Department of Computer Science and Engineering

Islamic University of Technology (IUT)

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Laboratory Report

CSE 4412: Data Communication and Networking Lab

Name	**: A Z Hasnain Kabir**
Student ID	**: 200042102**
Section	**: SWE**
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Title: Create a simple basic LAN (Local Area Network)

Objective:

1. Create a simple LAN by connecting multiple end devices.
2. Significance of IP address
3. Difference between Switch and Hub.
4. Configure the given topology (see .pkt file in the attachment) to create LAN.

Devices/ software Used: Cisco Packet Tracer

Working Procedure:

1. At first, open the lab file with cisco packet tracer.
2. Then, assign IP addresses for each computer. For simplicity, we are setting IP addresses for room 102 with the prefix 192.168.10, room 103 with prefix 192.168.11, room 101 with prefix 192.168.12.
3. Since, we have different values for last two octaves throughout each computer, we have to change the subnet mask to 255.255.0.0. In this case, the last two octaves will have different values after masking.
4. Then we use straight through cables to connect a PC with Hub or a PC with switch.
5. We use crossover cable for Hub and switch.
6. To send a message, we use the PC with the IP address 192.168.10.1 and go to command prompt and write ping 192.168.12.1. Afterwards, a message will be sent.

Diagram of the experiment:

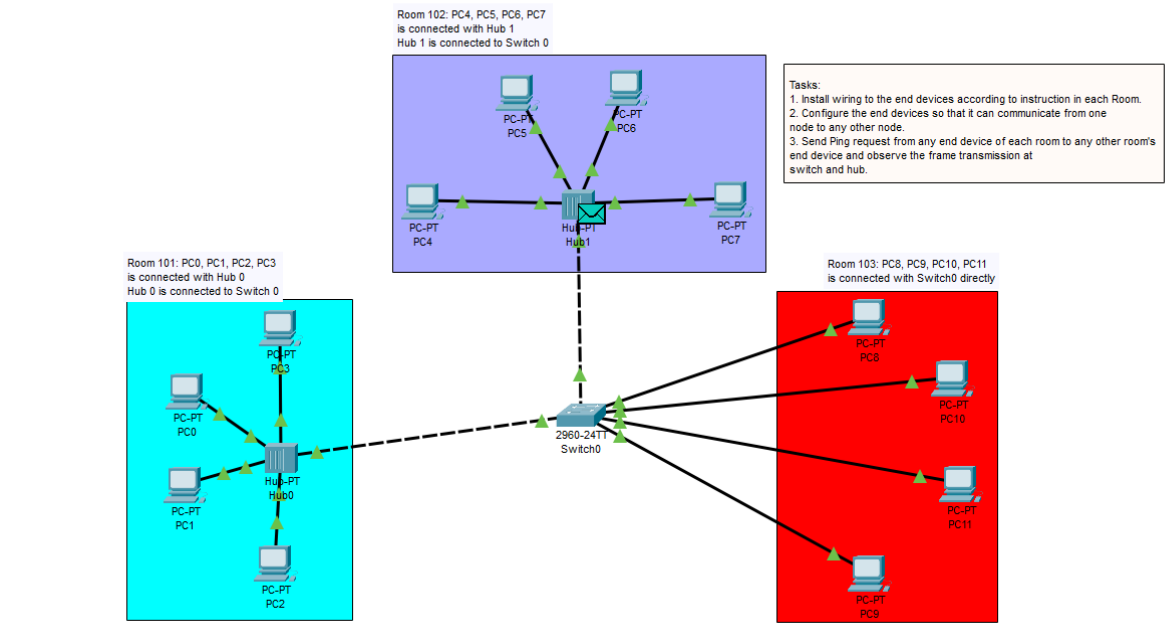

Fig: A message getting sent through Hub from PC5

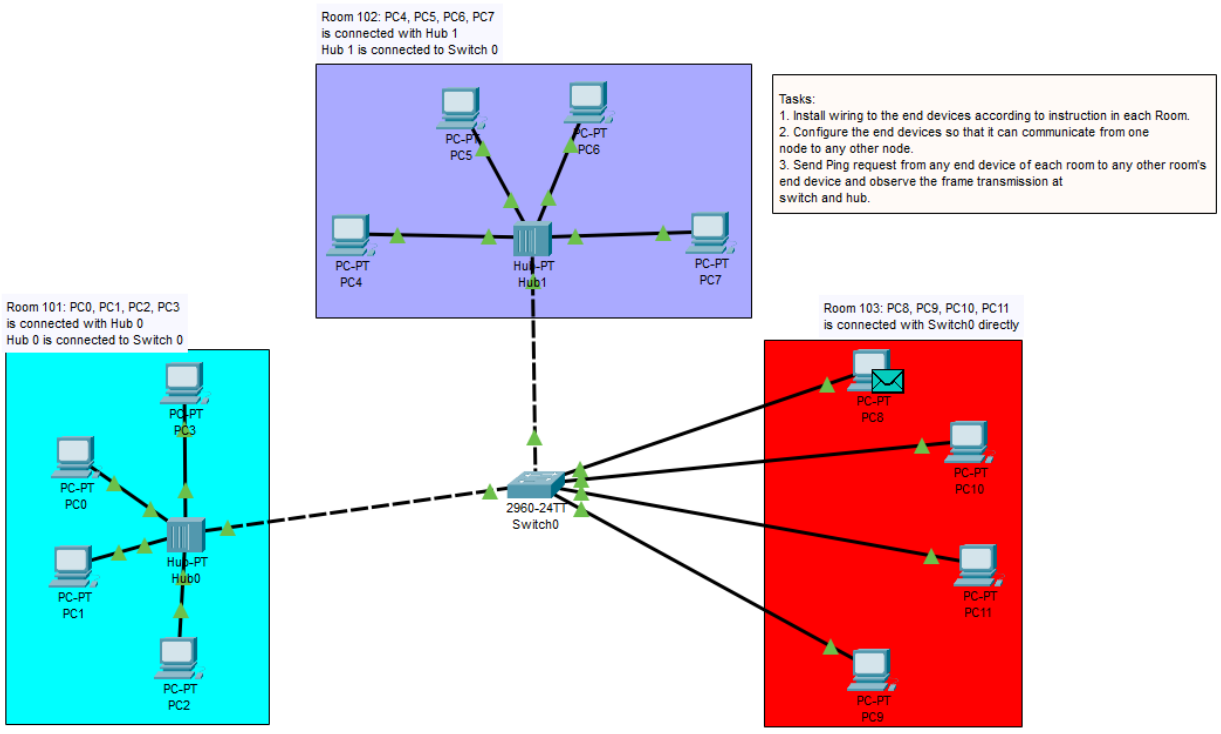

Fig: Message getting received by PC8

Observation:

- **Significance of IP address configuration to different end devices:**
  IP address can differentiate between end devices and helps to identify exactly that end device where a message is getting sent. Each end device must have different IP addresses. In case of sending message, we have to write the IP address of the end device we want to send the message to.

- **Difference between Switch and Hub**
  Hubs and switches are both network devices which transmits data over a network. Hub is responsible for broadcasting data over a network. Each end device receives the message sent through a Hub. Only the end device that is supposed to read the message accepts it and all the other devices reject the message. On the other hand, a switch sends data to that specific end device to which the message was supposed to reach. It does not broadcast a message similar to a Hub.

Challenges:

It is important to have a look at the subnet mask in the entire network. For instance, if each IP address differ by last two octaves, it is important to change the subnet mask to 255.255.0.0 from its default setting 255.255.255.0. This ensures that if the last two octaves of each IP address are unique, masking gives correct result.