

VLAN基本原理与配置

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前言

- 虚拟局域网（VLAN）技术为以太网引入了灵活的控制手段，被广泛应用。



培训目标

- 学完本课程后，您应该能：
 - 了解VLAN技术产生的背景
 - 了解VLAN标签的产生方法
 - 掌握VLAN标签的应用规则
 - 掌握VLAN的配置



目 录

1. VLAN简介
2. VLAN标签的应用规则

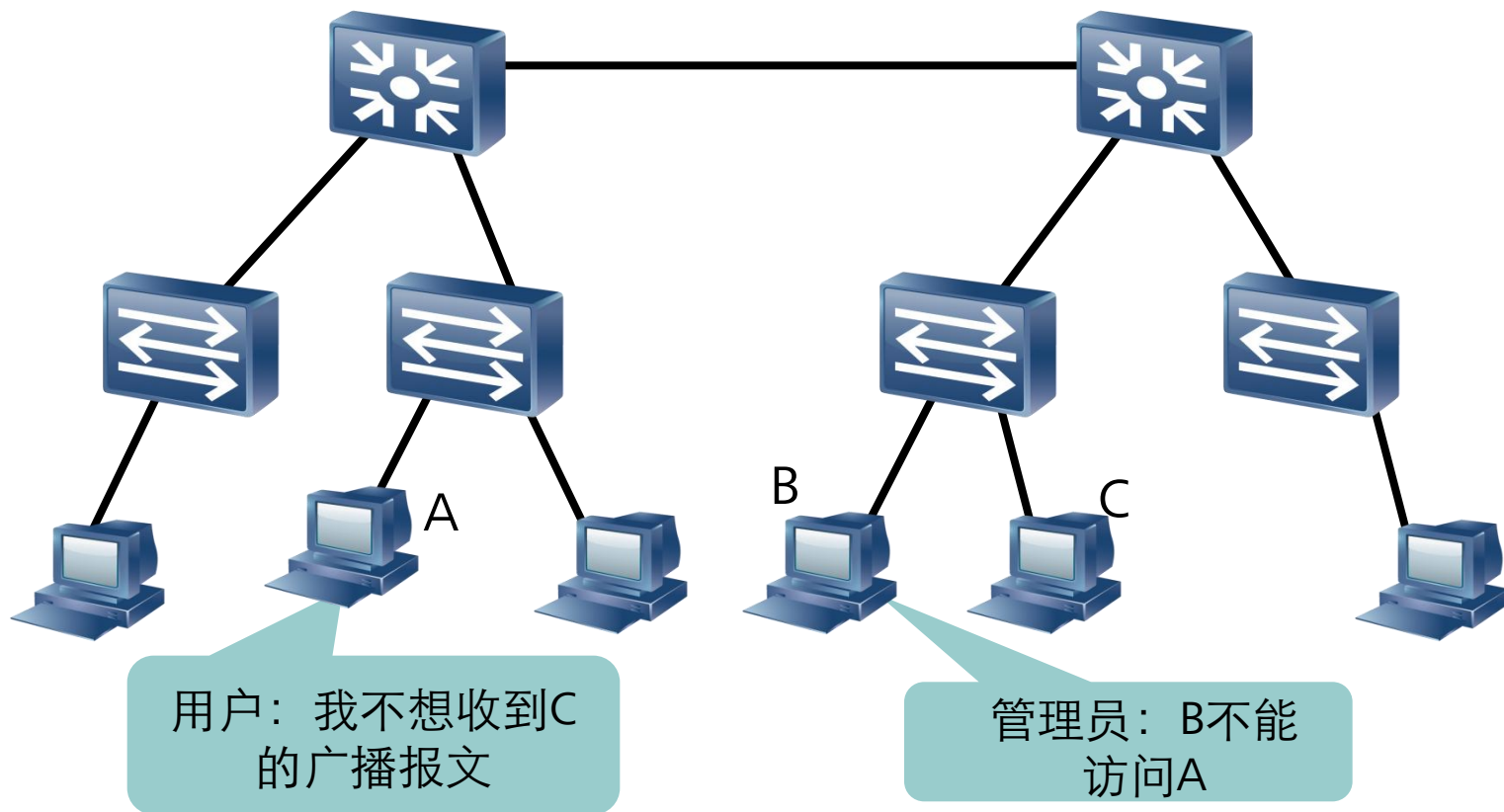


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1. VLAN简介

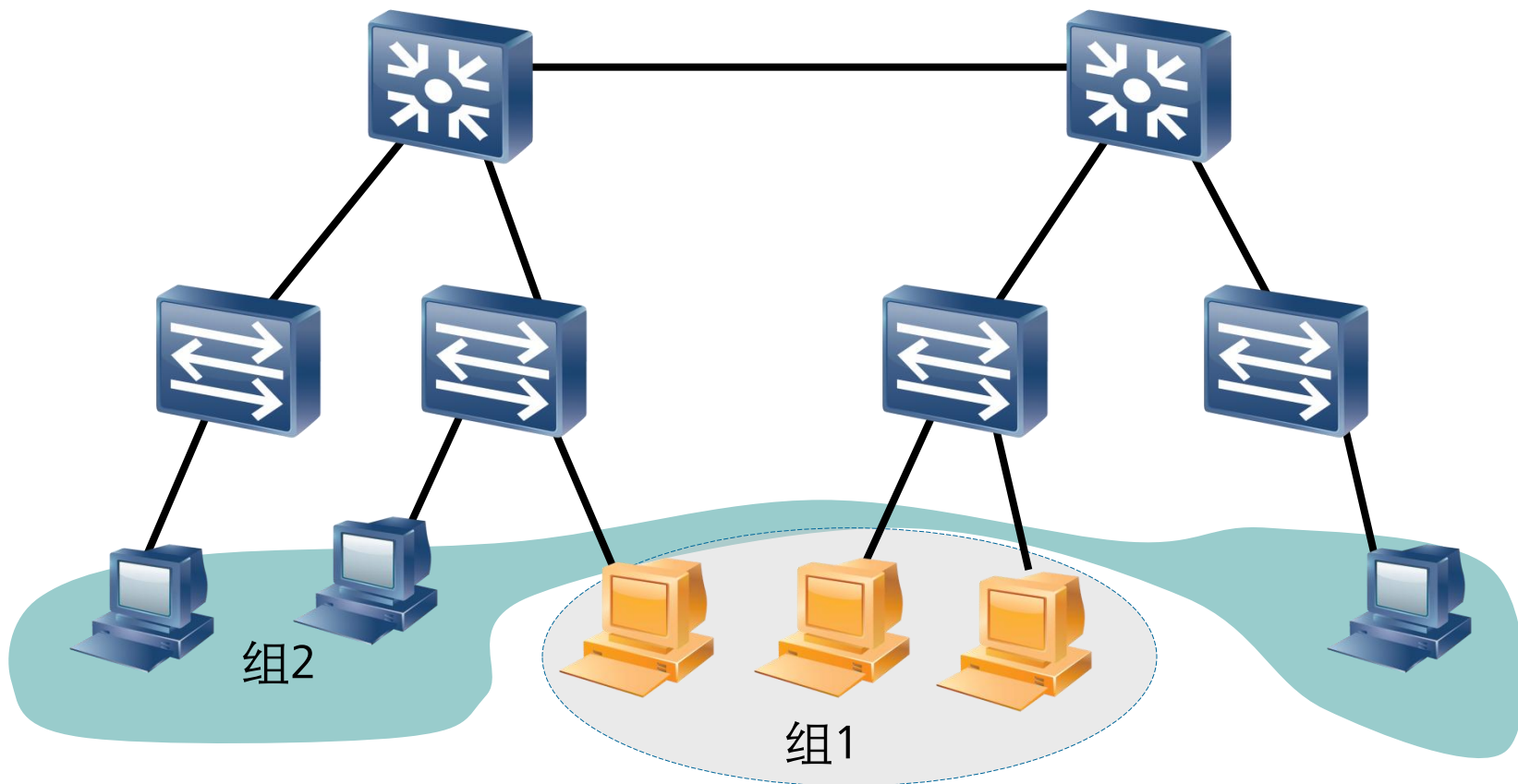
