

计算机网络实验

71117408 梅洛瑜

实验二：

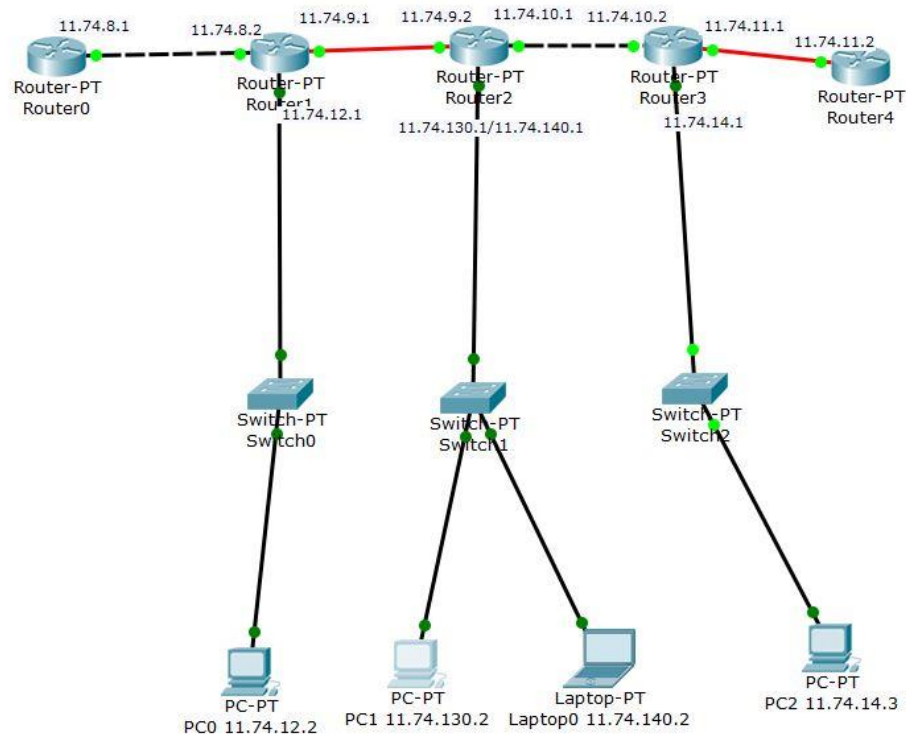
1. 设计目标：

在实验一的基础上，将连接在同一台交换机上的两台主机划分到不同vlan，以此产生新的局域网，并通过路由器配置使得八个子网相互联通

2. 配置方案：

配置交换机划分 vlan，使得连接两个主机的接口分别处于不同 vlan，并将与路由器连接的接口设置为 trunk 模式。配置路由器将与交换机连接的接口划分为 01 与 02 两个子接口分别对应 vlan10 与 vlan20，并配置接口 IP 处于不同子网。设置主机 IP 与路由器相应子接口 IP 处于相同子网，网关为相应子接口 IP

拓扑逻辑：



Switch:

 Switch1

Physical Config CLI Attributes

```
Current configuration : 585 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet1/1
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet2/1
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet3/1
!
interface FastEthernet4/1
!
interface FastEthernet5/1
!
interface Vlan1
 no ip address
 shutdown
```

Router:

 Router2

Physical	Config	CLI	Attributes
----------	--------	-----	------------

```
interface FastEthernet0/0
ip address 11.74.10.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
!
interface FastEthernet1/0.10
encapsulation dot1Q 10
ip address 11.74.130.1 255.255.255.0
!
interface FastEthernet1/0.20
encapsulation dot1Q 20
ip address 11.74.140.1 255.255.255.0
!
interface Serial2/0
no ip address
clock rate 2000000
shutdown
!
interface Serial3/0
no ip address
clock rate 2000000
shutdown
!
interface FastEthernet4/0
ip address 11.74.9.2 255.255.255.0
!
interface FastEthernet5/0
no ip address
shutdown
!
ip classless
ip route 11.74.12.0 255.255.255.0 11.74.9.1
ip route 11.74.14.0 255.255.255.0 11.74.10.2
ip route 11.74.8.0 255.255.255.0 11.74.9.1
ip route 11.74.11.0 255.255.255.0 11.74.10.2
ip route 11.74.10.0 255.255.255.0 11.74.10.2
ip route 11.74.9.0 255.255.255.0 11.74.9.1
!
ip flow-export version 9
```

3. 联通测试:

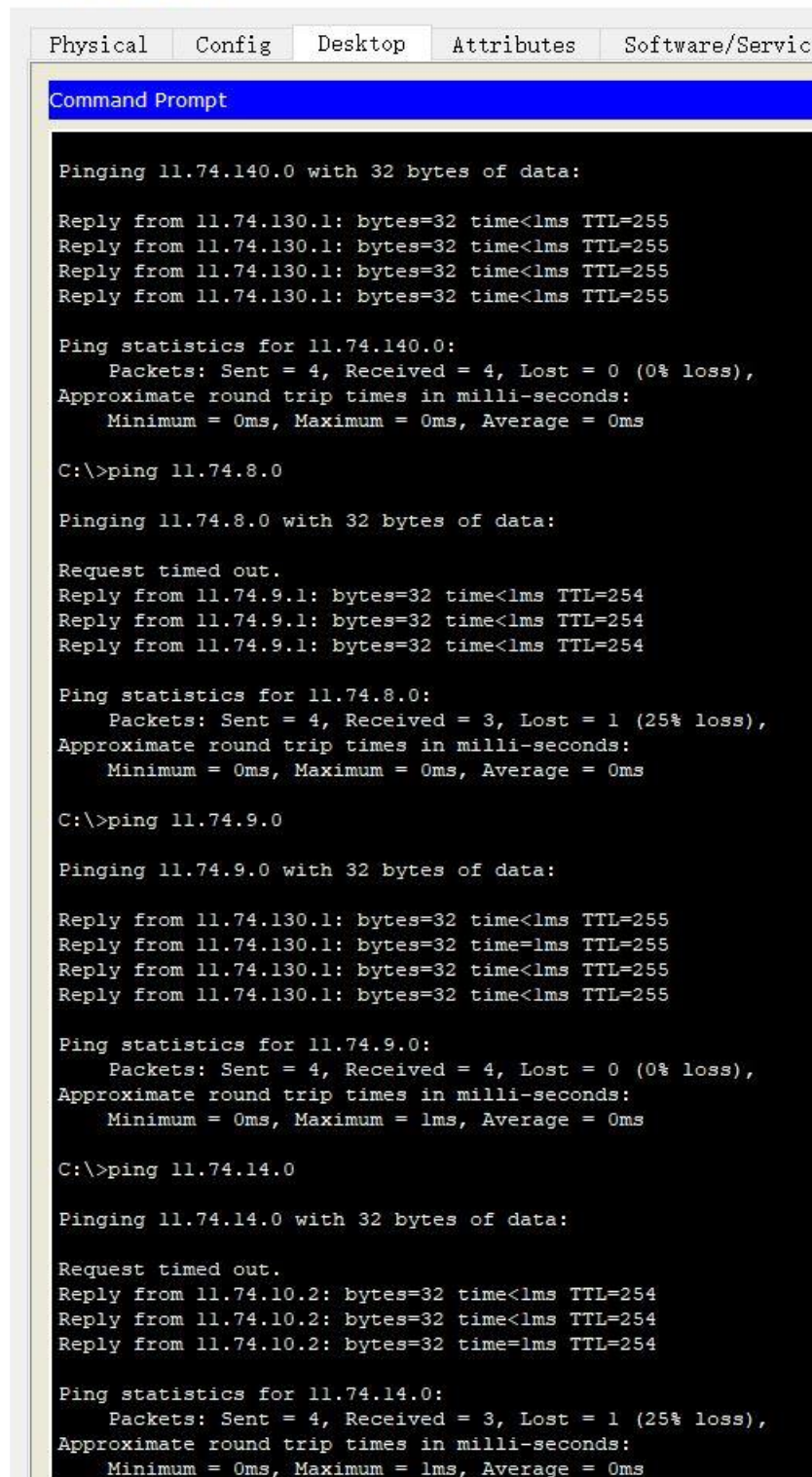
利用 ping 命令，测试处于两 vlan 中的主机间联通性和 vlan 中主机与其它子网间联通性

Ping

between

vlan:

PC1 11.74.130.2



```
Physical  Config  Desktop  Attributes  Software/Service
Command Prompt

Pinging 11.74.140.0 with 32 bytes of data:

Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255

Ping statistics for 11.74.140.0:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 11.74.8.0

Pinging 11.74.8.0 with 32 bytes of data:

Request timed out.
Reply from 11.74.9.1: bytes=32 time<1ms TTL=254
Reply from 11.74.9.1: bytes=32 time<1ms TTL=254
Reply from 11.74.9.1: bytes=32 time<1ms TTL=254

Ping statistics for 11.74.8.0:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 11.74.9.0

Pinging 11.74.9.0 with 32 bytes of data:

Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255
Reply from 11.74.130.1: bytes=32 time<1ms TTL=255

Ping statistics for 11.74.9.0:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 11.74.14.0

Pinging 11.74.14.0 with 32 bytes of data:

Request timed out.
Reply from 11.74.10.2: bytes=32 time<1ms TTL=254
Reply from 11.74.10.2: bytes=32 time<1ms TTL=254
Reply from 11.74.10.2: bytes=32 time<1ms TTL=254

Ping statistics for 11.74.14.0:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

4. 实验小结:

在实验一的基础上，将连接在 switch1 上的两台主机划分到不同 vlan 中，由于处于不同 vlan 此时主机不能通信。配置路由表使得两 vlan 间联通并与其它子网也联通，路由器需要划分成 IP 不同的子接口，并将 vlan 中设备的网关设置为相应子接口的 IP。最

后利用 ping 命令测试不同子网间联通性