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1.1 Design a Mesh Topology for the given requirements

Design and configure a fully connected Mesh Network in CISCO Packet Tracer and ensure all devices can communicate with each other.

Requirements:

1. Detailed Network Design(Screenshot from CISCO)
2. Basic setup
    1. What devices are added to the workspace in CISCO Packet Tracer?
    2. What are the steps to connect each device to every other device using appropriate cables?
3. IP address configuration
    1. How do you assign an IP address to each device in Mesh Network?
    2. What subnet mask should be used for the given IP address?
4. Verification
    1. How can you verify the connectivity between devices using the command?
    2. What steps would you take if a device does not respond to a ping request?
5. Status of packet transmission (screenshot of workspace along with status panel)

1. Detailed Network Design(Screenshot from CISCO)
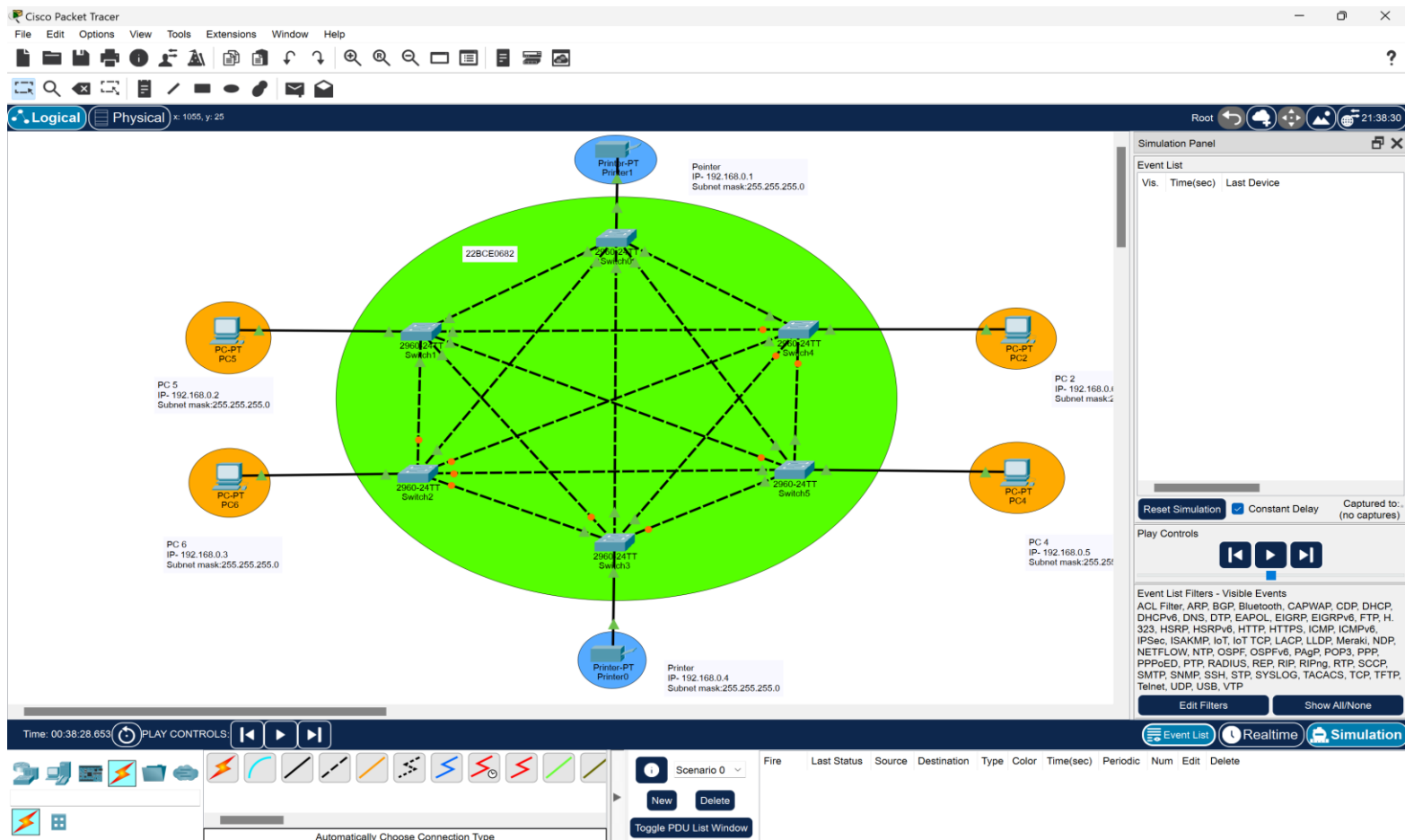
2. Basic setup

    a. What devices are added to the workspace in CISCO Packet Tracer?

Devices		IP Address	Subnet - Mask	Quantity
Switches				6
PC	PC 5	192.168.0.2	255.255.255.0	3
	PC 6	192.168.0.3		
	PC 4	192.168.0.5		
PC	PC 2	192.168.0.6	255.255.255.0	1
Printer	Printer 1	192.168.0.1	255.255.255.0	2
	Printer 2	192.168.0.4		
Cables	Copper Cross-Over			
	Copper Straight-Through			

    b. What are the steps to connect each device to every other device using appropriate cables?

