

Ex. No: 4 VLAN Configuration Using a Managed Switch

Date:

Objective

To configure Virtual Local Area Networks (VLANs) on a managed switch and verify that hosts within the same VLAN can communicate while others cannot.

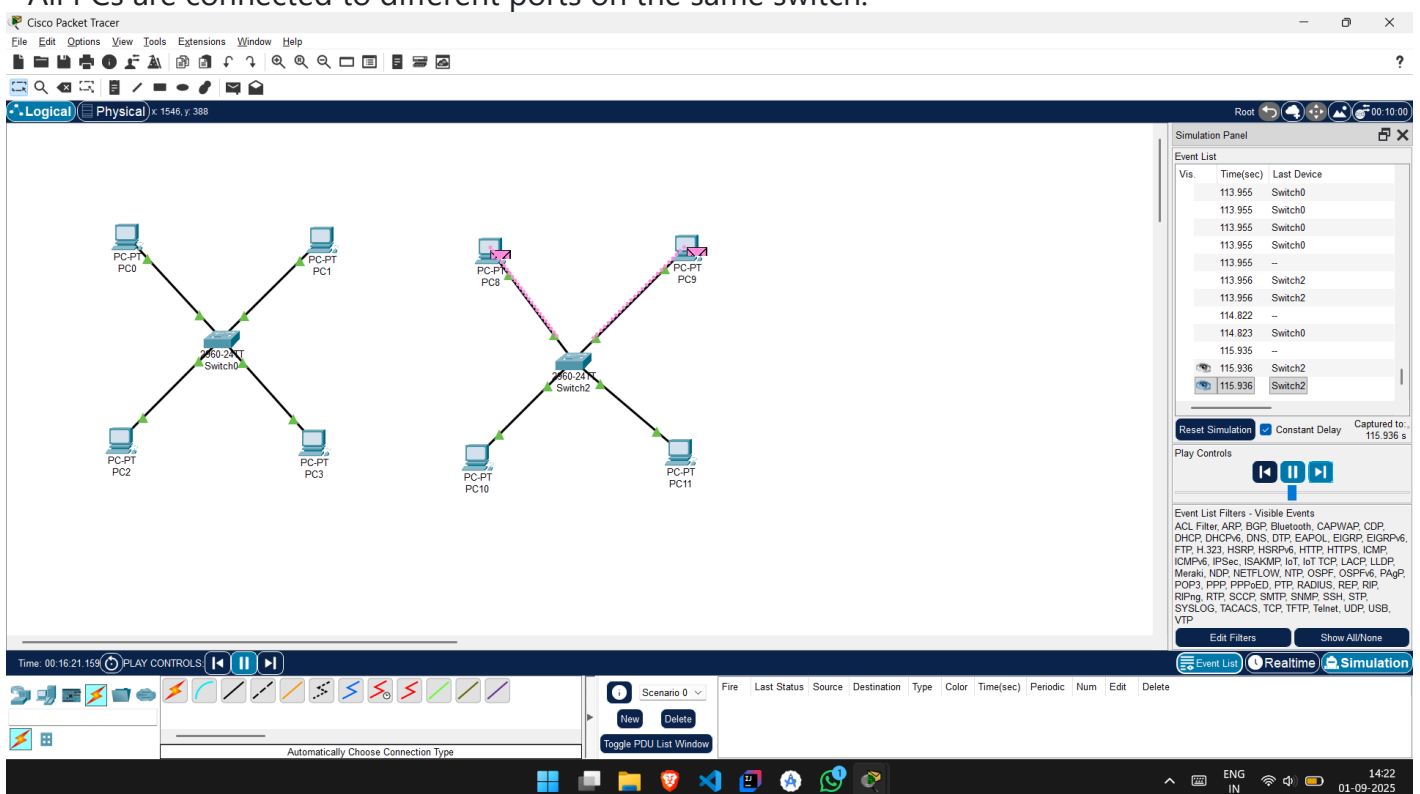
Apparatus/Tools Required

- Cisco Packet Tracer
- 1 Managed Switch (e.g., 2960)
- 4 PCs
- Straight-through Ethernet cables

Network Topology Diagram

Description:

- PC0 and PC1 are assigned to VLAN 10.
- PC2 and PC3 are assigned to VLAN 20.
- All PCs are connected to different ports on the same switch.



