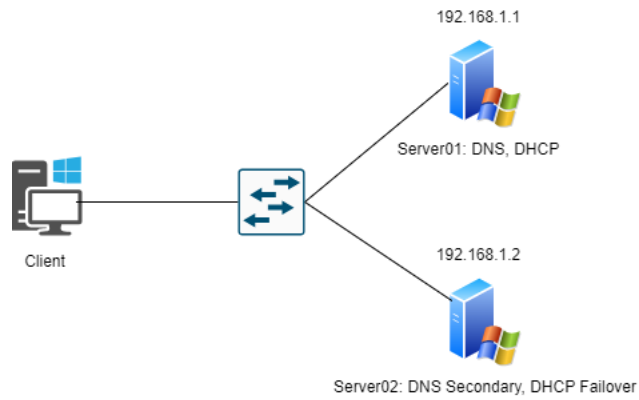


CẤU HÌNH DHCP

MÔ HÌNH MẠNG



CHUẨN BỊ

2 máy Windows Server 2022

Server01:

- Đặt server name: server01
- IP: 192.168.1.1
- Subnet mask: 255.255.255.0
- Default Gateway: 192.168.1.1
- DNS Server: 192.168.1.1

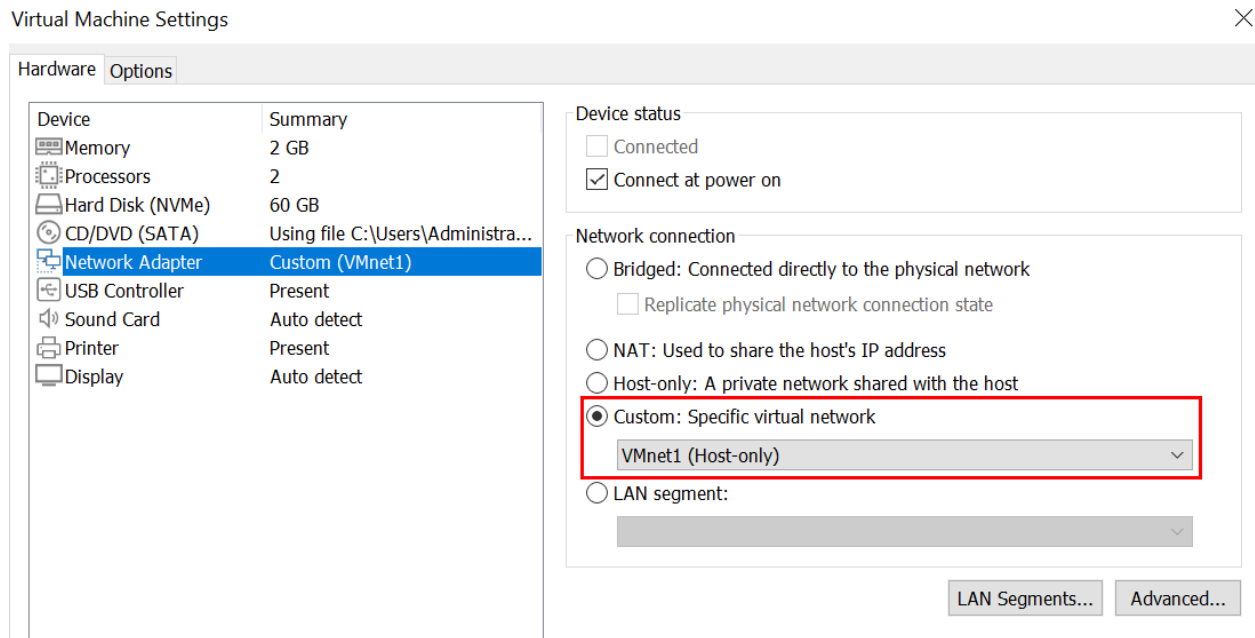
Server02:

- Đặt server name: server02
- IP: 192.168.1.2
- Subnet mask: 255.255.255.0
- Default Gateway: 192.168.1.1
- DNS Server: 192.168.1.2

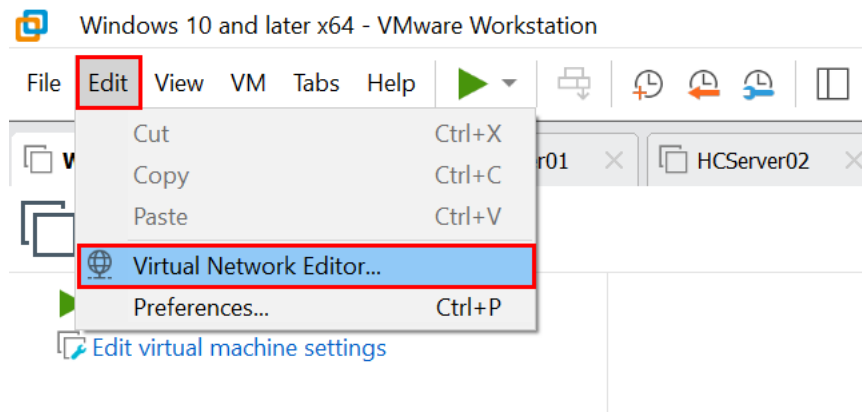
1 máy client Windows10:

- IP để DHCP

Trên phần mềm VMware, chỉnh Network Adapter của các máy ảo về **VMnet1 (Host-only)**



Tắt DHCP Server trên phần mềm VMware, chọn **Edit > Virtual Network Editor...**



Chọn **VMnet1** > Bỏ check **Use local DHCP service to....VMs** > **OK**

Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet0	Bridged	Auto-bridging	-	-	-
VMnet1	Host-only	-	Connected	-	192.168.253.0
VMnet8	NAT	NAT	Connected	Enabled	192.168.197.0

Add Network... Remove Network Rename Network...

VMnet Information

☐ Bridged (connect VMs directly to the external network)
 Bridged to: Automatic Automatic Settings...

☐ NAT (shared host's IP address with VMs) NAT Settings...

☒ Host-only (connect VMs internally in a private network)

☒ Connect a host virtual adapter to this network
 Host virtual adapter name: VMware Network Adapter VMnet1

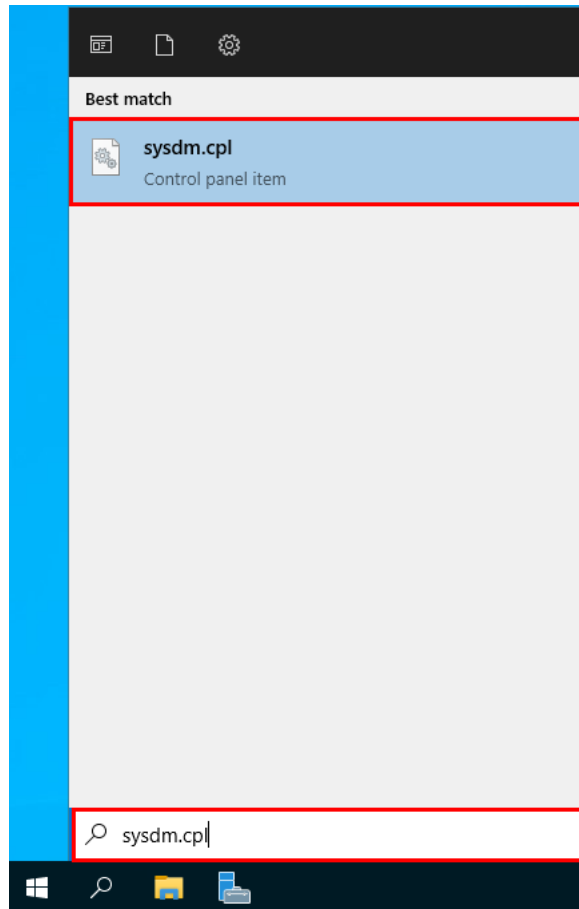
☐ Use local DHCP service to distribute IP address to VMs DHCP Settings...

