

BÁO CÁO THỰC HÀNH

Môn học: Quản trị mạng và hệ thống

Lab 6: Xây dựng mô hình mạng cho doanh nghiệp nhỏ

GVHD: Ngô Đức Hoàng Sơn

Nhóm 8

THÔNG TIN CHUNG:

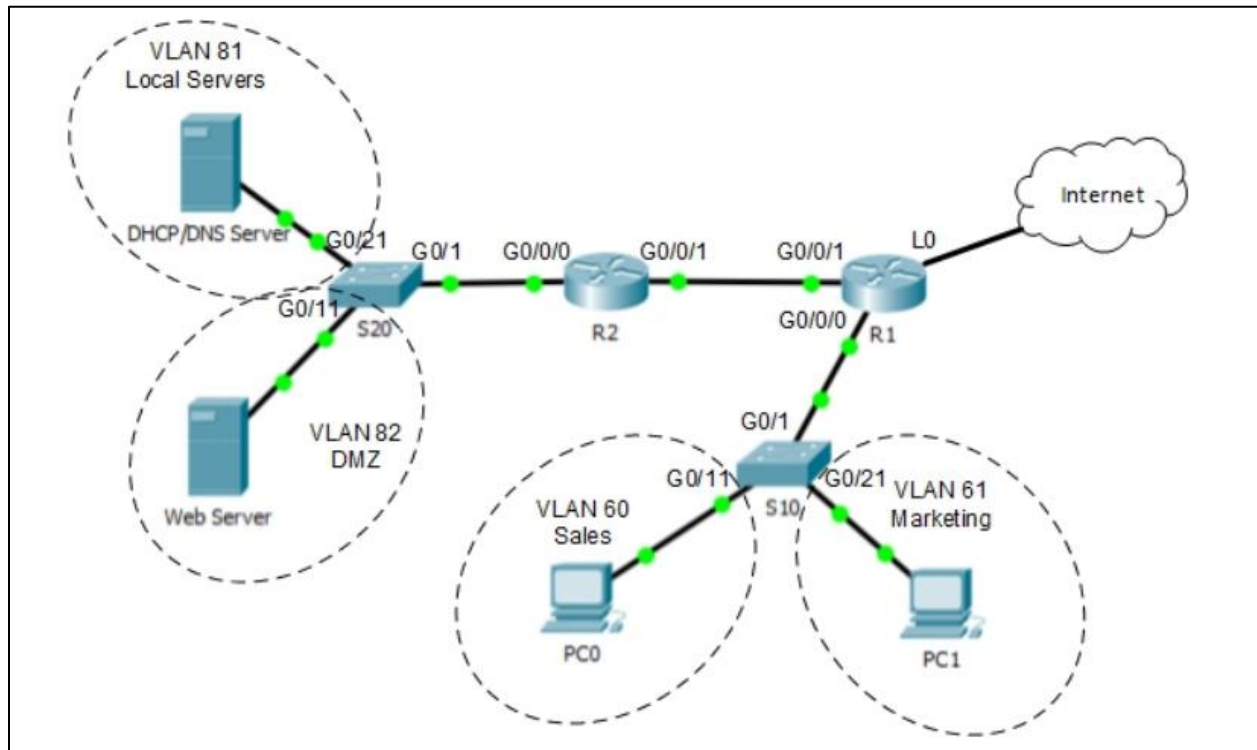
(Liệt kê tất cả các thành viên trong nhóm)

Lớp: NT132.P12.ANTT.2

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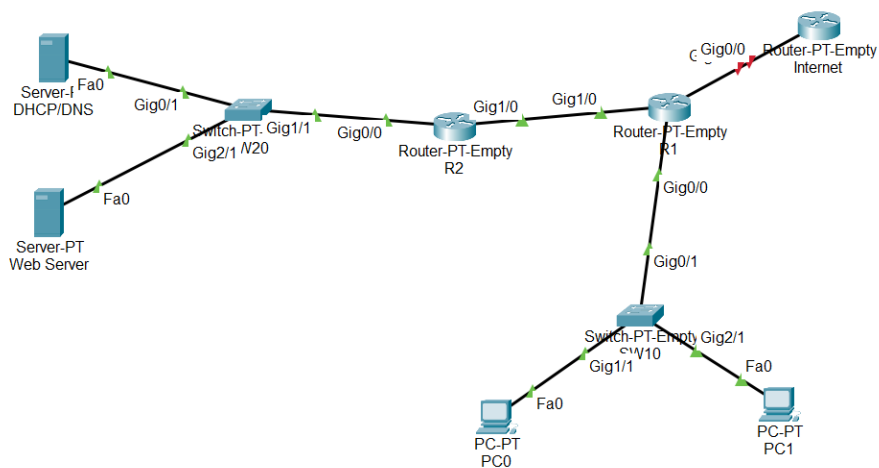
Phần bên dưới của báo cáo này là tài liệu báo cáo chi tiết của nhóm thực hiện.

BẢO CÁO CHI TIẾT



Phần 1: Xây dựng mô hình mạng như trên với Packet Tracer.

1. Thực hiện vẽ lại mô hình mạng với Packet Tracer.



2. Thực hiện chia địa chỉ IP cho các thiết bị với yêu cầu sau:

- Sử dụng lớp mạng 10.81.8.0/24 để chia mạng cho các mạng con trong mô hình.
- VLAN 81: 5 hosts, VLAN 82: 5 hosts, VLAN 60: 20 hosts, VLAN 61: 30 hosts.
- Địa chỉ đầu chia cho interface của router, địa chỉ thứ 2 chia cho interface VLAN, địa chỉ cuối chia cho các hosts.
- Interface L0 của R1 có địa chỉ 80.81.82.83/32.

- **Bảng chia IP các mạng con**

Số host	Network	Subnet Mask	Dãy IP	Broadcast
30	10.81.8.0/27	255.255.255.224	10.81.8.1 - 10.81.8.30	10.81.8.31
20	10.81.8.32/27	255.255.255.224	10.81.8.33 - 10.81.8.62	10.81.8.63
5	10.81.8.64/29	255.255.255.248	10.81.8.65 - 10.81.8.70	10.81.8.71
5	10.81.8.72/29	255.255.255.248	10.81.8.73 - 10.81.8.78	10.81.8.79

- **Bảng IP cho các thiết bị**

Thiết bị	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0/0.60	10.81.8.33	255.255.255.224	N/A
	G0/0/0.61	10.81.8.1	255.255.255.224	N/A
	G0/0/1	10.81.8.253	255.255.255.252	N/A
	Loopback0	80.81.82.83	255.255.255.255	N/A
R2	G0/0/0.81	10.81.8.65	255.255.255.248	N/A
	G0/0/0.82	10.81.8.73	255.255.255.248	N/A
	G0/0/1	10.81.8.254	255.255.255.252	N/A
S10	VLAN 60	10.81.8.34	255.255.255.224	N/A
	VLAN 61	10.81.8.2	255.255.255.224	N/A
S20	VLAN 80	10.81.8.66	255.255.255.248	N/A
	VLAN 81	10.81.8.74	255.255.255.248	N/A
PC0	NIC	10.81.8.62	255.255.255.224	10.81.8.33
PC1	NIC	10.81.8.30	255.255.255.224	10.81.8.1
DHCP/DNS Server	NIC	10.81.8.70	255.255.255.248	10.81.8.65
Web Server	NIC	10.81.8.78	255.255.255.248	10.81.8.73

3. Cấu hình cơ bản cho các thiết bị (các switches và routers)

- Cấu hình hostname.
- Cấu hình enable password.
- Cấu hình dịch vụ mã hoá các password.
- Cấu hình telnet.