- Connect PCs and Laptops to Switches:
  - PC Connection:
    - Select a PC.
    - Click on the "Connections" icon.
    - Choose "Copper Straight-Through."
    - Click on the PC and select the FastEthernet port.
    - Click on a Switch and select an available port
  - Laptop Connection:
    - Select a Laptop.
    - Click on the "Connections" icon.
    - Choose "Copper Straight-Through."
    - Click on the Laptop and select the FastEthernet port.
    - Click on a Switch and select an available port.
  - Printer Connection:
    - Select the Printer.
    - Click on the "Connections" icon.
    - Choose "Copper Straight-Through."
    - Click on the Printer and select the FastEthernet port.
    - Click on a Switch and select an available port.

- Interconnect Switches:
  - Switch to Switch Connection:
  - Select a Switch.
  - Click on the "Connections" icon.
  - Choose "Copper Cross-Over."
  - Click on the Switch and select a port.
  - Click on another Switch and select an available port.
  - Repeat these steps to connect all switches together.

3. IP address configuration

    a. How do you assign an IP address to each device in Mesh Network?

- PCs and Laptops:
  - Click on a PC or Laptop.
  - Go to the "Desktop" tab.
  - Open the "IP Configuration" tool.
  - Assign an IP address and subnet mask.
    - PC1: IP Address: 192.168.0.2, Subnet Mask: 255.255.255.0
    - PC2: IP Address: 192.168.0.3, Subnet Mask: 255.255.255.0
    - PC3: IP Address: 192.168.0.5, Subnet Mask: 255.255.255.0
    - PC3: IP Address: 192.168.0.6, Subnet Mask: 255.255.255.0

- Printer:
  - Click on the Printer.
  - Go to the "Config" tab.
  - Select the interface FastEthernet0.
  - Assign an IP address and subnet mask.
  - IP Address: 192.168.0.1, Subnet Mask: 255.255.255.0
  - IP Address: 192.168.0.4, Subnet Mask: 255.255.255.0

    b. What subnet mask should be used for the given IP address?

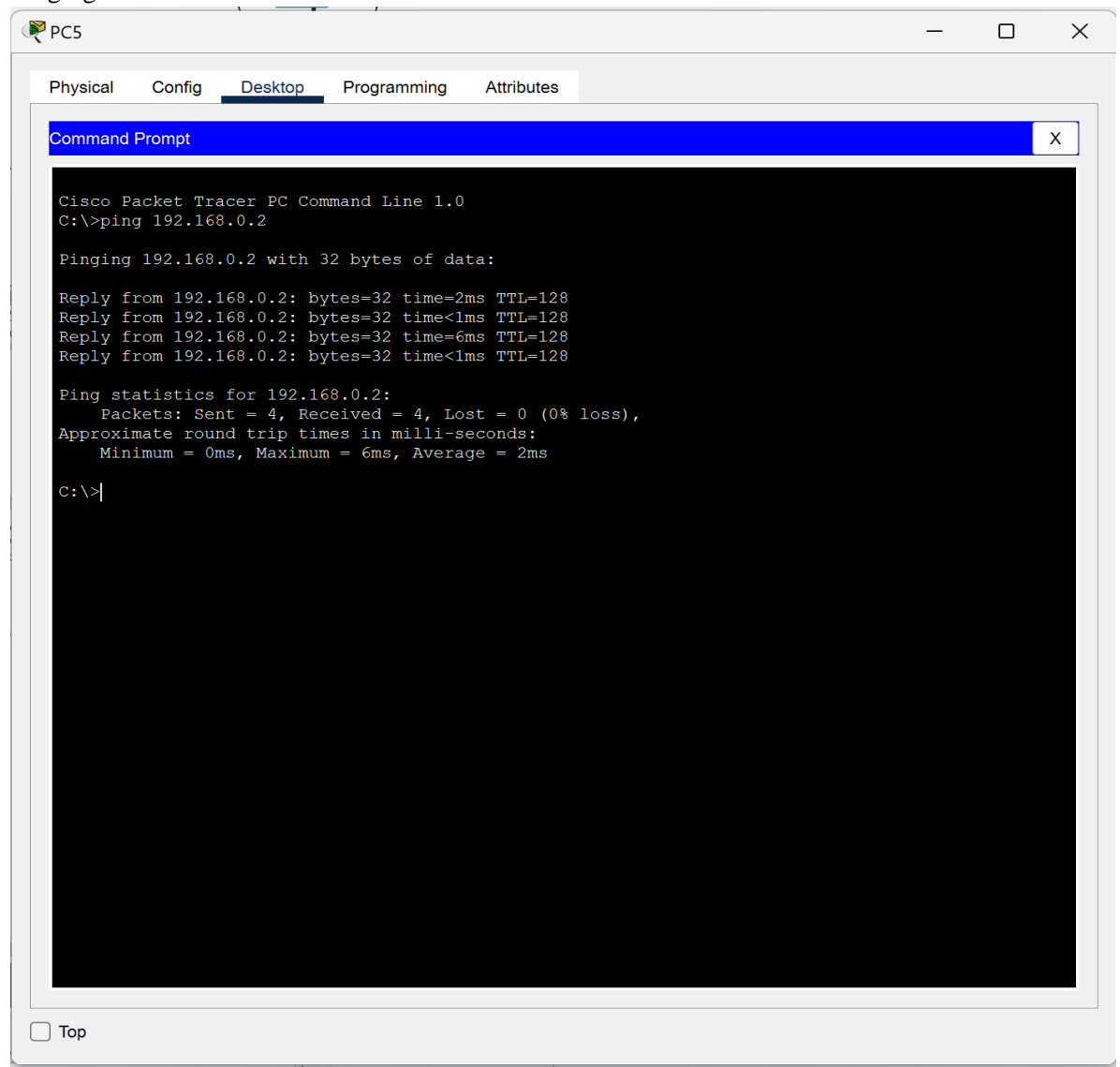| Devices		Subnet - Mask
PC	PC 5	255.255.255.0
	PC 6	
	PC 2	
PC	PC 3	255.255.255.0
Printer	Printer 1	255.255.255.0
	Printer 4	

