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TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN
KHOA CÔNG NGHỆ THÔNG TIN

ĐỒ ÁN PACKET TRACER

NETWORK DESIGNATION AND
CONFIGURATION USING CISCO PACKET

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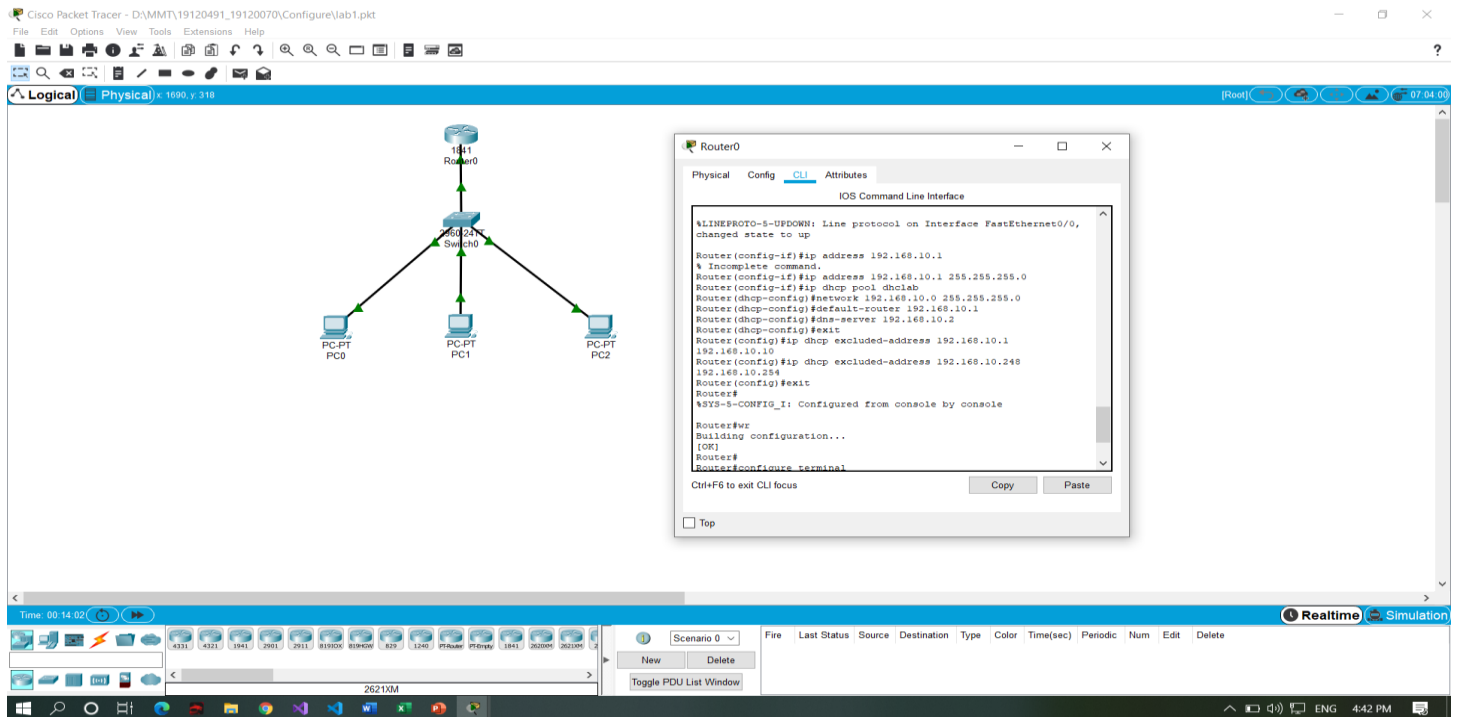
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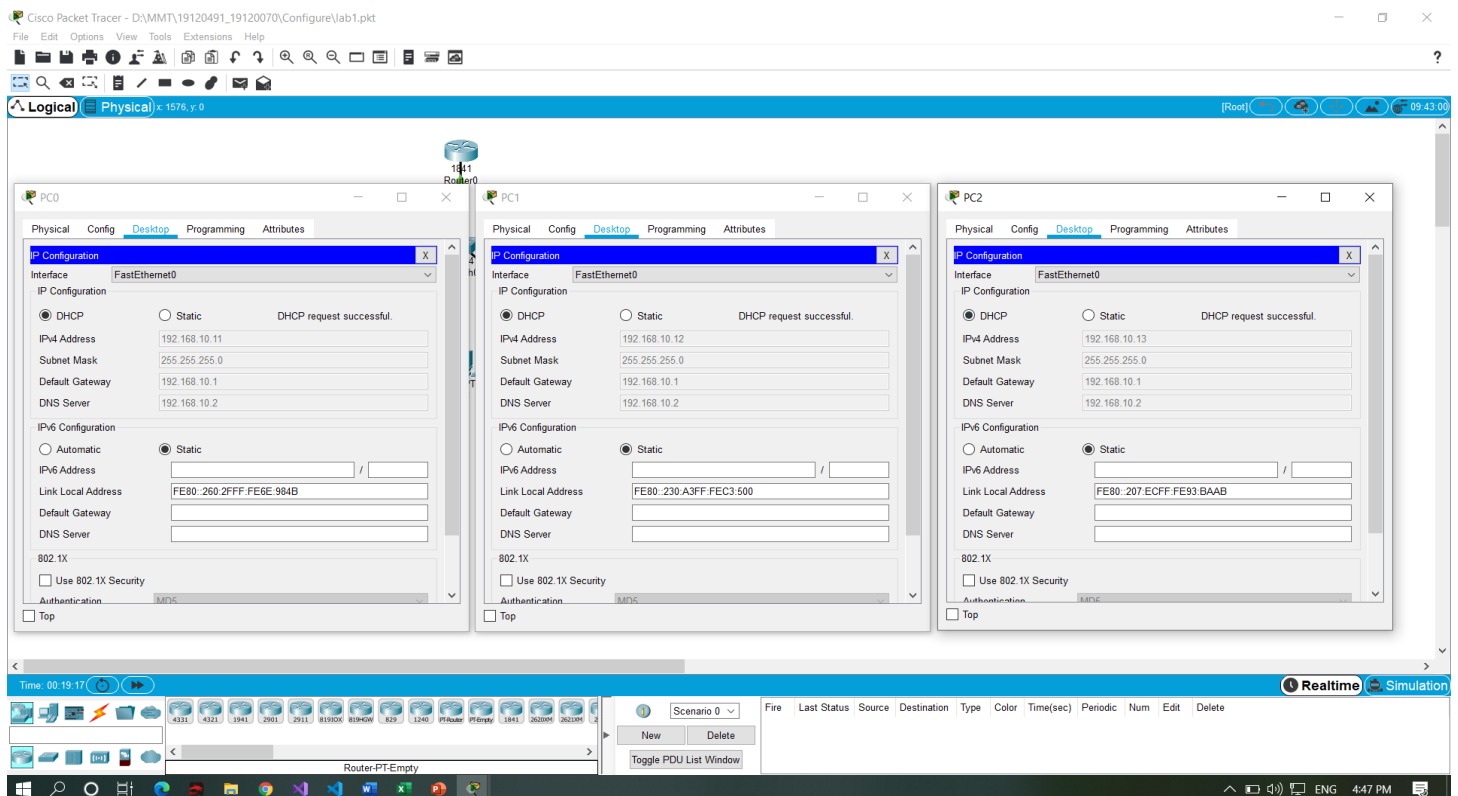
I. Lab 1: DHCP configuration on CISCO router