2. VLAN标签的应用规则

VLAN的产生原因

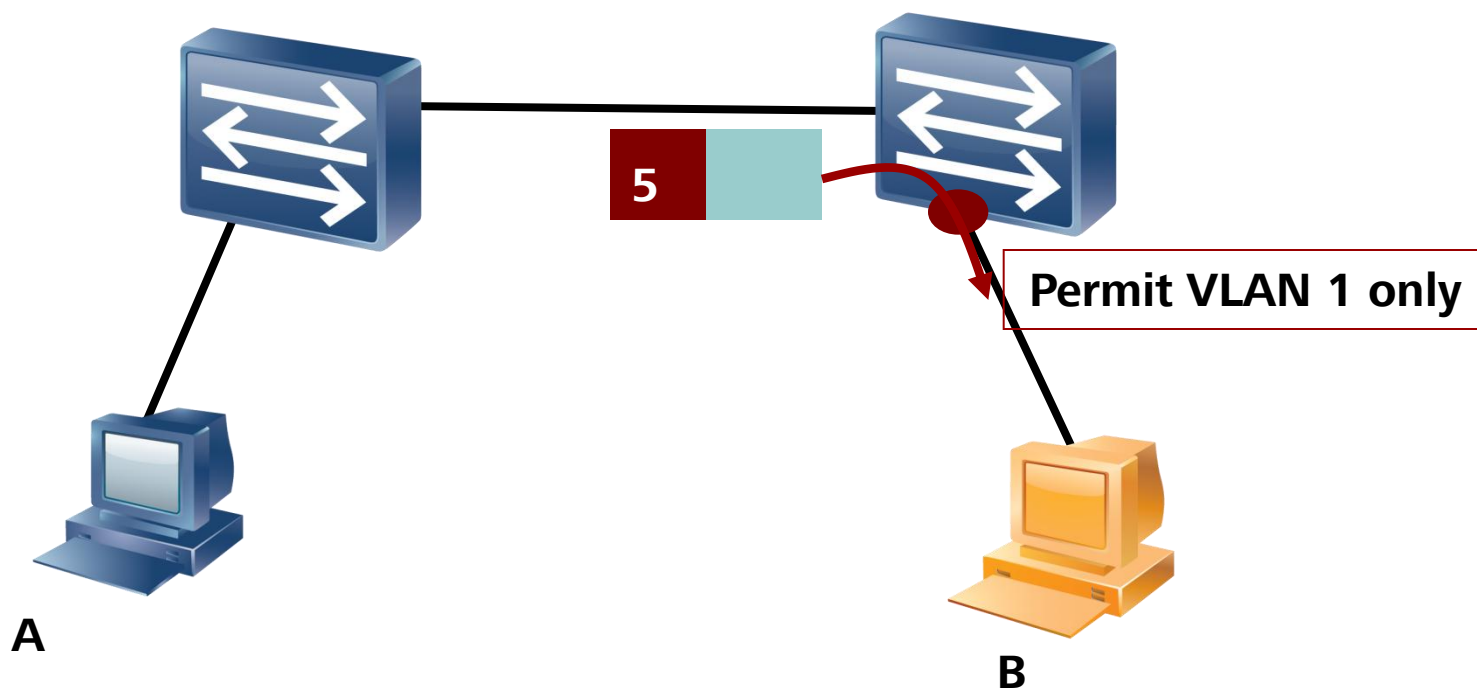


以太网缺少转发控制手段

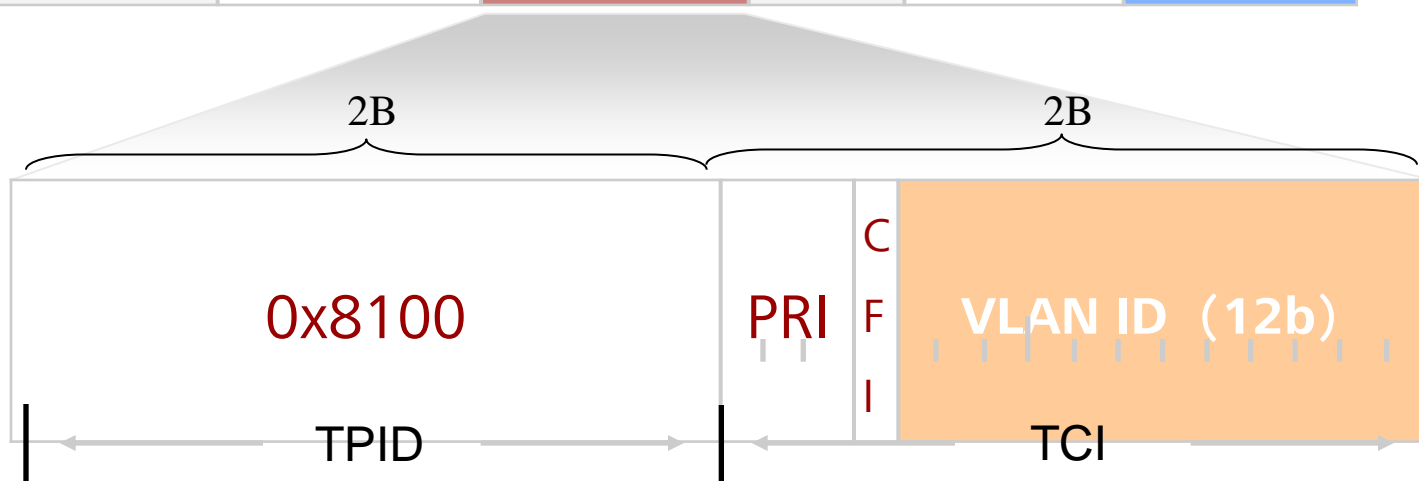
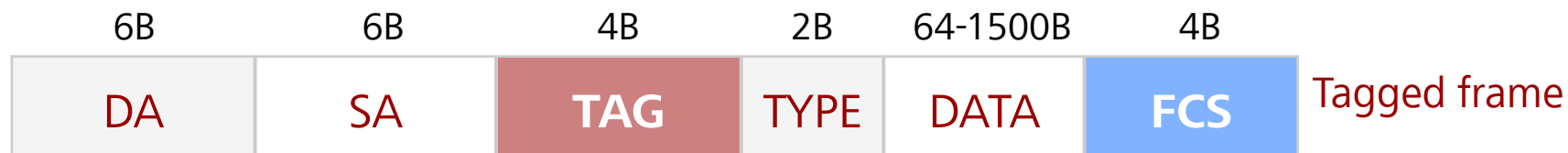
VLAN技术的目标