4. Verification

a. How can you verify the connectivity between devices using the command?

- Open the Command Prompt on a PC or Laptop.
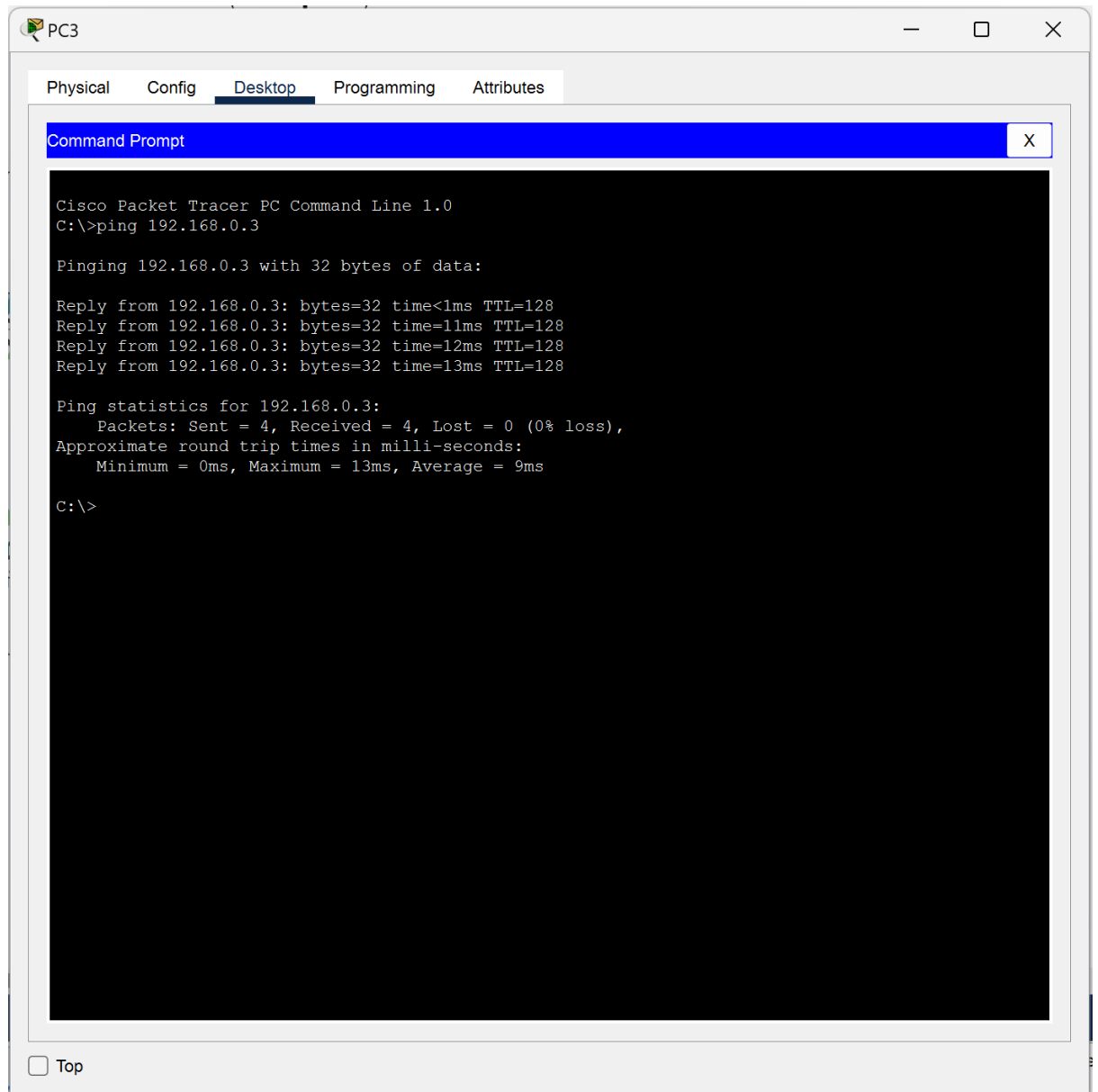- Use the ping command to test connectivity. For example:

```
Unset

        ping 192.168.0.1
```

