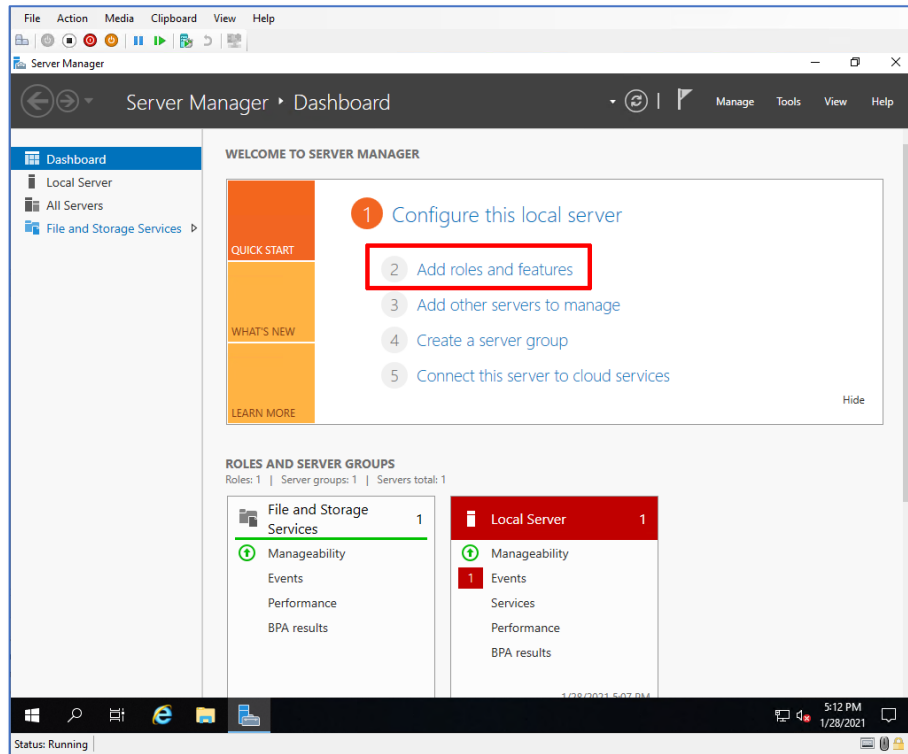
Configure iscsi_trgt to act as an iSCSI Target Server

You will now configure the the **iscsi_trgt** VM to act as an iSCSI target server that will make the storage volumes it hosts accessible to other VMs on the network at a later stage.

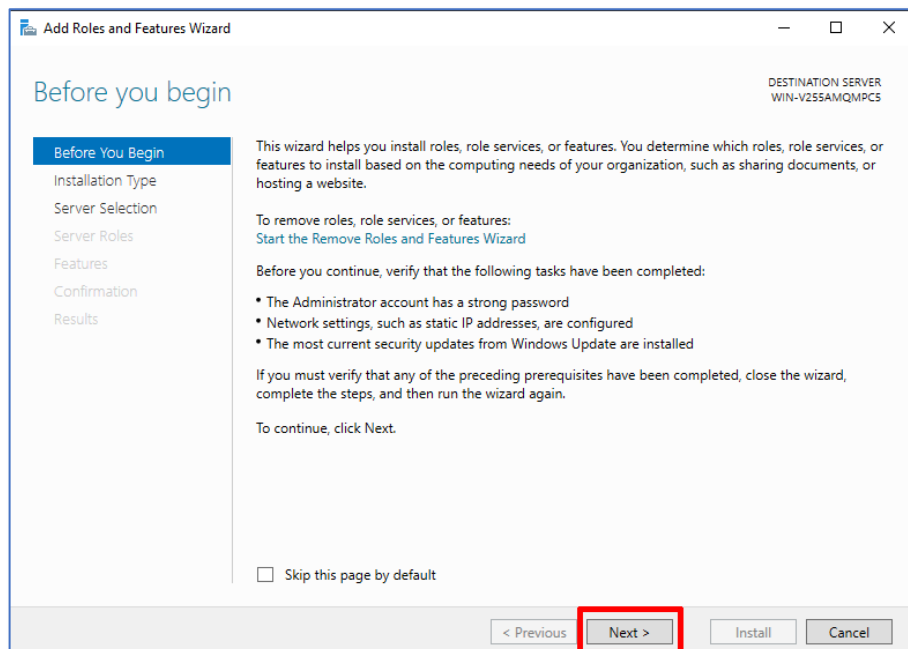
1. If the *Server Manager* is not already open, click the *Windows Start button* and then click **Server Manager** from the menu that appears



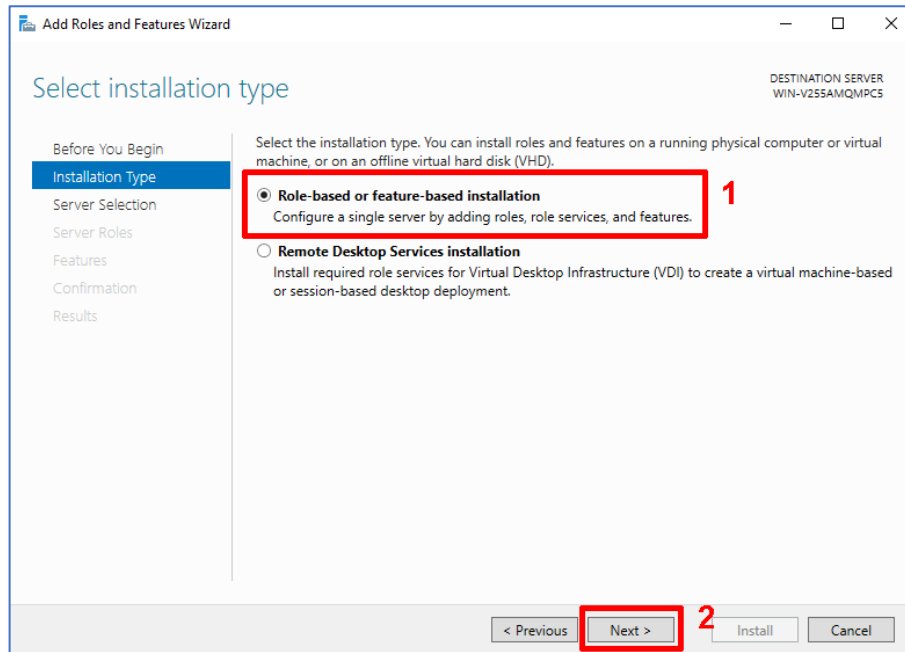
2. In the *Windows Server Manager*, click on **Add roles and features**



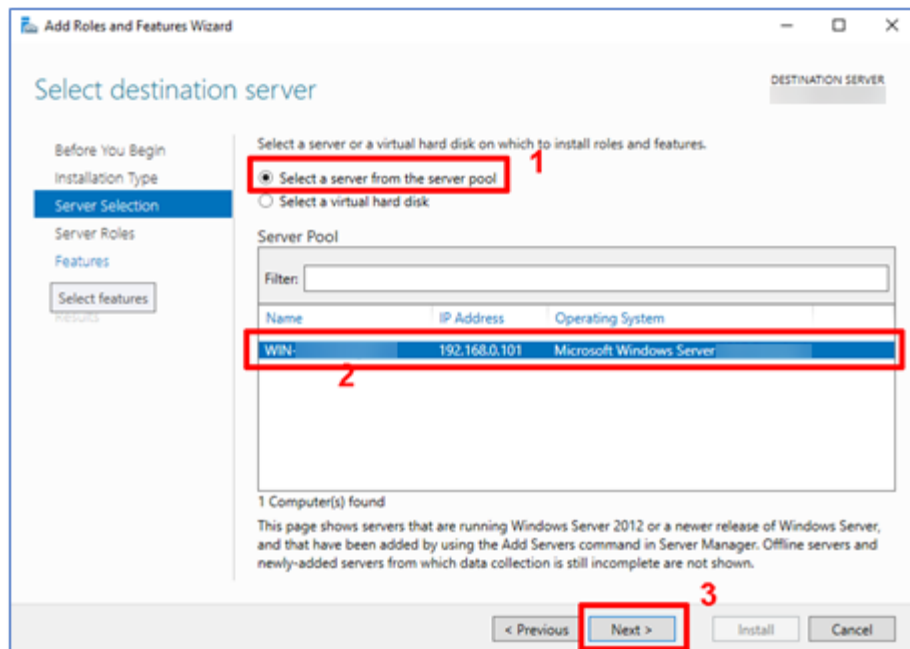
3. Click **Next >**



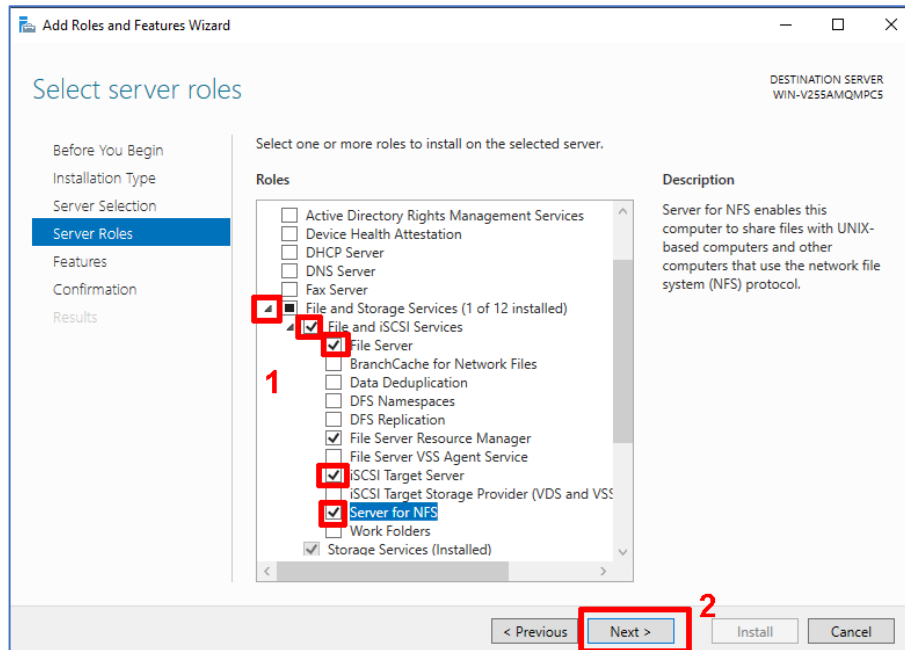
4. Ensure **Role-based or feature-based installation** is selected and then click **Next >**



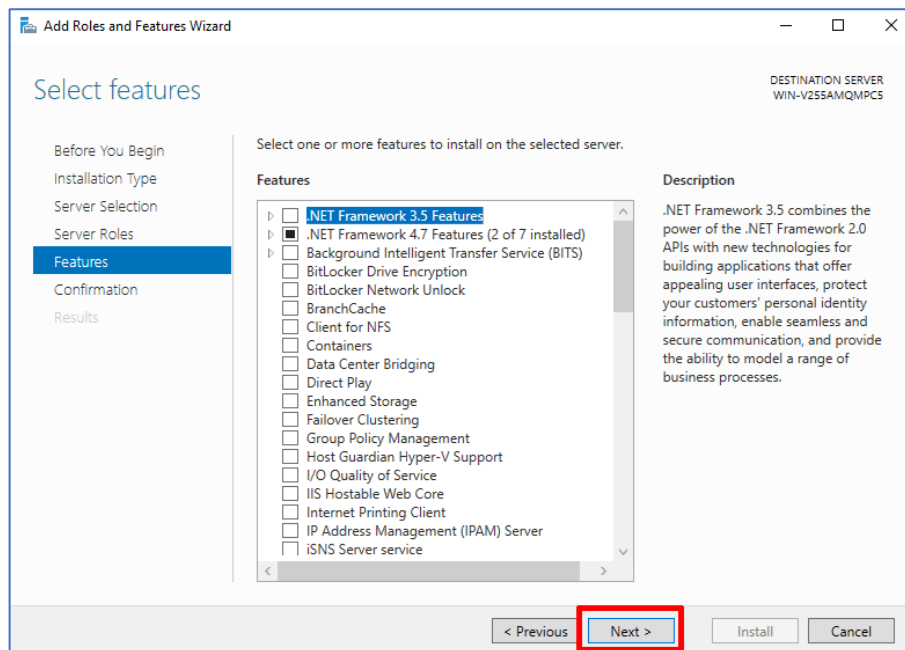
5. Ensure **Select a server from the server pool** is selected; select the desired server (there should be only one in the list) and then click **Next >**



