VLAN 实验

【实验题目】**VLAN 实验**

【实验目的】掌握 VLAN 配置方法。

【实验说明】

截屏只是记录一下实验结果，应尽量缩小，可以大致看清楚就可以了。

注意实验开始前重启交换机：#reload

【预备知识】

- 两台交换机之间采用干道(trunk)端口连接，干道端口属于所有 VLAN。非干道端口为普通 VLAN 接口(主机端口)，默认为 VLAN 1。
- 进入干道的帧需要封装 VLAN ID，使得接收方可以知道该帧来自哪个 VLAN。从干道收到的没有封装 VLAN ID 的帧属于 Native VLAN，默认为 VLAN 1。

【配置举例】

- *启动 VLAN 10*

  (config)#vlan 10
- *把接口 f0/5 配置为 VLAN 10 接口*

  (config)#interface f0/5

  (config-if)#switchport access vlan 10
- *把接口 f0/24`配置为干道接口*

  (config)#interface f0/24

  (config-if)#switchport mode trunk
- *显示 VLAN（不显示 trunk 接口）*

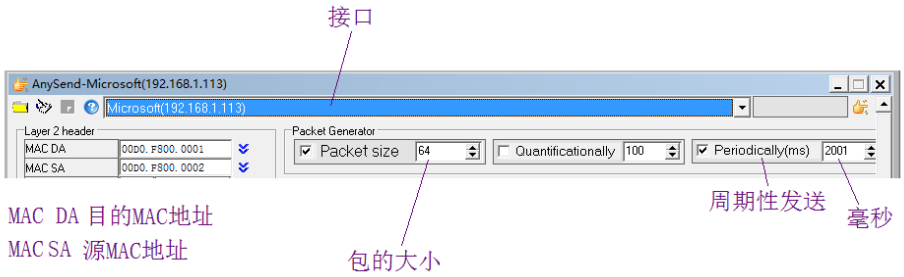
  #show vlan

* 一般来说，取消某个配置在原来的语句前加上 no 和空格，但是不能取消 switchport mode trunk 而是先用(config-if)#switchport mode access 重新设置为主机端口。

* 交换机不一定有 f0/5 等接口，用#show interface 查看一下接口名

【实验任务】

发送：用 anysend 发帧，选择实验网网卡（接口），修改 MAC DA 或 MAC SA，然后发送（可以设置周期发送）。



接收：用 WireShark 接收帧，选择实验网网卡，选择 ARP 协议，设置 filter:eth.src==0001.0EC3.0F0E(改为源主机地址)

复杂 filter:eth.src==0001.0EC3.0F0E or eth.dst==0002.DEF5.2D13

(1) 用命令 ipconfig /all 查出实验网网卡的 MAC 地址:

PC1:**00-88-99-00-13-76**

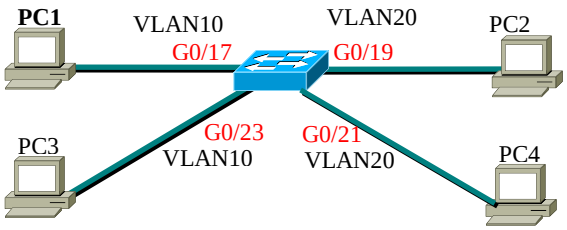
PC2:**44-33-4c-0e-ce-18**

PC3:**44-33-4c-0e-b6-ef**

PC4:**4c-cc-6a-dc-4d-19**（自带电脑）

(2) 按下图配置 VLAN:

单交换机实现 VLAN



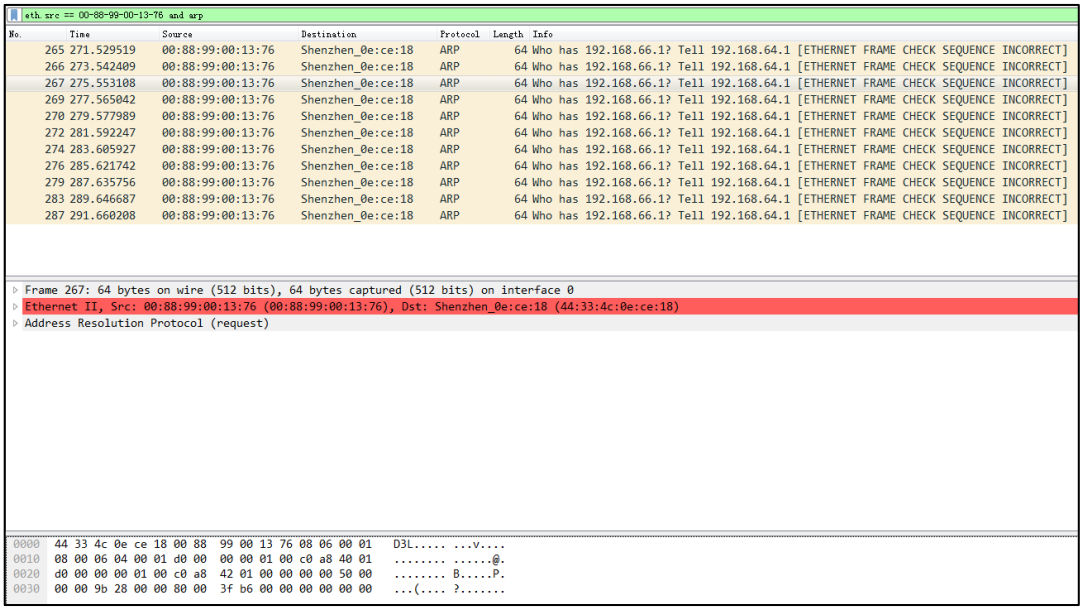
[PC1 分别向 PC2、PC3 和 PC4 发帧]

哪些主机可以收到?

PC3 可以收到。

收到该帧的主机截屏 WireShark:

在 PC3 上截屏. 可见收到的帧的源 MAC 地址为 PC1 的地址。



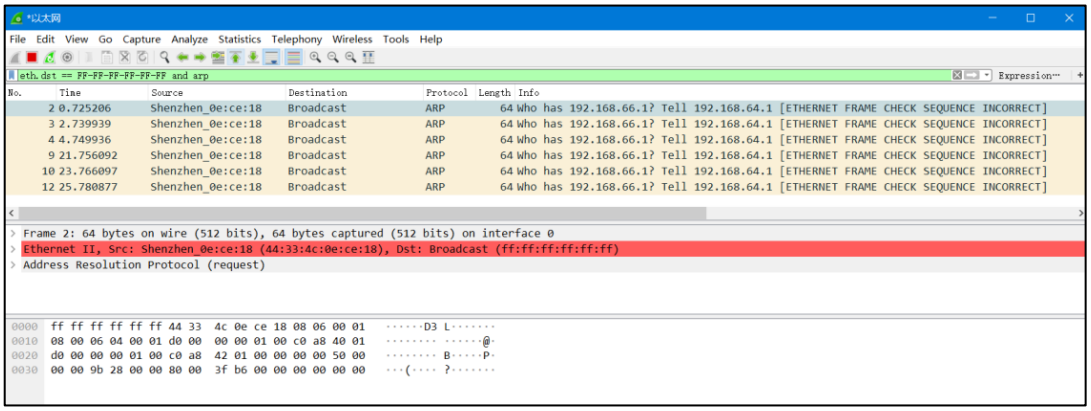
[PC2 发送广播帧]

哪些主机可以收到?

PC4 可以收到。

收到该帧的主机截屏 WireShark:

在 PC4 上截屏。可见收到的帧的源 MAC 地址为 PC2 的地址。



[Switch#show vlan 并截屏]

```
*Mar 17 20:40:52: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/21, changed state to up.
*Mar 17 20:40:52: %SYS-5-COLDSTART: System coldstart.
*Mar 17 20:40:53: %LINK-3-UPDOWN: Interface GigabitEthernet 0/17, changed state to up.
*Mar 17 20:40:53: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/17, changed state to up.
*Mar 17 20:40:53: %LINK-3-UPDOWN: Interface GigabitEthernet 0/19, changed state to up.
*Mar 17 20:40:53: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/19, changed state to up.
*Mar 17 20:40:53: %LINK-3-UPDOWN: Interface GigabitEthernet 0/23, changed state to up.
*Mar 17 20:40:53: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/23, changed state to up.


20-S5750-1>
20-S5750-1>enable 14

Password:
20-S5750-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
20-S5750-1(config)#vlan 10
20-S5750-1(config-vlan)#interface g0/17
20-S5750-1(config-if-GigabitEthernet 0/17)#swi
20-S5750-1(config-if-GigabitEthernet 0/17)#switchport acce
20-S5750-1(config-if-GigabitEthernet 0/17)#switchport access vl
20-S5750-1(config-if-GigabitEthernet 0/17)#switchport access vlan 10
20-S5750-1(config-if-GigabitEthernet 0/17)#show vl
20-S5750-1(config-if-GigabitEthernet 0/17)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/18, Gi0/19, Gi0/20, Gi0/21
                                                Gi0/22, Gi0/23, Gi0/24, Gi0/25
                                                Gi0/26, Gi0/27, Gi0/28
  10 VLAN0010                         STATIC    Gi0/17
20-S5750-1(config-if-GigabitEthernet 0/17)#inter
20-S5750-1(config-if-GigabitEthernet 0/17)#interfa
20-S5750-1(config-if-GigabitEthernet 0/17)#interface
20-S5750-1(config-if-GigabitEthernet 0/17)#interface g0/19
20-S5750-1(config-if-GigabitEthernet 0/19)#swi
20-S5750-1(config-if-GigabitEthernet 0/19)#switchport ace
20-S5750-1(config-if-GigabitEthernet 0/19)#switchport acc
20-S5750-1(config-if-GigabitEthernet 0/19)#switchport access vl
20-S5750-1(config-if-GigabitEthernet 0/19)#switchport access vlan 20
20-S5750-1(config-if-GigabitEthernet 0/19)#interface g0/23
20-S5750-1(config-if-GigabitEthernet 0/23)#switchport access vlan 10
20-S5750-1(config-if-GigabitEthernet 0/23)#interface g0/21
20-S5750-1(config-if-GigabitEthernet 0/21)#switchport access vlan 20
20-S5750-1(config-if-GigabitEthernet 0/21)#show vl
20-S5750-1(config-if-GigabitEthernet 0/21)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/18, Gi0/20, Gi0/22, Gi0/24
                                                Gi0/25, Gi0/26, Gi0/27, Gi0/28
  10 VLAN0010                         STATIC    Gi0/17, Gi0/23
  20 VLAN0020                         STATIC    Gi0/19, Gi0/21
```

[分析实验结果]

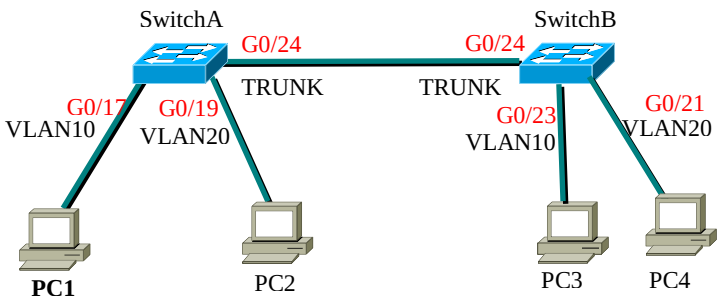
首先明确，我们根据实际实验情况修改了上面拓扑图中的接口，并用红色字体标注了。根据 VLAN 配置，PC1 和 PC3 在 VLAN10 中，PC2 和 PC4 在 VLAN20 中。

若 PC1 分别向 PC2、PC3、PC4 发帧，那么由于 PC1 发出的帧只被交换机转发至 VLAN10 的端口，因此只有处于同一 VLAN 的 PC3 能收到；PC2 和 PC4 则完全收不到 PC1 发出的帧。

若 PC2 发送广播帧，那么由于“同一个 VLAN 的端口处于同一个广播域，不同 VLAN 的端口处于不同广播域”，因此只有 PC4 能收到 PC2 发出的广播帧；PC1 和 PC3 则完全收不到该广播帧。

(3) 按下图进行配置:

跨交换机实现 VLAN



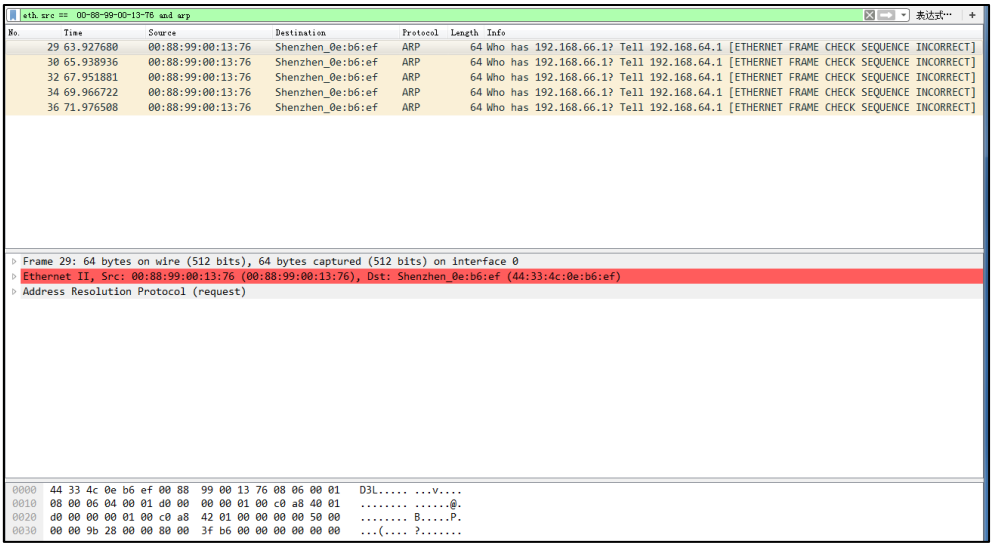
[PC1 分别向 PC2、PC3 和 PC4 发帧]

哪些主机可以收到?

PC3 可以收到。

收到该帧的主机截屏 WireShark:

在 PC3 上截屏。可见收到的帧的源 MAC 地址为 PC1 的地址。



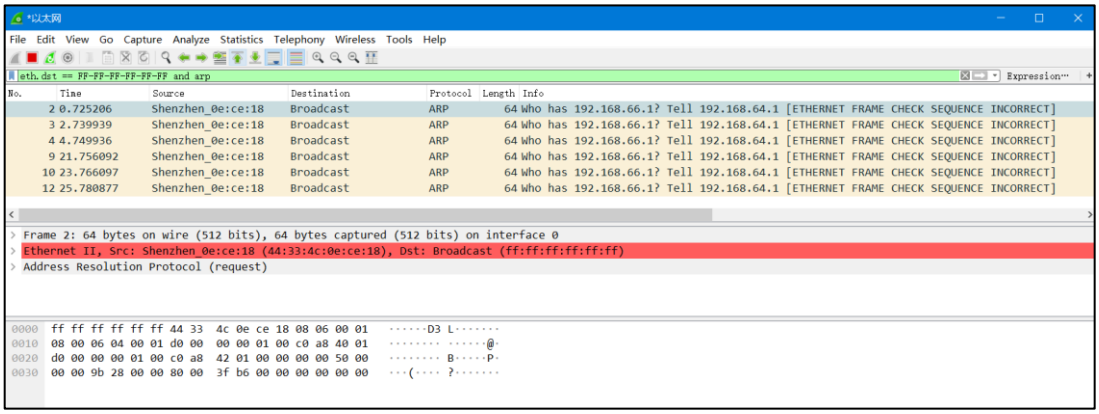
[PC2 发广播帧]