- Cấu hình R1:

```

Router>
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#enable password nhom8
R1(config)#service password-encryption
R1(config)#line console 0
R1(config-line)#password nhom8
R1(config-line)#login
R1(config-line)#exit
R1(config)#line vty 0 4
R1(config-line)#password nhom8
R1(config-line)#login
R1(config-line)#exit
R1(config)#
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#

```

- Cấu hình R2:

```

Router>
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R2
R2(config)#enable password nhom8
R2(config)#service password-encryption
R2(config)#line console 0
R2(config-line)#password nhom8
R2(config-line)#login
R2(config-line)#exit
R2(config)#line vty 0 4
R2(config-line)#password nhom8
R2(config-line)#login
R2(config-line)#exit
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R2#

```

- Cấu hình S10:

```

Switch>
Switch>enable
Switch#hostname S10
      ^
% Invalid input detected at '^' marker.

Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S10
S10(config)#enable password nhom8
S10(config)#service password-encryption
S10(config)#line console 0
S10(config-line)#password nhom8
S10(config-line)#login
S10(config-line)#exit
S10(config)#line vty 0 4
S10(config-line)#password nhom8
S10(config-line)#login
S10(config-line)#exit
S10(config)#exit
S10#
%SYS-5-CONFIG_I: Configured from console by console

S10#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
S10#

```

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- Cấu hình S20:

```

Switch>
Switch>enable
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S20
S20(config)#enable password nhom8
S20(config)#service password-encryption
S20(config)#line console 0
S20(config-line)#password nhom8
S20(config-line)#login
S20(config-line)#exit
S20(config)#line vty 0 4
S20(config-line)#password nhom8
S20(config-line)#login
S20(config-line)#exit
S20(config)#exit
S20#
%SYS-5-CONFIG_I: Configured from console by console

S20#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
S20#

```

* Cấu hình VLANs và Trunking

- Cấu hình VLAN trên các switch và gán các interface vào VLAN:

- Cấu hình S10:

```
S10#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S10(config)#vlan 60
S10(config-vlan)#name VLAN60
S10(config-vlan)#exit
S10(config)#interface f0/11
%Invalid interface type and number
S10(config)#interface g1/1
S10(config-if)#switchport mode access
S10(config-if)#switchport access vlan 60
S10(config-if)#exit
S10(config)#interface g2/1
S10(config-if)#switchport mode access
S10(config-if)#switchport access vlan 81
% Access VLAN does not exist. Creating vlan 81
S10(config-if)#
S10#
%SYS-5-CONFIG_I: Configured from console by console

S10#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S10(config)#vlan 81
S10(config-vlan)#name VLAN81
S10(config-vlan)#
S10(config-vlan)#exit
S10(config)#no vlan 81
S10(config)#vlan 61
S10(config-vlan)#name VLAN61
S10(config-vlan)#exit
S10(config)#interface g2/1
S10(config-if)#switchport mode access
S10(config-if)#switchport access vlan 61
S10(config-if)#
```

Cấu hình S20:

```

S20>en
Password:
S20#config t
Enter configuration commands, one per line. End with CNTL/Z.
S20(config)#vlan 81
S20(config-vlan)#name VLAN81
S20(config-vlan)#exit
S20(config)#vlan 8
S20(config-vlan)#no vlan 8
S20(config)#vlan 82
S20(config-vlan)#name VLAN82
S20(config-vlan)#exit
S20(config)#interface g2/1
S20(config-if)#switchport mode access
S20(config-if)#switchport access vlan 82
S20(config-if)#exit
S20(config)#interface g0/1
S20(config-if)#switchport mode access
S20(config-if)#switchport access vlan 81
S20(config-if)#
S20#
%SYS-5-CONFIG_I: Configured from console by console

S20#wr
Building configuration...
[OK]
S20#show vlan brief

```

VLAN	Name	Status	Ports
1	default	active	Gig1/1
81	VLAN81	active	Gig0/1
82	VLAN82	active	Gig2/1
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

Cấu hình đường trunk trên các switch:

+ Trên S10:

```

S10#config t
Enter configuration commands, one per line. End with CNTL/Z.
S10(config)#interface g0/1
S10(config-if)#switchport mode trunk
S10(config-if)#

```

```

S20(config)#interface g1/1
S20(config-if)#switchport mode trunk
^
% Invalid input detected at '^' marker.
S20(config-if)#switchport mode trunk
S20(config-if)#

```

4. Cấu hình địa chỉ IP tương ứng cho các thiết bị như bảng địa chỉ.

- Cấu hình R1:

```
R1(config)#interface loopback0

R1(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

R1(config-if)#ip address 80.81.82.83 255.255.255.255
R1(config-if)#exit
R1(config)#interface g0/0/0
      ^
% Invalid input detected at '^' marker.

R1(config)#int g0/0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R1(config-if)#interface g0/0.60
R1(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.60, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.60, changed state to
up

R1(config-subif)#no shutdown
R1(config-subif)#encapsulation dot1Q 60
R1(config-subif)#ip address 10.81.8.33
% Incomplete command.
R1(config-subif)#ip address 10.81.8.33 255.255.255.224
R1(config-subif)#exit
R1(config)#interface g0/0.61
R1(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.61, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.61, changed state to
up

R1(config-subif)#no shutdown
R1(config-subif)#encapsulation dot1Q 61
```



```
R1(config-subif)#exit
R1(config)#interface g0/0.61
R1(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.61, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.61, changed state to
up

R1(config-subif)#no shutdown
R1(config-subif)#encapsulation dot1Q 61
R1(config-subif)#ip address 10.81.8.1 255.255.255.224
R1(config-subif)#
R1(config-subif)#exit
R1(config)#interface g1/0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet1/0, changed state to up

R1(config-if)#ip address 10.81.8.253 255.255.255.252
R1(config-if)#
```

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- Cấu hình R2

```
Password:
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface g0/0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R2(config-if)#interface g0/0.81
R2(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.81, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.81, changed state to up

R2(config-subif)#no shutdown
R2(config-subif)#encapsulation dot1Q 81
R2(config-subif)#ip address 10.81.8.65 255.255.255.248
R2(config-subif)#exit
R2(config)#interface g0/0.82
R2(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.82, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.82, changed state to up

R2(config-subif)#no shutdown
R2(config-subif)#encapsulation dot1Q 82
R2(config-subif)#ip address 10.81.8.73 255.255.255.248
R2(config-subif)#exit
R2(config)#interface g1/0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0, changed state to up

R2(config-if)#ip address 10.81.8.254 255.255.255.252
R2(config-if)#|
```

- Cấu hình S10

```
S10>en
Password:
S10#config t
Enter configuration commands, one per line. End with CNTL/Z.
S10(config)#interface vlan 60
S10(config-if)#
%LINK-5-CHANGED: Interface Vlan60, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan60, changed state to up

S10(config-if)#no shutdown
S10(config-if)#ip address 10.81.8.34 255.255.255.224
S10(config-if)#exit
S10(config)#interface vlan 61
S10(config-if)#
%LINK-5-CHANGED: Interface Vlan61, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan61, changed state to up

S10(config-if)#no shutdown
S10(config-if)#ip address 10.81.8.2 255.255.255.224
S10(config-if)#
```

- Cấu hình S20

```
S20#config t
Enter configuration commands, one per line. End with CNTL/Z.
S20(config)#
S20(config)#interface vlan 81
S20(config-if)#
%LINK-5-CHANGED: Interface Vlan81, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan81, changed state to up

S20(config-if)#no shutdown
S20(config-if)#ip address 10.81.8.66 255.255.255.248
S20(config-if)#exit
S20(config)#interface vlan 82
S20(config-if)#
%LINK-5-CHANGED: Interface Vlan82, changed state to up

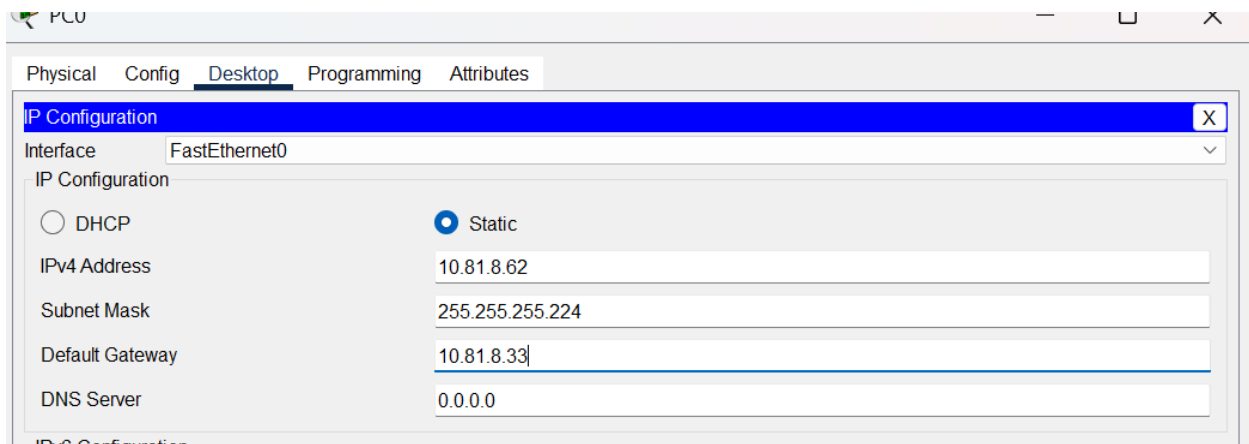
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan82, changed state to up

S20(config-if)#no shutdown
S20(config-if)#ip address 10.81.8.74 255.255.255.248
S20(config-if)#
```

