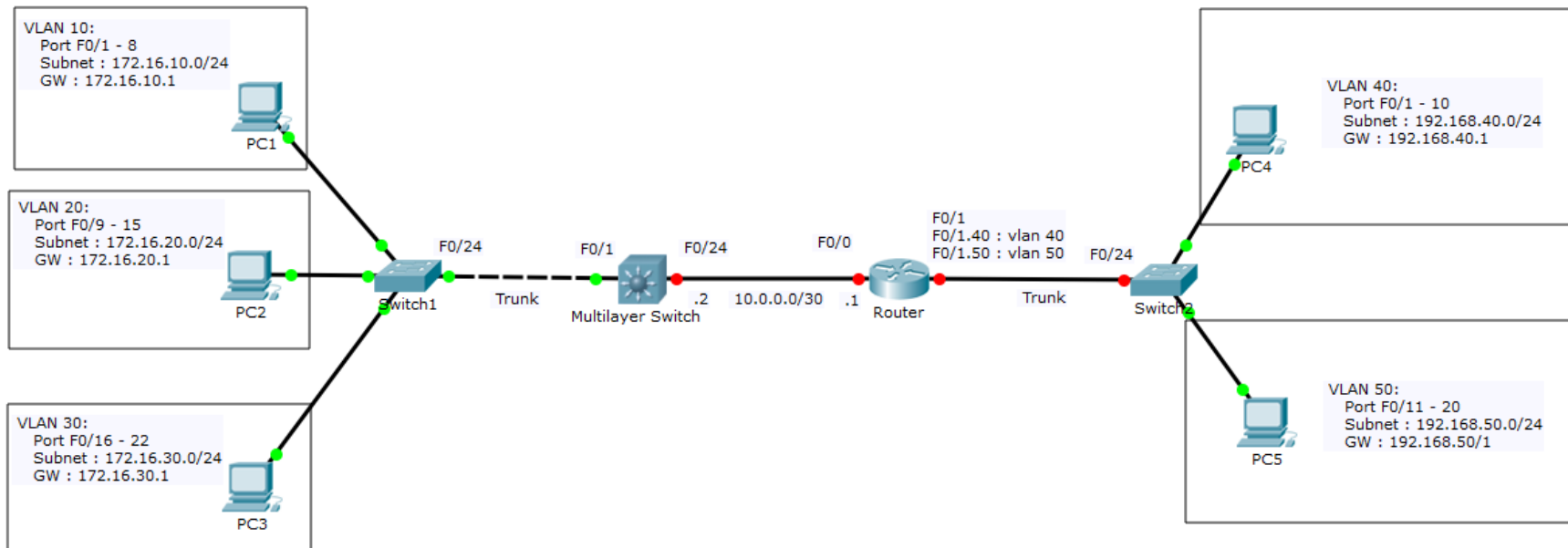


# HƯỚNG DẪN LAB

## LAB 10 – VLAN Trunking

Designed by : Nguyễn Phú Thịnh

### Sơ đồ LAB :



## Yêu cầu

- Đầu nối, đặt IP và chia VLAN như sơ đồ
- IP và VLAN phải được đặt đúng như quy hoạch trên sơ đồ
- Cấu hình đường trunk, native vlan 999, chỉ cho phép các VLAN cần thiết đi qua
- Cấu hình để Multilayer Switch làm DHCP Server cho VLAN 10,20,30
- Cấu hình Router làm DHCP Server cho vlan 40,50
- Cấu hình định tuyến tĩnh để tất cả các máy tính ping được nhau

## Các bước thực hiện

Bước 1: Đầu nối như sơ đồ. Đổi tên thiết bị để tránh nhầm lẫn

Switch 1 -> SW1

Switch 2 -> SW2

Multilayer Switch -> L3-SW

Router -> RT

Bước 2: Tạo VLAN trên các switch

Switch1		
SW1(config)#vlan 10 SW1(config-vlan)#exit SW1(config)#vlan 20 SW1(config-vlan)#exit SW1(config)#vlan 30 SW1(config-vlan)#exit SW1(config)#		
Kiểm tra: SW1(config)#do show vlan brief		
VLAN	Name	Status Ports
1	default	active Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10	VLAN0010	active
20	VLAN0020	active
30	VLAN0030	active
1002	fddi-default	active
1003	token-ring-default	active
1004	fddinet-default	active
1005	trnet-default	active

Switch2		
<pre>SW2(config)#vlan 40 SW2(config-vlan)#exit SW2(config)#vlan 50 SW2(config-vlan)#exit SW2(config)#</pre>		
<b>Kiểm tra:</b> SW2(config)#do show vlan brief		
VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
40 VLAN0040	active	
50 VLAN0050	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Multilayer Switch		
<pre>L3-SW(config)#vlan 10 L3-SW(config-vlan)#exit L3-SW(config)#vlan 20 L3-SW(config-vlan)#exit L3-SW(config)#vlan 30 L3-SW(config-vlan)#exit L3-SW(config)#</pre>		
<b>Kiểm tra:</b> L3-SW(config)#do show vlan brief		
VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10 VLAN0010	active	
20 VLAN0020	active	
30 VLAN0030	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Bước 3: Gán port vào VLAN

Switch1
---------

```

SW1(config)#interface range F0/1-8
SW1(config-if-range)#switchport access vlan
SW1(config-if-range)#switchport access vlan 10
SW1(config-if-range)#exit
SW1(config)#interface range F0/9-15
SW1(config-if-range)#switchport access vlan 20
SW1(config-if-range)#exit
SW1(config)#int range F0/16-22
SW1(config-if-range)#switchport access vlan 30
SW1(config-if-range)#end
SW1#

```

Kiểm tra:  
SW1#show vlan brief

VLAN	Name	Status	Ports
1	default	active	Fa0/23, Fa0/24, Gig0/1, Gig0/2
10	VLAN0010	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8
20	VLAN0020	active	Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15
30	VLAN0030	active	Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

