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1.2 Design a star topology for the given requirements

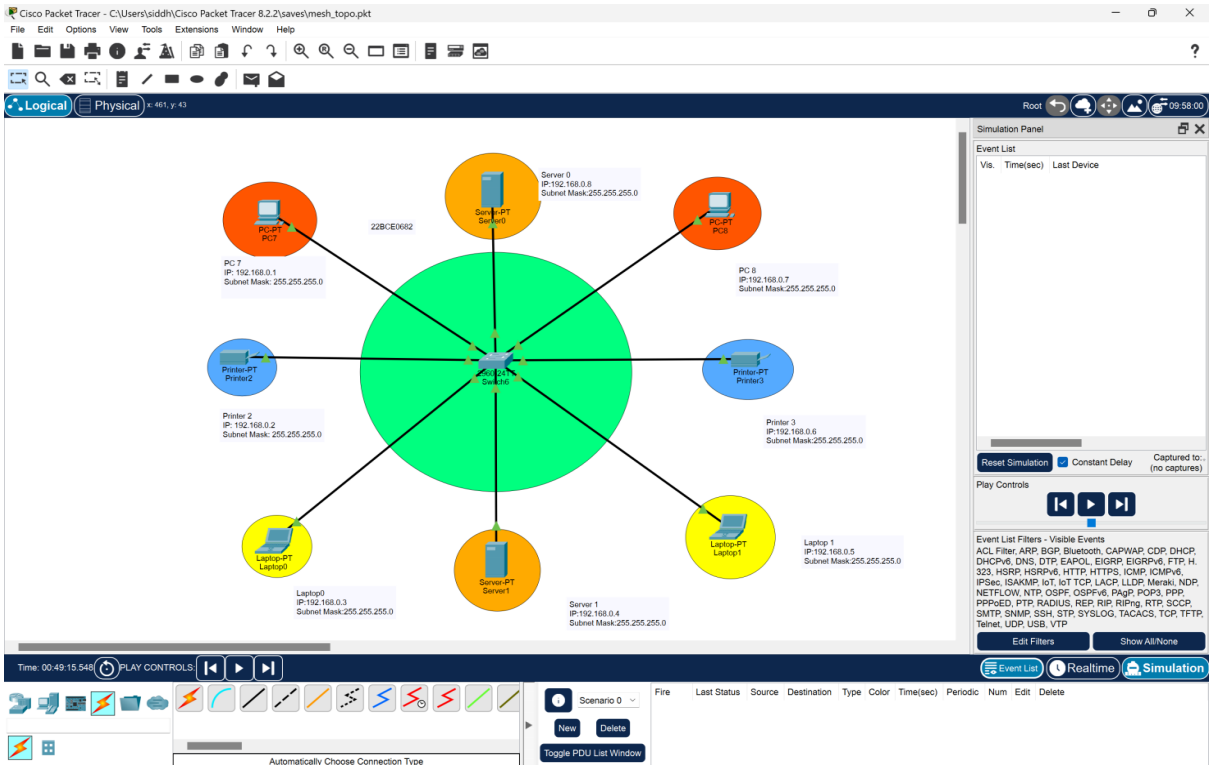
Design and configure a fully connected Star Network in CISCO Packet Tracer and ensure all devices can communicate with each other.(For both Switch and Hub)

Requirements:

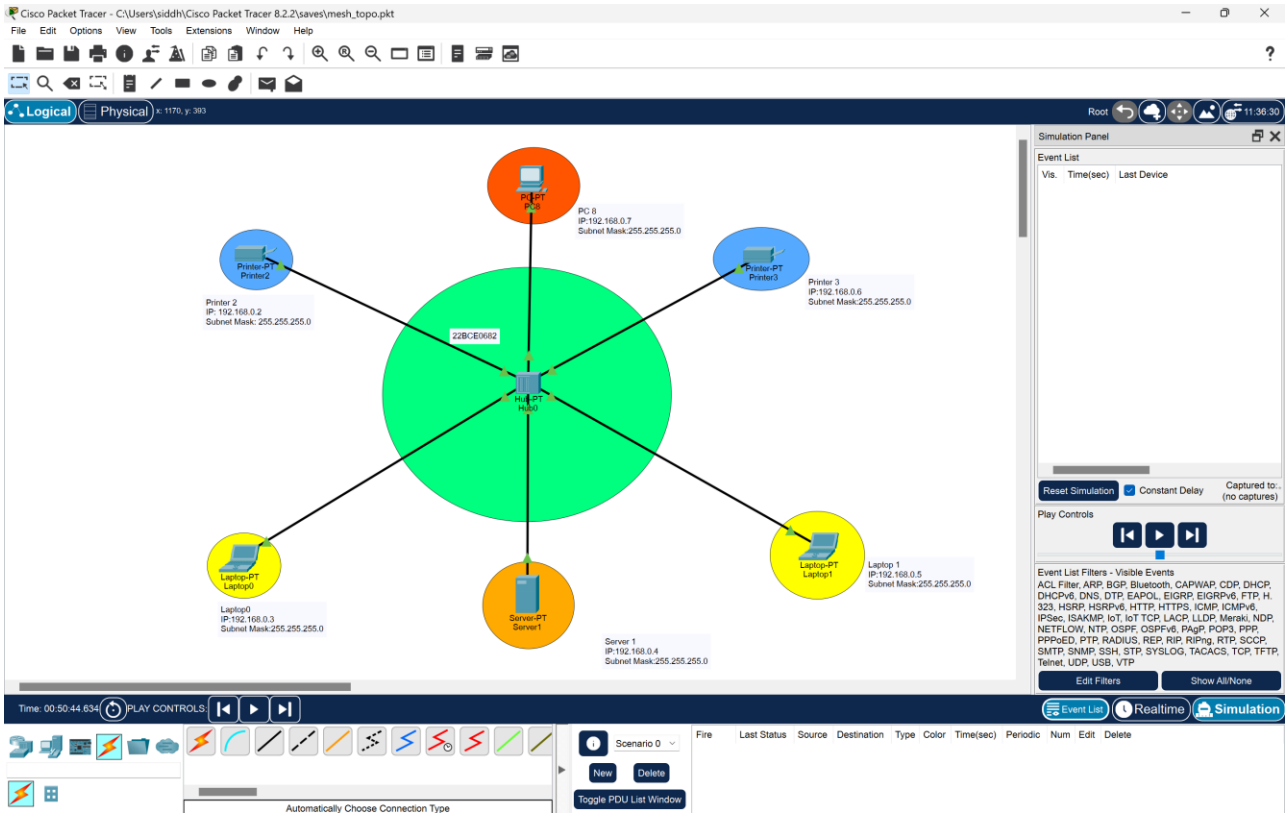
1. Detailed Network Design(Screenshot from CISCO)
2. Basic setup
    1. What devices are added to the workspace in CISCO Packet Tracer?
    2. What are the steps to connect each device to every other device using appropriate cables?
3. IP address configuration
    1. How do you assign an IP address to each device in Star 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)

- Switch



- Hub



2. Basic setup

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

Devices		IP Address	Subnet - Mask	Quantity
Switch				1
Hub				1
PC, Laptop	PC 7 (HUB only one)	192.168.0.1	255.255.255.0	4
	PC 8	192.168.0.7		
	Laptop 0	192.168.0.3		
	Laptop 1	192.168.0.7		
Server	Server 0 (HUB only one)	192.168.0.4	255.255.255.0	2
	Server 1	192.168.0.8		

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Devices		IP Address	Subnet - Mask	Quantity
Printer	Printer 1	192.168.0.2	255.255.255.0	1
	Printer 2	192.168.0.6		
Cables	Copper Straight-Through			

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

- Connect PCs and Laptops to Switch:
  - 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.

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

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.
    - PC7: IP Address: 192.168.0.1, Subnet Mask: 255.255.255.0
    - PC 8: IP Address: 192.168.0.4, Subnet Mask: 255.255.255.0
    - Laptop 0: IP Address: 192.168.0.3, Subnet Mask: 255.255.255.0
    - Laptop 1: IP Address: 192.168.0.8, 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.
    - Printer 2: IP Address: 192.168.0.2, Subnet Mask: 255.255.255.0
    - Printer 3: IP Address: 192.168.0.9, Subnet Mask: 255.255.255.0
- Server:
  - Click on the Server.
  - Go to the "Config" tab.
  - Select the interface FastEthernet0.
  - Assign an IP address and subnet mask.
    - Server 0: IP Address: 192.168.0.5, Subnet Mask: 255.255.255.0
    - Server 1: IP Address: 192.168.0.7, Subnet Mask: 255.255.255.0

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

Devices		Subnet - Mask
PC & Laptop	PC 7	255.255.255.0
	PC 8	
	Laptop 0	
	Laptop 1	
Server	Server 1	255.255.255.0
	Server 2	
Printer	Printer 1	255.255.255.0
	Printer 2	

4. Verification

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

b.

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

```
Unset
ping 192.168.0.1
```

