A diagram of a network

AI-generated content may be incorrect.

**Network Documentation**

**1. Overview**

This project sets up a segmented enterprise network using VLANs for departmental separation, along with a multilayer (core) switch that performs inter-VLAN routing. Access switches serve each department (HR, CS, Marketing, IT, Management, Finance), and a dedicated server-side switch hosts server resources. Each device includes a welcome message banner for identification and security.

**2. Network Topology & Connections**

**Core Infrastructure**

* **Core (Multilayer) Switch (CoreSwitch):**
  + **Role:** Acts as the central hub for the network. It performs inter-VLAN routing and connects to all department and server switches via trunk ports.
  + **Connections:**
    - Two trunk ports (GigabitEthernet0/1 and GigabitEthernet0/2) carry all VLANs (departmental and server VLANs).

**Department Access Switches**

* **HR\_Switch, CS\_Switch, Marketing\_Switch, IT\_Switch, Management\_Switch, Finance\_Switch:**
  + **Role:** Provide access for end devices within each respective department.
  + **VLAN Assignment:**
    - HR (VLAN 10), CS (VLAN 20), Marketing (VLAN 30), IT (VLAN 40), Management (VLAN 50), Finance (VLAN 60).
  + **Connections:**
    - Access ports on each switch are configured for the department’s VLAN.
    - A trunk port (typically GigabitEthernet0/1) uplinks each access switch to the CoreSwitch. The trunk carries all necessary VLANs.

**Server-Side Switch**

* **ServerSwitch:**
  + **Role:** Connects server resources such as the DHCP server, Email server, and HTTPS server.
  + **VLAN Assignment:**
    - DHCP Server (VLAN 100), Email Server (VLAN 110), HTTPS Server (VLAN 120).
  + **Connections:**
    - A trunk port uplinks the ServerSwitch to the CoreSwitch. The trunk is configured to allow both server VLANs and departmental VLANs.

**3. Configuration Details**

Each device is configured with a set of commands for creating VLANs, setting up basic access and trunk ports, and displaying a welcome message. Below is a summary of the configurations used on each device:

**3.1. Multilayer (Core) Switch – CoreSwitch**

* **Basic Setup:**
  + Hostname: CoreSwitch
  + Banner (Welcome Message): Displays a custom welcome message.
  + Layer 3 Routing Enabled (ip routing).
* **VLANs Created:**
  + Department VLANs: 10 (HR), 20 (CS), 30 (Marketing), 40 (IT), 50 (Management), 60 (Finance).
  + Server VLANs: 100 (DHCP\_Server), 110 (Email\_Server), 120 (HTTPS\_Server).
* **Trunk Configuration:**
  + Trunk ports (GigabitEthernet0/1 and GigabitEthernet0/2) allow traffic for all VLANs.

**3.2. Department Access Switches (HR, CS, Marketing, IT, Management, Finance)**

For each departmental switch (e.g., **HR\_Switch**):

* **Basic Setup:**
  + Hostname (e.g., HR\_Switch).
  + Banner: A welcome message identifying the department.
* **VLAN Creation:**
  + The department-specific VLAN (e.g., VLAN 10 for HR) is created.
* **Access Ports:**
  + A range of FastEthernet ports is configured as access ports assigned to the specific VLAN.
* **Trunk Uplink:**
  + A trunk port (e.g., GigabitEthernet0/1) is configured to connect with the CoreSwitch, carrying all departmental VLANs.

**3.3. Server-Side Switch – ServerSwitch**

* **Basic Setup:**
  + Hostname: ServerSwitch
  + Banner: A welcome message for the server room.
* **VLAN Creation:**
  + Server VLANs: 100, 110, 120 are created for DHCP, Email, and HTTPS servers respectively.
* **Trunk Uplink:**
  + The trunk port is configured to carry both server VLANs and departmental VLANs to ensure proper connectivity.

**4. How It All Works Together**

* **Inter-VLAN Routing:**  
  The CoreSwitch, with routing enabled and configured SVIs for each VLAN, allows devices in different VLANs to communicate. This removes the need for a separate router for internal routing.
* **VLAN Segmentation:**  
  Each department has its own VLAN to isolate network traffic, ensuring security and better performance.
* **Trunk Links:**  
  Trunk ports are used between the CoreSwitch and all other switches to carry multiple VLANs across a single physical connection. This simplifies cabling and maximizes network efficiency.
* **Welcome Messages:**  
  Each switch displays a custom banner message when accessed, helping identify the device and providing a simple security notice to unauthorized users.

**5. Summary of Commands and Their Purpose**

* **Hostname & Banner Setup:**  
  Identifies the device and displays a welcome message for security and user awareness.
* **VLAN Creation:**  
  Segregates network traffic by creating logical groupings for different departments and server resources.
* **SVI/Interface Configuration:**  
  Configures interfaces (SVIs on the CoreSwitch) for routing and assigns IP addresses to manage inter-VLAN traffic.
* **Trunk Port Configuration:**  
  Ensures that multiple VLANs can pass between the CoreSwitch and the access/server switches, enabling connectivity across the entire network.
* **Basic Saving & Verification:**  
  Commands like write memory save the configuration, and verification commands (e.g., show vlan brief) help confirm the setup.

**6. Conclusion**

This documentation outlines the complete setup and connections of the network. The core design uses a multilayer switch for centralized routing and segmented access switches for departmental traffic. Trunk links ensure all VLANs are carried throughout the network, and each switch's welcome message enhances both management and security. This comprehensive configuration aims to provide a scalable, efficient, and secure enterprise network.