

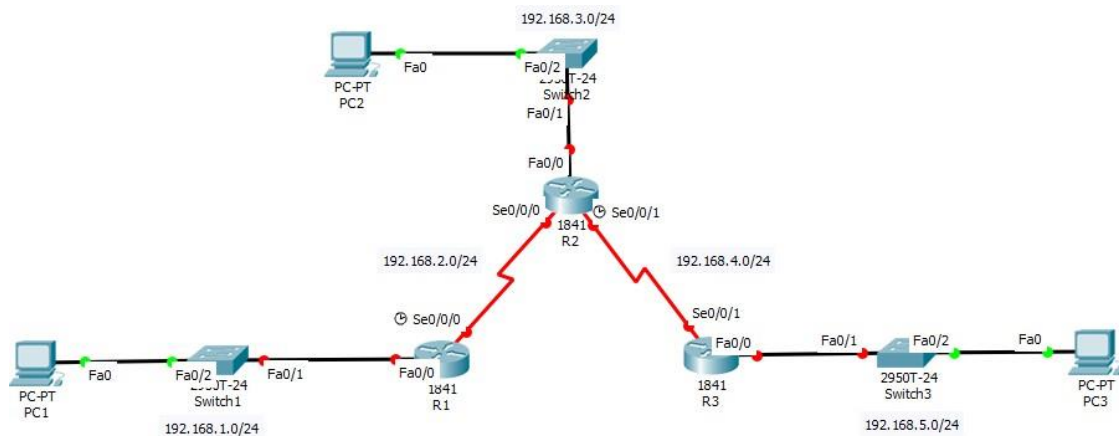
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BÀI LAB02_TKM

Lab 5.6.1: Basic RIP Configuration

Scenario A: Running RIPv1 on Classful Networks



- Cấu hình địa chỉ IP, Subnet Mask và Default Gateway cho các thiết bị
- Cấu hình Router R1

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no sh
Router(config-if)#ex
Router(config)#int s0/0/0
Router(config-if)#ip add 192.168.2.1 255.255.255.0
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#clock rate 56000
Router(config-if)#ex
Router(config)#hostname R1
R1(config)#ex
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#show ip int brief
Interface IP-Address OK? Method Status Protocol
FastEthernet0/0 192.168.1.1 YES manual up up
FastEthernet0/1 unassigned YES unset administratively down down
Serial0/1/0 192.168.2.1 YES manual down down
Serial0/1/1 unassigned YES unset administratively down down
Vlan1 unassigned YES unset administratively down down

```

R1

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Ethernet0/0/0

Serial0/1/0

Global Settings

Display Name

R1

Hostname

R1

NVRAM

Erase

Save

Startup Config

Load...

Export...

Running Config

Export...

Merge...

Equivalent IOS Commands

Press RETURN to get started!

Top

- Cấu hình Router R2

```
Router>en
```

```
Router#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#int f0/0
```

```
Router(config-if)#ip add 192.168.3.1 255.255.255.0
```

```
Router(config-if)#no sh
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
Router(config-if)#ex
```

```
Router(config)#int s0/0/0
```

```
Router(config-if)#ip add 192.168.2.2 255.255.255.0
```

```
Router(config-if)#no sh
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
Router(config-if)#ex
```

```
Router(config)#int
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up  
s0/0/1
```

```
Router(config-if)#ip add 192.168.4.2 255.255.255.0
```

```
Router(config-if)#clock rate 56000
```

```
Router(config-if)#no sh
```

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
```

```
Router(config-if)#ex
```

```
Router(config)#hostname R2
```

```
R2(config)#ex
```

```
R2#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
R2#show ip int brief
```

```
Interface IP-Address OK? Method Status Protocol
```

```
FastEthernet0/0 192.168.3.1 YES manual up up
```

```
FastEthernet0/1 unassigned YES unset administratively down down
```

```
Serial0/0/0 192.168.2.2 YES manual up up
```

```
Serial0/0/1 192.168.4.2 YES manual down down
```

Vlan1 unassigned YES unset administratively down down

 R2

Physical

Config

CLI

Attributes

IOS Con

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#ip add 192.168.3.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#ex
Router(config)#int s0/0/0
Router(config-if)#ip add 192.168.2.2 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#ex
Router(config)#int
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
s0/0/1
Router(config-if)#ip add 192.168.4.2 255.255.255.0
Router(config-if)#clock rate 56000
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Router(config-if)#ex
Router(config)#hostname R2
R2(config)#ex
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#show ip int brief
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0 192.168.3.1     YES manual up          up
FastEthernet0/1 unassigned      YES unset  administratively down down
Serial0/0/0     192.168.2.2     YES manual up          up
Serial0/0/1     192.168.4.2     YES manual up          up
```

Ctrl+F6 to exit CLI focus

- Cấu hình Router R3

```
Router>en
```

```
Router#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#int f0/0
```

```
Router(config-if)#ip add 192.168.5.1 255.255.255.0
```

```
Router(config-if)#no sh
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
Router(config-if)#ex
```

```
Router(config)#int s0/0/1
```

```
Router(config-if)#ip add 192.168.4.1 255.255.255.0
```

```
Router(config-if)#no sh
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
```

```
Router(config-if)#ex
```

```
Router(config)#hostna
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up  
me R3
```

```
R3(config)#ex
```

```
R3#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
R3#show ip int brief
```

```
Interface IP-Address OK? Method Status Protocol
```

```
FastEthernet0/0 192.168.5.1 YES manual up up
```

```
FastEthernet0/1 unassigned YES unset administratively down down
```

```
Serial0/0/0 unassigned YES unset administratively down down
```

```
Serial0/0/1 192.168.4.1 YES manual up up
```

```
Vlan1 unassigned YES unset administratively down down
```

- Cấu hình các PC

PC1

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::201:64FF:FE4E:756E

IPv6 Gateway

IPv6 DNS Server

PC2

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.3.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::230:A3FF:FE3E:7289

IPv6 Gateway

IPv6 DNS Server

PC3

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.5.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.5.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:BAFF:FE81:C900

IPv6 Gateway

IPv6 DNS Server

- Mở cmd của 1 PC bất kỳ Ping thử

PC3

```

Physical Config Desktop Programming Attributes
Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.5.10

Pinging 192.168.5.10 with 32 bytes of data:

Reply from 192.168.5.10: bytes=32 time<1ms TTL=128
Reply from 192.168.5.10: bytes=32 time=1ms TTL=128
Reply from 192.168.5.10: bytes=32 time=3ms TTL=128
Reply from 192.168.5.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.5.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

C:\>|

```

```

R1(config)#router rip
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
Reply from 192.168.3.1: Destination host unreachable.
Reply from 192.168.5.1: Destination host unreachable.
Reply from 192.168.5.1: Destination host unreachable.

