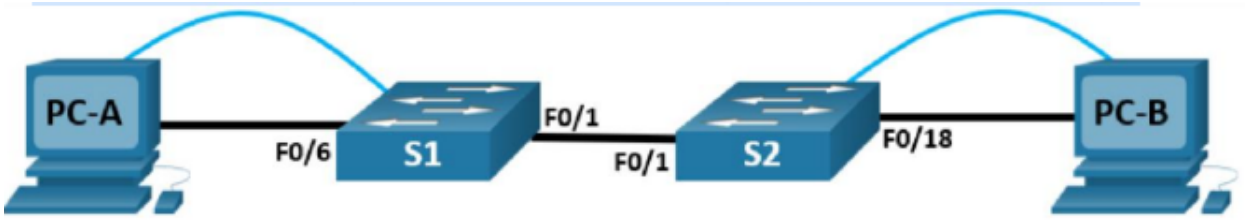
Ex.No - 08
Date - 03/09/2024

VIRTUAL LAN CONFIGURATION

AIM:

To simulate Virtual LAN configuration using CISCO Packet Tracer Simulation.

Packet Tracer - Configure VLANs and Trunking - Physical Mode Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
S1	VLAN 1	192.168.1.11	255.255.255.0	N/A
S2	VLAN 1	192.168.1.12	255.255.255.0	N/A
PC-A	NIC	192.168.10.3	255.255.255.0	192.168.10.1
PC-B	NIC	192.168.10.4	255.255.255.0	192.168.10.1

Blank Line - no additional information

OBJECTIVES:

Part 1: Build the Network and Configure Basic Device Settings
Part 2: Create VLANs and Assign Switch Ports
Part 3: Maintain VLAN Port Assignments and the VLAN Database
Part 4: Configure an 802.1Q Trunk between the Switches

Part 1: Build the Network and Configure Basic Device Settings

Step 1: Build the network as shown in the topology.

Attach the devices as shown in the topology diagram, and cable as necessary.

a. Click and drag both switch S1 and S2 to the Rack.
b. Click and drag both PC-A and PC-B to the Table and use the power button to turn them
c. Provide network connectivity by connecting Copper Straight-through cables, as shown in the topology.
d. Connect Console Cable from device PC-A to S1 and from device PC-B to

Step 2: Configure basic settings for each switch.

a. From the Desktop Tab on each PC, use the Terminal to console into each switch and

enable privileged EXEC mode.
Open configuration window
b. Enter configuration mode.
c. Assign a device name to each switch.
d. Assign class as the privileged EXEC encrypted password.
e. Assign cisco as the console password and enable login.
f. Assign cisco as the vty password and enable login.
g. Encrypt the plaintext passwords.
h. Create a banner that warns anyone accessing the device that unauthorized access is Prohibited.
i. Configure the IP address listed in the Addressing Table for VLAN 1 on the switch.

Step 3: Configure PC hosts.

From the Desktop tab on each PC, click IP Configuration and enter the addressing information as displayed in the Addressing Table.

Step 4: Test connectivity.

Test network connectivity by attempting to ping between each of the cabled devices.

Part 2: Create VLANs and Assign Switch Ports

Step 1: Create VLANs on the switches.

From the Desktop Tab on each PC, use Terminal to continue configuring both network switches.

Open configuration window

a. Create the VLANs on S1.

```
S1(config)# vlan 10
S1(config-vlan)# name Operations
S1(config-vlan)# vlan 20
S1(config-vlan)# name Parking_Lot
S1(config-vlan)# vlan 99
S1(config-vlan)# name Management
S1(config-vlan)# vlan 1000
S1(config-vlan)# name Native
S1(config-vlan)# end
```

b. Create the same VLANs on S2.

c. Issue the show vlan brief command to view the list of VLANs on S1.

```
S1# show vlan brief
```

VLAN Name Status Ports

---- -------------------------------- --------- -------------------------------

1 default active Fa0/1, Fa0/2, Fa0/3, Fa0/4
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

Step 2: Assign VLANs to the correct switch interfaces.

a. Assign VLANs to the interfaces on S1.