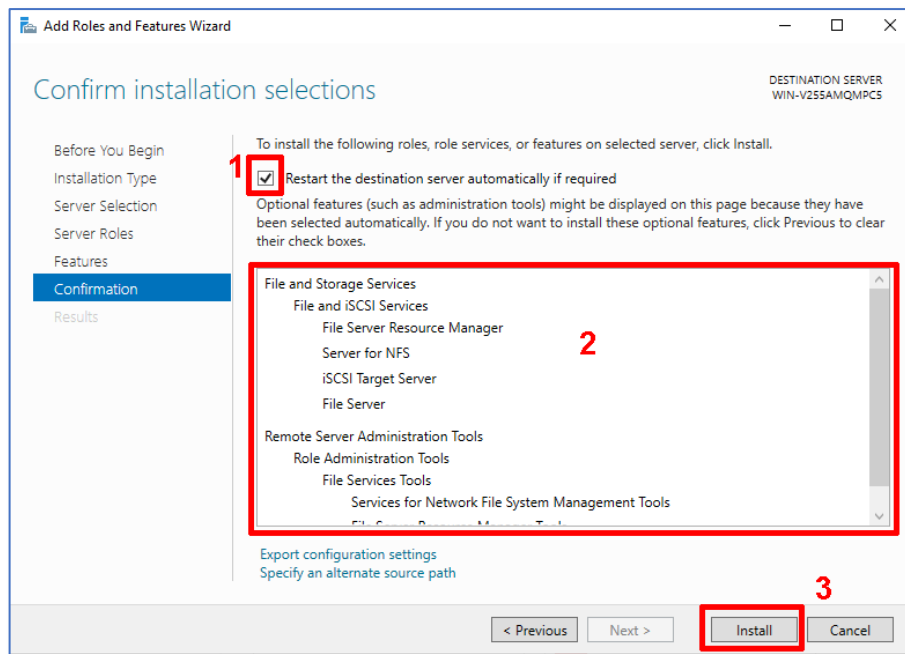
6. Check the option boxes as shown and then click **Next >**



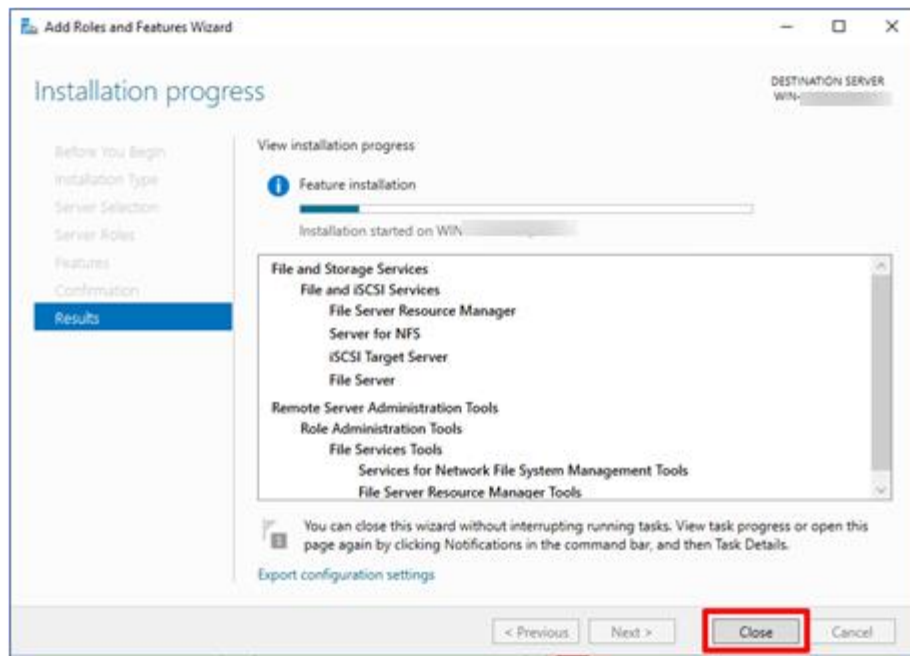
7. Click **Next >**



8. Ensure **Restart the destination server automatically if required** is checked; peruse the selections summary to make sure it's correct and then click **Install**

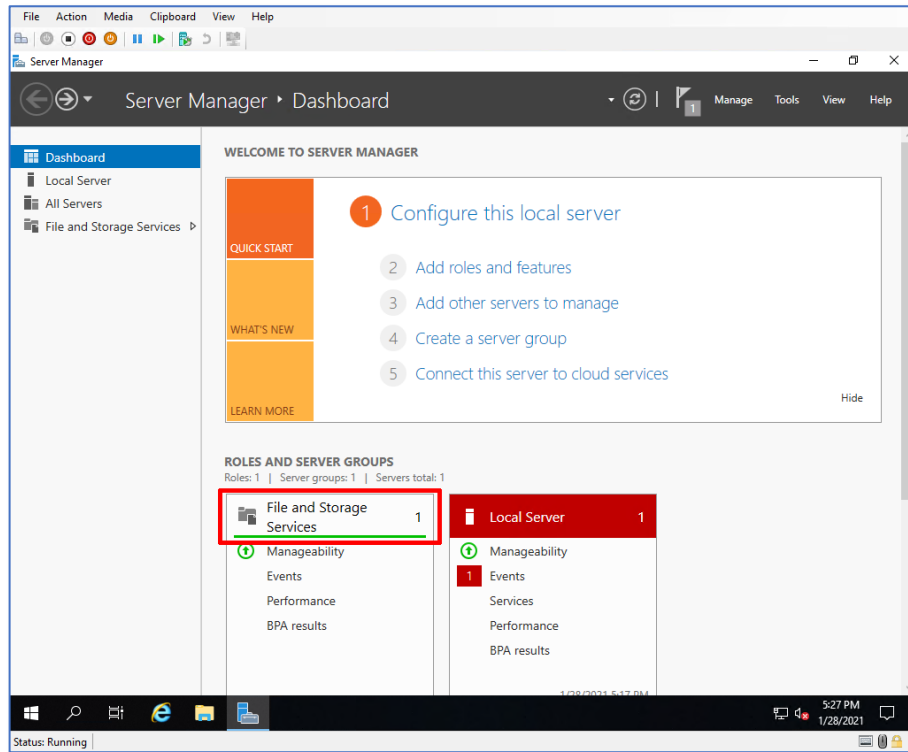


9. Once the installation process completes, click **Close**

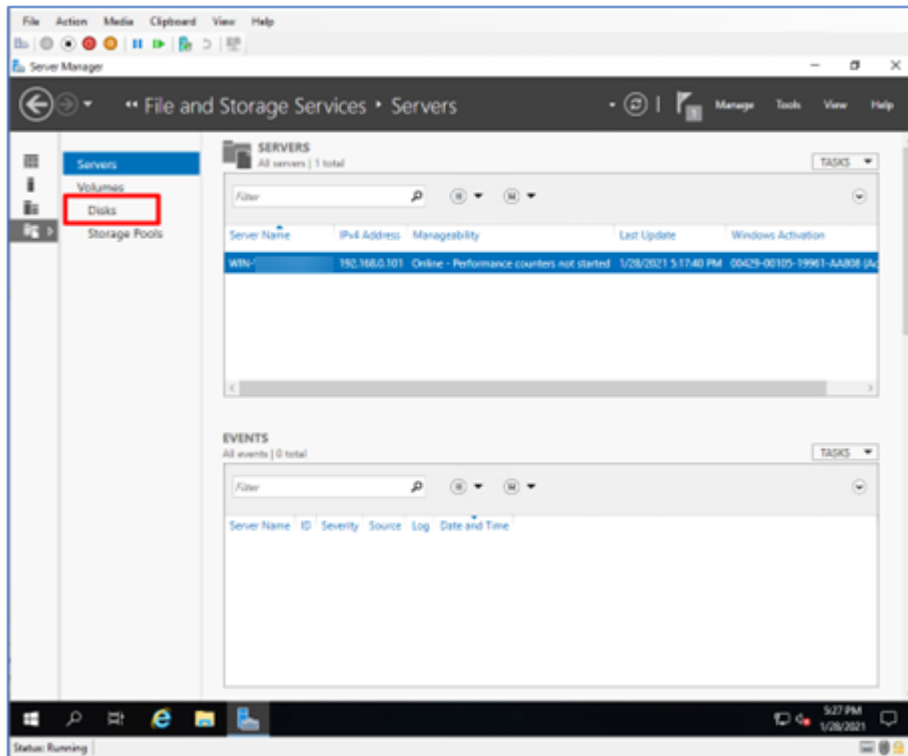


Note: Windows Server may restart at this stage which will take a minute or two. If so, wait until the restart is complete and then return to the Windows Server Manager.

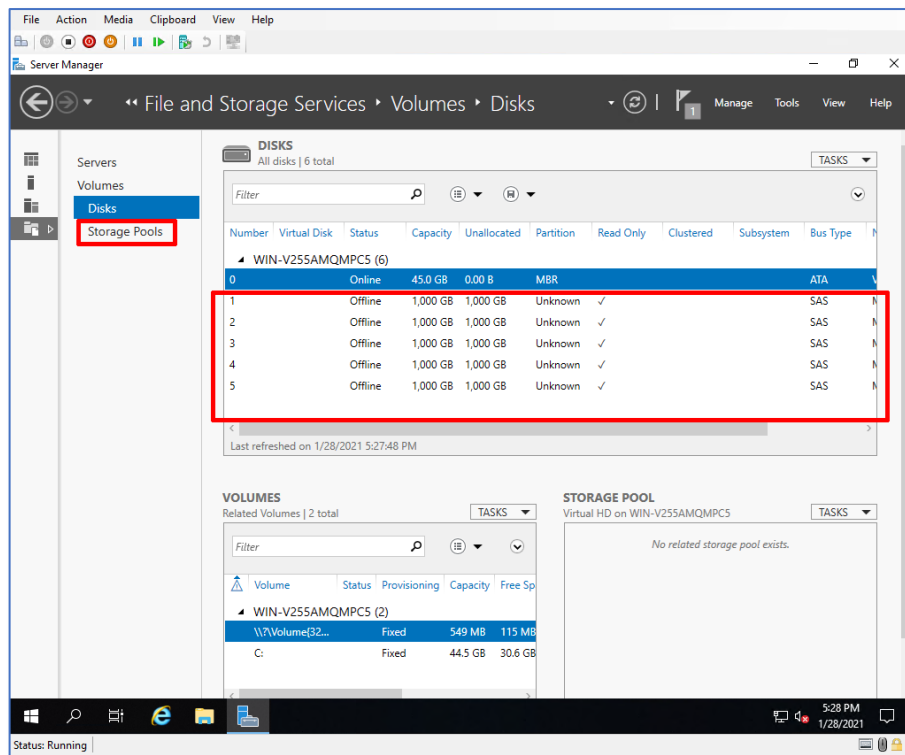
10. Click on **File and Storage Services**



