

NETWORK INSTALLATION AND ADMINISTRATION I I

LAB ASSIGNMENT 1 (PART II)- MANAGING AD SITES AND REPLICATION

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COLLEGE JOHNABBOTTE

Contents

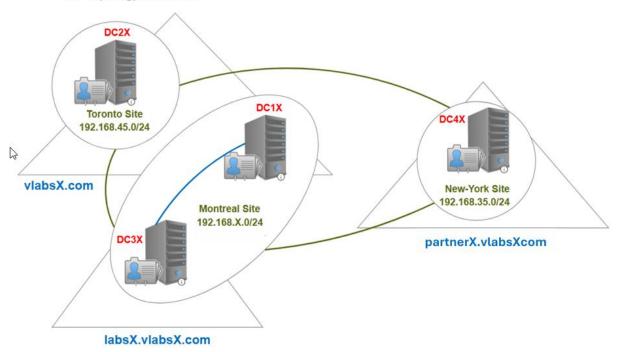
Lab Overview	2
Topology	
Task 1: Configuring DC209	4
Task 2: Configuring DC4XX	6
Task 3: Managing the Connections Objects	11
Task 4: Managing the Notification-Based Replication	19
Task 5: Creating Sites	22
Task 6: Creating Subnets	25

Lab Overview

This lab provides students with hands-on experience in configuring and managing Active Directory Sites and Replication. The tasks include setting up sites, subnets, site links, and replication monitoring using both GUI and PowerShell. By completing this lab, students will gain a deep understanding of AD DS replication and inter-site communication.

Topology

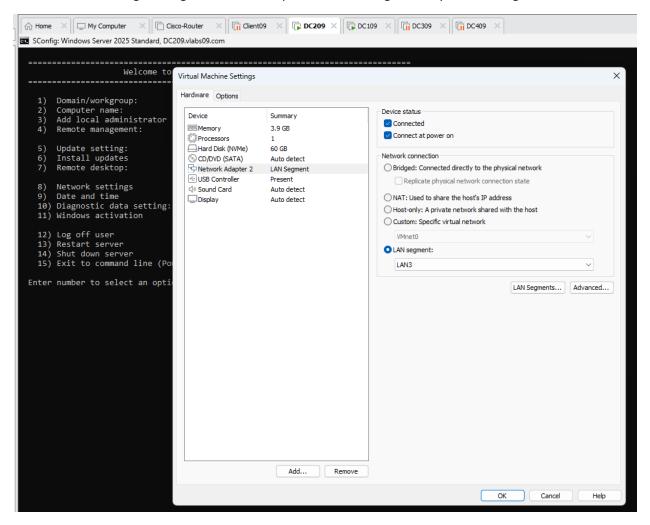
Lab Topology Overview



My Lab Number in college is 9, So all X in the picture should be ${\bf 9}$.

Task 1: Configuring DC209

- Start the DC209 VM.
- After starting and login into DC209, open its VM Settings, modify the LAN segment to LAN3.



• Change the NIC IP address to 192.168.45.1/24 with default gateway to 192.168.45.50. netsh interface ipv4 set address name="Ethernet0" static 192.168.45.1 255.255.255.0 192.168.45.50

```
S C:\> netsh interface ipv4 set address name="Ethernet1" static 192.168.45.1 255.255.255.0 192.168.45.50

S C:\> ipconfig

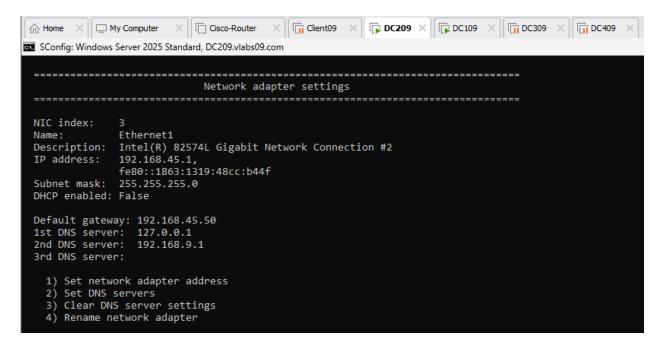
Indows IP Configuration

thernet adapter Ethernet1:

Connection-specific DNS Suffix .:
    Link-local IPv6 Address . . . . : fe80::1863:1319:48cc:b44f%3
    IPv4 Address . . . . . : 192.168.45.1
    Subnet Mask . . . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.45.50

S C:\>
```

Keep the DNS IP address as it is → 192.168.X.1



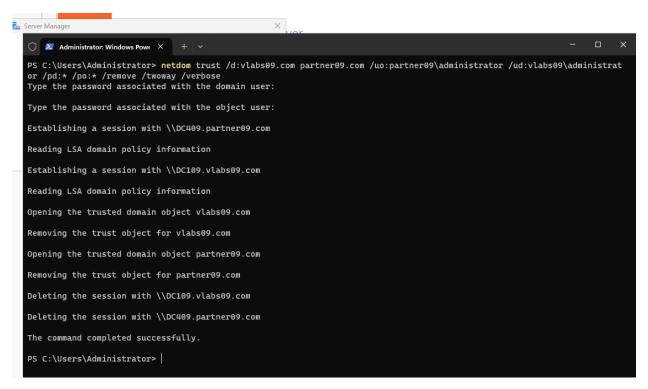
Ping the default gateway 192.168.45.50 and 192.168.X.1

```
X Cisco-Router
                                          X | [ Client09 X | DC209 X | [
         X My Computer
SConfig: Windows Server 2025 Standard, DC209.vlabs09.com
PS C:\> ping 192.168.45.50
Pinging 192.168.45.50 with 32 bytes of data:
Reply from 192.168.45.50: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.45.50:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 0ms, Maximum = 0ms, Average = 0ms
PS C:\> ping 192.168.9.1
Pinging 192.168.9.1 with 32 bytes of data:
Reply from 192.168.9.1: bytes=32 time=1ms TTL=127
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.9.1:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Task 2: Configuring DC4XX

For legal and operational reasons, the company has decided to integrate the previously independent partnerXX.com into the existing vlabsXX.com forest. A new child domain called partnerXX.vlabsXX.com must be created.

• From DC4XX remove the two-way trust with vlabsXX.com netdom trust /d:vlabsXX.com partnerXX.com /uo:partnerXX\administrator /ud:vlabsXX\administrator /pd:* /po:* /remove /twoway /verbose



• Demote DC4XX:

Uninstall-ADDSDomainController `

- -LocalAdministratorPassword (ConvertTo-SecureString "Passw0rd\$" -AsPlainText -Force) `
- -LastDomainControllerInDomain `
- -RemoveApplicationPartitions `
- -Force

