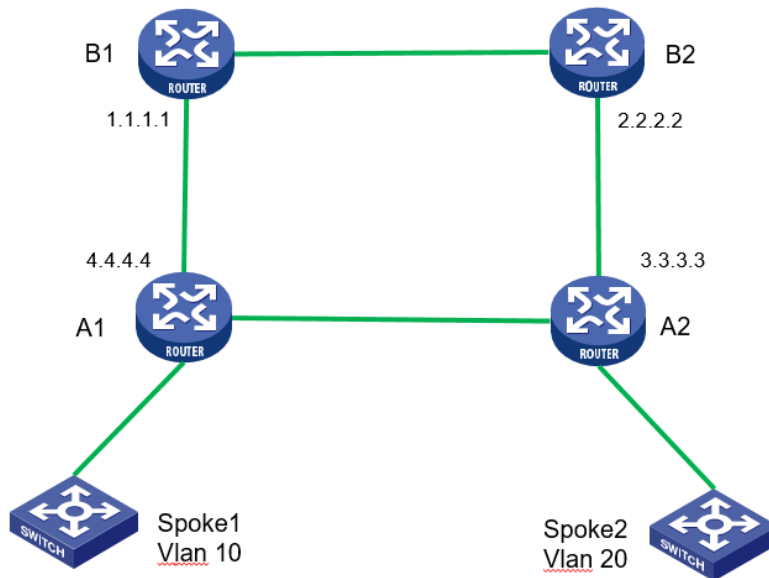


某地市已经部署了我司IPRAN环网，现在客户希望在环网上增加某政企客户的二层专线业务，从而实现该客户同城两个办公楼之前的业务二层互通。

因为客户侧的原因，客户两分支之间的VLAN tag会有所差异，从而配置方法会有所不同，共分为以下几种方式：

1. Spoke1/2均有tag，且tag一致；
2. Spoke1/2均有tag，但是tag不一致；
3. Spoke1无tag,Spoke2有tag；
4. 两侧均无tag；

本文主要介绍第二种情况。



如图所示，本地已经部署一个IPRAN环网设备，两个办公楼分别位于A1/A2处，现在需要在A1-A2之间建立一条二层通道VLL，实现SPOKE1与SPOKE2之间的二层互通。两个分支分别属于VLAN 10及VLAN 20。

进行二层专线配置之前需要先保证环网部分路由互通正常，且全网已经使能了MPLS及LDP协议。

Spoke1	Vlan 10	Spoke2	VLAN 20
A1配置			
<pre> l2vpn enable # pw-class vll pw-type ethernet vccv cc router-alert vccv bfd xconnect-group 1 connection 1 ac interface GigabitEthernet0/2 service-instance 10 peer 3.3.3.3 pw-id 34 pw-class vll interface GigabitEthernet0/2 port link-mode bridge service-instance 10 encapsulation s-vid 10 </pre>			
A2配置			

```

l2vpn enable
#
pw-class vll
pw-type ethernet
vccv cc router-alert
vccv bfd

xconnect-group 1
connection 1
ac interface GigabitEthernet0/2 service-instance 20
peer 4.4.4.4 pw-id 34 pw-class vll

interface GigabitEthernet0/2
port link-mode bridge
service-instance 20
encapsulation s-vid 20

```

两个Spoke之间互通正常:

```

[H3C]ping 192.168.1.2
Ping 192.168.1.2 (192.168.1.2): 56 data bytes, press CTRL_C to break
56 bytes from 192.168.1.2: icmp_seq=0 ttl=255 time=1.709 ms
56 bytes from 192.168.1.2: icmp_seq=1 ttl=255 time=1.368 ms
56 bytes from 192.168.1.2: icmp_seq=2 ttl=255 time=2.054 ms
56 bytes from 192.168.1.2: icmp_seq=3 ttl=255 time=2.012 ms
56 bytes from 192.168.1.2: icmp_seq=4 ttl=255 time=1.662 ms

--- Ping statistics for 192.168.1.2 ---
5 packets transmitted, 5 packets received, 0.0% packet loss
round-trip min/avg/max/std-dev = 1.368/1.761/2.054/0.251 ms
[H3C]Nov  3 08:43:43.063 2015 H3C PING/6/PING STATISTICS: Ping statistics for 192.168.1.2: 5 packets transmi
ted, 5 packets received, 0.0% packet loss, round-trip min/avg/max/std-dev = 1.368/1.761/2.054/0.251 ms.