1. Cấu hình thiết bị

Cấu hình cho router bằng các command trong tab CLI



Cấu hình xong router thì vào từng PC → tab **Desktop** chỉnh IP configuration sang DHCP



2. Trả lời câu hỏi

1. IP addresses of PC0, PC1, PC2 which were acquired from DHCP

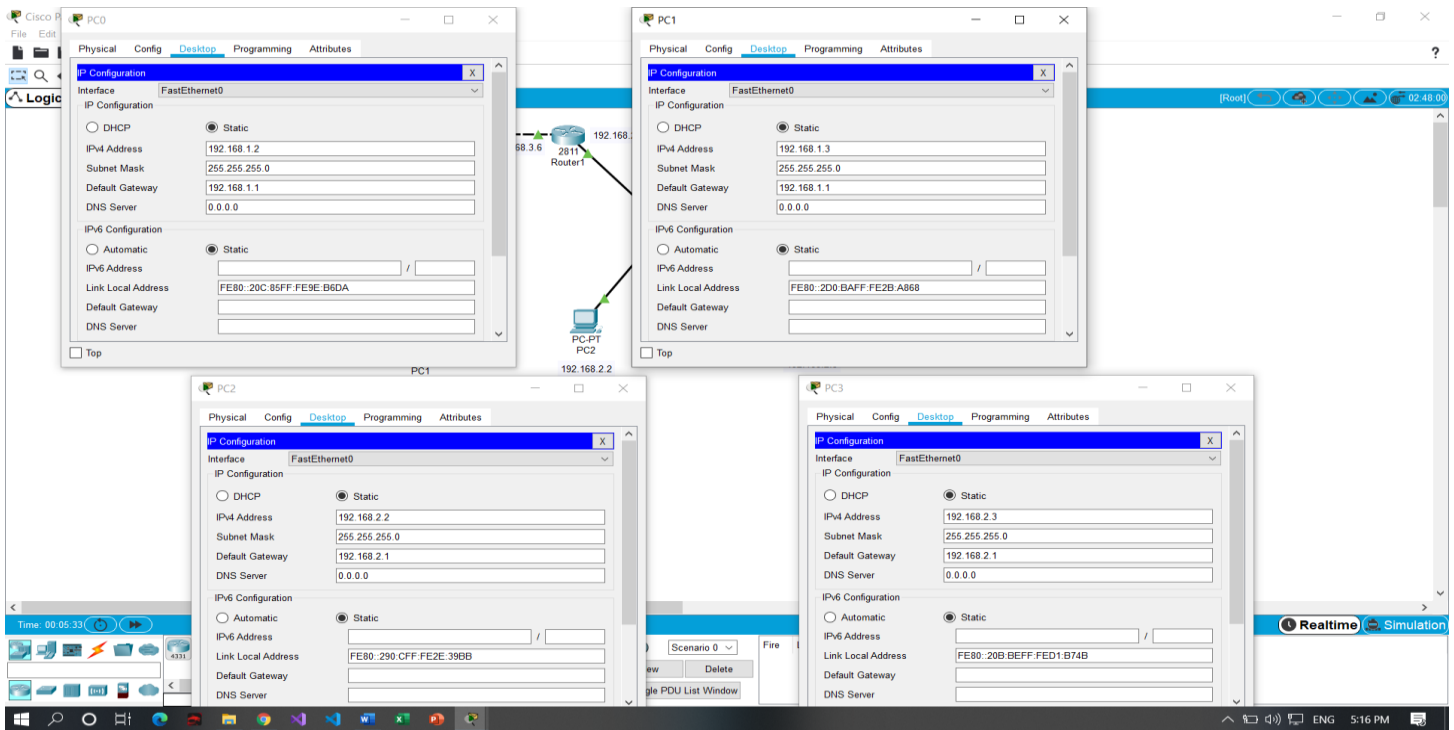
PC	IP address
PC0	192.168.10.11
PC1	192.168.10.12
PC2	192.168.10.13

2. The gateway addresses of PC0, PC1, PC2: 192.168.10.1
3. The DNS server for PC0, PC1, PC2 : 192.168.10.2

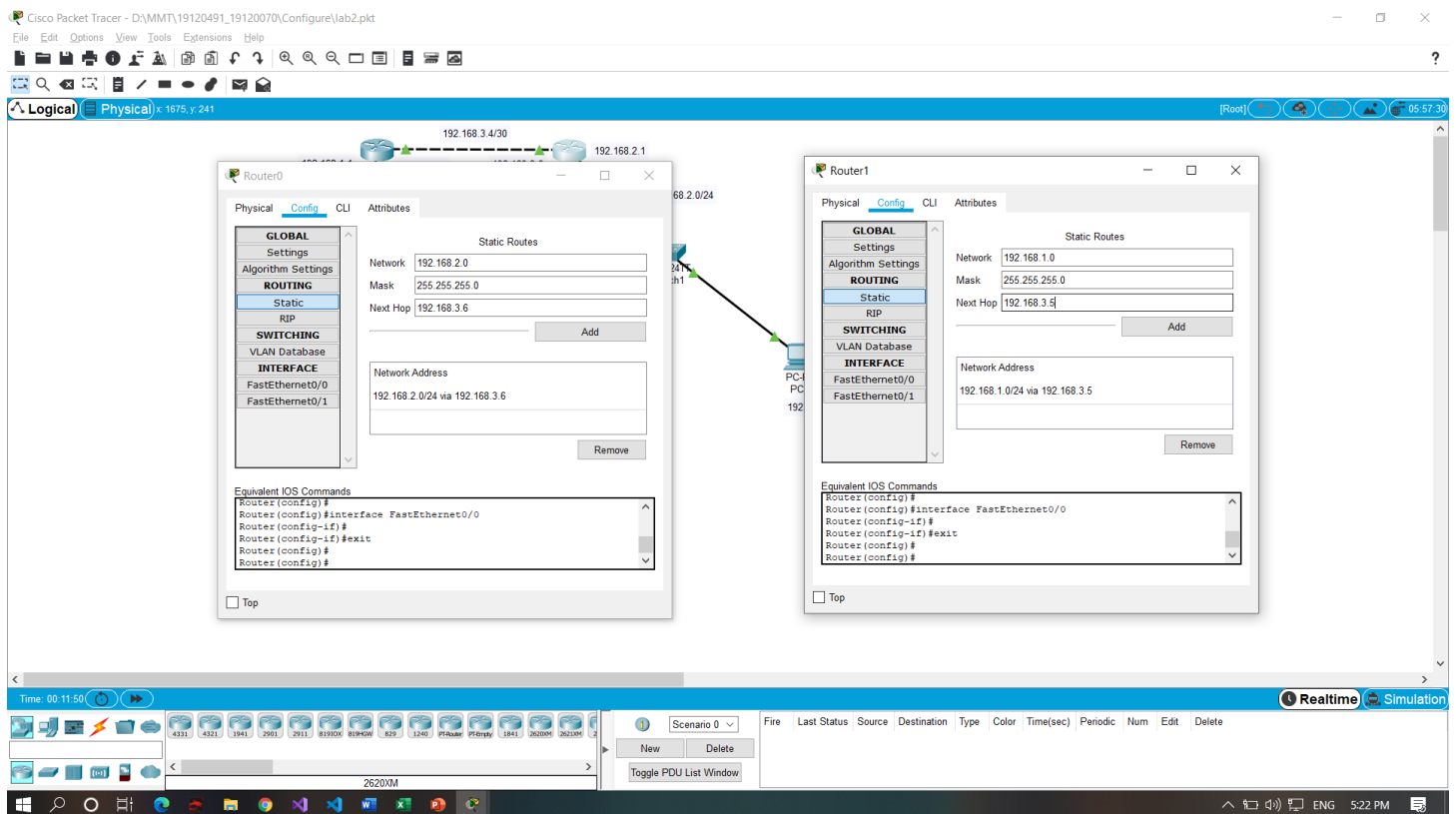
II. Lab 2: Static routing implementation

1. Cấu hình thiết bị

- Cấu hình IP configuration cho các PC: IPv4 address, Subnet Mask, Default Gateway tương ứng cho từng PC.



