

Implementation of VLAN

1. Create a topology (For example, 4 PCs and a Switch) as follows:

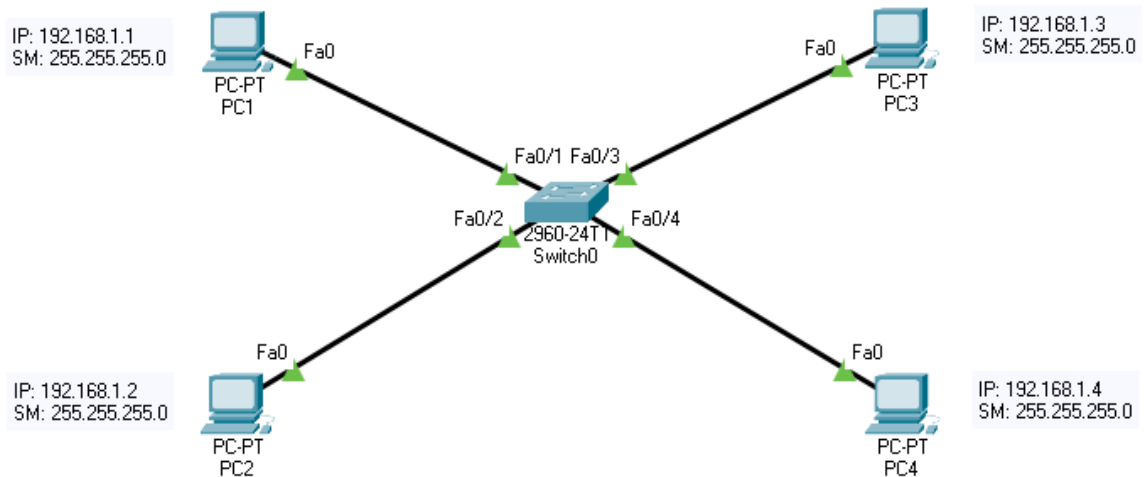


Fig. 1 Topology for VLAN

2. Assign IP and Subnet Mask to all end devices (PC1-PC4)
3. Create a VLAN (VLAN 2) on the switch as follows:
 - a. Switch>enable
 - b. Switch#configure terminal
 - c. Switch(config)#vlan 2 [Create vlan number 2]
 - d. Switch(config-vlan)#name cce [Provide a name to vlan. This is optional]
 - e. Switch(config-vlan)#exit [Exit from vlan mode]
4. Configure interfaces of switch so that they are on respective VLANs as per requirements:
 - a. Switch(config)#interface fastEthernet 0/3 [configure interfaces for VLANs]
 - b. Switch(config-if)#switchport mode access [Enable access mode on Fa0/3]
 - c. Switch(config-if)#switchport access vlan 2 [Assign Fa0/3 to VLAN-2]
 - d. Switch(config-if)#exit [Exit from interface mode]
 - e. Switch(config)# [Repeat step f to h for other interfaces as per requirements]
 - f. In case there is a need to configure multiple interfaces at once then write the following command:
 - i. Switch(config)#interface range fastEthernet 0/5-10 [Config Fa0/5 to 0/10]
 - ii. Switch(config-if-range)# [Write commands f to h here]
5. Show VLAN status
To see the status of VLAN implementation write the following command:

Switch#show vlan

[Output of show vlan is mentioned below]

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
2	cce	active	Fa0/3, Fa0/4

6. Check working of VLAN by ping (within VLAN and among VLANs). Below mentioned results indicate that you have successfully configured VLAN in your switch:
- Within VLAN ping will successful
 - Inter-VLAN ping unsuccessful

