Vic Modern Hotel Network Project

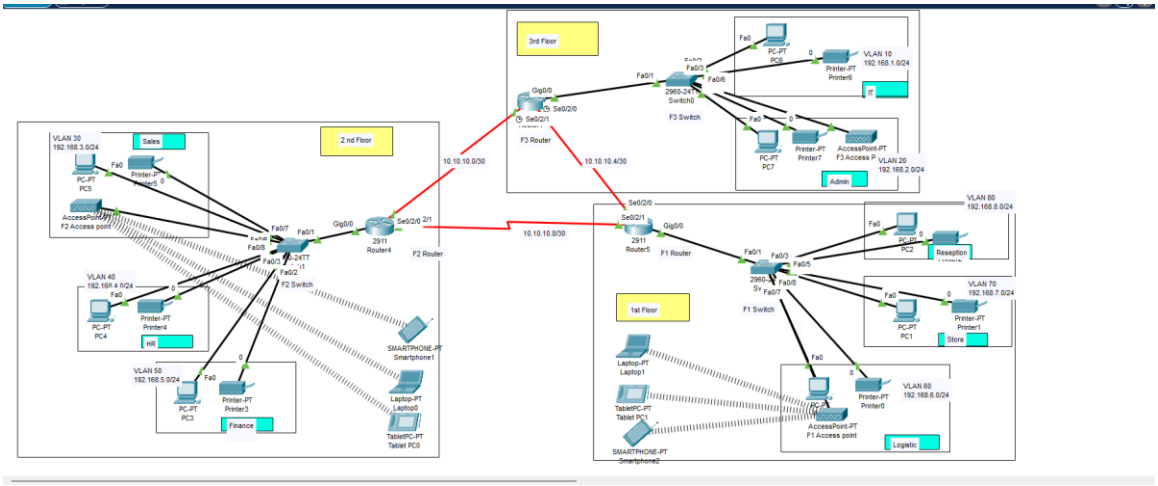
1. Project Overview

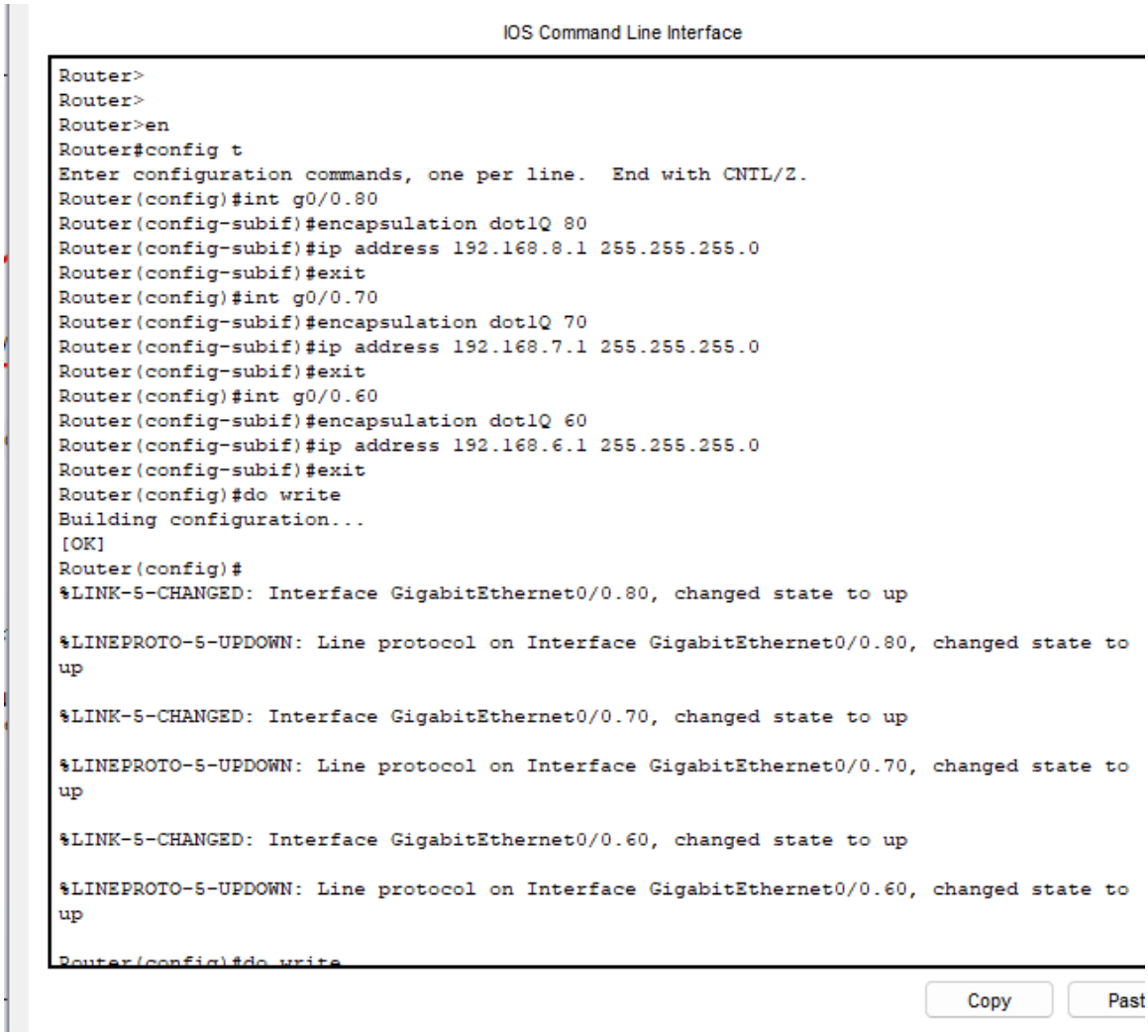
This project involves designing and implementing a computer network for Vic Modern Hotel, which has three floors. Each floor hosts different departments, and the network is designed to ensure connectivity, security, and management of devices.

