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Batch: **25VID1340_DC_Batch2**
Date: 17/06/2025
Training Program: **Data Center**

Failover clustering –capstone project

Failover Clustering

Failover Clustering in Windows Server 2019 is a feature that allows multiple servers (nodes) to work together to provide high availability (HA) for services and applications. If one server fails, another server in the cluster automatically takes over — ensuring minimal downtime.

Key Concepts of Failover Clustering

1. **Failover Cluster:** A group of independent servers (nodes) working together to increase availability.

2. **Cluster Node:** A server that is a member of the failover cluster.

3. **Cluster Resource:** Services or applications like File Server, SQL Server, VMs, etc., that are made highly available.

4. **Cluster Shared Volumes (CSV):** Shared disks that multiple cluster nodes can access simultaneously.

Setup Virtual Mechines

Step 1 – Create the Base Windows Server 2019 VM

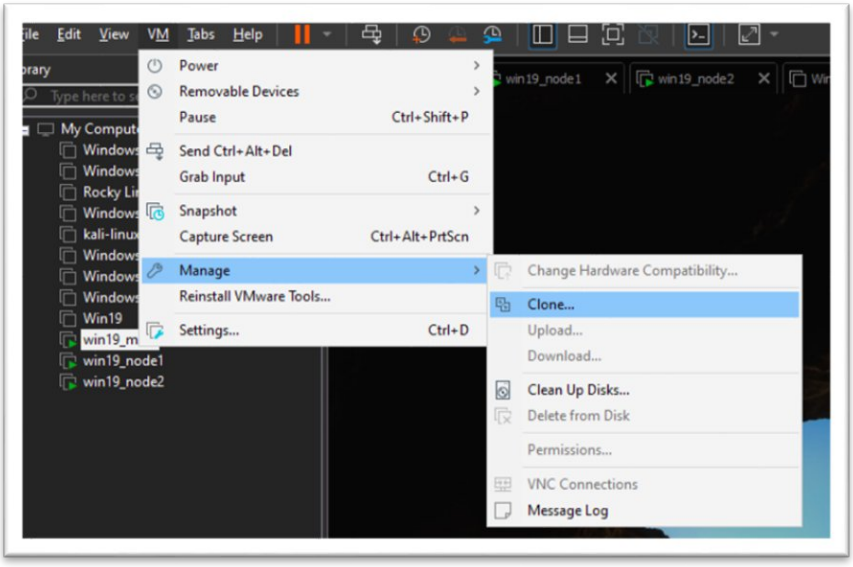
1. Open **VMware Workstation**.
2. Create a new VM:
    a. RAM: **8 GB**
    b. HDD: **80 GB**
    c. Network Adapter: **NAT**
    d. Processors : 2

3. Install Windows Server 2019.
4. Install **VMware Tools**.
5. Disable the firewall.

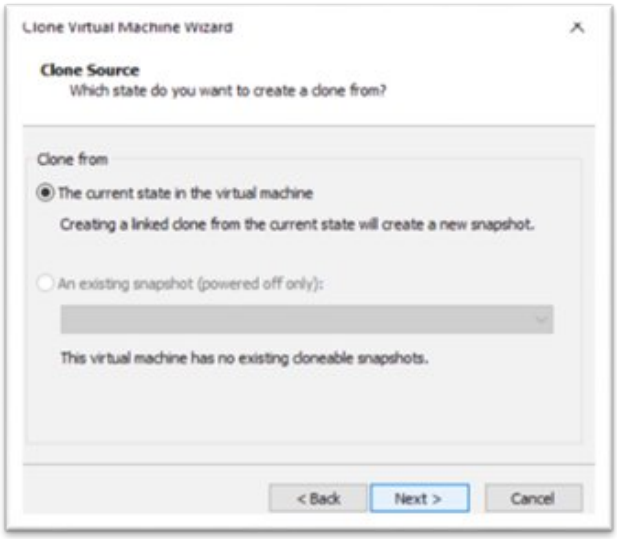
6. Rename the computer (e.g., win19base) and **reboot**.
7. Verify changes and shut down the VM.

Step 2 – Clone the Base OS

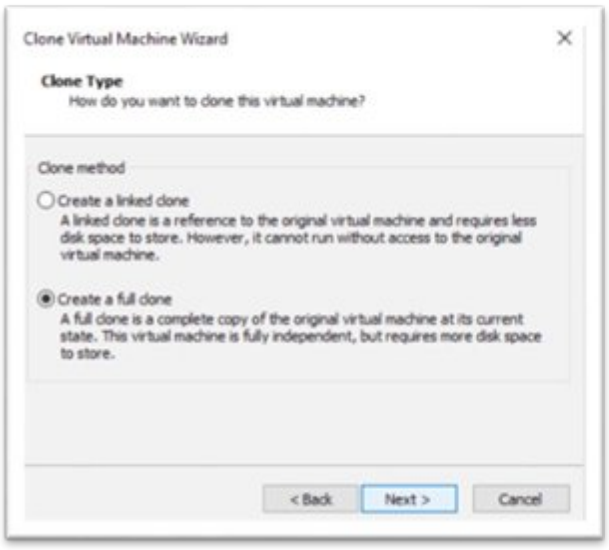
1. Right-click on the base VM → **Manage > Clone**

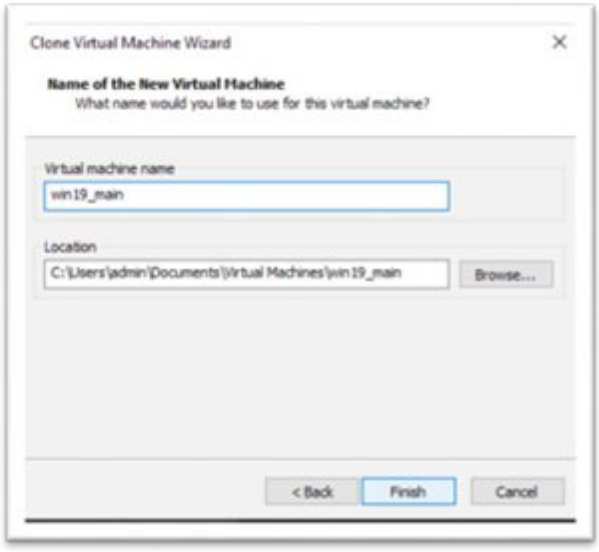


Choose **Current State of VM** → Next.