```
O ► Administrator: Windows Pow × + v - □ X

PS C:\Users\Administrator> Uninstall-ADDSDomainController \ -LocalAdministratorPassword (ConvertTo-SecureString "Passw0rds" -AsPlainText -Force) \ -LastDomainControllerInDomain \ -RemoveApplicationPartitions \ -Force
```

Wait until the Server restarts automatically



• After restarting, remove the AD Domain Service role:

Uninstall-WindowsFeature AD-Domain-Services -IncludeManagementTools -Restart

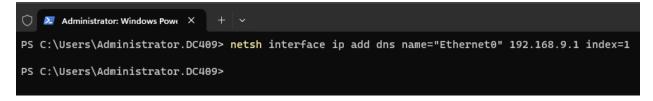


Wait until the Server restarts automatically



• After restarting, modify the DNS IP address to 192.168.X.1 and disable IPv6:

netsh interface ip add dns name="Ethernet0" 192.168.X.1 index=1



Disable-NetAdapterBinding -Name "Ethernet0" -ComponentID ms_tcpip6

```
Administrator: Windows Pow: X + V

PS C:\Users\Administrator.DC409> Disable-NetAdapterBinding -Name "Ethernet0" -ComponentID ms_tcpip6

PS C:\Users\Administrator.DC409>
```

• Ping the DNS Server 192.168.9.1 and nslookup vlabs09.com before doing next step.

```
PS C:\Users\Administrator.DC409> nslookup vlabs09.com
DNS request timed out.
    timeout was 2 seconds.
Server: UnKnown
Address: 192.168.9.1

DNS request timed out.
    timeout was 2 seconds.
DNS request timed out.
    timeout was 2 seconds.
Name: vlabs09.com
Address: 192.168.9.1

PS C:\Users\Administrator.DC409>
```

```
PS C:\Users\Administrator.DC409> ping 192.168.9.1

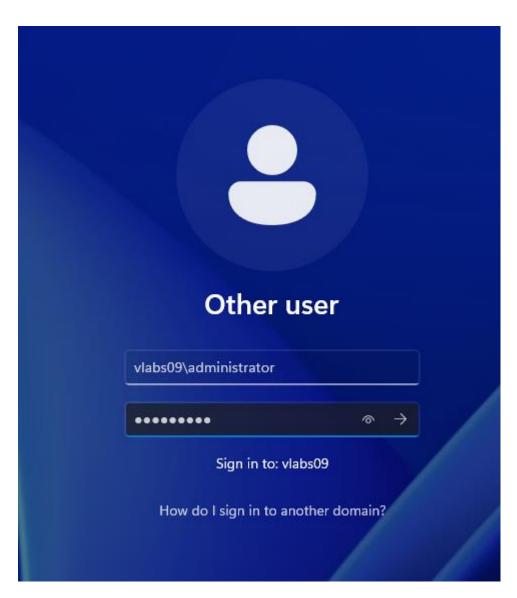
Pinging 192.168.9.1 with 32 bytes of data:
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Reply from 192.168.9.1: bytes=32 time<1ms TTL=127
Reply from 192.168.9.1: bytes=32 time=1ms TTL=127
Reply from 192.168.9.1: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.9.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PS C:\Users\Administrator.DC409>
```

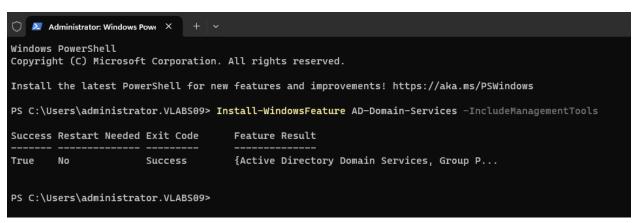
• Join the server DC4XX to the domain vlabsXX.com using PowerShell: Add-Computer -DomainName vlabs25.com -Credential vlabs25\administrator -Verbose Restart -Force

```
PS C:\Users\Administrator.DC409> Add-Computer -DomainName vlabs09.com -Credential vlabs09\administrator -Verbose -Restar t -Force
```

After restarting, login with the vlabsXX\administrator user account.



• Create a new child domain partnerXX.vlabsXX.com using PowerShell: Install-WindowsFeature AD-Domain-Services -IncludeManagementTools



Install-ADDSDomain `

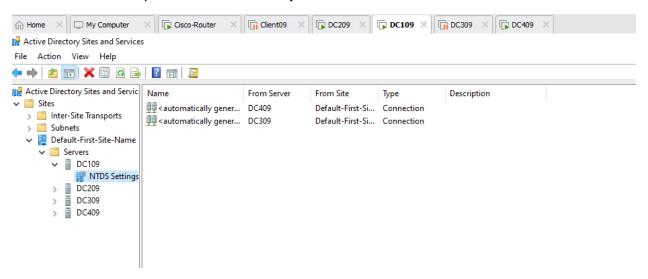
- -NewDomainName "partnerXX" `
- -ParentDomainName "vlabsXX.com" `
- -InstallDNS `
- -CreateDNSDelegation:\$true `
- -DomainMode "WinThreshold" `
- -NoGlobalCatalog:\$true `
- -SafeModeAdministratorPassword (ConvertTo-SecureString "Passw0rd\$" -AsPlainText Force) `
- -Force