Objectives:
- Design a network that allows communication between all devices.
- Implement VLANs for department segmentation.
- Configure OSPF routing for inter-VLAN and inter-router communication.
- Implement DHCP for dynamic IP addressing.
- Configure port security and SSH for secure management.

2. Network Requirements

- Three routers located in IT department/server room.
- Routers connected using serial DCE cables.
- Network between routers: 10.10.10.0/30, 10.10.10.4/30, 10.10.10.8/30
- One switch per floor.
- Wi-Fi connectivity for laptops and phones on each floor.
- Printers in each department.
- VLAN configuration per department.
- OSPF routing.
- DHCP configuration per VLAN.
- SSH for secure router access.
- Port security for IT department switch (Test-PC only).

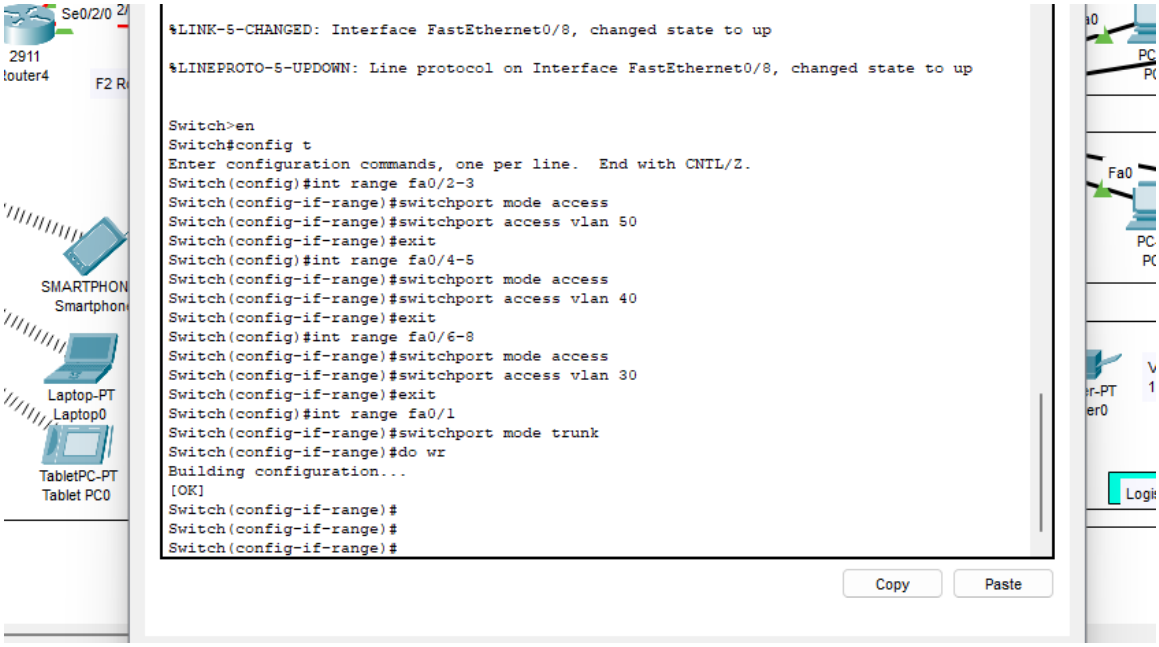




3. VLAN Design

Floor-wise VLAN configuration:

Floor	Department	VLAN ID	IP Network
1st	Reception	80	192.168.8.0/24
