2025

Bank System Network Design

Subash Subedi

Design and Implementation of a Bank System Network Design (Project #5)

Project #5 Case Study and Requirements

Radeon Company Ltd. is a US-owned company that deals with Banking and Insurance. The company is intending to expand its services across the African continent having the first branch to be located in Nairobi, Kenya. The company has secured a four-story building to operate within the Kenyan capital city. Therefore, the company would like to allow sourcing the knowledge from a group of final-year students from the local university to design and implement their company network. Assume you are among the students to take over this role, carefully read down the requirements then model the design and implement the network based on the company's needs. Each floor has departments as provided on the table below.;

First Floor			
No.	Departments	No. of PC	No. of Printers
1	Management	20	4
2	Research	20	4
3	Human resource	20	4

Second Floor			
No.	Departments	No. of PC	No. of Printers
1	Marketing	20	4
2	Accounting	20	4
3	Finance	20	4

Third Floor			
No.	Departments	No. of PC	No. of Printers
1	Logistics and store	20	4
2	Customer care	20	4
3	Guest Area	40	2

Fourth Floor				
No.	Departments	No. of PC	No. of Printers	No of Servers
1	Administration	20	2	
2	ICT	20	2	
3	Server Room	2 Admin PCs		3 (DHCP, HTTP and Email)

- Use a software modeling tool to visualize the network topology (Use Hierarchical Network Design - Software Modelling Tools: MS Visio, Visual Paradigm, or Draw.io for modeling network design.
- Use any of the following network simulation software to implement the above topology. - Simulation software: Cisco Packet tracer or GNS3 for design and implementation.
- Use OSPF as the routing protocol to advertise routes.
- Each department is required to have a wireless network for the users.

- Each department except the server room will be anticipated to have around 60 users both wired and wireless users.
- Host devices in the network are required to obtain IPv4 addresses automatically.
- Devices in all the departments are required to communicate with each other.
- Create HTTP, and E-mail servers.
- All devices in the network are expected to obtain an IP address dynamically from the dedicated DHCP servers located at the server room.
- Configure SSH in all the routers for remote login.
- Configure the basic configuration of the devices: Hostnames, Line Console and Enable passwords, Banner messages Disable domain IP lookup, encrypt all configured passwords.
- Each department should be in a different VLAN and subnetwork; VLANs you will use in your case, e.g. 10, 20, 30… etc..
- Planning of IP Addresses: You have been given 192.168.10.0 as the base address for this network. Do subnetting based on the number of hosts in every department as provided above. Identify subnet mask, useable IP address range, and broadcast address for each subnet.
- End Device Configurations: Configure all the end devices in the network with the appropriate IP address based on the calculations above.
- Configure port-security: Use sticky command to obtain MAC Address and Violation mode of the shutdown.
- Test and Verifying Network Communication.