- Cấu hình config cho Router: Static Routes và Interface tương ứng cho từng router
 - Chỉnh Static Routes



- Chỉnh FastEthernet0/0

The screenshot shows the Cisco Packet Tracer interface with Router0's configuration window open. The 'Config' tab is selected, and the 'FastEthernet0/0' interface is highlighted. The configuration shows the interface is enabled, with a bandwidth of 100 Mbps, duplex set to Full Duplex, and auto-negotiation enabled. The IP address is 192.168.1.1 and the subnet mask is 255.255.255.0. The MAC address is 000C.8580.DC01. The 'Equivalent IOS Commands' section shows the following commands:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

The network diagram shows Router0 connected to a switch, which is then connected to Router1. The switch has a 24-port Gigabit Ethernet interface connected to Router1's FastEthernet0/24.

- Chỉnh FastEthernet0/1

The screenshot shows the Cisco Packet Tracer interface with Router0's configuration window open. The 'Config' tab is selected, and the 'FastEthernet0/1' interface is highlighted. The configuration shows the interface is enabled, with a bandwidth of 100 Mbps, duplex set to Full Duplex, and auto-negotiation enabled. The IP address is 192.168.3.5 and the subnet mask is 255.255.255.252. The MAC address is 000C.8580.DC02. The 'Equivalent IOS Commands' section shows the following commands:

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
```

The network diagram shows Router0 connected to a switch, which is then connected to Router1. The switch has a 24-port Gigabit Ethernet interface connected to Router1's FastEthernet0/24.

2. Trả lời câu hỏi

1. Ping between PC0 and PC2, PC3 and PC1

- PC0 and PC2:

The screenshot shows the Cisco Packet Tracer interface with two PC command prompts open. PC0 (192.168.2.1) is pinging 192.168.2.2 (PC2). The output shows a successful ping with 0% loss. PC2 (192.168.1.2) is pinging 192.168.1.2 (PC0). The output also shows a successful ping with 0% loss.

```

PC0 Command Prompt:
C:\>ping 192.168.2.2
Pinging 192.168.2.2 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.2.2
Pinging 192.168.2.2 with 32 bytes of data:
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>

PC2 Command Prompt:
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2
Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 6ms
C:\>
  
```

- PC1 and PC3:

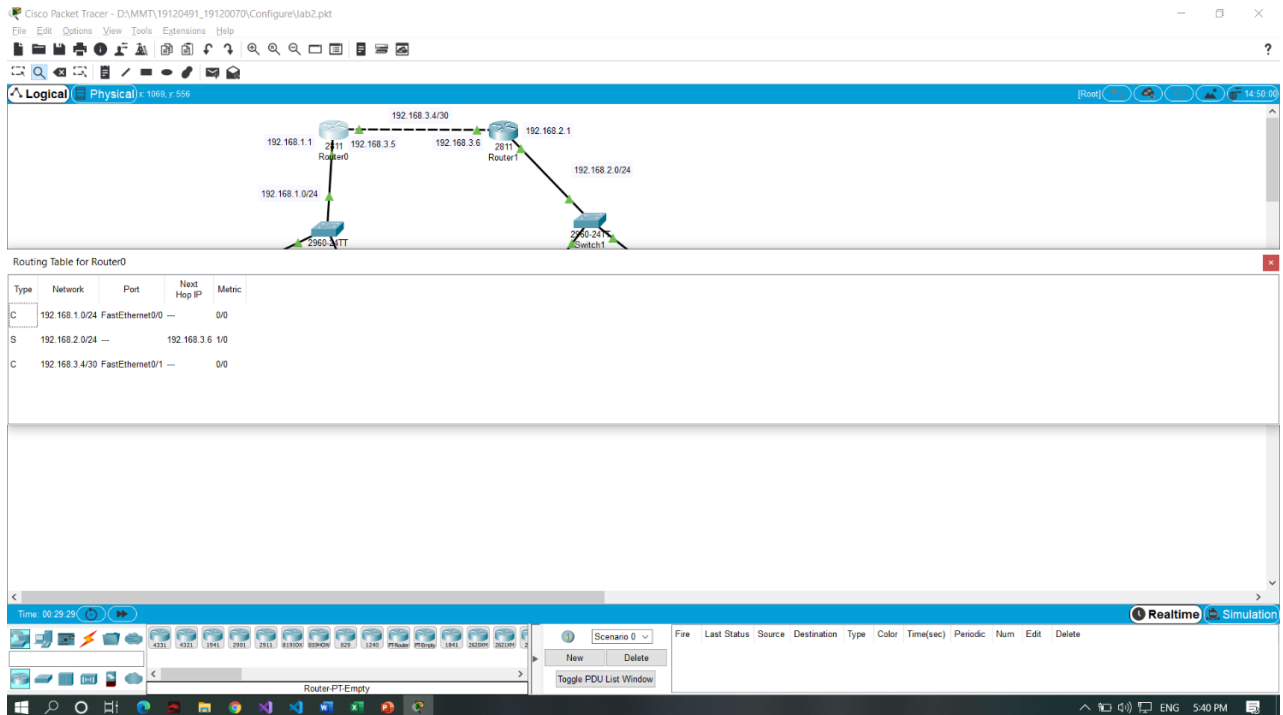
The screenshot shows the Cisco Packet Tracer interface with two PC command prompts open. PC1 (192.168.2.1) is pinging 192.168.2.3 (PC3). The output shows a successful ping with 0% loss. PC3 (192.168.1.3) is pinging 192.168.1.3 (PC1). The output also shows a successful ping with 0% loss.