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>|

```

Ta thử kiểm tra xem tại ết lập giao thức RIP cho các Router nói chuyện với nhau
Thiết lập cho R1

```

R2(config)#router rip
R2(config-router)#network 192.168.2.0
R2(config-router)#network 192.168.3.0
R2(config-router)#network 192.168.4.0
R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

```


Thiết lập cho R3

```
R3(config)#router rip
R3(config-router)#network 192.168.4.0
R3(config-router)#network 192.168.5.0
R3(config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

- Sau khi cấu hình xong thì ta thử ở PC3 ping đến PC2 hoặc PC1 thử

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=10ms TTL=126
Reply from 192.168.3.10: bytes=32 time=12ms TTL=126
Reply from 192.168.3.10: bytes=32 time=11ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 12ms, Average = 8ms
```

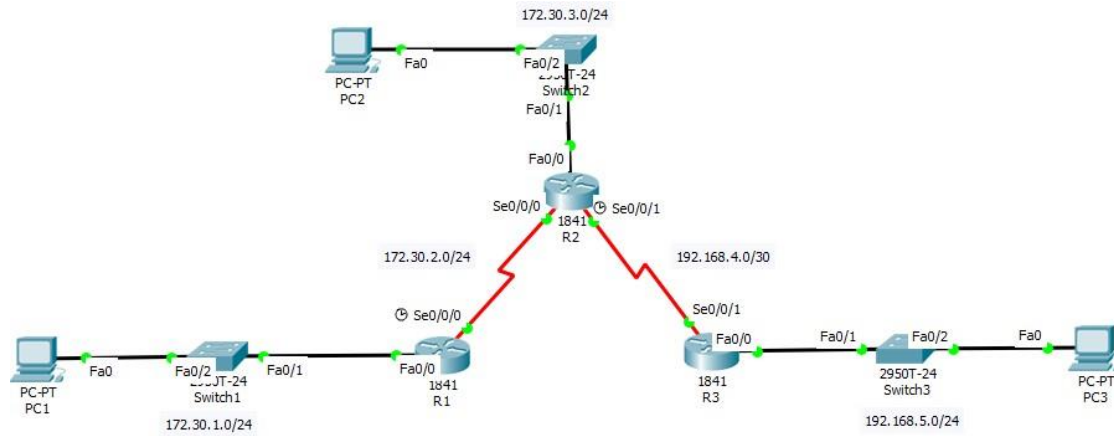
- Thử gửi 1 gói tin từ PC1 đến PC3

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	--	PC1	ICMP	
	0.001	PC1	Switch1	ICMP	
	0.002	Switch1	R1	ICMP	
	0.003	R1	R2	ICMP	
	0.004	R2	R3	ICMP	
	0.005	R3	Switch3	ICMP	
	0.006	Switch3	PC3	ICMP	
	0.007	PC3	Switch3	ICMP	
	0.008	Switch3	R3	ICMP	
	0.009	R3	R2	ICMP	
	0.010	R2	R1	ICMP	
	0.011	R1	Switch1	ICMP	
	0.012	Switch1	PC1	ICMP	

Ta thấy gói tin đã được gửi từ PC1->S1->R1->R2->R3->S3->PC3 và trả ngược lại phản hồi gói tin đã được gửi thành công từ PC3->S3->R3->R2->R1->S1->PC1

Scenario B: Running RIPv1 with Subnets and Between Classful Networks

Topology Diagram



- Cấu hình địa chỉ IP, Subnet Mask và Default Gateway cho các thiết bị
- Cấu hình Router R1

R1>en

R1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#int f0/0

R1(config-if)#ip add 172.30.1.1 255.255.255.0

R1(config-if)#no sh

R1(config-if)#ex

R1(config)#int s0/0/0

R1(config-if)#ip add 172.30.2.1 255.255.255.0

R1(config-if)#clock rate 56000

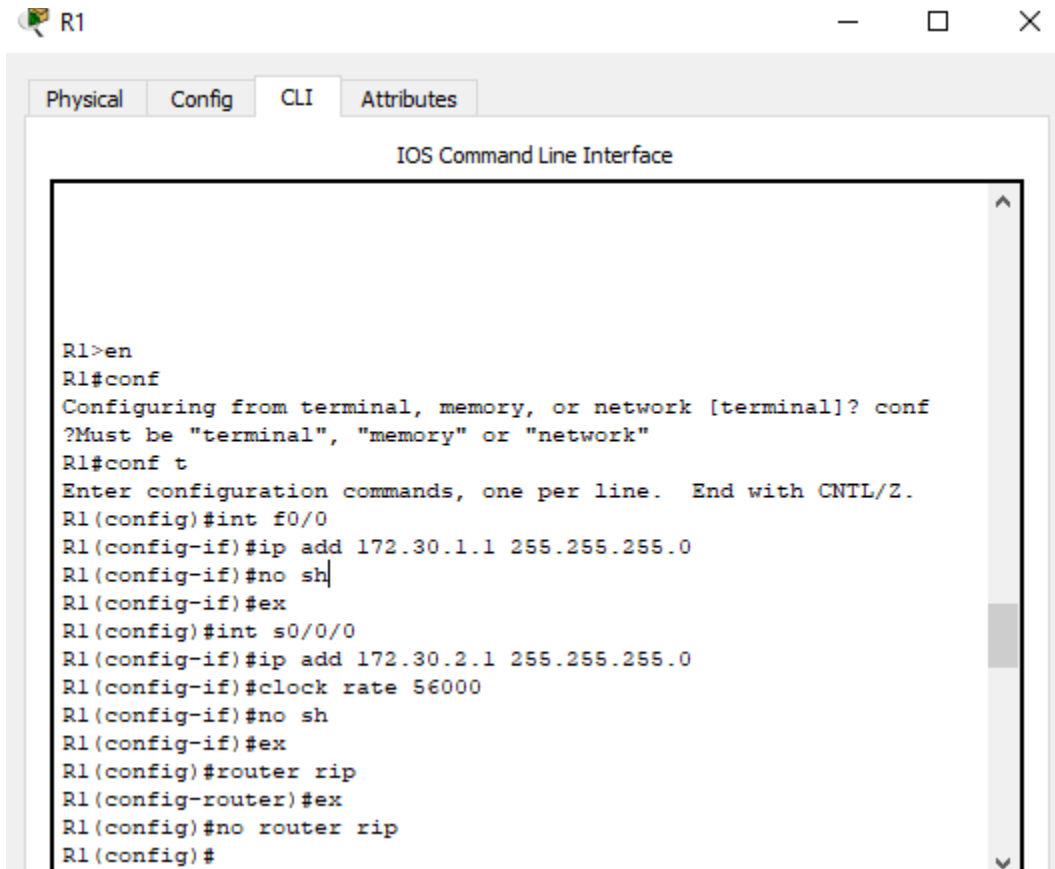
R1(config-if)#no sh

R1(config-if)#ex

R1(config)#router rip

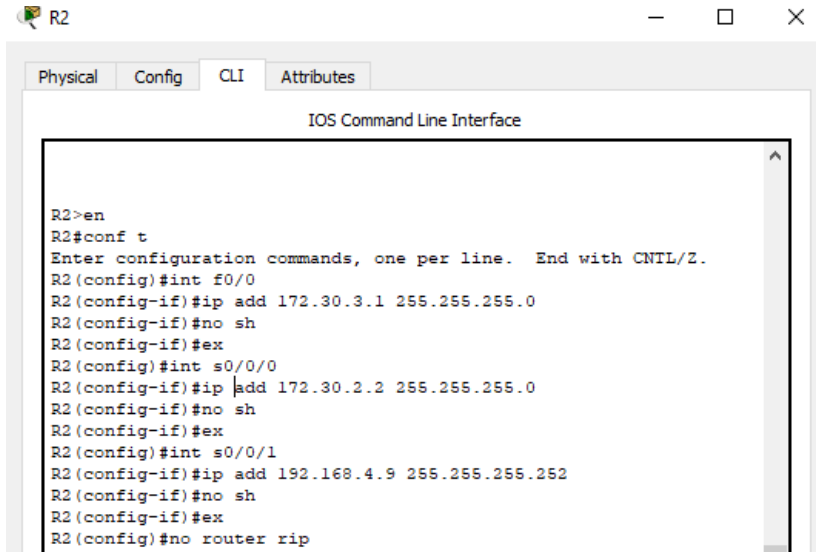
R1(config-router)#ex

R1(config)#no router rip



- Cấu hình Router R2

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#ip add 172.30.3.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/0
R2(config-if)#ip add 172.30.2.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/1
R2(config-if)#ip add 192.168.4.9 255.255.255.252
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#no router rip
```