IP Addressing Table

Device	VLAN	IP Address	Subnet Mask	Port
PC0	10	192.168.10.1	255.255.255.0	FastEthernet0/1
PC1	10	192.168.10.2	255.255.255.0	FastEthernet0/2
PC2	20	192.168.20.1	255.255.255.0	FastEthernet0/3
PC3	20	192.168.20.2	255.255.255.0	FastEthernet0/4

Procedure

1. Open Cisco Packet Tracer and add 4 PCs and 1 Switch.
2. Connect PC0–PC3 to switch ports FastEthernet0/1 to FastEthernet0/4 respectively.
3. Assign static IP addresses to each PC as per the IP table.
4. Enter the Switch CLI and create two VLANs:
 - o VLAN 10 for PC0 and PC1
 - o VLAN 20 for PC2 and PC3
5. Assign the respective switch ports to their VLANs.
6. Use the ping command from PC0 to PC1 (should succeed).
7. Try pinging from PC0 to PC2 (should fail — different VLANs).

Commands Used (Switch CLI)

bash

CopyEdit

Switch> enable

Switch# configure terminal

Switch(config)# vlan 10

Switch(config-vlan)# name STAFF

Switch(config-vlan)# exit

Switch(config)# vlan 20

Switch(config-vlan)# name STUDENTS

Switch(config-vlan)# exit

Switch(config)# interface range fastethernet0/1 - 2

Switch(config-if-range)# switchport mode access

Switch(config-if-range)# switchport access vlan 10

Switch(config-if-range)# exit

```
Switch(config)# interface range fastEthernet0/3 - 4
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 20
Switch(config-if-range)# exit
```

Output (Screenshots)

• VLAN configuration on switch

Switch2

```
IOS Command Line Interface

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name STAFF
Switch(config-vlan)#exit
Switch(config)#interface range fastEthernet0/1-2
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name STUDENTS
Switch(config-vlan)#exit
Switch(config)#interface range fastEthernet0/3-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
% Invalid input detected at '' marker.
Switch(config-if-range)#exit
% Invalid input detected at '' marker.
Switch(config-if-range)#exit
Switch(config)#
```

Event List

Vis	Time(sec)	Last Device
105.940	--	Switch2
105.962	--	Switch2
105.963	Switch2	
105.963	Switch2	
105.965	--	
105.966	Switch0	
105.966	Switch0	
105.966	Switch0	
105.966	Switch0	
105.966	Switch0	
107.938	--	
107.939	Switch2	
107.939	Switch2	