3. Select **Full Clone**:
   • Name: win19_main





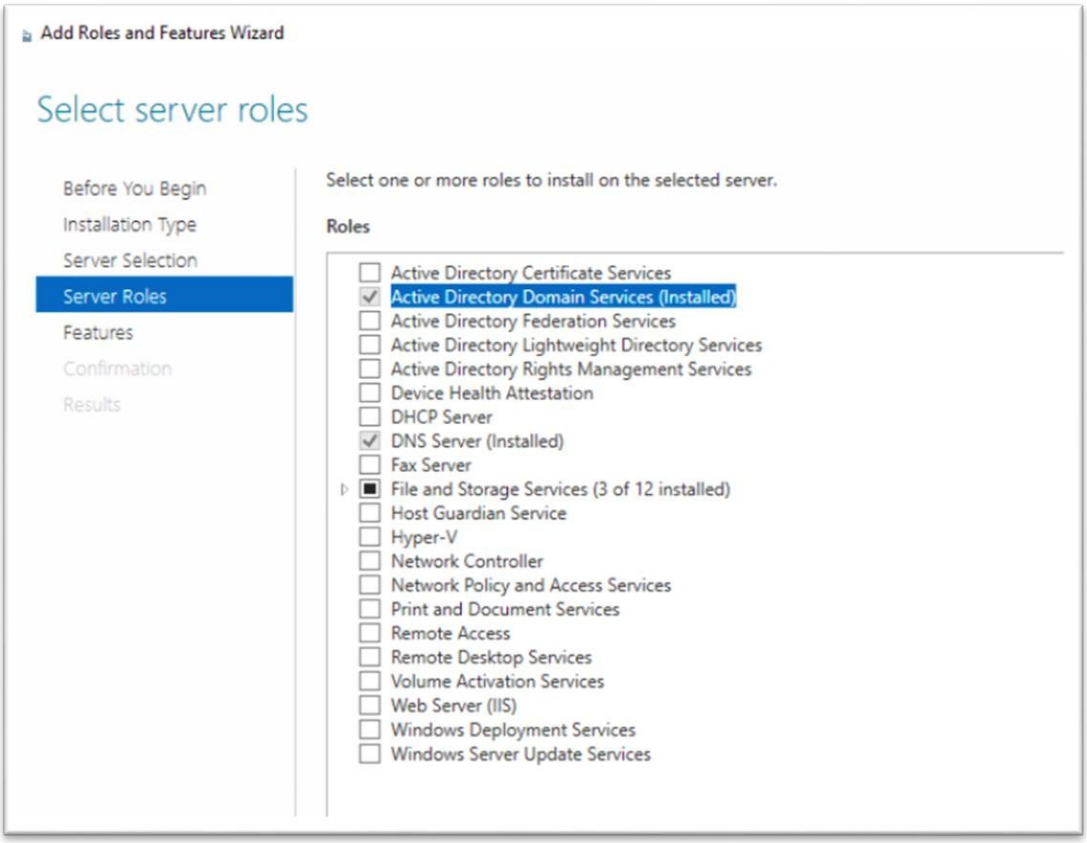
4. **Now Create 2 more VMs name that machine win19_node1 and win19_node2**

Step 3 – Setup Main Server

1. **Set Static Ip to 192.168.1.50**
2. **Rename the Os to win19main**

<u>Install AD DS and DNS Roles</u>

3. **Server Manager > Add roles and features > Server Roles**
4. **Select Active Directory Domain Services and DNS Server and install**

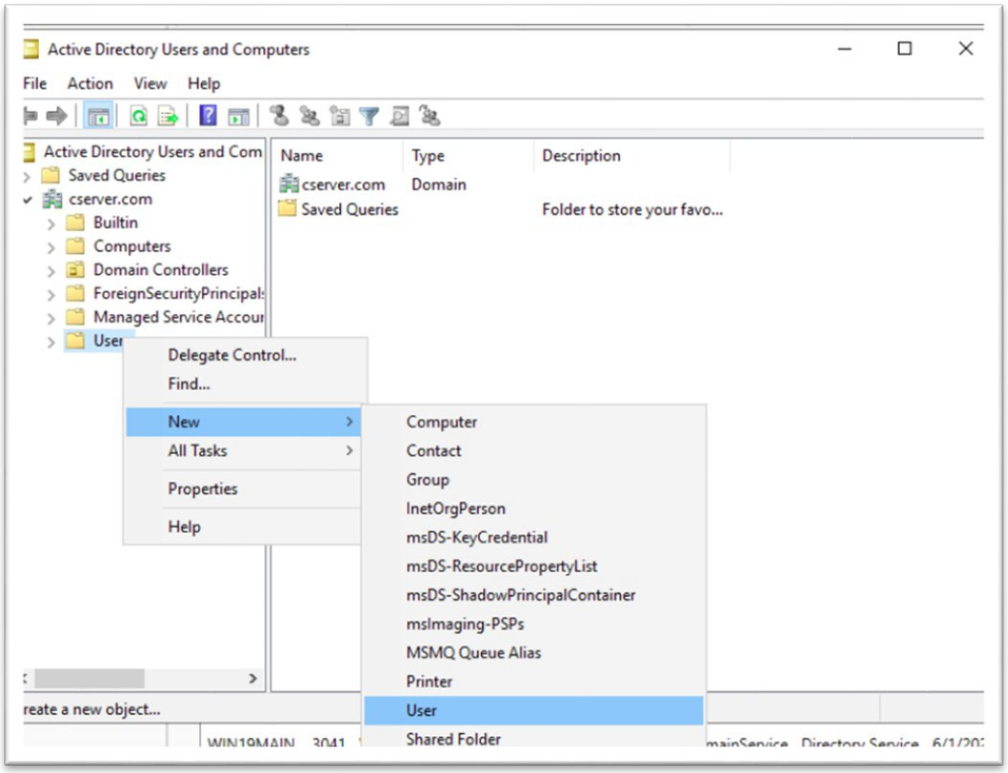


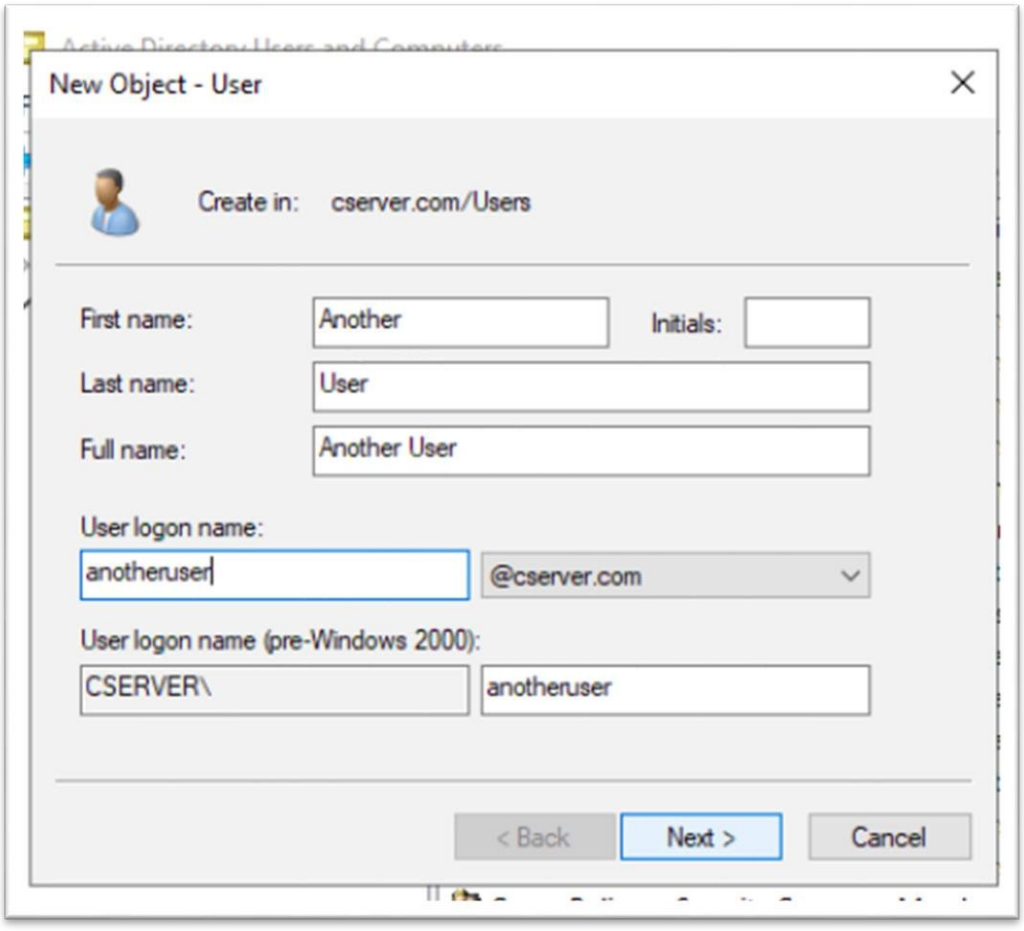
Promote to Domain Controller

5. **Notifications > Promote this server to a domain server > Add a new forest > set password > and Install**
6. **After Install Reboot Once**

