



3/30/2023

Capstone Project

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SANISH -A01047718

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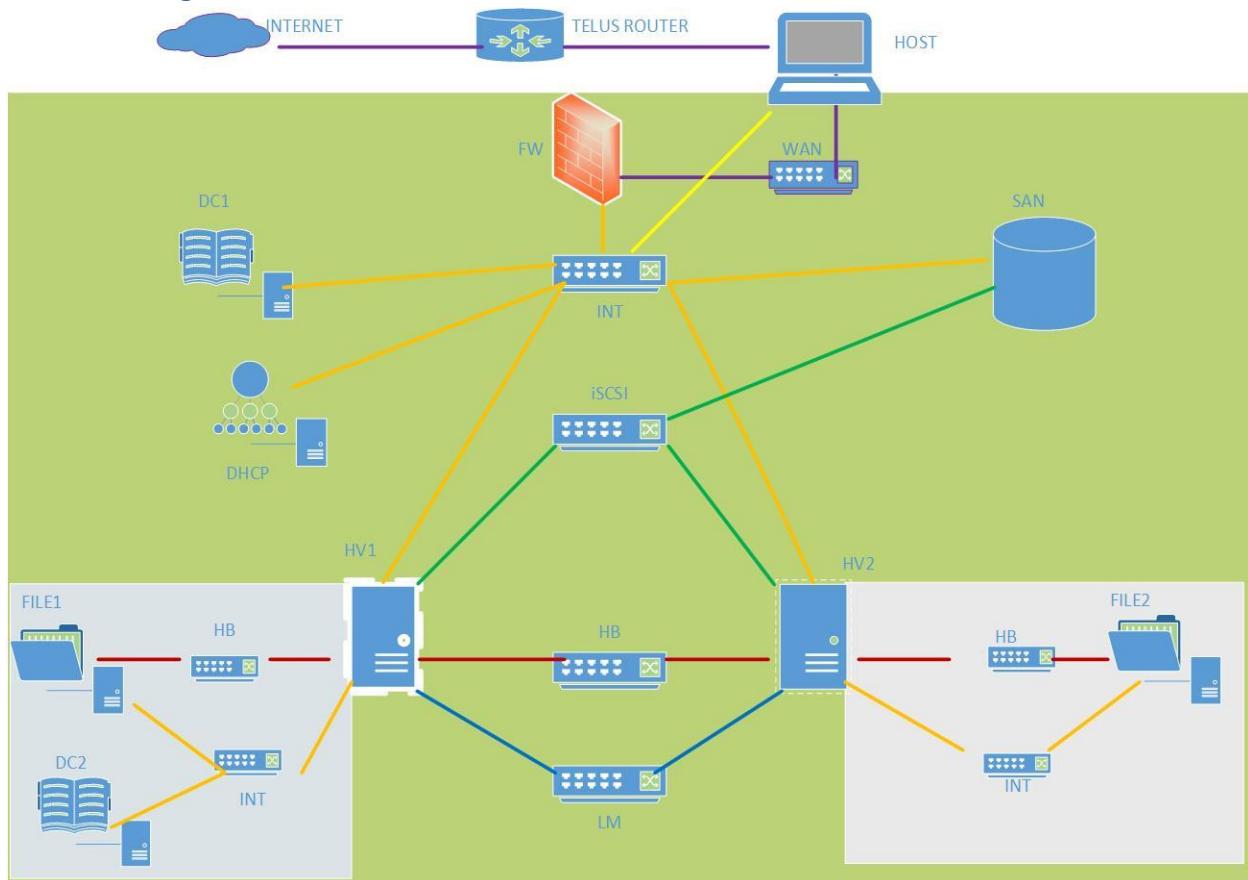
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Network Diagram



IP Table

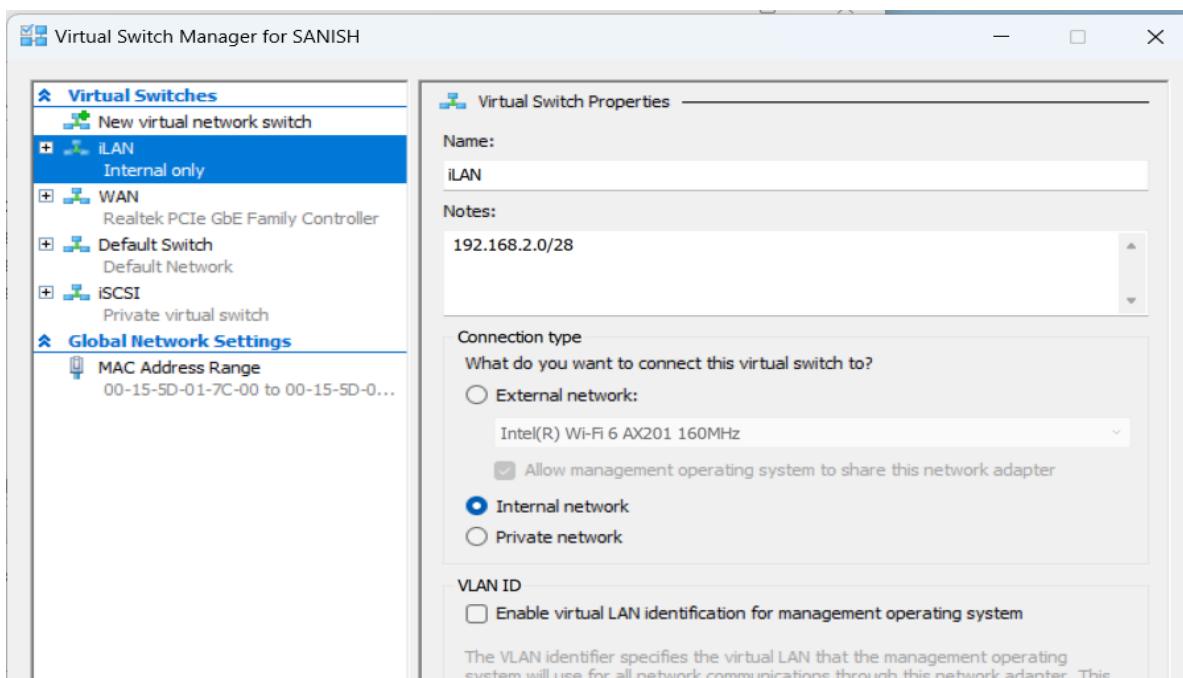
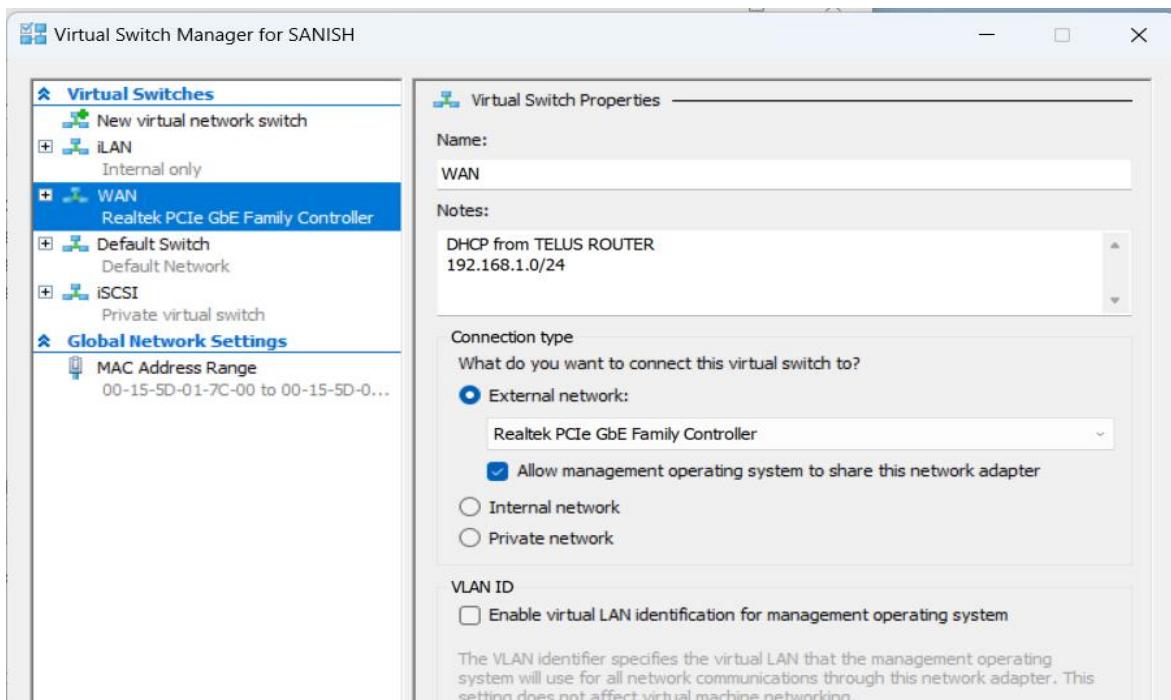
FW Wan IP (Wan)	192.168.1.125/24	512 MB	
FW IP(Gateway)(LAN)	192.168.2.14/28		
Lenovo Host IP(LAN)	192.168.2.13/28		
DC1	192.168.2.1/28	512 MB	
LDHCP	192.168.2.3/28	512 MB	
SAN(LAN)	192.168.2.11/28	512 MB	
SAN (iSCSI)	10.10.10.1/29		
HV1(LAN)	192.168.2.4/28	2600MB	
HV1(iSCSI)	10.10.10.2/29		
HV1(LM)	30.30.30.1/30		
HV1(HB)	20.20.20.1/29		
HV2(LAN)	192.168.2.5/28	2600 MB	
HV2(iSCSI)	10.10.10.3/29		
HV2(LM)	30.30.30.2/30		
HV2(HB)	20.20.20.2/29		
FILE01(HB)	20.20.20.4/29	512 MB	
FILE02(HB)	20.20.20.3/29	512 MB	
DC2	192.168.2.2/28	512 MB	

Install and Configure Pfsense Firewall

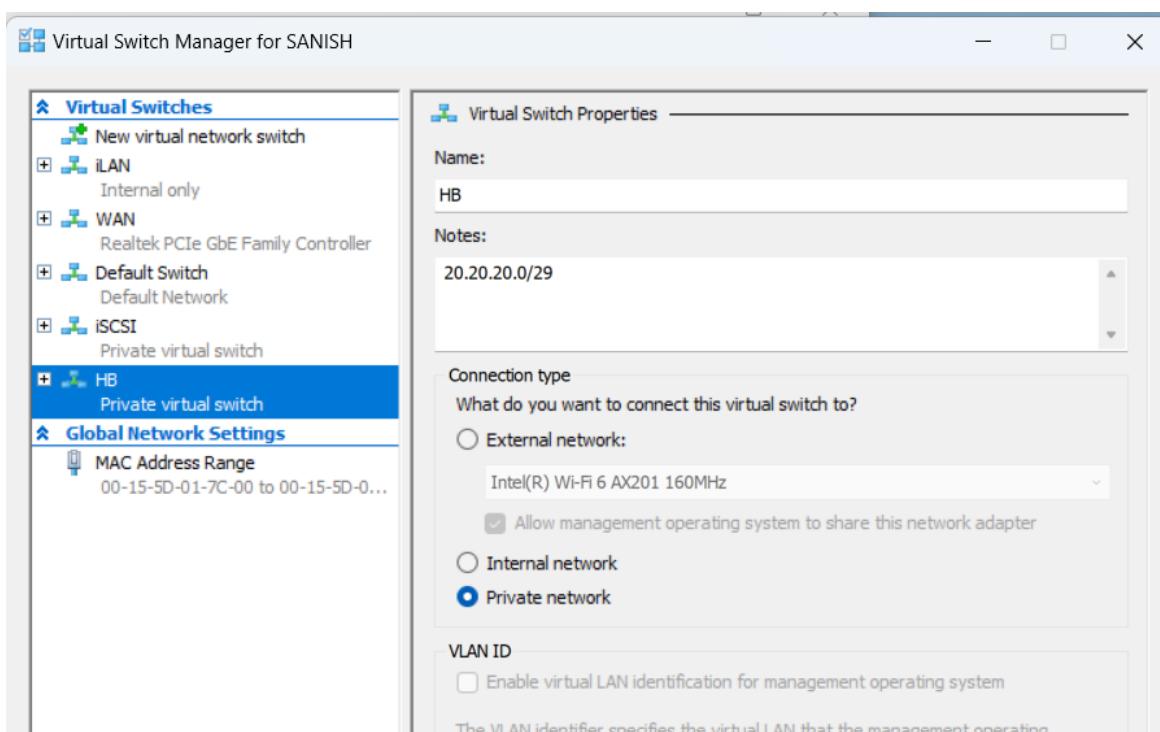
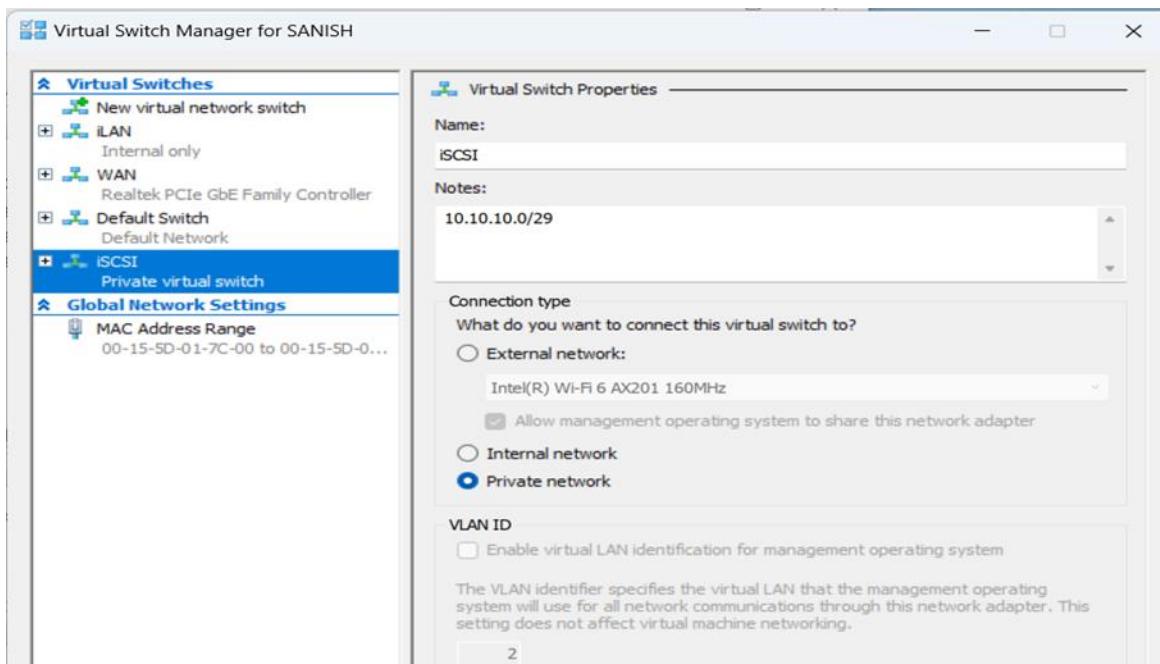
Create switches

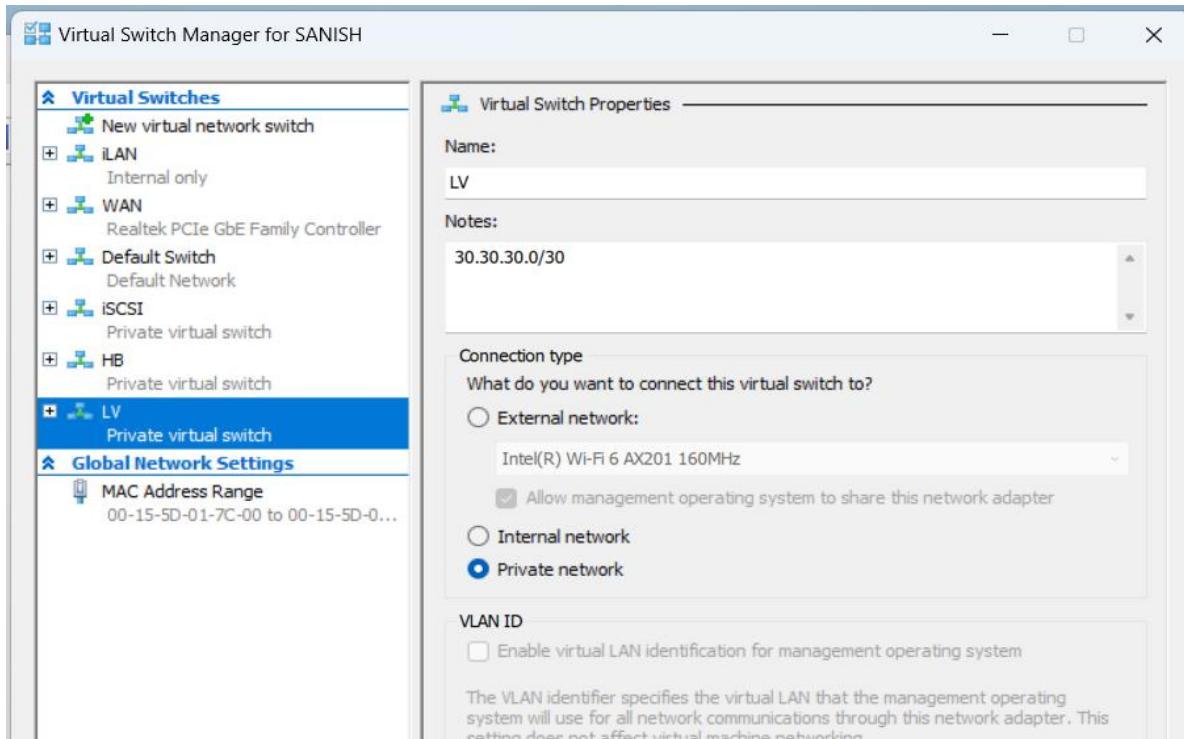
Open Hyper-V manager → select Virtual Switch manager

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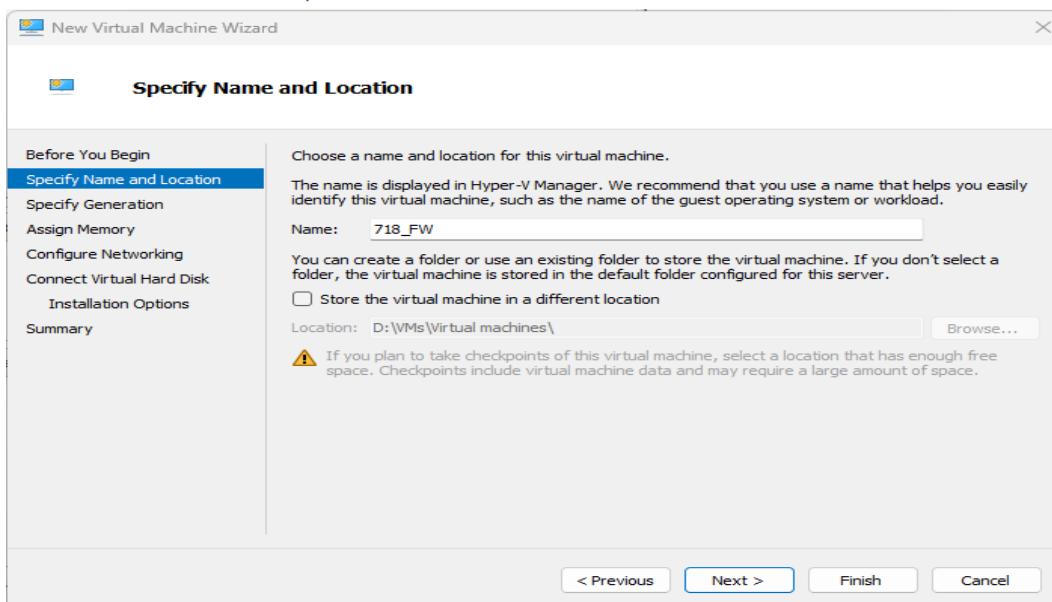


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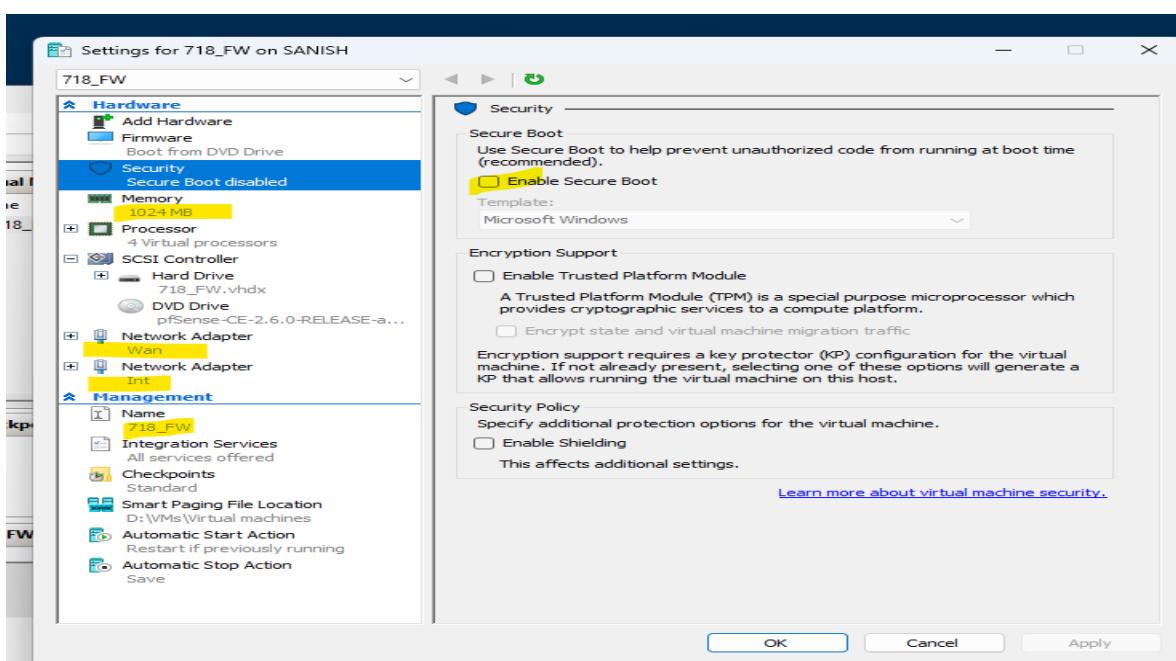
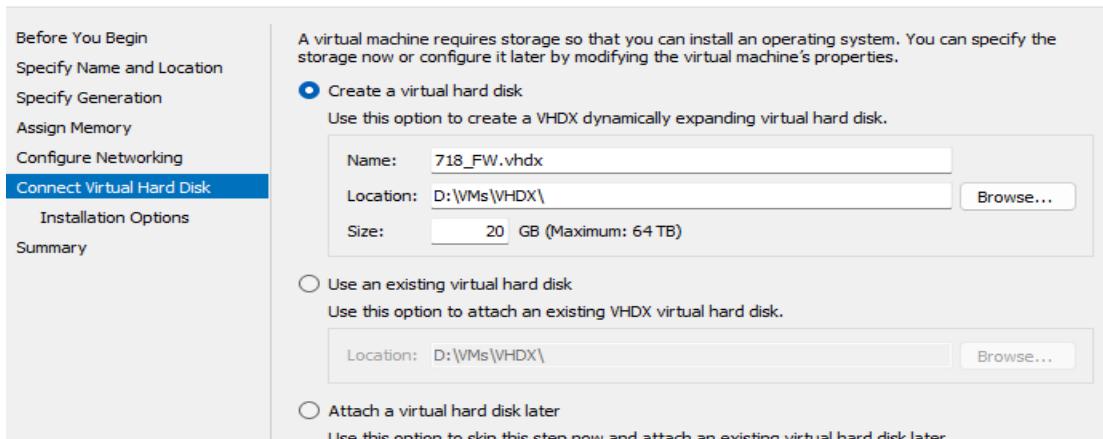
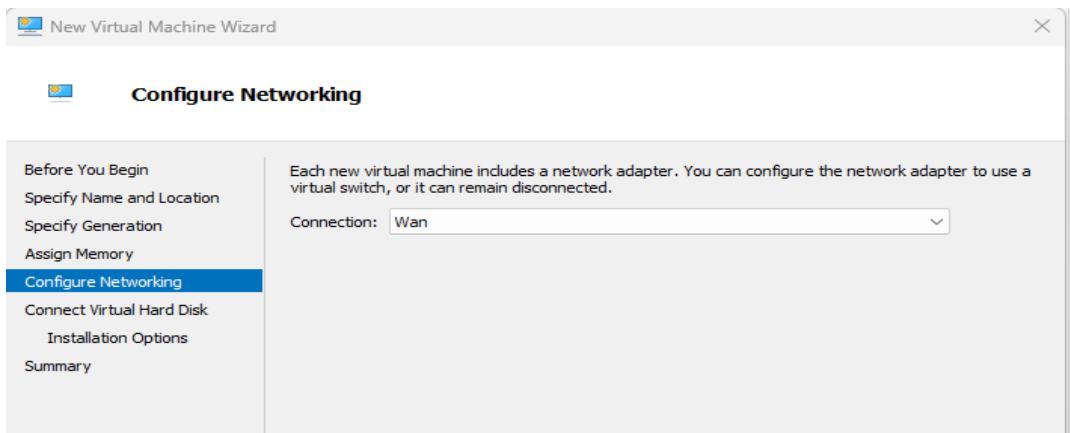




Install Pfsense Router/Firewall



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```
Enter an option: 2
Available interfaces:
1 - WAN (hn0 - dhcp, dhcp6)
2 - LAN (hn1 - static)

Enter the number of the interface you wish to configure: 2
Enter the new LAN IPv4 address. Press <ENTER> for none:
> 192.168.2.14

Subnet masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. 255.255.255.0 = 24
     255.255.0.0   = 16
     255.0.0.0     = 8

Enter the new LAN IPv4 subnet bit count (1 to 32):
> 28

For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Enter the new LAN IPv6 address. Press <ENTER> for none:
>

Do you want to enable the DHCP server on LAN? (y/n) n
Disabling IPv4 DHCPD...
Disabling IPv6 DHCPD...

Do you want to revert to HTTP as the webConfigurator protocol? (y/n) n

Please wait while the changes are saved to LAN...
Reloading filter...
Reloading routing configuration...
DHCPD...

The IPv4 LAN address has been set to 192.168.2.14/28
You can now access the webConfigurator by opening the following URL in your web browser:
https://192.168.2.14/
```

```
Press <ENTER> to continue.
Hyper-V Virtual Machine - Netgate Device ID: 7add74ce65a8824393d4

*** Welcome to pfSense 2.6.0-RELEASE (amd64) on pfSense ***

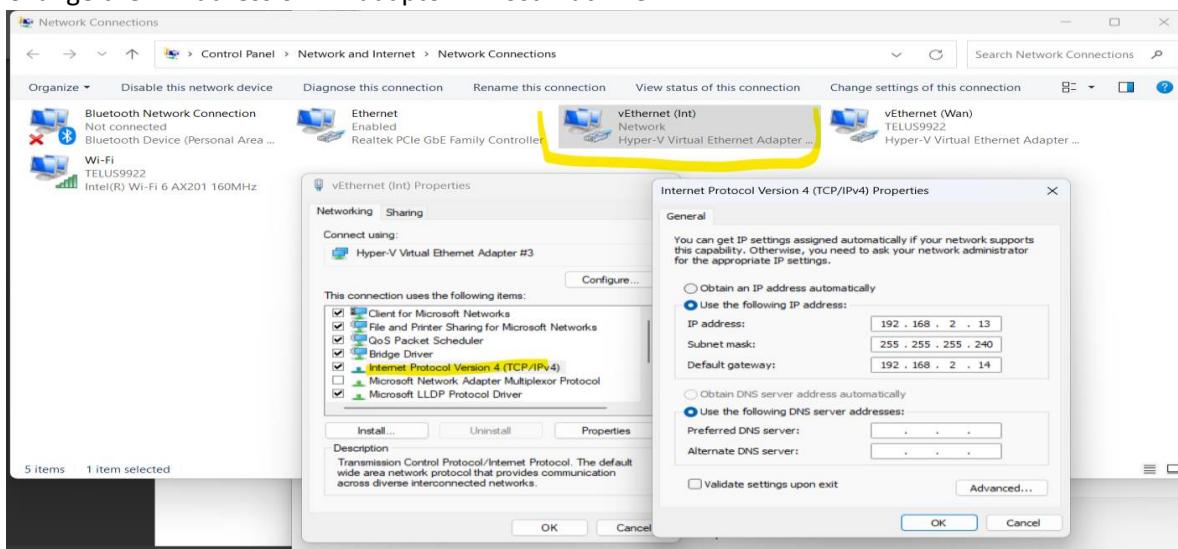
WAN (wan)      -> hn0      -> v4/DHCP4: 192.168.1.125/24
LAN (lan)      -> hn1      -> v4: 192.168.2.14/28

0) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults 13) Update from console
5) Reboot system              14) Enable Secure Shell (sshd)
6) Halt system                15) Restore recent configuration
7) Ping host                  16) Restart PHP-FPM
8) Shell

Enter an option: [■]
Status: Running [■]
```

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Change the IP Address of INT adaptor in host machine



Status / Dashboard

System Information

Name	pfSense.home.arpa
User	admin@192.168.2.13 (Local Database)
System	Hyper-V Virtual Machine Netgate Device ID: a77d7780a2591bad4722
BIOS	Vendor: Microsoft Corporation Version: Hyper-V UEFI Release v4.1 Release Date: Wed Apr 6 2022
Version	2.6.0-RELEASE (amd64) built on Mon Jan 31 10:57:53 UTC 2022

Netgate Services And Support

Retrieving support information

Interfaces

WAN	10Gbase-T <full-duplex>	192.168.1.126
LAN	10Gbase-T <full-duplex>	192.168.2.14

Services / DNS Resolver / General Settings

General Settings

- General DNS Resolver Options**
 - Enable**: Enable DNS resolver
 - Enable SSL/TLS Service**: Respond to incoming SSL/TLS queries from local clients

Configures the DNS Resolver to act as a DNS over SSL/TLS server which can answer queries from clients which also support DNS over TLS. Activating this option disables automatic interface response routing behavior, thus it works best with specific interface bindings.
 - SSL/TLS Certificate**: webConfigurator default (64191d9fc704)
 - SSL/TLS Listen Port**: 853
- Network Interfaces**
- Outgoing Network Interfaces**

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The screenshot shows the pfSense web interface under the 'Services / DNS Forwarder' section. The 'General DNS Forwarder Options' tab is selected. The 'Enable' checkbox is checked. Under 'DHCP Registration', there is an unchecked checkbox for 'Register DHCP leases in DNS forwarder'. A note explains that if this option is set, machines specifying their hostname during a DHCP lease request will be registered in the DNS forwarder. Under 'Static DHCP', there is an unchecked checkbox for 'Register DHCP static mappings in DNS forwarder'. A note explains that if this option is set, IPv4 DHCP static mappings will be registered in the DNS forwarder. Under 'Prefer DHCP', there is an unchecked checkbox for 'Resolve DHCP mappings first'. A note explains that if this option is set, DHCP mappings will be resolved before manual lists. Below these options is a terminal window showing network configuration and a ping test.

```
WAN (wan)      -> hn0          -> v4/DHCP4: 192.168.1.125/24
LAN (lan)      -> hn1          -> v4: 192.168.2.14/28

0) Logout (SSH only)
1) Assign Interfaces
2) Set interface(s) IP address
3) Reset webConfigurator password
4) Reset to factory defaults
5) Reboot system
6) Halt system
7) Ping host
8) Shell
9) pfTop
10) Filter Logs
11) Restart webConfigurator
12) PHP shell + pfSense tools
13) Update from console
14) Enable Secure Shell (sshd)
15) Restore recent configuration
16) Restart PHP-FPM

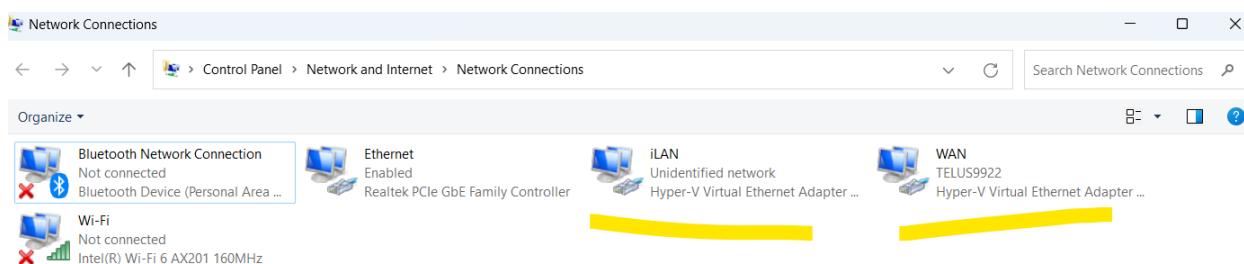
Enter an option: 7

Enter a host name or IP address: GOOGLE.CA
PING GOOGLE.CA (172.217.14.195): 56 data bytes
64 bytes from 172.217.14.195: icmp_seq=0 ttl=119 time=7.095 ms
64 bytes from 172.217.14.195: icmp_seq=1 ttl=119 time=7.589 ms
64 bytes from 172.217.14.195: icmp_seq=2 ttl=119 time=7.585 ms

--- GOOGLE.CA ping statistics ---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 7.095/7.423/7.589/0.232 ms

Press ENTER to continue.
```

```
PS C:\WINDOWS\system32> Rename-NetAdapter -Name "vEthernet (WAN)" -NewName "WAN"
PS C:\WINDOWS\system32> Rename-NetAdapter -Name "vEthernet (iLAN)" -NewName "iLAN"
```



Install and configure DC1

Administrator: Windows PowerShell ISE

File Edit View Tools Debug Add-ons Help

Untitled1.ps1 Script_New_Server_VMCreation_New_BootOrder_2023.ps1

```

1 $VMName = Read-Host -Prompt 'Input your VM name'
2 $VHDPath = "V:\VMs\VHDX\" + $VMName + ".vhdx"
3 new-vhd -Path $VHDPath -SizeBytes 30GB -Dynamic
4 New-VM -Name $VMName -MemoryStartupBytes 4GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
5 Add-VMVddDrive -VMName $VMName -Path V:\Softwares\WinServer\Server2022Trial.iso
6 $BootOrd = Get-VMFirmware $VMName
7 $BootOrd.bootorder
8 $Hddrive = $BootOrd.BootOrder[0]
9 $Pxe = $BootOrd.BootOrder[1]
10 $Dvddrive = $BootOrd.BootOrder[2]
11 Set-VMFirmware $VMName -BootOrder $Dvddrive,$Hddrive,$Pxe
12 Set-VM $VMName -AutomaticCheckpointsEnabled $false
13 Set-VMMemory $VMName -DynamicMemoryEnabled $true
14 Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"

```

PS C:\WINDOWS\system32> V:\assignment\scripts\Script_New_Server_VMCreation_New_BootOrder_2023.ps1
Input your VM name: 718DC1

ComputerName	:	SANISH
Path	:	V:\VMs\VHDX\718DC1.vhdx
VhdFormat	:	VHDX
VhdType	:	Dynamic
FileSize	:	4194304
Size	:	32212254720
MinimumSize	:	
LogicalSectorSize	:	512
PhysicalSectorSize	:	4096
Blocksize	:	33554432
ParentPath	:	
DiskIdentifier	:	D39C9DB3-71F6-4F08-BDE8-39ECC772D07C
FragmentationPercentage	:	0
Alignment	:	1
Attached	:	False
DiskNumber	:	
ISPMEMCompatible	:	False

718DC1 Off
718FW Running 0% 1048 MB

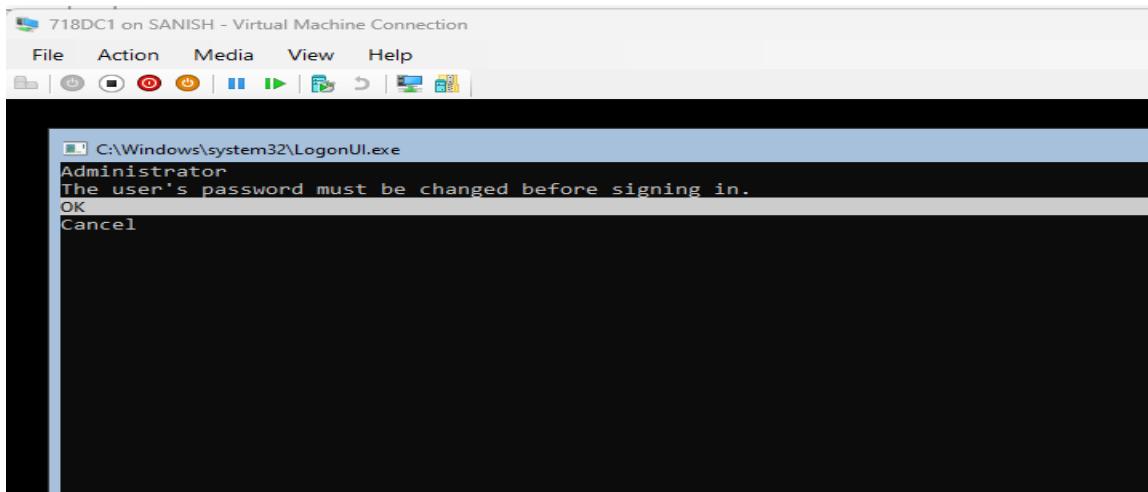
Microsoft Server Operating System Setup

Select the operating system you want to install

Operating system	Architecture	Date modified
Windows Server 2022 Standard Evaluation	x64	3/3/2022
Windows Server 2022 Standard Evaluation (Desktop Experi...	x64	3/3/2022
Windows Server 2022 Datacenter Evaluation	x64	3/3/2022
Windows Server 2022 Datacenter Evaluation (Desktop Experi...	x64	3/3/2022

Description:
(Recommended) This option omits most of the Windows graphical environment. Manage with a command prompt and PowerShell, or remotely with Windows Admin Center or other tools.

Next



Post installation task before creating ADDS in DC1

Untitled1.ps1 Script_New_Server_VMCreation_New_BootOrder_2023.ps1 Post_Server_Tasks_For_FIN_Domian_Controller.ps1

```

1 $IP = Read-Host -Prompt 'Input your IP Address'
2 $MaskBits = 28 # This means subnet mask = 255.255.255.240
3 $Gateway = "192.168.2.14"
4 $Dns = "192.168.2.1"
5 $IPTYPE = "IPv4"
6 # Retrieve the network adapter that you want to configure
7 $Adapter = Get-NetAdapter | ? {$_..Status -eq "up"}
8 # Remove any existing IP, gateway from our ipv4 adapter
9 If (($Adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
10 $Adapter | Remove-NetIPAddress -AddressFamily $IPTYPE -Confirm:$false
11 }
12 If (($Adapter | Get-NetIPConfiguration).Ipv4DefaultGateway) {
13 $Adapter | Remove-NetRoute -AddressFamily $IPTYPE -Confirm:$false
14 }
15 # Configure the IP address and default gateway
16 $Adapter | New-NetIPAddress
17 -AddressFamily $IPTYPE
18 -IPAddress $IP
19 -PrefixLength $MaskBits
20 -DefaultGateway $Gateway
21 # Configure the DNS client server IP addresses
22 $Adapter | Set-DnsClientServerAddress -ServerAddresses $DNS
23 # Rename the Network Adapter
24 Rename-NetAdapter -Name "Ethernet" -NewName "iLAN"
25 # Name Computer, and rename the local admin account
26 Rename-Computer -NewName (Read-Host -Prompt 'Input the new PC name')
27 Rename-LocalUser -Name "Administrator" -NewName "Sysadmin"
28 Restart-Computer -Force

```

cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:

```

[718DC1]: PS C:\Users\Administrator\Documents> $IP = Read-Host -Prompt 'Input your IP Address'
$MaskBits = 28 # This means subnet mask = 255.255.255.240
$Gateway = "192.168.2.14"
$Dns = "192.168.2.1"
$IPTYPE = "IPv4"
# Retrieve the network adapter that you want to configure
$Adapter = Get-NetAdapter | ? {$_..Status -eq "up"}
# Remove any existing IP, gateway from our ipv4 adapter
If (($Adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
$Adapter | Remove-NetIPAddress -AddressFamily $IPTYPE -Confirm:$false
}
If (($Adapter | Get-NetIPConfiguration).Ipv4DefaultGateway) {
$Adapter | Remove-NetRoute -AddressFamily $IPTYPE -Confirm:$false
}
# Configure the IP address and default gateway
$Adapter | New-NetIPAddress
-AddressFamily $IPTYPE
-IPAddress $IP
-PrefixLength $MaskBits
-DefaultGateway $Gateway
# Configure the DNS client server IP addresses
$Adapter | Set-DnsClientServerAddress -ServerAddresses $DNS
# Rename the Network Adapter
Rename-NetAdapter -Name "Ethernet" -NewName "iLAN"
# Name Computer, and rename the local admin account
Rename-Computer -NewName (Read-Host -Prompt 'Input the new PC name')
Rename-LocalUser -Name "Administrator" -NewName "Sysadmin"
Restart-Computer -Force

```

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```
Rename-LocalUser -Name "Administrator" -NewName "_LSysadmin"
Restart-Computer -Force
Input your IP Address: 192.168.2.1

IPAddress      : 192.168.2.1
InterfaceIndex  : 4
InterfaceAlias   : Ethernet
AddressFamily    : IPv4
Type            : Unicast
PrefixLength    : 24
PrefixOrigin     : Manual
SuffixOrigin     : Manual
AddressState     : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource     : False
PolicyStore      : ActiveStore

IPAddress      : 192.168.2.1
InterfaceIndex  : 4
InterfaceAlias   : Ethernet
AddressFamily    : IPv4
Type            : Unicast
PrefixLength    : 24
PrefixOrigin     : Manual
SuffixOrigin     : Manual
AddressState     : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource     : False
PolicyStore      : PersistentStore

Input the new PC name: 718DC1
WARNING: The changes will take effect after you restart the computer WIN-392QTAME5JV.
```

```
Administrator: C:\Windows\system32\cmd.exe
=====
                           Network adapter settings
=====

NIC index:      1
Description:  Microsoft Hyper-V Network Adapter
IP address:   192.168.2.1,
              fe80::1529:97a5:530d:c198
Subnet mask:  255.255.255.240
DHCP enabled: False

Default gateway:    192.168.2.14
Preferred DNS server: 192.168.2.1
Alternate DNS server:

  1) Set network adapter address
  2) Set DNS servers
  3) Clear DNS server settings

Enter selection (Blank=Cancel): -
```

```
Administrator: C:\Windows\system32\cmd.exe
=====
                           Windows activation
=====

  1) Display license information
  2) Activate Windows
  3) Install product key

Enter selection (Blank=Cancel): 1

Name: Windows(R), ServerDatacenterEval edition
Description: Windows(R) Operating System, TIMEBASED_EVAL channel
Partial Product Key: 37CYR
License Status: Licensed
Timebased activation expiration: 259194 minute(s) (180 day(s))

(Press ENTER to continue): S
```

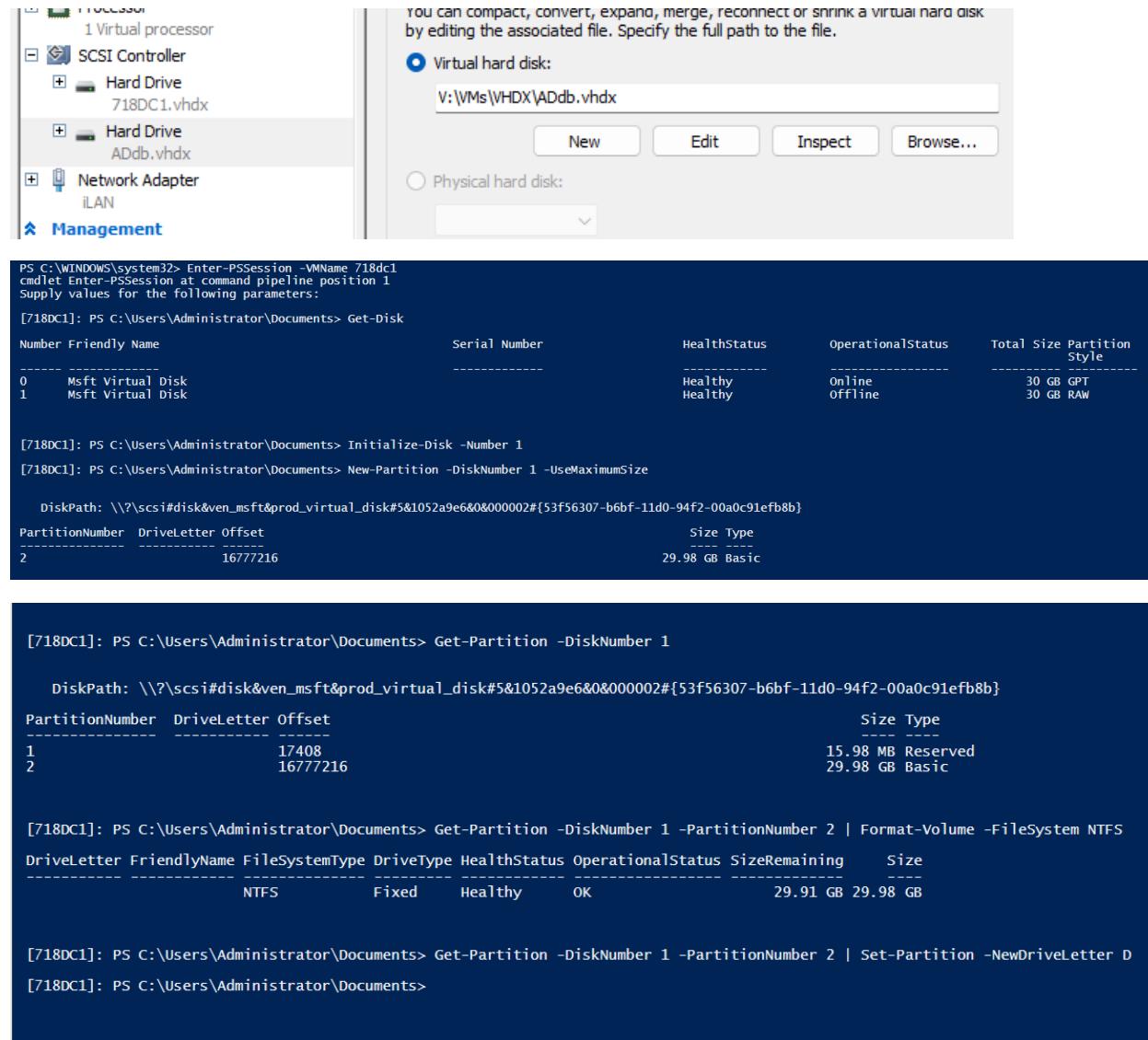
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Add secondary disk in DC1

Store the Active Directory Database on a secondary VHDX

Attach new VHDX disk name ADdb in DC1 sever, partitioned as D drive

Create two folders NTDS AND SYSVOL respectively



Remove Gateway and add new one in LAN

```
[DC1]: PS C:\Users\Administrator\Documents> Get-NetRoute -DestinationPrefix 0.0.0.0/0
[DC1]: PS C:\Users\Administrator\Documents> Get-NetRoute -DestinationPrefix 0.0.0.0/0 | Remove-NetRoute
```

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ifIndex	DestinationPrefix	NextHop	RouteMetric	ifMetric	PolicyStore
5	0.0.0.0/0	192.168.2.14	256	15	ActiveStore
5	0.0.0.0/0	192.168.2.14	256		Persiste...

Install AD-DS feature and promote as Domain controller

```
Start Installation...
86%  
  
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
Enter-PSSession : The credential is invalid.
At line:1 char:1
+ Enter-PSSession -VMName 718dc1
+ ~~~~~
+ CategoryInfo          : InvalidArgument: () [Enter-PSSession], PSDirectException
+ FullyQualifiedErrorId : CreateRemoteRunspaceForVMFailed,Microsoft.PowerShell.Commands.EnterPSSessionCommand  
  
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718dc1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:  
  
[718DC1]: PS C:\Users\Administrator\Documents> Install-WindowsFeature -name ad-domain-services -IncludeManagementTools
```

```
[718DC1]: PS C:\Users\Administrator\Documents> Install-WindowsFeature -name ad-domain-services -IncludeManagementTools
Success Restart Needed Exit Code      Feature Result
----- ----- ----- ----- {Active Directory Domain Services, Group P...
True   No        Success
```



```
[718DC1]: PS C:\Users\Administrator\Documents>
```

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```
Script_New_Server_VMCreation_New_BootOrder_2023.ps1 Post_Server_Tasks_For_FIN_Domian_Controller.ps1 Untitled2.ps1* X
4 -DomainMode "WinThreshold" ` 
5 -DomainName "CAP.TSP" ` 
6 -DomainNetbiosName "CAP" ` 
7 -ForestMode "WinThreshold" `| 
8 -InstallDns:$true ` 
9 -LogPath "D:\NTDS" ` 
10 -NoRebootOnCompletion:$false ` 
11 -SysvolPath "D:\SYSVOL" ` 
12 -Force:$true

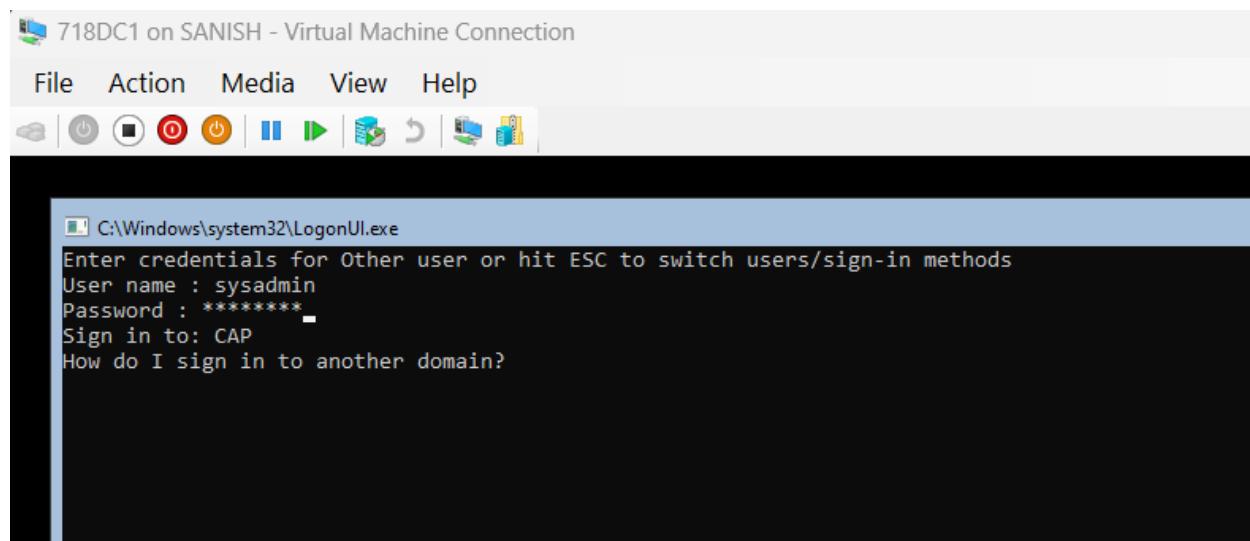
[718DC1]: PS C:\Users\Administrator\Documents>
[718DC1]: PS C:\Users\Administrator\Documents> Import-Module ADDSDeployment
Install-ADDSForest
-DatabasePath "D:\NTDS" ` 
-DomainMode "WinThreshold" ` 
-DomainName "CAP.TSP" ` 
-DomainNetbiosName "CAP" ` 
-ForestMode "WinThreshold" ` 
-InstallDns:$true ` 
-LogPath "D:\NTDS" ` 
-NoRebootOnCompletion:$false ` 
-SysvolPath "D:\SYSVOL" ` 
-Force:$true
WARNING: A script or application on the remote computer 718DC1 is sending a prompt request. When you are prompted, enter sensitive information, such as ls or passwords, only if you trust the remote computer and the application or script that is requesting the data.
WARNING: A script or application on the remote computer 718DC1 is sending a prompt request. When you are prompted, enter sensitive information, such as ls or passwords, only if you trust the remote computer and the application or script that is requesting the data.
WARNING: Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT prevents weaker cryptography algorithms when establishing security channel sessions.
For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

WARNING: A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server re integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable nam ion from outside the domain "CAP.TSP". Otherwise, no action is required.

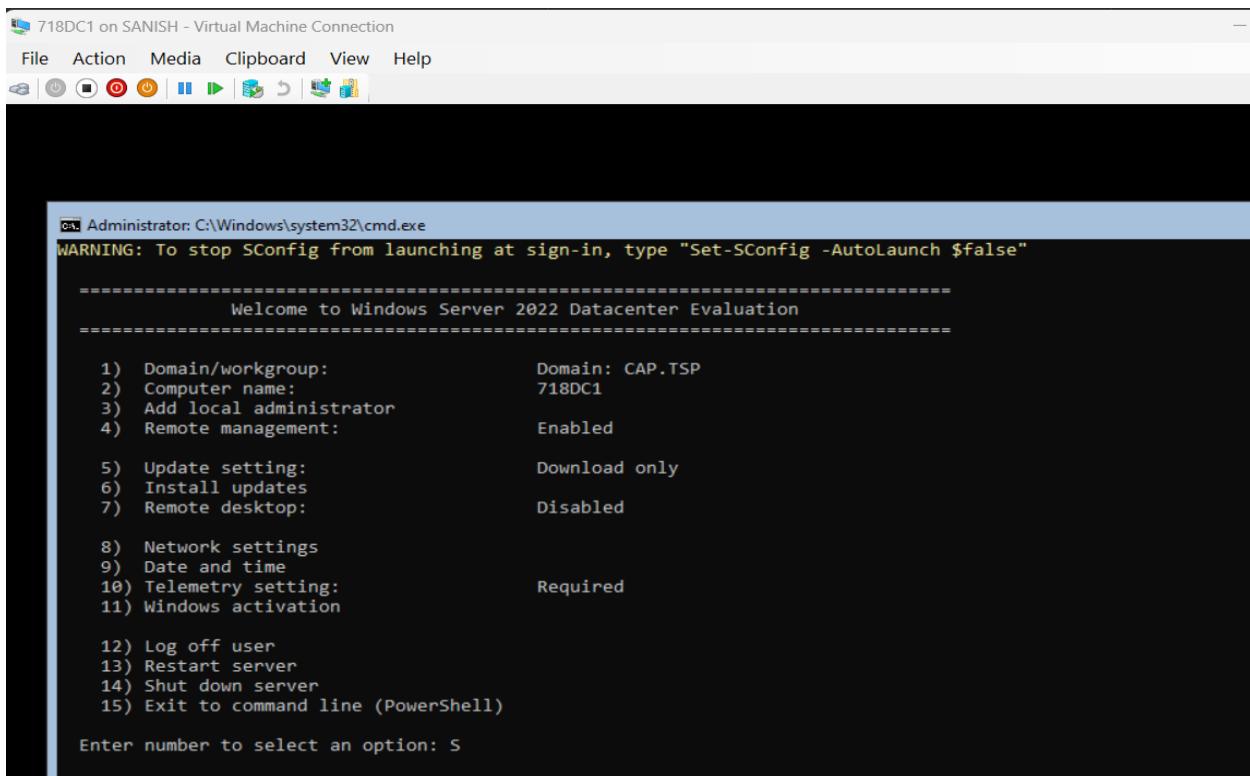
WARNING: Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT prevents weaker cryptography algorithms when establishing security channel sessions.
For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

WARNING: A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server re integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable nam ion from outside the domain "CAP.TSP". Otherwise, no action is required.

Message Context RebootRequired Status
----- ----- ----- -----
Operation completed successfully DCPromo.General.3 False Success
```

