Lab 1-4 VLAN Routing

Learning Objectives

As a result of this lab section, you should achieve the following tasks

- Establishment of a trunk interface for VLAN routing.
- Configuration of sub-interfaces on a single physical interface.
- Enabling of ARP messages to be broadcast between VLANS.

Topology

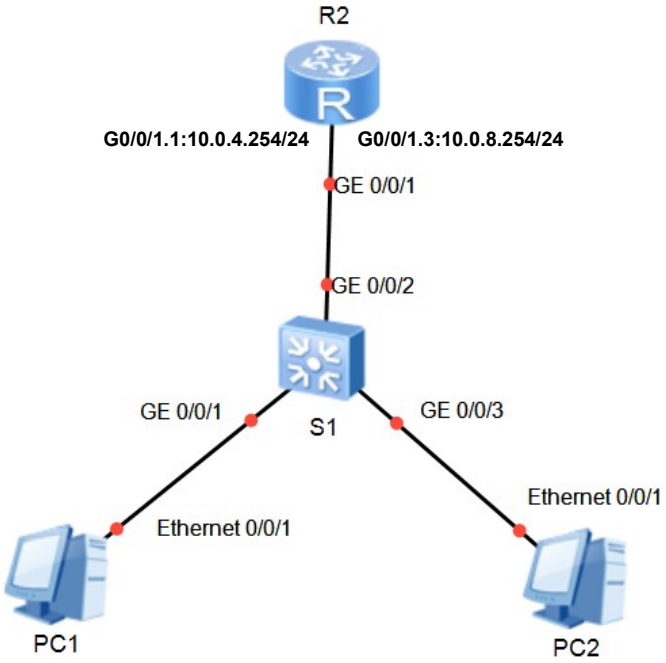


Figure 1.4 VLAN routing topology using a layer 2 switch.

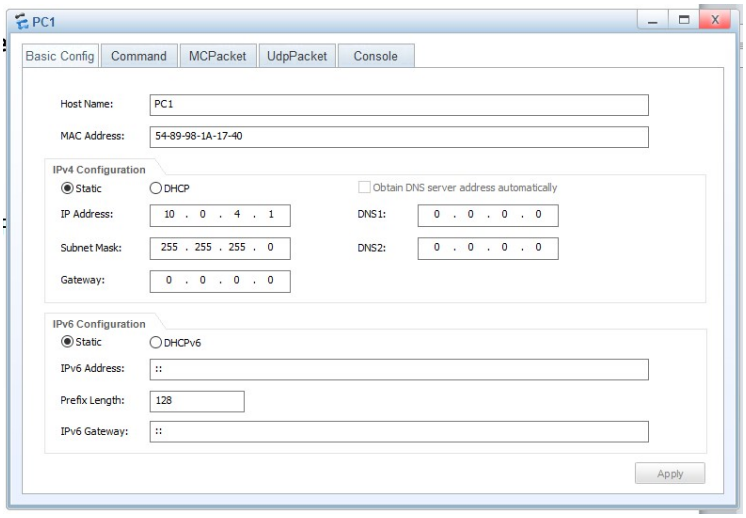
Scenario

The implementation of VLANs in the enterprise network has resulted in groups of users being isolated from other users that are part of different subnets. As the network administrator you have been given the task to ensure that the broadcast domains are maintained whilst allowing communication between the disparate users.