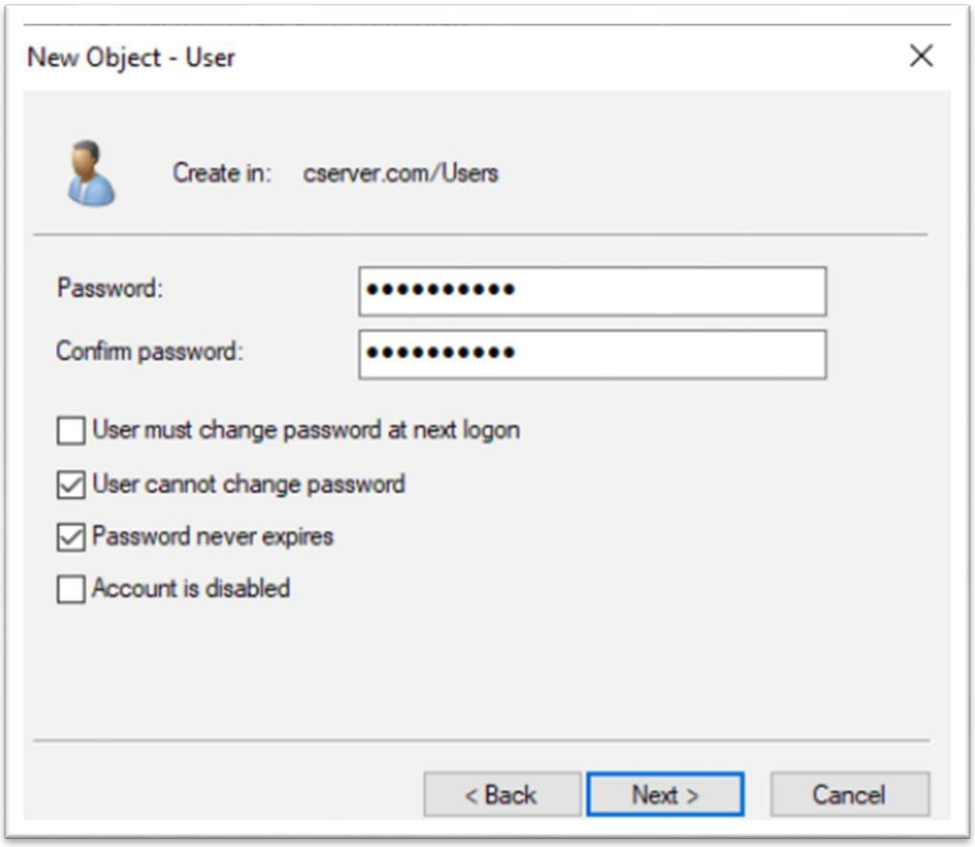
Create A Domain User

7. **Server Manager > Tools > Active Directory Users and Computer > Expand Domain > Right Click on user > new > User**

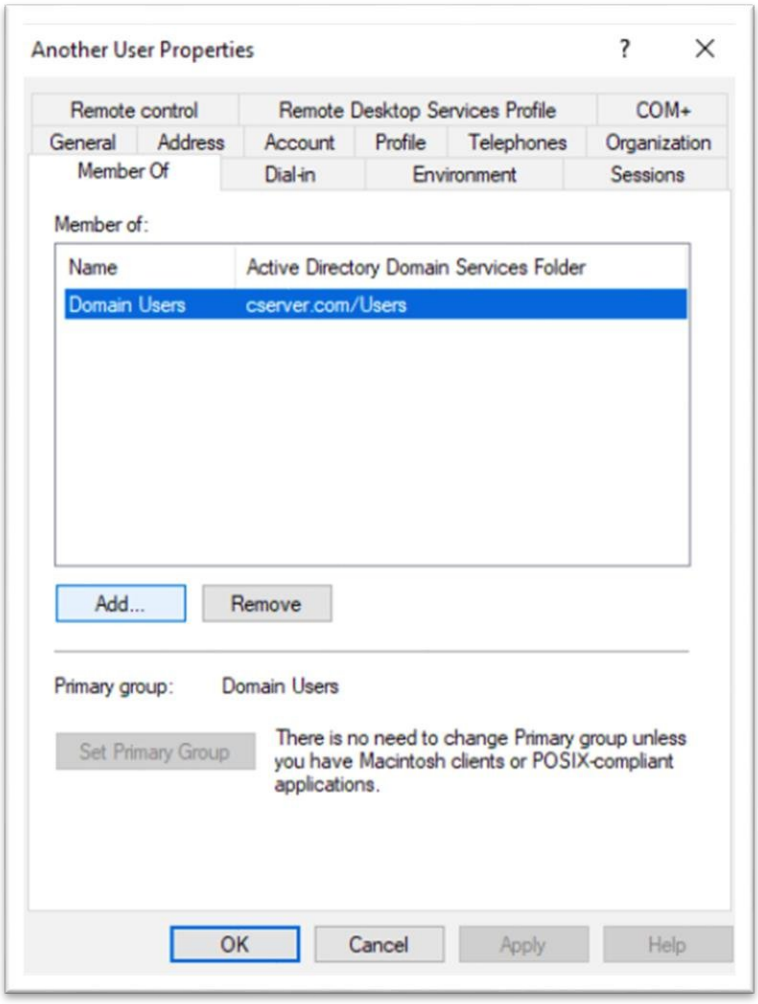

Active Directory Users and Computers
File Action View Help
Active Directory Users and Com
Saved Queries
cserver.com
Builtin
Computers
Domain Controllers
ForeignSecurityPrincipal
Managed Service Accou
User
Name
Type
Description
cserver.com
Domain
Saved Queries
Folder to store your favo...
Delegate Control...
Find...
New
All Tasks
Properties
Help
Computer
Contact
Group
InetOrgPerson
msDS-KeyCredential
msDS-ResourcePropertyList
msDS-ShadowPrincipalContainer
msImaging-PSPs
MSMQ Queue Alias
Printer
User
Shared Folder
reate a new object...


New Object - User
Create in: cserver.com/Users
First name:
Another
Initials:
Last name:
User
Full name:
Another User
User logon name:
anotheruser
@cserver.com
User logon name (pre-Windows 2000):
CSERVER\
anotheruser
< Back
Next >
Cancel

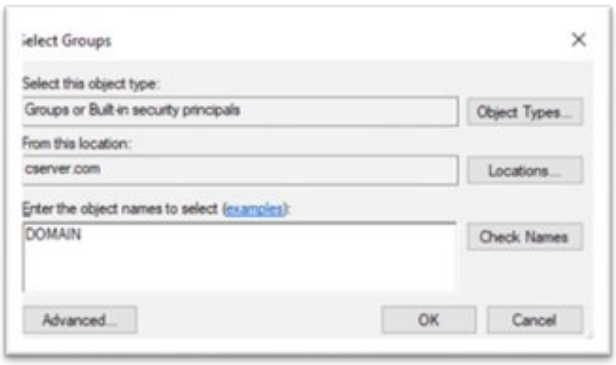
Set Password and select User cannot change password and Password never expire and next and finish

