

Lab-12: Objective:

Configure Inter V-LAN Routing.

LAB-12 Inter V-LAN Routing

Configure Inter V-LAN Routing in figure 30. At the end of the configuration, same class of users can communicate with each other while different should be restricted.

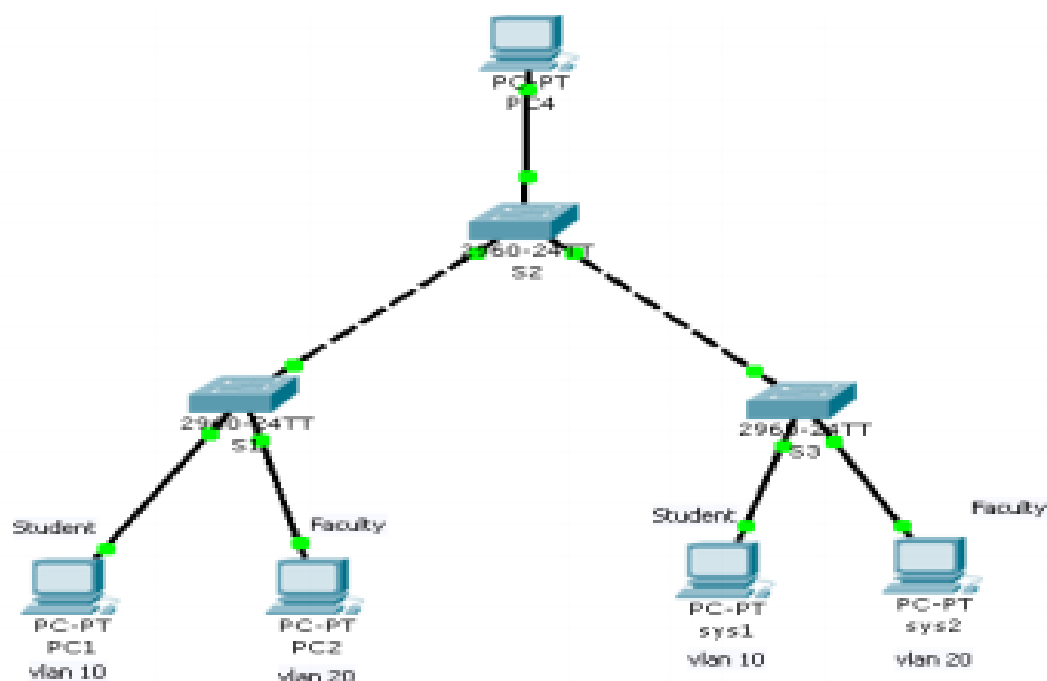


Figure 30

V-LANS

A VLAN (virtual LAN) is a sub network which can group together collections of devices on separate physical local area networks (LANs). A LAN is a group of computers and devices that share a communications line or wireless link to a server within the same geographical area.

VLANs make it easy for network administrators to partition a single switched network to match the functional and security requirements of their systems without having to run new cables or make major changes in their current network infrastructure. VLANs are often set up by larger businesses to re-partition devices for better traffic management.

VLANs are also important because they can help improve the overall performance of a network by grouping together devices that communicate most frequently. VLANs also provide security on larger networks by allowing a higher degree of control over which devices have access to each other. VLANs tend to be flexible because they are based on logical connections, rather than physical.

How VLAN works

Ports (interfaces) on switches can be assigned to one or more VLANs, enabling systems to be divided into logical groups based on which department they are associated with and establish rules about how systems in the separate groups are allowed to communicate with each other. These groups can range from the simple and practical (computers in one VLAN can see the printer on that VLAN, but computers outside that VLAN cannot), to the complex and legal (for example, computers in the retail banking departments cannot interact with computers in the trading departments).

Each VLAN provides data link access to all hosts connected to switch ports configured with the same VLAN ID. The VLAN tag is a 12-bit field in the Ethernet header that provides support for up to 4,096 VLANs per switching domain. VLAN tagging is standardized in IEEE (Institute of Electrical and Electronics Engineers) 802.1Q and is often called Dot1Q.

Multiple VLANs can be configured on a single port using a trunk configuration.