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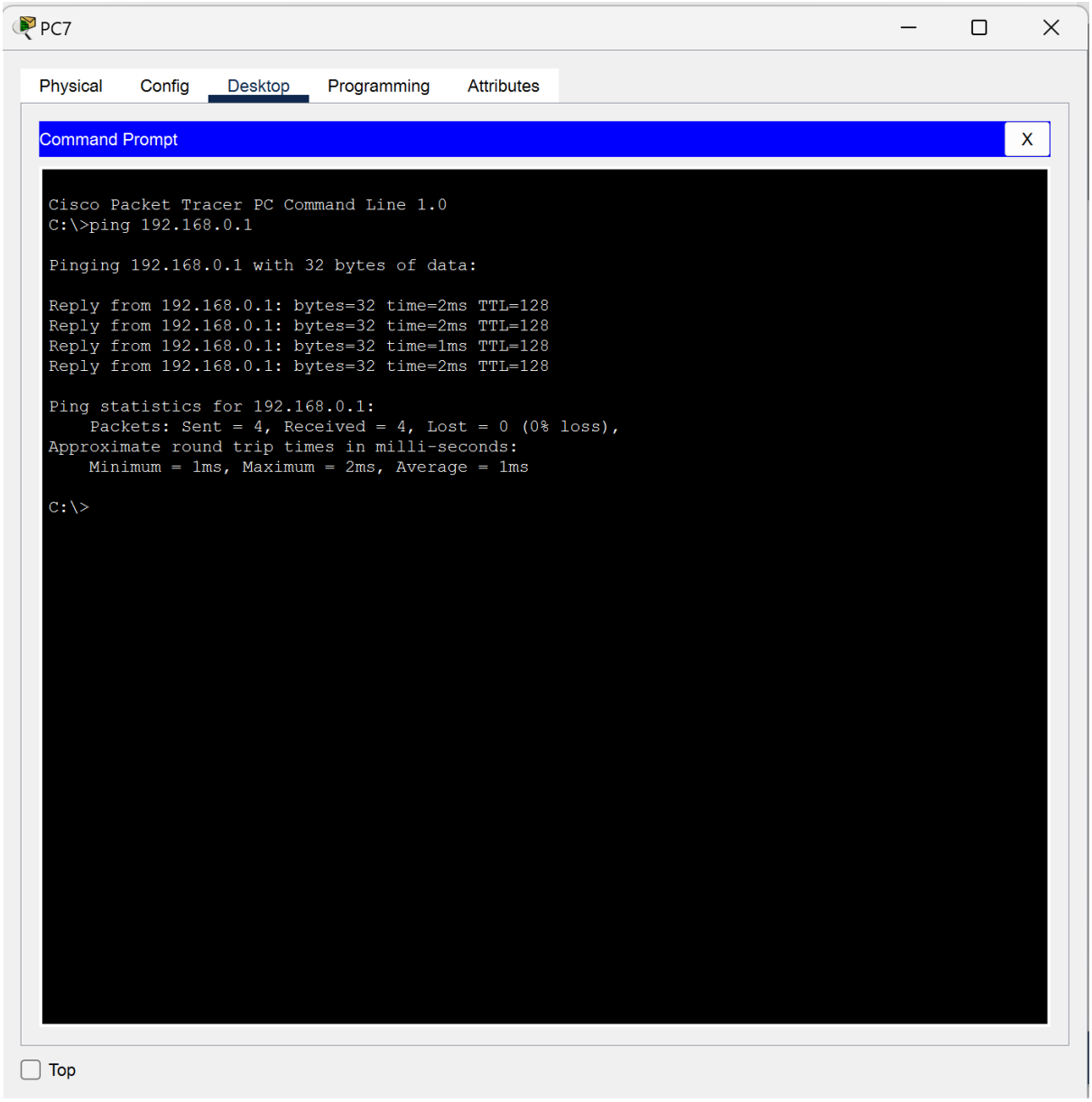
- Screenshots for Switch:
  - Pinging 192.168.0.1 to 192.168.0.2



  - Pinging 192.168.0.2 to 192.168.0.3

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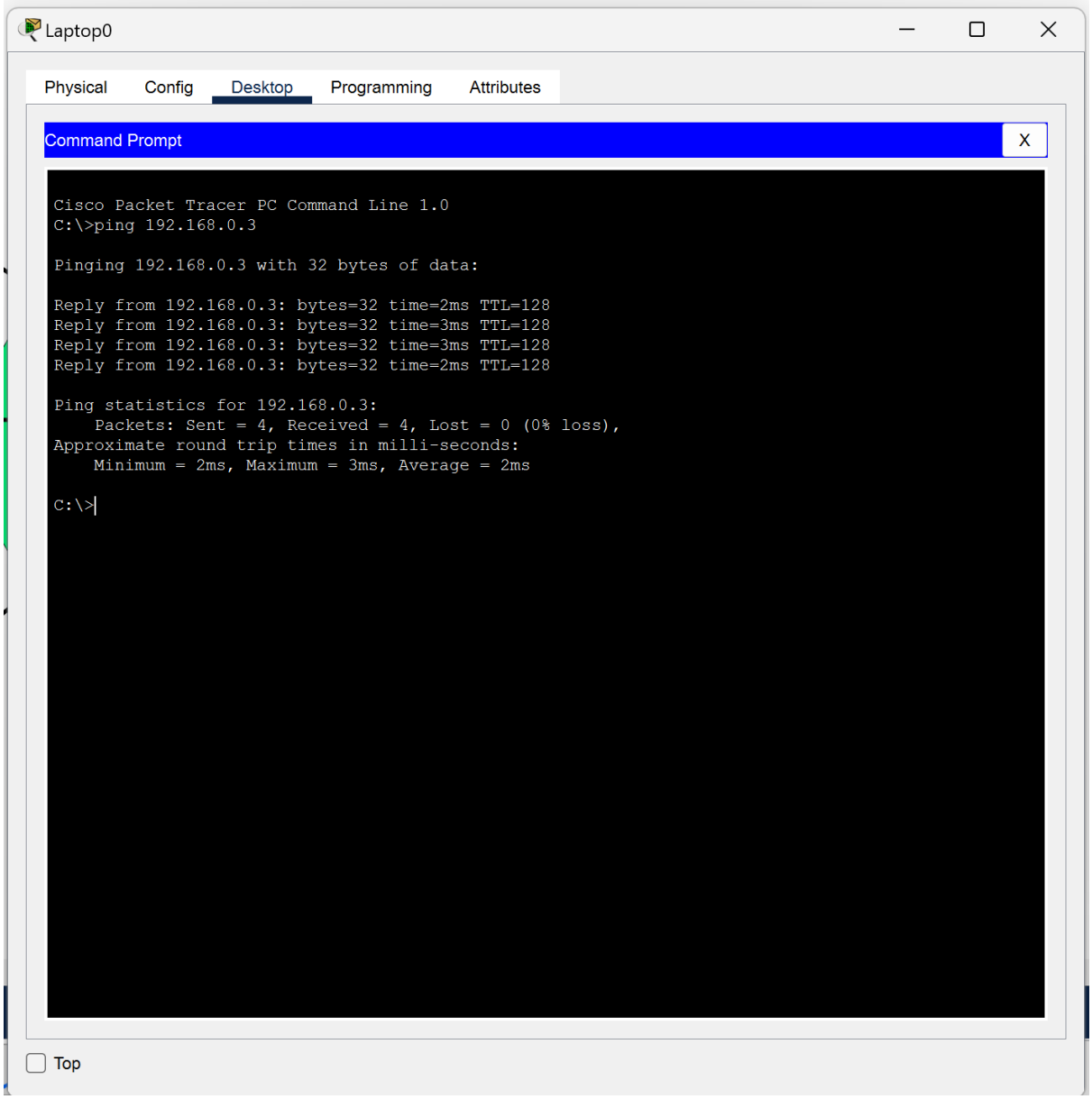

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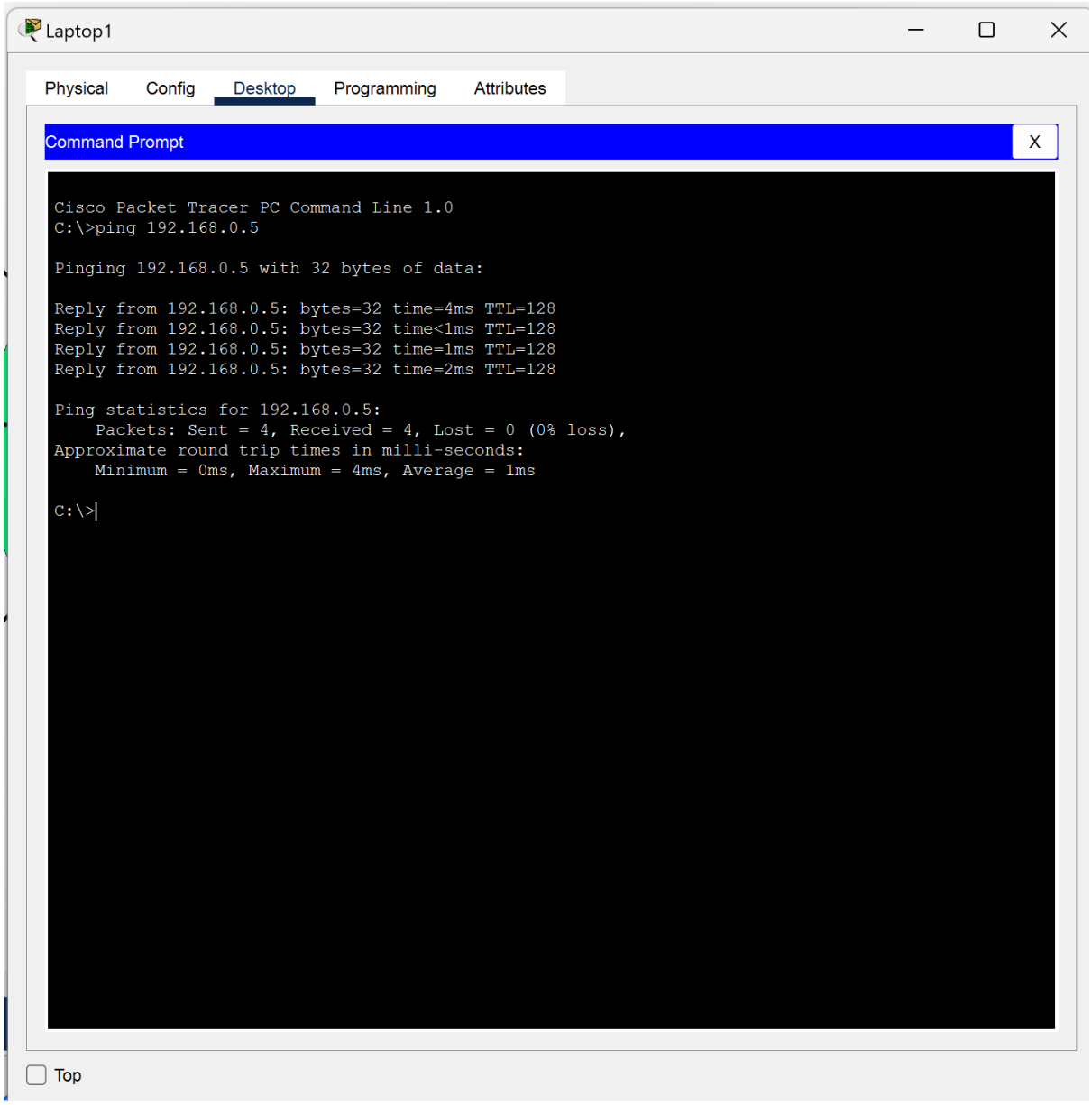
- Pinging 192.168.0.4 to 192.168.0.5



