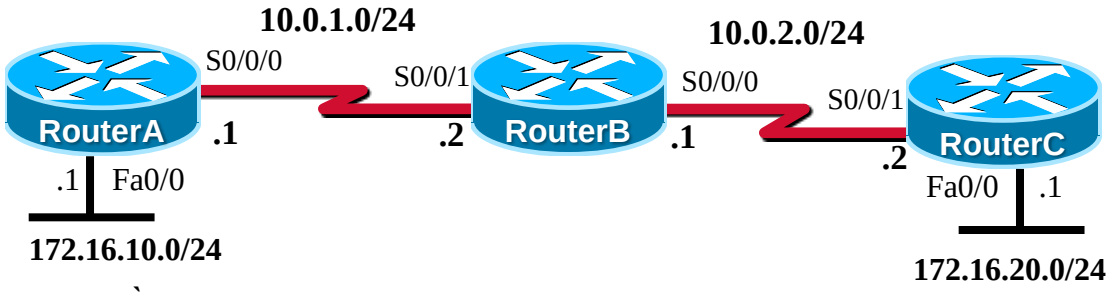
CÁC BÀI THỰC HÀNH

Lab 1 STATIC ROUTING



❖ **Yêu cầu**

- Cấu hình static route trên các routerA, routerB, routerC
- RouterB hoạt động như DCE, routerA là DTE
- Từ các router, ta phải có thể ping được tất cả các địa chỉ trong mạng.

❖ **Cấu hình**

Bước 1: Cấu hình cơ bản (cấu hình hostname, địa chỉ IP cho các interface, …)

- **Cấu hình routerA**

```
Router(config)#hostname routerA
routerA(config)#interface serial 0/0/0
routerA(config-if)#ip address 10.0.1.1 255.255.255.0
routerA(config-if)#no shutdown
routerA(config-if)#exit
routerA(config)#
```

- **Cấu hình routerB**

```
Router(config)#hostname routerB
routerB(config)#interface serial 0/0/0
routerB(config-if)#ip address 10.0.2.1  255.255.255.0
routerB(config-if)#no shutdown

routerB(config-if)#interface serial 0/0/1
routerB(config-if)#ip address 10.0.1.2  255.255.255.0
routerB(config-if)#clock rate 64000
routerB(config-if)#no shutdown
routerB(config-if)#exit
routerB(config)#
```

- **Cấu hình routerC**

```
Router>enable
Router#config terminal
```

```
Router(config)#hostname routerC
routerC(config)#interface S0/0/1
routerC(config-if)#ip address 10.0.2.2   255.255.255.0
routerC(config-if)#no shutdown
routerC(config-if)#exit
```

- **Kiểm tra cấu hình**

  Sử dụng lệnh **`ping`** để kiểm tra cấu hình

  - Kiểm tra kết quả `ping` giữa routerA với routerB
  - Kiểm tra kết quả `ping` giữa routerB với routerA, routerC
  - Kiểm tra kết quả `ping` giữa routerC với routerA, routerB

Bước 2: Cấu hình static route

- **RouterA**

```
RouterA(config)#ip route 10.0.2.0 255.255.255.0 10.0.1.2
RouterA(config)#ip route 172.16.20.0 255.255.255.0 10.0.1.2
```

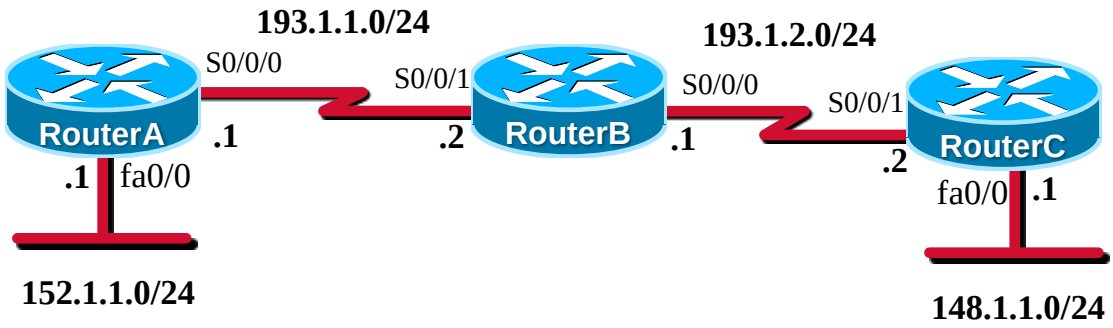
- **Router B**

```
RouterB(config)#ip route 172.16.10.0 255.255.255.0 10.0.1.1
RouterB(config)#ip route 172.16.20.0 255.255.255.0 10.0.2.2
```

- **RouterC**

```
RouterC(config)#ip route 10.0.1.0  255.255.255.0  10.0.2.1
RouterC(config)#ip route 172.16.10.0 255.255.255.0 10.0.2.1
```

Lab 2 DYNAMIC ROUTING – RIP



❖ **Yêu cầu**

- RouterA, RouterB, RouterC sử dụng RIP để quảng bá thông tin định tuyến
- Router B hoạt động như DCE cung cấp xung clock cho RouterA, RouterC
- Các router cấu hình RIP và quảng bá tất cả các mạng nối trực tiếp. Từ router A, B và C ta ping được hết các địa chỉ trong mạng.

❖ **Cấu hình**

Bước 1: Cấu hình cơ bản (đặt hostname, địa chỉ IP cho các cổng loopback, serial, fastethernet, …)

- **Đối với router A**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterA
RouterA(config)#interface  fa0/0
RouterA(config-if)#ip address 152.1.1.1  255.255.255.0
RouterA(config-if)#no shutown
RouterA(Config-if)#exit

RouterA(config)#interface Serial 0/0/0
RouterA(config-if)#ip address 193.1.1.1  255.255.255.0
RouterA(config-if)#clock rate 64000
RouterA(config-if)#no shutdown
RouterA(config-if)#exit
```

- **Đối với router B**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterB
RouterB(config)#interface S0/0/1
RouterB(config-if)#ip address 193.1.1.2 255.255.255.0
RouterB(Config-if)#no shut
RouterB(Config-if)#exit

RouterB(config)#int S0/0/0
RouterB(config-if)#ip address 193.1.2.1 255.255.255.0
RouterB(config-if)#clock rate 64000
RouterB(config-if)#no shutdown
RouterB(config-if)#exit
```

- **Đối với router C**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterC
RouterC(config)#interface fa0/0
RouterC(config-if)#ip address 148.1.1.1 255.255.255.0
RouterC(config-if)#no shutdown
RouterC(Config-if)#exit

RouterC(config)#interface s0/0/1
```

```
RouterC(config-if)#ip address 193.1.2.2  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(config-if)#exit
```

Bước 2: Cấu hình giao thức định tuyến RIP trên mỗi router

```
routerA(config)#router rip
routerA(config-router)#network 152.1.0.0
routerA(config-router)#network 193.1.1.0

routerB(config)#router rip
routerB(config-router)#network 193.1.1.0
routerB(config-router)#network 193.1.2.0