Task 1, Configuring Names on different V-LANS

```
S1>enable
S1#configure terminal
S1(Config)#vlan 10
S1(Config-vlan)#name Student
S1(Config-vlan)#exit
S1(Config)#vlan 20
S1(Config-vlan)#name Faculty
S1(Config-vlan)#exit
```

```
S2>enable
S2#configure terminal
S2(Config)#vlan 10
S2(Config-vlan)#name Student
S2(Config-vlan)#exit
S2(Config)#vlan 20
S2(Config-vlan)#name Faculty
```

```
S2(Config-vlan)#exit
```

```
S3>enable
S3#configure terminal
S3(Config)#vlan 10
S3(Config-vlan)#name Student
S3(Config-vlan)#exit
S3(Config)#vlan 20
S3(Config-vlan)#name Faculty
S3(Config-vlan)#exit
```

Task 2, Assigning IP to VLAN-99

```
S1>enable
S1#configure terminal
S1(Config)# interface vlan99
S1(Config-if) ip address 10.0.0.1 255.0.0.0
S1(Config-if) exit
```

```
S2>enable
S2#configure terminal
S2(Config)# interface vlan99
S2(Config-if) ip address 10.0.0.2 255.0.0.0
S2(Config-if) exit
```

```
S3>enable
S3#configure terminal
S3(Config)# interface vlan99
S3(Config-if) ip address 10.0.0.3 255.0.0.0
S3(Config-if) exit
```

Task 3, Configuring Access mode and Trunk Mode

```
S1>enable
S1#configure terminal
S1(Config)# interface range fa0/1-2
S1(Config-if) switchport mode trunk
S1(Config-if) exit
```

```
S1(Config)# interface range fa0/5-10
S1(Config-if) switchport mode access
```

```
S1(Config-if) switchport access vlan 10  
S1(Config-if) exit
```

```
S1(Config)# interface range fa0/11-15  
S1(Config-if) switchport mode access  
S1(Config-if) switchport access vlan 20  
S1(Config-if) exit
```

```
S2>enable  
S2#configure terminal  
S2(Config)# interface range fa0/1-2  
S2(Config-if) switchport mode trunk  
S2(Config-if) exit
```

```
S2(Config)# interface range fa0/5-10  
S2(Config-if) switchport mode access  
S2(Config-if) switchport access vlan 10  
S2(Config-if) exit
```

```
S2(Config)# interface range fa0/11-15  
S2(Config-if) switchport mode access  
S2(Config-if) switchport access vlan 20  
S2(Config-if) exit
```

```
S3>enable  
S3#configure terminal  
S3(Config)# interface range fa0/1-2  
S3(Config-if) switchport mode trunk  
S3(Config-if) exit
```

```
S3(Config)# interface range fa0/5-10  
S3(Config-if) switchport mode access  
S3(Config-if) switchport access vlan 10  
S3(Config-if) exit
```

```
S3(Config)# interface range fa0/11-15  
S3(Config-if) switchport mode access  
S3(Config-if) switchport access vlan 20  
S3(Config-if) exit
```

Note:

- Student PC's are connected to fast Ethernet port of switch from **5 to 10**
- Faculty PC's are connected to fast Ethernet port of switch from **11 to 15**
- Assign one Subnet address to PC'S that is:

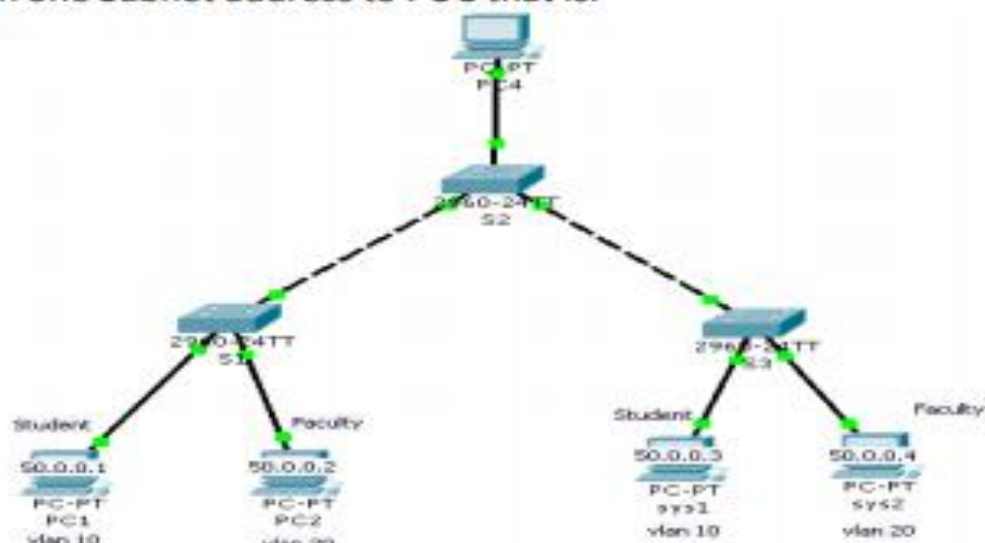


Figure 31

Refer to figure 31, when we attempt to PING from PC1 to sys1 the ping will be successful but if we PING from PC1 to PC2 or Sys2 then ping will be unsuccessful.

Lab-12 Exercise:

Configure Inter V-LAN Routing for different departments like Computer Science, Engineering, Management Sciences and Media & Arts. Attach 4 users in each department. At the end of the configuration, same class of users can communicate with each other while different should be restricted. What do you understand when you use the command "Show VLAN Brief"?