#### Switch2

```

SW2(config)#interface range F0/1-10
SW2(config-if-range)#switchport access vlan 40
SW2(config-if-range)#exit
SW2(config)#interface range F0/11-20
SW2(config-if-range)#switchport access vlan 50
SW2(config-if-range)#end
SW2#

```

Kiểm tra:  
SW2#show vlan brief

VLAN	Name	Status	Ports
1	default	active	Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
40	VLAN0040	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10
50	VLAN0050	active	Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

Bước 4: Cấu hình Trunk cho nhánh bên trái (Switch1 và Multilayer Switch)

Switch1
<pre>SW1(config)#interface F0/24 SW1(config-if)#switchport mode trunk SW1(config-if)#switchport trunk native vlan 999 SW1(config-if)#switchport trunk allowed vlan 10,20,30</pre>

Multilayer Switch
<pre>L3-SW(config)#int F0/1 L3-SW(config-if)#switchport trunk encapsulation dot1q L3-SW(config-if)#switchport mode trunk L3-SW(config-if)#switchport trunk native vlan 999 L3-SW(config-if)#switchport trunk allowed vlan 10,20,30</pre>

Kiểm tra :

Switch1
<pre>SW1#show interfaces trunk Port          Mode          Encapsulation  Status        Native vlan Fa0/24        on            802.1q         trunking      999  Port          Vlans allowed on trunk Fa0/24        10,20,30  Port          Vlans allowed and active in management domain Fa0/24        10,20,30  Port          Vlans in spanning tree forwarding state and not pruned Fa0/24        10,20,30  SW1#show interfaces F0/24 switchport Name: Fa0/24 Switchport: Enabled Administrative Mode: trunk Operational Mode: trunk Administrative Trunking Encapsulation: dot1q Operational Trunking Encapsulation: dot1q Negotiation of Trunking: On Access Mode VLAN: 1 (default) Trunking Native Mode VLAN: 999 (Inactive) Voice VLAN: none Administrative private-vlan host-association: none Administrative private-vlan mapping: none Administrative private-vlan trunk native VLAN: none Administrative private-vlan trunk encapsulation: dot1q Administrative private-vlan trunk normal VLANs: none Administrative private-vlan trunk private VLANs: none Operational private-vlan: none Trunking VLANs Enabled: ALL Pruning VLANs Enabled: 2-1001 Capture Mode Disabled Capture VLANs Allowed: ALL Protected: false Appliance trust: none</pre>

Multilayer Switch
<pre>L3-SW#show interfaces trunk Port          Mode          Encapsulation  Status        Native vlan Fa0/1         on            802.1q         trunking      999</pre>

```

Port      Vlans allowed on trunk
Fa0/1     10,20,30

Port      Vlans allowed and active in management domain
Fa0/1     10,20,30

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     10,20,30

L3-SW#show interfaces F0/1 switchport
Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 999
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: 10,20,30
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled
Appliance trust: none

```

## Bước 5: Cấu hình interface vlan trên Multilayer Switch

Multilayer Switch					
<pre> L3-SW(config)#interface vlan 10 L3-SW(config-if)#ip add 172.16.10.1 255.255.255.0 L3-SW(config-if)#no shut L3-SW(config-if)#exit L3-SW(config)#interface vlan 20 L3-SW(config-if)#ip add 172.16.20.1 255.255.255.0 L3-SW(config-if)#no shut L3-SW(config-if)#exit L3-SW(config)#interface vlan 30 L3-SW(config-if)#ip add 172.16.30.1 255.255.255.0 L3-SW(config-if)#no shut </pre>					
<b>Kiểm tra:</b>					
L3-SW#show ip interface brief					
Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/1	unassigned	YES	unset	up	up
FastEthernet0/2	unassigned	YES	unset	down	down
FastEthernet0/3	unassigned	YES	unset	down	down
FastEthernet0/4	unassigned	YES	unset	down	down
FastEthernet0/5	unassigned	YES	unset	down	down
FastEthernet0/6	unassigned	YES	unset	down	down

FastEthernet0/7	unassigned	YES	unset	down	down
FastEthernet0/8	unassigned	YES	unset	down	down
FastEthernet0/9	unassigned	YES	unset	down	down
FastEthernet0/10	unassigned	YES	unset	down	down
FastEthernet0/11	unassigned	YES	unset	down	down
FastEthernet0/12	unassigned	YES	unset	down	down
FastEthernet0/13	unassigned	YES	unset	down	down
FastEthernet0/14	unassigned	YES	unset	down	down
FastEthernet0/15	unassigned	YES	unset	down	down
FastEthernet0/16	unassigned	YES	unset	down	down
FastEthernet0/17	unassigned	YES	unset	down	down
FastEthernet0/18	unassigned	YES	unset	down	down
FastEthernet0/19	unassigned	YES	unset	down	down
FastEthernet0/20	unassigned	YES	unset	down	down
FastEthernet0/21	unassigned	YES	unset	down	down
FastEthernet0/22	unassigned	YES	unset	down	down
FastEthernet0/23	unassigned	YES	unset	down	down
FastEthernet0/24	unassigned	YES	unset	down	down
GigabitEthernet0/1	unassigned	YES	unset	down	down
GigabitEthernet0/2	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan10	172.16.10.1	YES	manual	up	up
Vlan20	172.16.20.1	YES	manual	up	up
Vlan30	172.16.30.1	YES	manual	up	up

Bước 6: Kiểm tra cấu hình switch

Đặt IP tĩnh cho PC1, PC2, PC3 và ping các interface VLAN

**PC1**

Đặt IP tĩnh cho PC1:

PC1
— □ ×

Physical
Config
Desktop
Attributes
Software/Services

IP Configuration
×

IP Configuration

☐ DHCP
 ☒ Static

IP Address

Subnet Mask

Default Gateway

DNS Server

IPv6 Configuration

☐ DHCP
 ☐ Auto Config
 ☒ Static

IPv6 Address
 /

Link Local Address

IPv6 Gateway

IPv6 DNS Server

☐ Top

## Mở Command Prompt và Ping các interface VLAN

```
C:\>ping 172.16.10.1

Pinging 172.16.10.1 with 32 bytes of data:

Reply from 172.16.10.1: bytes=32 time=89ms TTL=255
Reply from 172.16.10.1: bytes=32 time=1ms TTL=255
Reply from 172.16.10.1: bytes=32 time<1ms TTL=255
Reply from 172.16.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 172.16.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 89ms, Average = 22ms
```

```
C:\>ping 172.16.20.1

Pinging 172.16.20.1 with 32 bytes of data:

Reply from 172.16.20.1: bytes=32 time<1ms TTL=255
Reply from 172.16.20.1: bytes=32 time<1ms TTL=255
Reply from 172.16.20.1: bytes=32 time=1ms TTL=255
Reply from 172.16.20.1: bytes=32 time<1ms TTL=255

Ping statistics for 172.16.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 172.16.30.1

Pinging 172.16.30.1 with 32 bytes of data:

Reply from 172.16.30.1: bytes=32 time=4ms TTL=255
Reply from 172.16.30.1: bytes=32 time<1ms TTL=255
Reply from 172.16.30.1: bytes=32 time<1ms TTL=255
Reply from 172.16.30.1: bytes=32 time<1ms TTL=255

Ping statistics for 172.16.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms
```

Thực hiện tương tự với PC2 và PC3

## Bước 7: Cấu hình DHCP Server cho Multilayer Switch

### Multilayer Switch

```
L3-SW(config)#ip dhcp pool VLAN_10
L3-SW(dhcp-config)#network 172.16.10.0 255.255.255.0
L3-SW(dhcp-config)#default-router 172.16.10.1
L3-SW(dhcp-config)#dns 8.8.8.8
L3-SW(dhcp-config)#exit
L3-SW(config)#ip dhcp pool VLAN_20
L3-SW(dhcp-config)#network 172.16.20.0 255.255.255.0
L3-SW(dhcp-config)#default-router 172.16.20.1
L3-SW(dhcp-config)#dns 8.8.8.8
L3-SW(dhcp-config)#exit
L3-SW(config)#ip dhcp pool VLAN_30
L3-SW(dhcp-config)#network 172.16.30.0 255.255.255.0
L3-SW(dhcp-config)#default-router 172.16.30.1
L3-SW(dhcp-config)#dns 8.8.8.8
```



```
L3-SW(dhcp-config)#
```

Kiểm tra:

```
L3-SW#show ip dhcp pool
```

Pool VLAN\_10 :

```
Utilization mark (high/low) : 100 / 0
Subnet size (first/next)      : 0 / 0
Total addresses               : 254
Leased addresses              : 0
Excluded addresses            : 0
Pending event                 : none
```

1 subnet is currently in the pool

Current index	IP address range	Leased/Excluded/Total
172.16.10.1	172.16.10.1 - 172.16.10.254	0 / 0 / 254

Pool VLAN\_20 :

```
Utilization mark (high/low) : 100 / 0
Subnet size (first/next)      : 0 / 0
Total addresses               : 254
Leased addresses              : 0
Excluded addresses            : 0
Pending event                 : none
```

1 subnet is currently in the pool

Current index	IP address range	Leased/Excluded/Total
172.16.20.1	172.16.20.1 - 172.16.20.254	0 / 0 / 254

Pool VLAN\_30 :

```
Utilization mark (high/low) : 100 / 0
Subnet size (first/next)      : 0 / 0
Total addresses               : 254
Leased addresses              : 0
Excluded addresses            : 0
Pending event                 : none
```

