

组网及说明

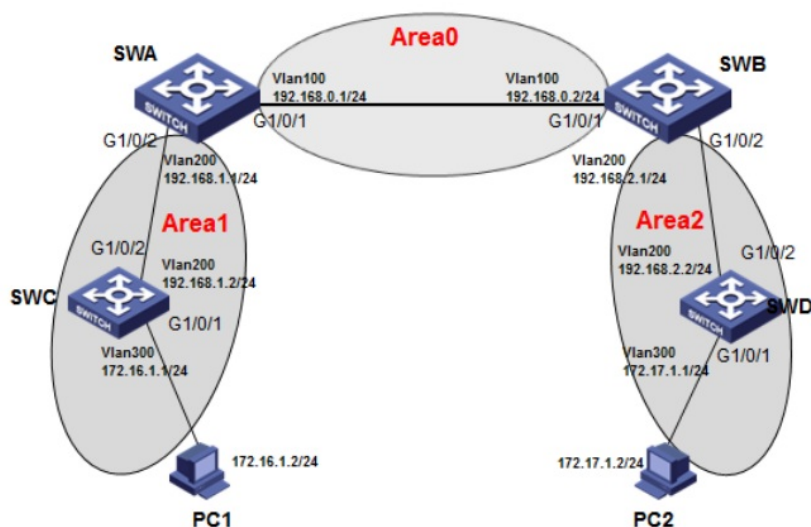
1.1适用产品系列

本案例适用于如S5024PV3-EI-HPWR、S5048PV3-EI、S5120V2-52P-LI、S5120V2-28P-SI、S5130-52S-EI、S5130S-28S-EI、S5150X-16ST-EI等S5000PV3、S5120V2、S5130、S5150系列的交换机。

1.2配置需求

SWA、SWB、SWC、SWD都运行OSPF，并将整个自治系统划分为3个区域。其中Switch A和Switch B作为ABR来转发区域之间的路由。配置完成后，每台交换机都应学到AS内的所有网段的路由。

2 组网图



配置步骤

3.1 SWA配置

#创建vlan100和vlan200，并把G1/0/1口加入vlan100、1/0/2口加入vlan200，并且配置vlan100和vlan200的虚接口地址

```
<SWA>system-view
```

System View: return to User View with Ctrl+Z.

```
[SWA]vlan 100
```

```
[SWA-vlan100]port GigabitEthernet 1/0/1
```

```
[SWA-vlan100]quit
```

```
[SWA]vlan 200
```

```
[SWA-vlan200]port GigabitEthernet 1/0/2
```

```
[SWA-vlan200]quit
```

```
[SWA]interface vlan 100
```

```
[SWA-Vlan-interface100]ip address 192.168.0.1 255.255.255.0
```

```
[SWA-Vlan-interface100]quit
```

```
[SWA]interface vlan 200
```

```
[SWA-Vlan-interface200]ip address 192.168.1.1 255.255.255.0
```

```
[SWA-Vlan-interface200]quit
```

#启动ospf协议，并设置路由器的router id

```
[SWA]ospf 1 router-id 192.168.1.1
```

#配置区域0并且发布网段

```
[SWA-ospf-1]area 0
```

```
[SWA-ospf-1-area-0.0.0.0]network 192.168.0.0 0.0.0.255
```

```
[SWA-ospf-1-area-0.0.0.0]quit
```

#配置区域1并且发布网段

```
[SWA-ospf-1]area 1
```

```
[SWA-ospf-1-area-0.0.0.1]network 192.168.1.0 0.0.0.255
```

```
[SWA-ospf-1-area-0.0.0.1]quit
```

```
[SWA-ospf-1]quit
#保存配置
[SWA]save force
```