Subnet IP: 192 . 168 . 253 . 0 Subnet mask: 255 . 255 . 255 . 0

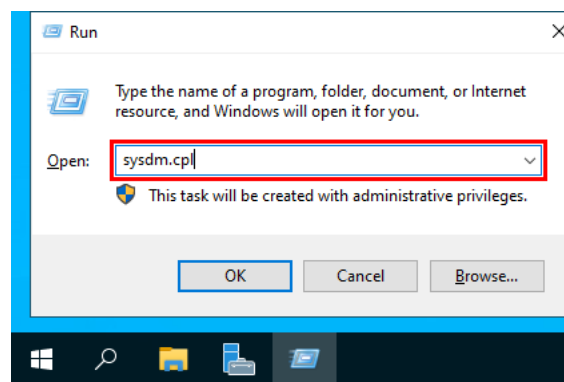
Restore Defaults Import... Export... OK Cancel Apply Help

Đổi tên máy cho DHCP Server01

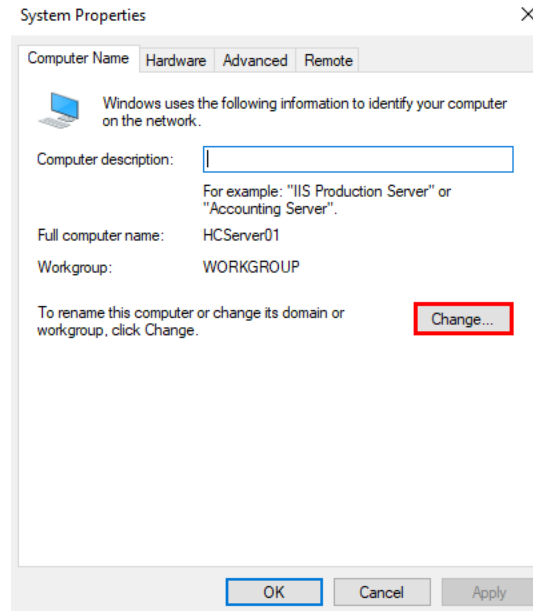
Nhấn phím Windows trên bàn phím, nhập: **sysdm.cpl** > **Enter**



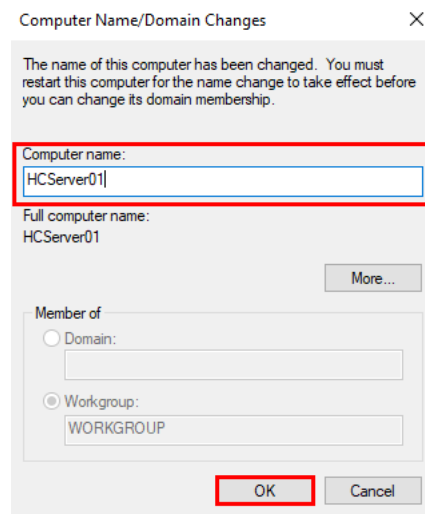
Hoặc nhấn tổ hợp phím **Windows + R**, nhập: **sysdm.cpl** > **Enter**



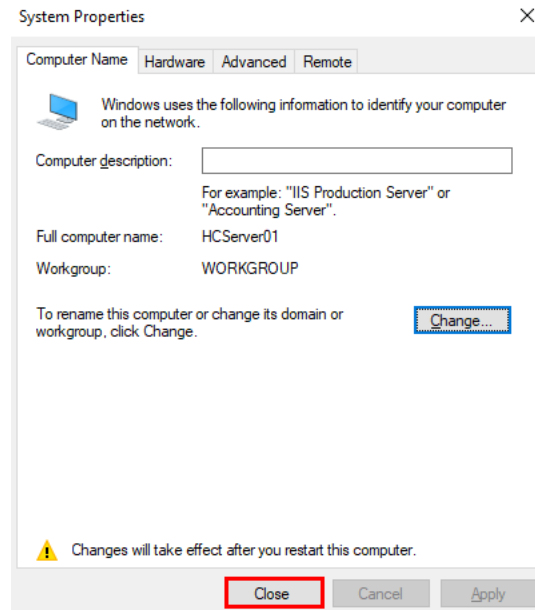
Cửa sổ System Properties, **Tab Computer Name** > chọn **Change...**



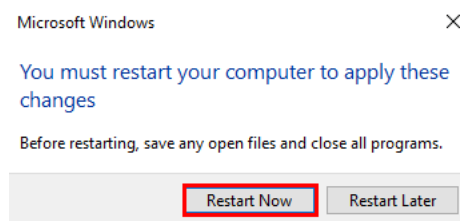
Đặt tên cho Server > **OK**



Nhấn **Close**

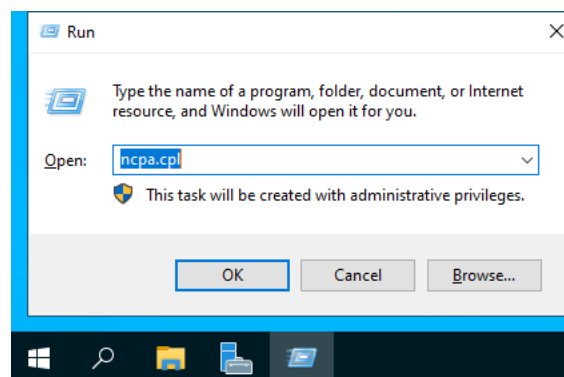


Máy yêu cầu khởi động lại, chọn Restart Now

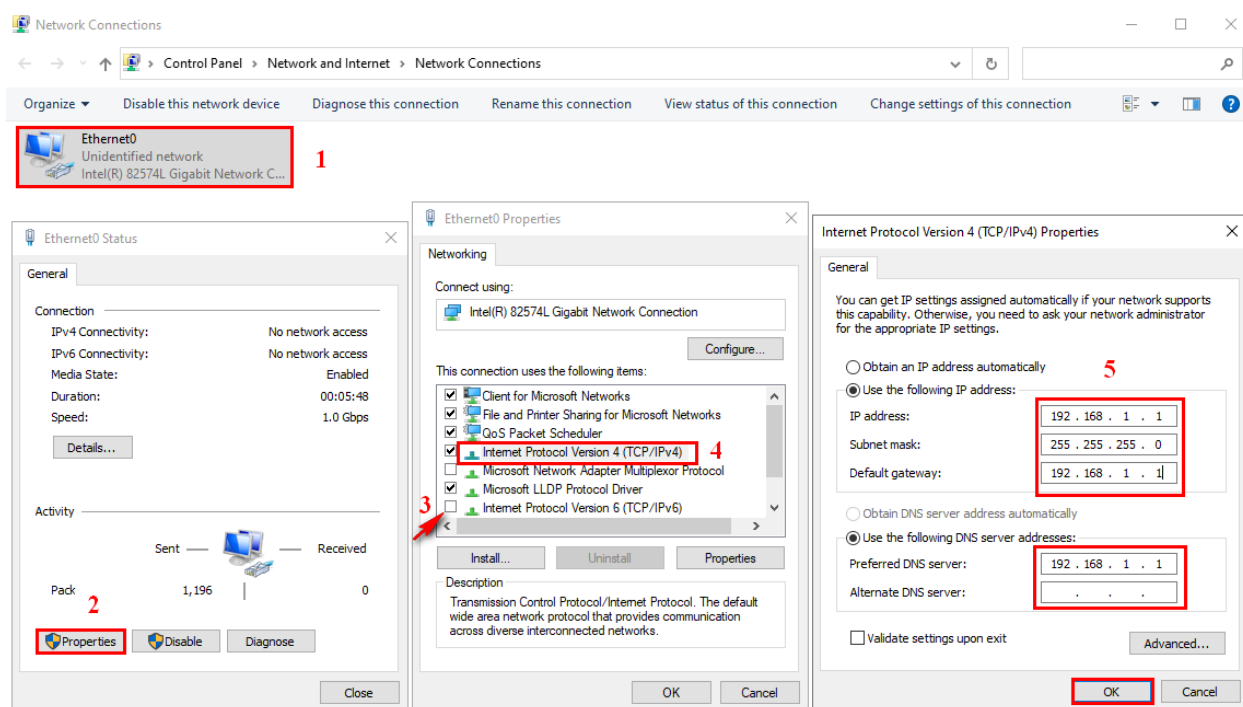


Cấu hình IP cho DHCP Server01:

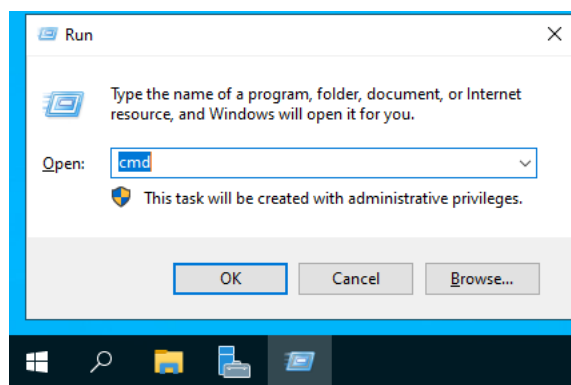
Nhấn **phím Windows** hoặc tổ hợp phím **Windows + R**, nhập: **ncpa.cpl** > **Enter**



Double click vào card mạng **Ethernet** > **Properties** > Bỏ dấu check tại **Internet Protocol Version 6 (TCP/IPv6)** > Double click vào **Internet Protocol Version 4 (TCP/IPv4)** > đặt địa chỉ IP cho Server > **OK** > **OK** > **Close**



Để kiểm tra địa IP trên máy, mở command line, nhấn phím Windows hoặc tổ hợp phím Windows + R, nhập: **cmd** > **Enter**



Giao diện command line, nhập: **ipconfig /all**

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.20348.587]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ipconfig /all

Windows IP Configuration

Host Name . . . . . : HCServer01
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet0:

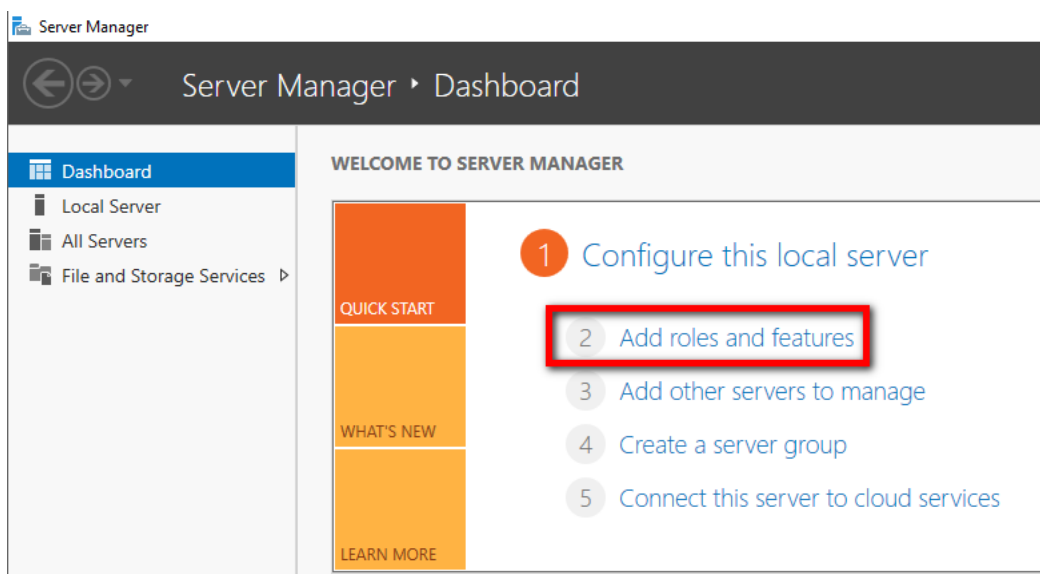
Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) 82574L Gigabit Network Connection
Physical Address. . . . . : 00-0C-29-D8-A2-4D
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.1.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 0.0.0.0
DNS Servers . . . . . : 192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled

C:\Users\Administrator>
```

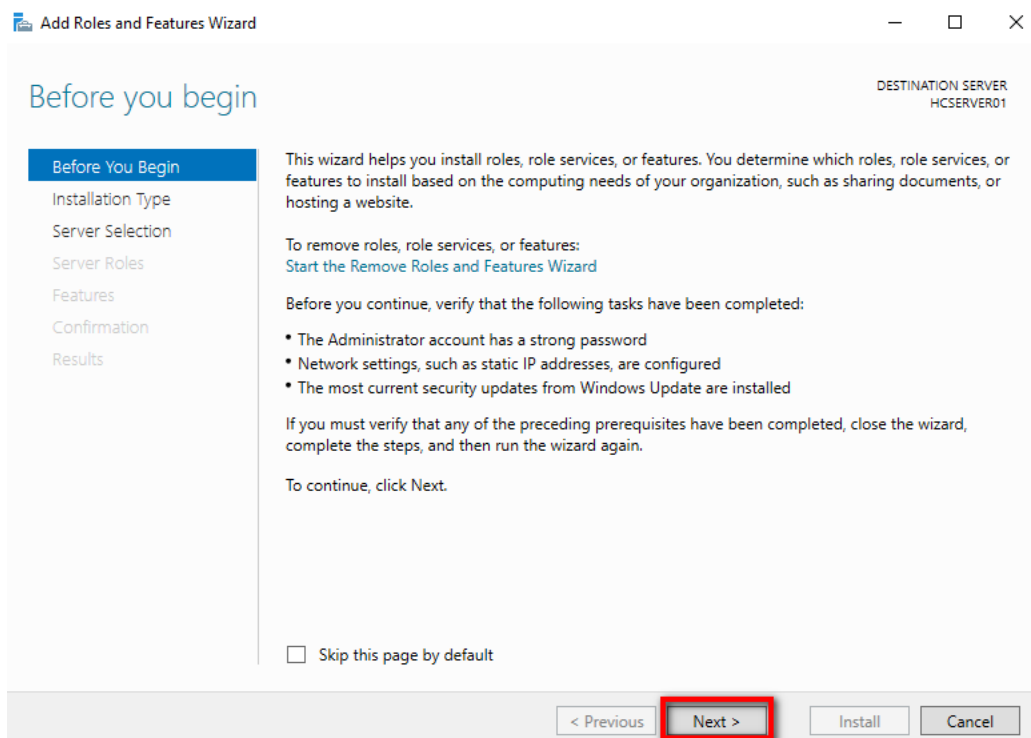
CÀI ĐẶT DỊCH VỤ DHCP SERVER

Thực hiện trên DHCP Server01

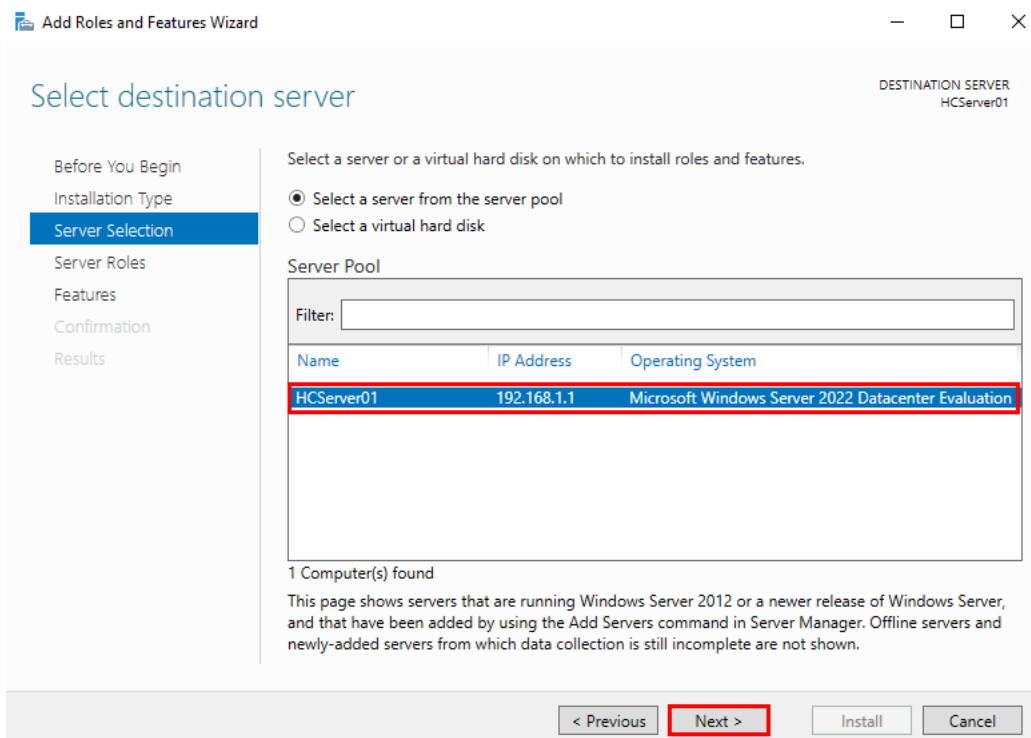
Tại giao diện Server Manager > Dashboard > Chọn **Add roles and features**



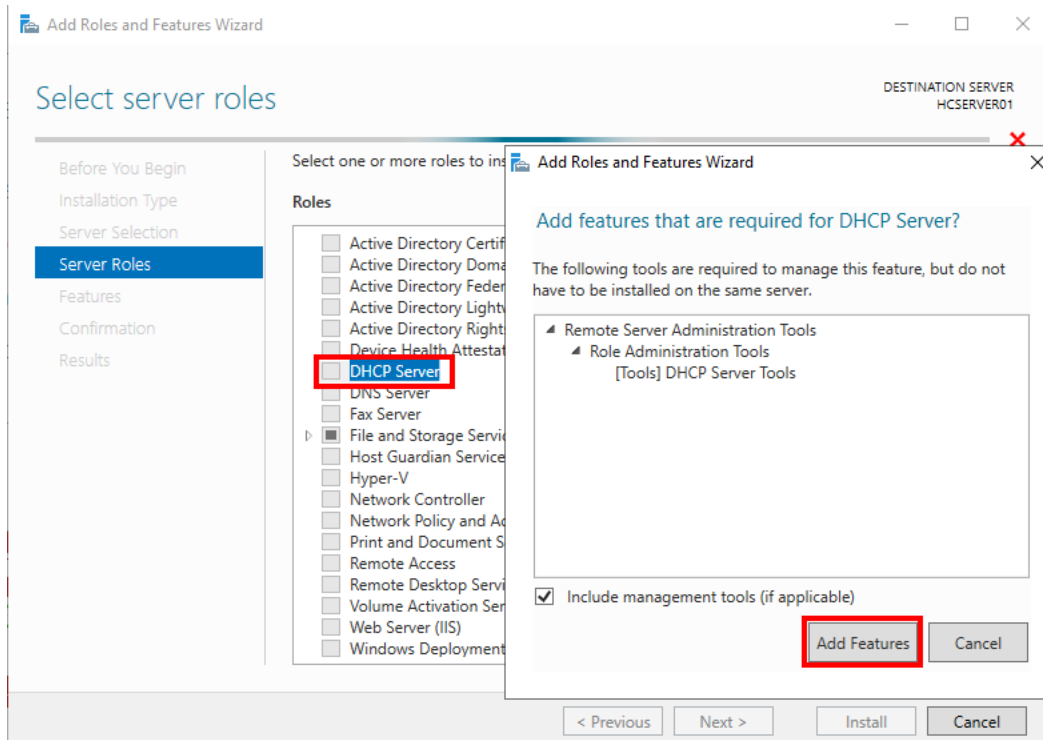
2 – Before you begin > Next > Next



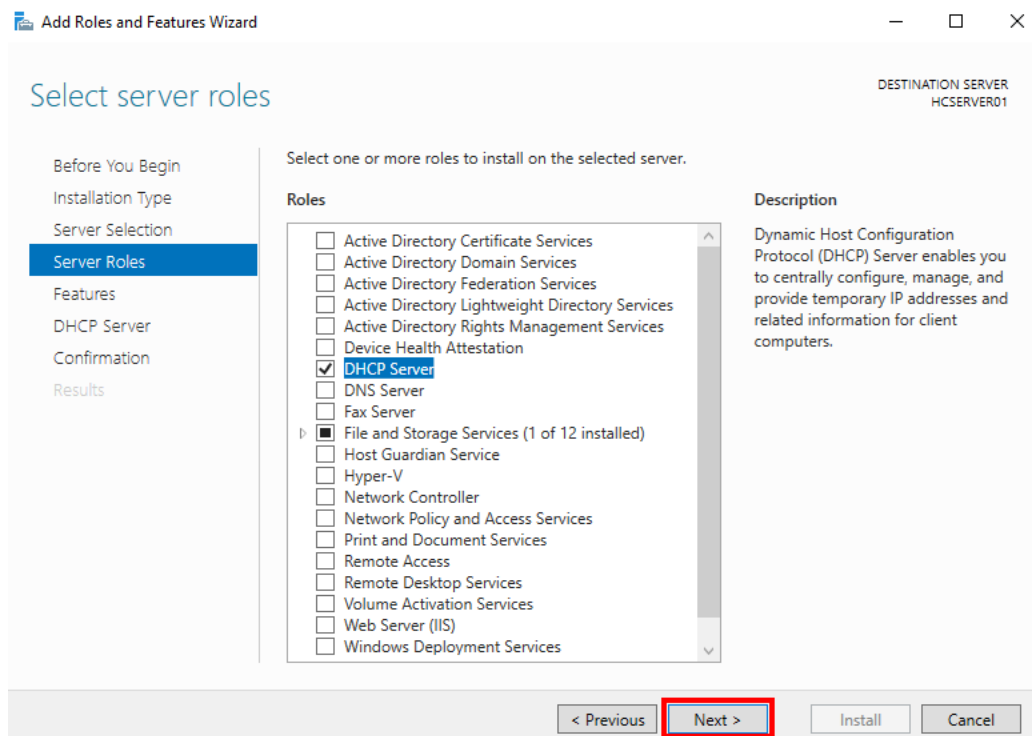
3 – Select destination server: Chọn Server cần cài đặt dịch vụ DHCP. Sau đó chọn **Next**



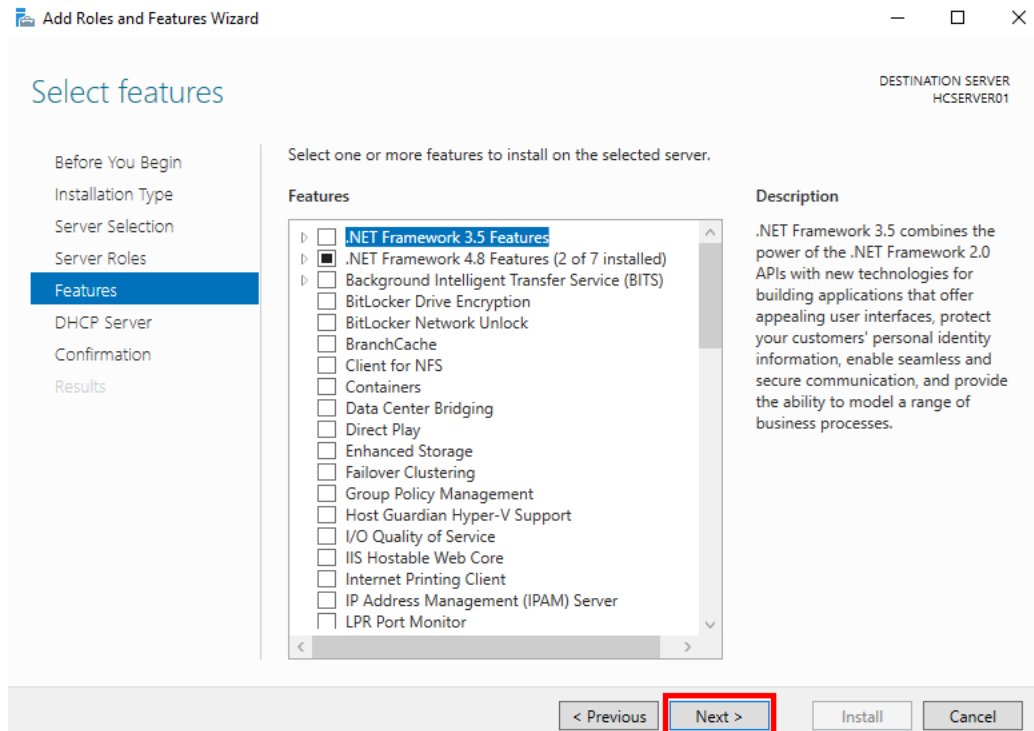
4 – Select server roles: Chọn dịch vụ cần cài đặt, trong bài lab này là **DHCP Server > Add Features**



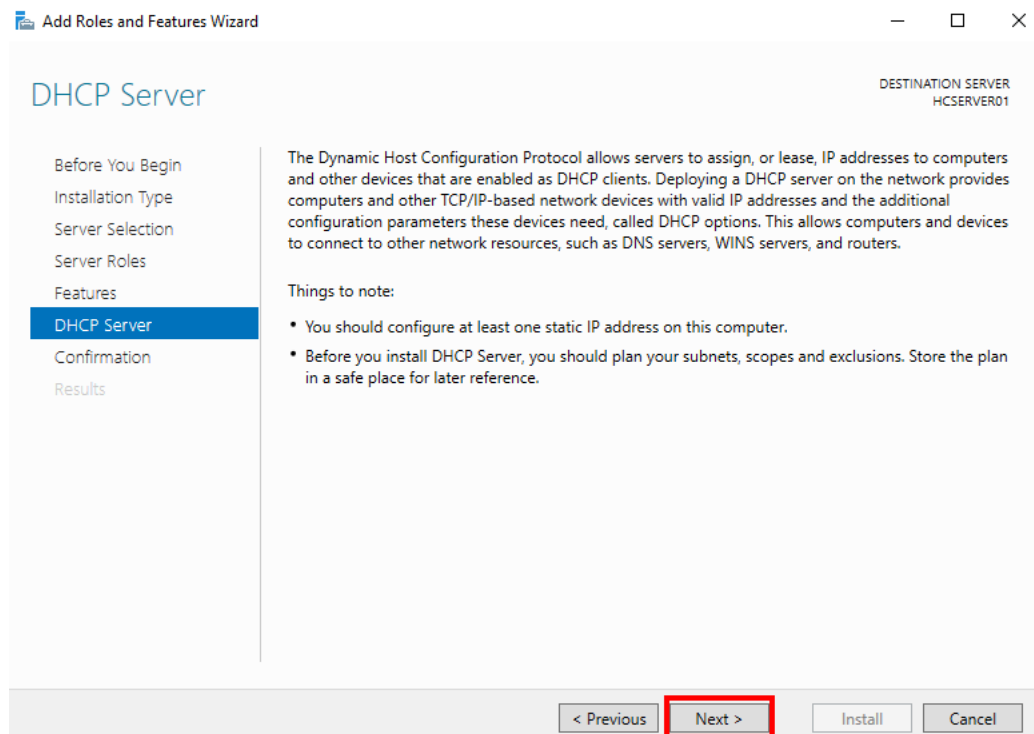
5 - Chọn Next



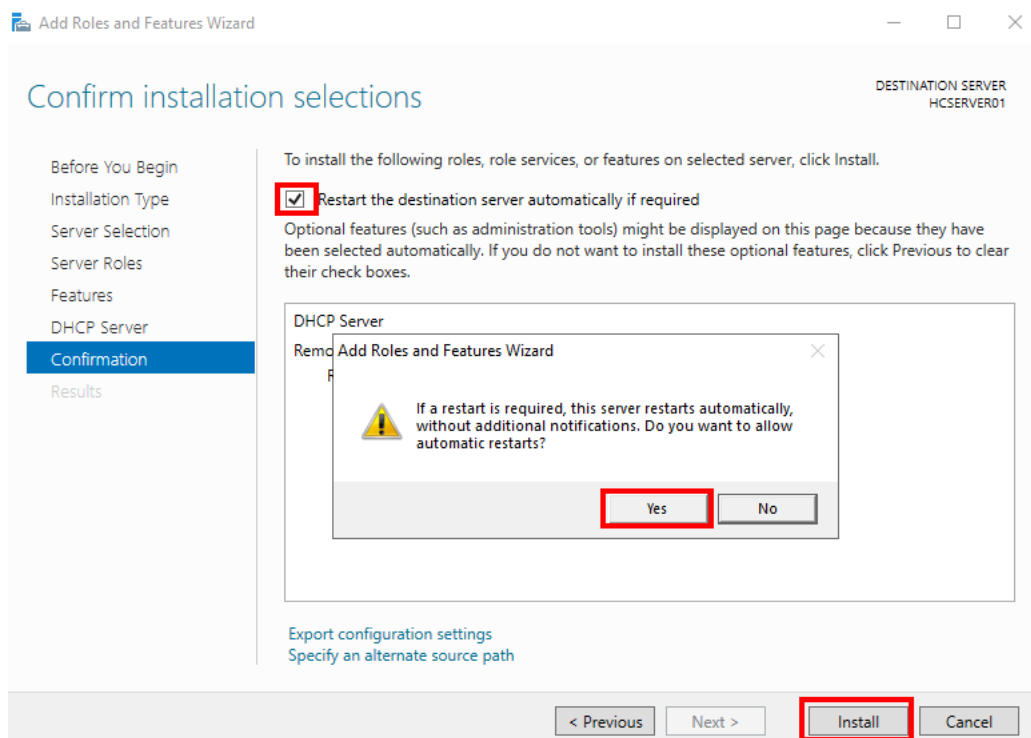
6 – Chọn **Next** để tiếp tục



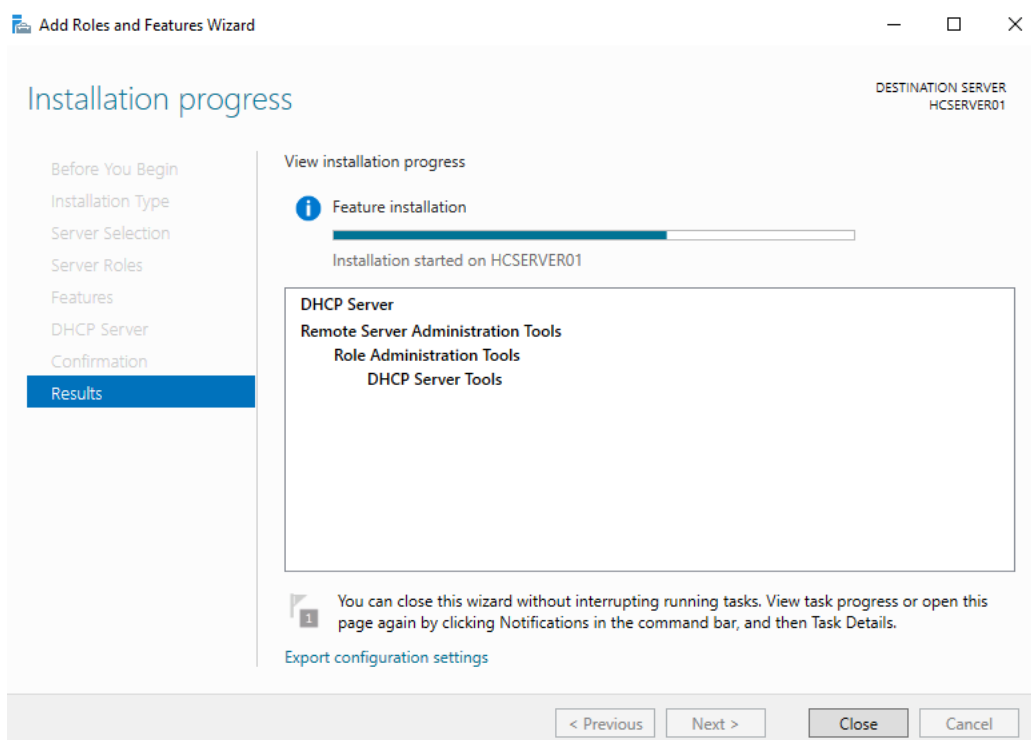
7 – Chọn **Next**



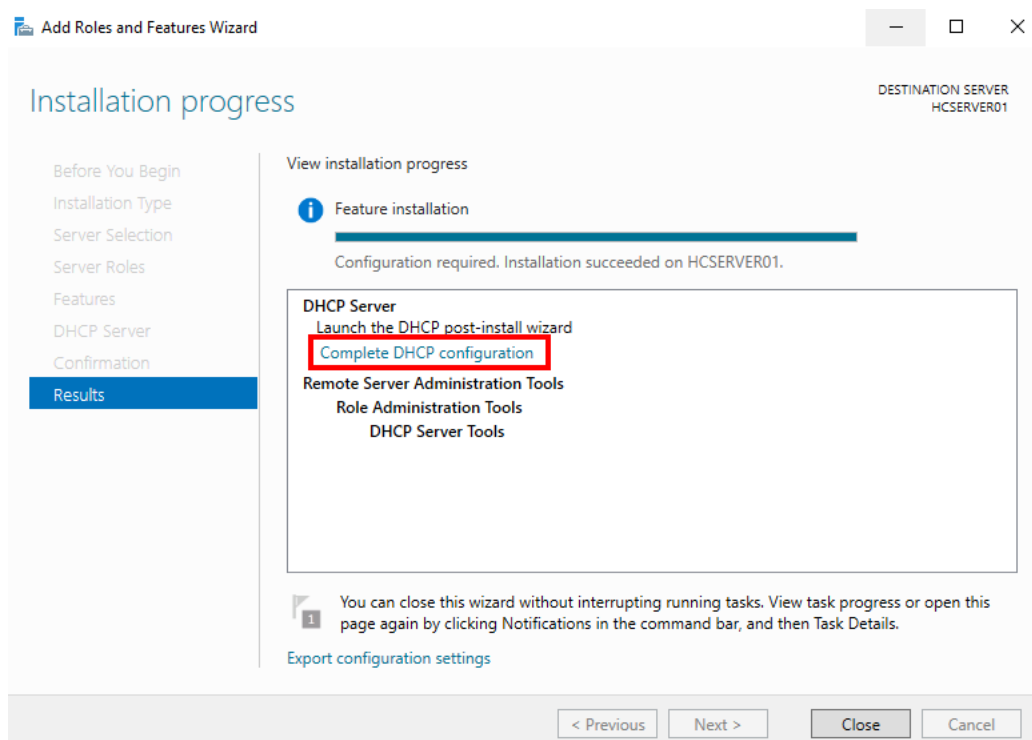
8 – Giao diện **Confirm installation selection** > Chọn **Install** để tiếp tục



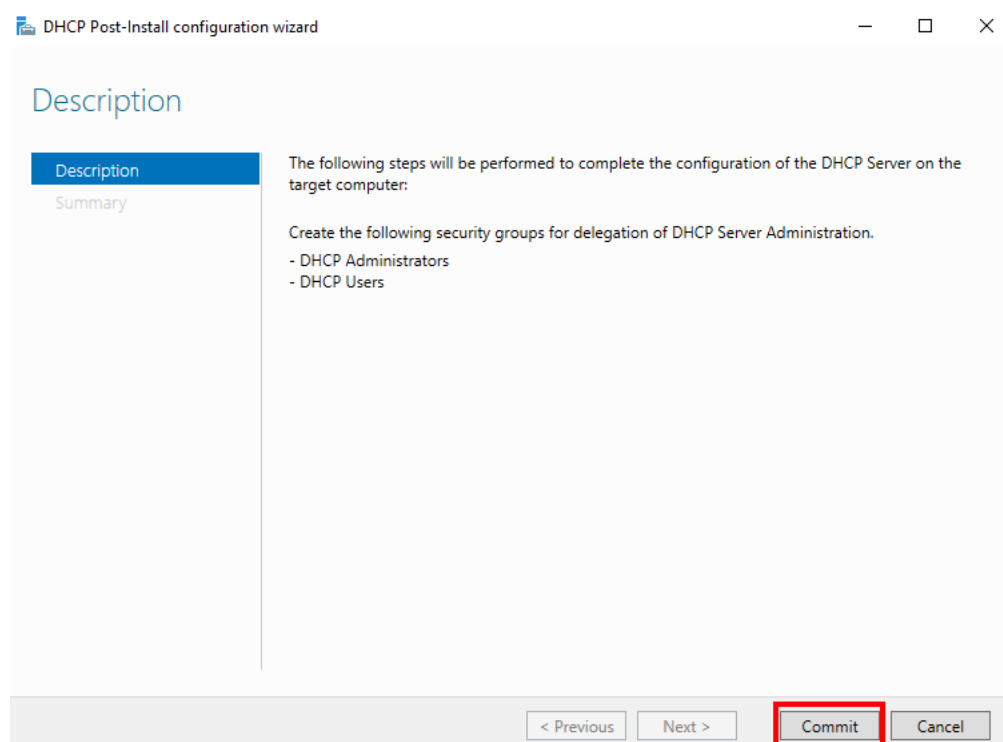
9 – Quá trình cài đặt diễn ra



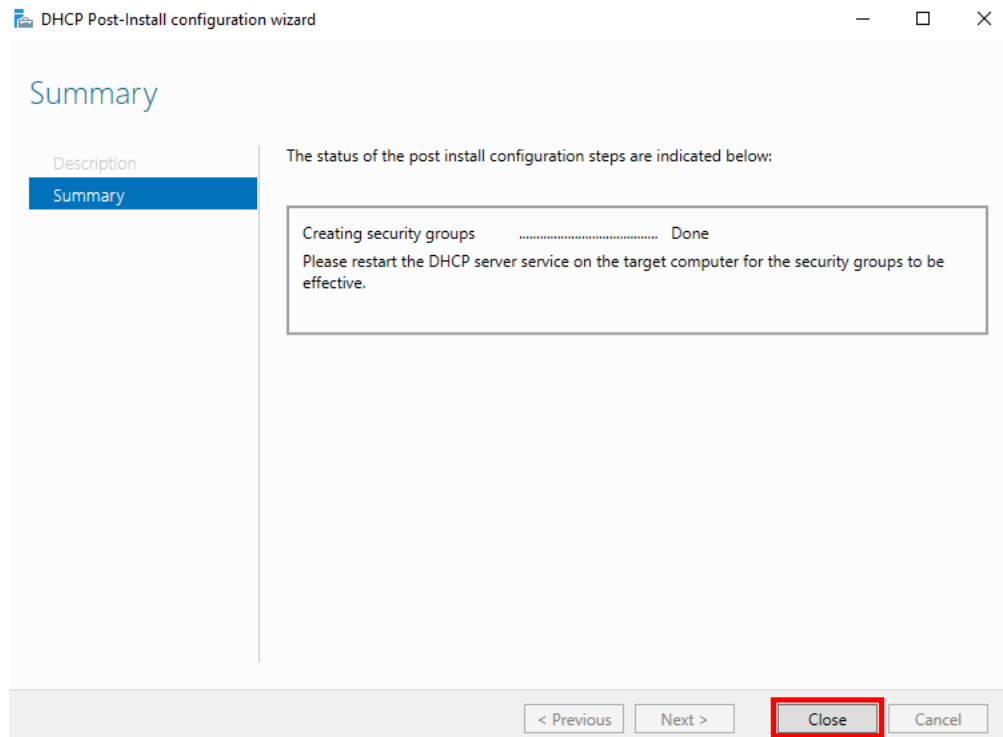
10 – Chọn **Complete DHCP configuration**



11 – Chọn **Commit**



12 – Chọn **Close > Close**

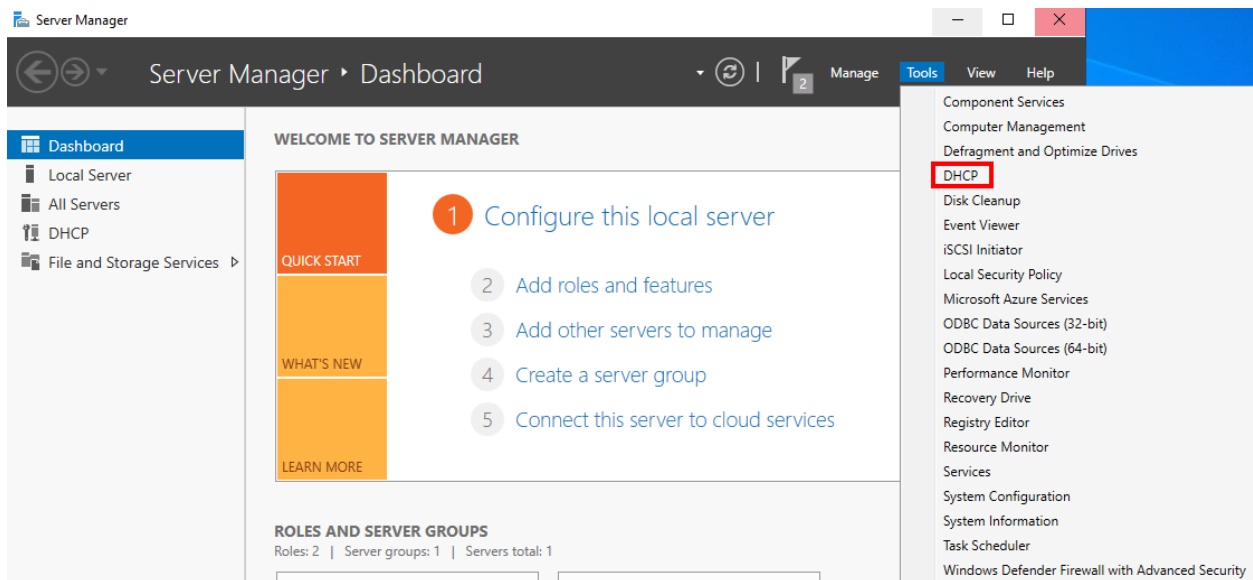


KHỞI TẠO SCOPE CẤP PHÁT DÃY IP TRÊN DHCP SERVER

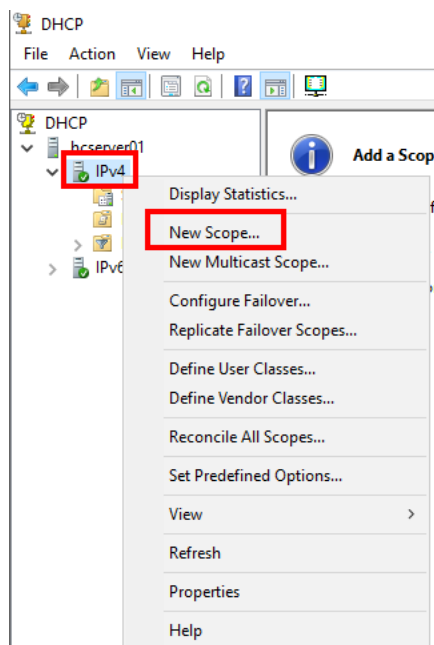
- Tạo Scope nhằm mục đích tạo ra 1 dãy địa chỉ IP để cấp phát cho máy client trong mạng LAN (mạng nội bộ)

➤ Vẫn thực hiện trên **DHCP Server01**

1 – Tại Server Manager > Dashboard > Chọn **Tools** > **DHCP**



2 – Click IPv4 > Chọn New Scope > Next



3 - Đặt tên Scope > Next

New Scope Wizard

Scope Name
You have to provide an identifying scope name. You also have the option of providing a description.

Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

< Back **Next >** Cancel

4 – Cấu hình dãy IP cấp phát trong hệ thống:

Địa chỉ ip cấp phát đầu tiên và ip cấp phát cuối cùng.

Nhấn **Next**

New Scope Wizard

IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.

Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back **Next >** Cancel