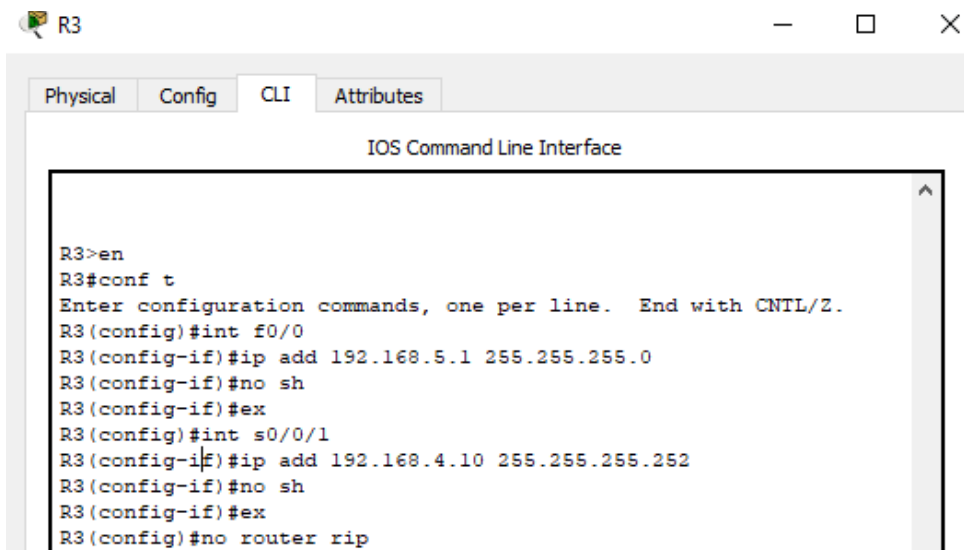


The screenshot shows a window titled 'R2' with tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The terminal output shows the following commands and responses:

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#ip add 172.30.3.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/0
R2(config-if)#ip add 172.30.2.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/1
R2(config-if)#ip add 192.168.4.9 255.255.255.252
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#no router rip
...
```

- Cấu hình Router R3

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add 192.168.5.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#int s0/0/1
R3(config-if)#ip add 192.168.4.10 255.255.255.252
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#no router rip
```



The screenshot shows a window titled 'R3' with tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The terminal output shows the following commands and responses:

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add 192.168.5.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#int s0/0/1
R3(config-if)#ip add 192.168.4.10 255.255.255.252
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#no router rip
```

- Cấu hình các PC

PC1

Physical Config Desktop Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 172.30.1.10

Subnet Mask 255.255.255.0

Default Gateway 172.30.1.1

DNS Server 0.0.0.0

PC2

Physical Config Desktop Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 172.30.3.10

Subnet Mask 255.255.255.0

Default Gateway 172.30.3.1

DNS Server 0.0.0.0

PC3

Physical Config Desktop Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.5.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.5.1

DNS Server 0.0.0.0

- Mở cmd của 1 PC bất kỳ Ping thử

PC3

```
Physical Config Desktop Programming Attributes
Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.5.10

Pinging 192.168.5.10 with 32 bytes of data:

Reply from 192.168.5.10: bytes=32 time<1ms TTL=128
Reply from 192.168.5.10: bytes=32 time=1ms TTL=128
Reply from 192.168.5.10: bytes=32 time=3ms TTL=128
Reply from 192.168.5.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.5.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

C:\>|
```

Ta thử kiểm tra xem tại PC 3 có ping được PC1 hoặc PC2 k?

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.5.1: Destination host unreachable.
Reply from 192.168.5.1: Destination host unreachable.
Reply from 192.168.5.1: Destination host unreachable.
Reply from 192.168.5.1: Destination host unreachable.

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>|
```

=>Do đó ta cần cấu hình RIP cho các Router để các PC có thể kết nối với nhau

- Ta thiết lập giao thức RIP cho các Router nói chuyện với nhau

Thiết lập cho R1

```
R1(config)#router rip
R1(config-router)#passive-interface f0/0
R1(config-router)#network 172.30.1.0
R1(config-router)#network 172.30.3.0
R1(config-router)#end
```

Thiết lập cho R2

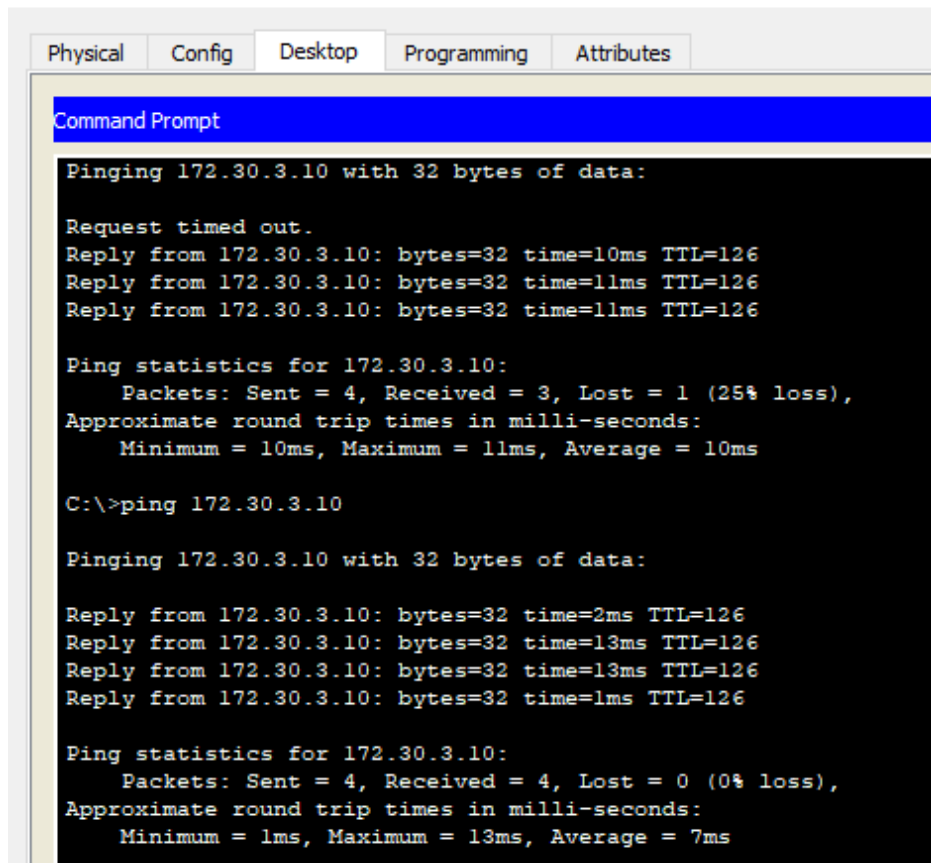
```
R2(config)#router rip
R2(config-router)#passive-interface f0/0
R2(config-router)#network 172.30.0.0
R2(config-router)#network 192.168.4.0
R2(config-router)#end
```

Thiết lập cho R3

```
R3(config)#router rip
R3(config-router)#passive-interface f0/0
R3(config-router)#network 192.168.4.0
R3(config-router)#network 192.168.5.0
R3(config-router)#end
```

- Sau khi cấu hình xong thì ta thử ở PC3 ping đến PC2 hoặc PC1 thử

 PC1



The screenshot shows a Windows desktop environment with a taskbar at the bottom. The 'Command Prompt' window is open, displaying the results of a ping command from PC1 to 172.30.3.10. The window has tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The Command Prompt shows two successful ping attempts. The first attempt shows a 25% loss (1 packet lost), while the second attempt shows 0% loss (all 4 packets received).

```
Physical Config Desktop Programming Attributes
Command Prompt

Pinging 172.30.3.10 with 32 bytes of data:

Request timed out.
Reply from 172.30.3.10: bytes=32 time=10ms TTL=126
Reply from 172.30.3.10: bytes=32 time=11ms TTL=126
Reply from 172.30.3.10: bytes=32 time=11ms TTL=126

Ping statistics for 172.30.3.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 11ms, Average = 10ms

C:\>ping 172.30.3.10

Pinging 172.30.3.10 with 32 bytes of data:

Reply from 172.30.3.10: bytes=32 time=2ms TTL=126
Reply from 172.30.3.10: bytes=32 time=13ms TTL=126
Reply from 172.30.3.10: bytes=32 time=13ms TTL=126
Reply from 172.30.3.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.30.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 13ms, Average = 7ms
```