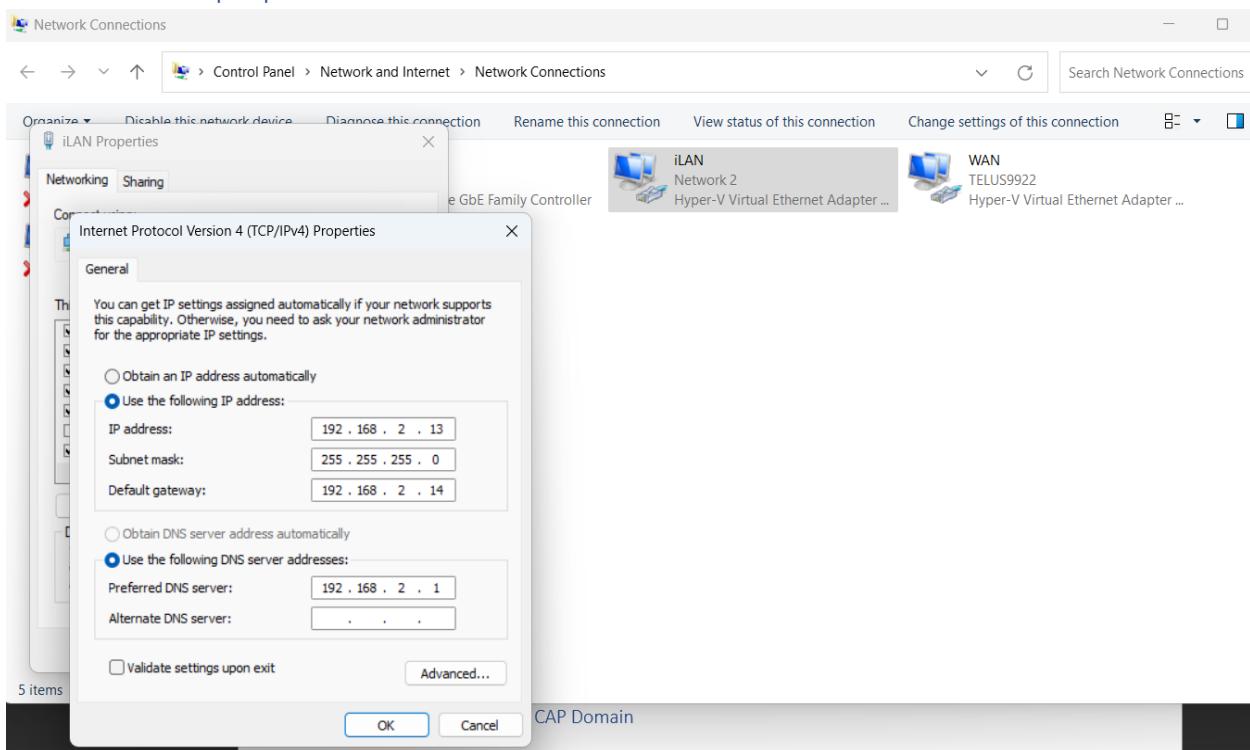


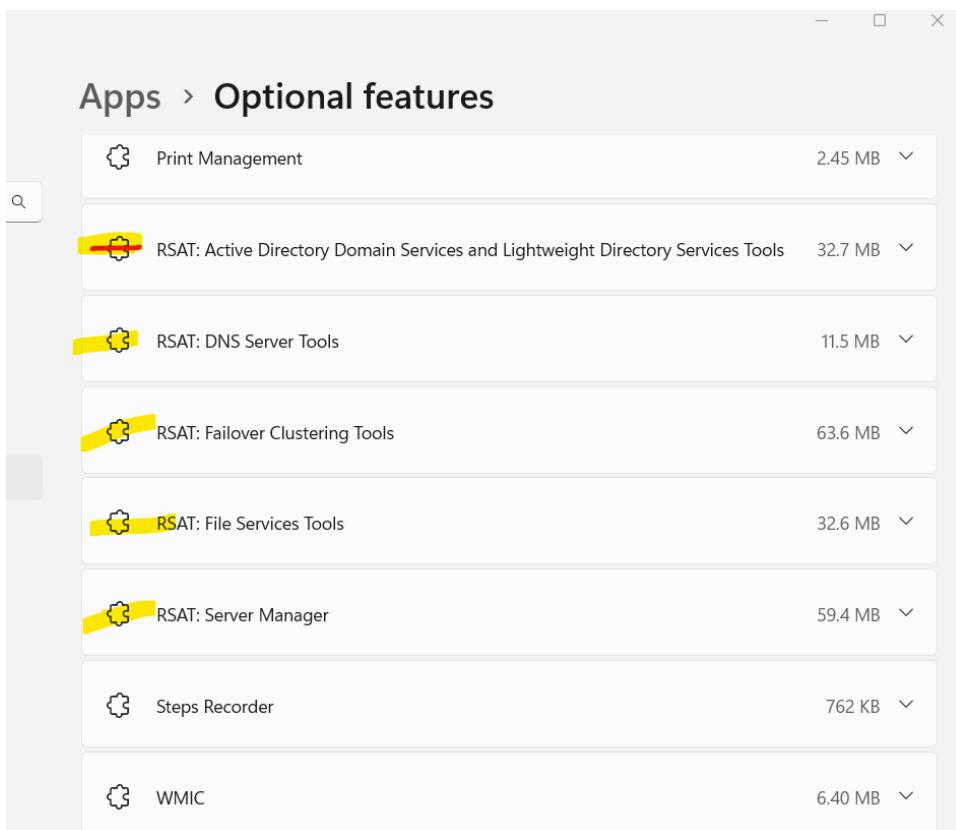
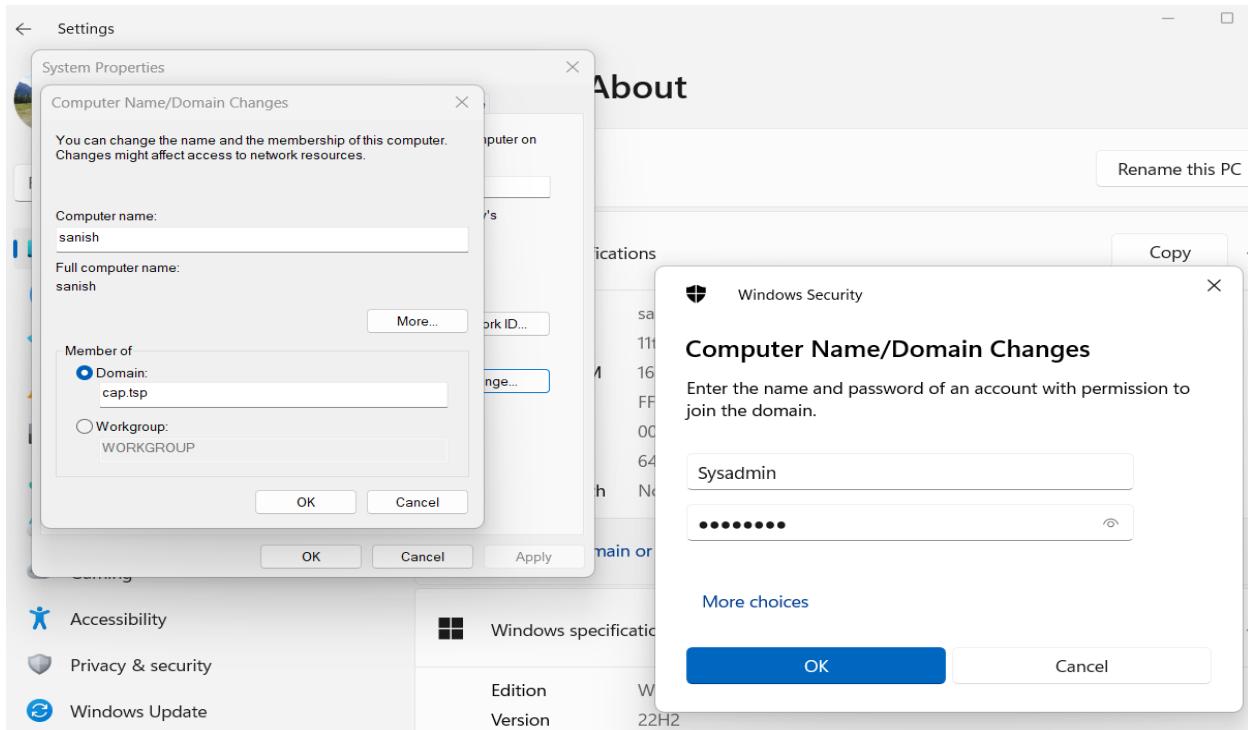
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Administrator: C:\Windows\system32\cmd.exe
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch \$false"
===== Welcome to Windows Server 2022 Datacenter Evaluation =====
1) Domain/workgroup: Domain: CAP.TSP
2) Computer name: 718DC1
3) Add local administrator
4) Remote management: Enabled
5) Update setting: Download only
6) Install updates
7) Remote desktop: Disabled
8) Network settings
9) Date and time
10) Telemetry setting: Required
11) Windows activation
12) Log off user
13) Restart server
14) Shut down server
15) Exit to command line (PowerShell)
Enter number to select an option: S

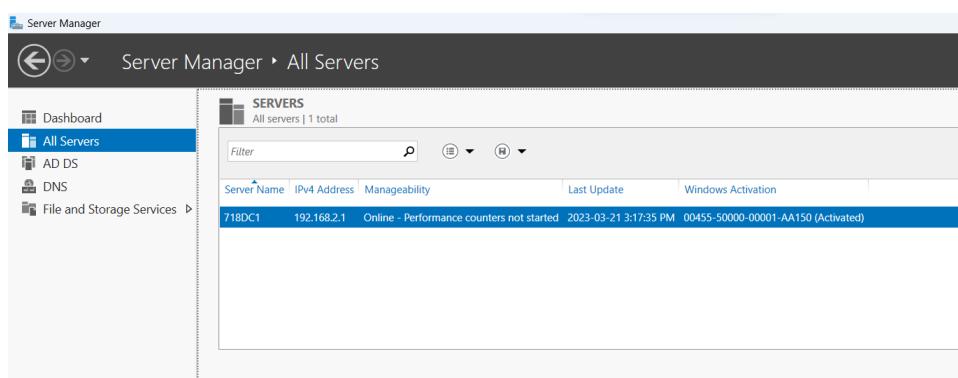
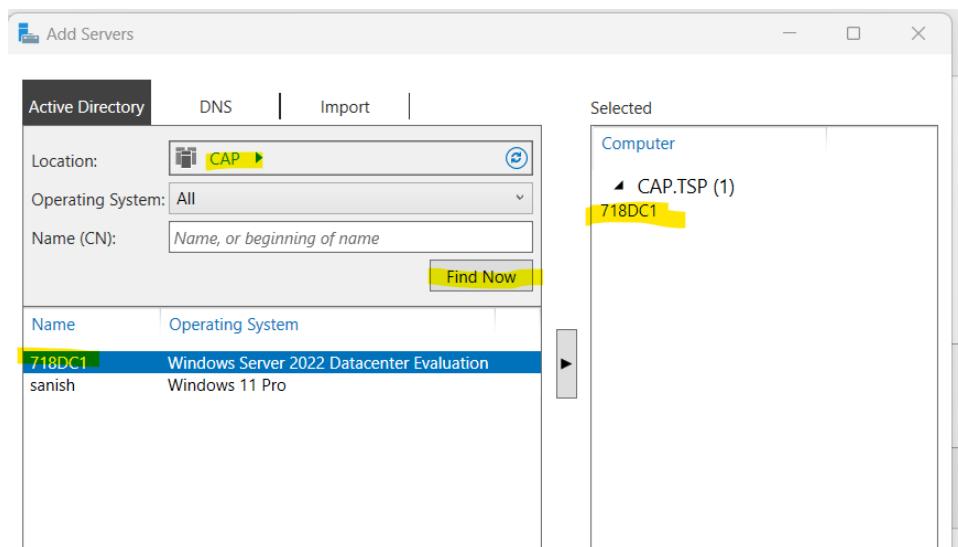
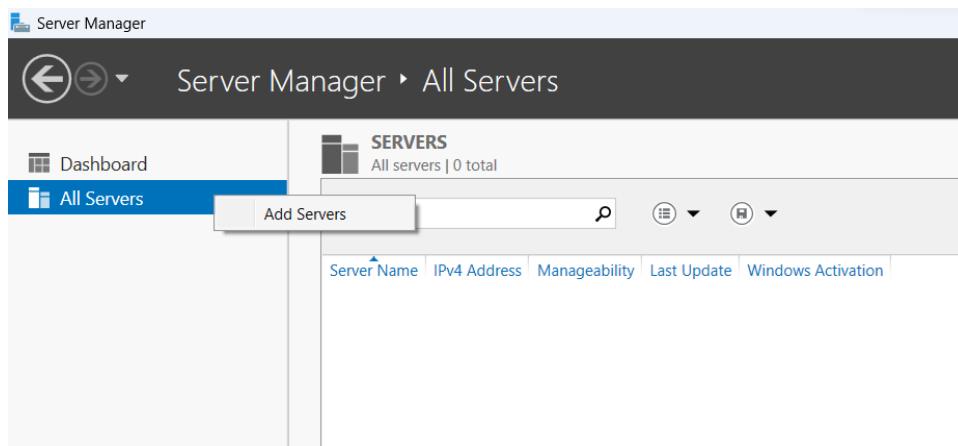
Join the host laptop to CAP Domain





Open server manager, then right click All Servers--> Add Server

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The screenshot shows the Active Directory Users and Computers interface. The left navigation pane includes 'Dashboard', 'All Servers', 'AD DS' (which is selected), 'DNS', and 'File and Storage Services'. The main pane displays a table with one row for '718DC1'. The table columns are 'Server Name', 'IPv4 Address', 'Manageability', 'Last Update', and 'Windows Activation'. The 'Manageability' column shows 'Online - Performance counters not started'. The 'Last Update' column shows '2023-03-21 3:17:35 PM'. The 'Windows Activation' column shows '00455-50000-00001-AA150 (Activated)'. Below the table is a tree view under 'Active Directory Users and Computers' with nodes like 'Saved Queries', 'CAP.TSP', 'Builtin', 'Computers' (which is expanded), 'Domain Controllers', 'ForeignSecurityPrincipals', 'Managed Service Account', and 'Users'. A context menu is open over the 'Computers' node.

The screenshot shows the Active Directory Users and Computers interface. The left navigation pane includes 'Dashboard', 'All Servers', 'AD DS' (selected), 'DNS', and 'File and Storage Services'. The main pane displays a table with one row for 'SANISH'. The table columns are 'Name', 'Type', and 'Description'. The 'Name' column shows 'SANISH', 'Type' shows 'Computer', and 'Description' is empty. The left sidebar shows the navigation tree under 'Active Directory Users and Computers' with nodes like 'Saved Queries', 'CAP.TSP', 'Builtin', 'Computers' (selected), 'Domain Controllers', 'ForeignSecurityPrincipals', 'Managed Service Account', and 'Users'.

The screenshot shows the Active Directory Users and Computers interface. The left navigation pane includes 'Dashboard', 'All Servers', 'AD DS' (selected), 'DNS', and 'File and Storage Services'. The main pane displays a table with multiple entries. The table columns are 'Name', 'Type', and 'Description'. The entries include:

Name	Type	Description
Key Admins	Security Group ...	Members of this group c...
Protected Us...	Security Group ...	Members of this group a...
RAS and IAS ...	Security Group ...	Servers in this group can...
Read-only D...	Security Group ...	Members of this group a...
sanish	User	
Schema Adm...	Security Group ...	Designated administrato...
Sysadmin	User	Built-in account for adm...

The left sidebar shows the navigation tree under 'Active Directory Users and Computers' with nodes like 'Saved Queries', 'CAP.TSP', 'Builtin', 'Computers', 'Domain Controllers', 'ForeignSecurityPrincipals', 'Managed Service Accc' (which is expanded).

The screenshot shows the Windows DNS Manager. On the left, a tree view displays the DNS namespace structure under '718DC1.CAP.TSP'. The 'Forward Lookup Zones' node has three children: '_msdc...', 'CAP.TSP', and 'Reverse Lookup Zones'. The 'Reverse Lookup Zones' node has two children: '718dc1' and 'sanish'. On the right, a table lists DNS records:

Name	Type	Data	Timestamp
_msdc...	Start of Authority (SOA)	[20], 718dc1.cap.tsp, hostm...	static
(same as parent folder)	Name Server (NS)	718dc1.cap.tsp.	static
(same as parent folder)	Host (A)	192.168.2.1	2023-03-21 1:00:00 PM
718dc1	Host (A)	192.168.2.1	static
sanish	Host (A)	192.168.2.13	2023-03-21 1:00:00 PM

Create a reverse lookup zone

The screenshot shows the 'Add a New Zone' wizard. The left pane shows the DNS namespace structure under '718DC1.CAP.TSP'. The 'Reverse Lookup Zones' node is selected. The right pane displays the 'Zone Type' step of the wizard:

Add a New Zone

The Domain Name System (DNS) allows a DNS namespace to be divided into zones. Each zone stores info one or more contiguous DNS domains.

New Zone Wizard

Zone Type
The DNS server supports various types of zones and storage.

Select the type of zone you want to create:

Primary zone
Creates a copy of a zone that can be updated directly on this server.

Secondary zone
Creates a copy of a zone that exists on another server. This option helps balance the processing load of primary servers and provides fault tolerance.

Stub zone
Creates a copy of a zone containing only Name Server (NS), Start of Authority (SOA), and possibly glue Host (A) records. A server containing a stub zone is not authoritative for that zone.

Store the zone in Active Directory (available only if DNS server is a writeable domain controller)

The screenshot shows the 'Add a New Zone' wizard. The left pane shows the DNS namespace structure under '718DC1.CAP.TSP'. The 'Reverse Lookup Zones' node is selected. The right pane displays the 'Reverse Lookup Zone Name' step of the wizard:

Add a New Zone

The Domain Name System (DNS) allows a DNS namespace to be divided into zones. Each zone stores info one or more contiguous DNS domains.

New Zone Wizard

Reverse Lookup Zone Name
A reverse lookup zone translates IP addresses into DNS names.

Choose whether you want to create a reverse lookup zone for IPv4 addresses or IPv6 addresses.

IPv4 Reverse Lookup Zone

IPv6 Reverse Lookup Zone

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The screenshot shows the Windows DNS Manager interface. On the left, a tree view displays the following structure:

- DNS
- 718DC1.CAP.TSP
 - Forward Lookup Zones
 - _msdc1.CAP.TSP
 - CAP.TSP
 - Reverse Lookup Zones
 - 2.168.192.in-addr.arpa
 - Trust Points
 - Conditional Forwarders

On the right, a table lists zone details:

Name	Type	Data	Timestamp
(same as parent folder)	Start of Authority (SOA)	[2], 718dc1.cap.tsp, hostma...	static
(same as parent folder)	Name Server (NS)	718dc1.cap.tsp.	static
192.168.2.1	Pointer (PTR)	718dc1.cap.tsp.	static

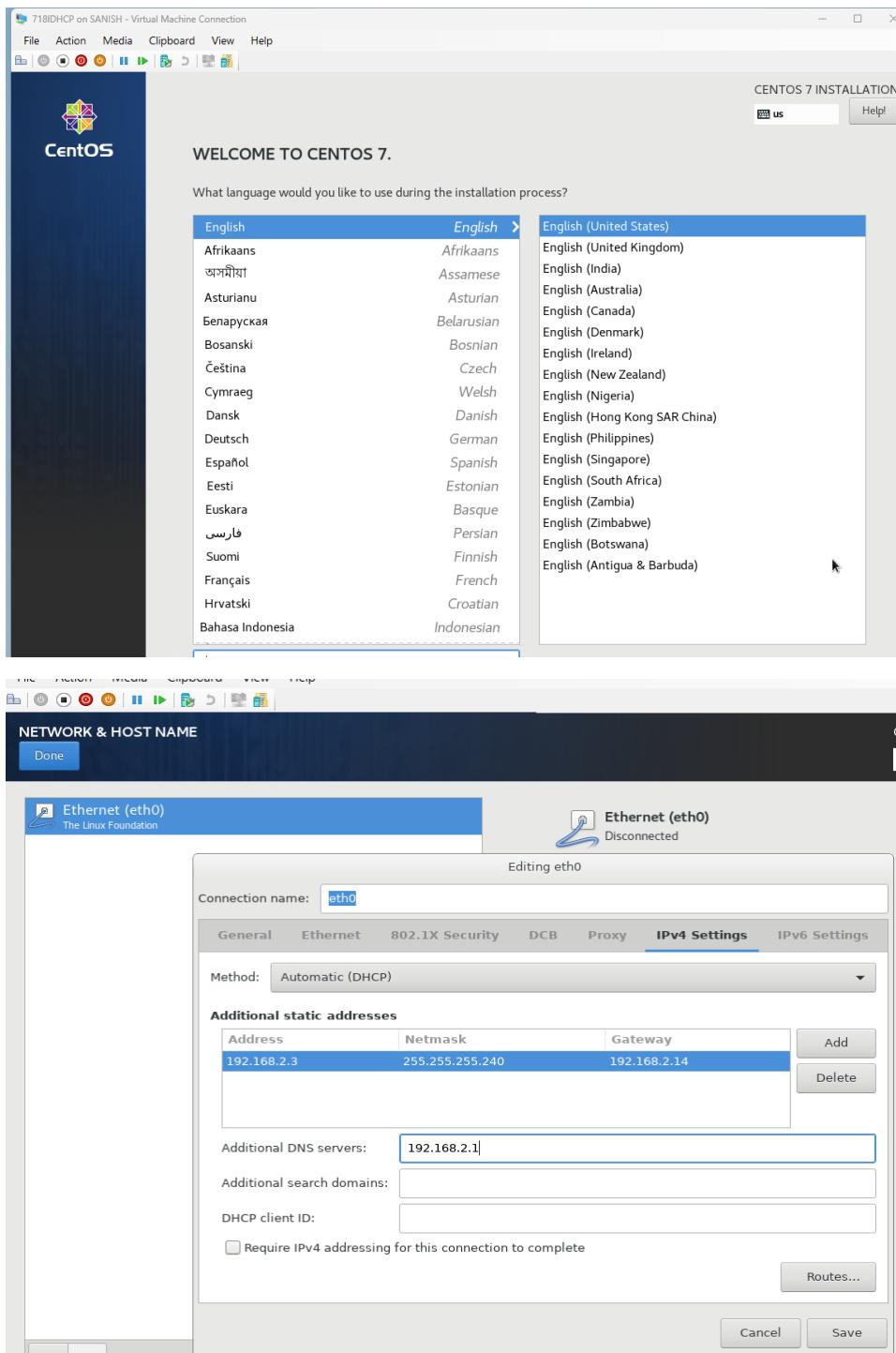
A separate window titled "718DC1.CAP.TSP Properties" is open, showing the "Forwarders" tab. It contains the following information:

IP Address	Server FQDN
192.168.2.14	<Unable to resolve>
8.8.8.8	dns.google

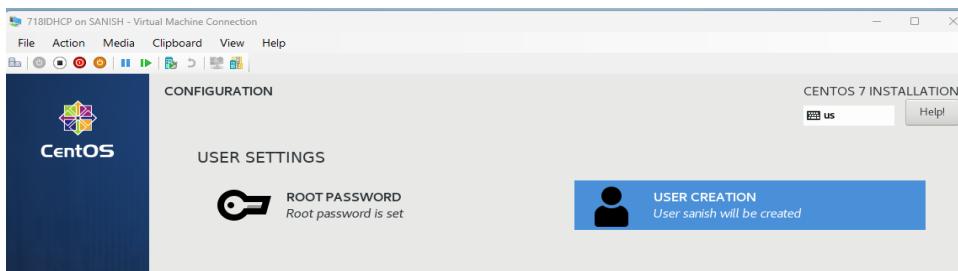
Install and Configure Linux DHCP Server

The screenshot shows the "Specify Name and Location" step of the "New Virtual Machine Wizard". The "Name" field is filled with "718DHCP". The "Location" field is set to "V:\VMs\Virtual machines\". A warning message at the bottom states: "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." Navigation buttons at the bottom include < Previous, Next >, Finish, and Cancel.

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Configure static ip

A screenshot of the network configuration interface for a 'Wired' connection. The 'IPv4' tab is selected. Under 'IPv4 Method', 'Manual' is chosen. The 'Addresses' table has one entry: Address 192.168.2.3, Netmask 255.255.255.240, and Gateway 192.168.2.14. Below this, the 'DNS' section shows 'Automatic' selected with the value '192.168.2.1'.

Check the network

```
[root@718LDHCP sanish]# ping 192.168.2.1
PING 192.168.2.1 (192.168.2.1) 56(84) bytes of data.
64 bytes from 192.168.2.1: icmp_seq=1 ttl=128 time=0.530 ms
64 bytes from 192.168.2.1: icmp_seq=2 ttl=128 time=0.958 ms
^Z
[1]+  Stopped                  ping 192.168.2.1
[root@718LDHCP sanish]# ping 192.168.2.14
PING 192.168.2.14 (192.168.2.14) 56(84) bytes of data.
64 bytes from 192.168.2.14: icmp_seq=1 ttl=64 time=0.550 ms
^Z
[2]+  Stopped                  ping 192.168.2.14
[root@718LDHCP sanish]# ping google.ca
PING google.ca (142.251.33.67) 56(84) bytes of data.
64 bytes from sea09s28-in-f3.1e100.net (142.251.33.67): icmp_seq=1 ttl=118 time=6.04 ms
64 bytes from sea09s28-in-f3.1e100.net (142.251.33.67): icmp_seq=2 ttl=118 time=12.7 ms
^Z
[3]+  Stopped                  ping google.ca
[root@718LDHCP sanish]#
```

Open terminals update the os : yum update

```
[1]+ Stopped                  ping google.ca
[sanish@718LDHCP ~]$ yum update
Loaded plugins: fastestmirror, langpacks
You need to be root to perform this command.
[sanish@718LDHCP ~]$ su root
Password:
[root@718LDHCP sanish]# yum update
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirror.esecuredata.com
 * extras: mirror.esecuredata.com
 * updates: mirror.esecuredata.com
base
extras
updates
(1/4): base/7/x86_64/group_gz
(2/4): extras/7/x86_64/primary_db
(3/4): base/7/x86_64/primary_db
(4/4): updates/7/x86_64/primary_db
Resolving Dependencies
--> Running transaction check
--> Package NetworkManager.x86_64 1:1.18.8-1.el7 will be updated
--> Package NetworkManager.x86_64 1:1.18.8-2.el7_9 will be an update
--> Package NetworkManager-ads[.x86_64 1:1.18.8-1.el7 will be updated
--> Package NetworkManager-ads[.x86_64 1:1.18.8-2.el7_9 will be an update
--> Package NetworkManager-glib.x86_64 1:1.18.8-1.el7 will be updated
--> Package NetworkManager-glib.x86_64 1:1.18.8-2.el7_9 will be an update
--> Package NetworkManager-libnm.x86_64 1:1.18.8-1.el7 will be updated
--> Package NetworkManager-libnm.x86_64 1:1.18.8-2.el7_9 will be an update
--> Package NetworkManager-ppp.x86_64 1:1.18.8-1.el7 will be updated
--> Package NetworkManager-ppp.x86_64 1:1.18.8-2.el7_9 will be an update
-----
vim-filesystem.x86_64 2:7.4.629-8.el7_9
vim-minimal.x86_64 2:7.4.629-8.el7_9
virt-what.x86_64 0:1.18-4.el7_9.1
webkitgtk4.x86_64 0:2.28.2-3.el7
webkitgtk4-jsc.x86_64 0:2.28.2-3.el7
wpa_supplicant.x86_64 1:2.6-12.el7_9.2
xfsdump.x86_64 0:3.1.7-2.el7_9
xorg-x11-drv-ati.x86_64 0:19.0.1-3.el7_7
xorg-x11-server-Xorg.x86_64 0:1.20.4-22.el7_9
xorg-x11-server-common.x86_64 0:1.20.4-22.el7_9
xz.x86_64 0:5.2.2-2.el7_9
xz-libs.x86_64 0:5.2.2-2.el7_9
zenity.x86_64 0:3.28.1-2.el7_9
zlib.x86_64 0:1.2.7-21.el7_9
```

Complete!

Create a record in DC1 for linux server

The screenshot shows the Microsoft DNS Management console. A 'New Host' dialog box is open, prompting for a name ('LDHCP') and IP address ('192.168.2.3'). The 'Create associated pointer (PTR) record' checkbox is checked. The main pane displays a list of DNS zones and their contents.

Name	Type	Data	Timestamp
_msdcs	Start of Authority (SOA)	[22], 718dc1.cap.tsp., hostm...	static
_sites	Name Server (NS)	718dc1.cap.tsp.	static
tcp	Host (A)	192.168.2.1	2023-03-21 1:00:00 PM
udp	Host (A)	192.168.2.1	static
DomainDnsZones	Host (A)	192.168.2.13	2023-03-21 1:00:00 PM
ForestDnsZones	Host (A)	192.168.2.3	
(same as parent folder)	Host (A)	192.168.2.1	
(same as parent folder)	Host (A)	192.168.2.1	
718dc1	Host (A)	192.168.2.13	
sanish	Host (A)	192.168.2.3	
LDHCP	Host (A)	192.168.2.3	

Join the Domain controller CAP.TSP

```
[root@718DHCP sanish]# yum install sssd realmd oddjob oddjob-mkhomedir adcli samba-common-tools krb5-workstation
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirror.esecuredata.com
 * extras: lesnet.mm.fcix.net
 * updates: lesnet.mm.fcix.net
Package realmd-0.16.1-12.el7_9.1.x86_64 already installed and latest version
Package oddjob-0.31.5-4.el7.x86_64 already installed and latest version
Package oddjob-mkhomedir-0.31.5-4.el7.x86_64 already installed and latest version
No package krb5-workstation available.
Resolving Dependencies
--> Running transaction check
--> Package adcli.x86_64 0:0.8.1-16.el7_9.1 will be installed
--> Package samba-common-tools.x86_64 0:4.10.16-24.el7_9 will be installed
--> Processing Dependency: samba-libs = 4.10.16-24.el7_9 for package: samba-common-tools-4.10.16-24.el7_9.x86_64
--> Processing Dependency: sssd.x86_64 0:1.16.5-10.el7_9.15 will be installed
--> Processing Dependency: sssd-proxy = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: sssd-ldap = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: sssd-krb5 = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: sssd-ipa = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: sssd-common = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: sssd-ad = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Processing Dependency: python-sssdconfig = 1.16.5-10.el7_9.15 for package: sssd-1.16.5-10.el7_9.15.x86_64
--> Running transaction check
--> Package python-sssdconfig.noarch 0:1.16.5-10.el7_9.15 will be installed
--> Package samba-libs.x86_64 0:4.10.16-24.el7_9 will be installed
--> Processing Dependency: libpytalloc-util.so.2(PYTALLOC_UTIL_2.1.9)(64bit) for package: samba-libs-4.10.16-24.el7_9.x86_64
--> Processing Dependency: libpytalloc-util.so.2(PYTALLOC_UTIL_2.1.6)(64bit) for package: samba-libs-4.10.16-24.el7_9.x86_64
--> Processing Dependency: libpytalloc-util.so.2(PYTALLOC_UTIL_2.0.6)(64bit) for package: samba-libs-4.10.16-24.el7_9.x86_64
--> Processing Dependency: libpytalloc-util.so.2()(64bit) for package: samba-libs-4.10.16-24.el7_9.x86_64
--> Processing Dependency: libtalloc_dbutil.so.1(/lib64) for package: samba-libs-4.10.16-24.el7_9.x86_64
```

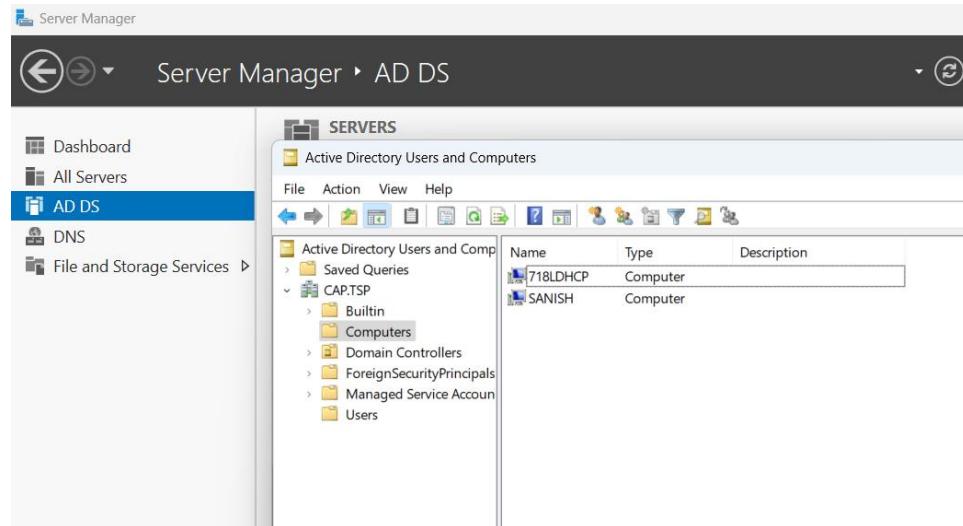
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```
Verifying : sssd-1.16.5-10.el7_9.15.x86_64 19/2:  
Verifying : pyldb-1.5.4-2.el7.x86_64 20/2:  
Verifying : libipa_hbac-1.16.5-10.el7_9.15.x86_64 21/2:  
Verifying : sssd-common-pac-1.16.5-10.el7_9.15.x86_64 22/2:  
Verifying : sssd-ipa-1.16.5-10.el7_9.15.x86_64 23/2:  
  
Installed:  
adcli.x86_64 0:0.8.1-16.el7_9.1     samba-common-tools.x86_64 0:4.10.16-24.el7_9     sssd.x86_64 0:1.16.5-10.el7_9.15  
  
Dependency Installed:  
c-ares.x86_64 0:1.10.0-3.el7  
libdbhash.x86_64 0:0.5.0-32.el7  
libbss_aufofs.x86_64 0:1.16.5-10.el7_9.15  
libbss_sudo.x86_64 0:1.16.5-10.el7_9.15  
pytalloc.x86_64 0:2.1.16-1.el7  
python-tdb.x86_64 0:1.3.18-1.el7  
sssd-ad.x86_64 0:1.16.5-10.el7_9.15  
sssd-common-pac.x86_64 0:1.16.5-10.el7_9.15  
sssd-krb5.x86_64 0:1.16.5-10.el7_9.15  
sssd-ldap.x86_64 0:1.16.5-10.el7_9.15  
  
http-parser.x86_64 0:2.7.1-9.el7  
libipa_hbac.x86_64 0:1.16.5-10.el7_9.15  
libbss_certmap.x86_64 0:1.16.5-10.el7_9.15  
pyldb.x86_64 0:1.5.4-2.el7  
python-sssdconfig.noarch 0:1.16.5-10.el7_9.15  
samba-libs.x86_64 0:4.10.16-24.el7_9  
sssd-common.x86_64 0:1.16.5-10.el7_9.15  
sssd-ipa.x86_64 0:1.16.5-10.el7_9.15  
sssd-krb5-common.x86_64 0:1.16.5-10.el7_9.15  
sssd-proxy.x86_64 0:1.16.5-10.el7_9.15  
  
Complete!  
[root@718LDHCP sanish]#
```

Join DC1 and apply Credentials

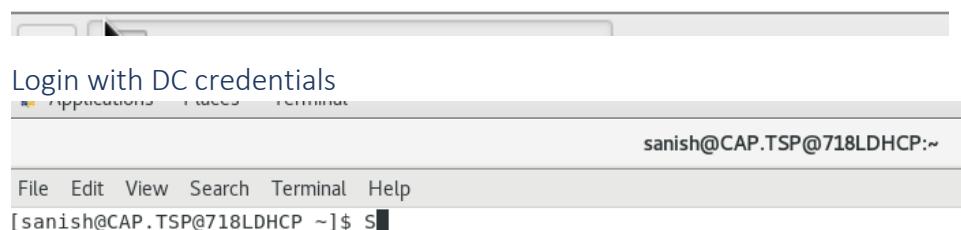
```
[root@718LDHCP sanish]# realm join --user=sanish CAP.TSP  
Password for sanish:  
[root@718LDHCP sanish]#
```

Linux system is Successfully joined in CAP.TSP DC



Name	Type	Description
718LDHCP	Computer	
SANISH	Computer	

```
[root@718LDHCP sanish]# realm list
CAP.TSP
  type: kerberos
  realm-name: CAP.TSP
  domain-name: cap.tsp
  configured: kerberos-member
  server-software: active-directory
  client-software: sssd
  required-package: oddjob
  required-package: oddjob-mkhomedir
  required-package: sssd
  required-package: adcli
  required-package: samba-common-tools
  login-formats: %U@cap.tsp
  login-policy: allow-realm-logins
[root@718LDHCP sanish]#
```



Create a new security admin group for linux server

A screenshot of the Active Directory Users and Computers (ADUC) management console. The left pane shows a tree view of the directory structure under "Active Directory Users and Computers". A new security group, "IT_Sudoers_G", has been created and is listed in the right pane. The right pane displays a table with columns: Name, Type, and Description. The group "IT_Sudoers_G" is listed with the type "Security Group ..." and the description "Linux Admins Group".

Name	Type	Description
IT_Sudoers_G	Security Group ...	Linux Admins Group

Add members to the group

IT_Sudoers_G Properties

General Members Member Of Managed By

Members:

Name	Active Directory Domain Services Folder
sanish	CAP.TSP/Users

Edit sudoers file in linux



Add the line in sudoers file

```
## Allows members of the users group to mount and umount the
## cdrom as root
# %users  ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom

## Allows members of the users group to shutdown this system
# %users  localhost=/sbin/shutdown -h now

## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)
#include /etc/sudoers.d
%CAP\\IT_Sudoers_G ALL=(ALL) ALL
```

Install DHCP

```
[root@718LDHCP sanish]# sudo yum -y install dhcp
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: centos.les.net
 * extras: lesnet.mm.fcix.net
 * updates: lesnet.mm.fcix.net
Resolving Dependencies
--> Running transaction check
-->> Package dhcp.x86_64 12:4.2.5-83.el7.centos.1 will be installed
-->> Finished Dependency Resolution

Dependencies Resolved

=====
Package           Arch      Version            Repository      Size
=====
Installing:
dhcp              x86_64   12:4.2.5-83.el7.centos.1          updates       515 k

Transaction Summary
=====
Install 1 Package

Total download size: 515 k
Installed size: 1.4 M
Downloading packages:
dhcp-4.2.5-83.el7.centos.1.x86_64.rpm                                | 515 kB  00:00:00

Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 12:dhcp-4.2.5-83.el7.centos.1.x86_64                               1/1
  Verifying   : 12:dhcp-4.2.5-83.el7.centos.1.x86_64                               1/1

Installed:
  dhcp.x86_64 12:4.2.5-83.el7.centos.1

Complete!
[root@718LDHCP sanish]#
```

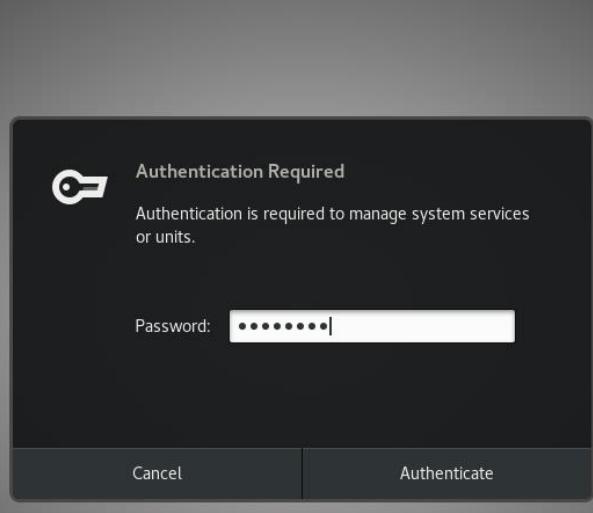
Edit the dhcpcd.conf file

```
[root@718LDHCP sanish]# nano /etc/dhcp/dhcpd.conf
```

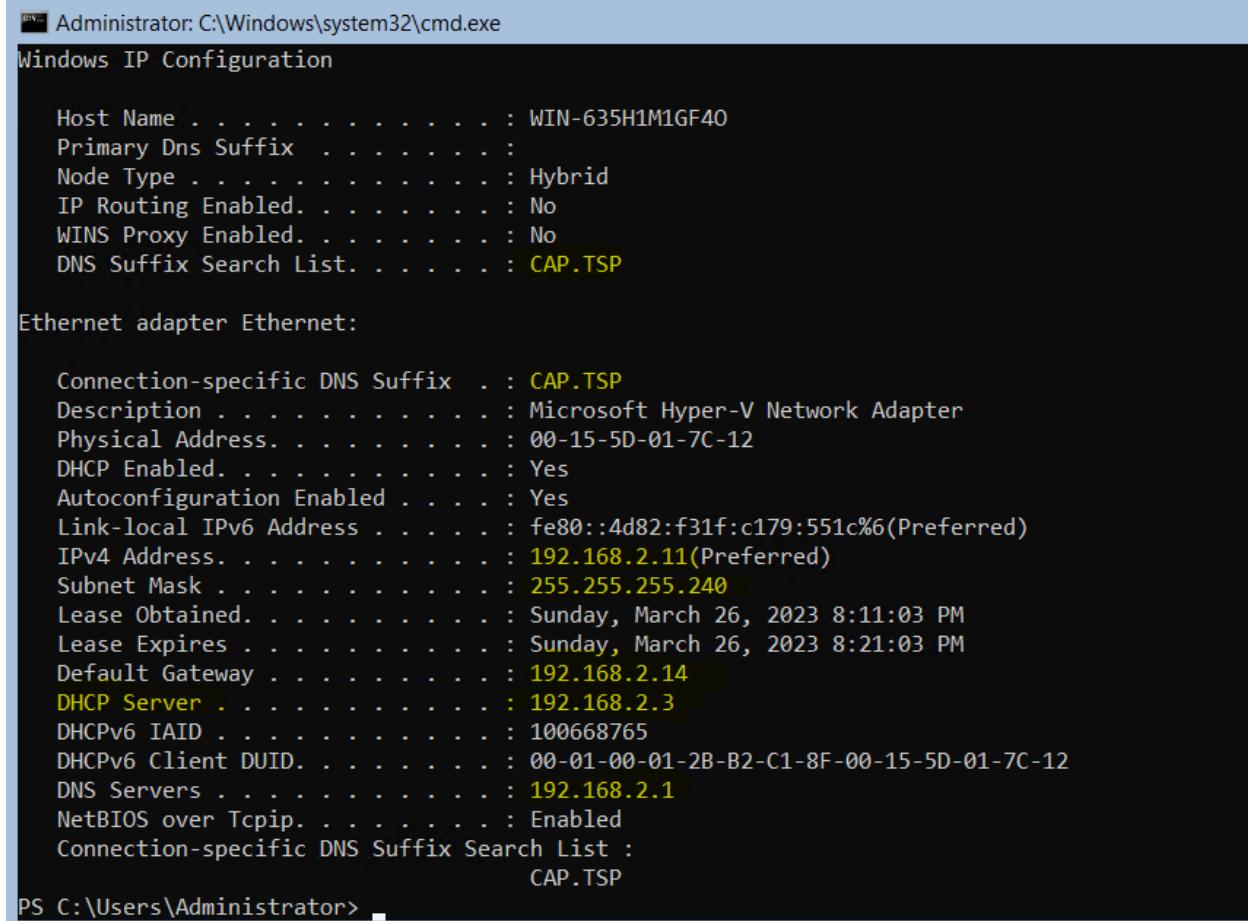
```
#  
# DHCP Server Configuration file.  
#   see /usr/share/doc/dhcp*/dhcpd.conf.example  
#   see dhcpd.conf(5) man page  
#  
default-lease-time 600;  
max-lease-time 7200;  
authoritative;  
  
subnet 192.168.2.0 netmask 255.255.255.240 {  
    option routers                  192.168.2.14;  
    option subnet-mask              255.255.255.240;  
    option broadcast-address        192.168.2.15;  
    option domain-search            "CAP.TSP";  
    option domain-name-servers     192.168.2.1;  
    range 192.168.2.10 192.168.2.14;  
host 718dc1 {  
    hardware ethernet 00:15:5d:01:7c:05;  
    fixed-address 192.168.2.1; }  
}
```

Start and enable the service

```
sanish@CAP.TSP@718LDHCP ~]$ systemctl start dhcpcd
```



```
[sanish@CAP.TSP@718LDHCP ~]$ systemctl start dhcpcd
[sanish@CAP.TSP@718LDHCP ~]$ systemctl enable dhcpcd
[sanish@CAP.TSP@718LDHCP ~]$ systemctl status dhcpcd
● dhcpcd.service - DHCPv4 Server Daemon
   Loaded: loaded (/usr/lib/systemd/system/dhcpcd.service; enabled; vendor preset: disabled)
     Active: active (running) since Tue 2023-03-21 19:44:44 PDT; 37s ago
       Docs: man:dhcpcd(8)
              man:dhcpcd.conf(5)
   Main PID: 2787 (dhcpcd)
      Status: "Dispatching packets..."
      CGroup: /system.slice/dhcpcd.service
              └─2787 /usr/sbin/dhcpcd -f -cf /etc/dhcp/dhcpcd.conf -user dhcpcd -gr...
[sanish@CAP.TSP@718LDHCP ~]$
```



Administrator: C:\Windows\system32\cmd.exe

Windows IP Configuration

Host Name : WIN-635H1M1GF40

Primary Dns Suffix :

Node Type : Hybrid

IP Routing Enabled. : No

WINS Proxy Enabled. : No

DNS Suffix Search List. : CAP.TSP

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : CAP.TSP

Description : Microsoft Hyper-V Network Adapter

Physical Address. : 00-15-5D-01-7C-12

DHCP Enabled. : Yes

Autoconfiguration Enabled : Yes

Link-local IPv6 Address : fe80::4d82:f31f:c179:551c%6(Preferred)

IPv4 Address. : 192.168.2.11(Preferred)

Subnet Mask : 255.255.255.240

Lease Obtained. : Sunday, March 26, 2023 8:11:03 PM

Lease Expires : Sunday, March 26, 2023 8:21:03 PM

Default Gateway : 192.168.2.14

DHCP Server : 192.168.2.3

DHCPv6 IAID : 100668765

DHCPv6 Client DUID. : 00-01-00-01-2B-B2-C1-8F-00-15-5D-01-7C-12

DNS Servers : 192.168.2.1

NetBIOS over Tcpip. : Enabled

Connection-specific DNS Suffix Search List :

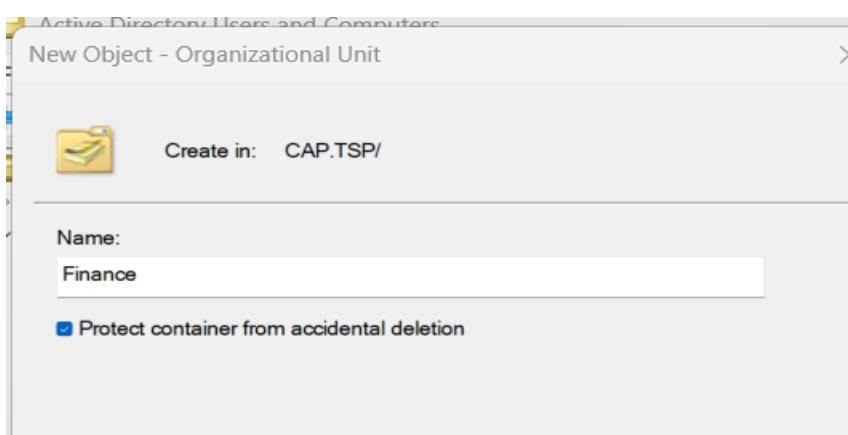
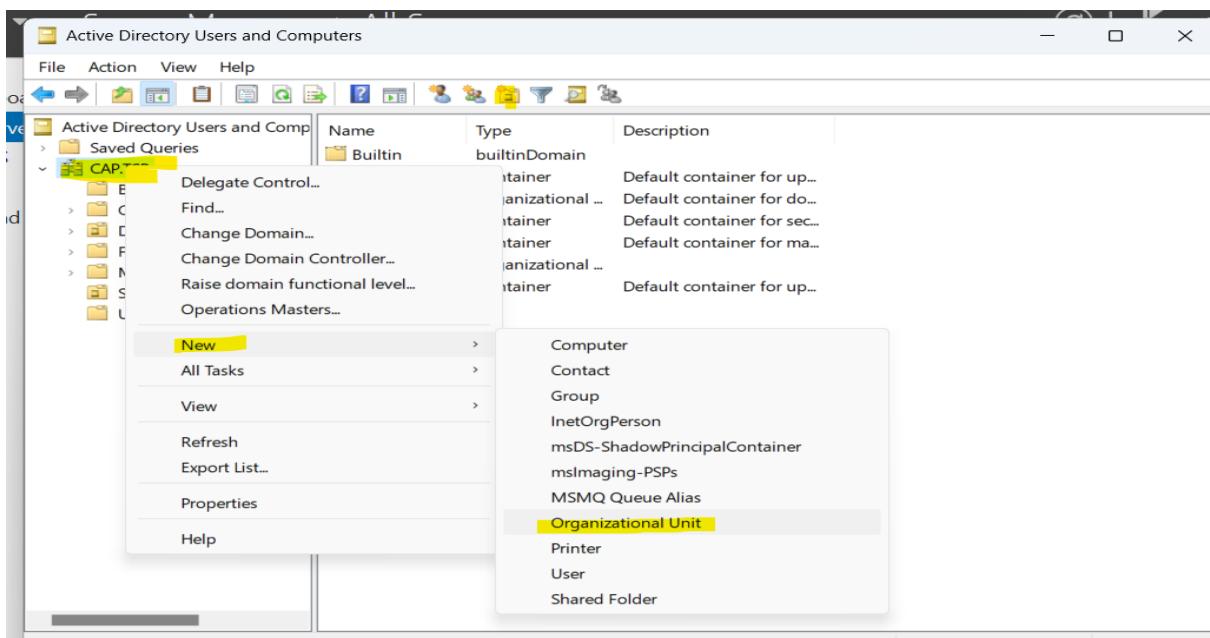
CAP.TSP

PS C:\Users\Administrator>

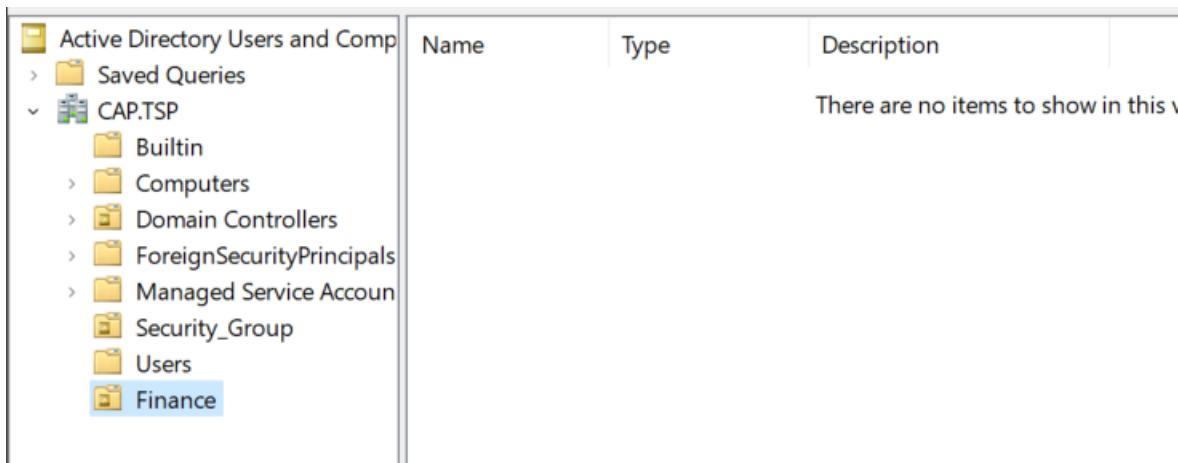
Create an Organizational Unit

Open Active Directory Users and Computers → right click on Domain controller name → new → organizational unit

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Finance ou created



Create 2 more OU's name Administator and accountants under finance OU

The screenshot shows the Active Directory Users and Computers interface. On the left, the navigation pane displays the following structure under CAP.TSP:

- Builtin
- Computers
- Domain Controllers
- ForeignSecurityPrincipals
- Managed Service Account
- Security_Group
- Users
- Finance** (selected)
 - Fin_Administrator
 - Accountants
- IT** (selected)
 - IT_Managers
 - Admins
 - IT_ServiceDesk

The main pane shows a table with three columns: Name, Type, and Description. The description column contains the message: "There are no items to show in this view."

Create an IT department OU

The screenshot shows the Active Directory Users and Computers interface. The navigation pane now includes a new entry under CAP.TSP:

- Builtin
- Computers
- Domain Controllers
- ForeignSecurityPrincipals
- Managed Service Account
- Security_Group
- Users
- Finance
- IT** (selected)

The main pane shows a table with three columns: Name, Type, and Description. The description column contains the message: "There are no items to show in this v".

Create 3 Sub OU under IT, Name IT_managers,Admins,IT_ServiceDesk

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The screenshot shows the Active Directory Users and Computers interface. On the left, a tree view displays the following structure:

- Active Directory Users and Computers
- Saved Queries
- CAP.TSP
 - Builtin
 - Computers
 - Domain Controllers
 - ForeignSecurityPrincipals
 - Managed Service Account
 - Security_Group
 - Users
- Finance
 - Controllers
 - Accountants
- IT
 - IT_Managers
 - Admins
 - IT_ServiceDesk

Below the tree view is a table with three columns: Name, Type, and Description. The Description column contains the text "There are no items to show in this view."

The screenshot shows the Active Directory Users and Computers interface. On the left, a tree view displays the following structure, with the 'Fin_Administrator' object selected:

- Active Directory Users and Computers
- Saved Queries
- CAP.TSP
 - Builtin
 - Computers
 - Domain Controllers
 - ForeignSecurityPrincipals
 - Managed Service Account
 - Security_Group
 - Users
- Finance
 - Fin_Administrator
 - Accountants
- IT
 - IT_Managers
 - Admins
 - IT_ServiceDesk

Below the tree view is a table with three columns: Name, Type, and Description. The Description column contains the text "There are no items to show in this view."

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Create users in fin_administrators and IT_managers

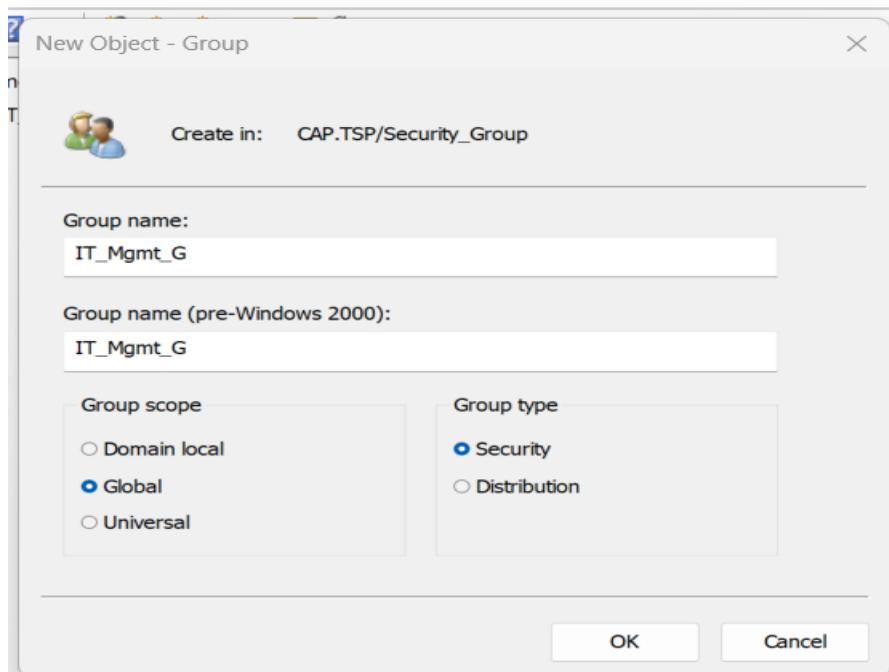
The screenshot shows the Active Directory Users and Computers interface. The left pane displays a tree view of the directory structure under 'Active Directory Users and Computers' and 'CAP.TSP'. The 'Fin_Administrator' group is selected. The right pane shows a table with two user entries:

Name	Type
jimmy george	User
paul adams	User

The screenshot shows the Active Directory Users and Computers interface. The left pane displays a tree view of the directory structure under 'Active Directory Users and Computers' and 'CAP.TSP'. The 'IT_Managers' group is selected. The right pane shows a table with two user entries:

Name	Type
adheena shaji	User
josh matthew	User

Create FIN management security group



Install and configure SAN

1.Create a new storage VM

Untitled1.ps1 Script_New_Server_VMCreation_New_BootOrder_2023.ps1

```

1 $VMName = Read-Host -Prompt 'Input your VM name'
2 $VHDPath = "V:\VMs\vhdx\" + $VMName + ".vhdx"
3 new-vhd -Path $VHDPath -SizeBytes 20GB -Dynamic
4 New-VM -Name $VMName -MemoryStartupBytes 2GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
5 Add-VMVhdDrive -VName $VMName -Path V:\Softwares\WinServer\Server2022Trial.iso
6 $BootOrd = Get-VMFirmware $VMName
7 $BootOrd.bootorder
8 $Hddrive = $BootOrd.BootOrder[0]
9 $Pxe = $BootOrd.BootOrder[1]
10 $Dvddrive = $BootOrd.BootOrder[2]
11 Set-VMFirmware $VMName -BootOrder $Dvddrive,$Hddrive,$Pxe
12 Set-VM $VMName -AutomaticCheckpointsEnabled $false
13 Set-VMMemory $VMName -DynamicMemoryEnabled $true
14 Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"

```

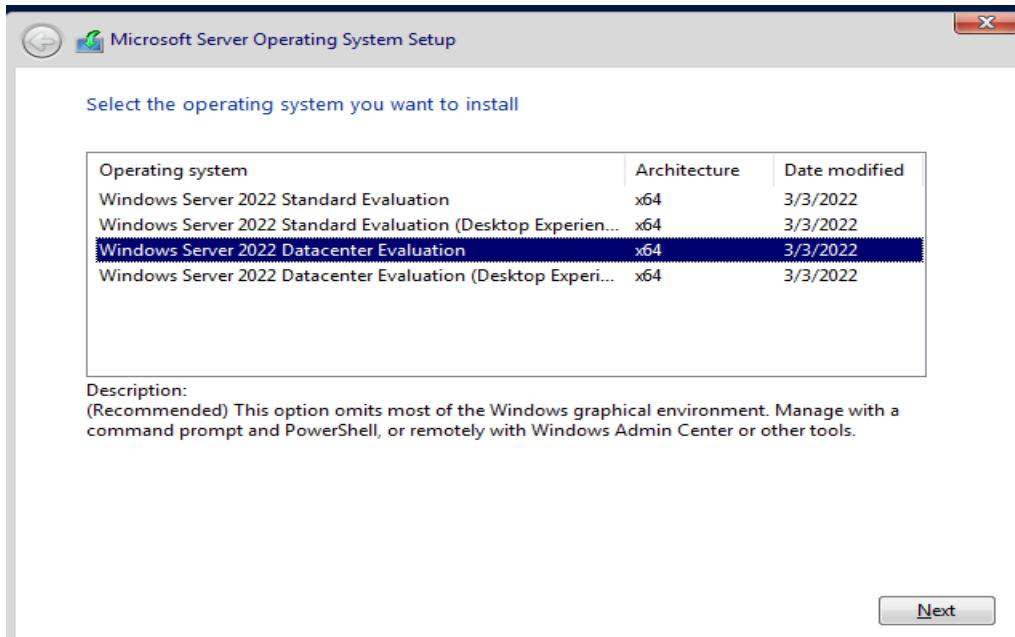
PS C:\WINDOWS\system32> Set-ExecutionPolicy -ExecutionPolicy Unrestricted

PS C:\WINDOWS\system32> V:\assignment\scripts\Script_New_Server_VMCreation_New_BootOrder_2023.ps1

Input your VM name: 718SAN

ComputerName	:	SANISH
Path	:	V:\VMs\vhdx\718SAN.vhdx
VhdFormat	:	VHDX
VhdType	:	Dynamic
FileSize	:	4194304
Size	:	21474836480
MinimumSize	:	
LogicalSectorSize	:	512
PhysicalSectorSize	:	4096
BlockSize	:	33554432
ParentPath	:	
DiskIdentifier	:	0C8941F7-ED16-4B08-9036-6F4D58A6F343
FragmentationPercentage	:	0
Alignment	:	1
Attached	:	False
DiskNumber	:	
IsPmemCompatible	:	False
AddressAbstractionType	:	None
Number	:	
Name	:	718SAN
State	:	off
CpuUsage	:	0
MemoryAssigned	:	0

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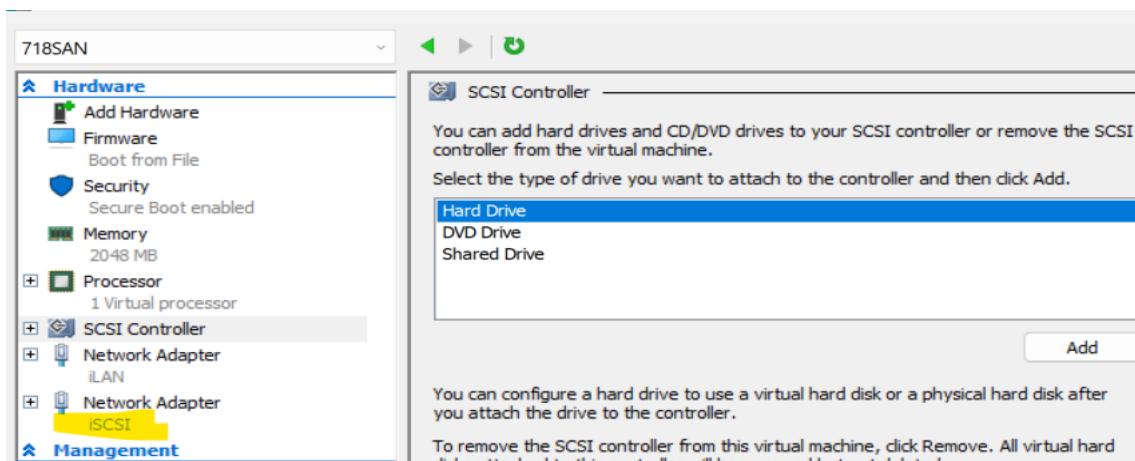


The screenshot shows a terminal window titled 'Administrator: C:\Windows\system32\cmd.exe'. It displays a welcome message for Windows Server 2022 Datacenter Evaluation and a list of 15 configuration options. The user has selected option 15, 'Exit to command line (PowerShell)', which is highlighted in yellow.

