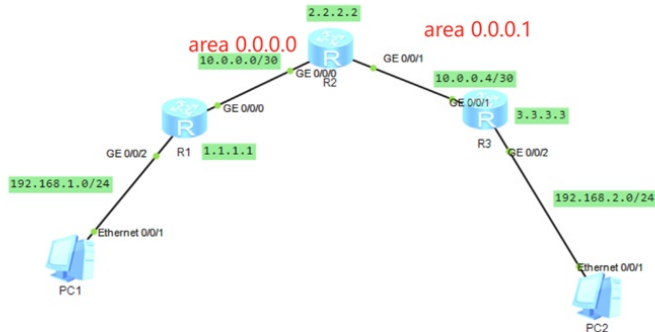


组网及说明



本案例采用ENSP模拟器来实现OSPF filter-policy过滤的配置案例，IP地址规划在网络拓扑图中已经有了明确的标识，为了实现PC之间互通，使用多区域OSPF来实现。同时为了实现OSPF路由过滤，本案例在R1路由器上对3.3.3.3/32的路由进行过滤，让R1不接受3.3.3.3/32的路由。

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路由器的多区域OSPF。
- 3、在R1配置ospf的filter-policy工具，联动IP地址前缀列表，过滤3.3.3.3/32的路由。

配置关键点

R1:

```
<Huawei>u t m
Info: Current terminal monitor is off.
<Huawei>u t d
Info: Current terminal debugging is off.
<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R1
[R1]int loopback 0
[R1-LoopBack0]ip address 1.1.1.1 32
[R1-LoopBack0]quit
[R1]int gi 0/0/2
[R1-GigabitEthernet0/0/2]ip address 192.168.1.1 24
[R1-GigabitEthernet0/0/2]quit
[R1]int gi 0/0/0
[R1-GigabitEthernet0/0/0]ip address 10.0.0.1 30
[R1-GigabitEthernet0/0/0]quit
[R1]ospf 1 router-id 1.1.1.1
[R1-ospf-1]area 0.0.0.0
[R1-ospf-1-area-0.0.0.0]network 10.0.0.0 0.0.0.3
[R1-ospf-1-area-0.0.0.0]network 192.168.1.0 0.0.0.255
[R1-ospf-1-area-0.0.0.0]network 1.1.1.1 0.0.0.0
[R1-ospf-1-area-0.0.0.0]quit
[R1-ospf-1]quit
```

R2:

```
<Huawei>u t m
Info: Current terminal monitor is off.
<Huawei>u t d
Info: Current terminal debugging is off.
<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R2
[R2]int loopback 0
[R2-LoopBack0]ip address 2.2.2.2 32
[R2-LoopBack0]quit
```

```

[R2]int gi 0/0/0
[R2-GigabitEthernet0/0/0]ip address 10.0.0.2 30
[R2-GigabitEthernet0/0/0]quit
[R2]int gi 0/0/1
[R2-GigabitEthernet0/0/1]ip address 10.0.0.5 30
[R2-GigabitEthernet0/0/1]quit
[R2]ospf 1 router-id 2.2.2.2
[R2-ospf-1]area 0.0.0.0
[R2-ospf-1-area-0.0.0.0]network 10.0.0.0 0.0.0.3
[R2-ospf-1-area-0.0.0.0]network 2.2.2.2 0.0.0.0
[R2-ospf-1-area-0.0.0.0]quit
[R2-ospf-1]area 0.0.0.1
[R2-ospf-1-area-0.0.0.1]network 10.0.0.4 0.0.0.3
[R2-ospf-1-area-0.0.0.1]quit
[R2-ospf-1]quit

```

R3:

```

<Huawei>u t m
Info: Current terminal monitor is off.
<Huawei>u t d
Info: Current terminal debugging is off.
<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R3
[R3]int loopback 0
[R3-LoopBack0]ip address 3.3.3.3 32
[R3-LoopBack0]quit
[R3]int gi 0/0/2
[R3-GigabitEthernet0/0/2]ip address 192.168.2.1 24
[R3-GigabitEthernet0/0/2]quit
[R3]int gi 0/0/1
[R3-GigabitEthernet0/0/1]ip address 10.0.0.6 30
[R3-GigabitEthernet0/0/1]quit
[R3]ospf 1 router-id 3.3.3.3
[R3-ospf-1]area 0.0.0.1
[R3-ospf-1-area-0.0.0.1]network 10.0.0.4 0.0.0.3
[R3-ospf-1-area-0.0.0.1]network 192.168.2.0 0.0.0.255
[R3-ospf-1-area-0.0.0.1]network 3.3.3.3 0.0.0.0
[R3-ospf-1-area-0.0.0.1]quit
[R3-ospf-1]quit