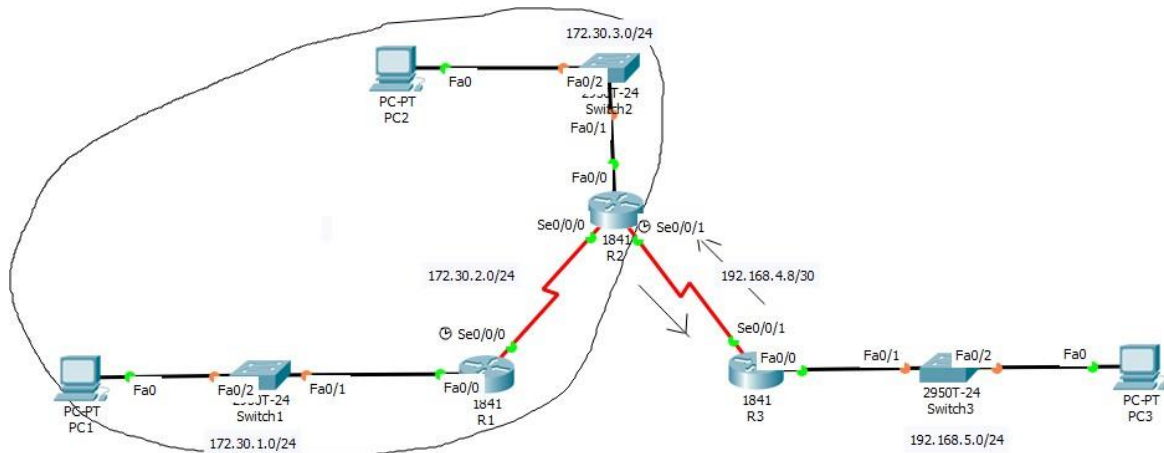

- Ta thử gửi 1 gói tin từ PC1 đến PC3

vis.	Time(sec)	Last Device	At Device	Type	Info
	0.001	--	PC1	ICMP	
	0.002	PC1	Switch1	ICMP	
	0.002	Switch1	R1	ICMP	
	0.003	Switch1	R1	ICMP	
	0.003	R1	R2	ICMP	
	0.004	R1	R2	ICMP	
	0.004	R2	R3	ICMP	
	0.005	R2	R3	ICMP	
	0.005	R3	Switch3	ICMP	
	0.006	R3	Switch3	ICMP	
	0.006	Switch3	PC3	ICMP	
	0.007	Switch3	PC3	ICMP	
	0.007	PC3	Switch3	ICMP	
	0.008	PC3	Switch3	ICMP	
	0.008	Switch3	R3	ICMP	
	0.009	Switch3	R3	ICMP	
	0.009	R3	R2	ICMP	
	0.010	R3	R2	ICMP	
	0.010	R2	R1	ICMP	
	0.011	R2	R1	ICMP	
	0.011	R1	Switch1	ICMP	
	0.012	R1	Switch1	ICMP	
	0.012	Switch1	PC1	ICMP	
	0.013	Switch1	PC1	ICMP	

Ta thấy gói tin đã được gửi từ PC1->S1->R1->R2->R3->S3->PC3 và trả ngược lại phản hồi gói tin đã được gửi thành công từ PC3->S3->R3->R2->R1->S1->PC1

Scenario C: Running RIPv1 on a Stub Network

Topology Diagram



- Cấu hình địa chỉ IP, Subnet Mask và Default Gateway cho các thiết bị
- Cấu hình Router R1

