

### S8500交换机实现Super vlan技术介绍

#### 一、简单原理介绍

Super VLAN又称为VLAN聚合 (VLAN Aggregation) , 其原理是一个Super VLAN包含多个Sub VLAN, Super VLAN可配置虚接口的IP地址。每个Sub VLAN是一个广播域, 不同Sub VLAN之间二层相互隔离, Sub VLAN不能配置虚接口IP地址。当Sub VLAN内的用户需要进行三层通信时, 将使用Super VLAN的虚接口的IP地址作为网关地址, 这样多个VLAN共享一个IP地址, 从而节省了IP地址资源。同时, 为了实现不同Sub VLAN间的三层互通及Sub VLAN与其他网络的互通, 需要利用ARP代理功能。通过ARP代理可以进行ARP请求和响应报文的转发与处理, 从而实现了二层隔离端口间的三层互通。缺省状态下, Sub VLAN下的ARP代理功能是关闭的。

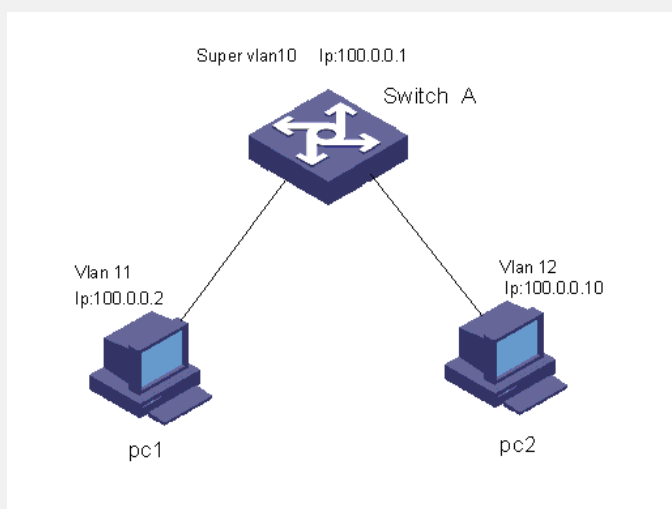
#### 二、S8500典型配置实例

##### 2.1 组网需求:

- (1) 创建Super VLAN 10
- (2) 创建Sub VLAN: VLAN 11、VLAN 12、VLAN 5

由于VLAN之间能够满足二层隔离, 现要求Sub VLAN两两之间三层互通。

##### 2.2 组网图:



##### 2.3 配置命令

Switch A基本配置:

```
#
vlan 10
supervlan
subvlan 11 to 12
#
vlan 11
arp proxy enable
#
vlan 12
arp proxy enable
#
interface Vlan-interface10
ip address 100.0.0.1 255.255.255.0
```

#### 三、正常状态信息查看

#在PC2下, 查arp表, 可见, 在arp表中, 由于设置了arp proxy enable, PC1的MAC地址被置为Switch A的MAC地址。报文查ARP表, 先送到SWITCH, 再次查ARP表, 才最后送到PC1。完成不同vlan之间的三层互通。

```
C:\Documents and Settings\LOU04961>arp -a
Interface: 100.0.0.10 --- 0x2
Internet Address Physical Address Type
100.0.0.1 00-e0-fc-36-45-b4 dynamic
100.0.0.2 00-e0-fc-36-45-b4 dynamic
```

#在Switch A下, 查arp表如下, 表项正常。

```
[Quidway]dis arp
```

Type: S-Static D-Dynamic

IP Address	MAC Address	VLAN ID	Port Name	Aging Type
100.0.0.10	00e0-fc3c-a5fc	12	Ethernet4/1/4	13 D
100.0.0.2	0015-c50b-a8ba	11	Ethernet4/1/2	16 D

#在PC1中, 查arp表如下:

C:\Documents and Settings\LOU04961>arp -a

Interface: 100.0.0.2 --- 0x2

Internet Address	Physical Address	Type
100.0.0.1	00-e0-fc-36-45-b4	dynamic
100.0.0.10	00-e0-fc-36-45-b4	dynamic

#### 四、排错(可debugging 信息)

#当没有配置ARP代理时, VLAN11和VLAN12不能互通。

取消ARP代理后, 如果尝试利用路由令VLAN11和VLAN12互通。即, 配置:

```
ip rou 100.0.0.1 32 100.0.0.1
```

#无法ping通, 发现Switch A中链接PC2的端口, 只有进来的报文, 没有出去的报文。  
可见ping包被丢弃。

```
<Quidway>dis int eth4/1/4
```

```
Ethernet4/1/4 current state : UP
```

```
IP Sending Frames' Format is PKTFMT_ETHNT_2, Hardware address is 00e0-fc36-45b1
```

```
The Maximum Transmit Unit is 1500
```

```
Media type is twisted pair, loopback not set
```

```
Port hardware type is 100_BASE_TX
```

```
100Mbps-speed mode, full-duplex mode
```

```
Link speed type is autonegotiation, link duplex type is autonegotiation
```

```
Flow-control is not enabled
```

```
The Maximum Frame Length is 1552
```

```
Broadcast MAX-ratio: 50%
```

```
Allow jumbo frame to pass
```

```
PVID: 12
```

```
Mdi type: auto
```

```
Link-status hold interval:3 Sec
```

```
Port link-type: access
```

```
Tagged VLAN ID : none
```

```
Untagged VLAN ID : 12
```

```
Last 300 seconds input: 0 packets/sec 64 bits/sec 0%
```

```
Last 300 seconds output: 0 packets/sec 0 bits/sec 0%
```

```
Input(total): 1838 packets, 119600 bytes
```

```
- broadcasts, - multicasts
```

```
Input(normal): 1838 packets, 119600 bytes
```

```
137 broadcasts, 0 multicasts
```

```
Input: 0 input errors, 0 runts, 0 giants, 0 throttles, 0 CRC
```

```
0 frame, 0 overruns, - aborts, 0 ignored, - parity errors
```

```
Output(total): 2643 packets, 234727 bytes
```

```
- broadcasts, - multicasts, 0 pauses
```

```
Output(normal): 2643 packets, 234727 bytes
```

```
2 broadcasts, 0 multicasts, 0 pauses
```

```
Output: 0 output errors, - underruns, - buffer failures
```

```
0 aborts, 0 deferred, - collisions, 0 late collisions
```

```
- lost carrier, - no carrier
```

```
Receive Packet Peak Value Info: 15118 bytes, happened at 11:03:25 6-27-2006
```

```
Transmit Packet Peak Value Info: 50006 bytes, happened at 11:03:25 6-27-2006
```

```
Input(total): 1845 packets, 120048 bytes
```

```
- broadcasts, - multicasts
```

```
Input(normal): 1845 packets, 120048 bytes
```

```
144 broadcasts, 0 multicasts
```

```
Input: 0 input errors, 0 runts, 0 giants, 0 throttles, 0 CRC
```

```
0 frame, 0 overruns, - aborts, 0 ignored, - parity errors
```

```
Output(total): 2643 packets, 234727 bytes
```

```
- broadcasts, - multicasts, 0 pauses
```

```
Output(normal): 2643 packets, 234727 bytes
```

```
2 broadcasts, 0 multicasts, 0 pauses
```

```
Output: 0 output errors, - underruns, - buffer failures
```

0 aborts, 0 deferred, - collisions, 0 late collisions

- lost carrier, - no carrier

Receive Packet Peak Value Info: 15118 bytes, happened at 11:03:25 6-27-2006

Transmit Packet Peak Value Info: 50006 bytes, happened at 11:03:25 6-27-2006