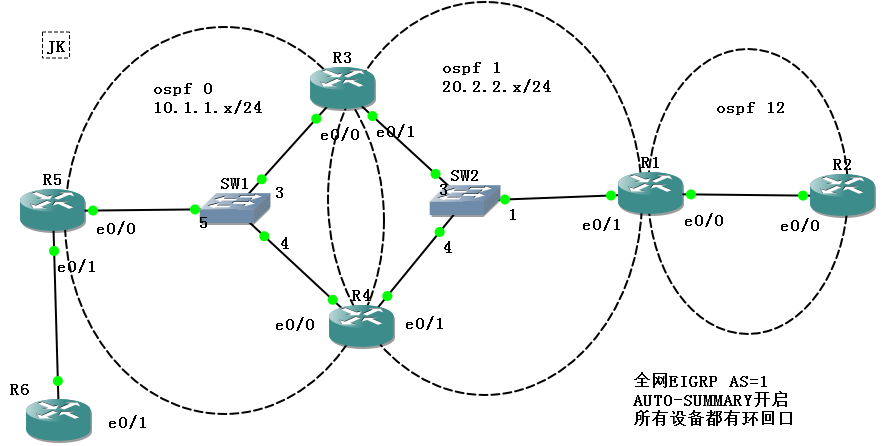
割接实验（平滑过滤）

该实验比较耗费精力，请做该实验前，准备好瓜子饮料 ——JK

一、实验拓扑



二、实验要求

1.全网EIGRP as =1 auto-summary开启

2.ospf 0,1,12 建立

3.R5，R6 eigrp 1 no auto-summary

4.所有网络PING通

三、实验步骤

**步骤一：**

**基本配置（全网eigrp已配置）**

R1：

R1#conf t

R1(config)#int e0/0

R1(config-if)#ip add 12.12.12.1 255.255.255.0

R1(config-if)#no shut

R1(config-if)#int e0/1

R1(config-if)#ip add 20.2.2.1 255.255.255.0

R1(config-if)#no shut

R1(config-if)#int lo0

R1(config-if)#ip add 1.1.1.1 255.255.255.0

R1(config-if)#end

R1(config)#router eigrp 1

R1(config-router)#eigrp router-id 1.1.1.1

R1(config-router)#net 1.1.1.1 0.0.0.0

R1(config-router)#net 20.2.2.1 0.0.0.0

R1(config-router)#net 12.12.12.1 0.0.0.0

R2：

R2#CONF T

R2(config)#int e0/0

R2(config-if)#ip add 12.12.12.2 255.255.255.0

R2(config-if)#no shut

R2(config-if)#int lo0

R2(config-if)#ip add 2.2.2.2 255.255.255.0

R2(config-if)#end

R2#conf t

R2(config)#router eigrp 1

R2(config-router)#eigrp rou

R2(config-router)#eigrp router-id 2.2.2.2

R2(config-router)#net 2.2.2.2 0.0.0.0

R2(config-router)#net 12.12.12.2 0.0.0.0

R2(config-router)#end

R3：

R3#CONF T

R3(config)#INT E0/0

R3(config-if)#IP ADD 10.1.1.3 255.255.255.0

R3(config-if)#no shut

R3(config-if)#int e0/1

R3(config-if)#ip add 20.2.2.3 255.255.255.0

R3(config-if)#no shut

R3(config-if)#int lo0

R3(config-if)#ip add 3.3.3.3 255.255.255.0

R3(config-if)#no shut

R3(config)#router eigrp 1

R3(config-router)network 3.3.3.3 0.0.0.0

R3(config-router)network 10.1.1.3 0.0.0.0

R3(config-router)network 20.2.2.3 0.0.0.0

R3(config-router)eigrp router-id 3.3.3.3

R4：

R4#CONF T

R4(config)#int e0/0

R4(config-if)#ip add 10.1.1.4 255.255.255.0

R4(config-if)#no shut

R4(config-if)#int e0/1

R4(config-if)#ip add 20.2.2.4 255.255.255.0

R4(config-if)#no shut

R4(config-if)#int lo0

R4(config-if)#ip add 4.4.4.4 255.255.255.0

R4(config-if)#end

R4#conf t

R4(config)#router eigrp 1

R4(config-router)#eigrp router-id 4.4.4.4

R4(config-router)#net 4.4.4.4 0.0.0.0

R4(config-router)#net 10.1.1.4 0.0.0.0

R4(config-router)#net 20.2.2.4 0.0.0.0

R5：

R5#conf t

R5(config)#int e0/0

R5(config-if)#ip add 10.1.1.5 255.255.255.0

R5(config-if)#no shut

R5(config-if)#int e0/1

R5(config-if)#ip add 56.56.56.5 255.255.255.0

R5(config-if)#no shut

R5(config-if)#int lo0

R5(config-if)#ip add 5.5.5.5 255.255.255.0

R5(config-if)#end

R5#conf t

R5(config)#router eigrp 1

R5(config-router)#eigrp router-id 5.5.5.5

R5(config-router)#net 10.1.1.5 0.0.0.0

R5(config-router)#net 56.56.56.5 0.0.0.0

R5(config-router)#net 5.5.5.5 0.0.0.0

R5(config-router)#end

R6：

R6#conf t

R6(config)#int e0/1

R6(config-if)#ip add 56.56.56.6 255.255.255.0

R6(config-if)#no shut

R6(config-if)#int lo0

R6(config-if)#ip add 6.6.6.6 255.255.255.0

R6(config-if)#end