RouterC(config)#router rip
RouterC(config-router)#network 148.1.0.0
RouterC(config-router)#network 193.1.2.0
```

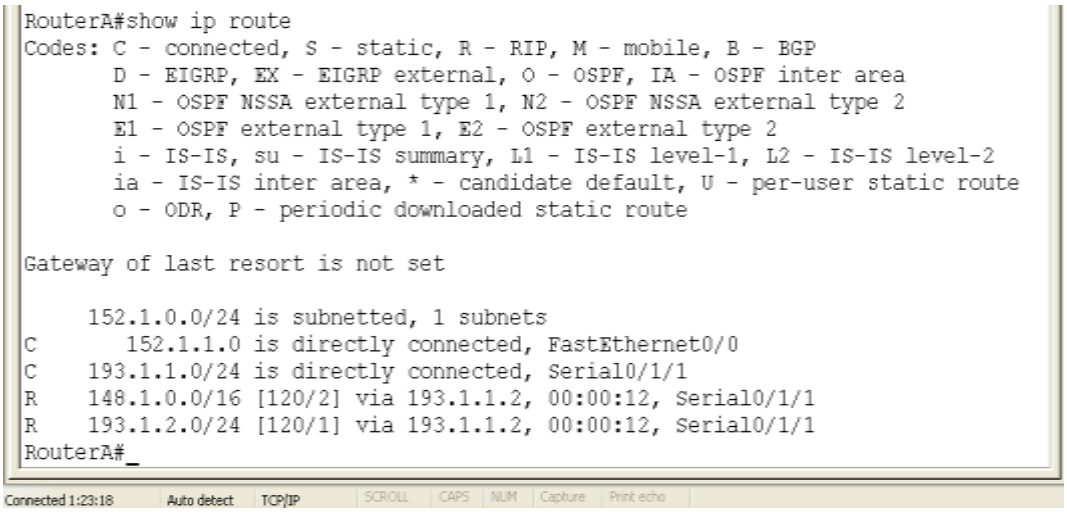
❖ **Kiểm tra:**

Thực hiện các câu lệnh sau để kiểm tra cấu hình

`Router#show ip route` : xem bảng định tuyến

`Router#debug ip rip` : xem quá trình cập nhật định tuyến của RIP

`Router#undebug all` : dừng quá trình debug



```
RouterB#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

R    152.1.0.0/16 [120/1] via 193.1.1.1, 00:00:01, Serial0/0/0
C    193.1.1.0/24 is directly connected, Serial0/0/0
R    148.1.0.0/16 [120/1] via 193.1.2.2, 00:00:26, Serial0/0/1
C    193.1.2.0/24 is directly connected, Serial0/0/1
RouterB#_
```

Connected 1:24:06 Auto detect TCP/IP

```
RouterC#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

R    152.1.0.0/16 [120/2] via 193.1.2.1, 00:00:25, Serial0/0/0
R    193.1.1.0/24 [120/1] via 193.1.2.1, 00:00:25, Serial0/0/0
     148.1.0.0/24 is subnetted, 1 subnets
C       148.1.1.0 is directly connected, FastEthernet0/0
C    193.1.2.0/24 is directly connected, Serial0/0/0
RouterC#
```

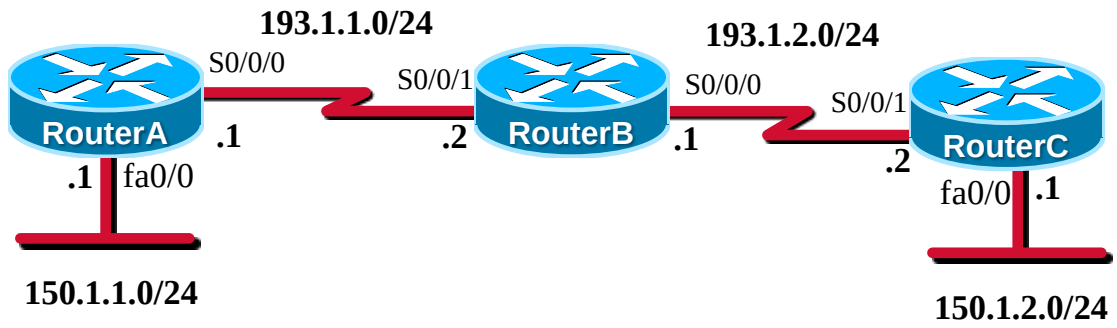
```
RouterA#
Building configuration...
Current configuration : 1426 bytes
!
hostname RouterA
!
interface FastEthernet0/0
 ip address 152.1.1.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/1/1
 ip address 193.1.1.1 255.255.255.0
!
!
```

```
router rip
 network 152.1.0.0
 network 193.1.1.0
!
ip classless
!
scheduler allocate 20000 1000
!
end
```

