

《计算机网络》实验报告

____信息____学院 ____计算机科学与技术____专业____2020____级

实验时间____2022____年____11____月____14____日

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实验名称____静态路由实验____

实验成绩____

一、实验目的

- (1) 掌握路由器的基本配置：关闭域名解释、设置路由器接口 IP 地址。
- (2) 根据以上拓扑划分出的三个网段配置静态路由，使所有主机都能相互通信。
- (3) 配置默认路由。
- (4) 了解 ping 命令和 trace 命令的原理和使用方法

二、实验仪器设备及软件

- (1) Cisco Packet Tracer 8.2.0 模拟器
- (2) 4 台 PC
- (3) 2 台 2811 路由器

三、实验方案

使用 2811 路由器进行实验，PC 两两一组放到两个网段中，并为两个路由器配置接口 IP 地址及静态路由。最后查看路由表并使用 trace 测试路由的路线。

四、实验步骤

1. 路由器的基本配置

- (1) 配置两个路由器的接口 IP 地址并将其开启
- (2) 配置各 PC 的 IP 地址及默认网关

2. 配置静态路由

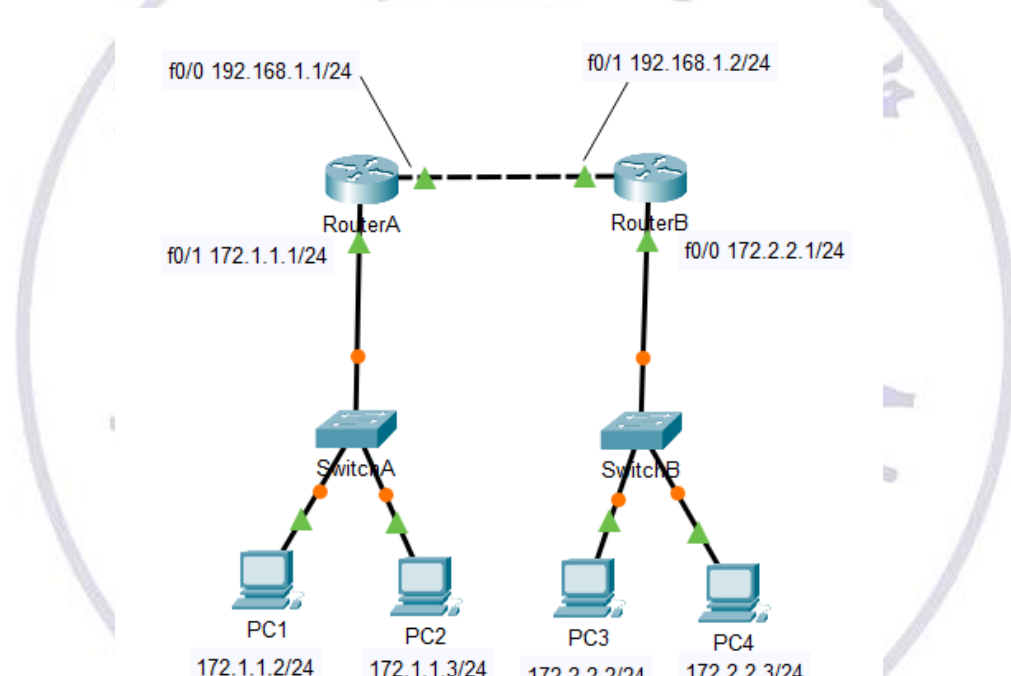
- (1) 给路由器 A 和路由器 B 分别配上路由表项，使能互相到达
- (2) 测试两个网段是否能够互相 ping 通
- (3) 在 PC1 上使用 tracert 命令测试到 PC3 的路由路径

3. 配置路由器的默认路由

- (1) 配置两个路由器的默认路由

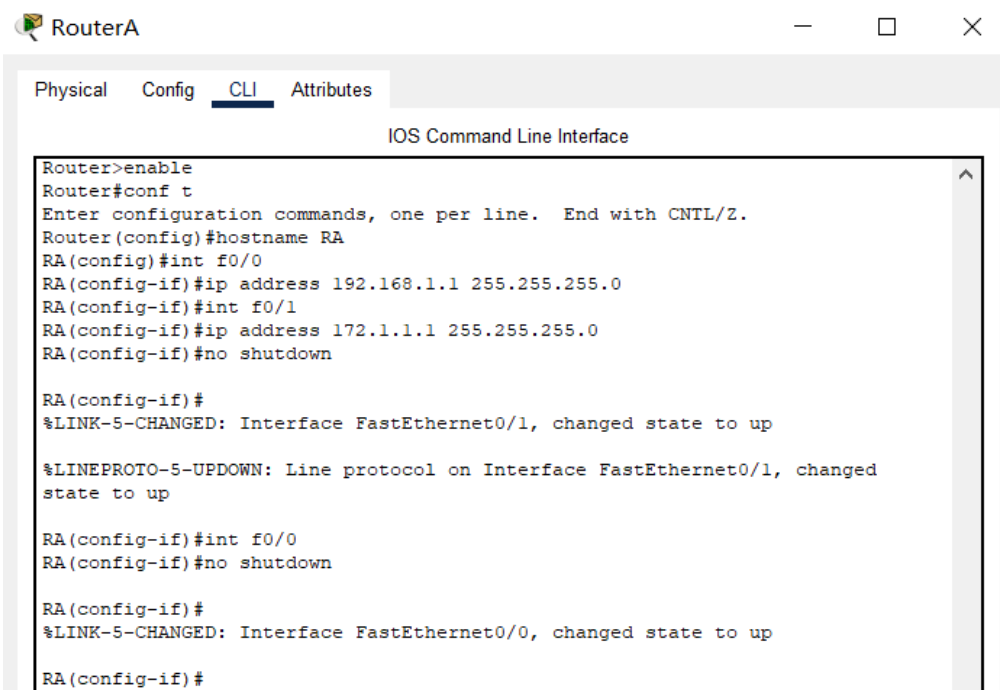
五、实验结果及分析

网络拓扑结构图如下



1. 路由器的基本配置

路由器 A 的基本配置



RouterA

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname RA
RA(config)#int f0/0
RA(config-if)#ip address 192.168.1.1 255.255.255.0
RA(config-if)#int f0/1
RA(config-if)#ip address 172.1.1.1 255.255.255.0
RA(config-if)#no shutdown

