

## 项目六：项目实施

### 1. 1. 1 任务实施

#### 1. 实施规划

##### 1) 实训拓扑结构

根据任务的需求与分析，实训的拓扑结构及网络参数如图 1-14 所示，以 PC1、PC2、模仿公司的市场部和产品部。

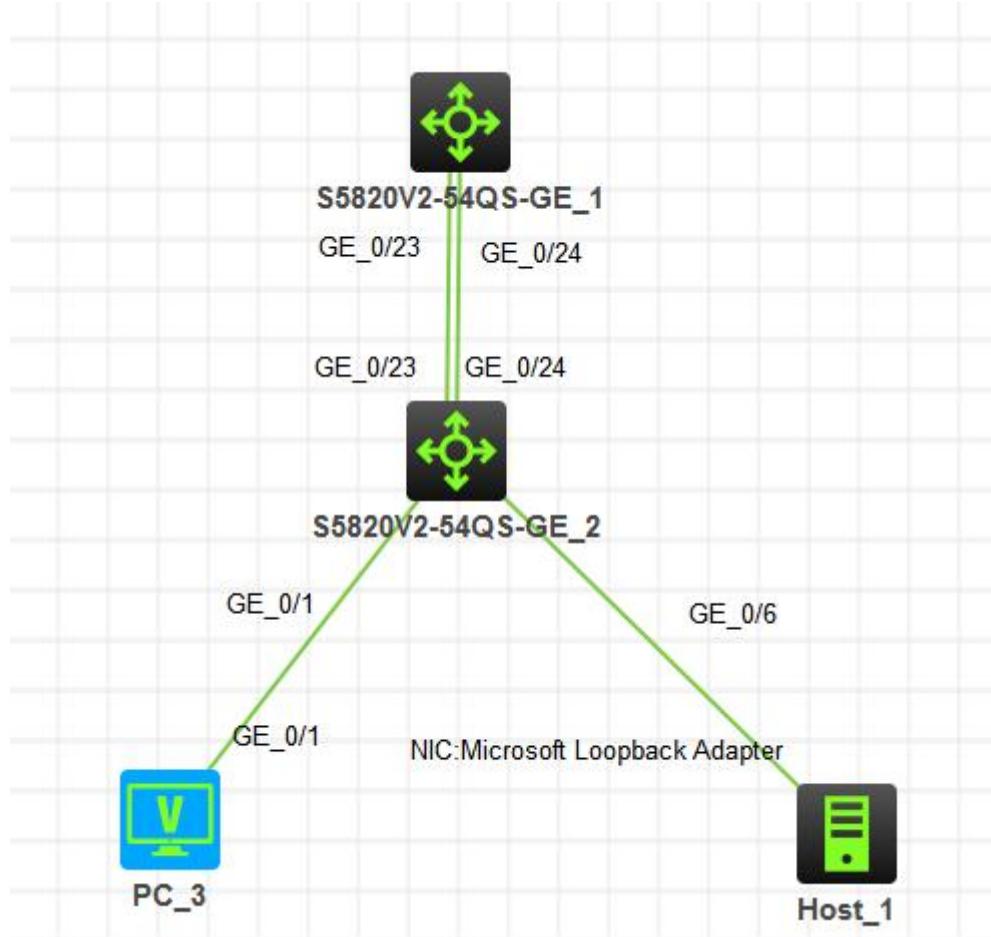


图 5-14 实训任务拓扑

##### 2) 实训设备

根据任务的需求和实训拓扑，每实训小组的实训设备配置建议如表 5-3 所示。

表5-3 实训设备配置清单

设备类型	设备型号	数量
交换机	H3C E126A	2
计算机	windows2003/windows7	2
双绞线	RJ-45	若干

##### 3) IP 地址规划

根据需求分析本任务的 IP 地址规划如表 5-4 所示。

表5-4 IP地址规划

设备	接口	IP 地址	网关
PC1	G0/1	192.168.10.2/24	192.168.10.254
PC2	G0/1	192.168.20.2/24	192.168.20.254
Sw2	Vlan10	192.168.10.254/24	
	Vlan20	192.168.20.254/24	
	Vlan1	1.1.1.2/30	
Sw1	Vlan1	1.1.1.1/30	