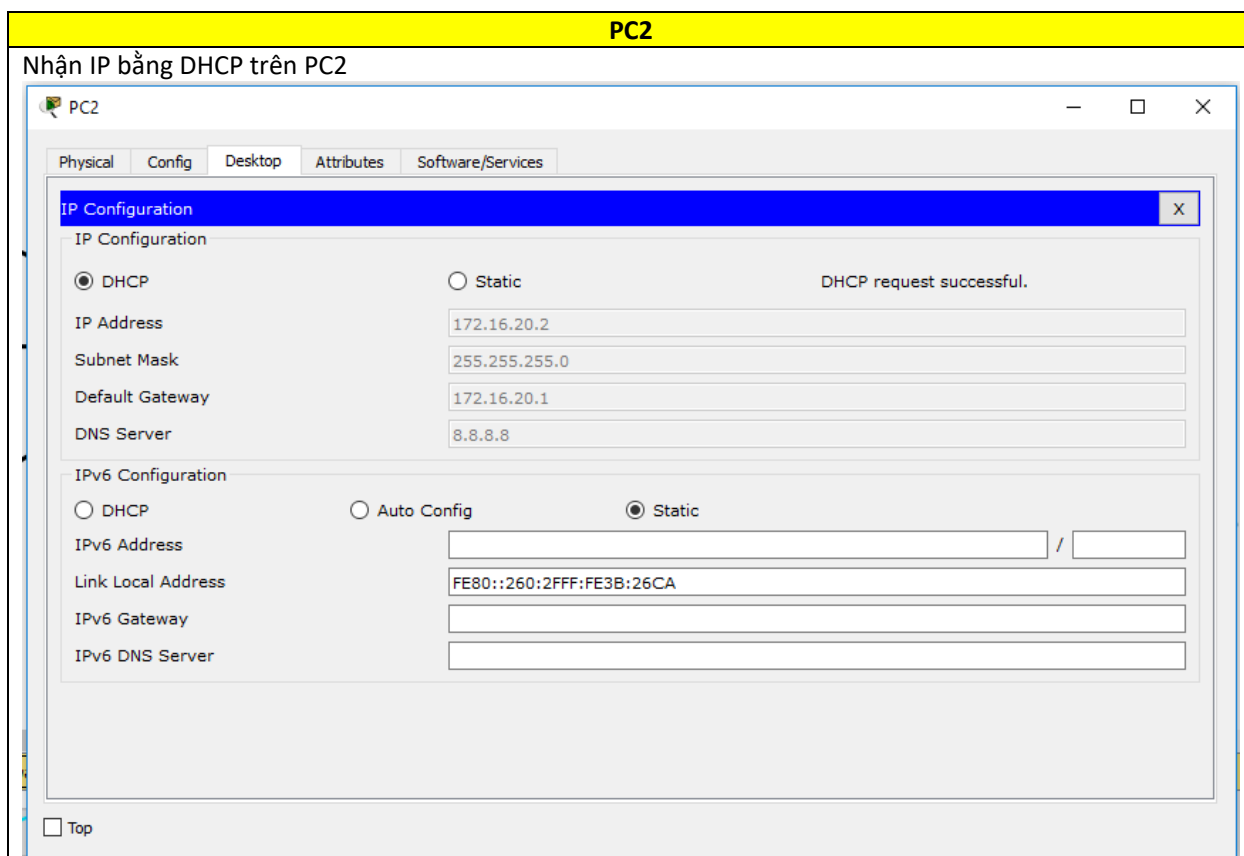
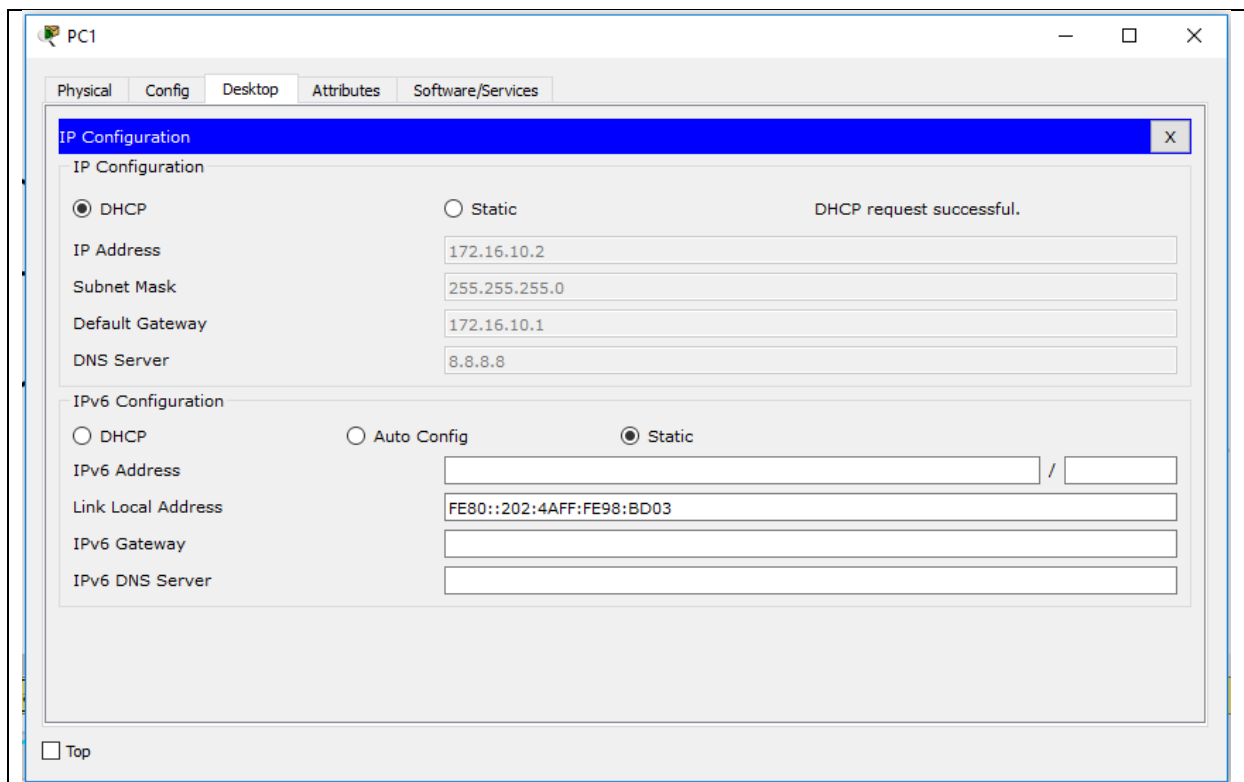
1 subnet is currently in the pool

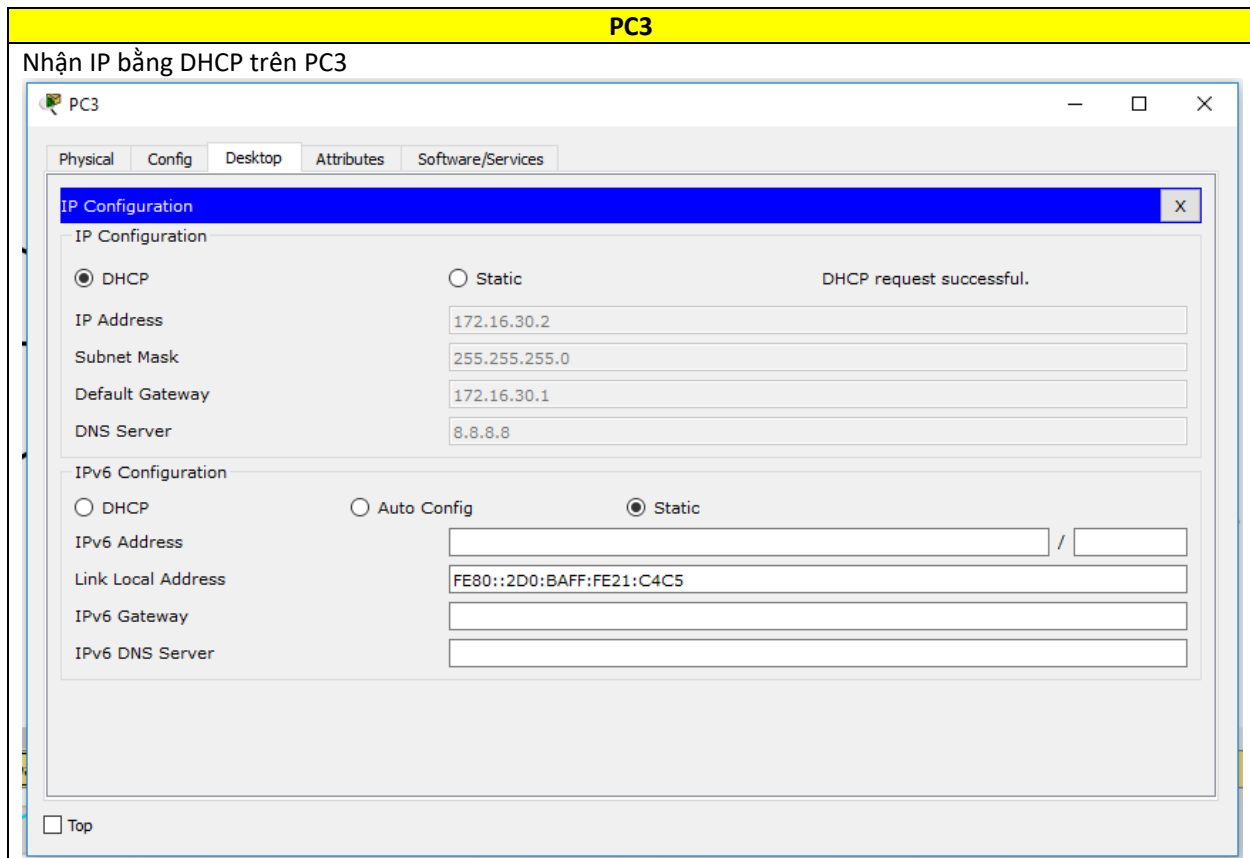
Current index	IP address range	Leased/Excluded/Total
172.16.30.1	172.16.30.1 - 172.16.30.254	0 / 0 / 254