```
PS C:\Users\administrator.VLABS09> Install-ADDSDomain \ -NewDomainName "partner09\" \ -ParentDomainName "vlabs09.com" \ -
InstallDNS \ -CreateDNSDelegation:\$true \ -DomainMode "WinThreshold" \ -NoGlobalCatalog:\$true \ -SafeModeAdministratorPa
ssword (ConvertTo-SecureString "Passw0rd\$" -AsPlainText -Force) \ -Forc
```

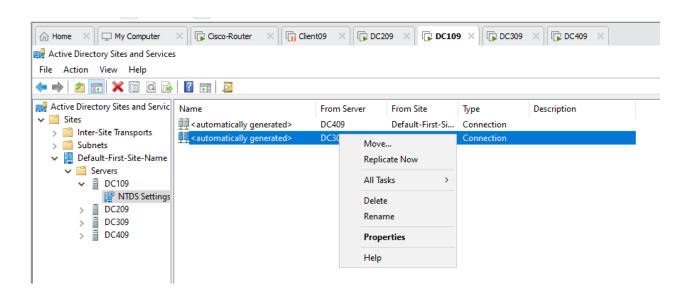
Task 3: Managing the Connections Objects

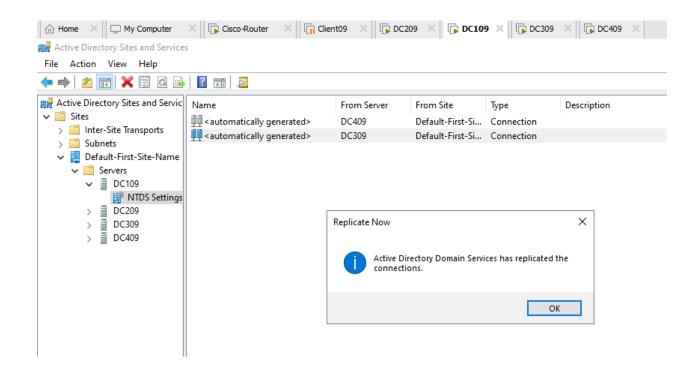
Using GUI:

• List the automatically created Connection Objects on DC1XX.

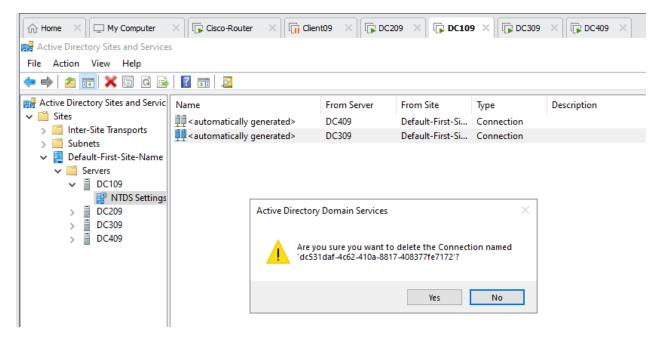


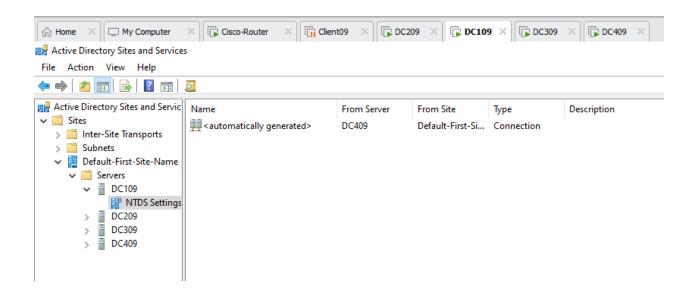
• Replicate manually to DC3XX.



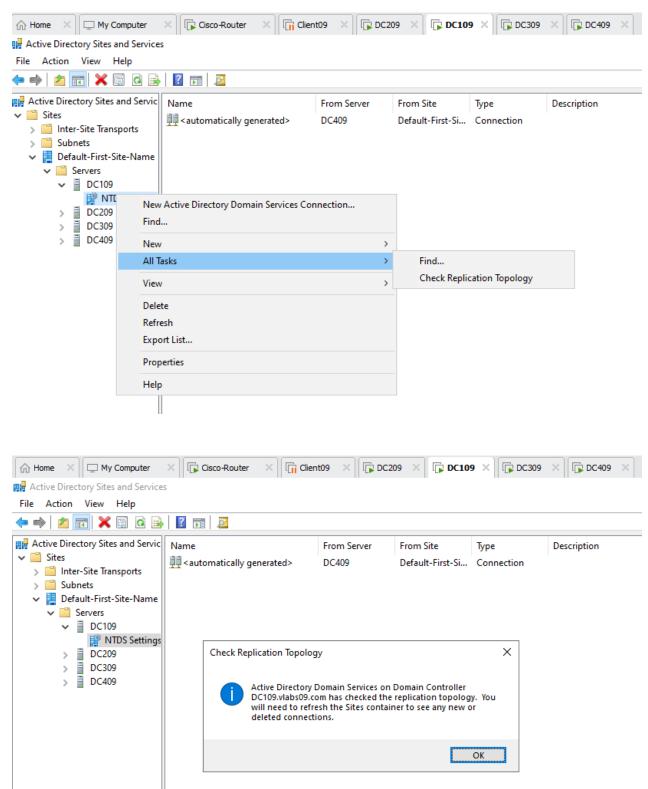


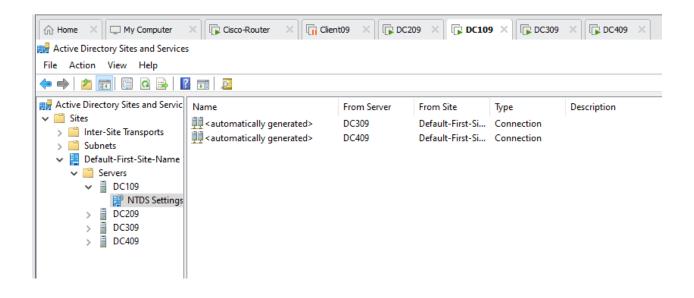
• Delete this Connection object to DC3XX.





• Recreate it again using the KCC to regenerate it automatically.





Using PowerShell:

• Replicate manually to DC4XX.

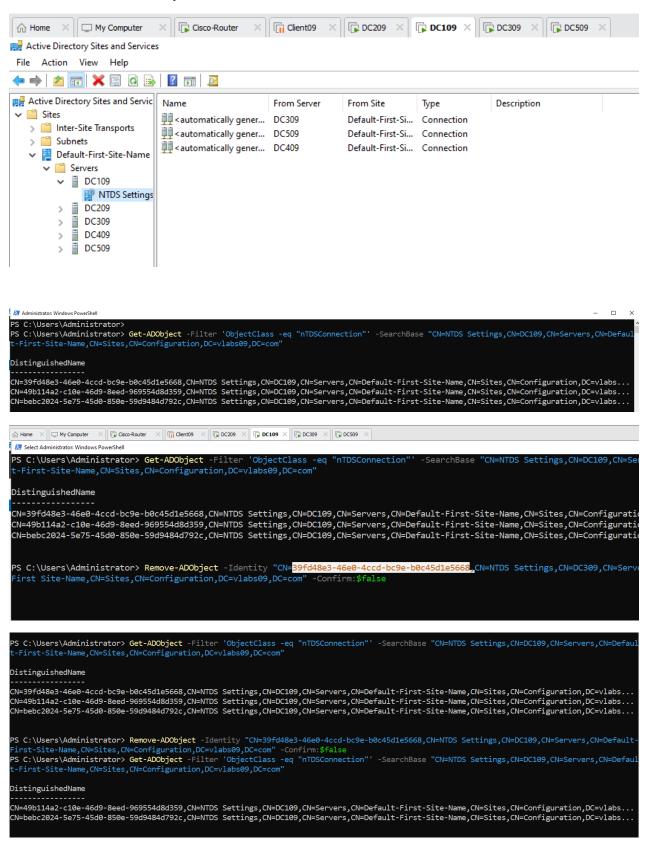


There is a problem. So based on DC4XX document I remove DC409 and I replace it with DC509.