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Technologies Implemented

1. Creating a network topology using Cisco Packet Tracer.

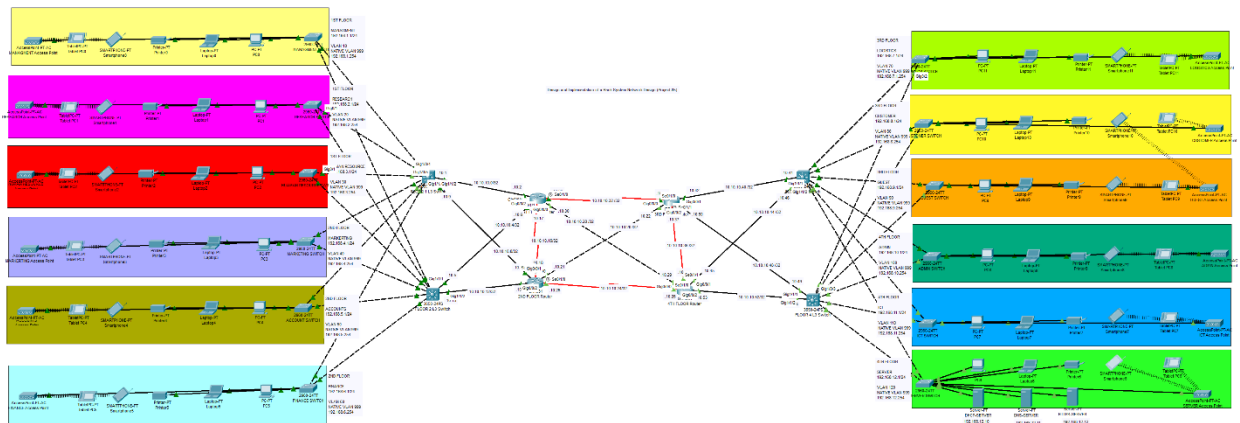Mesh Topology

2. Hierarchical Network Design.

Figure 1

3. Connecting Networking devices with Correct cabling.

INTERMEDIATE NETWORKING DEVICE

1. Router – Model – ISR 4331

2. L3 Switch – Model – 3650-24P

3. L2 Switch – Model – 2960- 24TT (IOS 15)

CABLE

Copper Cable

Serial DCE

4. Configuring Basic device settings.

MANAGEMENT DEPARTMENT SWITCH	LOGISTICS DEPARTMENT SWITCH
enable configure terminal hostname MANAGMENT_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit	enable configure terminal hostname LOGISTICS_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit
RESEARCH DEPARTMENT SWITCH	CUSTOMER DEPARTMENT SWITCH
enable configure terminal hostname RESEARCH_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local	enable configure terminal hostname CUSTOMER_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local

exit no ip domain lookup do wr end exit	exit no ip domain lookup do wr end exit
HUAMAN RESOURCE DEPARTMENT SWITCH enable configure terminal hostname HUMAN_RESOURCE_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit	**GUEST DEPARTMENT SWITCH** enable configure terminal hostname GUEST_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit
MARKETING DEPARTMENT SWITCH enable configure terminal hostname MARKETING_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash	**ADMIN DEPARTMENT SWITCH** enable configure terminal hostname ADMIN_SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash

username SUBASH privilege 15 secret SUBASH	username SUBASH privilege 15 secret SUBASH
service password-encryption	service password-encryption
line console 0	line console 0
motd-banner	motd-banner
login local	login local
exit	exit
no ip domain lookup	no ip domain lookup
do wr	do wr
end	end
exit	exit

ACCOUNT DEPARTMENT SWITCH

enable
configure terminal

hostname ACCOUNT_SWITCH
do clock set 09:17:00 29 APRIL 2025
banner motd $ ONLY AUTHORIZED USER $

username admin privilege 1 secret admin
username cisco privilege 5 secret cisco
username subash privilege 15 secret subash
username SUBASH privilege 15 secret SUBASH

service password-encryption

line console 0
motd-banner
login local
exit

no ip domain lookup

do wr

end
exit

ICT DEPARTMENT SWITCH

enable
configure terminal

hostname ICT_SWITCH
do clock set 09:17:00 29 APRIL 2025
banner motd $ ONLY AUTHORIZED USER $

username admin privilege 1 secret admin
username cisco privilege 5 secret cisco
username subash privilege 15 secret subash
username SUBASH privilege 15 secret SUBASH

service password-encryption

line console 0
motd-banner
login local
exit

no ip domain lookup

do wr

end
exit

FINANCE DEPARTMENT SWITCH

enable
configure terminal

SERVER DEPARTMENT SWITCH

enable
configure terminal

```
hostname FINANCE_SWITCH

do clock set 09:17:00 29 APRIL 2025

banner motd $ ONLY AUTHORIZED USER $


username admin privilege 1 secret admin

username cisco privilege 5 secret cisco

username subash privilege 15 secret subash

username SUBASH privilege 15 secret SUBASH


service password-encryption


line console 0

motd-banner

login local

exit


no ip domain lookup


do wr


end

exit
```

```
hostname SERVER_SWITCH

do clock set 09:17:00 29 APRIL 2025

banner motd $ ONLY AUTHORIZED USER $


username admin privilege 1 secret admin

username cisco privilege 5 secret cisco

username subash privilege 15 secret subash

username SUBASH privilege 15 secret SUBASH


service password-encryption


line console 0

motd-banner

login local

exit


no ip domain lookup


do wr


end

exit
```

1st FLOOR L3 SWITCH

```
enable

configure terminal


hostname 1st-FLOOR-L3-SWITCH

do clock set 09:17:00 29 APRIL 2025

banner motd $ ONLY AUTHORIZED USER $


username admin privilege 1 secret admin

username cisco privilege 5 secret cisco

username subash privilege 15 secret subash

username SUBASH privilege 15 secret SUBASH


service password-encryption


line console 0

motd-banner

login local

exit


no ip domain lookup


do wr
```

