华为交换路由教程

1. 切换中文模式<Quidway>language-mode Chinese
2. 进入系统视图<Quidway>system-view
   > Enter system view commands, one per line. End with Ctrl+Z.
   > [Quidway]
3. 配置某个接口（先进入接口然后才能配置）
   > [Quidway]interface Ethernet 0
   > [Quidway-Ethernet0]

4.配置主机名[Quidway]sysname 123
   > [123]

5.查看系统文件

```
<s2403h-ei>dir
 目录flash:/

-rwxrwxrwx   1 noone     nogroup      1977362  Apr 02 2000 00:08:07   S2000EI-VRP310
-R0023P11.app
-rwxrwxrwx   1 noone     nogroup            4  Apr 01 2000 23:55:16   snmpboots
-rwxrwxrwx   1 noone     nogroup       460036  Apr 02 2000 01:42:09   wnm2.2.2-0008.
zip

3381248 bytes total (933888 bytes free)
```

6.保存系统当前配置到 flash
   > <123>save
   > This will save the configuration in the flash memory.
   > The router configurations will be written to flash.
   > Are you sure?[Y/N]y
   > Now writing current configuration to flash memory.
   > Please wait for a while...
   >
   > Write current configuration to flash memory successfully.

   再次查看

```
<s2403h-ei>dir
 目录flash:/

-rwxrwxrwx   1 noone     nogroup      1977362  Apr 02 2000 00:08:07   S2000EI-VRP310
-R0023P11.app  交换机系统文件
-rwxrwxrwx   1 noone     nogroup            4  Apr 01 2000 23:55:16   snmpboots
-rwxrwxrwx   1 noone     nogroup               )2 2000 00:27:38   vrpcfg.txt
-rwxrwxrwx   1 noone     nogroup       46003b  Apr 02 2000 01:42:09   wnm2.2.2-0008.
zip wcb配置文件   系统保存的文件

3381248 bytes total (931840 bytes free)
```

7.设置系统时钟

```
<s2403h-ei>clock datetime ?
  HH:MM:SS  设置时间

<s2403h-ei>clock datetime
```

```
<s2403h-ei>clock datetime 11:46:20 2009/11/17
<s2403h-ei>
```

8.初始化设备

```
<s2403h-ei>delete vrpcfg.txt
 删除文件 flash:/vrpcfg.txt?[Y/N]:y
回收站中有同名文件 [vrpcfg.txt],是否覆盖?[Y/N]:y
% 删除文件 flash:/vrpcfg.txt

<s2403h-ei>_
```

```
<s2403h-ei>dir
 目录flash:/

-rwxrwxrwx    1 noone     nogroup     1977362   Apr 02 2000 00:08:07   S2000EI-VRP310
-R0023P11.app
-rwxrwxrwx    1 noone     nogroup          4    Apr 01 2000 23:55:16   snmpboots
-rwxrwxrwx    1 noone     nogroup     460036    Apr 02 2000 01:42:09   wnm2.2.2-0008.
zip

3381248 bytes total (933888 bytes free)
```

华为交换机有回收站的概念，如果想恢复

```
<s2403h-ei>undelete vrpcfg.txt
恢复删除文件 flash:/vrpcfg.txt ?[Y/N]:y
% 恢复文件 flash:/vrpcfg.txt
<s2403h-ei>di_
```

彻底删除系统当前配置

```
<s2403h-ei>delete ?
  /unreserved    彻底删除文件
  STRING<1-64>   [drive][path][file name]
  flash:         设备名

<s2403h-ei>delete /u
<s2403h-ei>delete /unreserved vr
<s2403h-ei>delete /unreserved vrpcfg.txt
 文件内容将无法恢复!!! 删除文件 flash:/vrpcfg.txt?[Y/N]:y
% 删除文件 flash:/vrpcfg.txt
```