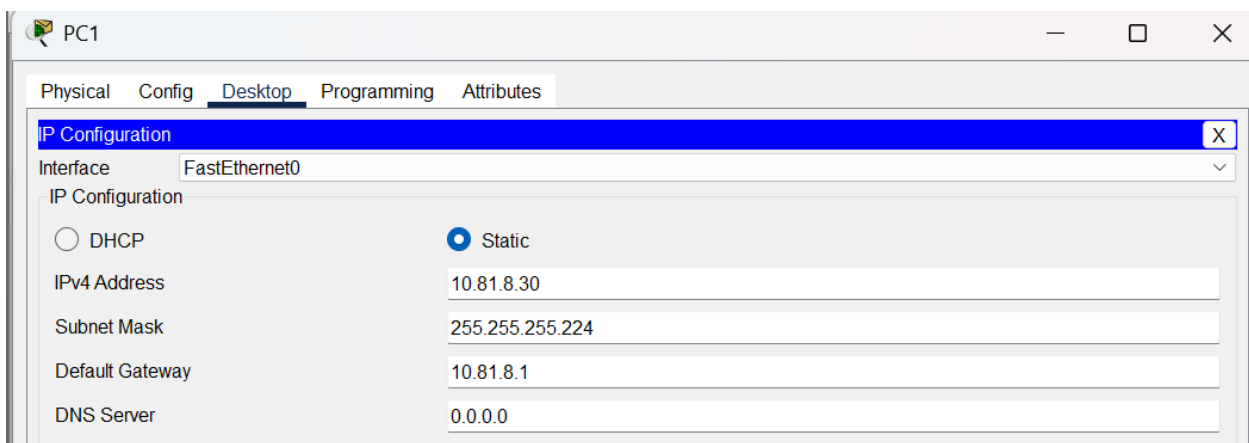
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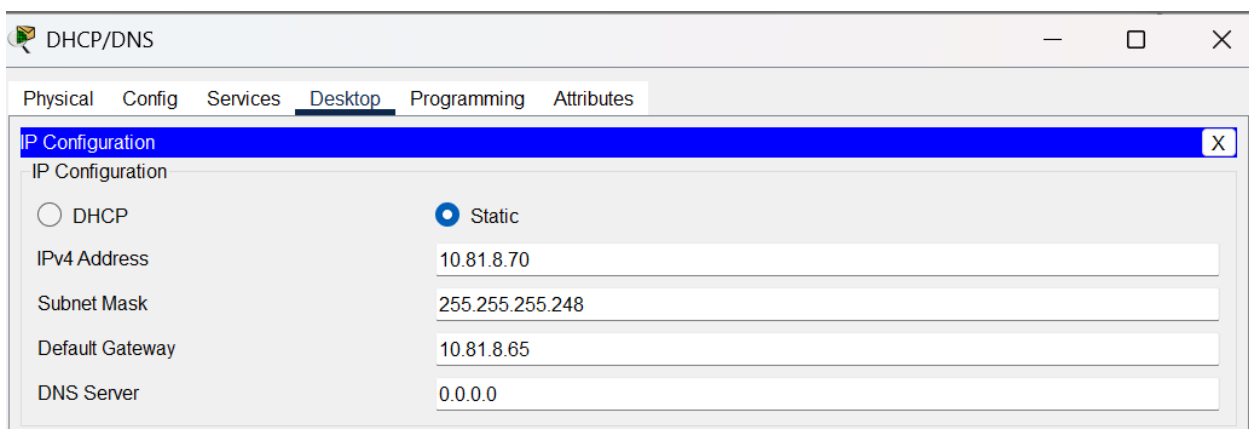
- PC0



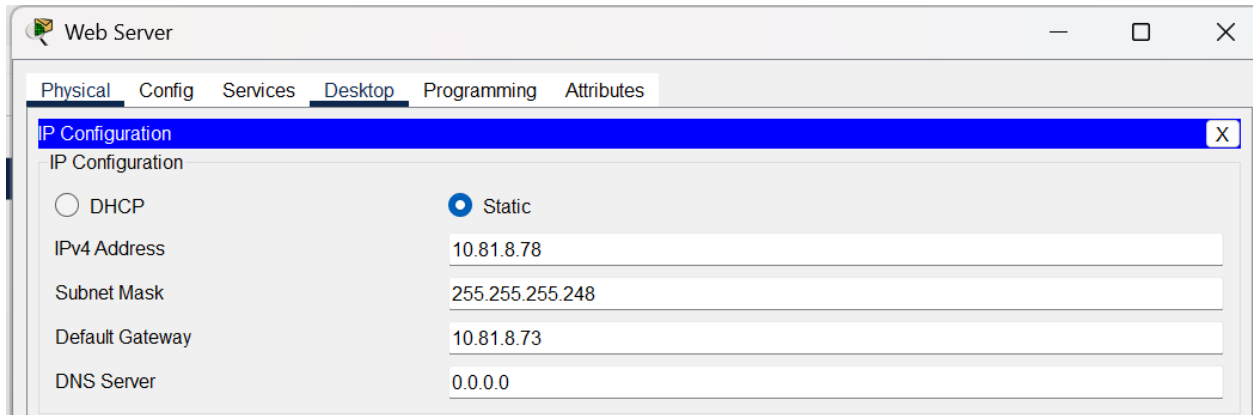
- PC1



- DHCP/DNS SERVER



- Web Server



5. Cấu hình định tuyến

- Giả sử rằng cổng L0 của router R1 là interface để đi ra Internet. Tạo một default static route đi ra interface này:

```
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface loopback0
R1(config-if)#ip route 0.0.0.0 0.0.0.0 loopback0
R1(config)#
```

- Cấu hình định tuyến OSPF trên R1 và R2 để các mạng có thể thấy nhau.

- Quảng bá default static route trên R1 đến các router khác thông qua OSPF.

R1:

```
R1(config)#router ospf 1
R1(config-router)#default-information originate
R1(config-router)#network 10.81.8.0 0.0.0.255 area 0
R1(config-router)#network 80.81.82.83 0.0.0.0 area 0
R1(config-router)#
```

R2:

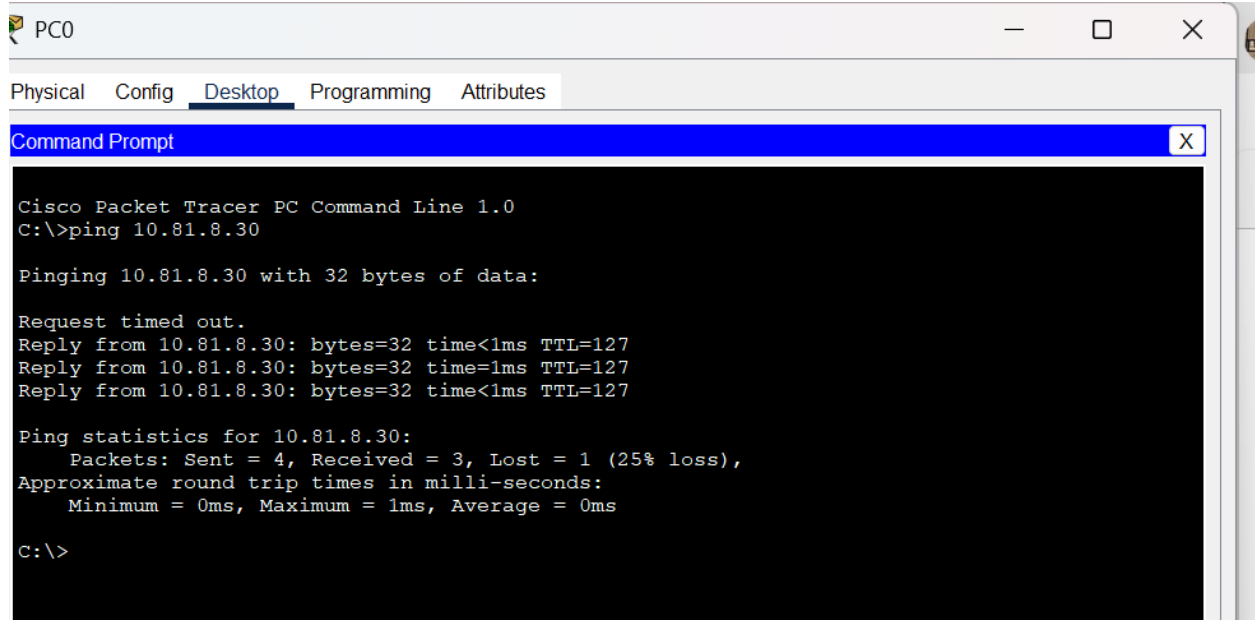
```
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network 10.81.15.0 0.0.0.255 area 0
R2(config-router)#no network 10.81.15.0 0.0.0.255 area 0
R2(config-router)#network 10.81.8.0 0.0.0.255 area 0
R2(config-router)#
00:54:43: %OSPF-5-ADJCHG: Process 1, Nbr 80.81.82.83 on GigabitEthernet1/0 from LOADING
to FULL, Loading Done
```

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- Kiểm tra kết nối:

+ Ping từ PC0 → PC1:



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.81.8.30

Pinging 10.81.8.30 with 32 bytes of data:

Request timed out.
Reply from 10.81.8.30: bytes=32 time<1ms TTL=127
Reply from 10.81.8.30: bytes=32 time=1ms TTL=127
Reply from 10.81.8.30: bytes=32 time<1ms TTL=127

Ping statistics for 10.81.8.30:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