- Pinging 192.168.0.6 to 192.168.0.7

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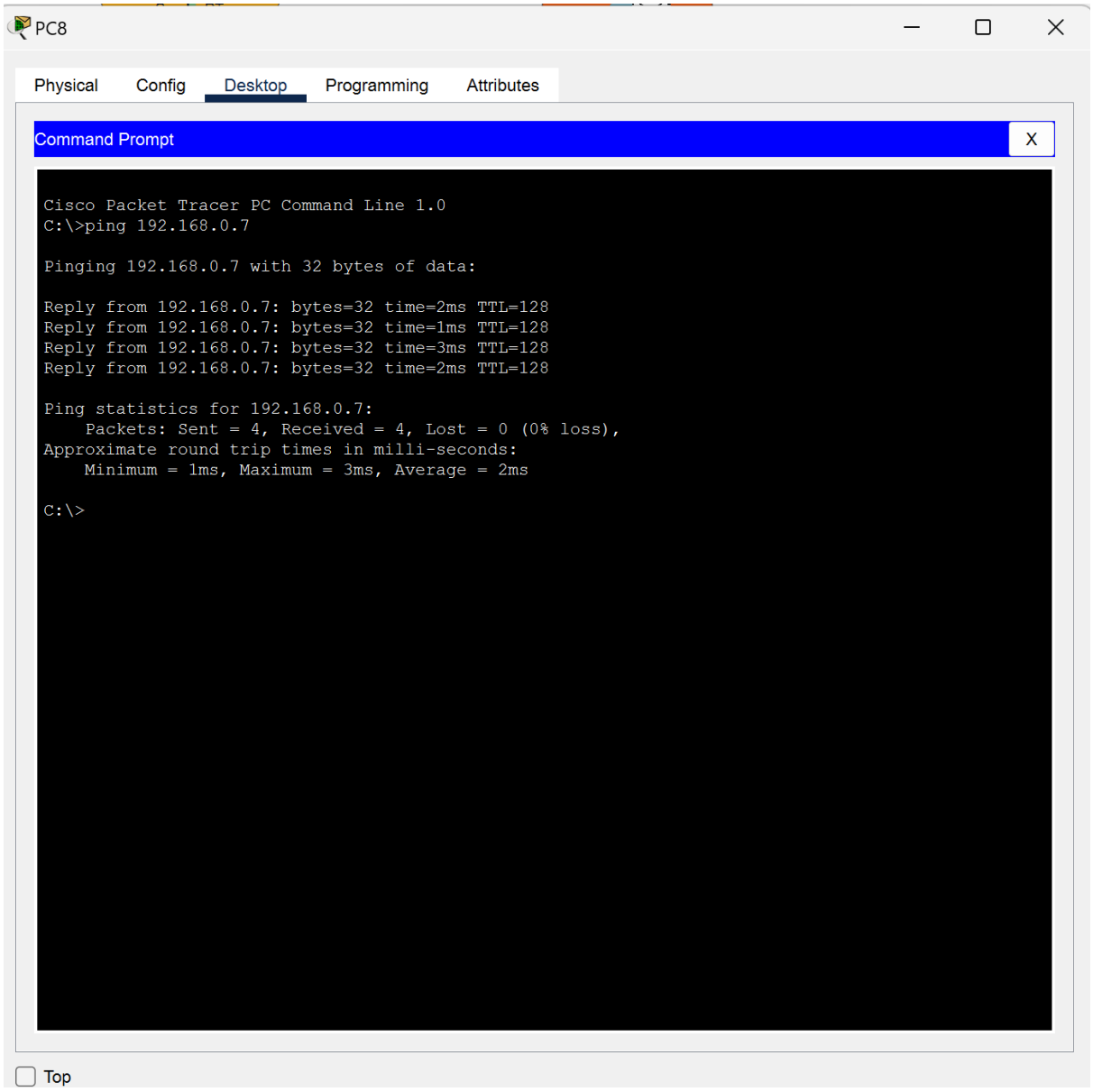

- Screenshots for Hub:
    - Pinging 192.168.0.1 to 192.168.0.2

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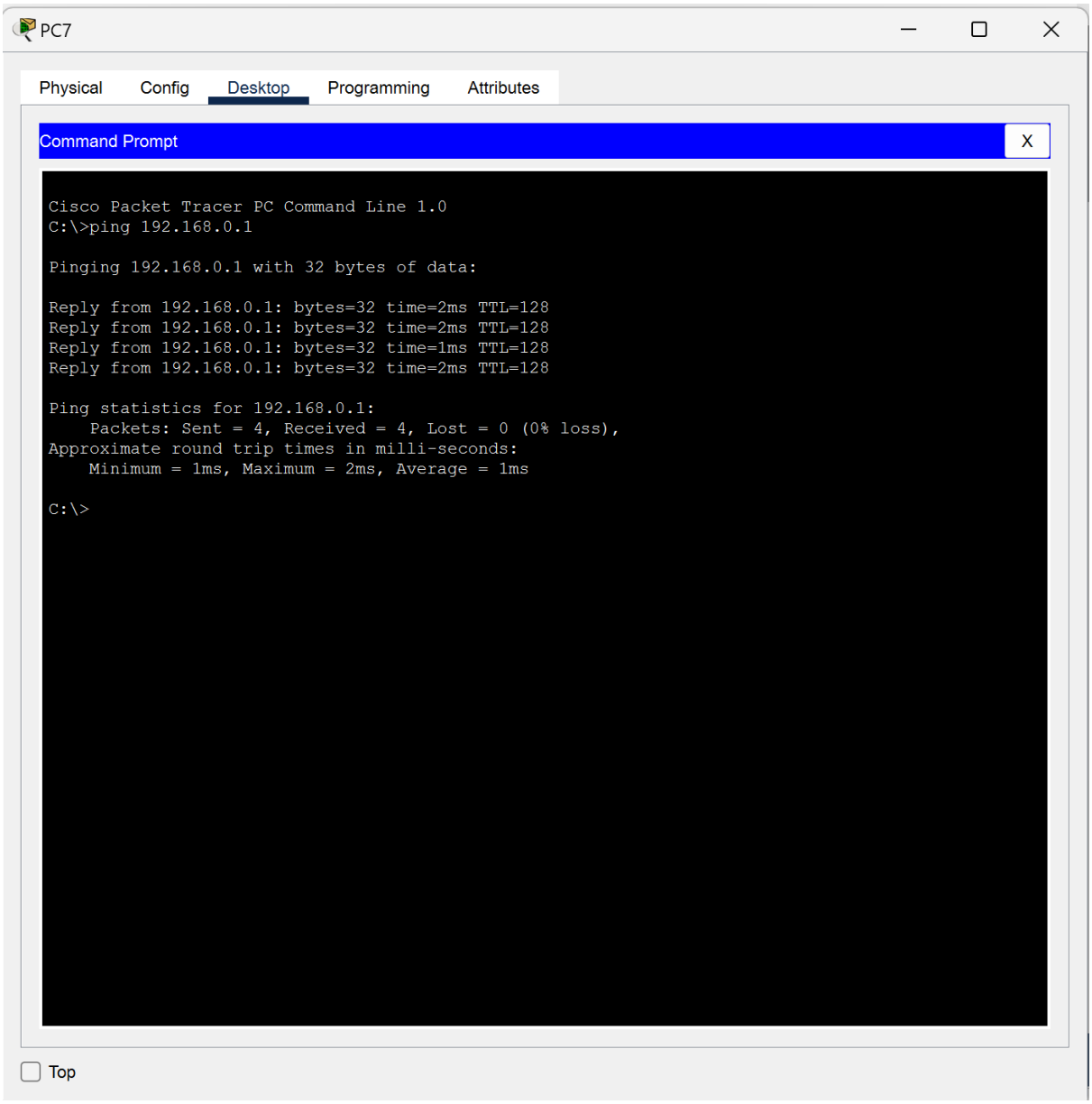