```

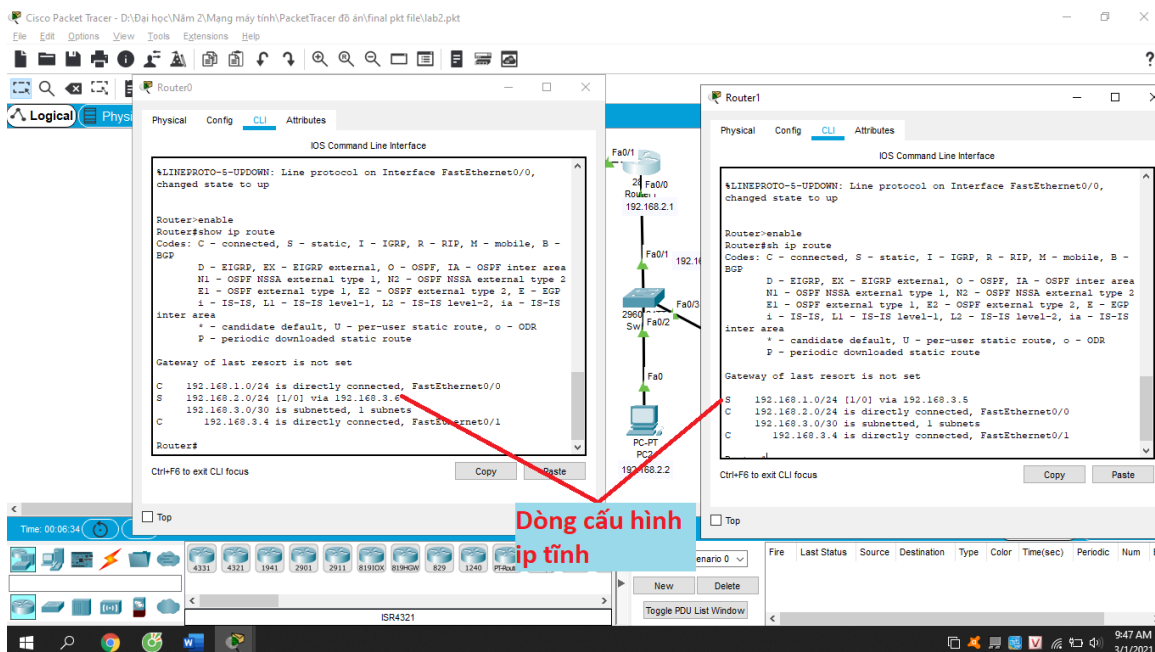
PC1 Command Prompt:
C:\>ping 192.168.2.3
Pinging 192.168.2.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 7ms
C:\>ping 192.168.2.3
Pinging 192.168.2.3 with 32 bytes of data:
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Reply from 192.168.2.3: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 3ms
C:\>