+ Ping từ PC0 → DHCP/DNS Server:

```
C:\>ping 10.81.8.70

Pinging 10.81.8.70 with 32 bytes of data:

Reply from 10.81.8.70: bytes=32 time<1ms TTL=126
Reply from 10.81.8.70: bytes=32 time<1ms TTL=126
Reply from 10.81.8.70: bytes=32 time<1ms TTL=126
Reply from 10.81.8.70: bytes=32 time=4ms TTL=126

Ping statistics for 10.81.8.70:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

C:\>
```

+ Ping từ PC0 → Web Server:

```
C:\>ping 10.81.8.78

Pinging 10.81.8.78 with 32 bytes of data:

Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126

Ping statistics for 10.81.8.78:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

. Cấu hình để các PC ra được Internet.

- Ping kiểm tra PC0, PC1 ra interface Internet:

Pc0:

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Ping statistics for 10.81.8.78:
  Packets: Sent = 3, Received = 2, Lost = 1 (34% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

Control-C
^C
C:\>clear
Invalid Command.

C:\>ping 10.81.8.78

Pinging 10.81.8.78 with 32 bytes of data:

Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126
Reply from 10.81.8.78: bytes=32 time<1ms TTL=126

Ping statistics for 10.81.8.78:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 80.81.82.83

Pinging 80.81.82.83 with 32 bytes of data:

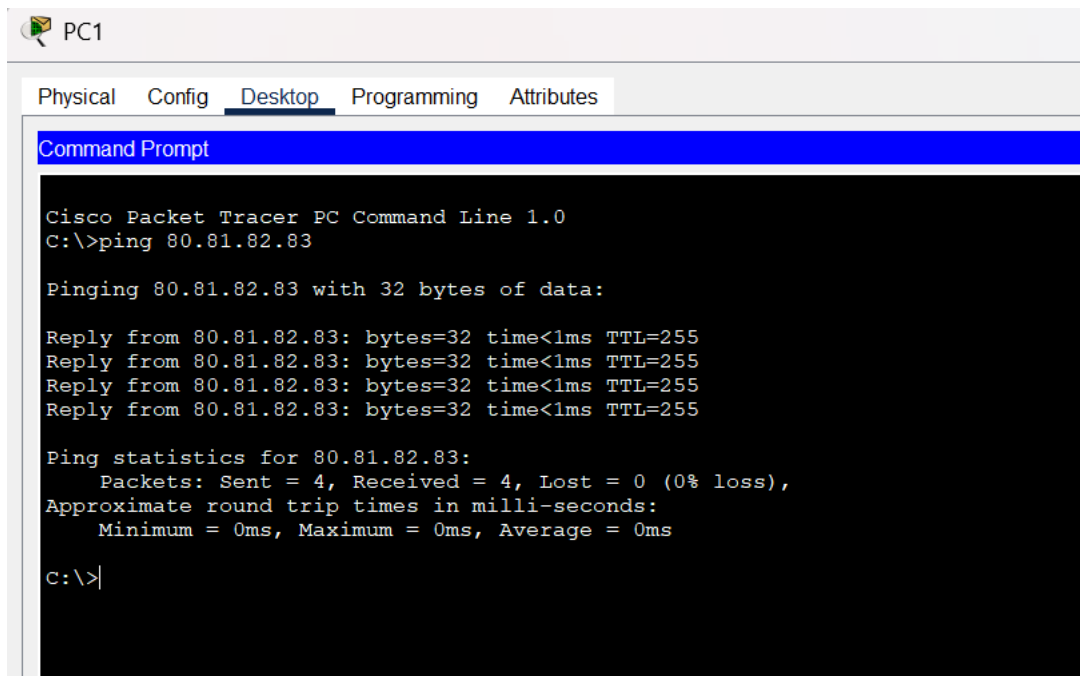
Reply from 80.81.82.83: bytes=32 time<1ms TTL=255
Reply from 80.81.82.83: bytes=32 time<1ms TTL=255
Reply from 80.81.82.83: bytes=32 time<1ms TTL=255
Reply from 80.81.82.83: bytes=32 time<1ms TTL=255

Ping statistics for 80.81.82.83:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Top

Pc1:



* Kiểm tra cấu hình:

R1:

R1

Physical Config CLI Attributes

IOS Command Line Interface

Password:

R1>en

Password:

R1#show ip interfaec brief

% Invalid input detected at '^' marker.

R1#show ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	up	up
GigabitEthernet0/0.60	10.81.8.33	YES	manual	up	up
GigabitEthernet0/0.61	10.81.8.1	YES	manual	up	up
GigabitEthernet1/0	10.81.8.253	YES	manual	up	up
GigabitEthernet2/0	unassigned	YES	unset	administratively down	down
Loopback0	80.81.82.83	YES	manual	up	up

R1#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 5 subnets, 3 masks

C 10.81.8.0/27 is directly connected, GigabitEthernet0/0.61

C 10.81.8.32/27 is directly connected, GigabitEthernet0/0.60

O 10.81.8.64/29 [110/2] via 10.81.8.254, 00:11:16, GigabitEthernet1/0

O 10.81.8.72/29 [110/2] via 10.81.8.254, 00:11:16, GigabitEthernet1/0

C 10.81.8.252/30 is directly connected, GigabitEthernet1/0

80.0.0.0/32 is subnetted, 1 subnets

C 80.81.82.83 is directly connected, Loopback0

S* 0.0.0.0/0 is directly connected, Loopback0

R1#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.81.8.254	1	FULL/BDR	00:00:35	10.81.8.254	GigabitEthernet1/0

R1#

R2:

R2

PhysicalConfigCLIAttributes

IOS Command Line Interface

```
R2(config-router)#no network 10.81.15.0 0.0.0.255 area 0
R2(config-router)#network 10.81.8.0 0.0.0.255 area 0
R2(config-router)#
00:54:43: %OSPF-5-ADJCHG: Process 1, Nbr 80.81.82.83 on GigabitEthernet1/0 from LOADING to FULL,
Loading Done

R2(config-router)#
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
R2#show ip interface brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       unassigned      YES unset    up          up
GigabitEthernet0/0.81    10.81.8.65      YES manual    up          up
GigabitEthernet0/0.82    10.81.8.73      YES manual    up          up
GigabitEthernet1/0       10.81.8.254     YES manual    up          up

R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 5 subnets, 3 masks
O       10.81.8.0/27 [110/2] via 10.81.8.253, 00:12:05, GigabitEthernet1/0
O       10.81.8.32/27 [110/2] via 10.81.8.253, 00:12:05, GigabitEthernet1/0
C       10.81.8.64/29 is directly connected, GigabitEthernet0/0.81
C       10.81.8.72/29 is directly connected, GigabitEthernet0/0.82
C       10.81.8.252/30 is directly connected, GigabitEthernet1/0
O       80.0.0.0/32 is subnetted, 1 subnets
O       80.81.82.83 [110/2] via 10.81.8.253, 00:12:05, GigabitEthernet1/0

R2#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address        Interface
80.81.82.83      1     FULL/DR         00:00:36   10.81.8.253   GigabitEthernet1/0
R2#
```

CopyPaste

Phần 2: Cấu hình các dịch vụ với mô hình mạng trên.

Bỏ qua các switch và router, đảm bảo các máy kết nối với nhau.

1. Cấu hình địa chỉ IP tĩnh và đảm bảo đã thiết lập gói dịch vụ web (LAMP/LEMP)

trên Linux server.

Cấu hình địa chỉ IP tĩnh cho máy ubuntu:

- Dùng câu lệnh để chỉnh sửa file cấu hình mạng và thêm nội dung vào file:

sudo nano /etc/netplan/01-netcfg.yaml

```
phucnhii@22521041: ~  
GNU nano 6.2 /etc/netplan/01-netcfg.yaml  
network:  
  version: 2  
  renderer: networkd  
  ethernet:  
    enp0s3:  
      addresses:  
        - 10.81.8.78/29  
      gateway4: 10.81.8.73  
      nameservers:  
        addresses:  
          - 8.8.8.8  
          - 8.8.4.4
```

- Áp dụng cấu hình bằng lệnh *sudo netplan apply*

```
phucnhii@22521041:~$ sudo nano /etc/netplan/01-netcfg.yaml  
phucnhii@22521041:~$ sudo netplan apply
```

Cài đặt và thiết lập dịch vụ LAMP/LEMP:

- Cài đặt LAMP bằng câu lệnh *sudo apt install apache2 php mysql-server*

```
phucnhii@22521041: ~  
phucnhii@22521041:~$ sudo apt install apache2 php mysql-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libaio1 libapache2-mod-php8.1 libapr1  
  libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libbcbi-fast-perl  
  libbcbi-pm-perl libevent-core-2.1-7 libevent-pthreads-2.1-7 libfcgi-bin  
  libfcgi-perl libfcgi0ldbl libhtml-template-perl libmecab2 libprotobuf-lite23  
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0  
  mysql-client-core-8.0 mysql-common mysql-server-8.0 mysql-server-core-8.0  
  php-common php8.1 php8.1-cli php8.1-common php8.1-opcache php8.1-readline
```

- Cấu hình virtual host cho website *www.nhom8.local*

Tạo thư mục chứa website: *sudo mkdir -p /var/www/nhom8.local*

