

**Experiment No.: 8**

**Title:** Network Design using Simulation software

**Batch:SY-IT(B3)**

**Roll No.:16010423076**

**Experiment No.:8**

**Aim:** Network Design using Simulation software

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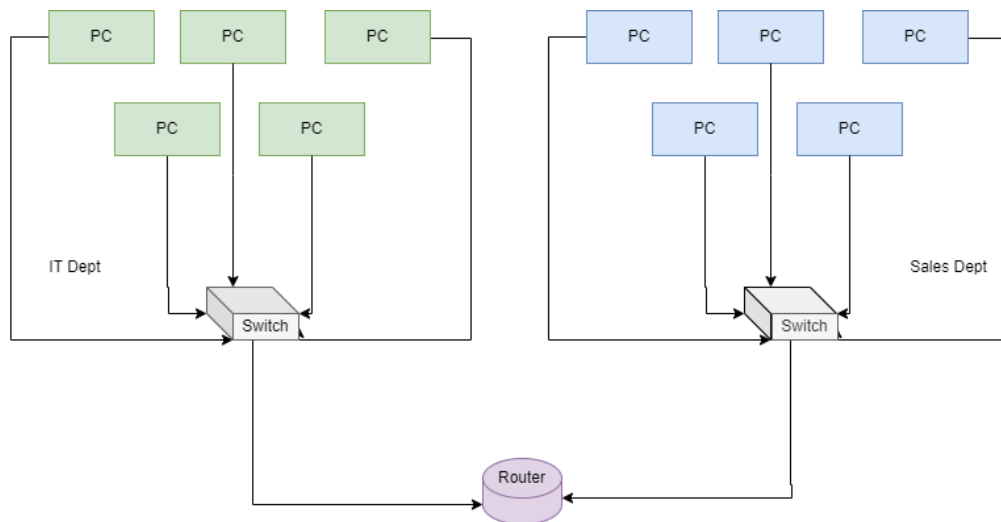
**Resources needed:** Cisco Network Packet Tracer (CNA)

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**Problem Statement :** Design a network for a small office with 2 departments: Sales and IT. Each department requires 5 PCs. All PCs should be able to communicate with each other through the network.

**Network Design :**

**Rough Network Design :**



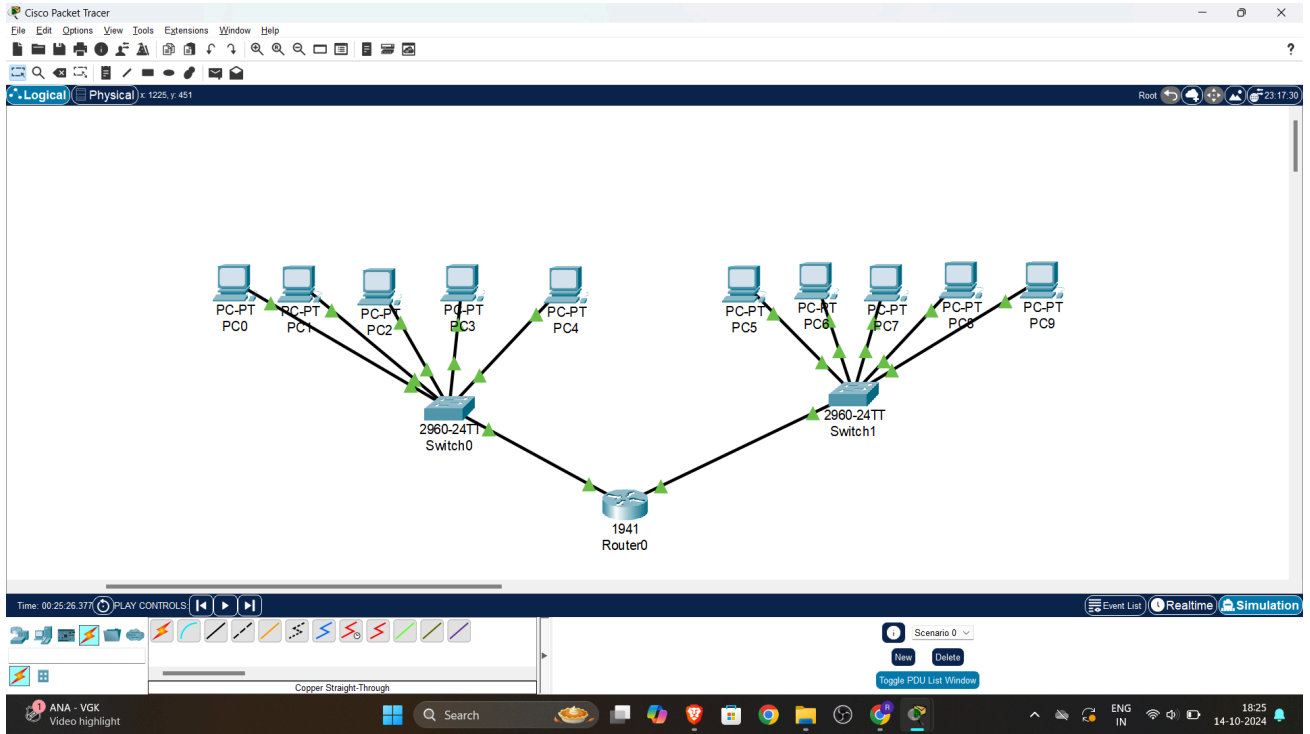
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**Activity:** Write problem statement clearly indicating the network requirement and then design the Network diagram for the same using any Simulation Software.