PC3 Command Prompt:
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3
Pinging 192.168.1.3 with 32 bytes of data:
Reply from 192.168.1.3: bytes=32 time<1ms TTL=126
Reply from 192.168.1.3: bytes=32 time<1ms TTL=126
Reply from 192.168.1.3: bytes=32 time<1ms TTL=126
Reply from 192.168.1.3: bytes=32 time<1ms TTL=126
Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 5ms
C:\>
  
```

2. The routing table of router R0



3. Line in the routing table is configured by static route

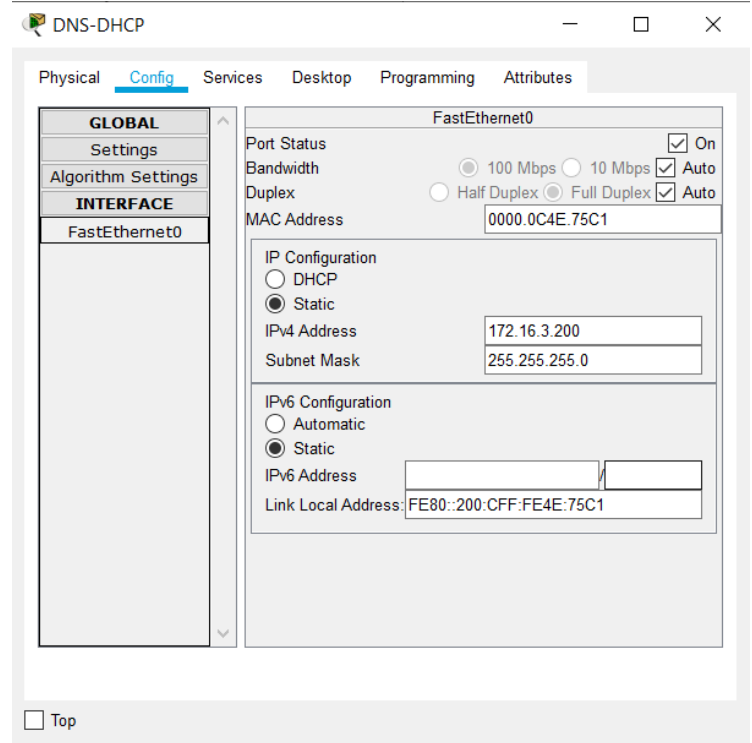
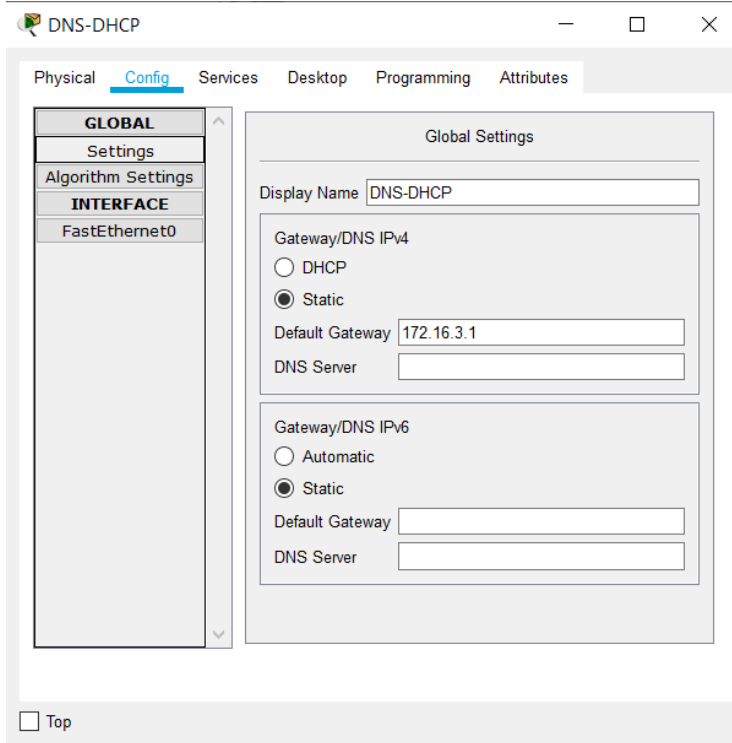


	Router 0	Router 1
Administrative distance (AD)	1	1
Metric	0	0

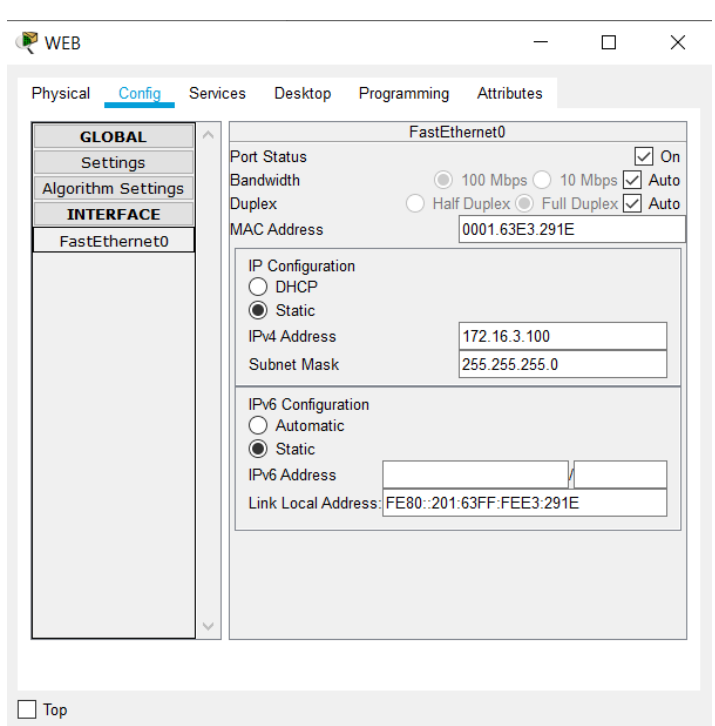
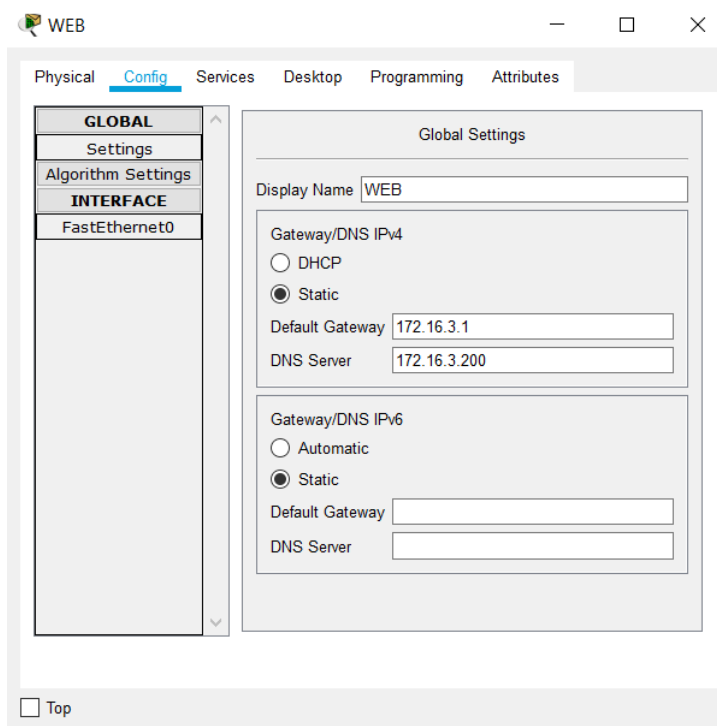
III. Lab 3: Implement the basic building network topology

1. Cấu hình thiết bị

- Cấu hình cho DNS-DHCP server

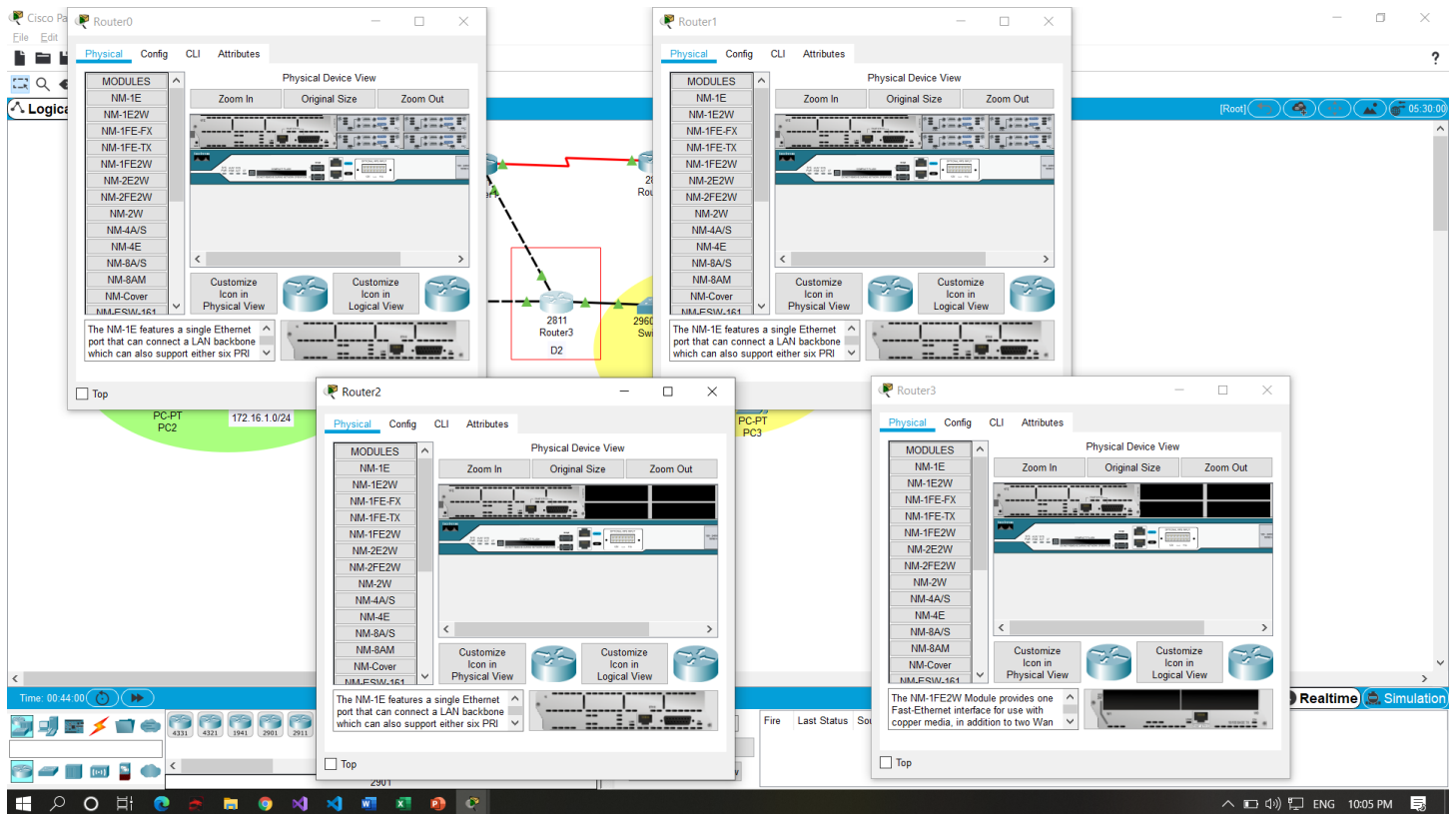


- Cấu hình cho WEB server

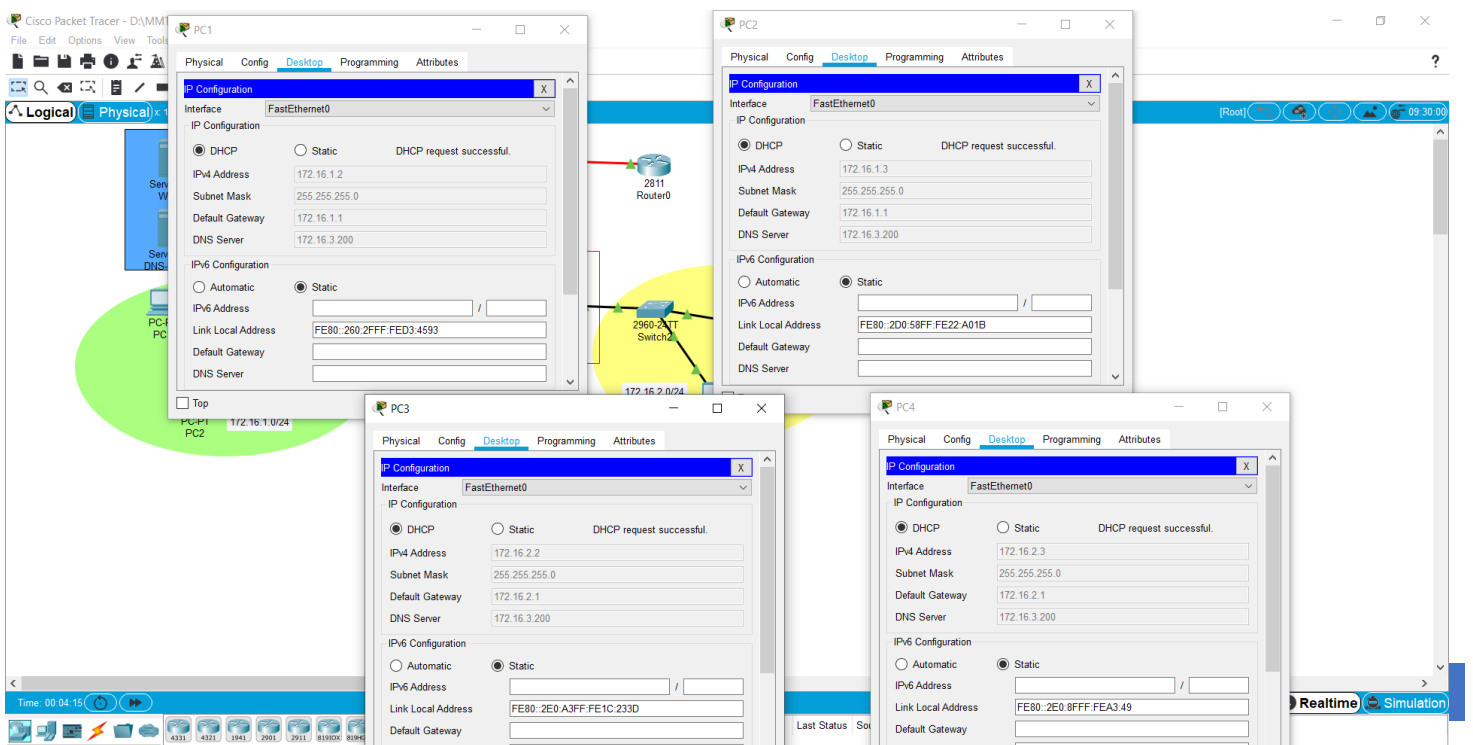


- Cấu hình cho Router: cài đặt module cho router

Router	Module	Chức năng
Router 0	HWIC-2T	Có được interface Se0/3/0
Router 1	- NM-1FE-TX - Se0/3/0	Có được interface Fa1/0 Có được interface Se0/3/0
Router 2	NM-1FE-TX	Có được interface Fa1/0
Router 3	NM-1FE-TX	Có được interface Fa1/0



- Cấu hình cho PC: Vào tab **Desktop** chuyển **IP configuration** thành **DHCP**



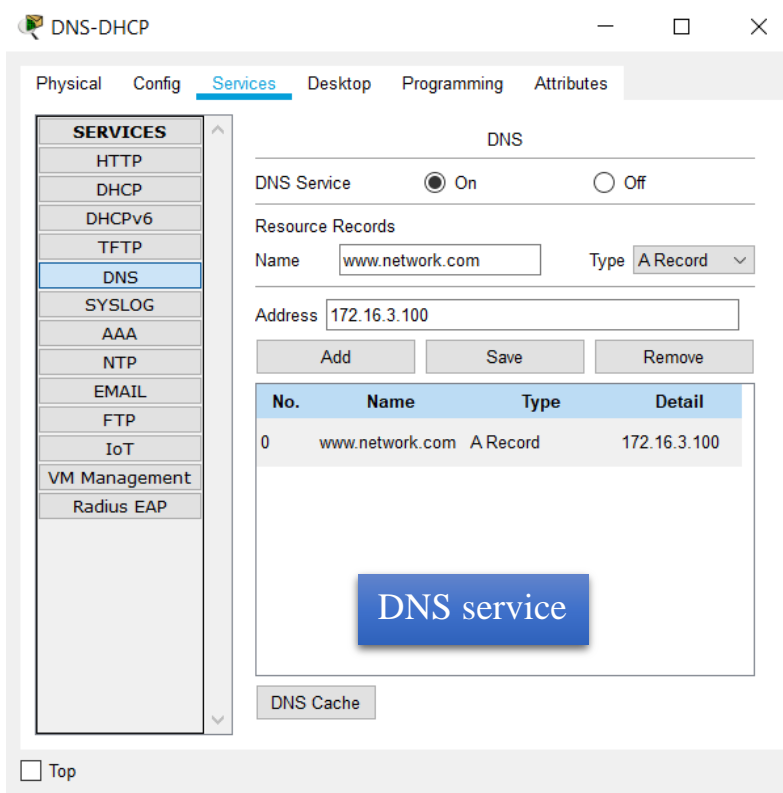
2. Trả lời câu hỏi

1. Finish the network topology

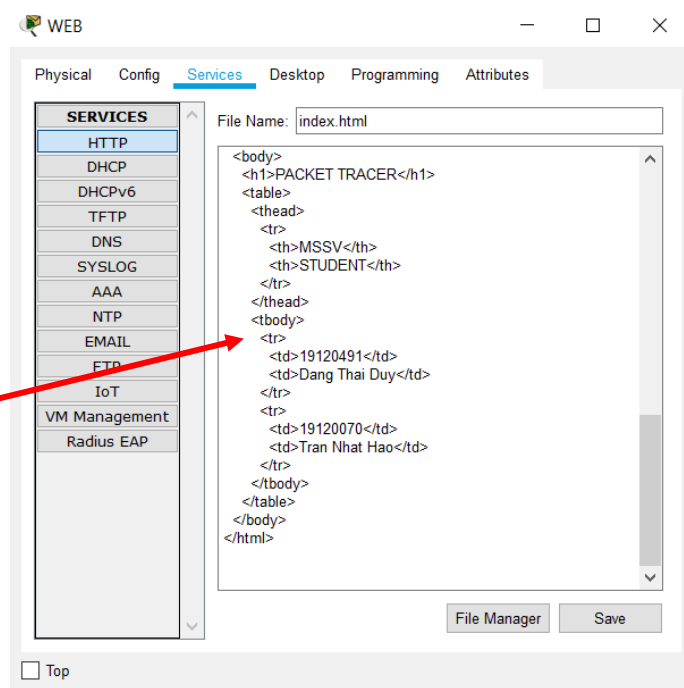
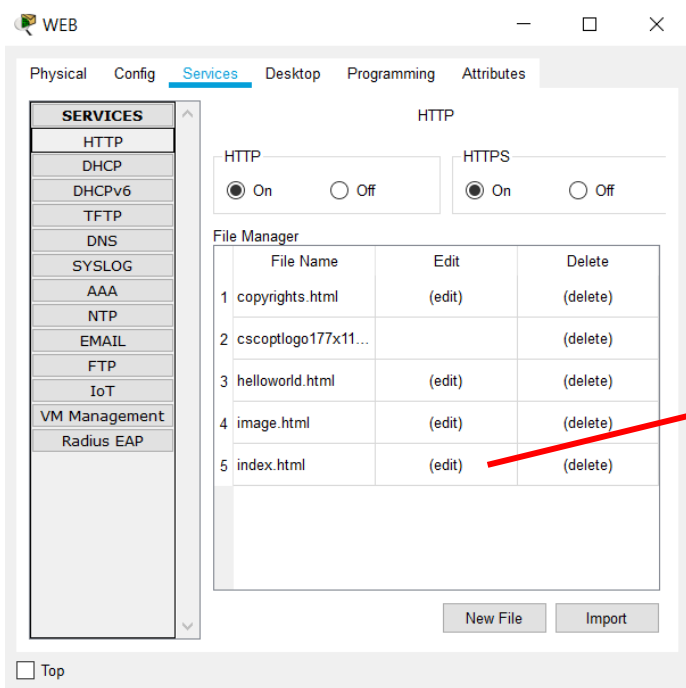
Device Name	Interface	IP address	Device Type
R0	S0/3/0	200.200.1.2/24	Router
R1	F0/0	172.16.3.1/24	Router
	F0/1	192.168.1.1/30	
	F1/0	192.168.2.1/30	
	S0/3/0	200.200.1.1/24	
R2	F0/0	172.16.1.1/24	Router
	F0/0	192.168.1.2/30	
	F1/0	192.168.3.1/30	
R3 (D2)	F0/1	192.168.2.2/30	Router
