Lab Report - 07

Course Title : Computer Networks Lab
Course Code : CSE 320
Report Name : Multi-Network Configuration and Routing Simulation.

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1. Objectives

The aim of this lab is to implement and test a web service hosted on a server within a multi-network environment using Cisco Packet Tracer. This includes configuring HTTP servers, ensuring DNS resolution, and verifying connectivity through inter-network communication.

2. Necessary Tools

2.1 Software: Cisco Packet Tracer

2.2 Hardware: Two routers, two switches, multiple PCs, a server, and an access point.

2.3 Cables: Straight-through cables for wired connections.

3. Theory/Background

This lab demonstrates the implementation of a multi-network topology and tests basic networking services. Key concepts include:

- **IP Addressing and Sub-netting:**
  Devices were assigned IPs (e.g., 192.168.1.0/24 for Network 1) to enable communication.
- **Routing:**

  - **RIP (Routing Information Protocol):** Configured on routers to facilitate inter-network communication.

- **Client-Server Architecture:**

  - HTTP Server hosted a web page accessed by PCs.
  - DNS Server translated domain names into IPs.

- **DHCP:**
  Automates IP assignment for network devices.
- **Protocols Used:**

  - **HTTP:** For web access.
  - **ICMP:** For connectivity tests.
  - **RIP:** For routing updates.

- **Devices and Technologies:**
  Switches, routers, and access points were used for wired and wireless connectivity.

This lab highlights the integration of services and protocols for scalable and efficient communication.
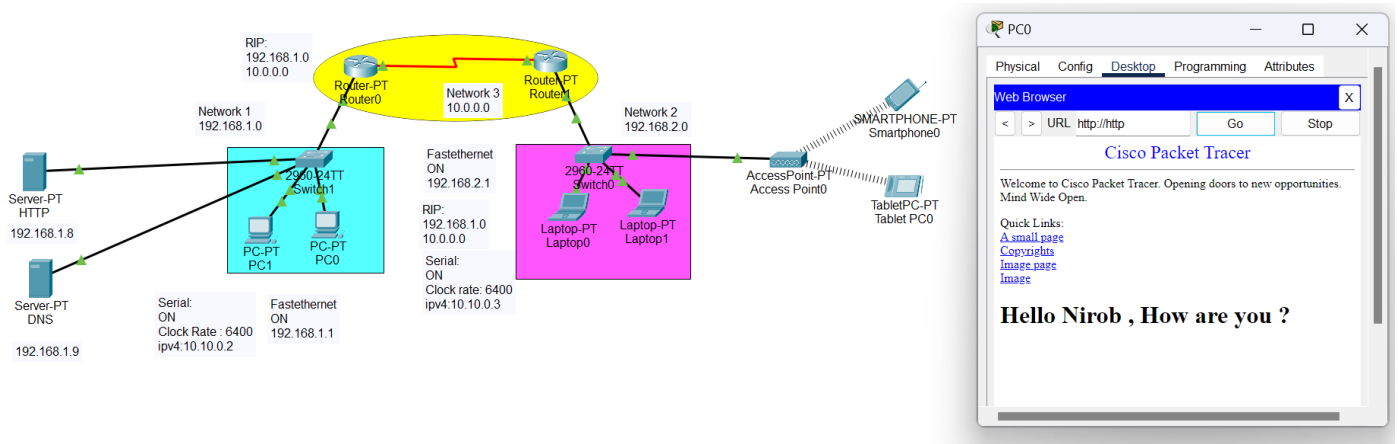
4. Figures

Figure 4.1: DNS Server.

5. Programs or Procedure

5.1 Topology Setup

1. **Add Devices:** Place routers, switches, servers, PCs, and an access point in the workspace.
2. **Connect Devices:** Establish connections between devices using appropriate cables.

5.2 IP Addressing

- Configure static IP addresses for servers.
- Set up a DHCP server to dynamically assign IPs to PCs and wireless devices.

5.3 Configure Routing

- Enable RIP on Router0 and Router1 for route sharing between networks.

5.4 Server Configuration

- **HTTP Server:**

  ➢ Host a basic HTML page displaying the message: "Hello Nirob, How are you?".

- **DNS Server:**

  - ➢ Enable DNS to resolve domain names for HTTP access.

5.5 Verify Connectivity

- Perform ping tests between devices in different networks.
- Test web page access via the HTTP server from PC0 and other devices.

6. Inputs and Outputs

Inputs:

- IP configuration for all devices.
- HTML code for the web page.
- RIP setup for routers.

Outputs:

- Ping Test Results:

  - ➢ Devices successfully communicated across networks.
  - ➢ HTTP server responded to requests from PC0 and laptops.

- Web Page Access:

  - ➢ PC0 successfully accessed the web page hosted on the HTTP server.
  - ➢ The page displayed the message: "Hello Nirob, How are you?".

7. Remarks/Comments

The lab was successfully completed, demonstrating effective configuration of DHCP, DNS, HTTP, and RIP for multi-network communication. Ping tests and HTTP access confirmed proper functionality.

Suggestions:

- Add backup routes for redundancy.
- Implement security measures like firewalls.

Overall, the lab provided valuable insights into real-world networking.