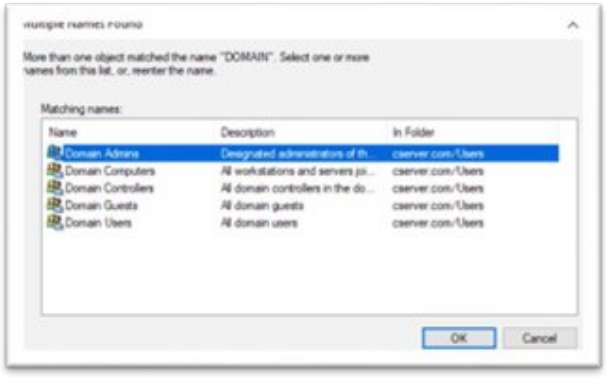


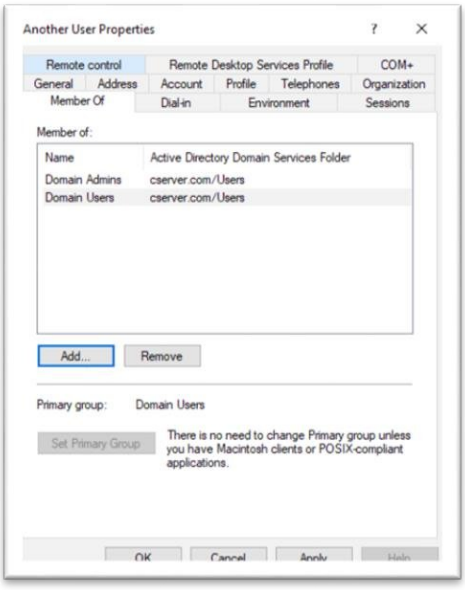
Go to Properties of newly created user > Member of and click on add



Enter Object name to Domain > Check Name > Select Domain Admin > OK

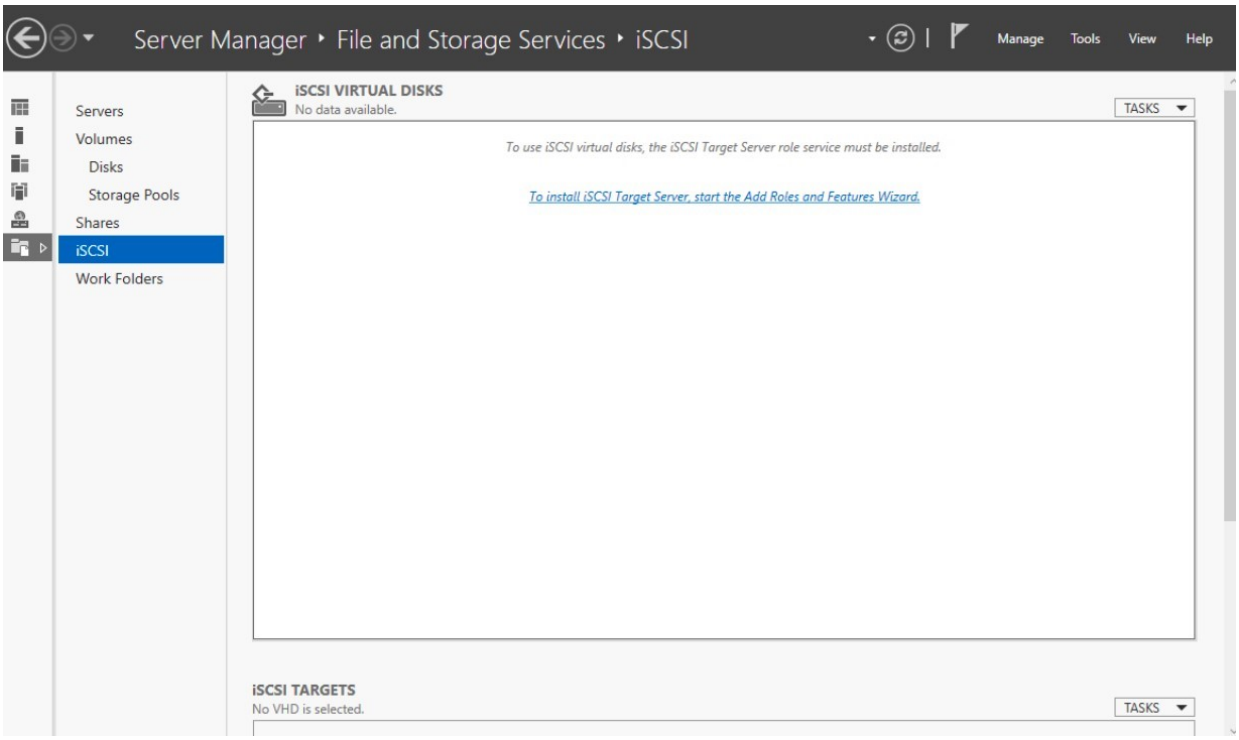




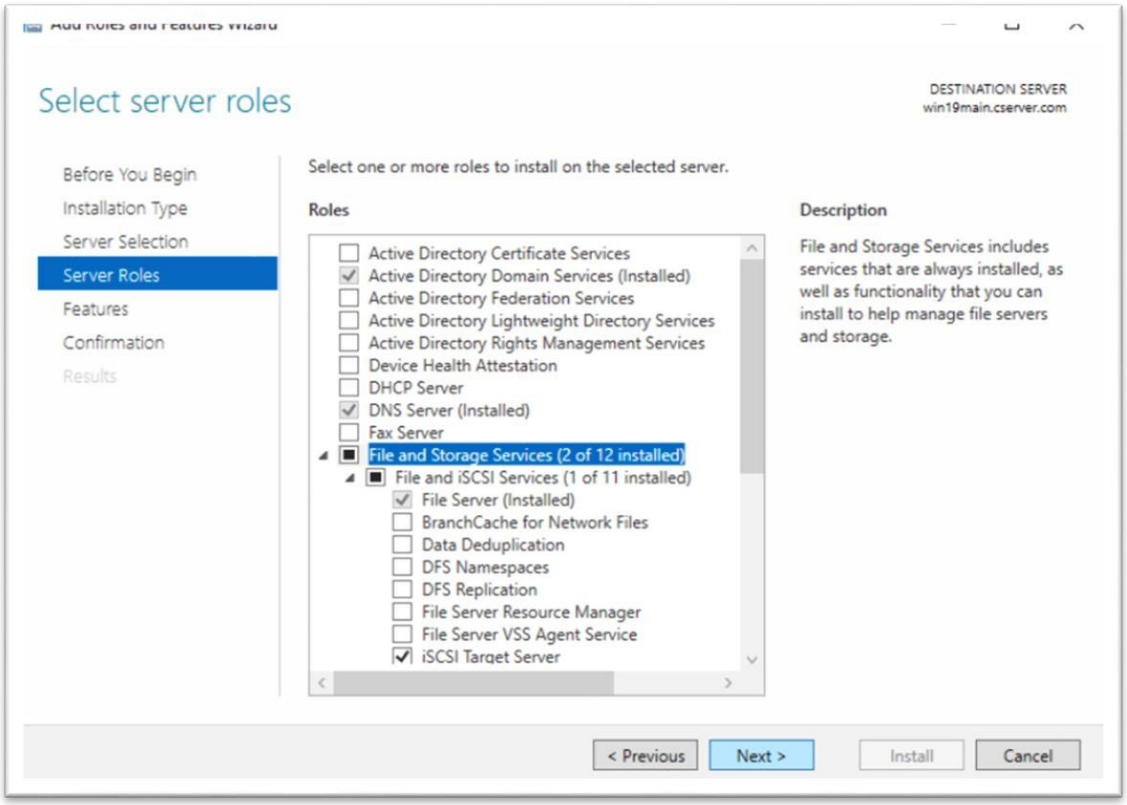


Setup iSCSI Target on Main Server

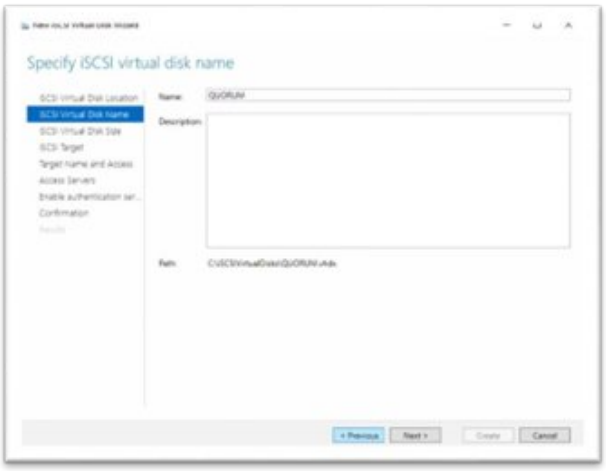
After that Go to Server Manager > File and Storage Services > ISCSI