5 – **Add Exclusions and Delay:** Cấu hình dãy IP được loại trừ không cấp phát trong hệ thống (nếu có). Sau đó chọn **Next**

New Scope Wizard

Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.



Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address: End IP address:

Excluded address range:

Subnet delay in milli second:

< Back

Next >

Cancel

6 – Chọn thời gian cấp phát IP > Next

New Scope Wizard

Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.



Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days: Hours: Minutes:

< Back

Next >

Cancel

7 – Chọn Next

New Scope Wizard

Configure DHCP Options
 You have to configure the most common DHCP options before clients can use the scope.

When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

☒ Yes, I want to configure these options now
☐ No, I will configure these options later

< Back **Next >** Cancel

8 – Add Default Gateway > **Next**

Noted: Default Gateway (cổng mặc định) là cổng có tính năng chuyển tiếp gói tin, cho phép các máy tính trong mạng A giao tiếp được với các máy tính trong mạng B hoặc cho phép các máy tính trong mạng nội bộ (local network) kết nối được internet.

New Scope Wizard

Router (Default Gateway)
 You can specify the routers, or default gateways, to be distributed by this scope.

To add an IP address for a router used by clients, enter the address below.

IP address:

 192.168.1.1

Add
 Remove
 Up
 Down

< Back **Next >** Cancel

9 – Add Domain name hoặc DNS server nếu có. Nếu không có thể bỏ trống > **Next**

New Scope Wizard

Domain Name and DNS Servers
The Domain Name System (DNS) maps and translates domain names used by clients on your network.

You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain:

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:	IP address:	
<input type="text"/>	<input type="text"/>	Add
<input type="button" value="Resolve"/>	192.168.1.1	Remove
		Up
		Down

< Back **Next >** Cancel

10 - WINS Server không có bỏ qua, chọn > **Next**