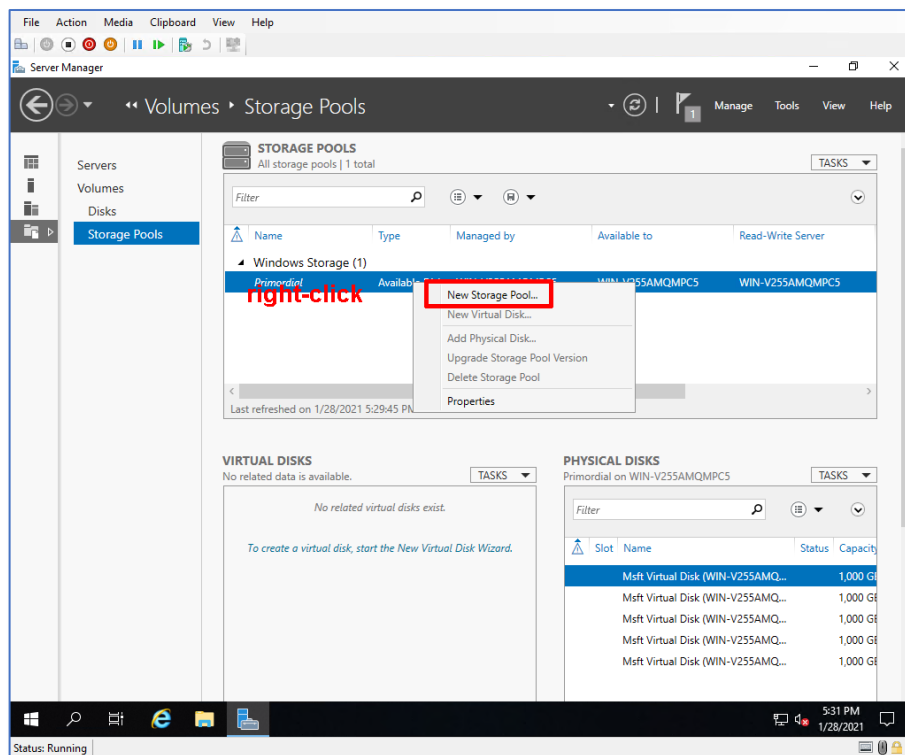
11. Click **Disks**



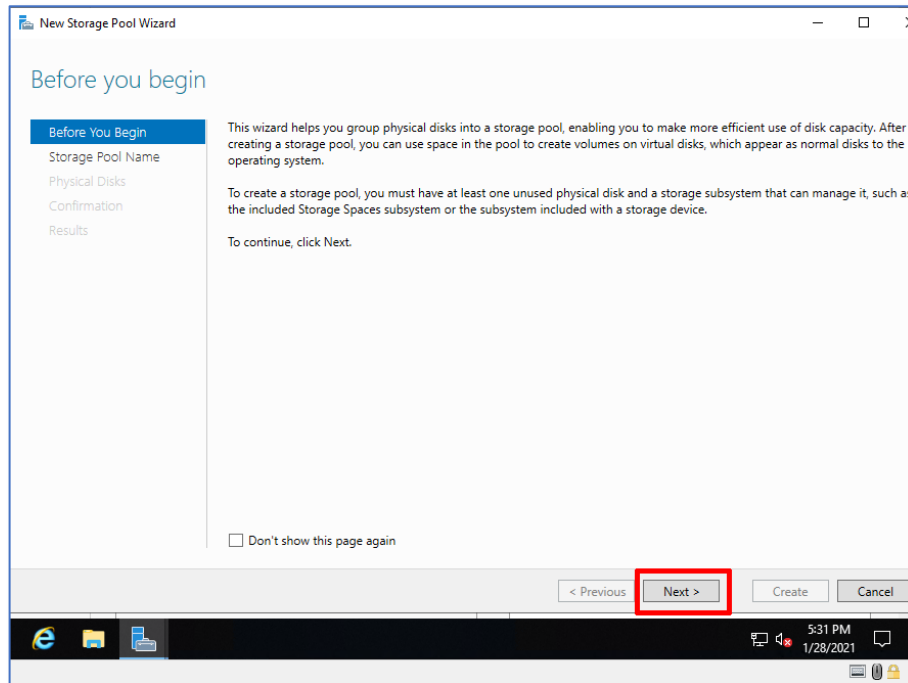
12. Ensure the five (5) virtual SCSI disks you created earlier are present in the disks panel and then click **Storage Pools**



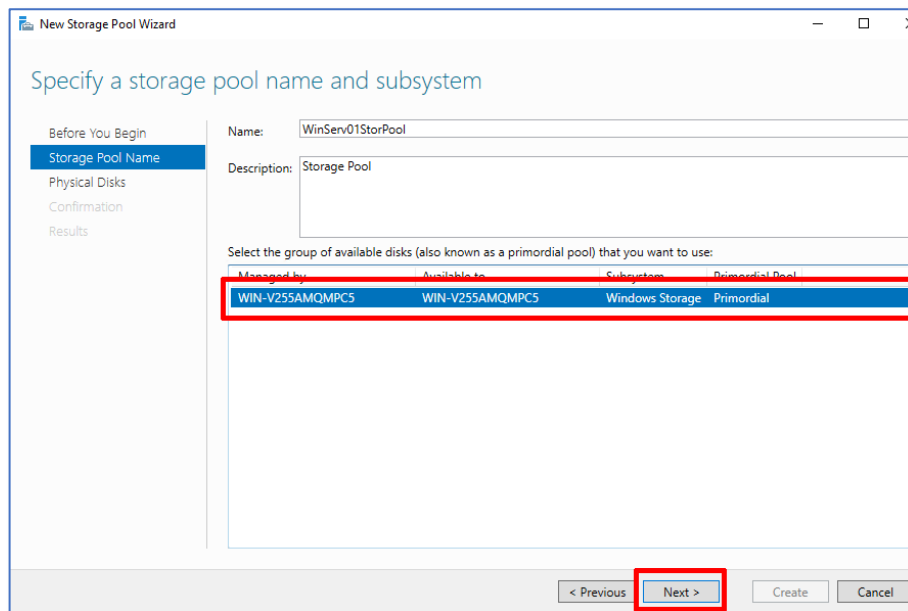
13. Right-click on the only Windows Storage option available in the list and select **New Storage Pool**



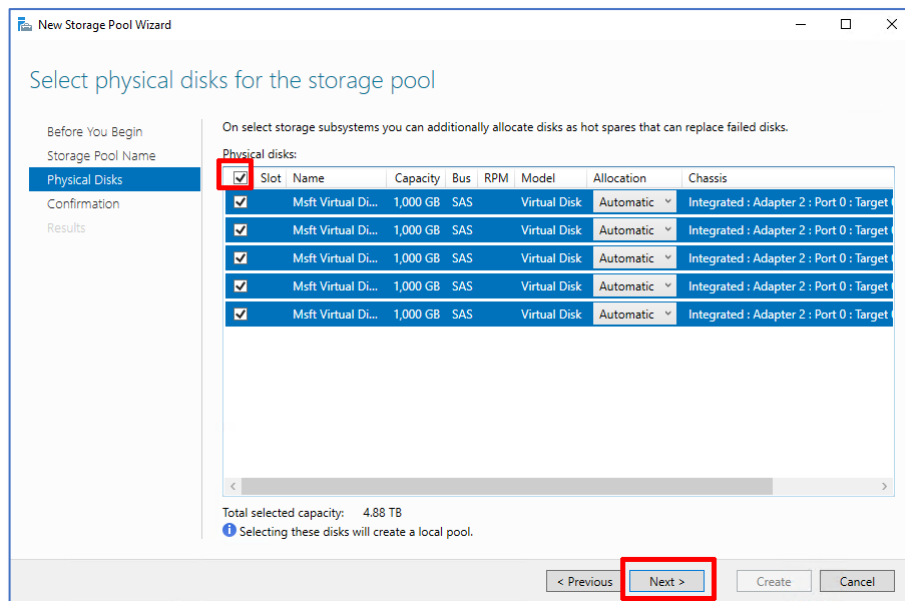
14. Click **Next >**



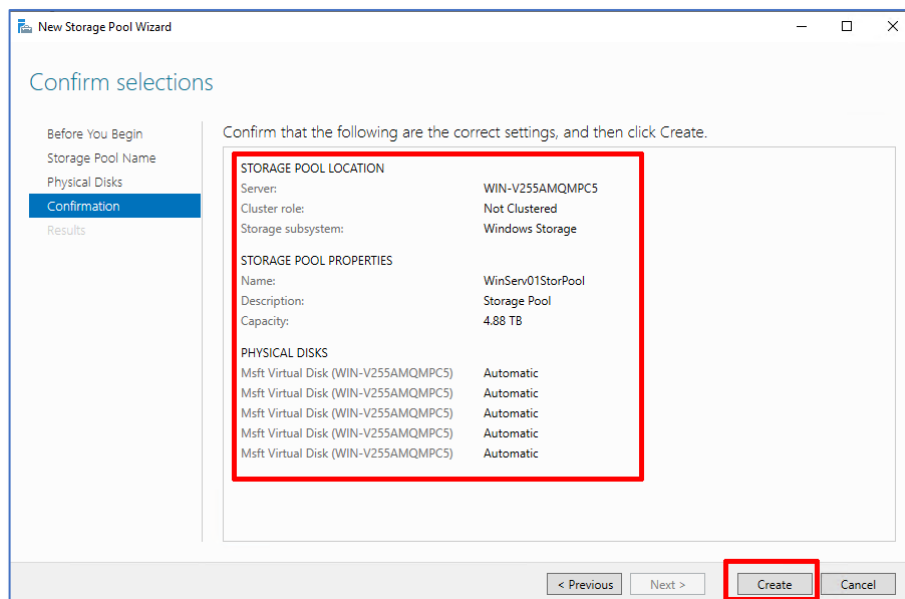
15. Select the only group of available disks available and then click **Next >**



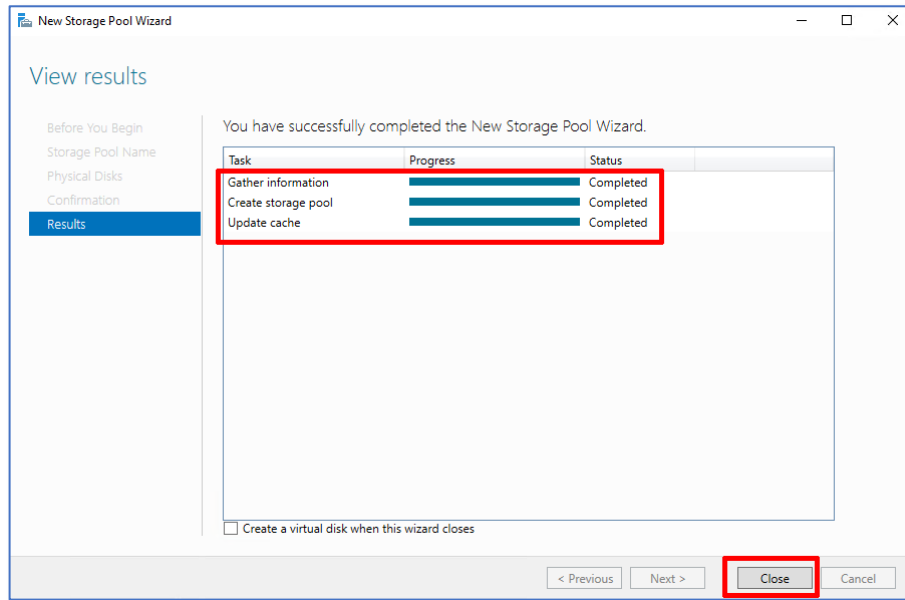
16. Click the *Select All* checkbox to select all virtual disks available in the disks list and then click **Next >**



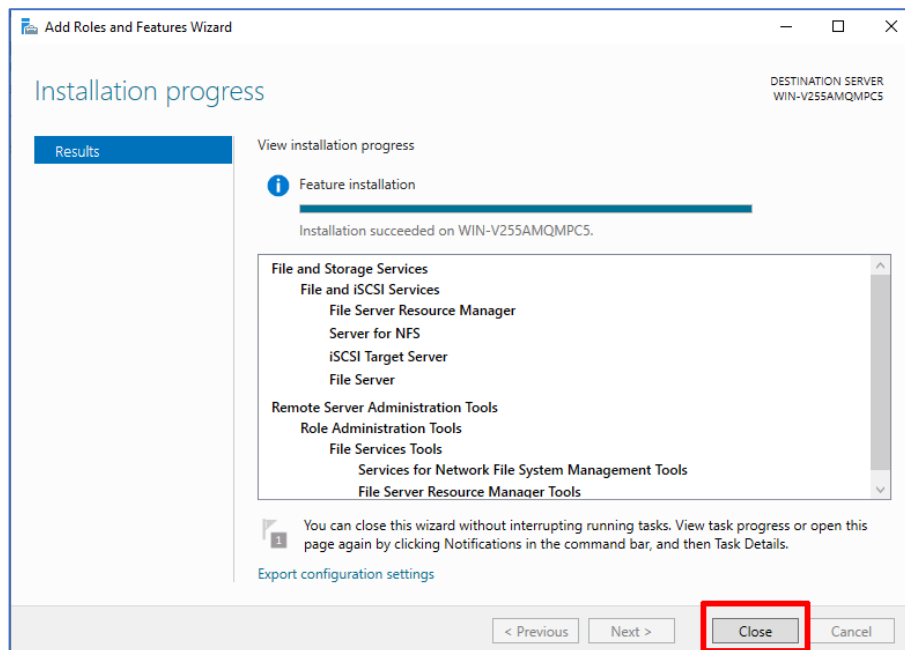
17. Confirm settings match the image below and then click **Create**



18. Once all tasks are complete, click **Close**



19. Click **Close**

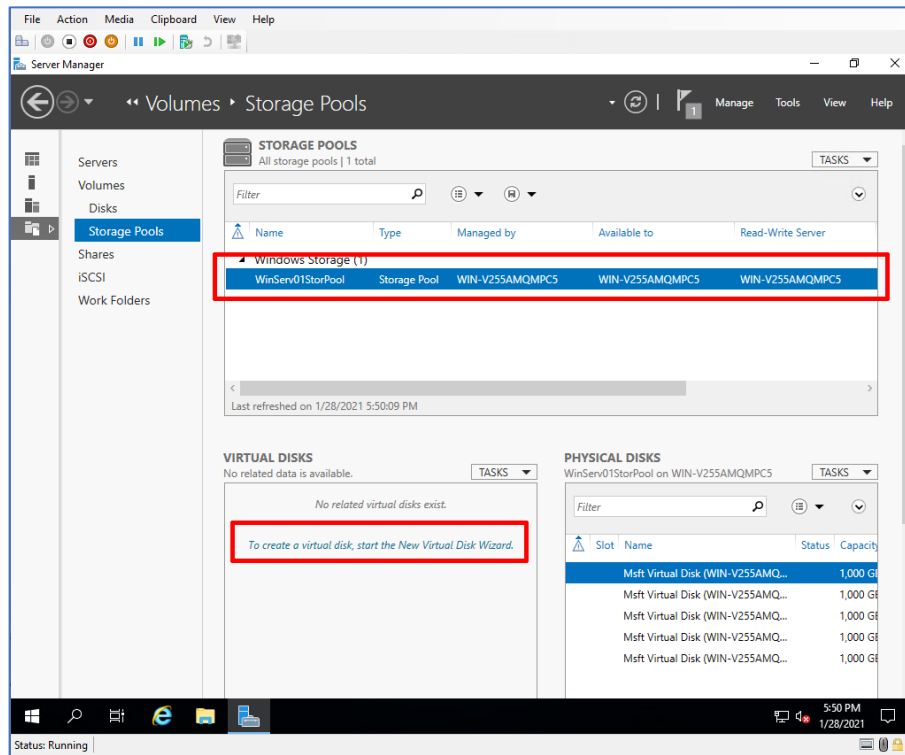


Congratulations – you have now successfully created a Storage Pool in Windows Server.