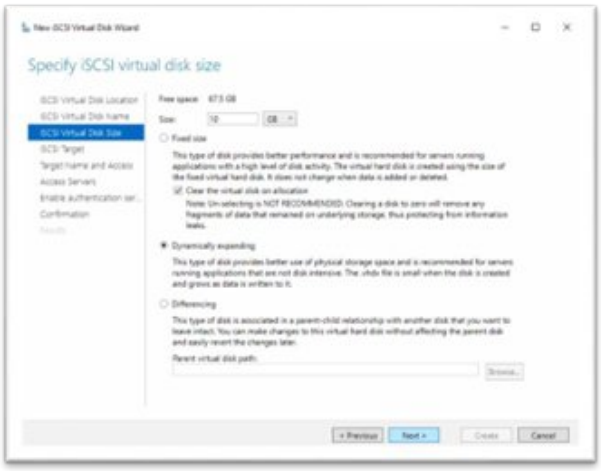


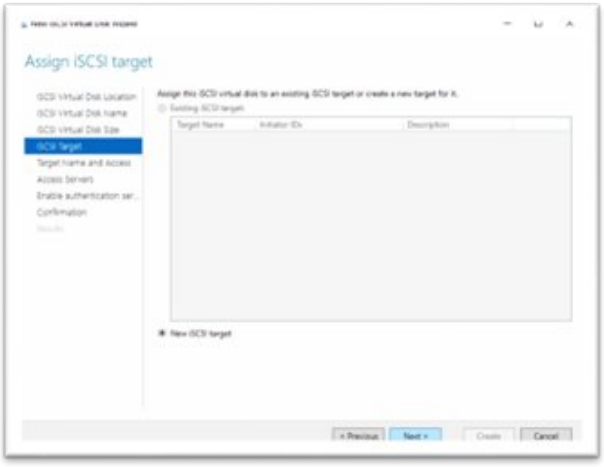
Install the required features for iscsi and reboot once

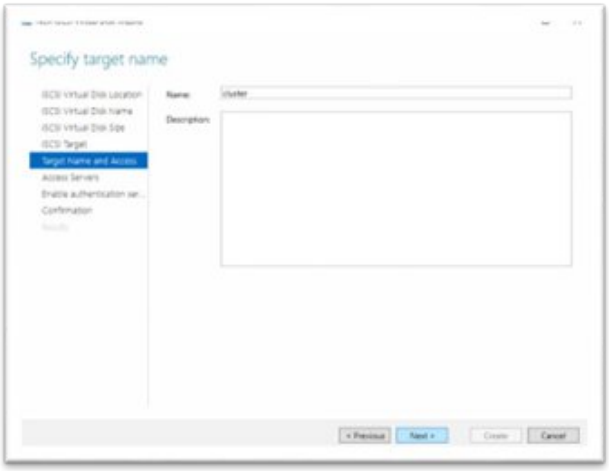


After Reboot Set Virtual disk name > Set virtual disk size and set dynamic spending > new iscsi > name target name

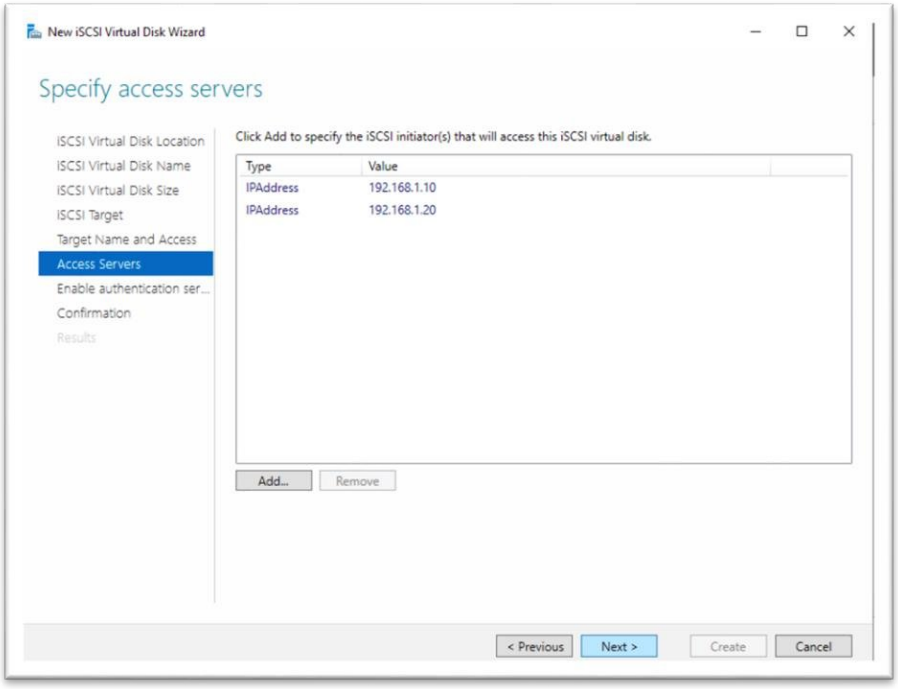

Specify iSCSI virtual disk name
Name:
QUORUM
Description:
Path:
< Previous
Next >
Create
Cancel


Specify iSCSI virtual disk size
Free space:
Size:
Fixed size
Clear the virtual disk on allocation
Dynamically expanding
Differencing
Parent virtual disk path:
Browse...
< Previous
Next >
Create
Cancel

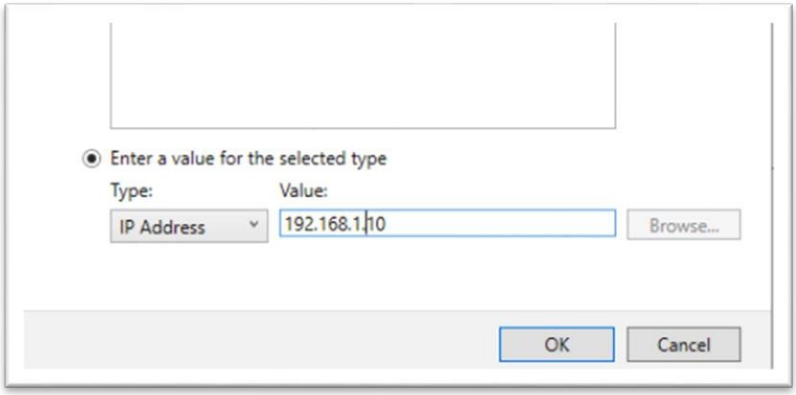

Assign iSCSI target
Assign this iSCSI virtual disk to an existing iSCSI target or create a new target for it.
Existing iSCSI targets:
Target Name
Initiator IDs
Description
New iSCSI target
< Previous
Next >
Create
Cancel


Specify target name
Name:
cluster
Description:
< Previous
Next >
Create
Cancel

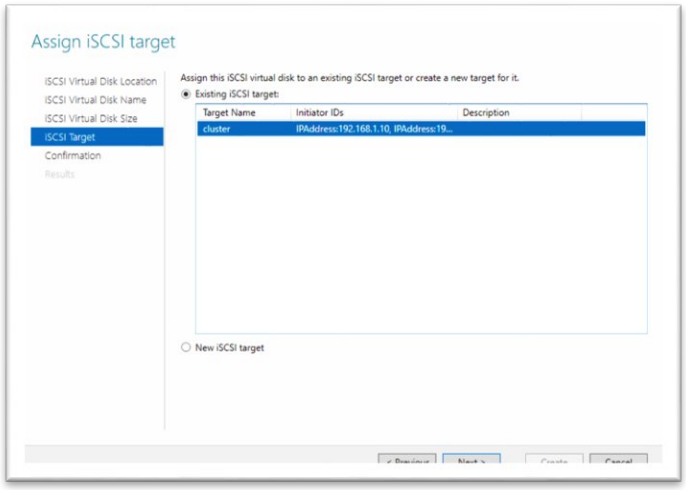
Click on add



Set type IP Address and set the value 192.168.1.10



After that create another iscsi and set the storage and select existing iscsi target and create with ip – 192.168.1.20