Noted: WINS Server một máy chủ phân giải tên, có chức năng là phân giải tên máy tính thành địa chỉ IP cho phép các máy tính trên mạng tìm thấy nhau sử dụng giao thức NetBIOS. Tuy nhiên, WINS chỉ hoạt động với các mạng máy tính sử dụng giao thức NetBIOS. WINS không thể được sử dụng trong các mạng máy tính sử dụng IPv6. Hiện tại WINS ít còn được sử dụng mà được thay thế bằng DNS Server.

New Scope Wizard

WINS Servers
Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.

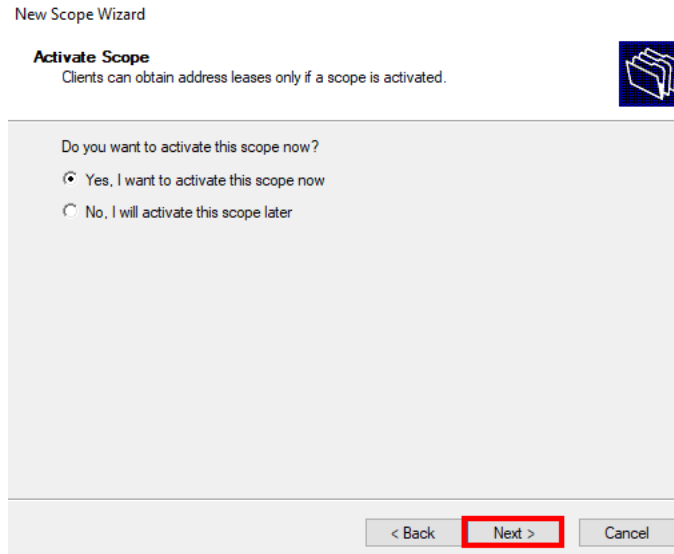
Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.

Server name:	IP address:	
<input type="text"/>	<input type="text"/>	Add
<input type="button" value="Resolve"/>		Remove
		Up
		Down

To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

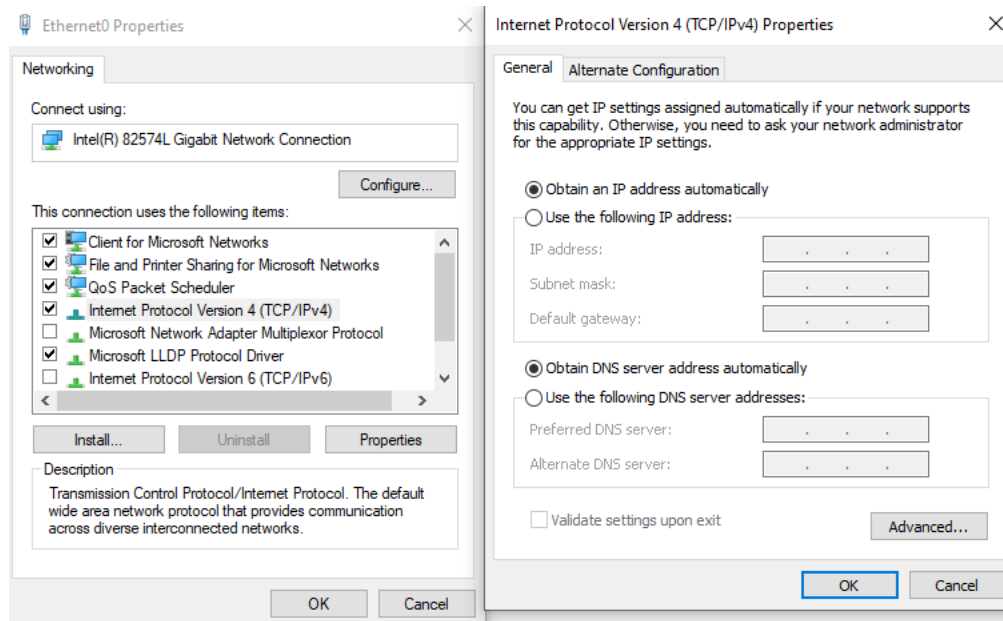
< Back **Next >** Cancel

11 - Chọn **Next > Finish**



Kiểm tra trên máy Client, máy Windows 10

1 – Trên máy client chuyển IP sang DHCP



Mở command line, nhập: **ipconfig /all**

Kiểm tra thấy máy Client đã nhận được IP từ **DHCP Server01**

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.2965]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ipconfig /all

Windows IP Configuration

Host Name . . . . . : HOHRUser01
Primary Dns Suffix . . . . . : ptit.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : ptit.local

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix . : 
Description . . . . . : Intel(R) 82574L Gigabit Network Connection
Physical Address. . . . . : 00-0C-29-ED-65-FF
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.1.50(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Saturday, October 28, 2023 8:38:28 AM
Lease Expires . . . . . : Saturday, October 28, 2023 9:38:29 AM
Default Gateway . . . . . : 192.168.1.1
DHCP Server . . . . . : 192.168.1.1
DNS Servers . . . . . : 192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter Bluetooth Network Connection:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : 
Description . . . . . : Bluetooth Device (Personal Area Network)
Physical Address. . . . . : 30-05-05-4E-92-CD
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

C:\Users\Administrator>
```