哪些主机可以收到？

PC4 可以收到。

收到该帧的主机截屏 WireShark：

在 PC4 上截屏。可见收到的帧的源 MAC 地址为 PC2 的地址。



[SwitchA#show vlan 并截屏]

```
20-S5750-1(config-if-GigabitEthernet 0/23)#show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/18, Gi0/20, Gi0/21, Gi0/22
                                                 Gi0/23, Gi0/24, Gi0/25, Gi0/26
                                                 Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/17
  20 VLAN0020                          STATIC    Gi0/19
20-S5750-1(config-if-GigabitEthernet 0/23)#interface g0/24
20-S5750-1(config-if-GigabitEthernet 0/24)#*Mar 17 21:13:34: %LINK-3-UPDOWN: Interface GigabitEthernet 0/13, changed state to down.
*Mar 17 21:13:34: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/13, changed state to down.
switchport access tr
20-S5750-1(config-if-GigabitEthernet 0/24)#switchport access trunk
                                           ^
% Invalid input detected at '^' marker.

20-S5750-1(config-if-GigabitEthernet 0/24)#switchport mode trunk
20-S5750-1(config-if-GigabitEthernet 0/24)#show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/18, Gi0/20, Gi0/21, Gi0/22
                                                 Gi0/23, Gi0/24, Gi0/25, Gi0/26
                                                 Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/17, Gi0/24
  20 VLAN0020                          STATIC    Gi0/19, Gi0/24
20-S5750-1(config-if-GigabitEthernet 0/24)#*Mar 17 21:13:59: %LINK-3-UPDOWN: Interface GigabitEthernet 0/24, changed state to up.
*Mar 17 21:13:59: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet 0/24, changed state to up.

20-S5750-1(config-if-GigabitEthernet 0/24)#*Mar 17 21:14:26: %LLDP-4-CREATEREM: Port GigabitEthernet 0/24 created one new neighbor,
 Chassis ID is 5869.6c15.59ca, Port ID is Gi0/24.
*Mar 17 21:15:30: %LLDP-4-AGEOUTREM: Port GigabitEthernet 0/13 one neighbor aged out, Chassis ID is 5869.6c15.59ca, Port ID is Gi0/
13.
show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/18, Gi0/20, Gi0/21, Gi0/22
                                                 Gi0/23, Gi0/24, Gi0/25, Gi0/26
                                                 Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/17, Gi0/24
  20 VLAN0020                          STATIC    Gi0/19, Gi0/24
20-S5750-1(config-if-GigabitEthernet 0/24)#
就绪                                    Telnet    60, 44   60 行, 131 列  VT100    数字
```

[SwitchB#show vlan 并截屏]

```
20-S5750-2(config-if-GigabitEthernet 0/24)#show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                 Gi0/21, Gi0/22, Gi0/23, Gi0/24
                                                 Gi0/25, Gi0/26, Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/24)#*Apr 26 10:56:15: %LLDP-4-AGEOUTREM: Port GigabitEthernet 0/13 one neighbor aged out, Ch
assis ID is 5869.6c15.59e2, Port ID is Gi0/13.

20-S5750-2(config-if-GigabitEthernet 0/24)#interface g0/21
20-S5750-2(config-if-GigabitEthernet 0/21)#switchport acce
20-S5750-2(config-if-GigabitEthernet 0/21)#switchport access vlan 20
20-S5750-2(config-if-GigabitEthernet 0/21)#interface g0/23
20-S5750-2(config-if-GigabitEthernet 0/23)#switchport access vlan 10
20-S5750-2(config-if-GigabitEthernet 0/23)#show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                 Gi0/22, Gi0/24, Gi0/25, Gi0/26
                                                 Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/23, Gi0/24
  20 VLAN0020                          STATIC    Gi0/21, Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/23)#show vlan
VLAN Name                              Status    Ports
---- --------------------------------- --------- -----------------------------------
   1 VLAN0001                          STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                 Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                 Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                 Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                 Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                 Gi0/22, Gi0/24, Gi0/25, Gi0/26
                                                 Gi0/27, Gi0/28
  10 VLAN0010                          STATIC    Gi0/23, Gi0/24
  20 VLAN0020                          STATIC    Gi0/21, Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/23)#
就绪                                    Telnet    60, 44   60 行, 131 列  VT100    数字
```

[分析实验结果]

首先明确，我们根据实际实验情况修改了上面拓扑图中的接口，并用红色字体标注了。根据 VLAN 配置，PC1 和 PC3 在 VLAN10 中，PC2 和 PC4 在 VLAN20 中。两台交换机通过各自的 g0/24 端口作为干道端口相互连接。

该项实验与前一项只有一台交换机的非常类似，唯一的不同就是使用了两台交换机并用干道相连。实验结果与之前相同——处于同一个 VLAN 的主机可以通信，处于不同 VLAN 的主机无法通信；同一个 VLAN 的端口处于同一个广播域，不同 VLAN 的端口处于不同广播域。