3rd FLOOR L3 SWITCH

```
enable

configure terminal


hostname 3rd-FLOOR-L3-SWITCH

do clock set 09:17:00 29 APRIL 2025

banner motd $ ONLY AUTHORIZED USER $


username admin privilege 1 secret admin

username cisco privilege 5 secret cisco

username subash privilege 15 secret subash

username SUBASH privilege 15 secret SUBASH


service password-encryption


line console 0

motd-banner

login local

exit


no ip domain lookup


do wr
```

end exit	end exit
2nd FLOOR L3 SWITCH enable configure terminal hostname 2nd-FLOOR-L3-SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit	**4TH FLOOR L3 SWITCH** enable configure terminal hostname 4th-FLOOR-L3-SWITCH do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit

1st FLOOR ROUTER enable configure terminal hostname 1ST-FLOOR-ROUTER do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption	**3RD FLOOR ROUTER** enable configure terminal hostname 3RD-FLOOR-ROUTER do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption

line console 0 motd-banner login local exit no ip domain lookup do wr end exit	line console 0 motd-banner login local exit no ip domain lookup do wr end exit
2ND FLOOR ROUTER enable configure terminal hostname 2ND-FLOOR-ROUTER do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit	**4TH FLOOR ROUTER** enable configure terminal hostname 4TH-FLOOR-ROUTER do clock set 09:17:00 29 APRIL 2025 banner motd $ ONLY AUTHORIZED USER $ username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash username SUBASH privilege 15 secret SUBASH service password-encryption line console 0 motd-banner login local exit no ip domain lookup do wr end exit

5. Creating VLANs and assigning ports VLAN numbers.

MANAGEMENT DEPARTMENT SWITCH	LOGISTICS DEPARTMENT SWITCH
enable configure terminal vlan 10 name MANAGMENT-1st-Floor exit vlan 999 name NATIVE exit interface vlan 10 ip address 192.168.1.254 255.255.255.0 no shutdown ip default-gateway 192.168.1.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 10 no shutdown exit end wr	enable configure terminal vlan 70 name LOGISTIC-3RD-FLOOR exit vlan 999 name NATIVE exit interface vlan 70 ip address 192.168.7.254 255.255.255.0 no shutdown ip default-gateway 192.168.7.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 70 no shutdown exit end wr
RESEARCH DEPARTMENT SWITCH	**CUSTOMER DEPARTMENT SWITCH**
enable configure terminal vlan 20 name RESEARCH-1st-FLOOR exit vlan 999 name NATIVE exit interface vlan 20 ip address 192.168.2.254 255.255.255.0 no shutdown	enable configure terminal vlan 80 name CUSTOMER-3RD-FLOOR exit vlan 999 name NATIVE exit interface vlan 80 ip address 192.168.8.254 255.255.255.0 no shutdown

ip default-gateway 192.168.2.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 20 no shutdown exit end wr	ip default-gateway 192.168.8.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 80 no shutdown exit
HUMAN RESOURCE DEPARTMENT SWITCH enable configure terminal vlan 30 name HUMAN-RESOURCE-1st-FLOOR exit vlan 999 name NATIVE exit interface vlan 30 ip address 192.168.3.254 255.255.255.0 no shutdown ip default-gateway 192.168.3.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 30 no shutdown exit end wr	**GUEST DEPARTMENT SWITCH** enable configure terminal vlan 90 name GUEST-3RD-FLOOR exit vlan 999 name NATIVE exit interface vlan 90 ip address 192.168.9.254 255.255.255.0 no shutdown ip default-gateway 192.168.9.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 90 no shutdown exit end wr
MARKETING DEPARTMENT SWITCH enable configure terminal vlan 40 name MARKETING-2ND-FLOOR exit vlan 999	**ADMIN DEPARTMENT SWITCH** enable configure terminal vlan 100 name ADMIN-4TH-FLOOR exit vlan 999

