

LAB WEEK 9

To create a virtual LAN on top of the physical LAN and enable communication between physical LAN and virtual LAN

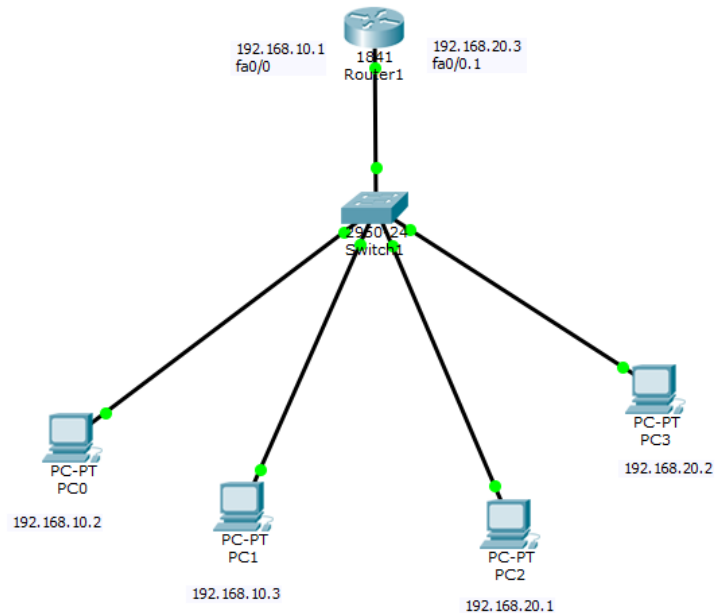


Figure 1: Topology

```
PC0
Physical Config Desktop Custom Interface
Command Prompt
PC>ping 192.168.10.1
Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time=0ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=0ms TTL=255
Reply from 192.168.10.1: bytes=32 time=0ms TTL=255
Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>ping 192.168.10.3
Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time=0ms TTL=128
Reply from 192.168.10.3: bytes=32 time=0ms TTL=128
Reply from 192.168.10.3: bytes=32 time=0ms TTL=128
Reply from 192.168.10.3: bytes=32 time=0ms TTL=128
Ping statistics for 192.168.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>ping 192.168.20.3
Pinging 192.168.20.3 with 32 bytes of data:
Reply from 192.168.20.3: bytes=32 time=0ms TTL=255
Reply from 192.168.20.3: bytes=32 time=0ms TTL=255
Reply from 192.168.20.3: bytes=32 time=0ms TTL=255
Reply from 192.168.20.3: bytes=32 time=0ms TTL=255
Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
PC>ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time=0ms TTL=127
Reply from 192.168.20.1: bytes=32 time=0ms TTL=127
Reply from 192.168.20.1: bytes=32 time=0ms TTL=127
Reply from 192.168.20.1: bytes=32 time=0ms TTL=127
Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time=4ms TTL=127
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
```

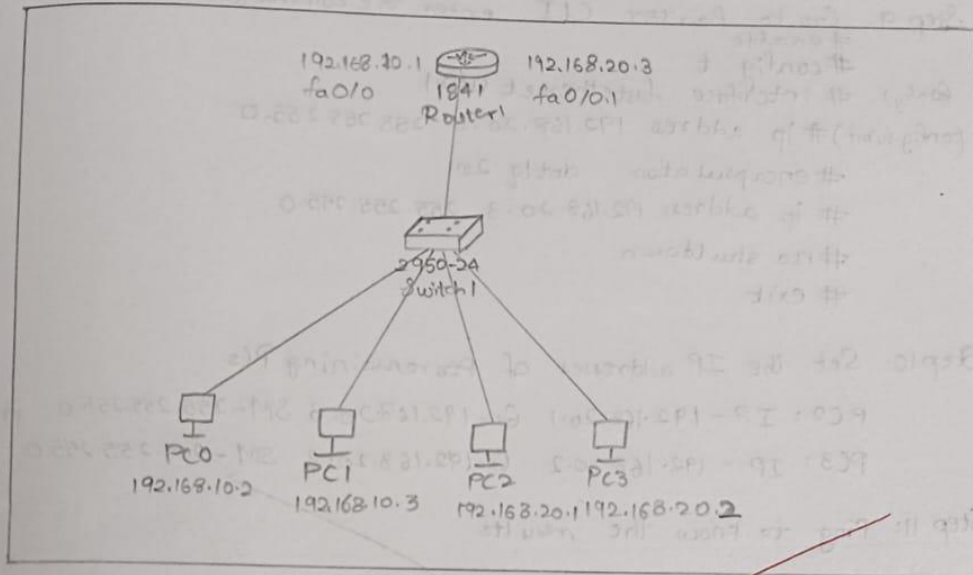
Figure 2: PC Command Prompt

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To create a virtual LAN on top of the physical LAN and enable communication between Physical LAN and virtual LAN.

* Topology:



* Configuration Steps:

Step 1: Select 4 PC-PTs from the end devices, a "2950-24" switch from switches and a "1841" Router from routers

Step 2: Connect all of them and assign IP addresses to the PCs of the Physical LAN.

PC0: IP - 192.168.10.2 SM - 255.255.255.0 G1 - 192.168.10.1

PC1: IP - 192.168.10.3 SM - 255.255.255.0 G - 192.168.10.1

Step 3: Go to Router. Select Fast ethernet 0/0, Turn the port status On and assign IP address for the Physical LAN

Router1: IP - 192.168.10.1 SM - 255.255.255.0

Step 4: Go to Switch. Select the interface which is connected to Virtual LAN.

Step 5: Change the Access Mode to Trunk Mode in Fast ethernet, where router is connected.

Step 6: Go to VLAN database, enter the following Number - 20 Name - VLAN1 and click on Add.

Figure 3: Observation Book 1

- Step 7: Select VLAN 20 for FastEthernet 0/3 and 0/4 where the VLAN PCs are connected.
- Step 8: Go to Router and in VLAN database
VLAN No - 20 and Name - VLAN1 click on add.
- Step 9: Go to Router CLI, enter the commands
 #enable
 #config t
 (config) # interface fastethernet 0/0.1
 (config-subif) # ip address 192.168.20.3 255.255.255.0
 # encapsulation dot1q 20
 # ip address 192.168.20.3 255.255.255.0
 # no shutdown
 # exit
- Step 10: Set the IP addresses of the remaining PCs
 PC2: IP - 192.168.20.1 G - 192.168.20.3 SM - 255.255.255.0
 PC3: IP - 192.168.20.2 G - 192.168.20.3 SM - 255.255.255.0
- Step 11: Ping to know the results.

* Observation:

The cmd prompt of PC0 [from Physical LAN to VLAN]

PC> ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time=4ms TTL=127

Ping statistics for 192.168.20.2:

Packets: Sent=4, Received=4, Lost=0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum=0ms, Maximum=12ms, Average=4ms

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Figure 4: Observation Book 2