1st	Store	70	192.168.7.0/24
1st	Logistics	60	192.168.6.0/24
2nd	Finance	50	192.168.5.0/24
2nd	HR	40	192.168.4.0/24
2nd	Sales	30	192.168.3.0/24
3rd	Admin	20	192.168.2.0/24
3rd	IT	10	192.168.1.0/24



4. IP Addressing Plan

- Router Interconnections (Serial Links):
  - R1-R2: 10.10.10.0/30
  - R2-R3: 10.10.10.4/30
  - R1-R3: 10.10.10.8/30
- Router Interfaces (VLAN Sub-Interfaces):
  - R1 (Floor 1): g0/0.80 → 192.168.8.1/24, g0/0.70 → 192.168.7.1/24, g0/0.60 → 192.168.6.1/24
  - R2 (Floor 2): g0/0.50 → 192.168.5.1/24, g0/0.40 → 192.168.4.1/24, g0/0.30 → 192.168.3.1/24
  - R3 (Floor 3): g0/0.20 → 192.168.2.1/24, g0/0.10 → 192.168.1.1/24

5. Routing Protocol

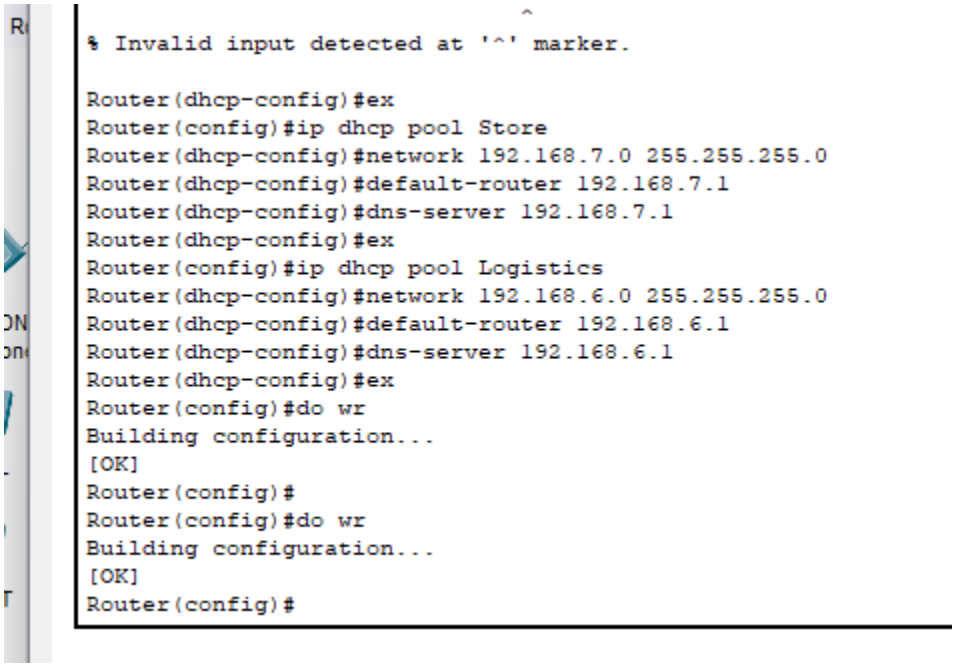
- OSPF used for dynamic routing.
- Router configuration:

router ospf 10
network 10.10.10.0 255.255.255.252 area 0
network 192.168.x.0 255.255.255.0 area 0

- Allows inter-VLAN and inter-router communication.