• PC IP settings

Switch2

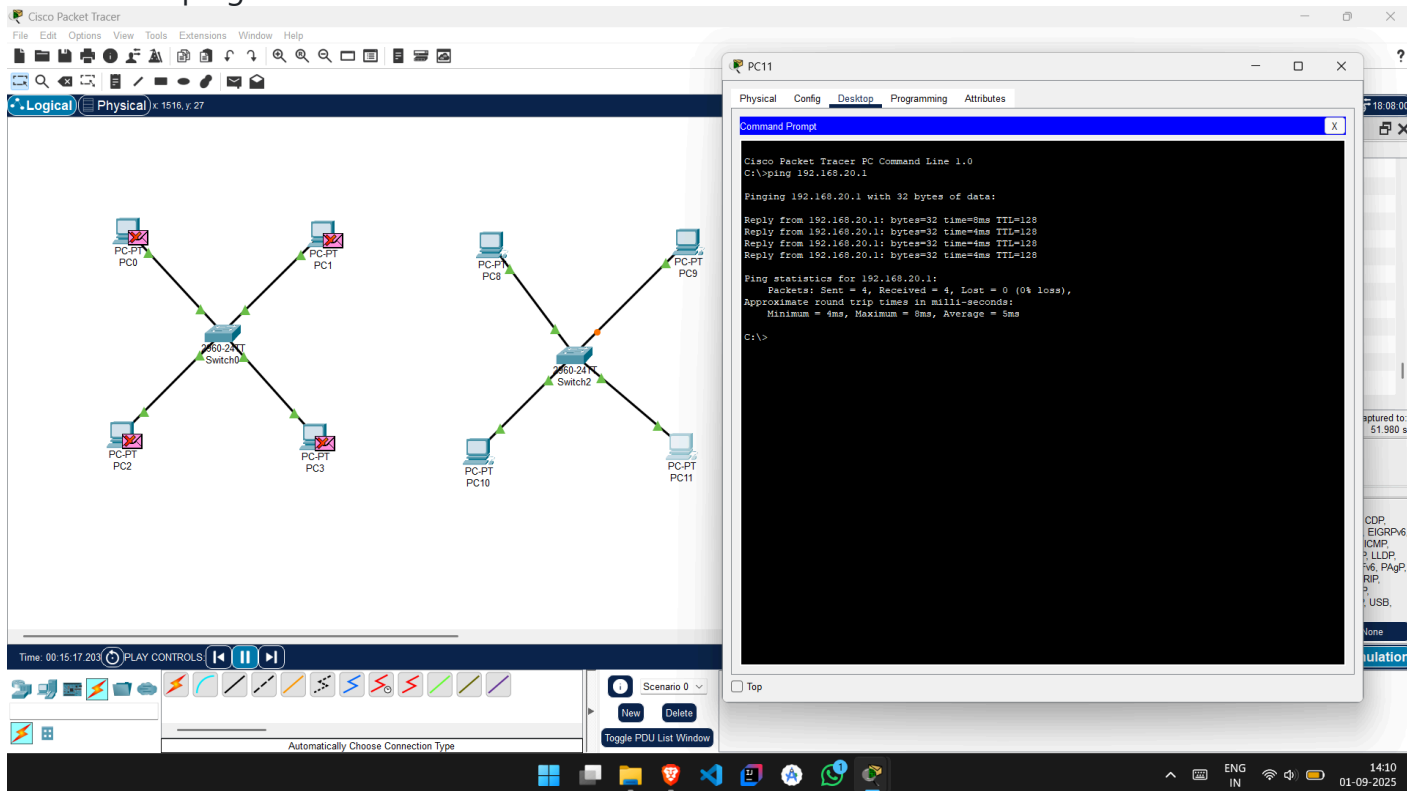
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Device Name: Switch2
Sw Custom Device Model: 2960 IOS15
Hostname: Switch