9.查看系统软硬件版本信息

```
<Quidway>display version ?
  <cr>
                                      vrp软件的版本
<Quidway>display version
Huawei Versatile Routing Platform Software
VRP Software, Version 3.10, Release 0023P11  更新版本号
Copyright (c) 1998-2009 Huawei Technologies Co., Ltd. All rights reserved.
Quidway S2403H-EI uptime is 0 week,0 day,0 hour,6 minutes

Quidway S2403H-EI with 50M Arm7 Processor   设备型号
 32M    bytes SDRAM                          处理器CPU
4096K   bytes Flash Memory                   内存
Config Register points to FLASH             flash大小

Hardware Version is VER.D                    硬件版本
Bootrom Version is 160
[Subslot 0] 25 FE                           Hardware Version is VER.D
                                            引导芯片版本
  设备的接口

<Quidway>_
```

10.查看系统当前运行中的配置，也就是内存中的配置

```
<H3C>display current-configuration
#
 version 5.20, Alpha 1011
#
 sysname H3C  主机名
#
 password-control login-attempt 3 exceed lock-time 120
#
 undo voice vlan mac-address 00e0-bb00-0000
#
 ipsec cpu-backup enable
#
 undo cryptoengine enable
#
 domain default enable system
#
vlan 1
#
domain system
 access-limit disable
 state active
 idle-cut disable
 self-service-url disable
#
interface Ethernet0/1/0
 port link-mode route
#
interface Ethernet0/1/1
 port link-mode route
#
interface Ethernet0/1/2
 port link-mode route
#
#
 load xml-configuration
#
user-interface con 0用户接口    物理口也就是物理终端口
user-interface vty 0用户接口   逻辑口也就是虚拟终端口，就是通过网络来连接
#
Return
```

11.查看保存的配置

```
<Quidway>display sa
<Quidway>display saved-configuration
Failed to read flash or config file doesn't exist. 从flash中读取文件失
                                                   败，也就是没有存过盘
```

```
<Quidway>save
将把当前的配置保存到交换机的 flash memory中.
你确信吗?[Y/N]y
将运行时的配置写入Flash Memory 中.
请稍侯...

将运行时的配置写入 Flash Memory 中成功.
```

然后再次<H3C>display saved-configurat就会看见保存过的配置

12.查看端口状态

```
[2403h-EI]display interface Ethernet 0/2
 Ethernet0/2是 DOWN
  发送的IP帧的帧格式是 PKTFMT_ETHNT_2 硬件地址是000f-e201-9463
  MTU 是 1518
  导线类型是 双绞线 端口环回没有设置
  端口硬件类型是 100_BASE_TX
  未知-速度 模式, 未知-双工 模式
  链路速度类型是自协商, 链路双工类型是自协商.
  流量控制: 不使能
  端口流量阈值未配置完全
  最大帧长 1536
  最多允许广播报文占用接口流量的百分比: 100%
  缺省VLAN ID: 1
  网线类型为: normal
  端口模式: access
  Tagged    VLAN ID : 无
  Untagged VLAN ID : 1
  最后 300 秒钟的输入:  0包/秒 0字节/秒
  最后 300 秒钟的输出:  0包/秒 0字节/秒
  输入(合计) :    0 报文, 0 字节
           0 广播包, 0 多播包
  输入(正常) :    0 报文, - 字节
           0 广播包, 0 多播包
```

13.给端口添加描述

[123]interface Ethernet 0/1/1

[123-Ethernet0/1/1]de

[123-Ethernet0/1/1]description ?

  TEXT   Up to 80 characters for description of the interface

[123-Ethernet0/1/1]description 502 给 0/1/1端口添加描述为 502

14.给 aux 端口添加密码，也就是物理终端的密码

[123]user-interface console0进入到 console0口

[123-ui-console0]set authentication password ?

  cipher Set the password with cipher text   密文密码

  simple Set the password with plain text   明文密码

[123-ui-console0]set authentication password cipher h3c

  然后再查看运行中的配置<123>display current-configur就会看见

user-interface con 0

 set authentication password cipher G`M^B<SDBB[Q=^Q`MAF4<1!!

