

Ex.No - 08

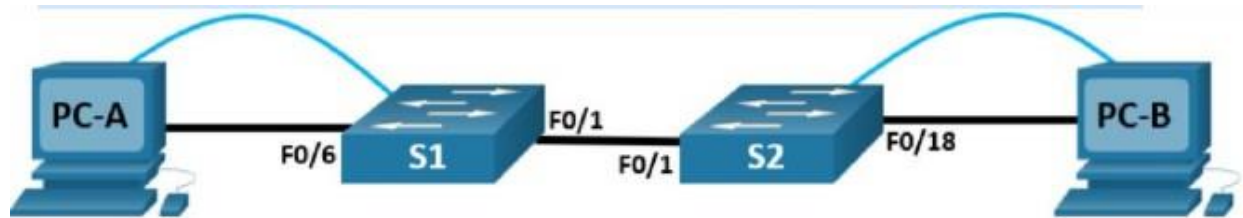
Date - 03/09/2024

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.

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

Step 2: Configure basic settings for each switch.

- 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
```

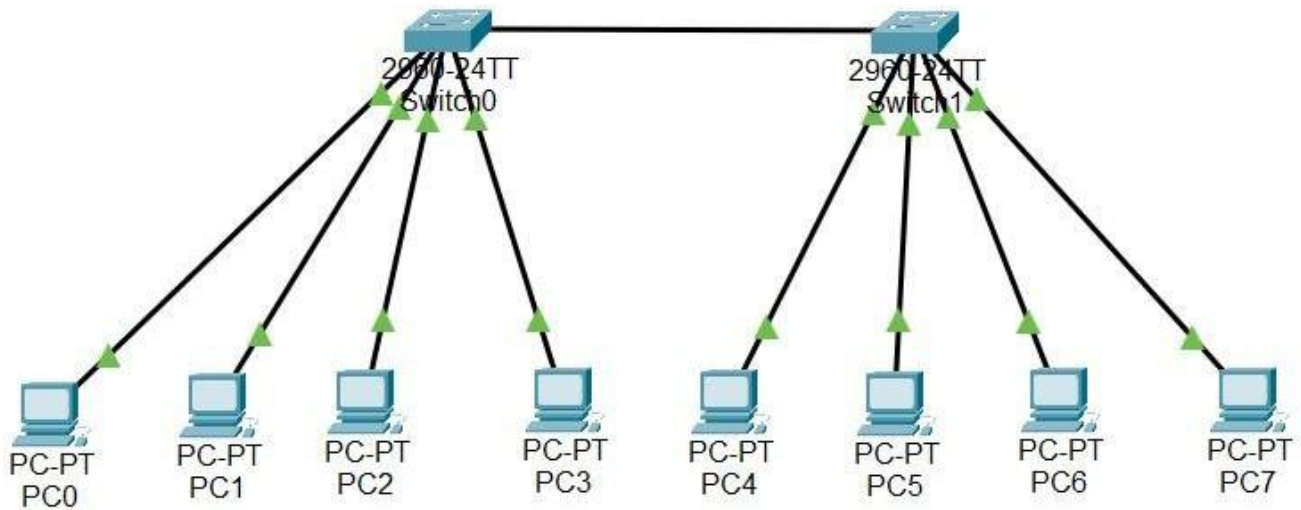
```
S1(config-if)# switchport trunk native vlan 1000
```

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.