```
RouterB#
Building configuration…
interface Serial0/0/0
 ip address 193.1.1.2 255.255.255.0
 clock rate 64000
!
interface Serial0/0/1
 ip address 193.1.2.1 255.255.255.0
 --More--         !
router rip
 network 193.1.1.0
 network 193.1.2.0
!
ip http server
no ip http secure-server
!
control-plane
!
!
 scheduler allocate 20000 1000
End
RouterC#
Building configuration...
Current configuration : 778 bytes
!
interface FastEthernet0/0
 ip address 148.1.1.1 255.255.255.0
 duplex auto
 speed auto

!
interface Serial0/0/0
 ip address 193.1.2.2 255.255.255.0
```

```
 clock rate 64000
!
!
router rip
 network 148.1.0.0
 network 193.1.2.0
!
ip http server
no ip http secure-server
!
control-plane
!
line con 0
line aux 0
line vty 0 4
 password cisco
 login
!
scheduler allocate 20000 1000
end
RouterC#
```

Lab 3. DYNAMIC ROUTING – RIPv2



❖ **Yêu cầu**

- RouterA, RouterB, RouterC sử dụng RIPv2 để quảng bá thông tin định tuyến
- Các router cấu hình RIPv2 và quảng bá tất cả các mạng nối trực tiếp. Từ router A, B và C ta ping được tất cả các địa chỉ trong mạng.

❖ **Cấu hình**

Bước 1: Cấu hình cơ bản (đặt hostname, địa chỉ IP cho các cổng loopback, serial, FastEthernet, …)

- Đối với router A

```
Router>enable
Router#config  terminal
Router(config)#hostname routerA
routerA(config)#int f0/0
routerA(config-if)#ip address 150.1.1.1  255.255.255.0
routerA(config-if)#no shutown
routerA(Config-if)#exit

routerA(config)#int s0/0/0
routerA(config-if)#ip address 193.1.1.1  255.255.255.0
routerA(config-if)#clock rate 64000
routerA(config-if)#no shutdown
routerA(config-if)#exit
```

- Đối với router B

```
Router>enable
Router#configure  terminal
Router(config)#hostname routerB
routerB(config)#interface  serial 0/0/1
routerB(config-if)#ip address 193.1.1.2  255.255.255.0
routerB(Config-if)#no shutdown
routerB(Config-if)#exit

routerB(config)#interface  serial 0/0/0
routerB(config-if)#ip address 193.1.2.1  255.255.255.0
routerB(config-if)#clock rate 64000
routerB(config-if)#no shutdown
routerB(config-if)#exit
```

- Đối với router C

```
Router>enable
Router#configure  terminal
Router(config)#hostname RouterC
RouterC(config)#interface  fastEthernet 0/0
RouterC(config-if)#ip address 150.1.2.1  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(Config-if)#exit
```

```
RouterC(config)#int s0/0/1
RouterC(config-if)#ip address 193.1.2.2  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(config-if)#exit
```

Bước 2: Cấu hình giao thức định tuyến RIP trên mỗi router

```
routerA(config)#router rip
routerA(config-router)#version 2
routerA(config-router)#network 150.1.0.0
routerA(config-router)#network 193.1.1.0
routerA(config-router)#no auto-summary

routerB(config)#router rip
routerB(config-router)#version 2
routerB(config-router)#network 193.1.1.0
routerB(config-router)#network 193.1.2.0
routerB(config-router)#no auto-summary

RouterC(config)#router rip
RouterC(config-router)#version 2
RouterC(config-router)#network 150.1.0.0
RouterC(config-router)#network 193.1.2.0
RouterC(config-router)#no auto-summary
```

- **Kiểm tra cấu hình**

Thực hiện các câu lệnh sau để kiểm tra cấu hình

`show ip route` : xem bảng định tuyến

`debug ip rip` : xem quá trình cập nhật định tuyến của RIP

`undebug all` : dừng quá trình debug