R1>en

R1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#int f0/0

R1(config-if)#ip add 172.30.1.1 255.255.255.0

R1(config-if)#no sh

R1(config-if)#ex

R1(config)#int s0/0/0

R1(config-if)#ip add 172.30.2.1 255.255.255.0

R1(config-if)#clock rate 56000

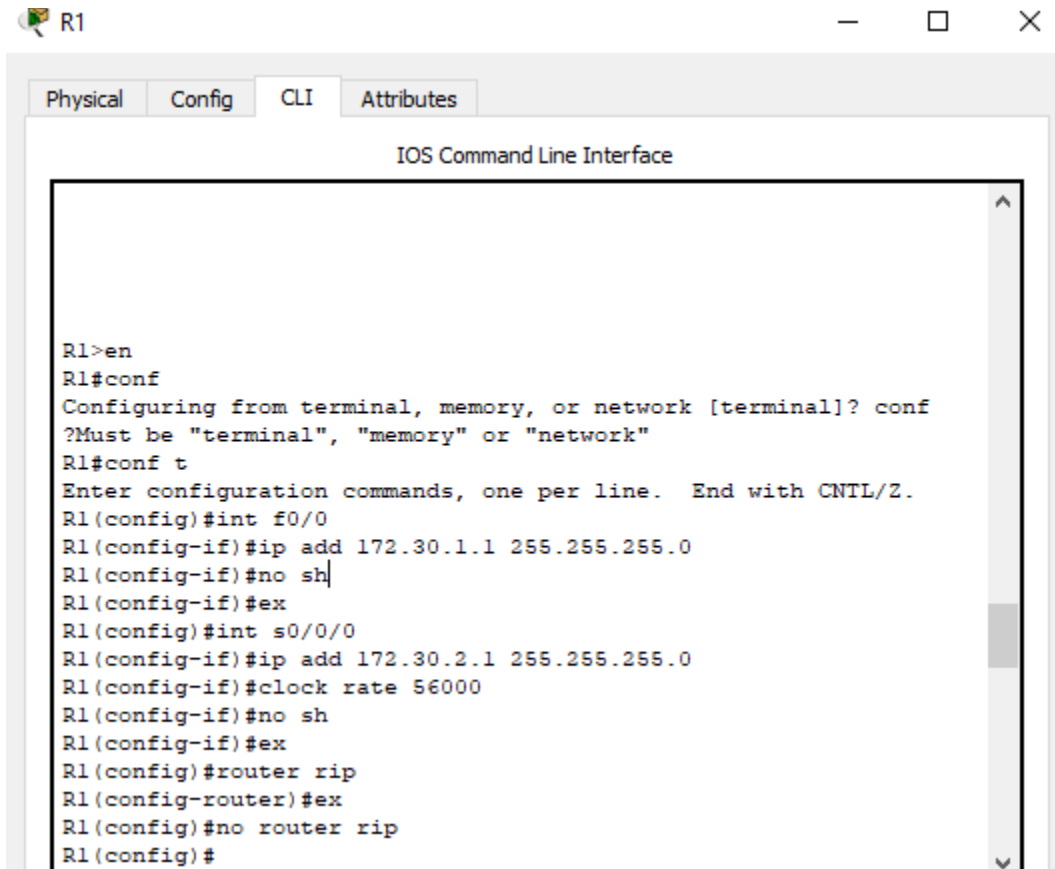
R1(config-if)#no sh

R1(config-if)#ex

R1(config)#router rip

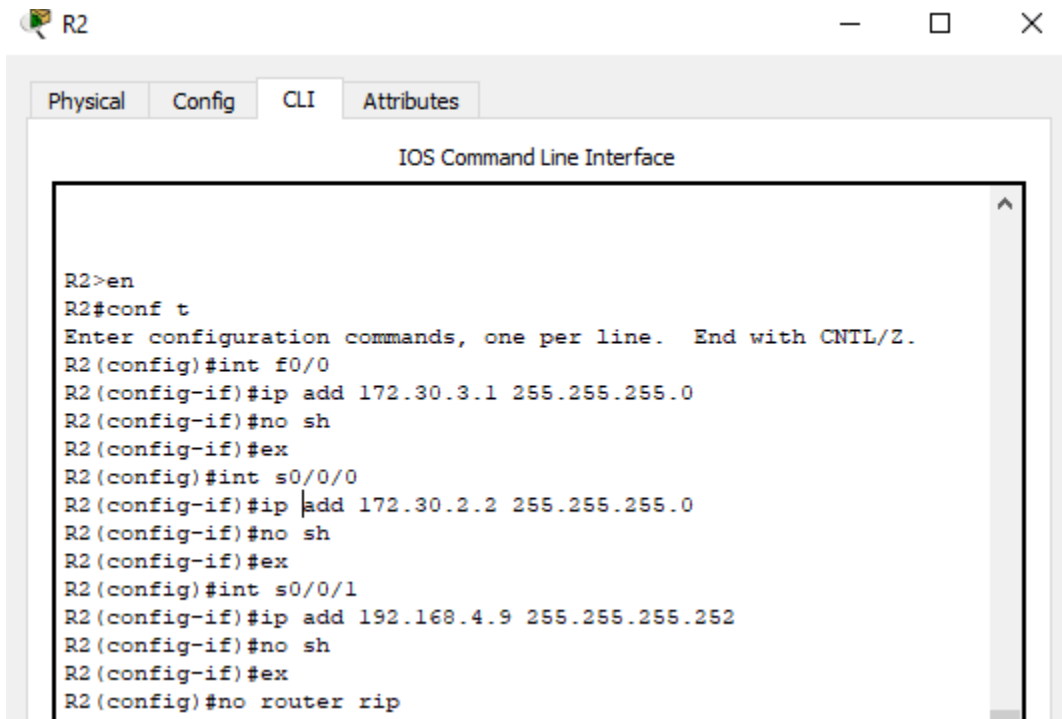
R1(config-router)#ex

R1(config)#no router rip



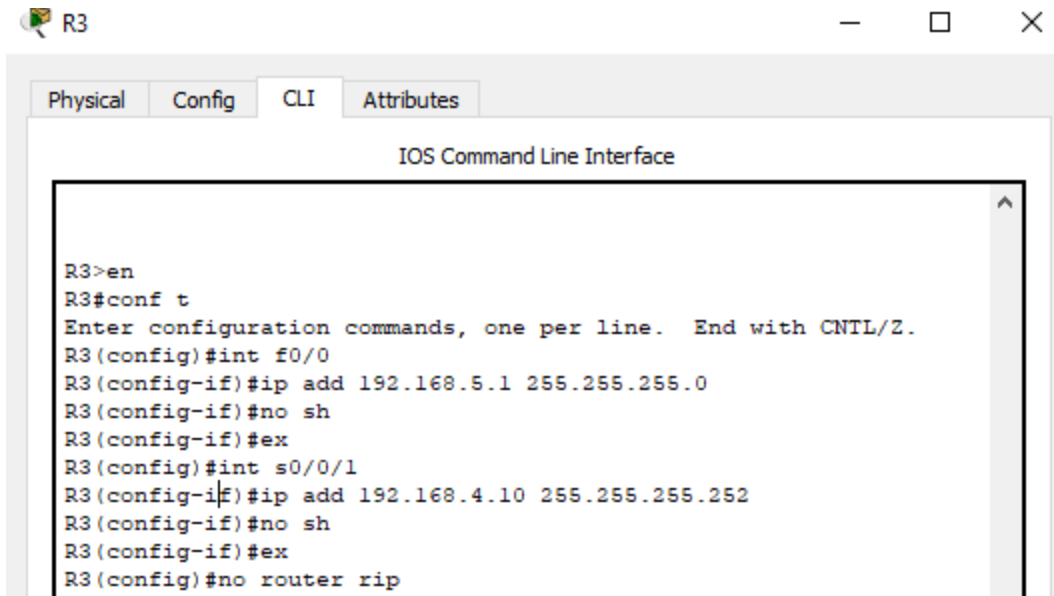
- Cấu hình Router R2

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#ip add 172.30.3.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/0
R2(config-if)#ip add 172.30.2.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/1
R2(config-if)#ip add 192.168.4.9 255.255.255.252
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#no router rip
```

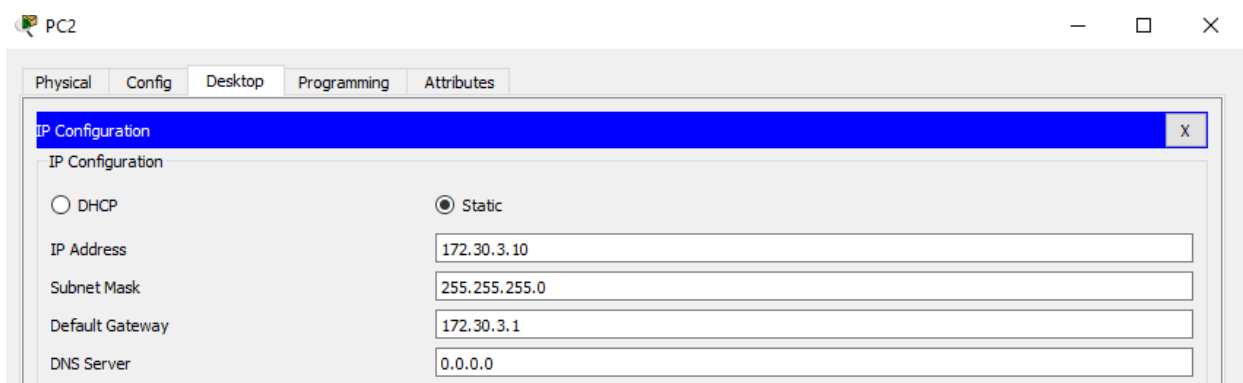
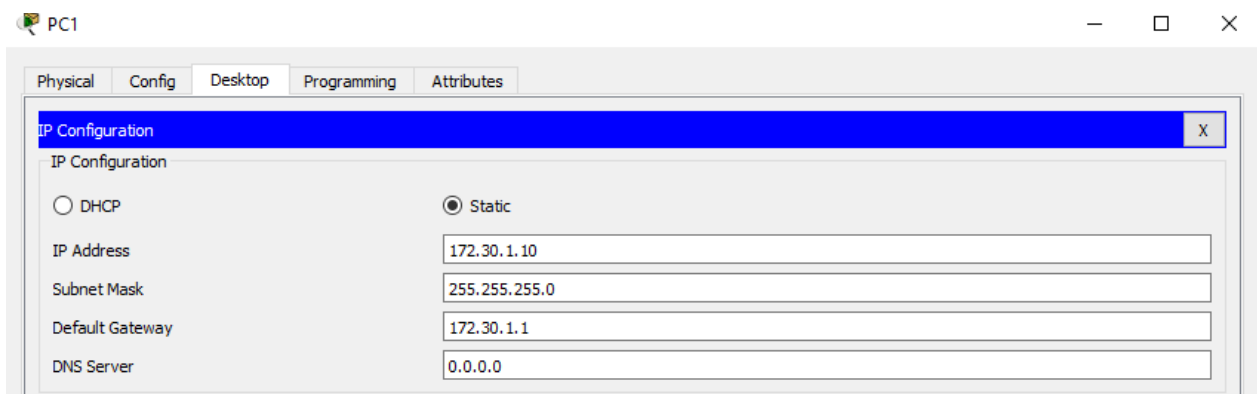


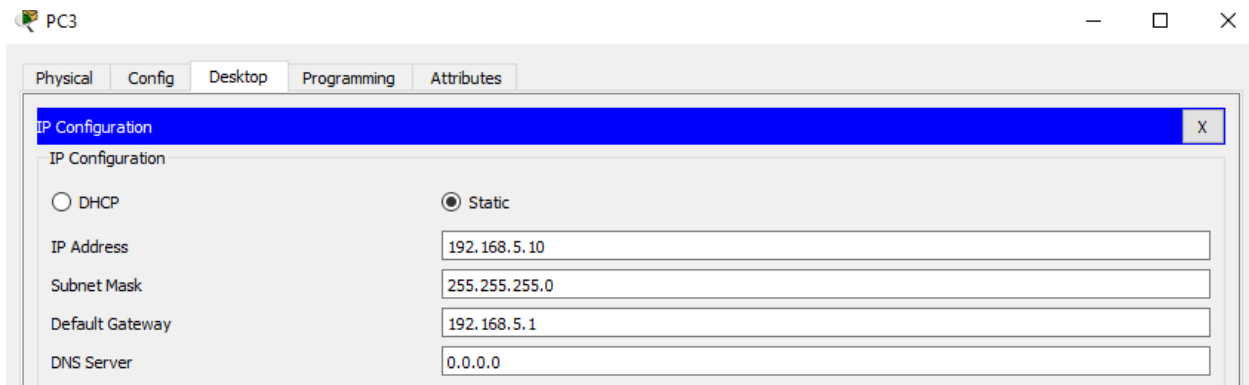
- Cấu hình Router R3

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add 192.168.5.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#int s0/0/1
R3(config-if)#ip add 192.168.4.10 255.255.255.252
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#no router rip
```