```
phucnhii@22521041:~$ sudo mkdir -p /var/www/nhom8.local
```

Tạo file cấu hình Apache: *sudo nano /etc/apache2/sites-available/nhom8.local.conf*

```
phucnhii@22521041: ~  
GNU nano 6.2 /etc/apache2/sites-available/nhom8.local.conf  
<VirtualHost *:80>  
    ServerName www.nhom8.local  
    DocumentRoot /var/www/nhom8.local  
    <Directory /var/www/nhom8.local>  
        AllowOverride All  
    </Directory>  
</VirtualHost>
```

Sau đó kích hoạt website bằng các câu lệnh:

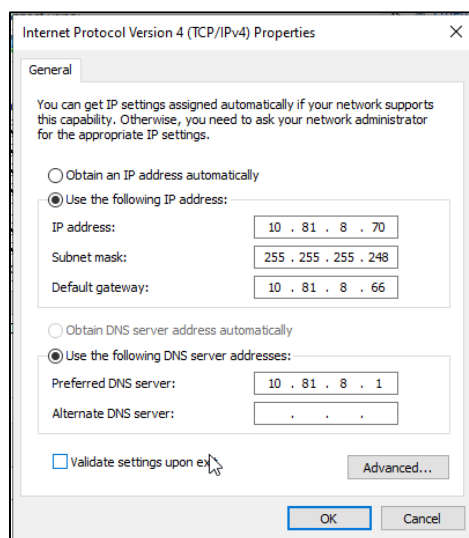
```
sudo a2ensite nhom8.local.conf
```