```

配置PC的IP地址:



PC之间能相互PING通:

```
PC1
基础配置 命令行 组播 UDP发包工具 串口
Welcome to use PC Simulator!
PC>ping 192.168.2.2
Ping 192.168.2.2: 32 data bytes, Press Ctrl_C to break
From 192.168.2.2: bytes=32 seq=1 ttl=125 time=93 ms
From 192.168.2.2: bytes=32 seq=2 ttl=125 time=110 ms
From 192.168.2.2: bytes=32 seq=3 ttl=125 time=93 ms
From 192.168.2.2: bytes=32 seq=4 ttl=125 time=94 ms
From 192.168.2.2: bytes=32 seq=5 ttl=125 time=94 ms
--- 192.168.2.2 ping statistics ---
 5 packet(s) transmitted
 5 packet(s) received
 0.00% packet loss
 round-trip min/avg/max = 93/96/110 ms
PC>
```

```
PC2
基础配置 命令行 组播 UDP发包工具 串口
Welcome to use PC Simulator!
PC>ping 192.168.1.2
Ping 192.168.1.2: 32 data bytes, Press Ctrl_C to break
From 192.168.1.2: bytes=32 seq=1 ttl=125 time=78 ms
From 192.168.1.2: bytes=32 seq=2 ttl=125 time=94 ms
From 192.168.1.2: bytes=32 seq=3 ttl=125 time=78 ms
From 192.168.1.2: bytes=32 seq=4 ttl=125 time=93 ms
From 192.168.1.2: bytes=32 seq=5 ttl=125 time=78 ms
--- 192.168.1.2 ping statistics ---
 5 packet(s) transmitted
 5 packet(s) received
 0.00% packet loss
 round-trip min/avg/max = 78/84/94 ms
PC>
```

分别检查R1、R2、R3路由器都已经建立了OSPF邻居关系:

```
[R1]dis ospf peer
      OSPF Process 1 with Router ID 1.1.1.1
      Neighbors
Area 0.0.0.0 interface 10.0.0.1(GigabitEthernet0/0/0)'s neighbors
Router ID: 2.2.2.2      Address: 10.0.0.2
State: Full Mode:Nbr is Master Priority: 1
DR: 10.0.0.1 BDR: 10.0.0.2 MTU: 0
Dead timer due in 37 sec
Retrans timer interval: 5
Neighbor is up for 00:04:22
Authentication Sequence: [ 0 ]
[R1]
```

```
[R2]dis ospf peer
      OSPF Process 1 with Router ID 2.2.2.2
      Neighbors
Area 0.0.0.0 interface 10.0.0.2(GigabitEthernet0/0/0)'s neighbors
Router ID: 1.1.1.1      Address: 10.0.0.1
State: Full Mode:Nbr is Slave Priority: 1
DR: 10.0.0.1 BDR: 10.0.0.2 MTU: 0
Dead timer due in 34 sec
Retrans timer interval: 5
Neighbor is up for 00:01:32
Authentication Sequence: [ 0 ]
      Neighbors
Area 0.0.0.1 interface 10.0.0.5(GigabitEthernet0/0/1)'s neighbors
Router ID: 3.3.3.3      Address: 10.0.0.6
State: Full Mode:Nbr is Master Priority: 1
DR: 10.0.0.5 BDR: 10.0.0.6 MTU: 0
Dead timer due in 38 sec
Retrans timer interval: 5
Neighbor is up for 00:00:33
Authentication Sequence: [ 0 ]
```

```
[R3]dis ospf peer

      OSPF Process 1 with Router ID 3.3.3.3
        Neighbors

Area 0.0.0.1 interface 10.0.0.6(GigabitEthernet0/0/1)'s neighbors
Router ID: 2.2.2.2      Address: 10.0.0.5
  State: Full Mode:Nbr is Slave Priority: 1
  DR: 10.0.0.5 BDR: 10.0.0.6 MTU: 0
  Dead timer due in 40 sec
  Retrans timer interval: 5
  Neighbor is up for 00:01:05
  Authentication Sequence: [ 0 ]
```

