Lab 1-2 VLAN Configuration

Learning Objectives

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

- Assign port interfaces to become access and trunk ports.
- Create VLANs.
- Configure VLAN tagging over ports.
- Configure the default VLAN for an interface using the Port VLAN ID.

Topology

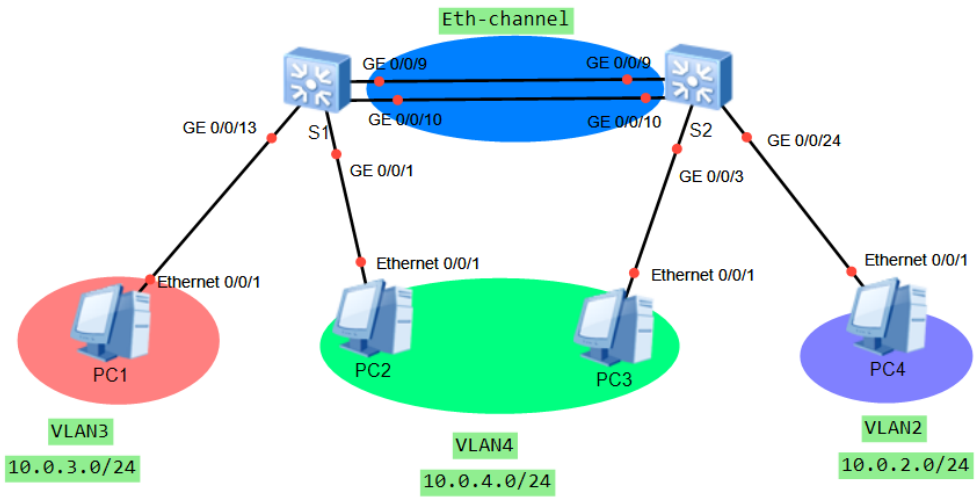


Figure 1.2 VLAN topology

Scenario

The enterprise network currently operates in a single broadcast domain resulting in a large amount of traffic being flooded to all network nodes.

It is required that the administrator attempt to control the flow of traffic at the link layer by implementing VLAN solutions. The VLAN solutions are to be applied to switches S1 and S2.

Tasks

Step 1 Preparing the environment.

Establish an Eth-trunk link between S1 and S2.

```
<Quidway>system-view
[Quidway]sysname S1
[S1]interface Eth-trunk 1
[Sl-Eth-Trunkl]mode lacp-static
[Sl-Eth-Trunkl]quit
[S1]interface GigabitEthernetO/O/9
[Sl-Gigabitethernet0/0/9]eth-trunk 1
[Sl-Gigabitethernet0/0/9]interface GigabitEthernet0/0/10
[Sl-Gigabitethernet0/0/10]eth-trunk 1
```

On S2, add interfaces to an Eth-Trunk using the Eth-Trunk view.

```
<Quidway>system-view
[Quidway]sysname S2
[S2]interface eth-trunk 1
[S2-Eth-Trunkl]mode lacp-static
[S2-Eth-Trunkl]trunkport GigabitEthernet 0/0/9
[S2-Eth-Trunkl]trunkport GigabitEthernet 0/0/10
```

Step 2 Establish a VLAN trunk.

The link type of a switch port interface is hybrid by default. Configure the port link-type for Eth-Trunk 1 to become a trunk port. Additionally, allow all VLANS to be permitted over the trunk port.

```
[S1]interface Eth-Trunk 1
[Sl-Eth-Trunkl]port link-type trunk
[Sl-Eth-Trunkl]port trunk allow-pass vlan all
[S2]interface Eth-Trunk 1
[S2-Eth-Trunkl]port link-type trunk
[S2-Eth-Trunkl]port trunk allow-pass vlan all
```

Step 3 Configure VLANs.

Use PC1, PC2, PC3 and PC4 as non-VLAN aware hosts and connect these hosts to switches S1 and S2 (according to topology). There are two methods

to create VLANs, and two methods to bind interfaces to the created VLANs, S1 and S2 are used to demonstrate the two methods. All interfaces associated with hosts should be configured as access ports.

On S1, associate interface Gigabit Ethernet 0/0/13 with VLAN 3, and interface Gigabit Ethernet 0/0/1 with VLAN 4.