6. DHCP Configuration

DHCP pools configured for each VLAN:
ip dhcp pool [DepartmentName]
network [VLAN network] [Subnet mask]
default-router [Router VLAN IP]
dns-server [Router VLAN IP]
- Enables dynamic IP assignment to PCs and printers.

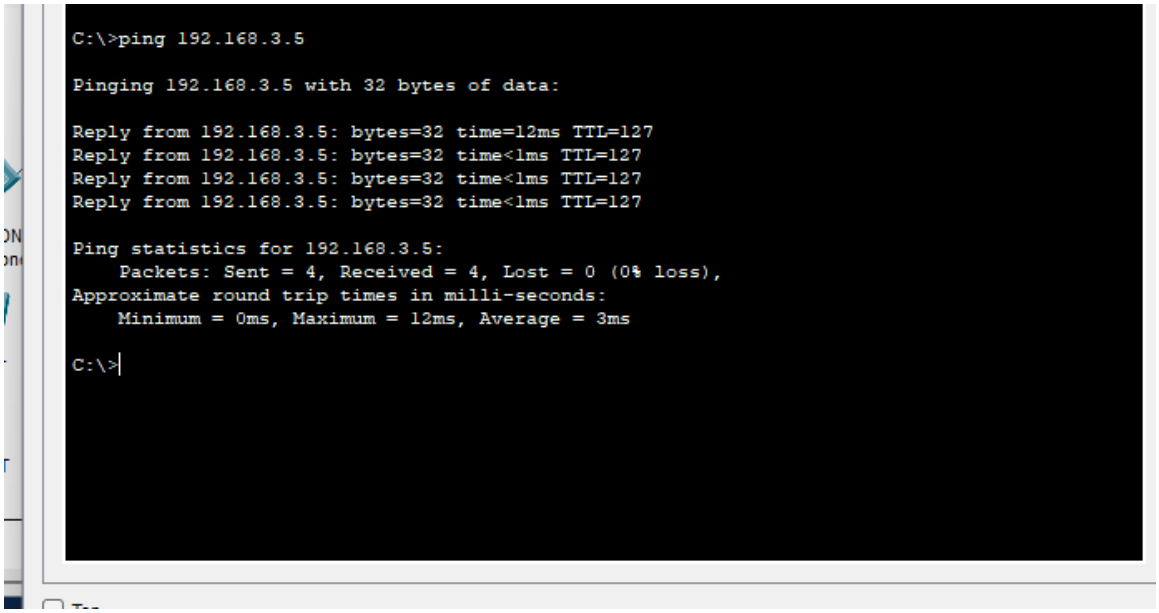


```
                                        ^
% Invalid input detected at '^' marker.

Router(dhcp-config)#ex
Router(config)#ip dhcp pool Store
Router(dhcp-config)#network 192.168.7.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.7.1
Router(dhcp-config)#dns-server 192.168.7.1
Router(dhcp-config)#ex
Router(config)#ip dhcp pool Logistics
Router(dhcp-config)#network 192.168.6.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.6.1
Router(dhcp-config)#dns-server 192.168.6.1
Router(dhcp-config)#ex
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
```

7. Switch Configuration

Each switch configured with VLANs and trunk port. Example for Floor 1 Switch:
interface range fa0/2-3
switchport mode access
switchport access vlan 80
interface range fa0/4-5
switchport mode access
switchport access vlan 70
interface range fa0/6-8
switchport mode access
switchport access vlan 60
interface fa0/1
switchport mode trunk