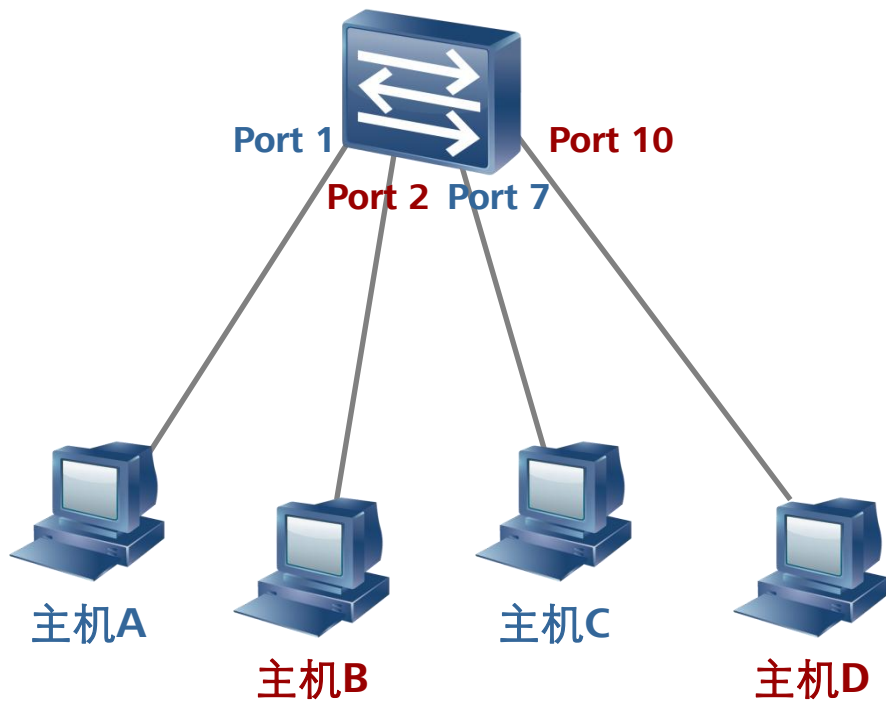
通过标签管理实现VLAN



VLAN标签介绍



如何生成VLAN标签



端口	PVID
Port1	5
Port2	10
.....
Port7	5
.....
Port10	10

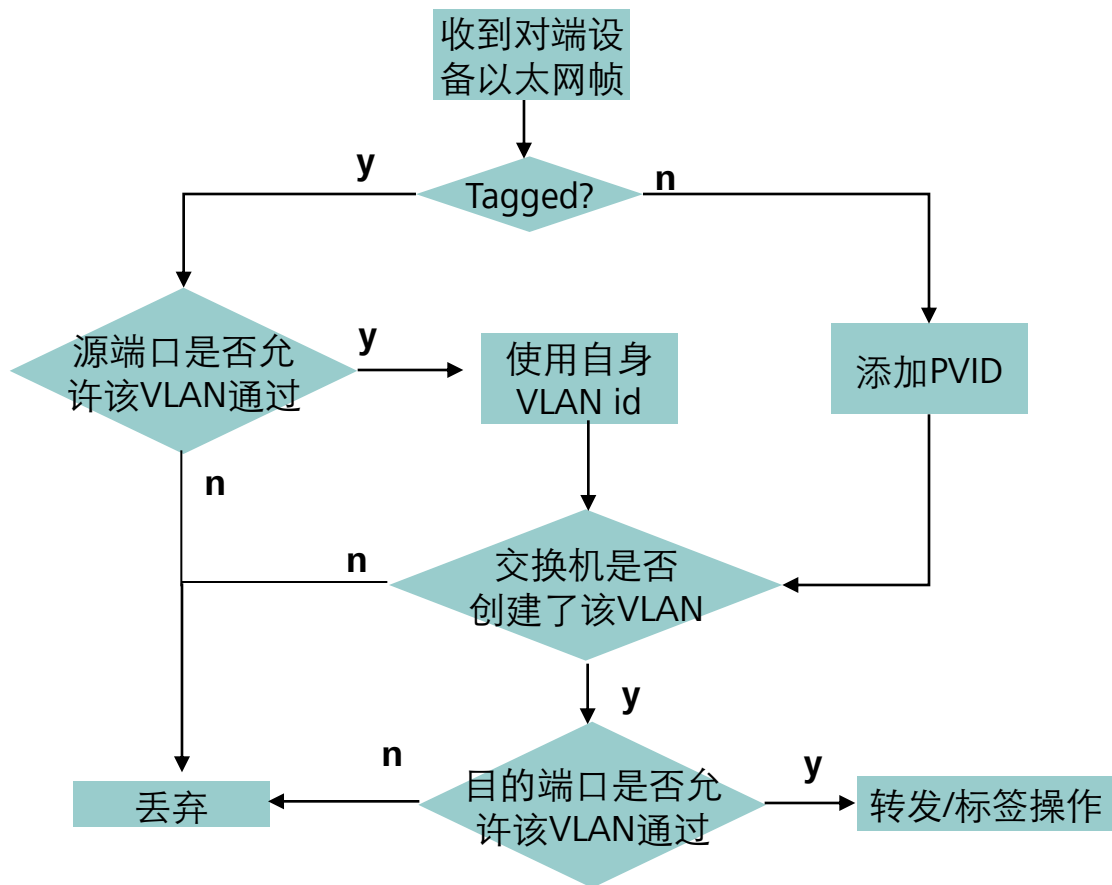


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1. VLAN简介

2. VLAN标签的应用规则

VLAN转发流程



Access端口VLAN属性

<Quidway>display interface Ethernet 1/0/1

Ethernet1/0/1 current state : DOWN

IP Sending Frames' Format is PKTFMT_ETHNT_2