```
PS C:\Users\Administrator> Sync-ADObject -Object "CN=Users,DC=vlabs09,DC=com" -Source DC109 -Destination DC509
PS C:\Users\Administrator>
```

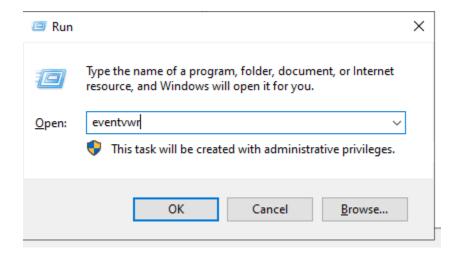
```
PS C:\Users\Administrator> Sync-ADObject -Object "CN=Users,DC=vlabs09,DC=com" -Source DC109 -Destination DC509
PS C:\Users\Administrator> Sync-ADObject -Object "DC=vlabs09,DC=com" -Source DC109 -Destination DC509
PS C:\Users\Administrator>
```

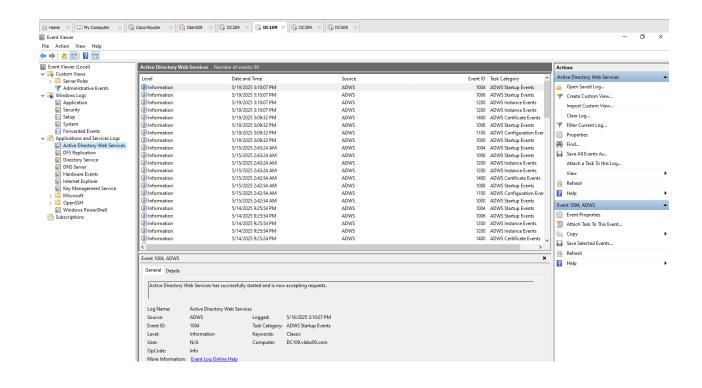
• Delete this Connection object to DC3XX.



• Recreate it again using the KCC to regenerate it automatically and verify that it is created.

• Open Event Viewer to list the KCC events and verify if there are any errors.

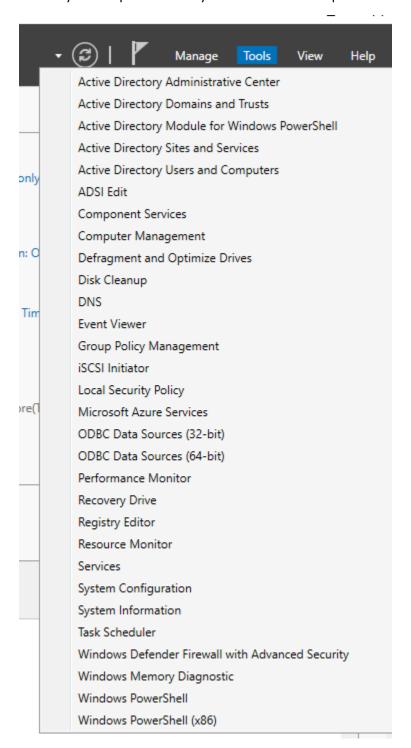


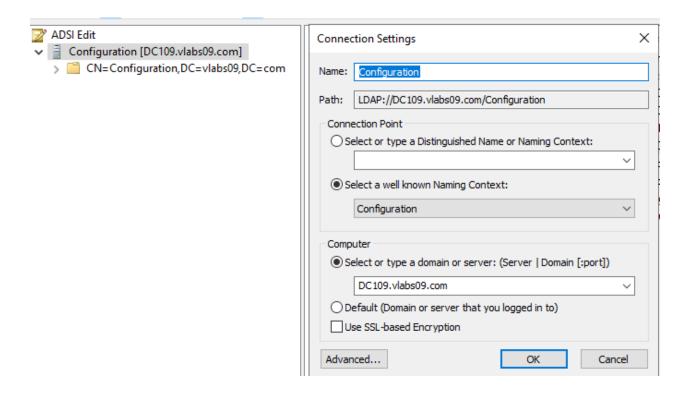


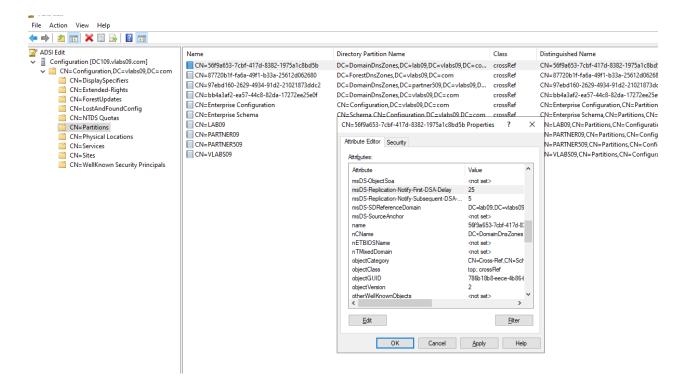
Task 4: Managing the Notification-Based Replication

Using GUI:

• Modify First Replication Delay to 25 sec and Subsequent Notifications to 5 sec.







Using PowerShell:

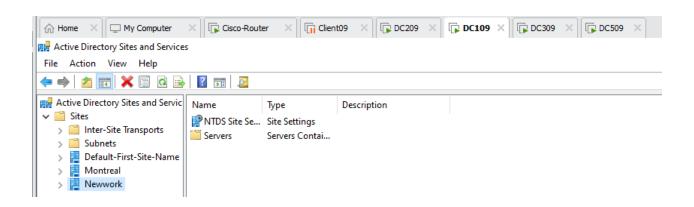
• Verify if Notification-Based Replication is enabled.

