

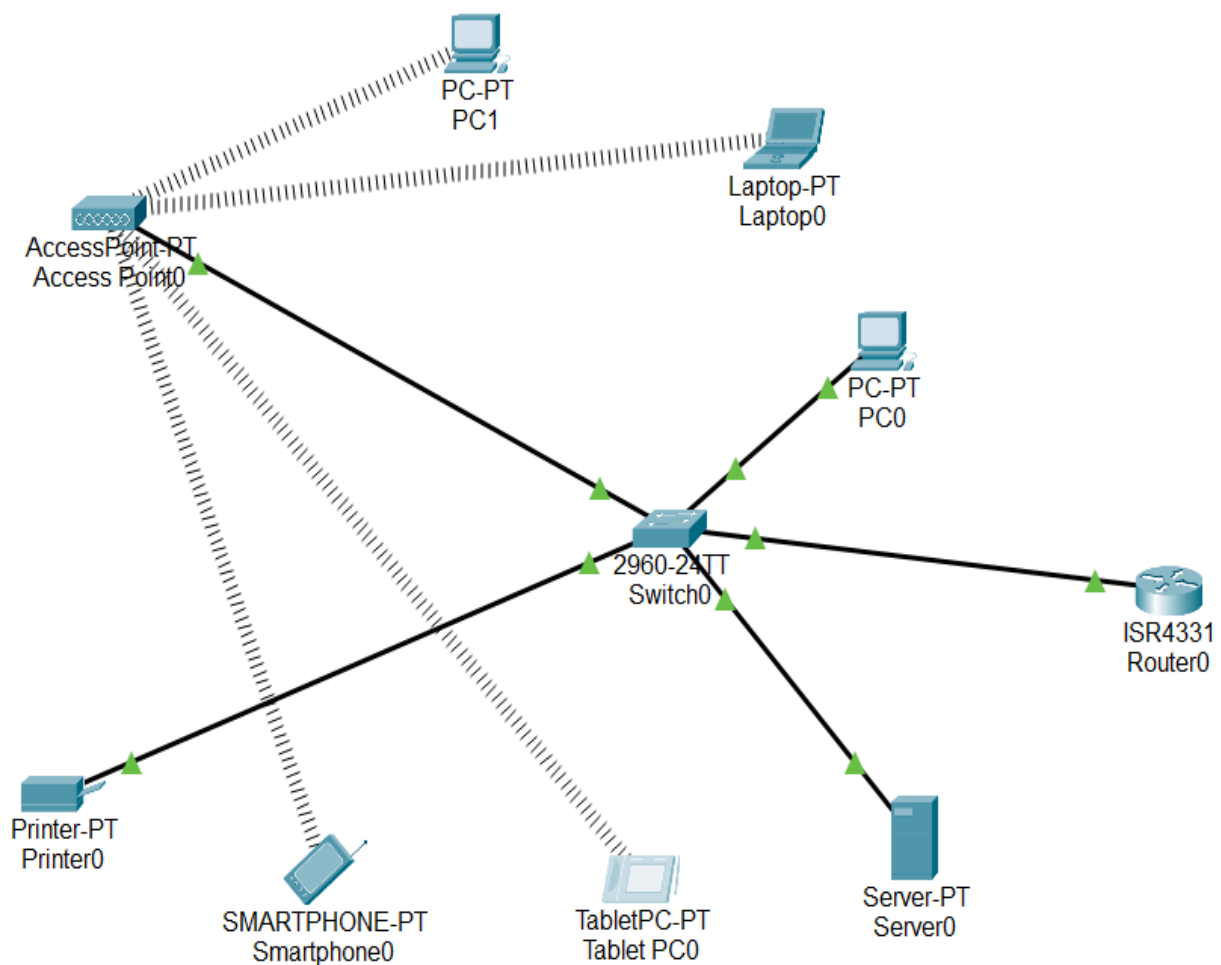
Practical – 6

Aim of the Practical :-

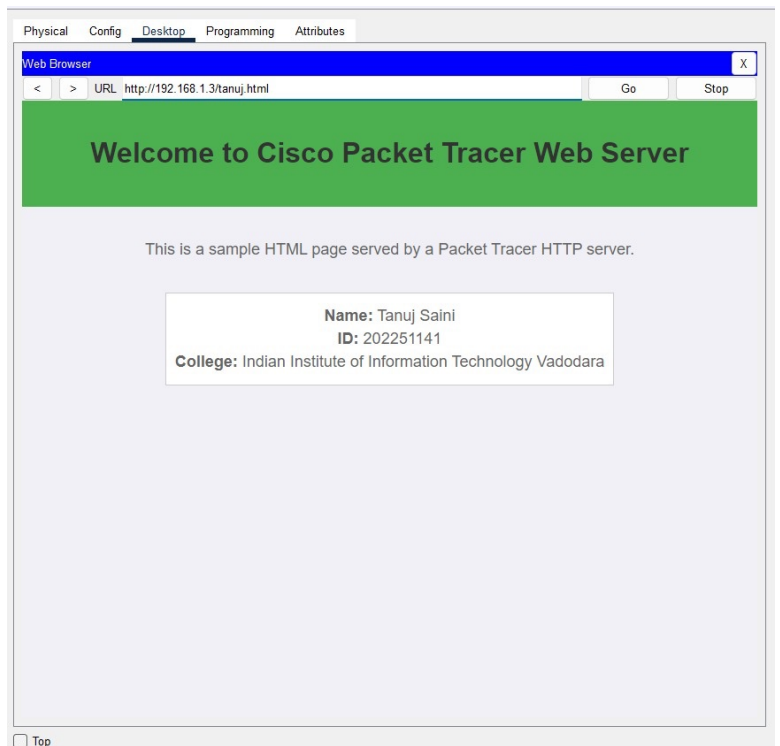
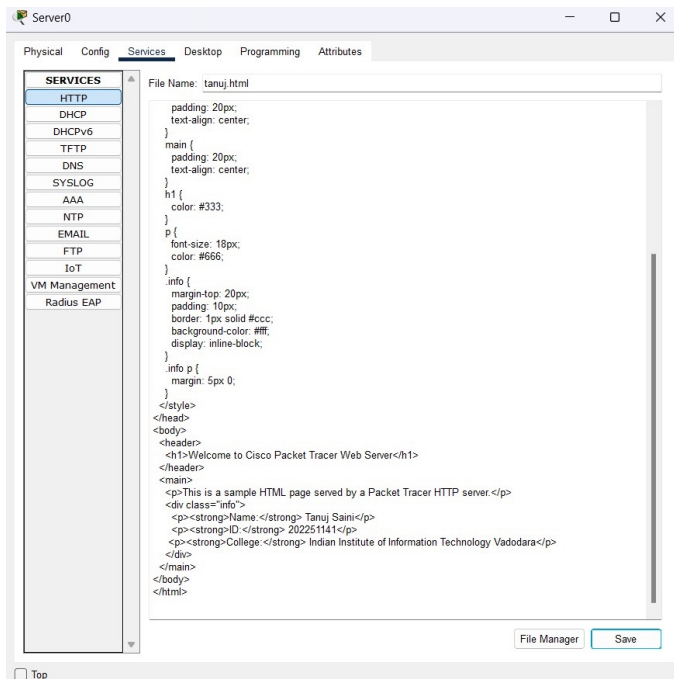
To configure a network with both wired and wireless devices for web and email communication using Cisco Packet Tracer.

Ques : (1). Extend the network that you created in Lab-5 using wireless devices by adding SERVER. Now open web page through a smart device. Also send a mail from one smart device to another.