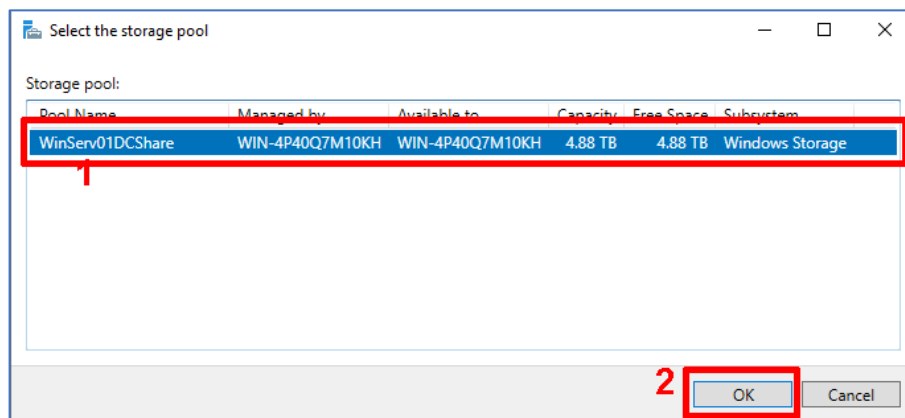
Create a Virtual Disk from a Storage Pool

Now let's go ahead and create a Virtual Disk that use the Storage Pool you just created.

1. Still in the *Storage Pools* panel, click *To create a virtual disk, start the New Virtual Disk Wizard*



2. Ensure the *Storage Pool* you just created is selected and then click **OK**



3. Give the new virtual disk a name and then click **Next >**

New Virtual Disk Wizard

Specify the virtual disk name

Before You Begin
Virtual Disk Name
 Enclosure Awareness
 Storage Layout
 Resiliency Settings
 Provisioning
 Size
 Confirmation
 Results

Name:

Description:

☐ Create storage tiers on this virtual disk
 Storage tiers enable automatic movement of the most frequently accessed files to faster storage.

i To use storage tiers, the storage pool requires a minimum of one automatically allocated physical disk of each media type (SSD and HDD).

< Previous **Next >** Create Cancel

4. Click **Next >**

New Virtual Disk Wizard

Specify enclosure resiliency

Before You Begin
 Virtual Disk Name
Enclosure Awareness
 Storage Layout
 Resiliency Settings
 Provisioning
 Size
 Confirmation
 Results

EnclosureAwareness stores copies of your data on separate storage enclosures (JBODs). Helping protect your data if an entire enclosure fails.

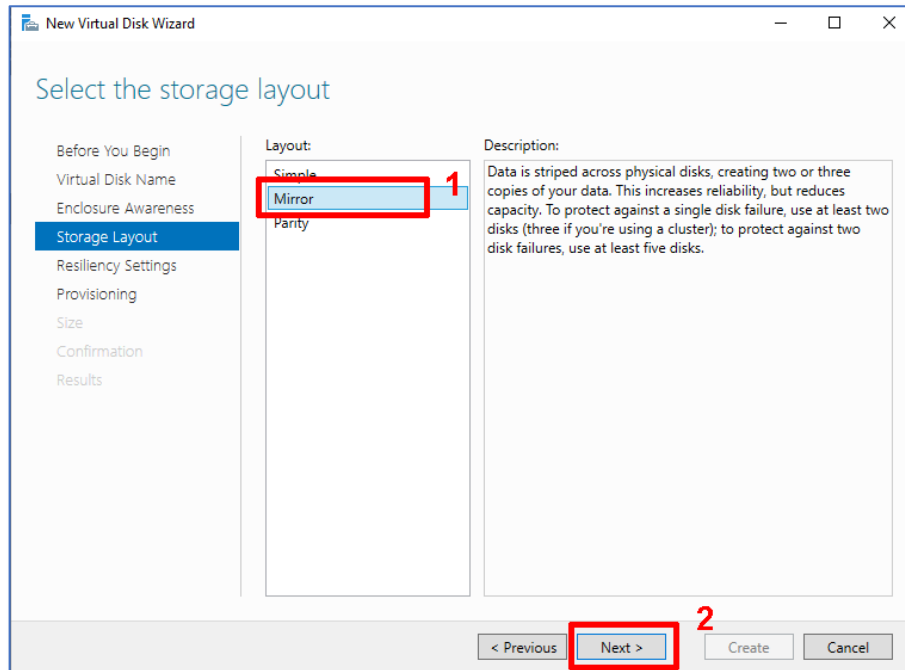
If you enable enclosure awareness, settings that requires additional enclosures are grayed out.

☐ Enable enclosure awareness

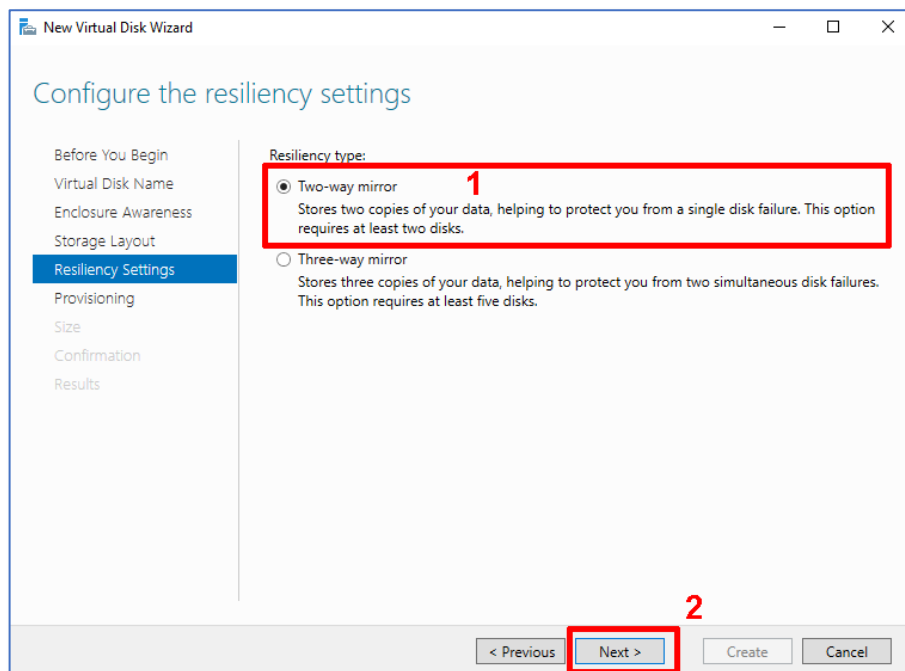
i To use enclosure awareness, your server must have at least three enclosures and the physical disks in each enclosure must have automatic allocation.

< Previous **Next >** Create Cancel

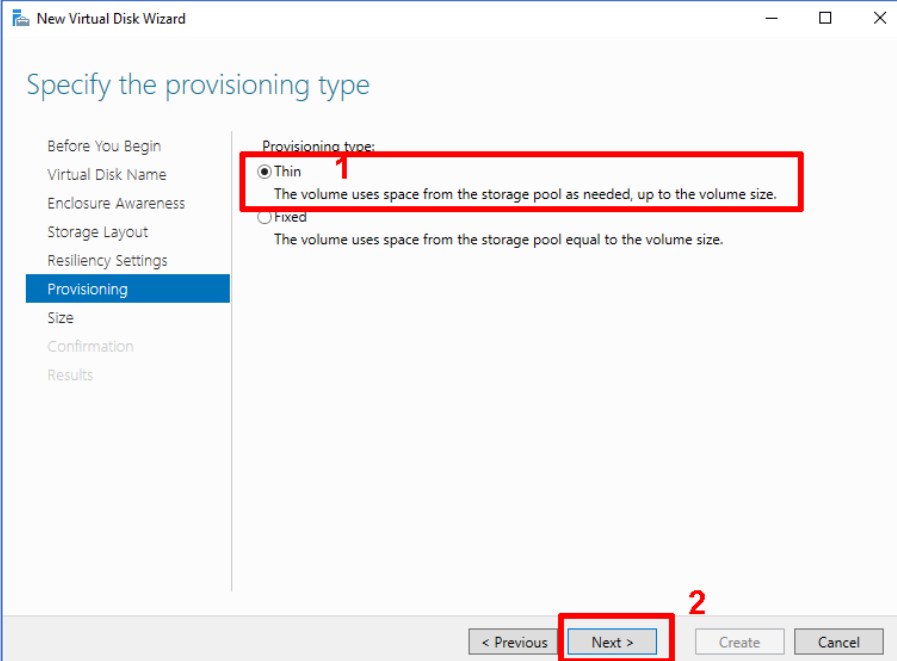
5. In the *Layout* panel select **Mirror** and then click **Next >**



6. Select *Two-way mirror* and then click **Next >**



7. Set **Thin** as the *Provisioning type* and then click **Next >**



New Virtual Disk Wizard

Specify the provisioning type

Before You Begin
Virtual Disk Name
Enclosure Awareness
Storage Layout
Resiliency Settings
Provisioning
Size
Confirmation
Results

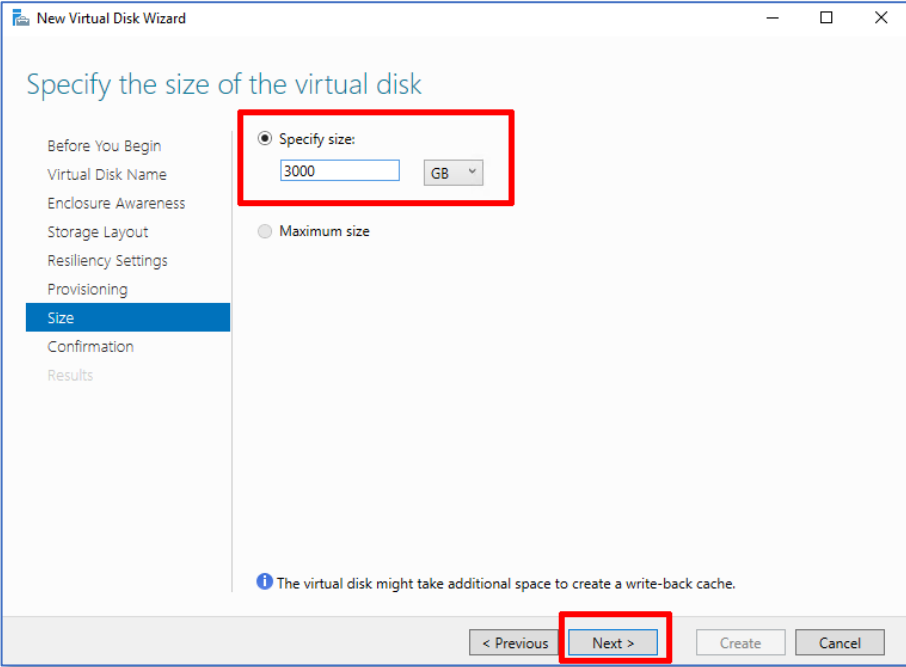
Provisioning type:

☒ Thin
The volume uses space from the storage pool as needed, up to the volume size.

☐ Fixed
The volume uses space from the storage pool equal to the volume size.