- Pinging 192.168.0.2 to 192.168.0.3

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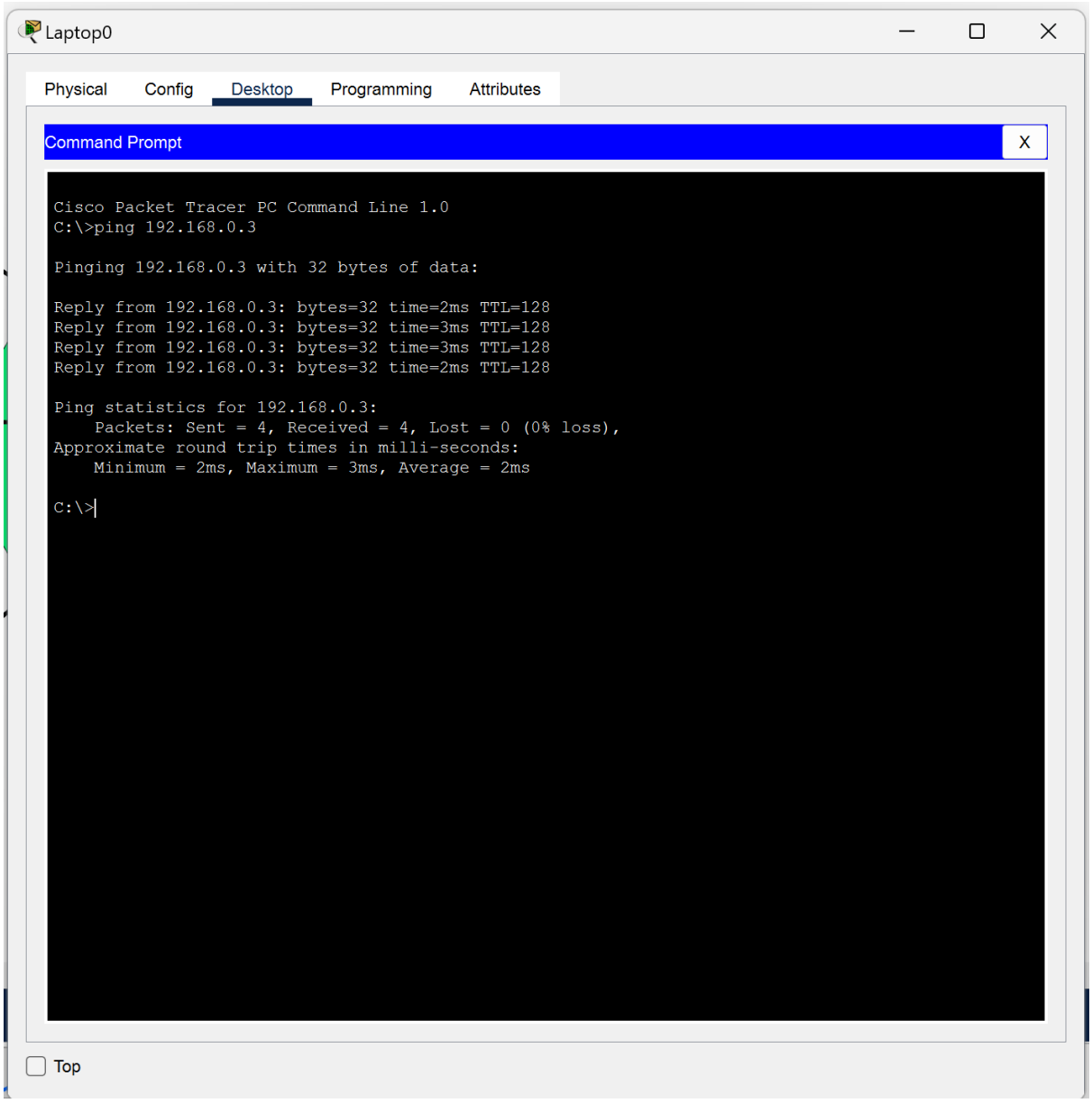
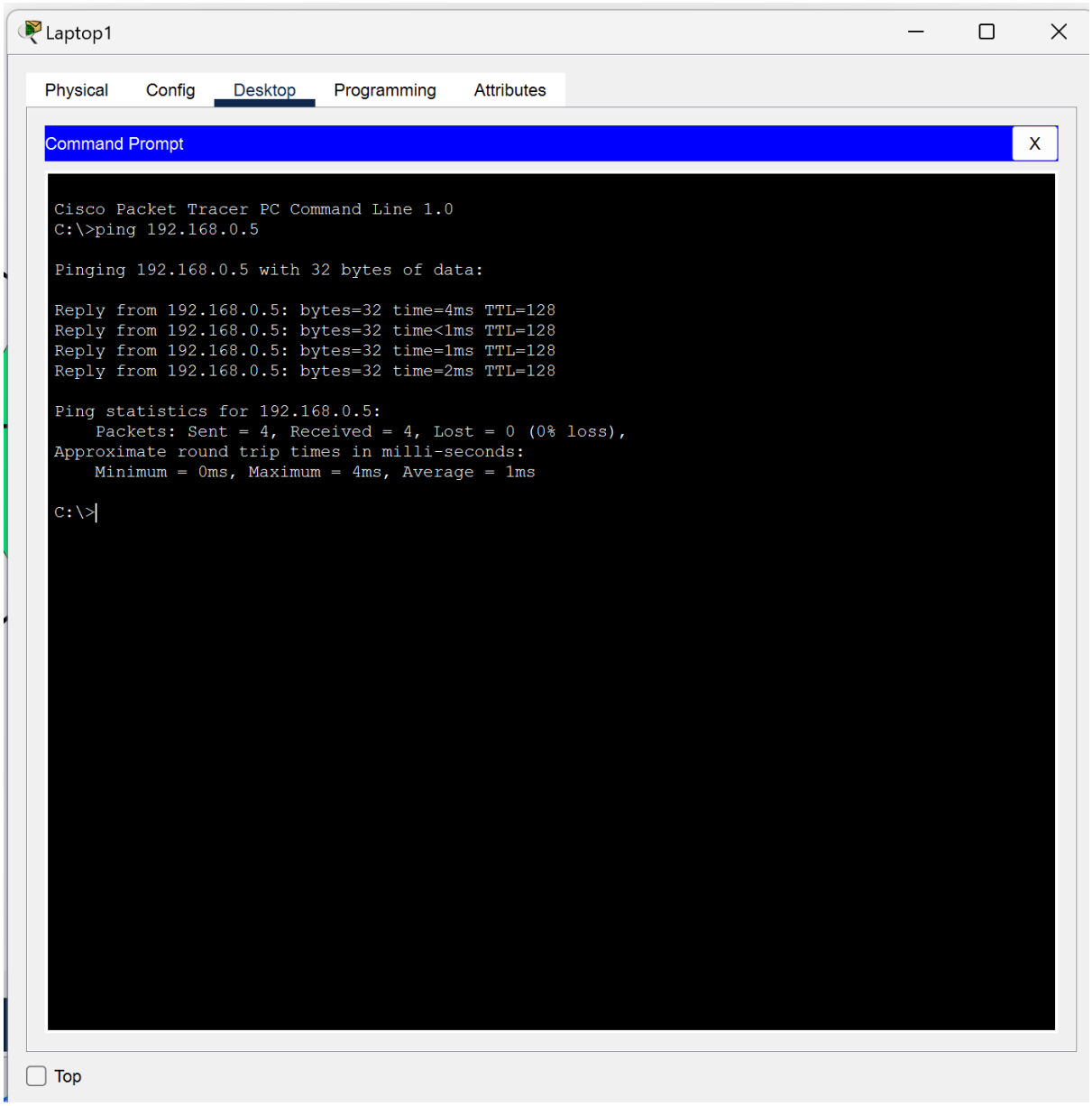


- Pinging 192.168.0.4 to 192.168.0.5



- Pinging 192.168.0.6 to 192.168.0.7

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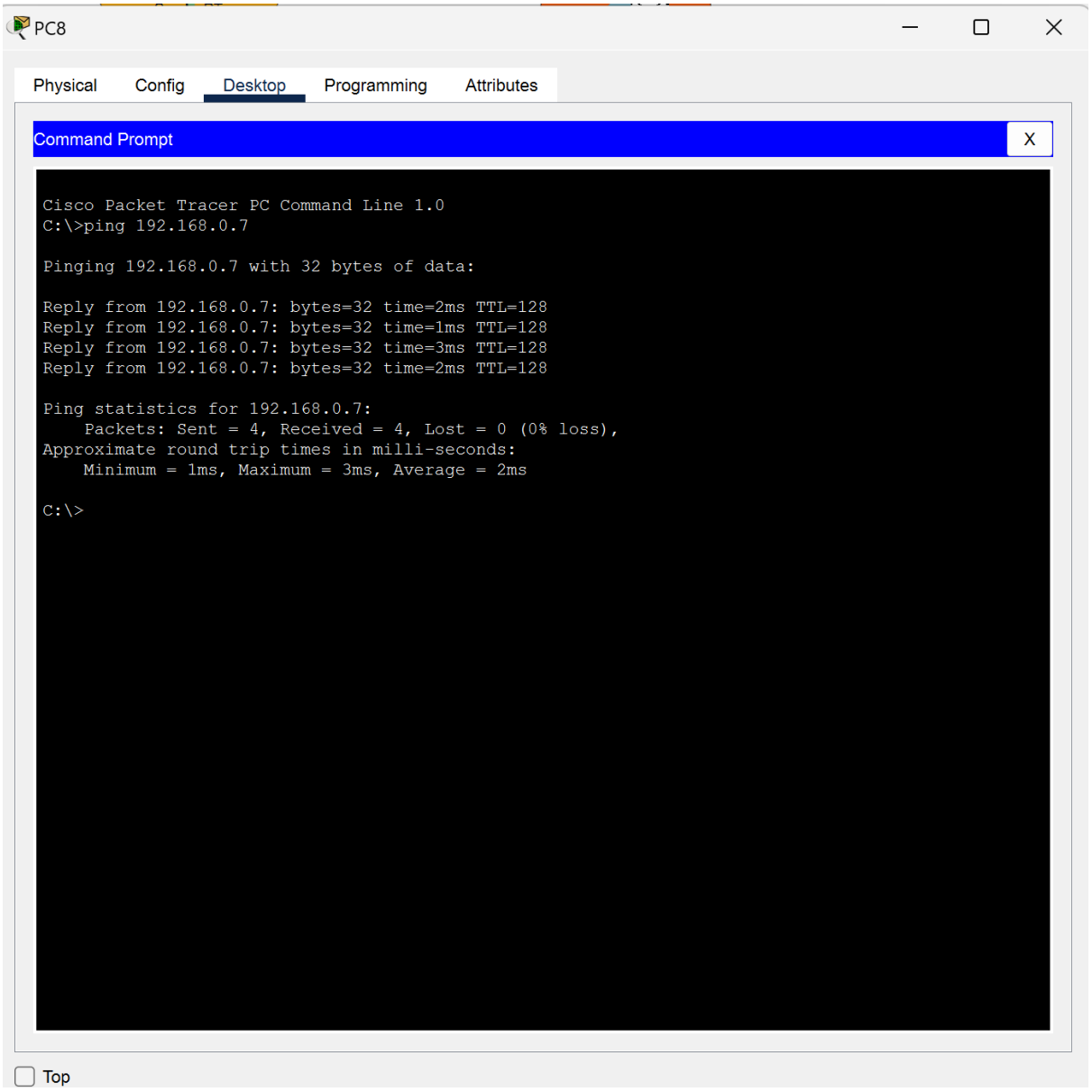