```
PS C:\Users\Administrator> Set-ADObject -Identity "CN=DEFAULTIPSITELINK,CN=IP,CN=Inter-Site Transports,CN=Sites,CN=Configuration,DC=vlabs09,DC=com" -Replace @{"options"=1}
PS C:\Users\Administrator> _
```

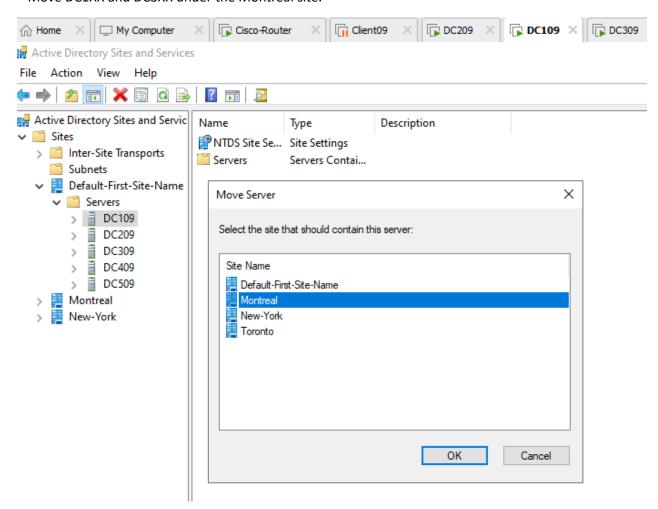
Task 5: Creating Sites

Using GUI:

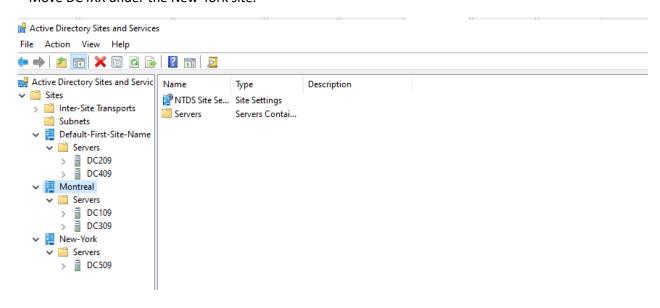
• Create the sites Montreal and New-York.



• Move DC1XX and DC3XX under the Montreal site.

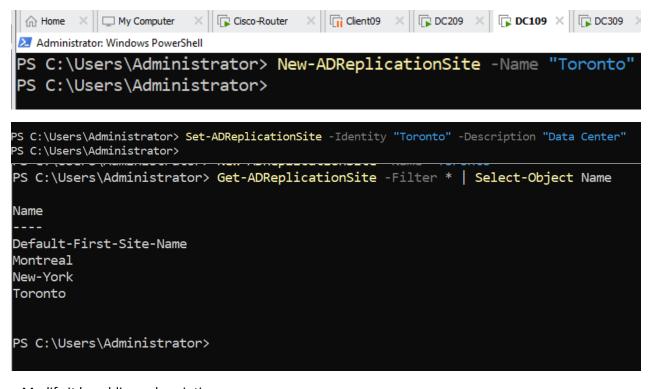


• Move DC4XX under the New-York site.



Using PowerShell:

• Create the site Toronto and verify that it has been created.



Modify it by adding a description.

```
PS C:\Users\Administrator> Set-ADReplicationSite -Identity "Toronto" -Description "Data Center"
PS C:\Users\Administrator> _
```

• Move DC2XX to Toronto site

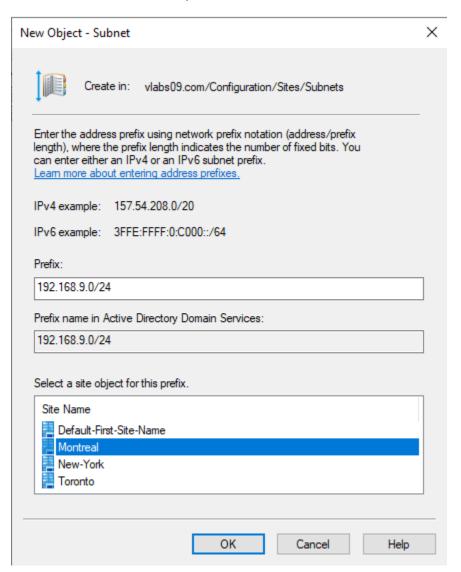
```
PS C:\Users\Administrator> Move-ADDirectoryServer -Identity "DC209" -Site "Toronto" PS C:\Users\Administrator> _
```

• Verify that it was moved.

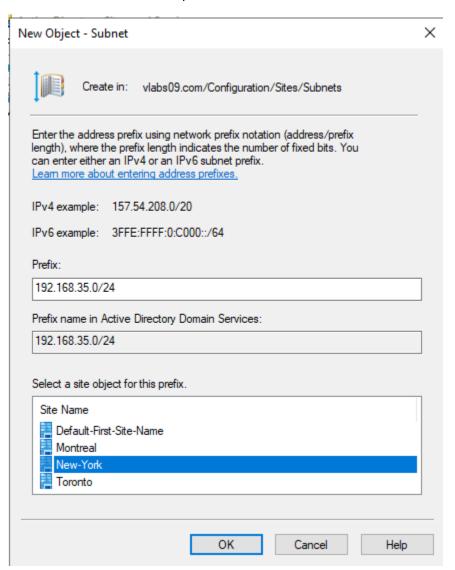
Task 6: Creating Subnets

Using GUI:

• Create subnet 192.168.XX.0/24 and associate it with the Montreal site.



• Create subnet 192.168.35.0/24 and associate it with the New-York site.



Using PowerShell:

• Create subnet 192.168.45.0/24 and associate it with the Toronto site.

```
PS C:\Users\Administrator> New-ADReplicationSubnet -Name "192.168.45.0/24" -Site "Toronto" PS C:\Users\Administrator>
```

• Verify the creation.

