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**Project Report: Campus Network Design**

**1. Introduction**

This project involves the design and implementation of a campus network that connects multiple labs. The network utilizes Routing Information Protocol (RIP), VLANs (Virtual Local Area Networks), and static routing to manage traffic efficiently and ensure seamless communication across the campus.

**2. Objectives**

* To create a reliable and scalable campus network.
* To implement VLANs for network segmentation and security.
* To use RIP for dynamic routing and static routing for specific paths.

**3. Network Design**

**3.1. Network Topology**

The network consists of several labs connected through switches and routers. Each lab represents a different VLAN to isolate traffic and improve security.

**3.2. VLAN Configuration**

* Each lab is assigned a unique VLAN ID.
* VLANs are used to segment the network logically, ensuring that traffic from one lab does not interfere with another.
* VLANs improve network management and enhance security.

**3.3. Routing Protocols**

* **RIP (Routing Information Protocol):**
* RIP
* is used for dynamic routing within the network. It helps in automatically updating the routing table, making the network adaptable to changes.
* **Static Routing:**
* Static routes are configured for specific paths where fixed routing is needed, ensuring certain traffic takes predetermined routes.

**4. Implementation Steps**

1. **VLAN Setup:**
   * Configure VLANs on the switches.
   * Assign VLAN IDs to the respective ports connecting to each lab.
2. **Router Configuration:**
   * Configure RIP on routers for dynamic routing.
   * Set up static routes for specific network segments.
3. **Testing and Validation:**
   * Test network connectivity between different VLANs.
   * Ensure proper routing and isolation of traffic.
   * Validate the functionality of RIP and static routes.

**5. Conclusion**

The campus network designed in this project successfully connects multiple labs with improved management and security through the use of VLANs. The combination of RIP and static routing ensures efficient and reliable communication across the network. This design is scalable and can be easily expanded to accommodate future growth.

**6. Future Work**

* Implement advanced routing protocols such as OSPF for larger networks.
* Integrate network monitoring tools for better management.
* Explore wireless connectivity for mobile devices within the campus.