```

1. Spoke 1 vlan 10 / Spoke 2 vlan 20

在A1/A2上查看PW状态, 均为UP状态:

```

[A1]dis l2v pw
Flags: M - main, B - backup, H - hub link, S - spoke link, N - no split horizon
Total number of PWs: 1
1 up, 0 blocked, 0 down, 0 defect, 0 idle, 0 duplicate

Xconnect-group Name: 1
Peer      PW ID/Rmt Site   In/Out Label   Proto  Flag  Link ID  State
3.3.3.3   34                917631/917630  LDP    M     1        Up
[A1]

[A2]dis l2v pw
Flags: M - main, B - backup, H - hub link, S - spoke link, N - no split horizon
Total number of PWs: 1
1 up, 0 blocked, 0 down, 0 defect, 0 idle, 0 duplicate

Xconnect-group Name: 1
Peer      PW ID/Rmt Site   In/Out Label   Proto  Flag  Link ID  State
4.4.4.4   34                917630/917631  LDP    M     1        Up
[A2]

```

分别在A1/A2上查看PW详细信息, PW状态为Eth类型:

```

[A1]dis l2v fo pw ver
Xconnect-group Name: 1
Connection Name: 1
Link ID: 1
  PW Type      : Ethernet          PW State : Up
  In Label     : 917631             Out Label: 917630
  MTU          : 1500
  PW Attributes : Main
  VCCV CC      : Router-Alert
  VCCV BFD     : Fault Detection with BFD
  Tunnel Group ID : 0x8000000300000000
  Tunnel NHLFE IDs: 1029
[A1]

[A2]dis l2v for pw ver
Xconnect-group Name: 1
Connection Name: 1
Link ID: 1
  PW Type      : Ethernet          PW State : Up
  In Label     : 917630             Out Label: 917631
  MTU          : 1500
  PW Attributes : Main
  VCCV CC      : Router-Alert
  VCCV BFD     : Fault Detection with BFD
  Tunnel Group ID : 0x8000001300000000
  Tunnel NHLFE IDs: 1030

```

分别在A1/A2上查看AC详细类型, AC接口类型为VLAN:

```

[A1]dis l2v for ac verbose
Xconnect-group Name: 1
Connection Name: 1
Interface: GE0/2.10
Link ID      : 0
Access Mode  : VLAN
[A1]

[A2]dis l2v for ac ver
Xconnect-group Name: 1
Connection Name: 1
Interface: GE0/2.20
Link ID      : 0
Access Mode  : VLAN
[A2]

```

1. 四种方式的组合, 主要在于AC接入类型的组合, 通过AC接入类型的配置, 可以控制A1/A2设备

对于报文Tag的处理;

2. 下面通过一个表格展示下四种方式对已VLAN tag的处理区别:

A1	A2	PW	A1 AC	A2 AC	备注
Vlan 10	Vlan 10	Ethernet	Ethernet	Ethernet	AC接入类型为Eth, 交换机带上来的为U-Tag; PW类型为Eth, 不允许P-Tag传输, 不影响U-Tag, 所以报文原tag会带到对端
Vlan 10	Vlan 20	Ethernet	Vlan	Vlan	AC接入类型为VLAN, 交换机带上来的为P-Tag; PW类型为Eth, 不允许P-Tag传输, 所以报文原tag删除, 然后到对端从对应接口出去的时候打上对应的Tag
无	Vlan 10	Ethernet	Ethernet	Vlan	AC接入类型为VLAN, 交换机带上来的为P-Tag; AC接入类型为Eth, 交换机带上来的为U-Tag; ; PW类型为Eth, 不影响U-Tag传输, 但是会去掉P-Tag, 报文到达对端打上或者替换对应的Tag转发出去
无	无	Ethernet	Ethernet	Ethernet	AC接入类型为Eth, 交换机带上来的为U-Tag; PW类型为Eth, 不允许P-Tag传输, 不影响U-Tag, 所以报文原tag会带到对端, 没有Tag, 就没有Tag