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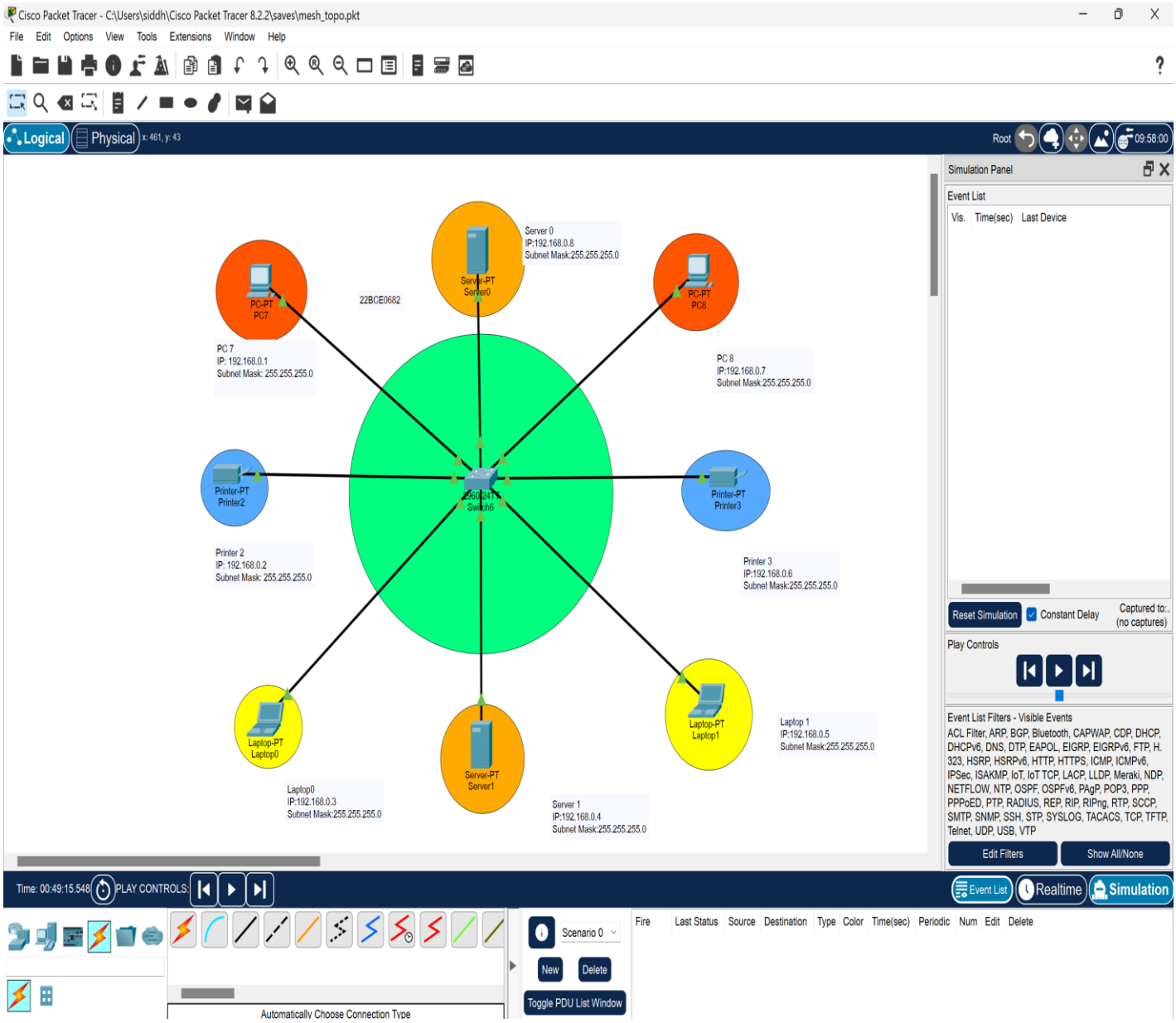
c. What steps would you take if a device does not respond to a ping request?

- Ensure all cables are correctly connected.
- Verify that all devices have the correct IP addresses and subnet masks.
- Check that interfaces on Switch and Hub 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)

- Switch



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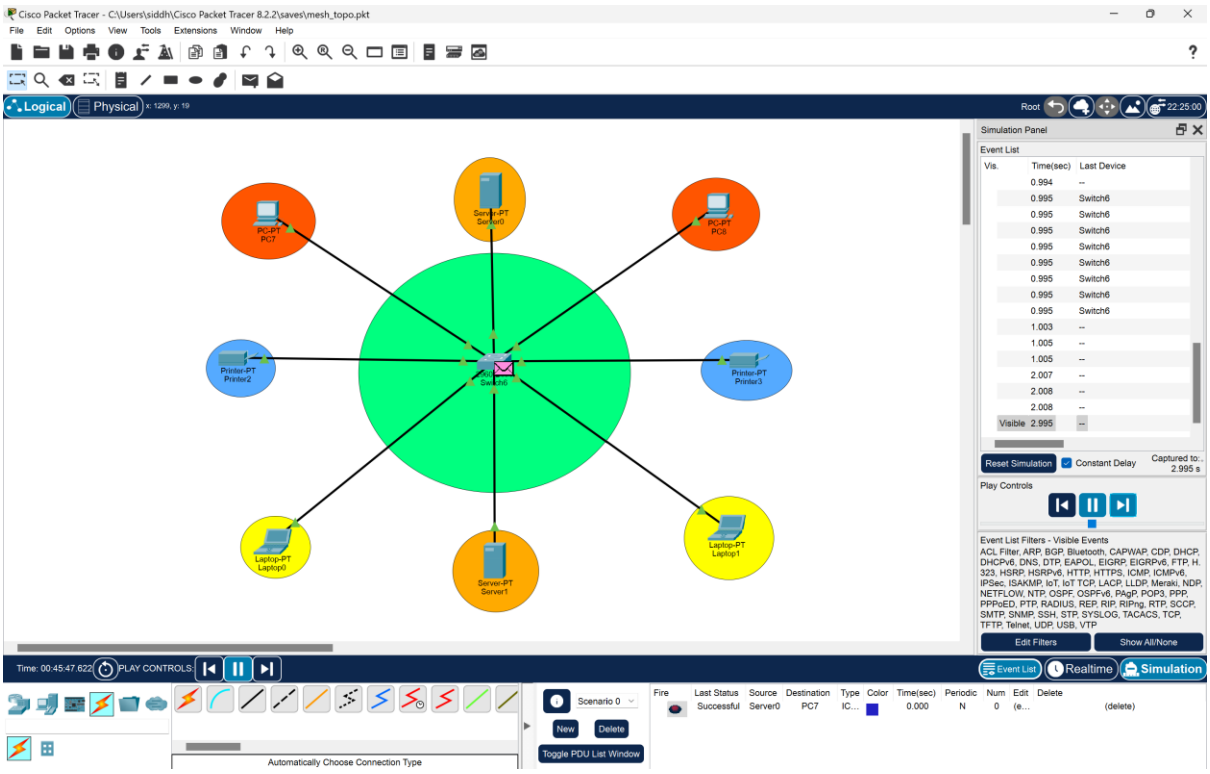
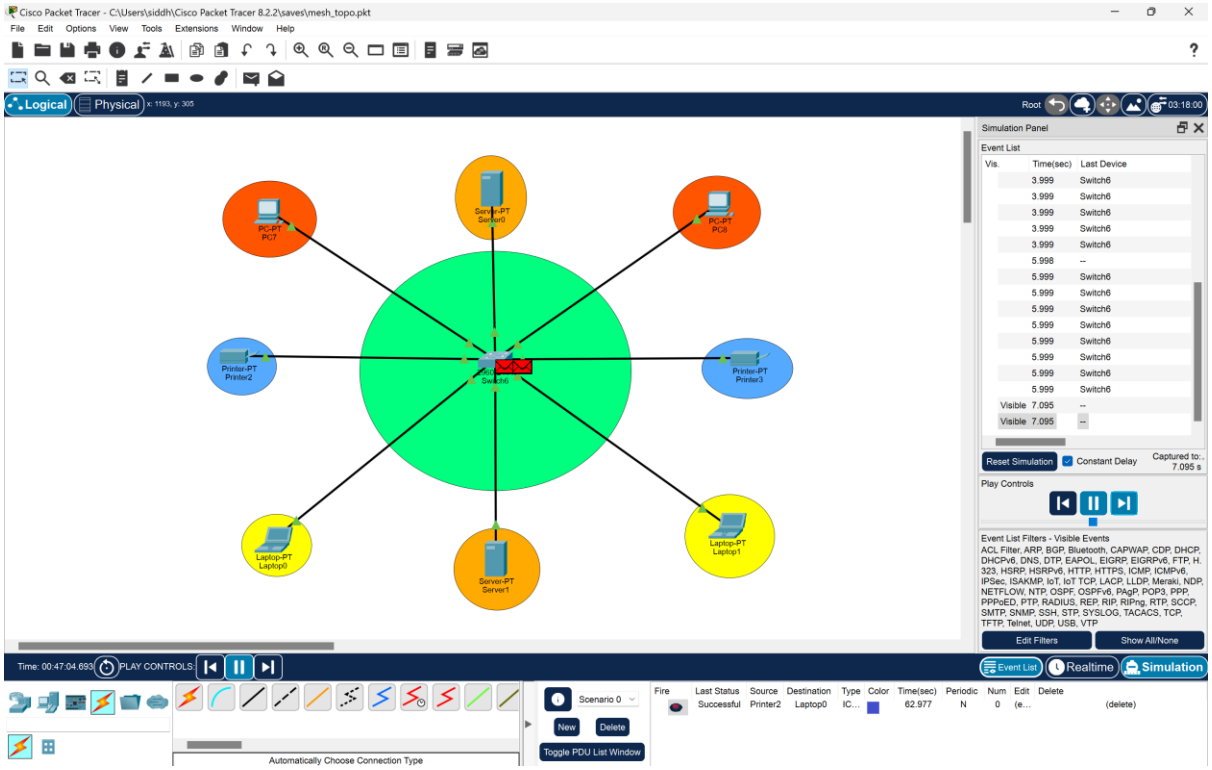
1. Sending Message from Server 0 to PC 7