RA(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

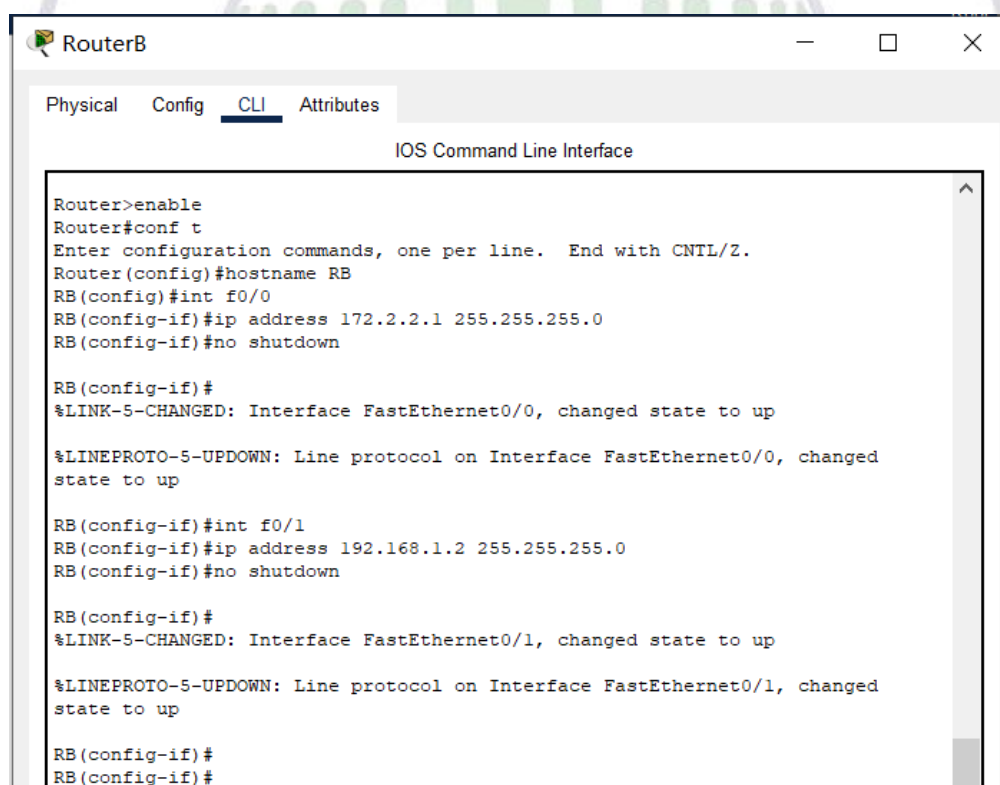
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed
state to up

RA(config-if)#int f0/0
RA(config-if)#no shutdown

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

RA(config-if)#
```

路由器 B 的基本配置



RouterB

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname RB
RB(config)#int f0/0
RB(config-if)#ip address 172.2.2.1 255.255.255.0
RB(config-if)#no shutdown

RB(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

RB(config-if)#int f0/1
RB(config-if)#ip address 192.168.1.2 255.255.255.0
RB(config-if)#no shutdown

RB(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed
state to up

RB(config-if)#
RB(config-if)#
```

各台 PC 的 IP 及网关配置

PC1

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0090.21B7.35E4

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 172.1.1.2

Subnet Mask 255.255.255.0

PC1

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name PC1

Interfaces FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Default Gateway 172.1.1.1

DNS Server

PC2

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.6491.6E5C

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 172.1.1.3

Subnet Mask 255.255.255.0

PC2

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name PC2

Interfaces FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Default Gateway 172.1.1.1

DNS Server

PC3

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.63D5.707D

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 172.2.2.2

Subnet Mask 255.255.255.0

IPv6 Configuration

PC3

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name PC3

Interfaces FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Default Gateway 172.2.2.1

