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：

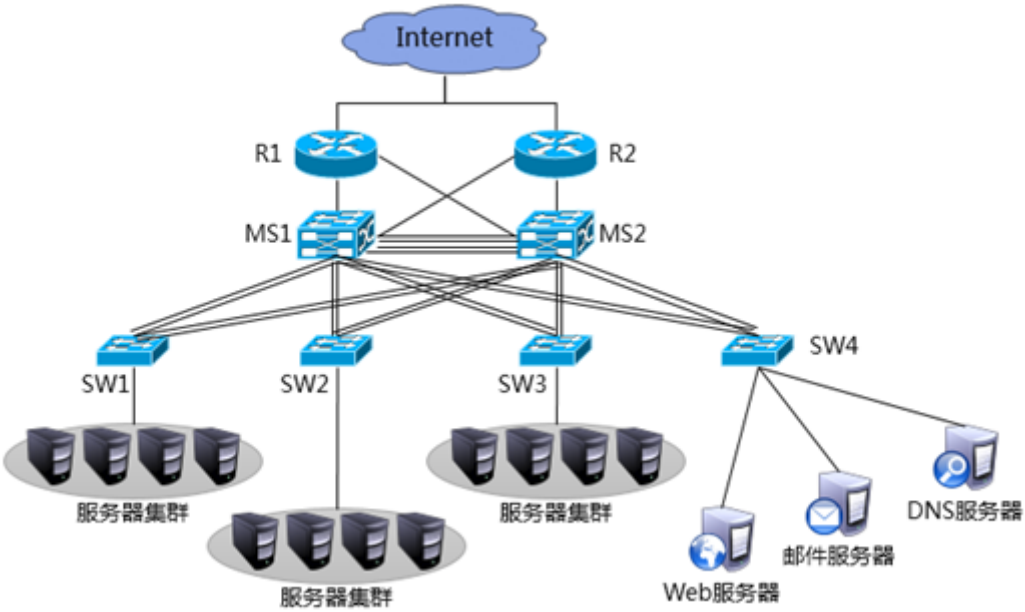

图-1

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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

```
SW1配置
<Huawei>system-view
[Huawei]vlan batch 10 20 30 40
[Huawei]port-group 1
[Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

[Huawei]interface Ethernet 0/0/5
[Huawei-Ethernet0/0/5] port link-type access
[Huawei-Ethernet0/0/5] port default vlan 10


SW2配置
<Huawei>system-view
[Huawei]vlan batch 10 20 30 40
[Huawei]port-group 1
[Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

[Huawei]interface Ethernet 0/0/5
[Huawei-Ethernet0/0/5] port link-type access
[Huawei-Ethernet0/0/5] port default vlan 20

SW3配置
<Huawei>system-view
[Huawei]vlan batch 10 20 30 40
[Huawei]port-group 1
[Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

```

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```
[Huawei]interface Ethernet 0/0/5
[Huawei-Ethernet0/0/5] port link-type access
[Huawei-Ethernet0/0/5] port default vlan 30

SW4配置
<Huawei>system-view
[Huawei]vlan batch 10 20 30 40
[Huawei]port-group 1
[Huawei-port-group-1]group-member Ethernet 0/0/1 to Ethernet 0/0/2
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

[Huawei]interface Ethernet 0/0/5
[Huawei-Ethernet0/0/5] port link-type access
[Huawei-Ethernet0/0/5] port default vlan 40
```

步骤二：S5700交换机配置

```
MS1配置

<Huawei>system-view
[Huawei]vlan batch 10 20 30 40 50 60
[Huawei]port-group 1
[Huawei-port-group-1]group-member GigabitEthernet 0/0/1 to GigabitEthernet 0/0/5
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

[Huawei]interface Vlanif 10
[Huawei-Vlanif10]ip address 192.168.10.252 24
[Huawei-Vlanif10]vrrp vrid 1 virtual-ip 192.168.10.254
[Huawei-Vlanif10]vrrp vrid 1 priority 110
[Huawei]interface Vlanif 20
[Huawei-Vlanif20]ip address 192.168.20.252 24
[Huawei-Vlanif20]vrrp vrid 2 virtual-ip 192.168.20.254
[Huawei-Vlanif20]vrrp vrid 2 priority 110