```
Administrator: C:\Windows\system32\cmd.exe
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch $false"
-----
Welcome to Windows Server 2022 Datacenter Evaluation
-----
1) Domain/workgroup:                               Workgroup: WORKGROUP
2) Computer name:                                WIN-2I00GACJGJE
3) Add local administrator
4) Remote management:                            Enabled
5) Update setting:                               Download only
6) Install updates
7) Remote desktop:                             Disabled
8) Network settings
9) Date and time
10) Telemetry setting:                          Required
11) Windows activation
12) Log off user
13) Restart server
14) Shut down server
15) Exit to command line (PowerShell)

Enter number to select an option: -
```

Connect iSCSI switch to SAN



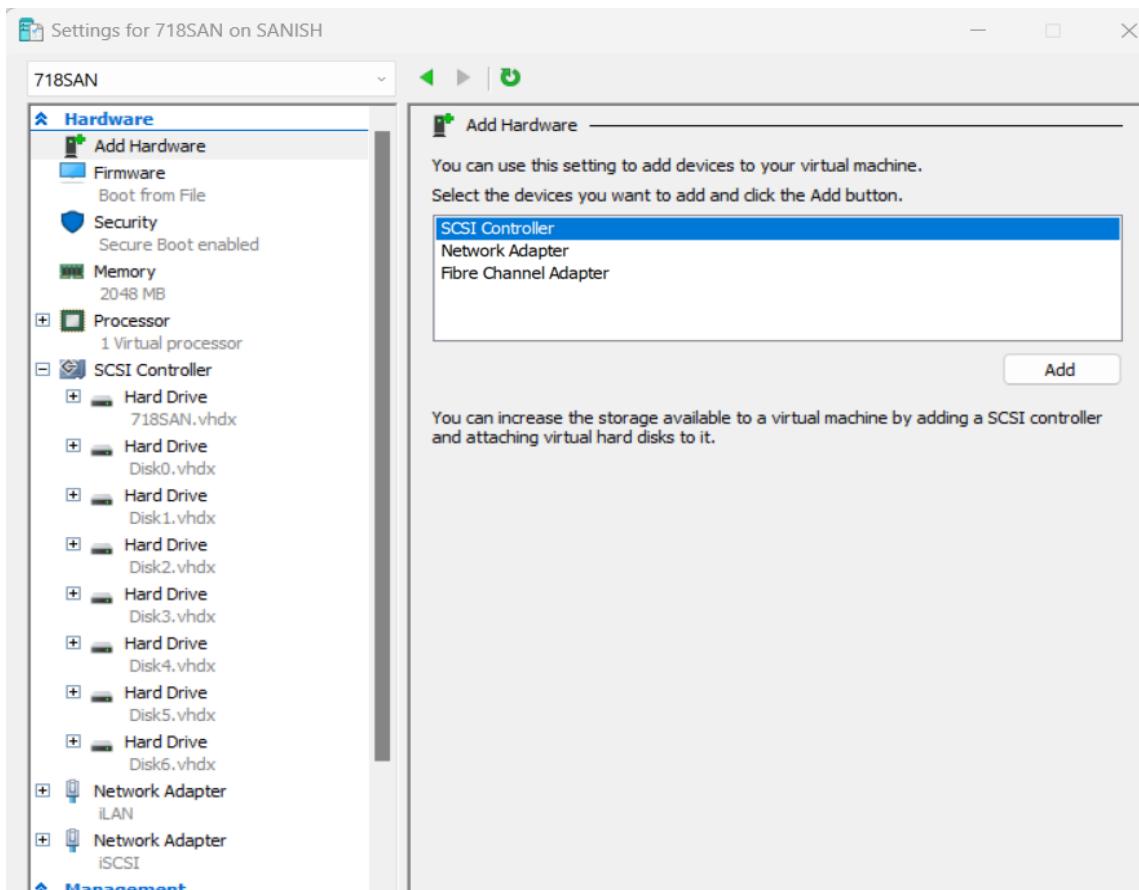
2.Create 7, 50GB Dynamic VHDXs on the Host and attach them to the Storage Server

```
PS C:\WINDOWS\system32> V:\assignment\scripts>Create_Disks_in_VM.ps1
PS C:\WINDOWS\system32>
```

The screenshot shows a Windows PowerShell window. The title bar indicates two tabs: 'Create_Disks_in_VM.ps1' and 'Script_New_Server_VMCreation_New_BootOrder_2023.ps1'. The main pane displays the following PowerShell script:

```
1 $VMName= "718SAN"
2 $numDisks =7
3 $storagePath ="V:\VMS\VHDX"
4
5 for ($i=0;$i -lt $numDisks; $i++) {
6     $vhd = New-VHD -Path "$storagePath\Disk$i.vhdx" -Dynamic -SizeBytes 50GB
7     Add-VMHardDiskDrive -VMName $VMName -Path $vhd.Path
8 }
```

Below the script, the command `V:\assignment\scripts>Create_Disks_in_VM.ps1` is run, followed by a prompt for the next command.



```
[718SAN]: PS C:\Users\Administrator\Documents> Enter-PSSession -VMName "718SAN"
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
```

```
[718SAN]: PS C:\Users\Administrator\Documents> Rename-LocalUser -Name "lsysadmin" -NewName "sanish"
```

Restart the SAN Vm

```
[718SAN]: PS C:\Users\Administrator\Documents> New-NetIPAddress -InterfaceAlias "iLAN" -IPAddress 192.168.2.11 -PrefixLength 28 -DefaultGateway 192.168.2.14

IPAddress      : 192.168.2.11
InterfaceIndex : 5
InterfaceAlias : iLAN
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 28
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState   : Tentative
ValidLifetime  : Infinite ([TimeSpan]::.MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::.MaxValue)
SkipDnsSource   : False
PolicyStore     : ActiveStore

IPAddress      : 192.168.2.11
InterfaceIndex : 5
```

```
[718SAN]: PS C:\Users\Administrator\Documents> Set-DnsClientServerAddress -InterfaceIndex 5 -ServerAddresses ("192.168.2.14,8.8.8.8")
```

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```
[718SAN]: PS C:\Users\Administrator\Documents> Rename-NetAdapter -Name "ethernet" -NewName "ISCSI0"
[718SAN]: PS C:\Users\Administrator\Documents> New-NetIPAddress -InterfaceAlias "iSCSI0" -IPAddress 10.10.10.1 -PrefixLength 29

IPAddress      : 10.10.10.1
InterfaceIndex : 11
InterfaceAlias  : ISCSI0
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState   : Tentative
ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
SkipAsSource   : False
PolicyStore    : ActiveStore

IPAddress      : 10.10.10.1
InterfaceIndex : 11
InterfaceAlias  : ISCSI0
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
```

```
718SAN on SANISH - Virtual Machine Connection
File Action Media View Help
Administrator: C:\Windows\system32\cmd.exe
WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\Administrator> get-NetConnectionProfile

Name          : Unidentified network
InterfaceAlias : ISCSI0
InterfaceIndex : 11
NetworkCategory : Public
IPv4Connectivity : NoTraffic
IPv6Connectivity : NoTraffic

Name          : Network
InterfaceAlias : iLAN
InterfaceIndex : 5
NetworkCategory : Public
IPv4Connectivity : Internet
IPv6Connectivity : NoTraffic

PS C:\Users\Administrator> set-NetConnectionProfile -InterfaceIndex 11 -NetworkCategory private
PS C:\Users\Administrator> S_
```

Add below commands in host machine

```
PS C:\WINDOWS\system32> netsh advfirewall firewall add rule name="Allow ICMPv4" protocol=icmpv4:8,any dir=in action=allow
Ok.

PS C:\WINDOWS\system32> winrm set winrm/config/client '@{TrustedHosts="192.168.2.11"}'
Client
  NetworkDelayms = 5000
  URLPrefix = wsman
  AllowUnencrypted = false
  Auth
    Basic = true
    Digest = true
    Kerberos = true
    Negotiate = true
    Certificate = true
    CredSSP = false
  DefaultPorts
    HTTP = 5985
    HTTPS = 5986
  TrustedHosts = 192.168.2.11
```

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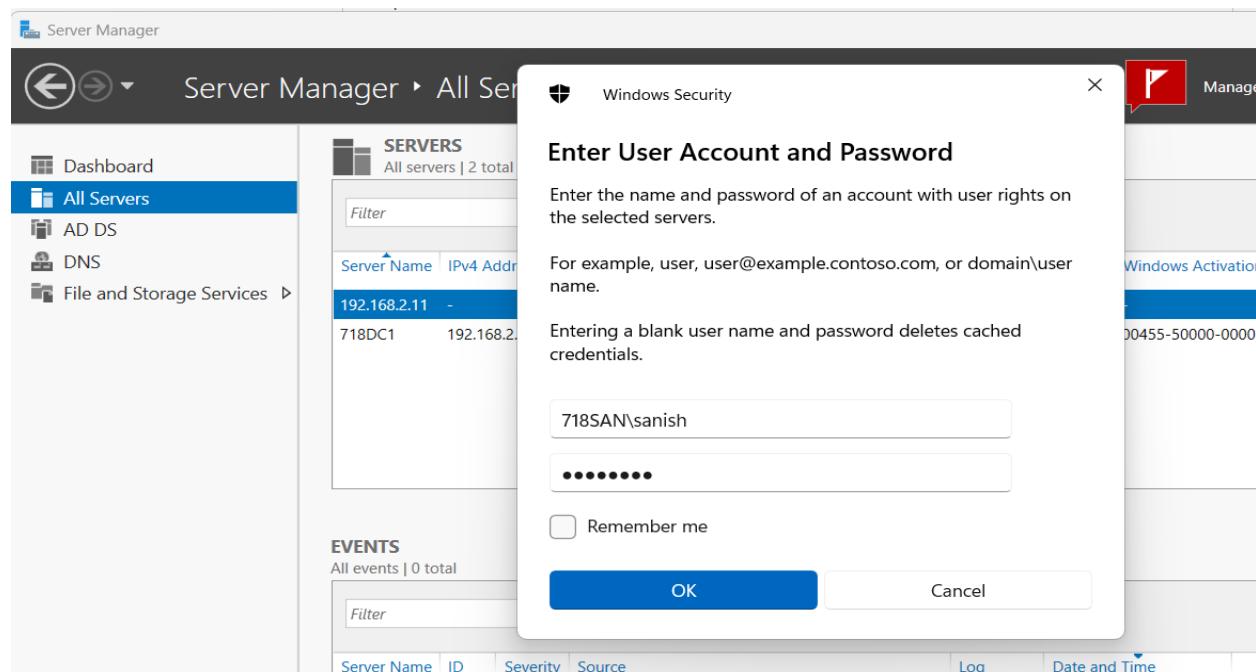
enable jumbo packet

```
[718SAN]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty -Name "ISCSI0"
```

Name	DisplayName	DisplayValue	RegistryKeyword	RegistryValue
ISCSI0	IPv4 Checksum Offload	Rx & Tx Enabled	*IPChecksumOffloadV2	{3}
ISCSI0	IPSec Offload	Auth Header and ESP Enabled	*IPsecOffloadV2	{3}
ISCSI0	Jumbo Packet	Disabled	*JumboPacket	{1514}
ISCSI0	Large Send Offload Version ...	Enabled	*LsoV2IPv4	{1}
ISCSI0	Large Send Offload Version ...	Enabled	*LsoV2IPv6	{1}
ISCSI0	Max Number of RSS Processors	64	*MaxRssProcessors	{64}
ISCSI0	Network Direct (RDMA)	Disabled	*NetworkDirect	{0}
ISCSI0	Maximum Number of RSS Queues	64	*NumRssQueues	{64}
ISCSI0	Packet Direct	Disabled	*PacketDirect	{0}
ISCSI0	Recv Segment Coalescing (IPv4)	Enabled	*RscIPv4	{1}
ISCSI0	Recv Segment Coalescing (IPv6)	Enabled	*RscIPv6	{1}
ISCSI0	Receive Side Scaling	Enabled	*RSS	{1}
ISCSI0	RSS Base Processor Number	0	*RssBaseProcessor	{0}
ISCSI0	Maximum RSS Processor Number	63	*RssMaxProcNumber	{63}
ISCSI0	RSS Profile	NUMA Scaling Static	*RSSProfile	{4}
ISCSI0	TCP Checksum Offload (IPv4)	Rx & Tx Enabled	*TCPChecksumOffloadV2	{3}
ISCSI0	TCP Checksum Offload (IPv6)	Rx & Tx Enabled	*TCPChecksumOffloadV6	{3}
ISCSI0	UDP Checksum Offload (IPv4)	Rx & Tx Enabled	*UDPChecksumOffloadV2	{3}
ISCSI0	UDP Checksum Offload (IPv6)	Rx & Tx Enabled	*UDPChecksumOffloadV6	{3}
ISCSI0	Forwarding Optimization	Disabled	ForwardingOptimization	{0}
ISCSI0	Hyper-V Network Adapter Name		HyperVNetworkAdapterName	{--}
ISCSI0	Network Address	--	NetworkAddress	{--}
ISCSI0	Receive Buffer Size	8MB	ReceiveBufferSize	{8192}
ISCSI0	Send Buffer Size	1MB	SendBufferSize	{1024}
ISCSI0	VLAN ID	0	VlanID	{0}

```
[718SAN]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty "ISCSI0" -DisplayName "Jumbo Packet" | Set-NetAdapterAdvancedProperty -RegistryValue "9014"
```

Name	DisplayName	DisplayValue	RegistryKeyword	RegistryValue
ISCSI0	IPv4 Checksum Offload	Rx & Tx Enabled	*IPChecksumOffloadV2	{3}
ISCSI0	IPSec Offload	Auth Header and ESP Enabled	*IPsecOffloadV2	{3}
ISCSI0	Jumbo Packet	9014 Bytes	*JumboPacket	[9014]
ISCSI0	Large Send Offload Version ...	Enabled	*LsoV2IPv4	{1}
ISCSI0	Large Send Offload Version ...	Enabled	*LsoV2IPv6	{1}
ISCSI0	Max Number of RSS Processors	64	*MaxRssProcessors	{64}
ISCSI0	Network Direct (RDMA)	Disabled	*NetworkDirect	{0}
ISCSI0	Maximum Number of RSS Queues	64	*NumRssQueues	{64}
ISCSI0	Packet Direct	Disabled	*PacketDirect	{0}
ISCSI0	Recv Segment Coalescing (IPv4)	Enabled	*RscIPv4	{1}
ISCSI0	Recv Segment Coalescing (IPv6)	Enabled	*RscIPv6	{1}
ISCSI0	Receive Side Scaling	Enabled	*RSS	{1}
ISCSI0	RSS Base Processor Number	0	*RssBaseProcessor	{0}



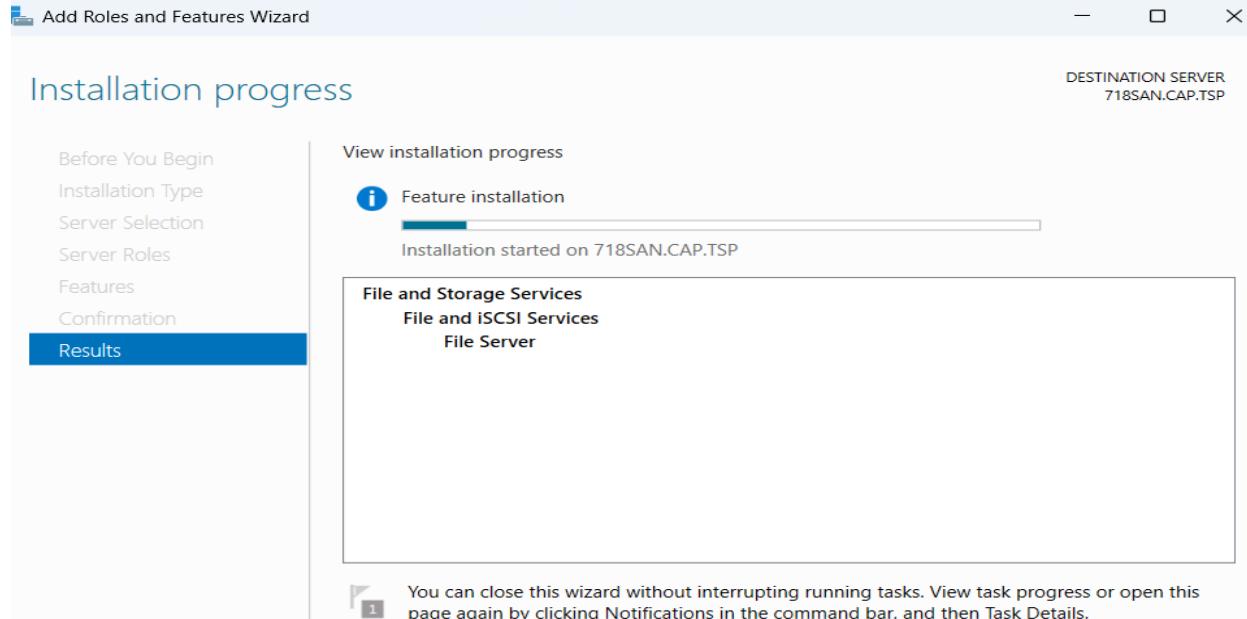
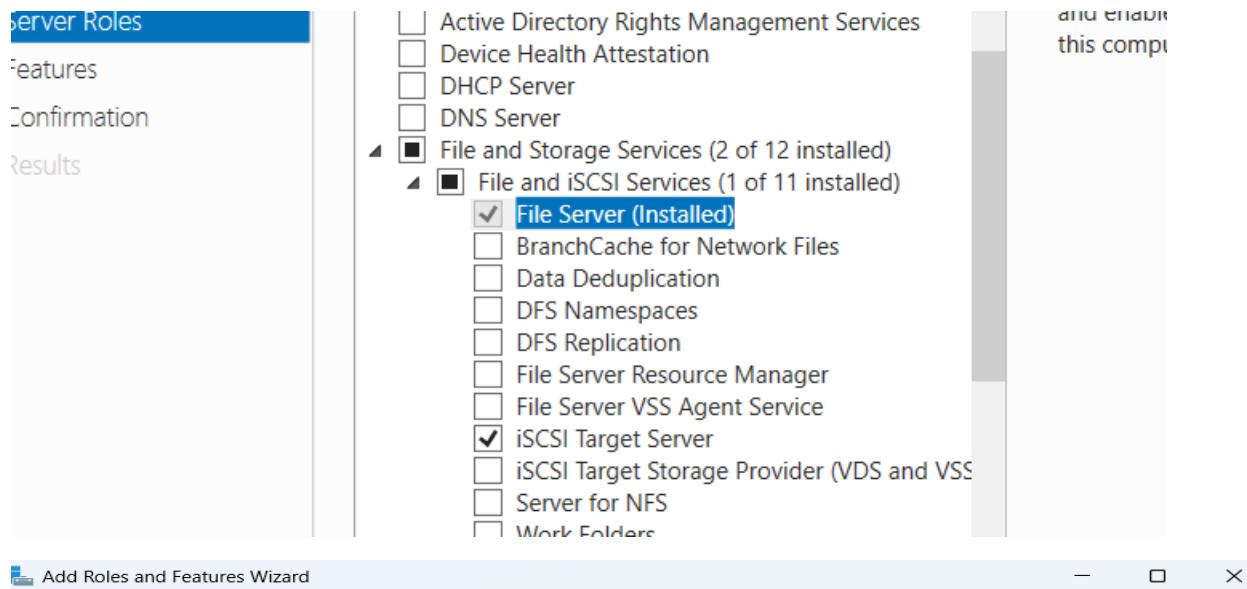
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Install the iSCSI Target Server Role on the Storage Server (SAN)

Open Server Manager and select install a new Role.

Select the iSCSI target role.

Add server role in SAN



Make the disks online

Capstone Project | SANISH -A01047718

Servers	Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
Volumes	0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk ^
Disks	1		Offline	50.0 GB	50.0 GB	Unknown	✓		SAS		Msft Virtual Disk
Storage Pools	2		Offline		New Volume...				SAS		Msft Virtual Disk
Shares	3		Offline		Bring Online				SAS		Msft Virtual Disk
iSCSI	4		Offline		Take Offline				SAS		Msft Virtual Disk
Work Folders	5		Offline		Reset Disk				SAS		Msft Virtual Disk
	6		Offline	50.0 GB	50.0 GB	Unknown	✓		SAS		Msft Virtual Disk
	7		Offline	50.0 GB	50.0 GB	Unknown	✓		SAS		Msft Virtual Disk

Last refreshed on 2023-03-23 2:07:23 PM

Servers	Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
Volumes	0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk ^
Disks	1		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
Storage Pools	2		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
Shares	3		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
iSCSI	4		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
Work Folders	5		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
	6		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk
	7		Online	50.0 GB	50.0 GB	Unknown			SAS		Msft Virtual Disk

Last refreshed on 2023-03-23 2:07:23 PM

Create a Storage pool, name Production

Specify a storage pool name and subsystem

Before You Begin Storage Pool Name Physical Disks Confirmation Results	Name: <input type="text" value="Production"/> Description: <input type="text"/> Select the group of available disks (also known as a primordial pool) that you want to use: <table border="1"> <tr> <th>Managed by</th> <th>Available to</th> <th>Subsystem</th> <th>Primordial Pool</th> </tr> <tr> <td>718SAN</td> <td>718SAN</td> <td>Windows Storage</td> <td>Primordial</td> </tr> </table>	Managed by	Available to	Subsystem	Primordial Pool	718SAN	718SAN	Windows Storage	Primordial
Managed by	Available to	Subsystem	Primordial Pool						
718SAN	718SAN	Windows Storage	Primordial						

Confirm selections

Before You Begin

Storage Pool Name

Physical Disks

Confirmation

Results

Confirm that the following are the correct settings, and then click Create.

STORAGE POOL LOCATION	
Server:	718SAN
Cluster role:	Not Clustered
Storage subsystem:	Windows Storage

STORAGE POOL PROPERTIES	
Name:	Production
Capacity:	350 GB

PHYSICAL DISKS	
Msft Virtual Disk (718SAN)	Automatic

Create a virtual disks

◀ Windows Storage (1)

Production	Storage Pool	718SAN	718SAN	718SAN	346
------------	--------------	--------	--------	--------	-----

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VIRTUAL DISKS
No related data is available.

PHYSICAL DISKS
Production on 718SAN

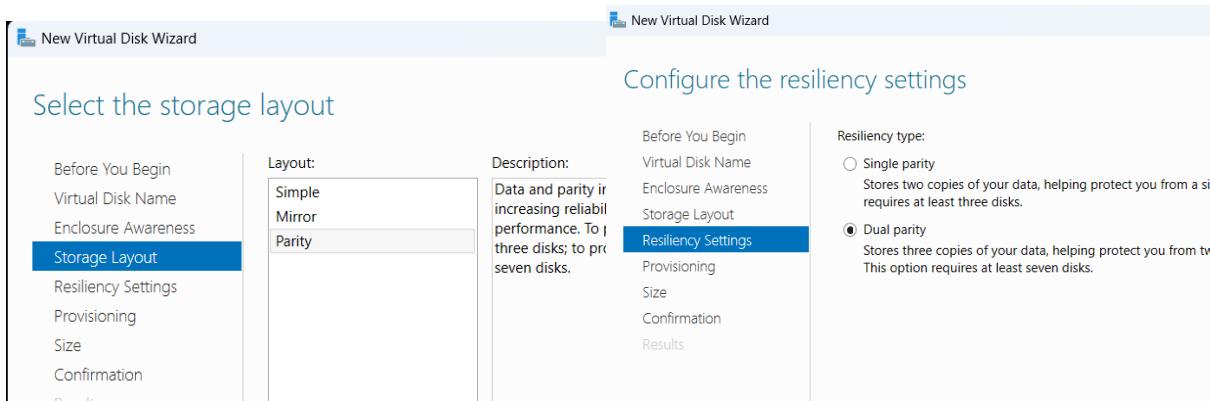
To create a virtual disk, start the [New Virtual Disk Wizard](#).

Select the storage pool

Storage pool:

Pool Name	Managed by	Available to	Capacity	Free Space	Subsystem
Production	718SAN	718SAN	346 GB	345 GB	Windows Storage

OK Cancel



Capstone Project | SANISH -A01047718

Script_New_Server_VMCreation_New_BootOrder_2023.ps1 Post_Server_Tasks_For_FIN_Domain_Controller.ps1 Untitled2.ps1* X

```
1 New-VirtualDisk -StoragePoolFriendlyName Production -FriendlyName RAID5 -Size 220 -ProvisioningType Fixed -ResiliencySettingName "parity" -PhysicalDiskRedundancy 2 -NumberOfColumns 7

PS C:\WINDOWS\system32> Enter-PSSession -VMName "718SAN"
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718SAN]: PS C:\Users\sanish\Documents>
[718SAN]: PS C:\Users\sanish\Documents> New-VirtualDisk -StoragePoolFriendlyName Production -FriendlyName RAID5 -Size 220 -ProvisioningType Fixed -ResiliencySettingName "parity" -PhysicalDiskRedundancy 2 -NumberOfColumns 7

FriendlyName ResiliencySettingName FaultDomainRedundancy OperationalStatus HealthStatus Size FootprintOnPool StorageEfficiency
----- ----- -----
RAID5 Parity 2 OK Healthy 5 GB 12.25 GB 40.82%
[718SAN]: PS C:\Users\sanish\Documents>
```

[718SAN]: PS C:\Users\sanish\Documents>
[718SAN]: PS C:\Users\sanish\Documents> New-VirtualDisk -StoragePoolFriendlyName Production -FriendlyName RAID5 -Size 220GB -ProvisioningType Fixed -ResiliencySettingName "parity" -PhysicalDiskRedundancy 2 -NumberOfColumns 7

FriendlyName ResiliencySettingName FaultDomainRedundancy OperationalStatus HealthStatus Size FootprintOnPool StorageEfficiency
----- ----- -----
RAID5 Parity 2 OK Healthy 220 GB 313.25 GB 70.23%
[718SAN]: PS C:\Users\sanish\Documents>

	Name	Type	Managed by	Available to	Read-Write Server	Capacity	Free Space
▲	Windows Storage (1)						
	Production	Storage Pool	718SAN	718SAN	718SAN	346 GB	19.1 GB

Last refreshed on 2023-03-23 2:48:13 PM

VIRTUAL DISKS
Production on 718SAN

	Name	Status	Layout	Provisioning	Capacity	Allocated
▲	RAIDS	Parity	Fixed	220 GB	220 GB	
	RAIDS	Parity	Fixed	5.00 GB	5.00 GB	

PHYSICAL DISKS
Production on 718SAN

	Slot	Name	Status	Capacity	Bus
▲		Msft Virtual Disk (718SAN)	OK	50.0 GB	SAS
		Msft Virtual Disk (718SAN)	OK	50.0 GB	SAS
		Msft Virtual Disk (718SAN)	OK	50.0 GB	SAS
		Msft Virtual Disk (718SAN)	OK	50.0 GB	SAS
		Msft Virtual Disk (718SAN)	OK	50.0 GB	SAS

Create a new volume for RAID5 Disks

The screenshot shows the 'Storage Pools' section of a management interface. On the left, a sidebar lists 'Disks', 'Storage Pools' (which is selected), 'Shares', 'iSCSI', and 'Work Folders'. The main area is divided into two tabs: 'VIRTUAL DISKS' and 'PHYSICAL DISKS'. The 'VIRTUAL DISKS' tab shows a table with columns: Name, Status, Layout, Provisioning, Capacity, Allocated. It lists two entries: 'RAIDS' and 'RAIDS'. A context menu is open over the second 'RAIDS' entry, with options: 'New Volume...', 'Repair Virtual Disk', 'Detach Virtual Disk', 'Mask or Unmask Virtual Disk...', 'Extend Virtual Disk...', 'Delete Virtual Disk', and 'Properties'. The 'PHYSICAL DISKS' tab shows a table with columns: Slot, Name, Status, Capacity, Bus. It lists multiple entries, all named 'Msft Virtual Disk (718SAN)' with a capacity of 50.0 GB and SAS bus type.

New Volume Wizard

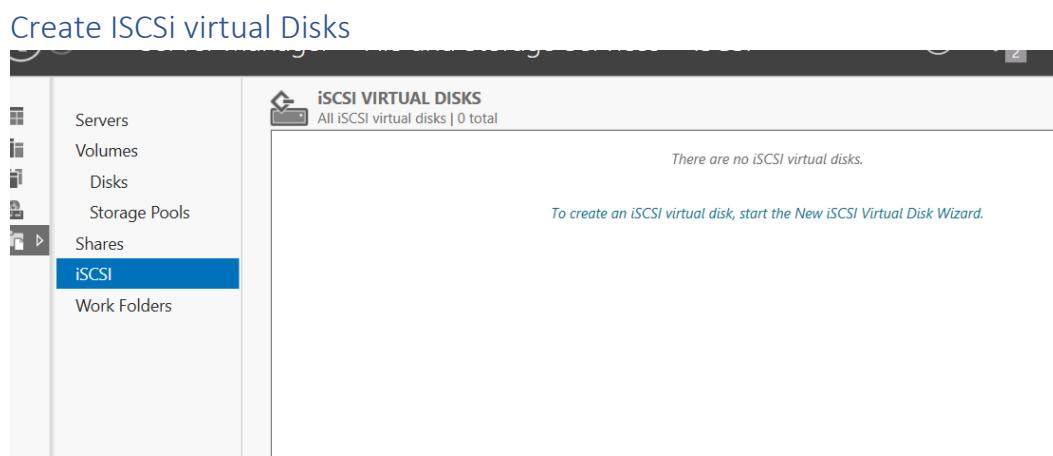
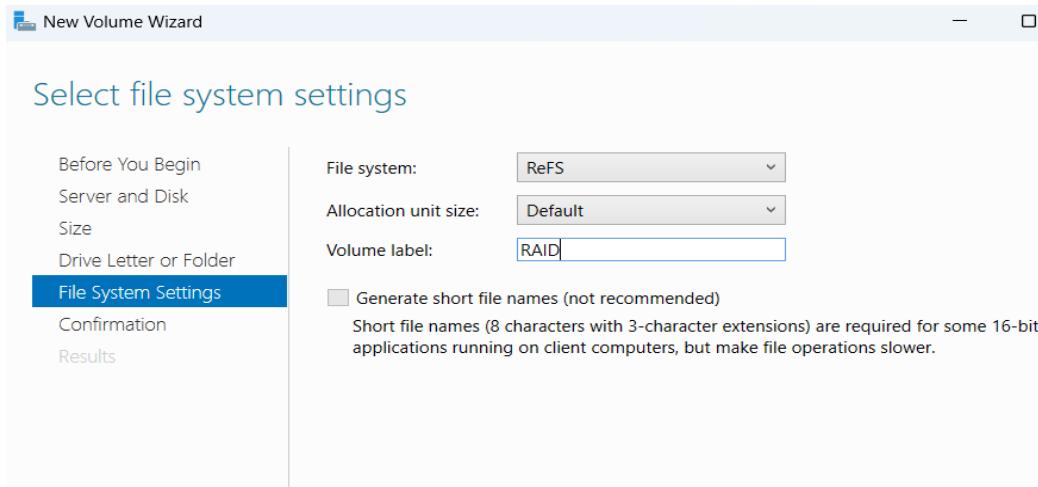
Specify the size of the volume

This is a screenshot of the 'Size' step in the 'New Volume Wizard'. The left sidebar shows steps: 'Before You Begin', 'Server and Disk', 'Size' (selected), 'Drive Letter or Folder', 'File System Settings', 'Confirmation', and 'Results'. The main pane displays 'Available Capacity: 203 GB' and 'Minimum size: 8.00 MB'. Under 'Volume size:', there is a text input field containing '203' and a dropdown menu set to 'GB'.

New Volume Wizard

Assign to a drive letter or folder

This is a screenshot of the 'Drive Letter or Folder' step in the 'New Volume Wizard'. The left sidebar shows steps: 'Before You Begin', 'Server and Disk', 'Size', 'Drive Letter or Folder' (selected), 'File System Settings', 'Confirmation', and 'Results'. The main pane contains instructions: 'Select whether to assign the volume to a drive letter or a folder. When you assign a volume to a folder, the volume appears as a folder within a drive, such as D:\UserData.' Below this, there is a section titled 'Assign to:' with three options: 'Drive letter: H' (radio button selected), 'The following folder:' (radio button unselected), and 'Don't assign to a drive letter or folder.' There is also a 'Browse...' button next to the folder input field.



Select iSCSI virtual disk location

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

Server:

Server Name	Status	Cluster Role	Owner Node
718SAN	Online	Not Clustered	

① 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:	9.58 GB	19.4 GB	NTFS
H:	197 GB	200 GB	ReFS

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

Type a custom path:

[< Previous](#) [Next >](#) [Create](#) [Cancel](#)

New iSCSI Virtual Disk Wizard

Specify iSCSI virtual disk name

iSCSI Virtual Disk Location

- iSCSI Virtual Disk Name
- Selected
- iSCSI Virtual Disk Size
- iSCSI Target
- Target Name and Access

Name:

Description:

Specify iSCSI virtual disk size

iSCSI Virtual Disk Location

- iSCSI Virtual Disk Name
- iSCSI Virtual Disk Size
- Selected
- iSCSI Target
- Target Name and Access

Free space: 197 GB

Size:

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

Assign iSCSI target

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target
Specify iSCSI virtual disk size
Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

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

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...

Name:

Quorum

Description:

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:

Enter a value for the selected type

Type:

IP Address

Value:

10.10.10.2

Browse...

OK **Cancel**

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
IPAddress	10.10.10.2
IPAddress	10.10.10.3

Add... Remove

Confirm selections

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

Confirm that the following are the correct settings, and then click Create.

iSCSI VIRTUAL DISK LOCATION
Server: 718SAN
Cluster role: Not Clustered
Path: H:\iSCSIVirtualDisks\Quarum.vhdx

iSCSI VIRTUAL DISK PROPERTIES
Name: Quarum
Size: 2.00 GB

TARGET PROPERTIES
Name: quarum

ACCESS SERVERS
IP Address: 10.10.10.2
IP Address: 10.10.10.3

SECURITY
CHAP: Disabled
Reverse CHAP: Disabled

< Previous Next > Create Cancel

Server Manager

Server Manager ▶ File and Storage Services ▶ iSCSI

Servers Volumes Disks Storage Pools Shares **iSCSI** Work Folders

iSCSI VIRTUAL DISKS
All iSCSI virtual disks | 1 total

Path	Status	Virtual Disk Status	Target Name	Target Status	Initiator ID	Size
H:\iSCSIVirtualDisks\Quarum.vhdx	Not Connected	quarum	Not Connected	Not Connected	IPAddress:10.10.10.2, IPAddress:10.10.10.3	2.00 GB

Create another disk for nested VM's Storage

Select iSCSI virtual disk location

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

Server:

Server Name	Status	Cluster Role	Owner Node
718SAN	Online	Not Clustered	

Tip: 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:	9.58 GB	19.4 GB	NTFS
H:	197 GB	200 GB	ReFS

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

Type a custom path:

Browse...

New iSCSI Virtual Disk Wizard

Specify iSCSI virtual disk name

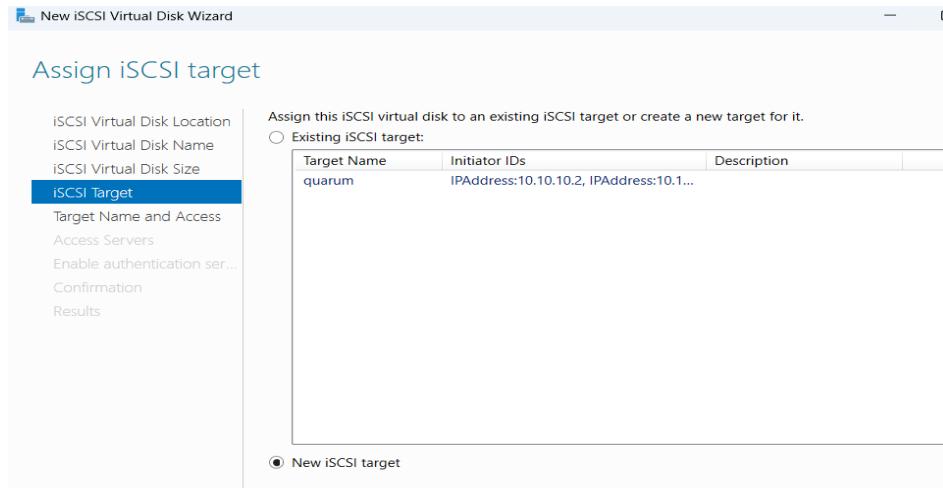
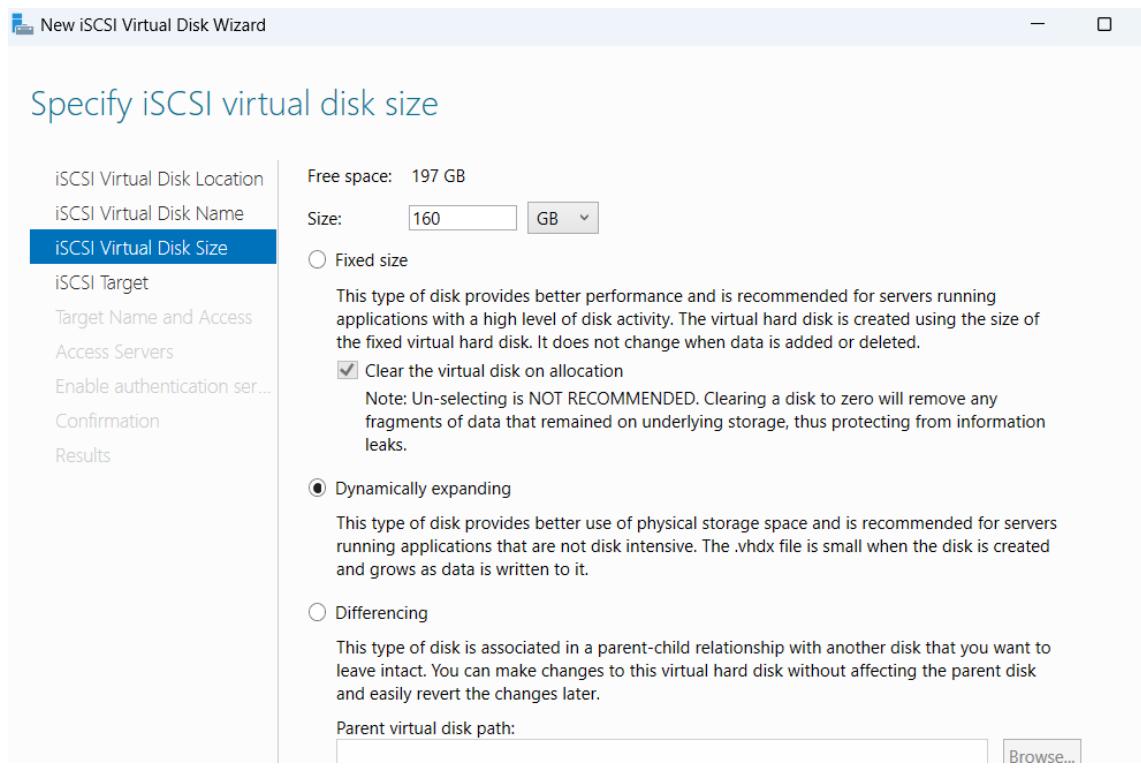
iSCSI Virtual Disk Location

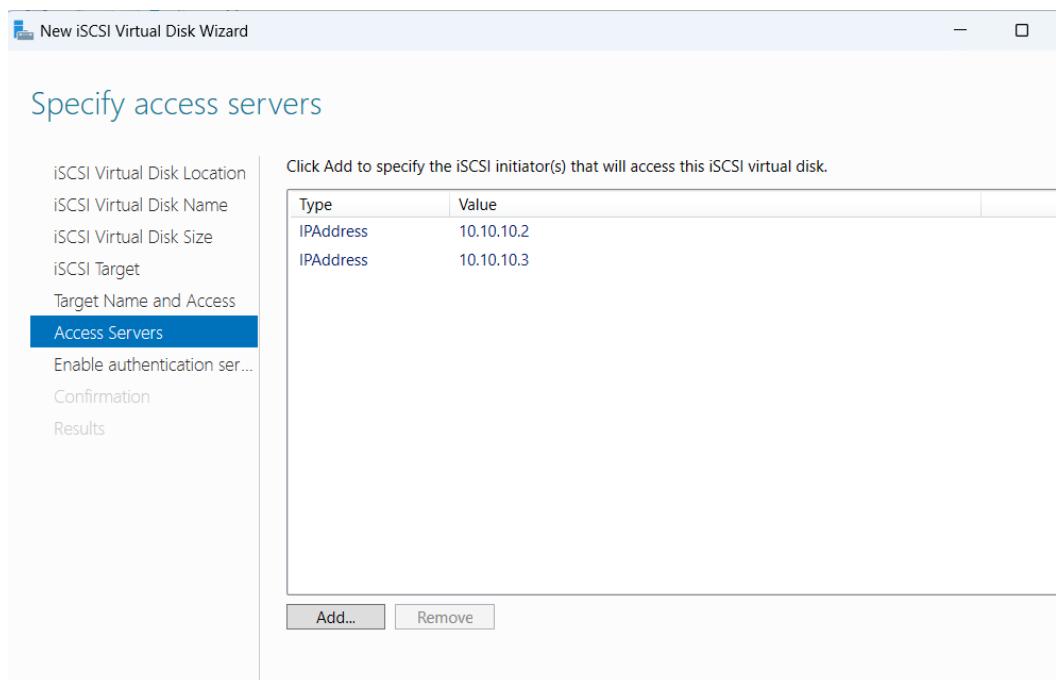
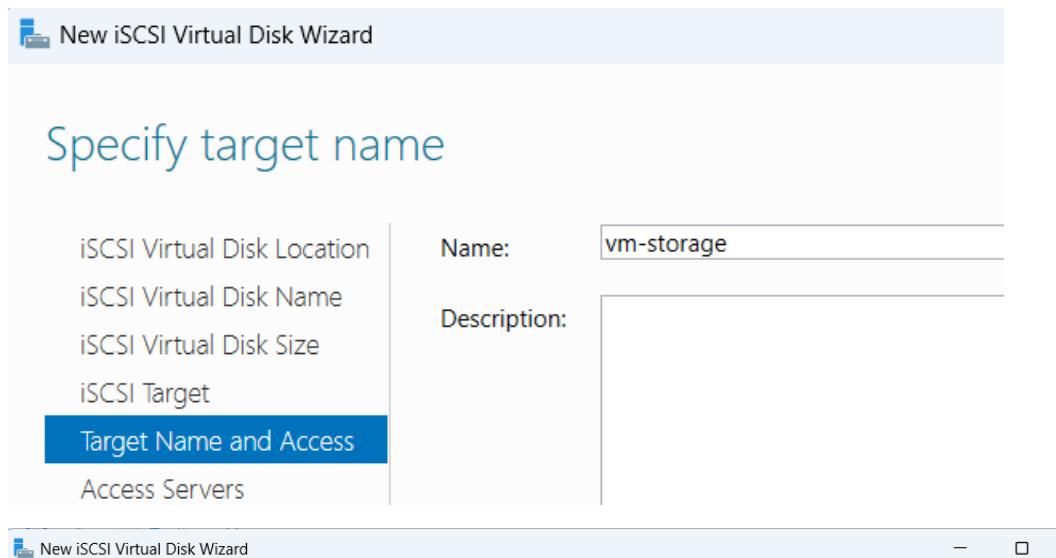
- iSCSI Virtual Disk Name**
- iSCSI Virtual Disk Size
- iSCSI Target
- Target Name and Access
- Access Servers
- Enable authentication ser...
- Confirmation
- Results

Name:

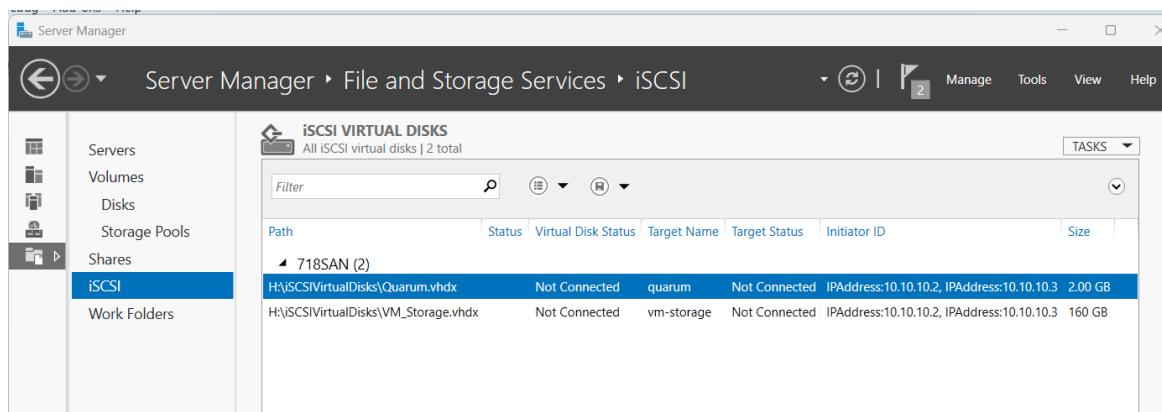
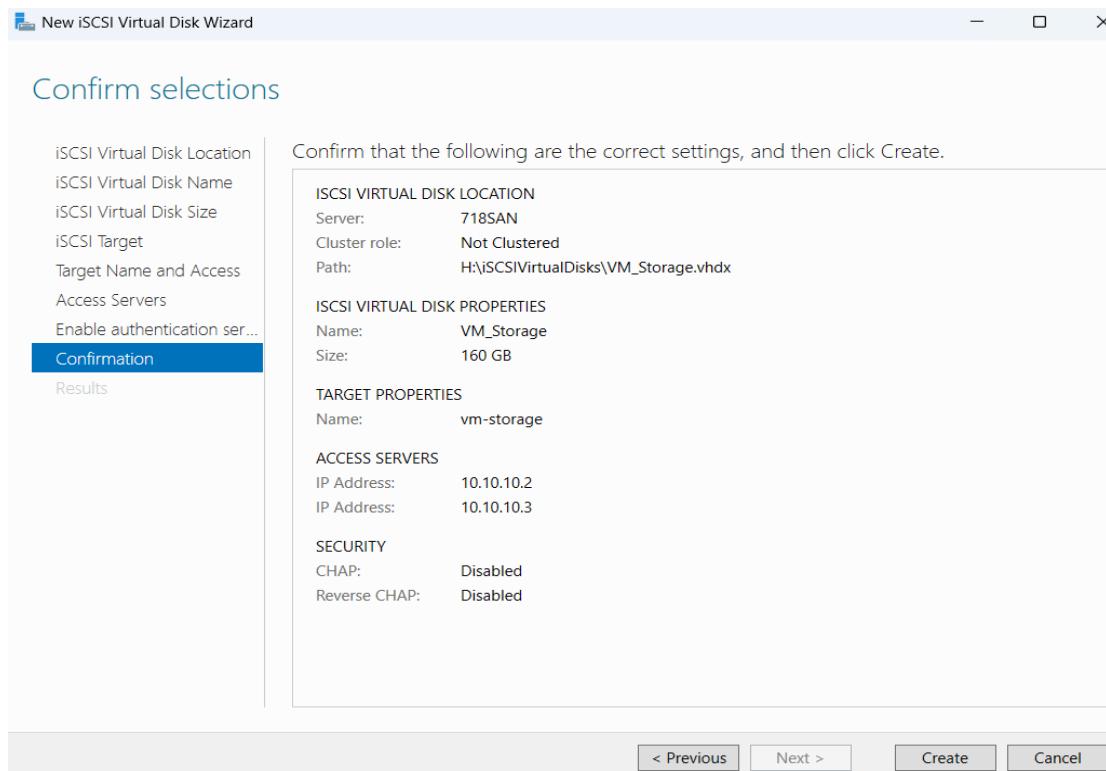
Description:

Path:





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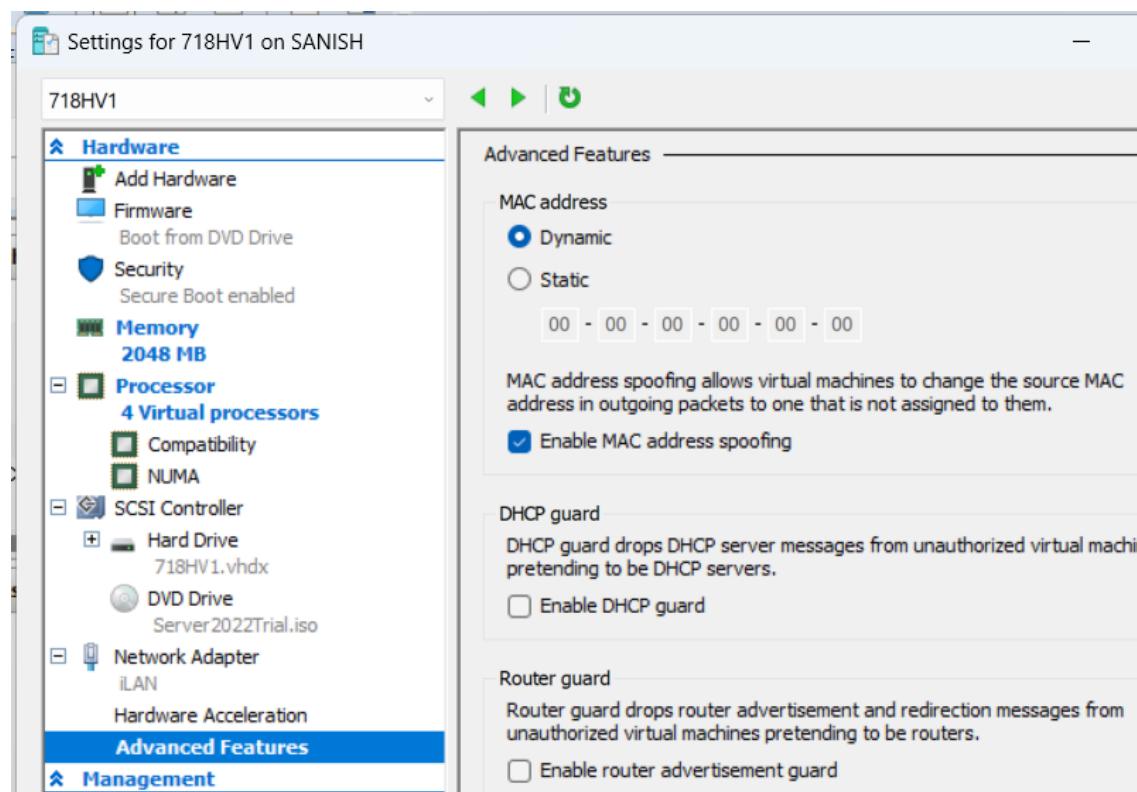


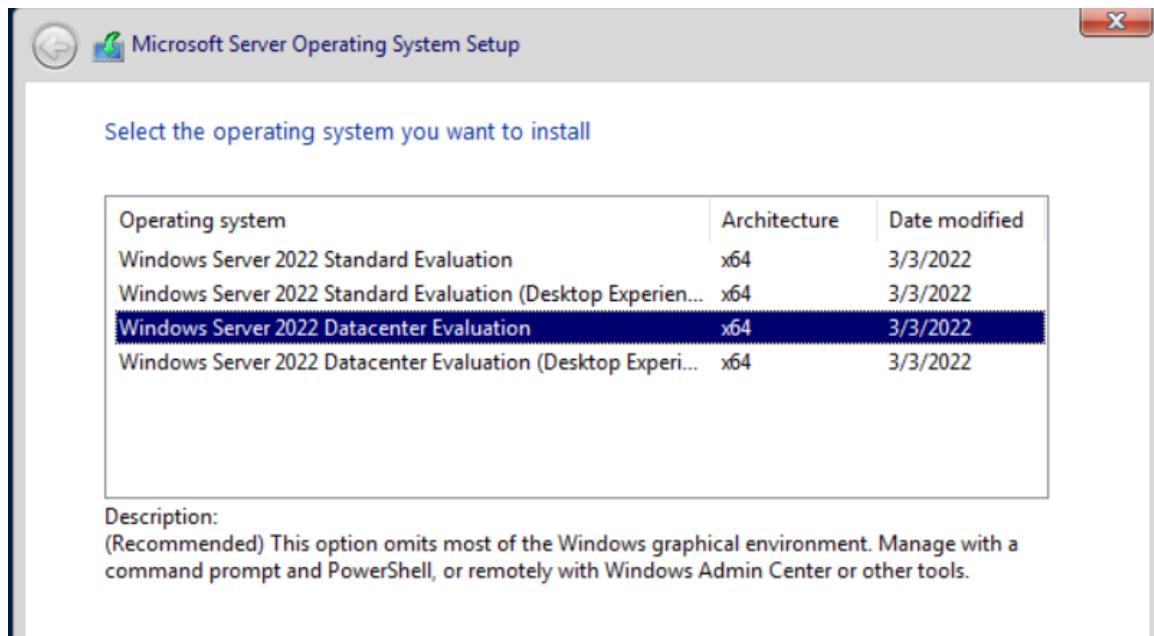
Create and configure nested Hyper-V1

```
Script_New_Server_VMCreation_New_BootOrder_2023.ps1 Post_Server_Tasks_For_FIN_Domian_Controller.ps1 Untitled2.ps1* Untitled3.ps1* Untitled4.ps1* X
1 $VMName = Read-Host -Prompt 'Input your VM name'
2 $VHDPath = "V:\VMs\VHDX\" + $VMName + ".vhdx"
3 new-vhd -Path $VHDPath -SizeBytes 20GB -Dynamic
4 New-VM -Name $VMName -MemoryStartupBytes 2GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
5 Add-VMVdvdDrive -VMName $VMName -Path c:\Softwares\WinServer\Server2022Trial.iso
6 $BootOrd = Get-VMFirmware $VMName
7 $BootOrd.bootorder
8 $hddrive = $BootOrd.BootOrder[0]
9 $pxe = $BootOrd.BootOrder[1]
10 $dvddrive = $BootOrd.BootOrder[2]
11 Set-VMFirmware $VMName -BootOrder $dvddrive,$hddrive,$pxe
12 Set-VM $VMName -AutomaticCheckpointsEnabled $false
13 Set-VMMemory $VMName -DynamicMemoryEnabled $true
14 Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"
```

```
PS C:\WINDOWS\system32> $VMName = Read-Host -Prompt 'Input your VM name'
$VHDPath = "V:\VMs\VHDX\" + $VMName + ".vhdx"
new-vhd -Path $VHDPath -SizeBytes 20GB -Dynamic
New-VM -Name $VMName -MemoryStartupBytes 2GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
Add-VMVdvdDrive -VMName $VMName -Path c:\Softwares\WinServer\Server2022Trial.iso
$BootOrd = Get-VMFirmware $VMName
$BootOrd.bootorder
$hddrive = $BootOrd.BootOrder[0]
$pxe = $BootOrd.BootOrder[1]
$dvddrive = $BootOrd.BootOrder[2]
Set-VMFirmware $VMName -BootOrder $dvddrive,$hddrive,$pxe
Set-VM $VMName -AutomaticCheckpointsEnabled $false
Set-VMMemory $VMName -DynamicMemoryEnabled $true
Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"
Input your VM name: 718HV1

ComputerName      : SANISH
Path              : V:\VMs\VHDX\718HV1.vhdx
VhdFormat         : VHDX
VhdType           : Dynamic
FileSize          : 4194304
```