但是华为交换机登陆的时候默认是不要口令的所以又要进入到那 aux 口里面开启密码认证

```
<123>system-view

[123]user-interface console 0

[123-ui-console0]authentication-mode ?

  none      Login without checking不要密码

  password  Authentication use password of user terminal int要密码ce

  scheme    Authentication use AAA    用 RADIUS  服务器来认证
```
然后一路推出，按回车的时候就要口令

如果想取消刚才的设置还是
```
<123>system-view

[123]user-interface ?

  INTEGER<0-70>   First user terminal interface number to be configured

  aux            Aux user terminal interface

  console        Primary user terminal interface

  tty            Async serial user terminal interface

  vty            Virtual user terminal interface

[123]user-interface console 0

[123-ui-console0]undo set authentication password

[123-ui-console0]authentication-mode ?

  none      Login without checking

  password  Authentication use password of user terminal interface

  scheme    Authentication use AAA

[123-ui-console0]authentication-mode n

[123-ui-console0]authentication-mode none
```
然后一路推出，按回车的时候就不要口令

给普通用户不要密码，切换到管理员要密码
```
<123>system-view

[123]user-interface console 0

[123-ui-console0]user privilege level ?

  INTEGER<0-3>   Specify privilege level

[123-ui-console0]user privilege level 0    0 的级别最低
```
然后推出，再次进入
```
<123>?

User view commands:

  cluster Run cluster command

  display Display current system information

  ping     Ping function

  quit     Exit from current command view

  rsh      Establish one RSH connection

  ssh2     Establish a secure shell client connection

  super    Set the current user priority level

  telnet Establish one TELNET connection

  tracertTrace route function
```
就会看见现在的命令少的多，说明自己现在是个没权利的用户，如果想切管理员
```
<123>super ?
```

```
     INTEGER<0-3>    Priority level
     <cr>
```

`<123>super`

```
User privilege level is 3, and only those commands can be used
whose level is equal or less than this.
Privilege note: 0-VISIT, 1-MONITOR, 2-SYSTEM, 3-MANAGE
```

然后再？就会看见已经切回到管理员，然后给 super加密码

`<123>system-view`

`[123]super password ?`

```
  cipher Display password with cipher 密文显示密码
  level  Specify the entering password of the specified priority
  simple Display password with plain text明文显示密码
```

就会给 super加密码成功

15.给交换机配置 IP 地址

　　交换机出厂的时候默认就有一个 VLAN1 。所以给交换机配置 ip地址也就是给 VLAN1　配置 ip地址所以，先进入 VLAN1

`[H3C]interface Vlan-interface 1`

`[H3C-Vlan-interface1]ip address 192.168.0.3 255.255.255.0`

16.给交换机进行系统升级

在升级前首先必须使交换机和自己在一个局域网内,，在给交换机配置管理 IP，因为交换机系统升级是使用 ip网络在进行的，同时也要是自己的 PC 和交换机通讯正常，在就是把自己的 PC 配置成一个 ftp或 tftp进行网络的传输,在升级之前看看自己的 flash是否可以放的下，如果放不下就要删除系统启动文件

```
[Quidway]tftp ?
  ascii   Ascii传输模式
  binary  二进制传输模式
  get     Tftp get
  put     Tftp put

[Quidway]tftp get
[Quidway]tftp get ?
  STRING<1-64>   位于tftp服务器上的源文件名，格式：//X.X.X.X/文件名
               或者位于集群tftp服务器的源文件名，格式：//cluster/文件名

[Quidway]tftp get //192.168.1.96/S2000EI-VRP310-R0023P11.app ?
  STRING<1-64>   目的文件名
  <cr>

[Quidway]tftp get //192.168.1.96/S2000EI-VRP310-R0023P11.app
```