```
*Sep  6 05:39:29.003: RIP: sending request on FastEthernet0/0 to 224.0.0.9
*Sep  6 05:39:29.003: RIP: sending request on Serial0/1/1 to 224.0.0.9
*Sep  6 05:39:29.019: RIP: received v2 update from 193.1.1.2 on Serial0/1/1
*Sep  6 05:39:29.019:      150.1.2.0/24 via 0.0.0.0 in 2 hops
*Sep  6 05:39:29.019:      193.1.2.0/24 via 0.0.0.0 in 1 hops
*Sep  6 05:39:29.031: RIP: received v2 update from 193.1.1.2 on Serial0/1/1
*Sep  6 05:39:29.031:      150.1.2.0/24 via 0.0.0.0 in 2 hops
*Sep  6 05:39:29.031:      193.1.2.0/24 via 0.0.0.0 in 1 hops
*Sep  6 05:39:29.039: RIP: received v2 update from 193.1.1.2 on Serial0/1/1
*Sep  6 05:39:29.039:      150.1.2.0/24 via 0.0.0.0 in 2 hops
*Sep  6 05:39:29.039:      193.1.2.0/24 via 0.0.0.0 in 1 hops
*Sep  6 05:39:30.267: RIP: received v2 update from 193.1.1.2 on Serial0/1/1
*Sep  6 05:39:30.267:      150.1.2.0/24 via 0.0.0.0 in 2 hops
*Sep  6 05:39:30.267:      193.1.2.0/24 via 0.0.0.0 in 1 hops
*Sep  6 05:39:31.003: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (150.1.1.1)
*Sep  6 05:39:31.003: RIP: build flash update entries
*Sep  6 05:39:31.003:   150.1.2.0/24 via 0.0.0.0, metric 3, tag 0
*Sep  6 05:39:31.003:   193.1.1.0/24 via 0.0.0.0, metric 1, tag 0
*Sep  6 05:39:31.003:   193.1.2.0/24 via 0.0.0.0, metric 2, tag 0
*Sep  6 05:39:31.003: RIP: sending v2 flash update to 224.0.0.9 via Serial0/1/1
(193.1.1.1)
*Sep  6 05:39:31.003: RIP: build flash update entries
*Sep  6 05:39:31.003:   150.1.1.0/24 via 0.0.0.0, metric 1, tag 0
```

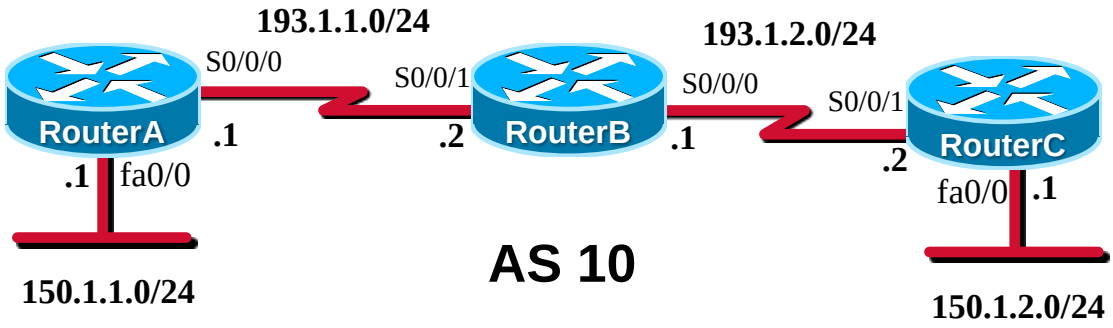
```
RouterA#
RouterA#
RouterA#
RouterA#
RouterA#
RouterA#
RouterA#
RouterA#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/1/1
R    193.1.2.0/24 [120/1] via 193.1.1.2, 00:00:12, Serial0/1/1
     150.1.0.0/24 is subnetted, 2 subnets
R       150.1.2.0 [120/2] via 193.1.1.2, 00:00:12, Serial0/1/1
C       150.1.1.0 is directly connected, FastEthernet0/0
RouterA#_
```