Post server configuration and domain join in HV1

```

Untitled1.ps1 Script_New_Server_VMCreation_New_BootOrder_2023.ps1 Post_Server_Tasks_For_FIN_Domian_Controller.ps1* Set_Static_IP_Name_PC_Domain_Join_Nam
1 $IP = Read-Host -Prompt 'Input your IP Address'
2 $MaskBits = 28 # This means subnet mask = 255.255.255.240
3 $Gateway = "192.168.2.14"
4 $Dns = "192.168.2.1"
5 $IPType = "IPv4"
6 # Retrieve the network adapter that you want to configure
7 $adapter = Get-NetAdapter | ? {$_..Status -eq "up"}
8 # Remove any existing IP, gateway from our ipv4 adapter
9 If ((($adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
10   $adapter | Remove-NetIPAddress -AddressFamily $IPType -Confirm:$false
11 }
12 If ((($adapter | Get-NetIPConfiguration).IPv4DefaultGateway) {
13   $adapter | Remove-NetRoute -AddressFamily $IPType -Confirm:$false
14 }
15 # Configure the IP address and default gateway
16 $adapter | New-NetIPAddress
17 -AddressFamily $IPType
18 -IPAddress $IP
19 -PrefixLength $MaskBits
20 -DefaultGateway $Gateway
21 # Configure the DNS client server IP addresses
22 $adapter | Set-DnsClientServerAddress -ServerAddresses $DNS
23 # Rename the Network Adapter
24 Rename-NetAdapter -Name "Ethernet" -NewName "LAN"
25 # Name Computer, add to Domain and OU placement
26 $cred = Get-Credential sanish
27 Add-Computer -DomainName CAP.TSP -Credential $cred -NewName ` 
28 (Read-Host -Prompt 'Input the new PC name') -OUPath (Read-Host -Prompt ` 
29 'What OU e.g OU=Servers,DC=CAP,DC=TSP')
30 Rename-LocalUser -Name "Administrator" -NewName "_LSysadmin"
31 Restart-Computer -Force

```

PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:

```

[718HV1]: PS C:\Users\Administrator\Documents> $IP = Read-Host -Prompt 'Input your IP Address'
$MaskBits = 28 # This means subnet mask = 255.255.255.240
$Gateway = "192.168.2.14"
$Dns = "192.168.2.1"
$IPType = "IPv4"
# Retrieve the network adapter that you want to configure
$adapter = Get-NetAdapter | ? {$_..Status -eq "up"}
# Remove any existing IP, gateway from our ipv4 adapter
If ((($adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
  $adapter | Remove-NetIPAddress -AddressFamily $IPType -Confirm:$false
}
If ((($adapter | Get-NetIPConfiguration).IPv4DefaultGateway) {
  $adapter | Remove-NetRoute -AddressFamily $IPType -Confirm:$false
}

```

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```
# Configure the DNS client server IP addresses
$adapter | Set-DnsClientServerAddress -ServerAddresses $DNS
# Rename the Network Adapter
Rename-NetAdapter -Name "Ethernet" -NewName "LAN"
# Name Computer, add to Domain and OU placement
$cred = Get-Credential sanish
Add-Computer -DomainName CAP.TSP -Credential $cred -NewName ` 
(Read-Host -Prompt 'Input the new PC name') -OUPath (Read-Host -Prompt ` 
'What OU e.g OU=Servers,DC=asan,DC=INT')
Rename-LocalUser -Name "Administrator" -NewName "_LSysadmin"
Restart-Computer -Force
Input your IP Address: 192.168.2.4

IPAddress      : 192.168.2.4
InterfaceIndex  : 6
InterfaceAlias   : Ethernet
AddressFamily    : IPv4
Type            : Unicast
PrefixLength    : 28
PrefixOrigin     : Manual
SuffixOrigin     : Manual
AddressState     : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource     : False
PolicyStore      : ActiveStore

IPAddress      : 192.168.2.4
InterfaceIndex  : 6
InterfaceAlias   : Ethernet
AddressFamily    : IPv4
Type            : Unicast
PrefixLength    : 28
PrefixOrigin     : Manual
SuffixOrigin     : Manual
AddressState     : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource     : False
PolicyStore      : PersistentStore

Input the new PC name: 718HV1
What OU e.g OU=Servers,DC=asan,DC=INT: OU=HyperV,OU=Servers,DC=CAP,DC=TSP
```

```
[718HV1]: PS C:\Users\sanish\Documents> ipconfig /all

Windows IP Configuration

Host Name . . . . . : 718HV1
Primary Dns Suffix . . . . . : CAP.TSP
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : CAP.TSP

Ethernet adapter LAN:

Connection-specific DNS Suffix . . . . . : CAP.TSP
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-15-5D-01-7C-12
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::ccbd:b668:9d44:3fe8%6(PREFERRED)
IPv4 Address. . . . . : 192.168.2.4(PREFERRED)
Subnet Mask . . . . . : 255.255.255.240
Default Gateway . . . . . : 192.168.2.14
DHCPv6 IAID . . . . . : 100668765
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B2-C1-8F-00-15-5D-01-7C-12
DNS Servers . . . . . : 192.168.2.1
NetBIOS over Tcpip. . . . . : Enabled
Connection-specific DNS Suffix Search List :
                                CAP.TSP
```

```
Administrator: C:\Windows\system32\cmd.exe
=====
Windows activation
=====

1) Display license information
2) Activate Windows
3) Install product key

Enter selection (Blank=Cancel): 1

Name: Windows(R), ServerDatacenterEval edition
Description: Windows(R) Operating System, TIMEBASED_EVAL channel
Partial Product Key: 37CYR
License Status: Licensed
Timebased activation expiration: 259179 minute(s) (180 day(s))

(Press ENTER to continue): .
```

Open icmpv4 firewall rule

```
[718HV1]: PS C:\Users\sanish\Documents> netsh advfirewall firewall add rule name="ICMP Ping Allow" protocol="icmpv4:8,any" dir=in action=allow
0k.
```

Shut down the Hyper-V1 VM and run the command in host Machine

```
PS C:\WINDOWS\system32>
PS C:\WINDOWS\system32> Set-VMProcessor -VMName 718HV1 -ExposeVirtualizationExtensions $true
PS C:\WINDOWS\system32>
```

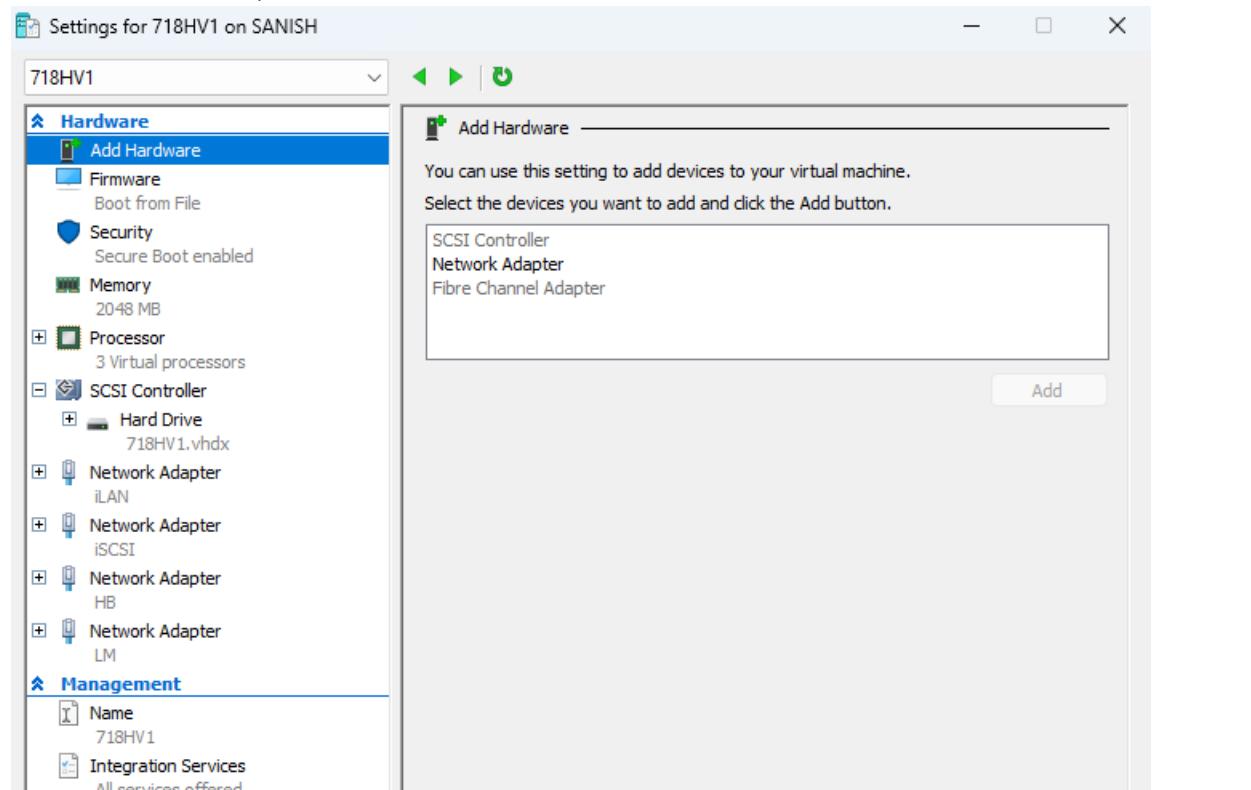


```
PS C:\WINDOWS\system32> Get-VMProcessor -VMName 718HV1 |fl

ResourcePoolName : Primordial
Count : 3
CompatibilityForMigrationEnabled : False
CompatibilityForMigrationMode : MinimumFeatureSet
CompatibilityForOlderOperatingSystemsEnabled : False
HwThreadCountPerCore : 0
ExposeVirtualizationExtensions : True
EnablePerfmonPmu : False
EnablePerfmonArchPmu : False
EnablePerfmonLbr : False
EnablePerfmonPebs : False
EnablePerfmonIpt : False
EnableLegacyApicMode : False
ApicMode : Default
```

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Add Network Adapter's to the iSCSInew, HB, and LM switches



The screenshot shows the 'Settings for 718HV1 on SANISH' window. In the left pane, under 'Hardware', 'Add Hardware' is selected. The right pane displays the 'Add Hardware' dialog with the instruction: 'You can use this setting to add devices to your virtual machine. Select the devices you want to add and click the Add button.' Below this, there is a list of device types: 'SCSI Controller', 'Network Adapter', and 'Fibre Channel Adapter'. The 'Network Adapter' option is highlighted.

[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapter

Name	InterfaceDescription	ifIndex	Status	MacAddress	LinkSpeed
Ethernet	Microsoft Hyper-V Network Adapter #2	10	Up	00-15-5D-01-7C-14	10 Gbps
Ethernet 3	Microsoft Hyper-V Network Adapter #4	18	Up	00-15-5D-01-7C-16	10 Gbps
Ethernet 2	Microsoft Hyper-V Network Adapter #3	14	Up	00-15-5D-01-7C-15	10 Gbps
LAN	Microsoft Hyper-V Network Adapter	6	Up	00-15-5D-01-7C-12	10 Gbps

[718HV1]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet" -NewName "iSCSI"

[718HV1]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet 2" -NewName "HB"

[718HV1]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet 3" -NewName "LM"

[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapter

Name	InterfaceDescription	ifIndex	Status	MacAddress	LinkSpeed
iSCSI	Microsoft Hyper-V Network Adapter #2	10	Up	00-15-5D-01-7C-14	10 Gbps
LM	Microsoft Hyper-V Network Adapter #4	18	Up	00-15-5D-01-7C-16	10 Gbps
HB	Microsoft Hyper-V Network Adapter #3	14	Up	00-15-5D-01-7C-15	10 Gbps
LAN	Microsoft Hyper-V Network Adapter	6	Up	00-15-5D-01-7C-12	10 Gbps

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```
[718HV1]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 10 -IPAddress 10.10.10.2 -PrefixLength 29
```

```
 IPAddress      : 10.10.10.2
 InterfaceIndex : 10
 InterfaceAlias : iSCSI
 AddressFamily   : IPv4
 Type           : Unicast
 PrefixLength   : 29
 PrefixOrigin   : Manual
 SuffixOrigin   : Manual
 AddressState   : Tentative
 ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
 PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
 SkipAsSource   : False
 PolicyStore    : ActiveStore

 IPAddress      : 10.10.10.2
 InterfaceIndex : 10
 InterfaceAlias : iSCSI
 AddressFamily   : IPv4
 Type           : Unicast
 PrefixLength   : 29
 PrefixOrigin   : Manual
 SuffixOrigin   : Manual
 AddressState   : Invalid
 ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
 PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
 SkipAsSource   : False
 PolicyStore    : PersistentStore
```

```
[718HV1]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 14 -IPAddress 20.20.20.1 -PrefixLength 29
```

```
 IPAddress      : 20.20.20.1
 InterfaceIndex : 14
 InterfaceAlias : HB
 AddressFamily   : IPv4
 Type           : Unicast
 PrefixLength   : 29
 PrefixOrigin   : Manual
 SuffixOrigin   : Manual
 AddressState   : Tentative
 ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
 PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
 SkipAsSource   : False
 PolicyStore    : ActiveStore

 IPAddress      : 20.20.20.1
 InterfaceIndex : 14
 InterfaceAlias : HB
 AddressFamily   : IPv4
 Type           : Unicast
 PrefixLength   : 29
 PrefixOrigin   : Manual
 SuffixOrigin   : Manual
 AddressState   : Invalid
 ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
 PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
 SkipAsSource   : False
 PolicyStore    : PersistentStore
```

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```
[718HV1]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 18 -IPAddress 30.30.30.1 -PrefixLength 30

IPAddress      : 30.30.30.1
InterfaceIndex : 18
InterfaceAlias : LM
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAssocSource : False
PolicyStore     : ActiveStore

IPAddress      : 30.30.30.1
InterfaceIndex : 18
InterfaceAlias : LM
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAssocSource : False
PolicyStore     : PersistentStore
```

Virtual Machines

Name	State	CPU Usage	Assigned Memory	Uptime	Status	Configured
718_FW	Saved-Critical				Cannot connect to virtual machine co...	
718DC1	Running	0%	512 MB	3.03:21:58		11.0
718FW	Running	0%	512 MB	3.03:22:30		11.0
718HV1	Running	1%	2048 MB	00:47:12		11.0
718HV2	Running	0%	2048 MB	00:38:33		11.0
718LDHCP	Running	0%	512 MB	2.09:58:15		11.0
718SAN	Running	0%	512 MB	2.08:48:00		11.0

Checkpoints

718HV1

Adapter	Connection	IP Addresses	Status
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:12)	iLAN	192.168.2.4, fe80::ccbd:b668:9d44:3fe8	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:15)	HB	20.20.20.1, fe80::a359:d09a:58ac:4565	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:14)	iSCSI	10.10.10.2, fe80::5926:88e6:150e:588d	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:16)	LM	30.30.30.1, fe80::1e8b:ec:31fe:4187	OK

Summary Memory Networking

Enable Jumbo Packet on iSCSI Adaptor

```
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty -Name iscsi
Name          DisplayName          DisplayValue          RegistryKeyword RegistryValue
--          -----
ISCSI          IPv4 Checksum Offload      Rx & Tx Enabled      *IPChecksumO... {3}
ISCSI          TPSec Offload          Auth Header and ESP Enabled *TPsecOffloadV2 {3}
ISCSI          Jumbo Packet          Disabled          *JumboPacket {1514}
ISCSI          Large Send Offload Version ... Enabled          *LsoV2IPV4 {1}
ISCSI          Large Send Offload Version ... Enabled          *LsoV2IPV6 {1}
ISCSI          Max Number of RSS Processors 16          *MaxRssProce... {16}
ISCSI          Network Direct (RDMA)        Disabled          *NetworkDirect {0}
ISCSI          Maximum Number of RSS Queues 16          *NumRssQueues {16}
ISCSI          Packet Direct          Disabled          *PacketDirect {0}
ISCSI          Recv Segment Coalescing (IPv4) Enabled          *RscIPV4 {1}
ISCSI          Recv Segment Coalescing (IPv6) Enabled          *RscIPV6 {1}
ISCSI          Receive Side Scaling       Enabled          *RSS {1}
ISCSI          RSS Base Processor Number 63          *RSSBaseProc... {0}
ISCSI          Maximum RSS Processor Number 63          *RSSMaxProcN... {6}
ISCSI          RSS Profile ID          NUMA Scaling Static *RSSProfileID {4}
ISCSI          TCP Checksum Offload (IPv4) Rx & Tx Enabled      *TCPChecksum... {3}
ISCSI          TCP Checksum Offload (IPv6) Rx & Tx Enabled      *TCPChecksum... {3}
ISCSI          UDP Checksum Offload (IPv4) Rx & Tx Enabled      *UDPChecksum... {3}
ISCSI          UDP Checksum Offload (IPv6) Rx & Tx Enabled      *UDPChecksum... {3}
ISCSI          Forwarding Optimization     Disabled          *ForwardingOp {0}
ISCSI          Hyper-V Network Adapter Name --          HyperVNetwor... {--}
ISCSI          Network Address          --          NetworkAddress {--}
ISCSI          Receive Buffer Size       8MB          ReceiveBuffe... {8192}
ISCSI          Send Buffer Size         1MB          SendBufferSize {1024}
ISCSI          VLAN ID                0          VLANID {0}
```

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```
[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty "iscsi" -DisplayName "Jumbo Packet" |Set-NetAdapterAdvancedProperty -RegistryValue "9014"
```

Name	DisplayName	DisplayValue	RegistryKeyword	RegistryValue
ISCSi	IPv4 Checksum Offload	Rx & Tx Enabled	*IPChecksumOffload	{3}
ISCSi	IPSec Offload	Auth Header and ESP Enabled	*IPsecOffloadV2	{3}
ISCSi	Jumbo Packet	9014 Bytes	*JumboPacket	{9014}
ISCSi	Large Send Offload Version ...	Enabled	*LsoV2IPv4	{1}
ISCSi	Large Send Offload Version ...	Enabled	*LsoV2IPv6	{1}
ISCSi	Max Number of RSS Processors	16	*MaxRssProcessors	{16}
ISCSi	Network Direct (RDMA)	Disabled	*NetworkDirect	{0}
ISCSi	Maximum Number of RSS Queues	16	*NumRssQueues	{16}
ISCSi	Packet Direct	Disabled	*PacketDirect	{0}

Ping to SAN

```
[718HV1]: PS C:\Users\sanish\Documents> ping 10.10.10.1 -f -l 8500
Pinging 10.10.10.1 with 8500 bytes of data:
Reply from 10.10.10.1: bytes=8500 time<1ms TTL=128
```

Create and configure nested Hyper-V2

```

1 $VMName = Read-Host -Prompt 'Input your VM name'
2 $VHDPath = "V:\VMs\VHDX\" + $VMName + ".vhdx"
3 new-vhd -Path $VHDPath -SizeBytes 20GB -Dynamic
4 New-VM -Name $VMName -MemoryStartupBytes 2GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
5 Add-VMVddrive -VMName $VMName -Path c:\Softwares\WinServer\Server2022Trial.iso
6 $BootOrd = Get-VMFirmware $VMName
7 $BootOrd.bootorder
8 $Hddrive = $BootOrd.BootOrder[0]
9 $Pxe = $BootOrd.BootOrder[1]
10 $Vddrive = $BootOrd.BootOrder[2]
11 Set-VMFirmware $VMName -BootOrder $Vddrive,$Hddrive,$Pxe
12 Set-VM $VMName -AutomaticCheckpointsEnabled $false
13 Set-VMMemory $VMName -DynamicMemoryEnabled $true
14 Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"

PS C:\WINDOWS\system32> $VMName = Read-Host -Prompt 'Input your VM name'
$VHDPath = "V:\VMs\VHDX\" + $VMName + ".vhdx"
new-vhd -Path $VHDPath -SizeBytes 20GB -Dynamic
New-VM -Name $VMName -MemoryStartupBytes 2GB -VHDPath $VHDPath -Generation 2 -SwitchName iLAN
Add-VMVddrive -VMName $VMName -Path c:\Softwares\WinServer\Server2022Trial.iso
$BootOrd = Get-VMFirmware $VMName
$BootOrd.bootorder
$Hddrive = $BootOrd.BootOrder[0]
$Pxe = $BootOrd.BootOrder[1]
$Vddrive = $BootOrd.BootOrder[2]
Set-VMFirmware $VMName -BootOrder $Vddrive,$Hddrive,$Pxe
Set-VM $VMName -AutomaticCheckpointsEnabled $false
Set-VMMemory $VMName -DynamicMemoryEnabled $true
Enable-VMIntegrationService -VMName $VMName -Name "Guest Service interface"
Input your VM name: 718HV2

ComputerName      : SANISH
Path              : V:\VMs\VHDX\718HV2.vhdx
VhdFormat         : VHDX
VhdType           : Dynamic
Filesize          : 4194304
Size              : 21474836480
MinimumSize       :
LogicalSectorSize : 512
PhysicalSectorSize: 4096
BlockSize         : 33554432
ParentPath        :
DiskIdentifier   : 21AC7E94-E3A1-47D5-A198-D524A84E033B
FragmentationPercentage: 0
Alignment         : 1
Attached          : False
DiskNumber        :
IsPmemCompatible : False
AddressAbstractionType: None

```

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718HV2 on SANISH - Virtual Machine Connection

File Action Media View Help

Administrator: C:\Windows\system32\cmd.exe

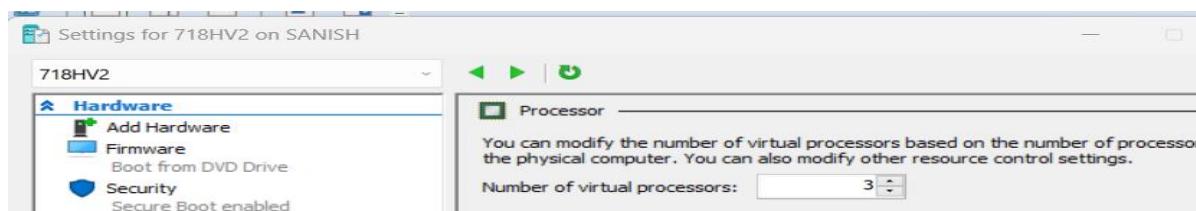
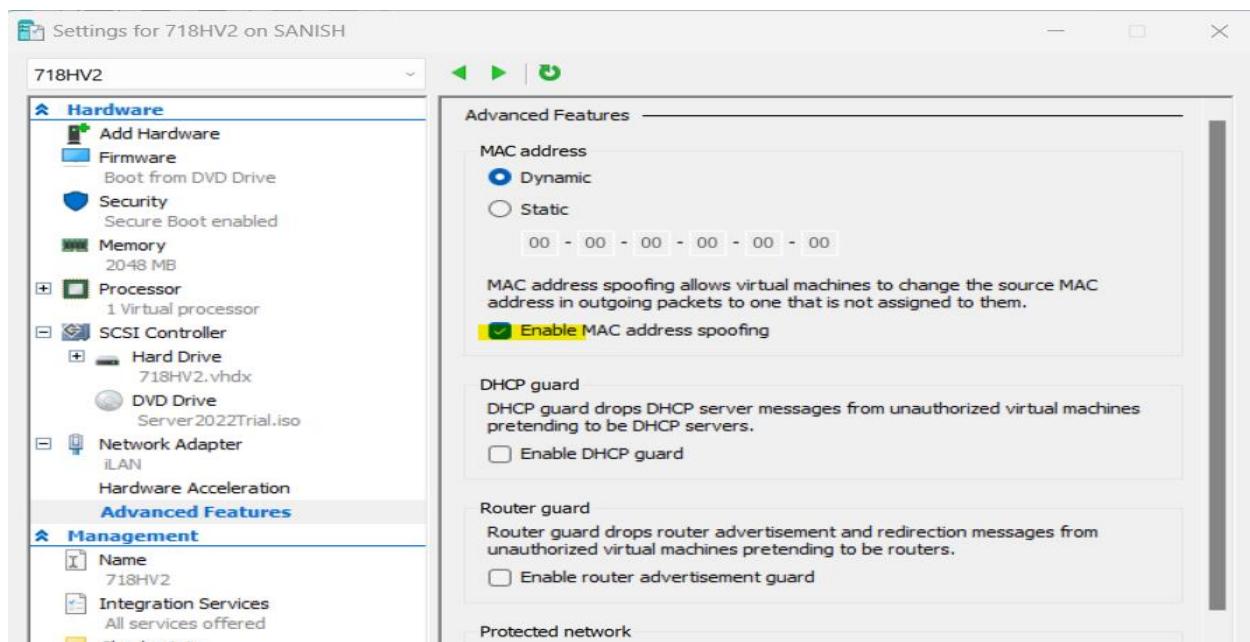
```
=====
Windows activation
=====

1) Display license information
2) Activate Windows
3) Install product key

Enter selection (Blank=Cancel): 1

Name: Windows(R), ServerDatacenterEval edition
Description: Windows(R) Operating System, TIMEBASED_EVAL channel
Partial Product Key: 37CYR
License Status: Licensed
Timebased activation expiration: 259132 minute(s) (180 day(s))

(Press ENTER to continue): SSS
```



Post server configuration and domain join in HV2

```

1 $IP = Read-Host -Prompt 'Input your IP Address'
2 $MaskBits = 28 # This means subnet mask = 255.255.255.240
3 $Gateway = "192.168.2.14"
4 $Dns = "192.168.2.1"
5 $IPType = "IPv4"
6 # Retrieve the network adapter that you want to configure
7 $adapter = Get-NetAdapter | ? {$_.Status -eq "up"}
8 # Remove any existing IP, gateway from our ipv4 adapter
9 If (($adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
10    $adapter | Remove-NetIPAddress -AddressFamily $IPType -Confirm:$false
11 }
12 If (($adapter | Get-NetIPConfiguration).Ipv4DefaultGateway) {
13    $adapter | Remove-NetRoute -AddressFamily $IPType -Confirm:$false
14 }
15 # Configure the IP address and default gateway
16 $adapter | New-NetIPAddress
17   -AddressFamily $IPType
18   -IPAddress $IP
19   -PrefixLength $MaskBits
20   -DefaultGateway $Gateway
21 # Configure the DNS client server IP addresses
22 $adapter | Set-DnsClientServerAddress -ServerAddresses $DNS
23 # Rename the Network Adapter
24 Rename-NetAdapter -Name "Ethernet" -NewName "LAN"
25 # Name Computer, add to Domain and OU placement
26 $cred = Get-Credential sanish
27 Add-Computer -DomainName CAP.TSP -Credential $cred -NewName
28 (Read-Host -Prompt 'Input the new PC name') -OUPath (Read-Host -Prompt
29 'What OU e.g OU=HyperV,OU=Servers,DC=CAP,DC=TSP')
30 Rename-LocalUser -Name "Administrator" -NewName "_LSysadmin"
31 Restart-Computer -Force

```

The screenshot shows a Windows PowerShell window with the following content:

```
[718HV2]: PS C:\Users\Administrator\Documents> $IP = Read-Host -Prompt 'Input your IP Address'
$MaskBits = 28 # This means subnet mask = 255.255.255.240
$Gateway = "192.168.2.14"
$Dns = "192.168.2.1"
$IPType = "IPv4"
# Retrieve the network adapter that you want to configure
$adapter = Get-NetAdapter | ? {$_.Status -eq "up"}
# Remove any existing IP, gateway from our ipv4 adapter
If (($adapter | Get-NetIPConfiguration).IPv4Address.IPAddress) {
    $adapter | Remove-NetIPAddress -AddressFamily $IPType -Confirm:$false
}
If (($adapter | Get-NetIPConfiguration).Ipv4DefaultGateway) {
    $adapter | Remove-NetRoute -AddressFamily $IPType -Confirm:$false
}
# Configure the IP address and default gateway
$adapter | New-NetIPAddress
```

```

Rename-NetAdapter -Name "Ethernet" -NewName "LAN"
# Name Computer, add to Domain and OU placement
$cred = Get-Credential sanish
Add-Computer -DomainName CAP.TSP -Credential $cred -NewName ` 
(Read-Host -Prompt 'Input the new PC name') -OUPath (Read-Host -Prompt ` 
'What OU e.g OU=HyperV,OU=Servers,DC=CAP,DC=TSP')
Rename-LocalUser -Name "Administrator" -NewName "_LSysadmin"
Restart-Computer -Force
Input your IP Address: 192.168.2.5

IPAddress          : 192.168.2.5
InterfaceIndex     : 4
InterfaceAlias     : Ethernet
AddressFamily      : IPv4
Type               : Unicast
PrefixLength       : 28
PrefixOrigin       : Manual
SuffixOrigin       : Manual
AddressState       : Tentative
ValidLifetime      : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime  : Infinite ([TimeSpan]::MaxValue)
SkipAsSource       : False
PolicyStore        : ActiveStore

IPAddress          : 192.168.2.5
InterfaceIndex     : 4
InterfaceAlias     : Ethernet
AddressFamily      : IPv4
Type               : Unicast
PrefixLength       : 28
PrefixOrigin       : Manual
SuffixOrigin       : Manual
AddressState       : Invalid
ValidLifetime      : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime  : Infinite ([TimeSpan]::MaxValue)
SkipAsSource       : False
PolicyStore        : PersistentStore

Input the new PC name: 718HV2
What OU e.g OU=HyperV,OU=Servers,DC=CAP,DC=TSP: OU=HyperV,OU=Servers,DC=CAP,DC=TSP
WARNING: The changes will take effect after you restart the computer WIN-N6QUCUH91OK.

```

Open icmpv4 firewall rule

```

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
[718HV2]: PS C:\Users\sanish\Documents> netsh advfirewall firewall add rule name="ICMP Ping Allow" protocol="icmpv4:8,any" dir=in action=allow
Ok.

```

Shut down the Hyper-V2 VM and run the command in host Machine

```

PS C:\WINDOWS\system32> Set-VMProcessor -VMName 718HV2 -ExposeVirtualizationExtensions $true

```



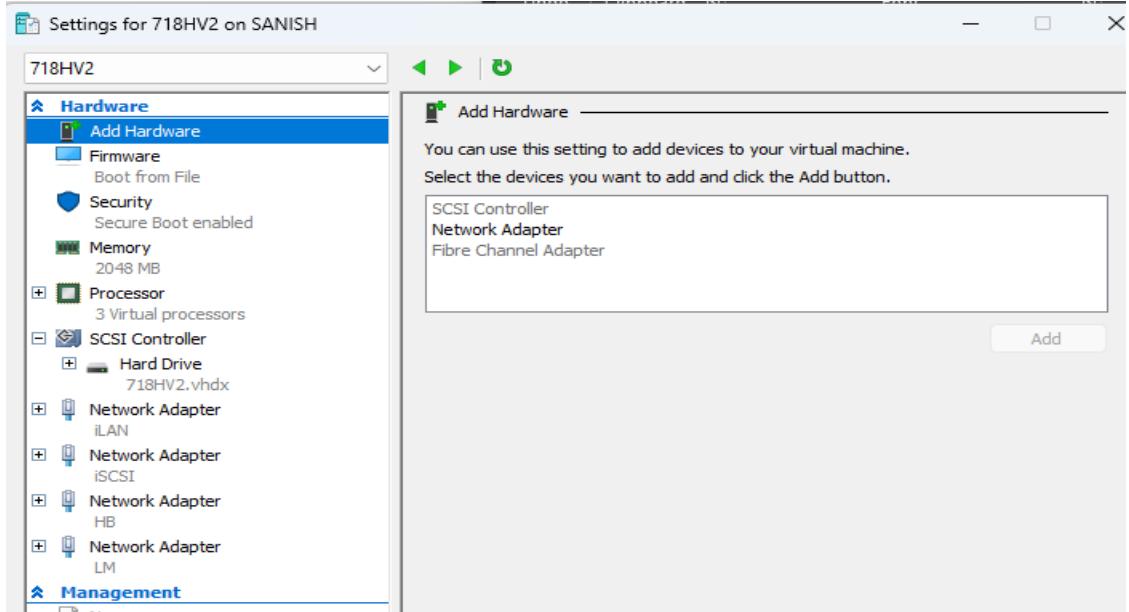
```

PS C:\WINDOWS\system32> Get-VMProcessor -VMName 718HV2 |fl

```

ResourcePoolName	:	Primordial
Count	:	3
CompatibilityForMigrationEnabled	:	False
CompatibilityForMigrationMode	:	MinimumFeatureSet
CompatibilityForOlderOperatingSystemsEnabled	:	False
HwThreadCountPerCore	:	0
ExposeVirtualizationExtensions	:	True
EnablePerfmonPmu	:	False
EnablePerfmonArchPmu	:	False
EnablePerfmonLbr	:	False
EnablePerfmonPebs	:	False
EnablePerfmonIpt	:	False
EnableLegacyApicMode	:	False
ApicMode	:	Default
AllowACountMCount	:	True
CpuBrandString	:	
PerfCpuFreqCapMhz	:	0
L3CacheWays	:	0
Maximum	:	100
Reserve	:	0

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```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapter
Name           InterfaceDescription      ifIndex Status     MacAddress   LinkSpeed
--           --                         --       --       --           --
Ethernet 2     Microsoft Hyper-V Network Adapter #3    14 Up      00-15-5D-01-7C-18  10 Gbps
Ethernet      Microsoft Hyper-V Network Adapter #2    10 Up      00-15-5D-01-7C-17  10 Gbps
LAN           Microsoft Hyper-V Network Adapter        4 Up      00-15-5D-01-7C-13  10 Gbps
Ethernet 3     Microsoft Hyper-V Network Adapter #4    18 Up      00-15-5D-01-7C-19  10 Gbps
```

```
[718HV2]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet" -NewName "ISCSI"
[718HV2]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet 2" -NewName "HB"
[718HV2]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet 3" -NewName "LM"
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapter
Name           InterfaceDescription      ifIndex Status     MacAddress   LinkSpeed
--           --                         --       --       --           --
HB            Microsoft Hyper-V Network Adapter #3    14 Up      00-15-5D-01-7C-18  10 Gbps
ISCSI          Microsoft Hyper-V Network Adapter #2    10 Up      00-15-5D-01-7C-17  10 Gbps
LAN           Microsoft Hyper-V Network Adapter        4 Up      00-15-5D-01-7C-13  10 Gbps
LM             Microsoft Hyper-V Network Adapter #4    18 Up      00-15-5D-01-7C-19  10 Gbps
```

```
[718HV2]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 10 -IPAddress 10.10.10.3 -PrefixLength 29
IPAddress      : 10.10.10.3
InterfaceIndex  : 10
InterfaceAlias  : ISCSI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState   : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 10.10.10.3
InterfaceIndex  : 10
InterfaceAlias  : ISCSI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState   : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : PersistentStore
```

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```
[718HV2]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 14 -IPAddress 20.20.20.2 -PrefixLength 29
```

```
IPAddress      : 20.20.20.2
InterfaceIndex : 14
InterfaceAlias : HB
AddressFamily   : IPv4
Type            : Unicast
PrefixLength    : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 20.20.20.2
InterfaceIndex : 14
InterfaceAlias : HB
AddressFamily   : IPv4
Type            : Unicast
PrefixLength    : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : PersistentStore
```

```
[718HV2]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceIndex 18 -IPAddress 30.30.30.2 -PrefixLength 30
```

```
IPAddress      : 30.30.30.2
InterfaceIndex : 18
InterfaceAlias : LM
AddressFamily   : IPv4
Type            : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 30.30.30.2
InterfaceIndex : 18
InterfaceAlias : LM
AddressFamily   : IPv4
Type            : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : PersistentStore
```

Virtual Machines

Name	State	CPU Usage	Assigned Memory	Uptime	Status	Config
718_FW	Saved-Critical				Cannot connect to virtual machine co...	
718DC1	Running	0%	512 MB	3.03:36:41		11.0
718FW	Running	0%	512 MB	3.03:37:13		11.0
718HV1	Running	0%	2048 MB	01:01:54		11.0
718HV2	Running	2%	2048 MB	00:53:18		11.0
718LDHCP	Running	0%	512 MB	2.10:12:58		11.0
718SAN	Running	0%	512 MB	2.09:02:43		11.0

Checkpoints

718HV2

Adapter	Connection	IP Addresses	Status
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:13)	iLAN	192.168.2.5, fe80::2fac:edc1:6fe5f4fe	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:17)	iSCSI	10.10.10.3, fe80::44a1:261cb440f8ed	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:18)	HB	20.20.20.2, fe80::ac15:7802:3b29:5728	OK
Network Adapter (Dynamic MAC: 00:15:5D:01:7C:19)	LM	30.30.30.2, fe80::c4ec:9c65f0a5:6ed5	OK

Summary Memory Networking

Enable jumbo packet on iSCSI adaptor

```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty -Name iscsi
Name          DisplayName          DisplayValue          RegistryKeyword RegistryValue
---          -----
ISCSI         IPv4 Checksum Offload    Rx & Tx Enabled      *IPChecksumO... {3}
ISCSI         IPsec Offload        Auth Header and ESP Enabled *IPsecOffloadv2 {3}
ISCSI         Jumbo Packet        Disabled           *JumboPacket {1514}
ISCSI         Large Send Offload Version ... Enabled      *Lsov2IPv4 {1}
ISCSI         Large Send Offload Version ... Enabled      *Lsov2IPv6 {1}
ISCSI         Max Number of RSS Processors 16            *MaxRssProce... {16}
ISCSI         Network Direct (RDMA)   Disabled           *NetworkDirect {0}
```

```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty "iscsi" -DisplayName "Jumbo Packet" |Set-NetAdapterAdvancedProperty -RegistryValue "9014"
```

```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapterAdvancedProperty -Name iscsi
Name          DisplayName          DisplayValue          RegistryKeyword RegistryValue
---          -----
ISCSI         IPv4 Checksum Offload    Rx & Tx Enabled      *IPChecksumO... {3}
ISCSI         IPsec Offload        Auth Header and ESP Enabled *IPsecOffloadv2 {3}
ISCSI         Jumbo Packet        9014 Bytes           *JumboPacket {9014}
ISCSI         Large Send offload Version ... Enabled      *Lsov2IPv4 {1}
```

```
[718HV2]: PS C:\Users\sanish\Documents> ping 10.10.10.1 -f -l 8500
Pinging 10.10.10.1 with 8500 bytes of data:
Reply from 10.10.10.1: bytes=8500 time<1ms TTL=128

Ping statistics for 10.10.10.1:
Packets: Sent = 4 Received = 4 Lost = 0 (0% loss)
```

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718HV1 on SANISH - Virtual Machine Connection

Select Administrator: C:\Windows\system32\cmd.exe

WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch \$false"

Welcome to Windows Server 2022 Datacenter Evaluation

1) Domain/workgroup: Domain: CAP.TSP
2) Computer name: 718HV1
3) Add local administrator
4) Remote management: Enabled
5) Update setting: Download only
6) Install updates
7) Remote desktop: Disabled
8) Network settings
9) Date and time
10) Telemetry setting: Required
11) Windows activation

Server Manager

All Servers

718DC1 192.168.2.1 Online - Performance counters not started 2023-03-24 10:14:53 AM 00455-50000-00001-AA150 (Activated)

718HV1 10.10.10.2,192.168.2.4 Online - Performance counters not started 2023-03-24 10:19:31 AM 00455-50000-00001-AA834 (Activated)

718SAN 10.10.10.1,192.168.2.11 Online - Performance counters not started 2023-03-24 10:14:51 AM 00455-50000-00001-AA193 (Activated)

EVENTS All events | 37 total

TASKS

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Administrator: C:\Windows\system32\cmd.exe

WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch \$false"

=====

Welcome to Windows Server 2022 Datacenter Evaluation

=====

1) Domain/workgroup:	Domain: CAP.TSP
2) Computer name:	718HV2
3) Add local administrator:	
4) Remote management:	Enabled
5) Update setting:	Download only
6) Install updates:	
7) Remote desktop:	Disabled
8) Network settings	
9) Date and time	
10) Telemetry setting:	Required
11) Windows activation	

Server Manager

Server Manager ▶ All Servers

Manage Tools View

Name	IP Address	Status	Last Checkin	Activation Status
718DC1	192.168.2.1	Online	2023-03-24 10:14:53 AM	00455-50000-00001-AA150 (Activated)
718HV1	10.10.10.2,192.168.2.4	Online	2023-03-24 10:19:31 AM	00455-50000-00001-AA834 (Activated)
718HV2	10.10.10.3,192.168.2.5	Online	2023-03-24 10:24:17 AM	00455-50000-00001-AA759 (Activated)
718SAN	10.10.10.1,192.168.2.11	Online	2023-03-24 10:14:51 AM	00455-50000-00001-AA193 (Activated)

DNS Manager

File Action View Help

DNS

Name	Type	Data	Timestamp
_msdcs	Start of Authority (SOA)	[32], 718dc1.cap.tsp, hostm...	static
_sites	Name Server (NS)	718dc1.cap.tsp.	static
_tcp	Host (A)	192.168.2.1	2023-03-21 1:00:00 PM
_udp	Host (A)	192.168.2.1	static
DomainDnsZones	(same as parent folder)		
ForestDnsZones	(same as parent folder)		
718dc1	Host (A)	192.168.2.1	static
718HV1	Host (A)	192.168.2.4	2023-03-24 10:00:00 AM
718HV2	Host (A)	192.168.2.5	2023-03-24 10:00:00 AM
718LDHCP	Host (A)	192.168.2.3	static
sanish	Host (A)	192.168.2.13	2023-03-21 7:00:00 PM

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Connect the HV servers (iSCSI Initiator) to the storage server (SAN) (iSCSI Target)

Connect HV1 to SAN

```
[718HV1]: PS C:\Users\sanish\Documents> Get-Service -Name MSiSCSI
Status    Name          DisplayName
-----   --           -----
Stopped  MSiSCSI      Microsoft iSCSI Initiator Service
```

```
[718HV1]: PS C:\Users\sanish\Documents> Start-Service -Name MSiSCSI
[718HV1]: PS C:\Users\sanish\Documents> Get-IscsiTarget
[718HV1]: PS C:\Users\sanish\Documents> New-IscsiTargetPortal -TargetPortalAddress "10.10.10.1"
```

```
InitiatorInstanceName :
InitiatorPortalAddress :
IsDataDigest       : False
IsHeaderDigest     : False
TargetPortalAddress : 10.10.10.1
TargetPortalPortNumber : 3260
PSComputerName     :
```

```
[718HV1]: PS C:\Users\sanish\Documents>
[718HV1]: PS C:\Users\sanish\Documents> New-IscsiTargetPortal -TargetPortalAddress "10.10.10.1"
```

```
InitiatorInstanceName :
InitiatorPortalAddress :
IsDataDigest       : False
IsHeaderDigest     : False
TargetPortalAddress : 10.10.10.1
TargetPortalPortNumber : 3260
PSComputerName     :
```

```
[718HV1]: PS C:\Users\sanish\Documents> iscsicli listinitiators
Microsoft iSCSI Initiator Version 10.0 Build 20348
```

```
Initiators List:
  ROOT\ISCSIPRT\0000_0
The operation completed successfully.
```

```
[718HV1]: PS C:\Users\sanish\Documents> New-IscsiTargetPortal -TargetPortalAddress "10.10.10.1" -InitiatorInstanceName "ROOT\ISCSIPRT\0000_0"
InitiatorInstanceName : ROOT\ISCSIPRT\0000_0
InitiatorPortalAddress :
IsDataDigest       : False
IsHeaderDigest     : False
TargetPortalAddress : 10.10.10.1
TargetPortalPortNumber : 3260
PSComputerName     :
```

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```
[718HV1]: PS C:\Users\sanish\Documents> Get-IscsiTarget | Format-List
```

```
IsConnected      : False
NodeAddress      : iqn.1991-05.com.microsoft:718san-quorum-target
PSCoputerName   :

IsConnected      : False
NodeAddress      : iqn.1991-05.com.microsoft:718san-vm-storage-target
PSCoputerName   :
```

```
[718HV1]: PS C:\Users\sanish\Documents> Connect-IscsiTarget -NodeAddress "iqn.1991-05.com.microsoft:718san-vm-storage-target"
```

```
AuthenticationType      : NONE
InitiatorInstanceName   : ROOT\ISCSIPRT\0000_0
InitiatorNodeAddress    : iqn.1991-05.com.microsoft:718hv1.cap.tsp
InitiatorPortalAddress  : 0.0.0.0
InitiatorSideIdentifier: 400001370000
IsConnected            : True
IsDataDigest           : False
IsDiscovered           : True
IsHeaderDigest         : False
IsPersistent           : False
NumberOfConnections    : 1
SessionIdentifier      : ffff970d46d51010-4000013700000004
TargetNodeAddress       : iqn.1991-05.com.microsoft:718san-vm-storage-target
TargetSideIdentifier   : 0100
PSCoputerName          :
```

Connect HV2 to SAN

```
[718HV2]: PS C:\Users\sanish\Documents> Get-Service -Name MSiSCSI
```

Status	Name	DisplayName
Stopped	MSiSCSI	Microsoft iSCSI Initiator Service

```
[718HV2]: PS C:\Users\sanish\Documents> Start-Service -Name MSiSCSI
```

```
[718HV2]: PS C:\Users\sanish\Documents> New-IscsiTargetPortal -TargetPortalAddress "10.10.10.1"
```

```
InitiatorInstanceName   :
InitiatorPortalAddress  :
IsDataDigest           : False
IsHeaderDigest          : False
TargetPortalAddress     : 10.10.10.1
TargetPortalPortNumber  : 3260
PSCoputerName          :
```

```
[718HV2]: PS C:\Users\sanish\Documents> iscsicli listinitiators
Microsoft iSCSI Initiator Version 10.0 Build 20348
```

```
Initiators List:
  ROOT\ISCSIPRT\0000_0
The operation completed successfully.
```

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```
[718HV2]: PS C:\Users\sanish\Documents> New-IscsiTargetPortal -TargetPortalAddress "10.10.10.1" -InitiatorInstanceName "ROOT\ISCSIPRT\0000_0"

InitiatorInstanceName : ROOT\ISCSIPRT\0000_0
InitiatorPortalAddress :
IsDataDigest : False
IsHeaderDigest : False
TargetPortalAddress : 10.10.10.1
TargetPortalPortNumber : 3260
PSCoputerName :
```

```
[718HV2]: PS C:\Users\sanish\Documents> Get-IscsiTarget | Format-List

IsConnected : False
NodeAddress : iqn.1991-05.com.microsoft:718san-quorum-target
PSCoputerName :

IsConnected : False
NodeAddress : iqn.1991-05.com.microsoft:718san-vm-storage-target
PSCoputerName :
```

```
[718HV2]: PS C:\Users\sanish\Documents> Connect-IscsiTarget -NodeAddress "iqn.1991-05.com.microsoft:718san-vm-storage-target"

AuthenticationType : NONE
InitiatorInstanceName : ROOT\ISCSIPRT\0000_0
InitiatorNodeAddress : iqn.1991-05.com.microsoft:718hv2.cap.tsp
InitiatorPortalAddress : 0.0.0.0
InitiatorSideIdentifier : 400001370000
IsConnected : True
IsDataDigest : False
IsDiscovered : True
IsHeaderDigest : False
IsPersistent : False
NumberOfConnections : 1
SessionIdentifier : fffff8508e62bd010-4000013700000003
TargetNodeAddress : iqn.1991-05.com.microsoft:718san-vm-storage-target
TargetSideIdentifier : 0300
PSCoputerName :
```

Open iSCSI target storage and refresh the server manager.

The screenshot shows the Windows Server Manager interface with two main sections:

- iSCSI VIRTUAL DISKS:** This section lists two virtual disks connected to the '718SAN' target. Both are labeled 'Connected' and have an 'IP Address' of 10.10.10.2. The sizes are 152 GB and 3.00 GB respectively.
- iSCSI TARGETS:** This section shows one target entry: 'vm-storage' from '718SAN' with an 'IP Address' of 10.10.10.2. The last logon was at 2:56:27 PM on March 24, 2023.

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DISKS
All disks | 10 total

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0		Online	30.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT			SAS		Msft Virtual Disk
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD

Last refreshed on 2023-03-24 3:30:46 PM

Bring the newly added Disks online.

Disks

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0		Online	30.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT			SAS		Msft Virtual Disk
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD

Last refreshed on 2023-03-24 3:30:46 PM

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0		Online	30.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT			SAS		Msft Virtual Disk
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB	Unknown	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI		MSFT Virtual HD

Last refreshed on 2023-03-24 3:30:46 PM

Assign new volume

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DISKS

All disks | 10 total

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
▲ 718DC1 (2)										
0		Online	30.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT			SAS		Msft Virtual Disk
▲ 718HV1 (3)										
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	190 GB	190 GB	Unknown			iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB				iSCSI		MSFT Virtual HD
▲ 718HV2 (3)										
0		Online	20.0 GB	1.00 MB				SAS		Msft Virtual Disk
1		Offline	190 GB	190 GB				iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	3.00 GB				iSCSI		MSFT Virtual HD

Last refreshed on 2023-03-24 3:30:46 PM

New Volume Wizard

Select the server and disk

Before You Begin

- Server and Disk
- Size
- Drive Letter or Folder
- File System Settings
- Confirmation
- Results

Server:

Provision to	Status	Cluster Role	Destination
718DC1	Online	Not Clustered	Local
718HV1	Online	Not Clustered	Local
718HV2	Online	Not Clustered	Local
718SAN	Online	Not Clustered	Local

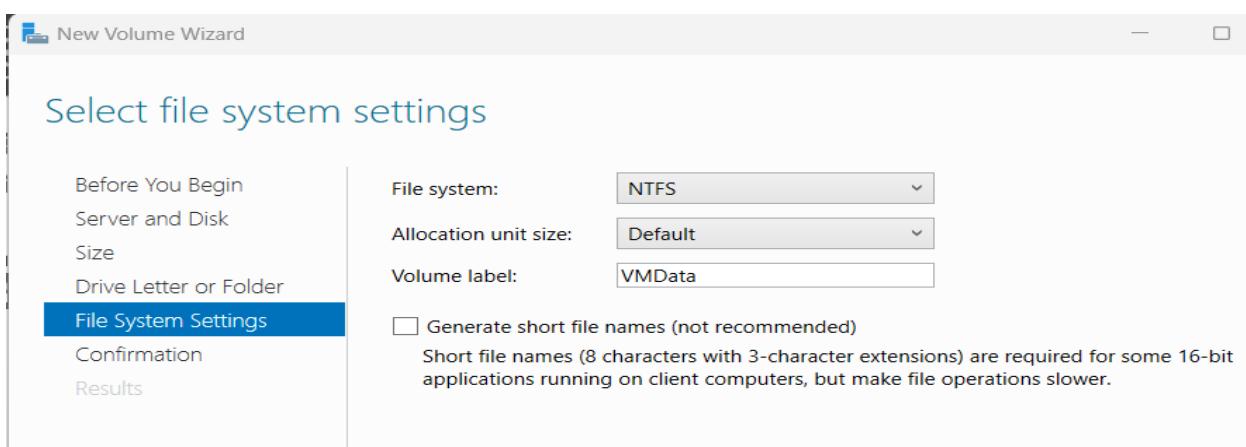
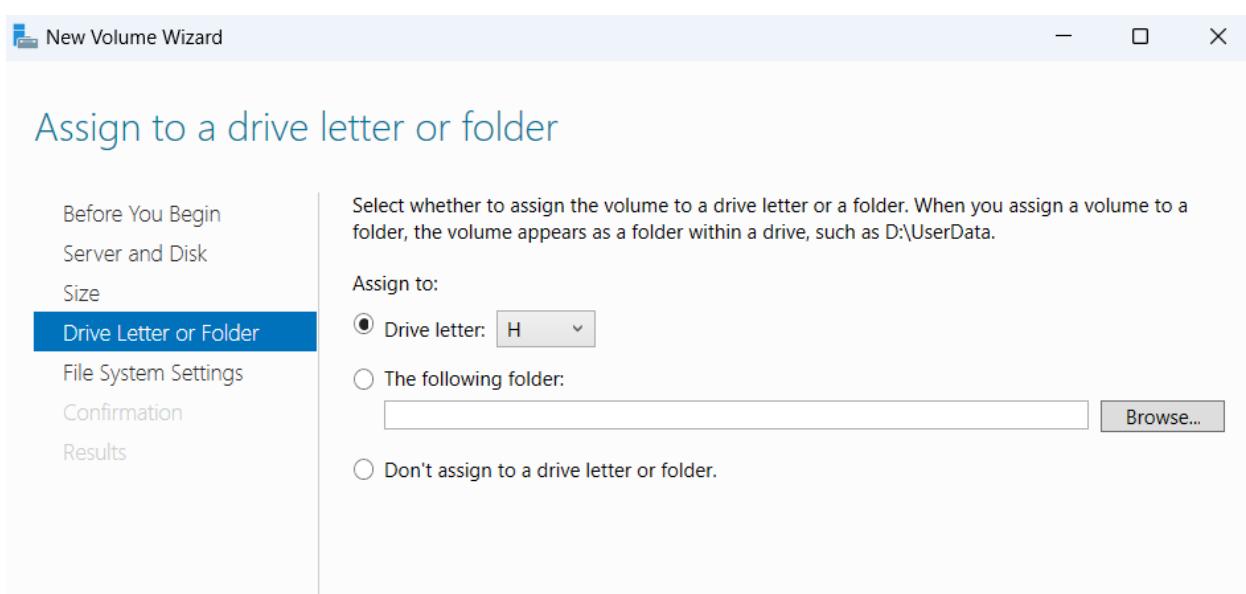
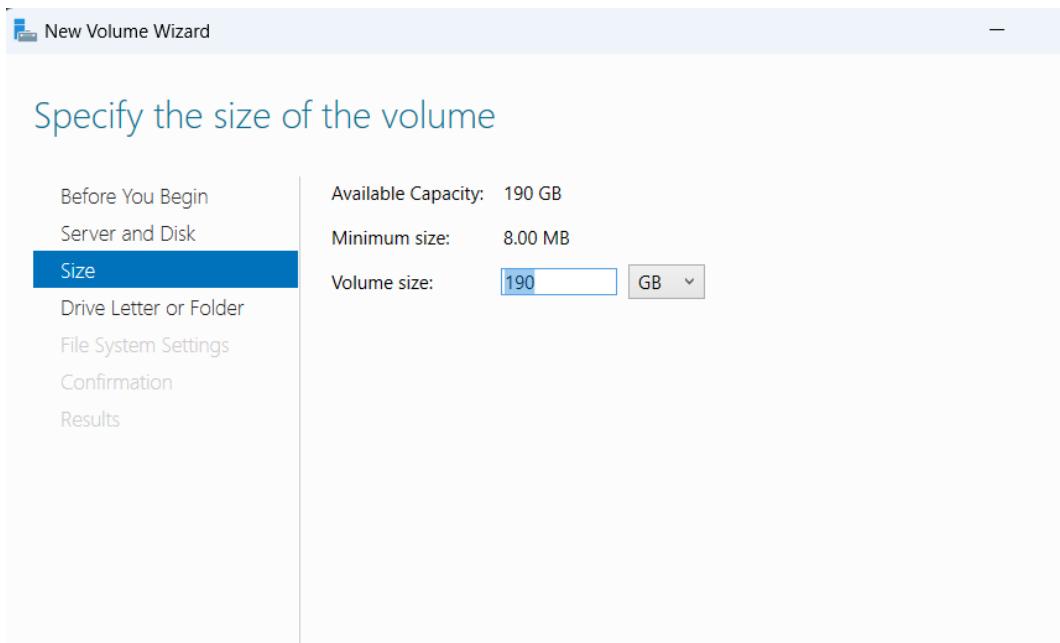
Disk:

Disk	Virtual Disk	Capacity	Free Space	Subsystem
Disk 1		190 GB	190 GB	

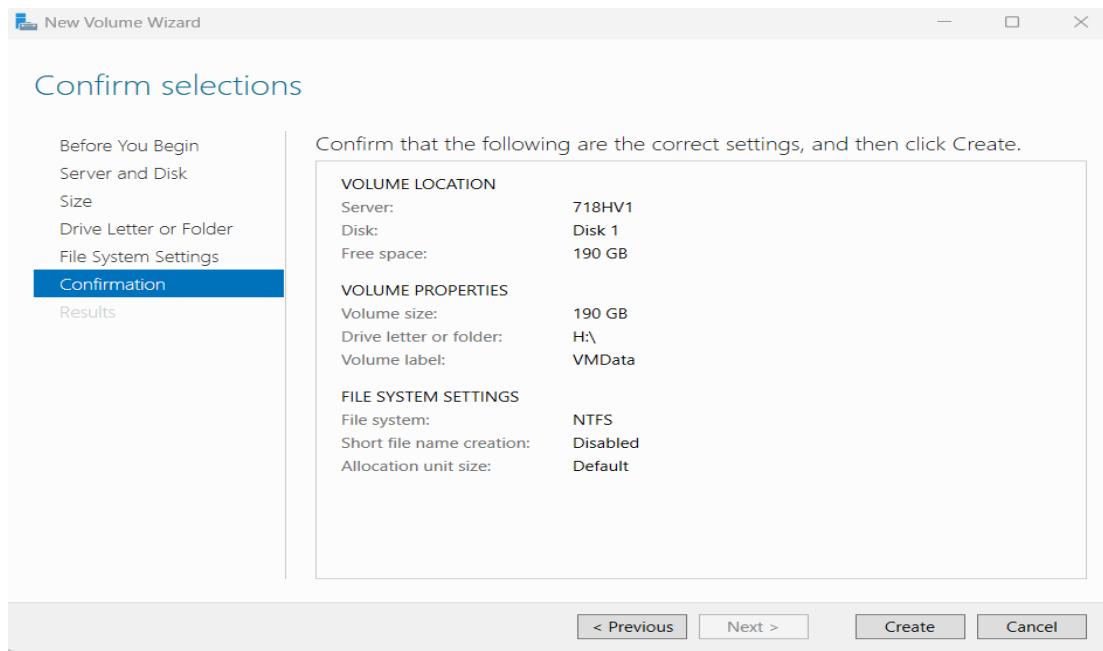
Refresh Rescan

! Disks with insufficient free space or read-only access are not shown.