这个是在有操作系统的情况下升级

下面的是在没有操作系统的情况下升级


```
        Initialize LS41LTSA ......................OK!
        SDRAM selftest..........................OK!
        FLASH selftest..........................OK!
        Switch chip selftest....................OK!
        Slot 1/1 has no module or get slot type error
        PHY selftest............................OK!
        Please check port leds..............finished!
        The switch Mac is: 000F-E201-9463



Press Ctrl-B to enter Boot Menu... 4    按ctrl+b进入
Password : **\****
```

```
        BOOT   MENU

1. Download application file to flash 下载文件到flash，也就是系统
2. Select application file to boot    选择一个文件来引导系统
3. Display all files in flash 显示所有flash里面的文件
4. Delete file from Flash 删除文件
5. Modify bootrom password 修改进入boot引导菜单的密码
0. Reboot 重启
```

```
              BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from Flash
5. Modify bootrom password
0. Reboot

Enter your choice(0-5): 1

Please set application file download protocol parameter:

1. Set TFTP protocol parameter    用tftp协议进行传输
2. Set FTP protocol parameter     用ftp协议进行传输
3. Set XMODEM protocol parameter  用xmodem进行传输（大部分用于升级boot）
0. Return to boot menu

Enter your choice(0-3): _
```

```
Please set application file download protocol parameter:

1. Set TFTP protocol parameter
2. Set FTP protocol parameter                      要进行传输的文件名
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3): 1

Load File name    : S2000-VRP310-r0020-32-a.app   wnm2.2.2-0008.zip
Switch IP address : 192.168.1.250  交换机的IP地址
Server IP address : 192.168.1.28   192.168.1.96  tftp的ip地址
Are you sure to download file to flash? Yes or No(Y/N)y 是否真的升级
Initializing net...
```

```
Are you sure to download file to flash? Yes or No(Y/N)y
Initializing net...
Warning: Can not get netmask from server !
...done!
Do you want to continue downloading? Yes or No(Y/N)y
Loading............_
```

在这里一定要把 tft 的路径指定正确

如果升级 boot 要选择 xmodem ，他是用物理终端进行传输的也就是通过计算机的 COM 口进行传输，如果选择第一项有可能升级不了，就是害怕有人没事升级 bootrom，所以华为做了个隐藏菜单，按 ctrl+u 就会出来一个隐藏菜单

```
Please set bootrom download protocol parameter:

1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter   用xmodem进行bootrom升级
0. Return to boot menu

Enter your choice(0-3): 3
```

到此时我们就是用物理终端进行升级也就是 bootrom，所以用不着 TFTP 了

```
Enter your choice(0-3): 3

Please select your download baudrate:

1.  9600
2.  19200
3.  38400
4.  57600
5. *115200
0.  Return

Enter your choice(0-5): 5
```

这里频率越高传输的速度也就越快

```
Enter your choice(0-5): 5
Are you sure to update your bootrom? Yes or No(Y/N)y
Download baudrate is 115200 bps. Please change the terminal's baudrate to 115200
 bps, and select XMODEM protocol.
Press enter key when ready.
```

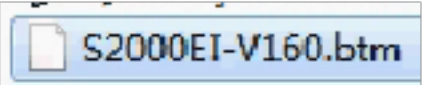是否真的升级

你选择了一个与当前波特率不匹配的值，请你把波特率调节为115200之后再来连接，改好了你在按回车键

位/秒 (B):	115200
数据位 (D):	8
奇偶校验 (P):	无
停止位 (S):	1
数据流控制 (F):	无

然后关闭该终端，重新打开 之后按回车键

```
Now please start transfer file use XMODEM protocol.
If you want to exit, Press <Ctrl+X>.
Waiting C
```

