**Vic Modern Hotel Network Design & Implementation**

**Project Overview**

**Introduction**

This document outlines the complete network design and implementation for **Vic Modern Hotel**, a multi-story hospitality establishment requiring a robust, secure, and segmented network infrastructure. The project involves designing a network that supports three floors with multiple departments, ensuring secure communication, wireless accessibility, and centralized management.

**Business Requirements**

* Support three floors with multiple departments
* Provide secure segmentation between departments
* Enable wireless connectivity for guests and staff
* Ensure all network devices can communicate appropriately
* Implement security measures for network protection
* Allow remote management capabilities
* Provide reliable printing services across all departments

**Network Design Specifications**

**Physical Infrastructure**

**Router Placement**

* Three routers located in the server room (IT Department, 3rd Floor)
* Router interconnections using serial DCE cables
* Network ranges: 10.10.10.0/30, 10.10.10.4/30, 10.10.10.8/30

**Switch Deployment**

* One switch per floor located on respective floors
  + **Switch 1:** 3rd Floor (IT & Admin)
  + **Switch 2:** 2nd Floor (Finance, HR, Sales)
  + **Switch 3:** 1st Floor (Reception, Store, Logistics)

**VLAN Architecture**

**First Floor Departments**

* Reception → VLAN 80 → 192.168.8.0/24
* Store → VLAN 70 → 192.168.7.0/24
* Logistics → VLAN 60 → 192.168.6.0/24

**Second Floor Departments**

* Finance → VLAN 50 → 192.168.5.0/24
* HR → VLAN 40 → 192.168.4.0/24
* Sales/Marketing → VLAN 30 → 192.168.3.0/24

**Third Floor Departments**

* Admin → VLAN 20 → 192.168.2.0/24
* IT → VLAN 10 → 192.168.1.0/24

**Technical Implementation**

**Switch Configuration**

**Switch 2 (2nd Floor)**

* enable
* configure terminal
* interface range fastEthernet 0/2-3
* switchport mode access
* switchport access vlan 30
* interface range fastEthernet 0/4-5
* switchport mode access
* switchport access vlan 40
* interface range fastEthernet 0/6-8
* switchport mode access
* switchport access vlan 50
* interface fastEthernet 0/1
* switchport mode trunk
* end
* write memory

**Switch 3 (1st Floor)**

* enable
* configure terminal
* interface range fastEthernet 0/6-7
* switchport mode access
* switchport access vlan 80
* interface range fastEthernet 0/4-5
* switchport mode access
* switchport access vlan 70
* interface range fastEthernet 0/2-3, fastEthernet 0/8
* switchport mode access
* switchport access vlan 60
* interface fastEthernet 0/1
* switchport mode trunk
* end
* write memory

**Router Configuration**

**Router Serial Interfaces**

*Router 2*

* enable
* configure terminal
* interface serial 0/3/0
* ip address 10.10.10.1 255.255.255.252
* interface serial 0/3/1
* ip address 10.10.10.10 255.255.255.252
* do show ip interface brief

*Router 3*

* enable
* configure terminal
* interface serial 0/3/0
* ip address 10.10.10.6 255.255.255.252
* interface serial 0/3/1
* ip address 10.10.10.2 255.255.255.252
* do show ip interface brief

**Inter-VLAN Routing**

**Router 1 (1st Floor)**

* interface gigabitEthernet 0/0.60
* encapsulation dot1Q 60
* ip address 192.168.6.1 255.255.255.0
* interface gigabitEthernet 0/0.70
* encapsulation dot1Q 70
* ip address 192.168.7.1 255.255.255.0
* interface gigabitEthernet 0/0.80
* encapsulation dot1Q 80
* ip address 192.168.8.1 255.255.255.0

**Router 2 (2nd Floor)**

* interface gigabitEthernet 0/0.30
* encapsulation dot1Q 30
* ip address 192.168.3.1 255.255.255.0
* interface gigabitEthernet 0/0.40
* encapsulation dot1Q 40
* ip address 192.168.4.1 255.255.255.0
* interface gigabitEthernet 0/0.50
* encapsulation dot1Q 50
* ip address 192.168.5.1 255.255.255.0

**Router 3 (3rd Floor)**

* interface gigabitEthernet 0/0.10
* encapsulation dot1Q 10
* ip address 192.168.1.1 255.255.255.0
* interface gigabitEthernet 0/0.20
* encapsulation dot1Q 20
* ip address 192.168.2.1 255.255.255.0