检查R1、R2、R3路由器的路由表，均已正常通过OSPF学习到对端的路由，同时R1能学习到3.3.3.3/24的路由。

```
<R1>dis ospf routing

      OSPF Process 1 with Router ID 1.1.1.1
        Routing Tables

Routing for Network
Destination      Cost  Type      NextHop      AdvRouter     Area
1.1.1.1/32       0     Stub      1.1.1.1      1.1.1.1       0.0.0.0
10.0.0.0/30      1     Transit   10.0.0.1     1.1.1.1       0.0.0.0
192.168.1.0/24   1     Stub      192.168.1.1 1.1.1.1       0.0.0.0
2.2.2.2/32       1     Stub      10.0.0.2     2.2.2.2       0.0.0.0
3.3.3.3/32       2     Inter-area 10.0.0.2     2.2.2.2       0.0.0.0
10.0.0.4/30      2     Inter-area 10.0.0.2     2.2.2.2       0.0.0.0
192.168.2.0/24   3     Inter-area 10.0.0.2     2.2.2.2       0.0.0.0

Total Nets: 7
Intra Area: 4  Inter Area: 3  ASE: 0  NSSA: 0
```

```
[R2]dis ospf routing

      OSPF Process 1 with Router ID 2.2.2.2
        Routing Tables

Routing for Network
Destination      Cost  Type      NextHop      AdvRouter     Area
2.2.2.2/32       0     Stub      2.2.2.2     2.2.2.2       0.0.0.0
10.0.0.0/30      1     Transit   10.0.0.2     2.2.2.2       0.0.0.0
10.0.0.4/30      1     Transit   10.0.0.5     2.2.2.2       0.0.0.1
1.1.1.1/32       1     Stub      10.0.0.1     1.1.1.1       0.0.0.0
3.3.3.3/32       1     Stub      10.0.0.6     3.3.3.3       0.0.0.1
192.168.1.0/24   2     Stub      10.0.0.1     1.1.1.1       0.0.0.0
192.168.2.0/24   2     Stub      10.0.0.6     3.3.3.3       0.0.0.1

Total Nets: 7
Intra Area: 7  Inter Area: 0  ASE: 0  NSSA: 0
```

```
[R3]dis ospf routing

      OSPF Process 1 with Router ID 3.3.3.3
        Routing Tables

Routing for Network
Destination      Cost  Type      NextHop      AdvRouter     Area
3.3.3.3/32       0     Stub      3.3.3.3     3.3.3.3       0.0.0.1
10.0.0.4/30      1     Transit   10.0.0.6     3.3.3.3       0.0.0.1
192.168.2.0/24   1     Stub      192.168.2.1 3.3.3.3       0.0.0.1
1.1.1.1/32       2     Inter-area 10.0.0.5     2.2.2.2       0.0.0.1
2.2.2.2/32       1     Inter-area 10.0.0.5     2.2.2.2       0.0.0.1
10.0.0.0/30      2     Inter-area 10.0.0.5     2.2.2.2       0.0.0.1
192.168.1.0/24   3     Inter-area 10.0.0.5     2.2.2.2       0.0.0.1

Total Nets: 7
Intra Area: 3  Inter Area: 4  ASE: 0  NSSA: 0
```

在R1是能PING通3.3.3.3

```
[R1-ospf-1]ping 3.3.3.3
PING 3.3.3.3: 56 data bytes, press CTRL_C to break
  Reply from 3.3.3.3: bytes=56 Sequence=1 ttl=254 time=70 ms
  Reply from 3.3.3.3: bytes=56 Sequence=2 ttl=254 time=60 ms
  Reply from 3.3.3.3: bytes=56 Sequence=3 ttl=254 time=50 ms
  Reply from 3.3.3.3: bytes=56 Sequence=4 ttl=254 time=60 ms
  Reply from 3.3.3.3: bytes=56 Sequence=5 ttl=254 time=60 ms

--- 3.3.3.3 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 50/60/70 ms
```

在R1配置IP地址前缀列表，联动filter-policy，过滤3.3.3.3/32的路由。

```
[R1]ip ip-prefix cc index 1 deny 3.3.3.3 32
[R1]ip ip-prefix cc index 2 permit 0.0.0.0 0 less-equal 32
[R1]ospf 1 router-id 1.1.1.1
[R1-ospf-1]filter-policy ip-prefix cc import
[R1-ospf-1]quit
```

再次在R1 PING 3.3.3.3，发现已无法PING通。

```
[R1-acl-basic-2000]ping 3.3.3.3
PING 3.3.3.3: 56 data bytes, press CTRL_C to break
  Request time out
  Request time out
  Request time out
  Request time out
  Request time out

--- 3.3.3.3 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

至此，OSPF filter-policy典型组网配置案例2已完成！