到这里就可以进行发送了，如果不想发送按 ctrl+进行取消，点超级终端的传送里面的发送文件指定文件名为 📄 S2000EI-V160.btm 协 议 选 则 xmodem 后 进 行 发 送

```
Now please start transfer file use XMODEM protocol.
If you want to exit, Press <Ctrl+X>.
Loading............done!

Please change the terminal's baudrate back to 9600 bps.
Press enter key when ready.
_
```

传送完毕，请你再把比特率改为9600进行连接

```
Bootrom is updating now......done!
                        这个时候他才进行升级，而且升级成
       BOOT  MENU       功了

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from Flash
5. Modify bootrom password
0. Reboot

Enter your choice(0-5): 0    到这里boot已经升级好了，可以重新启动了
```

此时我们也可以进行系统的备份，也就是通过 tftp 或 ftp 把 flash 里面的文件倒出来以便于以后 系 统 文 件 丢 失 再 次 进 行 上 传

```
[Quidway]tftp put wnm2.2.2-0008.zip //192.168.1.96/wnm2.2.2-0008.
...........................................................  进行文件的上传，就是文件的备
.................................................._         份
```

17.开启虚拟终端，也就是 ssh 或 telnet

如果没有给虚拟终端设置密码根本就连接不上,要是给虚拟终端设置密码之后进去时个普通用户，所以也配置不成功，锁业要给 super 设置口令之后才能完全控制这台交换机

<H3C>system-view

[H3C]user-interface vty 0 4

[H3C-ui-vty0-4]set authentication password ?

  cipher Set the password with cipher 明文

  simple Set the password with plain 密文

[H3C-ui-vty0-4]set authentication password simple 123 默认是不开启口令认证，所以来这么句

[H3C-ui-vty0-4]authentication-mode password

[H3C]super password ?

  cipher Display password with cipher 密文显示密码

  level Specify the entering password of the specified priority

  simple Display password with plain text 明文显示密码

[H3C]super password simple 123

如果想要 WEB 管理，还要单独给 WEB 设置账号和口令

[H3C]local-user admin

[H3C-luser-admin]password ?

  cipher Display password with cipher text 密文

  simple Display password with plain text 明文

[H3C-luser-admin]password simple 123

此时还是不能登录，因为 admin 这个用户的权利不够大，所以我们还要给他修改权利

[H3C]local-user admin
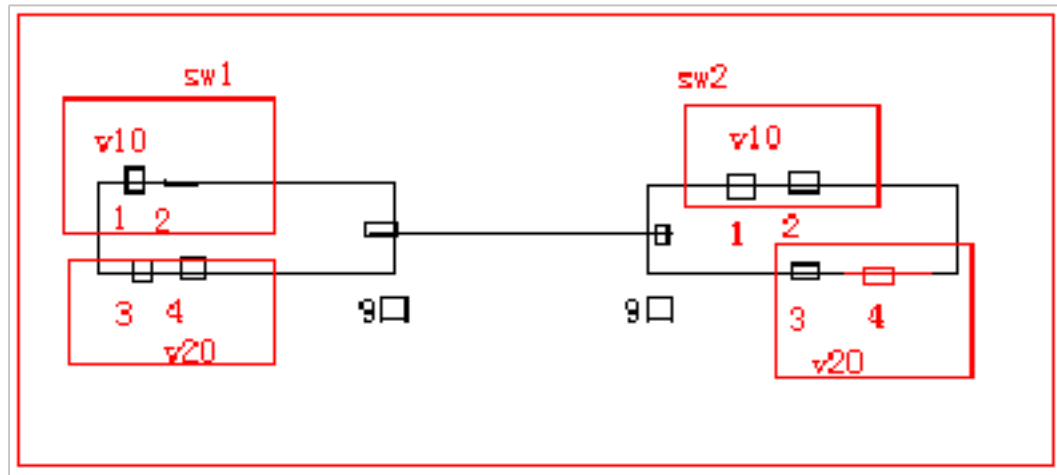
[H3C-luser-admin]service-type telnet level ?