Step 4 – Setup Node 1 and node 2 servers

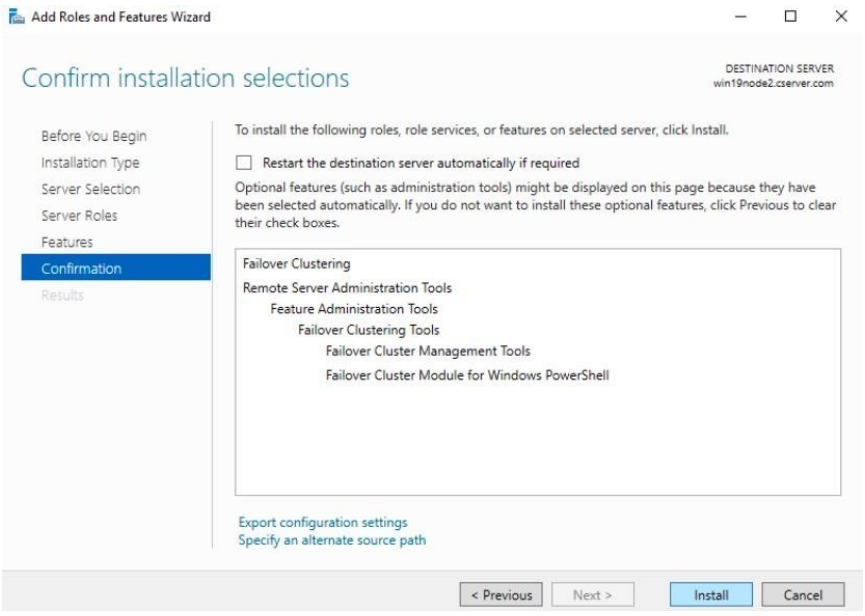
1. Run **Sysprep**:
    a. **C:\Windows\System32\Sysprep\sysprep.exe**
    b. Select **Enter System Out-of-Box Experience (OOBE)** and Generalize c. Reboot

After That reboot both the os accept the license and set password

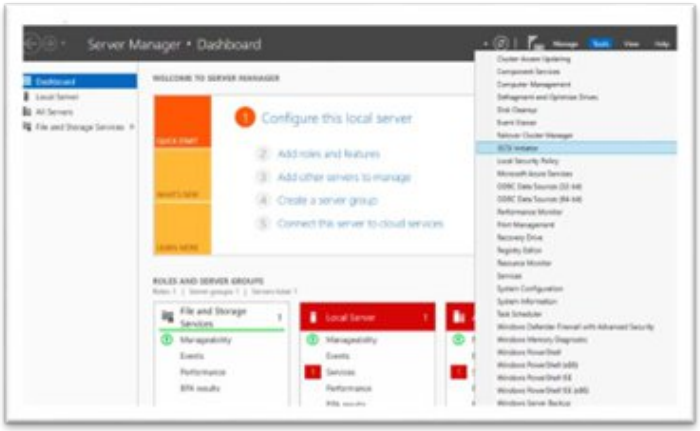
1. **After reboot set Static ip for node1 192.168.1.10 and node2 192.168.1.20**
2. **Default gateway set to 192.168.1.1 in both the os**
3. **And dns to 192.168.1.50**
4. **Server Manager > Add roles and feature > Features > Failover Clustering > Install (Both OS)**

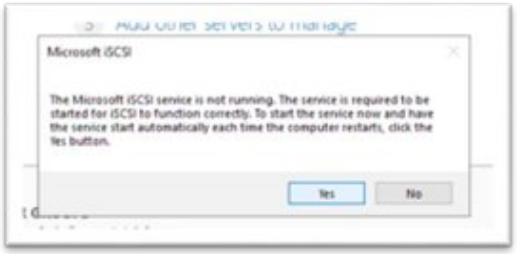
Step 5 – Setup Failover cluster

5. **Open Any of node os**
6. **Server Manager > Failover Cluster Manager > validate Configuration**

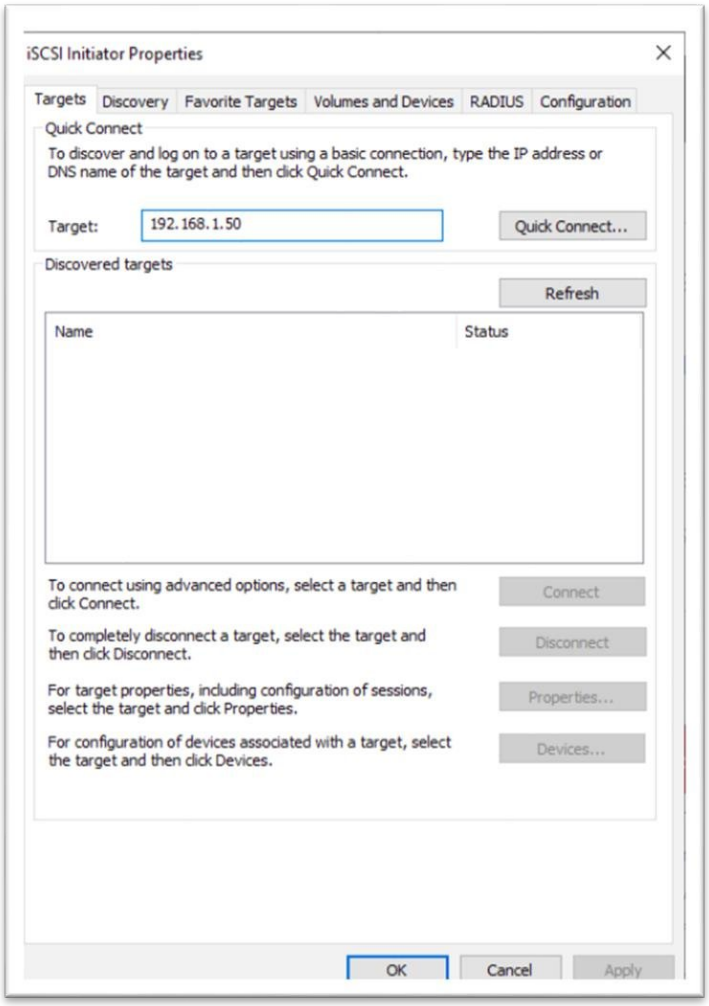


1. **Change the names for node1 to win19node1 and node2 to win19node2 and reboot**
   After rebooting server manager > iscsi Initiator > Click on Yes