R6#conf t

R6(config)#router eigrp 1

R6(config-router)#eigrp router-id 6.6.6.6

R6(config-router)#net 6.6.6.6 0.0.0.0

R6(config-router)#net 56.56.56.6 0.0.0.0

R6(config-router)#end

检验：

R6#show ip route eigrp

D 1.0.0.0/8 [90/460800] via 56.56.56.5, 00:40:23, Ethernet0/1

D 2.0.0.0/8 [90/486400] via 56.56.56.5, 00:40:23, Ethernet0/1

D 3.0.0.0/8 [90/435200] via 56.56.56.5, 00:40:23, Ethernet0/1

D 4.0.0.0/8 [90/435200] via 56.56.56.5, 00:40:23, Ethernet0/1

D 20.0.0.0/8 [90/332800] via 56.56.56.5, 00:40:23, Ethernet0/1

D 5.0.0.0/8 [90/409600] via 56.56.56.5, 00:40:23, Ethernet0/1

6.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

D 6.0.0.0/8 is a summary, 00:40:26, Null0

D 10.0.0.0/8 [90/307200] via 56.56.56.5, 00:40:23, Ethernet0/1

56.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

D 56.0.0.0/8 is a summary, 00:40:25, Null0

D 12.0.0.0/8 [90/358400] via 56.56.56.5, 00:40:23, Ethernet0/1

Ping 2.2.2.2 so 6.6.6.6 通！

**步骤二：**

**建立OSPF**

R2：

R2#conf t

R2(config)#router ospf 1

R2(config-router)#router-id 2.2.2.2

R2(config-router)#net 2.2.2.2 0.0.0.0 area 12

R2(config-router)#net 12.12.12.0 0.0.0.255 area 12

R2(config-router)#int lo0

R2(config-if)#ip ospf network point-to-point

R1：

R1#conf t

R1(config)#router ospf 1

R1(config-router)#router-id 1.1.1.1

R1(config-router)#net 1.1.1.1 0.0.0.0 a 1

R1(config-router)#net 20.2.2.0 0.0.0.255 a 1

R1(config-router)#net 12.12.12.0 0.0.0.255 a 12

R1(config-router)#int lo0

R1(config-if)#ip ospf net point-to-point

R3：

R3#conf t

R3(config)#router ospf 1

R3(config-router)#router-id 3.3.3.3

R3(config-router)#net 3.3.3.3 0.0.0.0 a 0

R3(config-router)#net 10.1.1.0 0.0.0.255 a 0

R3(config-router)#net 20.2.2.0 0.0.0.255 a 1

R3(config)#int lo0

R3(config-if)#ip ospf net point-to-point

R4：

R4#conf t

R4(config)#router ospf 1

R4(config-router)#router-id 4.4.4.4

R4(config-router)#net 4.4.4.4 0.0.0.0 a 0

R4(config-router)#net 10.1.1.0 0.0.0.255 a 0

R4(config-router)#net 20.2.2.0 0.0.0.255 a 1

R4(config-router)#int lo0

R4(config-if)#ip ospf net point-to-point

R5：

R5#CONF T

R5(config)#router ospf 1

R5(config-router)#router-id 5.5.5.5

R5(config-router)#net 10.1.1.0 0.0.0.255 a 0

R5(config-router)#net 5.5.5.5 0.0.0.0 a 0

R5(config-router)#exit

R5(config)#int lo0

R5(config-if)#ip ospf net point

R5(config-if)#ip ospf net point-to-point

**步骤三：**

**建立虚电路**

R1

R1(config)#router ospf 1

R1(config-router)#area 1 virtual-link 3.3.3.3

R1(config-router)#area 1 virtual-link 4.4.4.4

R4：

R4(config)#router ospf 1

R4(config-router)#area 1 virtual-link 1.1.1.1

R3：

R3(config)#router ospf 1

R3(config-router)#area 1 virtual-link 1.1.1.1

检验：

R2#show ip route ospf

1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 1.1.1.0/24 [110/11] via 12.12.12.1, 00:05:19, Ethernet0/0