Link speed type is autonegotiation

link duplex type is autonegotiation

PVID: 2

Mdi type: auto

Port link-type: access

Tagged VLAN ID : none

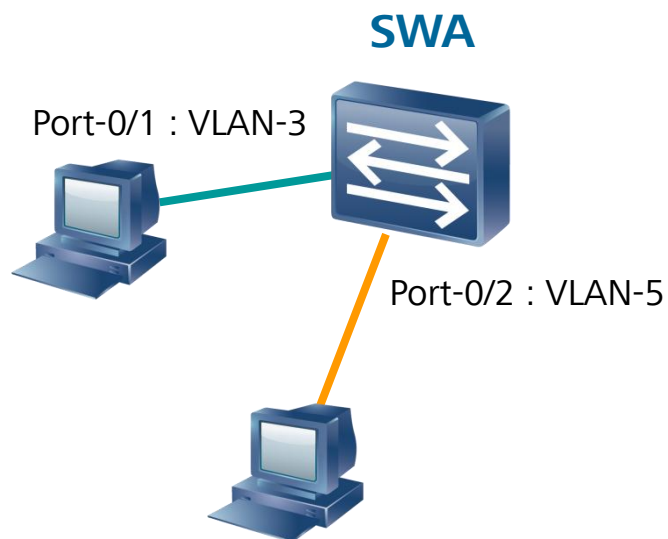
Untagged VLAN ID : 2

端口默认VLAN为2, Untagged帧
添加VLAN 2后再转发

Access端口，一般用
于连接主机

端口允许通过的VLAN，
与PVID相同

配置Access端口属性



\\配置端口类型

```
[Switch-Ethernet0/1]port link-type access  
[Switch-Ethernet0/2]port link-type access
```