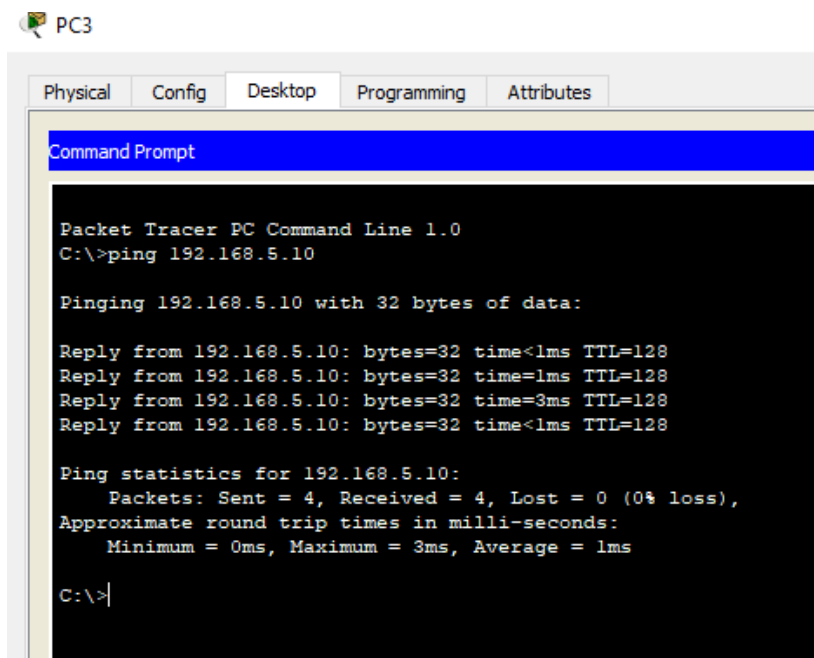


- Cấu hình các PC

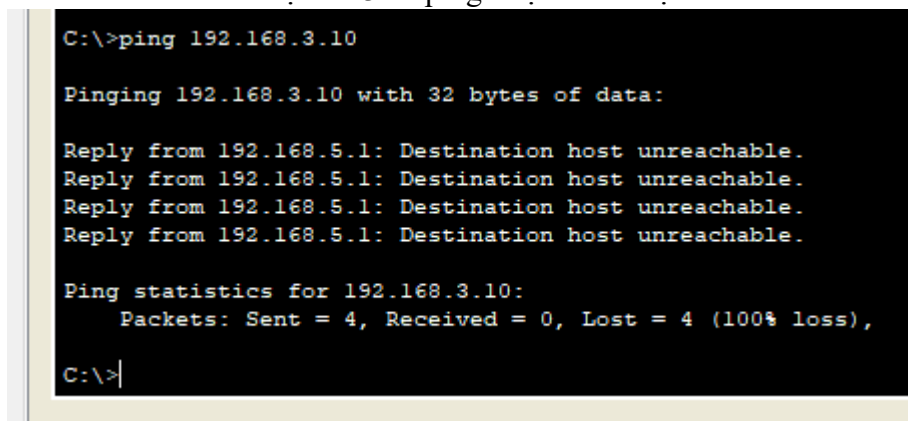




- Mở cmd của 1 PC bất kỳ Ping thử



Ta thử kiểm tra xem tại PC 3 có ping được PC1 hoặc PC2 k?



- Thiết lập giao thức RIP cho các Router

Thiết lập cho R2

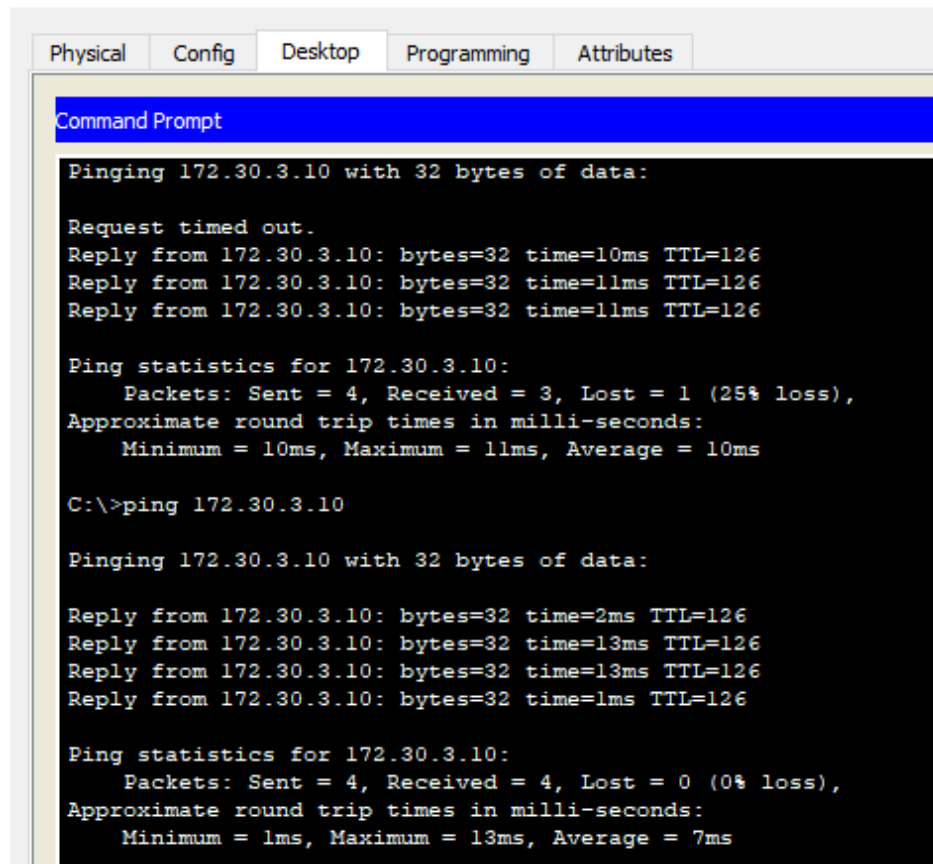
```
R2(config)#router rip
R2(config-router)#default-information originate
R2(config-router)#ex
R2(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
```

