CN Lab Experiment 4

Objective:

In this experiment, you will configure IP addressing using Variable Length Subnet Masking (VLSM) for a network. You will create subnets of different sizes to optimize IP address utilization, and configure routers and PCs to use these subnets. This will demonstrate efficient IP address allocation using VLSM.

Requirements:

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

Procedure:

Step 1:

1. Identify the major network address:
    - Example: 192.168.0.0/24
2. Determine the number of subnets and their sizes:
    - Subnet 1 (e.g., 50 hosts): Network Address: 192.168.0.0/26 (Subnet Mask: 255.255.255.192)
    - Subnet 2 (e.g., 30 hosts): Network Address: 192.168.0.64/27 (Subnet Mask: 255.255.255.224)
    - Subnet 3 (e.g., 10 hosts): Network Address: 192.168.0.96/28 (Subnet Mask: 255.255.255.240)
    - Subnet 4 (e.g., 5 hosts): Network Address: 192.168.0.112/29 (Subnet Mask: 255.255.255.248)

Step 2: Configuring Router

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. 0.1 and Subnet mask 255.255.192.0
- 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 3: Configuring PCs

1.Assign IP addresses to each PC:

- PC0:
  - Go to the desktop, select IP Configuration, and assign the following:
    - IP address: 192.168.0.2
    - Subnet Mask: 255.255.255.192
    - Default Gateway: 192.168.0.1
- PC1:
  - Go to the desktop, select IP Configuration, and assign the following:
    - IP address: 192.168.0.66
    - Subnet Mask: 255.255.255.224
    - Default Gateway: 192.168.0.65

Step 4: 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

Configuration Tables

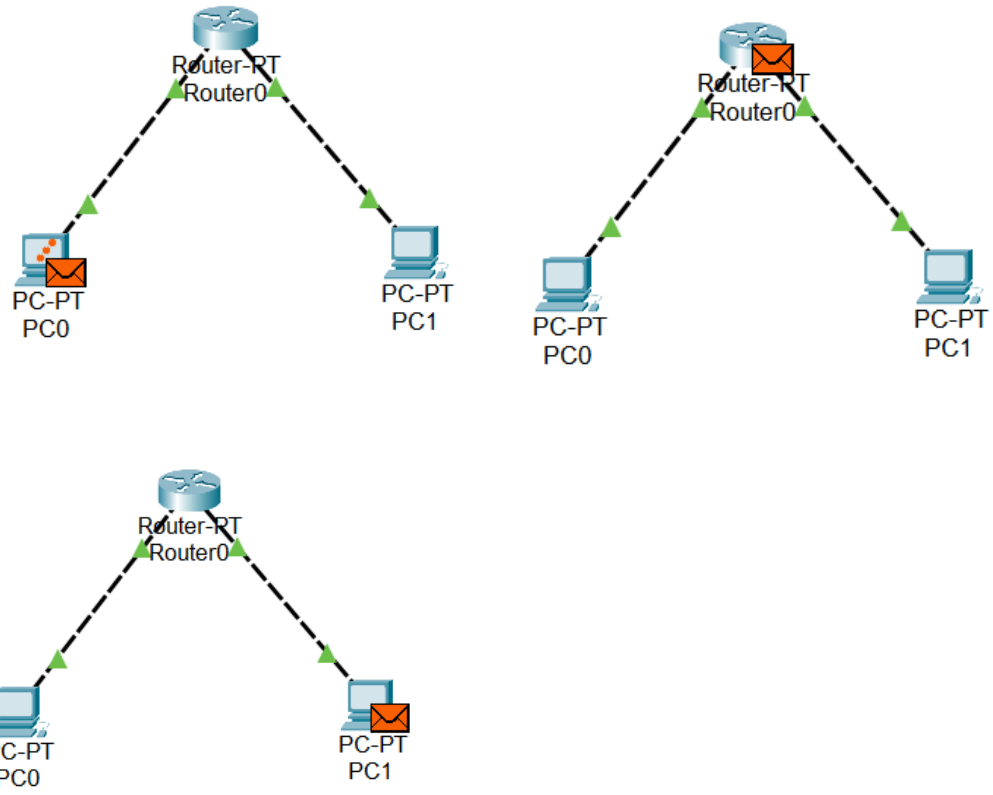
Router Configuration Table:

Device Name	IP Address FastEthernet0/0	Subnet Mask	IP Address FastEthernet0/1	Subnet Mask
Router1	192.168.0.1	255.255.255.192	192.168.0.65	255.255.255.224

PC Configuration Table:

Device Name	IP Address	Subnet Mask	Gateway
PC 0	192.168.0.2	255.255.255.192	192.168.0.1
PC 1	192.168.0.66	255.255.255.224	192.168.0.65

Results:



- We observe the packet traveling from PC0 to the router and then to PC1.
- The acknowledgment packet travels back from PC1 to PC0, confirming successful communication.