< Previous **Next >** Create Cancel

8. Set the virtual disk size as **3000GB** and then click **Next >**



New Virtual Disk Wizard

Specify the size of the virtual disk

Before You Begin
Virtual Disk Name
Enclosure Awareness
Storage Layout
Resiliency Settings
Provisioning
Size
Confirmation
Results

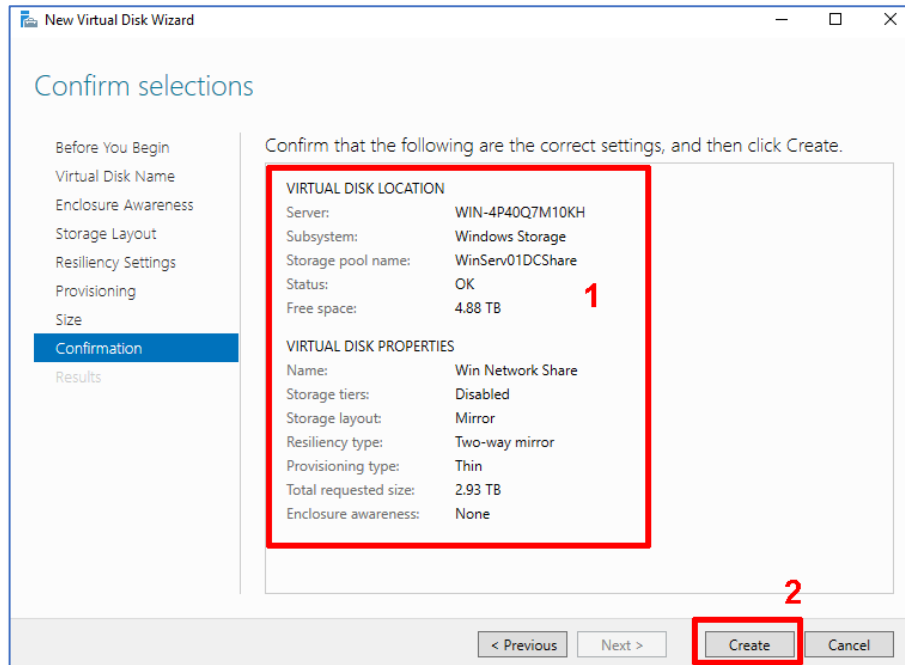
☒ Specify size:
3000 GB

☐ Maximum size

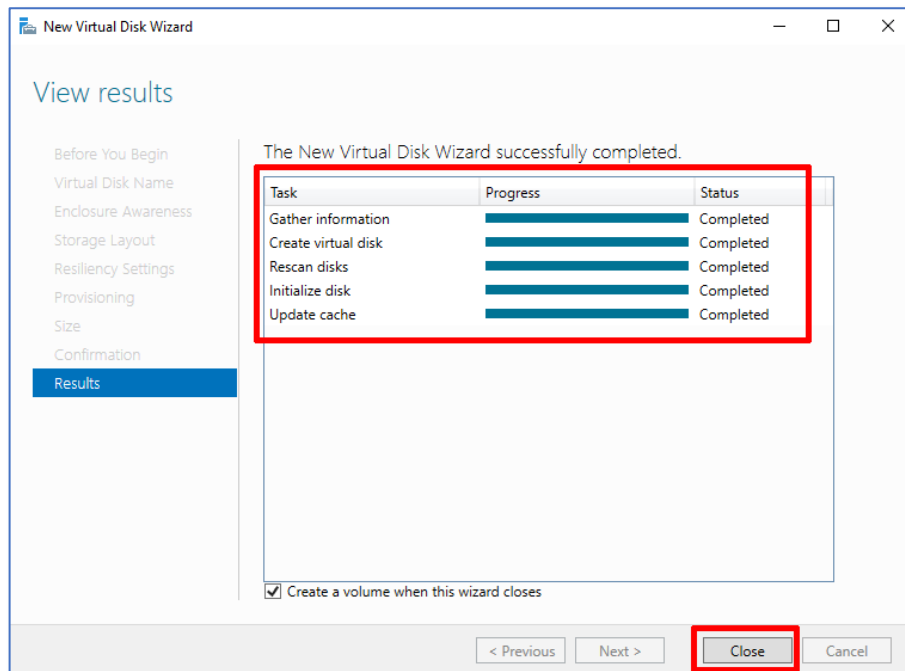
The virtual disk might take additional space to create a write-back cache.

< Previous **Next >** Create Cancel

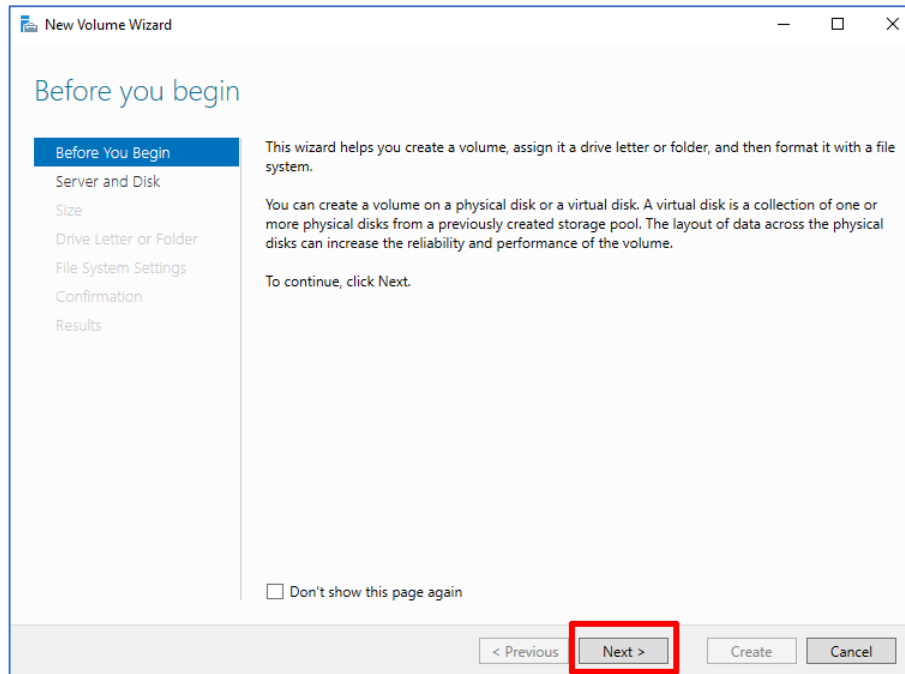
9. Confirm the settings match the image below and then click **Create**



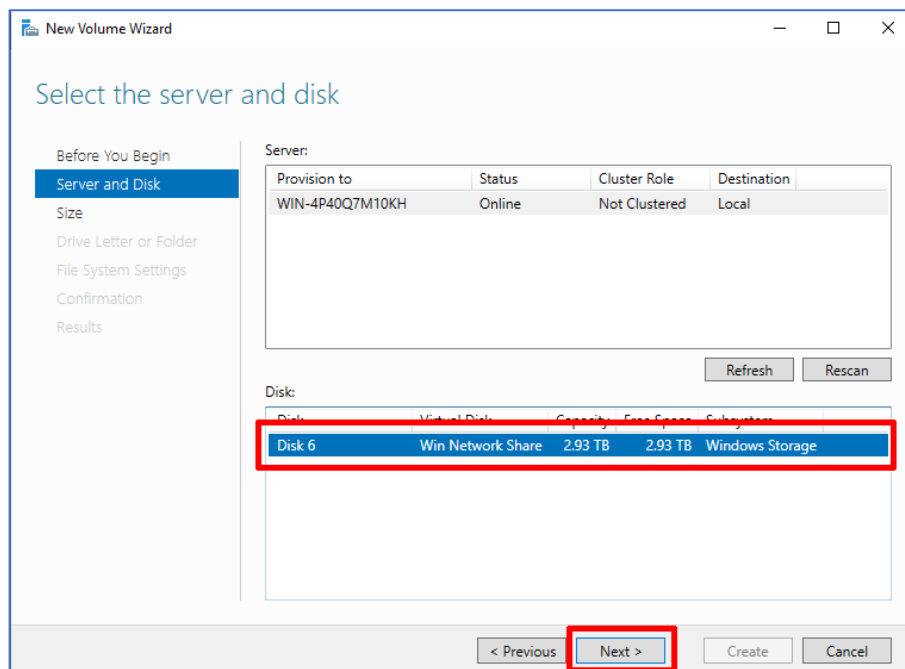
10. Once all tasks are complete click **Close**



11. Click **Next >**



12. In the *Disk* panel select the virtual disk you just created and then click **Next >**



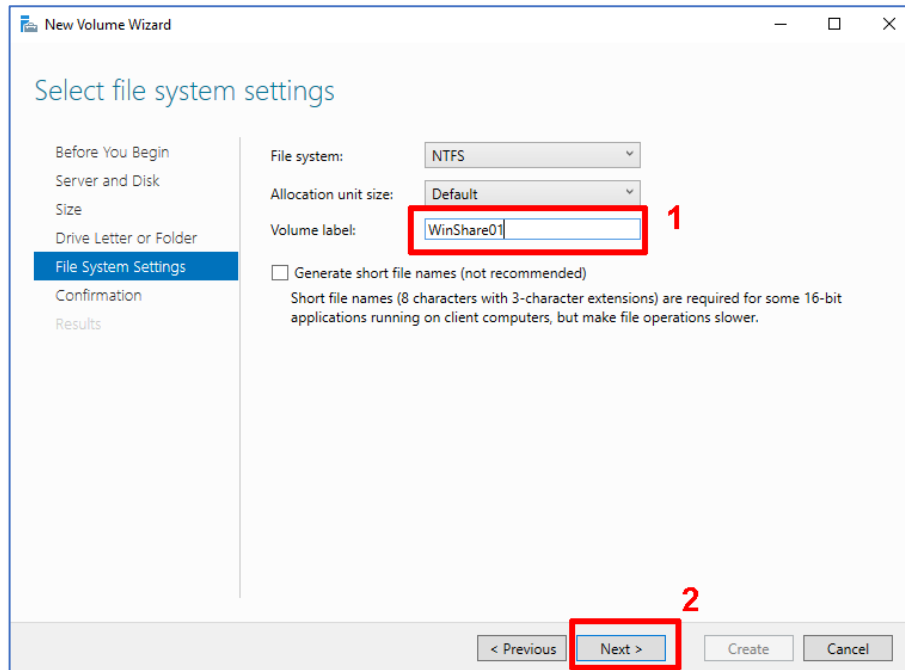
13. Keep the 2.93TB *Volume size* shown and then click **Next >**

The screenshot shows the 'New Volume Wizard' window at the 'Specify the size of the volume' step. The left sidebar has 'Size' selected. The main area shows 'Available Capacity: 2.93 TB' and 'Minimum size: 8.00 MB'. The 'Volume size' is set to '2.93' TB, which is highlighted with a red box and a red '1'. At the bottom, the 'Next >' button is highlighted with a red box and a red '2'.

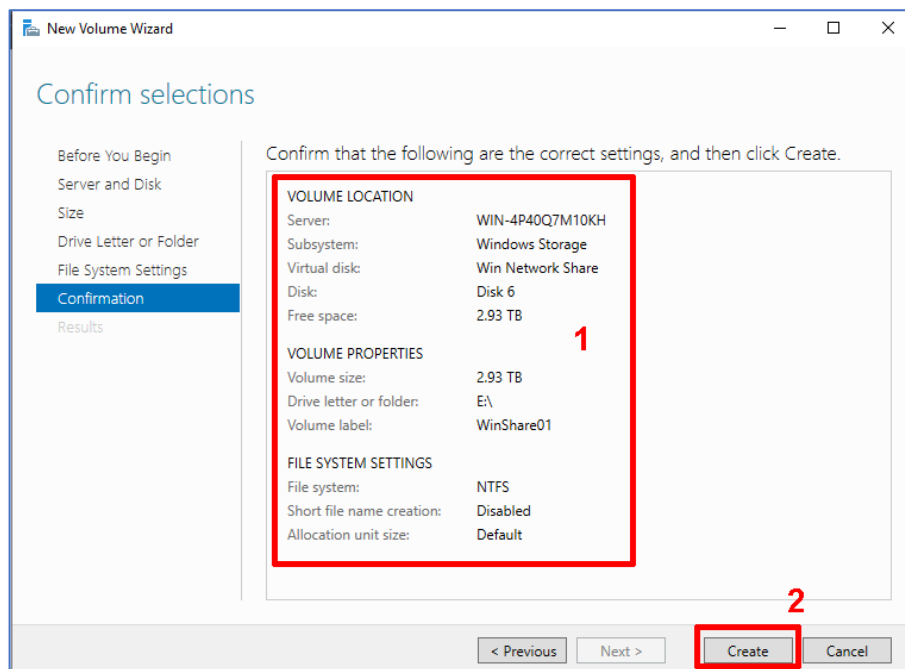
14. Ensure *Drive letter* is set to **E** and then click **Next >**

The screenshot shows the 'New Volume Wizard' window at the 'Assign to a drive letter or folder' step. The left sidebar has 'Drive Letter or Folder' selected. The main area shows instructions and three options: 'Drive letter: E' (selected and highlighted with a red box and a red '1'), 'The following folder:' (with a text box and 'Browse...' button), and 'Don't assign to a drive letter or folder.' At the bottom, the 'Next >' button is highlighted with a red box and a red '2'.