- Screenshots:
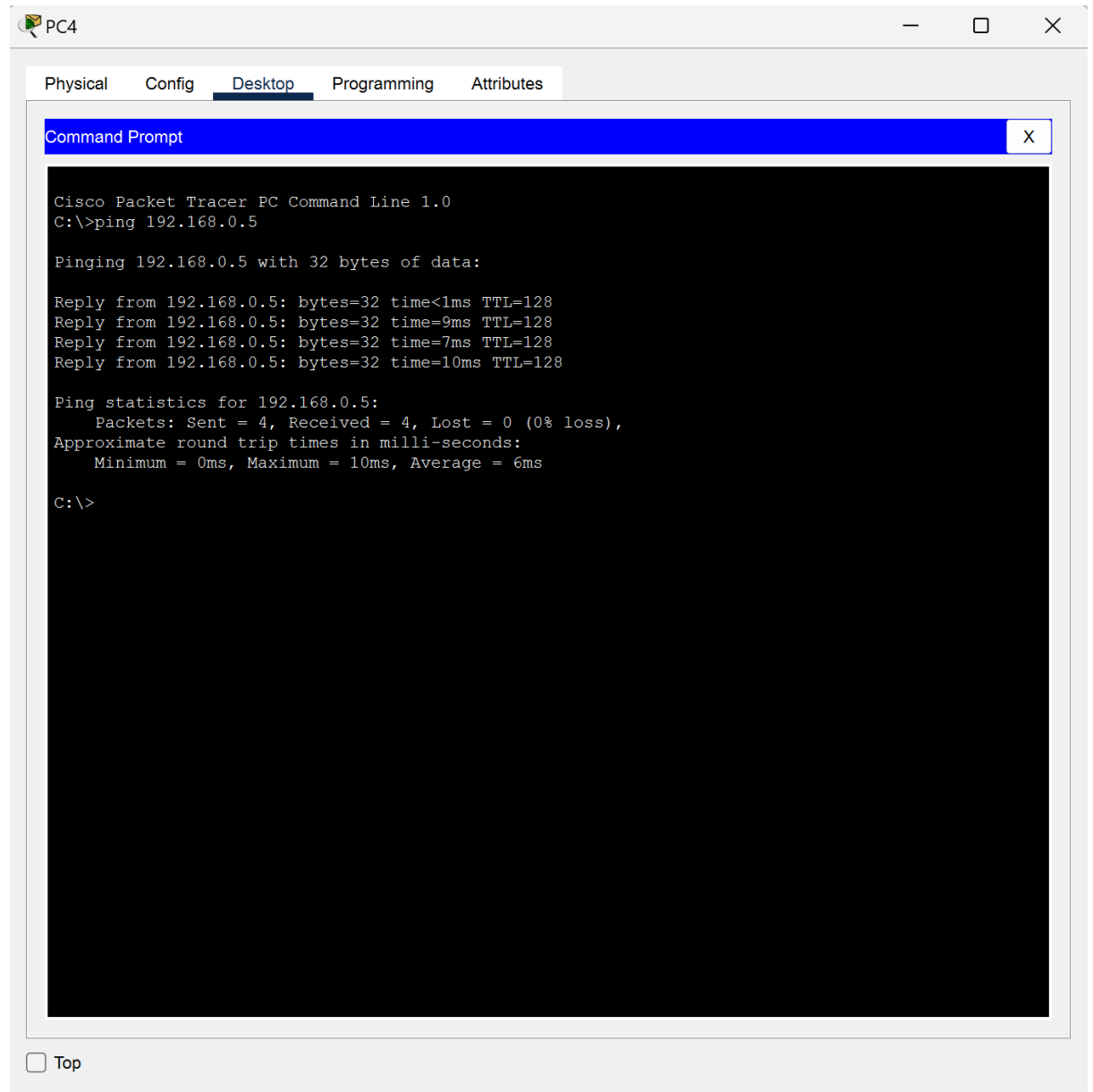 - Pinging 192.168.0.1 to 192.168.0.2

