Setting Up Wired and Wireless Routers

Experiment #5

I. Objective:

This laboratory session aims to provide hands-on experience in setting up both wired and wireless routers. By the end of this session, students should be able to configure and establish functional wired and wireless networks.

II. Materials:

Wired router

Wireless router

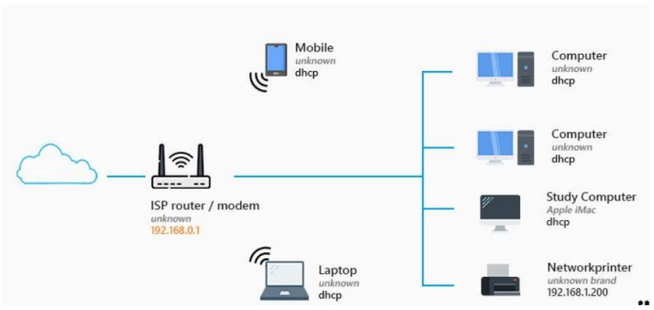
Computers or devices with Ethernet and Wi-Fi capabilities

Ethernet cables

LAN Speed Test software (for wired router setup)

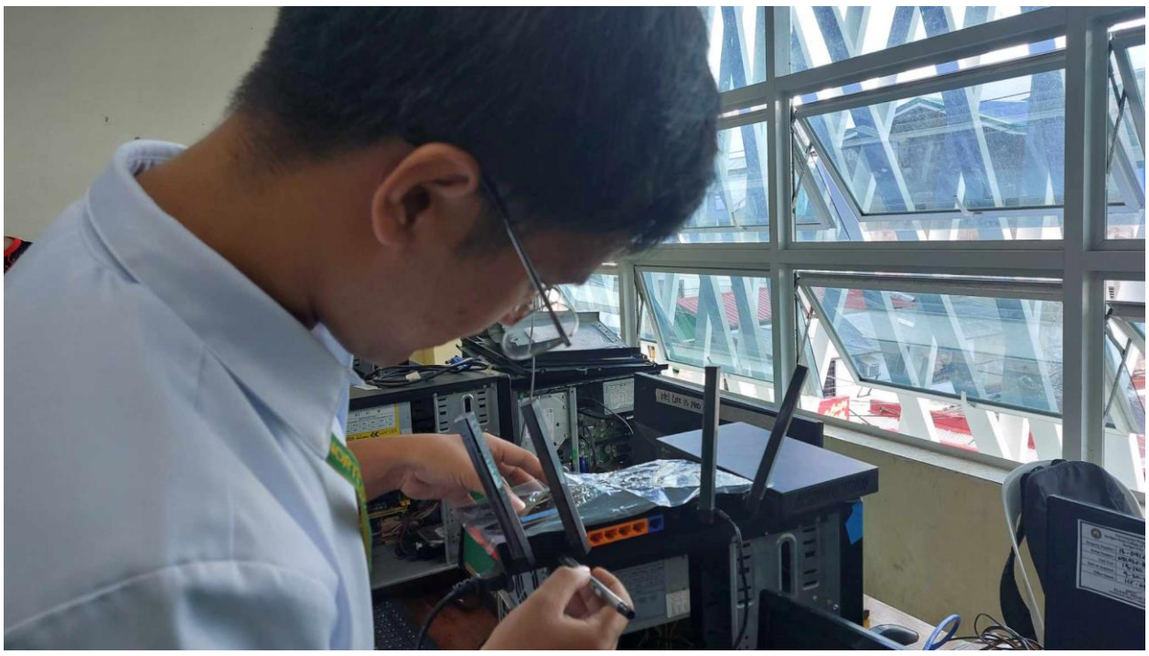
Smartphone or tablet with Wi-Fi analyzer app (for wireless router setup)

III. Network Diagram:




IV. Preparation:

Ensure that all routers are reset to factory defaults before the laboratory session.



Prepare a laboratory environment with sufficient space for students to work with routers and computers.

V. Procedure:

Setting Up a Wired Router:

1. Introduction to the Router: Explain the basic functions and components of a wired router, including WAN and LAN ports.
2. Physical Setup:
   - Connect the WAN port of the router to an internet source (e.g., a modem) using an Ethernet cable.
   - Connect one of the LAN ports of the router to a computer using another Ethernet cable.
   - Power on the router and the computer.
3. Accessing the Router Interface:

- Open a web browser on the connected computer.
- Enter the default IP address of the router (e.g., 192.168.1.1) in the address bar and press Enter.
- Log in to the router interface using the default username and password (refer to the router manual).

4. Configuring Basic Settings:

- Set up the internet connection type (e.g., DHCP, PPPoE) according to the provided internet connection.
- Configure wireless network settings if the router has wireless capabilities (optional).

5. Testing Network Speed:

- Install LAN Speed Test software on the connected computer.
- Use the software to measure the speed of data transfer between the computer and another device connected to the router's LAN port.
- Analyze the test results and ensure that the network speed meets expectations.

Setting Up a Wireless Router:

1. Introduction to the Router: Explain the basic functions and components of a wireless router, including SSID and security settings.
2. Physical Setup:

- Connect the WAN port of the router to an internet source (e.g., a modem) using an Ethernet cable.
- Power on the router and wait for it to boot up.

3. Accessing the Router Interface:

- Open a web browser on a computer or smartphone connected to the router's Wi-Fi network.
- Enter the default IP address of the router (e.g., 192.168.0.1) in the address bar and press Enter.
- Log in to the router interface using the default username and password (refer to the router manual).