	F0/0	172.16.2.1/24	
	F1/0	192.168.3.2/30	
Switch1 (D1)			Switch
WEB server	F0	172.16.3.100	Server
DNS-DHCP server	F0	172.16.3.200	Server
PC1	F0	172.16.1.2	End device
PC2	F0	172.16.1.3	End device
PC3	F0	172.16.2.2	End device
PC4	F0	172.16.2.3	End device

2. Configure the DNS server and Web server for www.network.com

- Cấu hình services cho DNS server

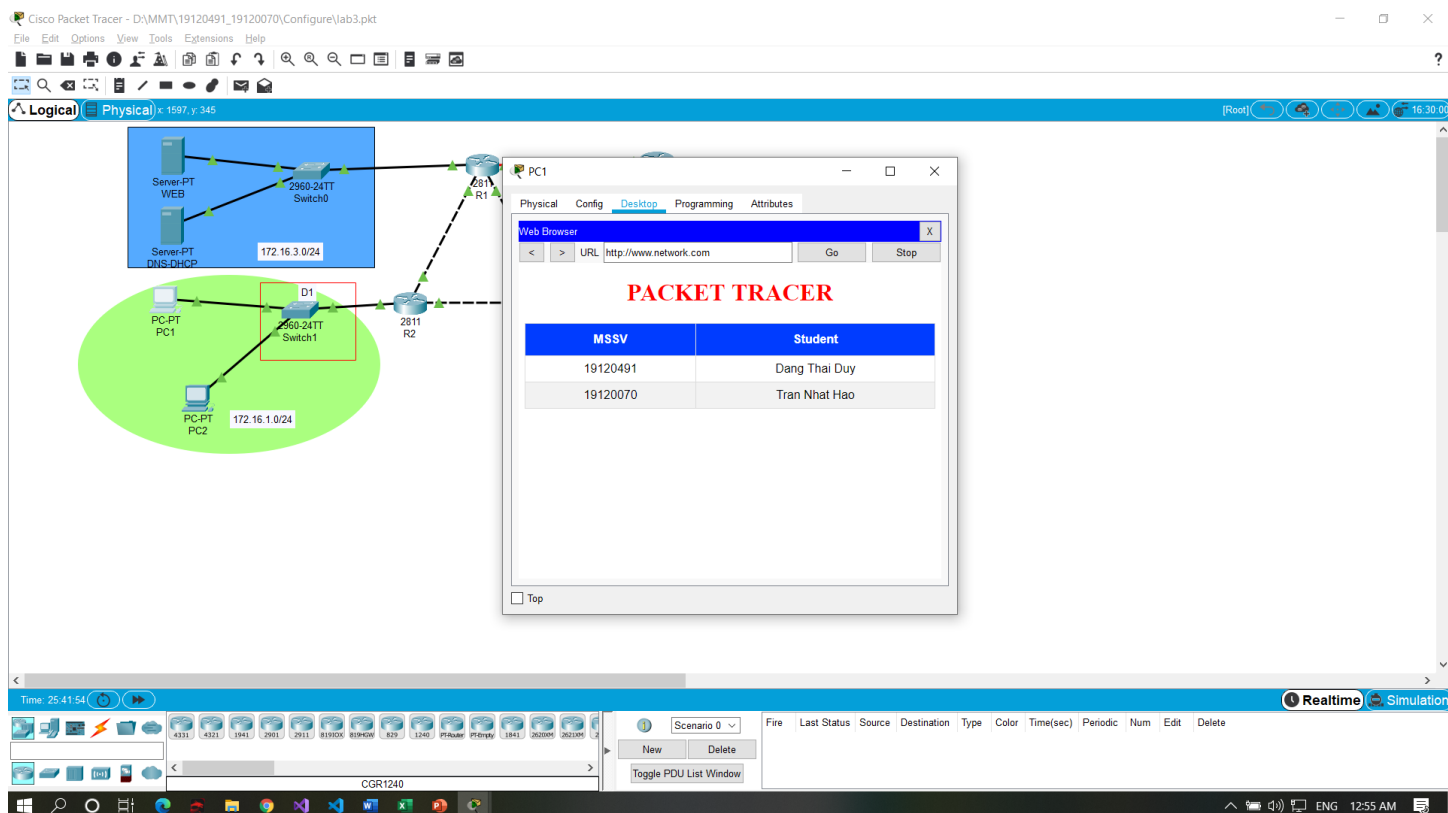


- Cấu hình services cho WEB server



HTTP service

- Truy cập vào www.network.com



3. Configure the DHCP server to assign the IP addresses to PC1, PC2, PC3, PC4

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: **FastEthernet0** Service: ☒ On ☐ Off

Pool Name: **serverPool**

Default Gateway: **172.16.3.1**

DNS Server: **172.16.3.200**

Start IP Address: **172** **16** **3** **2**

Subnet Mask: **255** **255** **255** **0**

Maximum Number of Users: **50**

TFTP Server: **0.0.0.0**

WLC Address: **0.0.0.0**

Add **Save** **Remove**

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
172.16.2.0/24	172.16.2.1	172.16.3.200	172.16.2.2	255.255.255.0	50	0.0.0.0	0.0.0.0
172.16.1.0/24	172.16.1.1	172.16.3.200	172.16.1.2	255.255.255.0	50	0.0.0.0	0.0.0.0
serverPool	172.16.3.1	172.16.3.200	172.16.3.2	255.255.255.0	50	0.0.0.0	0.0.0.0

☐ Top

DHCP service

4. Configure static routing for all routers

- **Chỉnh router 0: Chỉnh lần lượt Static Routes và Interface**

Router0

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- SWITCHING
- VLAN Database
- INTERFACE
- FastEthernet0/0
- FastEthernet0/1
- Serial0/0/0
- Serial0/0/1
- Serial0/1/0
- Serial0/1/1

Static Routes

Network: **192.168.3.0**

Mask: **255.255.255.252**

Next Hop: **200.200.1.1**

Add

Network Address

192.168.3.0/30 via 200.200.1.1

192.168.2.0/30 via 200.200.1.1

Remove

Equivalent IOS Commands