```
sudo systemctl reload apache2
```

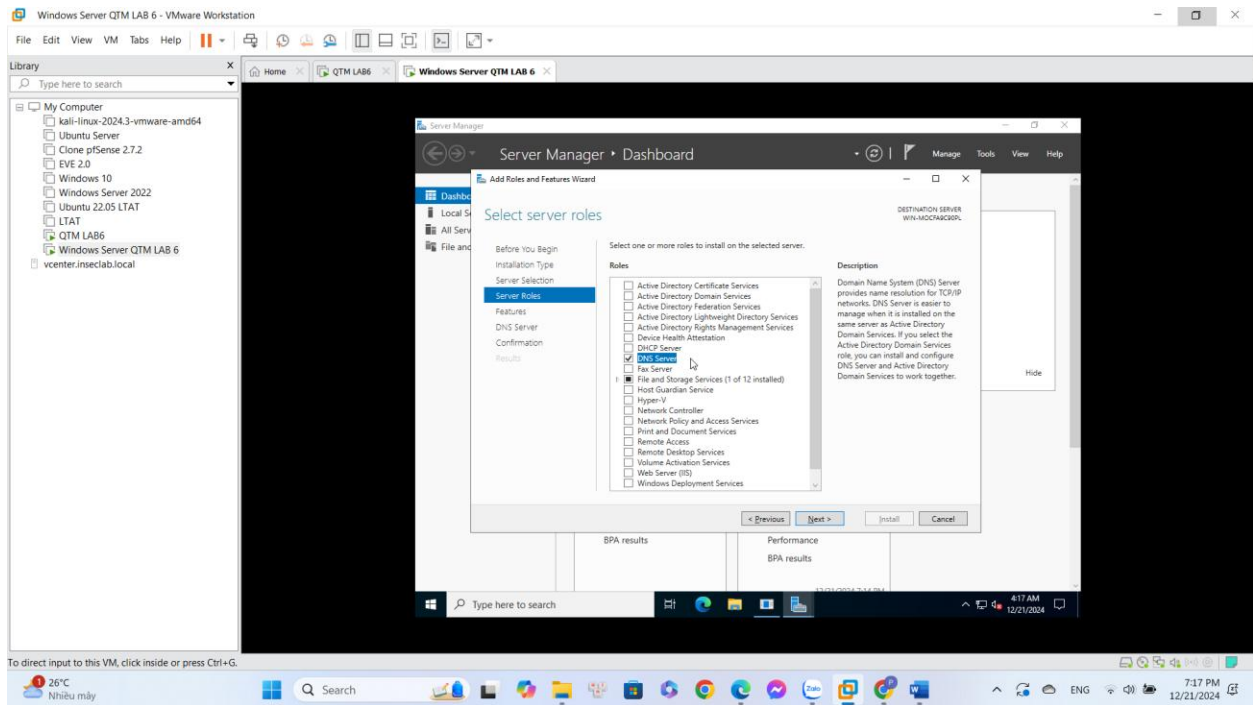
```
phucnhii@22521041:~$ sudo a2ensite nhom8.local.conf  
Enabling site nhom8.local.  
To activate the new configuration, you need to run:  
    systemctl reload apache2  
phucnhii@22521041:~$ sudo systemctl reload apache2
```

2. Cấu hình các dịch vụ cho Windows Server

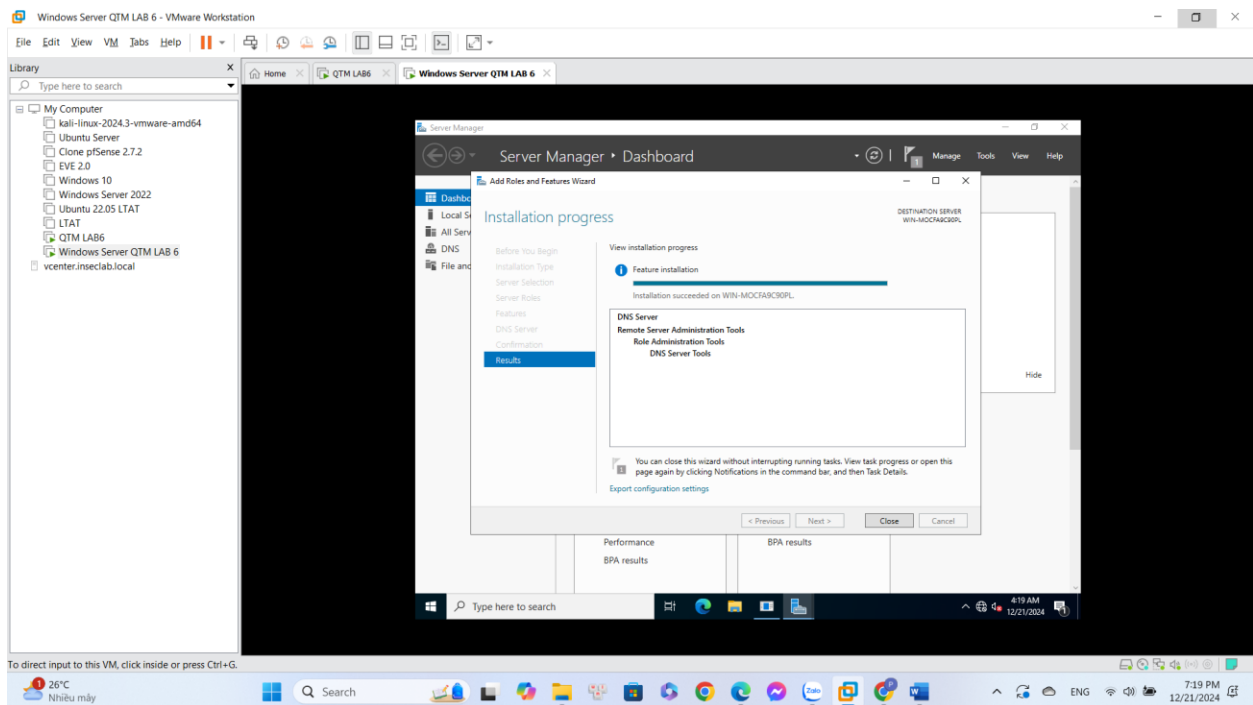
Đặt địa chỉ IP tĩnh cho server như sau