  - Pinging 192.168.0.2 to 192.168.0.3

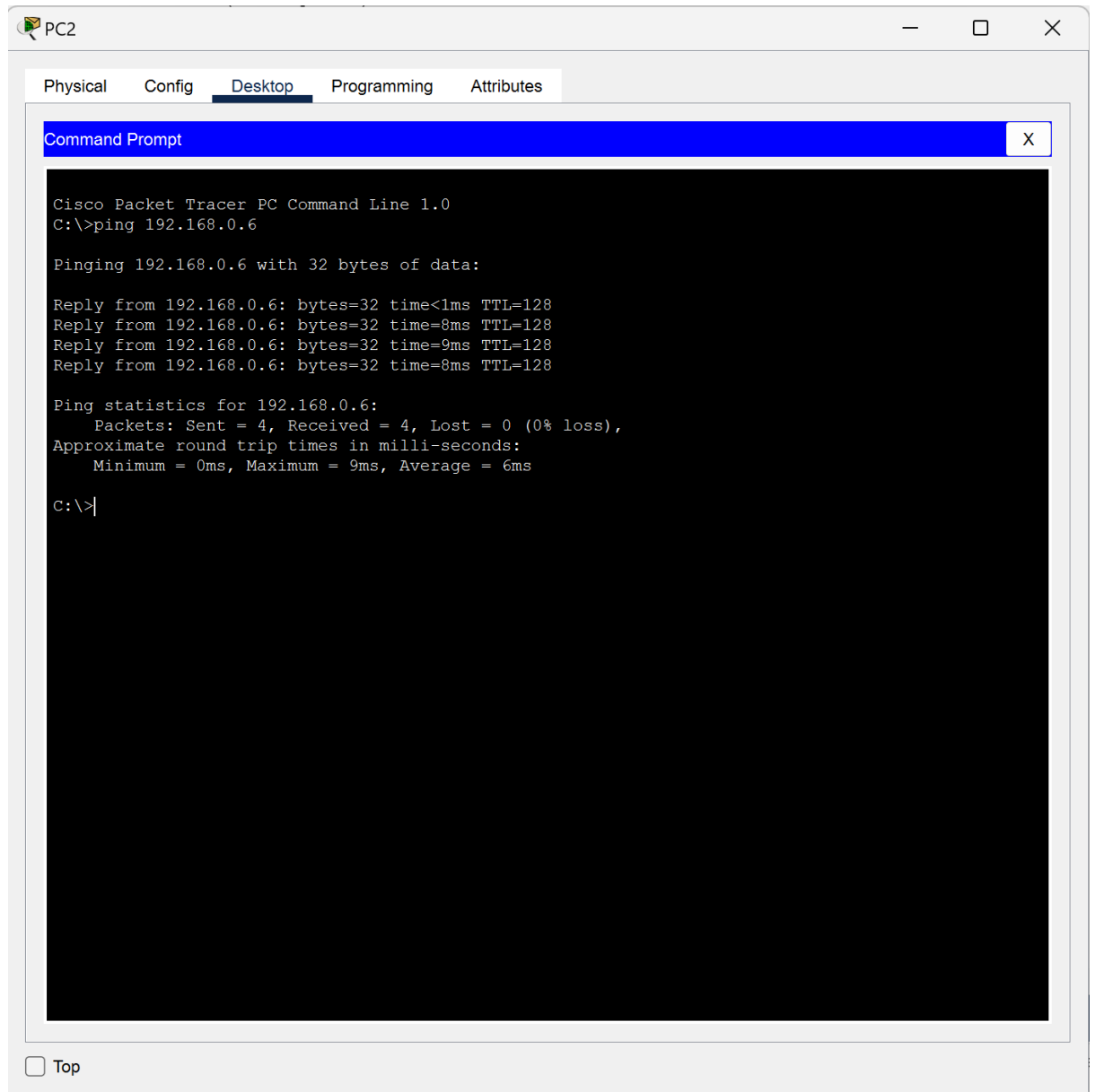PC3   — □ ✕

| Physical | Config | Desktop | Programming | Attributes |

Command Prompt   X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Reply from 192.168.0.3: bytes=32 time<1ms TTL=128
Reply from 192.168.0.3: bytes=32 time=11ms TTL=128
Reply from 192.168.0.3: bytes=32 time=12ms TTL=128
Reply from 192.168.0.3: bytes=32 time=13ms TTL=128

Ping statistics for 192.168.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 9ms

C:\>
```

☐ Top

○ Pinging 192.168.0.4 to 192.168.0.5

○ Pinging 192.168.0.5 to 192.168.0.6

PC2 — □ X

| Physical | Config | Desktop | Programming | Attributes |

Command Prompt   X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.6

Pinging 192.168.0.6 with 32 bytes of data:

Reply from 192.168.0.6: bytes=32 time<1ms TTL=128
Reply from 192.168.0.6: bytes=32 time=8ms TTL=128
Reply from 192.168.0.6: bytes=32 time=9ms TTL=128
Reply from 192.168.0.6: bytes=32 time=8ms TTL=128

Ping statistics for 192.168.0.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 9ms, Average = 6ms

C:\>
```

☐ Top

b. **What steps would you take if a device does not respond to a ping request?**

- Ensure all cables are correctly connected.
- Verify that all devices have the correct IP addresses and subnet masks.
- Check that interfaces on Switches are turned on (no shutdown command).
- Use the "Simulation" mode in Packet Tracer to see where packets are being dropped.
- Ensure that there are no IP address conflicts.