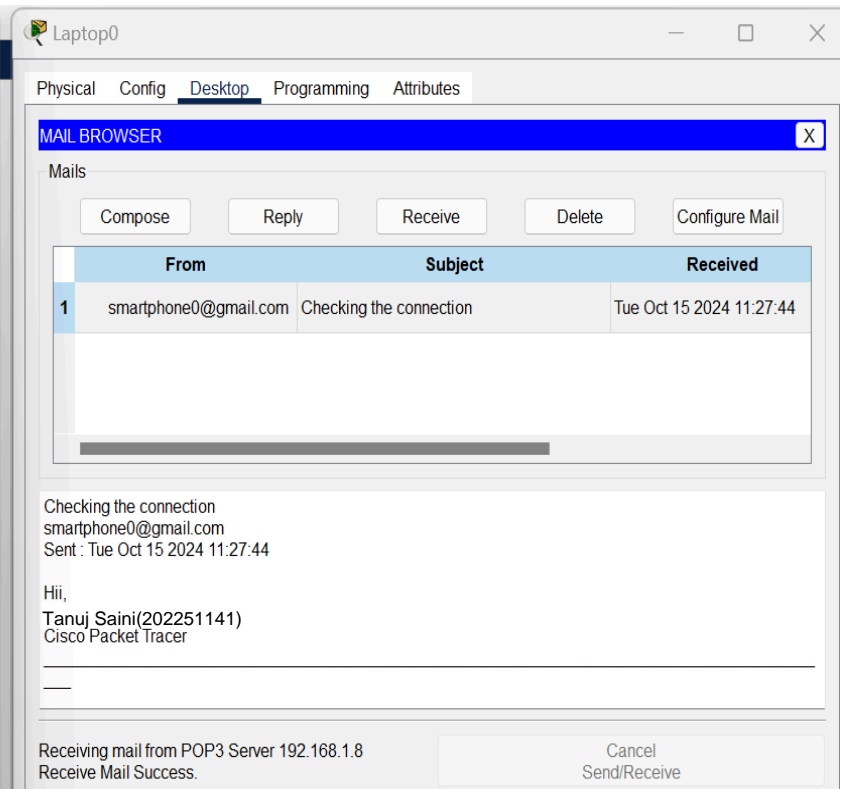
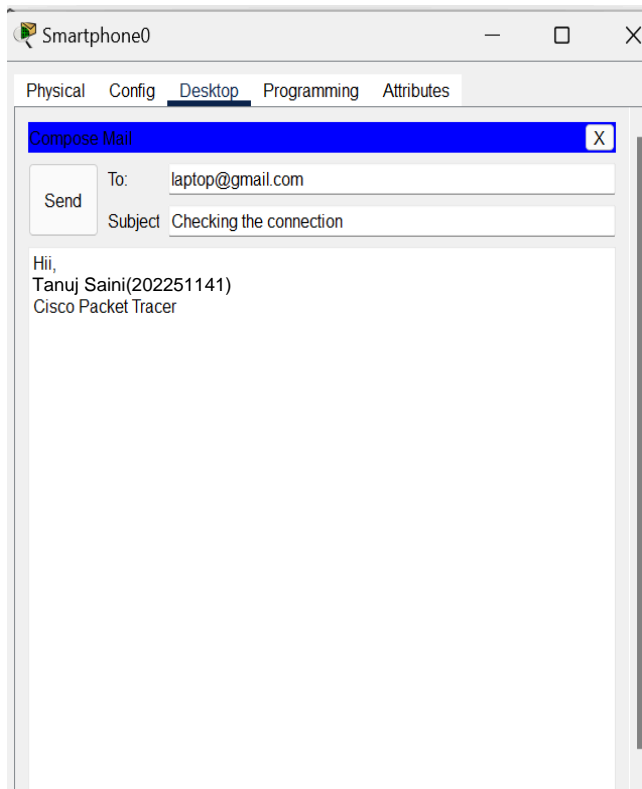
Ans :



Web Page Smart Device



Web Send mail Smartphone to Laptop



Ques : (2). How do you verify if the message transfer between wired and wireless devices is successful? What tools in Cisco Packet Tracer can be used?

Ans :

1. Simulation Mode:

- Switch to Simulation Mode using the bottom-right button in Packet Tracer. This mode allows you to visualize and inspect the packets moving across the network.
- Create the scenario (e.g., send an email from a smart wireless device to a PC connected via a wired connection).
- Click Capture/Forward to step through each packet transfer and inspect the packet details. This will show if the packets are being routed correctly between the wired and wireless devices.
- Look for the SMTP, POP3, HTTP, or other protocol packets relevant to your setup. Ensure the packets are successfully delivered and received without errors.

2. Use of the ‘Ping’ Command:

- Ping from a wireless device to a wired device (or vice versa) to verify connectivity.

Open the Command Prompt or Terminal on any device in the network and type:

ping [IP address of the target device]

Ex: ping 192.168.1.3 (laptop)

- Successful ping replies indicate that both devices are properly connected and can communicate.

3. Email Client Test:

- If you’ve set up an email server, test sending an email from a wireless device to a wired device.
- On the wired device, check the email client (e.g., by opening the email application and retrieving messages).
- If the email is received successfully, it verifies that the email service and communication between wired and wireless devices are functioning.