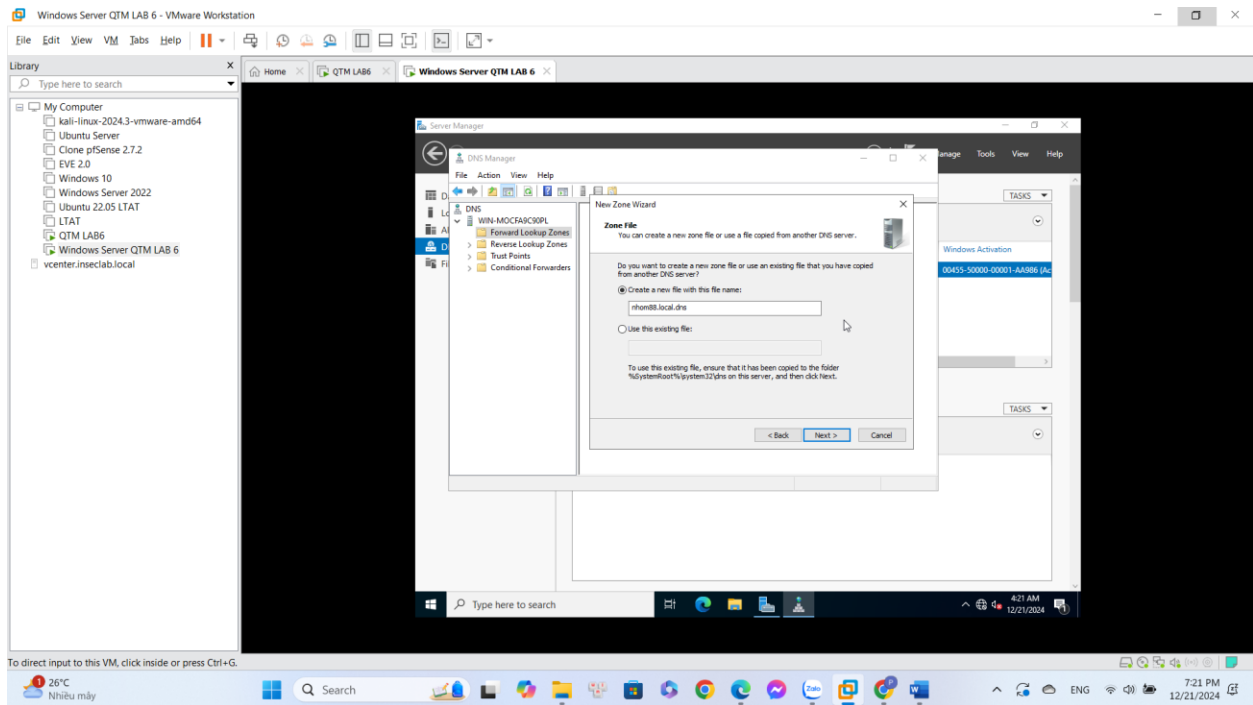
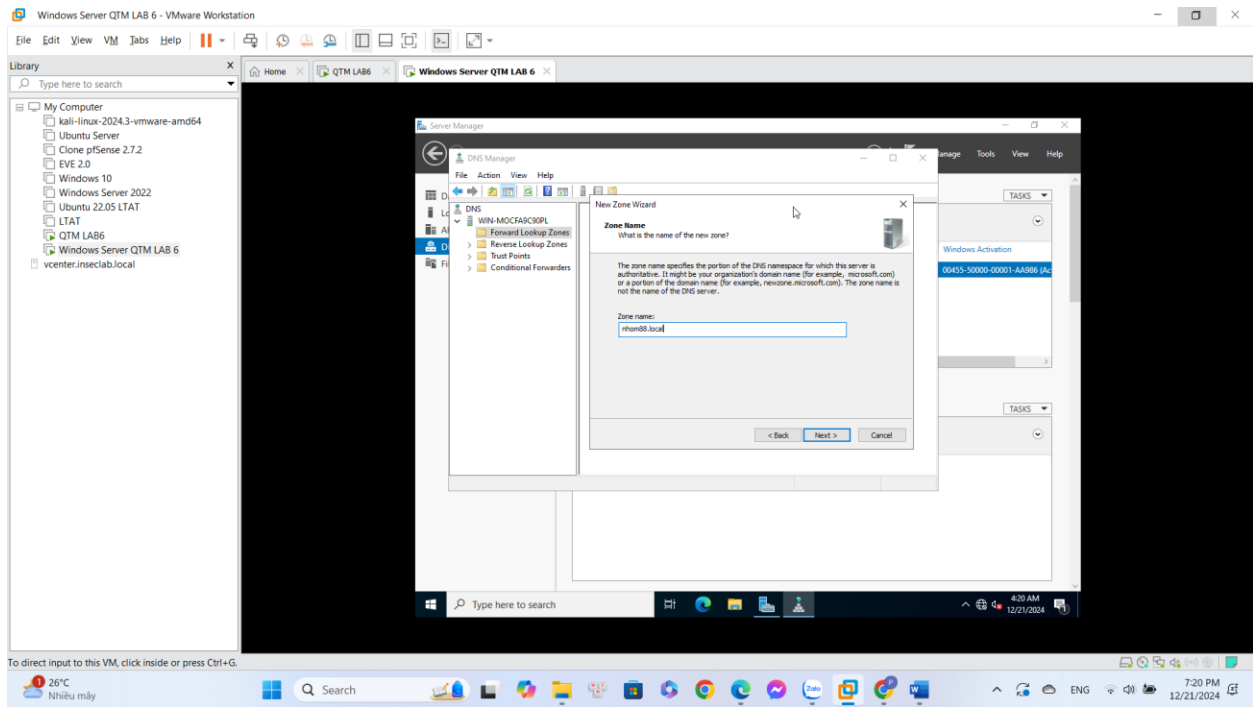
Cấu hình DNS với domain là nhom88.local

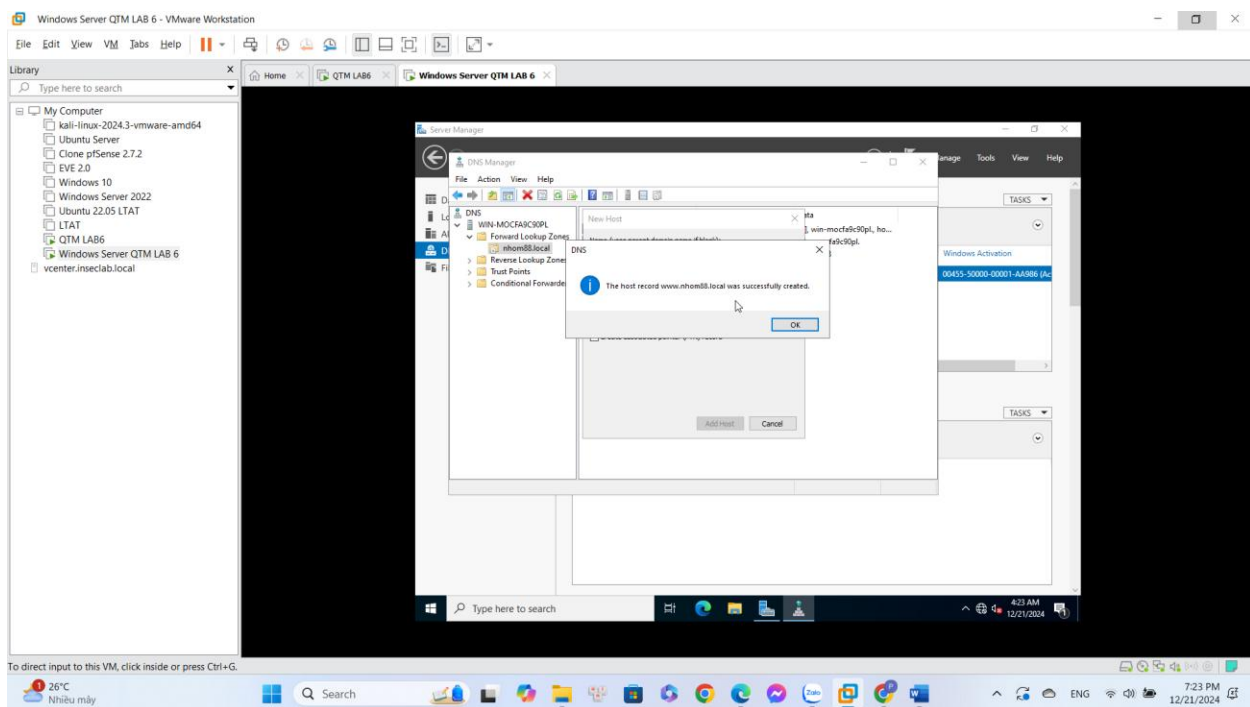
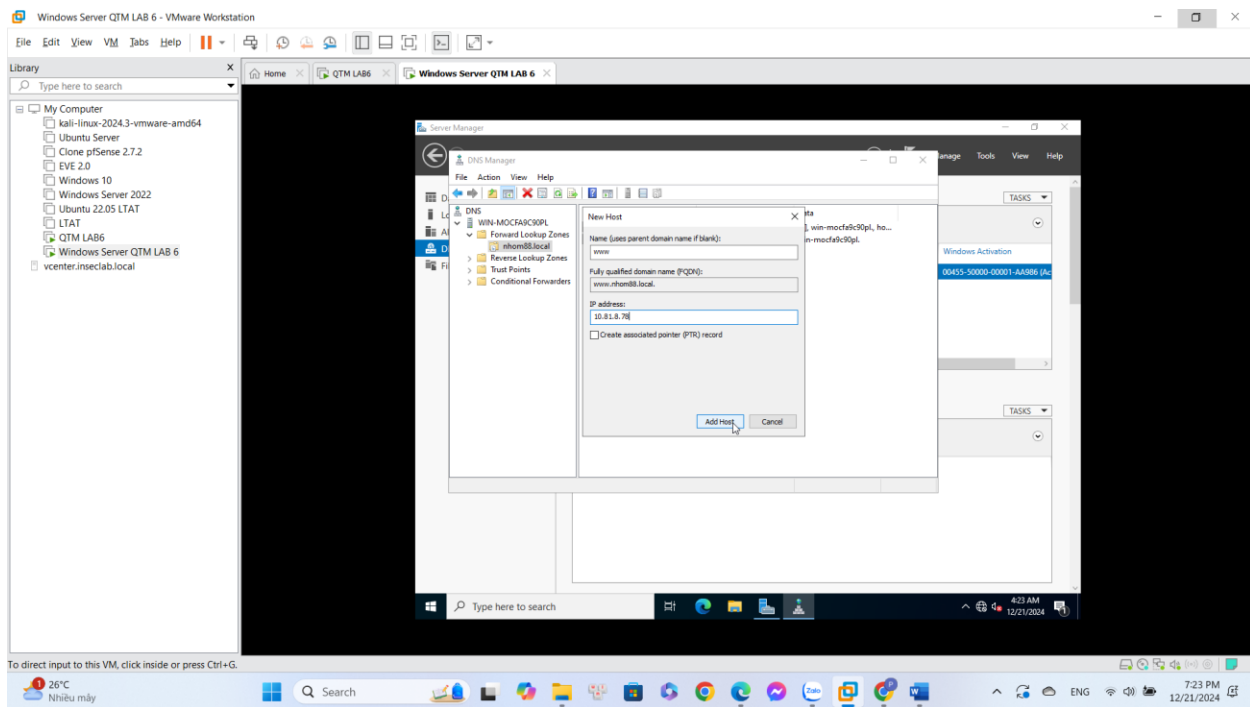


To direct input to this VM, click inside or press Ctrl+G.

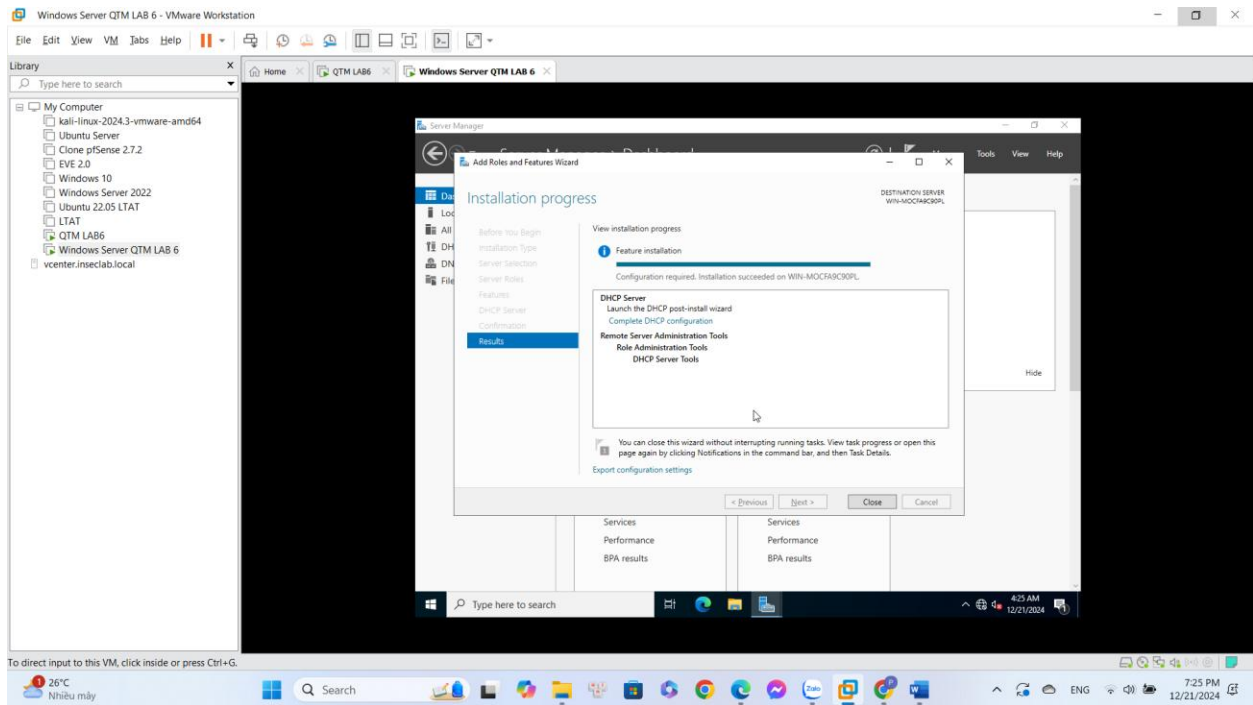
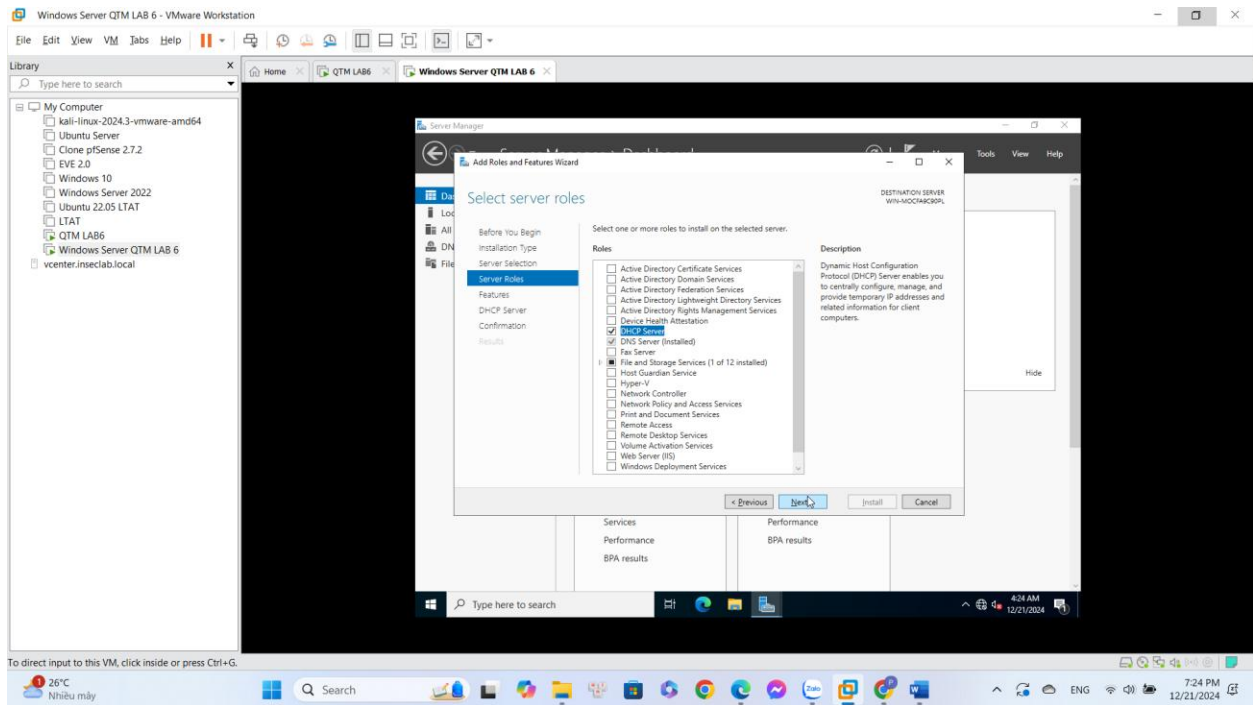


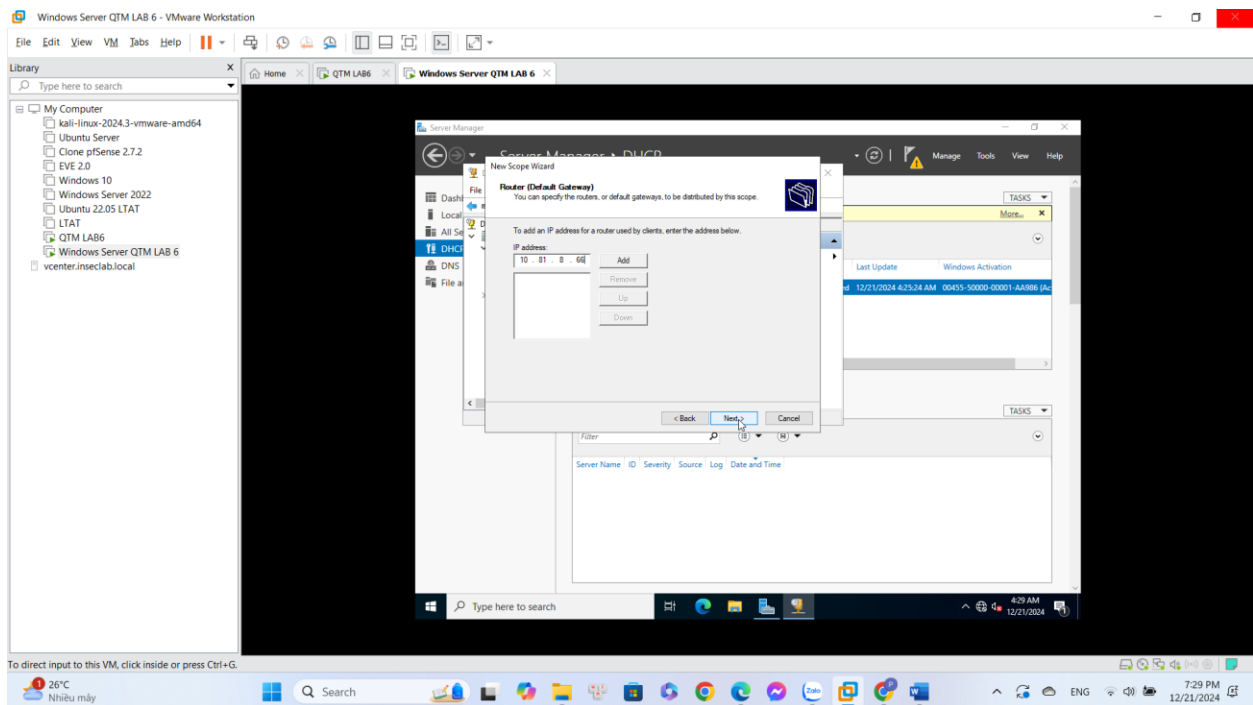
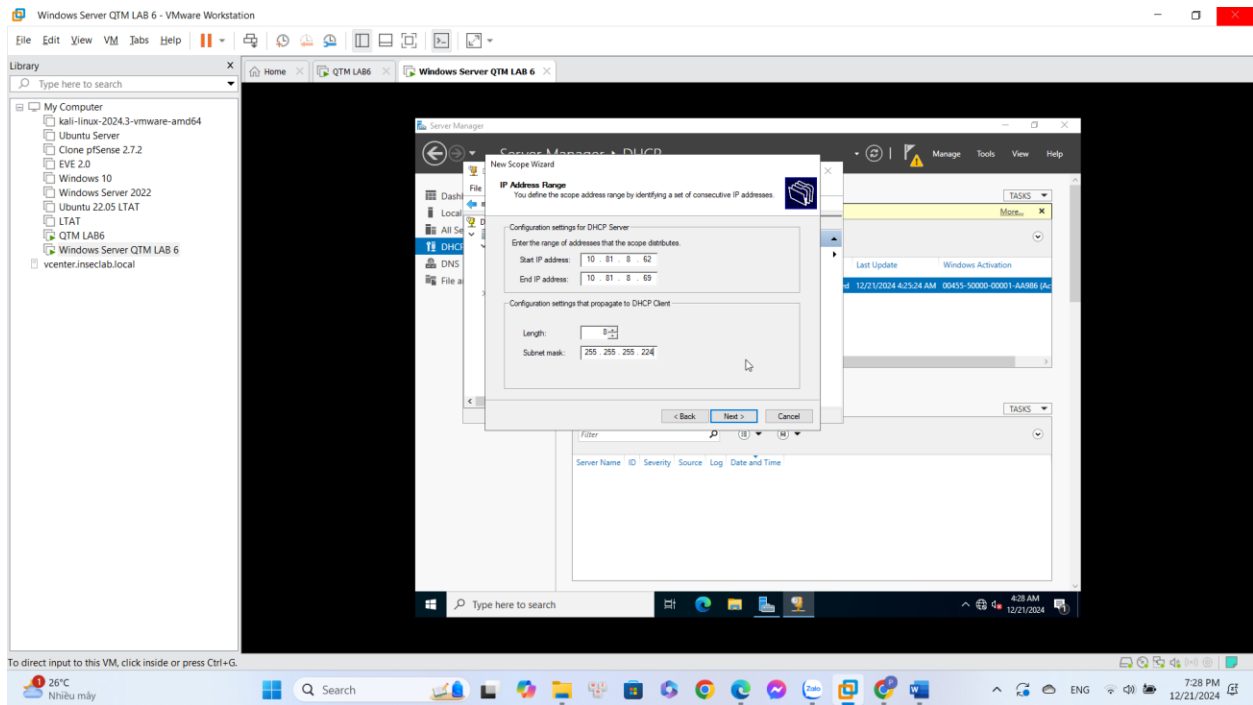
To direct input to this VM, click inside or press Ctrl+G.

