NSD NETWORK DAY05

1 案例：综合网络搭建

1.1 问题

现有网络问题分析：

接入层交换机只与同一个三层交换机相连，存在单点故障而影响网络通信。

互联网连接单一服务商

现有网络需求：

随着企业发展，为了保证网络的高可用性，需要使用很多的冗余技术。

保证局域网络不会因为线路故障而导致的网络故障。

保证客户端机器不会因为使用单一网关而出现的单点失败。

保证到互联网的高可用接入使用冗余互联网连接。

提高网络链路带宽。

1.2 方案

基于项目的需求，需要用到如下技术：

STP：解决二层环路带来的广播风暴并链路冗余问题

链路聚合：提高网络链路带宽
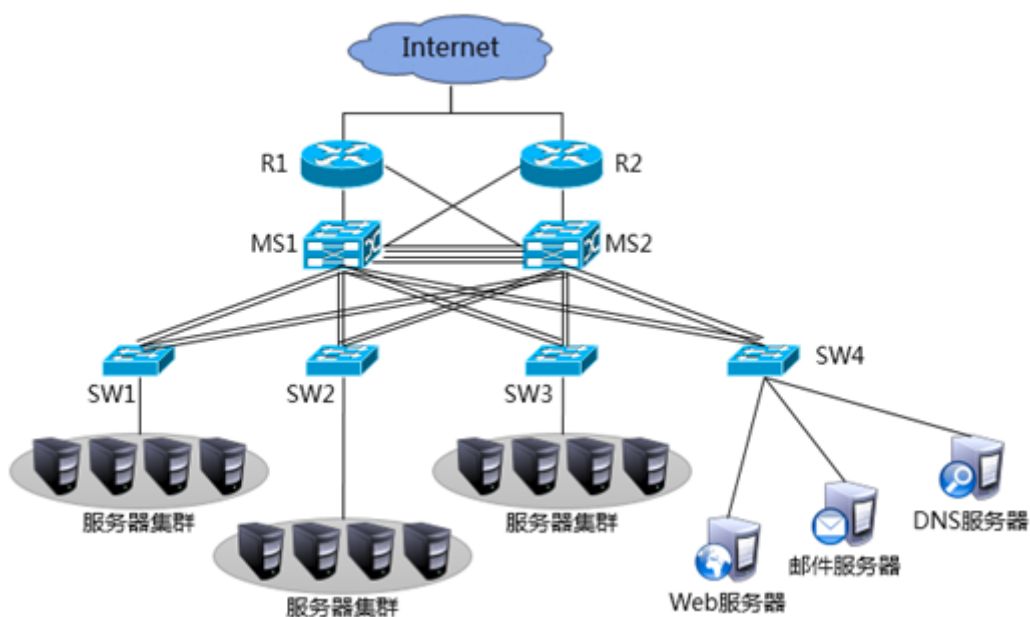
OSPF路由协议：实现网络路径的自动学习

VRRP：实现网关冗余

重新规划后的网络拓扑如图-1：

图-1

1.3 步骤

1.4 实现此案例需要按照如下步骤进行，为了配置过程中不被弹出信息干扰，可以关闭信息提示。

步骤一：S3700交换机配置

```
01.     SW1配置
02.     <Huawei>system-view
03.     [Huawei]vlan batch 10 20 30 40
04.     [Huawei]port-group 1
05.     [Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
06.     [Huawei-port-group-1]port link-type  trunk
07.     [Huawei-port-group-1]port trunk allow-pass vlan all
08.     [Huawei-port-group-1]quit
09.
10.     [Huawei]interface Ethernet 0/0/5
11.     [Huawei-Ethernet0/0/5] port link-type access
12.     [Huawei-Ethernet0/0/5] port default vlan 10
13.
14.
15.     SW2配置
16.     <Huawei>system-view
17.     [Huawei]vlan batch 10 20 30 40
18.     [Huawei]port-group 1
19.     [Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
20.     [Huawei-port-group-1]port link-type  trunk
21.     [Huawei-port-group-1]port trunk allow-pass vlan all
22.     [Huawei-port-group-1]quit
23.
24.     [Huawei]interface Ethernet 0/0/5
25.     [Huawei-Ethernet0/0/5] port link-type access
26.     [Huawei-Ethernet0/0/5] port default vlan 20
27.
28.     SW3配置
29.     <Huawei>system-view
30.     [Huawei]vlan batch 10 20 30 40
31.     [Huawei]port-group 1
32.     [Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
33.     [Huawei-port-group-1]port link-type  trunk
34.     [Huawei-port-group-1]port trunk allow-pass vlan all
35.     [Huawei-port-group-1]quit
36.
```

37. [Huawei]interface Ethernet 0/0/5

38. [Huawei-Ethernet0/0/5] port link-type access

39. [Huawei-Ethernet0/0/5] port default vlan 30

40.