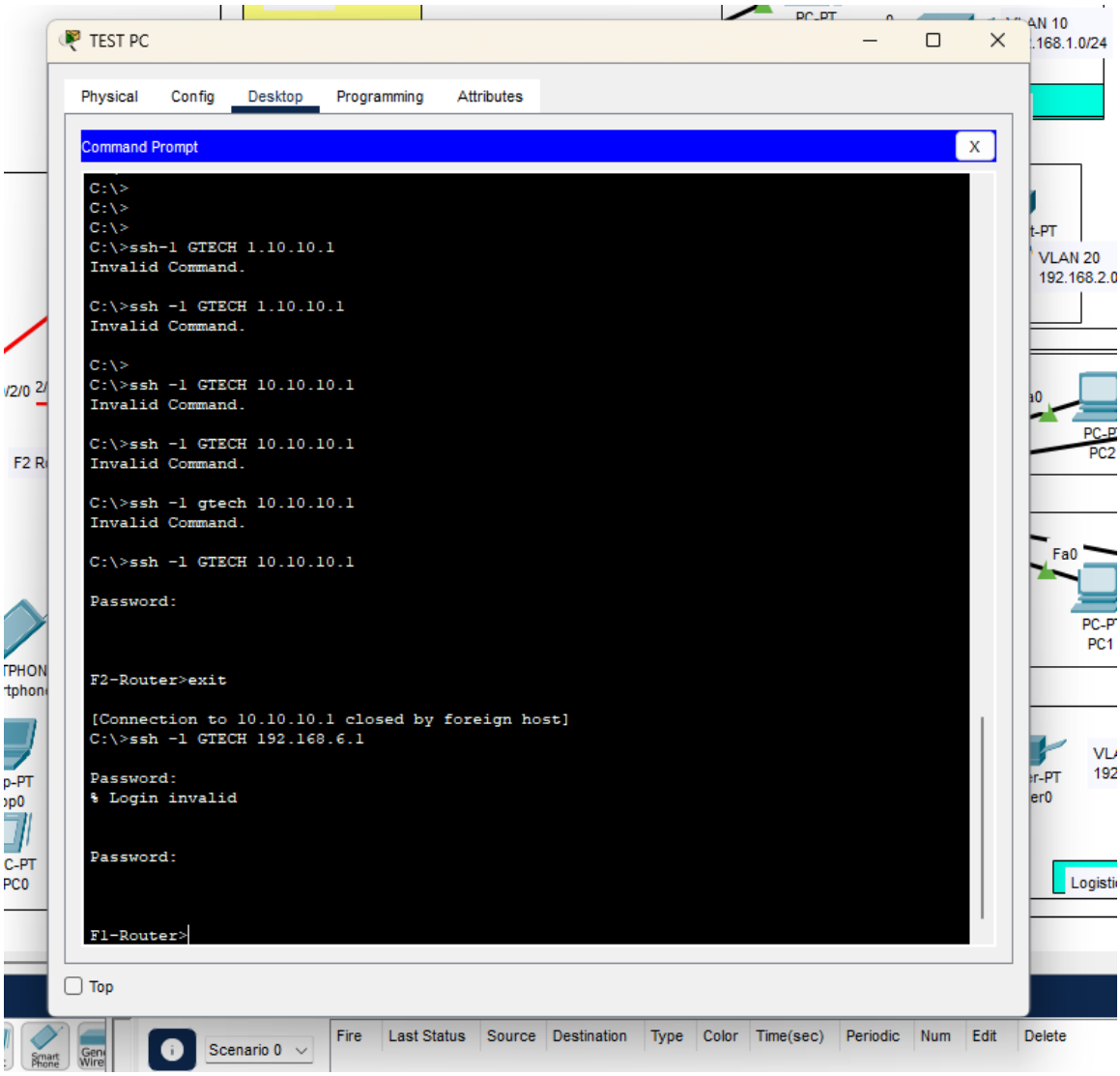


8. Security

- SSH Configuration on Routers:
hostname [RouterName]
ip domain-name GTECH
username GTECH password GTECH
crypto key generate rsa 1024
line vty 0 15
login local
transport input ssh
- Port Security on IT Switch:
interface fa0/1
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation shutdown
- Allows only Test-PC to access port fa0/1.

9. Testing

- Ping Test: Confirm connectivity between VLANs and routers.
- SSH Test: Use Test-PC to remotely access all routers:
ssh -l GTECH 10.10.10.1
ssh -l GTECH 192.168.6.1
- DHCP Test: Confirm PCs and printers receive IP addresses dynamically.



10. Conclusion

The Vic Modern Hotel network is successfully designed and implemented with:

- Proper VLAN segmentation.
- DHCP and OSPF routing for connectivity.
- Secure remote management via SSH.
- Port security implemented for sensitive IT devices.

All devices communicate seamlessly, ensuring efficient operations across all floors.