## Bước 8: Kiểm tra cấu hình DHCP

Trên PC, thử nhận IP bằng DHCP :

PC1
Nhận IP bằng DHCP trên PC1





Bước 9: Cấu hình trunk cho nhánh bên phải (switch 2)

**Switch2**

```
SW2(config)#int F0/24
SW2(config-if)#switchport mode trunk
SW2(config-if)#switchport trunk native vlan 999
SW2(config-if)#switchport trunk allowed vlan 40,50
```

Bước 10: Cấu hình router-on-a-stick trên Router

**Router**

```
RT(config)#interface F0/1
RT(config-if)#no shut
RT(config-if)#exit
RT(config)#int F0/1.40
RT(config-subif)#encapsulation dot1Q 40
RT(config-subif)#ip add 192.168.40.1 255.255.255.0
RT(config-subif)#exit
RT(config)#int F0/1.50
RT(config-subif)#encapsulation dot1Q 50
RT(config-subif)#ip add 192.168.50.1 255.255.255.0
```

**Kiểm tra:**  
RT#show ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/1	unassigned	YES	unset	up	up
FastEthernet0/1.40	192.168.40.1	YES	manual	up	up
FastEthernet0/1.50	192.168.50.1	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

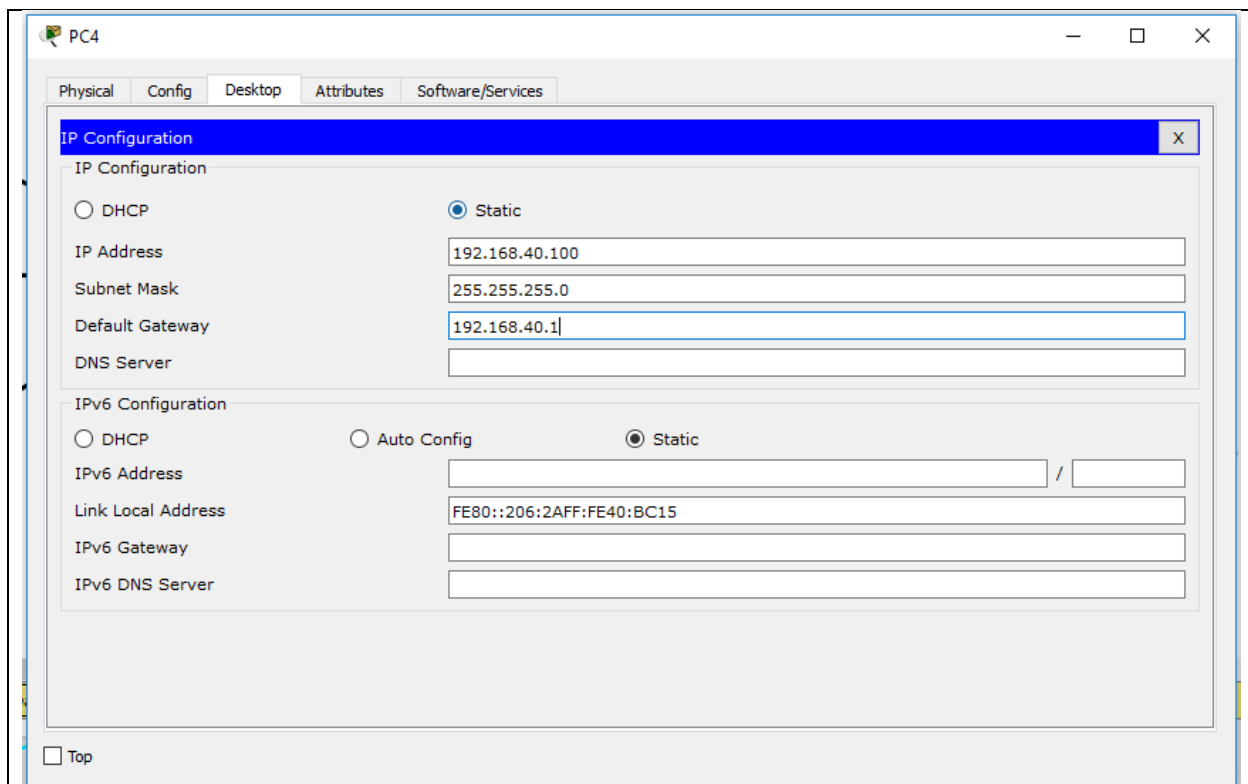
## Bước 11: Kiểm tra cấu hình trunk trên Switch2

