Campus Network Project Report

Objective:

The objective of this project is to design and demonstrate a functional campus network topology connecting three main buildings:

1. **ICT Building**
2. **CSE Department**
3. **Math Department**

The network ensures proper communication between these departments, with static IP assignments for routers and servers and dynamic IP management for client devices.

Network Topology:

- **Core Components**:
  - **Routers**: Three routers (Router 1, Router 2, Router 3) interconnecting the buildings and managing the LANs.
  - **Servers**: DHCP, DNS, and Web servers for network services.
- **IP Addressing**:
  - ICT Building: 192.168.1.0/24
  - CSE Department: 192.168.2.0/24
  - Math Department: 192.168.3.0/24
  - Inter-Router Links:
    - Between Router 1 and Router 2: 10.10.0.0/30
    - Between Router 2 and Router 3: 20.0.0.0/30

Key Configurations:

1. **Static IPs**:
   - Assigned to routers and servers to maintain stable communication across the network.
   - Example:
     - Router 1 (ICT LAN): 192.168.1.1
     - DHCP Server: 192.168.1.2
     - DNS Server: 192.168.1.3
     - Web Server: 192.168.1.4

2. **Dynamic Host Configuration Protocol (DHCP)**:
    - Configured three address pools for dynamic IP allocation in each building:
        - **Pool 1** (ICT): Starting at 192.168.1.5, with 20 users.
        - **Pool 2** (CSE): Starting at 192.168.2.2, with 20 users.
        - **Pool 3** (Math): Starting at 192.168.3.2, with 20 users.
3. **Domain Name System (DNS)**:
    - Hosted on a DNS server at 192.168.1.3.
    - Configured to resolve the domain www.tahir.com to the IP 192.168.1.3.
4. **Web Server**:
    - HTTP and HTTPS services enabled.
    - Custom index file for the website www.tahir.com.
5. **Routing Information Protocol (RIP)**:
    - Configured on all three routers to enable inter-network communication.
    - Example:
        - Router 1: Networks 192.168.1.0 and 10.10.0.0 added.
        - Router 2: Networks 192.168.2.0, 10.10.0.0, and 20.0.0.0 added.
        - Router 3: Networks 192.168.3.0 and 20.0.0.0 added.

Demonstrations:

1. **Network Connectivity**:
    - Verified communication between PCs in different departments:
        - ICT ↔ CSE: Successful
        - ICT ↔ Math: Successful
2. **Accessing Web Server**:
    - Confirmed the accessibility of the www.taher.com website from PCs in all three buildings:
        - ICT Building PC: Successful response from the web server.
        - CSE Department PC: Successful response from the web server.
        - Math Department PC: Successful response from the web server.

Summary:

This project showcases the design and implementation of a reliable campus network with efficient IP management, inter-department communication, and web services. By combining static IP configurations for critical components and dynamic IP allocation for clients, the network ensures stability and scalability.

Thank you for watching the demonstration!