```
PS C:\Users\Administrator> Get-ADReplicationSubnet -Filter * | Select-Object Name, Site

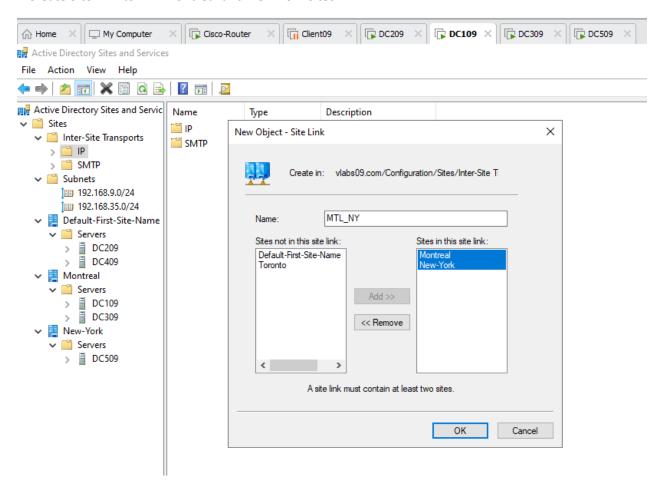
Name Site
----
192.168.9.0/24 CN=Montreal,CN=Sites,CN=Configuration,DC=vlabs09,DC=com
192.168.35.0/24 CN=New-York,CN=Sites,CN=Configuration,DC=vlabs09,DC=com
192.168.45.0/24 CN=Toronto,CN=Sites,CN=Configuration,DC=vlabs09,DC=com

PS C:\Users\Administrator>
```

Task 7: Creating Site Links

Using GUI:

• Create Site Link to link Montreal and New-York sites.

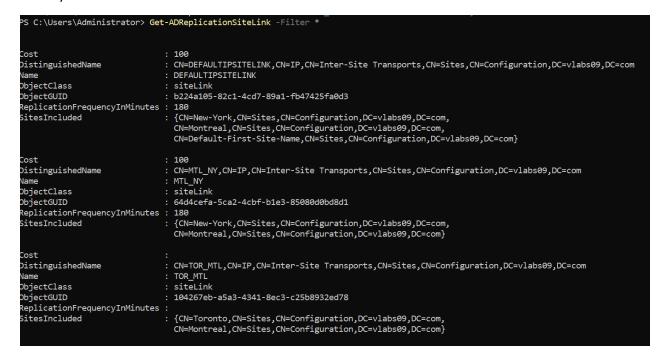


Using PowerShell:

• Create Site Link to link Toronto and Montreal sites.



Verify the creation



• Modify the replication cost to 90 and replication interval to 40.



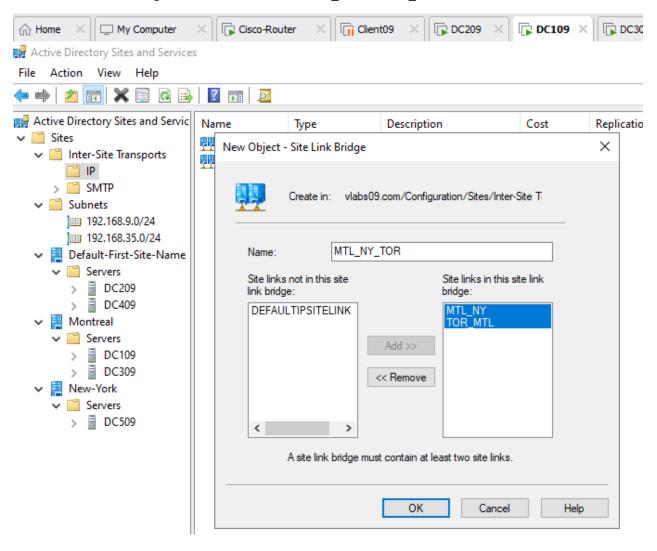
• Verify the modification.

PS C:\Users\Administrator> Get-ADReplicationSiteLink -Filter * DistinguishedName : CN=DEFAULTIPSITELINK,CN=IP,CN=Inter-Site Transports,CN=Sites,CN=Configuration,DC=vlabs09,DC=com Name DEFAULTIPSITELINK ObjectClass siteLink ObjectGUID b224a105-82c1-4cd7-89a1-fb47425fa0d3 ReplicationFrequencyInMinutes : 180 SitesIncluded : {CN=New-York,CN=Sites,CN=Configuration,DC=vlabs09,DC=com, CN=Montreal,CN=Sites,CN=Configuration,DC=vlabs09,DC=com, CN=Default-First-Site-Name, CN=Sites, CN=Configuration, DC=vlabs09, DC=com} Cost DistinguishedName $: CN=MTL_NY, CN=IP, CN=Inter-Site\ Transports, CN=Sites, CN=Configuration, DC=vlabs09, DC=compared to the configuration of the config$ MTL_NY siteLink Name ObjectClass ObjectGUID : 64d4cefa-5ca2-4cbf-b1e3-85080d0bd8d1 ReplicationFrequencyInMinutes : 180 SitesIncluded : {CN= Cost DistinguishedName $: \ CN=TOR_MTL, CN=IP, CN=Inter-Site \ Transports, CN=Sites, CN=Configuration, DC=vlabs09, DC=compared to the configuration of the co$: TOR_MTL : siteLink Name ObjectClass ObjectGUID : 104267eb-a5a3-4341-8ec3-c25b8932ed78 ReplicationFrequencyInMinutes : 40 CN=Toronto,CN=Sites,CN=Configuration,DC=vlabs09,DC=com,CN=Montreal,CN=Sites,CN=Configuration,DC=vlabs09,DC=com SitesIncluded

Task 8: Creating Site Link Bridge

Using GUI:

• Create a Site Link Bridge and add the two links: MTL_NY and TOR_MTL.



Using PowerShell:

• Verify the new Site Link Bridge.

```
PS C:\Users\Administrator> Get-ADReplicationSiteLinkBridge -Filter *

DistinguishedName : CN=MTL_NY_TOR,CN=IP,CN=Inter-Site Transports,CN=Sites,CN=Configuration,DC=vlabs09,DC=com

Name : MTL_NY_TOR

ObjectClass : siteLinkBridge

ObjectGUID : 7d0f9b1a-950c-4804-8988-2b5d1a4a5429

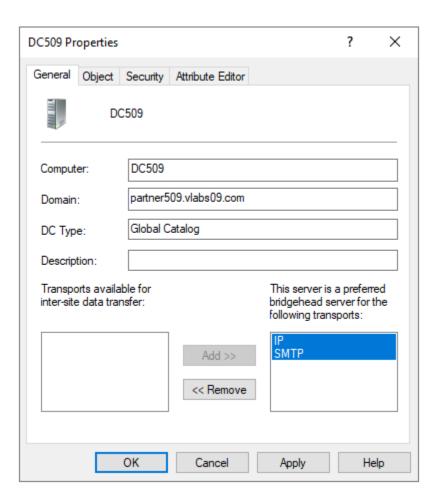
SiteLinkSIncluded : {CN=TOR_MTL,CN=IP,CN=Inter-Site Transports,CN=Sites,CN=Configuration,DC=vlabs09,DC=com, CN=MTL_NY,CN=IP,CN=Inter-Site