DNS Server

PC4

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00E0.B02A.517E

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 172.2.2.3

Subnet Mask 255.255.255.0

IPv6 Configuration

PC4

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name PC4

Interfaces FastEthernet0

Gateway/DNS IPv4

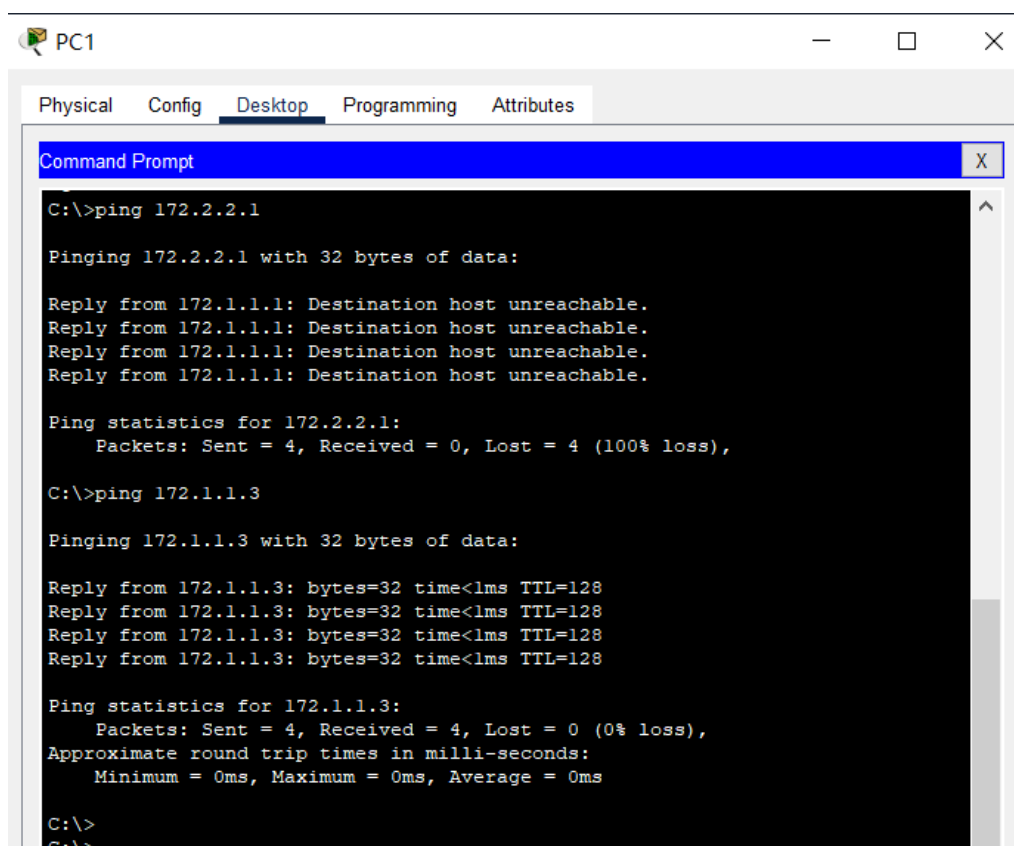
☐ DHCP

☒ Static

Default Gateway 172.2.2.1

DNS Server

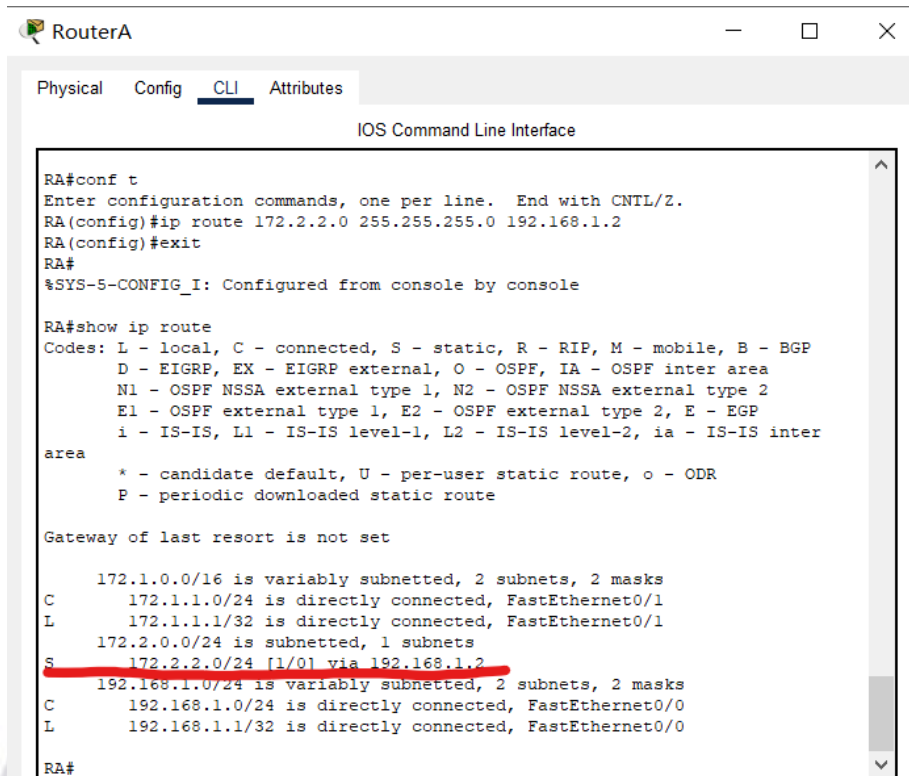
分别 ping 路由器 B 的 f0/0 接口与 PC2，结果如下图：



可以发现，PC1 ping 路由器 B 的 f0/0 接口（即 172.2.2.0/24 网段），显示“Destination host unreachable”，说明本网络（172.2.2.0/24 网段）根本没有到目标地址的路由路径。PC1 ping PC2（172.1.1.3）可以成功 ping 通，这是数据是通过交换机 A 直接转发给 PC2 的。

2. 配置静态路由

路由器 A 的静态路由配置及路由表，红色部分为手动配置的静态路由

A screenshot of the RouterA CLI interface. The window title is 'RouterA'. It has tabs for 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. The main area is titled 'IOS Command Line Interface'. The command history shows: 'RA#conf t', 'Enter configuration commands, one per line. End with CNTL/Z.', 'RA(config)#ip route 172.2.2.0 255.255.255.0 192.168.1.2', 'RA(config)#exit', 'RA#'. The output of 'RA#show ip route' is displayed, showing various route codes and a list of routes. The route 'S 172.2.2.0/24 [1/0] via 192.168.1.2' is highlighted in red. The output also shows 'Gateway of last resort is not set' and a list of subnets for 172.1.0.0/16, 172.1.1.0/24, 172.2.0.0/24, and 192.168.1.0/24.

```
RouterA
Physical Config CLI Attributes
IOS Command Line Interface

RA#conf t
Enter configuration commands, one per line. End with CNTL/Z.
RA(config)#ip route 172.2.2.0 255.255.255.0 192.168.1.2
RA(config)#exit
RA#
%SYS-5-CONFIG_I: Configured from console by console

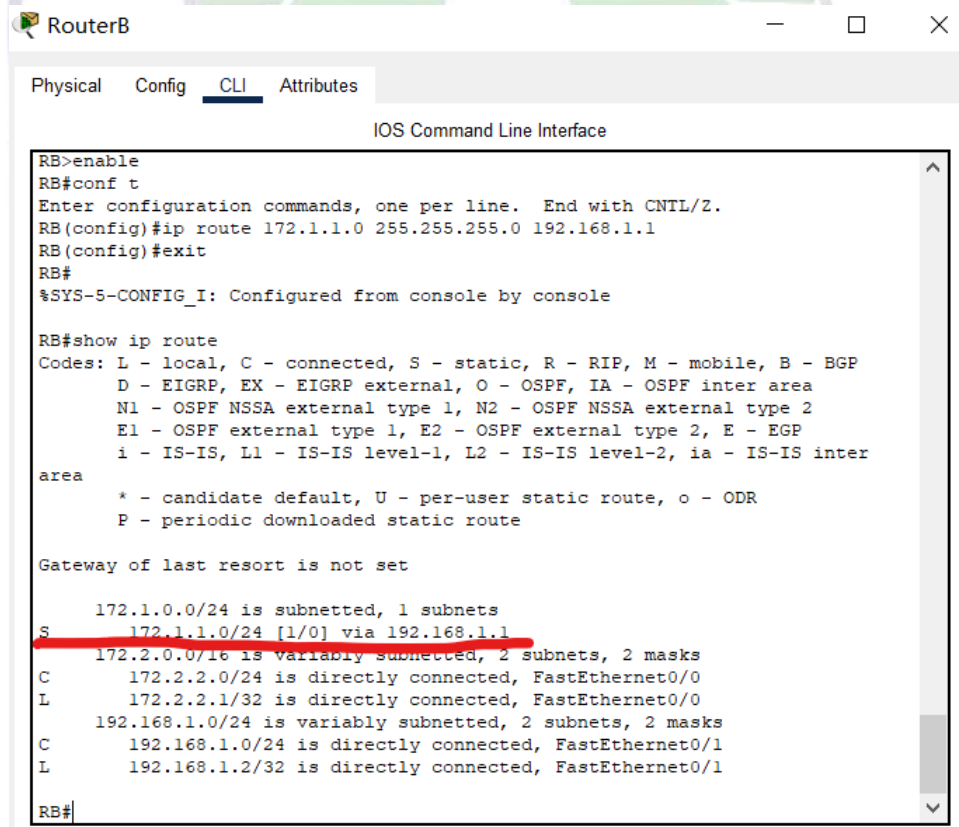
RA#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       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

      172.1.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.1.1.0/24 is directly connected, FastEthernet0/1
L       172.1.1.1/32 is directly connected, FastEthernet0/1
      172.2.0.0/24 is subnetted, 1 subnets
S       172.2.2.0/24 [1/0] via 192.168.1.2
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/0
L       192.168.1.1/32 is directly connected, FastEthernet0/0

RA#
```