3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 3.3.3.0/24 [110/21] via 12.12.12.1, 00:03:41, Ethernet0/0

4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 4.4.4.0/24 [110/21] via 12.12.12.1, 00:03:45, Ethernet0/0

20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 20.2.2.0/24 [110/20] via 12.12.12.1, 00:05:19, Ethernet0/0

5.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 5.5.5.0/24 [110/31] via 12.12.12.1, 00:03:45, Ethernet0/0

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 10.1.1.0/24 [110/30] via 12.12.12.1, 00:03:45, Ethernet0/0

R5#show ip route ospf

1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 1.1.1.0/24 [110/21] via 10.1.1.4, 00:05:17, Ethernet0/0

[110/21] via 10.1.1.3, 00:05:17, Ethernet0/0

2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 2.2.2.0/24 [110/31] via 10.1.1.4, 00:05:17, Ethernet0/0

[110/31] via 10.1.1.3, 00:05:17, Ethernet0/0

3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O 3.3.3.0/24 [110/11] via 10.1.1.3, 00:05:17, Ethernet0/0

4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O 4.4.4.0/24 [110/11] via 10.1.1.4, 00:05:17, Ethernet0/0

20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 20.2.2.0/24 [110/20] via 10.1.1.4, 00:05:17, Ethernet0/0