name NATIVE exit interface vlan 40 ip address 192.168.4.254 255.255.255.0 no shutdown ip default-gateway 192.168.4.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 40 no shutdown exit end wr	name NATIVE exit interface vlan 100 ip address 192.168.10.254 255.255.255.0 no shutdown ip default-gateway 192.168.10.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 100 no shutdown exit end wr
ACCOUNT DEPARTMENT SWITCH enable configure terminal vlan 50 name ACCOUNT-2ND-FLOOR exit vlan 999 name NATIVE exit interface vlan 50 ip address 192.168.5.254 255.255.255.0 no shutdown ip default-gateway 192.168.5.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 50 no shutdown exit end wr	***ICT DEPARTMENT SWITCH*** enable configure terminal vlan 110 name ICT-4TH-FLOOR exit vlan 999 name NATIVE exit interface vlan 110 ip address 192.168.11.254 255.255.255.0 no shutdown ip default-gateway 192.168.11.1 interface range fastethernet 0/1-24 switchport mode access switchport access vlan 110 no shutdown exit end wr
FINANCE DEPARTMENT SWITCH enable	***SERVER DEPARTMENT SWITCH*** enable

```
configure terminal

vlan 60
name FINANCE-2ND-FLOOR
exit

vlan 999
name NATIVE
exit

interface vlan 60
ip address 192.168.6.254 255.255.255.0
no shutdown

ip default-gateway 192.168.6.1

interface range fastethernet 0/1-24
switchport mode access
switchport access vlan 60
no shutdown
exit

end
wr
```

```
configure terminal

vlan 120
name SERVER-4TH-FLOOR
exit

vlan 999
name NATIVE
exit

interface vlan 120
ip address 192.168.12.254 255.255.255.0
no shutdown

ip default-gateway 192.168.12.1

interface range fastethernet 0/1-24
switchport mode access
switchport access vlan 120
no shutdown
exit

end
wr
```

1st & 2ND FLOOR L3 SWITCH

```
enable
configure terminal

vlan 10
name MANAGMENT-1st-Floor
exit

vlan 20
name RESEARCH-1st-FLOOR
exit

vlan 30
name HUMAN-RESOURCE-1st-FLOOR
exit

vlan 40
name MARKETING-2ND-FLOOR
exit

vlan 50
```

3rd & 4TH FLOOR L3 SWITCH

```
enable
configure terminal

vlan 70
name LOGISTIC-3RD-FLOOR
exit

vlan 80
name CUSTOMER-3RD-FLOOR
exit

vlan 90
name GUEST-3RD-FLOOR
exit

vlan 100
name ADMIN-4TH-FLOOR
exit

vlan 110
```

```
name ACCOUNT-2ND-FLOOR          name ICT-4TH-FLOOR
exit                            exit


vlan 60                         vlan 120
name FINANCE-2ND-FLOOR          name SERVER-4TH-FLOOR
exit                            exit


vlan 999                        vlan 999
name NATIVE                     name NATIVE
exit                            exit


end                             end
wr                              wr
```

6. Subnetting and IP Addressing.

Floor	DEPARTMENT	NETWORK ID	GATEWAYS / STARTING IP	LAST IP / VLAN IP	BROADCAST ID	SUBNET MASK
1st Floor	MANAGEMENT DEPARTMENT	192.168.1.0 /24	192.168.1.1	192.168.1.254	192.168.1.255	255.255.255.0
	ACCOUNTING DEPARTMENT	192.168.2.0 /24	192.168.2.1	192.168.2.254	192.168.2.255	255.255.255.0
	HR DEPARTMENT	192.168.3.0 /24	192.168.3.1	192.168.3.254	192.168.3.255	255.255.255.0
2nd Floor	MARKETING DEPARTMENT	192.168.4.0 /24	192.168.4.1	192.168.4.254	192.168.4.255	255.255.255.0
	ACCOUNTING DEPARTMENT	192.168.5.0 /24	192.168.5.1	192.168.5.254	192.168.5.255	255.255.255.0
	FINANCE DEPARTMENT	192.168.6.0 /24	192.168.6.1	192.168.6.254	192.168.6.255	255.255.255.0
3rd Floor	LOGISTIC & STORE DEPARTMENT	192.168.7.0 /24	192.168.7.1	192.168.7.254	192.168.7.255	255.255.255.0
	CUSTOMER CARE DEPARTMENT	192.168.8.0 /24	192.168.8.1	192.168.8.254	192.168.8.255	255.255.255.0
	GUEST DEPARTMENT	192.168.9.0 /24	192.168.9.1	192.168.9.254	192.168.9.255	255.255.255.0
4th Floor	ADMINISTRATION DEPARTMENT	192.168.10.0 /24	192.168.10.1	192.168.10.254	192.168.10.255	255.255.255.0
	ICT DEPARTMENT	192.168.11.0/24	192.168.11.1	192.168.11.254	192.168.11.255	255.255.255.0
	SERVER DEPARTMENT	192.168.12.0/24	192.168.12.1	192.168.12.254	192.168.12.255	255.255.255.0