(4) 接上一步骤，将 SwitchA 和 SwitchB 的接口 F0/24 分别改为 VLAN 10 和 VLAN 20：

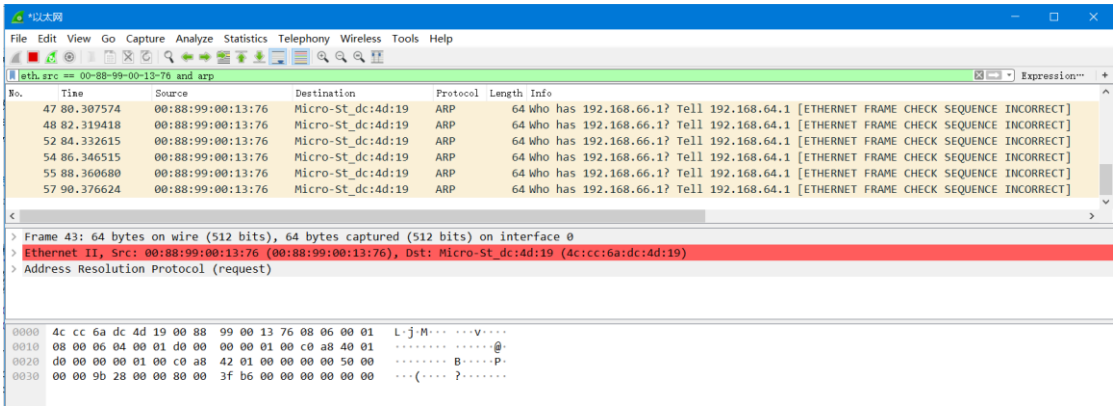
[PC1 分别向 PC2、PC3 和 PC4 发帧]

哪些主机可以收到？

PC4 可以收到。

收到该帧的主机截屏 WireShark：

在 PC4 上截屏。可见收到的帧的源 MAC 地址为 PC2 的地址。



[PC2 发广播帧]

哪些主机可以收到？

都收不到。

收到该帧的主机截屏 WireShark：

都收不到帧，因此没有截屏。

[SwitchA#show vlan 并截屏]

```
20-S5750-1(config-if-GigabitEthernet 0/24)#*Mar 17 21:14:26: %LLDP-4-CREATEREM: Port GigabitEthernet 0/24 created one new neighbor,
 Chassis ID is 5869.6c15.59ca, Port ID is Gi0/24.
*Mar 17 21:15:30: %LLDP-4-AGEOUTREM: Port GigabitEthernet 0/13 one neighbor aged out, Chassis ID is 5869.6c15.59ca, Port ID is Gi0/
13.
show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/18, Gi0/20, Gi0/21, Gi0/22
                                                Gi0/23, Gi0/24, Gi0/25, Gi0/26
                                                Gi0/27, Gi0/28
  10 VLAN0010                         STATIC    Gi0/17, Gi0/24
  20 VLAN0020                         STATIC    Gi0/19, Gi0/24
20-S5750-1(config-if-GigabitEthernet 0/24)#swit
20-S5750-1(config-if-GigabitEthernet 0/24)#interfa
20-S5750-1(config-if-GigabitEthernet 0/24)#interface g0/24
20-S5750-1(config-if-GigabitEthernet 0/24)#siwth
20-S5750-1(config-if-GigabitEthernet 0/24)#swit
20-S5750-1(config-if-GigabitEthernet 0/24)#switchport acces
20-S5750-1(config-if-GigabitEthernet 0/24)#switchport access vla
20-S5750-1(config-if-GigabitEthernet 0/24)#switchport access vlan 10
can not set access vlan on this port mode!
20-S5750-1(config-if-GigabitEthernet 0/24)#no switchport mode trunk
                                                  ^
% Invalid input detected at '^' marker.

20-S5750-1(config-if-GigabitEthernet 0/24)#switchport mode access
20-S5750-1(config-if-GigabitEthernet 0/24)#switchport access vlan 10
%Warning: the native vlan of port GigabitEthernet 0/24 may not match with its neighbor.
20-S5750-1(config-if-GigabitEthernet 0/24)#*Mar 17 21:27:25: %LLDP-4-ERRDETECT: Native vlan for the port GigabitEthernet 0/24 may n
ot match with the one for the neighbor port. Port native vlan=10, neighbor port native vlan=1.
*Mar 17 21:27:44: %LLDP-4-ERRDETECT: Native vlan for the port GigabitEthernet 0/24 may not match with the one for the neighbor port
. Port native vlan=10, neighbor port native vlan=20.

20-S5750-1(config-if-GigabitEthernet 0/24)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/18, Gi0/20, Gi0/21, Gi0/22
                                                Gi0/23, Gi0/25, Gi0/26, Gi0/27
                                                Gi0/28
  10 VLAN0010                         STATIC    Gi0/17, Gi0/24
  20 VLAN0020                         STATIC    Gi0/19
20-S5750-1(config-if-GigabitEthernet 0/24)#
```