  INTEGER<0-3>   Level of user

[H3C-luser-admin]service-type telnet level 3 到这里就可以 web 进行配置了

18.vlan 技术（标记型）

用于跨交换机的时候

[SW2]vlan 10   建立 vlan

[SW2-vlan10]port Ethernet 0/4/0 to Ethernet 0/4/1 把端口加入到 vlan10

[SW2-vlan10]quit

[SW2]vlan 20

[SW2-vlan20]port Ethernet 0/4/2 to Ethernet 0/4/3 把端口加入到 vlan20

[SW2]vlan 30

[SW2-vlan30]port Ethernet 0 把端口加入到 vlan30

[SW2]interface Ethernet 0/4/7

[SW2-Ethernet0/4/7]port ?

　access   Specify current Access port's characteristics
　hybrid   Specify current Hybrid port's characteristics
　inline-interface   Add ports to or delete ports from inline-interfaces
　link-aggregation   Link aggregation group
　link-mode   Switch the specified interface to layer2 or layer3
                       ethernet
　link-type   Specify port link-type
　smart-link   Specify smart link
　trunk   Specify current Trunk port's characteristics

[SW2-Ethernet0/4/7]port link-type ?

　access Access link-type
　hybrid Hybrid VLAN link-type
　trunk VLAN Trunk link-type

 [SW2-Ethernet0/4/7]port link-type trunk ?

　<cr>

[SW2-Ethernet0/4/7]port link-type trunk

[SW2-Ethernet0/4/7]port trunk ? 作为干道

　permit allowed VLANs 允许那些过
　pvid   Specify current Trunk port's PVID VLAN characteristics 本端口的 PVID 设置

[SW2-Ethernet0/4/7]port trunk permit vlan ?

　INTEGER<1-4094>   VLAN ID
　all   All the VLANs

[SW2-Ethernet0/4/7]port trunk permit vlan al

[SW2-Ethernet0/4/7]port trunk permit vlan all

 Please wait... Done.

[SW2-Ethernet0/4/7]port trunk pvid v更改pvid为 VLAN30
<SW2>display vlan all
 VLAN ID: 1
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0001
 Broadcast MAX-ratio: 100%
 Tagged   Ports:
    Ethernet0/4/7
 Untagged Ports:
    Ethernet0/4/4   Ethernet0/4/5   Ethernet0/4/6

 VLAN ID: 10
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0010
 Broadcast MAX-ratio: 100%
 Tagged   Ports:
    Ethernet0/4/7
 Untagged Ports:
    Ethernet0/4/0   Ethernet0/4/1

 VLAN ID: 20
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0020
 Broadcast MAX-ratio: 100%
 Tagged   Ports:
    Ethernet0/4/7
 Untagged Ports:
    Ethernet0/4/2   Ethernet0/4/3