**DHCP Services**

**Router 1 (1st Floor)**  
Pools: Reception, Store, Logistics

* enable
* configure terminal
* service dhcp
* ip dhcp pool Reception
* network 192.168.8.0 255.255.255.0
* default-router 192.168.8.1
* dns-server 192.168.8.1
* ip dhcp pool Store
* network 192.168.7.0 255.255.255.0
* default-router 192.168.7.1
* dns-server 192.168.7.1
* ip dhcp pool Logistics
* network 192.168.6.0 255.255.255.0
* default-router 192.168.6.1
* dns-server 192.168.6.1

**Router 2 (2nd Floor)**  
Pools: Sales, HR, Finance

* enable
* configure terminal
* service dhcp
* ip dhcp pool Sales
* network 192.168.3.0 255.255.255.0
* default-router 192.168.3.1
* dns-server 192.168.3.1
* ip dhcp pool HR
* network 192.168.4.0 255.255.255.0
* default-router 192.168.4.1
* dns-server 192.168.4.1
* ip dhcp pool Finance
* network 192.168.5.0 255.255.255.0
* default-router 192.168.5.1
* dns-server 192.168.5.1

**Router 3 (3rd Floor)**  
Pools: IT, Admin

* enable
* configure terminal
* service dhcp
* ip dhcp pool IT
* network 192.168.1.0 255.255.255.0
* default-router 192.168.1.1
* dns-server 192.168.1.1
* ip dhcp pool Admin
* network 192.168.2.0 255.255.255.0
* default-router 192.168.2.1
* dns-server 192.168.2.1

*(All pools configured with default-gateway and DNS pointing to their router sub-interface IPs.)*

**OSPF Routing**

**Router 1**

* router ospf 10
* router-id 1.1.1.1
* network 10.10.10.8 0.0.0.3 area 0
* network 10.10.10.4 0.0.0.3 area 0
* network 192.168.6.0 0.0.0.255 area 0
* network 192.168.7.0 0.0.0.255 area 0
* network 192.168.8.0 0.0.0.255 area 0

**Router 2**

* router ospf 10
* router-id 2.2.2.2
* network 10.10.10.8 0.0.0.3 area 0
* network 10.10.10.0 0.0.0.3 area 0
* network 192.168.3.0 0.0.0.255 area 0
* network 192.168.4.0 0.0.0.255 area 0
* network 192.168.5.0 0.0.0.255 area 0

**Router 3**

* router ospf 10
* router-id 3.3.3.3
* network 10.10.10.4 0.0.0.3 area 0
* network 10.10.10.0 0.0.0.3 area 0
* network 192.168.1.0 0.0.0.255 area 0
* network 192.168.2.0 0.0.0.255 area 0

**Security Implementation**

**SSH (All Routers)**

* ip domain-name lab
* username lab password lab
* crypto key generate rsa 1024
* line vty 0 15
* login local
* transport input ssh

**Port Security (3rd Floor Switch – IT)**

* interface fastEthernet 0/2
* switchport port-security maximum 1
* switchport port-security mac-address sticky
* switchport port-security violation shutdown

**Network Testing & Verification**

* **Inter-VLAN Communication:** Ping between departments across floors
* **DHCP:** Verify devices receive correct pool IPs
* **OSPF:** Confirm neighbor adjacency and routing tables
* **SSH:** Test login on all routers with local credentials
* **Port Security:** Connect unauthorized device → port shutdown

**Wireless Network Implementation**

* Separate SSIDs per department
* VLAN tagging for wireless networks
* WPA2/WPA3 security
* Guest network isolation

**Printer Configuration**

* VLAN-specific printers per department
* Secure printing protocols

**Project Deliverables**

**Documentation**

* Network diagram
* IP scheme
* VLAN design
* Security guide
* Testing procedures

**Configs**

* Router configs
* Switch configs
* Security policy files

**Training**

* Operation guide
* Troubleshooting guide
* Best practices
* Maintenance schedule

**Monitoring**

* Config backups
* Firmware & patching
* Performance & traffic monitoring
* Alerts and logging

**Conclusion**

The **Vic Modern Hotel network** delivers a **robust, secure, and scalable infrastructure** that fully meets business needs:

* Secure segmentation across departments
* Reliable connectivity across all floors
* Guest & staff wireless access
* Centralized management & monitoring
* Enterprise-grade security features
* Scalable design for future growth