路由器 B 的静态路由配置及路由表，红色部分为手动配置的静态路由

A screenshot of the RouterB CLI interface. The window title is 'RouterB'. It has tabs for 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. The main area is titled 'IOS Command Line Interface'. The command history shows: 'RB>enable', 'RB#conf t', 'Enter configuration commands, one per line. End with CNTL/Z.', 'RB(config)#ip route 172.1.1.0 255.255.255.0 192.168.1.1', 'RB(config)#exit', 'RB#'. The output of 'RB#show ip route' is displayed, showing various route codes and a list of routes. The route 'S 172.1.1.0/24 [1/0] via 192.168.1.1' is highlighted in red. The output also shows 'Gateway of last resort is not set' and a list of subnets for 172.1.0.0/24, 172.2.0.0/16, 172.2.2.0/24, and 192.168.1.0/24.

```
RouterB
Physical Config CLI Attributes
IOS Command Line Interface

RB>enable
RB#conf t
Enter configuration commands, one per line. End with CNTL/Z.
RB(config)#ip route 172.1.1.0 255.255.255.0 192.168.1.1
RB(config)#exit
RB#
%SYS-5-CONFIG_I: Configured from console by console

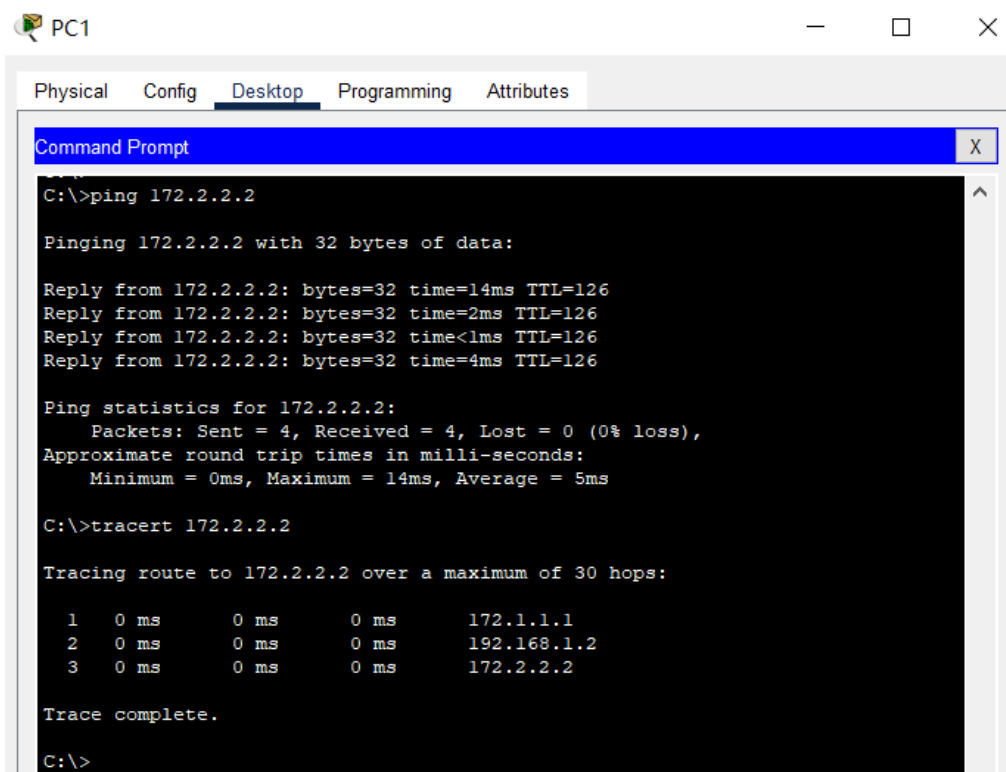
RB#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       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

      172.1.0.0/24 is subnetted, 1 subnets
S       172.1.1.0/24 [1/0] via 192.168.1.1
      172.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.2.2.0/24 is directly connected, FastEthernet0/0
L       172.2.2.1/32 is directly connected, FastEthernet0/0
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/1
L       192.168.1.2/32 is directly connected, FastEthernet0/1

RB#
```