1) Assign PC-A to the Operation VLAN.

```
S1(config)# interface f0/6
S1(config-if)# switchport mode access
S1(config-if)# switchport access vlan 10
```

2) From VLAN 1, remove the management IP address and configure it on VLAN 99.

```
S1(config)# interface vlan 1
S1(config-if)# no ip address
S1(config-if)# interface vlan 99
S1(config-if)# ip address 192.168.1.11 255.255.255.0
S1(config-if)# end
```

b. Issue the show vlan brief command and verify that the VLANs are assigned to the correct interfaces.

c. Issue the show ip interface brief command.

d. Assign PC-B to the Operations VLAN on S2.

e. From VLAN 1, remove the management IP address and configure it on VLAN 99 according to the Addressing Table.

f. Use the show vlan brief command to verify that the VLANs are assigned to the correct interfaces.

Part 3: Maintain VLAN Port Assignments and the VLAN Database

In Part 3, you will change port VLAN assignments and remove VLANs from the VLAN Database.

Step 1: Assign a VLAN to multiple interfaces.

From the Desktop Tab on each PC, use Terminal to continue configuring both network switches.

Open configuration window

a. On S1, assign interfaces F0/11 – 24 to VLAN99.

```
S1(config)# interface range f0/11-24
S1(config-if-range)# switchport mode access
S1(config-if-range)# switchport access vlan 99
S1(config-if-range)# end
```

b. Issue the show vlan brief command to verify VLAN assignments.

c. Reassign F0/11 and F0/21 to VLAN 10.

d. Verify that VLAN assignments are correct.

Step 2: Remove a VLAN assignment from an interface.

a. Use the no switchport access vlan command to remove the VLAN 99 assignment to F0/24.

```
S1(config)# interface f0/24
S1(config-if)# no switchport access vlan
S1(config-if)# end
```

Step 3: Remove a VLAN ID from the VLAN database.

a. Add VLAN 30 to interface F0/24 without issuing the global VLAN command.

S1(config)# interface f0/24

S1(config-if)# switchport access vlan 30

% Access VLAN does not exist. Creating vlan 30

Note: Current switch technology no longer requires that the vlan command be issued to add a VLAN to the database. By assigning an unknown VLAN to a port, the VLAN will be created and added to the VLAN database.

b. Verify that the new VLAN is displayed in the VLAN table.

c. Use the no vlan 30 command to remove VLAN 30 from the VLAN database.

S1(config)# no vlan 30

S1(config)# end

d. Issue the show vlan brief command. F0/24 was assigned to VLAN 30.

e. On interface F0/24, issue the no switchport access vlan command.

f. Issue the show vlan brief command to determine the VLAN assignment for F0/24.

Close configuration window.

Part 4: Configure an 802.1Q Trunk Between the Switches

In Part 4, you will configure interface F0/1 to use the Dynamic Trunking Protocol (DTP) to allow it to negotiate the trunk mode. After this has been accomplished and verified, you will disable DTP on interface F0/1 and manually configure it as a trunk

.

Step 1: Use DTP to initiate trunking on F0/1.

The default DTP mode of a 2960 switch port is dynamic auto. This allows the interface to convert the link to a trunk if the neighboring interface is set to trunk or dynamic desirable mode.

Open configuration window

a. On S1, set F0/1 to negotiate trunk mode.

S1(config)# interface f0/1

S1(config-if)# switchport mode dynamic desirable

b. On S1 and S2, issue the show vlan brief command. Interface F0/1 is no longer assigned to VLAN 1. Trunked interfaces are not listed in the VLAN table.

c. Issue the show interfaces trunk command to view trunked interfaces. Notice that the mode on S1 is set to desirable, and the mode on S2 is set to auto.

S1# show interfaces trunk

S2# show interfaces trunk

Close configuration window

d. Verify that VLAN traffic is traveling over trunk interface F0/1.

Step 2: Manually configure trunk interface F0/1.

The switchport mode trunk command is used to manually configure a port as a trunk. This command should be issued on both ends of the link.

a. On interface F0/1, change the switchport mode to force trunking. Make sure to do this on

both switches.