2. Sending Message from Printer 2 to Laptop 0



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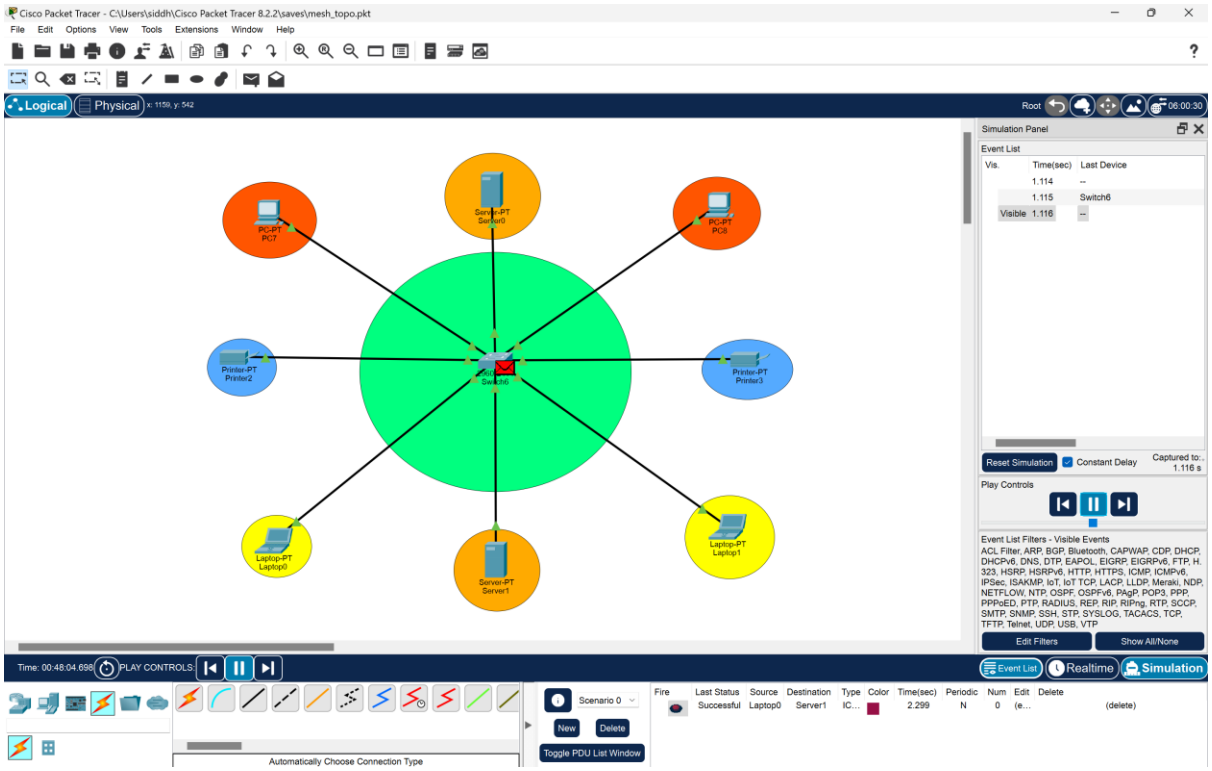
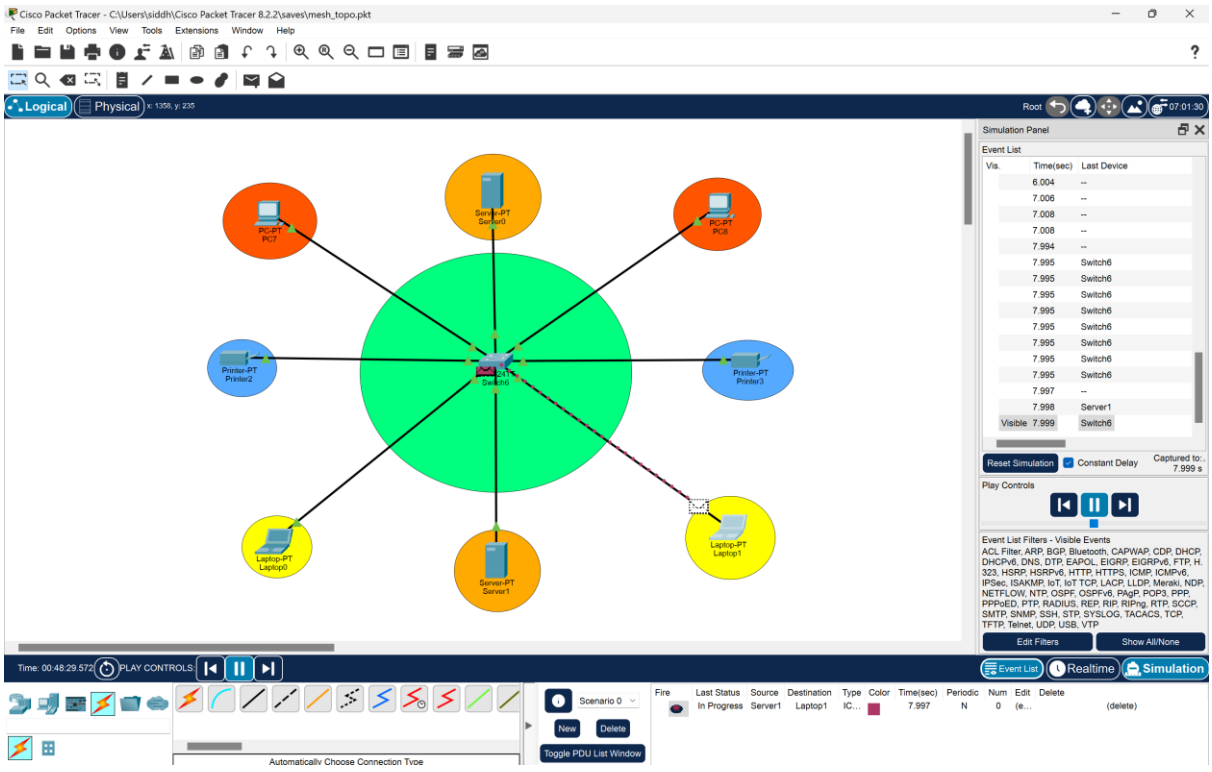
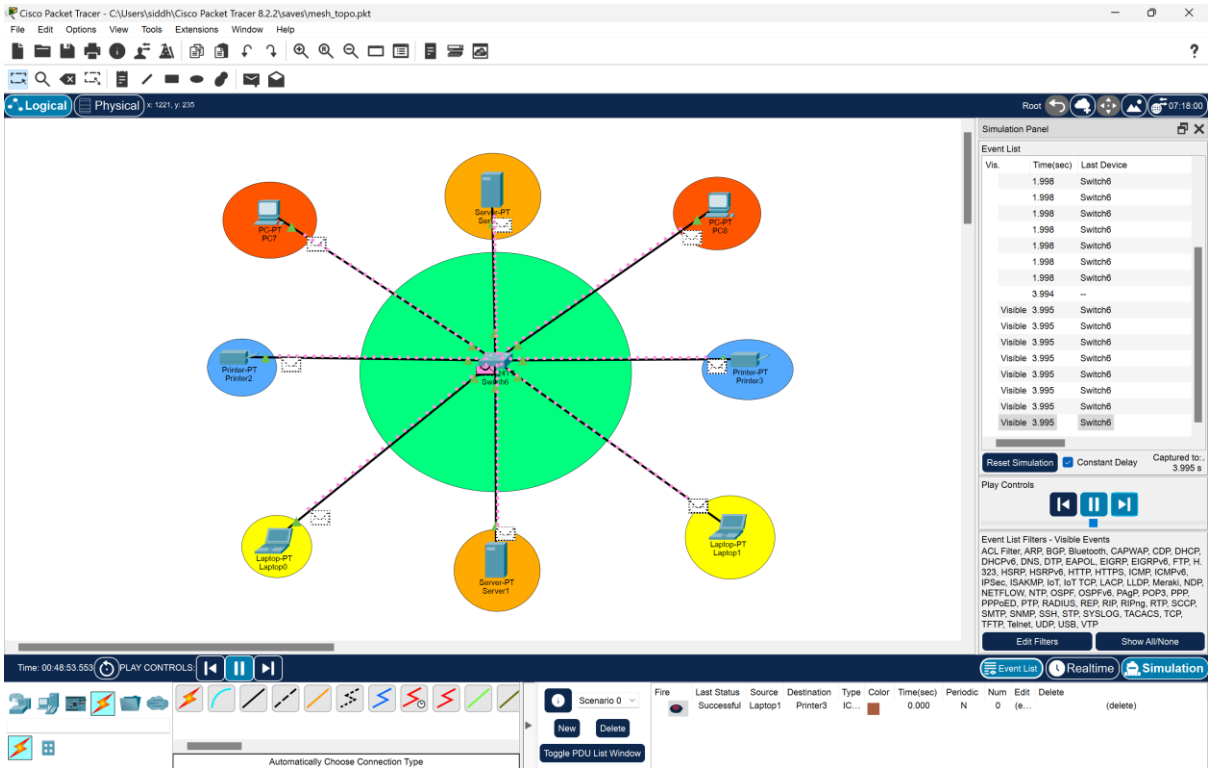
3. Sending Message from Laptop 0 to Server 1



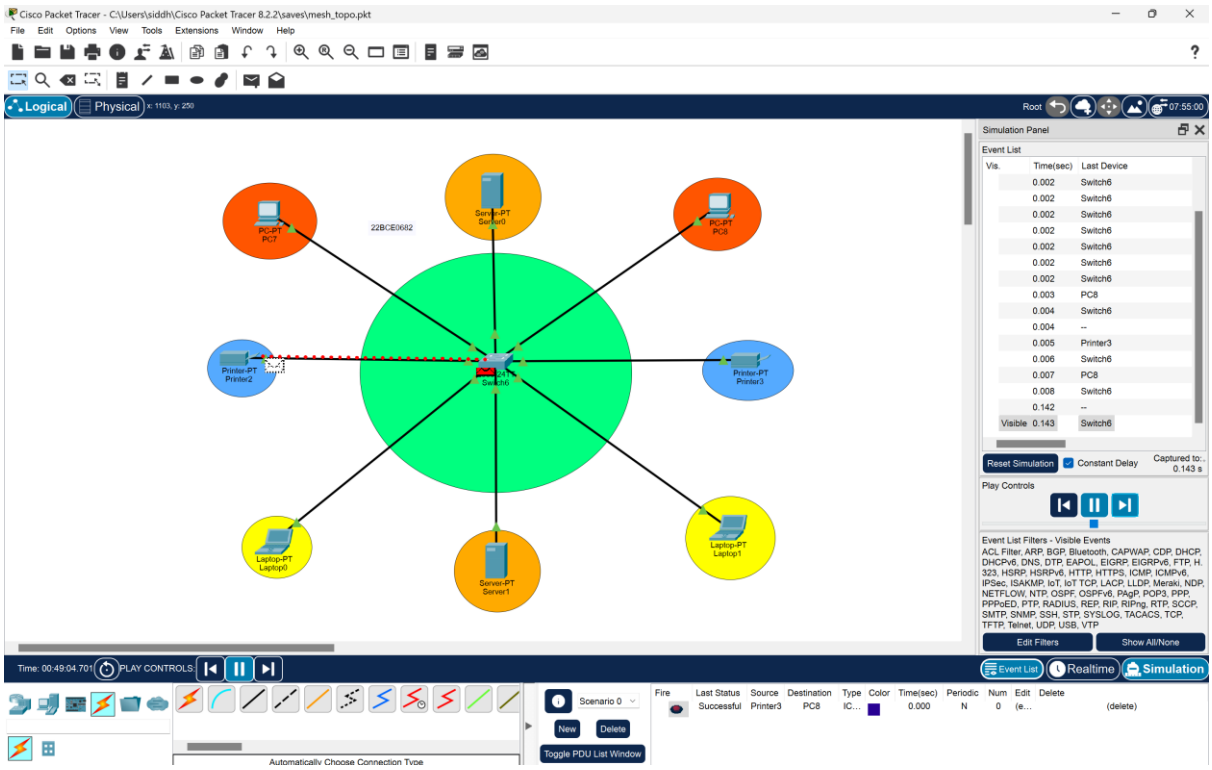
4. Sending Message from Server 1 to Laptop 1



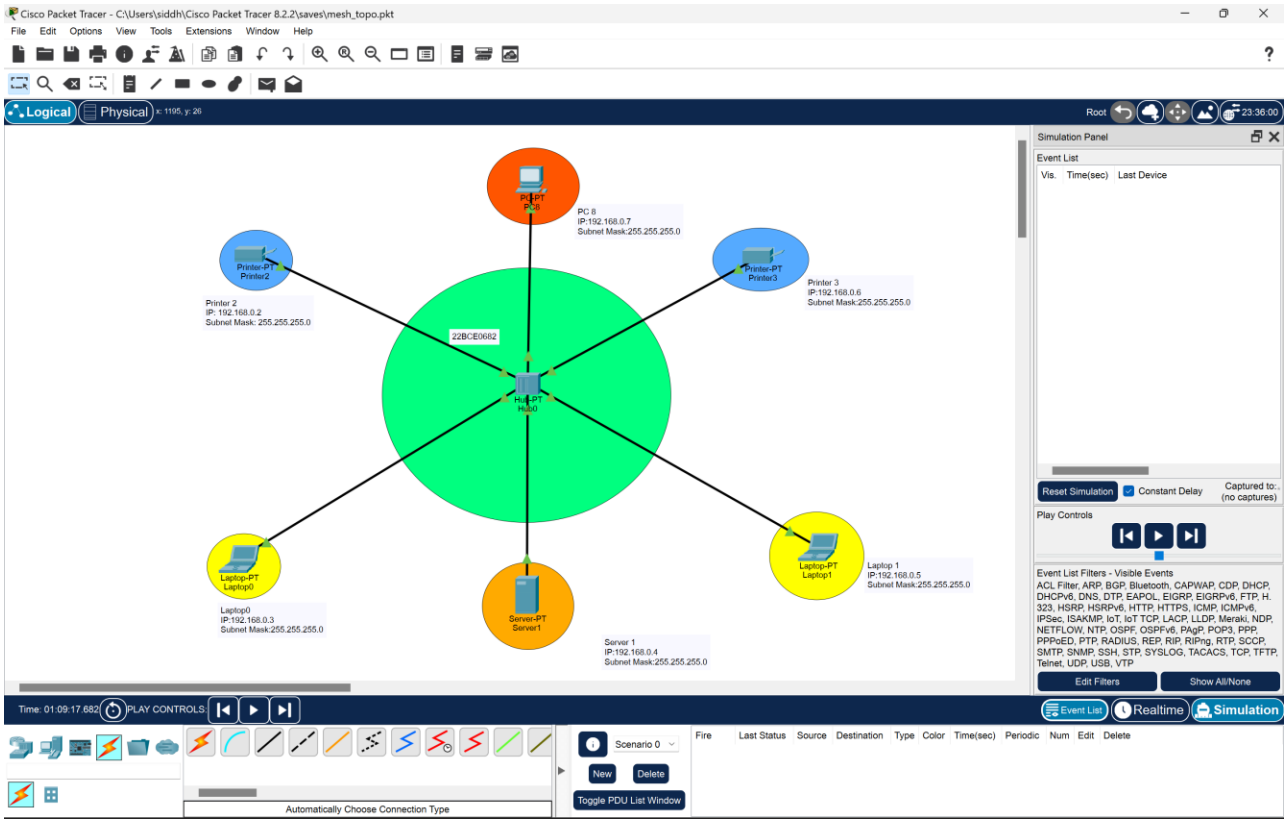
5. Sending Message from Laptop 1 to Printer 3



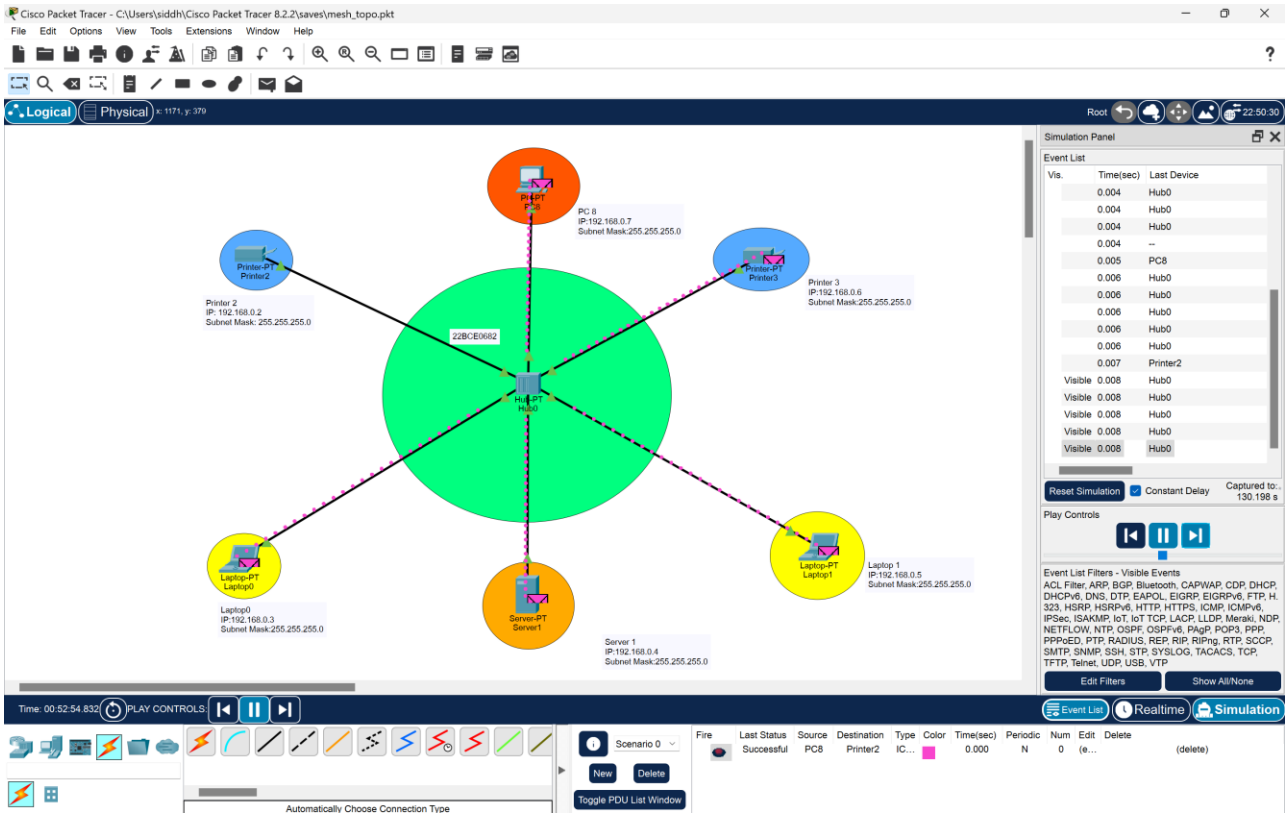
6. Sending Message from Printer 3 to PC 8



