

Problem

Design a network with multiple VLANs to separate broadcast domains and enable inter-VLAN communication using a Layer 3 device.

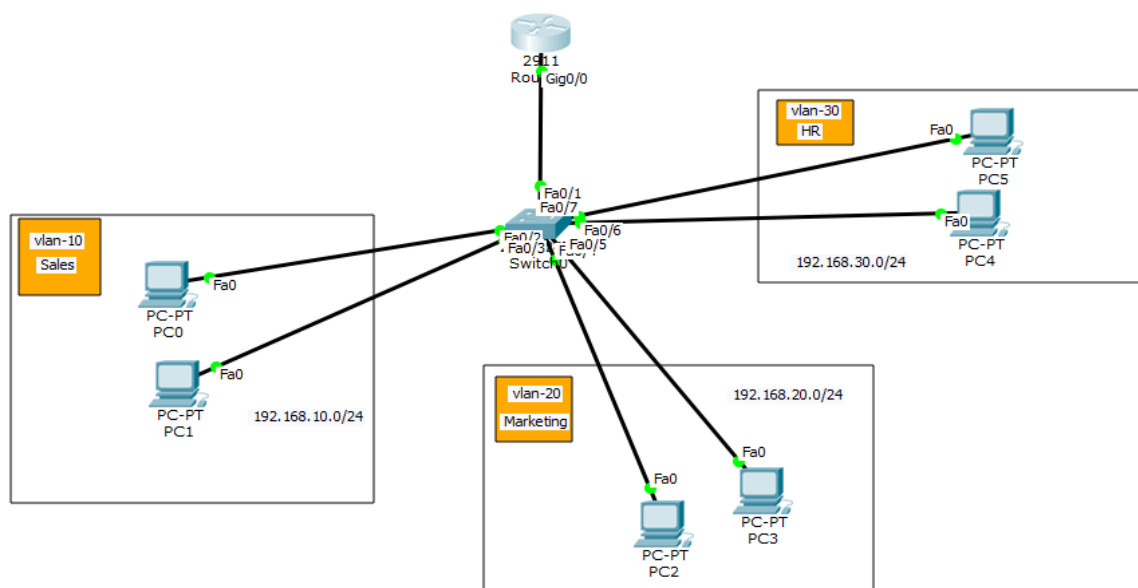
Network Design:

Create a network with at least three VLANs (e.g., VLAN 10 for Sales, VLAN 20 for Marketing, and VLAN 30 for HR).

Assign IP subnets to each VLAN (e.g., 192.168.10.0/24 for VLAN 10, 192.168.20.0/24 for VLAN 20, and 192.168.30.0/24 for VLAN 30).

Solution

* ->Inter-VLAN routing is the process of sending data between different VLANs (Virtual Local Area Networks). VLANs divide broadcast domains on a LAN environment, and hosts in different VLANs can't communicate with each other by default. To enable communication, a router or Layer 3 switch is required to route traffic between VLANs.



Step-1: Configure the VLAN Number and Name

```
Switch(config)#vlan 10
```

Switch(config-vlan)#name sales

```
Switch(config-vlan)#vlan 20
```

```
Switch(config-vlan)#name marketing
```

```
Switch(config-vlan)#vlan 30
```

```
Switch(config-vlan)#name hr
```

Step-2: Configure Access Mode

```
Switch(config)#interface range fastEthernet 0/2-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit

Switch(config)#interface range fastEthernet 0/4-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit

Switch(config)#interface range fastEthernet 0/6-7
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
```

Step-3: Configure Trunk Mode

```
Switch(config)#int f0/1
Switch(config-if)#switchport mode trunk
```

Step-4: Inter-VLAN Configure

*-> Use the encapsulation dot1q command in subinterface range configuration mode to apply a VLAN ID to the subinterface.

```
Router(config)#int gigabitEthernet 0/0.10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.10.1 255.255.255.0
Router(config-subif)#exit

Router(config)#int gigabitEthernet 0/0.20
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#exit

Router(config)#int gigabitEthernet 0/0.30
```

Router(config-subif)#encapsulation dot1Q 30

Router(config-subif)#ip address 192.168.30.1 255.255.255.0

Router(config-subif)#do wr

Step-5: Configure IP in the PC manually.

Default Gateway of Sales(VLAN 10) => 192.168.10.1

Default Gateway of Marketing(VLAN 20) => 192.168.20.1

Default Gateway of HR(VLAN 30) => 192.168.30.1