Switch2				
SW2#show interfaces trunk				
Port	Mode	Encapsulation	Status	Native vlan
Fa0/24	on	802.1q	trunking	999
Port	Vlans allowed on trunk			
Fa0/24	40,50			
Port	Vlans allowed and active in management domain			
Fa0/24	40,50			
Port	Vlans in spanning tree forwarding state and not pruned			
Fa0/24	40,50			
SW2#show interfaces F0/24 switchport				
Name: Fa0/24				
Switchport: Enabled				
Administrative Mode: trunk				
Operational Mode: trunk				
Administrative Trunking Encapsulation: dot1q				
Operational Trunking Encapsulation: dot1q				
Negotiation of Trunking: On				
Access Mode VLAN: 1 (default)				
Trunking Native Mode VLAN: 999 (Inactive)				
Voice VLAN: none				
Administrative private-vlan host-association: none				
Administrative private-vlan mapping: none				
Administrative private-vlan trunk native VLAN: none				
Administrative private-vlan trunk encapsulation: dot1q				
Administrative private-vlan trunk normal VLANs: none				
Administrative private-vlan trunk private VLANs: none				
Operational private-vlan: none				
Trunking VLANs Enabled: ALL				
Pruning VLANs Enabled: 2-1001				
Capture Mode Disabled				
Capture VLANs Allowed: ALL				
Protected: false				
Appliance trust: none				

## Bước 12: Kiểm tra cấu hình switch

Đặt IP tĩnh cho PC4, PC5 và ping các sub-interface

PC4
Đặt IP tĩnh cho PC4



### Mở Command Prompt và Ping các sub-interface

```
C:\>ping 192.168.40.1

Pinging 192.168.40.1 with 32 bytes of data:

Reply from 192.168.40.1: bytes=32 time=2ms TTL=255
Reply from 192.168.40.1: bytes=32 time<1ms TTL=255
Reply from 192.168.40.1: bytes=32 time<1ms TTL=255
Reply from 192.168.40.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.40.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>ping 192.168.50.1

Pinging 192.168.50.1 with 32 bytes of data:

Reply from 192.168.50.1: bytes=32 time=2ms TTL=255
Reply from 192.168.50.1: bytes=32 time<1ms TTL=255
Reply from 192.168.50.1: bytes=32 time<1ms TTL=255
Reply from 192.168.50.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.50.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

Thực hiện tương tự với PC5

### Bước 13: Cấu hình DHCP Server cho Router

Router
RT(config)#ip dhcp pool VLAN_40

```

RT(dhcp-config)#network 192.168.40.0 255.255.255.0
RT(dhcp-config)#default-router 192.168.40.1
RT(dhcp-config)#dns 8.8.8.8
RT(dhcp-config)#exit
RT(config)#ip dhcp pool VLAN_50
RT(dhcp-config)#network 192.168.50.0 255.255.255.0
RT(dhcp-config)#default-router 192.168.50.1
RT(dhcp-config)#dns 8.8.8.8

```

#### Kiểm tra:

```
RT#show ip dhcp pool
```

```

Pool VLAN_40 :
  Utilization mark (high/low)      : 100 / 0
  Subnet size (first/next)          : 0 / 0
  Total addresses                    : 254
  Leased addresses                   : 0
  Excluded addresses                 : 0
  Pending event                      : none

  1 subnet is currently in the pool
  Current index      IP address range      Leased/Excluded/Total
  192.168.40.1       192.168.40.1 - 192.168.40.254  0 / 0 / 254

Pool VLAN_50 :
  Utilization mark (high/low)      : 100 / 0
  Subnet size (first/next)          : 0 / 0
  Total addresses                    : 254
  Leased addresses                   : 0
  Excluded addresses                 : 0
  Pending event                      : none