 VLAN ID: 30
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0030
 Broadcast MAX-ratio: 100%
 Tagged   Ports: none
 Untagged Ports:
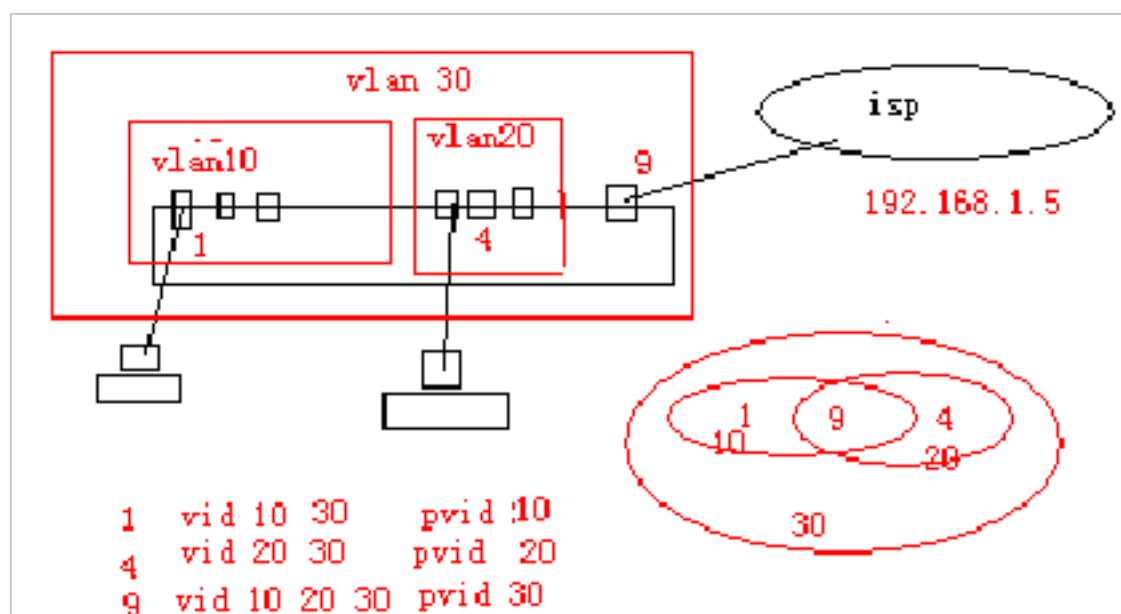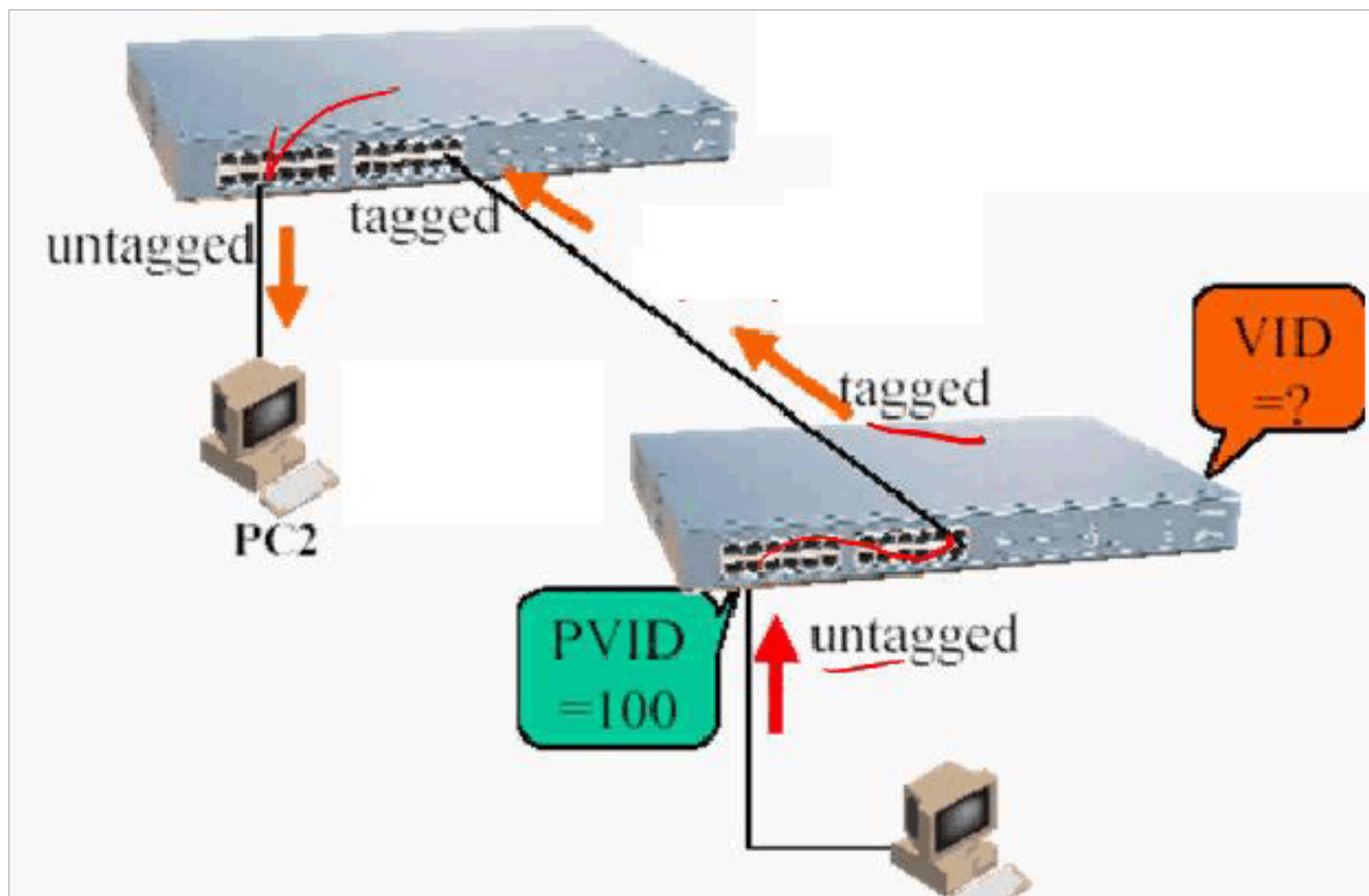   Ethernet0/4/7
Sw1 和 sw2 配置相似
 华为的习惯是只要你把某个端口设置为 trunk 那么他会把这个端口加入到每个 VLAN 里
面去，也就是一个端口属于多个vlan，缺省属于一个。
19 非标记 vlan设置，用于接服务器或路由器的时候

