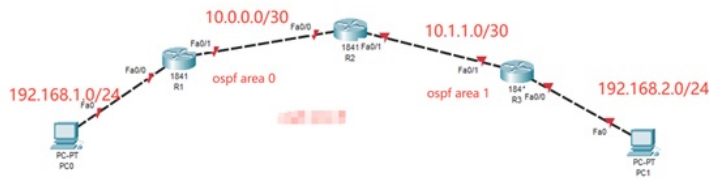


## 组网及说明



本案例采用思科模拟器的路由器来实现多区域OSPF的典型组网需求，在该网络中，R1、R2属于区域0、R3与R2属于区域1，通过配置OSPF实现PC之间的业务互通。

## 配置步骤

- 1、按照网络拓扑图配置IP地址。
- 2、分别配置R1、R2、R3的OSPF。
- 3、PC之间进行相互PING测试。

## 配置关键点

R1:

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hos R1
R1(config)#int f 0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#int f 0/1
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#router ospf 1
R1(config-router)#network 10.0.0.0 0.0.0.3 area 0
R1(config-router)#network 192.168.1.0 0.0.0.255 area 0
R1(config-router)#exit
R1(config)#do wr
Building configuration...
[OK]
R1(config)#
```

R2:

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hos R2
R2(config)#int f 0/0
R2(config-if)#ip address 10.0.0.2 255.255.255.252
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#int f 0/1
R2(config-if)#ip address 10.1.1.1 255.255.255.252
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#router ospf 1
R2(config-router)#network 10.0.0.0 0.0.0.3 area 0
R2(config-router)#network 10.1.1.0 0.0.0.3 area 1
R2(config-router)#exit
```

```
R2(config)#do wr
Building configuration...
[OK]
```

```
R3:
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hos R3
R3(config)#int f 0/0
R3(config-if)#ip address 192.168.2.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#int f 0/1
R3(config-if)#ip address 10.1.1.2 255.255.255.252
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#router ospf 1
R3(config-router)#network 10.1.1.0 0.0.0.3 area 1
R3(config-router)#network 192.168.2.0 0.0.0.255 area 1
R3(config-router)#exit
R3(config)#do wr
Building configuration...
[OK]
```

分别查看R1、R2、R3的OSPF邻居建立情况，均已经完成建立。

```
R1(config)#do sh ip ospf nei

Neighbor ID      Pri   State           Dead Time   Address      Interface
10.1.1.1         1    FULL/BDR        00:00:38   10.0.0.2    FastEthernet0/1
R1(config)#

R2(config)#do sh ip ospf nei

Neighbor ID      Pri   State           Dead Time   Address      Interface
192.168.1.1     1    FULL/DR         00:00:38   10.0.0.1    FastEthernet0/0
192.168.2.1     1    FULL/DR         00:00:37   10.1.1.2    FastEthernet0/1
R2(config)#

R3(config)#do sh ip ospf nei

Neighbor ID      Pri   State           Dead Time   Address      Interface
10.1.1.1         1    FULL/BDR        00:00:31   10.1.1.1    FastEthernet0/1
R3(config)#
```