Trên máy DHCP Server01

Chọn **Address Leases**, bên Phải hiện thông tin của máy client đã được cấp IP bao gồm: Địa chỉ IP, Tên máy tính, Thời gian hết hạn cấp IP, Loại dịch vụ

DHCP

hcsrvr01

IPv4

Scope [192.168.1.0] Scope01

Address Pool

Address Leases

Reservations

Scope Options

Policies

Server Options

Policies

Filters

IPv6

Client IP Address	Name	Lease Expiration	Type	Unique ID
192.168.1.50	HOHRUser01.ptit.local	10/28/2023 9:38:28 AM	DHCP	000c29ed65ff

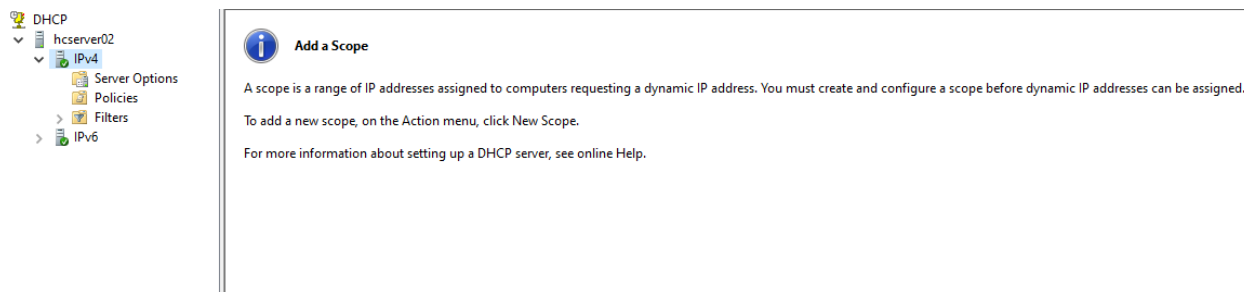
CẤU HÌNH DHCP FAILOVER

- DHCP Failover có chức năng cho phép hai máy chủ DHCP đồng bộ thông tin địa chỉ IP và cấu hình tùy chọn, đảm bảo khả năng cung cấp dịch vụ DHCP liên tục cho các máy client trong trường hợp một máy chủ DHCP bị lỗi.

1 – Tiến hành cài đặt thêm **1 DHCP Server02** (Cài đặt và tạo thêm 1 máy ảo Windows Server 2022)

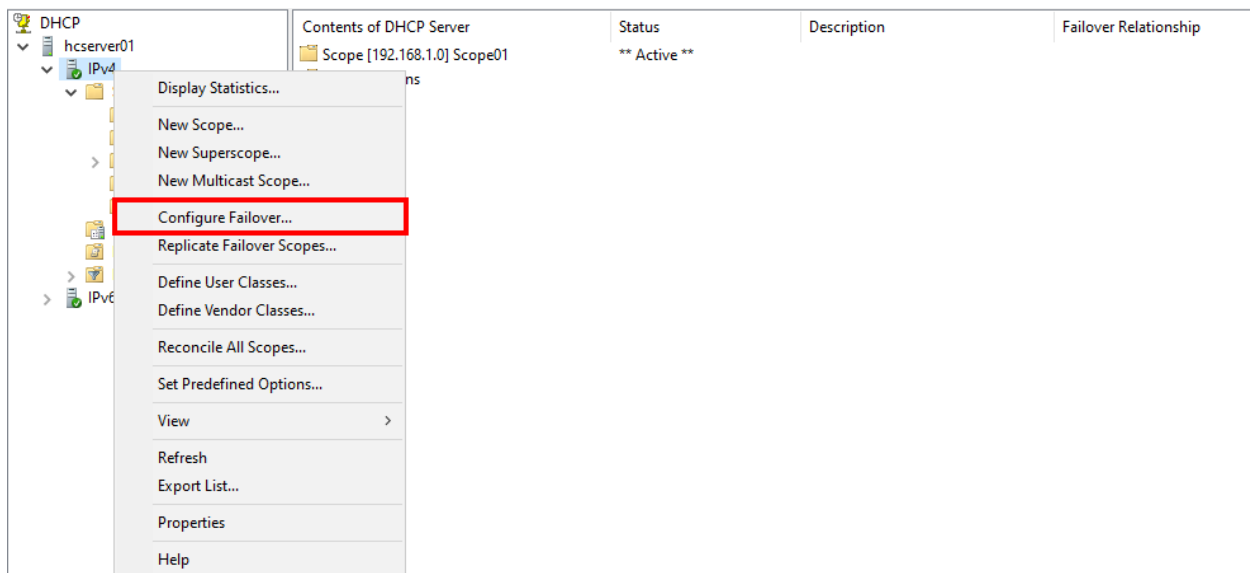
2 – Trên **DHCP Server02** thực hiện các bước cài dịch vụ DHCP Server (xem lại hướng dẫn **CÀI ĐẶT DỊCH VỤ DHCP SERVER** trang 08 – trang 13)