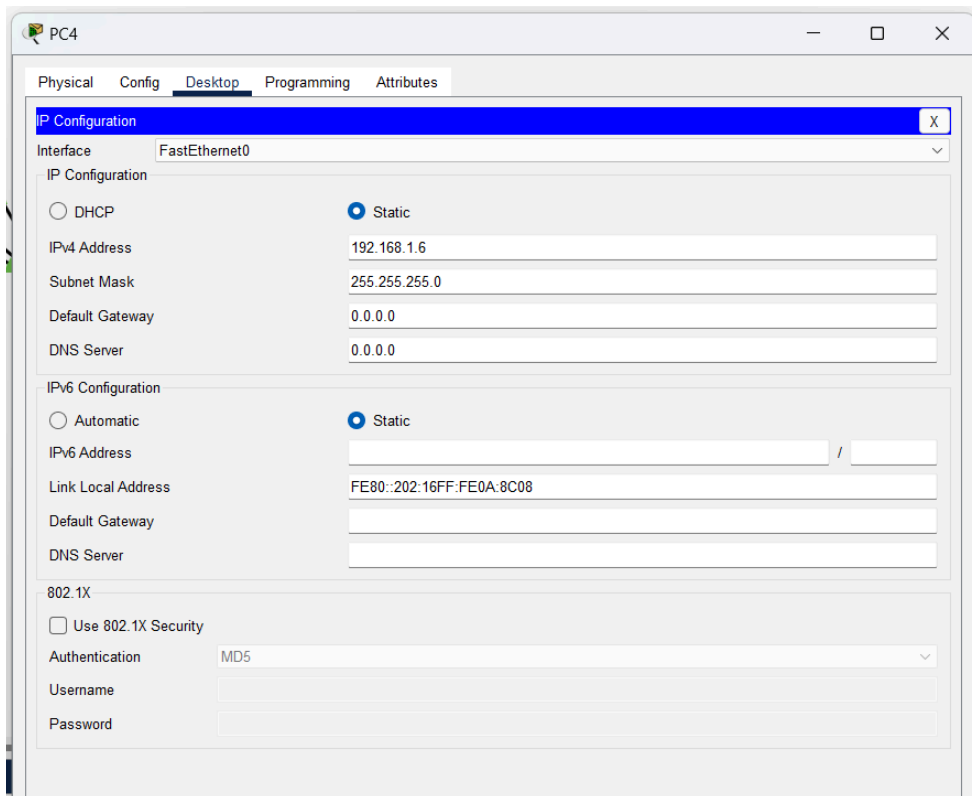
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**Explanation:**