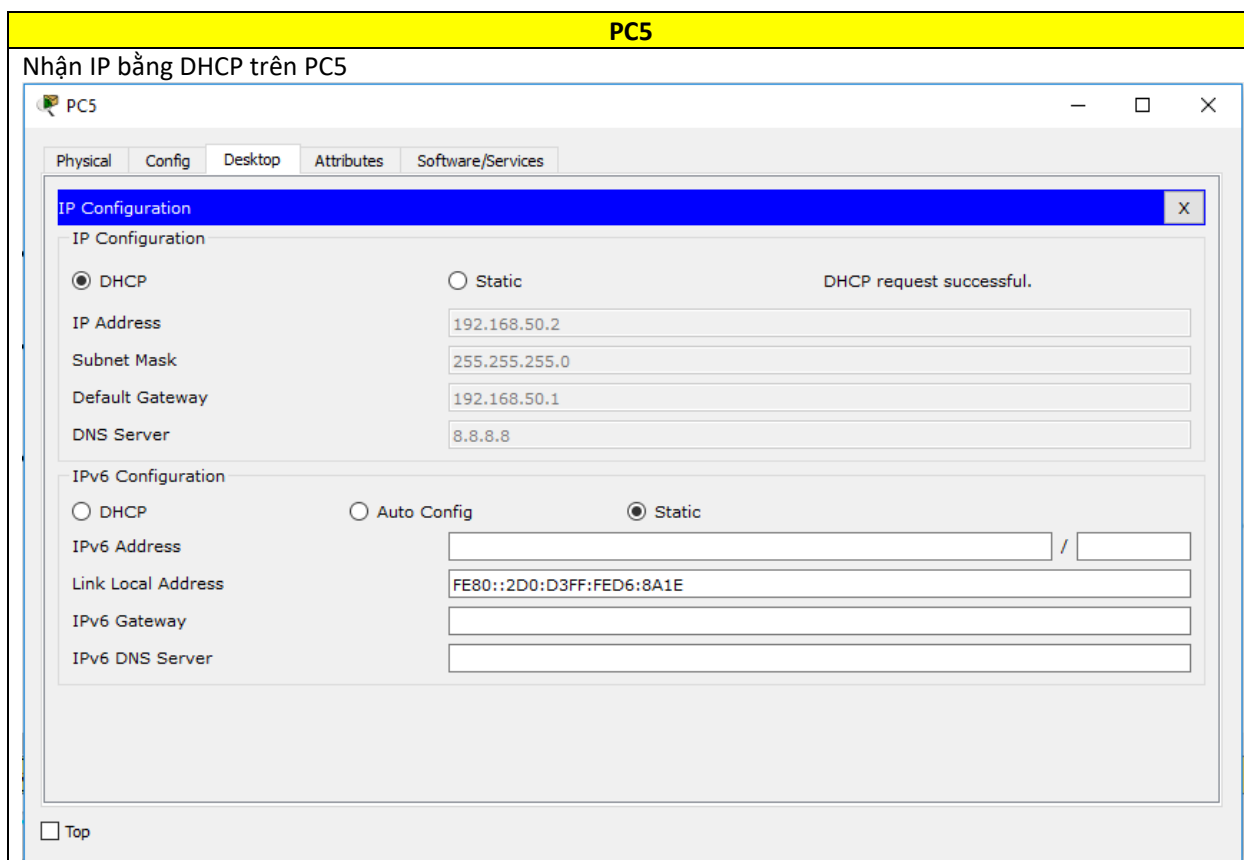
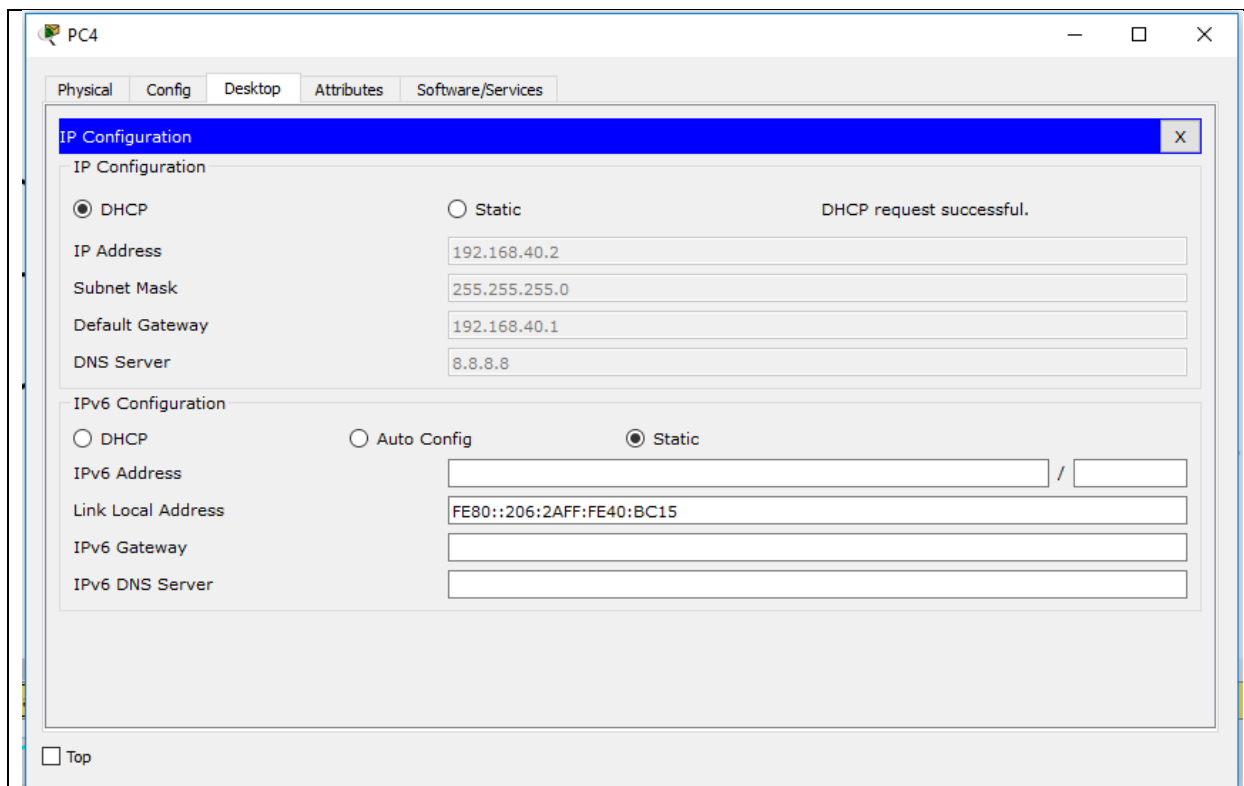
  1 subnet is currently in the pool
  Current index      IP address range      Leased/Excluded/Total
  192.168.50.1       192.168.50.1 - 192.168.50.254  0 / 0 / 254

```

## Bước 14: Kiểm tra cấu hình DHCP

Trên PC, thử nhận IP bằng DHCP :

PC4
Nhận IP bằng DHCP trên PC4



## Bước 15: Cấu hình IP cho cổng còn lại của Router (cổng F0/0)

Router					
RT(config)#interface F0/0 RT(config-if)#ip add 10.0.0.1 255.255.255.252 RT(config-if)#no shut					
Kiểm tra:					
RT#show ip interface brief					
Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	10.0.0.1	YES	manual	up	up
FastEthernet0/1	unassigned	YES	unset	up	up
FastEthernet0/1.40	192.168.40.1	YES	manual	up	up
FastEthernet0/1.50	192.168.50.1	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down
RT#show interfaces F0/0					
FastEthernet0/0 is up, line protocol is up (connected)					
Hardware is Lance, address is 00d0.bc6a.2801 (bia 00d0.bc6a.2801)					
Internet address is 10.0.0.1/30					
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,					
reliability 255/255, txload 1/255, rxload 1/255					
Encapsulation ARPA, loopback not set					
ARP type: ARPA, ARP Timeout 04:00:00,					
Last input 00:00:08, output 00:00:05, output hang never					
Last clearing of "show interface" counters never					
Input queue: 0/75/0 (size/max/drops); Total output drops: 0					
Queueing strategy: fifo					
Output queue :0/40 (size/max)					
5 minute input rate 0 bits/sec, 0 packets/sec					
5 minute output rate 0 bits/sec, 0 packets/sec					
0 packets input, 0 bytes, 0 no buffer					
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles					
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort					
0 input packets with dribble condition detected					
0 packets output, 0 bytes, 0 underruns					
0 output errors, 0 collisions, 1 interface resets					
0 babbles, 0 late collision, 0 deferred					
0 lost carrier, 0 no carrier					

## Bước 16: Cấu hình IP cho cổng F0/24 trên multilayer switch

Multilayer Switch					
L3-SW(config)#interface F0/24 L3-SW(config-if)#no switchport L3-SW(config-if)#ip add 10.0.0.2 255.255.255.0					
Kiểm tra:					
L3-SW#show ip interface brief					
Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/1	unassigned	YES	unset	up	up
FastEthernet0/2	unassigned	YES	unset	down	down
FastEthernet0/3	unassigned	YES	unset	down	down
FastEthernet0/4	unassigned	YES	unset	down	down
FastEthernet0/5	unassigned	YES	unset	down	down
FastEthernet0/6	unassigned	YES	unset	down	down
FastEthernet0/7	unassigned	YES	unset	down	down
FastEthernet0/8	unassigned	YES	unset	down	down



FastEthernet0/9	unassigned	YES	unset	down	down
FastEthernet0/10	unassigned	YES	unset	down	down
FastEthernet0/11	unassigned	YES	unset	down	down
FastEthernet0/12	unassigned	YES	unset	down	down
FastEthernet0/13	unassigned	YES	unset	down	down
FastEthernet0/14	unassigned	YES	unset	down	down
FastEthernet0/15	unassigned	YES	unset	down	down
FastEthernet0/16	unassigned	YES	unset	down	down
FastEthernet0/17	unassigned	YES	unset	down	down
FastEthernet0/18	unassigned	YES	unset	down	down
FastEthernet0/19	unassigned	YES	unset	down	down
FastEthernet0/20	unassigned	YES	unset	down	down
FastEthernet0/21	unassigned	YES	unset	down	down
FastEthernet0/22	unassigned	YES	unset	down	down
FastEthernet0/23	unassigned	YES	unset	down	down
FastEthernet0/24	10.0.0.2	YES	manual	up	up
GigabitEthernet0/1	unassigned	YES	unset	down	down
GigabitEthernet0/2	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan10	172.16.10.1	YES	manual	up	up
Vlan20	172.16.20.1	YES	manual	up	up
Vlan30	172.16.30.1	YES	manual	up	up

**Ping thử:**  
L3-SW#ping 10.0.0.1

Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:  
.!!!!  
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/12/51 ms

## Bước 17: Cấu hình định tuyến tĩnh

Router
RT(config)#ip route 172.16.10.0 255.255.255.0 10.0.0.2 RT(config)#ip route 172.16.20.0 255.255.255.0 10.0.0.2 RT(config)#ip route 172.16.30.0 255.255.255.0 10.0.0.2
<b>Kiểm tra:</b> RT#show ip route
Gateway of last resort is not set
10.0.0.0/30 is subnetted, 1 subnets
C 10.0.0.0 is directly connected, FastEthernet0/0
172.16.0.0/24 is subnetted, 3 subnets
S 172.16.10.0 [1/0] via 10.0.0.2
S 172.16.20.0 [1/0] via 10.0.0.2
S 172.16.30.0 [1/0] via 10.0.0.2
C 192.168.40.0/24 is directly connected, FastEthernet0/1.40
C 192.168.50.0/24 is directly connected, FastEthernet0/1.50

Multilayer Switch
L3-SW(config)#ip routing L3-SW(config)#ip route 192.168.40.0 255.255.255.0 10.0.0.1 L3-SW(config)#ip route 192.168.50.0 255.255.255.0 10.0.0.1
<b>Kiểm tra:</b>