```
RouterB#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/1
     150.1.0.0/24 is subnetted, 2 subnets
R       150.1.2.0 [120/1] via 193.1.2.2, 00:00:03, Serial0/0/1
R       150.1.1.0 [120/1] via 193.1.1.1, 00:00:03, Serial0/0/0
RouterB#_
```


```
RouterB#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/1
     150.1.0.0/24 is subnetted, 2 subnets
R       150.1.2.0 [120/1] via 193.1.2.2, 00:00:03, Serial0/0/1
R       150.1.1.0 [120/1] via 193.1.1.1, 00:00:03, Serial0/0/0
RouterB#_
```


```
RouterC#
RouterC#
RouterC#
RouterC#
RouterC#
RouterC#
RouterC#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

R    193.1.1.0/24 [120/1] via 193.1.2.1, 00:00:20, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/0
     150.1.0.0/16 is variably subnetted, 3 subnets, 2 masks
C       150.1.2.0/24 is directly connected, FastEthernet0/0
R       150.1.1.0/24 [120/2] via 193.1.2.1, 00:00:20, Serial0/0/0
R       150.1.0.0/16 [120/2] via 193.1.2.1, 00:02:30, Serial0/0/0
RouterC#_
```

Lab 4 **DYNAMIC ROUTING – EIGRP**



❖ **Yêu cầu**

- RouterA, RouterB, RouterC sử dụng EIGRP để quảng bá thông tin định tuyến
- Các router cấu hình EIGRP và quảng bá tất cả các mạng nối trực tiếp. Từ router A, B và C ta ping được hết tất cả các địa chỉ trong mạng.

❖ **Các bước thực hiện**

Bước 1: Cấu hình cơ bản (đặt hostname địa chỉ IP cho các cổng loopback, serial, fastEthernet, …)

- **Đối với router A**

```
Router>enable
Router#config terminal
Router(config)#hostname routerA
routerA(config)#interface fa0/0
routerA(config-if)#ip address 150.1.1.1  255.255.255.0
routerA(config-if)#no shutown
routerA(Config-if)#exit

routerA(config)#interface S0/0/0
routerA(config-if)#ip address 193.1.1.1  255.255.255.0
routerA(config-if)#clock rate 64000
routerA(config-if)#no shutdown
routerA(config-if)#exit
```

- **Đối với router B**

```
Router>enable
Router#config terminal
Router(config)#hostname routerB
routerB(config)#interface S0/0/1
routerB(config-if)#ip address 193.1.1.2  255.255.255.0
routerB(Config-if)#no shut
routerB(Config-if)#exit
```

```
routerB(config)#interface S0/0/0
routerB(config-if)#ip address 193.1.2.1  255.255.255.0
routerB(config-if)#clock rate 64000
routerB(config-if)#no shutdown
routerB(config-if)#exit
```

- **Đối với router C**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterC
RouterC(config)#interface fastethernet 0/0
RouterC(config-if)#ip address 150.1.2.1  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(Config-if)#exit

RouterC(config)#interface S0/0/1
RouterC(config-if)#ip address 193.1.2.2  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(config-if)#exit
```

Bước 2: Cấu hình giao thức định tuyến EIGRP trên mỗi router

```
RouterA(config)#router eigrp 10
RouterA(config-router)#network 150.1.0.0
RouterA(config-router)#network 193.1.1.0
RouterA(config-router)#no auto-summary

routerB(config)#router eigrp 10
routerB(config-router)#network 193.1.1.0
routerB(config-router)#network 193.1.2.0
routerB(config-router)# no auto-summary

RouterC(config)#router eigrp 10
RouterC(config-router)#network 150.1.0.0
RouterC(config-router)#network 193.1.2.0
RouterC(config-router)#no auto-summary
```