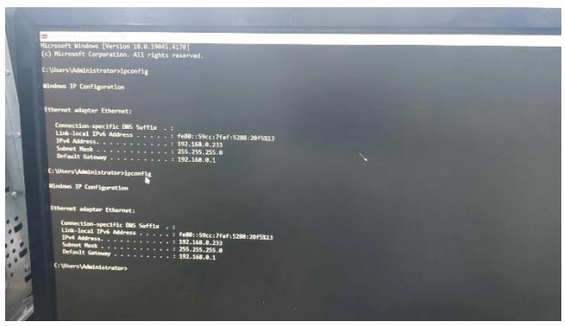
4. Configuring Basic Settings:

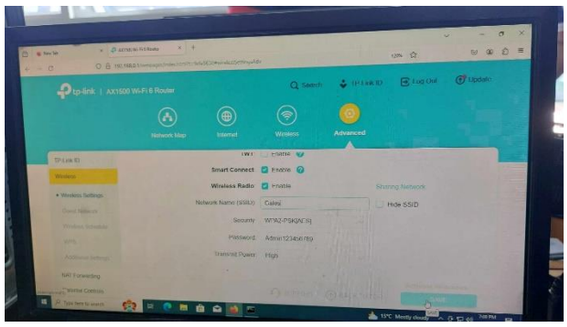
- Set up the internet connection type (e.g., DHCP, PPPoE) according to the provided internet connection.
- Configure wireless network settings, including SSID, security type (WPA2-PSK recommended), and password.

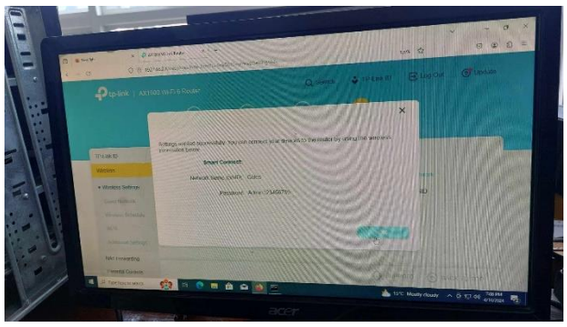
5. Signal Strength and Range Testing:

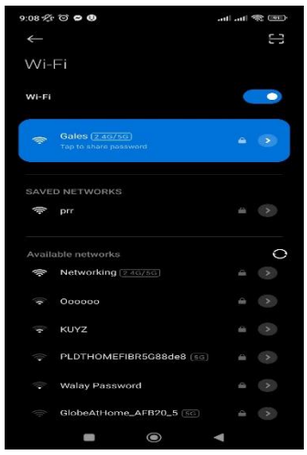
- Use a smartphone or tablet with a Wi-Fi analyzer app to measure the signal strength and range of the wireless network.
- Move around the laboratory space while observing changes in signal strength.
- Record the signal strength at various locations to determine the effective range of the wireless network.

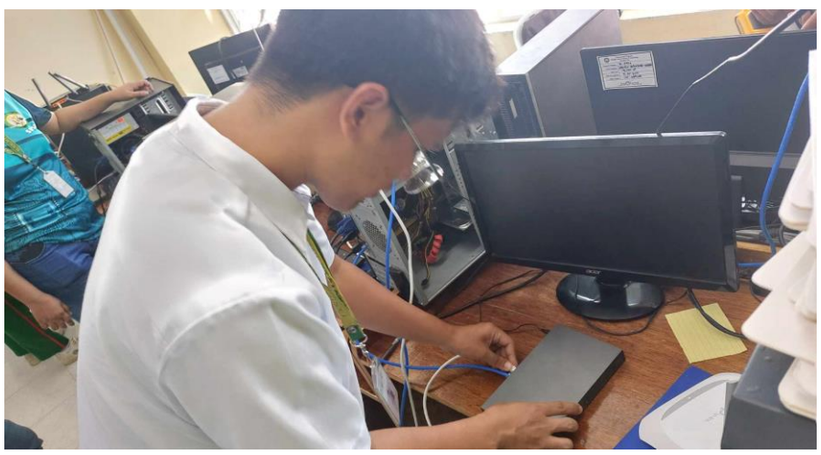
Documentation:

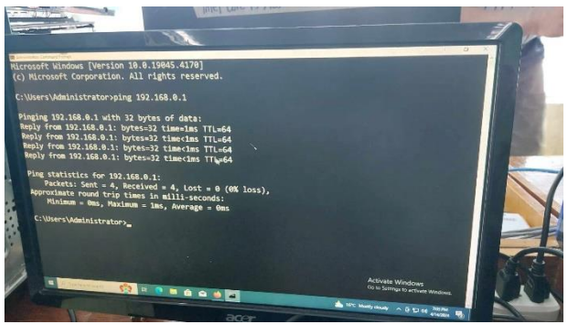






Observation/Conclusion:

In our Networking experiment, my partner and I, teamed up for Experiment #5, focusing on setting up routers. First things first, we hit the reset button on the router to give it a clean slate. Then, we used cmd to find the Default Gateway, which is a crucial step in router setup.

After that, I took charge and set up a new password to keep our network secure. I chose "Gales" as the name and "Admin123456789" as the password. With the router all set up, we gave connecting a try, and it worked like a charm!

But we weren't done yet. We wanted to expand our network, so we decided to add a switch. After plugging everything in, we did a quick ping test to make sure all our devices were talking to each other. Sure enough, everything was working smoothly!

Looking back, the key was to take it step by step, follow the instructions carefully, and work together as a team. Now that our network is up and running, I'm feeling confident and ready for whatever Networking challenges come our way!