Open configuration window

S1(config)# interface f0/1

S1(config-if)# switchport mode trunk

b. Issue the show interfaces trunk command to view the trunk mode. Notice that the mode changed from desirable to on.

S1# show interfaces trunk

c. Modify the trunk configuration on both switches by changing the native VLAN from VLAN 1 to VLAN 1000.

S1(config)# interface f0/1

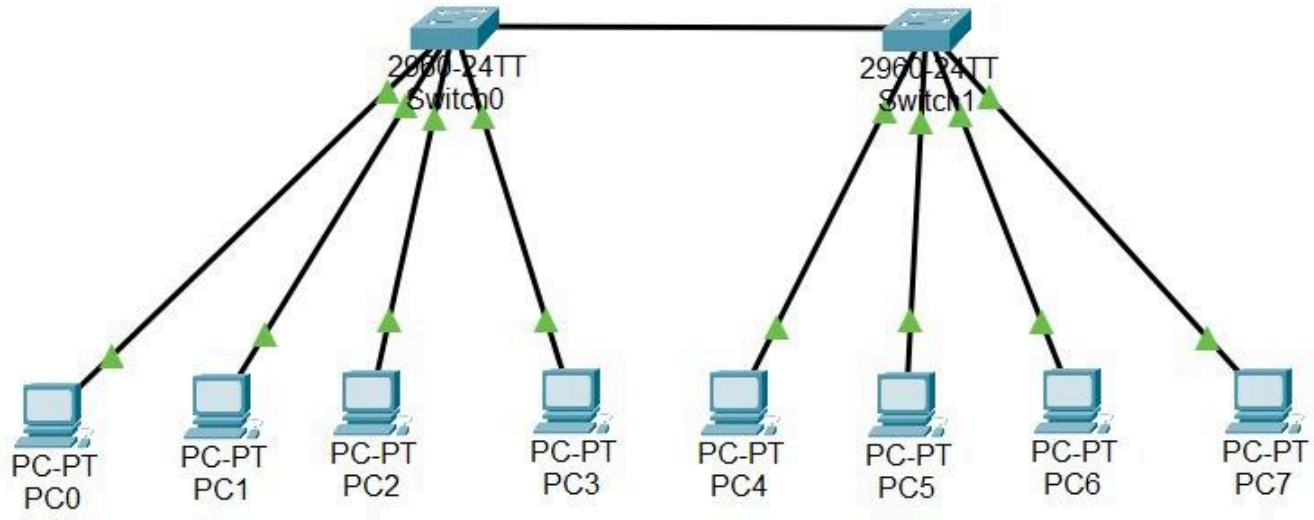
S1(config-if)# switchport trunk native vlan 1000

d. Issue the show interfaces trunk command to view the trunk. Notice the Native VLAN information is updated.

S2# show interfaces trunk

Close configuration window

VIRTUAL LAN SETUP:



```
Cisco Packet Tracer PC Command Line 1.0
C:\> ping FE80::201:C9FF:FE75:C50E

Pinging FE80::201:C9FF:FE75:C50E with 32 bytes of data:

Reply from FE80::201:C9FF:FE75:C50E: bytes=32 time<1ms TTL=128
Reply from FE80::201:C9FF:FE75:C50E: bytes=32 time<1ms TTL=128
Reply from FE80::201:C9FF:FE75:C50E: bytes=32 time<1ms TTL=128
Reply from FE80::201:C9FF:FE75:C50E: bytes=32 time<1ms TTL=128

Ping statistics for FE80::201:C9FF:FE75:C50E:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ip config
Invalid Command.

C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::2D0:58FF:FEAC:4D18
   IPv6 Address.....: ::
   IPv4 Address.....: 10.10.10.2
   Subnet Mask.....: 255.0.0.0
   Default Gateway.....: ::
                                 10.10.10.2

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: ::
   IPv6 Address.....: ::
   IPv4 Address.....: 0.0.0.0
   Subnet Mask.....: 0.0.0.0
   Default Gateway.....: ::
                                 0.0.0.0

C:\>
```

RESULT:

The virtual LAN Configuration using Cisco Packet Tracer has been executed successfully.