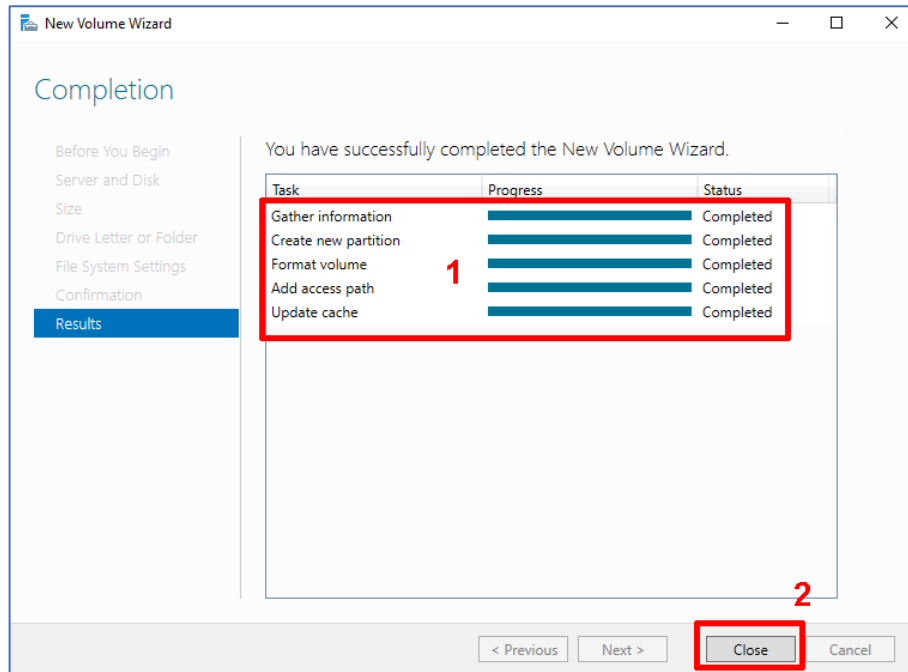
15. Give the *Volume* a label and then click **Next >**



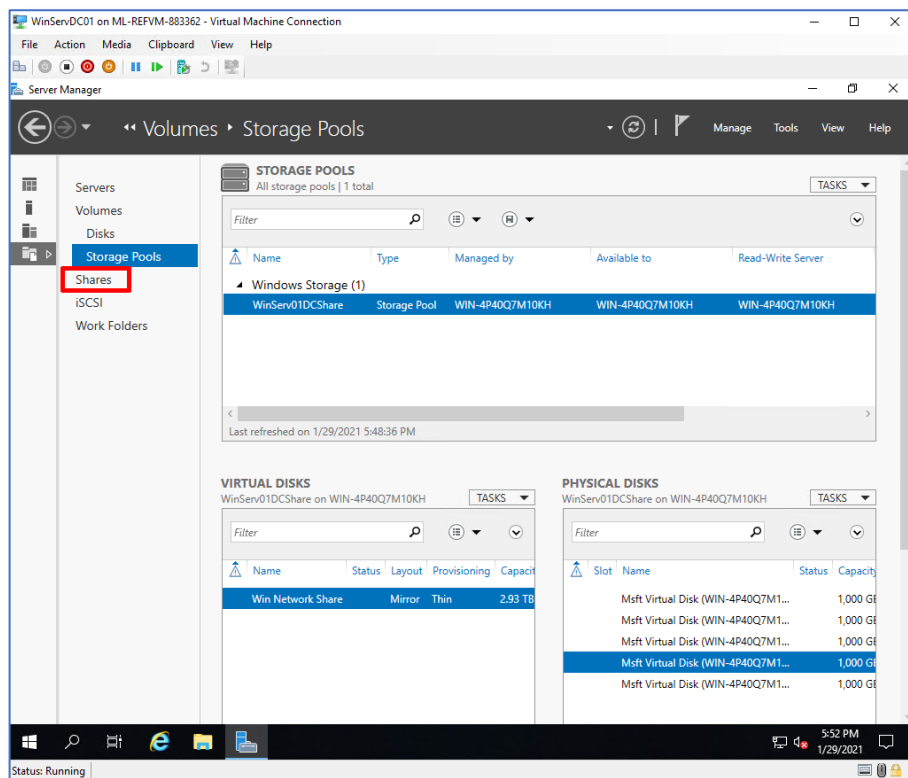
16. Confirm settings match the image below and then click **Create**



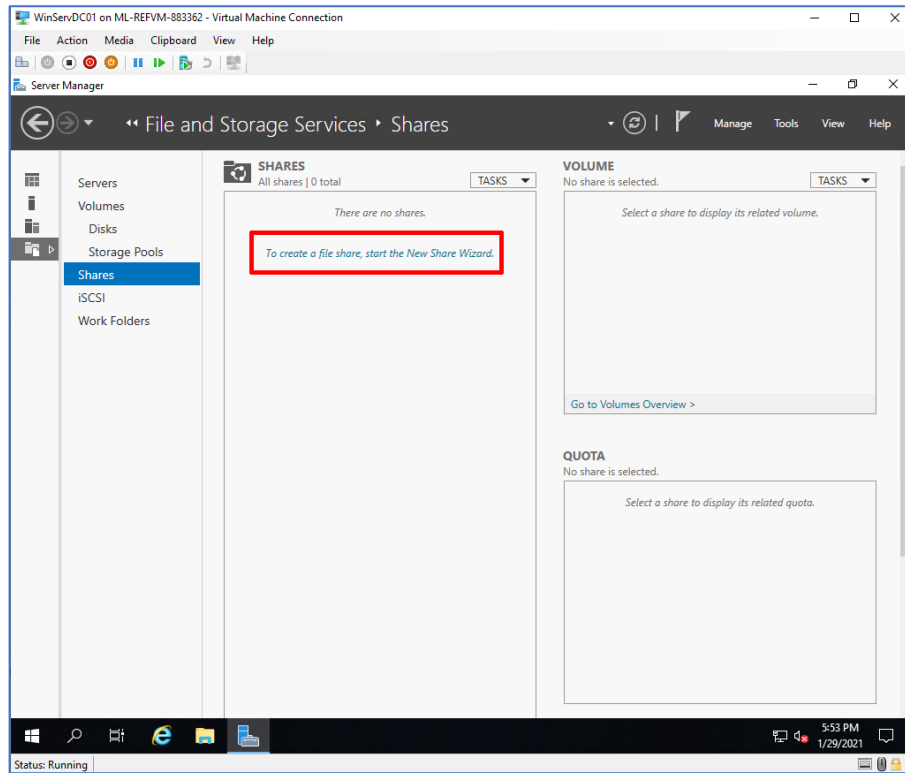
17. Once all tasks complete click **Close**



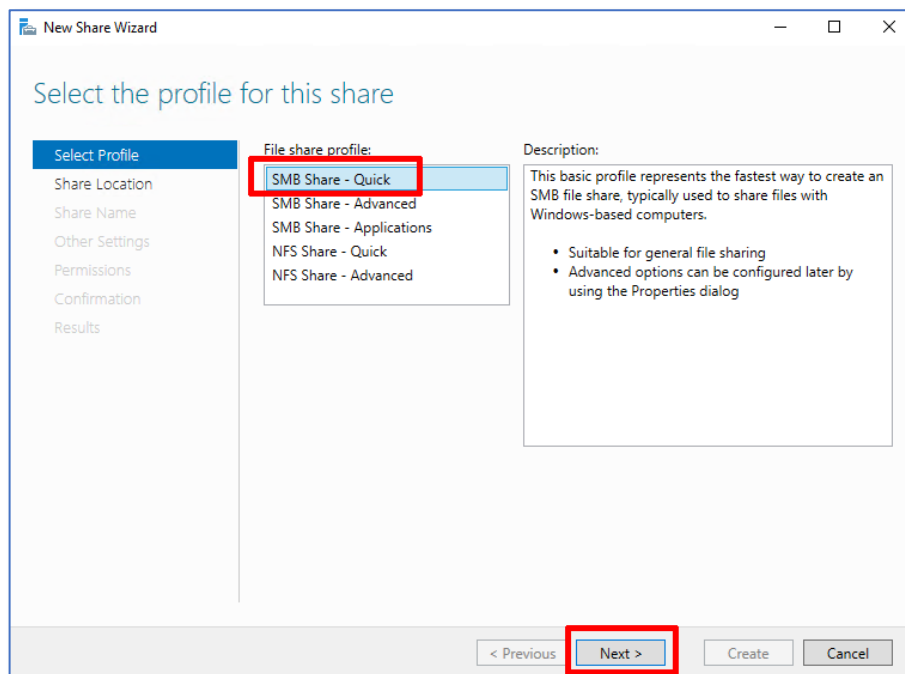
18. In the *Volumes* panel click **Shares**



19. Click *To create a file share, start the New Share Wizard*



20. Select **SMB Share – Quick** and then click **Next >**



21. Under *Share location* ensure *Select by volume* is selected and that volume **E** is also selected, then click **Next >**

New Share Wizard

Select the server and path for this share

Select Profile

- Share Location
- Share Name
- Other Settings
- Permissions
- Confirmation
- Results

Server:

Server Name	Status	Cluster Role	Owner Node
WIN-4P40Q7M10KH	Online	Not Clustered	

Share location:

☒ Select by volume:

Volume	Free Space	Capacity	File System
C:	28.3 GB	39.5 GB	NTFS
E:	2.93 TB	2.93 TB	NTFS

The location of the file share will be a new folder in the \Shares directory on the selected volume.

☐ Type a custom path:

< Previous **Next >** Create Cancel

22. Specify a name for the share and then click **Next >**

New Share Wizard

Specify share name

Select Profile

- Share Location
- Share Name
- Other Settings
- Permissions
- Confirmation
- Results

Share name: WinServ01Share

Share description:

Local path to share: E:\Shares\WinServ01Share

i If the folder does not exist, the folder is created.

Remote path to share: \\WIN-4P40Q7M10KH\WinServ01Share

< Previous **Next >** Create Cancel

23. Ensure *Allow caching of share* is checked and then click **Next >**

New Share Wizard

Configure share settings

Select Profile
Share Location
Share Name
Other Settings
Permissions
Confirmation
Results

☐ Enable access-based enumeration
Access-based enumeration displays only the files and folders that a user has permissions to access. If a user does not have Read (or equivalent) permissions for a folder, Windows hides the folder from the user's view.

☒ **Allow caching of share** 1
Caching makes the contents of the share available to offline users. If the BranchCache for Network Files role service is installed, you can enable BranchCache on the share.
☐ Enable BranchCache on the file share
BranchCache enables computers in a branch office to cache files downloaded from this share, and then allows the files to be securely available to other computers in the branch.

☐ Encrypt data access
When enabled, remote file access to this share will be encrypted. This secures the data against unauthorized access while the data is transferred to and from the share. If this box is checked and grayed out, an administrator has turned on encryption for the entire server.

< Previous **Next >** 2 Create Cancel

24. Leave the folder permissions as they are and click **Next >**

New Share Wizard

Specify permissions to control access

Select Profile
Share Location
Share Name
Other Settings
Permissions
Confirmation
Results

Permissions to access the files on a share are set using a combination of folder permissions, share permissions, and, optionally, a central access policy.