## 4) VLAN 规划

根据需求分析本任务的 IP 地址规划，如表 1-5 所示。

表1-5Vlan规划

部门名称	主机	Vlan	端口
市场部	PC1	10	E 1/0/1 to E 1/0/5
产品部	PC2	20	E 1/0/6 to E 1/0/10

## 2. 实施步骤

- 1) 根据实训拓扑图进行交换机、计算机的线缆连接，配置 PC1、PC2、的 IP 地址。
- 2) 使用计算机 Windows 操作系统的“超级终端”组件程序通过串口连接到交换机的配置界面，其中超级终端串口的属性设置还原为默认值（每秒位数 9600、数据位 8、奇偶校验无、数据流控制无）。
- 3) 超级终端登录到路由器，进行任务的相关配置。
- 4) Sw1 主要配置清单如下。

```
[sw]sysn sw1
[sw1]vl 10
[sw1-vlan10]port GigabitEthernet 1/0/1 to GigabitEthernet 1/0/5
[sw1]vl 20
[sw1-vlan20]port GigabitEthernet 1/0/6 to GigabitEthernet 1/0/10
[sw1]interface GigabitEthernet 1/0/24
[sw1-GigabitEthernet1/0/24]port link-type trunk
[sw1-GigabitEthernet1/0/24]port trunk permit vlan all
[sw1]interface Vlan-interface 1
[sw1-Vlan-interface1]ip addr 1.1.1.2 30
[sw1]telnet server enable
[sw1]user-interface vty 0 4
[sw1-line-vty0-4]authentication-mode scheme
[sw1-line-vty0-4]quit
[sw1]local-user wgf
[sw1-luser-manage-wgf]password simple 123
[sw1-luser-manage-wgf]service-type telnet
[sw1] ip route-static 0.0.0.0 0 1.1.1.1
[sw1]int Bridge-Aggregation 1
[sw1]int GigabitEthernet 1/0/23
[sw1-GigabitEthernet1/0/23]port link-aggregation group 1
```

```
[sw1-GigabitEthernet1/0/23]int GigabitEthernet 1/0/24
[sw1-GigabitEthernet1/0/24]port link-aggregation group 1
[sw1]int Bridge-Aggregation 1
[sw1-Bridge-Aggregation1]port link-type trunk
[sw1-Bridge-Aggregation1]port trunk permit vlan all
```

5) sw2 主要配置清单如下：

```
[sw1]interface GigabitEthernet 1/0/24
[sw1-GigabitEthernet1/0/24]port link-type trunk
[sw1-GigabitEthernet1/0/24]port trunk permit vlan all
[sw2]interface Vlan-interface 1
[sw2-Vlan-interface1]ip add 1.1.1.1 30
[sw2]interface Vlan-interface 10
[sw2-Vlan-interface10]ip add 192.168.10.254 24
[sw2]interface Vlan-interface 20
[sw2-Vlan-interface10]ip add 192.168.20.254 24
[sw2]telnet server enable
[sw2]user-interface vty 0 4
[sw2-line-vty0-4]authentication-mode scheme
[sw2-line-vty0-4]quit
[sw2]local-user wgf1
[sw2-luser-manage-wgf1]password simple 123
[sw2-luser-manage-wgf1]service-type telnet
[sw1] ip route-static 0.0.0.0 1.1.1.2
[sw2]dhcp server ip-pool 333
[sw2-dhcp-pool-333]network 192.168.10.0 mask 255.255.255.0
[sw2-dhcp-pool-333]gateway-list 192.168.10.254
[sw2-dhcp-pool-333]address range 192.168.10.100 192.168.10.200
[sw2-dhcp-pool-333]qu
[sw2]dhcp server ip-pool 555
[sw2-dhcp-pool-555]network 192.168.20.0 mask 255.255.255.0
[sw2-dhcp-pool-555]gateway-list 192.168.20.254
[sw2-dhcp-pool-555]address range 192.168.20.100 192.168.20.200
[sw2]dhcp enable
[sw2]interface Vlan-interface 10
[sw2-Vlan-interface10]dhcp select relay
[sw2-Vlan-interface10]dhcp relay server-address 1.1.1..2
[sw2]interface Vlan-interface 20
[sw2-Vlan-interface20]dhcp select relay
[sw2-Vlan-interface20]dhcp relay server-address 1.1.1.2
[sw2]int Bridge-Aggregation 1
[sw2]int GigabitEthernet 1/0/23
[sw2-GigabitEthernet1/0/23]port link-aggregation group 1
[sw2-GigabitEthernet1/0/23]int GigabitEthernet 1/0/24
[sw2-GigabitEthernet1/0/24]port link-aggregation group 1
```

```
[sw2]int Bridge-Aggregation 1
[sw2-Bridge-Aggregation1]port link-type trunk
[sw2-Bridge-Aggregation1]port trunk permit vlan all
```