PC1 可以 ping 通 PC3，两个网段是连通的，路由跟踪的结果如下图



The screenshot shows a PC1 desktop environment with a window titled 'PC1'. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of 'ping 172.2.2.2' and 'tracert 172.2.2.2' commands. The ping results show four successful replies with varying times and TTL values. The traceroute shows a path of three hops: 172.1.1.1, 192.168.1.2, and 172.2.2.2.

```
C:\>ping 172.2.2.2

Pinging 172.2.2.2 with 32 bytes of data:

Reply from 172.2.2.2: bytes=32 time=14ms TTL=126
Reply from 172.2.2.2: bytes=32 time=2ms TTL=126
Reply from 172.2.2.2: bytes=32 time<1ms TTL=126
Reply from 172.2.2.2: bytes=32 time=4ms TTL=126

Ping statistics for 172.2.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 14ms, Average = 5ms

C:\>tracert 172.2.2.2

Tracing route to 172.2.2.2 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms   172.1.1.1
  1  0 ms    0 ms    0 ms   192.168.1.2
  2  0 ms    0 ms    0 ms   172.2.2.2

Trace complete.

C:\>
```

可以发现，路由跟踪跟踪的是每个下一跳的 IP 地址，对于 PC1 来说，下一跳为路由器 A 的 f0/1 接口；对于路由器 A 来说，下一跳为路由器 B 的 f0/1 接口；对于路由器 B 来说，下一跳为 PC3。

3. 配置路由器的默认路由

将路由器 A 的默认路由设为路由器 B 的 f0/1 接口（红色线标注处）

RouterA

Physical Config CLI Attributes

IOS Command Line Interface

```
Enter configuration commands, one per line. End with CNTL/Z.
RA(config)#ip rout
RA(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.2
RA(config)#exit
RA#
%SYS-5-CONFIG_I: Configured from console by console

RA#show ip route
Codes: L - local, C - connected, S - static, 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 192.168.1.2 to network 0.0.0.0

    172.1.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.1.1.0/24 is directly connected, FastEthernet0/1
L       172.1.1.1/32 is directly connected, FastEthernet0/1
L       172.2.0.0/24 is subnetted, 1 subnets
S       172.2.2.0/24 [1/0] via 192.168.1.2
C       192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/0
L       192.168.1.1/32 is directly connected, FastEthernet0/0
S*    0.0.0.0/0 [1/0] via 192.168.1.2
```

将路由器 B 的默认路由设为路由器 A 的 f0/0 接口（红色线标注处）

RouterB

Physical Config CLI Attributes

IOS Command Line Interface

```
RB#conf t
Enter configuration commands, one per line. End with CNTL/Z.
RB(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.1
RB(config)#exit
RB#
%SYS-5-CONFIG_I: Configured from console by console

RB#show ip route
Codes: L - local, C - connected, S - static, 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 192.168.1.1 to network 0.0.0.0

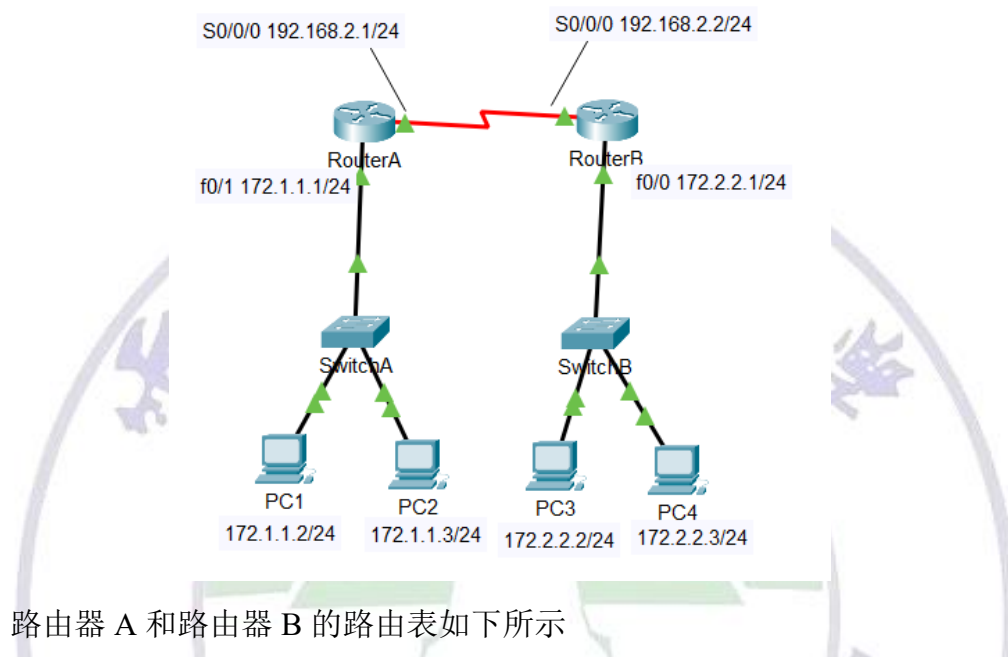
    172.1.0.0/24 is subnetted, 1 subnets
S       172.1.1.0/24 [1/0] via 192.168.1.1
L       172.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.2.2.0/24 is directly connected, FastEthernet0/0
L       172.2.2.1/32 is directly connected, FastEthernet0/0
C       192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/1
L       192.168.1.2/32 is directly connected, FastEthernet0/1
S*    0.0.0.0/0 [1/0] via 192.168.1.1
RB#
```

六、实验总结及体会

思考题

(1) 如果实验拓扑图如图 11-8 所示, 应该如何配置才能使得所有 PC 机相互通信?