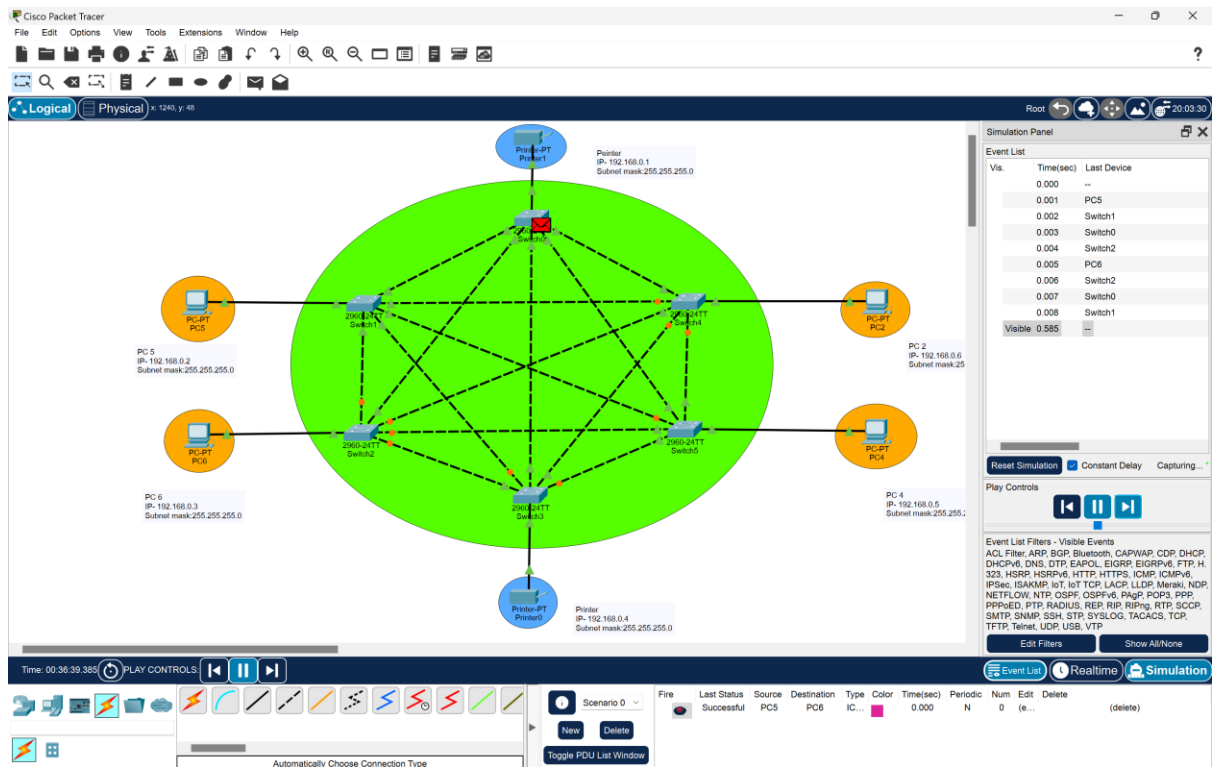**5. Status of packet transmission (screenshot of workspace along with status panel)**
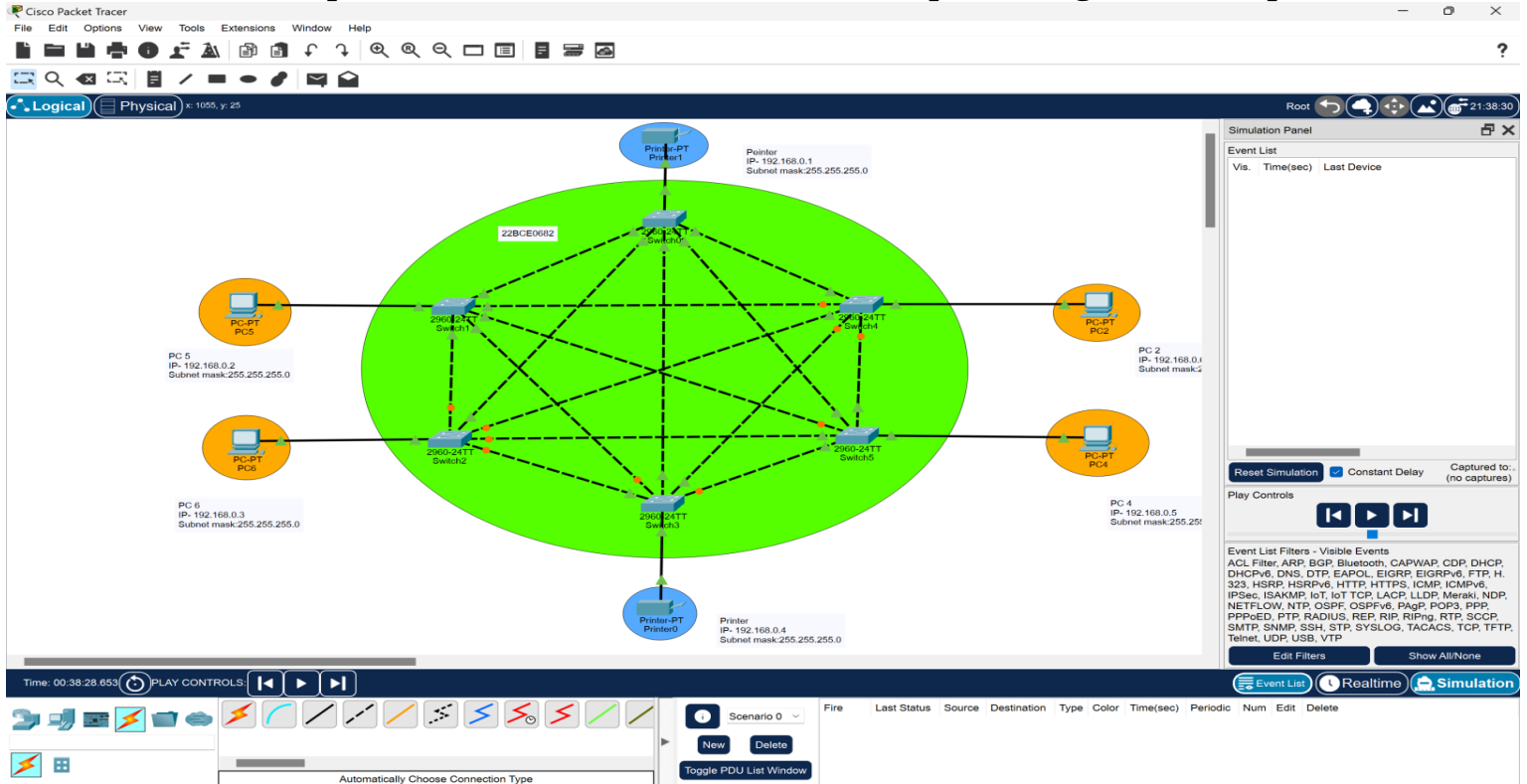