On S2, associate interface Gigabit Ethernet 0/0/2 with VLAN4, and Gigabit Ethernet 0/0/24 with VLAN 2.

```
[S1]interface GigabitEthernet0/0/13
[Sl-GigabitEthernet0/0/13]port link-type access
[Sl-GigabitEthernetO/O/13]quit
[S1]interface GigabitEthernet0/0/l
[Sl-GigabitEthernet0/0/l]port link-type access
[Sl-GigabitEthernet0/0/l]quit
[Sl]vlan 2
[Sl-vlan2]vlan 3
[Sl-vlan3]port GigabitEthernet0/0/13
[Sl-vlan3]vlan 4
[Sl-vlan4]port GigabitEthernetO/O/1
[S2]vlan batch 2 to 4
[S2]interface GigabitEthernet 0/0/3
[S2-GigabitEthernet0/0/3]port link-type access
[S2-GigabitEthernet0/0/3]port default vlan 4
[S2-GigabitEthernet0/0/3]quit
[S2]interface GigabitEthernet 0/0/24
[S2-GigabitEthernet0/0/24]port link-type access
[S2-GigabitEthernet0/0/24]port default vlan 2
```

Verify that the VLAN configuration has been correctly applied to S1 and S2.

```
<Sl>display vlan
The total number of vlans is : 4

--------------------------------------------------------------------------------

U: Up;        D: Down;        TG: Tagged;        UT: Untagged;
MP: Vlan-mapping;             ST: Vlan-stacking;
#: ProtocolTransparent-vlan; *: Management-vlan;
--------------------------------------------------------------------------------
VID Type     Ports
--------------------------------------------------------------------------------
```

```
   1    common      UT:GE0/0/2(U)  GE0/0/3(U)      GE0/0/4(U)    GE0/0/5(U)
                    GE0/0/6(D)     GE0/0/7(D)      GE0/0/8(D)    GE 0/0/11(D)
                    GE0/0/12(D)    GE0/0/14(D)     GE0/0/15(D)   GE0/0/16(D)
                    GE0/0/17(D)    GE0/0/18(D)     GE0/0/19(D)   GE0/0/20(D)
                    GE 0/0/21(U)   GE 0/0/22(U)    GE 0/0/23(U)  GE 0/0/24(D)
                    Eth-Trunk1(U)
   2    common TG:Eth-Trunk1(U)
   3    common UT:GE0/0/13(U)
               TG:Eth-Trunk1(U)
   4    common UT:GE0/0/1(U)
               TG:Eth-Trunk1(U)
   ...output omitted...


<S2>display vlan
The total number of vlans is : 4
--------------------------------------------------------------------------------
U: Up;         D: Down;         TG: Tagged;         UT: Untagged;
MP: Vlan-mapping;               ST: Vlan-stacking;
#: ProtocolTransparent-vlan; *: Management-vlan;
--------------------------------------------------------------------------------
VID Type     Ports
--------------------------------------------------------------------------------
   1    common      UT:GE0/0/1(U)  GE0/0/2(U)      GE0/0/4(U)    GE0/0/5(U)
                    GE0/0/6(D)     GE0/0/7(D)      GE0/0/8(D)    GE 0/0/11(D)
                    GE0/0/12(D)    GE0/0/13(D)     GE0/0/14(D)   GE0/0/15(D)
                    GE0/0/16(D)    GE0/0/17(D)     GE0/0/18(D)   GE0/0/19(D)
                    GE 0/0/20(U)   GE 0/0/21(U)    GE 0/0/22(U)  GE 0/0/23(D)
                    Eth-Trunk1(U)
   2    common UT:GE0/0/24(U)
               TG:Eth-Trunk1(U)
   3    common TG:Eth-Trunk1(U)
   4    common UT:GE0/0/3(U)
               TG:Eth-Trunk1(U)
   ...output omitted...
```

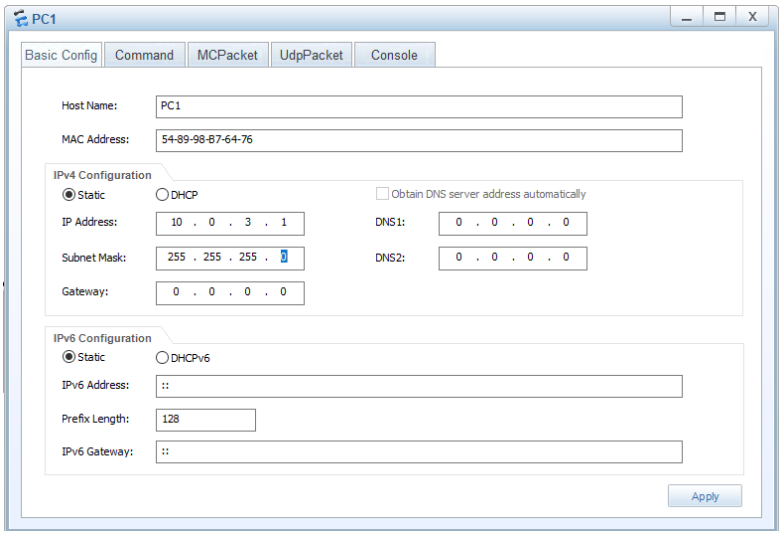
The highlighted entries confirm the binding of the interfaces to each created VLAN. All VLANs are permitted over the trunk (TG) port Eth-Trunk 1.

Step 4 Configure IP addressing for each VLAN.

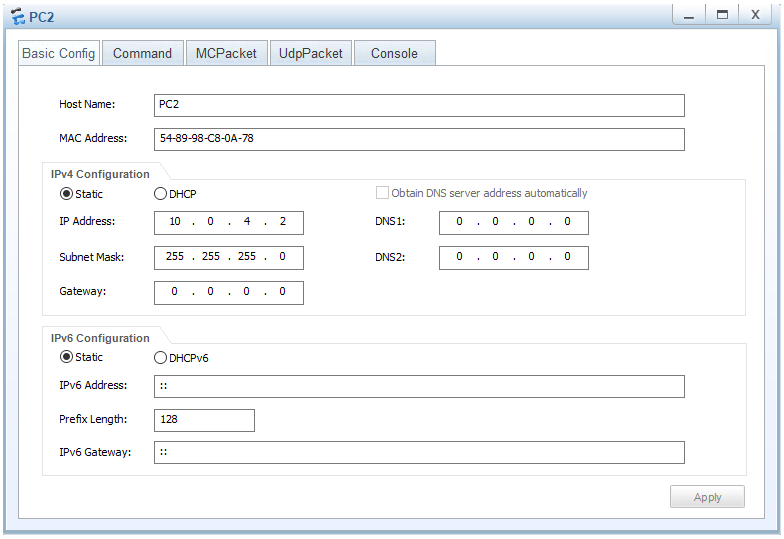
Configure IP addresses on hosts, PC1, PC2, PC3, and PC4 as part of the

respective VLANs.

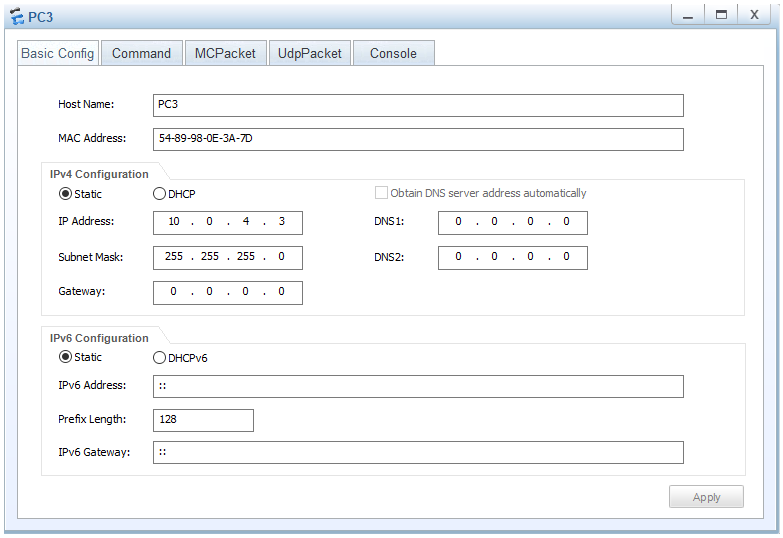
Configuration of PC1



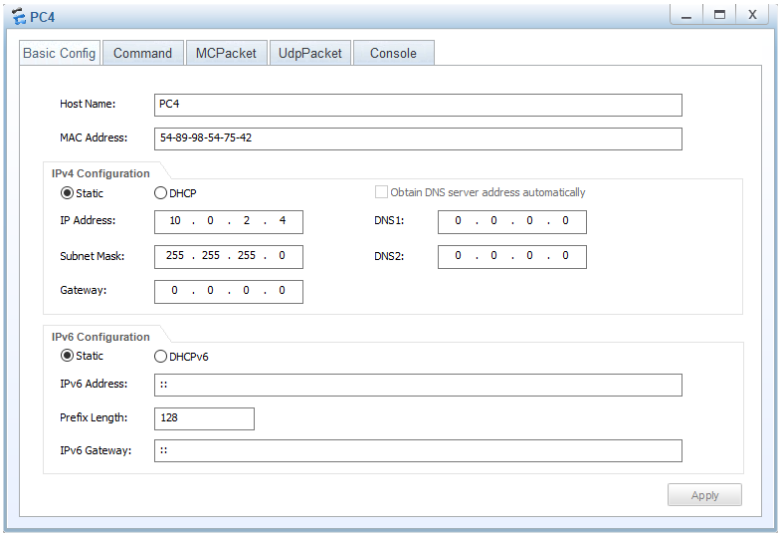
Configuration of PC2



Configuration of PC3

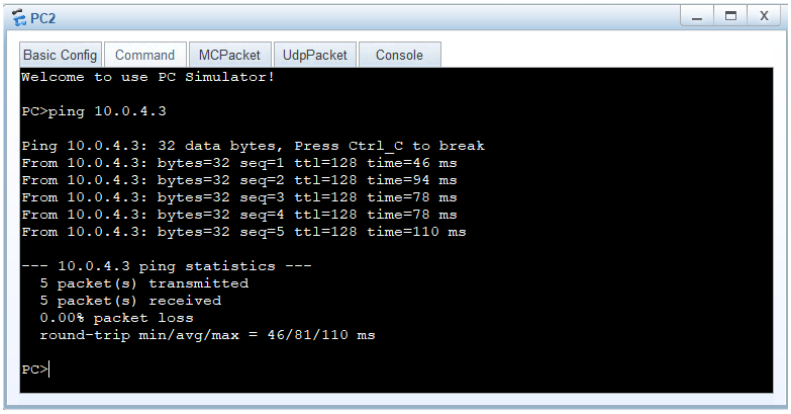


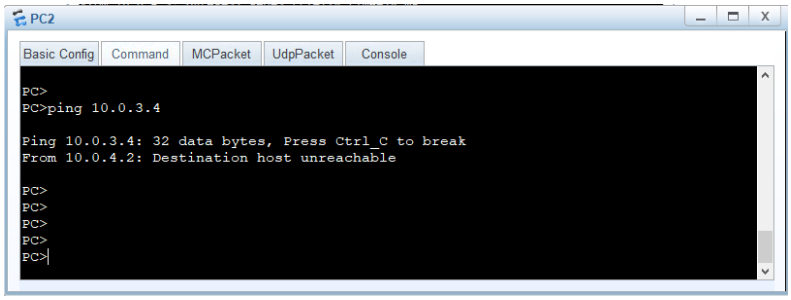
Configuration of PC4



Step 5 Verify the configuration, by checking the connectivity.

Use the ping command. PC2 and PC3 in VLAN 4 should be able to communicate with one another. Devices in other VLANs should be unable to communicate.





You may wish to also try between PC2 and PC1, and between PC3 and PC4.

Final Configuration

```
[S1]display current-configuration
#
[Software Version V100R006C00SPC800
sysname S1
#
vlan batch 2 to 4
#
lacp priority 100
#
interface Eth-Trunkl
port link-type trunk
port trunk allow-pass vlan 2 to 4094
mode lacp-static
#
interface GigabitEthernet0/0/1
port link-type access
port default vlan 4
#
interface GigabitEthernet0/0/9
eth-trunk 1
lacp priority 100
```

```
undo negotiation auto
speed 100
#
interface GigabitEthernet0/0/10
eth-trunk 1
lacp priority 100
undo negotiation auto
speed 100
#
interface GigabitEthernet0/0/13
port link-type access
port default vlan 3
#
return

[S2]display current-configuration
#
[Software Version V100R006C00SPC800
sysname S2
#
vlan batch 2 4
#
interface Eth-Trunkl
port link-type trunk
port trunk allow-pass vlan 2 to 4094
mode lacp-static
#
interface GigabitEthernet0/0/3
port link-type access
port default vlan 4
#
interface GigabitEthernet0/0/9
eth-trunk 1
undo negotiation auto
speed 100
#
interface GigabitEthernet0/0/10
eth-trunk 1
undo negotiation auto
speed 100
#
interface GigabitEthernet0/0/24
port link-type access
port default vlan 2
```

```
#
interface NULL0
#
user-interface con 0
user-interface vty 0 4
#
return
```