如下图标注中所示配置接口的 IP



路由器 A 和路由器 B 的路由表如下所示

```
RA>enable
RA#show ip route
Codes: L - local, C - connected, S - static, 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

    172.1.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.1.1.0/24 is directly connected, FastEthernet0/1
L       172.1.1.1/32 is directly connected, FastEthernet0/1
    172.2.0.0/24 is subnetted, 1 subnets
S       172.2.2.0/24 [1/0] via 192.168.2.2
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.1/32 is directly connected, Serial0/0/0
RA#
```

```
RB>enable
RB#show ip route
Codes: L - local, C - connected, S - static, 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

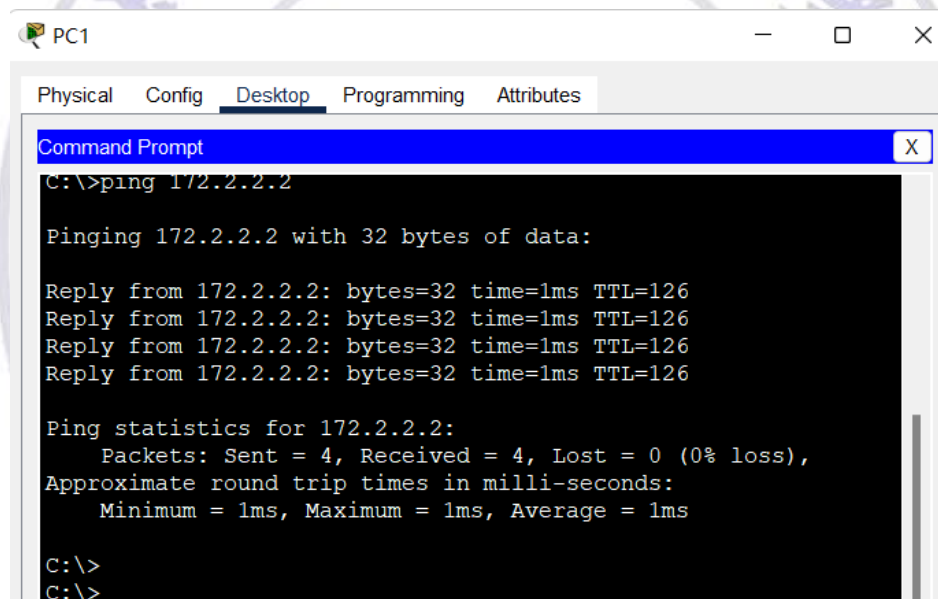
Gateway of last resort is not set

    172.1.0.0/24 is subnetted, 1 subnets
S       172.1.1.0/24 [1/0] via 192.168.2.1
    172.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.2.2.0/24 is directly connected, FastEthernet0/0
L       172.2.2.1/32 is directly connected, FastEthernet0/0
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.2/32 is directly connected, Serial0/0/0

RB#
```

其中,PC1、PC2 的网关设置为 172.1.1.1;PC3、PC4 的网关设置为 172.2.2.1。

PC1 ping PC3 与 PC4 ping PC1 的结果如下图所示



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 172.2.2.2

Pinging 172.2.2.2 with 32 bytes of data:

Reply from 172.2.2.2: bytes=32 time=1ms TTL=126
Reply from 172.2.2.2: bytes=32 time=1ms TTL=126
Reply from 172.2.2.2: bytes=32 time=1ms TTL=126
Reply from 172.2.2.2: bytes=32 time=1ms TTL=126

Ping statistics for 172.2.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>
C:\>
```

```
PC4
Physical Config Desktop Programming Attributes
Command Prompt X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.1.1.2

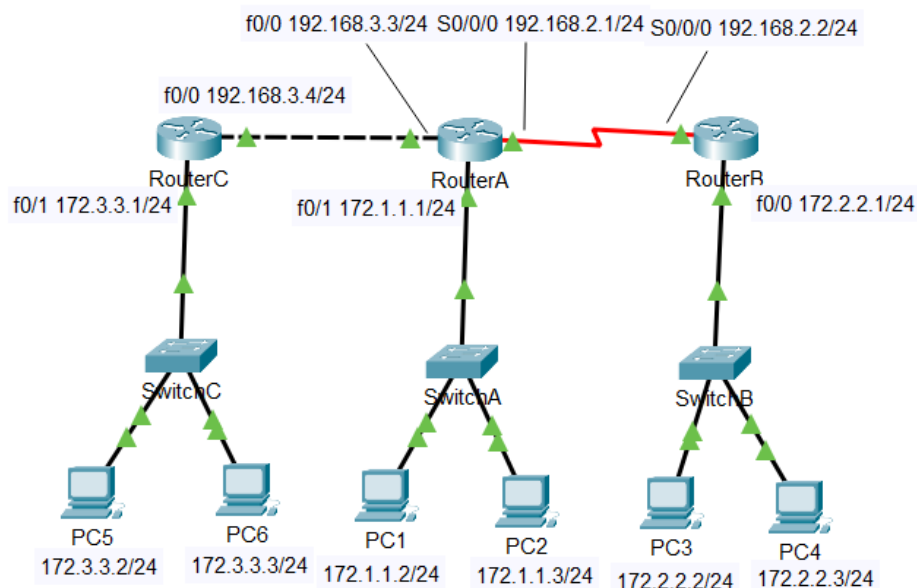
Pinging 172.1.1.2 with 32 bytes of data:

Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=9ms TTL=126

Ping statistics for 172.1.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 9ms, Average = 3ms
C:\>
```

(2) 如果是由三个路由器组成的拓扑图（如图 11-9 所示），应该如何配置才能让所有的 PC 机相互通信？

如下图标注中所示配置各接口的 IP 地址



路由器 A、路由器 B 和路由器 C 的路由表如下所示

IOS Command Line Interface

```
RA>enable
RA#show ip route
Codes: L - local, C - connected, S - static, 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