❖ **Kiểm tra cấu hình**

Thực hiện các câu lệnh sau để kiểm tra cấu hình

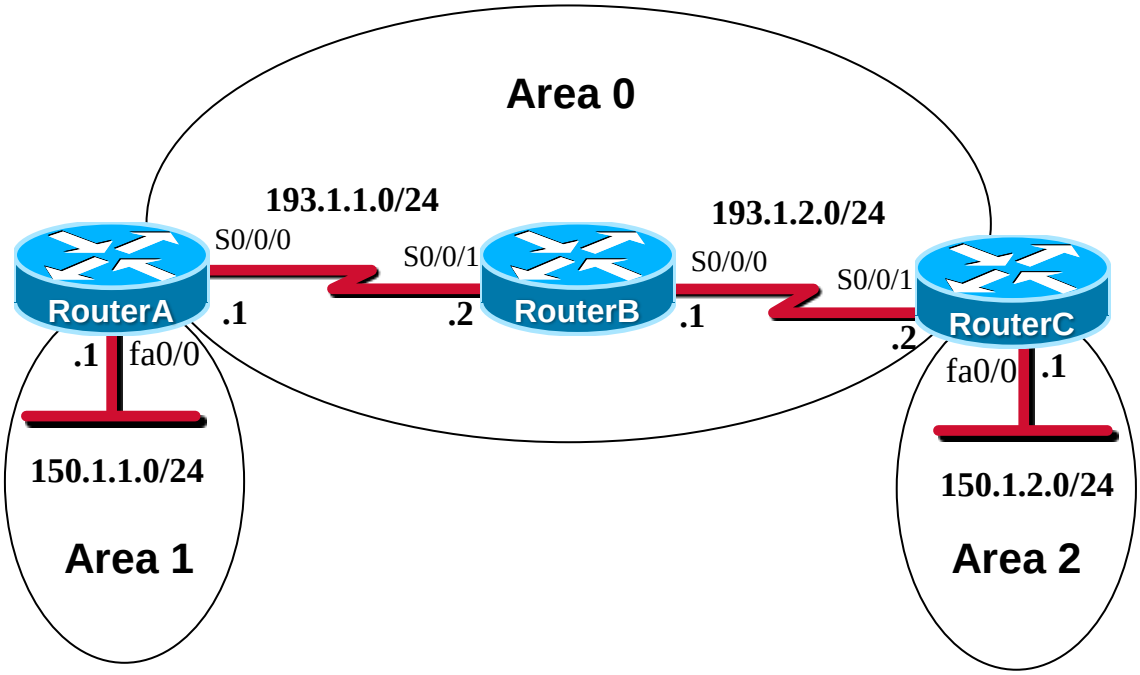
`Router#show ip route` : xem bảng định tuyến

```
RouterA#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/1/1
D    193.1.2.0/24 [90/21024000] via 193.1.1.2, 00:01:02, Serial0/1/1
     150.1.0.0/24 is subnetted, 2 subnets
D       150.1.2.0 [90/21026560] via 193.1.1.2, 00:01:02, Serial0/1/1
C       150.1.1.0 is directly connected, FastEthernet0/0
RouterA#
```

```
RouterB#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/1
     150.1.0.0/24 is subnetted, 2 subnets
D       150.1.2.0 [90/20514560] via 193.1.2.2, 00:03:08, Serial0/0/1
D       150.1.1.0 [90/20514560] via 193.1.1.1, 00:03:22, Serial0/0/0
RouterB#
```

```
RouterB#õ
Termserver#3
[Resuming connection 3 to r5-3 ... ]

RouterC#
RouterC#
RouterC#
RouterC#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

D    193.1.1.0/24 [90/21024000] via 193.1.2.1, 00:05:12, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/0
     150.1.0.0/24 is subnetted, 2 subnets
C       150.1.2.0 is directly connected, FastEthernet0/0
D       150.1.1.0 [90/21026560] via 193.1.2.1, 00:03:42, Serial0/0/0
RouterC#_
```

Lab 5. DYNAMIC ROUTING – OSPF



❖ **Mô tả**

- RouterA, RouterB, RouterC sử dụng OSPF để quảng bá thông tin định tuyến
- Các router cấu hình OSPF và quảng bá tất cả các mạng nối trực tiếp. Từ Router A, B và C ta ping được hết các địa chỉ trong mạng.

