Computer Networks – LAB 3: Router Configuration (Creating Passwords, Configuring Interfaces)

Objective:

- To configure a router and PCs using Cisco Packet Tracer.
- To establish network connectivity between two PCs through a router.
- To assign IP addresses and configure router interfaces for communication.
- To simulate and verify data transfer between PCs using Packet Tracer.

Requirements:

- Cisco Packet Tracer software.
- A GitHub account and a repository for lab assignments.
- Access to Google Classroom for submission

Procedure:

Step 1: Configuring Router1

1. Select the router and open CLI.

2. Press ENTER to start configuring Router1.

3. Activate privileged mode:

- Type enable

4. Access the configuration menu:

- Type config t (configure terminal)

5. Configure interfaces of Router1:

- FastEthernet0/0:
    - Type interface FastEthernet0/0
    - Configure with the IP address 192.168.10.1 and Subnet mask 255.255.255.0
- FastEthernet0/1:
    - Type interface FastEthernet0/1
    - Configure with the IP address 192.168.20.1 and Subnet mask 255.255.255.0

6. Finish configuration:

- Type no shutdown to activate the interfaces

Step 2: Configuring PCs

1. Assign IP addresses to each PC:

PC0:

Go to the desktop, select IP Configuration, and assign the following:

- IP address: 192.168.10.2
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.10.1

PC1:

Go to the desktop, select IP Configuration, and assign the following:

- IP address: 192.168.20.2
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.20.1

Step 3: Connecting PCs with Router

1. Connect the devices using copper straight-through cables:

- Connect FastEthernet0 port of PC0 to FastEthernet0/0 port of Router1
- Connect FastEthernet0 port of PC1 to FastEthernet0/1 port of Router1

Simulation of Designed Network Topology

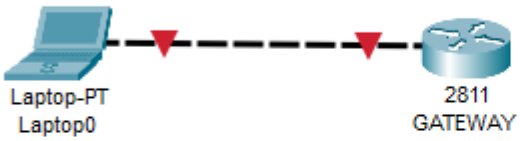
Sending a PDU from PC0 to PC1

1. Open the simulation mode in Packet Tracer.

2. Send a PDU from PC0 to PC1:

○ Observe the packet traveling from PC0 to the router and then to PC1.

Results:



```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname GATEWAY
GATEWAY(config)#enable secret cisco
GATEWAY(config)#service password-encryption
GATEWAY(config)#line console 0
GATEWAY(config-line)#password cisco
GATEWAY(config-line)#login
GATEWAY(config-line)#logging synchronous
GATEWAY(config-line)#exec-timeout 2 45
GATEWAY(config-line)#history size 10
GATEWAY(config-line)#
```

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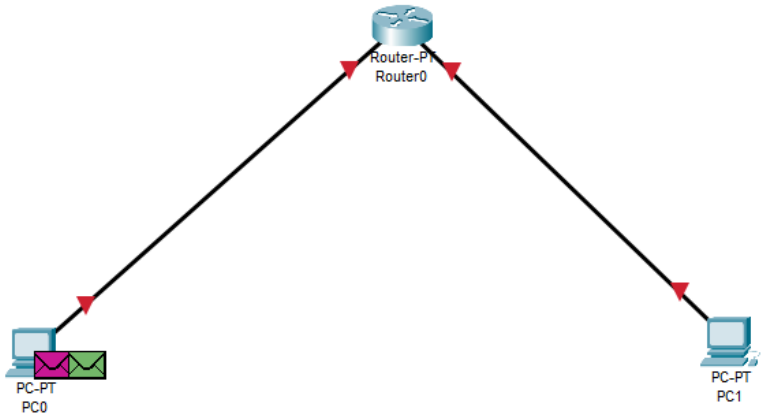