```

L3-SW#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

    10.0.0.0/24 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, FastEthernet0/24
    172.16.0.0/24 is subnetted, 3 subnets
C       172.16.10.0 is directly connected, Vlan10
C       172.16.20.0 is directly connected, Vlan20
C       172.16.30.0 is directly connected, Vlan30
S       192.168.40.0/24 [1/0] via 10.0.0.1
S       192.168.50.0/24 [1/0] via 10.0.0.1

```

## Bước 18: Kiểm tra định tuyến

Các PC ping thành công với nhau

PC1
<p><b>PC1 ping PC4</b></p> <pre> C:\&gt;ping 192.168.40.1  Pinging 192.168.40.1 with 32 bytes of data:  Reply from 192.168.40.1: bytes=32 time&lt;1ms TTL=254 Reply from 192.168.40.1: bytes=32 time=1ms TTL=254 Reply from 192.168.40.1: bytes=32 time=11ms TTL=254 Reply from 192.168.40.1: bytes=32 time&lt;1ms TTL=254  Ping statistics for 192.168.40.1:     Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),     Approximate round trip times in milli-seconds:         Minimum = 0ms, Maximum = 11ms, Average = 3ms </pre>
<p><b>PC1 ping PC5</b></p> <pre> C:\&gt;ping 192.168.50.2  Pinging 192.168.50.2 with 32 bytes of data:  Request timed out. Reply from 192.168.50.2: bytes=32 time=10ms TTL=126 Reply from 192.168.50.2: bytes=32 time=10ms TTL=126 Reply from 192.168.50.2: bytes=32 time=10ms TTL=126  Ping statistics for 192.168.50.2:     Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),     Approximate round trip times in milli-seconds:         Minimum = 10ms, Maximum = 10ms, Average = 10ms </pre>

Thực hiện tương tự với PC2 và PC3.