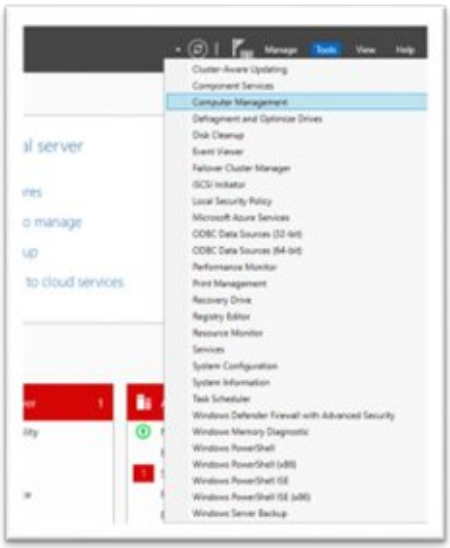


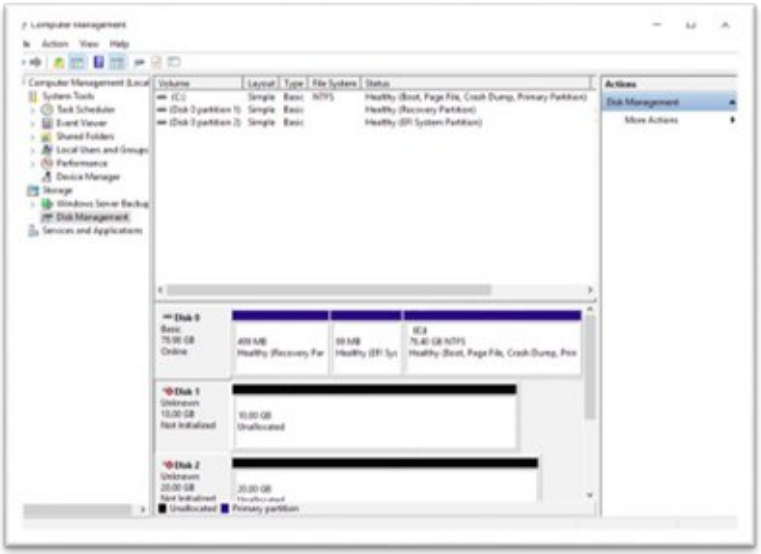


In the target set the ip to 192.168.1.50 and Quick Connect click ok

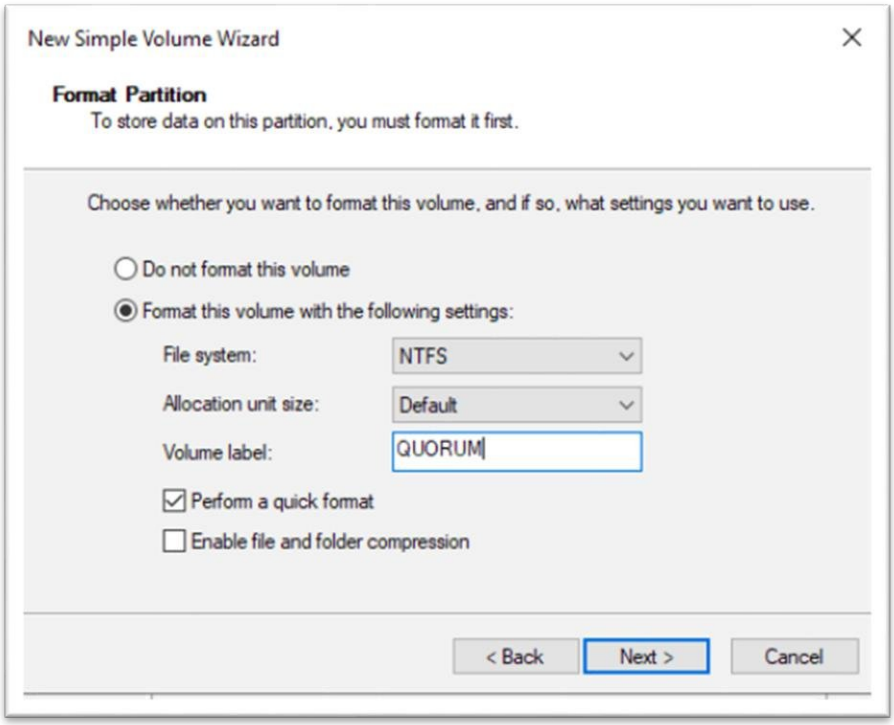


After that go to Tools > Computer management > storage > Disk Management





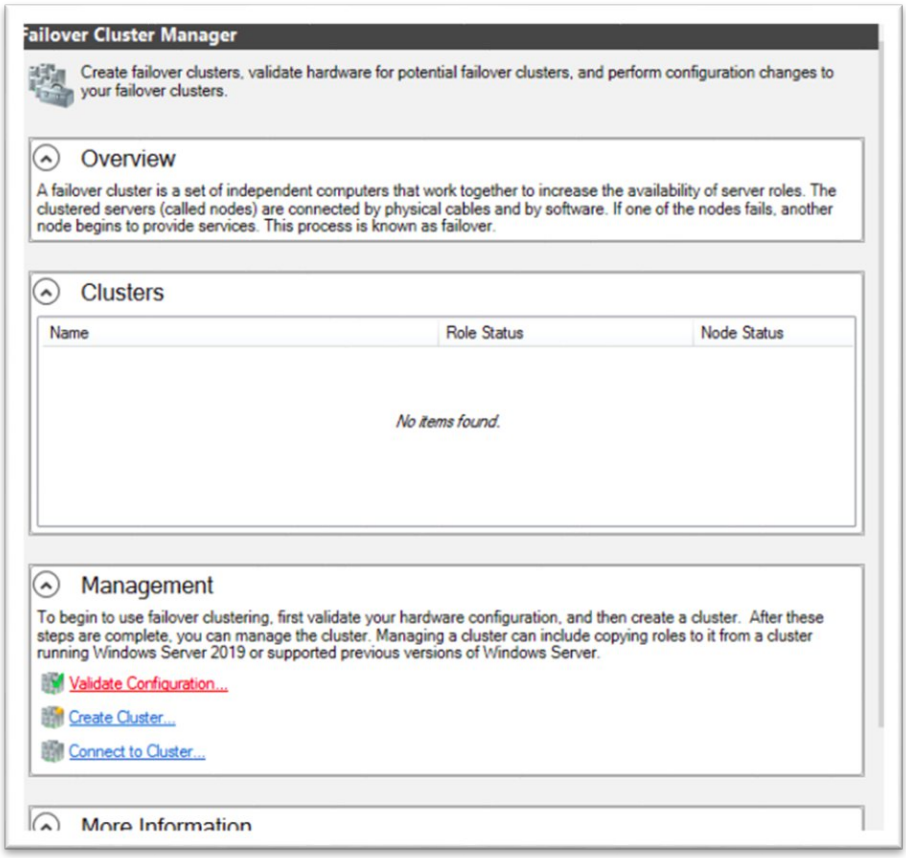
Click on online in both disks > Disk Initiate > Assign latter > set the volume name to QUORAM and DATA (Set It both the os)



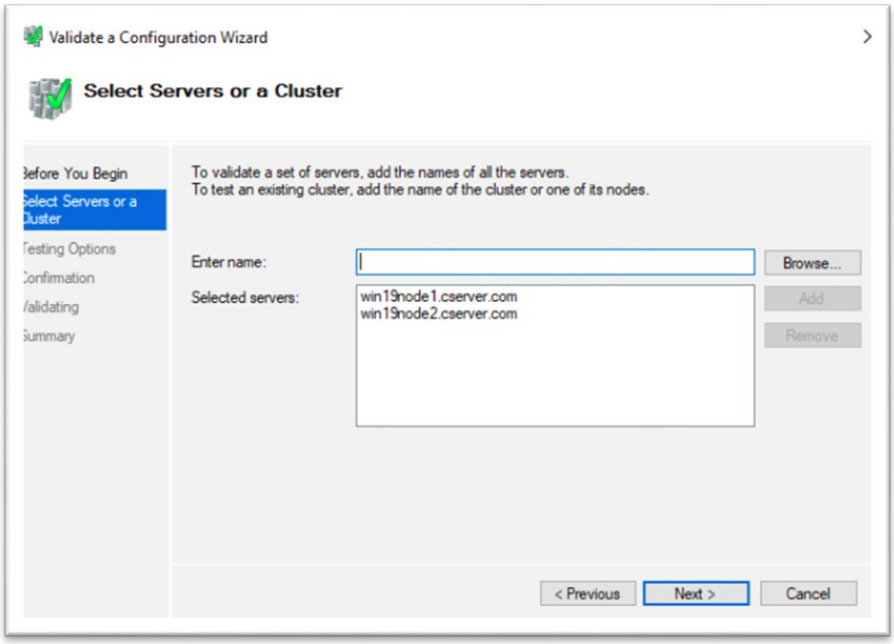
Click on online in both disks > Disk Initiate > Assign latter > set the volume name to QUORAM and DATA (Set It both the os)