3.2 SWB配置

```
#创建vlan100和vlan200，并把G1/0/1口加入vlan100、1/0/2口加入vlan200，并且配置vlan100和vlan200的虚接口地址
<SWB>system-view
System View: return to User View with Ctrl+Z.
[SWB]vlan 100
[SWB-vlan100]port GigabitEthernet 1/0/1
[SWB-vlan100]quit
[SWB]vlan 200
[SWB-vlan200]port GigabitEthernet 1/0/2
[SWB-vlan200]quit
[SWB]interface vlan 100
[SWB-Vlan-interface100]ip address 192.168.0.2 255.255.255.0
[SWB-Vlan-interface100]quit
[SWB]interface vlan 200
[SWB-Vlan-interface200]ip address 192.168.2.1 255.255.255.0
[SWB-Vlan-interface200]quit
#启动ospf协议，并设置路由器的router id
[SWB]ospf 1 router-id 192.168.2.1
#配置区域0并且发布网段
[SWB-ospf-1]area 0
[SWB-ospf-1-area-0.0.0.0]network 192.168.0.0 0.0.0.255
[SWB-ospf-1-area-0.0.0.0]quit
#配置区域2并且发布网段
[SWB-ospf-1]area 2
[SWB-ospf-1-area-0.0.0.2]network 192.168.2.0 0.0.0.255
[SWB-ospf-1-area-0.0.0.2]quit
[SWB-ospf-1]quit
#保存配置
[SWB]save force
```

3.3 SWC配置

```
#创建vlan200和vlan300，并把G1/0/1口加入vlan300、1/0/2口加入vlan200，并且配置vlan300和vlan200的虚接口地址
<SWC>system-view
System View: return to User View with Ctrl+Z.
[SWC]vlan 300
[SWC-vlan300]port GigabitEthernet 1/0/1
[SWC-vlan300]quit
[SWC]vlan 200
[SWC-vlan200]port GigabitEthernet 1/0/2
[SWC-vlan200]quit
[SWC]interface vlan 300
[SWC-Vlan-interface300]ip address 172.16.1.1 255.255.255.0
[SWC-Vlan-interface300]quit
[SWC]interface vlan 200
[SWC-Vlan-interface200]ip address 192.168.1.2 255.255.255.0
[SWC-Vlan-interface200]quit
#启动ospf协议，并设置路由器的router id
[SWC]ospf 1 router-id 192.168.1.2
#配置区域1并且发布网段
[SWC-ospf-1]area 1
[SWC-ospf-1-area-0.0.0.1]network 192.168.1.0 0.0.0.255
[SWC-ospf-1-area-0.0.0.1]network 172.16.1.0 0.0.0.255
[SWC-ospf-1-area-0.0.0.1]quit
[SWC-ospf-1]quit
#保存配置
[SWC]save force
```

3.4 SWD配置

#创建vlan200和vlan300，并把G1/0/1口加入vlan300、1/0/2口加入vlan200，并且配置vlan300和vlan200的虚接口地址

<SWD>system-view

System View: return to User View with Ctrl+Z.

[SWD]vlan 300

[SWD-vlan300]port GigabitEthernet 1/0/1

[SWD-vlan300]quit

[SWD]vlan 200

[SWD-vlan200]port GigabitEthernet 1/0/2

[SWD-vlan200]quit

[SWD]interface vlan 300

[SWD-Vlan-interface300]ip address 172.17.1.1 255.255.255.0

[SWD-Vlan-interface300]quit

[SWD]interface vlan 200

[SWD-Vlan-interface200]ip address 192.168.2.2 255.255.255.0

[SWD-Vlan-interface200]quit

#启动ospf协议，并设置路由器的router id

[SWD]ospf 1 router-id 192.168.2.2

#配置区域1并且发布网段

[SWD-ospf-1]area 2

[SWD-ospf-1-area-0.0.0.2]network 192.168.2.0 0.0.0.255

[SWD-ospf-1-area-0.0.0.2]network 172.17.1.0 0.0.0.255

[SWD-ospf-1-area-0.0.0.2]quit

[SWD-ospf-1]quit

#保存配置

[SWD]save force

3.5 验证配置

#查看Switch A的OSPF邻居，Full是正常状态

[SWA]display ospf peer

OSPF Process 1 with Router ID 192.168.1.1

Neighbor Brief Information

Area: 0.0.0.0

Router ID	Address	Pri	Dead-Time	State	Interface
192.168.2.1	192.168.0.2	1	32	Full/BDR	Vlan100