Share permissions: Everyone Read Only

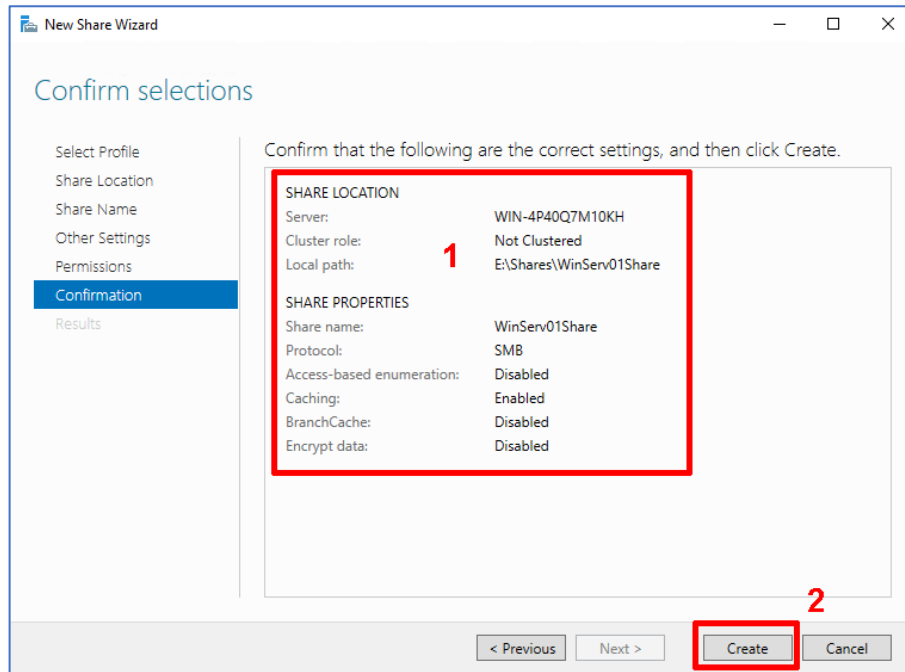
Folder permissions:

Type	Principal	Access	Applies To
Allow	BUILTIN\Users	Special	This folder and subfolders
Allow	BUILTIN\Users	Read & execu...	This folder, subfolders, and files
Allow	CREATOR OWNER	Full Control	Subfolders and files only
Allow	NT AUTHORITY\SYSTEM	Full Control	This folder, subfolders, and files
Allow	BUILTIN\Administrators	Full Control	This folder, subfolders, and files
Allow	BUILTIN\Administrators	Full Control	This folder only

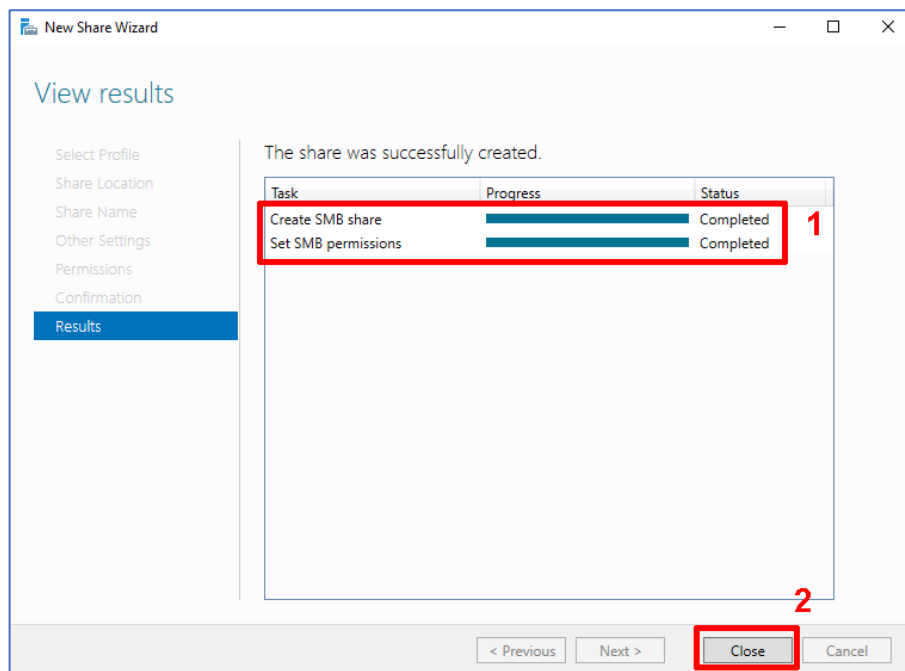
Customize permissions...

< Previous **Next >** Create Cancel

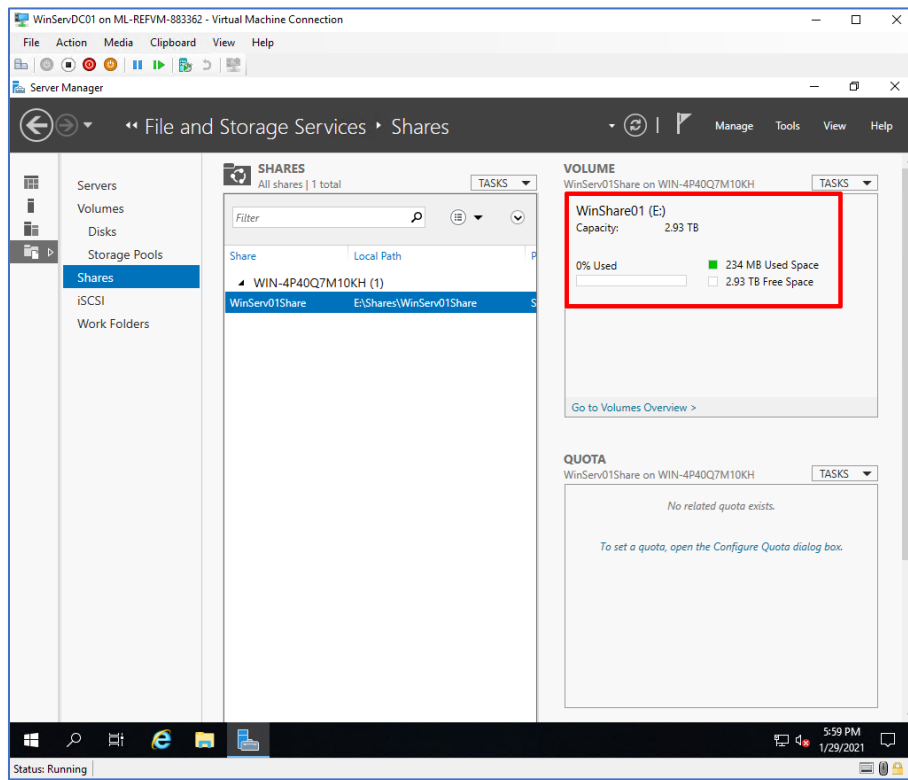
25. Confirm settings are as in the image below and then click **Create**



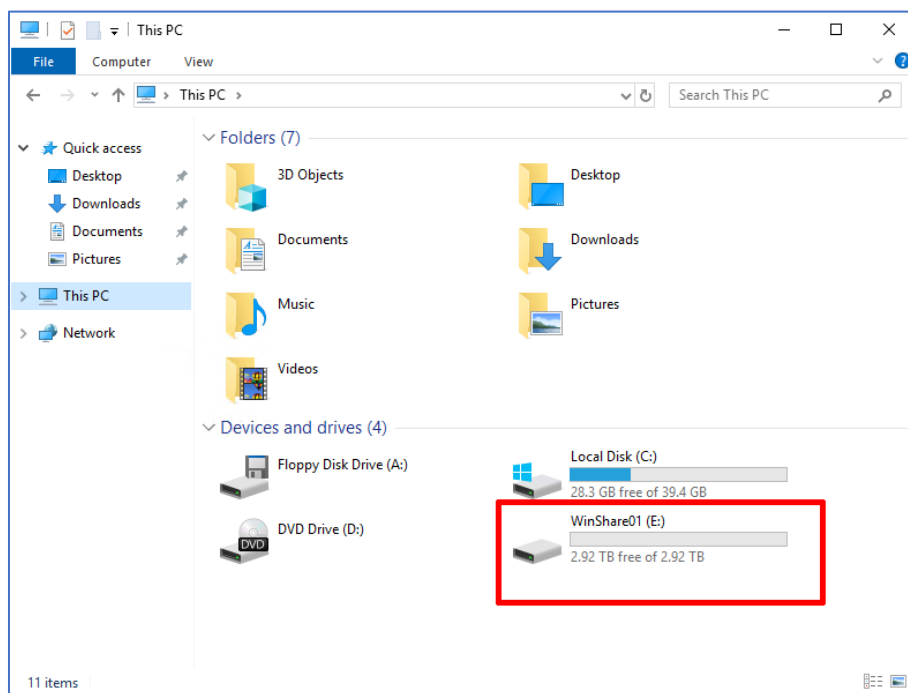
26. Once all tasks are complete click **Close**



Congratulations – you have created a virtual disk and made it available to the network.

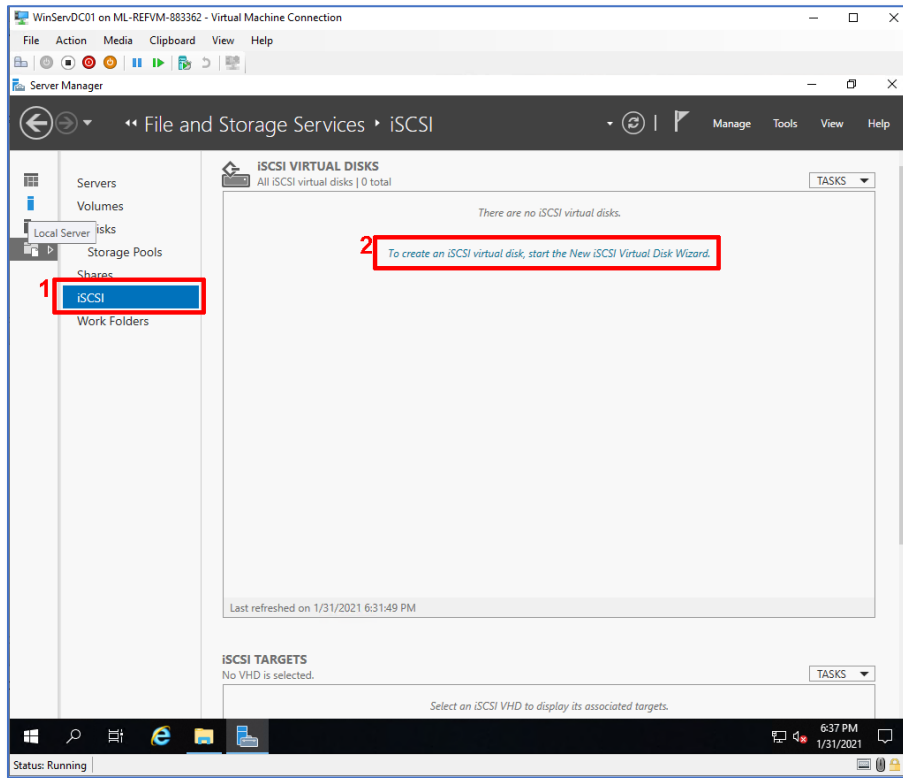


If you now go to *This PC* in *Windows Explorer* you will see that the new virtual disk now appears.



Make the New Virtual Disk an iSCSI Target

1. In the *File and Storage Services* panel, go to the *iSCSI* section and then click [To create an iSCSI virtual disk, start the New iSCSI Virtual Disk Wizard](#)



2. Ensure *Select by volume* is selected; ensure that the new volume just created (E:) is selected and then click **Next >**

Select iSCSI virtual disk location

Server:

Server Name	Status	Cluster Role	Owner Node
WIN-4P40Q7M10KH	Online	Not Clustered	

The list is filtered to show only servers with the iSCSI Target Server role installed.

Storage location:

☒ Select by volume:

Volume	Free Space	Capacity	File System
C:	27.9 GB	39.5 GB	NTFS
E:	2.93 TB	2.93 TB	NTFS

The iSCSI virtual disk will be saved at \iSCSIVirtualDisk on the selected volume.

☐ Type a custom path:

< Previous **Next >** Create Cancel

3. Give the new iSCSI virtual disk a name and then click **Next >**

Specify iSCSI virtual disk name

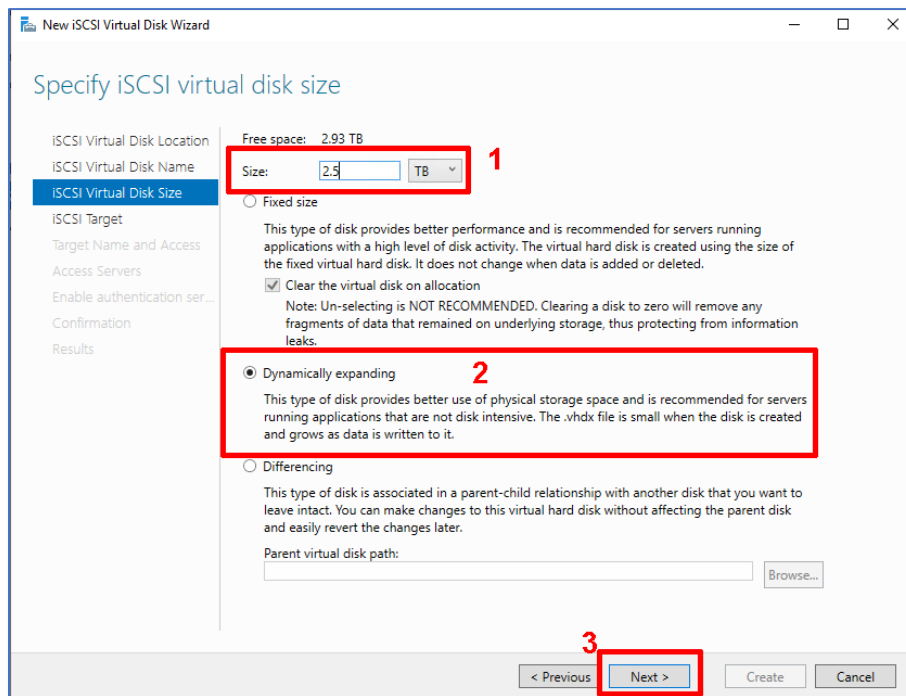
Name:

Description:

Path: E:\iSCSIVirtualDisks\iscsi_nw_share.vhdx

< Previous **Next >** Create Cancel

- Set a size for the new iSCSI virtual disk; ensure *Dynamically expanding* is selected and then click **Next >**



New iSCSI Virtual Disk Wizard

Specify iSCSI virtual disk size

Free space: 2.93 TB

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Size: 2.5 TB **1**

☐ Fixed size

This type of disk provides better performance and is recommended for servers running applications with a high level of disk activity. The virtual hard disk is created using the size of the fixed virtual hard disk. It does not change when data is added or deleted.