Thiết lập cho R3

```
R3(config)#ip route 172.30.0.0 255.255.255.0 s0/0/1
```

- Sau khi cấu hình xong thì ta thử ở PC3 ping đến PC2 hoặc PC1 thử

PC1



```
Physical Config Desktop Programming Attributes
Command Prompt

Pinging 172.30.3.10 with 32 bytes of data:

Request timed out.
Reply from 172.30.3.10: bytes=32 time=10ms TTL=126
Reply from 172.30.3.10: bytes=32 time=11ms TTL=126
Reply from 172.30.3.10: bytes=32 time=11ms TTL=126

Ping statistics for 172.30.3.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 11ms, Average = 10ms

C:\>ping 172.30.3.10

Pinging 172.30.3.10 with 32 bytes of data:

Reply from 172.30.3.10: bytes=32 time=2ms TTL=126
Reply from 172.30.3.10: bytes=32 time=13ms TTL=126
Reply from 172.30.3.10: bytes=32 time=13ms TTL=126
Reply from 172.30.3.10: bytes=32 time=1ms TTL=126

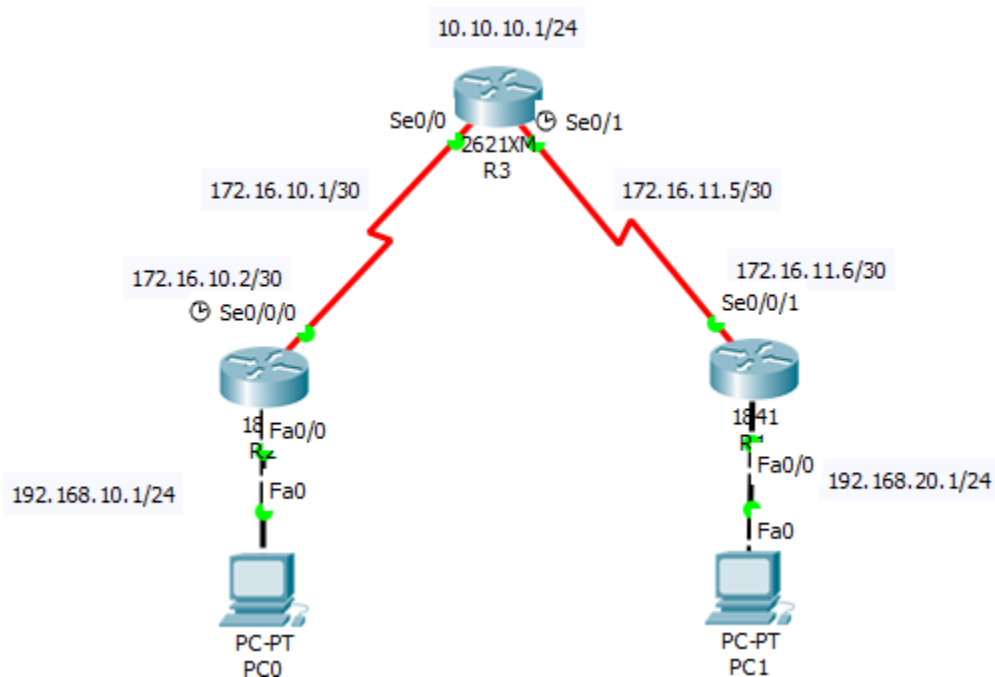
Ping statistics for 172.30.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 13ms, Average = 7ms
```

- Ta thử gửi 1 gói tin từ PC1 đến PC3

vis.	Time(sec)	Last Device	At Device	Type	Info
	0.001	--	PC1	ICMP	
	0.002	PC1	Switch1	ICMP	
	0.002	Switch1	R1	ICMP	
	0.003	Switch1	R1	ICMP	
	0.003	R1	R2	ICMP	
	0.004	R1	R2	ICMP	
	0.004	R2	R3	ICMP	
	0.005	R2	R3	ICMP	
	0.005	R3	Switch3	ICMP	
	0.006	R3	Switch3	ICMP	
	0.006	Switch3	PC3	ICMP	
	0.007	Switch3	PC3	ICMP	
	0.007	PC3	Switch3	ICMP	
	0.008	PC3	Switch3	ICMP	
	0.008	Switch3	R3	ICMP	
	0.009	Switch3	R3	ICMP	
	0.009	R3	R2	ICMP	
	0.010	R3	R2	ICMP	
	0.010	R2	R1	ICMP	
	0.011	R2	R1	ICMP	
	0.011	R1	Switch1	ICMP	
	0.012	R1	Switch1	ICMP	
	0.012	Switch1	PC1	ICMP	
	0.013	Switch1	PC1	ICMP	

Ta thấy gói tin đã được gửi từ PC1->S1->R1->R2->R3->S3->PC3 và trả ngược lại phản hồi gói tin đã được gửi thành công từ PC3->S3->R3->R2->R1->S1->PC1

Bài 2:



- Cấu hình Router R1

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int f0/0
R1(config-if)#ip add 192.168.20.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#ex
R1(config)#int s0/0/1
R1(config-if)#ip add 172.16.11.6 255.255.255.252
R1(config-if)#no sh
R1(config-if)#ex
```

- Cấu hình Router R2

```
R2(config)#int f0/0
```

```
R2(config-if)#ip add 192.168.10.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int s0/0/0
R2(config-if)#ip add 172.16.10.2 255.255.255.252
R2(config-if)#clock rate 56000
R2(config-if)#no sh
R2(config-if)#ex
```

- Cấu hình Router R3

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int s0/0
R3(config-if)#ip add 172.16.10.1 255.255.255.252
R3(config-if)#no sh
R3(config-if)#ex
R3(config)#int s0/1
R3(config-if)#ip add 172.16.11.5 255.255.255.252
R3(config-if)#clock rate 56000
R3(config-if)#no sh
R3(config-if)#ex
```

- Cấu hình cho Switch S1

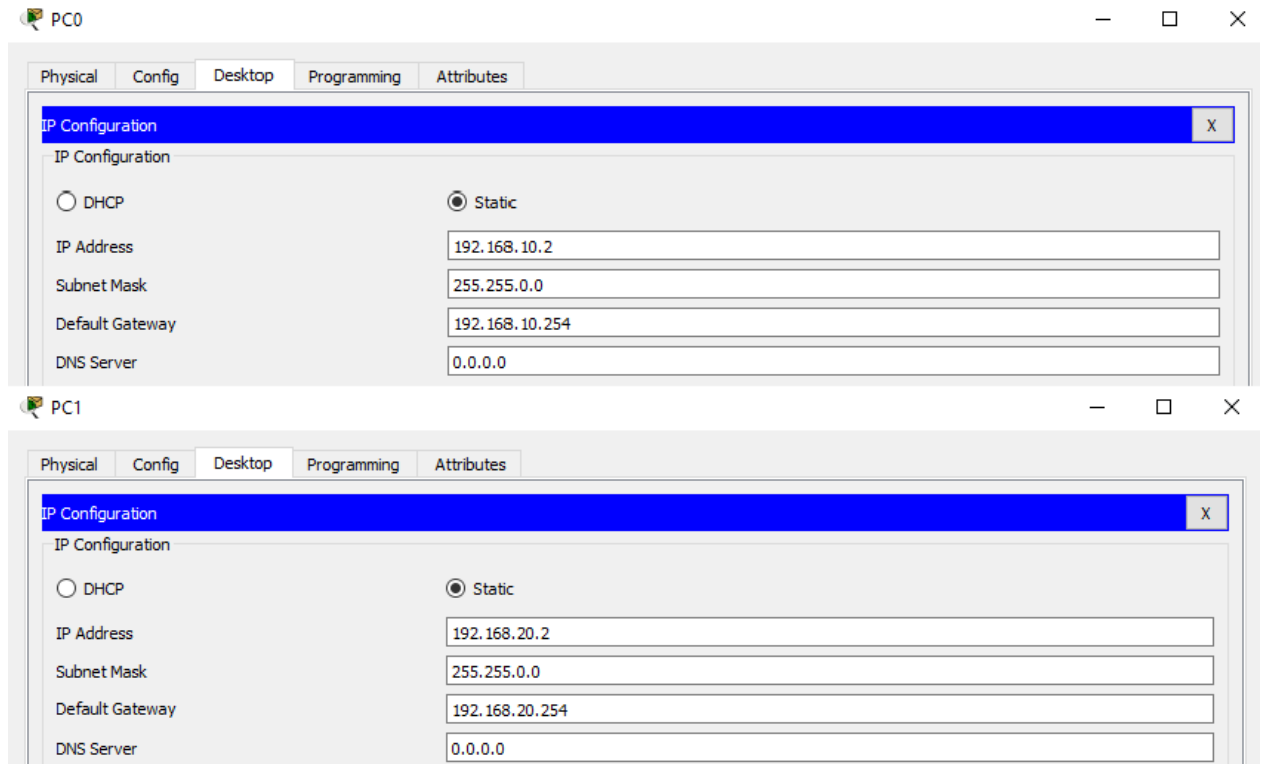
```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip add 192.168.1.11 255.255.255.0
Switch(config-if)#no shut

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