[110/20] via 10.1.1.3, 00:05:17, Ethernet0/0

12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

O IA 12.12.12.0/24 [110/30] via 10.1.1.4, 00:05:17, Ethernet0/0

[110/30] via 10.1.1.3, 00:05:17, Ethernet0/0

**步骤四：**

**改大eigrp的管理距离**

**R2：**

**R2(config)#access-list 40 permit any**

**R2(config)#router eigrp 1**

**R2(config-router)#distance 111 12.12.12.1 0.0.0.0 40**

**R1：**

**R1(config)#access-list 40 permit any**

**R1(config)#router eigrp 1**

**R1(config-router)#distance 111 12.12.12.2 0.0.0.0 40**

**R1(config-router)#distance 111 12.12.12.2 0.0.0.0 40**

**R3：**

**R3(config)#access-list 40 permit any**

**R3(config)#router eigrp 1**

**R3(config-router)#distance 111 10.1.1.3 0.0.0.0 40**

**R3(config-router)#distance 111 10.1.1.5 0.0.0.0 40**

**R3(config-router)#distance 111 10.1.1.3 0.0.0.0 40**

**R3(config-router)#distance 111 10.1.1.5 0.0.0.0 40**

**R4：**

**R4(config)#access-list 40 permit any**

**R4(config)#router eigrp 1**

**R4(config-router)#distance 111 20.2.2.1 0.0.0.0 40**

**R4(config-router)#distance 111 20.2.2.3 0.0.0.0 40**

**R4(config-router)#distance 111 10.1.1.3 0.0.0.0 40**

**R4(config-router)#distance 111 10.1.1.5 0.0.0.0 40**

**R5：**

**R5(config)#access-list 40 permit any**

**R5(config)#router eigrp 1**

**R5(config-router)#distance 111 10.1.1.3 0.0.0.0 40**

**R5(config-router)#distance 111 10.1.1.4 0.0.0.0 40**

步骤五：

**重分发**

**R5(config)#router ospf 1**

**R5(config-router)#redistribute eigrp 1 subnets metric 30**

**R5(config)#router eigrp 1**

**R5(config-router)#redistribute ospf 1 metric 10000 100 255 1 1500**

**检验：**

**Ping 6.6.6.6 so 2.2.2.2**

**Ping 2.2.2.2 so 6.6.6.6**

**R6#show ip route**

**Codes: 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**

**i - IS-IS, su - IS-IS summary, 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**

**1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 1.1.1.0/24 [170/307200] via 56.56.56.5, 00:01:20, Ethernet0/1**

**D 1.0.0.0/8 [90/460800] via 56.56.56.5, 00:01:20, Ethernet0/1**

**2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 2.2.2.0/24 [170/307200] via 56.56.56.5, 00:01:20, Ethernet0/1**

**D 2.0.0.0/8 [90/486400] via 56.56.56.5, 00:00:00, Ethernet0/1**

**3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 3.3.3.0/24 [170/307200] via 56.56.56.5, 00:01:20, Ethernet0/1**

**D 3.0.0.0/8 [90/435200] via 56.56.56.5, 00:01:22, Ethernet0/1**

**4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 4.4.4.0/24 [170/307200] via 56.56.56.5, 00:01:22, Ethernet0/1**

**D 4.0.0.0/8 [90/435200] via 56.56.56.5, 00:01:22, Ethernet0/1**

**20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 20.2.2.0/24 [170/307200] via 56.56.56.5, 00:01:37, Ethernet0/1**

**D 20.0.0.0/8 [90/332800] via 56.56.56.5, 00:01:37, Ethernet0/1**

**D 5.0.0.0/8 [90/409600] via 56.56.56.5, 00:01:37, Ethernet0/1**

**6.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**C 6.6.6.0/24 is directly connected, Loopback0**

**D 6.0.0.0/8 is a summary, 00:01:18, Null0**

**D 10.0.0.0/8 [90/307200] via 56.56.56.5, 00:01:37, Ethernet0/1**

**56.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**C 56.56.56.0/24 is directly connected, Ethernet0/1**

**D 56.0.0.0/8 is a summary, 00:01:18, Null0**

**12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**D EX 12.12.12.0/24 [170/307200] via 56.56.56.5, 00:01:37, Ethernet0/1**

**D 12.0.0.0/8 [90/358400] via 56.56.56.5, 00:01:37, Ethernet0/1**

**R2#show ip route**

**Codes: 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**

**i - IS-IS, su - IS-IS summary, 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**

**1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 1.1.1.0/24 [110/11] via 12.12.12.1, 01:20:53, Ethernet0/0**

**O E2 1.0.0.0/8 [110/30] via 12.12.12.1, 00:14:04, Ethernet0/0**

**2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**C 2.2.2.0/24 is directly connected, Loopback0**

**D 2.0.0.0/8 is a summary, 04:26:35, Null0**

**3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 3.3.3.0/24 [110/21] via 12.12.12.1, 01:19:15, Ethernet0/0**

**O E2 3.0.0.0/8 [110/30] via 12.12.12.1, 00:14:06, Ethernet0/0**

**4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 4.4.4.0/24 [110/21] via 12.12.12.1, 01:19:22, Ethernet0/0**

**O E2 4.0.0.0/8 [110/30] via 12.12.12.1, 00:14:06, Ethernet0/0**

**20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 20.2.2.0/24 [110/20] via 12.12.12.1, 01:20:57, Ethernet0/0**

**O E2 20.0.0.0/8 [110/30] via 12.12.12.1, 00:14:08, Ethernet0/0**

**5.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 5.5.5.0/24 [110/31] via 12.12.12.1, 01:19:24, Ethernet0/0**

**O E2 5.0.0.0/8 [110/30] via 12.12.12.1, 00:05:24, Ethernet0/0**

**O E2 6.0.0.0/8 [110/30] via 12.12.12.1, 00:02:29, Ethernet0/0**

**10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O IA 10.1.1.0/24 [110/30] via 12.12.12.1, 01:19:24, Ethernet0/0**

**O E2 10.0.0.0/8 [110/30] via 12.12.12.1, 00:14:08, Ethernet0/0**

**56.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**O E2 56.56.56.0/24 [110/30] via 12.12.12.1, 00:03:52, Ethernet0/0**

**O E2 56.0.0.0/8 [110/30] via 12.12.12.1, 00:03:51, Ethernet0/0**

**12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks**

**C 12.12.12.0/24 is directly connected, Ethernet0/0**

**D 12.0.0.0/8 is a summary, 04:26:39, Null0**

步骤六：

**取消ospf内的eigrp路由协议**

**R1~R4：no router eigrp 1**

步骤七：

**取消自动汇总**

**R5(config)#router eigrp 1**

**R5(config-router)#no auto**

**R5(config-router)#no auto-summary**

**R6(config)#router eigrp 1**

**R6(config-router)#no auto**

**R6(config-router)#no auto-summary**

**步骤八：**

**ospf内流量分行**

**R5🡪R3🡪R1 备份：R5🡪R4🡪R1**

**R1🡪R4🡪R5备份： R5🡪R3🡪R1**