Tasks

Step 1 **Preparing the environment.**

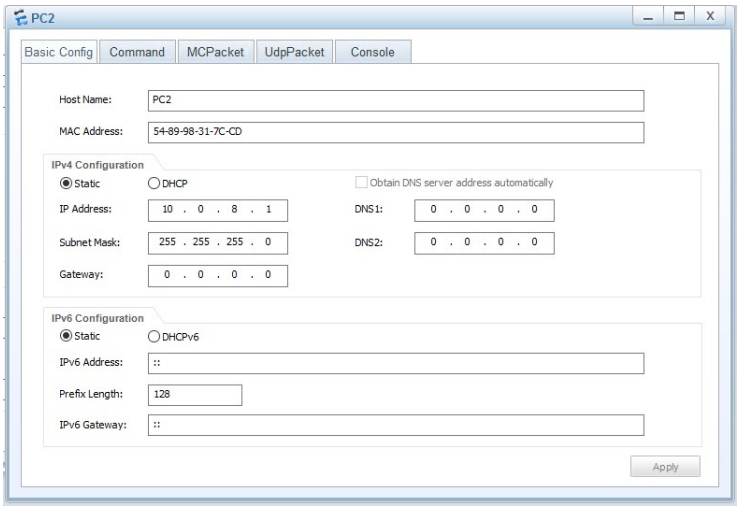
Configure the system name for S1. Configure the IP address 10.0.4.1/24 on computer PC1 connected to S1 on port G0/0/1.




```
<Quidway>system-view
[Quidway]sysname S1
```

Step 3 **Configure an IP address for R3**

Configure an IP address in the 10.0.8.0/24 network range on PC2 network interface card.



Step 4 **Establish two VLANs**

Create VLANs 4 and 8 on S1, configure interface Gigabit Ethernet 0/0/1 to belong to VLAN 4, and interface Gigabit Ethernet 0/0/3 to belong to VLAN 8.

```
[Sl]vlan batch 4 8
Info: This operation may take a few seconds. Please wait for a moment... done.
[SI]interface GigabitEthernet 0/0/1
[Sl-GigabitEthernetO/0/1]port link-type access
[Sl-GigabitEthernetO/0/1]port default vlan 4
[Sl-GigabitEthernetO/0/1]guit
[SI]interface GigabitEthernet0/0/3
[Sl-GigabitEthernetO/0/3]port link-type access
[Sl-GigabitEthernet0/0/3]port default vlan 8
[Sl-GigabitEthernetO/0/3]guit
```

Set interface Gigabit Ethernet 0/0/2 as a trunk link for VLANs 4 and 8.

```
[SI]interface GigabitEthernetO/O/2
[Sl-GigabitEthernetO/0/2]port link-type trunk
[Sl-GigabitEthernetO/0/2]port trunk allow-pass vlan 4 8
```

Step 5 **Configure VLAN routing through the sub-interface of R2**

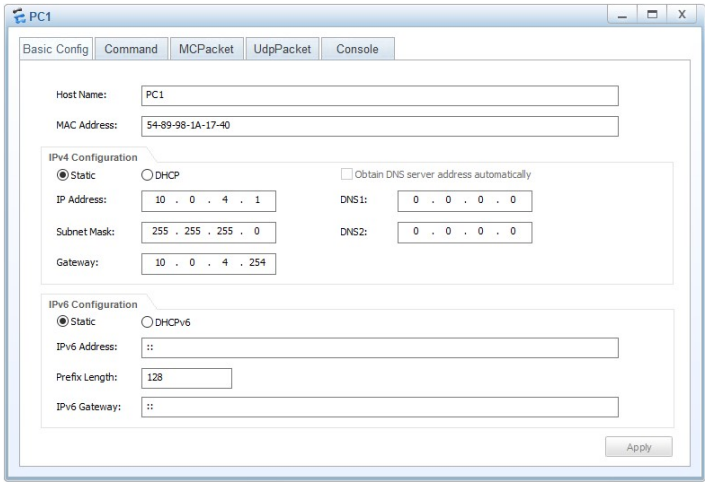
Configure sub-interfaces GigabitEthernet0/0/1.1 and GigabitEthernet0/0/1.3, to act as the gateway of VLAN 4, and act as the gateway of VLAN 8.