```
Switch(config-if)#exit  
Switch(config)#hostname S1  
S1(config)#exit
```

- Cấu hình cho các PC



- Ta thử từ PC0 ping đến PC1 xem được không?
Lúc này ta vẫn chưa ping được đến PC1
- Ta thiết lập giao thức RIP cho các Router nói chuyện với nhau

Thiết lập cho Router R1

```
R1(config)#router rip  
R1(config-router)#network 192.168.10.0  
R1(config-router)#network 172.16.10.0  
R1(config-router)#end  
R1#
```

Thiết lập cho Router R2

```
R2(config)#router rip  
R2(config-router)#network 172.16.10.0  
R2(config-router)#network 172.16.11.0  
R2(config-router)#end
```

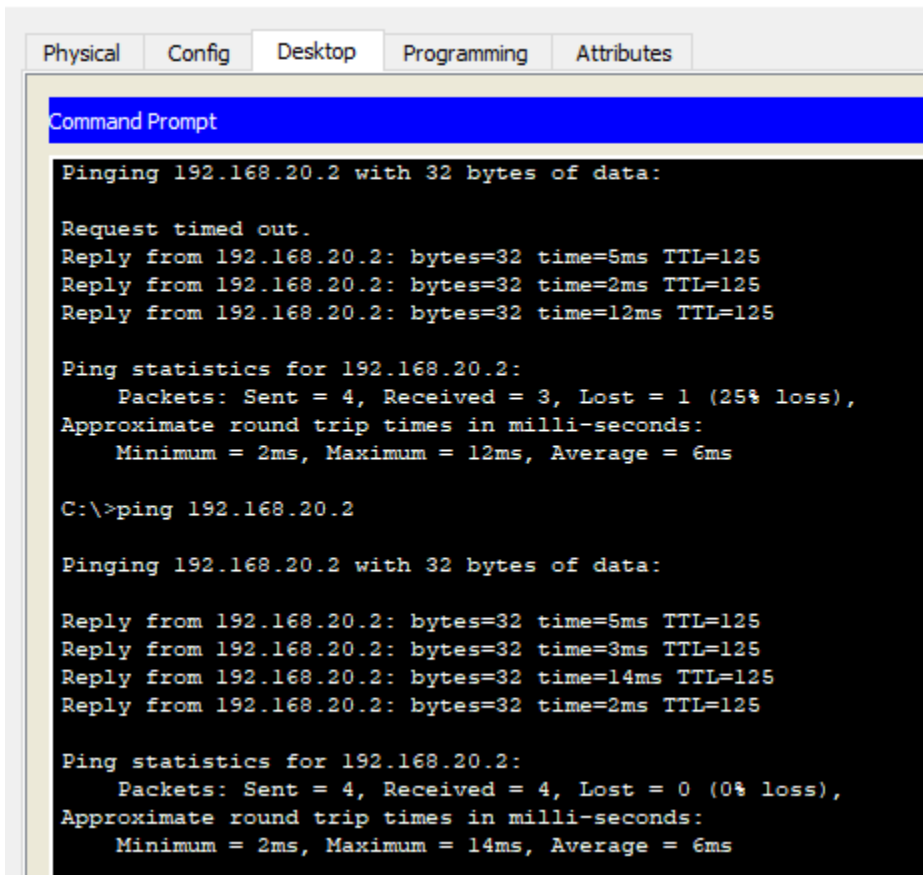
Thiết lập cho Router R3

```
R3(config)#router rip
R3(config-router)#network 172.16.11.0
R3(config-router)#network 192.168.20.0
R3(config-router)#end
```

- Ta thử từ PC0 ping đến PC1 xem được không?

Ta đã ping được đến máy khác

 PC0



The screenshot shows a PC0 desktop environment with a taskbar at the top containing icons for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The window has a blue title bar and a black background with white text. The text shows a series of ping commands and their results to the IP address 192.168.20.2. The first set of results shows a 25% loss (1 out of 4 packets received). The second set of results shows 0% loss (4 out of 4 packets received).

```
Physical Config Desktop Programming Attributes
Command Prompt

Pinging 192.168.20.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.2: bytes=32 time=5ms TTL=125
Reply from 192.168.20.2: bytes=32 time=2ms TTL=125
Reply from 192.168.20.2: bytes=32 time=12ms TTL=125


Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 12ms, Average = 6ms

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time=5ms TTL=125
Reply from 192.168.20.2: bytes=32 time=3ms TTL=125
Reply from 192.168.20.2: bytes=32 time=14ms TTL=125
Reply from 192.168.20.2: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 14ms, Average = 6ms
```

Event List					
Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	--	PC0	ICMP	
	0.001	PC0	R2	ICMP	
	0.002	R2	R3	ICMP	
	0.003	R3	R1	ICMP	
	0.004	R1	PC1	ICMP	
	0.005	PC1	R1	ICMP	
	0.006	R1	R3	ICMP	
	0.007	R3	R2	ICMP	
	0.008	R2	PC0	ICMP	

Và đây là đường đi của gói tin

Giải thích các câu lệnh trong CLI

- + Router>en: Để mở Router và cấu hình
- + Router#conf t: Mở terminal để cấu hình
- + Router(config)#int f0/0: Int là Interface, dùng để đi vào cổng fastethernet
- + Router(config-int)#ip add 10.1.1.1 255.255.255.252: Dùng để cấu hình địa chỉ ip và subnet mask của router
- + Router(config-int)#no shut: Có nghĩa là không tắt router đó đi và tiếp tục cấu hình
- + Router(config-int)#clock rate 56000: Dùng để cấu hình clock rate cho các DCE
- + Router(config-int)#exit: Dùng để thoát khỏi một cổng hay terminal (dạng giống như nút back của thư mục cây)
- + Router(config)#hostname ISP: Có nghĩa là đặt tên cho Router đó là ISP sau khi thực hiện lệnh đó thì sẽ thành ISP(config)#
- + Router#show ip int brief: Có nghĩa là show các địa chỉ ip của switch hay địa chỉ các cổng của router,...
- + Switch#int vlan 1: Dùng để cấu hình địa chỉ ip cho switch
- + Router(config)#router rip: Dùng để thiết lập giao thức RIP cho các router
- + Router(config-router)#network 172.30.3.0: Dùng để bật local nào có địa chỉ ip bắt đầu bằng 172.30.3.x