< Previous Next > Create Cancel



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The screenshot shows the 'Disks' section of the Storage Spaces management interface. The left sidebar includes options like Servers, Volumes, Disks (selected), Storage Pools, Shares, iSCSI, and Work Folders. The main area displays a table of disks:

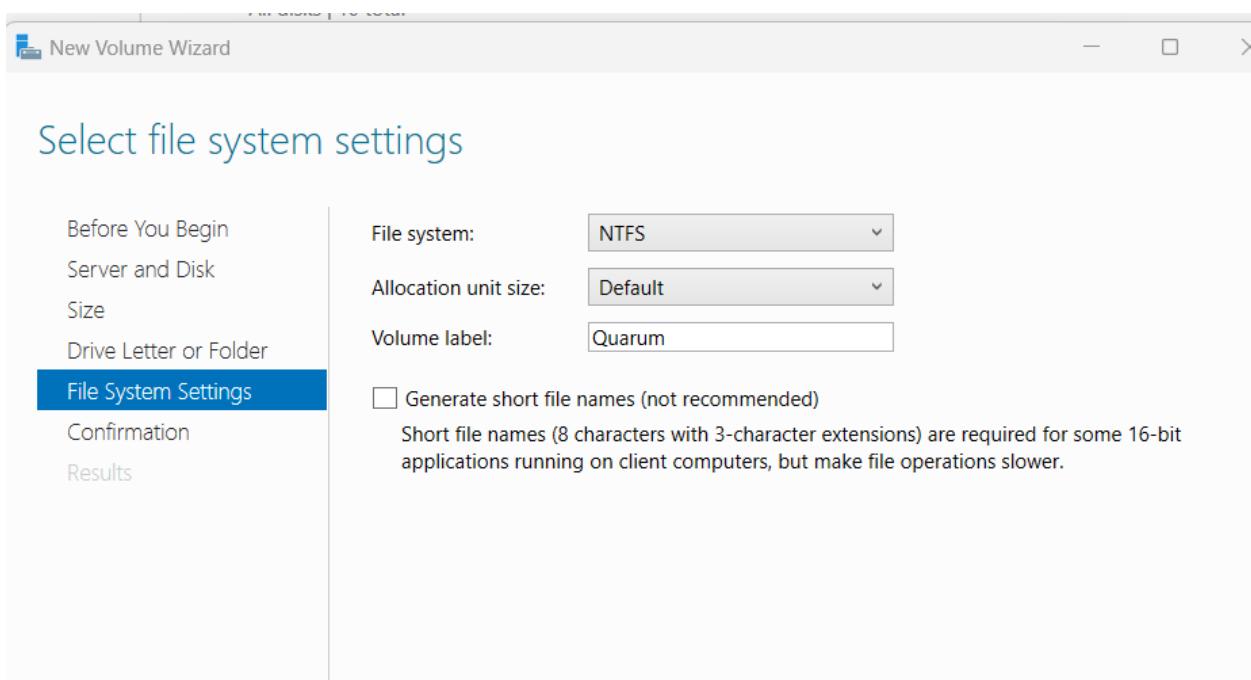
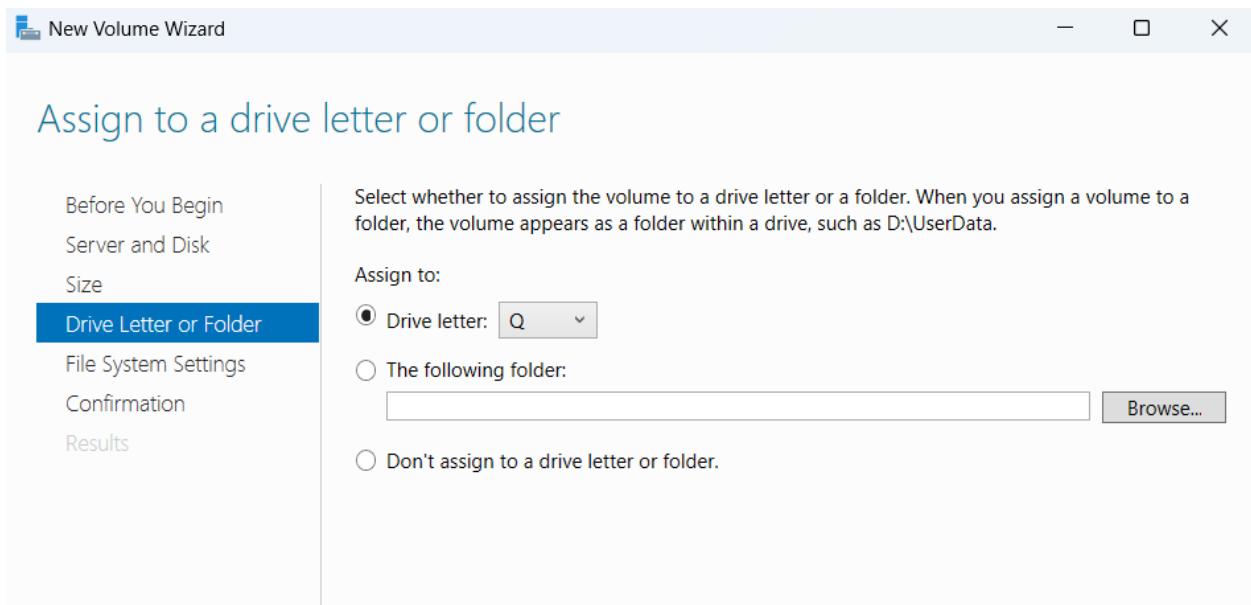
Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0	718DC1 (2)	Online	30.0 GB	1.00 MB	GPT			SAS	Msft Virtual Disk	
1		Online	30.0 GB	0.00 B	GPT			SAS	Msft Virtual Disk	
0	718HV1 (3)	Online	20.0 GB	1.00 MB	GPT			SAS	Msft Virtual Disk	
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI	MSFT Virtual HD	
1		Online	190 GB	0.00 B	GPT			iSCSI	MSFT Virtual HD	
0	718HV2 (3)	Online	20.0 GB	1.00 MB	GPT			SAS	Msft Virtual Disk	
1		Offline	190 GB	0.00 B	GPT	✓		iSCSI	MSFT Virtual HD	
2		Offline	3.00 GB	3.00 GB	Unknown	✓		iSCSI	MSFT Virtual HD	

Last refreshed on 2023-03-24 3:30:46 PM

Create Quarum disk

The screenshot shows the 'Specify the size of the volume' step of the New Volume Wizard. The left navigation pane shows steps: Before You Begin, Server and Disk, Size (selected), Drive Letter or Folder, File System Settings, Confirmation, and Results. The right pane displays size settings:

Available Capacity:	2.97 GB
Minimum size:	8.00 MB
Volume size:	<input type="text" value="2.97"/> GB



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The screenshot shows the Windows Server Disk Management console. The left sidebar has a navigation menu with options like Servers, Volumes, Disks (which is selected), Storage Pools, Shares, iSCSI, and Work Folders. The main pane displays a table of disk information for three hosts:

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
718DC1 (2)										
0		Online	30.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT			SAS		Msft Virtual Disk
718HV1 (3)										
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Online	190 GB	0.00 B	GPT			iSCSI		MSFT Virtual HD
2		Online	3.00 GB	0.00 B	GPT			iSCSI		MSFT Virtual HD
718HV2 (3)										
0		Online	20.0 GB	1.00 MB	GPT			SAS		Msft Virtual Disk
1		Offline	190 GB	0.00 B	GPT	✓		iSCSI		MSFT Virtual HD
2		Offline	3.00 GB	0.00 B	GPT	✓		iSCSI		MSFT Virtual HD

At the bottom of the table, it says "Last refreshed on 2023-03-24 3:30:46 PM".

```
[718HV1]: PS C:\Users\sanish\Documents> Set-NetFirewallRule -DisplayGroup "file and printer sharing" -Enabled True -Profile Any
```

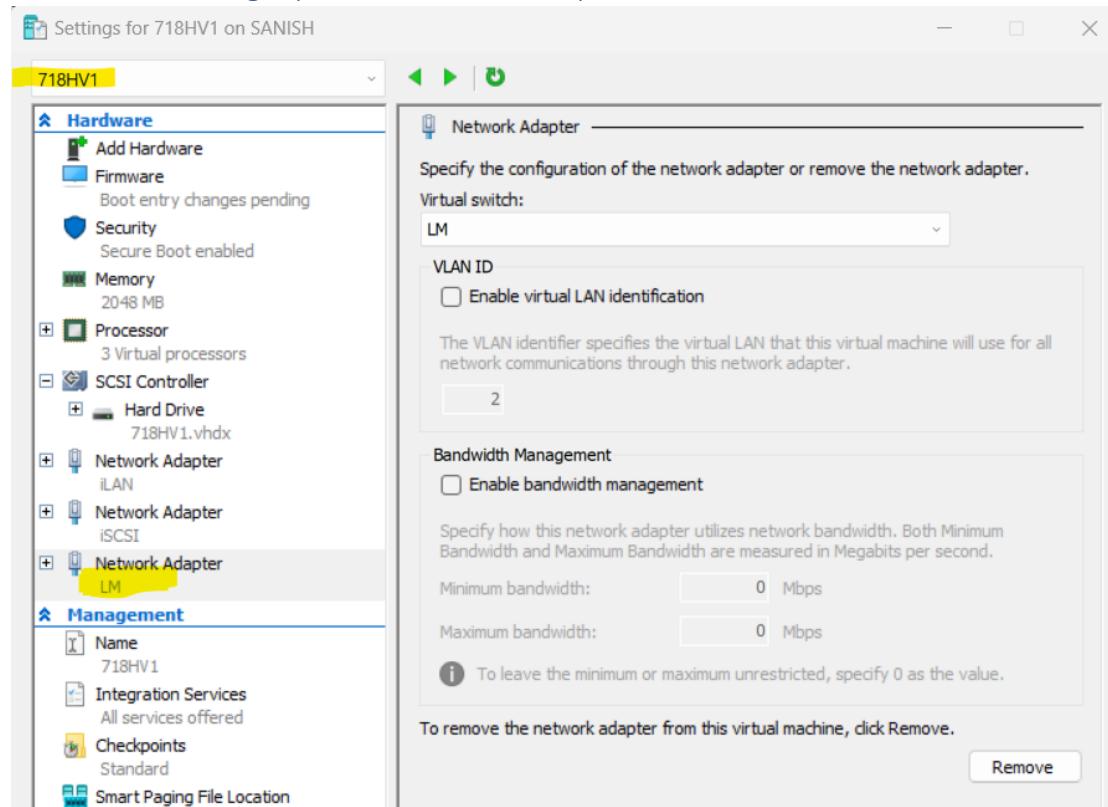
The screenshot shows a Windows file explorer window titled "VM". The address bar shows the path: "Network > 192.168.2.4 > h\$ > VM >". The left sidebar lists common folder icons: Documents, Pictures, Music, Videos, Screenshots, and Assignment 3.2. The main pane displays a list of files and folders:

Name	Date modified	Type
VHDX	2023-03-26 7:29 PM	File folder
VM file	2023-03-26 7:29 PM	File folder

we do not need to do the same steps in HV2, because we share the same volume in other Hyper-V also.

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Connect and assign ip address to LM adaptor on HV1 and HV2



```
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapter
Name           InterfaceDescription          ifIndex Status    MacAddress      LinkSpeed
--           --Microsoft Hyper-V Network Adapter #3       14 Up      00-15-5D-01-7C-10  10 Gbps
Ethernet        Microsoft Hyper-V Network Adapter #2       6 Up      00-15-5D-01-7C-0D  10 Gbps
iSCSi         Microsoft Hyper-V Network Adapter          4 Up      00-15-5D-01-7C-0B  10 Gbps
iLAN          Microsoft Hyper-V Network Adapter          2 Up      00-15-5D-01-7C-01  10 Gbps

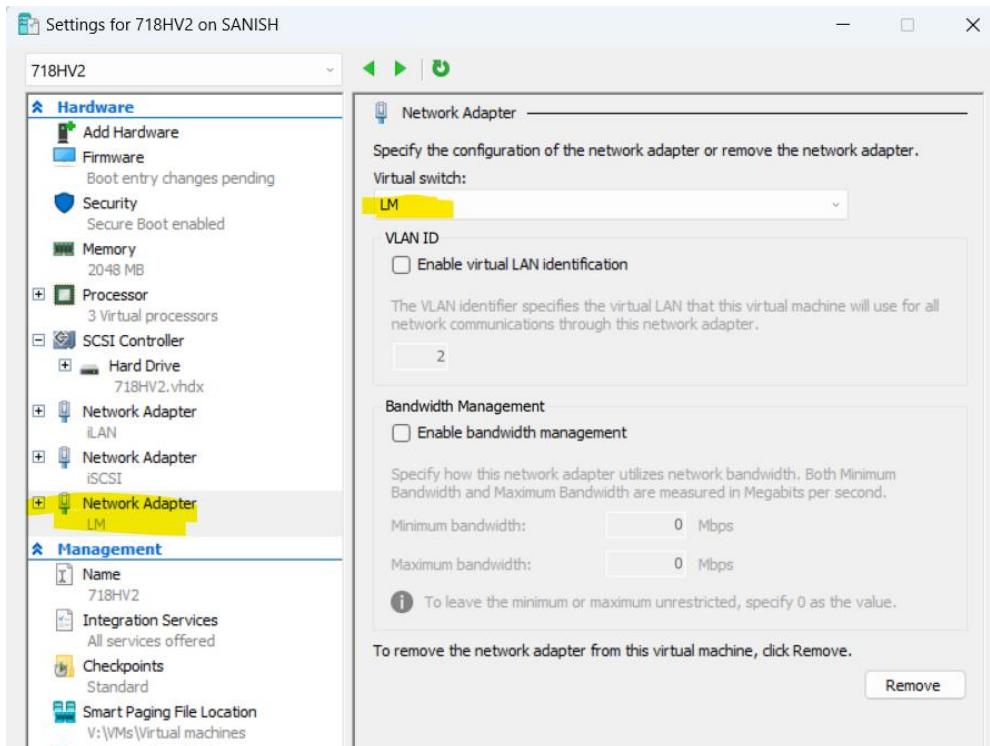
[718HV1]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet" -NewName "LIMI"
```

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```
[718HV1]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceAlias "LIMI" -IPAddress 30.30.30.2 -PrefixLength 30

IPAddress      : 30.30.30.2
InterfaceIndex : 14
InterfaceAlias  : LIMI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 30.30.30.2
InterfaceIndex : 14
InterfaceAlias  : LIMI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : PersistentStore
```



```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapter

Name            InterfaceDescription          ifIndex Status   MacAddress      LinkSpeed
--              --                         --        --       --             --
iSCSI           Microsoft Hyper-V Network Adapter #2    7 Up      00-15-5D-01-7C-0E  10 Gbps
iLAN            Microsoft Hyper-V Network Adapter      6 Up      00-15-5D-01-7C-0C  10 Gbps
Ethernet         Microsoft Hyper-V Network Adapter #3    14 Up     00-15-5D-01-7C-11  10 Gbps

[718HV2]: PS C:\Users\sanish\Documents> Rename-NetAdapter -Name "ethernet" -NewName "LIMI"
```

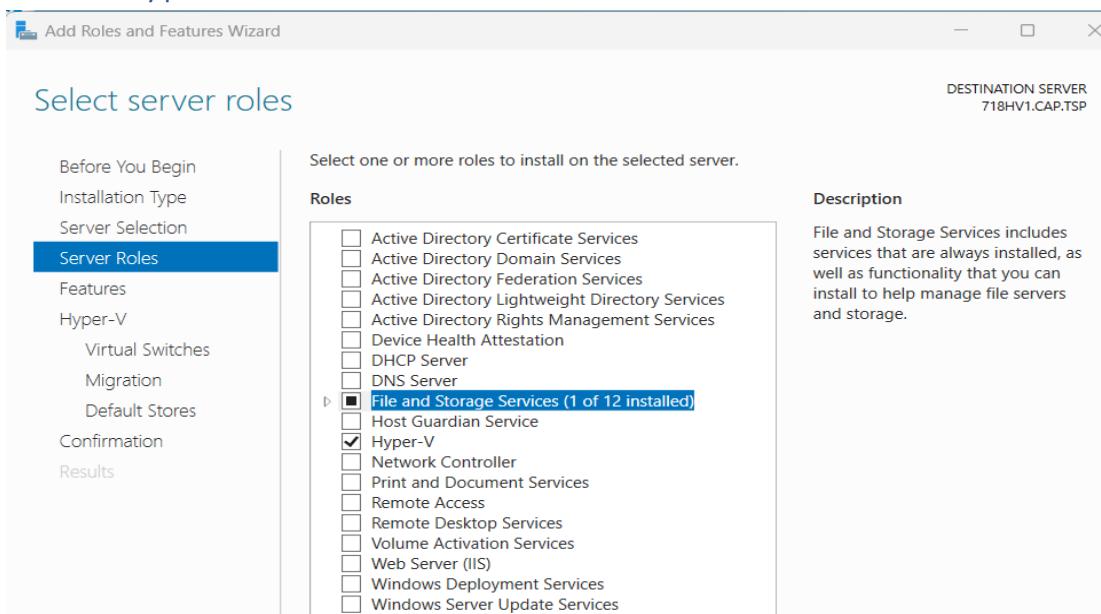
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```
[718HV2]: PS C:\Users\sanish\Documents> New-NetIPAddress -InterfaceAlias "LIMI" -IPAddress 30.30.30.1 -PrefixLength 30

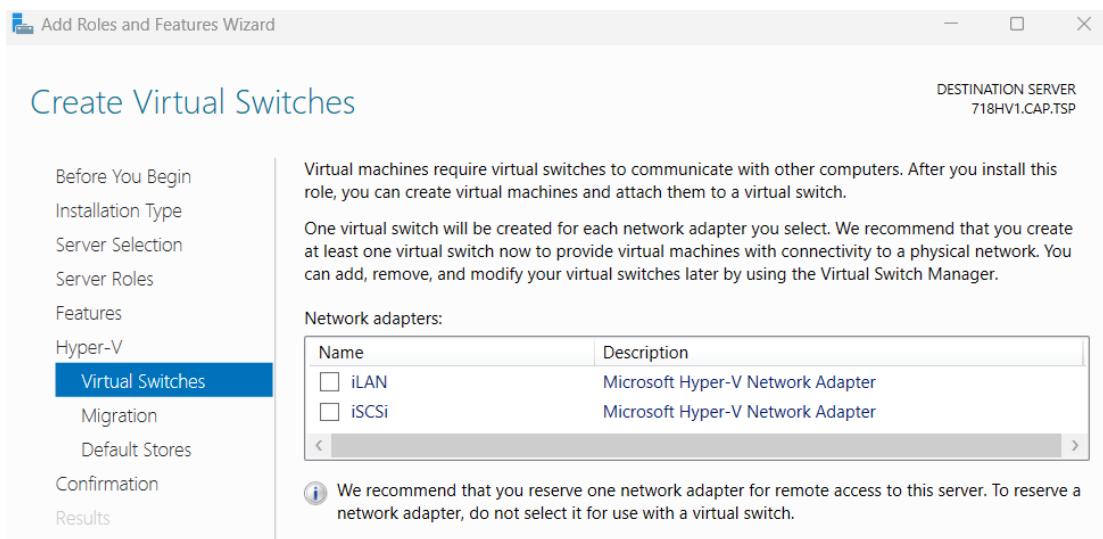
IPAddress      : 30.30.30.1
InterfaceIndex : 14
InterfaceAlias  : LIMI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 30.30.30.1
InterfaceIndex : 14
InterfaceAlias  : LIMI
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 30
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime: Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : PersistentStore
```

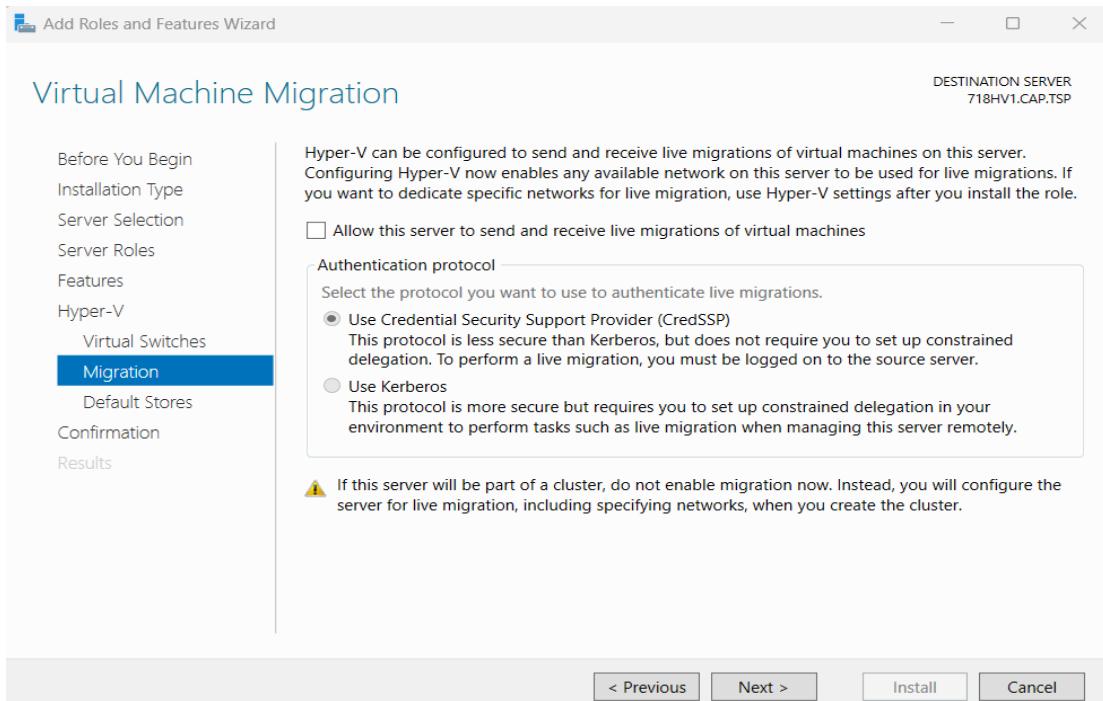
Install Hyper-V role on both HV1.



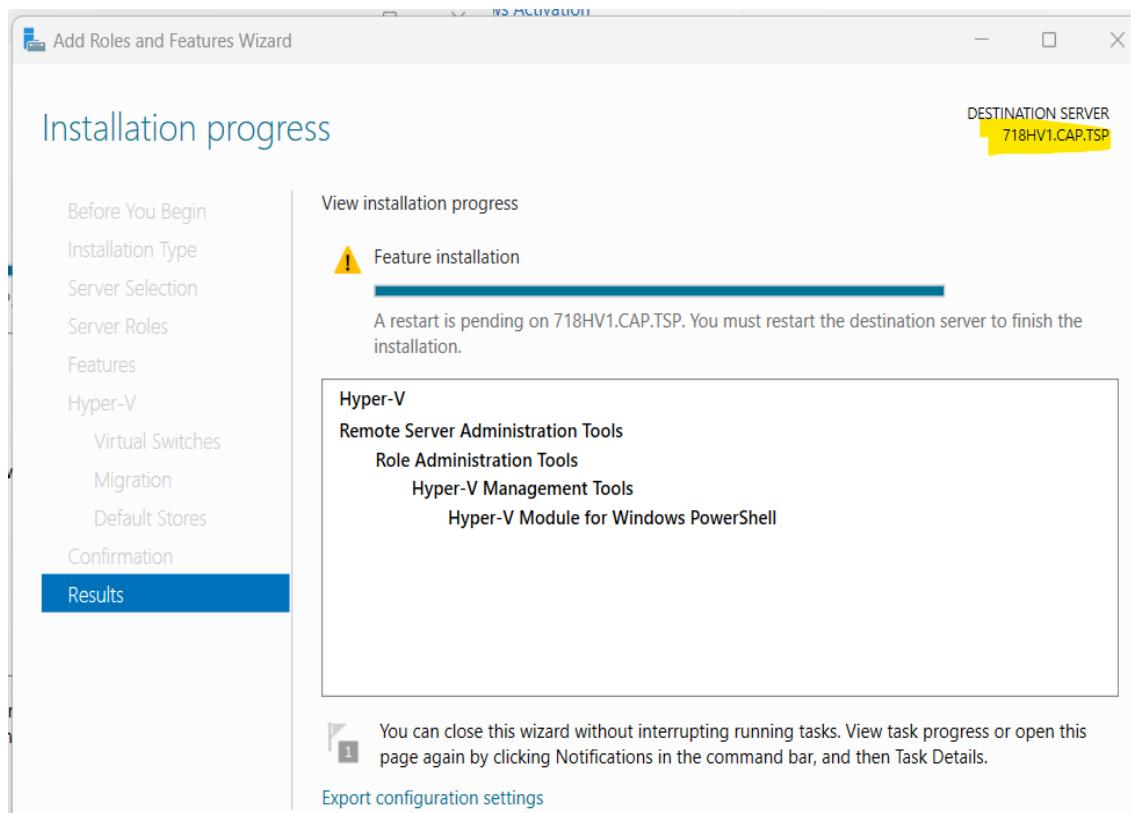
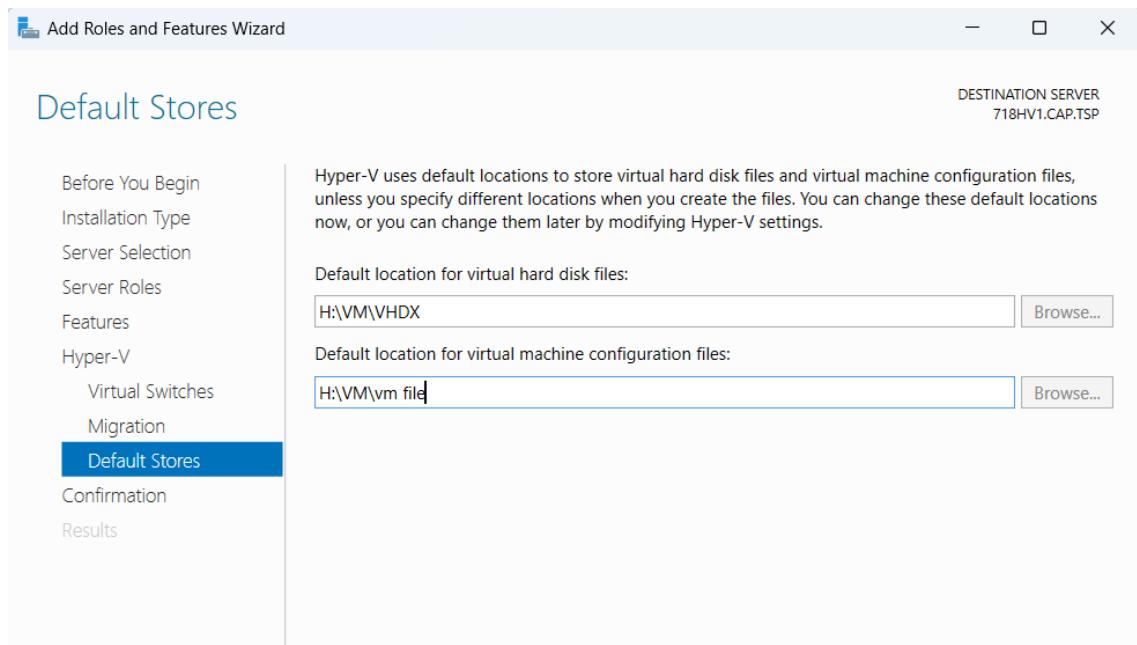
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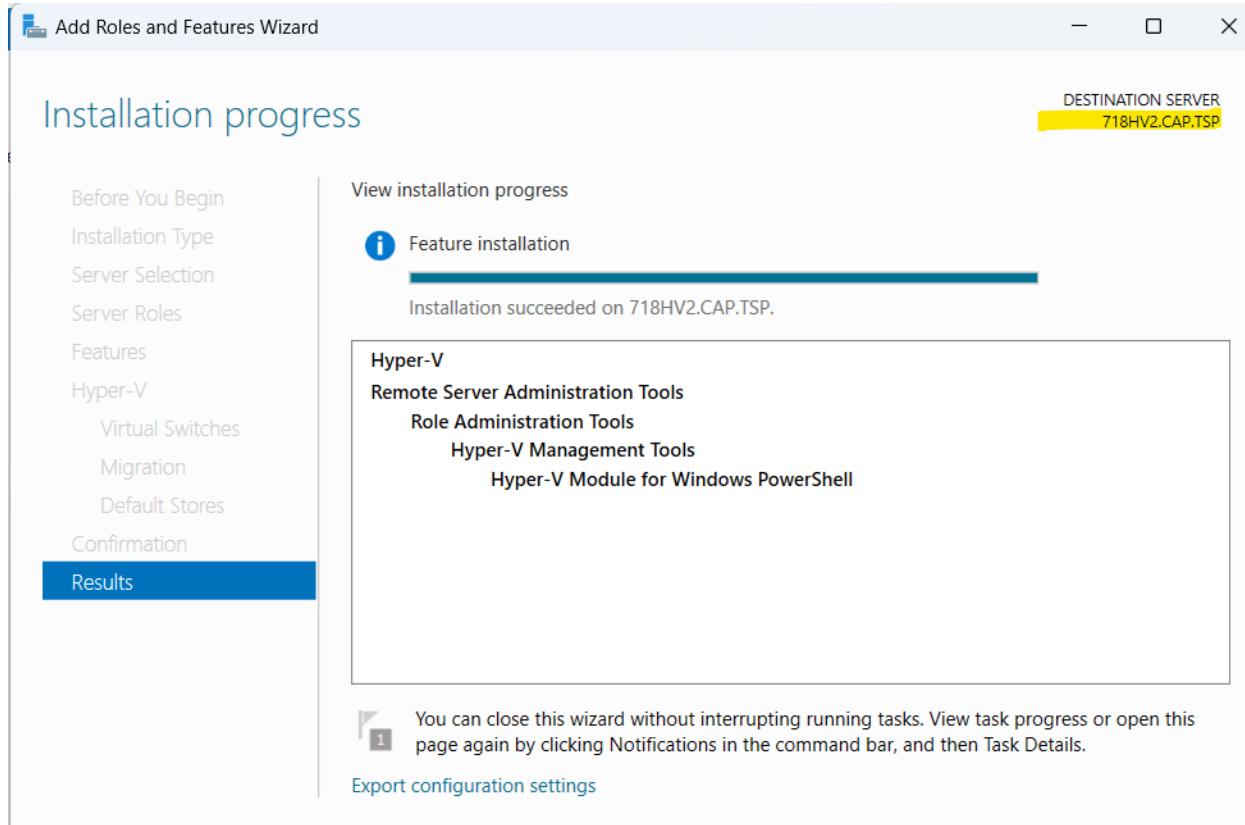


Keep Untick migration



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Create an External Switches on HV1 and HV2

Open sever manager → Hyper-V

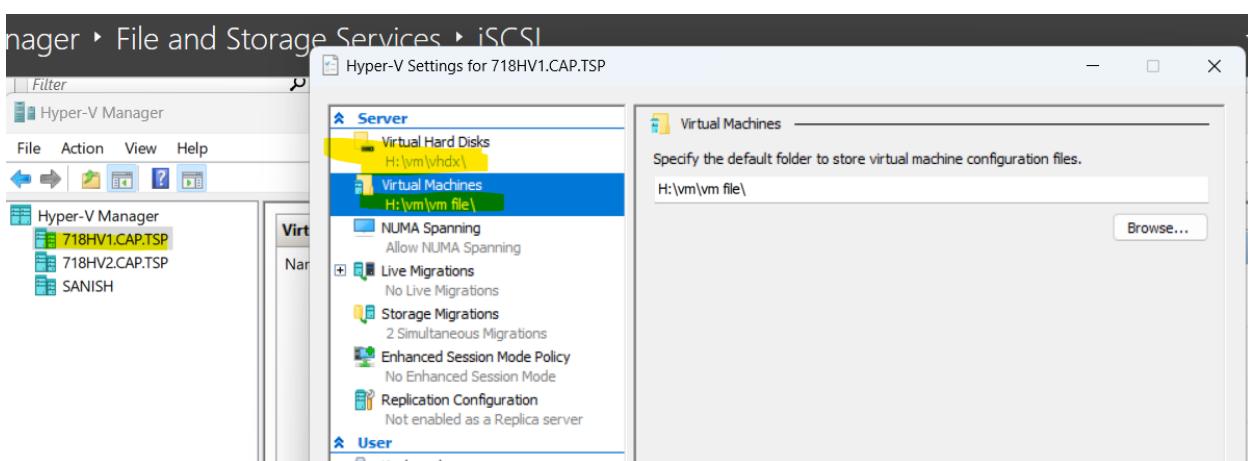
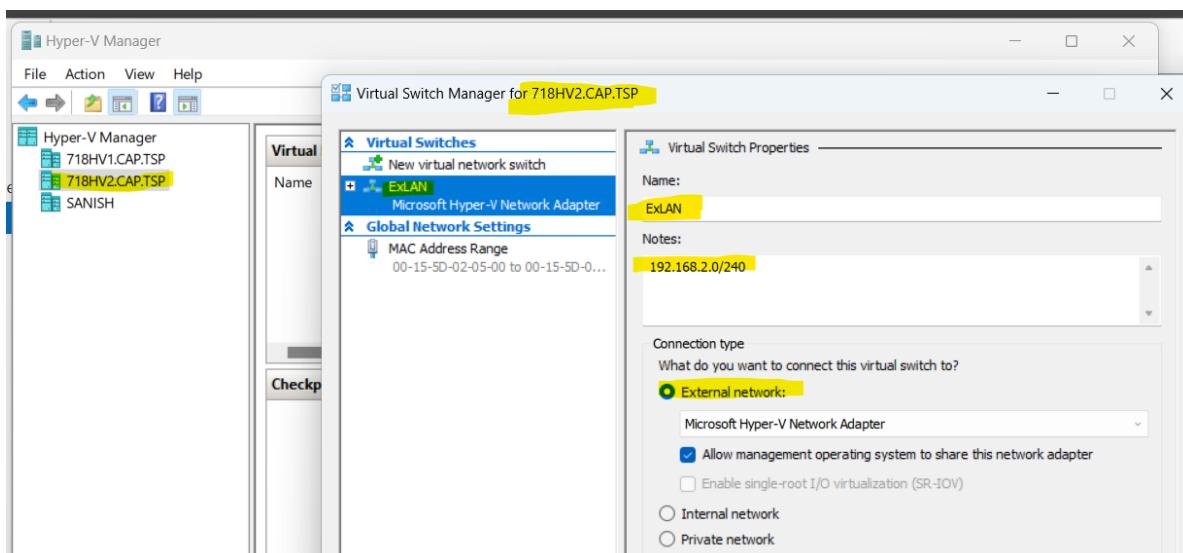
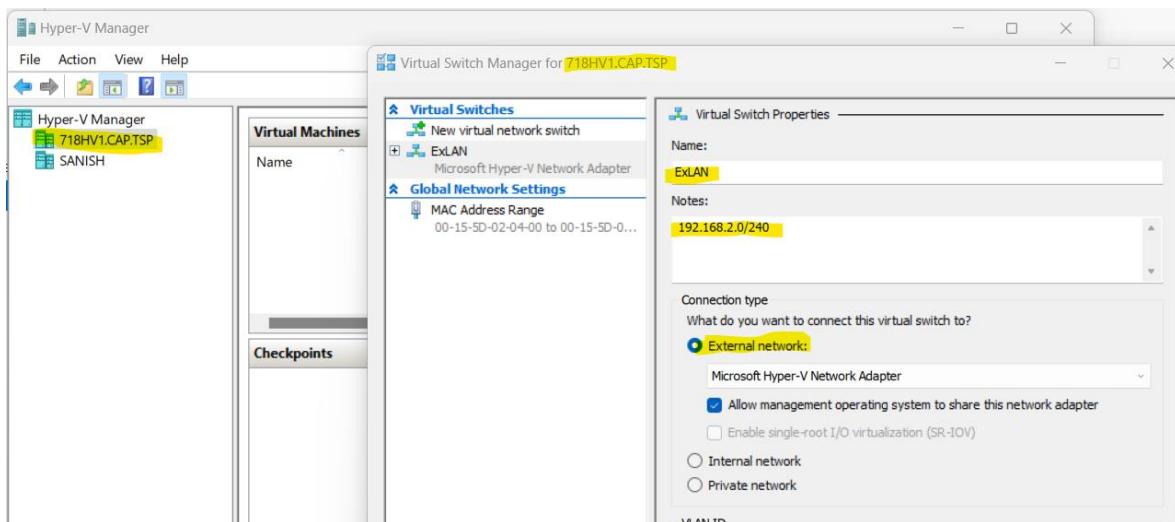
The screenshot shows the 'Server Manager' interface under the 'Hyper-V' section. The left navigation pane includes 'Dashboard', 'All Servers', 'AD DS', 'DNS', 'File and Storage Services', and 'Hyper-V' (which is selected). The main area has two sections: 'SOURCES' (listing 'All servers | 2 total') and 'EVENTS' (listing 'All events | 4 total'). The 'SOURCES' section shows two servers:

Server Name	IP4 Address	Manageability	Last Update	Windows Activation
718HV1	10.10.10.2	Performance counters not started	2023-03-25 12:24:17 PM	00455-50000-00001-AA834 (Activated)
718HV2	10.10.10.3	Performance counters not started	2023-03-25 12:24:17 PM	00455-50000-00001-AA759 (Activated)

A context menu is open over the 718HV1 row, with 'Hyper-V Manager' highlighted. Other options in the menu include 'Add Roles and Features', 'Restart Server', 'Computer Management', 'Remote Desktop Connection', 'Windows PowerShell', and 'Configure NIC Teaming'. The 'EVENTS' section shows a log of four events for 718HV1:

Server Name	ID	Severity	Source	Log	Date and Time
718HV1	14100	Warning	Microsoft-Windows-Hyper-V-VMMS	Microsoft-Windows-Hyper-V-VMMS-Admin	2023-03-25 11:57:12 AM
718HV1	14100	Warning	Microsoft-Windows-Hyper-V-VMMS	Microsoft-Windows-Hyper-V-VMMS-Admin	2023-03-25 11:56:42 AM
718HV1	14100	Warning	Microsoft-Windows-Hyper-V-VMMS	Microsoft-Windows-Hyper-V-VMMS-Admin	2023-03-25 11:47:31 AM
718HV1	12520	Warning	Microsoft-Windows-Hyper-V-VMMS	Microsoft-Windows-Hyper-V-VMMS-Admin	2023-03-24 1:25:39 PM

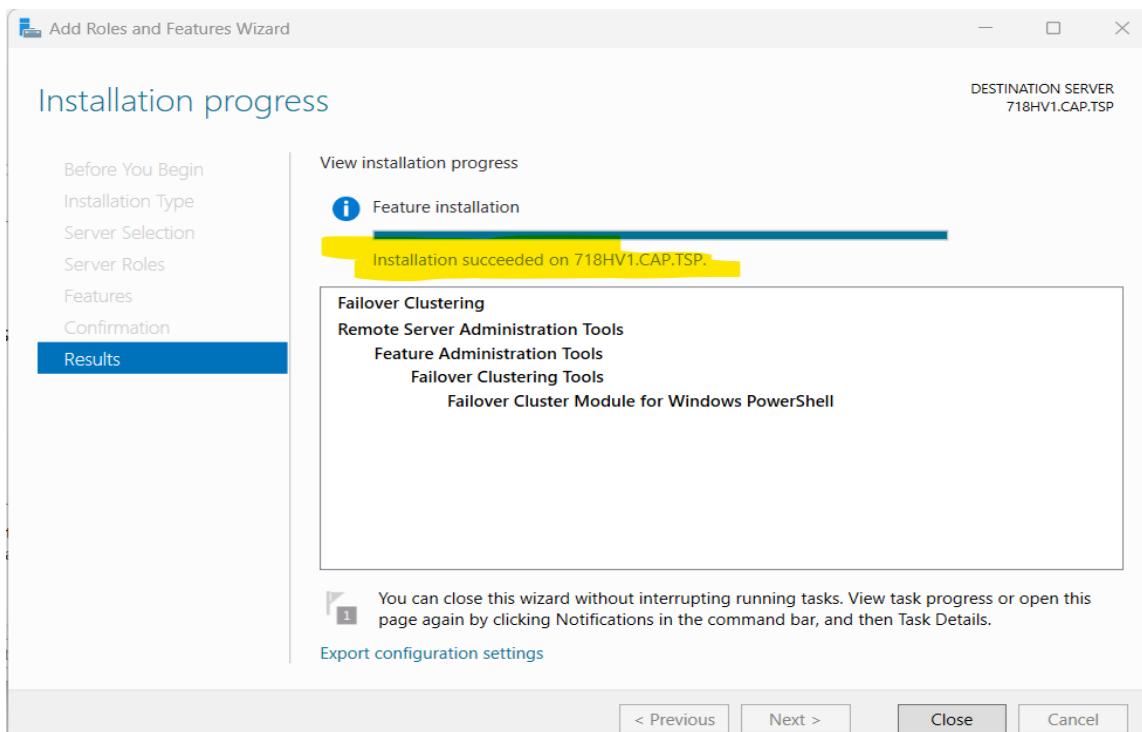
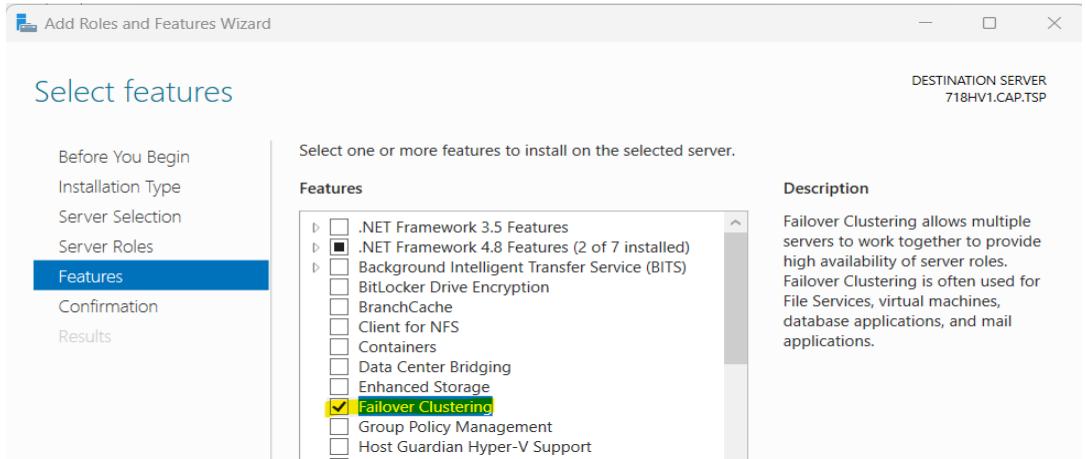
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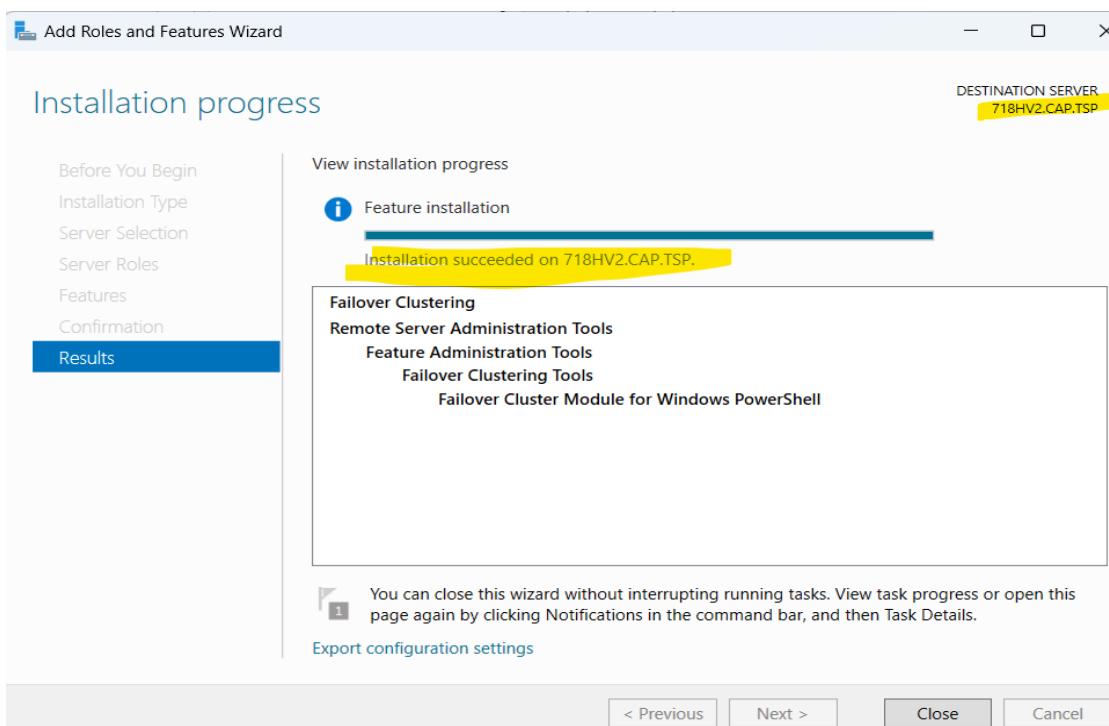
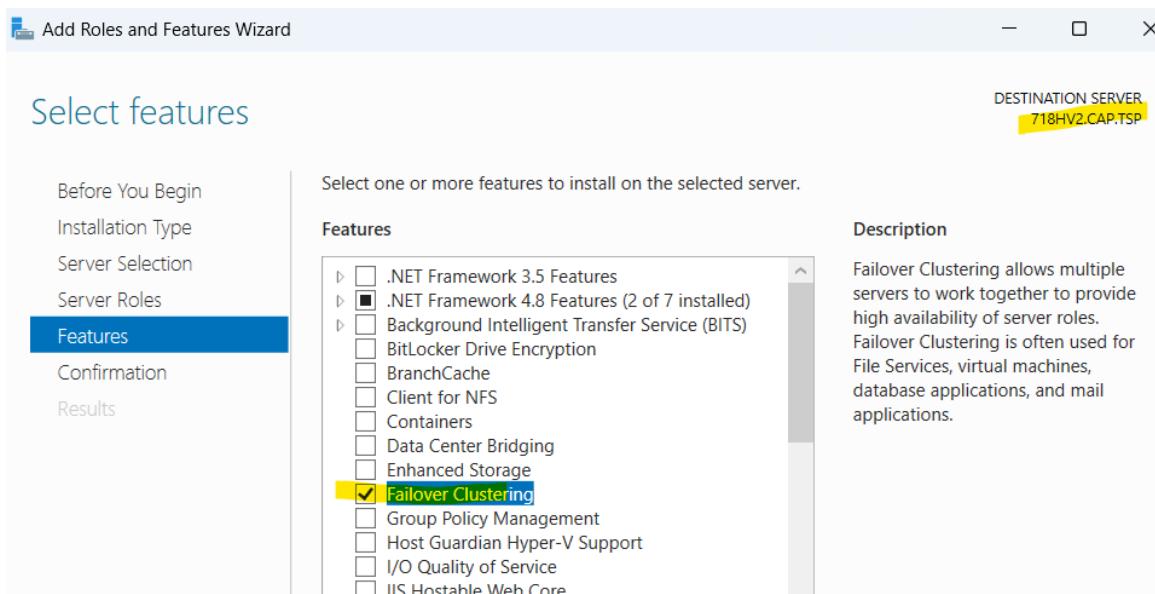
```
[718HV2]: PS C:\Users\sanish\Documents> Set-NetFirewallRule -DisplayGroup "file and printer sharing" -Enabled True -Profile Any
```

Create and Configure the Failover Cluster

Install the failover cluster feature on both HV Servers

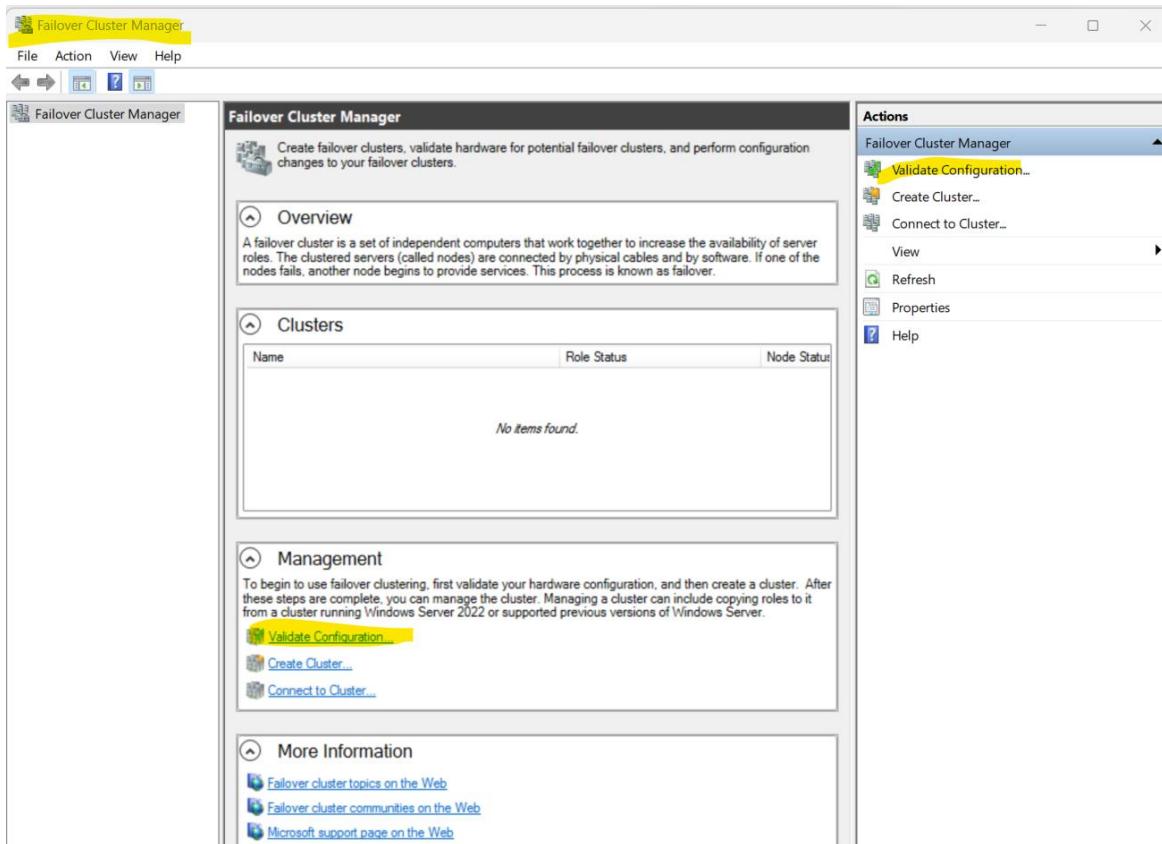


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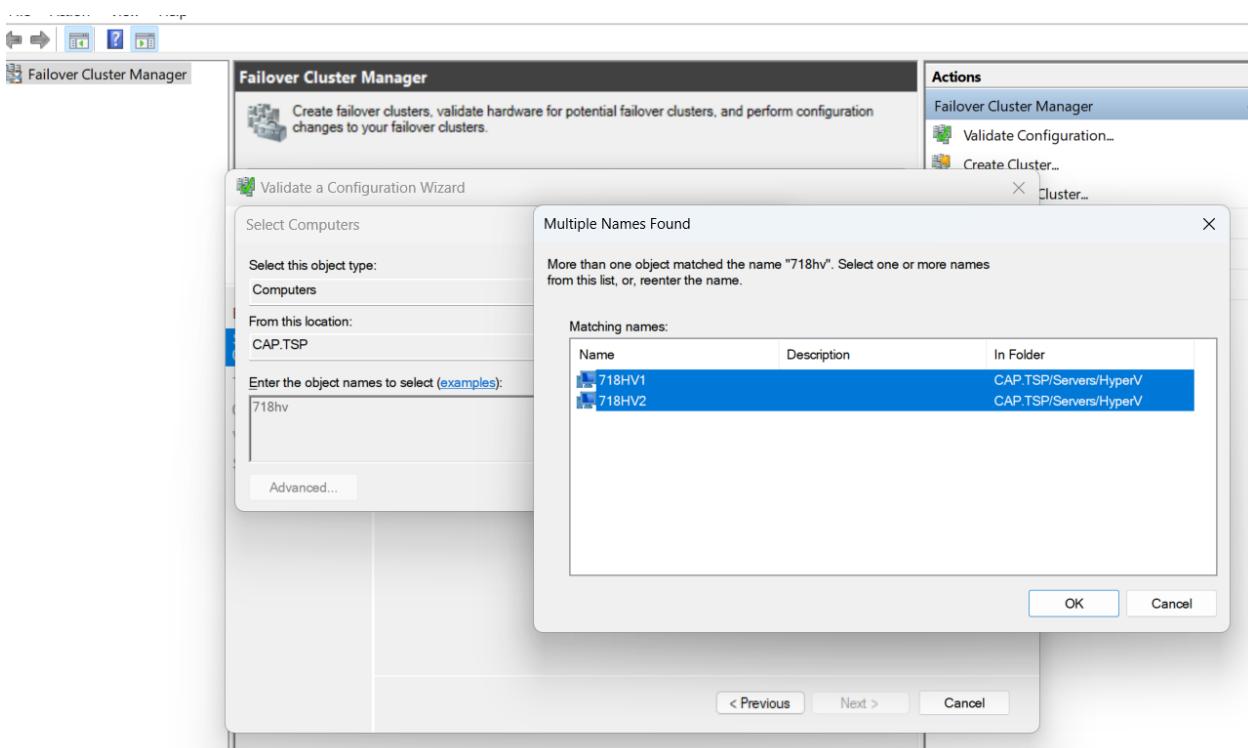


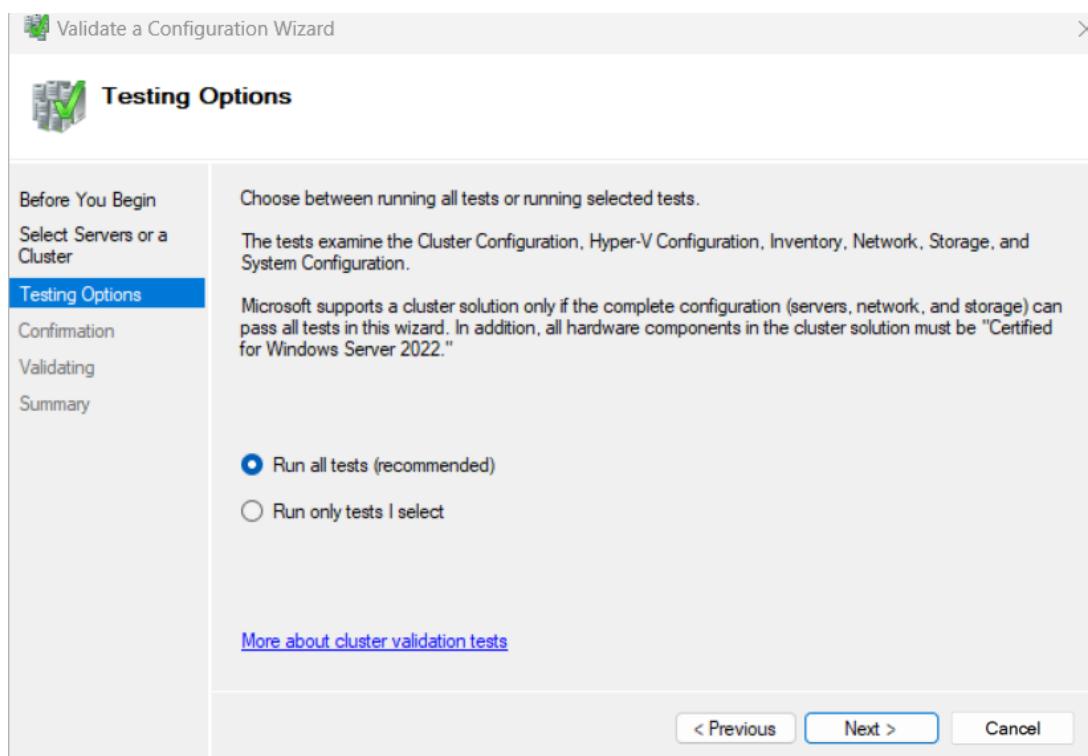
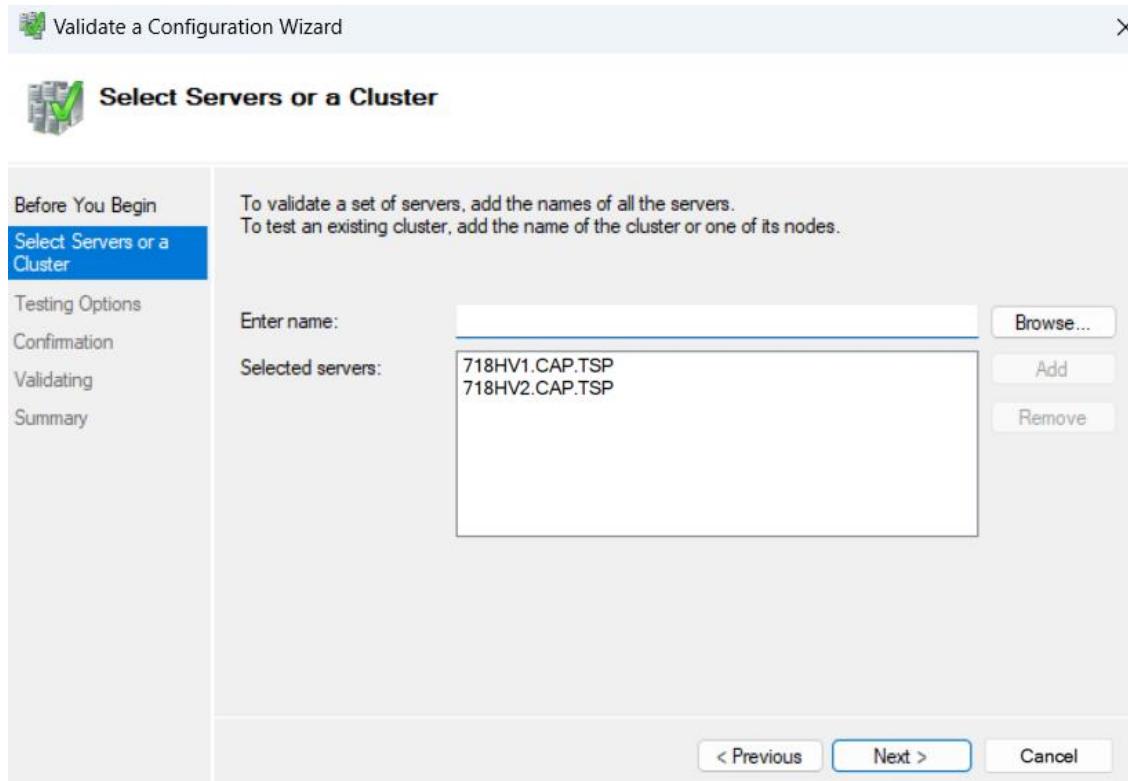
Validate the Fail over cluster.

