



Experiment 8

Aim: To create a network topology for simulating VLANs on the switch using Cisco packet tracer

Theory:

A Virtual LAN (VLAN) is simply a logical LAN. VLANs have similar characteristics with those of physical LANs, only that with VLANs, you can logically group hosts even if they are physically located on separate LAN segments. Each VLAN can be considered as a separate subnet or broadcast domain. For this reason, to move packets from one VLAN to another, a router or a layer 3 switch is used. VLANs are configured on switches by placing some interfaces into one broadcast domain and some interfaces into another.

Output:

Main:

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with two VLANs: VLAN10 (green) and VLAN20 (blue). VLAN10 contains PC-PT PC0 and PC-PT PC1. VLAN20 contains PC-PT PC2 and PC-PT PC3. Both VLANs are connected to a central switch (Switch0) via their Fa0/24 interfaces. The switch is connected to a 2811 Router via its Fa0/24 interface. The router's Fa0/0 interface is connected to the Fa0/0 interface of the 2811 Router. A command prompt window is open, showing the results of a ping test from PC0 to PC2. The output indicates a 25% loss, with the following statistics:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 20ms, Average = 6ms

C:\>
```

VLAN10 PC Configuration:

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	0.0.0.0



VLAN20 PC Configuration

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.2.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.1
DNS Server	0.0.0.0

Switch CLI Configuration:

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name HR
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name IT
Switch(config-vlan)#int fa2/1
Switch(config-if)#switchport access vlan 10
Switch(config-if)#int fa3/1
Switch(config-if)#switchport access vlan 10
Switch(config-if)#int fa0/1
Switch(config-if)#switchport access vlan 20
Switch(config-if)#int fa1/1
Switch(config-if)#switchport access vlan 20
Switch(config-if)#int fa6/1
Switch(config-if)#switchport mode trunk
Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet6/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet6/1, changed state to up

Switch con0 is now available

Press RETURN to get started.
```

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Router CLI Configuration:

Router0

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#int fa0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.10, changed state to up

Router(config-subif)#encapsulation dot1q 10
^
% Invalid input detected at '^' marker.

Router(config-subif)#encapsulation dot1q 10
Router(config-subif)#encapsulation dot1q 10
^
% Invalid input detected at '^' marker.

Router(config-subif)#encapsulation dot1q 10
Router(config-subif)#ip address 192.168.1.1 255.255.255.0
Router(config-subif)#
Router(config-subif)#int fa0/0.20
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state to up

Router(config-subif)#encapsulation dot1q 20
^
% Invalid input detected at '^' marker.

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.2.1 255.255.255.0
Router(config-subif)#
```

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Conclusion: