**Department of Computer Engineering**
**TE Computer-B (2024-25 Sem I)**
**Computer Networks and Security**
**CNS Simulation Assignment 1: VLAN Configuration**

**[CO1-CO2, BT: L3 (Apply)] [Max Marks: 10]**
**Date of Assignment 16th July 2025** **Last Date of Submission: 21st July 2025**

**Demonstrate of Virtual LAN (VLAN) using Packet Tracer**

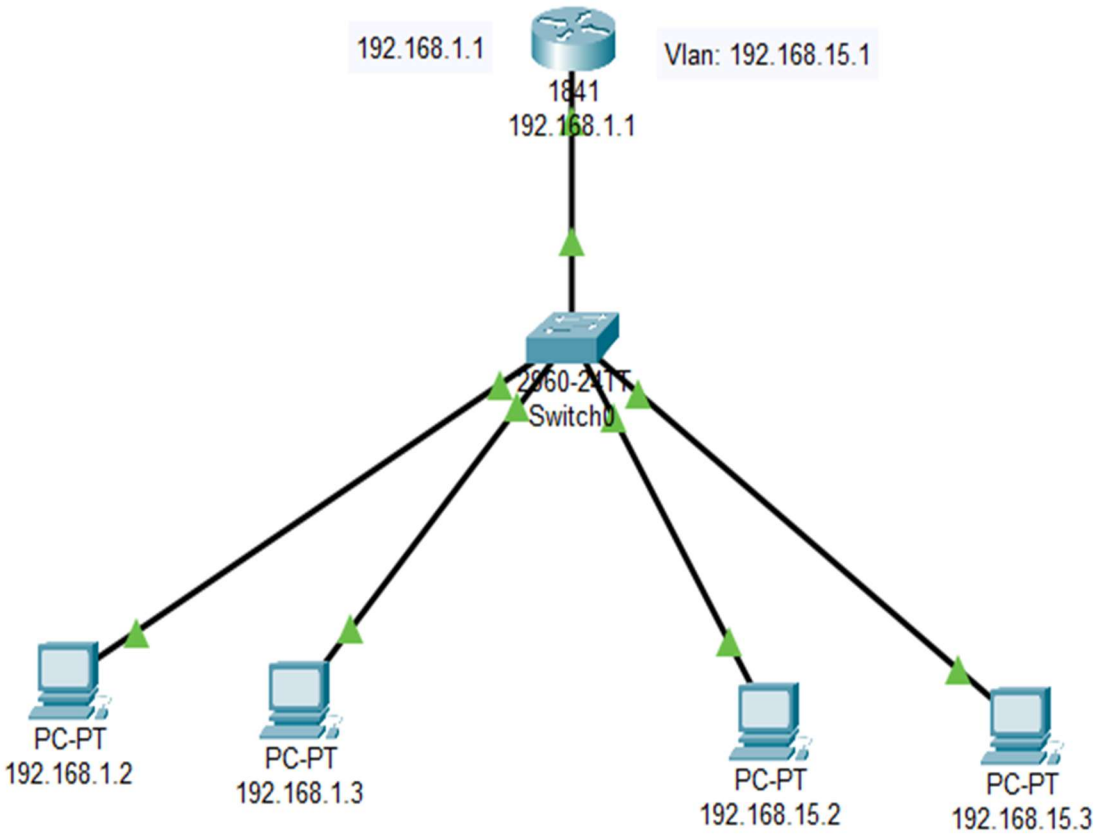
**Objective:** To configure and demonstrate Virtual LANs (VLANs) using Cisco Packet Tracer by creating two VLANs and testing inter-VLAN communication through a router.

**IP Address Series:** 192.168.1.1 to 192.168.1.254 for VLAN1 (Device 1 and 2)

192.168.15.1 to 192.168.15.254 for VLAN2 (Device 3 and 4)

**Steps Involved:**

1. **Network Topology:** 1 Router, 1 Switch, 4 PCs (2 in VLAN1, 2 in VLAN47), Cabling



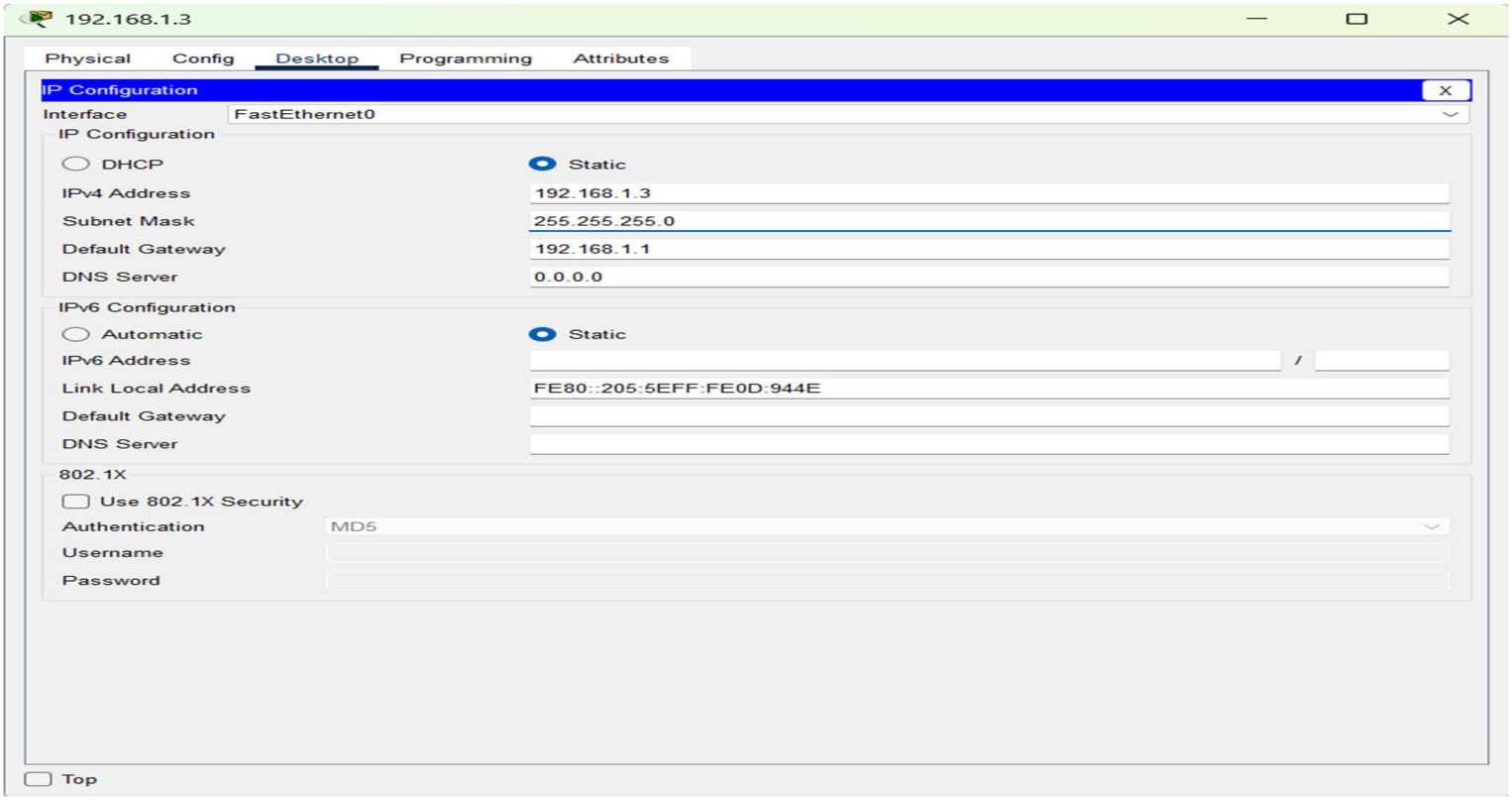
## 2. IP Address Configuration of PCs:

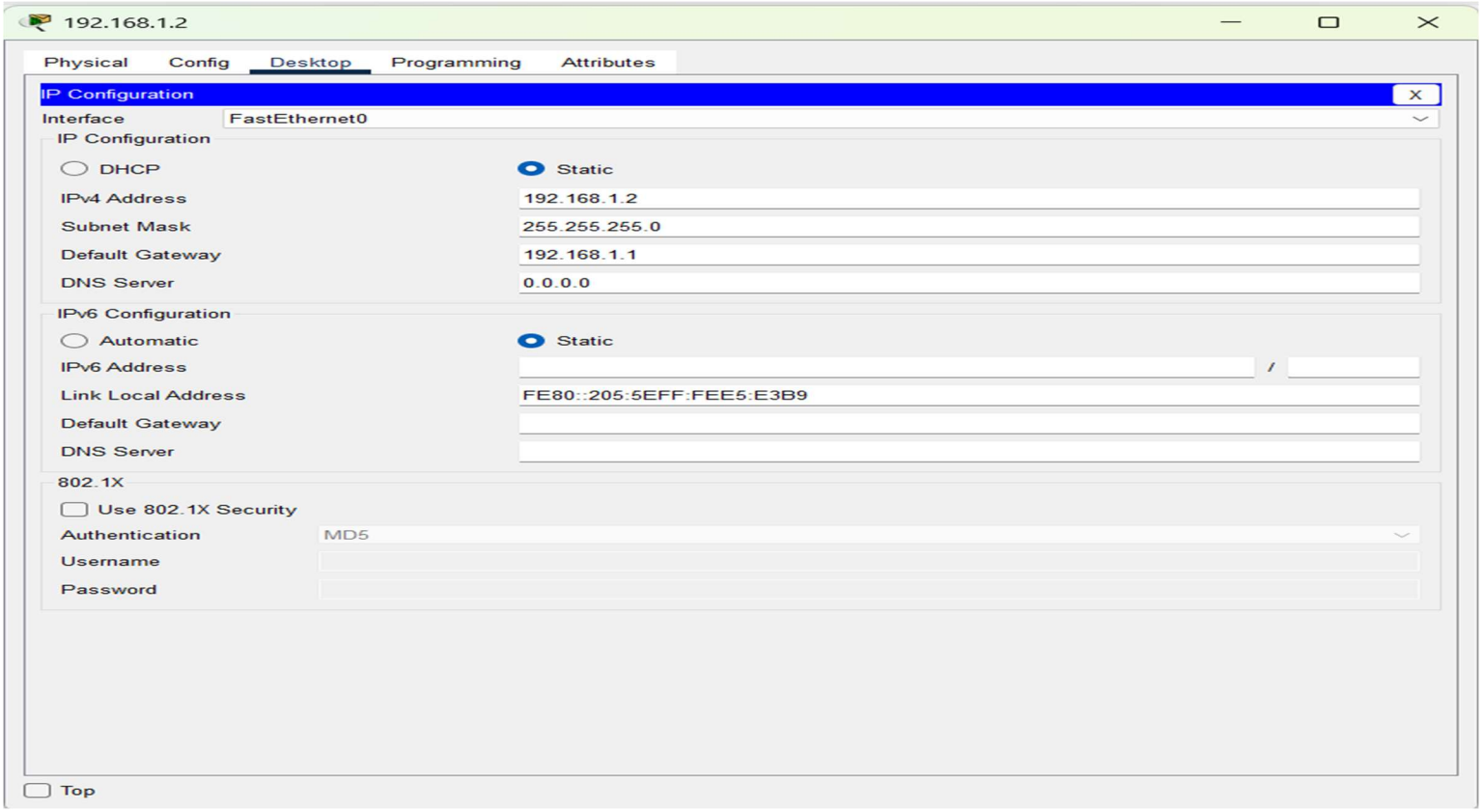
Device 1: IP – 192.168.1.2, Subnet Mask – 255.255.255.0, Gateway – 192.168.1.1

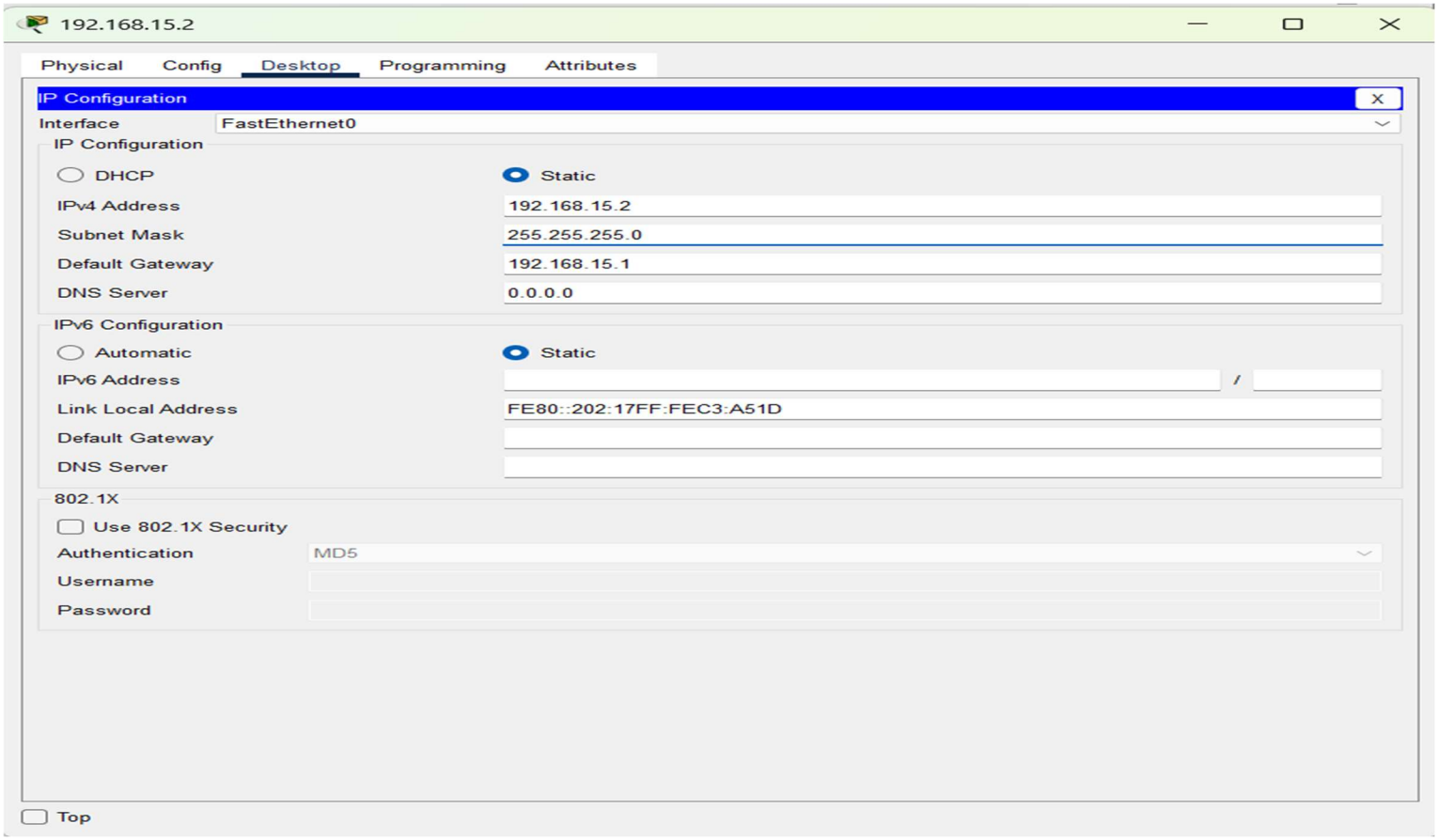
Device 2: IP – 192.168.1.3, Subnet Mask – 255.255.255.0, Gateway – 192.168.1.1

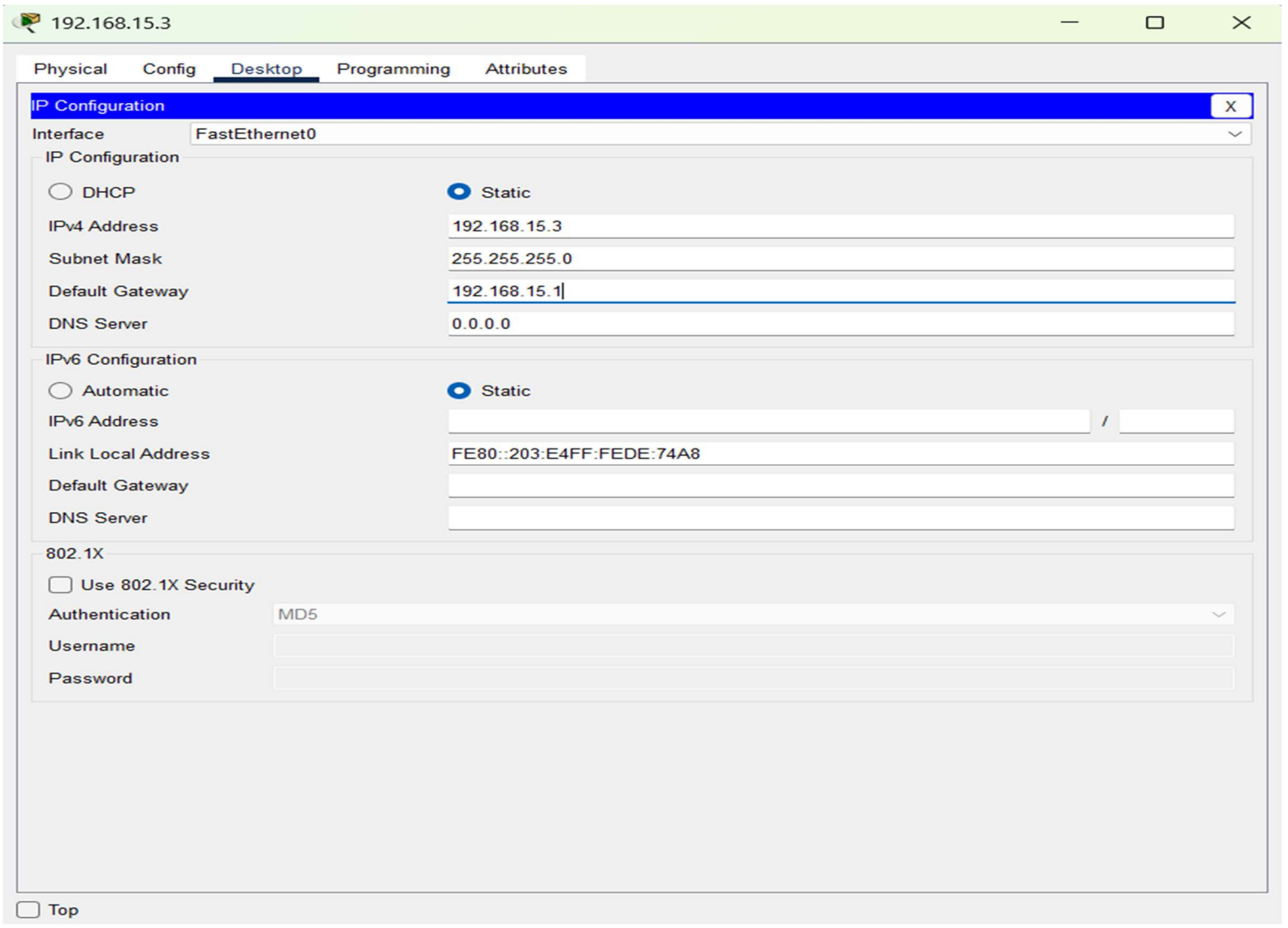
Device 3: IP – 192.168.15.2, Subnet Mask – 255.255.255.0, Gateway – 192.168.15.1

Device 4: IP – 192.168.15.3, Subnet Mask – 255.255.255.0, Gateway – 192.168.15.1

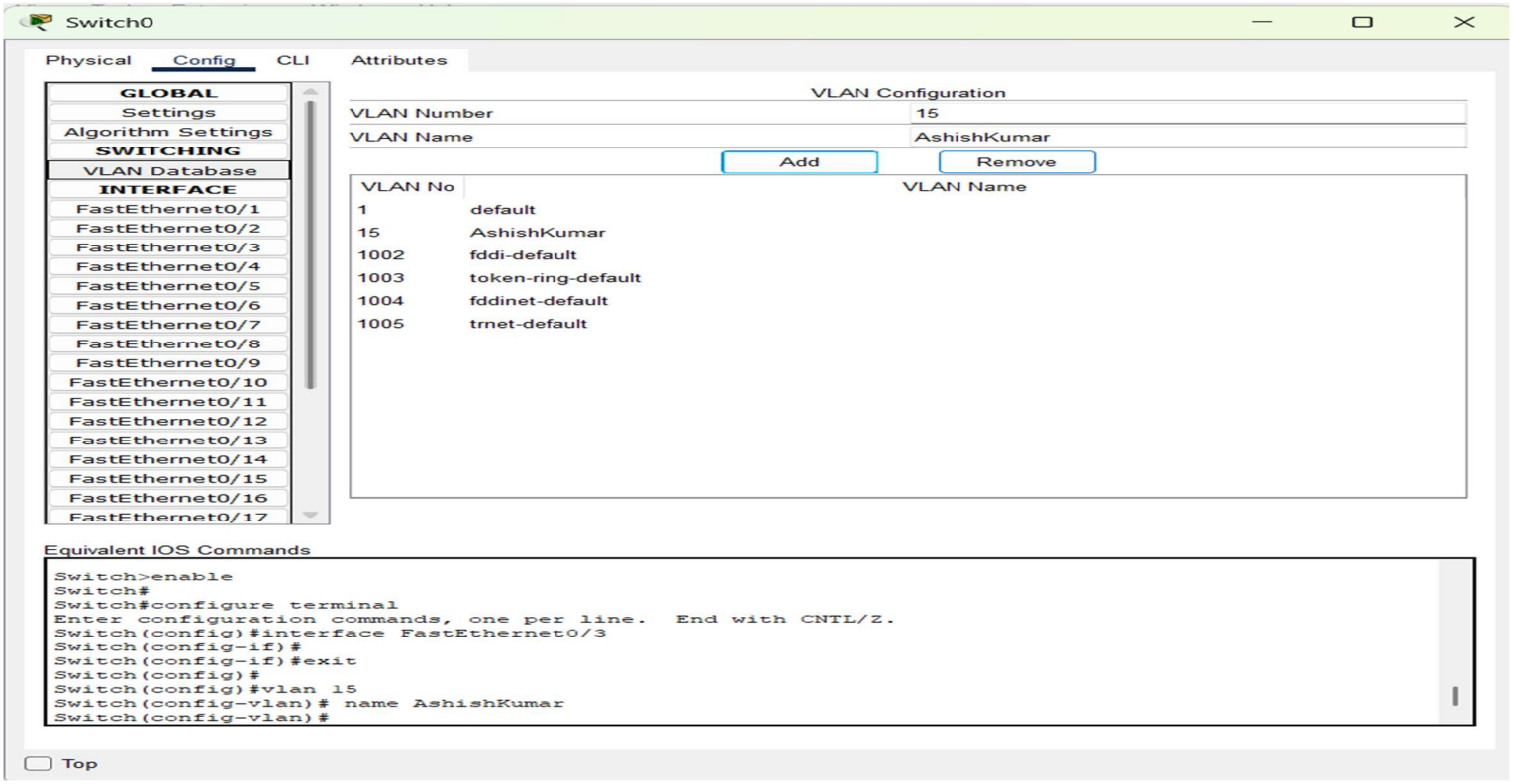


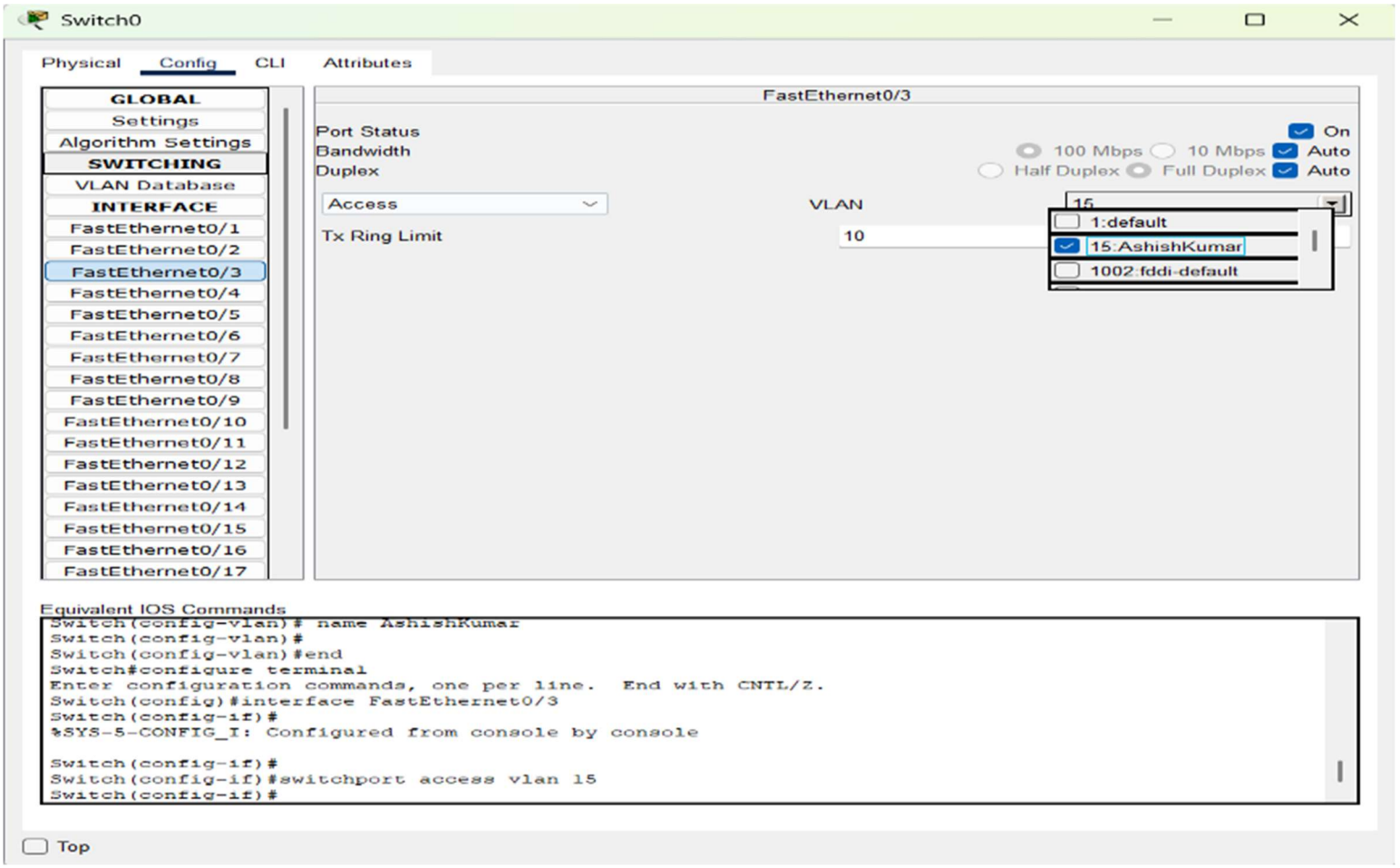




192.168.15.2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.15.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.15.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::202:17FF:FEC3:A51D
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top


192.168.15.3
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.15.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.15.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::203:E4FF:FEDE:74A8
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

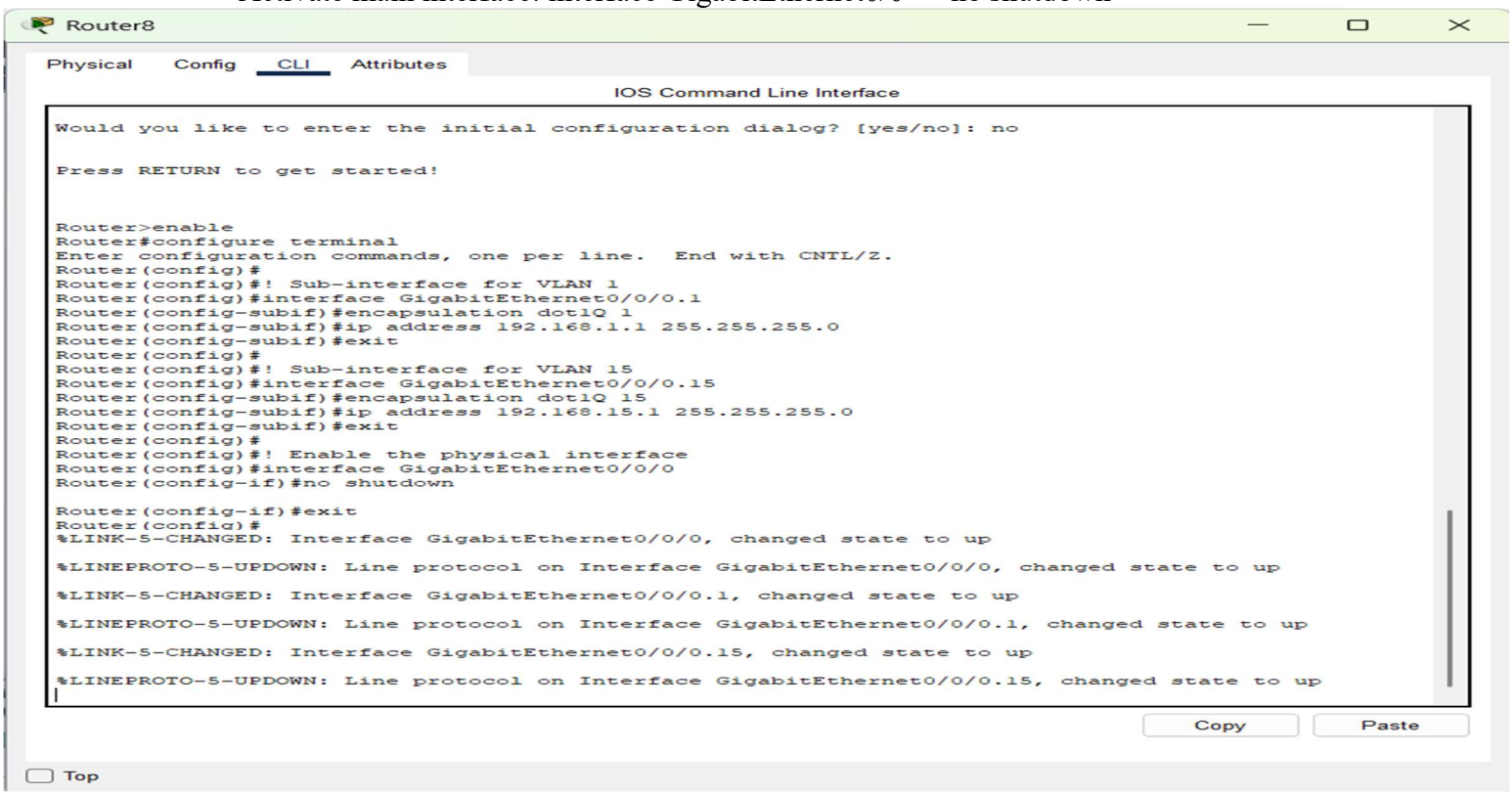
3. **Configuration of VLAN Database at Switch:**
    - Go to Switch0 > Config > VLAN Database, enter VLAN Number 15, VLAN Name AshishKumar, and click Add.
    - Select GigaEthernet0/3, set mode to Access, and assign it to VLAN 15: AshishKumar from the dropdown.

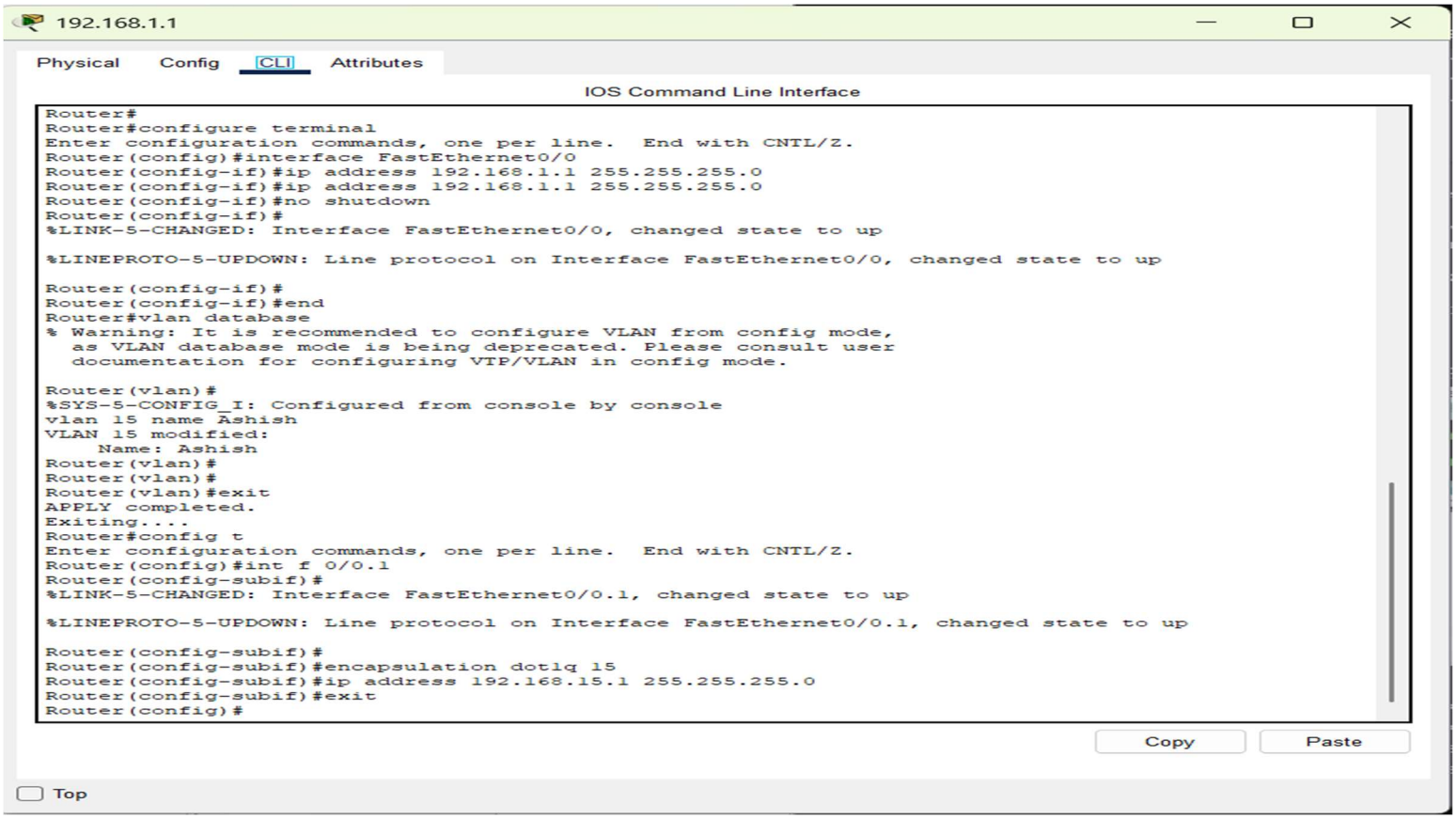


### 4. Configuration of router

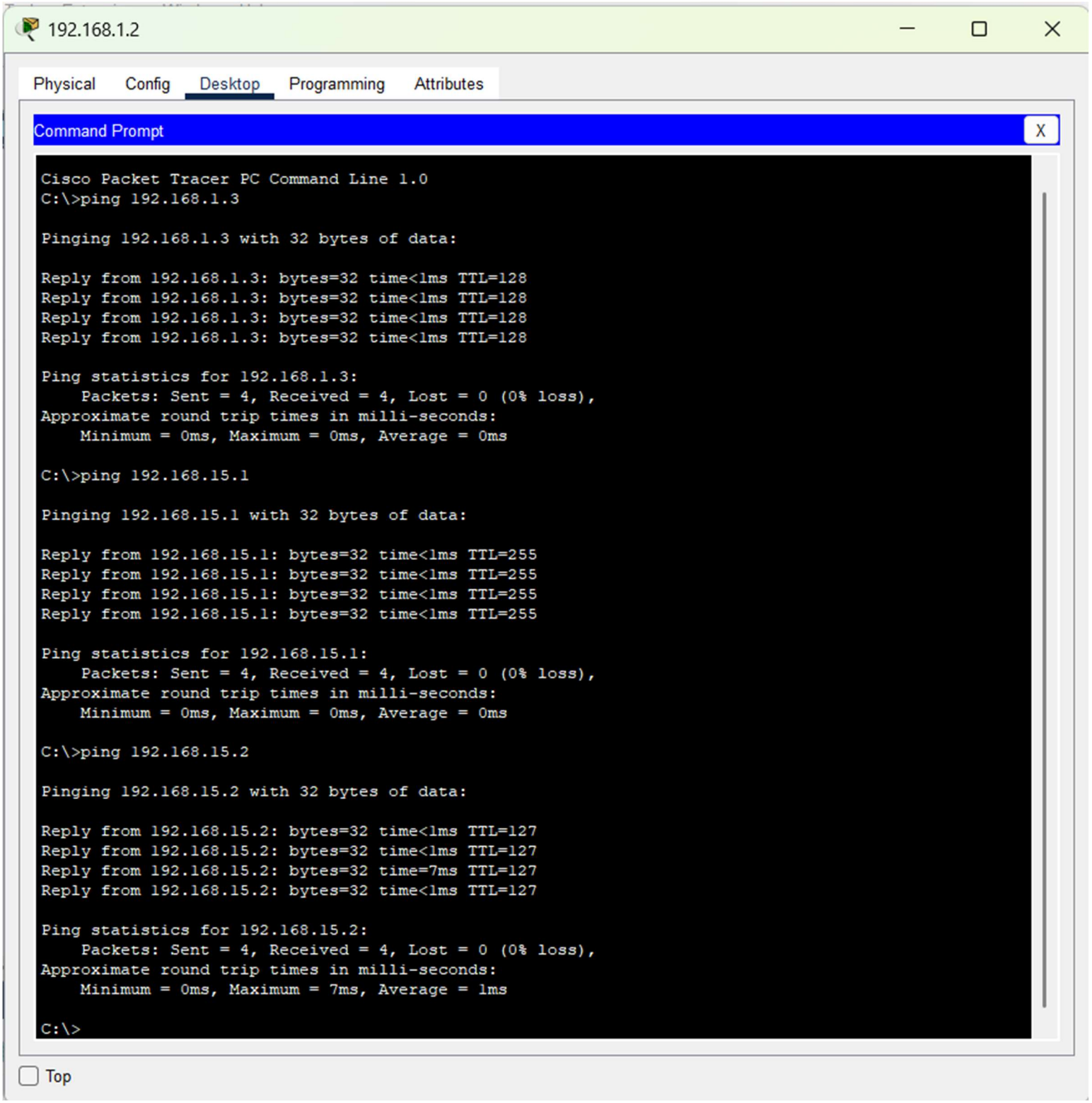
- Go to **Router CLI**, enter: enable → configure terminal
- Create sub interface for VLAN 1: interface GigabitEthernet0/0.1 → encapsulation dot1Q 1 → ip address 192.168.1.1 255.255.255.0 → exit
- Create sub interface for VLAN 15: interface GigabitEthernet0/0.15 → encapsulation dot1Q 15 → ip address 192.168.15.1 255.255.255.0 → exit
- Activate main interface: interface GigabitEthernet0/0 → no shutdown

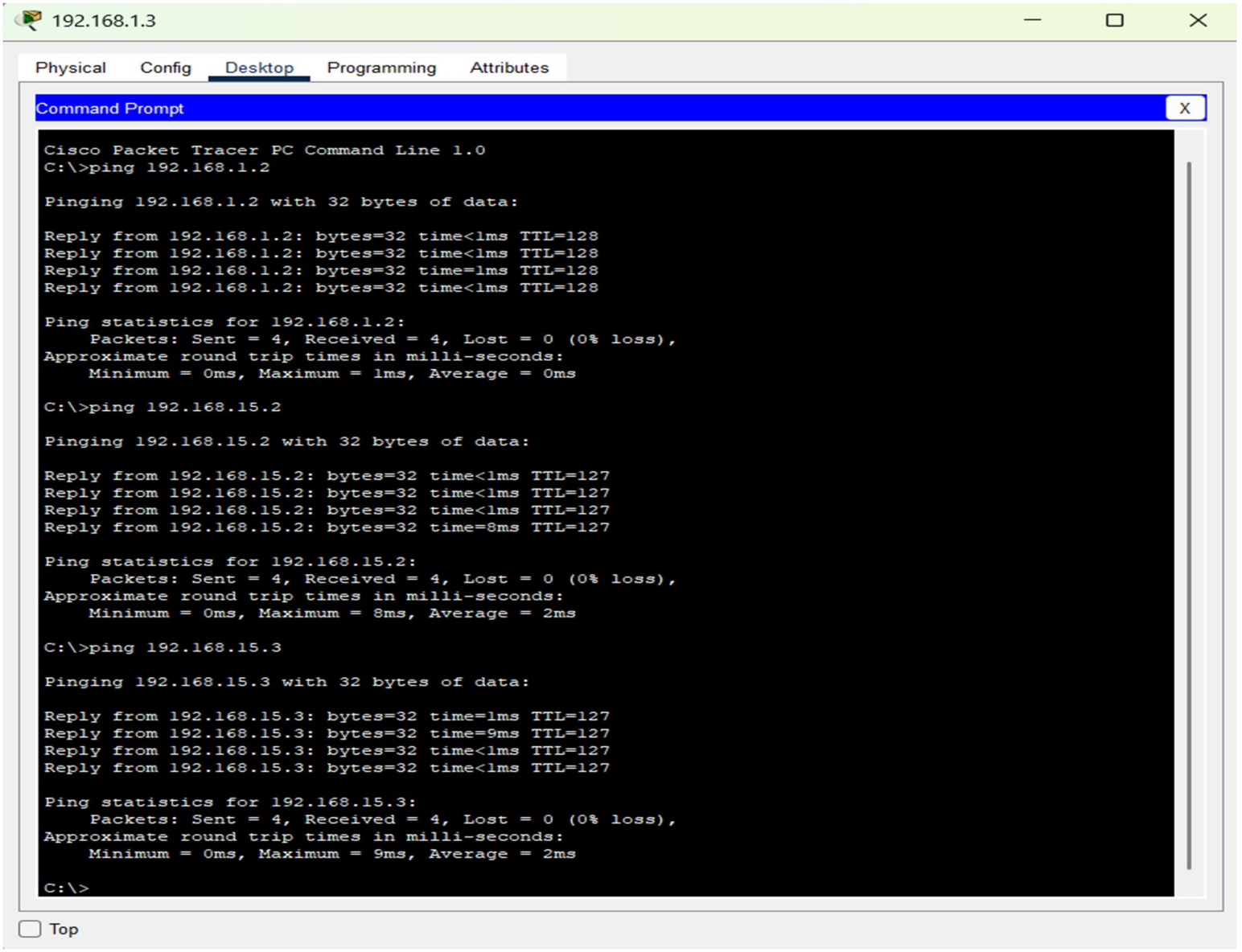


5. **Ping Testing:**

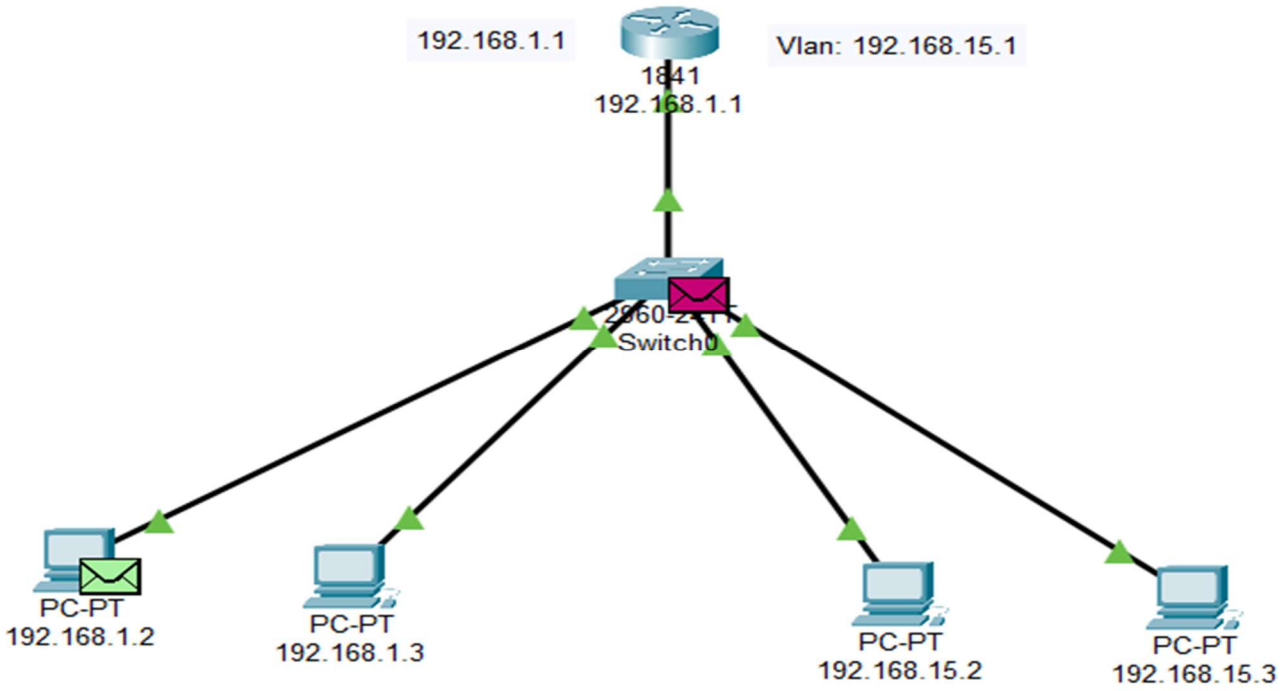
- On PC1, open Command Prompt and ping PC2 (same VLAN): ping 192.168.1.3 — Successful reply received**.**
- On PC1, ping the Router sub interface for VLAN 15: ping 192.168.15.1 — Successful, confirming router reachability.
- On PC2, ping PC1 (same VLAN): ping 192.168.1.2 — Successful reply.
- On PC2, ping PC3 and PC4 (different VLAN): ping 192.168.15.3 and ping 192.168.15.2 — Both successful, confirming inter-VLAN routing.