如下图，交换机是可以认标记的，也就是数据包中间加了四个字节的东西，而路由器或 PC 就不一定认标记型帧，所以 802.1q 里面特殊规定，所以接交换机的是 tagged 帧，而接 pc 或路由器的一定是 untagged 帧

在这里国产交换机可以是一个端口属于多个 VLAN，但是缺省只能属于一个 VLAN，就是混杂模式

[H3C-Ethernet01]port hybrid vlan 10 30 untagged

Error: It is not a Hybrid port（hybrid 混杂模式，untagged 不带标记）

<H3C>system-view
[H3C]vlan 10
[H3C-vlan10]port Ethernet 0/1 to Ethernet 0/3
[H3C-vlan10] quit
[H3C]vlan 20
[H3C-vlan20]port Ethernet 0/4 to Ethernet 0/6

```
[H3C-vlan20] quit
[H3C]vlan 30
[H3C-vlan30]port Ethernet 0/1 to Ethernet 0/6
[H3C-vlan30]display vlan all
 VLAN ID: 1
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0001
 Broadcast MAX-ratio: 100%
 Tagged    Ports: none
 Untagged Ports:
    Ethernet0/7          Ethernet0/8          Ethernet0/9

 VLAN ID: 10
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0010
 Broadcast MAX-ratio: 100%
 Tagged    Ports: none
 Untagged Ports: none

 VLAN ID: 20
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0020
 Broadcast MAX-ratio: 100%
 Tagged    Ports: none
 Untagged Ports: none

 VLAN ID: 30
 VLAN Type: static
 Route Interface: not configured
 Description: VLAN 0030
 Broadcast MAX-ratio: 100%
 Tagged    Ports: none
 Untagged Ports:
    Ethernet0/1          Ethernet0/2          Ethernet0/3
    Ethernet0/4          Ethernet0/5          Ethernet0/6
```
在这里华为交换机还是受思科的影响很深，缺省一个端口可以属于一个 VLAN ，这根本不是我们要的结果，所以我们到口里面看看
```
[H3C]interface Ethernet 0/1
[H3C-Ethernet0/1]port ?
   access                Specify current Access port's characteristics
   hybrid                Specify current Hybrid port's characteristics
```