❖ **Các bước thực hiện**

Đặt hostname địa chỉ IP cho các cổng serial, FastEthernet

- **Đối với router A**

```
Router>enable
Router#config termial
Router(config)#hostname RouterA
RouterA(config)#interface fa0/0
RouterA(config-if)#ip address 150.1.1.1  255.255.255.0
RouterA(config-if)#no shutdown
RouterA(Config-if)#exit

RouterA(config)#interface s0/0/0
RouterA(config-if)#ip address 193.1.1.1  255.255.255.0
RouterA(config-if)#clock rate 64000
RouterA(config-if)#no shutdown
RouterA(config-if)#exit
```

- **Đối với router B**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterB
RouterB(config)#interface S0/0/1
RouterB(config-if)#ip address 193.1.1.2  255.255.255.0
RouterB(config-if)#no shutdown
RouterB(config-if)#exit

RouterB(config)#interface S0/0/0
RouterB(config-if)#ip address 193.1.2.1  255.255.255.0
RouterB(config-if)#clock rate 64000
RouterB(config-if)#no shutdown
RouterB(config-if)#exit
```

- **Đối với router C**

```
Router>enable
Router#config terminal
Router(config)#hostname RouterC
RouterC(config)#interface fa0/0
RouterC(config-if)#ip address 150.1.2.1  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(Config-if)#exit

RouterC(config)#interface S0/0/1
RouterC(config-if)#ip address 193.1.2.2  255.255.255.0
RouterC(config-if)#no shutdown
RouterC(config-if)#exit
```

- Cấu hình giao thức định tuyến OSPF trên mỗi router

```
RouterA(config)#router ospf 1
RouterA(config-router)#network 150.1.1.0 0.0.0.255 area 1
RouterA(config-router)#network 193.1.1.0 0.0.0.255 area 0

RouterB(config)#router ospf 1
RouterB(config-router)#network 193.1.1.0 0.0.0.255 area 0
RouterB(config-router)#network 193.1.2.0 0.0.0.255 area 0

RouterC(config)#router ospf 1
RouterC(config-router)#network 150.1.2.0 0.0.0.255 area 2
RouterC(config-router)#network 193.1.2.0 0.0.0.255 area 0
```

❖ **Kiểm tra cấu hình**

Thực hiện các câu lệnh sau để kiểm tra cấu hình

`Router#show ip route` : xem bảng định tuyến

`Router#ping` : kiểm tra kết nối

```
RouterA#
RouterA#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/1/1
O    193.1.2.0/24 [110/1562] via 193.1.1.2, 00:00:48, Serial0/1/1
     150.1.0.0/24 is subnetted, 2 subnets
O IA    150.1.2.0 [110/1563] via 193.1.1.2, 00:00:48, Serial0/1/1
C       150.1.1.0 is directly connected, FastEthernet0/0
RouterA#
```

```
RouterB#
RouterB#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    193.1.1.0/24 is directly connected, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/1
     150.1.0.0/24 is subnetted, 2 subnets
O IA    150.1.2.0 [110/782] via 193.1.2.2, 00:02:08, Serial0/0/1
O IA    150.1.1.0 [110/782] via 193.1.1.1, 00:02:08, Serial0/0/0
RouterB#
```

```
RouterC#
RouterC#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

O    193.1.1.0/24 [110/1562] via 193.1.2.1, 00:02:24, Serial0/0/0
C    193.1.2.0/24 is directly connected, Serial0/0/0
     150.1.0.0/24 is subnetted, 2 subnets
C       150.1.2.0 is directly connected, FastEthernet0/0
O IA    150.1.1.0 [110/1563] via 193.1.2.1, 00:02:24, Serial0/0/0
RouterC#_
```