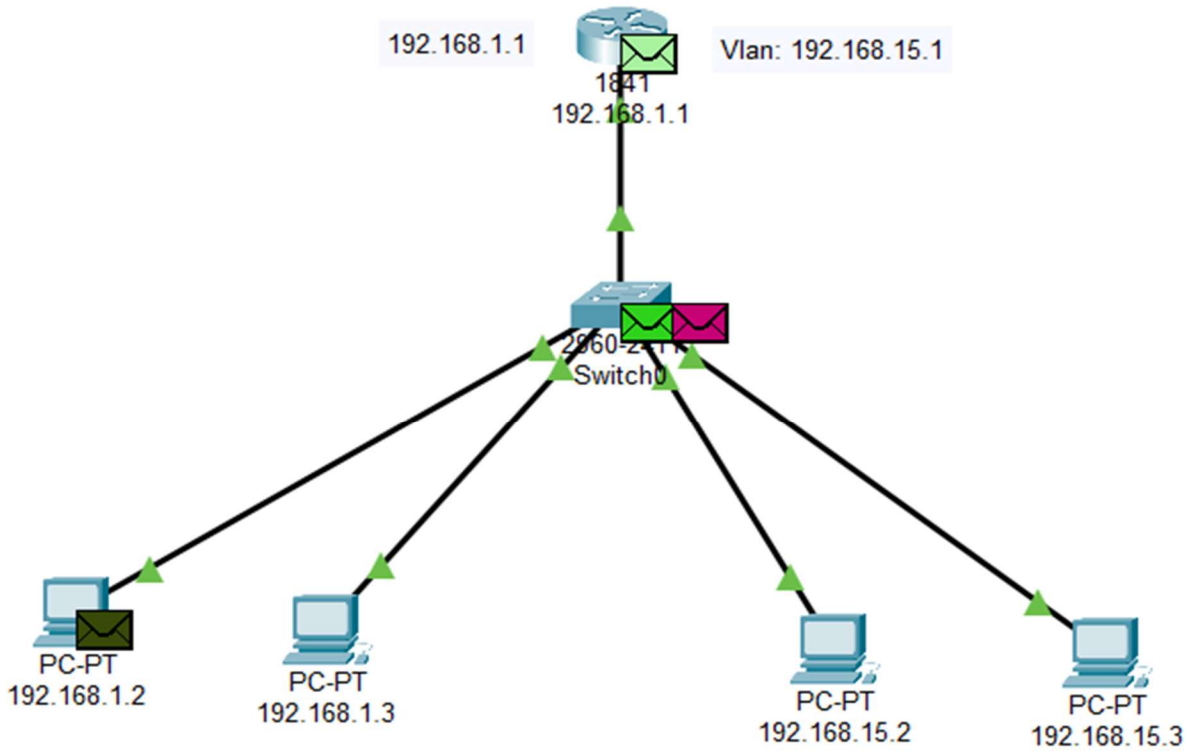





6. **Real Mode Simulation and Event Simulation:**

- At the bottom-right, click Simulation Mode.
- Now click the “Add Simple PDU” (envelope icon) from the bottom-left toolbar.
- Click on Device 1 (192.168.1.2), then click on Device 2 (192.168.1.3).
- This drops a simulated ping (ICMP packet) between the two devices.
- After a few steps, the simulation should complete and show packet delivery. Message changes to: Last Status: Successful | Source: Device 1 | Destination: Device 2 | Type: ICMP
- At the bottom-right, click the Simulation tab.
- Click the Add Simple PDU tool (envelope icon in the bottom-left toolset).
- First, click on Device 1 (192.168.1.2), then click on Device 2 (192.168.1.3) to create a simulated ping.
- Press the Capture/Forward button to step through the packet's path.
- Green dots/arrows will appear showing the packet flow from source to destination.
- We will see events updating live in the Event List Panel (right side).


192.168.1.1
1841
192.168.1.1
Vlan: 192.168.15.1
Switch0
PC-PT
192.168.1.2
PC-PT
192.168.1.3
PC-PT
192.168.15.2
PC-PT
192.168.15.3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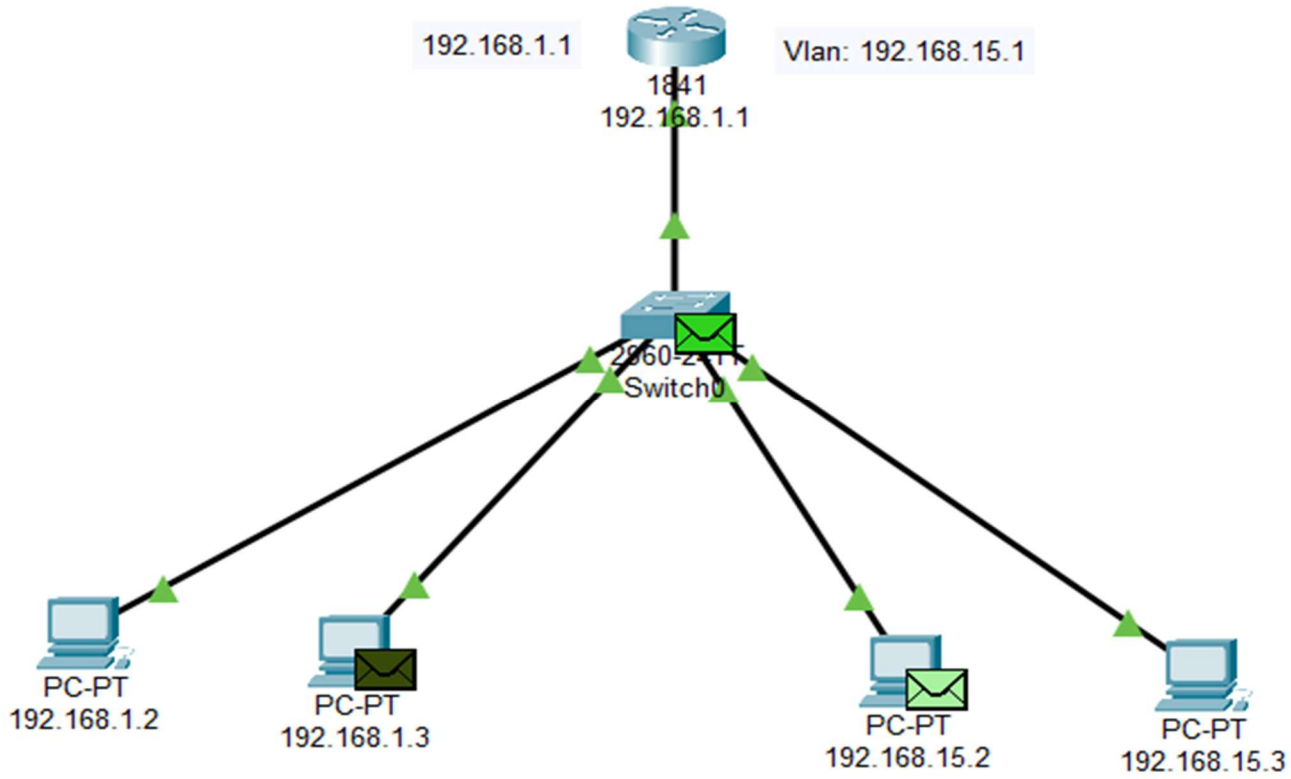
PC-PT
192.168.15.2
PC-PT
192.168.15.3