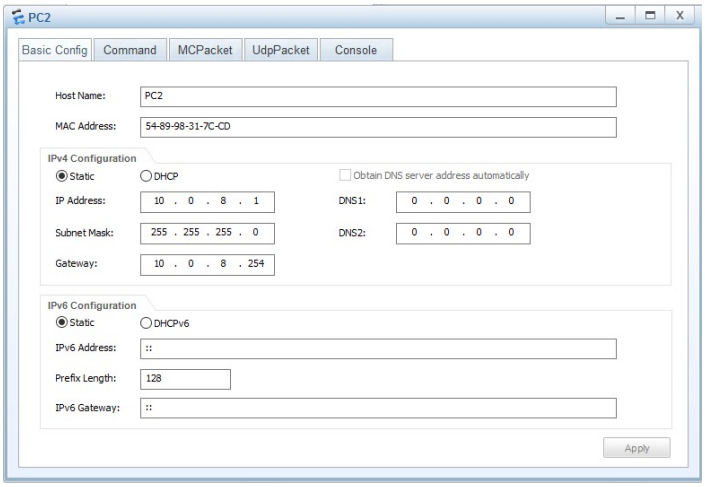
```
<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R2
[R2]interface GigabitEthernetO/0/1.1
[R2-GigabitEthernetO/0/1.1]ip address 10.0.4.254 24
[R2-GigabitEthernetO/0/1.1]dotlg termination vid 4
[R2-GigabitEthernet0/0/1.1]arp broadcast enable
[R2-GigabitEthernet0/0/1.1]quit
[R2]interface GigabitEthernetO/0/1.3
[R2-GigabitEthernet0/0/1.3]ip address 10.0.8.254 24
[R2-GigabitEthernet0/0/1.3]dot1q termination vid 8
[R2-GigabitEthernet0/0/1.3]arp broadcast enable
```

Test connectivity between PC1 and PC2.

```
<R1>ping 10.0.8.1
  PING 10.0.8.1: 56 data bytes, press CTRL_C to break
    Request time out
    Request time out
    Request time out
    Request time out
    Request time out
--- 10.0.8.1 ping statistics ---
  5 packet(s) transmitted
  0 packet(s) received
  100.00% packet loss
```

Configure a default gateway on PC1 and PC2.





Test connectivity between PC1 and PC2 again.

```
<Rl>ping 10.0.8.1
      PING 10.0.8.1: 56 data bytes, press CTRL_C to break
   Reply  from  10.0.8.1  bytes=56 Sequence=1 ttl=254 time=10 ms
   Reply  from  10.0.8.1  bytes=56 Sequence=2 ttl=254 time=1 ms
   Reply  from  10.0.8.1  bytes=56 Sequence=3 ttl=254 time=1 ms
   Reply  from  10.0.8.1  bytes=56 Sequence=4 ttl=254 time=10 ms
   Reply from 10.0.8.1    bytes=56 Sequence=5 ttl=254 time=1 ms

   -  10.0.8.1 ping statistics ----
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 1/4/10 ms
```

```
[R2]display ip routing-table
Route Flags: R - relay, D - download to fib


Routing Tables: Public
         Destinations : 10
                              Routes    10

      Destination/Mask Proto Pre Cost Flags NextHop    Interface


 10.0.4.0/24       Direct 0     0       D   10.0.4.254 GigabitEthernetO/0/1.1
 10.0.4.254/32     Direct 0     0       D   127.0.0.1  GigabitEthernetO/0/1.1
 10.0.4.255/32     Direct 0     0       D   127.0.0.1  GigabitEthernetO/0/1.1
 10.0.8.0/24       Direct 0     0       D   10.0.8.254 GigabitEthernet0/0/I.3
  10.0. 8.254/32   Direct  0    0       D  127.0. 0.1   GigabitEthernetO/0/I.3
  10.0. 8.255/32   Direct  0    0       D  127.0. 0.1   GigabitEthernetO/0/1.3
  127.0. 0.0/8     Direct  0    0       D  127.0. 0.1   InLoopBackO
  127.0. 0.1/32    Direct  0    0       D  127.0. 0.1   InLoopBackO
127.255.255.255/32 Direct 0      0       D  127.0. 0.1   InLoopBackO
255.255.255.255/32 Direct 0      0       D  127.0. 0.1   InLoopBack0
```