分别查看R1、R2、R3的路由表，均已经学习到对端传递过来的路由。

```
R1(config)#do sh ip ro
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

10.0.0.0/30 is subnetted, 2 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
O    10.1.1.0 [110/2] via 10.0.0.2, 00:02:49, FastEthernet0/1
C    192.168.1.0/24 is directly connected, FastEthernet0/0
O    192.168.2.0/24 [110/3] via 10.0.0.2, 00:02:49, FastEthernet0/1
R1(config)#

R2(config)#do sh ip ro
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

10.0.0.0/30 is subnetted, 2 subnets
C    10.0.0.0 is directly connected, FastEthernet0/0
C    10.1.1.0 is directly connected, FastEthernet0/1
O    192.168.1.0/24 [110/2] via 10.0.0.1, 00:06:40, FastEthernet0/0
O    192.168.2.0/24 [110/2] via 10.1.1.2, 00:03:27, FastEthernet0/1
R2(config)#
```

```

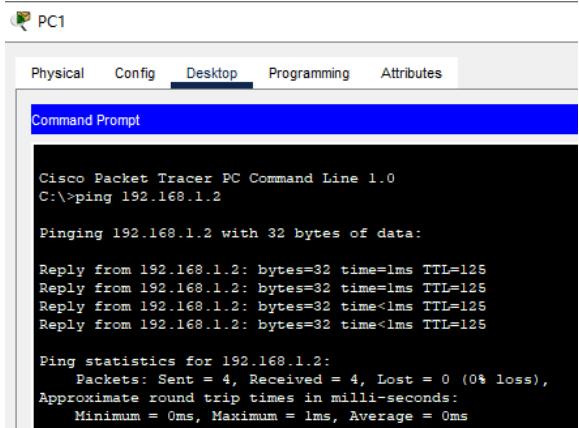
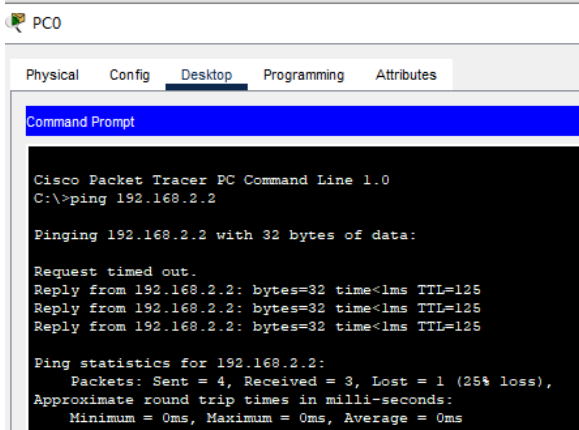
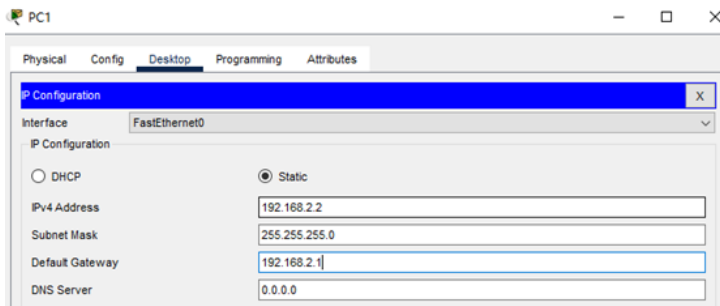
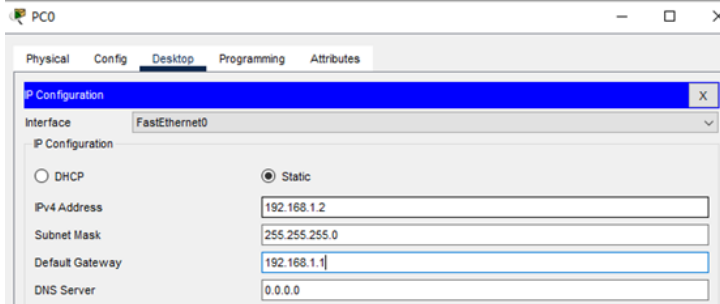
R3(config)#do sh ip ro
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS 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

10.0.0.0/30 is subnetted, 2 subnets
O 10.0.0.0 [110/2] via 10.1.1.1, 00:03:44, FastEthernet0/1
C 10.1.1.0 is directly connected, FastEthernet0/1
O 192.168.1.0/24 [110/3] via 10.1.1.1, 00:03:44, FastEthernet0/1
C 192.168.1.0/24 is directly connected, FastEthernet0/1
R3(config)#

```

PC分别填写IP地址，且能相互PING通。



至此，思科路由器多区域OSPF典型组网配置案例已完成！