[SwitchB#show vlan 并截屏]

```
20-S5750-2(config-if-GigabitEthernet 0/23)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -----------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                Gi0/22, Gi0/24, Gi0/25, Gi0/26
                                                Gi0/27, Gi0/28
  10 VLAN0010                         STATIC    Gi0/23, Gi0/24
  20 VLAN0020                         STATIC    Gi0/21, Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/23)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -----------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                Gi0/22, Gi0/24, Gi0/25, Gi0/26
                                                Gi0/27, Gi0/28
  10 VLAN0010                         STATIC    Gi0/23, Gi0/24
  20 VLAN0020                         STATIC    Gi0/21, Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/23)#*Apr 26 11:08:11: %LLDP-4-ERRDETECT: Native vlan for the port GigabitEthernet 0/24 may n
ot match with the one for the neighbor port. Port native vlan=1, neighbor port native vlan=10.

20-S5750-2(config-if-GigabitEthernet 0/23)#interface g0/24
20-S5750-2(config-if-GigabitEthernet 0/24)#switchport mode access
20-S5750-2(config-if-GigabitEthernet 0/24)#switchport access vlan 20
%Warning: the native vlan of port GigabitEthernet 0/24 may not match with its neighbor.
20-S5750-2(config-if-GigabitEthernet 0/24)#*Apr 26 11:08:30: %LLDP-4-ERRDETECT: Native vlan for the port GigabitEthernet 0/24 may n
ot match with the one for the neighbor port. Port native vlan=20, neighbor port native vlan=10.

20-S5750-2(config-if-GigabitEthernet 0/24)#show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -----------------------------------
   1 VLAN0001                         STATIC    Gi0/1, Gi0/2, Gi0/3, Gi0/4
                                                Gi0/5, Gi0/6, Gi0/7, Gi0/8
                                                Gi0/9, Gi0/10, Gi0/11, Gi0/12
                                                Gi0/13, Gi0/14, Gi0/15, Gi0/16
                                                Gi0/17, Gi0/18, Gi0/19, Gi0/20
                                                Gi0/22, Gi0/25, Gi0/26, Gi0/27
                                                Gi0/28
  10 VLAN0010                         STATIC    Gi0/23
  20 VLAN0020                         STATIC    Gi0/21, Gi0/24
20-S5750-2(config-if-GigabitEthernet 0/24)#
```

[分析实验结果]

现在两台交换机不再是通过刚到端口相连，而是通过 Switch1 的一个 VLAN10 端口和 Switch2 的一个 VLAN20 端口相连。不是干道端口就意味着两台交换机之间的数据帧将不包含 VLAN ID。

PC1 向 PC2、PC3、PC4 发送数据时，有以下情况：① PC2 和 PC1 连至同一个交换机，但不在同一个 VLAN 中，因此 PC2 收不到 PC1 发来的帧；② PC1 发出的数据帧被 Switch1 转发至其他 VLAN10 的端口，并到达 Switch2 的与之相连的那个 VLAN20 端口，因此 Switch2 认为该帧属于 VLAN20，它将把该帧转发至 VLAN20 的端口，所以 PC4 可以收到，PC3 无法收到。

PC2 发广播帧时，Switch1 将会把广播帧转发给同属于 VLAN20 的端口。然而 Switch1 上除了 PC2，没有其他端口主机属于 VLAN20，因此将被 Switch1 丢弃，所以 PC1、PC3、PC4 全都收不到 PC2 发出的广播帧。