41. SW4配置

42. <Huawei>system-view

43. [Huawei]vlan batch 10 20 30 40

44. [Huawei]port-group 1

45. [Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2

46. [Huawei-port-group-1]port link-type trunk

47. [Huawei-port-group-1]port trunk allow-pass vlan all

48. [Huawei-port-group-1]quit

49.

50. [Huawei]interface Ethernet 0/0/5

51. [Huawei-Ethernet0/0/5] port link-type access

52. [Huawei-Ethernet0/0/5] port default vlan 40

步骤二：S5700交换机配置

01. MS1配置

02.

03. <Huawei>system-view

04. [Huawei]vlan batch 10 20 30 40 50 60

05. [Huawei]port-group 1

06. [Huawei-port-group-1]group-member GigabitEthernet 0/0/1 to GigabitEthernet 0/0/5

07. [Huawei-port-group-1]port link-type trunk

08. [Huawei-port-group-1]port trunk allow-pass vlan all

09. [Huawei-port-group-1]quit

10.

11. [Huawei]interface Vlanif 10

12. [Huawei-Vlanif10]ip address 192.168.10.252 24

13. [Huawei-Vlanif10]vrrp vrid 1 virtual-ip 192.168.10.254

14. [Huawei-Vlanif10]vrrp vrid 1 priority 110

15. [Huawei]interface Vlanif 20

16. [Huawei-Vlanif20]ip address 192.168.20.252 24

17. [Huawei-Vlanif20]vrrp vrid 2 virtual-ip 192.168.20.254

18. [Huawei-Vlanif20]vrrp vrid 2 priority 110

19.

20. [Huawei]interface Vlanif 30

21. [Huawei-Vlanif30]ip address 192.168.30.252 24

22.	[Huawei-Vlanif30]vrrp vrid 3 virtual-ip 192.168.30.254
23.	[Huawei]interface Vlanif 40
24.	[Huawei-Vlanif40]ip address 192.168.40.252 24
25.	[Huawei-Vlanif40]vrrp vrid 4 virtual-ip 192.168.40.254
26.	
27.	[Huawei]interface Vlanif 50
28.	[Huawei-Vlanif50]ip address 192.168.50.2 24
29.	[Huawei]interface GigabitEthernet 0/0/23
30.	[Huawei-GigabitEthernet0/0/23]port link-type access
31.	[Huawei-GigabitEthernet0/0/23]port default vlan 50
32.	
33.	[Huawei]interface Vlanif 60
34.	[Huawei-Vlanif60]ip address 192.168.60.2 24
35.	[Huawei]interface GigabitEthernet 0/0/24
36.	[Huawei-GigabitEthernet0/0/24]port link-type access
37.	[Huawei-GigabitEthernet0/0/24]port default vlan 60
38.	
39.	
40.	[Huawei]ospf
41.	[Huawei-ospf-1]area 0
42.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.10.0 0.0.0.255
43.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.20.0 0.0.0.255
44.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.30.0 0.0.0.255
45.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.40.0 0.0.0.255
46.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.50.0 0.0.0.255
47.	[Huawei-ospf-1-area-0.0.0.0]network 192.168.60.0 0.0.0.255
48.	
49.	MS2配置
50.	<Huawei>system-view
51.	[Huawei]vlan batch 10 20 30 40 70 80
52.	[Huawei]port-group 1
53.	[Huawei-port-group-1]group-member GigabitEthernet 0/0/1 to GigabitEthernet 0/0/5
54.	[Huawei-port-group-1]port link-type trunk
55.	[Huawei-port-group-1]port trunk allow-pass vlan all
56.	[Huawei-port-group-1]quit
57.	
58.	[Huawei]interface Vlanif 10
59.	[Huawei-Vlanif10]ip address 192.168.10.253 24
60.	[Huawei-Vlanif10]vrrp vrid 1 virtual-ip 192.168.10.254
61.	[Huawei]interface Vlanif 20
62.	[Huawei-Vlanif20]ip address 192.168.20.253 24

63.   [Huawei-Vlanif20]vrrp vrid 2 virtual-ip 192.168.20.254

64.

65.   [Huawei]interface Vlanif 30

66.   [Huawei-Vlanif30]ip address 192.168.30.253 24

67.   [Huawei-Vlanif30]vrrp vrid 3 virtual-ip 192.168.30.254

68.   [Huawei-Vlanif20]vrrp vrid 3 priority 110

69.   [Huawei]interface Vlanif 40

70.   [Huawei-Vlanif40]ip address 192.168.40.253 24

71.   [Huawei-Vlanif40]vrrp vrid 4 virtual-ip 192.168.40.254

72.   [Huawei-Vlanif20]vrrp vrid 4 priority 110

73.

