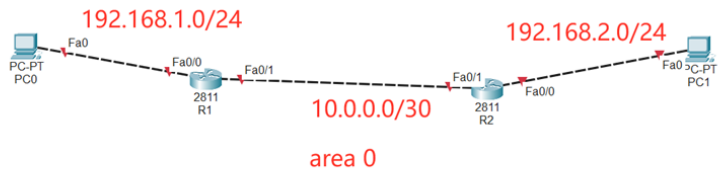
【MVS】思科路由器OSPF区域明文认证典型组网配置案例

网络相关 韦家宁 2024-07-03 发表

组网及说明



本案例采用思科模拟器来模拟OSPF接口明文认证，在网络拓扑图中，R1与R2采用OSPF单区域实现互联，为了确保OSPF邻居的合法性，采用接口明文认证确保网络的安全。

配置步骤

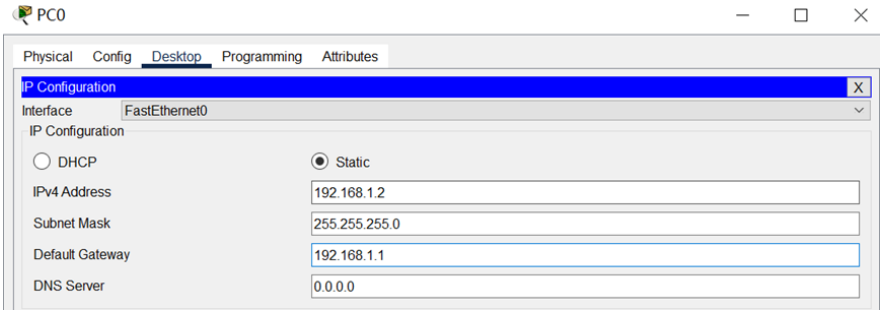
1、按照网络拓扑图配置IP地址。
2、配置R1、R2的OSPF。
3、配置R1与R2的OSPF接口明文认证。
4、查看R1与R2已经建立OSPF邻居关系。
5、PC1与PC2能相互PING通。

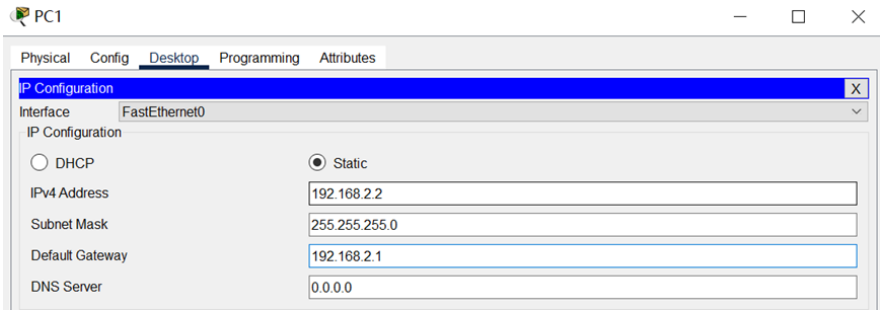
配置关键点

```
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)#int f 0/1
R1(config-if)#ip ospf authentication-key 1 james
R1(config-if)#no shutdown
R1(config-if)#exit

R1(config)#router ospf 1
R1(config-router)#area 0 authentication
R1(config-router)#exit


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 192.168.2.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#int f 0/1
R2(config-if)#ip address 10.0.0.2 255.255.255.252
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 192.168.2.0 0.0.0.255 area 0
R2(config-router)#exit

R2(config)#int f 0/1
R2(config-if)#ip ospf authentication-key 1 james
R2(config-if)#exit

R2(config)#router ospf 1
R2(config-router)#area 0 authentication
R2(config-router)#exit
```

PC分别填写IP地址，且能相互PING通





PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=254
Reply from 192.168.1.1: bytes=32 time<1ms TTL=254
Reply from 192.168.1.1: bytes=32 time<1ms TTL=254
Reply from 192.168.1.1: bytes=32 time<1ms TTL=254

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

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=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126
Reply from 192.168.1.2: bytes=32 time<1ms TTL=126

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 = 0ms, Average = 0ms

C:\>
```

分别查看R1、R2建立OSPF邻居的情况，发现OSPF邻居已建立。

```
R1#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.2.1       1   FULL/BDR        00:00:34    10.0.0.2        FastEthernet0/1
R1#
```

```
R2#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        FastEthernet0/1
R2#
```

分别查看R1、R2路由学习的情况，发现均能学习到对端发布的路由。

```
R1#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

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/30 is directly connected, FastEthernet0/1
L       10.0.0.1/32 is directly connected, FastEthernet0/1
     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
O    192.168.2.0/24 [110/2] via 10.0.0.2, 00:03:34, FastEthernet0/1

R1#
```

```
R2#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

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/30 is directly connected, FastEthernet0/1
L       10.0.0.2/32 is directly connected, FastEthernet0/1
O    192.168.1.0/24 [110/2] via 10.0.0.1, 00:04:16, FastEthernet0/1
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, FastEthernet0/0
L       192.168.2.1/32 is directly connected, FastEthernet0/0

R2#
```

至此，思科路由OSPF区域明文认证典型组网配置案例已完成。