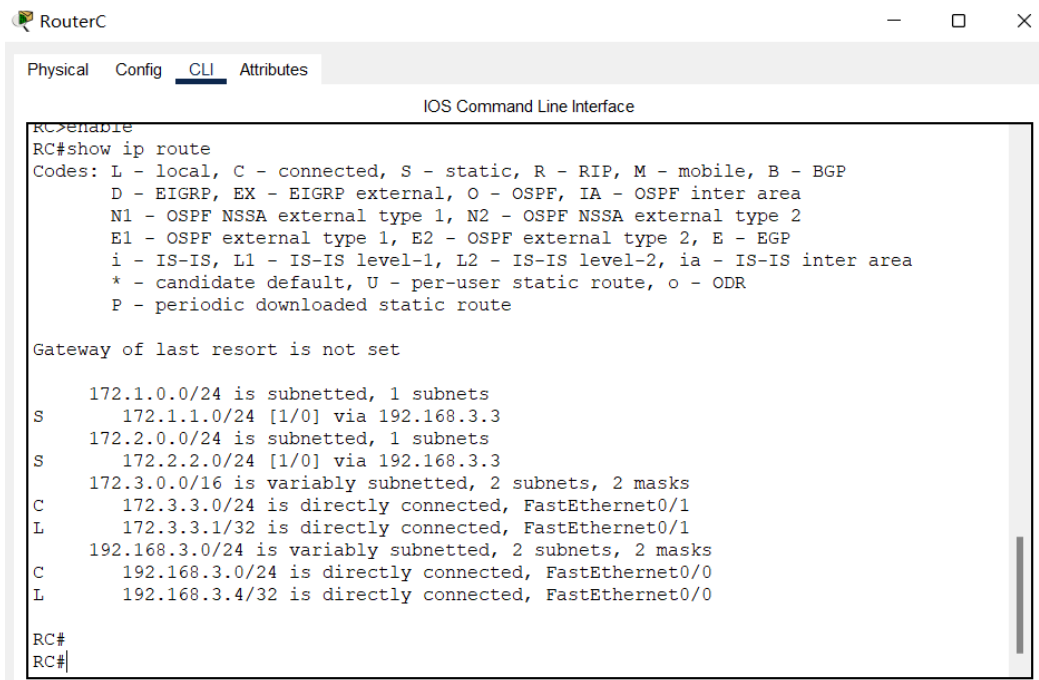
    172.1.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.1.1.0/24 is directly connected, FastEthernet0/1
L       172.1.1.1/32 is directly connected, FastEthernet0/1
    172.2.0.0/24 is subnetted, 1 subnets
S       172.2.2.0/24 [1/0] via 192.168.2.2
    172.3.0.0/24 is subnetted, 1 subnets
S       172.3.3.0/24 [1/0] via 192.168.3.4
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.1/32 is directly connected, Serial0/0/0
    192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, FastEthernet0/0
--More--
```

IOS Command Line Interface

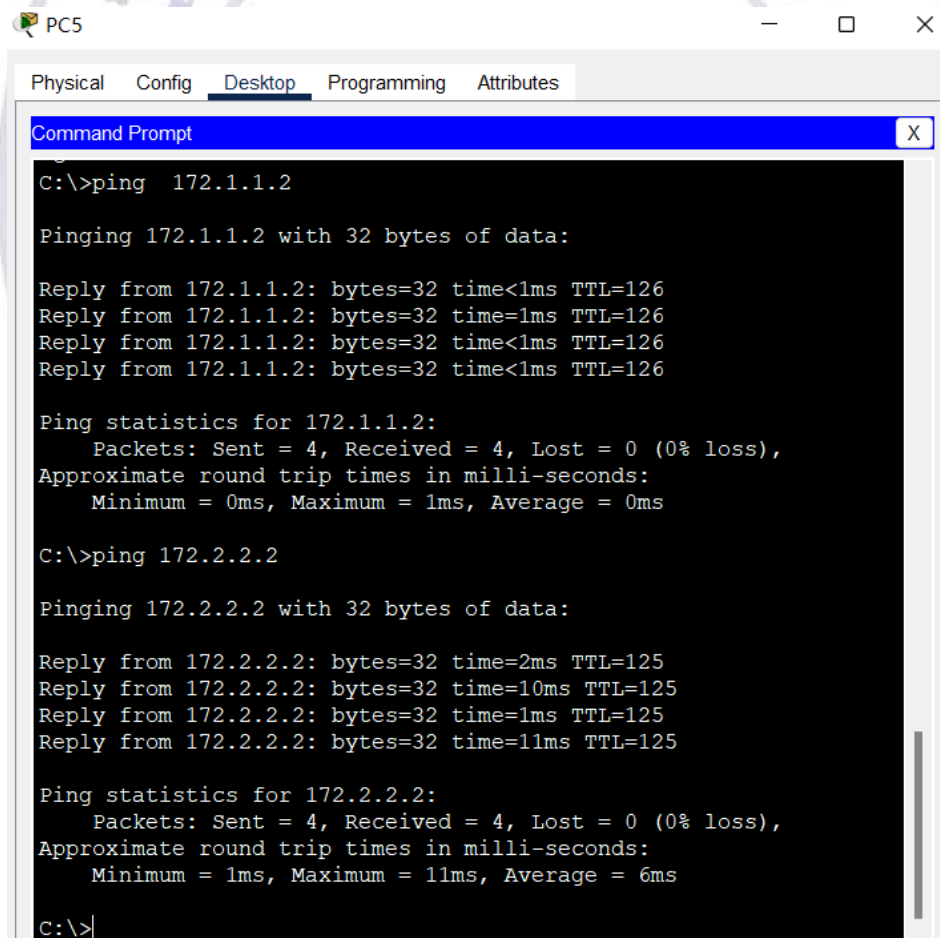
```
RB>enable
RB#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 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