1st FLOOR L3 SWITCH	*3rd FLOOR L3 SWITCH*
enable configure terminal interface GigabitEthernet 1/1/1 no switchport ip address 10.10.10.1 255.255.255.252 no shutdown exit interface GigabitEthernet 1/1/2 no switchport ip address 10.10.10.9 255.255.255.252 no shutdown exit end wr	enable configure terminal interface GigabitEthernet 1/1/1 no switchport ip address 10.10.10.41 255.255.255.252 no shutdown exit interface GigabitEthernet 1/1/2 no switchport ip address 10.10.10.46 255.255.255.252 no shutdown exit end wr

1ST FLOOR L3 SWITCH	**4TH FLOOR L3 SWITCH**
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 1/1/1	interface GigabitEthernet 1/1/1
no switchport	no switchport
ip address 10.10.10.5 255.255.255.252	ip address 10.10.10.49 255.255.255.252
no shutdown	no shutdown
exit	exit
interface GigabitEthernet 1/1/2	interface GigabitEthernet 1/1/2
no switchport	no switchport
ip address 10.10.10.13 255.255.255.252	ip address 10.10.10.54 255.255.255.252
no shutdown	no shutdown
exit	exit
end	end
wr	wr

1st FLOOR L3 SWITCH	**3rd FLOOR L3 SWITCH**
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 0/0/0	interface GigabitEthernet 0/0/0
ip address 10.10.10.30 255.255.255.252	ip address 10.10.10.22 255.255.255.252
no shutdown	no shutdown
exit	exit
interface GigabitEthernet 0/0/1	interface GigabitEthernet 0/0/1
ip address 10.10.10.2 255.255.255.252	ip address 10.10.10.42 255.255.255.252
no shutdown	no shutdown
exit	exit
interface GigabitEthernet 0/0/2	interface GigabitEthernet 0/0/2
ip address 10.10.10.6 255.255.255.252	ip address 10.10.10.50 255.255.255.252
no shutdown	no shutdown
exit	exit
interface Serial 0/1/0	interface Serial 0/1/0
ip address 10.10.10.33 255.255.255.252	ip address 10.10.10.34 255.255.255.252
clock rate 64000	clock rate 64000
no shutdown	no shutdown
exit	exit
interface Serial0/1/1	interface Serial0/1/1

ip address 10.10.10.17 255.255.255.252	ip address 10.10.10.37 255.255.255.252
clock rate 64000	clock rate 64000
no shutdown	no shutdown
exit	exit
end	end
wr	wr
2nd FLOOR L3 SWITCH	**4TH FLOOR L3 SWITCH**
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 0/0/0	interface GigabitEthernet 0/0/0
ip address 10.10.10.21 255.255.255.252	ip address 10.10.10.29 255.255.255.252
no shutdown	no shutdown
exit	exit
interface GigabitEthernet 0/0/1	interface GigabitEthernet 0/0/1
ip address 10.10.10.10 255.255.255.252	ip address 10.10.10.45 255.255.255.252
no shutdown	no shutdown
exit	exit
interface GigabitEthernet 0/0/2	interface GigabitEthernet 0/0/2
ip address 10.10.10.14 255.255.255.252	ip address 10.10.10.53 255.255.255.252
no shutdown	no shutdown
exit	exit
interface Serial 0/1/0	interface Serial 0/1/0
ip address 10.10.10.25 255.255.255.252	ip address 10.10.10.26 255.255.255.252
clock rate 64000	clock rate 64000
no shutdown	no shutdown
exit	exit
interface Serial0/1/1	interface Serial0/1/1
ip address 10.10.10.18 255.255.255.252	ip address 10.10.10.38 255.255.255.252
clock rate 64000	clock rate 64000
no shutdown	no shutdown
exit	exit
end	end
wr	wr

7. Configure Link Aggregation Control Protocol EtherChannel {LACP (802.3ad)}

MANAGEMENT DEPARTMENT SWITCH	LOGISTICS DEPARTMENT SWITCH
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 0/1	interface GigabitEthernet 0/1
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 1 mode active	channel-group 1 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 1	interface port-channel 1
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 10	switchport trunk allowed vlan 70
switchport nonegotiate	switchport nonegotiate
exit	exit
interface GigabitEthernet 0/2	interface GigabitEthernet 0/2
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 2 mode active	channel-group 2 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 2	interface port-channel 2
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 10	switchport trunk allowed vlan 70
switchport nonegotiate	switchport nonegotiate
exit	exit
do wr	do wr
RESEARCH DEPARTMENT SWITCH	**CUSTOMER DEPARTMENT SWITCH**
enable	enable
configure terminal	configure terminal

interface GigabitEthernet 0/1

description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 1 mode active

no shutdown

exit

interface port-channel 1

switchport mode trunk

switchport trunk native vlan 999

switchport trunk allowed vlan 20

switchport nonegotiate

exit

interface GigabitEthernet 0/2

description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 2 mode active

no shutdown

exit

interface port-channel 2

switchport mode trunk

switchport trunk native vlan 999

switchport trunk allowed vlan 20

switchport nonegotiate

exit

do wr

---

interface GigabitEthernet 0/1

description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 1 mode active

no shutdown

exit

interface port-channel 1

switchport mode trunk

switchport trunk native vlan 999

switchport trunk allowed vlan 80

switchport nonegotiate

exit

interface GigabitEthernet 0/2

description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 2 mode active

no shutdown

exit

interface port-channel 2

switchport mode trunk

switchport trunk native vlan 999

switchport trunk allowed vlan 80

switchport nonegotiate

exit

do wr

HUMAN RESOURCE DEPARTMENT SWITCH

enable

configure terminal

interface GigabitEthernet 0/1

description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 1 mode active

no shutdown

exit

GUEST DEPARTMENT SWITCH

enable

configure terminal

interface GigabitEthernet 0/1

description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH **

shutdown

channel-protocol lacp

channel-group 1 mode active

no shutdown

exit

interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 30 switchport nonegotiate exit interface GigabitEthernet 0/2 description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH ** shutdown channel-protocol lacp channel-group 2 mode active no shutdown exit interface port-channel 2 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 30 switchport nonegotiate exit do wr	interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 90 switchport nonegotiate exit interface GigabitEthernet 0/2 description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH ** shutdown channel-protocol lacp channel-group 2 mode active no shutdown exit interface port-channel 2 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 90 switchport nonegotiate exit do wr
MARKETING DEPARTMENT SWITCH enable configure terminal interface GigabitEthernet 0/1 description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 40 switchport nonegotiate exit interface GigabitEthernet 0/2	**ADMIN DEPARTMENT SWITCH** enable configure terminal interface GigabitEthernet 0/1 description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 100 switchport nonegotiate exit interface GigabitEthernet 0/2

description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 2 mode active	channel-group 2 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 2	interface port-channel 2
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 40	switchport trunk allowed vlan 100
switchport nonegotiate	switchport nonegotiate
exit	exit
do wr	do wr
ACCOUNT DEPARTMENT SWITCH	**ICT DEPARTMENT SWITCH**
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 0/1	interface GigabitEthernet 0/1
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 1 mode active	channel-group 1 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 1	interface port-channel 1
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 50	switchport trunk allowed vlan 110
switchport nonegotiate	switchport nonegotiate
exit	exit
interface GigabitEthernet 0/2	interface GigabitEthernet 0/2
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 2 mode active	channel-group 2 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 2	interface port-channel 2

switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 50	switchport trunk allowed vlan 110
switchport nonegotiate	switchport nonegotiate
exit	exit
do wr	do wr

FINANCE DEPARTMENT SWITCH	**SERVER DEPARTMENT SWITCH**
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 0/1	interface GigabitEthernet 0/1
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL THIRD FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 1 mode active	channel-group 1 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 1	interface port-channel 1
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 60	switchport trunk allowed vlan 120
switchport nonegotiate	switchport nonegotiate
exit	exit
interface GigabitEthernet 0/2	interface GigabitEthernet 0/2
description ** TRUNK INTERFACE LACP ETHERCHANNEL FIRST FLOOR L3 SWITCH **	description ** TRUNK INTERFACE LACP ETHERCHANNEL FOURTH FLOOR L3 SWITCH **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 2 mode active	channel-group 2 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 2	interface port-channel 2
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 60	switchport trunk allowed vlan 120
switchport nonegotiate	switchport nonegotiate
exit	exit
do wr	do wr