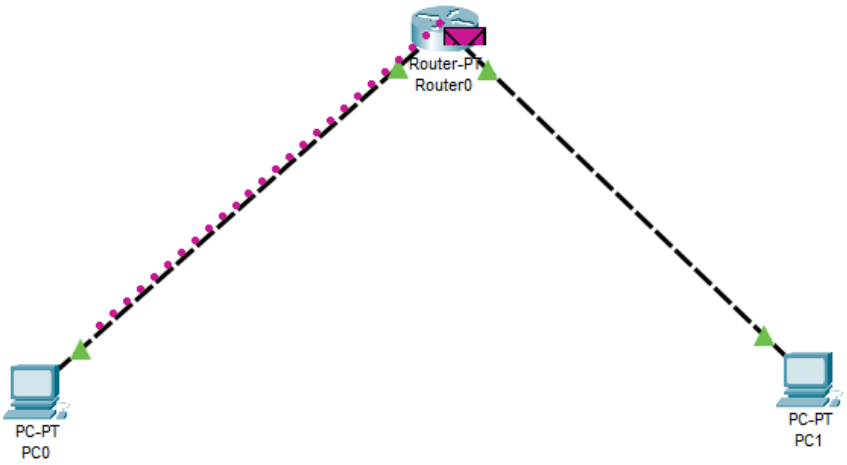
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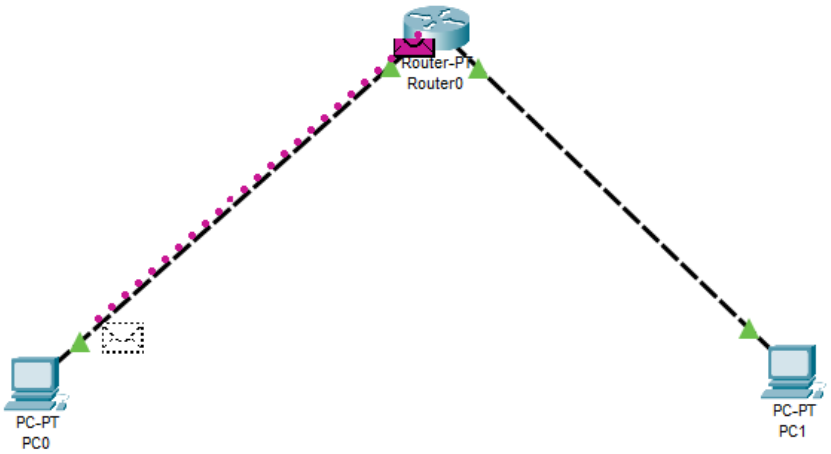
Router0
PC-PT
PC0
PC-PT
PC1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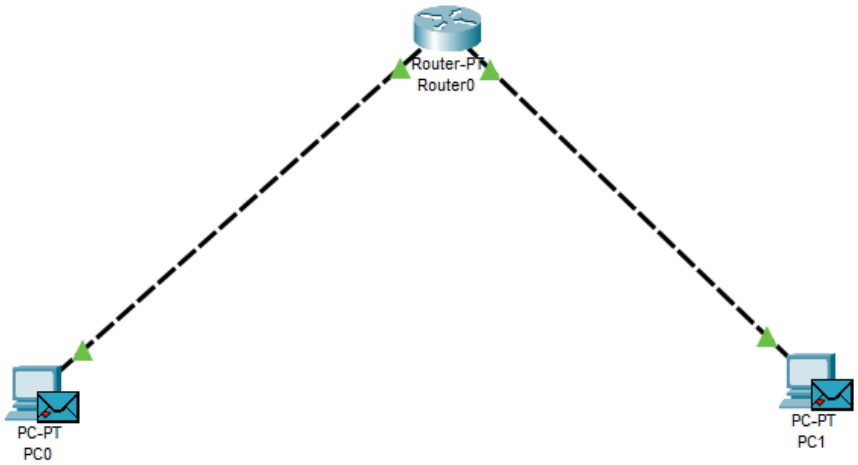

Summary of Lab Learnings:

In this lab, we successfully configured a basic network using Cisco Packet Tracer, involving a router and two PCs. The key learnings include:

1. **Router Configuration:** We learned how to access and configure router interfaces using the CLI, including assigning IP addresses and activating the interfaces.
2. **PC Configuration:** We practiced setting up the IP configuration on PCs, including assigning IP addresses, subnet masks, and default gateways, ensuring proper communication within the network.
3. **Cable Selection and Connectivity:** We explored the use of copper straight-through cables to connect PCs to the router, reinforcing the importance of selecting the correct cable type for different connections.
4. **Network Topology Simulation:** We tested network connectivity by sending a PDU from one PC to another, demonstrating the router's ability to route traffic between different network segments.