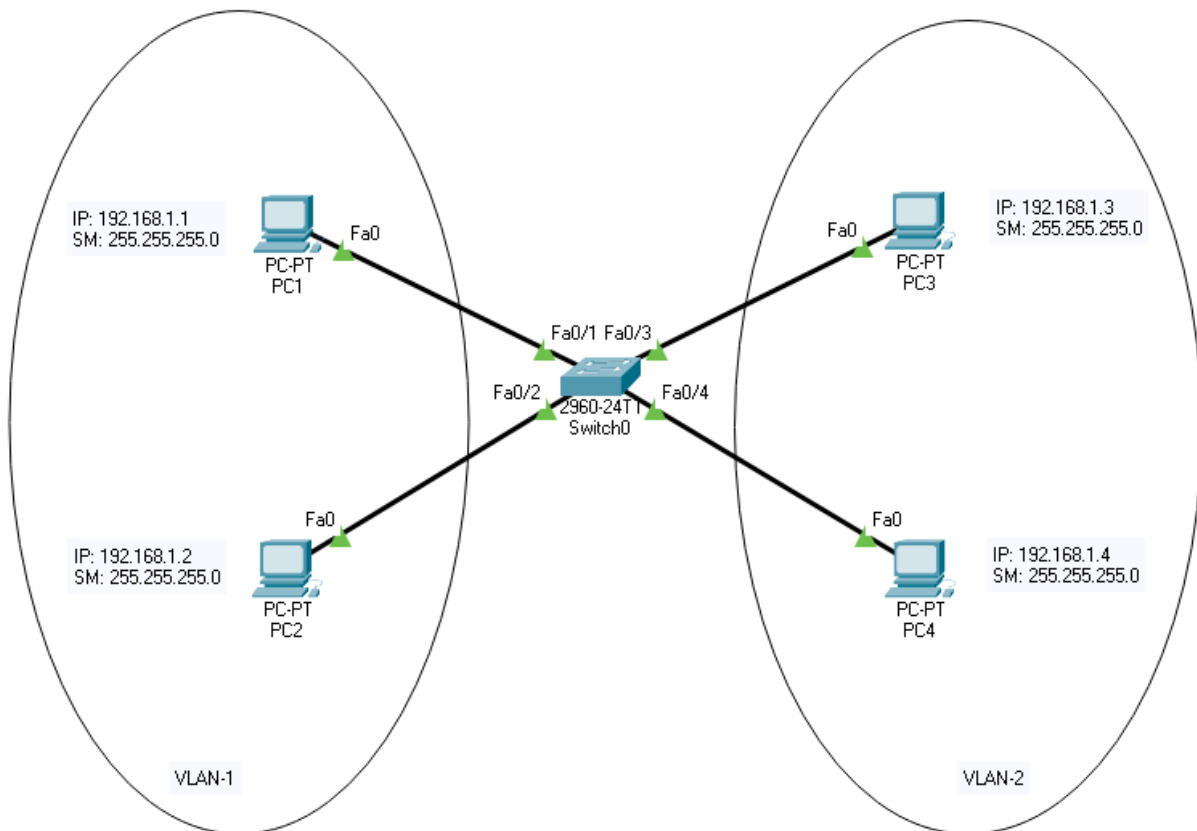


Fig 2: Implementation of VLAN

Inter-VLAN Communication using Router

To enable inter-VLAN communication there is a need to include router so that the existing VLAN topology looks as shown in figure:

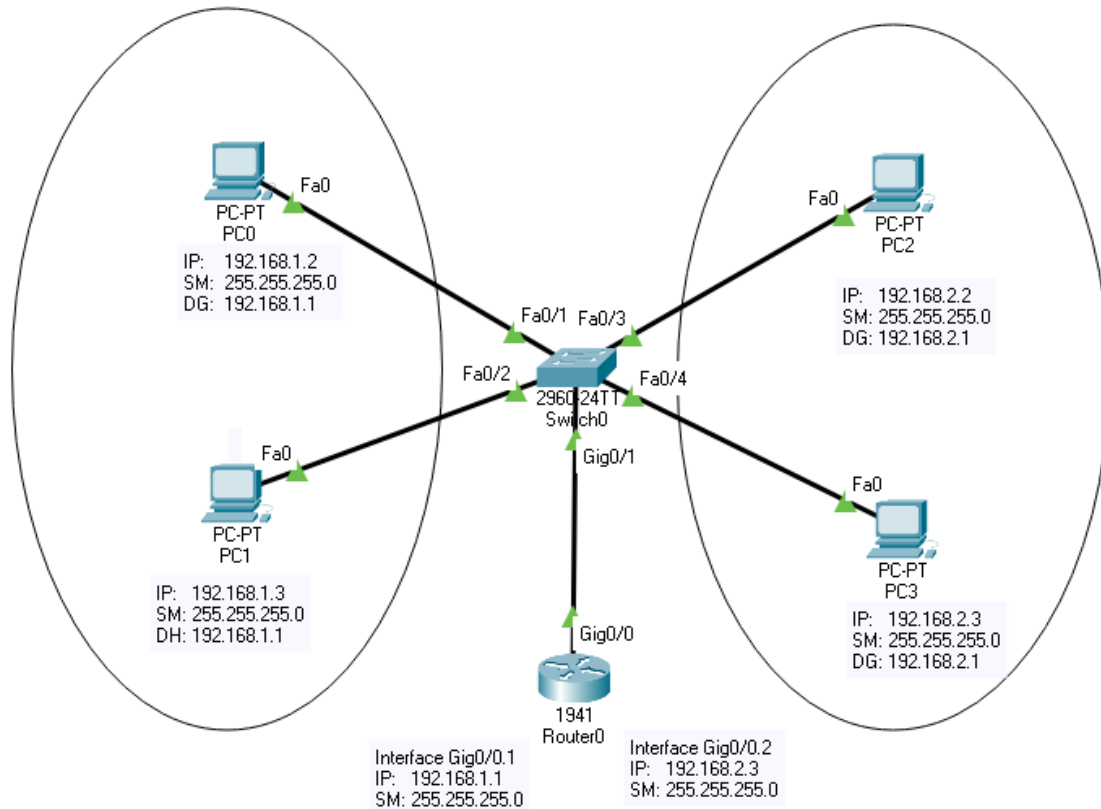


Fig. 3: Inter-VLAN communication using Router

Configurations:

1. Router:

a. Configure Gig0/0 interface as follows

```
Router>enable
Router#configure terminal
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#no shut
```

b. Make two sub interfaces of Gig0/0 as follows:

i. Gig0/0.1

```
Router(config-if)#int gig0/0.1
Router(config-subif)#encapsulation dot1q 1 [This command will enable
802.1Q on sub_interface 0.1]
```

```
Router(config-subif)#ip address 192.168.1.1 255.255.255.0
```

ii. Gig0/0.2

```
Router(config-if)#int gig0/0.2
```

```
Router(config-subif)#encapsulation dot1q 2 [This command will enable  
802.1Q on sub_interface 0.2]
```

```
Router(config-subif)#ip address 192.168.2.1 255.255.255.0
```

2. Switch:

- a. Configure trunk mode on switch interface that is connected with Router. For example, Gig0/1 of Switch0 is connected with Router0's Gig0/0.

```
Switch(config)#int gig0/1
```

```
Switch(config-if)#switchport mode trunk [Enable trunk mode]
```

- b. Configure interfaces so that corresponding interface should be a part of a particular VLAN. You can keep the existing topology unchanged for ease.

3. End devices:

- a. **Configure IP, Subnet Mask and Default gateway as shown in figure 3.**

Result: To check the working of inter-VLAN communication, try to ping from one PC on VLAN-1 to another PC on VLAN-2 and vice-versa. If ping is successful, then inter-VLAN communication is successful.

Note: Show Ping snapshots