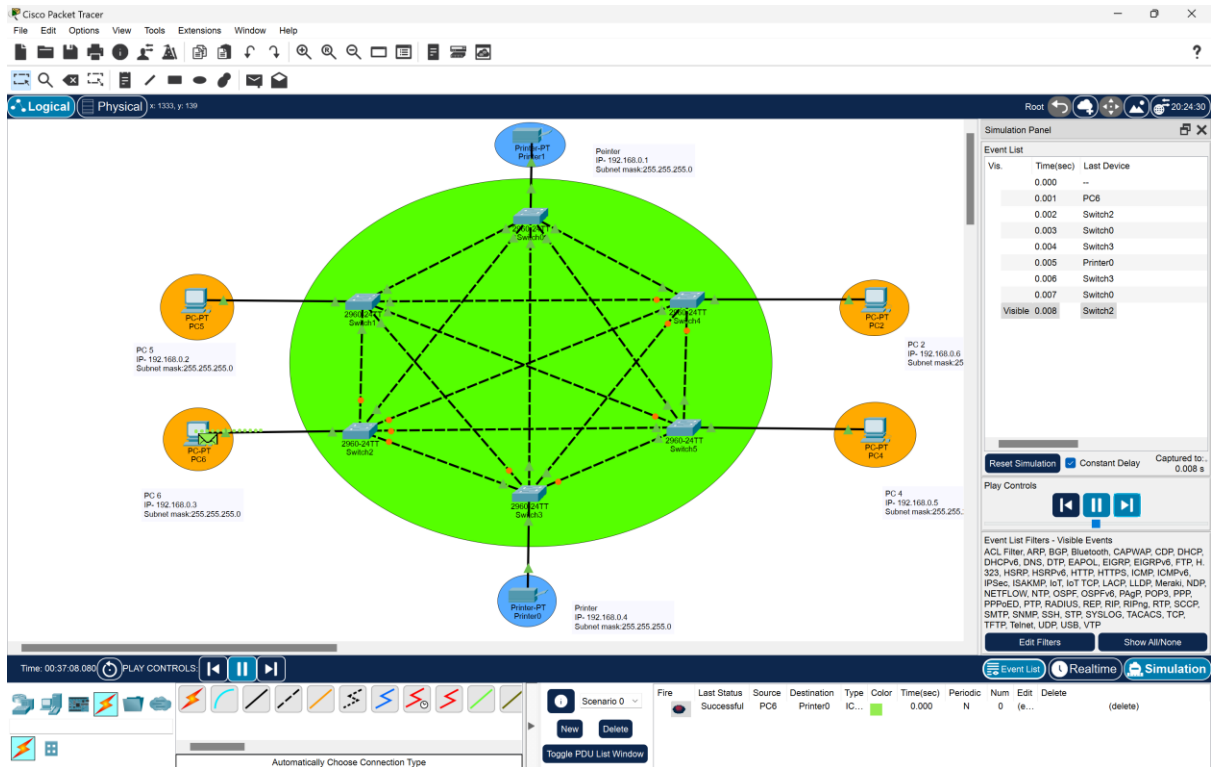
1. Sending Message from Printer 1 to PC 5
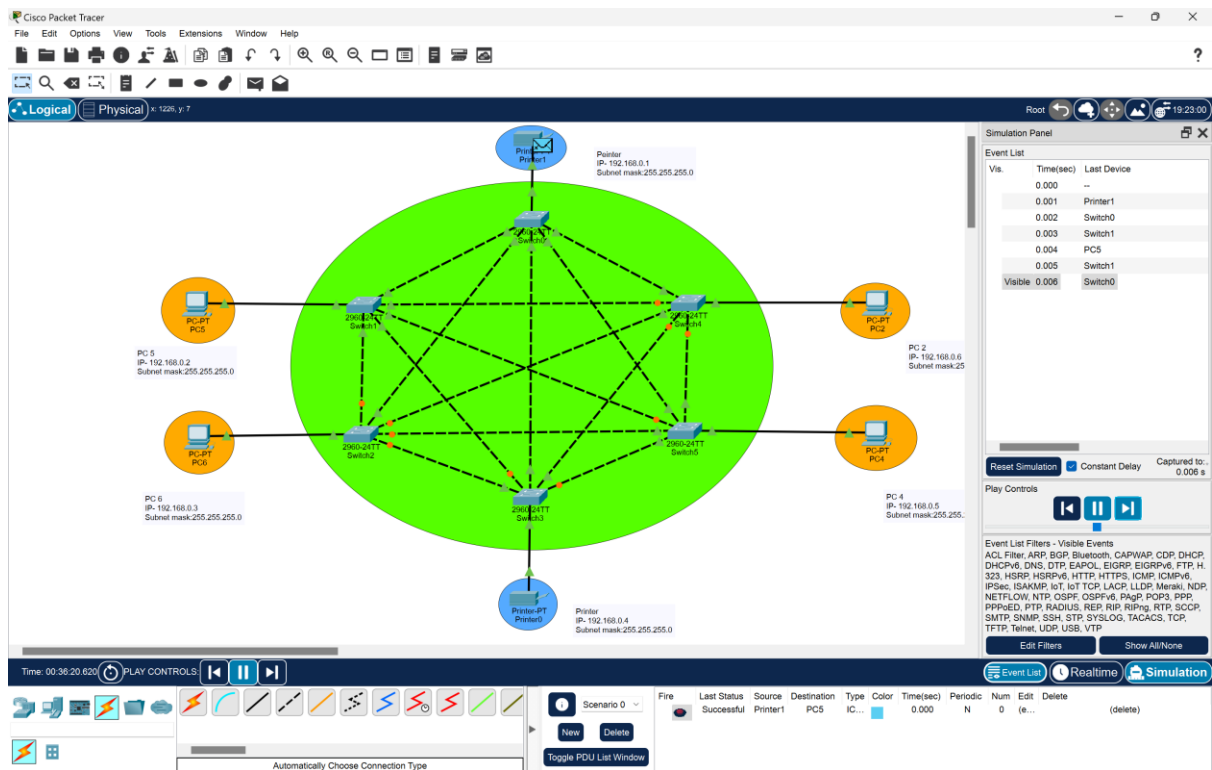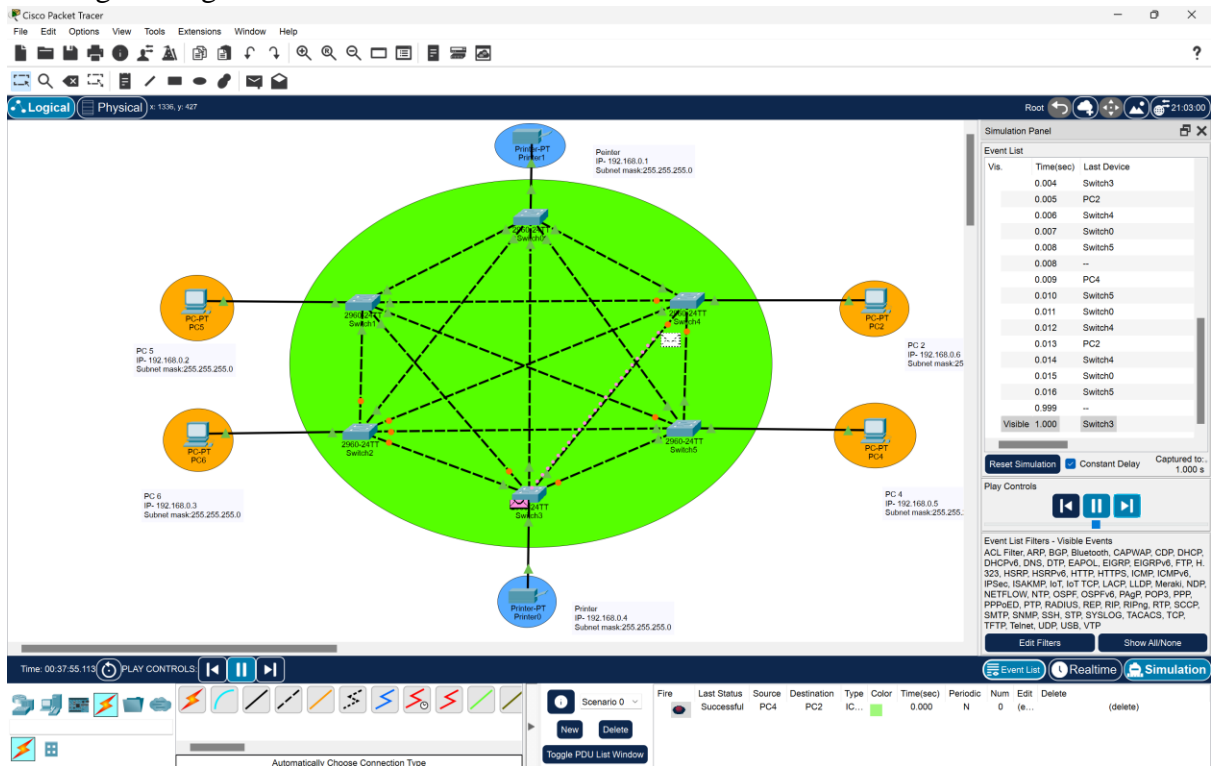

2. Sending Message from PC 5 to PC 6

3. Sending Message from PC 6 to Printer 0

4. Sending Message from PC 4 to PC 2

5. Sending Message from PC 2 to Printer 1