**Bank Telecommunication Network**

**1. Project Overview**

The project involves creating a telecommunication network for a bank with multiple departments (e.g., Finance, Marketing, Customer Care, and others). Each department is segregated using VLANs to enhance security and efficiency. The network includes servers for Finance and HR departments, and inter-departmental communication is facilitated through routing.

**2. Network Design**

**2.1 Topology**

* Hierarchical design with separate networks for each department.
* Core devices include:
  + **Routers** for inter-network communication.
  + **Switches** for departmental LANs.
* All departments are part of the **192.168.1.0/24** network with subnetting applied.

**2.2 VLAN Structure**

* VLANs segregate departments:
  + **Finance Department**: 192.168.1.0/26
  + **Marketing Department**: 192.168.1.64/26
  + **Customer Care Department**: 192.168.1.128/26
  + **HR Department**: 192.168.1.192/26

**3. Configuration**

**3.1 DHCP Configuration**

Dynamic IP allocation is used for each department. The DHCP server is configured on routers.

**3.2 VLANs on Switches**

Each department has its VLAN with dedicated ports. VLANs allow secure segmentation and reduce broadcast traffic.

**3.3 Inter-VLAN Routing**

Inter-department communication is achieved using router subinterfaces configured with unique IP addresses.

**3.4 Server Allocation**

* **Finance Department**:
  + HTTP Server: 192.168.1.2
  + FTP Server: 192.168.1.3
* **HR Department**:
  + DNS Server: 192.168.1.4
  + Email Server: 192.168.1.5

**4. IP Addressing**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department** | **Subnet** | **Host Range** | **Default Gateway** |
| Finance | 192.168.1.0/26 | 192.168.1.1 - 192.168.1.62 | 192.168.1.1 |
| Marketing | 192.168.1.64/26 | 192.168.1.65 - 192.168.1.126 | 192.168.1.65 |
| Customer Care | 192.168.1.128/26 | 192.168.1.129 - 192.168.1.190 | 192.168.1.129 |
| HR | 192.168.1.192/26 | 192.168.1.193 - 192.168.1.254 | 192.168.1.193 |

**5. Testing and Verification**

1. **Ping Test**:
   * Verify connectivity within the same VLAN and across VLANs.
2. **Server Test**:
   * Ensure Finance and HR servers are accessible.
3. **DHCP Test**:
   * Check if IP addresses are dynamically assigned to PCs.

**6. Future Enhancements**

* Add firewall configurations for enhanced security.
* Implement redundancy protocols (e.g., HSRP or VRRP).
* Introduce VPN for remote departmental access.