Port      Link      VLAN  IP Address  MAC Address
FastEthernet0/1  Up       10    10.0.0.1    00E0.FF16.8401
FastEthernet0/2  Up       10    10.0.0.2    00E0.FF16.8402
FastEthernet0/3  Up       20    10.0.0.3    00E0.FF16.8403
FastEthernet0/4  Up       20    10.0.0.4    00E0.FF16.8404
FastEthernet0/5  Down     1    10.0.0.5    00E0.FF16.8405
FastEthernet0/6  Down     1    10.0.0.6    00E0.FF16.8406
FastEthernet0/7  Down     1    10.0.0.7    00E0.FF16.8407
FastEthernet0/8  Down     1    10.0.0.8    00E0.FF16.8408
FastEthernet0/9  Down     1    10.0.0.9    00E0.FF16.8409
FastEthernet0/10 Down     1    10.0.0.10   00E0.FF16.840A
FastEthernet0/11 Down     1    10.0.0.11   00E0.FF16.840B
FastEthernet0/12 Down     1    10.0.0.12   00E0.FF16.840C
FastEthernet0/13 Down     1    10.0.0.13   00E0.FF16.840D
FastEthernet0/14 Down     1    10.0.0.14   00E0.FF16.840E
FastEthernet0/15 Down     1    10.0.0.15   00E0.FF16.840F
FastEthernet0/16 Down     1    10.0.0.16   00E0.FF16.8410
FastEthernet0/17 Down     1    10.0.0.17   00E0.FF16.8411
FastEthernet0/18 Down     1    10.0.0.18   00E0.FF16.8412
FastEthernet0/19 Down     1    10.0.0.19   00E0.FF16.8413
FastEthernet0/20 Down     1    10.0.0.20   00E0.FF16.8414
FastEthernet0/21 Down     1    10.0.0.21   00E0.FF16.8415
FastEthernet0/22 Down     1    10.0.0.22   00E0.FF16.8416
FastEthernet0/23 Down     1    10.0.0.23   00E0.FF16.8417
FastEthernet0/24 Down     1    10.0.0.24   00E0.FF16.8418
GigabitEthernet0/1 Down     1    10.0.0.1    00E0.FF16.8419
GigabitEthernet0/2 Down     1    10.0.0.2    00E0.FF16.841A
Vlan1       Down     1    <not set>  0001.64B0.1161
```

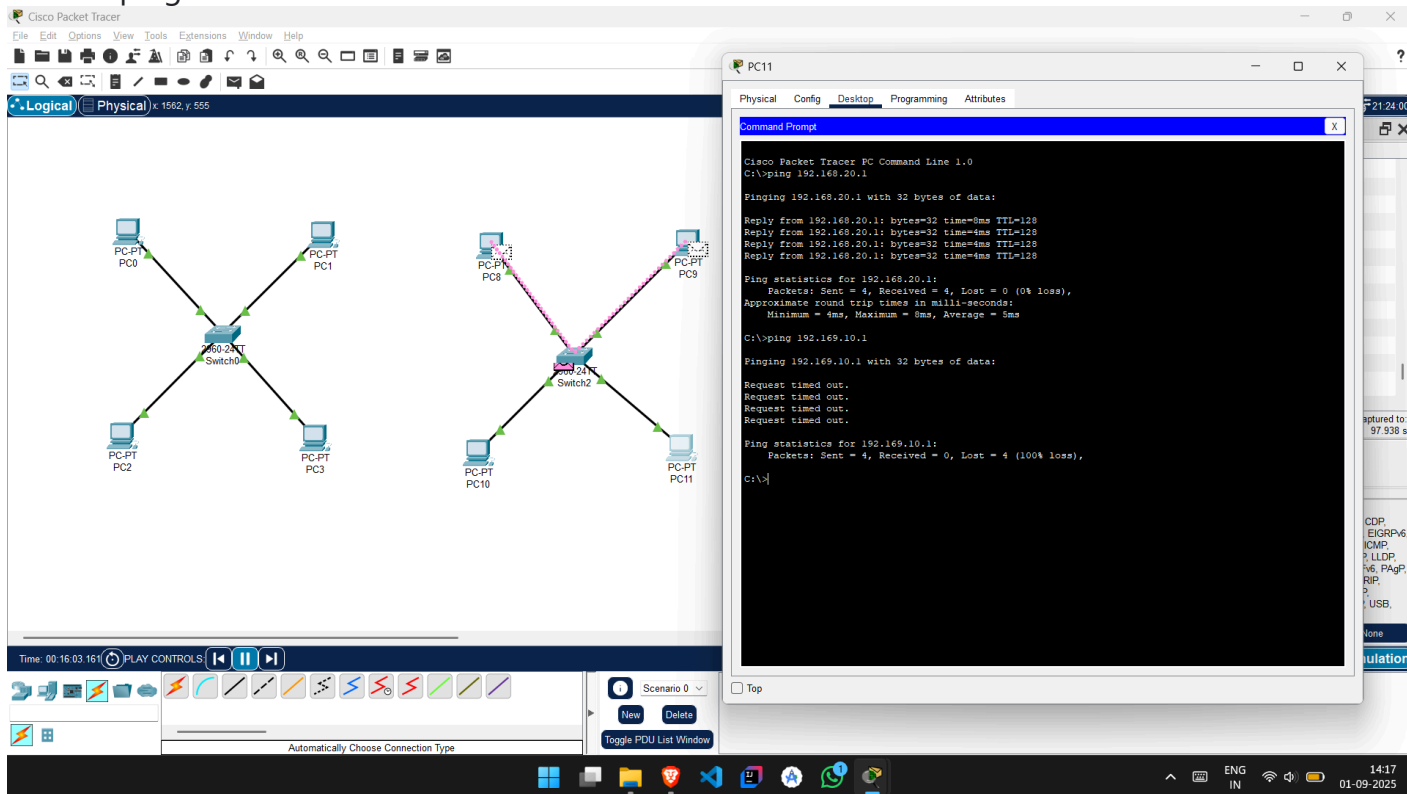
Event List

Vis	Time(sec)	Last Device
110.006	--	
110.006	--	
110.006	--	
110.006	--	
110.007	Switch2	
110.007	Switch2	
110.007	Switch2	
110.007	Switch2	
111.937	--	
111.938	Switch2	
111.938	Switch2	
111.956	Switch2	

• Successful ping between PCs in the same VLAN



• Failed ping between PCs in different VLANs



Result

Successfully created and configured VLANs on a managed switch. Verified that only PCs within the same VLAN could communicate with each other.