```
Router(config)#interface Serial0/3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#
```

☐ Top

Router0

Physical **Config** CLI Attributes

RIP

- VLAN Database
- INTERFACE**
- FastEthernet0/0
- FastEthernet0/1
- Serial0/0/0
- Serial0/0/1
- Serial0/1/0
- Serial0/1/1
- Serial0/2/0
- Serial0/2/1
- Serial0/3/0**
- Serial0/3/1
- FastEthernet1/0

Serial0/3/0

Port Status: ☒ On

Duplex: ☐ Full Duplex ☐ Half Duplex

Clock Rate: **2000000**

IP Configuration

IPv4 Address: **200.200.1.2**

Subnet Mask: **255.255.255.0**

Tx Ring Limit: **10**

Equivalent IOS Commands

```
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
```

☐ Top

Static Routes		
Network	Mask	Next hop
172.16.1.0	255.255.255.0	200.200.1.1
172.16.2.0	255.255.255.0	200.200.1.1
172.16.3.0	255.255.255.0	200.200.1.1

Interface	IP Configuration	
	Ipv4 Address	Subnet Mask
Serial0/3/0	200.200.1.2	255.255.255.0

Tương tự như vậy, cấu hình lần lượt cho các router 1, router 2, router 3

- **Chỉnh router 1:**

Static Routes		
Network	Mask	Next hop
172.16.1.0	255.255.255.0	192.168.1.2
172.16.2.0	255.255.255.0	192.168.2.2

Interface	IP Configuration	
	Ipv4 Address	Subnet Mask
FastEthernet0/0	172.16.3.1	255.255.255.0
FastEthernet0/1	192.168.1.1	255.255.255.252
Serial0/3/0	200.200.1.1	255.255.255.0
FastEthernet1/0	192.168.2.1	255.255.255.252

- **Chỉnh router 2:**

Static Routes		
Network	Mask	Next hop
172.16.2.0	255.255.255.0	192.168.3.2
172.16.3.0	255.255.255.0	192.168.1.1
200.200.1.0	255.255.255.0	192.168.1.1

Interface	IP Configuration	
	Ipv4 Address	Subnet Mask
FastEthernet0/0	172.16.1.1	255.255.255.0
FastEthernet0/1	192.168.1.2	255.255.255.252
FastEthernet1/0	192.168.3.1	255.255.255.252

- Chỉnh router 3:

Static Routes		
Network	Mask	Next hop
172.16.1.0	255.255.255.0	192.168.3.1
172.16.3.0	255.255.255.0	192.168.2.1
200.200.1.0	255.255.255.0	192.168.2.1

Interface	IP Configuration	
	Ipv4 Address	Subnet Mask
FastEthernet0/0	172.16.1.1	255.255.255.0
FastEthernet0/1	192.168.1.2	255.255.255.252
FastEthernet1/0	192.168.3.1	255.255.255.252

5. Execute ping command from PC1 to PC3, PC4 to PC2

- Ping from PC1 to PC3

The screenshot shows the Cisco Packet Tracer interface with a network topology. A 2811 Router0 is connected to a 2960 Switch2. The switch is connected to PC1 (172.16.2.2) and PC3 (172.16.2.1). The PC1 command prompt shows the following output:

```

C:\>ping 172.16.2.1
Pinging 172.16.2.1 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 172.16.2.1: bytes=32 time=1ms TTL=126
Reply from 172.16.2.1: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.2.1:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 172.16.2.2
Pinging 172.16.2.2 with 32 bytes of data:
Reply from 172.16.2.2: bytes=32 time=1ms TTL=126
Reply from 172.16.2.2: bytes=32 time=1ms TTL=126
Reply from 172.16.2.2: bytes=32 time=1ms TTL=126
Reply from 172.16.2.2: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```

The PC3 command prompt shows the following output:

```

C:\>ipconfig

FastEthernet0 Connection (default port)
    . . . . .
    IPv6 Address . . . . . : FE80::2E0:A3FF:FE1C:233D
    IPv4 Address . . . . . : 172.16.2.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . : 172.16.2.1

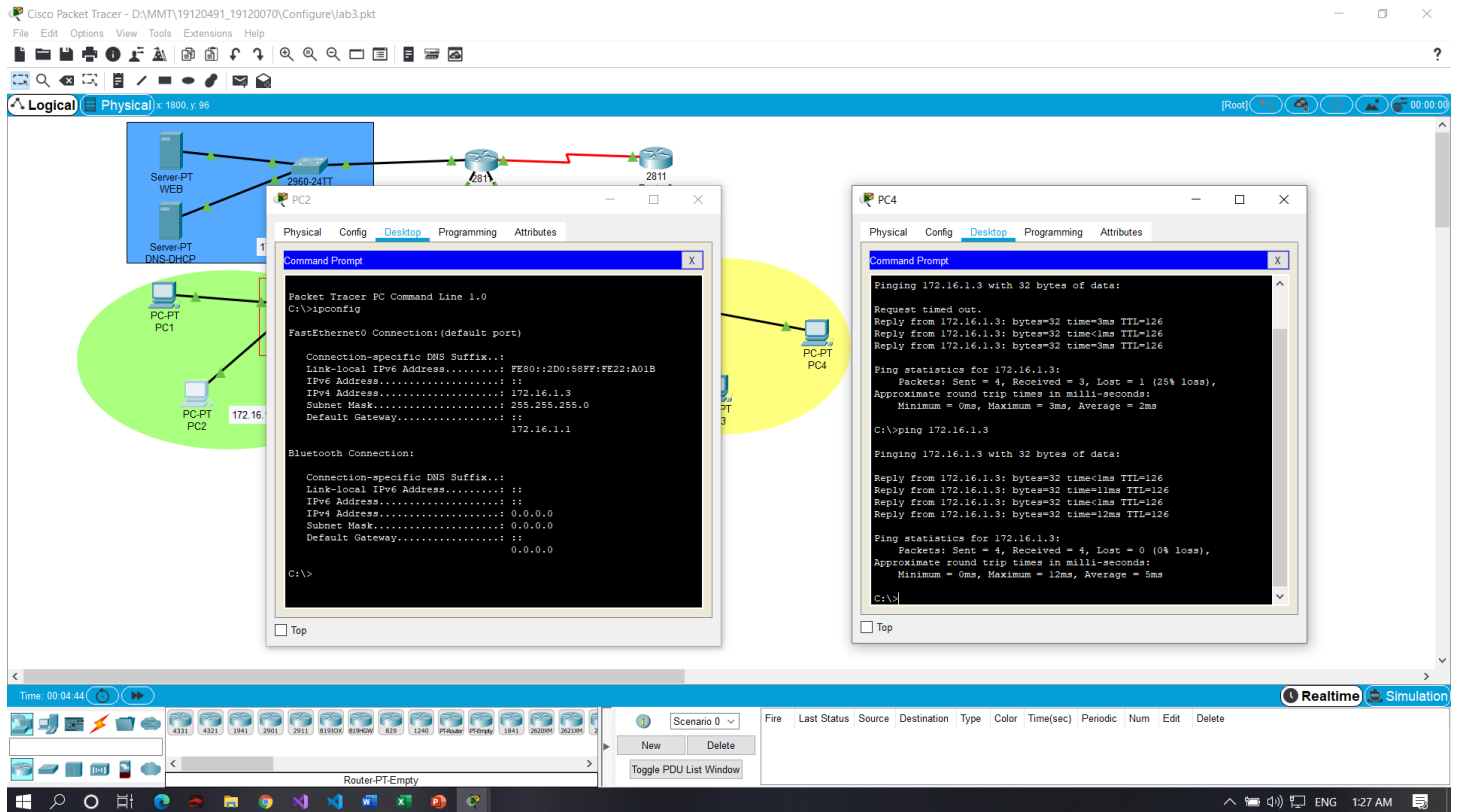
Bluetooth Connection:
    . . . . .
    IPv6 Address . . . . . : 
    IPv4 Address . . . . . : 0.0.0.0
    Subnet Mask . . . . . : 
    Default Gateway . . . . : 0.0.0.0

C:\>

```

The network diagram shows the 2811 Router0 connected to the 2960 Switch2. The switch is connected to PC1 (172.16.2.2) and PC3 (172.16.2.1). The PC1 command prompt shows the output of the ping command, indicating a successful connection to PC3.

- Ping from PC4 to PC2



6. Access the web pages at <http://www.network.com> address via web browser

