Modern Hotel Network Design Report

Project Overview

This project involves the design and implementation of a secure and efficient network infrastructure for Modern Hotel, spanning across three floors, each hosting multiple departments. The objective is to segment departments using VLANs, ensure inter-floor communication with OSPF, and provide secure remote access via SSH.

Network Infrastructure

Floor-wise Layout and VLANs

1st Floor:
- Reception – VLAN 80 – 192.168.8.0/24
- Store – VLAN 70 – 192.168.7.0/24
- Logistics – VLAN 60 – 192.168.6.0/24

2nd Floor:
- Finance – VLAN 50 – 192.168.5.0/24
- HR – VLAN 40 – 192.168.4.0/24
- Sales – VLAN 30 – 192.168.3.0/24

3rd Floor:
- Admin – VLAN 20 – 192.168.2.0/24
- IT – VLAN 10 – 192.168.1.0/24

Router & Interconnection

Three routers are located in the IT Department Server Room. They are connected via serial DCE cables using the following networks:
- 10.10.10.0/30
- 10.10.10.4/30
- 10.10.10.8/30
Routers are configured with OSPF for inter-network communication.

DHCP Configuration

Each router acts as the DHCP server for its respective VLANs. Devices within each VLAN dynamically receive IP addresses based on their department's subnet.

SSH and Port Security

SSH is configured on all routers to allow remote login. Test-PC is added to the IT switch (fa0/1) and used to verify SSH login. Port security is enabled on IT switch port fa0/1 to allow only Test-PC using the sticky MAC address method with violation mode: shutdown.

Network Testing

Ping tests and SSH login from Test-PC validate full interconnectivity. Devices across all VLANs can communicate successfully via OSPF routing. DHCP leases confirm correct IP distribution per VLAN. Port security correctly shuts down the port when unauthorized devices are connected.

Summary

The implemented design ensures:
- Segmented, isolated departmental traffic via VLANs
- Dynamic IP assignment and simplified management using DHCP
- Remote administration using SSH
- Security with port-based MAC filtering
- Optimized and scalable routing using OSPF

This design provides a secure, scalable, and manageable network for Modern Hotel.