Trên **DHCP Server 02** **KHÔNG** thực hiện tạo các Scopes cấp phát IP

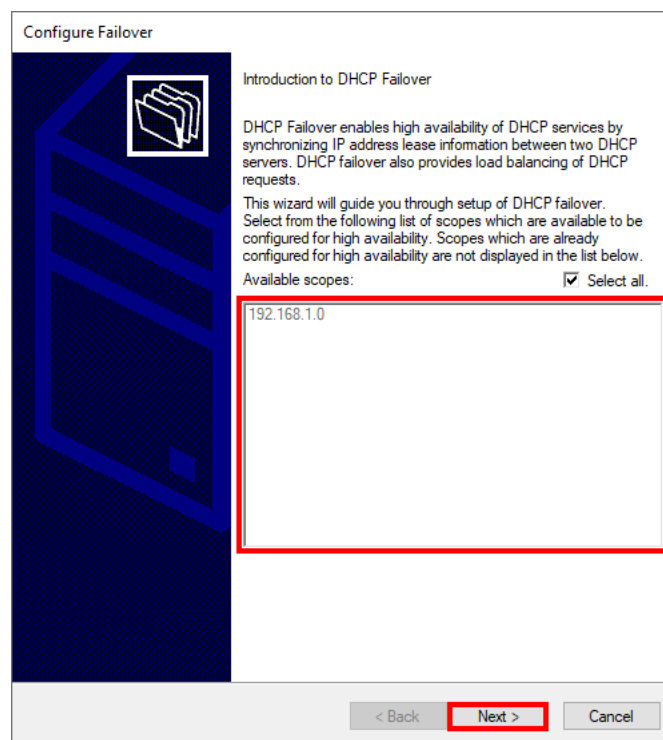


3 – Trên **DHCP Server01**:

- Chuột phải **IPv4** > **Configure Failover...**



4 – Chọn những Scopes IP nào được đồng bộ thông qua DHCP Failover > **Next**



5 – Bước tiếp theo chỉ định server làm Partner Server, nhập địa chỉ IP của **DHCP Server02** > **Enter** > **OK** > **Next**

Specify the partner server to use for failover



Provide the host name or IP address of the partner DHCP server with which failover

Add Server ? X

Select a server you want to add to your console.

☒ This server:

192.168.1.2 Browse...

☐ This authorized DHCP server:

Name	IP Address
Gathering information...	

OK Cancel

< Back Next > Cancel

Specify the partner server to use for failover



Provide the host name or IP address of the partner DHCP server with which failover should be configured.

You can select from the list of servers with an existing failover configuration or you can browse and select from the list of authorized DHCP servers.

Alternatively, you can type the host name or IP address of the partner server.

Partner Server: hcserver02 Add Server

☐ Reuse existing failover relationships configured with this server (if any exist).

< Back Next > Cancel

6 – Chỉ định hình thức hoạt động của các server:

- Load balance: cân bằng tải và tỉ trọng trên mỗi server sẽ là 50%, có thể điều chỉnh tỉ lệ 70% - 30% tùy vào yêu cầu thực tế.

- Hot Standby (Active – Passive): một DHCP Server là Active chịu trách nhiệm chính cấp địa chỉ IP và DHCP Server còn lại là standby nhiệm vụ dự phòng, khi DHCP Server Active gặp sự cố thì DHCP standby mới cấp phát IP

Configure Failover

Create a new failover relationship

Create a new failover relationship with partner hcserver02

Relationship Name:

Maximum Client Lead Time: hours minutes

Mode:

Load Balance Percentage

Local Server: %

Partner Server: %

☐ State Switchover Interval: minutes

☒ Enable Message Authentication

Shared Secret:

< Back **Next >** Cancel

7 – Thông tin tổng quát về cấu hình dịch vụ Failover

Configure Failover

Failover will be set up between hcserver01 and hcserver02 with the following parameters.

Scopes:

192.168.1.0

Relationship Name: hcserver01-hcserver02
 Maximum Client Lead Time: 1 hrs 0 mins
 Mode: Load balance
 State Switchover Interval: Disabled

Load Balance Percentage

Local Server: 50 %
 Partner Server: 50 %

< Back Finish Cancel

8 – **Close > Finish**. Sau khi cấu hình hoàn tất dữ liệu từ DHCP Server01 sẽ được tạo và chuyển qua DHCP Server02

Configure Failover

Failover will be set up between hcserver01 and hcserver02 with the following parameters.

Configure Failover

Progress of failover configuration.

The log below shows the progress of the various tasks for configuring failover including any errors encountered.

Add scopes on partner serverSuccessful
 Disable scopes on partner serverSuccessful
 Creation of failover configuration on partner serverSuccessful
 Creation of failover configuration on host serverSuccessful
 Activate scopes on partner server.....Successful
 Configure failover successful.

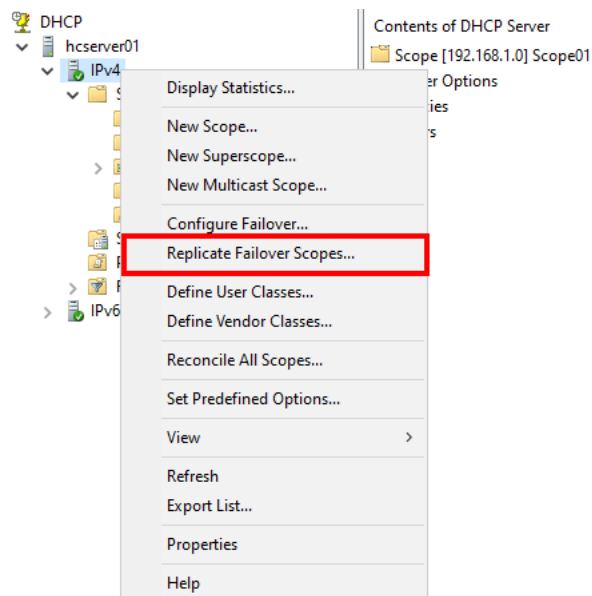
Close

< Back Finish Cancel

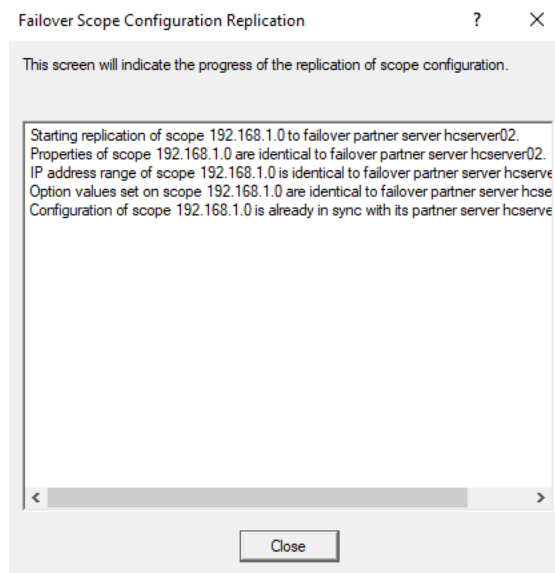
9 – Kiểm tra trên **DHCP Server02** đã có các thông tin scopes cấp phát IP

DHCP	Contents of DHCP Server	Status	Description	Failover Relationship
<ul style="list-style-type: none"> hcservers02 <ul style="list-style-type: none"> IPv4 <ul style="list-style-type: none"> Scope [192.168.1.0] Scope01 <ul style="list-style-type: none"> Server Options Policies Filters IPv6 	<ul style="list-style-type: none"> Scope [192.168.1.0] Scope01 Server Options Policies Filters 	** Active **		hcservers01-hcservers02

10 – Theo định kỳ dữ liệu giữa các server sẽ được đồng bộ. Để đồng bộ ngay lập tức có thể sử dụng chức năng **Replicate Failover Scope... > OK**



11 – Các dữ liệu sẽ được đồng bộ từ DHCP Server01 qua DHCP Server02



Kiểm tra

1 - Tắt dịch vụ DHCP trên **DHCP Server01** hoặc Shutdown máy **DHCP Server01**

2 - Máy client – Windows 10:

- Mở command line, nhập: **ipconfig /all**
- Máy client đang nhận ip 192.168.1.50

```
C:\Users\ptit>ipconfig /all

Windows IP Configuration

Host Name . . . . . : DESKTOP-HNFFIVV
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) 82574L Gigabit Network Connection
Physical Address. . . . . : 00-0C-29-ED-65-FF
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.1.50(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Wednesday, October 25, 2023 4:54:34 PM
Lease Expires . . . . . : Wednesday, October 25, 2023 5:54:33 PM
Default Gateway . . . . . : 192.168.1.1
DHCP Server . . . . . : 192.168.1.2
DNS Servers . . . . . : 192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled
```

- Giải phóng địa chỉ IP đã được cấp phát: **ipconfig /release**
- Cấp mới địa chỉ IP: **ipconfig /renew**
- Máy client đã nhận ip mới **192.168.1.126** do **DHCP Server02** cấp

```

C:\Users\ptit>ipconfig /release

Windows IP Configuration

No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet0:

    Connection-specific DNS Suffix  . : 
    Default Gateway . . . . . : 

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

C:\Users\ptit>ipconfig /renew

Windows IP Configuration

No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet0:

    Connection-specific DNS Suffix  . : 
    IPv4 Address. . . . . : 192.168.1.126
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

C:\Users\ptit>_

```

3 - Trên **DHCP Server02** ghi nhận đã cấp IP mới cho máy client.

	Client IP Address	Name	Lease Expiration	Type	Unique ID	Description	Network Access Protection	Probation Expiration	Filter Profile	Policy
DHCP hcsrvr02 IPv4 Server Options Scope [192.168.1.0] Scope01 Address Pool Address Leases Reservations Scope Options Policies Filters IPv6	192.168.1.126	DESKTOP-HNFFIVV	10/25/2023 5:55:34 PM	DHCP	000c29ed6...		Full Access	N/A	None	