Area: 0.0.0.1

Router ID	Address	Pri	Dead-Time	State	Interface
192.168.1.2	192.168.1.2	1	36	Full/BDR	Vlan200

#查看Switch A的OSPF路由信息

[SWA]display ospf routing

OSPF Process 1 with Router ID 192.168.1.1

Routing Table

Topology base (MTID 0)

Routing for network

Destination	Cost	Type	NextHop	AdvRouter	Area
172.16.1.0/24	2	Stub	192.168.1.2	192.168.1.2	0.0.0.1
172.17.1.0/24	3	Inter	192.168.0.2	192.168.2.1	0.0.0.0
192.168.0.0/24	1	Transit	0.0.0.0	192.168.1.1	0.0.0.0
192.168.1.0/24	1	Transit	0.0.0.0	192.168.1.1	0.0.0.1
192.168.2.0/24	2	Inter	192.168.0.2	192.168.2.1	0.0.0.0

Total nets: 5

Intra area: 3 Inter area: 2 ASE: 0 NSSA: 0

#查看Switch A的路由表信息，有到172.16.1.0、172.17.1.0、192.168.2.0的路由

[SWA]display ip routing-table

Destinations : 19 Routes : 19

Destination/Mask	Proto	Pre	Cost	NextHop	Interface
0.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
127.0.0.0/8	Direct	0	0	127.0.0.1	InLoop0
127.0.0.0/32	Direct	0	0	127.0.0.1	InLoop0
127.0.0.1/32	Direct	0	0	127.0.0.1	InLoop0
127.255.255.255/32	Direct	0	0	127.0.0.1	InLoop0
172.16.1.0/24	O_INTRA	10	2	192.168.1.2	Vlan200
172.17.1.0/24	O_INTER	10	3	192.168.0.2	Vlan100
192.168.0.0/24	Direct	0	0	192.168.0.1	Vlan100

```
192.168.0.0/32   Direct 0 0      192.168.0.1   Vlan100
192.168.0.1/32   Direct 0 0      127.0.0.1    InLoop0
192.168.0.255/32 Direct 0 0      192.168.0.1   Vlan100
192.168.1.0/24   Direct 0 0      192.168.1.1   Vlan200
192.168.1.0/32   Direct 0 0      192.168.1.1   Vlan200
192.168.1.1/32   Direct 0 0      127.0.0.1    InLoop0
192.168.1.1/32   Direct 0 0      127.0.0.1    InLoop0
192.168.1.255/32 Direct 0 0      192.168.1.1   Vlan200
192.168.2.0/24   O_INTER 10 2    192.168.0.2   Vlan100
224.0.0.0/4      Direct 0 0      0.0.0.0       NULL0
224.0.0.0/24     Direct 0 0      0.0.0.0       NULL0
255.255.255.255/32 Direct 0 0      127.0.0.1    InLoop0
# PC1 ping PC2 正常通信
C:\Users\mfw2656>ping 172.17.1.2
Ping 172.17.1.2 (172.17.1.2): 56 data bytes, press CTRL_C to break
56 bytes from 172.17.1.2: icmp_seq=0 ttl=254 time=8.000 ms
56 bytes from 172.17.1.2: icmp_seq=1 ttl=254 time=2.000 ms
56 bytes from 172.17.1.2: icmp_seq=2 ttl=254 time=3.000 ms
56 bytes from 172.17.1.2: icmp_seq=3 ttl=254 time=3.000 ms
172.17.1.2的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 2ms, 最长 = 3ms, 平均 = 2ms
```

配置关键点