74.   [Huawei]interface Vlanif 70

75.   [Huawei-Vlanif70]ip address 192.168.70.2 24

76.   [Huawei]interface GigabitEthernet 0/0/23

77.   [Huawei-GigabitEthernet0/0/23]port link-type access

78.   [Huawei-GigabitEthernet0/0/23]port default vlan 70

79.

80.   [Huawei]interface Vlanif 80

81.   [Huawei-Vlanif80]ip address 192.168.80.2 24

82.   [Huawei]interface GigabitEthernet 0/0/24

83.   [Huawei-GigabitEthernet0/0/24]port link-type access

84.   [Huawei-GigabitEthernet0/0/24]port default vlan 80

85.

86.   [Huawei]ospf

87.   [Huawei-ospf-1]area 0

88.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.10.0 0.0.0.255

89.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.20.0 0.0.0.255

90.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.30.0 0.0.0.255

91.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.40.0 0.0.0.255

92.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.70.0 0.0.0.255

93.   [Huawei-ospf-1-area-0.0.0.0]network 192.168.80.0 0.0.0.255

然后测试目前网络是否可以达成全网互通。

步骤四：路由器配置
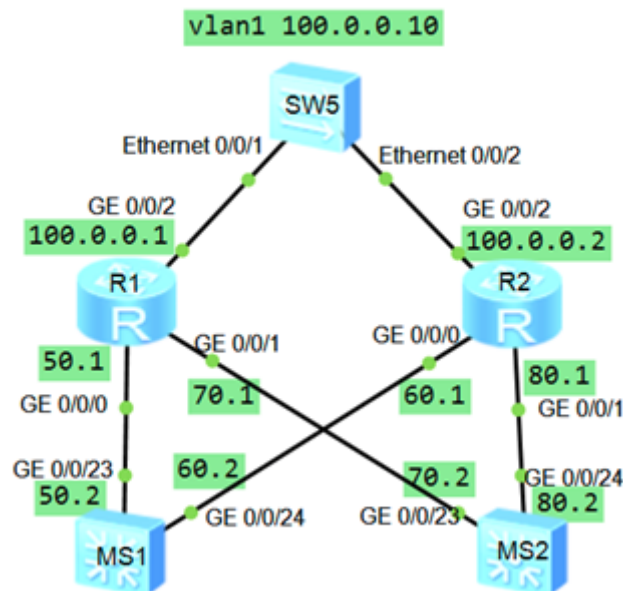
按图-2为路由器与三层交换机相连的接口配置ip

注:50.1表示ip需要配置为192.168.50.1

图-2

01. R1

02. <Huawei>system-view

03. [Huawei]interface GigabitEthernet 0/0/0

04. [Huawei-GigabitEthernet0/0/0]ip address 192.168.50.1 24

05. [Huawei]interface GigabitEthernet 0/0/1

06. [Huawei-GigabitEthernet0/0/1]ip address 192.168.70.1 24

07. [Huawei]interface GigabitEthernet 0/0/2

08. [Huawei-GigabitEthernet0/0/2]ip address 100.0.0.1 8

09. [Huawei-GigabitEthernet0/0/2]nat static global 100.0.0.3 inside 192.168.40.1

10. [Huawei-GigabitEthernet0/0/2]quit

11. [Huawei]ip route-static 0.0.0.0 0 100.0.0.10

12.

13. [Huawei]ospf

14. [Huawei-ospf-1]default-route-advertise

15. [Huawei-ospf-1]area 0

16. [Huawei-ospf-1-area-0.0.0.0]network 192.168.50.0 0.0.0.255

17. [Huawei-ospf-1-area-0.0.0.0]network 192.168.70.0 0.0.0.255

18.

19. R2

20. <Huawei>system-view

21. [Huawei]interface GigabitEthernet 0/0/0

22. [Huawei-GigabitEthernet0/0/0]ip address 192.168.60.1 24

23. [Huawei]interface GigabitEthernet 0/0/1

24. [Huawei-GigabitEthernet0/0/1]ip address 192.168.80.1 24

25. [Huawei]interface GigabitEthernet 0/0/2

26. [Huawei-GigabitEthernet0/0/2]ip address 100.0.0.2 8

27. [Huawei-GigabitEthernet0/0/2]nat static global 100.0.0.4 inside 192.168.40.2

28. [Huawei-GigabitEthernet0/0/2]quit

29. [Huawei]ip route-static 0.0.0.0 0 100.0.0.10

30.

31. [Huawei]ospf

32. [Huawei-ospf-1]default-route-advertise

33. [Huawei-ospf-1]area 0

34. [Huawei-ospf-1-area-0.0.0.0]network 192.168.60.0 0.0.0.255

35. [Huawei-ospf-1-area-0.0.0.0]network 192.168.80.0 0.0.0.255

　　三层交换机如果看不到从路由器学习来的默认路由就去检查路由器G0/2地址是否配置，之后验证从内网可以访问外网设备，ping通证明项目升级成功。