[Huawei]interface Vlanif 30
[Huawei-Vlanif30]ip address 192.168.30.252 24
```

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```
[Huawei-Vlanif30]vrrp vrid 3 virtual-ip 192.168.30.254
[Huawei]interface Vlanif 40
[Huawei-Vlanif40]ip address 192.168.40.252 24
[Huawei-Vlanif40]vrrp vrid 4 virtual-ip 192.168.40.254

[Huawei]interface Vlanif 50
[Huawei-Vlanif50]ip address 192.168.50.2 24
[Huawei]interface GigabitEthernet 0/0/23
[Huawei-GigabitEthernet0/0/23]port link-type access
[Huawei-GigabitEthernet0/0/23]port default vlan 50

[Huawei]interface Vlanif 60
[Huawei-Vlanif60]ip address 192.168.60.2 24
[Huawei]interface GigabitEthernet 0/0/24
[Huawei-GigabitEthernet0/0/24]port link-type access
[Huawei-GigabitEthernet0/0/24]port default vlan 60


[Huawei]ospf
[Huawei-ospf-1]area 0
[Huawei-ospf-1-area-0.0.0.0]network 192.168.10.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.20.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.30.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.40.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.50.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.60.0 0.0.0.255

MS2配置
<Huawei>system-view
[Huawei]vlan batch 10 20 30 40 70 80
[Huawei]port-group 1
[Huawei-port-group-1]group-member GigabitEthernet 0/0/1 to GigabitEthernet 0/0/5
[Huawei-port-group-1]port link-type  trunk
[Huawei-port-group-1]port trunk allow-pass vlan all
[Huawei-port-group-1]quit

[Huawei]interface Vlanif 10
[Huawei-Vlanif10]ip address 192.168.10.253 24
[Huawei-Vlanif10]vrrp vrid 1 virtual-ip 192.168.10.254
[Huawei]interface Vlanif 20
[Huawei-Vlanif20]ip address 192.168.20.253 24
```

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```
[Huawei-Vlanif20]vrrp vrid 2 virtual-ip 192.168.20.254

[Huawei]interface Vlanif 30
[Huawei-Vlanif30]ip address 192.168.30.253 24
[Huawei-Vlanif30]vrrp vrid 3 virtual-ip 192.168.30.254
[Huawei-Vlanif20]vrrp vrid 3 priority 110
[Huawei]interface Vlanif 40
[Huawei-Vlanif40]ip address 192.168.40.253 24
[Huawei-Vlanif40]vrrp vrid 4 virtual-ip 192.168.40.254
[Huawei-Vlanif20]vrrp vrid 4 priority 110

[Huawei]interface Vlanif 70
[Huawei-Vlanif70]ip address 192.168.70.2 24
[Huawei]interface GigabitEthernet 0/0/23
[Huawei-GigabitEthernet0/0/23]port link-type access
[Huawei-GigabitEthernet0/0/23]port default vlan 70

[Huawei]interface Vlanif 80
[Huawei-Vlanif80]ip address 192.168.80.2 24
[Huawei]interface GigabitEthernet 0/0/24
[Huawei-GigabitEthernet0/0/24]port link-type access
[Huawei-GigabitEthernet0/0/24]port default vlan 80

[Huawei]ospf
[Huawei-ospf-1]area 0
[Huawei-ospf-1-area-0.0.0.0]network 192.168.10.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.20.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.30.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.40.0 0.0.0.255
[Huawei-ospf-1-area-0.0.0.0]network 192.168.70.0 0.0.0.255
[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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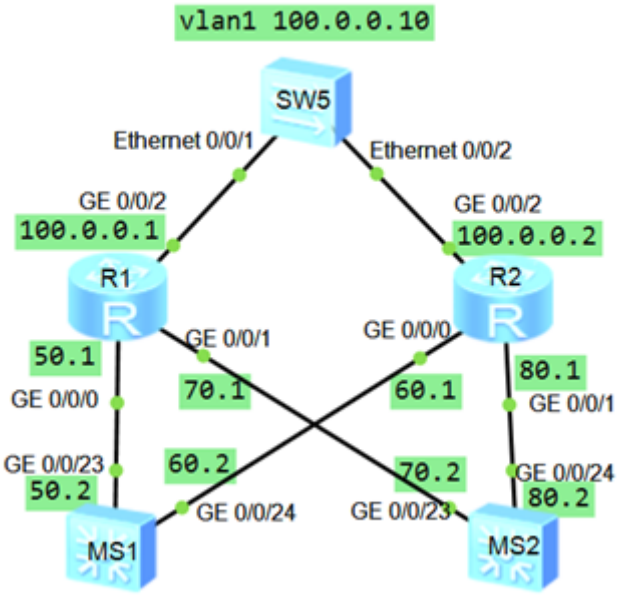

图-2

```
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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```
[Huawei-GigabitEthernet0/0/2]ip address 100.0.0.2 8
[Huawei-GigabitEthernet0/0/2]nat static global 100.0.0.4 inside 192.168.40.2
[Huawei-GigabitEthernet0/0/2]quit
[Huawei]ip route-static 0.0.0.0 0 100.0.0.10

[Huawei]ospf
[Huawei-ospf-1]default-route-advertise
[Huawei-ospf-1]area 0
[Huawei-ospf-1-area-0.0.0.0]network 192.168.60.0 0.0.0.255
[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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