### 5.1.6 任务验收

#### 1. 设备验收

根据实训拓扑图检查验收路由器、计算机的线缆连接，检查 PC1、PC2、的 IP 地址。

#### 2. 配置验收

##### (1) 查看路由器路由表

```
[H3C]display ip routing-table
[H3C]display ip routing-table

Destinations : 21      Routes : 21

Destination/Mask   Proto   Pre  Cost      NextHop          Interface
0.0.0.0/0          Static   60   0        1.1.1.2          Vlan1
0.0.0.32           Direct    0   0        127.0.0.1        InLoop0
1.1.1.0/30         Direct    0   0        1.1.1.1          Vlan1
1.1.1.0/32         Direct    0   0        1.1.1.1          Vlan1
1.1.1.1/32         Direct    0   0        127.0.0.1        InLoop0
1.1.1.3/32         Direct    0   0        1.1.1.1          Vlan1
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
192.168.10.0/24     Direct    0   0        192.168.10.254  Vlan10
192.168.10.0/32     Direct    0   0        192.168.10.254  Vlan10
192.168.10.254/32  Direct    0   0        127.0.0.1        InLoop0
192.168.10.255/32  Direct    0   0        192.168.10.254  Vlan10
192.168.20.0/24     Direct    0   0        192.168.20.254  Vlan20
192.168.20.0/32     Direct    0   0        192.168.20.254  Vlan20
192.168.20.254/32  Direct    0   0        127.0.0.1        InLoop0
192.168.20.255/32  Direct    0   0        192.168.20.254  Vlan20
224.0.0.0/4          Direct    0   0        0.0.0.0          NULL0
----- More -----
```

##### (2) 查看链路聚合

```
S5820V2-54QS-GE_2
*Jul 20 10:49:03:066 2020 sw1 IFNET/5/LINK_UPDOWN: Line protocol s
d to up.
Configuring GigabitEthernet1/0/23 done.
Configuring GigabitEthernet1/0/24 done.
[sw1-Bridge-Aggregation1]qu
[sw1]int
[sw1]interface g*Jul 20 10:49:33:602 2020 sw1 STP/6/STP_DETECTED_T
ected a topology change.

[sw1]interface b
[sw1]interface Bridge-Aggregation 1
[sw1-Bridge-Aggregation1]dis int
[sw1-Bridge-Aggregation1]dis interface br
[sw1-Bridge-Aggregation1]dis interface Bri
[sw1-Bridge-Aggregation1]dis interface Bridge-Aggregation br
[sw1-Bridge-Aggregation1]dis interface Bridge-Aggregation brief
Brief information on interfaces in bridge mode:
Link: ADM - administratively down; Stby - standby
Speed: (a) - auto
Duplex: (a)/A - auto; H - half; F - full
Type: A - access; T - trunk; H - hybrid
Interface      Link Speed   Duplex Type PVID Description
BAGG1          UP    2G(a)   F(a)    T     1
[sw1-Bridge-Aggregation1]
```

### 3. 功能验收

#### (1) 自动获取 IP 参数



(2) 市场部和产品部之间能相互通信。

管理员: C:\Windows\system32\cmd.exe

```
媒体状态 : 媒体已断开
连接特定的 DNS 后缀 : 
描述 : Microsoft ISATAP Adapter #2
物理地址 : 00-00-00-00-00-00-E0
DHCP 已启用 : 不
自动配置已启用 : 是

C:\Users\Administrator>
C:\Users\Administrator>
C:\Users\Administrator>
C:\Users\Administrator>ping 192.168.10.1

正在 Ping 192.168.10.1 具有 32 字节的数据:
来自 192.168.10.1 的回复: 字节=32 时间=5ms TTL=254
来自 192.168.10.1 的回复: 字节=32 时间=3ms TTL=254
来自 192.168.10.1 的回复: 字节=32 时间=2ms TTL=254
来自 192.168.10.1 的回复: 字节=32 时间=2ms TTL=254

192.168.10.1 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 = 5ms, 平均 = 3ms

C:\Users\Administrator>
```