Open failover cluster manager → validate configuration.



Add hyper-V host, participate that cluster





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Validate a Configuration Wizard

Validating

Before You Begin
Select Servers or a Cluster
Testing Options
Confirmation
Validating
Summary

The following validation tests are running. Depending on the test selection, this may take a significant amount of time.

Progress	Test	Result
100%	List Host Guardian Service client configuration	The test passed.
100%	List Memory Information	The test passed.
100%	List Operating System Information	The test passed.
100%	List Plug and Play Devices	The test passed.
100%	List Running Processes	The test passed.
100%	List Services Information	The test passed.
100%	List Software Updates	The test passed.
0%	List System Drivers	Test is currently running.

Test is currently running.

Validate a Configuration Wizard

Summary

Before You Begin
Select Servers or a Cluster
Testing Options
Confirmation
Validating
Summary

Testing has completed for the tests you selected. To confirm that your cluster solution is supported, you must run all tests. A cluster solution is supported by Microsoft only if you run all cluster validation tests, and all tests succeed (with or without warnings).

Node	Result
718HV1.CAP.TSP	Validated
718HV2.CAP.TSP	Validated

Result

List BIOS Information	Success
List Disks	Success
List Disks To Be Validated	Not Applicable
List Environment Variables	Success
List Fibre Channel Host Bus Adapters	Success
List Host Guardian Service client configuration	Success
List Information About Servers Running Hyper-V	Success
List iSCSI Host Bus Adapters	Success
List Memory Information	Success
List Network Metric Order	Success
List Operating System Information	Success
List Plug and Play Devices	Success
List Running Processes	Success
List SAS Host Bus Adapters	Success

Create the cluster now using the validated nodes...

To view the report created by the wizard, click View Report.
To close this wizard, click Finish.

View Report...

Finish

Capstone Project | SANISH -A01047718

Node:	718HV1.GAR-TSP	Validated
Node:	718HV2.GAR-TSP	Validated
Started:	2023-03-25 1:28:27 PM	
Completed:	2023-03-25 1:31:05 PM	

The Validate a Configuration Wizard must be run after any change is made to the configuration of the cluster or hardware. For more information, see <https://go.microsoft.com/fwlink/?LinkId=280145>.

Results by Category

Name	Result Summary	Description
Hyper-V Configuration		Not Applicable
Inventory		Success
Network		Success
Storage		Success
System Configuration		Success

Hyper-V Configuration

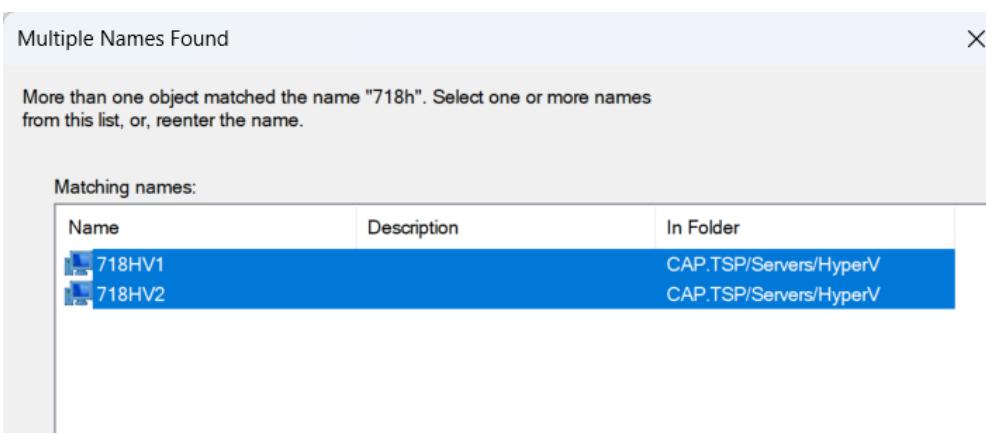
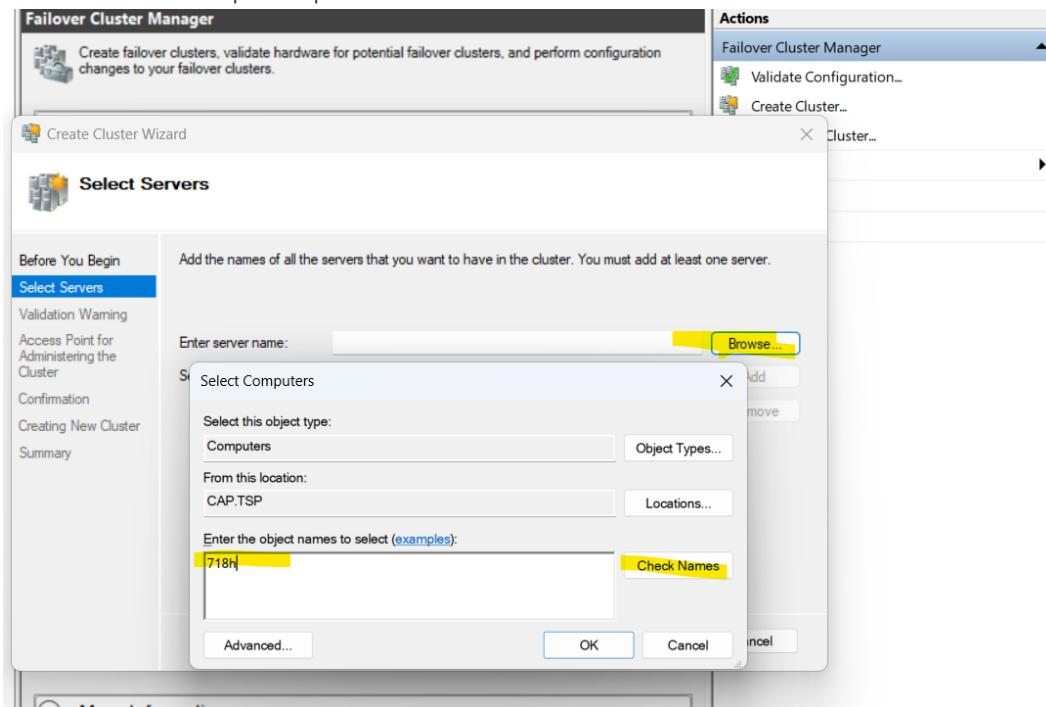
Name	Result	Description
List Information About Servers Running Hyper-V		Success
Validate Compatibility of Virtual Fibre Channel SANs for Hyper-V		Success
Validate Hyper-V Memory Resource Pool Compatibility		Success
Validate Hyper-V Network Resource Pool And Virtual Switch Compatibility		Success
Validate Hyper-V Processor Resource Pool Compatibility		Success
Validate Hyper-V Role Installed		Success
Validate Hyper-V Storage Resource Pool Compatibility		Success
Validate Matching Processor Manufacturers		Success
Validate Processor Capabilities		Not Applicable

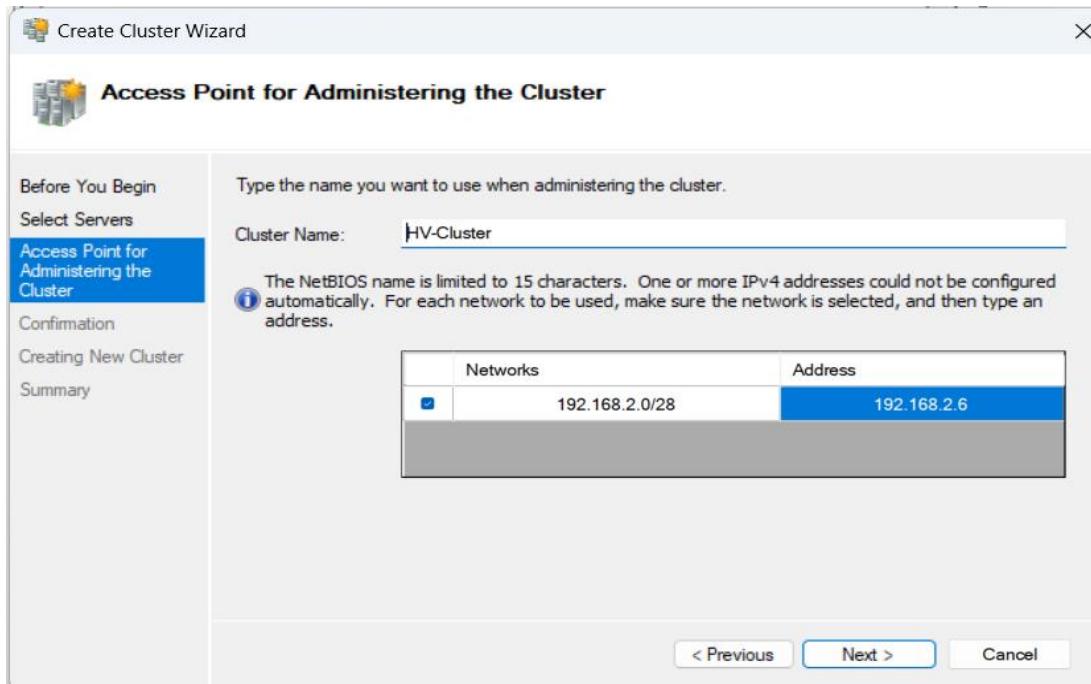
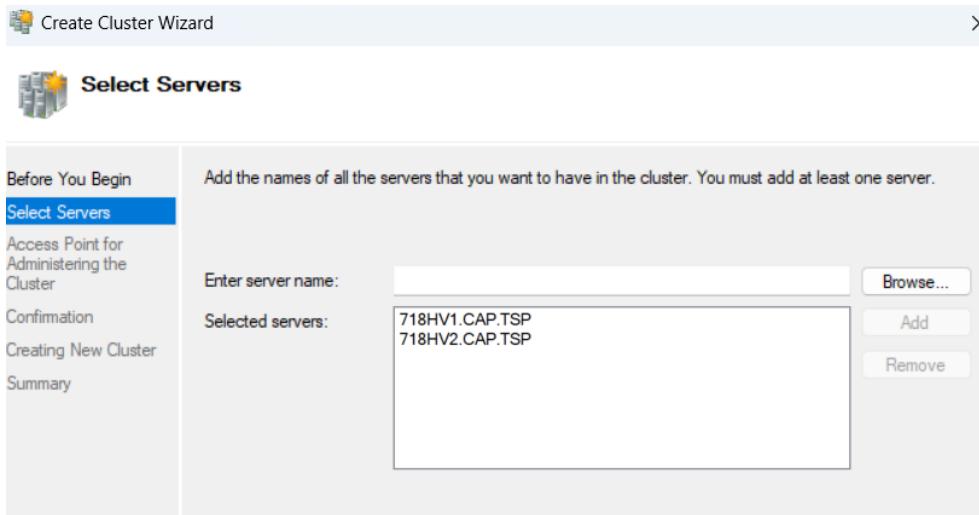
Create the Cluster

The screenshot shows the Failover Cluster Manager interface. The left navigation pane has options: File, Action, View, Help, Back, Forward, and a toolbar with icons for Validate Configuration, Create Cluster, Connect to Cluster, View, Refresh, Properties, and Help. The main area is titled 'Failover Cluster Manager' and contains the following sections:

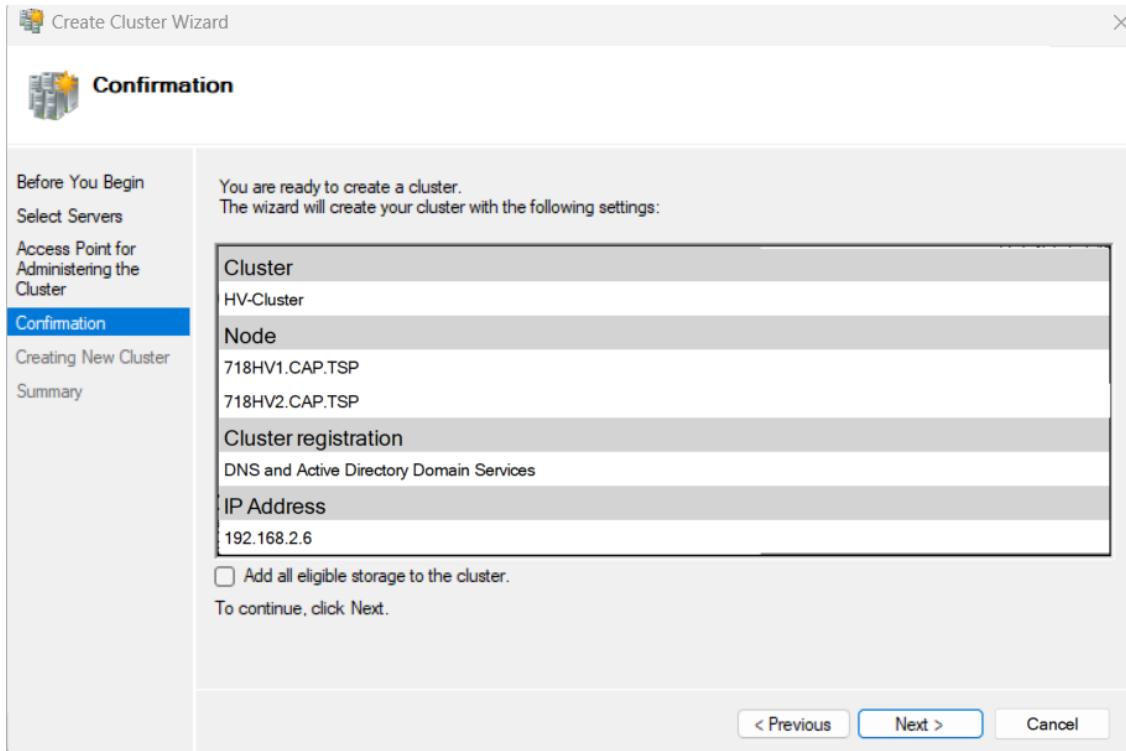
- Actions:** A list of actions including 'Failover Cluster Manager', 'Validate Configuration...', 'Create Cluster...', 'Connect to Cluster...', 'View', 'Refresh', 'Properties', and 'Help'. The 'Create Cluster...' option is highlighted with a yellow box.
- Validate Configuration...**: Describes validating hardware for potential failover clusters.
- Create Cluster...**: Describes creating a failover cluster.
- Connect to Cluster...**: Describes connecting to an existing failover cluster.
- View**: Describes failover clustering as a set of independent computers working together to increase availability.
- No items found.**: A message indicating no clusters are currently listed.
- Management**: Instructions for beginning failover clustering, including 'Validate Configuration...', 'Create Cluster...', and 'Connect to Cluster...' links.
- More Information**: Links to 'Failover cluster topics on the Web', 'Failover cluster communities on the Web', and 'Microsoft support page on the Web'.

Add the nodes to participate the cluster.

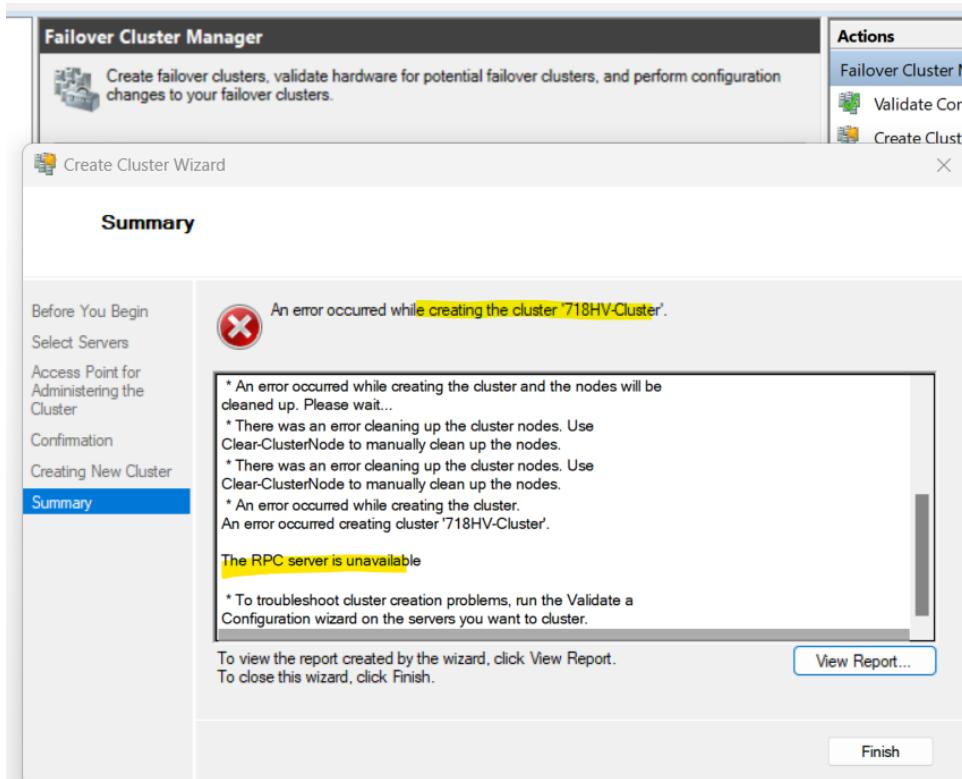




Untick the eligible storage, It can be added later



Error Occurred



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Create computer object 718HV-Cluster on domain controller \\18DC1.CAP.TSP in organizational unit OU=HyperV,OU=Servers,DC=CAP,DC=TSP.

Validating installation of the Network FT Driver on node 718HV1.CAP.TSP.

Validating installation of the Cluster Disk Driver on node 718HV1.CAP.TSP.

Configuring Cluster Service on node 718HV1.CAP.TSP.

Operation failed, attempting cleanup.

An error occurred while creating the cluster and the nodes will be cleaned up. Please wait...

An error occurred while creating the cluster and the nodes will be cleaned up. Please wait...

There was an error cleaning up the cluster nodes. Use Clear-ClusterNode to manually clean up the nodes.

There was an error cleaning up the cluster nodes. Use Clear-ClusterNode to manually clean up the nodes.

An error occurred while creating the cluster.

An error occurred creating cluster '718HV-Cluster'.

The RPC server is unavailable

To troubleshoot cluster creation problems, run the Validate a Configuration wizard on the servers you want to cluster.

Turn off firewall on both node machine

```
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:

[718HV1]: PS C:\Users\sanish\Documents> netsh advfirewall set allprofiles state off
ok.
```

```
[718DC1]: PS C:\Users\sanish\Documents> netsh advfirewall set allprofiles state off
ok.
```

```
[718DC1]: PS C:\Users\sanish\Documents> exit
```

```
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
```

```
[718HV1]: PS C:\Users\sanish\Documents> netsh advfirewall set allprofiles state off
ok.
```

```
[718HV1]: PS C:\Users\sanish\Documents> exit
```

```
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv2
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
```

```
[718HV2]: PS C:\Users\sanish\Documents> netsh advfirewall set allprofiles state off
ok.
```

check RPC

```
[718HV1]: PS C:\Users\sanish\Documents> Get-Service -ComputerName 718hv1 -Name RpcSs
Status   Name           DisplayName
-----  --  -----
Running  RpcSs          Remote Procedure Call (RPC)

[718HV1]: PS C:\Users\sanish\Documents> exit
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv2
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718HV2]: PS C:\Users\sanish\Documents> Get-Service -ComputerName 718hv2 -Name RpcSs
Status   Name           DisplayName
-----  --  -----
Running  RpcSs          Remote Procedure Call (RPC)

[718HV2]: PS C:\Users\sanish\Documents> exit
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718dc1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718DC1]: PS C:\Users\sanish\Documents> Get-Service -ComputerName 718dc1 -Name RpcSs
Status   Name           DisplayName
-----  --  -----
Running  RpcSs          Remote Procedure Call (RPC)
```

Creating Hyper-V cluster through PS

1. Before creating the cluster, run this command to validate the cluster configuration meets Hyper V clustering best practices:

```
[718HV2]: PS C:\Users\sanish\Documents> Test-Cluster 718hv1,718hv2
Mode          LastWriteTime        Length Name
---          -----        572079 Validation Report 2023.03.27 At 11.23.55.htm
```

Use the **new-cluster** command let to create a cluster and assign the name, the nodes, and a static IP address to the cluster

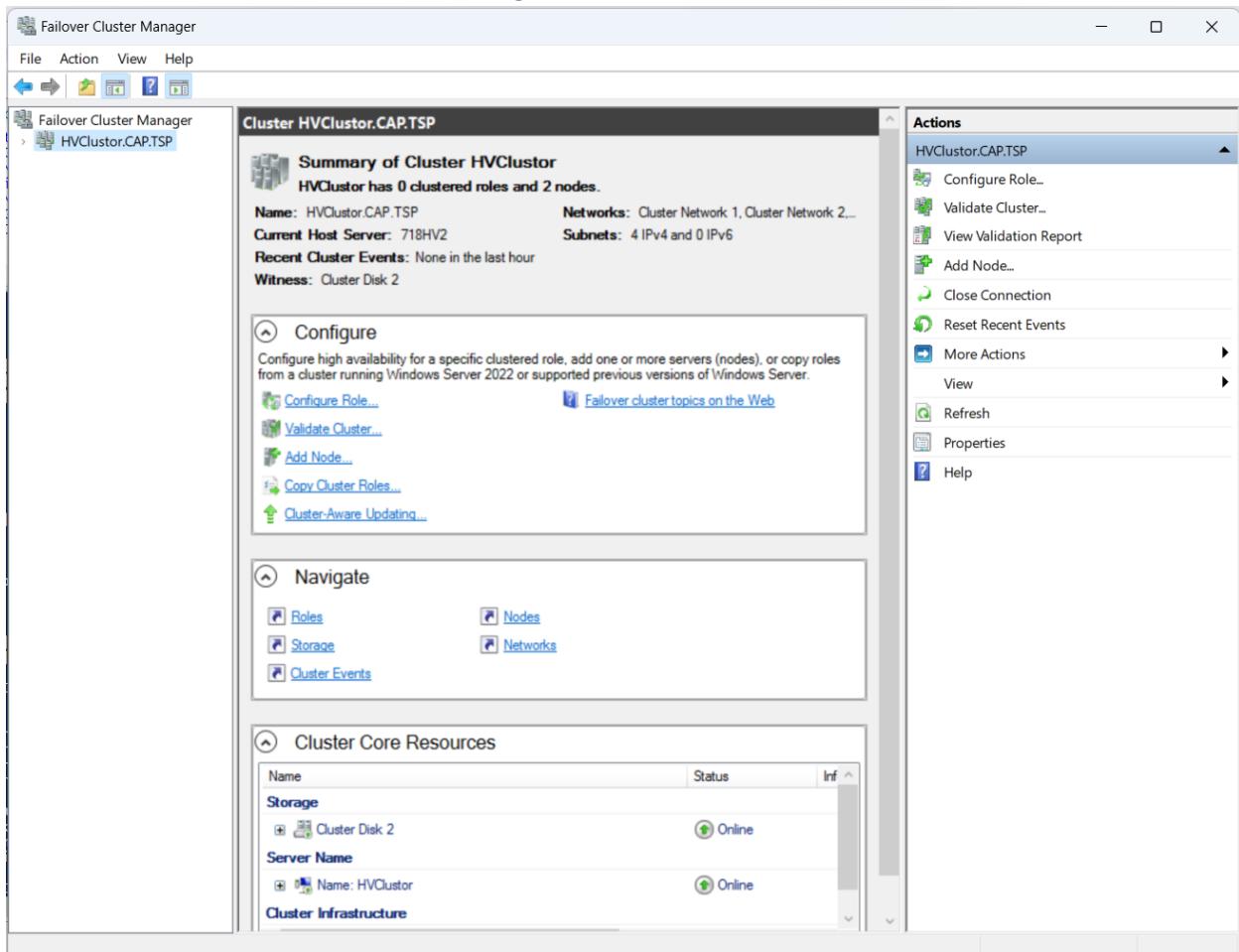
```
[718HV2]: PS C:\Users\sanish\Documents> New-Cluster -Name HVCluster -Node 718hv1,718hv2 -StaticAddress 192.168.2.8
Name
-----
HVCluster
```

```
PS C:\WINDOWS\system32> ping 192.168.2.8

Pinging 192.168.2.8 with 32 bytes of data:
Reply from 192.168.2.8: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Connect cluster in failover cluster manager



Cluster nodes and storages



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Nodes (2)

Search

Name	Status	Assigned Vote	Current Vote	Site	Rack	Ch
718HV1	Up	1	1	Site 192.168.2.0/28		
718HV2	Up	1	1	Site 192.168.2.0/28		

718HV1

Name	Status	Owner Node	Information
718HV1 - HB Adapter: Microsoft Hyper-V Network Adapter #3 IP V4 Addresses:20.20.20.1	Up	718HV1	
718HV1 - LM Adapter: Microsoft Hyper-V Network Adapter #4 IP V4 Addresses:30.30.30.1	Up	718HV1	
718HV1 - vEthernet (LAN) Adapter: Hyper-V Virtual Ethernet Adapter IP V4 Addresses:192.168.2.4	Up	718HV1	
718HV1 - vEthernet (HB) Adapter: Hyper-V Virtual Ethernet Adapter #2 IP V4 Addresses:10.10.10.2	Up	718HV1	

Nodes (2)

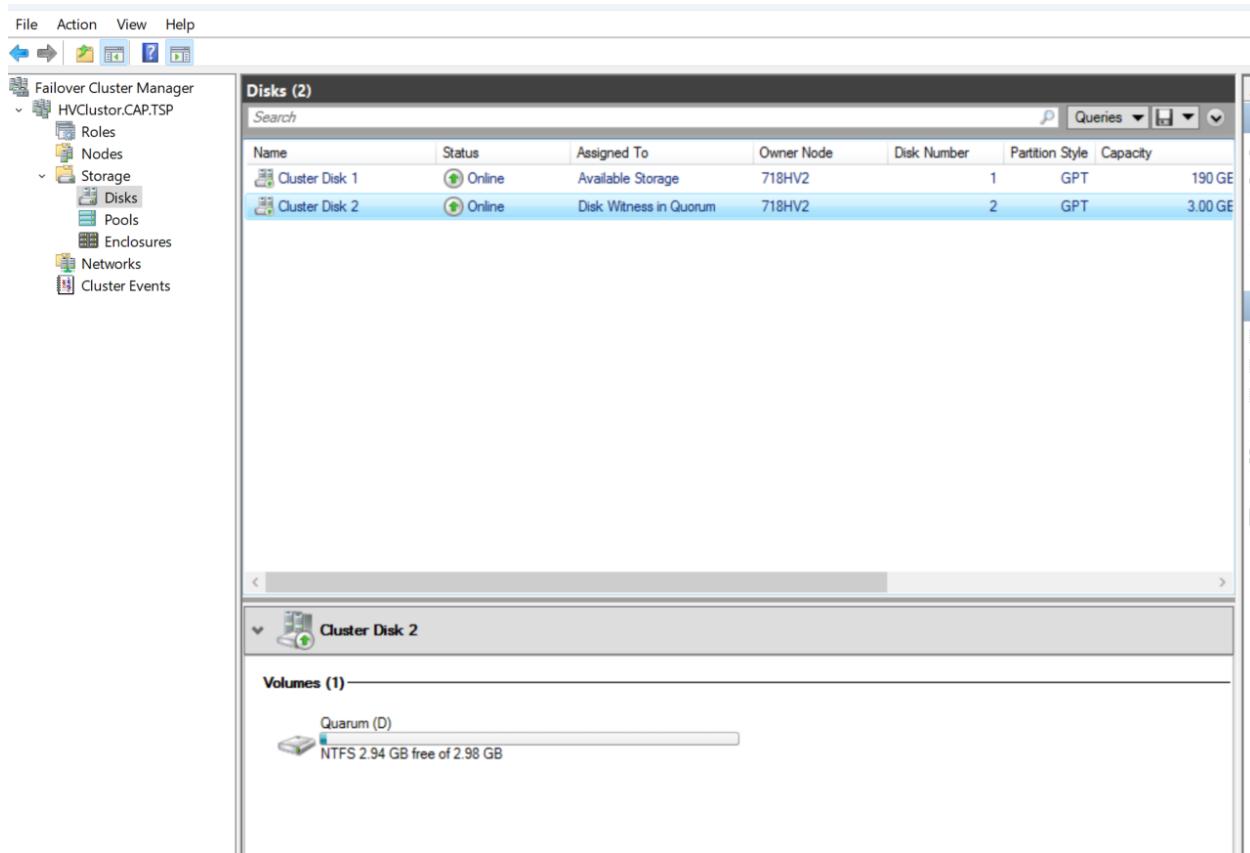
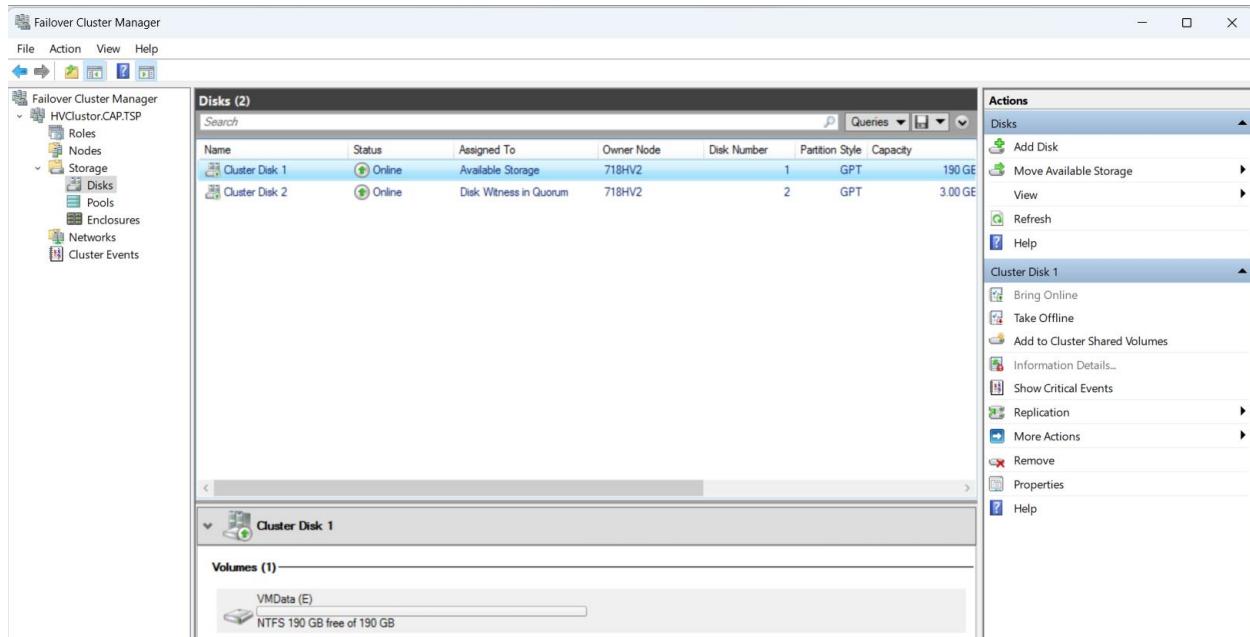
Search

Name	Status	Assigned Vote	Current Vote	Site	Rack	Ch
718HV1	Up	1	1	Site 192.168.2.0/28		
718HV2	Up	1	1	Site 192.168.2.0/28		

718HV2

Name	Status	Owner Node	Information
718HV2 - HB Adapter: Microsoft Hyper-V Network Adapter #3 IP V4 Addresses:20.20.20.2	Up	718HV2	
718HV2 - LM Adapter: Microsoft Hyper-V Network Adapter #4 IP V4 Addresses:30.30.30.2	Up	718HV2	
718HV2 - vEthernet (LAN) Adapter: Hyper-V Virtual Ethernet Adapter IP V4 Addresses:192.168.2.5	Up	718HV2	
718HV2 - vEthernet (HB) Adapter: Hyper-V Virtual Ethernet Adapter #2 IP V4 Addresses:10.10.10.3	Up	718HV2	

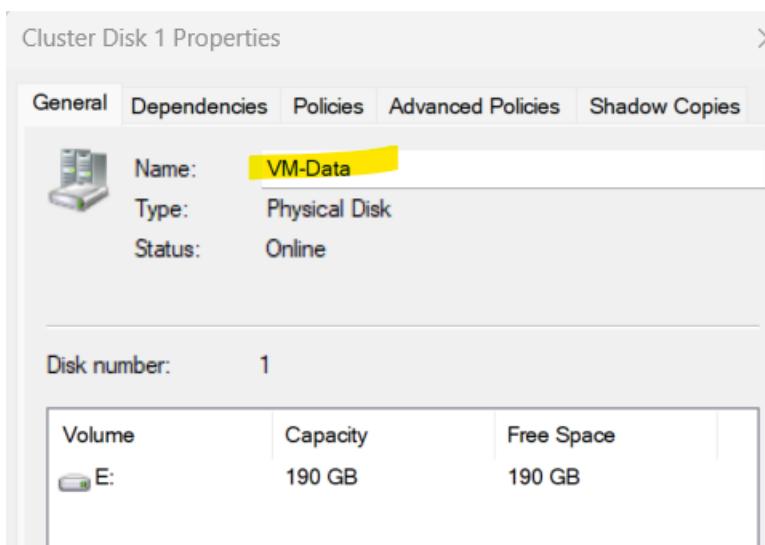
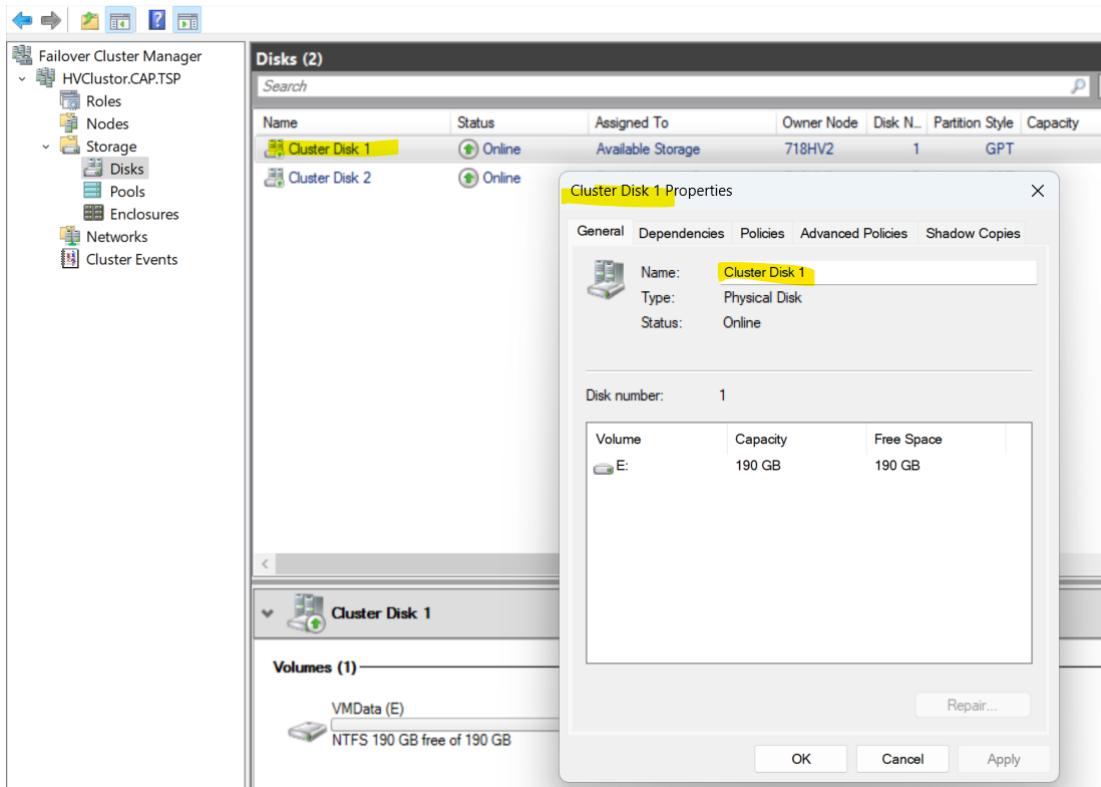
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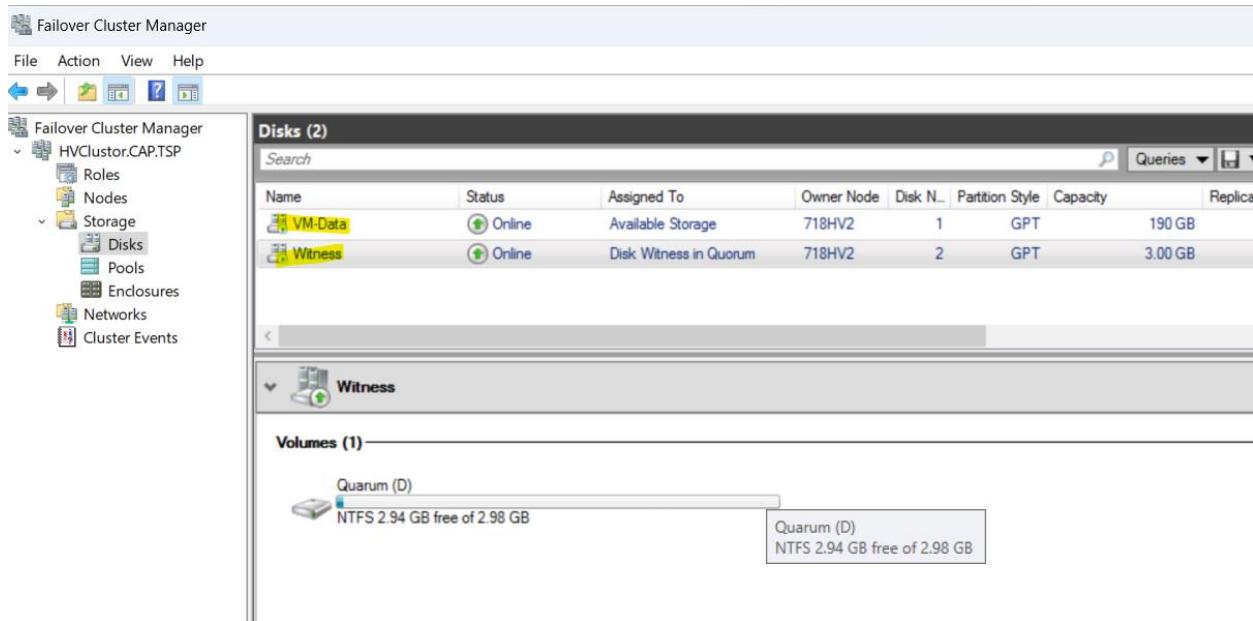
Change the name of cluster Disks

Double click the disk and change the name

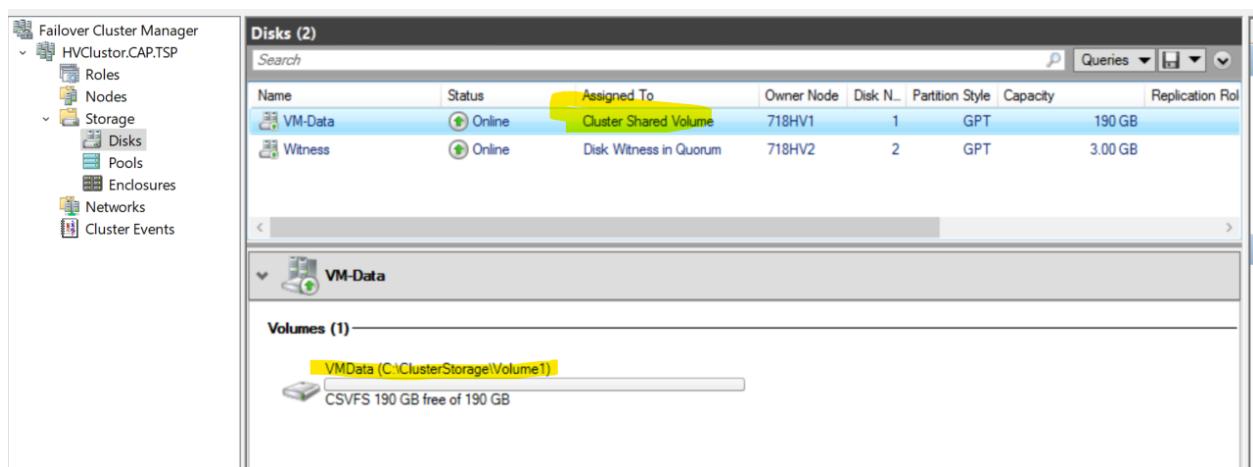
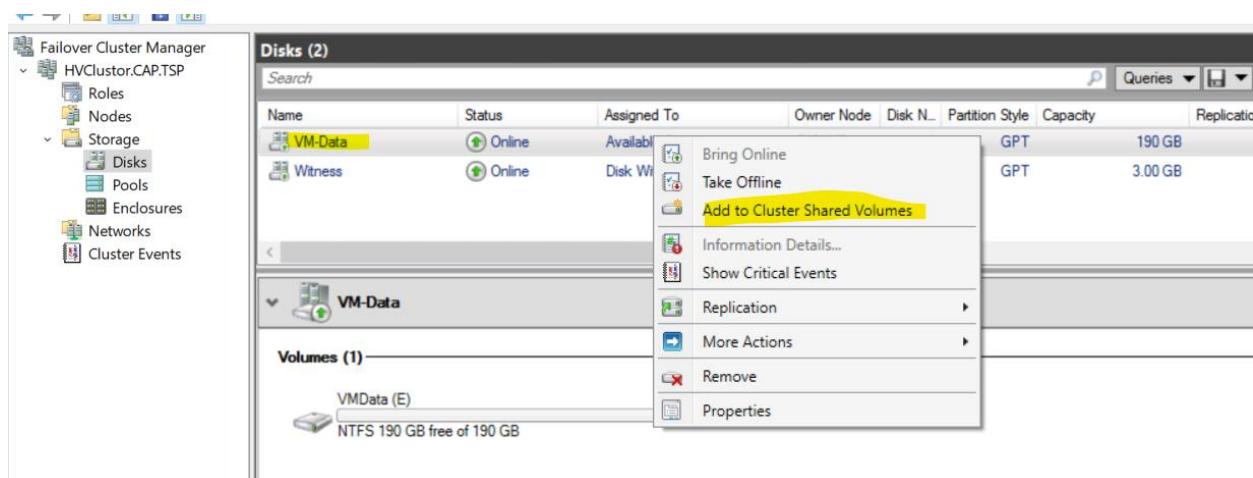
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Add the VM-Data disk to cluster shared volume



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Change the cluster network names

The screenshot shows the Failover Cluster Manager interface. The left navigation pane lists 'HVCluster.CAP.TSP' under 'Failover Cluster Manager' with 'Networks' selected. The main pane displays 'Networks (4)' with four entries:

Name	Status	Cluster Use	Information
Cluster Network 1	Up	None	
Cluster Network 2	Up	Cluster Only	
Cluster Network 3	Up	Cluster Only	
Cluster Network 4	Up	Cluster and Client	

A yellow box highlights 'Cluster Network 1'. A detailed view of 'Cluster Network 1' is shown in a separate window, listing two network connections:

Name	Status	Owner Node	Information
718HV1 - iSCSI	Up	718HV1	Adapter: Microsoft Hyper-V Network Adapter #2 IP V4 Addresses: 10.10.10.2
718HV2 - iSCSI	Up	718HV2	Adapter: Microsoft Hyper-V Network Adapter #2 IP V4 Addresses: 10.10.10.3

The bottom tabs show 'Summary' and 'Network Connections'. The status bar indicates 'Networks: Cluster Network 1'.

The screenshot shows the Failover Cluster Manager interface again, with 'Networks' selected in the left pane. The main pane displays 'Networks (4)' with four entries:

Name	Status	Cluster Use	Information
iSCSI	Up	None	
HB	Up	Cluster Only	
LM	Up	Cluster Only	
LAN	Up	Cluster and Client	

A yellow box highlights 'LAN'. A detailed view of 'LAN' is shown in a separate window, listing two network connections:

Name	Status	Owner Node	Information
718HV1 - vEthernet (LAN)	Up	718HV1	Adapter: Hyper-V Virtual Ethernet Adapter IP V4 Addresses: 192.168.2.4
718HV2 - vEthernet (LAN)	Up	718HV2	Adapter: Hyper-V Virtual Ethernet Adapter IP V4 Addresses: 192.168.2.5

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Failover Cluster Manager

HVCluster.CAP.TSP

- Roles
- Nodes
- Storage
 - Disks
 - Pools
 - Enclosures
- Networks**
- Cluster Events

Networks (4)

Name	Status	Cluster Use	Information
iSCSI	Up	None	
HB	Up	Cluster Only	
LM	Up	Cluster Only	
LAN	Up	Cluster and Client	

LM

Name	Status	Owner Node	Information
718HV1 - LM	Up	718HV1	Adapter: Microsoft Hyper-V Network Adapter #4 IP V4 Addresses: 30.30.30.1
718HV2 - LM	Up	718HV2	Adapter: Microsoft Hyper-V Network Adapter #4 IP V4 Addresses: 30.30.30.2

Failover Cluster Manager

HVCluster.CAP.TSP

- Roles
- Nodes
- Storage
 - Disks
 - Pools
 - Enclosures
- Networks**
- Cluster Events

Networks (4)

Name	Status	Cluster Use	Information
iSCSI	Up	None	
HB	Up	Cluster Only	
LM	Up	Cluster Only	
LAN	Up	Cluster and Client	

HB

Name	Status	Owner Node	Information
718HV1 - HB	Up	718HV1	Adapter: Microsoft Hyper-V Network Adapter #3 IP V4 Addresses: 20.20.20.1
718HV2 - HB	Up	718HV2	Adapter: Microsoft Hyper-V Network Adapter #3 IP V4 Addresses: 20.20.20.2

Create Quorum witness

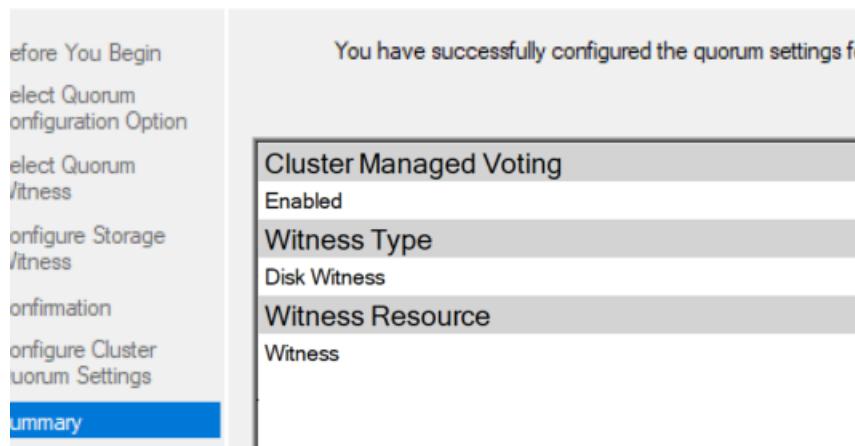
Select Quorum Configuration Option

- Use default quorum configuration
The cluster determines quorum management options, including the quorum witness.
- Select the quorum witness
You can add or change the quorum witness. The cluster determines the other quorum management options.
- Advanced quorum configuration
You determine the quorum management options, including the quorum witness.

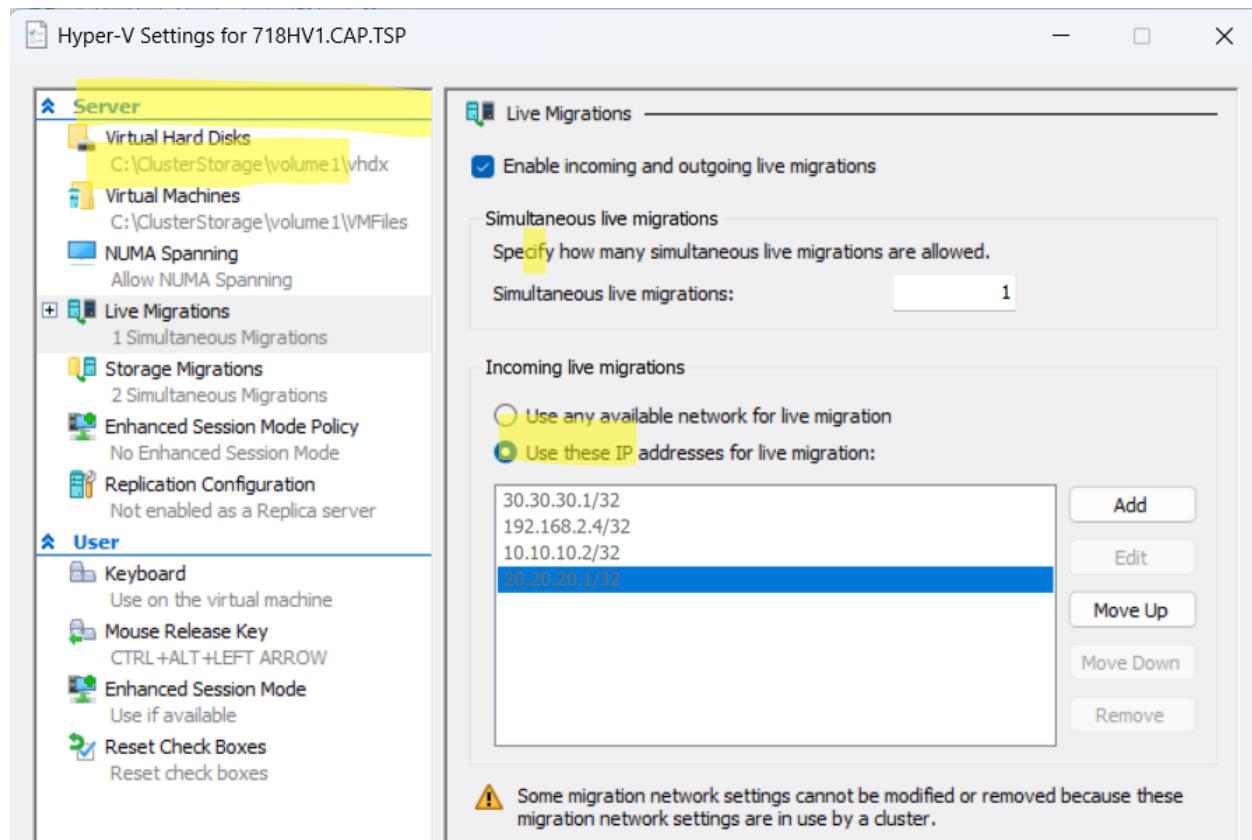
Select Quorum Witness

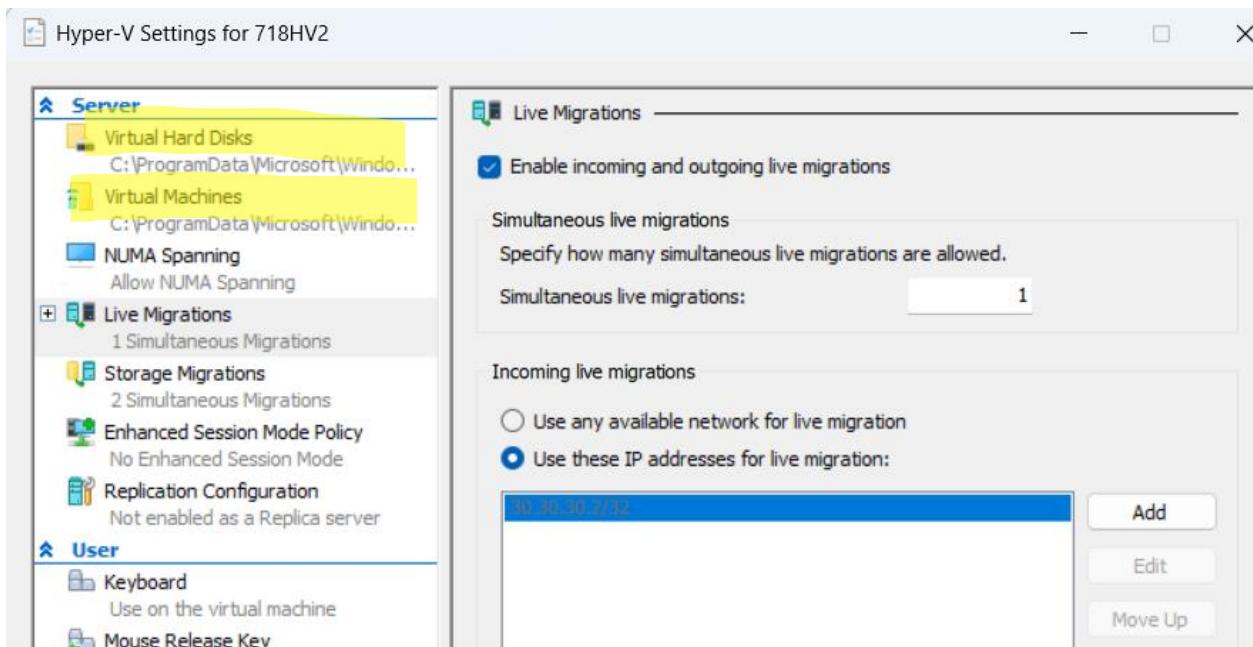
Configure Storage Witness

Name	Status	Node	Location
Volum... File System: NTFS	Online	718HV2	Cluster



Change the Storage location and migration settings on both HV1 and HV2





Check the lan network On HV2 Ipconfig/all

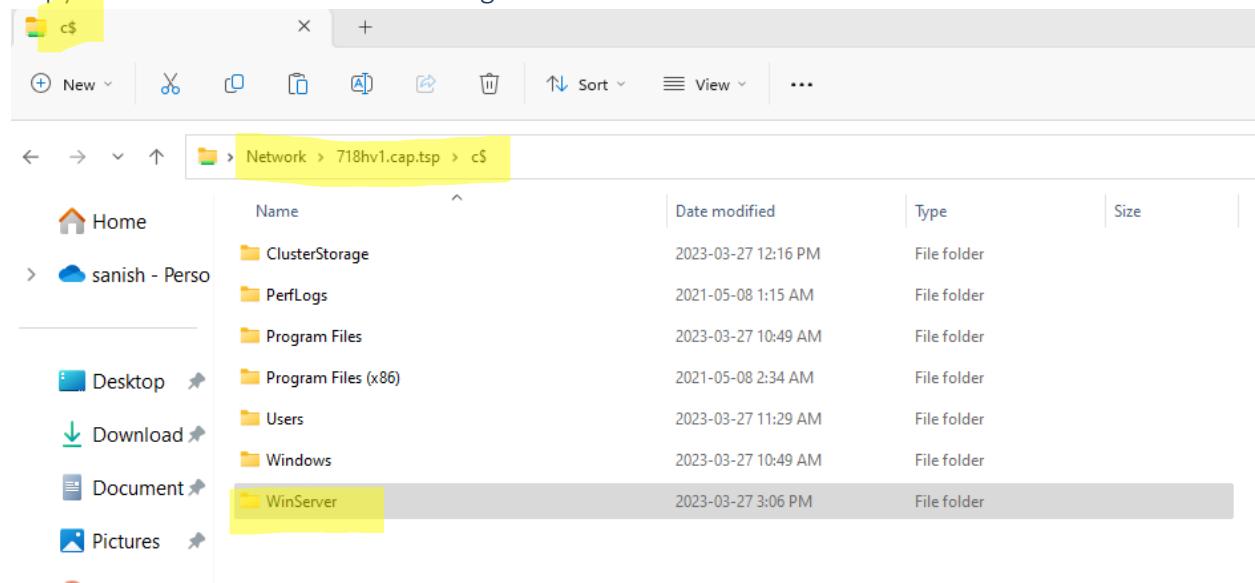
Because hv failover cluster id configured on HV2