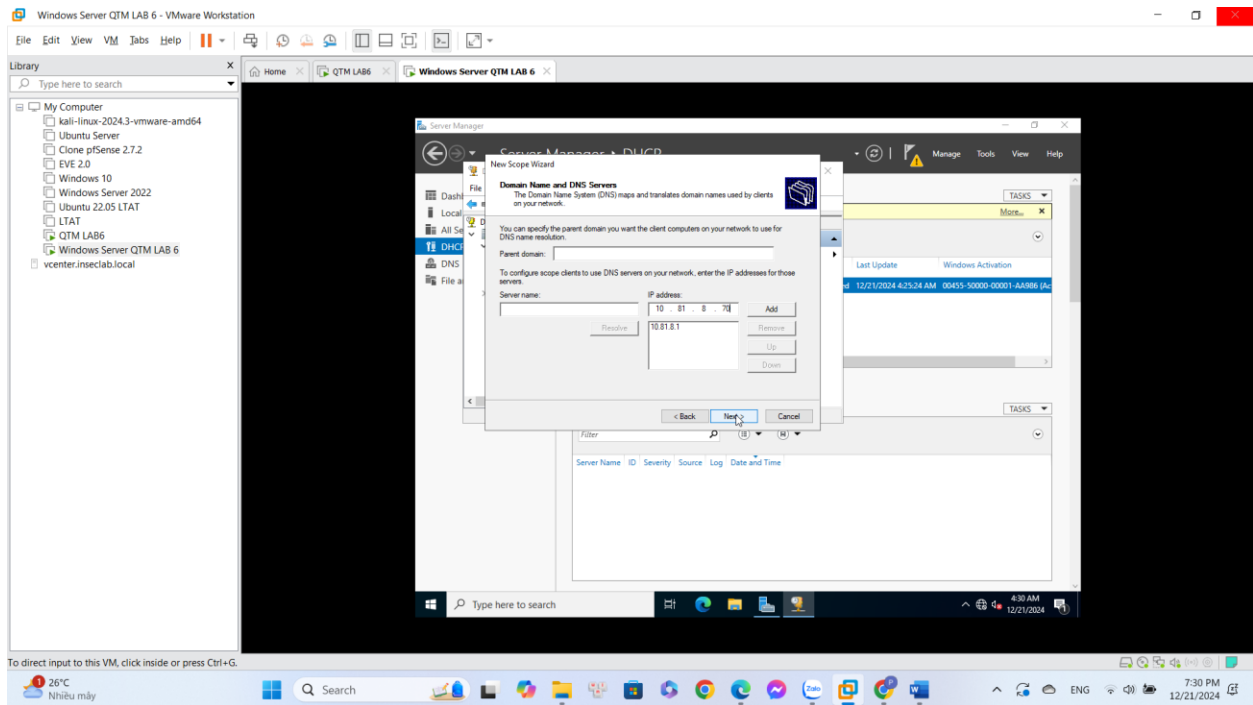




Tiếp tục cấu hình DHCP

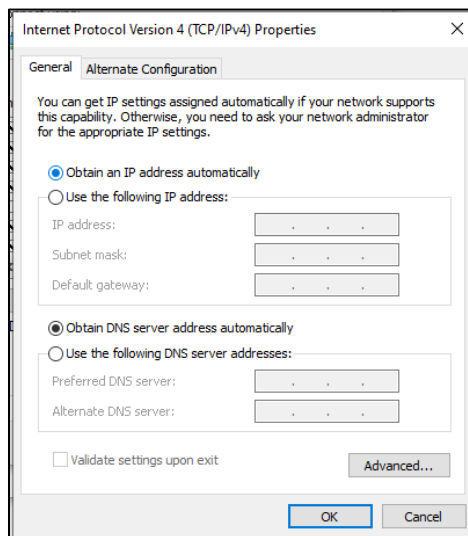






3. Cấu hình cho các máy PC0, PC1 nhận địa chỉ IP động được cấp từ DHCP Server. Truy cập đến web server (www.nhomx.local)

Trên máy PC0, PC1 truy cập vào Network and sharing center và cấu hình như sau



Kiểm tra lại bằng câu lệnh `ipconfig /all` trong cmd và tiến hành ping đến web server 10.81.8.78 để kiểm tra.