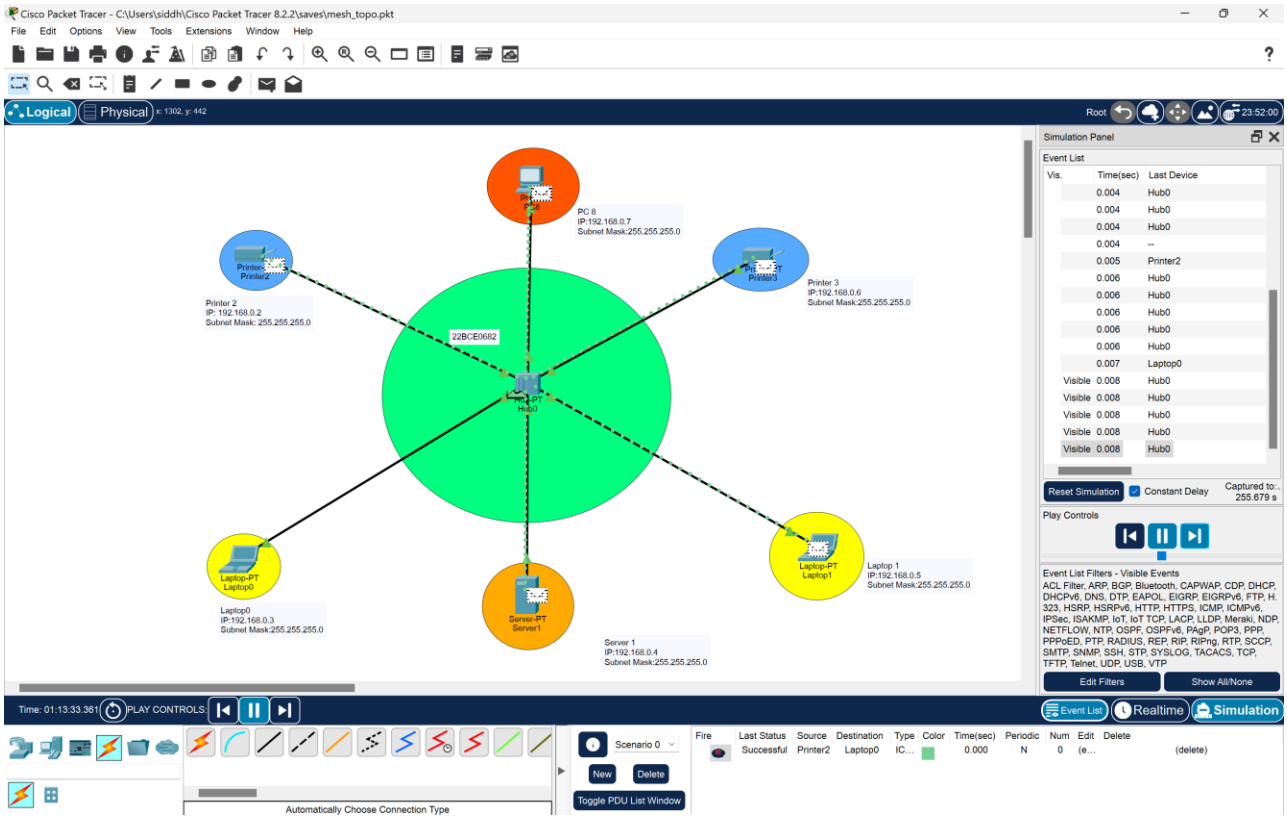
- Hub



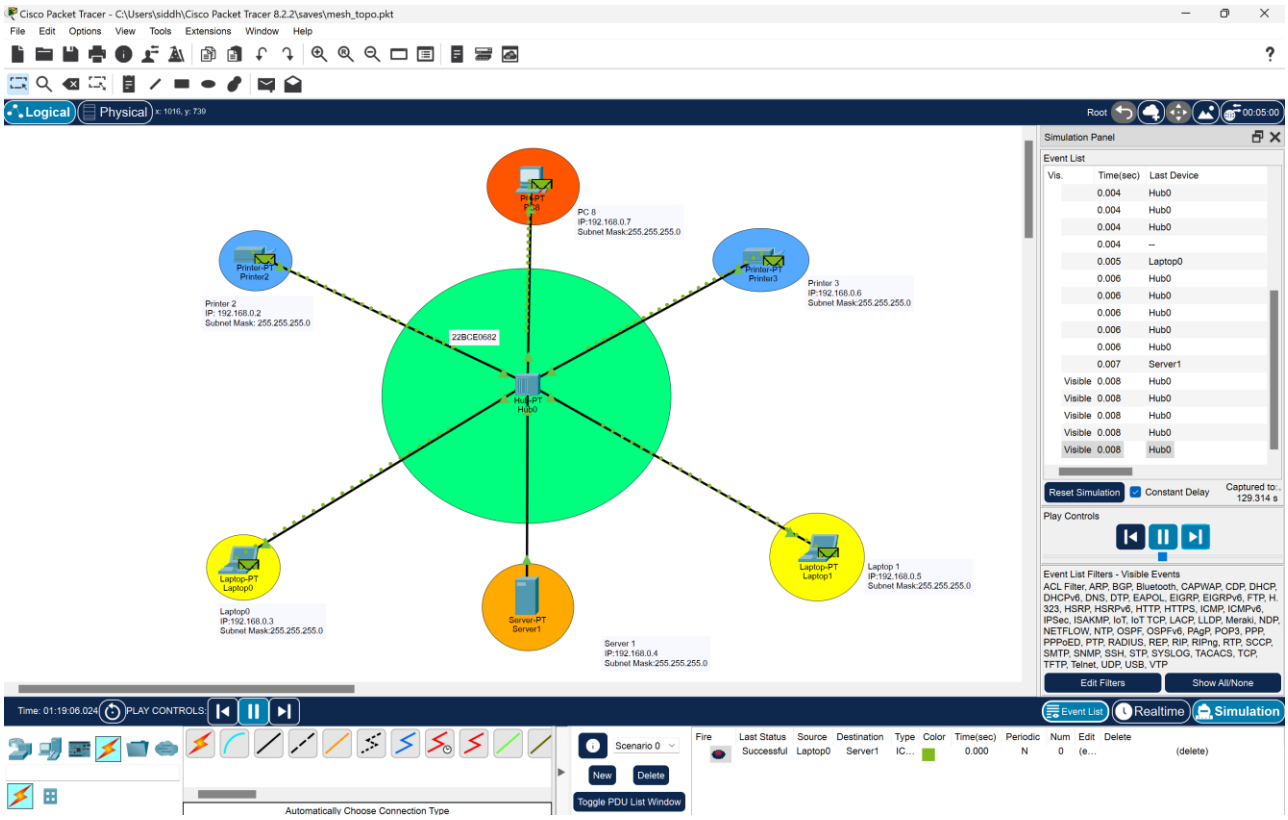
7. Sending Message from PC 8 to Printer 2



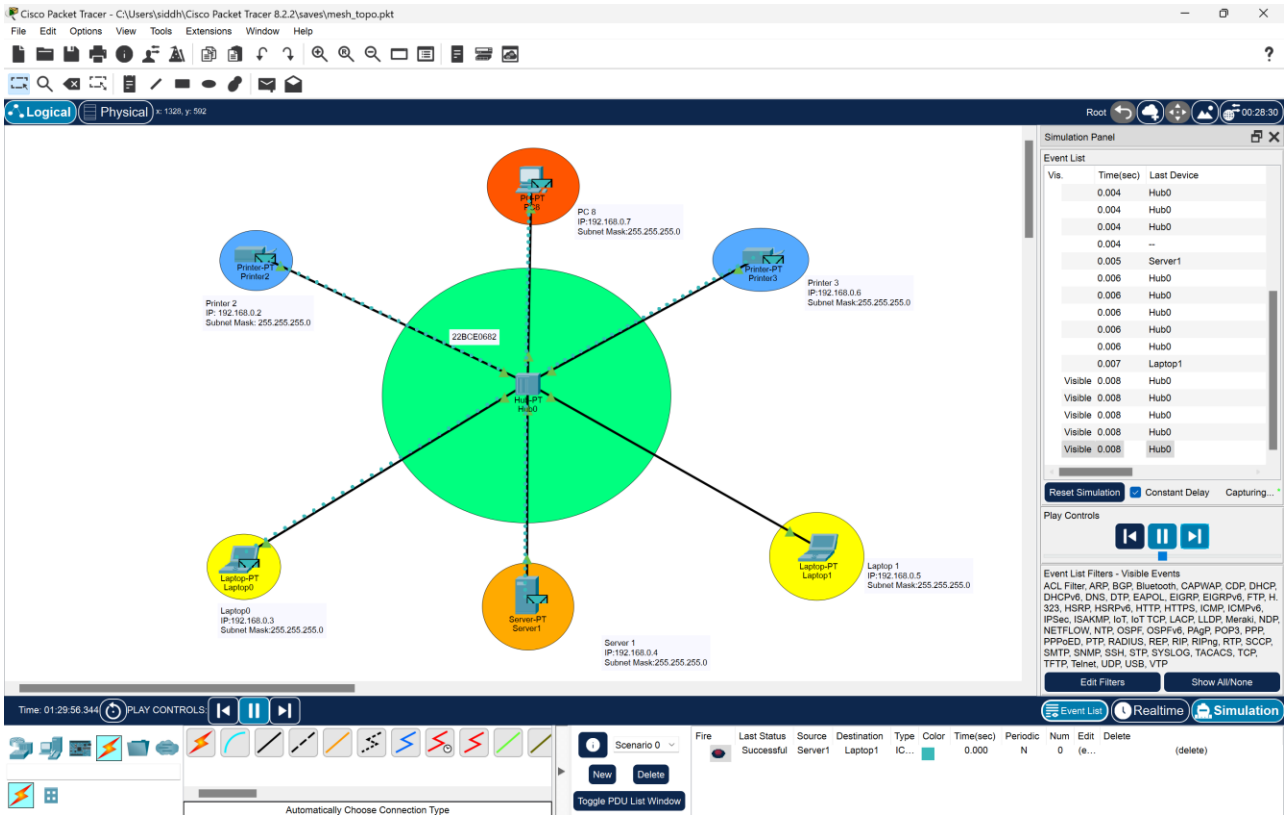
8. Sending Message from Printer 2 to Laptop 0



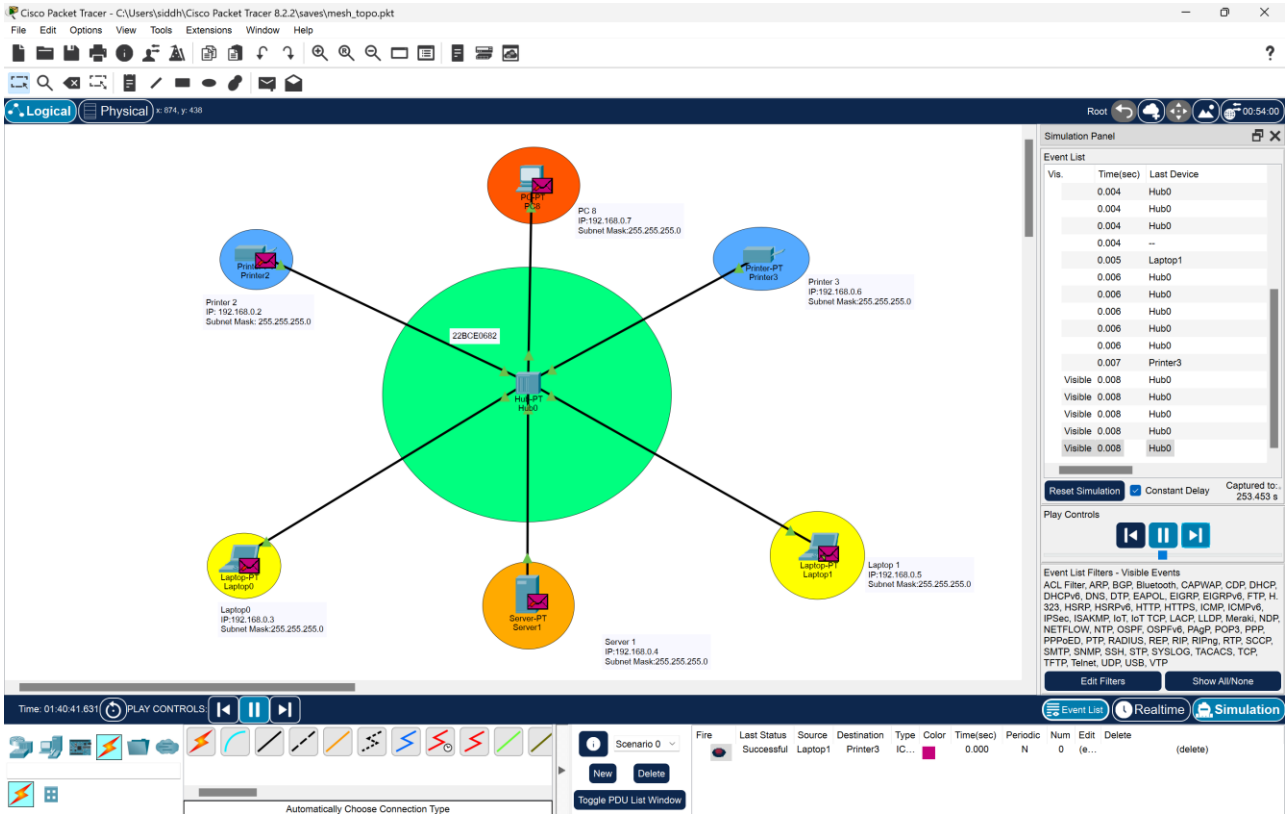
9. Sending Message from Laptop 0 to Server 1



10. Sending Message from Server 1 to Laptop 1



11. Sending Message from Laptop 1 to Printer 3



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12. Sending Message from Printer 3 to PC 8