```

NetBIOS over Tcpip. . . . . Enabled
Ethernet adapter vEthernet (LAN):
    Connection-specific DNS Suffix . . . . . .
    Description . . . . . : Hyper-V Virtual Ethernet Adapter
    Physical Address . . . . . : 00-15-5D-01-7C-13
    DHCP Enabled. . . . . : No
    Autoconfiguration Enabled . . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::8814:7466:c3a3:9056%11(Preferred)
    IPv4 Address. . . . . : 192.168.2.5(Preferred)
    Subnet Mask . . . . . : 255.255.255.240
    IPv4 Address. . . . . : 192.168.2.8(Preferred)
    Subnet Mask . . . . . : 255.255.255.240
    Default Gateway . . . . . : 192.168.2.14
    DHCPv6 IAID . . . . . : 184554845
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B2-C4-09-00-15-5D-01-7C-13
    DNS Servers . . . . . : 192.168.2.1
    NetBIOS over Tcpip. . . . . Enabled
Tunnel adapter Local Area Connection* 1:

```

Copy server 2022 iso to cluster storage

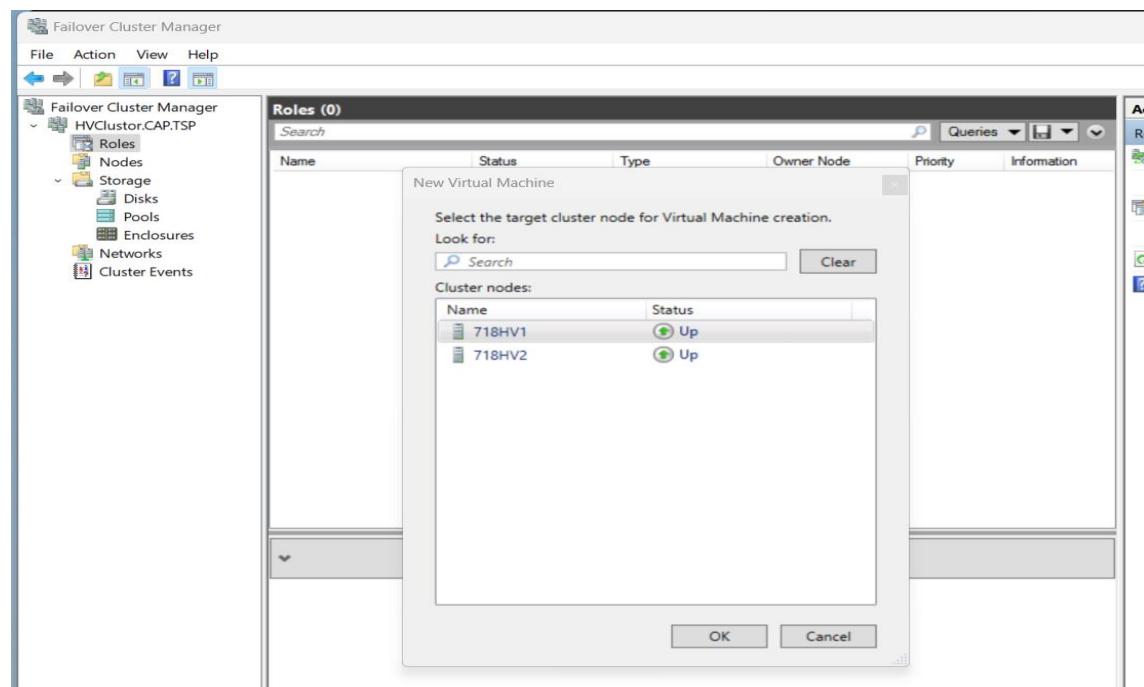


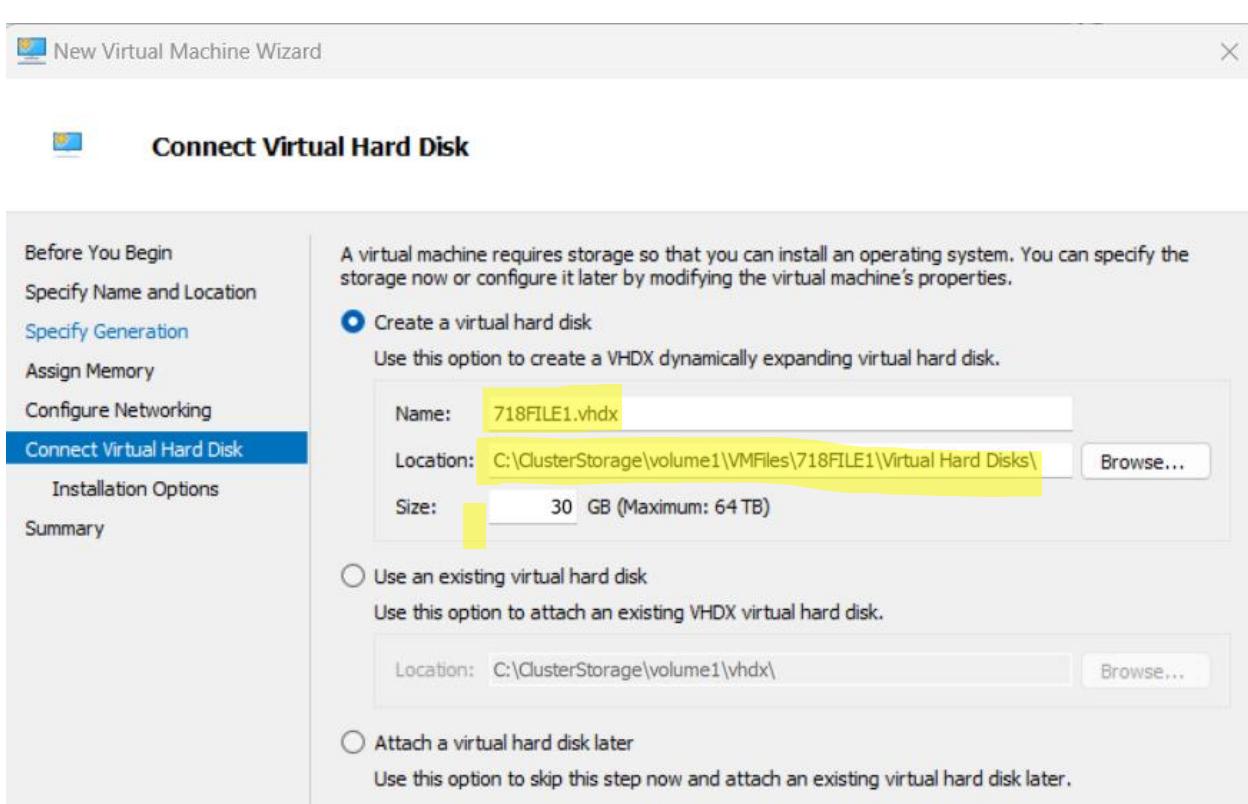
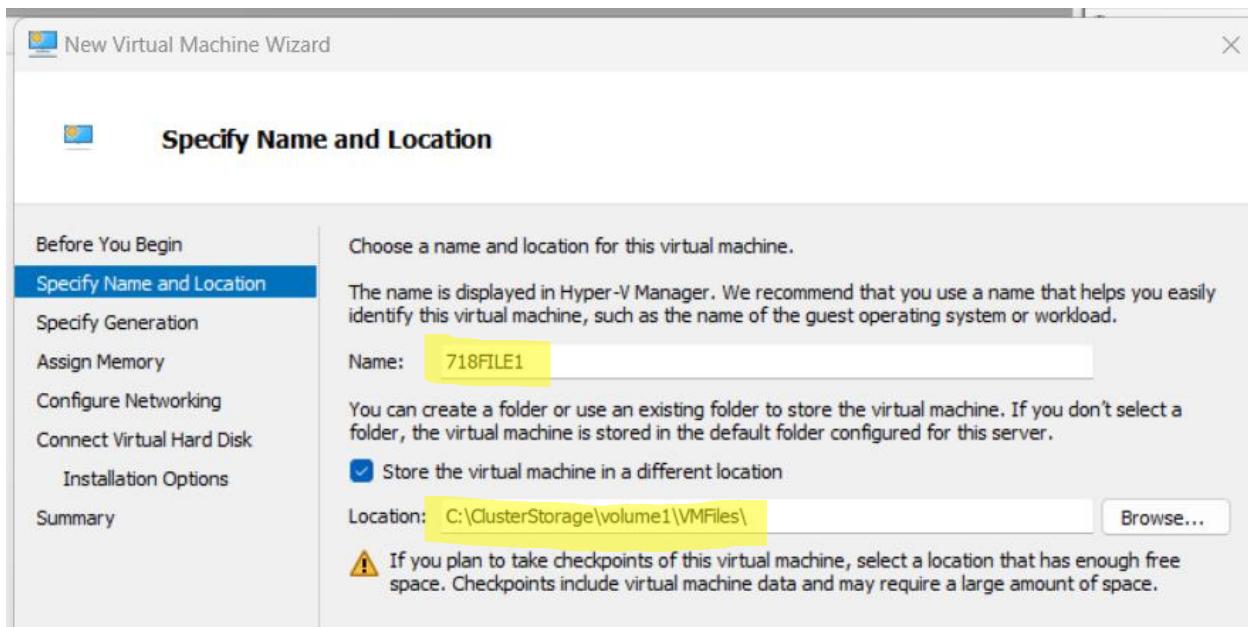
Create and configure file servers.

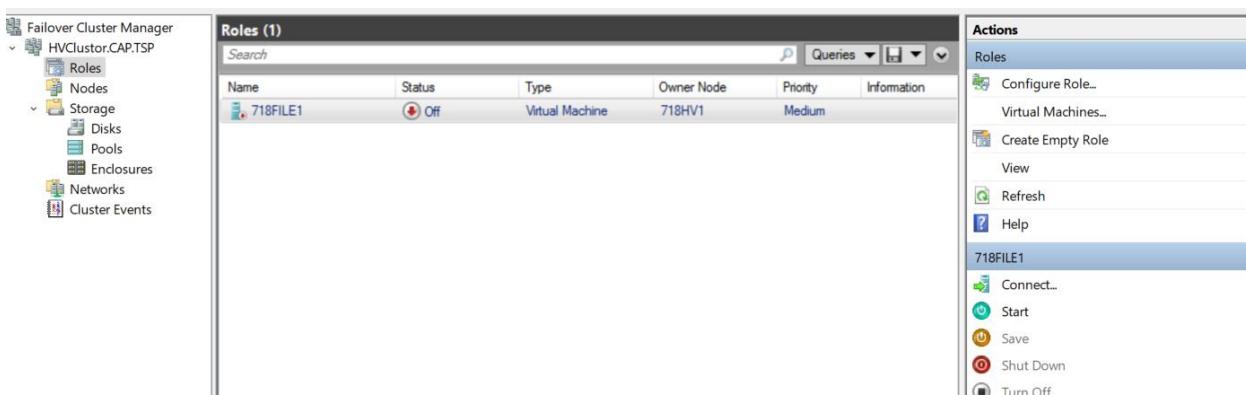
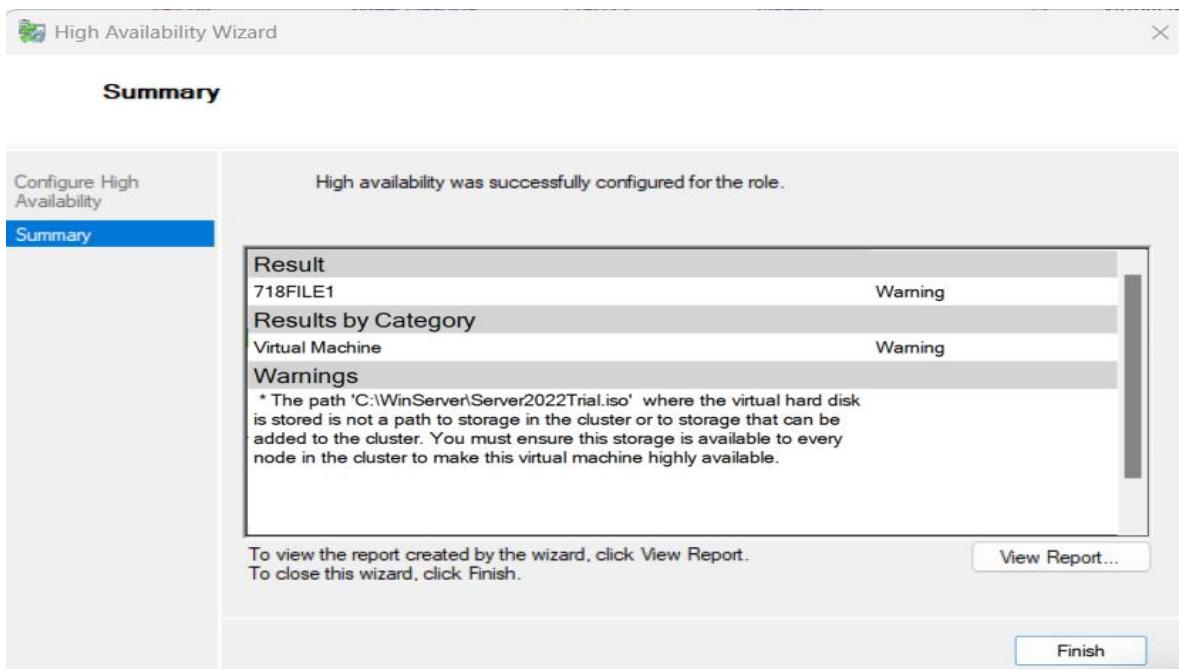
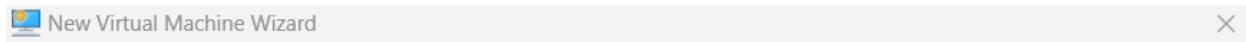
Install and configure file server1.

Open cluster manager → action pane on the right → virtual machines → new virtual machine

Or right click on roles → select virtual machines → new virtual machine







Assign 1048 RAM and install 2022 core server2022

The screenshot shows a command-line window titled "Administrator: C:\Windows\system32\cmd.exe". The title bar also includes "718File1 on 718HV1 - Virtual Machine Connection". The window displays a configuration menu for a Windows Server 2022 Datacenter Evaluation. The menu lists various options from 1 to 15, each with a setting value. The settings are:

- 1) Domain/workgroup: WORKGROUP
- 2) Computer name: WIN-RAIBG5D4U90
- 3) Add local administrator: Enabled
- 4) Remote management: Download only
- 5) Update setting: Disabled
- 6) Install updates: Required
- 7) Remote desktop: Required
- 8) Network settings: Enabled
- 9) Date and time: Enabled
- 10) Telemetry setting: Enabled
- 11) Windows activation: Enabled
- 12) Log off user: Enabled
- 13) Restart server: Enabled
- 14) Shut down server: Enabled
- 15) Exit to command line (PowerShell): Enabled

At the bottom, the prompt "Enter number to select an option: -" is visible.

Getting IP from LDHCP Server

The screenshot shows a command-line window titled "Administrator: C:\Windows\system32\cmd.exe". The title bar also includes "718File1 on 718HV1 - Virtual Machine Connection". The window displays the output of the "ipconfig /all" command. The output shows network configuration details for the "WIN-RAIBG5D4U90" host, including the IP address assigned by the DHCP server.

```

WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\Administrator> ipconfig /all

Windows IP Configuration

Host Name . . . . . : WIN-RAIBG5D4U90
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : CAP.TSP

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . . . : CAP.TSP
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-15-5D-02-04-02
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::9455:a3bf:8599:10da%6(Preferred)
IPv4 Address. . . . . : 192.168.2.11(Preferred)
Subnet Mask . . . . . : 255.255.255.240
Lease Obtained. . . . . : Monday, March 27, 2023 6:03:26 PM
Lease Expires . . . . . : Monday, March 27, 2023 6:13:26 PM
Default Gateway . . . . . : 192.168.2.14
DHCP Server . . . . . : 192.168.2.3
DHCPv6 IAID . . . . . : 100668765
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B3-ED-EF-00-15-5D-02-04-02
DNS Servers . . . . . : 192.168.2.1
NetBIOS over Tcpip. . . . . : Enabled
Connection-specific DNS Suffix Search List :
                                CAP.TSP

PS C:\Users\Administrator>

```

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Add static IP, reduce Ram as 512 GB

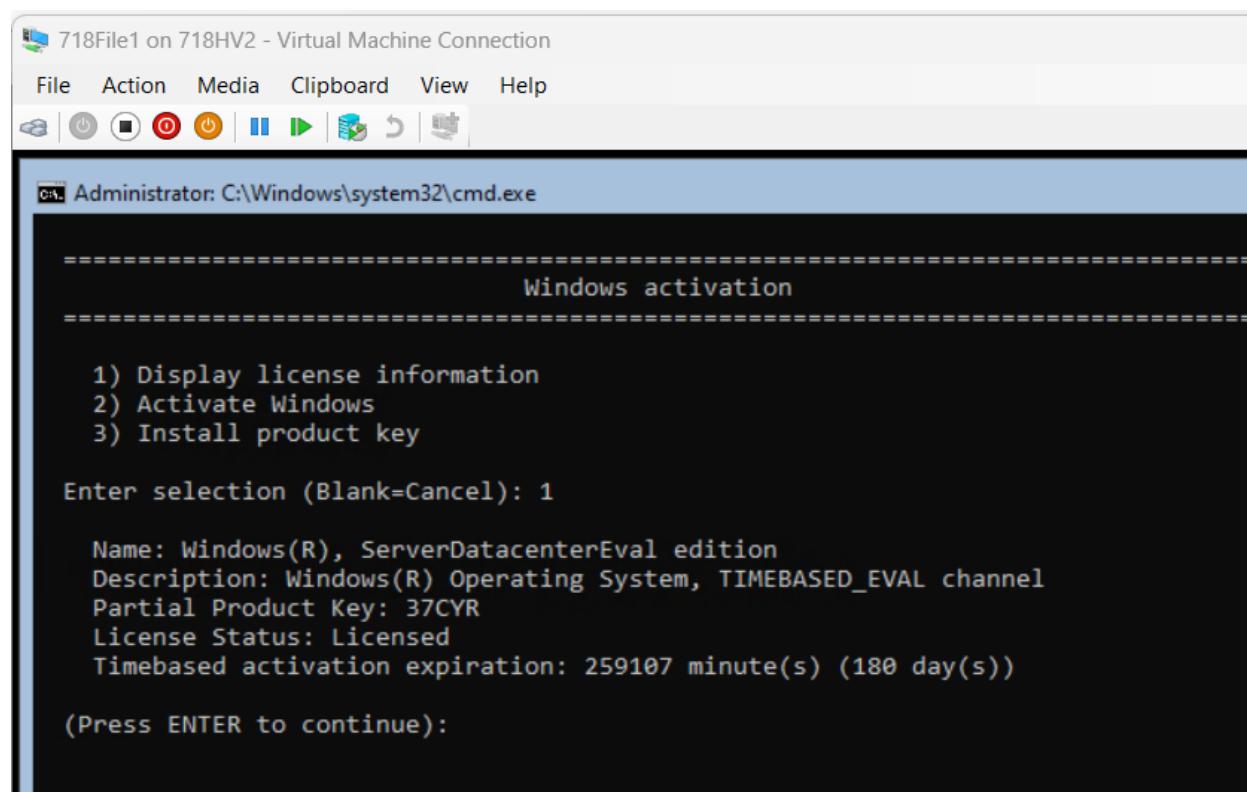
```
PS C:\Users\Administrator> Get-NetAdapter
Name           InterfaceDescription          ifIndex Status   MacAddress      LinkSpeed
----           ----
Ethernet 2     Microsoft Hyper-V Network Adapter #2    7 Up       00-15-5D-02-04-0B  10 Gbps
Ethernet       Microsoft Hyper-V Network Adapter        2 Up       00-15-5D-02-04-0A  10 Gbps

Default Gateway . . . . . :
PS C:\Users\Administrator> Rename-NetAdapter -Name "ethernet" -NewName "LAN"
PS C:\Users\Administrator> Rename-NetAdapter -Name "ethernet 2" -NewName "HB"
PS C:\Users\Administrator> New-NetIPAddress -InterfaceAlias "lan" -IPAddress 192.168.2.7 -PrefixLength 28 -DefaultGateway 192.168.2.1

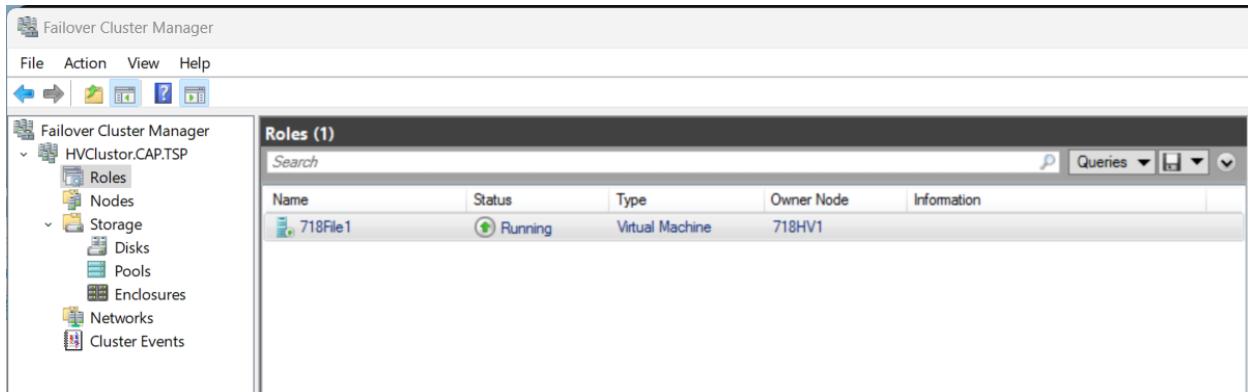
IPAddress      : 192.168.2.7
InterfaceIndex  : 2
InterfaceAlias  : LAN
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 28
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState   : Tentative
ValidLifetime   : Infinite ([TimeSpan]::.MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::.MaxValue)
SkipAsSource    : False
SleckyState     : ActiveState

PS C:\Users\Administrator> Set-DnsClientServerAddress -InterfaceAlias "LAN" -ServerAddresses "192.168.2.1"
PS C:\Users\Administrator> S

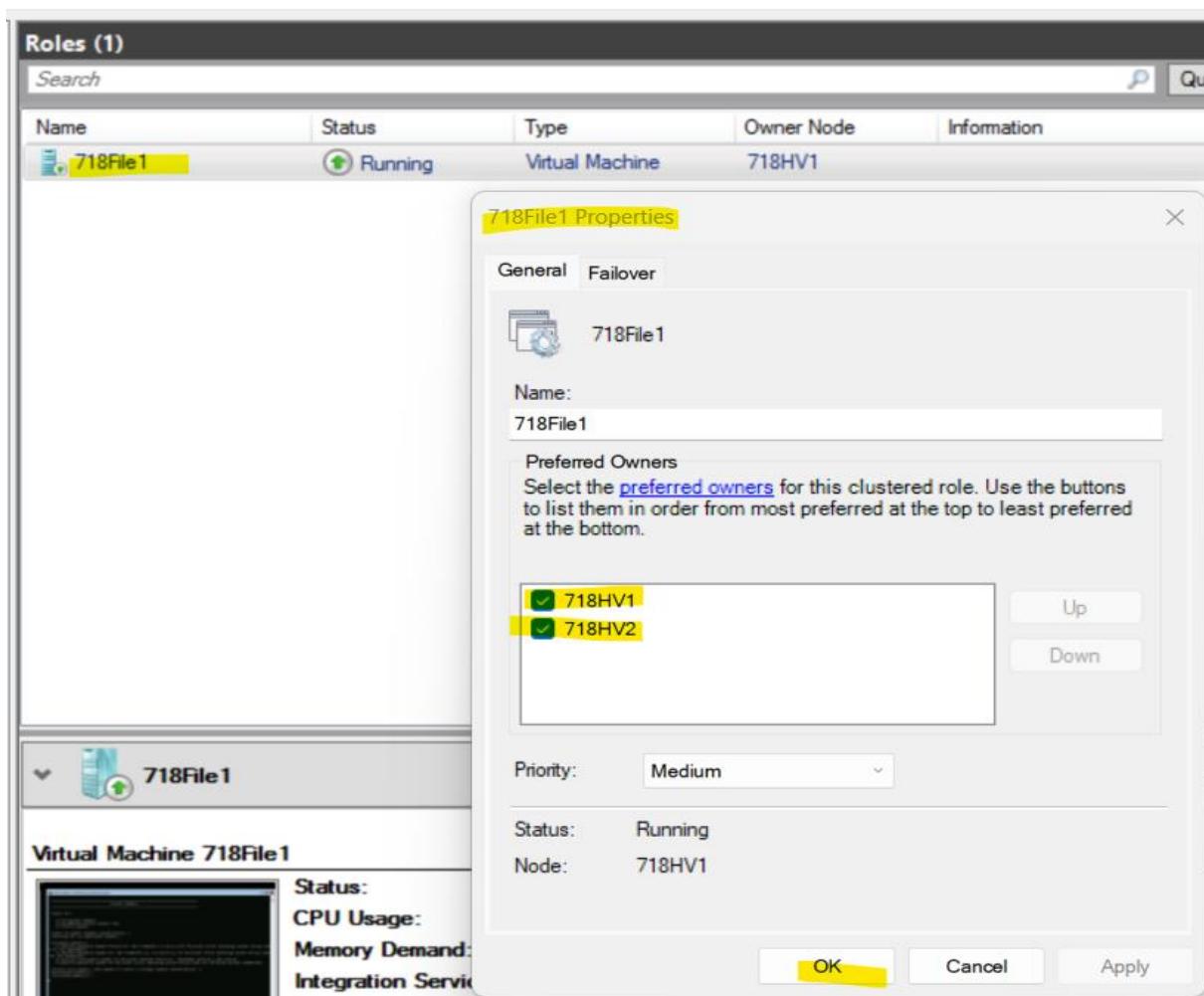
PS C:\Users\Administrator> New-NetIPAddress -InterfaceAlias "hb" -IPAddress 20.20.20.3 -PrefixLength 29
```



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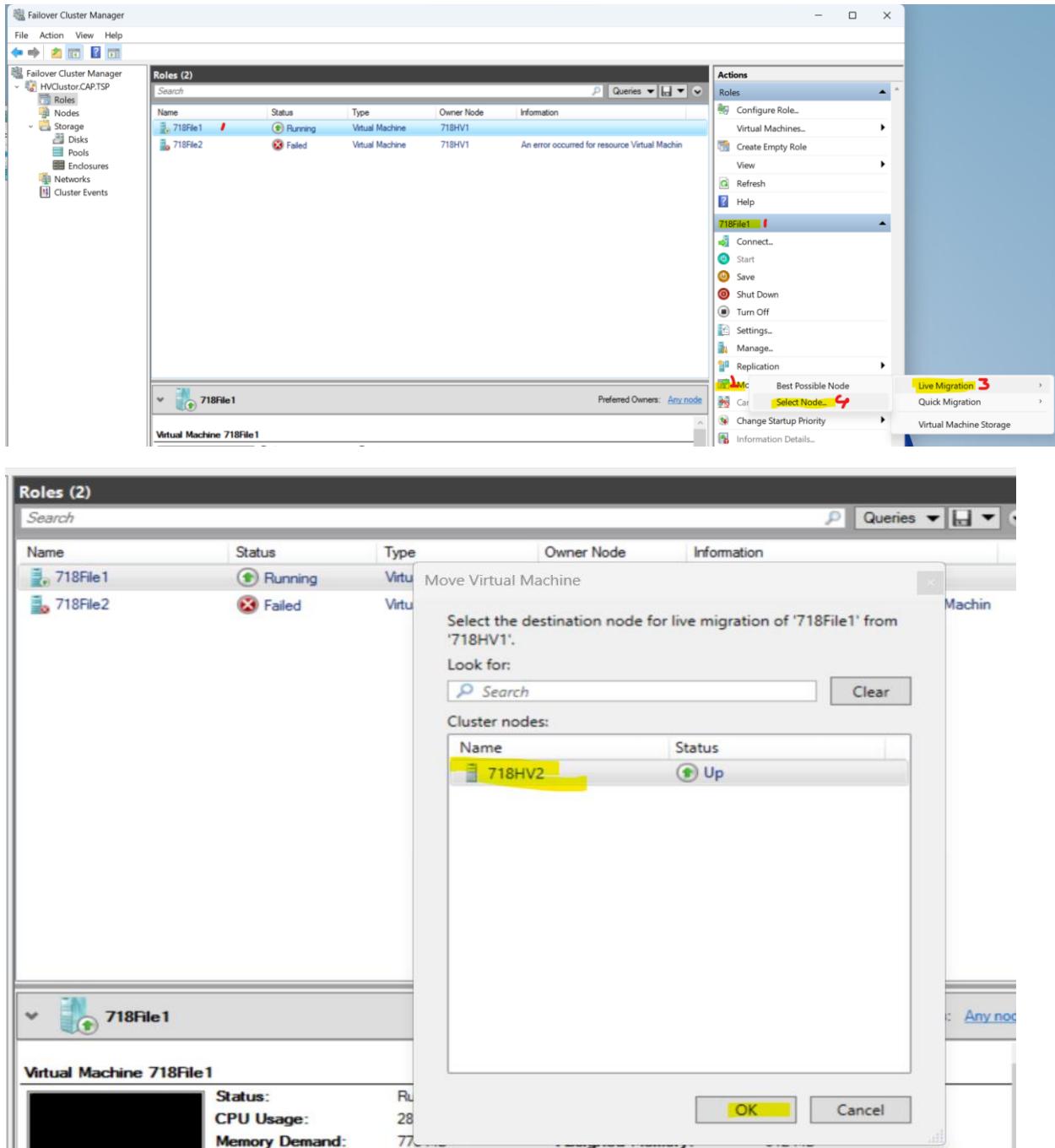
Make File1 Property preferred owner to be both HV1 And HV2 servers



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Live migration Test

Change the owner node of File1, ie, HV1 to HV2



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The screenshot shows the Failover Cluster Manager interface. On the left is a navigation pane with 'HVCluster.CAP.TSP' selected, and under it, 'Roles' is expanded to show 'Nodes', 'Storage' (with 'Disks', 'Pools', and 'Enclosures'), 'Networks', and 'Cluster Events'. The main window is titled 'Roles (2)' and contains a table with the following data:

Name	Status	Type	Owner Node	Information
718File1	Live Migrating	Virtual Machine	718HV1	Live Migrating, 3% completed
718File2	Failed	Virtual Machine	718HV1	

In the second screenshot, the status of 718File1 has changed to 'Running' and its owner node is now '718HV2'. The information column for 718File2 now displays the message: 'An error occurred for resource Virtual Machin'.

Domain join File1 server

The screenshot shows a Windows command prompt window titled '718File1 on 718HV2 - Virtual Machine Connection'. The title bar includes icons for File, Action, Media, Clipboard, View, Help, and various system controls. The command prompt window is titled 'Administrator: C:\Windows\system32\cmd.exe'. The text output is as follows:

```
=====
Change domain/workgroup membership
=====

Current workgroup: WORKGROUP

Join (D)omain or (W)orkgroup? (Blank=Cancel): D
Name of domain to join (Blank=Cancel): cap.tsp
Specify an authorized domain\user (Blank=Cancel): cap\sanish
Password for cap\sanish: *****
Joining cap.tsp...
WARNING: The changes will take effect after you restart the computer WIN-RAIBG5D4U90.
Successfully joined domain.
Do you want to change the computer name before restarting? (Y)es or (N)o: y
Enter new computer name (Blank=Cancel): 718File1
```

718File1 on 718HV2 - Virtual Machine Connection

File Action Media Clipboard View Help

Administrator: C:\Windows\system32\cmd.exe

```
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch $false"

=====
Welcome to Windows Server 2022 Datacenter Evaluation
=====

1) Domain/workgroup:           Domain: CAP.TSP
2) Computer name:             718FILE1
3) Add local administrator
4) Remote management:         Enabled
5) Update setting:            Download only
6) Install updates
7) Remote desktop:            Disabled
8) Network settings
9) Date and time
```

IP address of LAN and HB on FILE1

718File1 on 718HV2 - Virtual Machine Connection

File Action Media Clipboard View Help

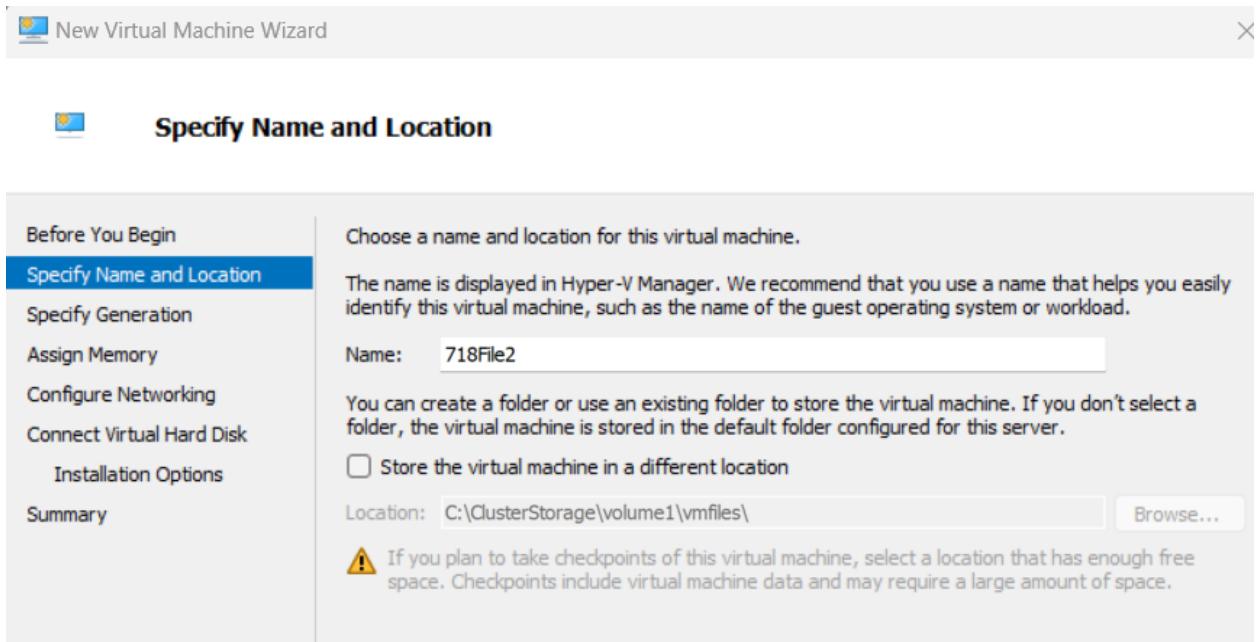
Administrator: C:\Windows\system32\cmd.exe

```
Ethernet adapter LAN:
Connection-specific DNS Suffix . : CAP.TSP
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-15-5D-02-05-04
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::8d2d:7002:fb3b:998c%6(PREFERRED)
IPv4 Address. . . . . : 192.168.2.8(PREFERRED)
Subnet Mask . . . . . : 255.255.255.240
Default Gateway . . . . . : 192.168.2.14
DHCPv6 IAID . . . . . : 100668765
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B5-4D-47-00-15-5D-02-05-04
DNS Servers . . . . . : 192.168.2.1
NetBIOS over Tcpip. . . . . : Enabled
Connection-specific DNS Suffix Search List :
CAP.TSP

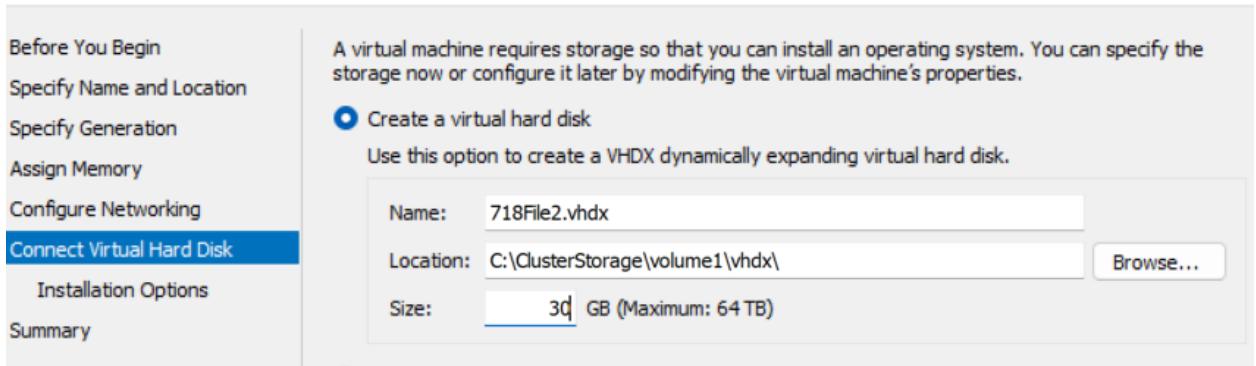
Ethernet adapter HB:
Connection-specific DNS Suffix . . . . . : Microsoft Hyper-V Network Adapter #2
Description . . . . . : Microsoft Hyper-V Network Adapter #2
Physical Address. . . . . : 00-15-5D-02-05-05
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::cd01:8aa0:294a:2921%5(PREFERRED)
IPv4 Address. . . . . : 20.20.20.4(PREFERRED)
Subnet Mask . . . . . : 255.255.255.248
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 117445981
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B5-4D-47-00-15-5D-02-05-04
DNS Servers . . . . . : fec0:0:0:ffff::1%1
                           fec0:0:0:ffff::2%1
                           fec0:0:0:ffff::3%1
NetBIOS over Tcpip. . . . . : Enabled
```

PS C:\Users\sanish>

Create FILE2 VM



Connect Virtual Hard Disk



Do the same configure in file1

Update settings, static ip address, reduce the RAM as 512,remove image file iso

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The image shows two windows side-by-side. The left window is titled 'Settings for 718File02 on 718HV1.CAP.TSP' and displays the hardware configuration for a virtual machine. It includes sections for Hardware (Add Hardware, Firmware, Security, Memory, Processor, SCSI Controller, Network Adapter), Management, and a central pane for adding hardware like SCSI Controller, Network Adapter, and Fibre Channel Adapter. The right window is titled '718File2 on 718HV1 - Virtual Machine Connection' and shows a command-line interface (cmd.exe) running on a Windows Server 2022 Datacenter Evaluation system. The command 'Welcome to Windows Server 2022 Datacenter Evaluation' is displayed, followed by a list of 15 numbered options for configuration.

```
Administrator: C:\Windows\system32\cmd.exe
=====
Welcome to Windows Server 2022 Datacenter Evaluation
=====

1) Domain/workgroup: Domain: CAP.TSP
2) Computer name: 718FILE2
3) Add local administrator
4) Remote management: Enabled

5) Update setting: Download only
6) Install updates
7) Remote desktop: Disabled

8) Network settings
9) Date and time
10) Telemetry setting: Required
11) Windows activation

12) Log off user
13) Restart server
14) Shut down server
15) Exit to command line (PowerShell)
```

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Ip address of LAN And HB on FILE2

Administrator: C:\Windows\system32\cmd.exe

Ethernet adapter LAN:

```
Connection-specific DNS Suffix . : CAP.TSP
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-15-5D-02-04-0A
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::b1f1:9ebe:fc4f:8ef5%2(PREFERRED)
IPv4 Address. . . . . : 192.168.2.7(PREFERRED)
Subnet Mask . . . . . : 255.255.255.240
Default Gateway . . . . . : 192.168.2.14
DHCPv6 IAID . . . . . : 100668765
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B5-4B-D4-00-15-5D-02-04-0A
DNS Servers . . . . . : 192.168.2.1
NetBIOS over Tcpip. . . . . : Enabled
Connection-specific DNS Suffix Search List :
CAP.TSP
```

Ethernet adapter HB:

```
Connection-specific DNS Suffix . . . . . : Microsoft Hyper-V Network Adapter #2
Description . . . . . : Microsoft Hyper-V Network Adapter #2
Physical Address. . . . . : 00-15-5D-02-04-0B
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::3835:4f08:c4f6:d571%7(PREFERRED)
IPv4 Address. . . . . : 20.20.20.3(PREFERRED)
Subnet Mask . . . . . : 255.255.255.248
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 117445981
DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-B5-4B-D4-00-15-5D-02-04-0A
DNS Servers . . . . . : fec0:0:0:ffff::1%1
fec0:0:0:ffff::2%1
```

Server Manager • All Servers

Dashboard All Servers AD DS DNS File and Storage Services Hyper-V

Server Name	IPv4 Address	Manageability	Last Update	Windows Activ
718DC1	192.168.2.1	Online - Performance counters not started	2023-03-28 2:28:40 PM	00455-50000-0
718FILE01	192.168.2.6	Online - Performance counters not started	2023-03-28 2:31:59 PM	00455-50000-0
718FILE02	192.168.2.7	Online - Performance counters not started	2023-03-28 2:32:02 PM	00455-50000-0
718HV1	10.10.10.2,192.168.2.4,192.168.2.8,20.20.20.1,30.30.30.1	Online - Performance counters not started	2023-03-28 2:28:40 PM	00455-50000-0
718HV2	10.10.10.3,192.168.2.5,20.20.20.2,30.30.30.2	Online - Performance counters not started	2023-03-28 2:28:40 PM	00455-50000-0
718SAN	10.10.10.1,192.168.2.12	Online - Performance counters not started	2023-03-28 2:28:41 PM	00455-50000-0
HVCluster	10.10.10.2,192.168.2.4,192.168.2.8,20.20.20.1,30.30.30.1	Online	2023-03-28 2:28:40 PM	-

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The screenshot shows the Failover Cluster Manager interface with two clustered roles listed:

Name	Status	Type	Owner Node	Priority
718File1	Running	Virtual Machine	718HV2	Medium
718File2	Running	Virtual Machine	718HV1	Medium

A detailed view of the 718File2 role properties is shown in a modal window:

- General Tab:** Shows the role name "718File2".
- Preferred Owners:** A list of preferred owners includes "718HV1" and "718HV2", both marked with checked checkboxes.
- Priority:** Set to "Medium".
- Status:** "Running".
- Node:** "718HV1".

At the bottom of the modal are "OK", "Cancel", and "Apply" buttons.

The left sidebar of the FCM interface shows the navigation tree:

- Failover Cluster Manager
- HVClust.CAP.TSP
 - Roles
 - Nodes
 - Storage
 - Networks
 - Cluster Events

Add HB network adaptor on both file server

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The screenshot shows two windows. The top window is titled "Settings for 718File01 on 718HV1.CAP.TSP" and displays the "Hardware" and "Management" tabs. The "Management" tab is active, showing the name "718File01". The bottom window is titled "718File01 on 718HV1 - Virtual Machine Connection" and shows a PowerShell session. The session starts with the command `Rename-NetAdapter -InterfaceAlias "ethernet 2" -NewName "HB"`, followed by `New-NetIPAddress -InterfaceIndex 11 -IPAddress 20.20.20.3 -PrefixLength 29`. It then lists the properties of the new interface, including:

```
PS C:\Users\sanish> Rename-NetAdapter -InterfaceAlias "ethernet 2" -NewName "HB"
PS C:\Users\sanish> New-NetIPAddress -InterfaceIndex 11 -IPAddress 20.20.20.3 -PrefixLength 29

IPAddress      : 20.20.20.3
InterfaceIndex  : 11
InterfaceAlias  : HB
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::.MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::.MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

IPAddress      : 20.20.20.3
InterfaceIndex  : 11
InterfaceAlias  : HB
```

```

Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\sanish> Rename-NetAdapter -Name "ethernet" -NewName "HB"
PS C:\Users\sanish> New-NetIPAddress -InterfaceAlias "HB" -IPAddress 20.20.20.4 -PrefixLength 29

IPAddress      : 20.20.20.4
InterfaceIndex : 10
InterfaceAlias : HB
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Tentative
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False
PolicyStore     : ActiveStore

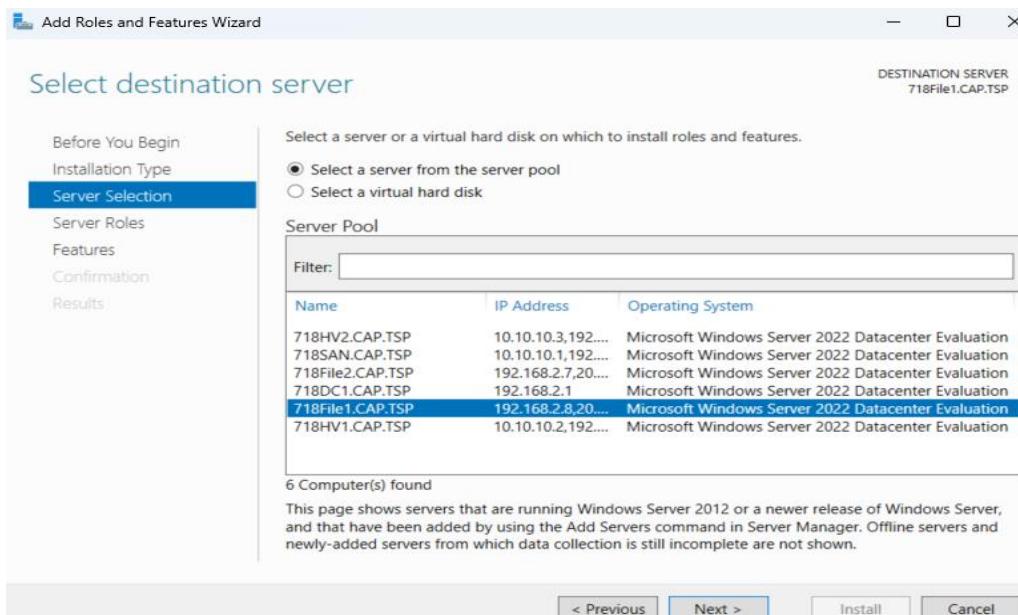
IPAddress      : 20.20.20.4
InterfaceIndex : 10
InterfaceAlias : HB
AddressFamily   : IPv4
Type           : Unicast
PrefixLength    : 29
PrefixOrigin    : Manual
SuffixOrigin    : Manual
AddressState    : Invalid
ValidLifetime   : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
SkipAsSource    : False