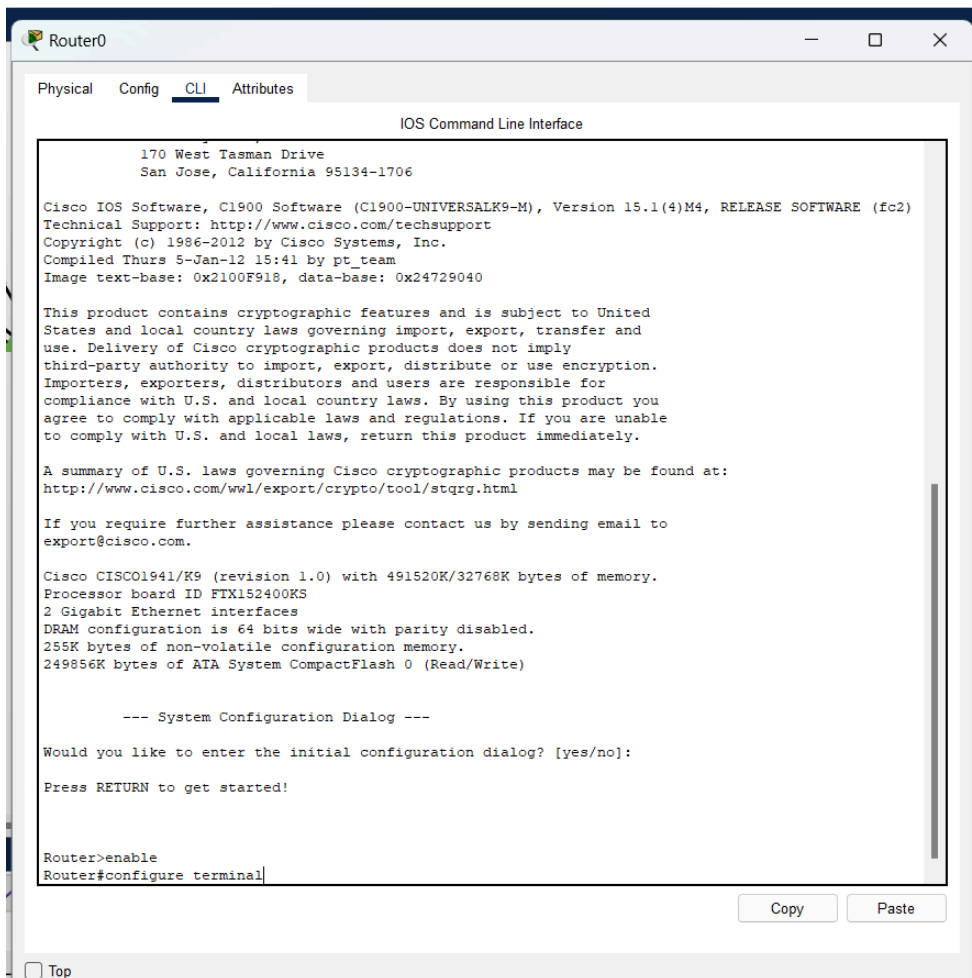
1. **Creating the Network Topology :**  
Design the physical or logical layout of the network by placing devices (routers, switches, PCs) and defining their connections.



- ## 2. Configuring the IP Addresses :
- Assign unique IP addresses to each device in the network to ensure proper communication and routing between them.



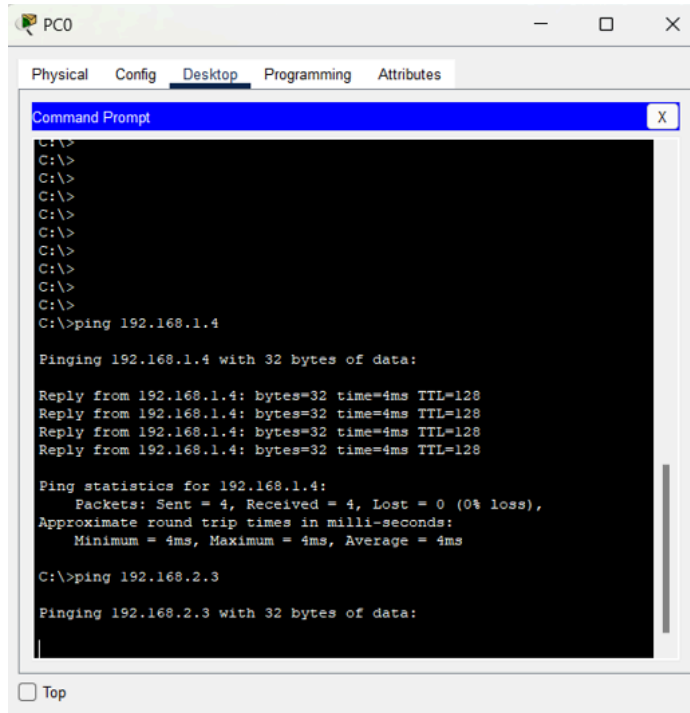
### 3. Router Configuration



#### 4. Testing the Network :

Verify connectivity and functionality by using tools like ping to check if devices can communicate successfully across the network.

