



Experiment No. 8
Perform to simulate VLANs on the switch/router using Cisco packet tracer/GNS3
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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-PT1 (192.168.1.10) and PC-PT4 (192.168.1.20). VLAN20 contains PC-PT2 (192.168.2.10) and PC-PT3 (192.168.2.20). All PCs are connected to a central switch (Switch-NT) via their Fa0 interfaces. The switch has Fa0/1 connected to PC-PT1, Fa0/2 to PC-PT2, Fa0/3 to PC-PT4, and Fa0/4 to PC-PT3. The switch is also connected to a 2811 Router via its Fa0/0 interface. The router has Fa0/0 connected to the switch and Fa0/1 connected to the internet. A command prompt window is open on the right, showing the following output:

```
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=20ms 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

☐ DHCP

☒ 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:

Conclusion:

Simulating VLANs using Cisco Packet Tracer and GNS3 provides an invaluable hands-on experience for both novice and experienced network engineers. These tools offer a realistic



environment to study and experiment with VLAN configurations, ensuring that users can design, configure, and troubleshoot VLANs effectively. By mastering VLANs in these simulated environments, network professionals can enhance their skills and better prepare for real-world networking challenges, leading to more efficient, secure, and manageable network infrastructures.



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