



Project: Vic-Deluxe Guest House

Introduction

Purpose of the Project

The Guest Room Management System (GRMS) is a comprehensive solution tailored to the operational needs of Vic Deluxe Guest House. The project leverages modern networking technologies to ensure efficient management of guest services and departmental operations.

1. **Streamlined Operations:** Dedicated to enhancing room assignments, housekeeping, and guest requests.
2. **Enhanced Security:** VLAN segmentation safeguards departmental communications and data.
3. **Optimized Management:** Automates IP assignments with DHCP and facilitates routing using OSPF.
4. **Scalability:** Supports future expansions like IoT devices or service enhancements.

Scope of the Project

The GRMS encompasses networking infrastructure for a four-floor layout with specific functionalities:

1. **1st Floor:** Reception and Store.
2. **2nd Floor:** Finance, HR, and Sales/Marketing departments.
3. **3rd Floor:** Admin and IT departments.
4. **4th Floor:** Guest Room Management.

Salient Features of the System

1. **Network Segmentation:** VLANs isolate departmental networks for security and performance.
2. **Dynamic Address Allocation:** DHCP simplifies device integration with automated IP assignment.
3. **Efficient Routing:** OSPF ensures optimized communication across the network.

4. **Scalability:** Room for additional services and IoT integrations in the future.
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Technologies and Protocols

- **VLANs:** Segment traffic for secure departmental operations.
- **DHCP:** Automates IP address allocation per floor.
- **OSPF:** Scalable routing between floors.
- **SSH:** Secures router management.
- **VLAN:** Wireless connectivity for staff and guests.
- **Switch Port Security:** Restricts unauthorized access on IT ports.

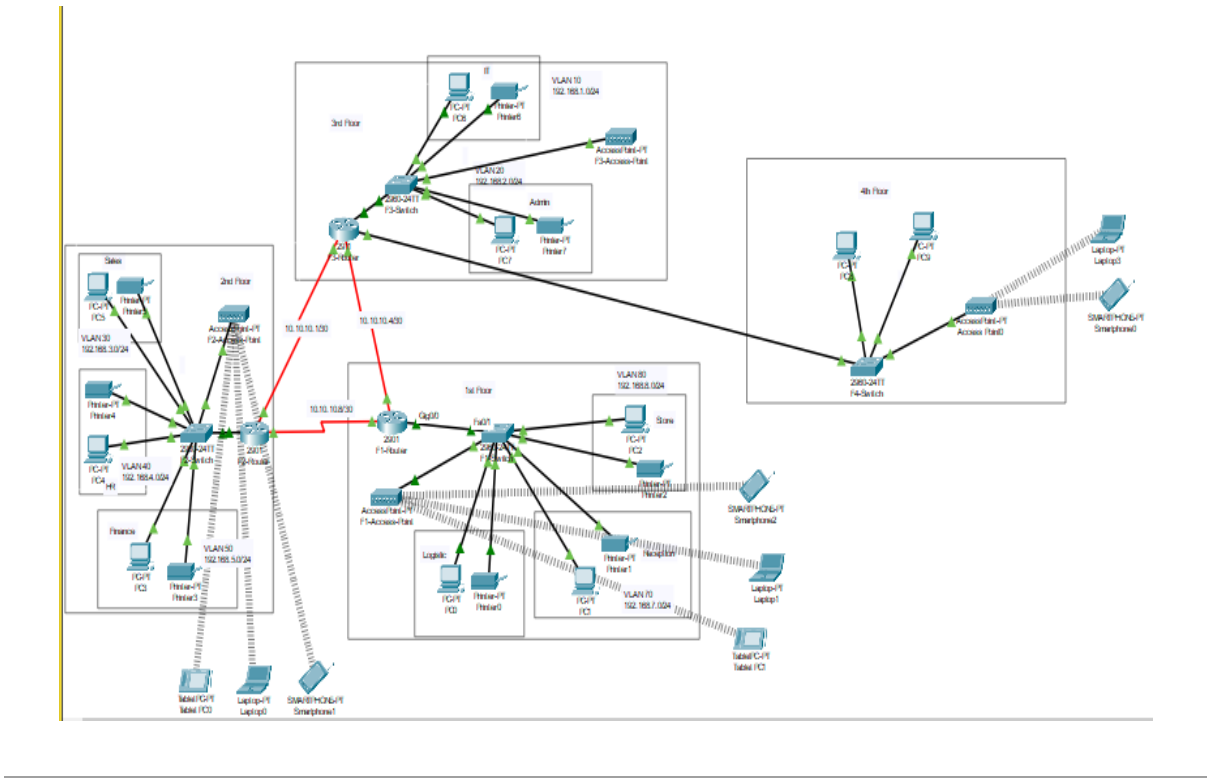
4th Floor – Guest Room Management

- **Purpose:** Manages guest services like housekeeping and room assignments.
 - **Features:** VLAN isolation, scalability for IoT, and seamless integration with other floors.
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Testing and Verification

1. VLANs tested for traffic isolation and security.
 2. DHCP verified for dynamic IP assignment.
 3. OSPF routing ensures efficient inter-floor communication.
 4. SSH secures administrative access to routers.
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Network Toplogy



CLI Commands

Router 1

The screenshot shows a Cisco Packet Tracer interface with a console window titled "Router1". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" currently selected. The main area displays the IOS Command Line Interface (CLI) session.

```

Router>en
Router#config t
Enter configuration commands, one per line. End with CTRL/Z.
Router(config)#interface serial 0/3/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#clock rate 56000
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/3/0, changed state to down
Router(config-if)#int fa0/0/0
Router(config-if)#ip add 192.168.10.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
VLINERPROTO-5-UPDOWN: line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#int fa0/1
Router(config-if)#ip add 192.168.12.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
VLINERPROTO-5-UPDOWN: line protocol on Interface FastEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 s0/3/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line. End with CTRL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 s0/1/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

%LINK-5-CHANGED: Interface Serial0/3/0, changed state to up
VLINERPROTO-5-UPDOWN: line protocol on Interface Serial0/3/0, changed state to up

```

At the bottom right of the console window are two buttons labeled "Copy" and "Paste".

Router 2

Physical Config **CLI** Attributes

IOS Command Line Interface

Would you like to enter the initial configuration dialog? (yes/no): no

Press RETURN to get started!

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 0/3/0
Router(config-if)#ip add 192.168.11.2 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/3/0, changed state to up

Router(config-if)#interface
%LINKPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed stat
Router(config-if)#exit
Router(config)#interface serial 0/1/0
Router(config-if)#ip add 192.168.14.1 255.255.255.0
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#int fa0/0
Router(config-if)#ip add 192.168.16.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINKPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#int fa0/1
Router(config-if)#ip add 192.168.15.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINKPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#
  
```

Copy Paste

VLAN Implementation

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name marketing
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name it
Switch(config-vlan)#exit
Switch(config)#exit
Switch#
keys-k-COMPID_1: configured from console by console

Switch#wr
Building configuration...
[OK]
Switch#show vlan br

VLAN Name                Status    Ports
-----
1    default                active    Fa0/7, Fa0/9, Fa0/10, Fa0/11,
                                           Fa0/12, Fa0/13, Fa0/14, Fa0/15,
                                           Fa0/16, Fa0/17, Fa0/18, Fa0/19,
                                           Fa0/20, Fa0/21, Fa0/22, Fa0/23
                                           ram/24

10   marketing              active    Fa0/24

20   it                     active    Fa0/24

1002 fddi-default          active
1003 token-ring-default   active
1004 fddinet-default       active
1005 tnetr-default         active

Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/2-3
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#int range fa0/4-5
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
keys-k-COMPID_1: configured from console by console

Switch#wr
Building configuration...
[OK]
Switch#show vlan br
  
```

Copy Paste

Admin Office

The screenshot shows the configuration window for 'Access Point0'. The 'Config' tab is selected. On the left, under 'INTERFACE', 'Port 1' is highlighted. The main area shows settings for 'Port 1':

- Port Status: ☒ On
- SSID: Admin
- 2.4 GHz Channel: 6
- Coverage Range (meters): 140.00
- Authentication: ☒ WPA2-PSK (Other options: Disabled, WEP, WPA-PSK)
- WEP Key: (empty)
- PSK Pass Phrase: adminoffice
- User ID: (empty)
- Password: (empty)
- Encryption Type: AES

Second Floor

The screenshot shows the configuration window for 'Access Point3'. The 'Config' tab is selected. On the left, under 'INTERFACE', 'Port 1' is highlighted. The main area shows settings for 'Port 1':

- Port Status: ☒ On
- SSID: Second
- 2.4 GHz Channel: 6
- Coverage Range (meters): 140.00
- Authentication: ☒ WPA2-PSK (Other options: Disabled, WEP, WPA-PSK)
- WEP Key: (empty)
- PSK Pass Phrase: secondfloor
- User ID: (empty)
- Password: (empty)
- Encryption Type: AES

DHCP Implementation

Router 1

```
Router#en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip dhcp pool lan1
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#network 192.168.10.2 255.255.255.0
Router(dhcp-config)#exit
Router(config)#
```

Buttons: Copy, Paste

☐ Top

Router 2

```
Router#en
Router#conf t
Enter configuration commands, one per line. End with ctrl/z.
Router(config)#ip dhcp pool lan2
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#network 192.168.10.2 255.255.255.0
Router(dhcp-config)#exit
Router(config)#ip dhcp pool lan3
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#network 192.168.10.2 255.255.255.0
Router(dhcp-config)#exit
```

Conclusion and Future Scope

The GRMS successfully meets operational and guest service requirements, ensuring efficient communication, security, and scalability. Future enhancements may include IoT-enabled smart room systems and advanced analytics for network performance monitoring.