192.168.1.1
1841
192.168.1.1
Vlan: 192.168.15.1
Switch0
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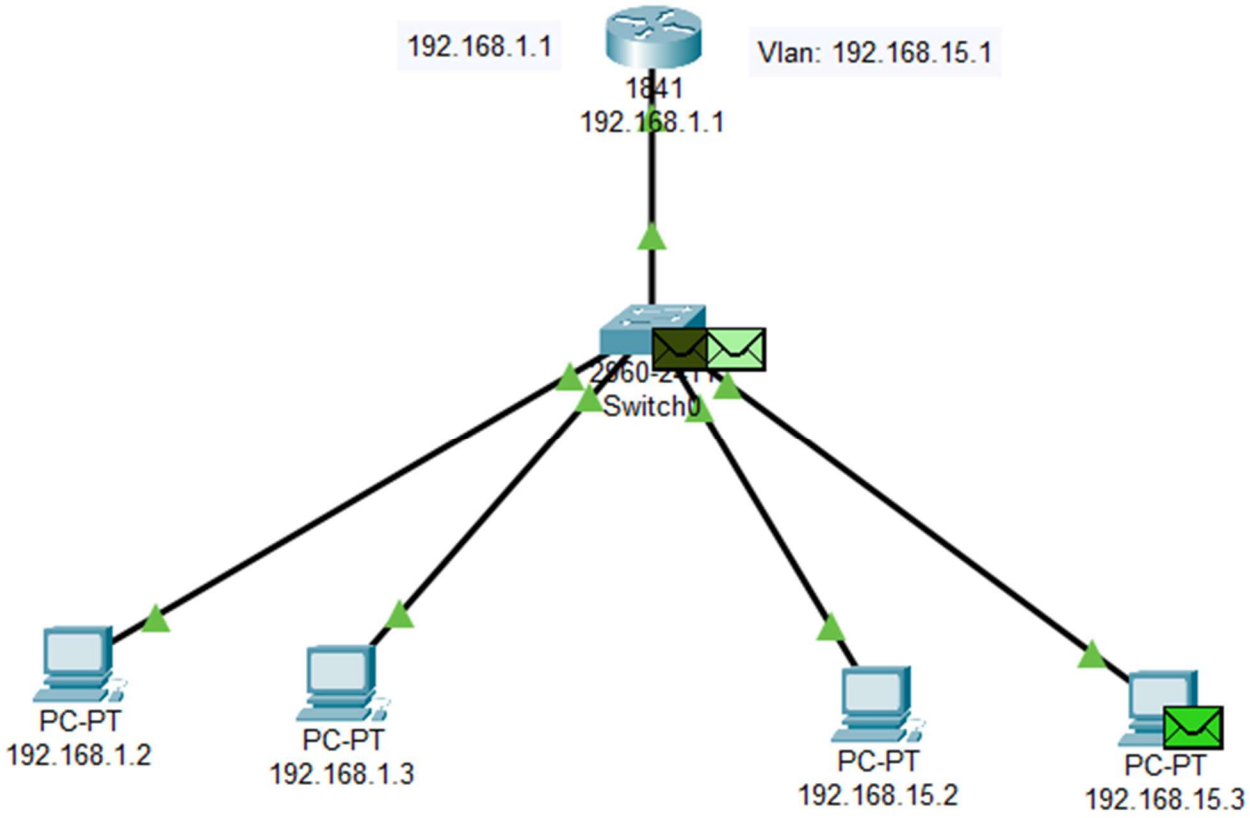
PC-PT
192.168.1.3
PC-PT
192.168.15.2
PC-PT
192.168.15.3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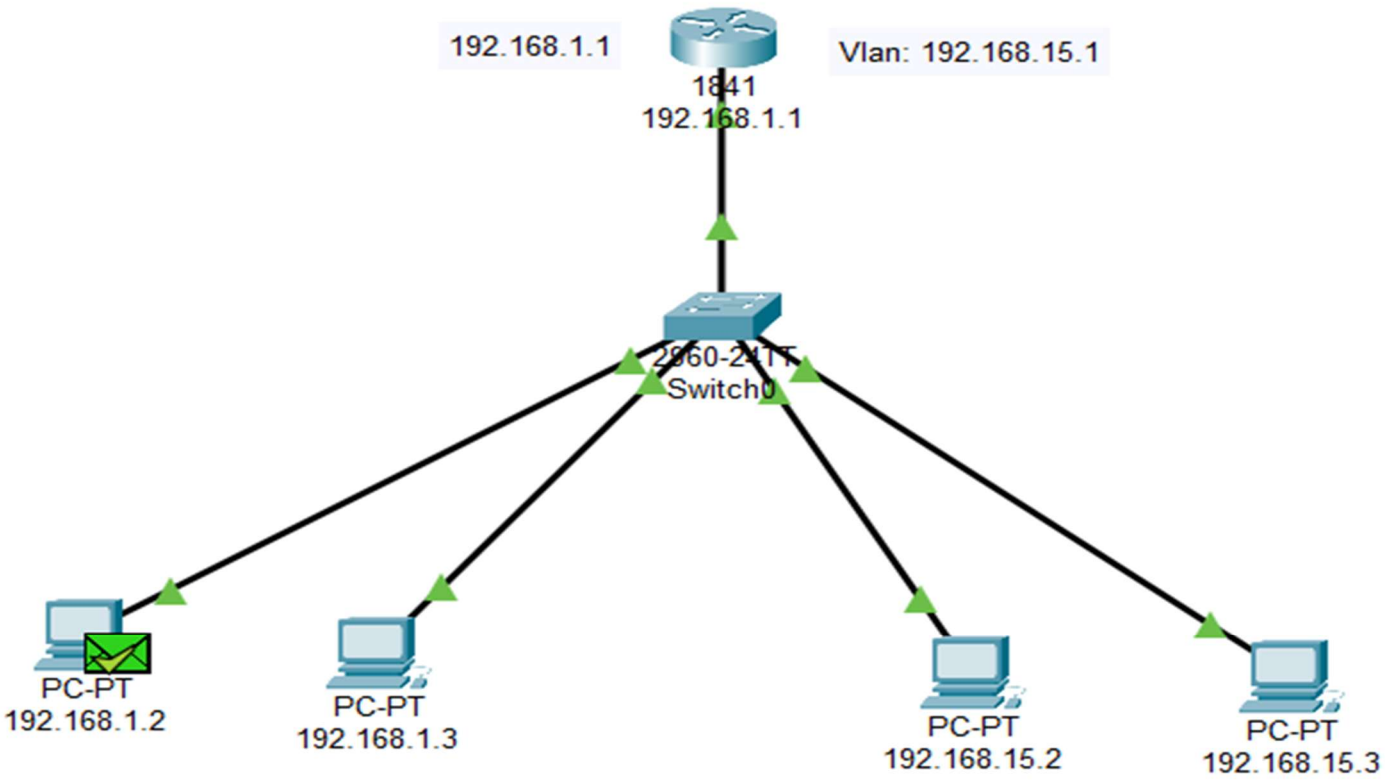
PC-PT
192.168.15.3




| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|
| | Successful | 192.168.1.2 | 192.168.1.3 | ICMP | | 0.000 | N | 0 | (edit) | (delete) |
| | Successful | 192.168.1.2 | 192.168.15.2 | ICMP | | 0.000 | N | 1 | (edit) | (delete) |
| | Successful | 192.168.1.2 | 192.168.15.3 | ICMP | | 0.000 | N | 2 | (edit) | (delete) |