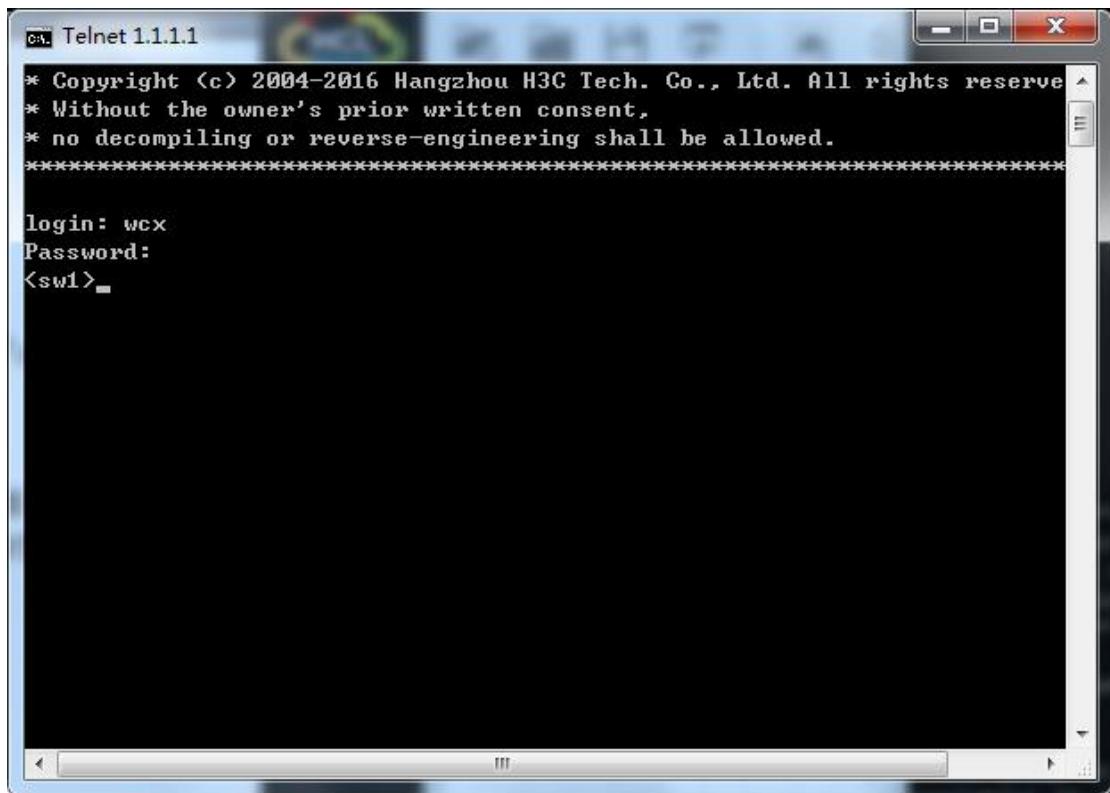
市场部

```
<H3C>%Jul 20 10:53:51:903 2020 H3C SHELL/5/SHELL_LOGIN: Console logged in from co
.
^
% Unrecognized command found at '^' position.
<H3C>ping 192.168.20.2
Ping 192.168.20.2 (192.168.20.2): 56 data bytes, press CTRL_C to break
56 bytes from 192.168.20.2: icmp_seq=0 ttl=127 time=3.000 ms
56 bytes from 192.168.20.2: icmp_seq=1 ttl=127 time=4.000 ms
56 bytes from 192.168.20.2: icmp_seq=2 ttl=127 time=2.000 ms
56 bytes from 192.168.20.2: icmp_seq=3 ttl=127 time=3.000 ms
56 bytes from 192.168.20.2: icmp_seq=4 ttl=127 time=2.000 ms

--- Ping statistics for 192.168.20.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 2.000/2.800/4.000/0.748 ms
<H3C>%Jul 20 10:54:00:717 2020 H3C PING/6/PING_STATISTICS: Ping statistics for 19
mitted, 5 packet(s) received, 0.0% packet loss, round-trip min/avg/max/std-dev =
```

图 5-15 在 PC2 (产品部) 上通过命令提示符 ping 命令访问外部网络

### (3) 设备远程管理



The screenshot shows a Windows-style Telnet window titled "Telnet 1.1.1.1". The title bar includes standard window controls (minimize, maximize, close). The main area displays a copyright notice from Hangzhou H3C Tech. Co., Ltd. (2004-2016), followed by a login prompt:  
\* Copyright (c) 2004-2016 Hangzhou H3C Tech. Co., Ltd. All rights reserved.  
\* Without the owner's prior written consent,  
\* no decompiling or reverse-engineering shall be allowed.  
\*\*\*\*\*  
login: wcx  
Password:  
<sw1>\_

### 1.1.7 任务总结

针对某公司办公区网络的改造任务的内容和目标，根据需求分析进行了实训的规划和实施，通过本任务进行了交换机 vlan、vlan trunk、三层 vlan 路由、dhcp 、dhcp relay、链路聚合等的配置实训。