Setup Failover cluster

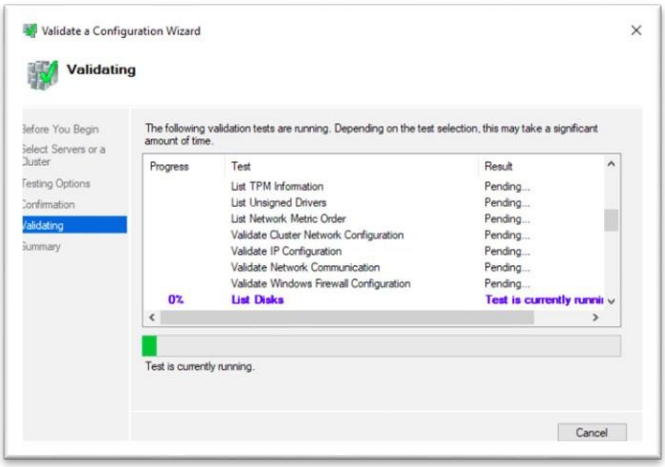
1. **Open Any of node os**
2. **Server Manager > Failover Cluster Manager > validate Configuration**



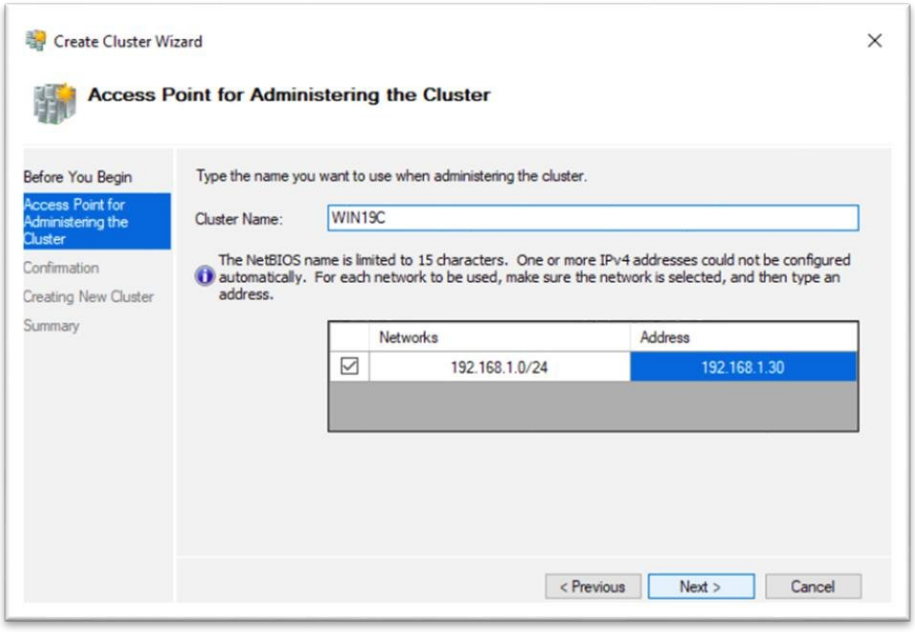
Enter node server names and add them



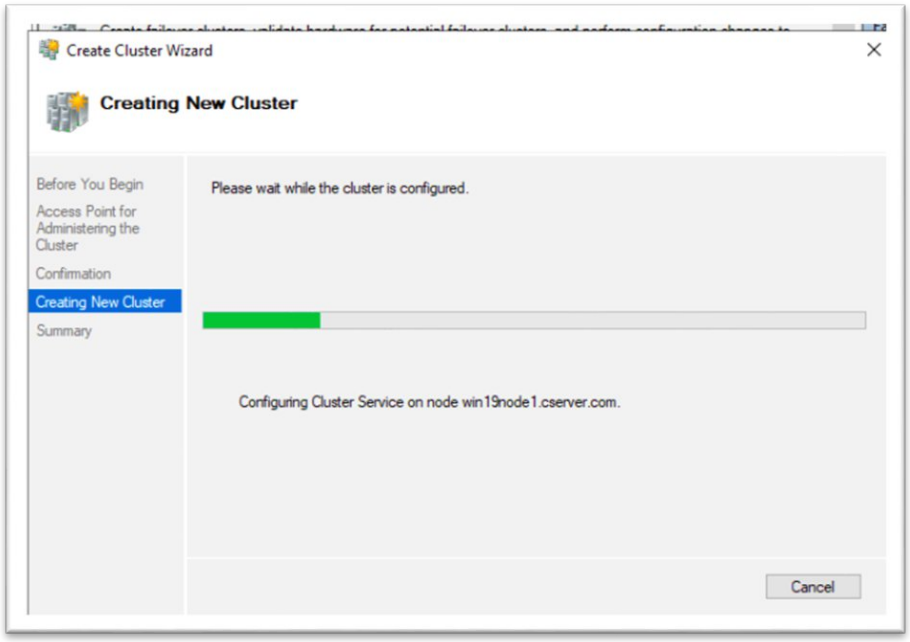
Click on run all test and next and check confirmations and start the test by click next, it takes some time to test



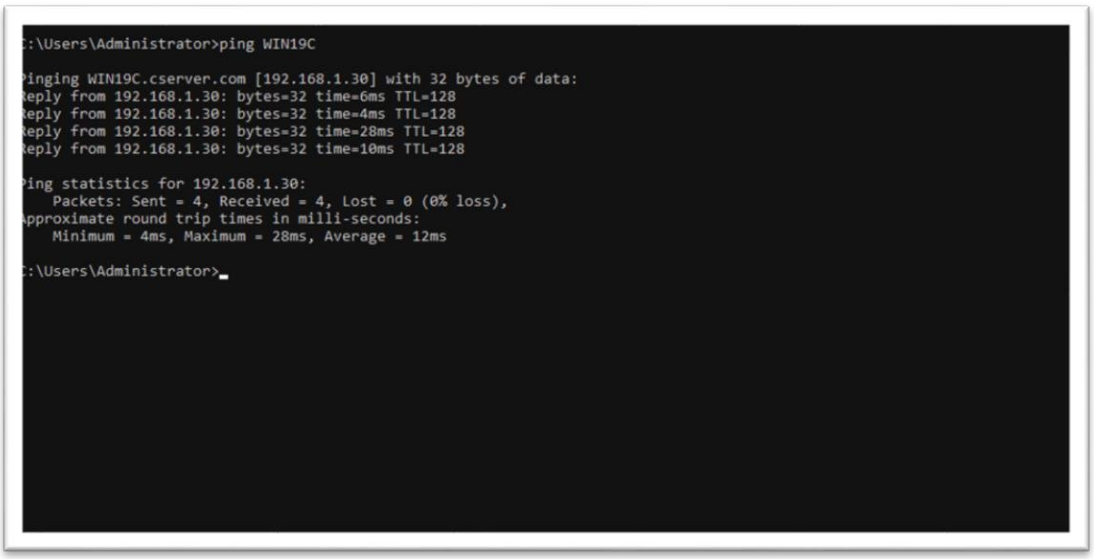
1. **Check all the results and check on create the clusters... and click on finish. It will open another wizard**
   After that set the cluster name and set a cluster ip address



Click on next and after that its starts installing



Check the installations by ping to the cluster name



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