☒ Clear the virtual disk on allocation

Note: Un-selecting is NOT RECOMMENDED. Clearing a disk to zero will remove any fragments of data that remained on underlying storage, thus protecting from information leaks.

☒ Dynamically expanding **2**

This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The .vhdx file is small when the disk is created and grows as data is written to it.

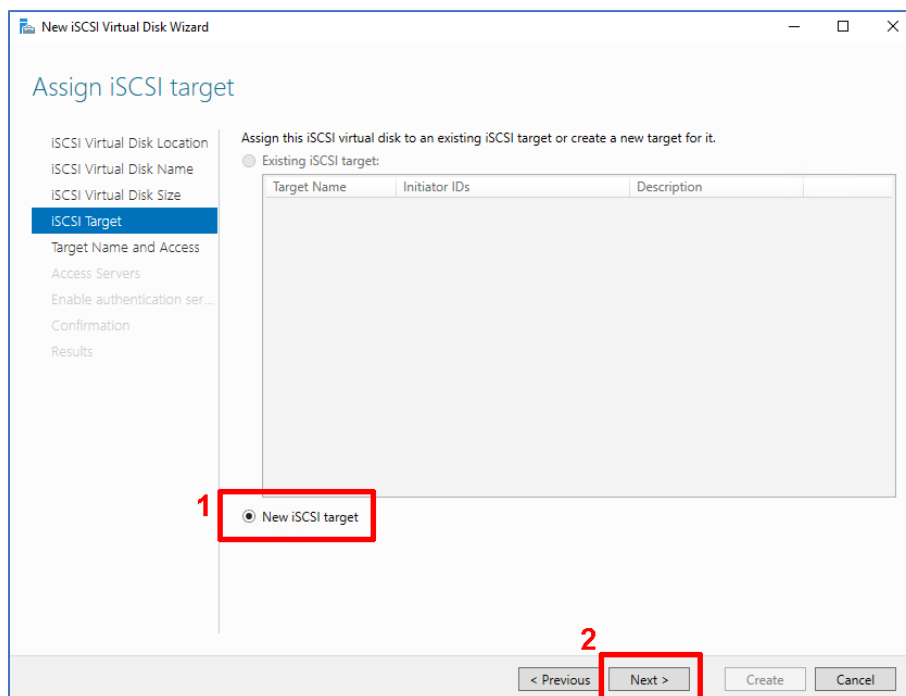
☐ Differencing

This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to this virtual hard disk without affecting the parent disk and easily revert the changes later.

Parent virtual disk path:

3

- Ensure *New iSCSI target* is selected and then click **Next >**



New iSCSI Virtual Disk Wizard

Assign iSCSI target

Assign this iSCSI virtual disk to an existing iSCSI target or create a new target for it.

☐ Existing iSCSI target:

Target Name	Initiator IDs	Description

☒ New iSCSI target **1**

2

6. Give the iSCSI Target a name and then click **Next >**

New iSCSI Virtual Disk Wizard

Specify target name

ISCSI Virtual Disk Location
 ISCSI Virtual Disk Name
 ISCSI Virtual Disk Size
 ISCSI Target
Target Name and Access
 Access Servers
 Enable authentication ser...
 Confirmation
 Results

Name: ¹

Description:

< Previous **Next >** ² Create Cancel

7. Click **Add...**

New iSCSI Virtual Disk Wizard

Specify access servers

ISCSI Virtual Disk Location
 ISCSI Virtual Disk Name
 ISCSI Virtual Disk Size
 ISCSI Target
 Target Name and Access
Access Servers
 Enable authentication ser...
 Confirmation
 Results

Click Add to specify the iSCSI initiator(s) that will access this iSCSI virtual disk.

Type	Value
------	-------

Add... Remove

< Previous Next > Create Cancel

8. Ensure Select from the initiator cache on the target server is selected and choose the desired iSCSI Initiator (this will be another Windows Server VM you created for this purpose)

Add initiator ID

Select a method to identify the initiator:

☐ Query initiator computer for ID (not supported on Windows Server 2008 R2, Windows 7, or earlier):

Browse...

☒ Select from the initiator cache on the target server: **1**

iqn.1991-05.com.microsoft:win-v2k9cm3597q

☐ Enter a value for the selected type

Type: IQN Value: Browse...

2 OK Cancel

9. Ensure the *IQN* of the selected *Target Initiator* is visible and then click **Next >**

Specify access servers

Click Add to specify the iSCSI initiator(s) that will access this iSCSI virtual disk.

Type	Value
IQN	iqn.1991-05.com.microsoftwin-v2k9cm3597q

Buttons: Add... Remove

Navigation: < Previous **Next >** Create Cancel

10. Click **Next >**

Enable Authentication

Optionally, enable the CHAP protocol to authenticate initiator connections, or enable reverse CHAP to allow the initiator to authenticate the iSCSI target.

☐ **Enable CHAP:**

User name:

Password:

Confirm password:

☐ **Enable reverse CHAP:**

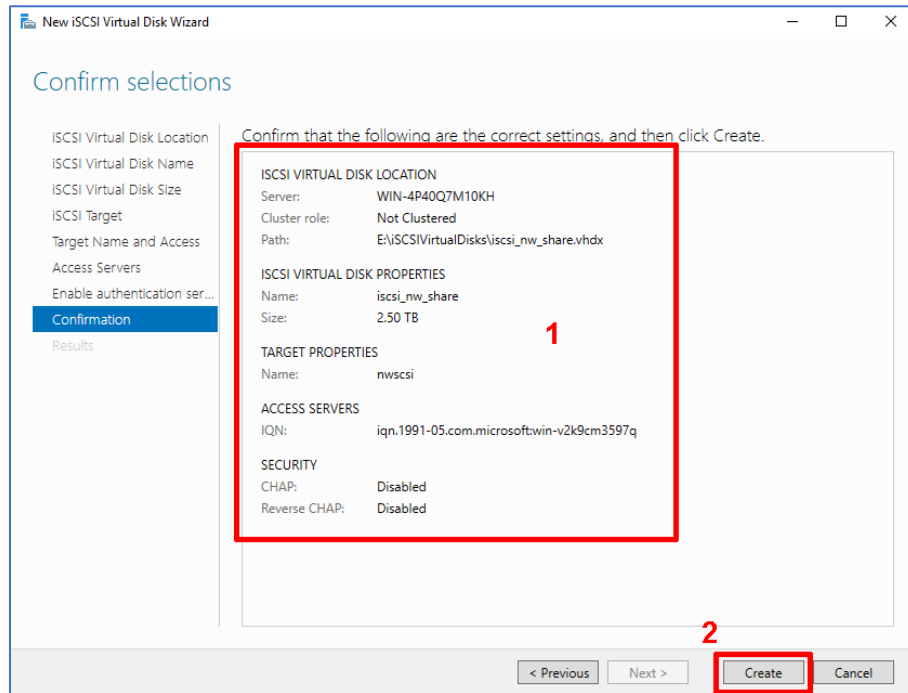
User name:

Password:

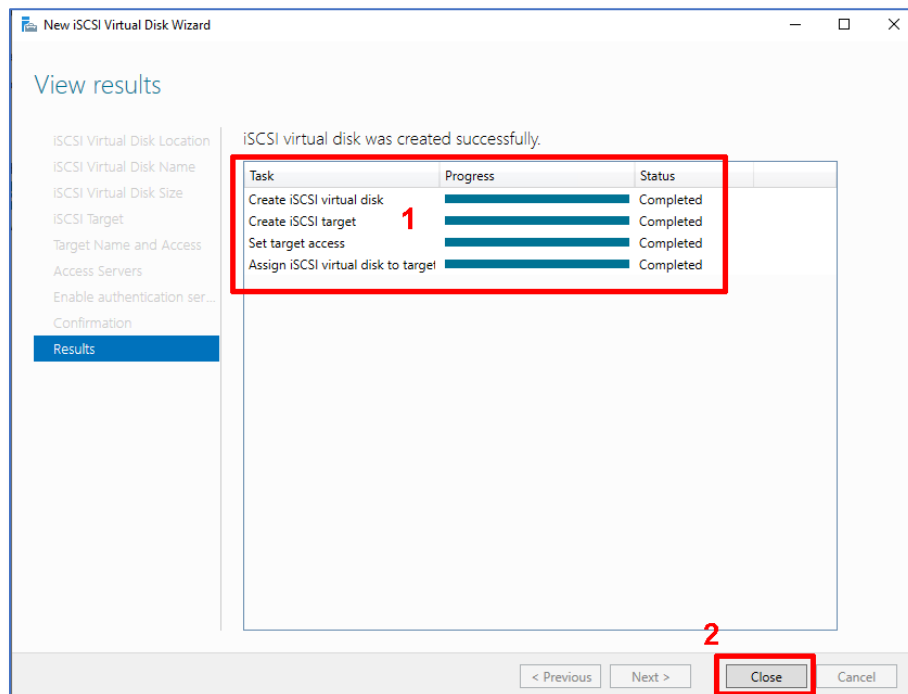
Confirm password:

Navigation: < Previous **Next >** Create Cancel

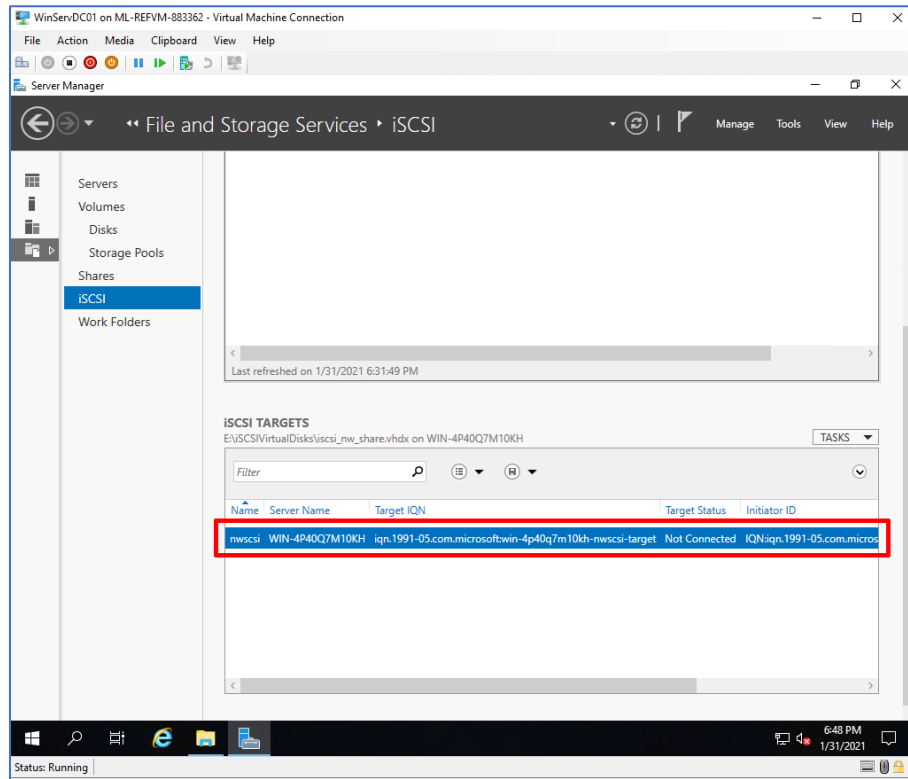
11. Confirm settings match the image below and then click **Create**



12. Once all tasks are complete, click **Close**



13. Ensure the newly create iSCSI virtual disk is present in the *iSCSI TARGETS* panel.



Congratulations, you have successfully set up an iSCSI target virtual disk for use by other nodes on the network.

Conclusion

At this point you should have:

- Configured Windows Server as an iSCSI target server
- Created a virtual disk from a storage pool and share it with the network

You can now close Hyper-V, close the RDP connection to your CSG2132_ED_TR3_2023 virtual machine, and shut it down in Azure.

END OF WORKSHOP