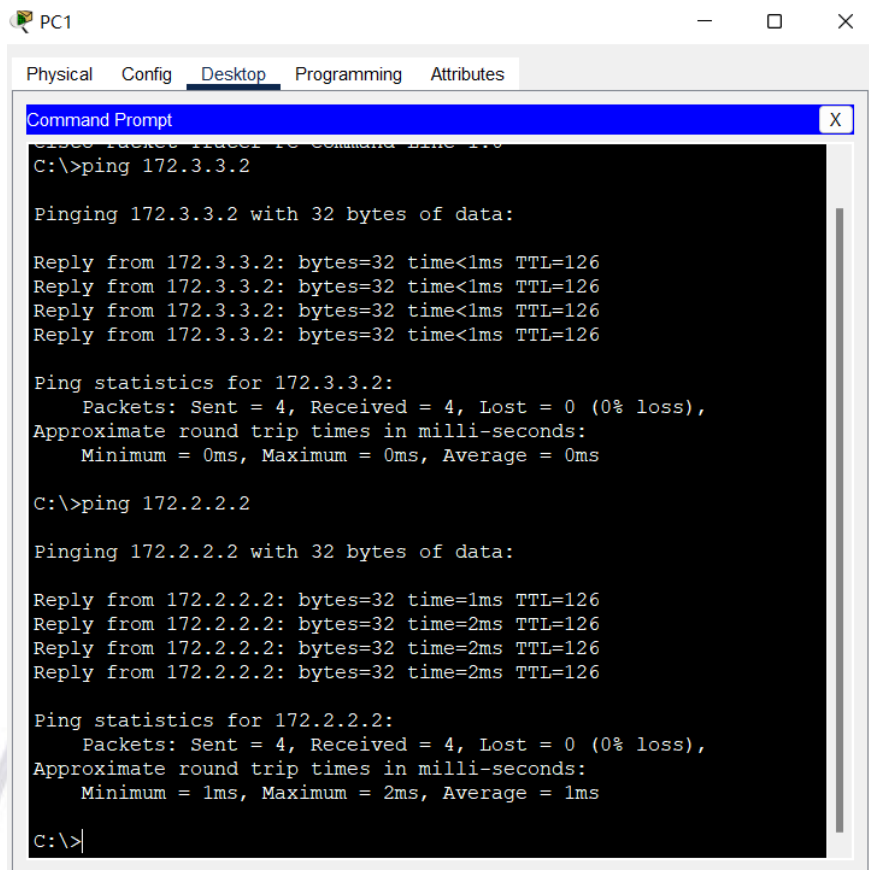
    172.1.0.0/24 is subnetted, 1 subnets
S       172.1.1.0/24 [1/0] via 192.168.2.1
    172.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.2.2.0/24 is directly connected, FastEthernet0/0
L       172.2.2.1/32 is directly connected, FastEthernet0/0
    172.3.0.0/24 is subnetted, 1 subnets
S       172.3.3.0/24 [1/0] via 192.168.2.1
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.2/32 is directly connected, Serial0/0/0
RB#
```



PC5 ping PC1、PC3 的结果如下所示



PC1 ping PC5、PC3 的结果如下所示



PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 172.3.3.2

Pinging 172.3.3.2 with 32 bytes of data:

Reply from 172.3.3.2: bytes=32 time<1ms TTL=126
Reply from 172.3.3.2: bytes=32 time<1ms TTL=126
Reply from 172.3.3.2: bytes=32 time<1ms TTL=126
Reply from 172.3.3.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.3.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 172.2.2.2

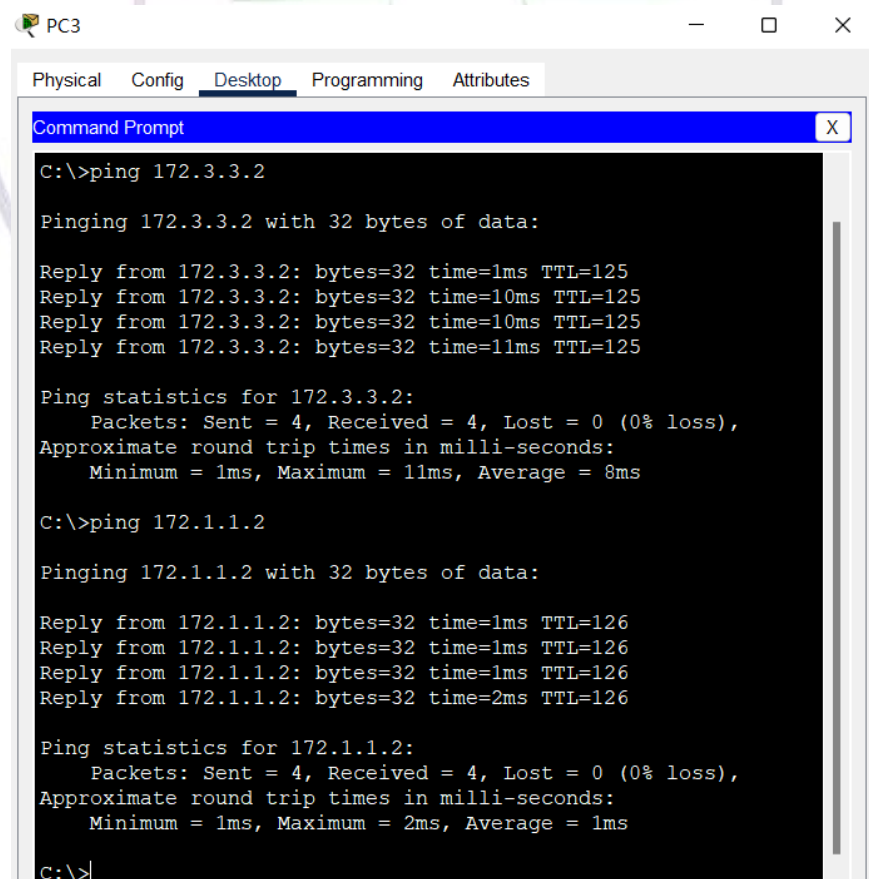
Pinging 172.2.2.2 with 32 bytes of data:

Reply from 172.2.2.2: bytes=32 time=1ms TTL=126
Reply from 172.2.2.2: bytes=32 time=2ms TTL=126
Reply from 172.2.2.2: bytes=32 time=2ms TTL=126
Reply from 172.2.2.2: bytes=32 time=2ms TTL=126

Ping statistics for 172.2.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>|
```

PC3 ping PC5、PC1 的结果如下所示



PC3

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 172.3.3.2

Pinging 172.3.3.2 with 32 bytes of data:

Reply from 172.3.3.2: bytes=32 time=1ms TTL=125
Reply from 172.3.3.2: bytes=32 time=10ms TTL=125
Reply from 172.3.3.2: bytes=32 time=10ms TTL=125
Reply from 172.3.3.2: bytes=32 time=11ms TTL=125

Ping statistics for 172.3.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 8ms

C:\>ping 172.1.1.2

Pinging 172.1.1.2 with 32 bytes of data:

Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=1ms TTL=126
Reply from 172.1.1.2: bytes=32 time=2ms TTL=126

Ping statistics for 172.1.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>|
```

七、教师评语