\\创建VLAN

```
[Switch]vlan 3  
[Switch]vlan 5
```

\\设置端口PVID

```
[Switch-Ethernet0/1]port access vlan 3  
[Switch-Ethernet0/2]port access vlan 5
```

Trunk端口VLAN属性

<Quidway>display interface Ethernet 1/0/2

Ethernet1/0/2 current state : DOWN

IP Sending Frames' Format is PKTFMT_ETHNT_2

Link speed type is autonegotiation

link duplex type is autonegotiation

收到untagged帧
后，添加PVID 3再转发

PVID: 3

Mdi type: auto

用于连接交换机
等网络设备

Port link-type: trunk

VLAN passing : 1(default vlan), 3

VLAN permitted: 1(default vlan),3, 5

允许多个VLAN通过

配置Trunk端口属性



\\创建VLAN

```
[Switch]vlan 3
```

\\配置端口类型

```
[Switch-Ethernet0/3]port link-type trunk
```

\\配置Trunk-Link端口PVID

```
[Switch-Ethernet0/3]port trunk pvid vlan 3
```

\\配置Trunk-Link所允许通过的VLAN (permitted VLAN)

```
[Switch-Ethernet0/3]port trunk permit vlan 5
```


Hybird端口VLAN属性

<Quidway>display interface Ethernet 1/0/2

Ethernet1/0/2 current state : DOWN

IP Sending Frames' Format is PKTFMT_ETHNT_2

Link speed type is autonegotiation

link duplex type is autonegotiation

PVID: 5

Mdi type: auto

Port link-type: hybrid

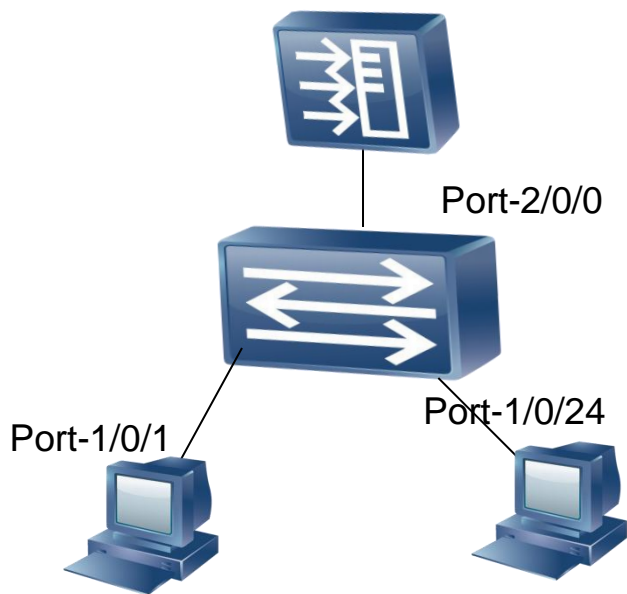
Tagged VLAN ID : 3

Untagged VLAN ID : 1, 4

按照Trunk端口的方式转发

移除标签后转发

配置Hybrid端口



```
[Quidway-Ethernet1/0/1]port link-type hybrid  
[Quidway-Ethernet1/0/1]port hybrid pvid vlan 2  
[Quidway-Ethernet1/0/1]port hybrid vlan 2 untagged
```

```
[Quidway-Ethernet1/0/24]port link-type hybrid  
[Quidway-Ethernet1/0/24]port hybrid pvid vlan 3  
[Quidway-Ethernet1/0/24]port hybrid vlan 3 untagged
```

```
[Quidway-Ethernet2/0/0]port link-type hybrid  
[Quidway-Ethernet2/0/0]port hybrid pvid vlan 99  
[Quidway-Ethernet2/0/0]port hybrid vlan 2 to 3 untagged
```

问 题

- VLAN的优点?
- VLAN的划分方法?

谢谢

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