4. Web Browser Test:

- On a wireless smart device, open the web browser application and access the web page hosted on a server connected to the wired network.
- If the web page loads without errors, it confirms that HTTP traffic is successfully transferring between wired and wireless devices.

5. Packet Sniffer (Packet Analyzer):

- Add a Packet Sniffer to the network (under End Devices).
- Connect the sniffer to a point where both wired and wireless traffic passes through (e.g., the main switch or the wireless router).
- Monitor the traffic for specific packet types (like HTTP, SMTP) to see if they are being transmitted and received as expected.

Ques : (3). What role does the router play in facilitating communication between wired and wireless devices?

Ans :

Here are the key roles the router performs:

1. Interconnecting Wired and Wireless Networks:

- The router connects the wired network (e.g., PCs, servers connected via Ethernet cables) and the wireless network (e.g., smartphones, tablets connected via Wi-Fi) into a single, unified network.
- It allows devices from both wired and wireless segments to communicate seamlessly by bridging the two networks.

2. Routing and Packet Forwarding:

- The router receives data packets from devices on both networks, examines their destination IP addresses, and determines the most efficient route to forward them.
- It directs traffic between wired and wireless devices, ensuring that data reaches the correct destination, regardless of the device type.

3. Network Address Translation (NAT):

- When a wireless router is used, it often performs Network Address Translation (NAT) to allow multiple devices to share a single public IP address when accessing external networks (e.g., the Internet).
- NAT helps wired and wireless devices communicate using private IP addresses within the local network, while the router handles the translation when accessing resources outside.

4. Managing IP Address Assignment via DHCP:

- The router typically acts as a DHCP (Dynamic Host Configuration Protocol) server, assigning IP addresses dynamically to both wired and wireless devices.
- This ensures that devices can automatically connect to the network and communicate without manual IP configuration, keeping the entire network segment (wired and wireless) on the same subnet.

5. Wireless Access Point Functionality:

- For wireless routers, the router also serves as a Wireless Access Point (WAP), providing Wi-Fi connectivity to wireless devices and enabling them to join the network.
- The router manages the Wi-Fi connection, including security settings like SSID, encryption protocols (e.g., WPA2), and authentication to secure communication with wireless devices.

6. Managing Network Traffic and Security:

- The router manages network traffic between wired and wireless devices to avoid collisions and optimize performance.
- It applies security features, such as firewalls, access control lists (ACLs), and wireless encryption, to protect communication between devices on different network segments.

Ques : (4). What role does the router play in facilitating communication between wired and wireless devices?

Ans :

Step 1: Add the Server to the Network

1. **Place the Server:**
 - Add a Generic Server to your network.
 - Connect the server to your router (wired or wireless) using an Ethernet cable.
2. **Configure the Server's IP Address:**
 - Open the server's Config tab.
 - Set a Static IP address for the server that matches the subnet of your network (e.g., [192.168.1.8](#)).
 - Ensure the Default Gateway and DNS settings match those of your network.

Step 2: Enable Email Services on the Server

1. **Open the Services Tab:**
 - Click on the server and navigate to the Services tab.
2. **Enable SMTP (Simple Mail Transfer Protocol):**
 - Select Email from the list of services.
 - Enable the SMTP service by turning the service ON.
 - Set the Domain Name (e.g., [gmail.com](#)).
 - Add user accounts that will be used by the smart device :--

Example:

- Username: [Smartphone0](#), Password: [pass3](#)
- Username: [laptop](#) , Password: [pass5](#)

Step 3: Configure Smart Devices for Email

1. **Access the Smart Device's Email Client:**
 - On each smart device, open the Email application from the available tools.
2. **Set Up Email Accounts:**
 - Enter the email credentials matching the ones configured on the server
 - (e.g., [smartphone0@gmail.com](#) and its password).
 - Set the Incoming Mail Server (POP3) to the server's IP address (e.g., [192.168.1.8](#)).
 - Set the Outgoing Mail Server (SMTP) to the same IP address ([192.168.1.8](#)).
3. **Save the Configuration:**
 - Save the configuration and ensure the smart device connects to the email server using the settings you provided.

Step 4: Test Email Communication

1. **Send an Email:**
 - From one smart device, compose an email and send it to another configured email account (e.g., laptop@gmail.com).
2. **Check for Received Emails:**
 - On the second smart device, open the email client and check for new messages. If configured correctly, the email should be received successfully.