

NSD NETWORK DAY05

1. 案例：综合网络搭建

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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：

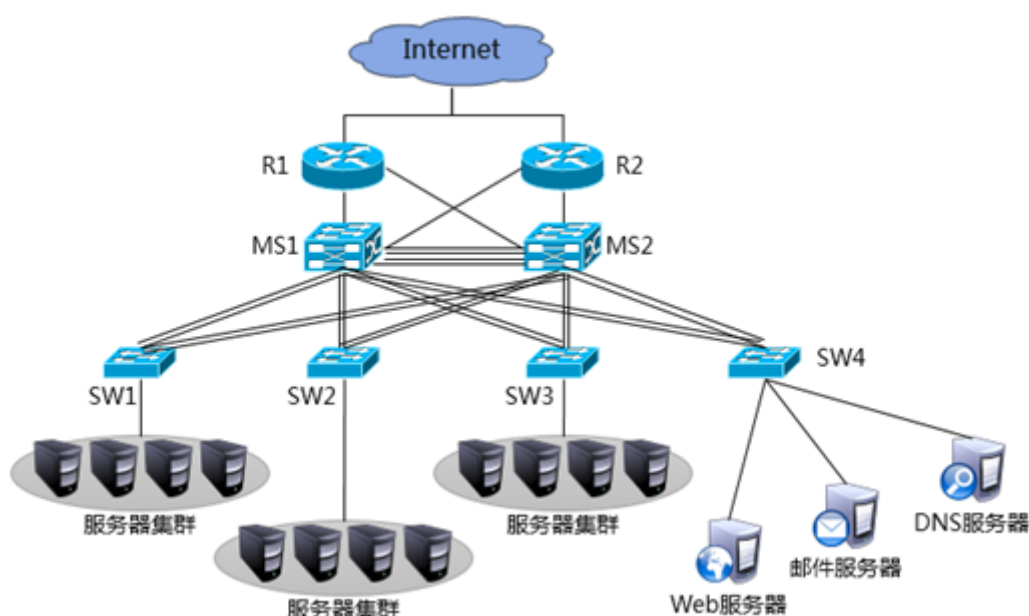


图-1

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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.

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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

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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

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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

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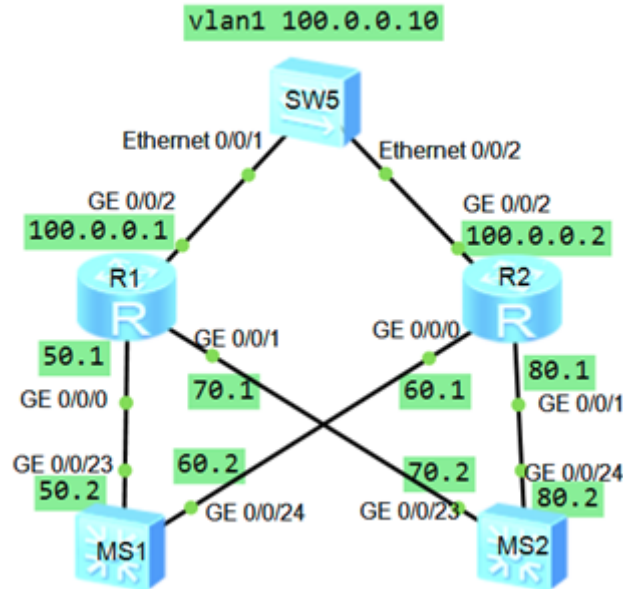


图-2

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

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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。

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