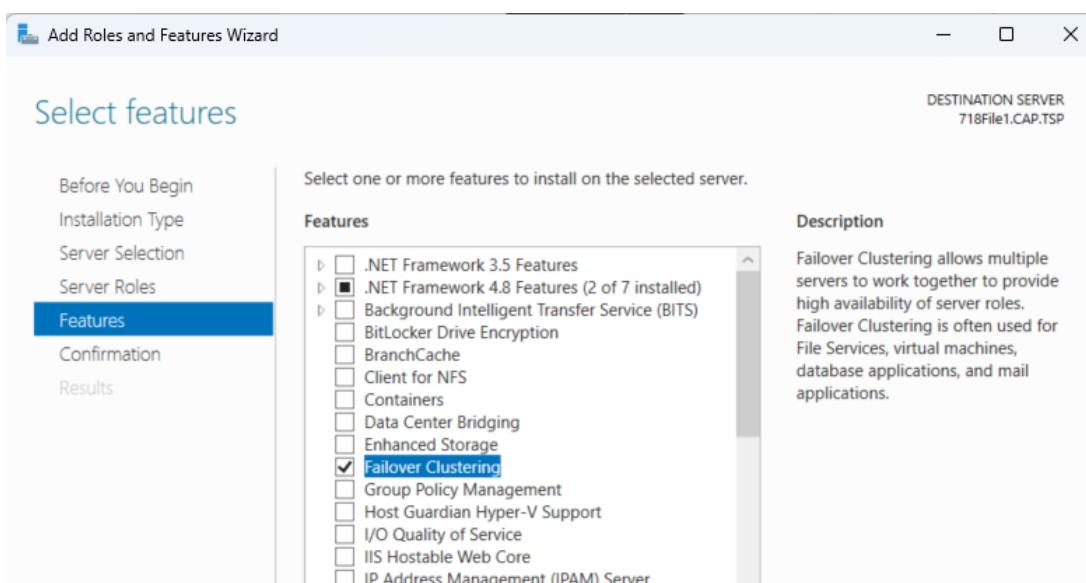
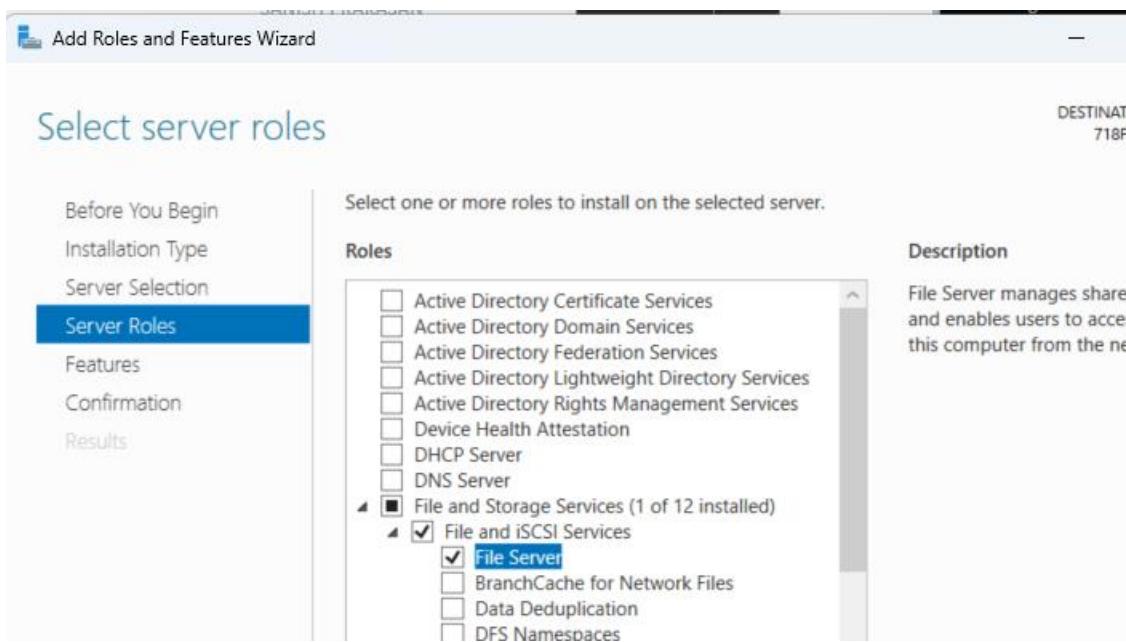
```

Create a check points on DC1,San,HV1,HV2 named before File server

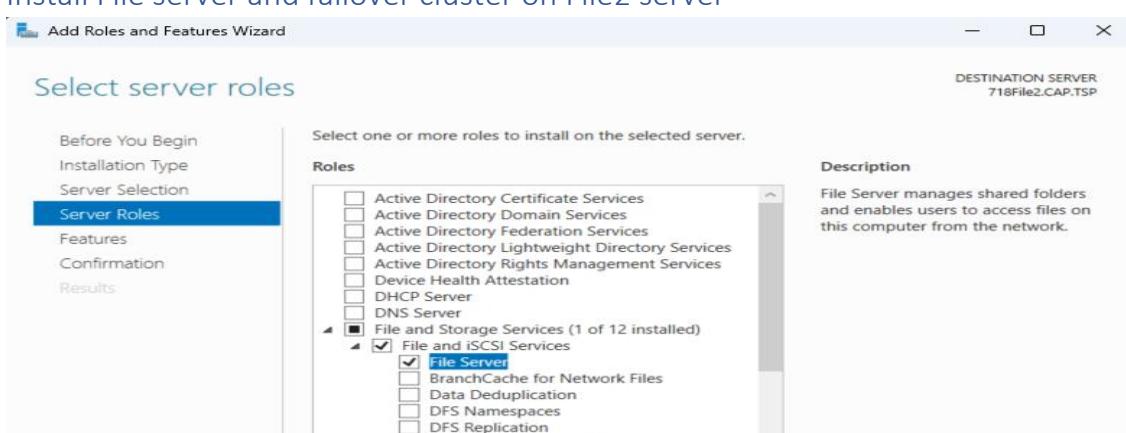
Install and configure File server role & Cluster feature on both File server.

Install File server and failover cluster on File1 server

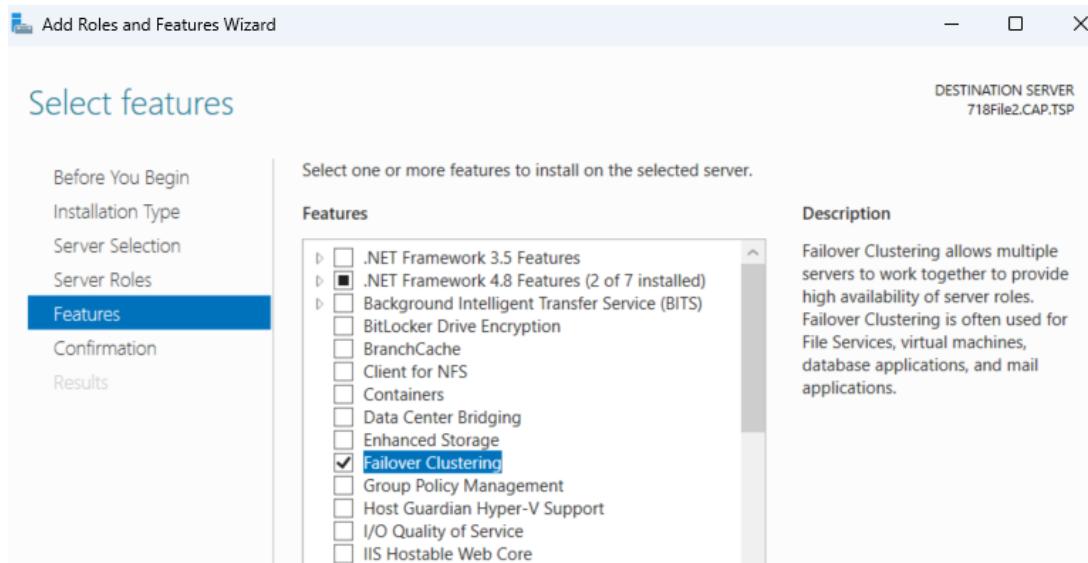




Install File server and failover cluster on File2 server

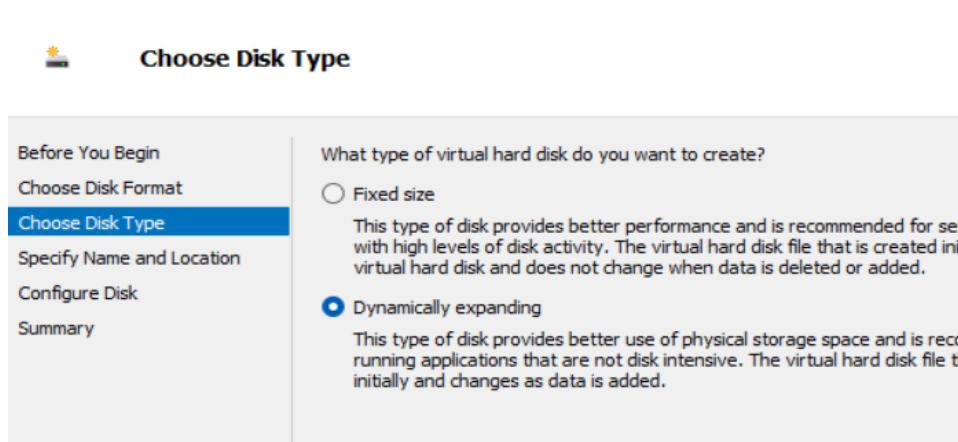
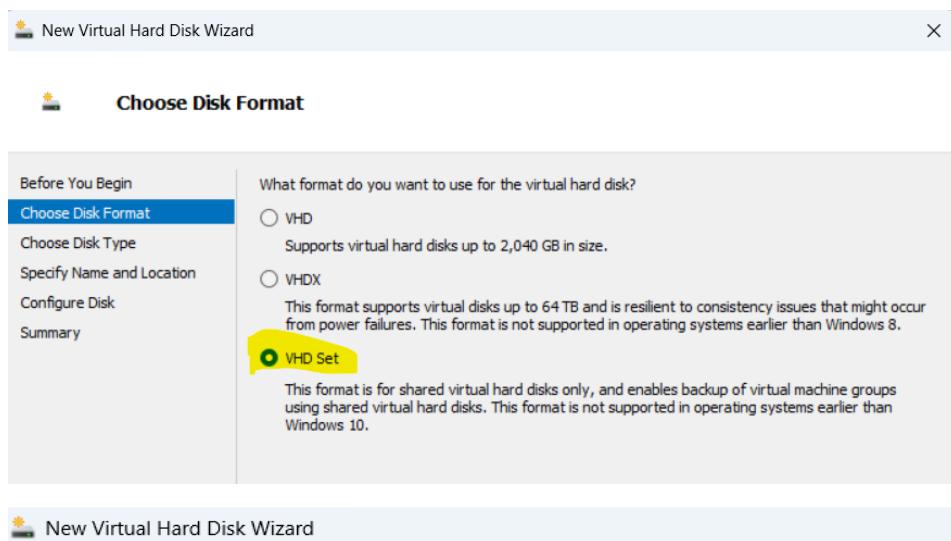


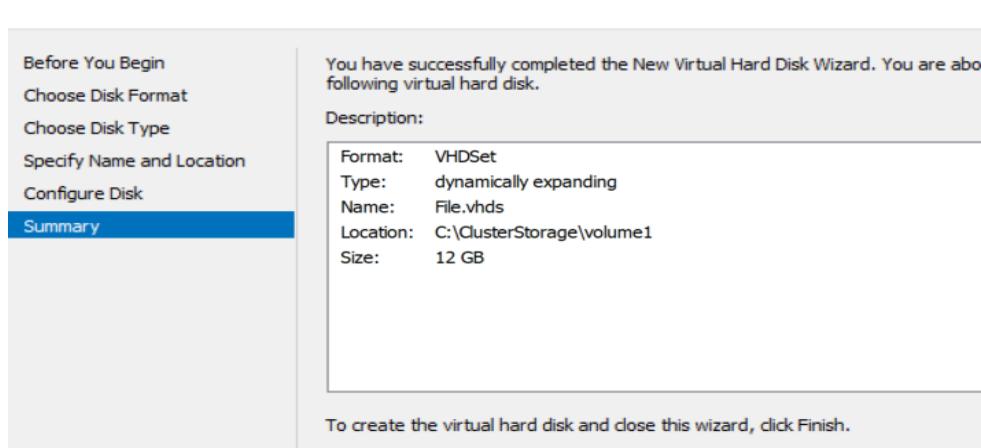
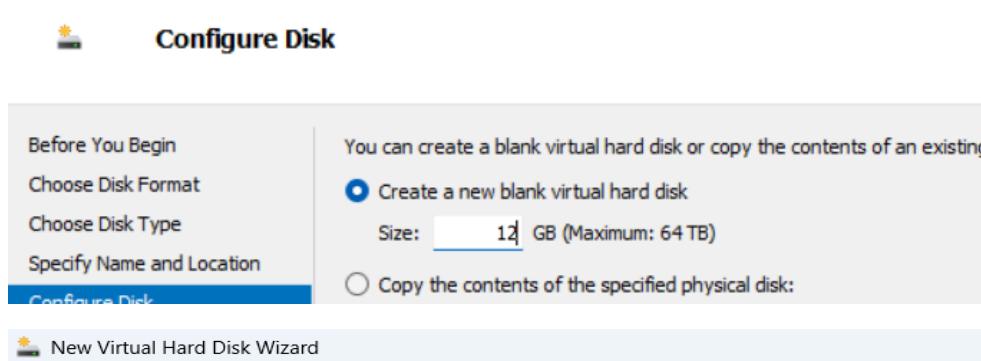
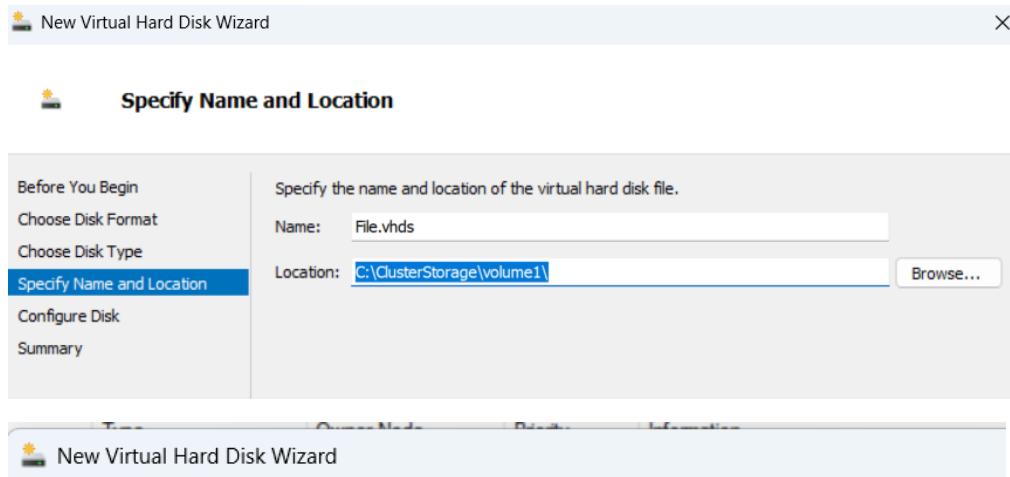
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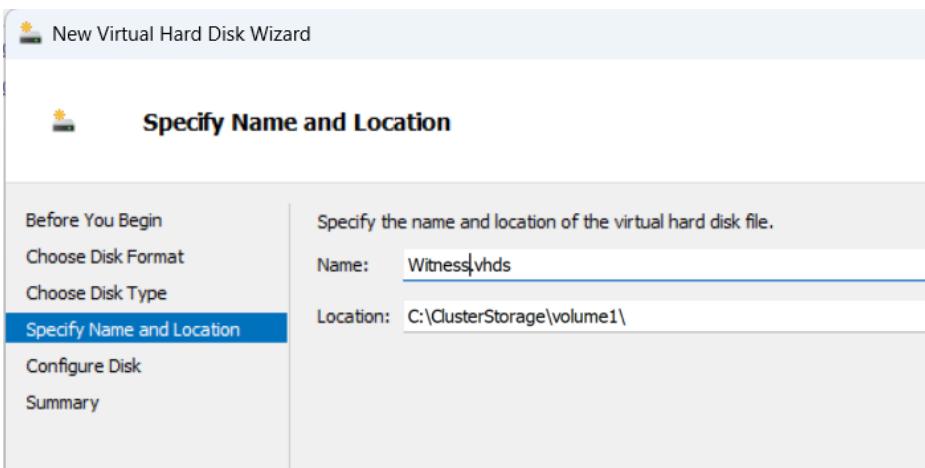
Create a VHD Set for Storage

Open fail over cluster manager→roles→virtual machines→select new hard disk





Create second Vhd set disk for witness



Configure Disk

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

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: 2 GB (Maximum: 64 TB)

Copy the contents of the specified physical disk:

Volume1				
New	Cut Copy Paste Delete Sort View More			
< > v ^ [Network > 718hv1.cap.tsp > c\$ > ClusterStorage > Volume1]				
Home	Name	Date modified	Type	Size
sanish - Personal	VMs	2023-03-28 5:22 PM	File folder	
Desktop	WinServer	2023-03-28 5:21 PM	File folder	
Downloads	File.vhds	2023-03-29 8:46 AM	VHDS File	260 KB
Documents	File_03633b68-1b49-410e-92f3-7bdfe46996.avhdx	2023-03-29 8:46 AM	AVHDX File	4,096 KB
Pictures	Witness_299c2e7a-a073-4b67-a157-6ed4a32d10b4.avh...	2023-03-29 8:55 AM	AVHDX File	4,096 KB
Music	Witness.vhds	2023-03-29 8:55 AM	VHDS File	260 KB
Videos				

Copy the newly created disk to VHDX folder

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VHDX				
+ New X Close Sort View ...				
← → ↑ ↓ ...				
		\718hv1.cap.tsp\c\$\ClusterStorage\Volume1\VMs\VHDX		
Home	Name	Date modified	Type	Size
sanish - Personal	718File1	2023-03-28 7:18 PM	Hard Disk Image File	13,242,368 KB
	718File2	2023-03-28 7:18 PM	Hard Disk Image File	7,671,808 KB
Desktop	File.vhds	2023-03-29 8:46 AM	VHDS File	260 KB
Downloads	File_03633b68-1b49-410e-92f3-7bdfe46996.avhdx	2023-03-29 8:46 AM	AVHDX File	4,096 KB
Documents	Witness.vhds	2023-03-29 8:55 AM	VHDS File	260 KB
Pictures	Witness_299c2e7a-a073-4b67-a157-6ed4a32d10b4.avh...	2023-03-29 8:55 AM	AVHDX File	4,096 KB

Attach file disk and witness disk to File1 and File2

Settings for 718File1 on 718HV2.CAP.TSP

The screenshot shows the 'Hardware' section of the settings window. Under 'Shared Drive', a 'Virtual hard disk' is selected with the path 'C:\ClusterStorage\volume1\vm\vhdx\witness.vhds'. The 'Controller' is set to 'SCSI Controller' and 'Location' to '2 (in use)'. A 'Remove' button is visible at the bottom right.

Settings for 718File2 on 718HV1.CAP.TSP

The screenshot shows the 'Hardware' section of the settings window. Under 'Shared Drive', a 'Virtual hard disk' is selected with the path 'C:\ClusterStorage\volume1\vm\vhdx\witness.vhds'. The 'Controller' is set to 'SCSI Controller' and 'Location' to '2 (in use)'. A 'Remove' button is visible at the bottom right.

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Make online these disks in one fileserver

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0	718DC1 (2)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT				SAS	Msft Virtual Disk
0	718File1 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Online	12.0 GB	12.0 GB	Unknown				SAS	Msft Virtual Disk
2		Online	2.00 GB	2.00 GB	Unknown				SAS	Msft Virtual Disk
0	718File2 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Offline	12.0 GB	12.0 GB	Unknown	✓			SAS	Msft Virtual Disk
2		Offline	2.00 GB	2.00 GB	Unknown	✓			SAS	Msft Virtual Disk
0	718HV1 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1										

Format these disks

New Volume Wizard

Select the server and disk

Before You Begin

Server and Disk

Size

Drive Letter or Folder

File System Settings

Confirmation

Results

Server:

Provision to	Status	Cluster Role	Destination
718DC1	Online	Not Clustered	Local
718File1	Online	Not Clustered	Local
718File2	Online	Not Clustered	Local
718HV1	Online	Cluster Node	Local
718HV2	Online	Cluster Node	Local
718HV3	Online	Not Clustered	Local

Disk:

Disk	Virtual Disk	Capacity	Free Space	Subsystem
Disk 1		12.0 GB	12.0 GB	
Disk 2		2.00 GB	2.00 GB	

< Previous Next > Create Cancel

New Volume Wizard

Confirm selections

Before You Begin

Server and Disk

Size

Drive Letter or Folder

File System Settings

Confirmation

Results

Confirm that the following are the correct settings,

VOLUME LOCATION

Server:	718File1
Disk:	Disk 1
Free space:	12.0 GB

VOLUME PROPERTIES

Volume size:	12.0 GB
Drive letter or folder:	D:\
Volume label:	FSData

FILE SYSTEM SETTINGS

File system:	NTFS
Short file name creation:	Disabled
Allocation unit size:	Default

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Do the same steps for witness disk

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0	718DC1 (2)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Online	30.0 GB	0.00 B	GPT				SAS	Msft Virtual Disk
0	718File1 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Online	12.0 GB	0.00 B	GPT				SAS	Msft Virtual Disk
2		Online	2.00 GB	0.00 B	GPT				SAS	Msft Virtual Disk
0	718File2 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk
1		Offline	12.0 GB	0.00 B	GPT	✓			SAS	Msft Virtual Disk
2		Offline	2.00 GB	0.00 B	GPT	✓			SAS	Msft Virtual Disk
0	718HV1 (3)	Online	30.0 GB	1.00 MB	GPT				SAS	Msft Virtual Disk

Check connection between file1 and file 2 through HB network

718File2 on 718HV1 - Virtual Machine Connection

File Action Media Clipboard View Help

Administrator: C:\Windows\system32\cmd.exe

```
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
PS C:\Users\sanish> ping 20.20.20.4

Pinging 20.20.20.4 with 32 bytes of data:
Request timed out.
Reply from 20.20.20.4: bytes=32 time=1ms TTL=128
Reply from 20.20.20.4: bytes=32 time=1ms TTL=128
Reply from 20.20.20.4: bytes=32 time=1ms TTL=128

Ping statistics for 20.20.20.4:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

718File1 on 718HV2 - Virtual Machine Connection

File Action Media Clipboard View Help

Administrator: C:\Windows\system32\cmd.exe

```
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
PS C:\Users\sanish> ping 20.20.20.3

Pinging 20.20.20.3 with 32 bytes of data:
Reply from 20.20.20.3: bytes=32 time=1ms TTL=128

Ping statistics for 20.20.20.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

```
[718HV2]: PS C:\Users\sanish\Documents> Get-NetAdapter
Name                InterfaceDescription          ifIndex Status   MacAddress      LinkSpeed
----                ----
vEthernet (LAN)     Hyper-V Virtual Ethernet Adapter    12 Up       00-15-5D-01-7C-13  10 Gbps
HB                  Microsoft Hyper-V Network Adapter #3 11 Up       00-15-5D-01-7C-18  10 Gbps
vEthernet (HB)      Hyper-V Virtual Ethernet Adapter #2 28 Up       00-15-5D-01-7C-17  10 Gbps
ISCSI               Microsoft Hyper-V Network Adapter #2  9 Up       00-15-5D-01-7C-17  10 Gbps
LAN                 Microsoft Hyper-V Network Adapter   6 Up       00-15-5D-01-7C-13  10 Gbps
LM                  Microsoft Hyper-V Network Adapter #4  2 Up       00-15-5D-01-7C-19  10 Gbps

[718HV2]: PS C:\Users\sanish\Documents> exit
PS C:\WINDOWS\system32> Enter-PSSession -VMName 718hv1
cmdlet Enter-PSSession at command pipeline position 1
Supply values for the following parameters:
[718HV1]: PS C:\Users\sanish\Documents> Get-NetAdapter
Name                InterfaceDescription          ifIndex Status   MacAddress      LinkSpeed
----                ----
ISCSI               Microsoft Hyper-V Network Adapter #2 12 Up       00-15-5D-01-7C-14  10 Gbps
vEthernet (LAN)     Hyper-V Virtual Ethernet Adapter    11 Up       00-15-5D-01-7C-12  10 Gbps
LM                  Microsoft Hyper-V Network Adapter #4 10 Up       00-15-5D-01-7C-16  10 Gbps
HB                  Microsoft Hyper-V Network Adapter #3  9 Up       00-15-5D-01-7C-15  10 Gbps
LAN                 Microsoft Hyper-V Network Adapter   8 Up       00-15-5D-01-7C-12  10 Gbps
vEthernet (HB)      Hyper-V Virtual Ethernet Adapter #2 28 Up       00-15-5D-01-7C-14  10 Gbps

[718HV1]: PS C:\Users\sanish\Documents>
```

Create and configure the File Server Cluster

Open failover cluster manager and validate the configuration for File1 and file2.



```
718File1 on 718HV2 - Virtual Machine Connection
File Action Media Clipboard View Help
File | Power | Stop | Start | Pause | Run | Refresh | Help

Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\sanish> test-cluster 718file1,718file2
Mode           LastWriteTime        Length Name
----           -----          -----  -
-a---  3/29/2023 11:28 AM 505644 Validation Report 2023.03.29 At 11.26.09.htm

PS C:\Users\sanish> new-cluster -name FSCluster -node 718File1,718File2 -StaticAddress 192.168.2.9
Name
-----
FSCluster

PS C:\Users\sanish>
```

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Active Directory Users and Computers

Name	Type	Description
718FILE1	Computer	
718FILE2	Computer	
FSCluster	Computer	

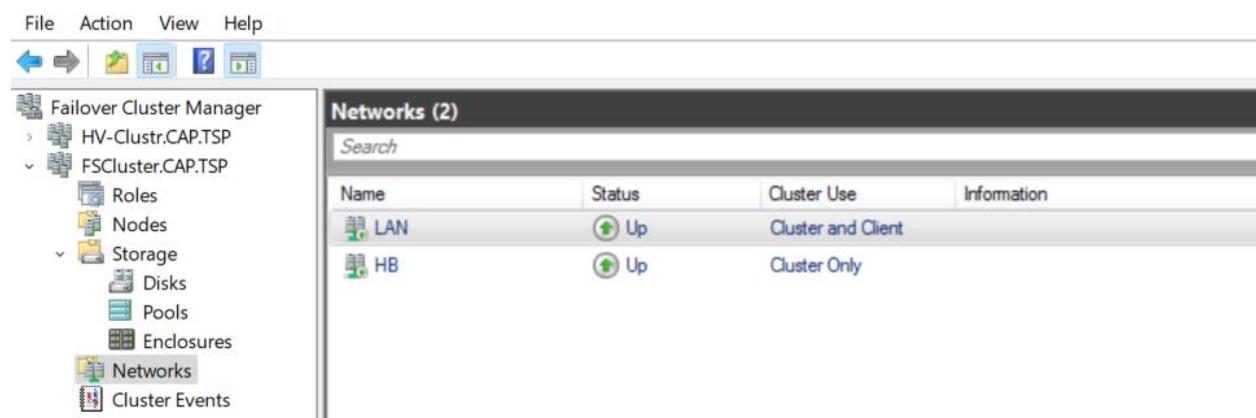
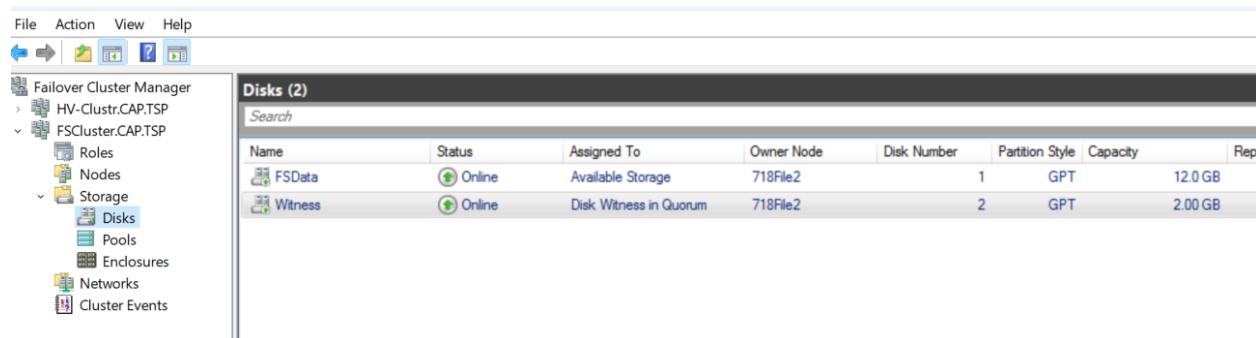
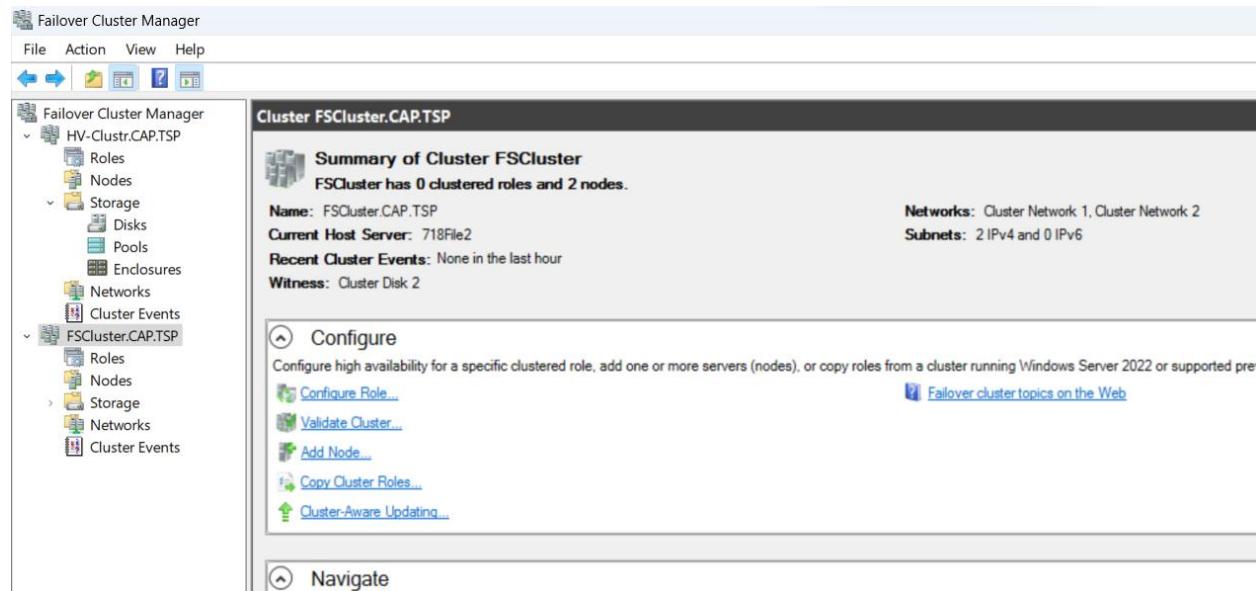
DNS

Name	Type	Data	Timestamp
_msdcs	Start of Authority (SOA)	[58], 718dc1.cap.tsp., host...	static
_sites	Name Server (NS)	718dc1.cap.tsp.	static
_tcp	Host (A)	192.168.2.1	2023-03-28 2:00:00 PM
_udp	Host (A)	192.168.2.1	static
DomainDnsZones	Host (A)	192.168.2.8	2023-03-28 7:00:00 PM
ForestDnsZones	Host (A)	192.168.2.7	2023-03-28 7:00:00 PM
(same as parent folder)	Host (A)	192.168.2.4	2023-03-26 9:00:00 PM
(same as parent folder)	Host (A)	192.168.2.5	2023-03-26 9:00:00 PM
718dc1	Host (A)	192.168.2.3	static
718File1	Host (A)	192.168.2.12	2023-03-24 12:00:00 PM
718File2	Host (A)	192.168.2.13	2023-03-28 9:00:00 PM
718HV1	Host (A)	192.168.2.6	2023-03-28 4:00:00 PM
718HV2	Host (A)	192.168.2.9	2023-03-29 11:00:00 AM
718LDHCP	Host (A)	192.168.2.2	2023-03-29 11:00:00 AM
718SAN	Host (A)	192.168.2.1	2023-03-26 9:00:00 PM
FSCluster	Host (A)	192.168.2.1	2023-03-28 9:00:00 PM
HV-Clstr	Host (A)	192.168.2.1	2023-03-28 9:00:00 PM
sanish	Host (A)	192.168.2.1	2023-03-28 9:00:00 PM

All Servers

Server Name	IPv4 Address	Manageability
718DC1	192.168.2.1	Online - Performance counters not started
718FILE1	192.168.2.8,20.20.20.4	Online - Performance counters not started
718FILE2	192.168.2.7,192.168.2.9,20.20.20.3	Online - Performance counters not started
718HV1	10.10.10.2,192.168.2.4,20.20.20.1,30.30.30.1	Online - Performance counters not started
718HV2	10.10.10.3,192.168.2.5,192.168.2.6,20.20.20.2,30.30.30.2	Online - Performance counters not started
718SAN	10.10.10.1,192.168.2.12	Online - Performance counters not started
FSCluster	192.168.2.7,192.168.2.9,20.20.20.3	Online
HV-Clstr	10.10.10.3,192.168.2.5,192.168.2.6,20.20.20.2,30.30.30.2	Online

Add Fscluster to failover cluster manager



Create quorum witness

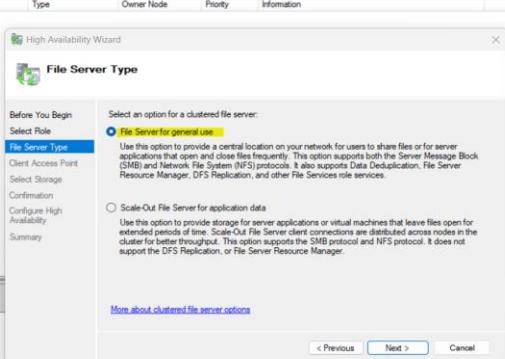
 Configure Cluster Quorum Wizard

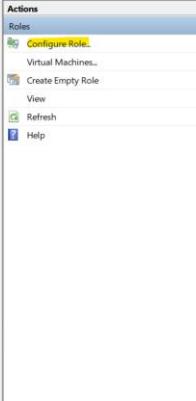
 **Configure Storage Witness**

Before You Begin	Select the storage volume that you want to assign as the disk witness.												
Select Quorum Configuration Option													
Select Quorum Witness													
Configure Storage Witness	<table border="1"> <thead> <tr> <th>Name</th> <th>Status</th> <th>Node</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>FSData</td> <td>Online</td> <td>718File2</td> <td>Available Storage</td> </tr> <tr> <td><input checked="" type="checkbox"/> Witness</td> <td>Online</td> <td>718File2</td> <td>Cluster Group</td> </tr> </tbody> </table>	Name	Status	Node	Location	FSData	Online	718File2	Available Storage	<input checked="" type="checkbox"/> Witness	Online	718File2	Cluster Group
Name	Status	Node	Location										
FSData	Online	718File2	Available Storage										
<input checked="" type="checkbox"/> Witness	Online	718File2	Cluster Group										
Confirmation													
Configure Cluster Quorum Settings													
Summary													

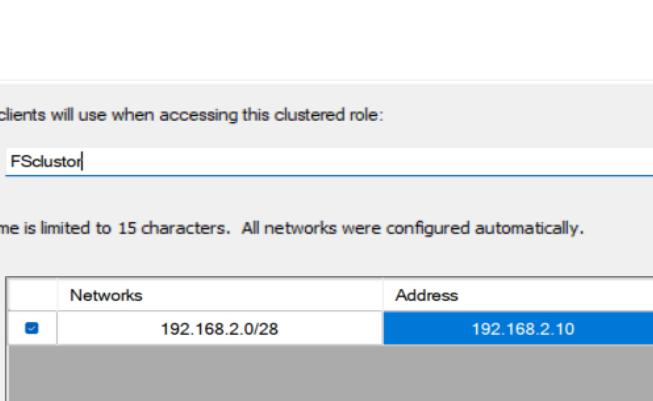
Create a File server role in failover cluster.

 Failover Cluster Manager

 High Availability Wizard
File Server Type
File Server for general use
Client Access Point
Select Storage
Confirmation
Configure High Availability
Summary

 Actions
Roles
Configure Role...
Virtual Machines...
Create Empty Role
View
Refresh
Help

 High Availability Wizard

 Client Access Point

Before You Begin	Type the name that clients will use when accessing this clustered role:				
Select Role	Name: FScluster				
File Server Type					
Client Access Point	<p>The NetBIOS name is limited to 15 characters. All networks were configured automatically.</p> <table border="1"> <thead> <tr> <th>Networks</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td>192.168.2.0/28</td> <td>192.168.2.10</td> </tr> </tbody> </table>	Networks	Address	192.168.2.0/28	192.168.2.10
Networks	Address				
192.168.2.0/28	192.168.2.10				
Select Storage					
Confirmation					
Configure High Availability					
Summary					



Error

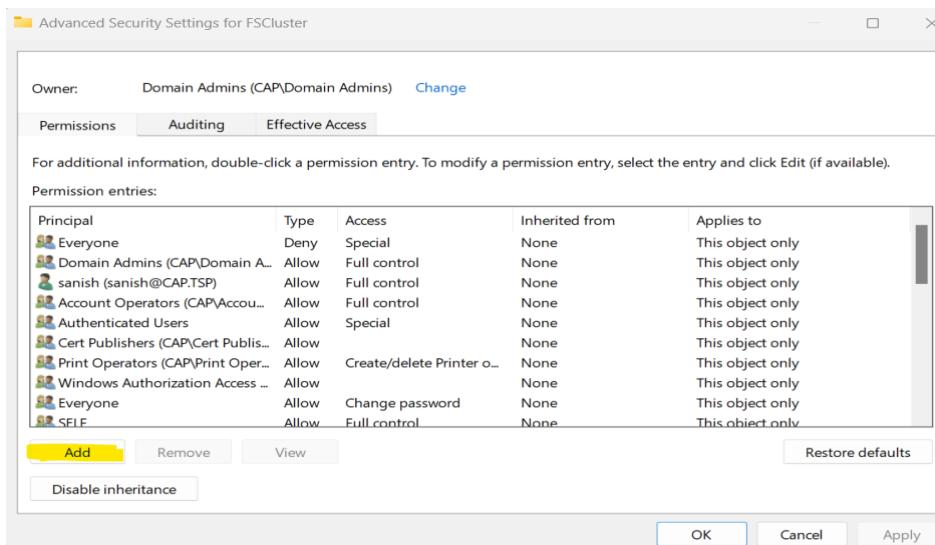
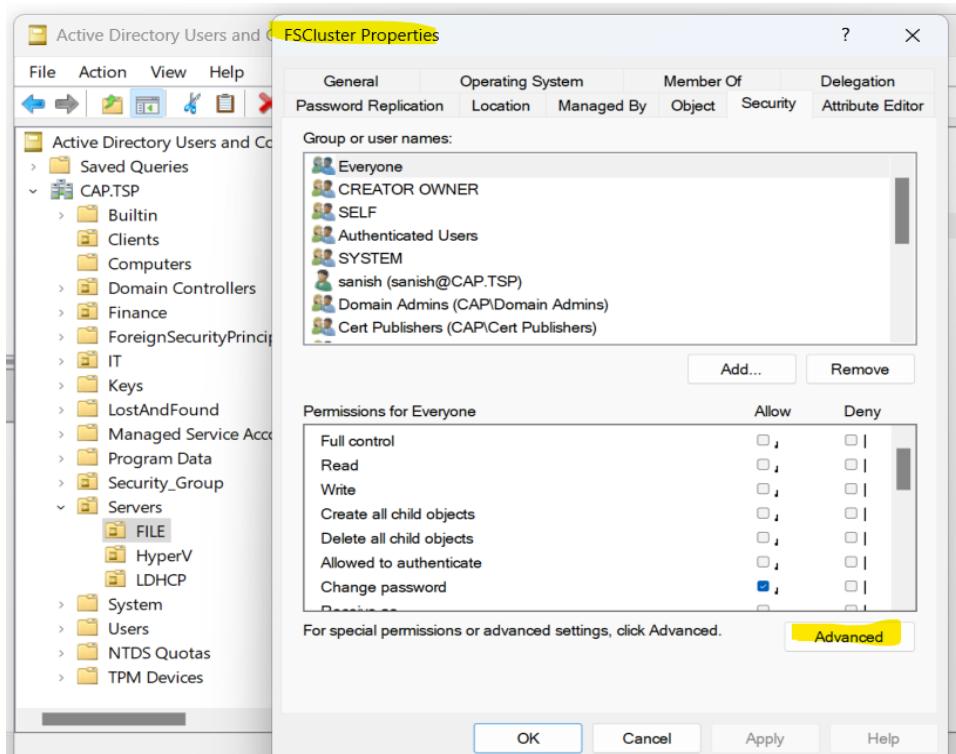
Name	Status	Type	Owner Node	Priority	Information
FScluster	Failed	File Server	718File1	Medium	

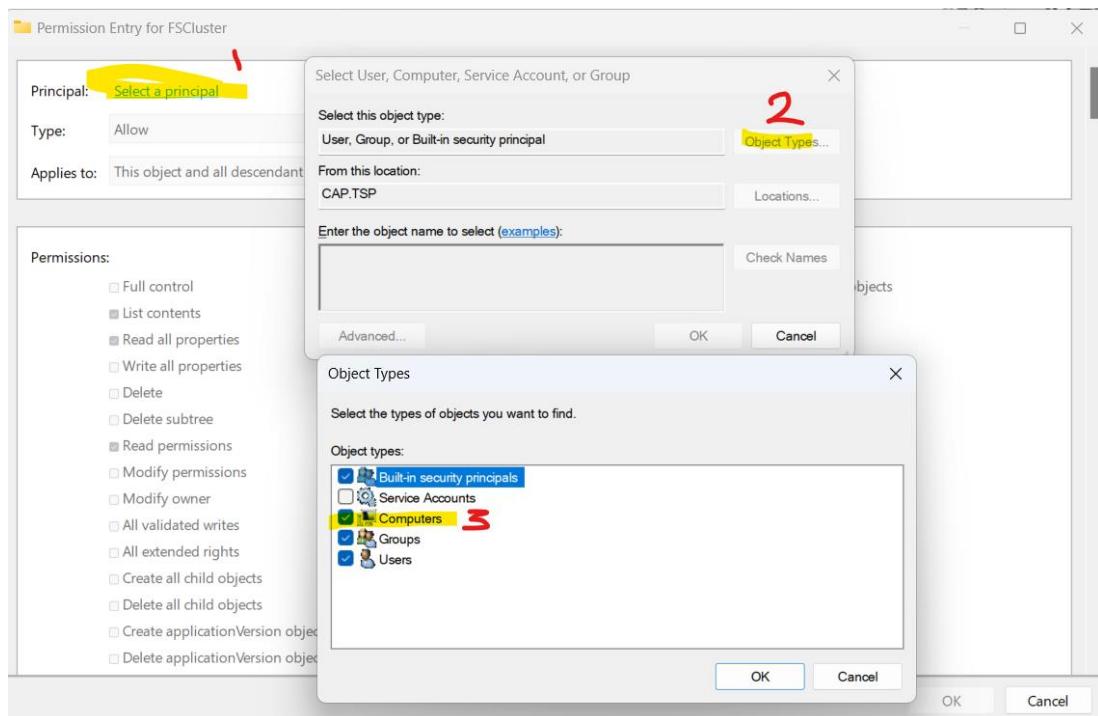
Solution

FileServerCluster does not have permission to create computer objects in DC1

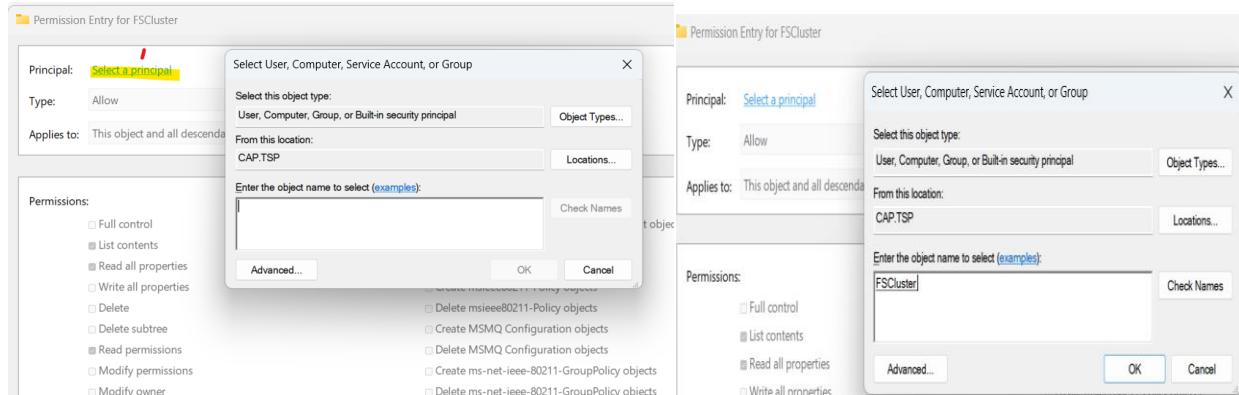
Open ADDUC

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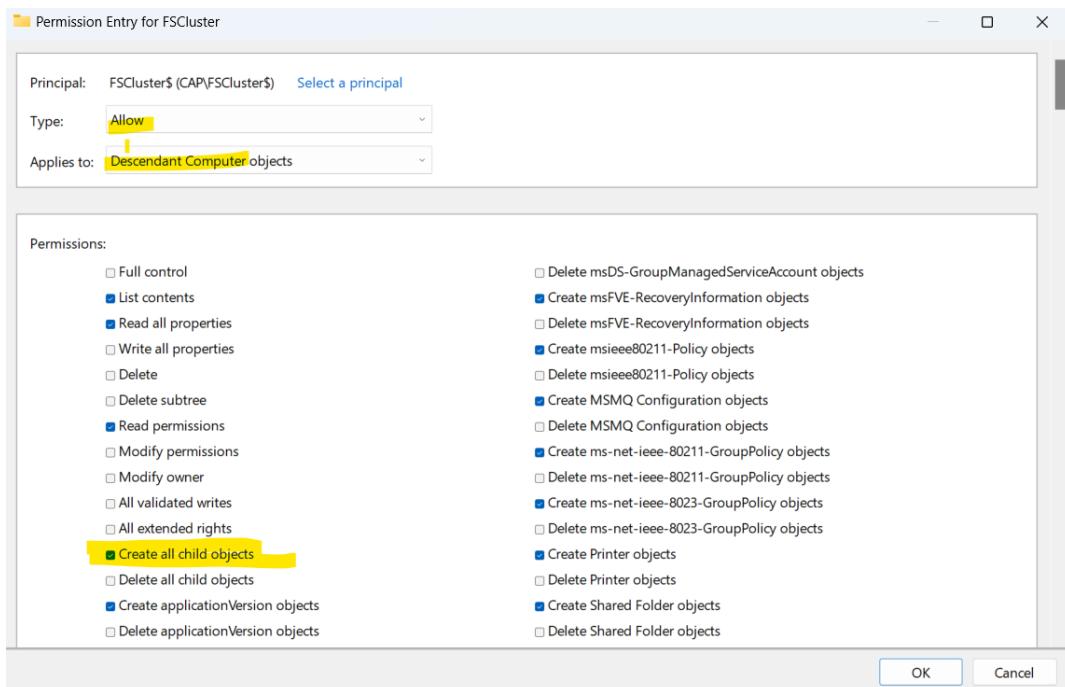




Add the object as FSCluster



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Owner: Domain Admins (CAP\Domain Admins) Change						
Permissions	Auditing	Effective Access				
For additional information, double-click a permission entry. To modify a permission entry, select the entry and click Edit (if available).						
Permission entries:						
Principal	Type	Access	Inherited from	Applies to		
Everyone	Deny	Special	None	This object only		
Domain Admins (CAP\Domain Adm...)	Allow	Full control	None	This object only		
sanish (sanish@CAP.TSP)	Allow	Full control	None	This object only		
Account Operators (CAP\Account O...)	Allow	Full control	None	This object only		
Authenticated Users	Allow	Special	None	This object only		
SELF	Allow	Full control	None	This object only		
SYSTEM	Allow	Full control	None	This object only		
Cert Publishers (CAP\Cert Publishers)	Allow		None	This object only		
Print Operators (CAP\Print Operators)	Allow	Create/delete Printer obj...	None	This object only		
Windows Authorization Access Grou...	Allow		None	This object only		
Everyone	Allow	Change password	None	This object only		
FSCluster\$ (CAP\FSCluster\$)	Allow	Special	None	Descendant Computer objects		
Enterprise Admins (CAP\Enterprise A...)	Allow	Full control	DC=CAP,DC=TSP	This object and all descendant obj...		
Pre-Windows 2000 Compatible Acce...	Allow	List contents	DC=CAP,DC=TSP	This object and all descendant obj...		
Administrators (CAP\Administrators)	Allow	Special	DC=CAP,DC=TSP	This object and all descendant obj...		
Pre-Windows 2000 Compatible Acce...	Allow	Special	DC=CAP,DC=TSP	Descendant InetOrgPerson objects		
Pre-Windows 2000 Compatible Acce...	Allow	Special	DC=CAP,DC=TSP	Descendant Group objects		
Pre-Windows 2000 Compatible Acce...	Allow	Special	DC=CAP,DC=TSP	Descendant User objects		
SELF	Allow		DC=CAP,DC=TSP	This object and all descendant obj...		

Create and configure Secondary Domain Controller(DC2)

The screenshot shows the Failover Cluster Manager interface. On the left, the navigation pane lists clusters: HV-Clstr.CAP.TSP and FileCCAP.TSP. Under HV-Clstr.CAP.TSP, the 'Storage' node is expanded, showing 'Disks', 'Pools', and 'Enclosures'. Under FileCCAP.TSP, the 'Storage' node is also expanded. The main pane displays a table titled 'Roles (2)' with two entries:

Name	Status	Type	Owner Node	Priority	Information
718File1	Running	Virtual Machine	718HV2	Medium	
718File2	Running	Virtual Machine	718HV1	Medium	

The Actions pane on the right shows options for 718File1, including 'Connect...', 'Start', 'Save', 'Shut Down', 'Turn Off', 'Settings...', 'Manage...', 'Replication', and 'Move'.

Shut down one File server , move the other server to that owner node

This screenshot shows the same Failover Cluster Manager interface after one of the file servers has been shutdown. The table in the center now shows:

Name	Status	Type	Owner Node	Priority	Information
718File1	Off	Virtual Machine	718HV2	Medium	
718File2	Running	Virtual Machine	718HV2	Medium	

Create new VM and post installation tasks

Open HV failover cluster manager → Action pane on the right → virtual machine → new virtual machine

VM name → DC2, RAM → 800MB, network adaptor → LAN

The screenshot shows the Failover Cluster Manager interface with three virtual machines listed in the 'Roles (3)' table:

Name	Status	Type	Owner Node	Priority	Information
718DC2	Running	Virtual Machine	718HV1	Medium	
718File1	Off	Virtual Machine	718HV2	Medium	
718File2	Running	Virtual Machine	718HV2	Medium	

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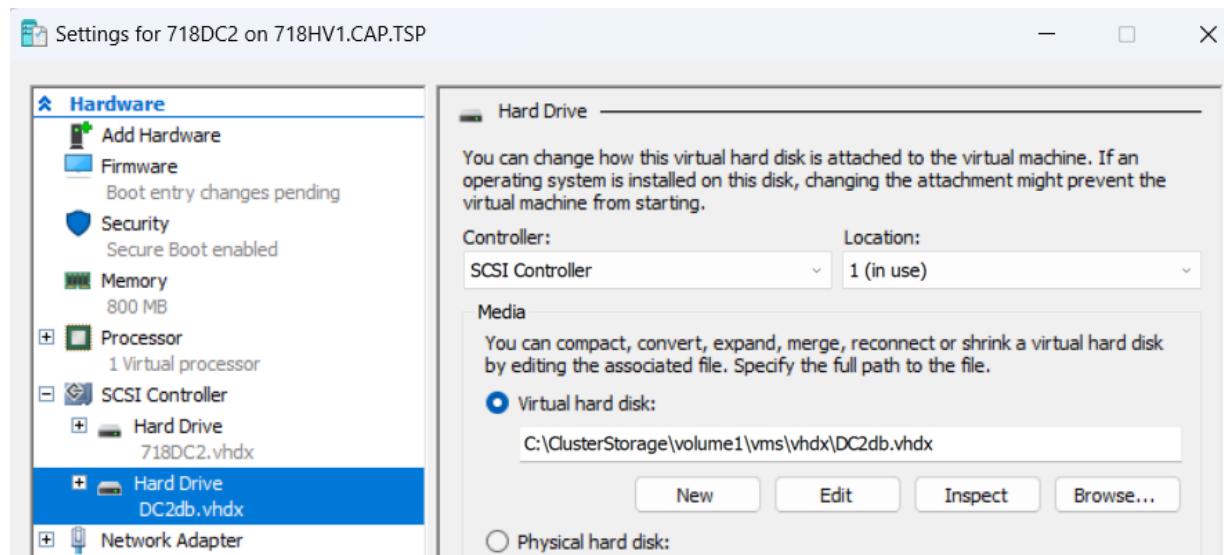
```
PS C:\Users\Administrator> Get-NetAdapter
Name           InterfaceDescription          ifIndex Status      MacAddress      LinkSpeed
----           ----
Ethernet       Microsoft Hyper-V Network Adapter    4 Up       00-15-5D-02-04-0C  10 Gbps

PS C:\Users\Administrator> Rename-NetAdapter -InterfaceAlias "ethernet" -NewName "LAN"
PS C:\Users\Administrator> New-NetIPAddress -InterfaceIndex 4 -IPAddress 192.168.2.2 -PrefixLength 28 -DefaultGateway 192.168.2.14

IPAddress      : 192.168.2.2
InterfaceIndex  : 4
InterfaceAlias  : LAN
AddressFamily   : IPv4
Type           : Unicast
PrefixLength   : 28
PrefixOrigin    : Manual

PS C:\Users\Administrator> Set-DnsClientServerAddress -InterfaceIndex 4 -ServerAddresses ("192.168.2.1,192.168.2.2")
PS C:\Users\Administrator>
```

Create and attach 20gb hard disk named DC2db



Initialize disk

```
PS C:\Users\Administrator> get-disk
Number Friendly Name Serial Number          HealthStatus  OperationalStatus  Total Size Partition Style
----   ----
0      Msft Virtu...                         Healthy      Online
1      Msft Virtu...                         Healthy      Offline      30 GB  GPT
20 GB RAW

PS C:\Users\Administrator> Initialize-Disk -Number 1
PS C:\Users\Administrator> New-Partition -DiskNumber 1 -UseMaximumSize

DiskPath: \\?\scsi#disk&ven_msft&prod_virtual_disk#5&33f66415&0&000001#{53f56307-b6bf-11d0-94f2-00a0c91efb8b}

PartitionNumber DriveLetter Offset          Size Type
-----   -----
2                  16777216                19.98 GB Basic
```

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```
PS C:\Users\Administrator> Get-Partition -DiskNumber 1 -PartitionNumber 2 | Format-Volume -FileSystem NTFS
DriveLetter FriendlyName FileSystemType DriveType HealthStatus OperationalStatus SizeRemaining     Size
-----      -----      -----      -----      -----      -----      -----      -----
          NTFS        Fixed       Healthy      OK           19.93 GB 19.98 GB

PS C:\Users\Administrator> Get-Partition -DiskNumber 1 -PartitionNumber 2 | Set-Partition -NewDriveLetter D
PS C:\Users\Administrator>

PS C:\Users\Administrator> cd d:\>
PS D:\> ls
PS D:\> mkdir SYSVOL

Directory: D:\

Mode                LastWriteTime         Length Name
----                -----         -----  -
d----- 3/29/2023 11:14 PM                 SYSVOL

PS D:\> mkdir NTDS
```

Change the name and domain join

The screenshot shows the Windows Active Directory Users and Computers (ADUC) management console. The left navigation pane displays the following tree structure under 'Active Directory Users and Computers':

- Active Directory Users and Computers
- Saved Queries
- CAP.TSP
 - Builtin
 - Clients
 - Computers
 - Domain Controllers
 - Finance
 - ForeignSecurityPrincipals

The 'Domain Controllers' folder is currently selected. The main pane displays a table of objects:

Name	Type	DC Type	Site	Description
718DC1	Computer	GC	Default-First-Site	
718DC2	Computer			

Add AD DS role in DC2

```
PS C:\Users\sanish> Install-WindowsFeature -Name AD-Domain-Services -IncludeManagementTools
Success Restart Needed Exit Code      Feature Result
-----      -----      -----      -----
True        No            Success      {Active Directory Domain Services, Group P...}
```

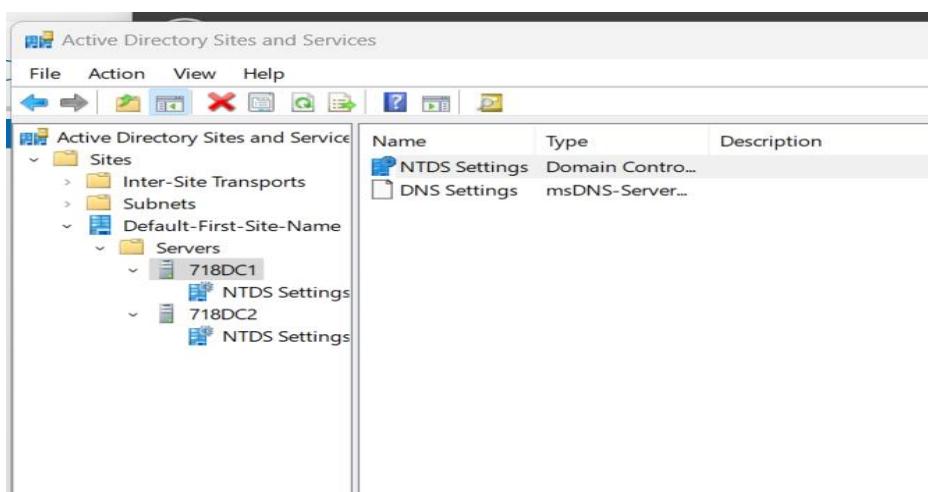
```
PS C:\Users\sanish> Install-ADDSDomainController
>> -NoGlobalCatalog:$false
>> -CreateDnsDelegation:$false
>> -Credential (Get-Credential)
>> -DatabasePath "D:\NTDS"
>> -DomainName "cap.tsp"
>> -InstallDns:$true
>> -LogPath "D:\NTDS"
>> -NoRebootOnCompletion:$false
>> -SiteName "Default-First-Site-Name"
>> -SysvolPath "SYSVOL"
>> -Force

cmdlet Get-Credential at command pipeline position 1
Supply values for the following parameters:
Credential
SafeModeAdministratorPassword: *****
Confirm SafeModeAdministratorPassword: *****
```

```
Administrator: C:\Windows\system32\cmd.exe
cmdlet Get-Credential at command pipeline position 1
Supply values for the following parameters:
Credential
SafeModeAdministratorPassword: *****
Confirm SafeModeAdministratorPassword: *****

Install-ADDSDomainController
Determining replication source DC
Validating environment and user input
    All tests completed successfully
    [oooooooooooooooooooooooooooooooooooooo]
Installing new domain controller
    Replicating CN=Configuration,DC=CAP,DC=TSP: received 1069 out of approximately 1069 objects

WARNING: A delegation for this DNS server cannot be created because the authoritative parent zone cannot be
does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should ma
create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside t
"CAP.TSP". Otherwise, no action is required.
```



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The screenshot shows the Windows DNS Manager application window. The left pane displays a tree view of DNS configurations under 'DNS' and a specific zone '718DC1.CAP.TSP'. The right pane is a table listing DNS records with columns: Name, Type, Data, and Timestamp.

Name	Type	Data	Timestamp
_msdcs	Start of Authority (SOA)	[77], 718dc1.cap.tsp., host...	static
_sites	Name Server (NS)	718dc1.cap.tsp.	static
_tcp	Host (A)	192.168.2.2	2023-03-29 11:00:00 PM
_udp	Host (A)	192.168.2.1	2023-03-28 2:00:00 PM
DomainDnsZones	Host (A)	192.168.2.1	static
ForestDnsZones	Host (A)	192.168.2.2	2023-03-29 11:00:00 PM
(same as parent folder)	Host (A)	192.168.2.8	2023-03-28 7:00:00 PM
(same as parent folder)	Host (A)	192.168.2.7	2023-03-28 7:00:00 PM
718dc1	Host (A)	192.168.2.4	2023-03-26 9:00:00 PM
718DC2	Host (A)	192.168.2.5	2023-03-26 9:00:00 PM
718File1	Host (A)	192.168.2.3	static
718File2	Host (A)	192.168.2.12	2023-03-24 12:00:00 PM
718HV1	Host (A)	192.168.2.9	2023-03-29 6:00:00 PM
718HV2	Host (A)	192.168.2.6	2023-03-28 4:00:00 PM
718LDP	Host (A)	192.168.2.13	2023-03-28 9:00:00 PM
718SAN	Host (A)	192.168.2.11	
FileC	Host (A)	192.168.2.10	
HV-Clustr	Host (A)	192.168.2.1	
sanish	Host (A)	192.168.2.1	

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Active Directory Users and Computers

File Action View Help

Back Forward Refresh Stop Find Filter

Name	Type	Description
718FILE1	Computer	
718FILE2	Computer	
FileC	Computer	Failover cluster virtual network name account

Active Directory Users and Computers

- > Saved Queries
- > CAP.TSP
 - > Builtin
 - > Clients
 - > Computers
 - > Domain Controllers
 - > Finance
 - > Accounttants
 - > Fin_Administrator
 - > ForeignSecurityPrincipal
 - > IT
 - > Admins
 - > IT_Managers
 - > IT_ServiceDesk
 - > Keys
 - > LostAndFound
 - > Managed Service Accour
 - > Program Data
 - > Security_Group
 - > Servers
 - > FILE
 - > HyperV
 - > LDHCP
 - > System
 - > Users
 - > NTDS Quotas
 - > TPM Devices

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Failover Cluster Manager

File Action View Help

← → 🔍 🌐 🎉 ? 📁

Roles (3)

Name	Status	Type	Owner Node	Priority
718DC2	Running	Virtual Machine	718HV1	Medium
718File1	Running	Virtual Machine	718HV2	Medium
718File2	Running	Virtual Machine	718HV2	Medium

Hyper-V Manager

File Action View Help

← → 🔍 🌐 🎉 ? 📁

Virtual Machines

Name	State	CPU Usage	Assigned Memory	Uptime
718DC1	Running	0%	512 MB	06:45:25
718FW	Running	0%	512 MB	6.05:18:08
718HV1	Running	0%	2600 MB	06:45:05
718HV2	Running	1%	2600 MB	06:44:55
718LDHCP	Running	0%	512 MB	2.06:50:12
718SAN	Running	0%	512 MB	06:44:53

Checkpoints

- After HV Cluster
- before file svr
- cno-inject
- Now



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Servers							SAS	Msft Virtual Di
Volumes							SAS	Msft Virtual Di
Disks							SAS	Msft Virtual Di
Storage Pools	0	Online	30.0 GB	1.00 MB	GPT			
Shares	1	Online	30.0 GB	0.00 B	GPT			
iSCSI	0	Online	30.0 GB	1.00 MB	GPT			
Work Folders							SAS	Msft Virtual Di
718DC1 (2)	1	Online	20.0 GB	0.00 B	GPT			
718DC2 (2)	1	Online	30.0 GB	1.00 MB	GPT			
718File1 (3)	0	Online	12.0 GB	0.00 B	GPT	✓		
718File1 (3)	1	Offline	2.00 GB	0.00 B	GPT	✓		
718File1 (3)	2	Online	30.0 GB	1.00 MB	GPT			
718File2 (3)	1	Offline	12.0 GB	0.00 B	GPT	✓		
718File2 (3)	2	Online	2.00 GB	0.00 B	GPT			
718File2 (3)	0	Online	30.0 GB	1.00 MB	GPT			
718HV1 (3)	0	Online	30.0 GB	1.00 MB	GPT			
718HV1 (3)	1	Offline	190 GB	0.00 B	GPT	✓		
718HV1 (3)	2	Offline	3.00 GB	0.00 B	GPT	✓	✓	
718HV2 (3)	1	Online	190 GB	0.00 B	GPT	✓		
718HV2 (3)	0	Online	30.0 GB	1.00 MB	GPT			
718HV2 (3)	2	Online	3.00 GB	0.00 B	GPT	✓		
718SAN (2)	8	Data	Online	200 GB	0.00 B	GPT	Windows Storage	Storage S...
718SAN (2)	0	Data	Online	20.0 GB	1.00 MB	GPT	SAS	Msft Virtual Di
	<							>

Reflective writing

By doing this project I learned how to manage complex projects and how to use time management effectively. I felt very confident after completing each steps.

The main problem I faced during this project was using standalone servers instead of using parent disk. Due to this reason when my projects clashes, I had to reinstall and updates every servers and lost a lot of time. I like failover cluster and its troubleshooting. The only thing that I dislike about this project is file server cluster node creating.

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Capstone Project | SANISH -A01047718

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