Transports,CN=Sites,CN=Configuration,DC=vlabs09,DC=com}
```

Task 9: Selecting a Bridgehead

Using GUI:

• Select DC5XX as a bridgehead for the Toronto Site.

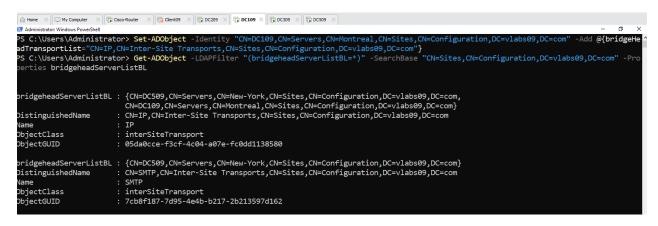


Using PowerShell:

• Select DC1XX as a bridgehead for the Montreal Site.



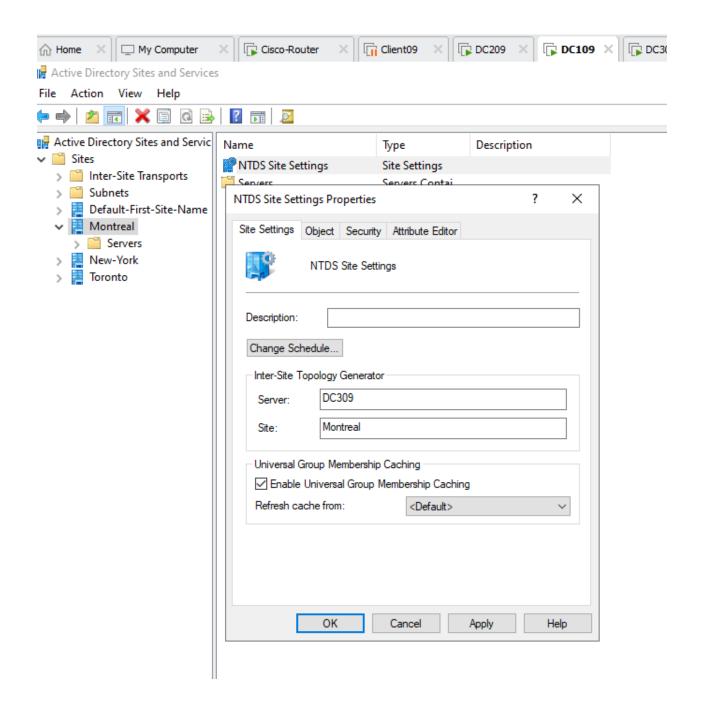
• Verify that DC1XX is the bridgehead.



Task 10: Managing Universal Group Membership

Using GUI:

• Enable Universal Group Membership on the Montreal site.



Using PowerShell:

• Enable Universal Group Membership on the New-York site.

PS C:\Users\Administrator> Set-ADReplicationSite -Identity New-York -UniversalGroupCachingEnabled \$True PS C:\Users\Administrator>

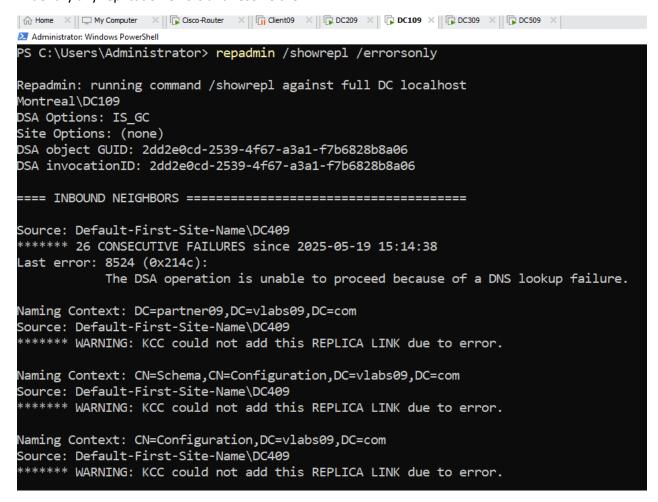
Task 11: Monitoring and Troubleshooting Replication

From DC1XX, using PowerShell:

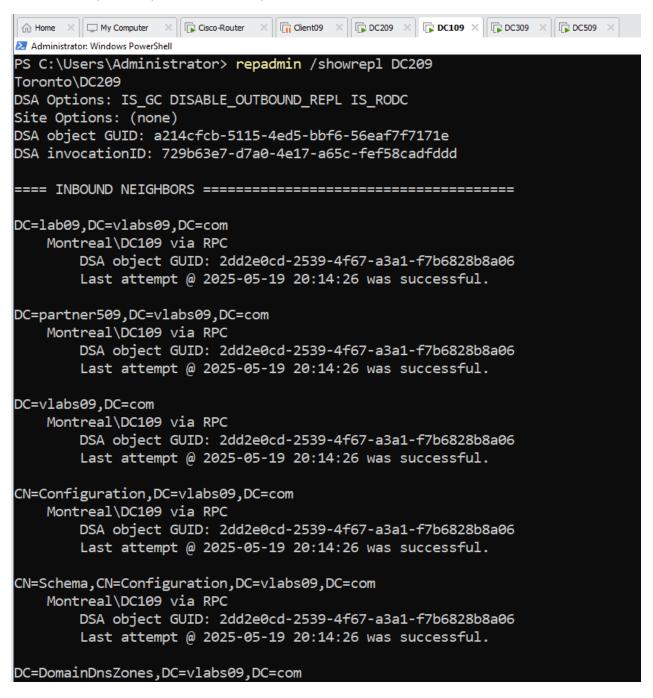
• Check the replication partner and the replication status.