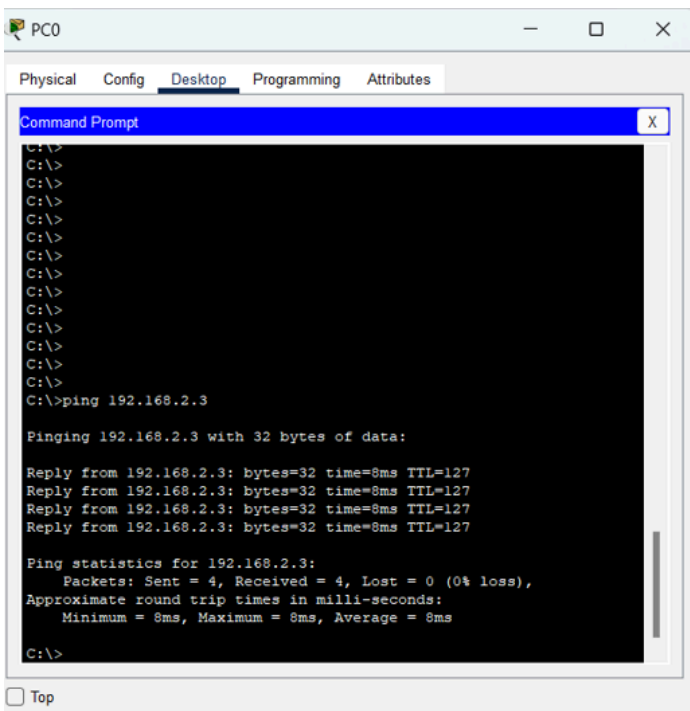
- Check connection within IT department itself



The screenshot shows a PC0 window with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt window. The Command Prompt shows the following text:

```
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>ping 192.168.1.4  
  
Pinging 192.168.1.4 with 32 bytes of data:  
  
Reply from 192.168.1.4: bytes=32 time=4ms TTL=128  
Reply from 192.168.1.4: bytes=32 time=4ms TTL=128  
Reply from 192.168.1.4: bytes=32 time=4ms TTL=128  
Reply from 192.168.1.4: bytes=32 time=4ms TTL=128  
  
Ping statistics for 192.168.1.4:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 4ms, Maximum = 4ms, Average = 4ms  
  
C:\>ping 192.168.2.3  
  
Pinging 192.168.2.3 with 32 bytes of data:  
  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
  
Ping statistics for 192.168.2.3:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 8ms, Maximum = 8ms, Average = 8ms  
  
C:\>
```

- Checking Connction of IT department with Sales Department



The screenshot shows a PC0 window with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt window. The Command Prompt shows the following text:

```
C:\>  
C:\>  
C:\>  
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C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>  
C:\>ping 192.168.2.3  
  
Pinging 192.168.2.3 with 32 bytes of data:  
  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
Reply from 192.168.2.3: bytes=32 time=8ms TTL=127  
  
Ping statistics for 192.168.2.3:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 8ms, Maximum = 8ms, Average = 8ms  
  
C:\>
```

The results on terminal, show that the connections are working properly.

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**Outcomes:** CO1: Understand the data communication systems, network topologies and network devices

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**Conclusion:**

Through this activity, I learned how to design a network topology, configure IP addresses, and test network connectivity effectively. It was enlightening to see how each device connects and communicates within the network, and the importance of proper configuration in ensuring seamless communication.

**Grade:** AA / AB / BB / BC / CC / CD /DD

**Signature of faculty in-charge with date**

**References:**

**Books/ Journals/ Websites:**

For creating rough structures : <https://app.diagrams.net/>

Cisco Packet tracer : <https://www.netacad.com/cisco-packet-tracer>

<https://www.lucidchart.com/pages/network-diagram/how-to-draw-a-network-diagram>

<https://miro.com/diagramming/how-to-create-a-network-diagram/>