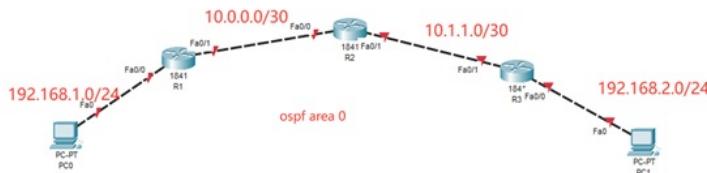




组网及说明



本案例采用思科模拟器的路由器来实现单区域OSPF的典型组网需求，在该网络中，全网路由器均属于区域0，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 0
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 0
R3(config-router)#network 192.168.2.0 0.0.0.255 area 0
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

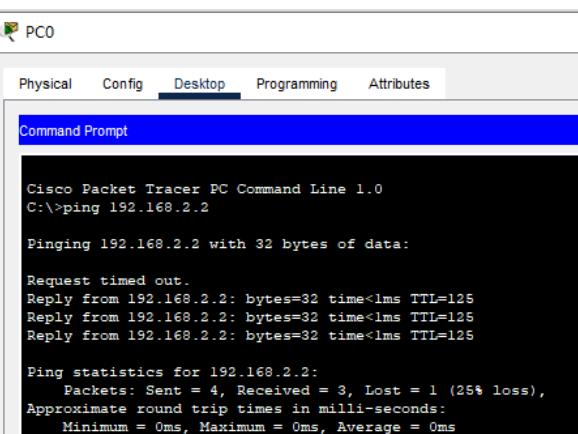
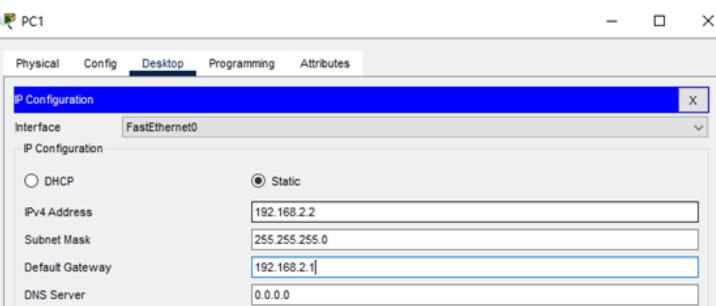
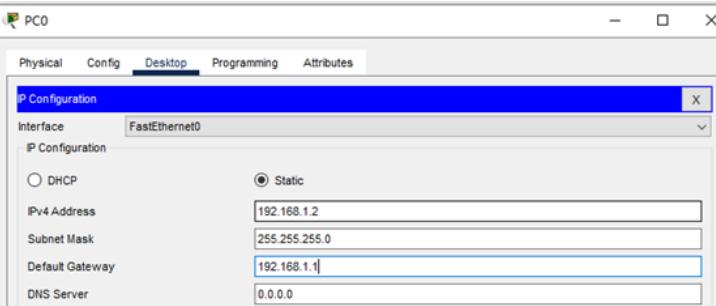
Gateway of last resort is not set

  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  192.168.2.0/24 is directly connected, FastEthernet0/0

R3(config)#

```

PC分别填写IP地址，且能相互PING通。



PC1

The screenshot shows a Cisco Packet Tracer interface titled 'PC1'. At the top, there's a menu bar with tabs: Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is currently selected. Below the menu is a blue header bar labeled 'Command Prompt'. The main area of the window is a black terminal window displaying the output of a 'ping' command. The output shows four successful replies from the target IP address 192.168.1.2, each with 32 bytes and a TTL of 125. It also provides statistics: 4 packets sent, 4 received, 0 lost (0% loss), and approximate round trip times (Minimum = 0ms, Maximum = 1ms, Average = 0ms).

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time=1ms TTL=125
Reply from 192.168.1.2: bytes=32 time=1ms TTL=125
Reply from 192.168.1.2: bytes=32 time<1ms TTL=125
Reply from 192.168.1.2: bytes=32 time<1ms TTL=125

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

至此，思科路由器单区域OSPF典型组网配置案例已完成！