```
Administrator: Windows PowerShell
PS C:\Users\Administrator> repadmin /showrepl
Repadmin: running command /showrepl against full DC localhost
Montreal\DC109
DSA Options: IS GC
Site Options: (none)
DSA object GUID: 2dd2e0cd-2539-4f67-a3a1-f7b6828b8a06
DSA invocationID: 2dd2e0cd-2539-4f67-a3a1-f7b6828b8a06
CN=Configuration,DC=vlabs09,DC=com
   Montreal\DC309 via RPC
       DSA object GUID: 20c22bd2-8799-4f8d-9d55-ca57fea24d05
       Last attempt @ 2025-05-19 20:31:37 was successful.
   New-York\DC509 via RPC
       DSA object GUID: 323e2d8d-053a-486c-92a6-cc137eb94fe4
       Last attempt @ 2025-05-19 20:31:40 was successful.
CN=Schema,CN=Configuration,DC=vlabs09,DC=com
   Montreal\DC309 via RPC
       DSA object GUID: 20c22bd2-8799-4f8d-9d55-ca57fea24d05
       Last attempt @ 2025-05-19 19:54:31 was successful.
   New-York\DC509 via RPC
       DSA object GUID: 323e2d8d-053a-486c-92a6-cc137eb94fe4
       Last attempt @ 2025-05-19 20:09:31 was successful.
DC=ForestDnsZones,DC=vlabs09,DC=com
   Montreal\DC309 via RPC
       DSA object GUID: 20c22bd2-8799-4f8d-9d55-ca57fea24d05
       Last attempt @ 2025-05-19 19:54:31 was successful.
   New-York\DC509 via RPC
       DSA object GUID: 323e2d8d-053a-486c-92a6-cc137eb94fe4
       Last attempt @ 2025-05-19 20:09:31 was successful.
```

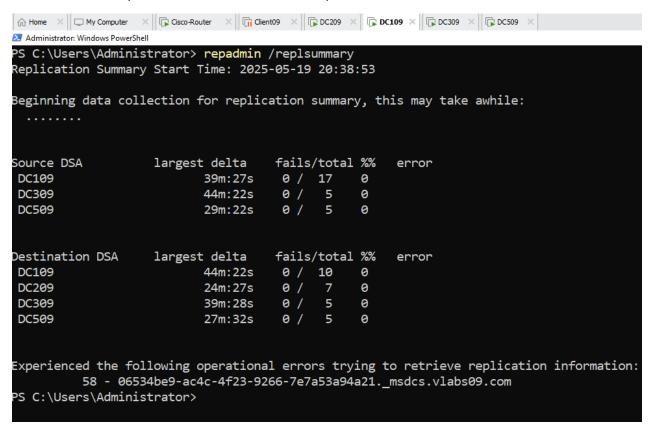
• Identify any replication errors and resolve them.



• Check the replication partner and the replication status for DC2XX



• Summarize the replication status and the overall replication health.



• Check the replication queue.

```
PS C:\Users\Administrator> repadmin /queue

Repadmin: running command /queue against full DC localhost

Queue contains 0 items.

PS C:\Users\Administrator> _
```

Force replication between DC1XX and DC3XX by pulling from DC3XX

```
Administrator: Windows PowerShell

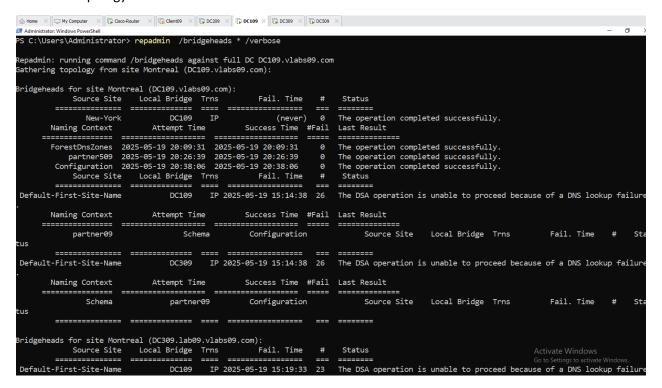
PS C:\Users\Administrator> repadmin /syncall DC309 /aed

CALLBACK MESSAGE: Error contacting server CN=NTDS Settings,CN=DC409,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=vlabs09,DC=com (network error): 1722 (0x6ba):

The RPC server is unavailable.

SyncAll cancelled by user request.
```

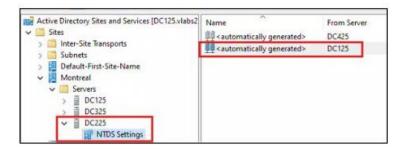
• List the Topology information.



Lab Assignment 1 (Part II) - AD FSMO and GC

Task 12: Managing FSMO role and Global Catalog

- 1. Reconfigure DC2XX
 - Login to DC2XX
 - Use the vlabsXX\administrator account.
 - Keep the session open.
 - Modify VM Network Settings
 - Open the VM settings for DC2XX.
 - Change the LAN segment to LAN1.
 - Update IP Configuration on DC2XX
 - Go back to the open session on DC2XX.
 netsh interface ip set address name="Ethernet0" static 192.168.X.2 255.255.255.0
 192.168.X.50
 - Test Network and DNS
 - o ping 192.168.X.1
 - nslookup vlabsXX.com
 - Reconfigure Active Directory Sites on DC1XX
 - Log in to DC1XX.
 - Open Active Directory Sites and Services.
 - Move DC2XX from the Toronto site to the Montreal site.
 - o Delete the Toronto site. o Delete the subnet 192.168.45.0/24.
 - Force Replication from DC1XX
 - Locate the NTDS connection between DC1XX and DC2XX.
 - o Right-click the connection object and select Replicate now.



- 2. Demote the Domain Controller (RODC)
 - Return to DC2XX.
 - Safely remove a domain controller (typically an RODC) from the domain and return it to a standalone server.

Uninstall-ADDSDomainController `

- -LocalAdministratorPassword (Read-Host -Prompt "Enter local admin password" -AsSecureString) `
- -Force

- 3. Promote a Writable Domain Controller (Replica)
 - Promote a member server to become a writable domain controller for an existing domain (vlabsXX.com) in the Montreal site.

Install-ADDSDomainController `

- -DomainName "vlabs25.com" `
- -Credential (Get-Credential) `
- -SiteName "Montreal" `
- -InstallDNS `
- -NoGlobalCatalog:\$true `
- -Force
- 4. Managing FSMO role and Global Catalog
- Before starting these tasks, from DC1XX, open Active Directory Sites and Services.
- Locate the NTDS connection between DC1XX and DC2XX.
- Right-click the connection object and select Replicate now.
- On DC2XX, use the netdom tool to locate the FSMO roles of all the domains.
- On DC2XX, use PowerShell to transfer the Domain Naming Master FSMO role from DC1XX to DC2XX, then verify that the role has been successfully moved.
- Go back to DC1XX, use the GUI to transfer the Domain Naming Master FSMO role back to DC1XX.
- Simulate a failure scenario:
 - Stop the DC1XX server.
 - o On DC2XX, use the ntdsutil tool to seize the PDC Emulator FSMO role.
 - Start the DC1XX server again.
- From DC1XX, use the GUI to verify that the PDC Emulator FSMO role is now held by DC2XX.
- Go back to DC2XX:
 - o Configure the PDC Emulator DC to synchronize time with a reliable time source.
 - o Enable the Global Catalog role.
- Return to DC1XX, use the GUI to disable the Global Catalog on DC2XX.