1ˢᵗ & 2ᴺᴰ FLOOR L3 SWITCH	**3ʳᵈ & 4ᵀᴴ FLOOR L3 SWITCH**

```
enable
configure terminal

interface GigabitEthernet 1/0/3
description ** MANAGMENT TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 1 mode active
no shutdown
exit

interface port-channel 1
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 10
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/3
description ** LOGISTIC TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 7 mode active
no shutdown
exit

interface port-channel 7
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 70
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/4
description ** REARCH TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 2 mode active
no shutdown
exit

interface port-channel 2
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 20
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/4
description ** CUSTOMER TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 8 mode active
no shutdown
exit

interface port-channel 8
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 80
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal
```

```
enable
configure terminal
```

```
interface GigabitEthernet 1/0/5
description ** HR TRUNK INTERFACE LACP ETHERCHANNEL
**
shutdown
channel-protocol lacp
channel-group 3 mode active
no shutdown
exit

interface port-channel 3
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 30
switchport nonegotiate
no shutdown
exit

end
wr
```

```
interface GigabitEthernet 1/0/5
description ** GUEST TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 9 mode active
no shutdown
exit

interface port-channel 9
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 90
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/6
description ** MARKETING TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 4 mode active
no shutdown
exit

interface port-channel 4
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 40
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/6
description ** ADMIN TRUNK INTERFACE LACP
ETHERCHANNEL **
shutdown
channel-protocol lacp
channel-group 10 mode active
no shutdown
exit

interface port-channel 10
switchport mode trunk
switchport trunk native vlan 999
switchport trunk allowed vlan 100
switchport nonegotiate
no shutdown
exit

end
wr
```

```
enable
configure terminal

interface GigabitEthernet 1/0/7
```

```
enable
configure terminal

interface GigabitEthernet 1/0/7
```

description ** ACCOUNT TRUNK INTERFACE LACP ETHERCHANNEL **	description ** ICT TRUNK INTERFACE LACP ETHERCHANNEL **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 5 mode active	channel-group 11 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 5	interface port-channel 11
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 50	switchport trunk allowed vlan 110
switchport nonegotiate	switchport nonegotiate
no shutdown	no shutdown
exit	exit
end	end
wr	wr
enable	enable
configure terminal	configure terminal
interface GigabitEthernet 1/0/8	interface GigabitEthernet 1/0/8
description ** FINANCE TRUNK INTERFACE LACP ETHERCHANNEL **	description ** SERVER TRUNK INTERFACE LACP ETHERCHANNEL **
shutdown	shutdown
channel-protocol lacp	channel-protocol lacp
channel-group 6 mode active	channel-group 12 mode active
no shutdown	no shutdown
exit	exit
interface port-channel 6	interface port-channel 12
switchport mode trunk	switchport mode trunk
switchport trunk native vlan 999	switchport trunk native vlan 999
switchport trunk allowed vlan 60	switchport trunk allowed vlan 120
switchport nonegotiate	switchport nonegotiate
no shutdown	no shutdown
exit	exit
end	end
wr	wr

8. Configuring Inter-VLAN Routing on the Multilayer switches (Switch Virtual Interface).

1ˢᵗ & 2ᴺᴰ FLOOR L3 SWITCH	3ʳᵈ & 4ᵀᴴ FLOOR L3 SWITCH
enable configure terminal interface vlan 10 no shutdown ip address 192.168.1.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 20 no shutdown ip address 192.168.2.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 30 no shutdown ip address 192.168.3.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 40 no shutdown ip address 192.168.4.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 50 no shutdown ip address 192.168.5.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 60 no shutdown ip address 192.168.6.1 255.255.255.0 ip helper-address 192.168.12.10 exit	enable configure terminal interface vlan 70 no shutdown ip address 192.168.7.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 80 no shutdown ip address 192.168.8.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 90 no shutdown ip address 192.168.9.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 100 no shutdown ip address 192.168.10.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 110 no shutdown ip address 192.168.11.1 255.255.255.0 ip helper-address 192.168.12.10 exit interface vlan 120 no shutdown ip address 192.168.12.1 255.255.255.0 exit

9. Configuring Dedicated DHCP Server device to provide dynamic IP allocation.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
ACCOUNT-POOL	192.168.5.1	192.168.12.11	192.168.5.15	255.255.255.0	235	0.0.0.0	0.0.0.0
FINANCE-POOL	192.168.6.1	192.168.12.11	192.168.6.15	255.255.255.0	235	0.0.0.0	0.0.0.0
LOGISTIC-POOL	192.168.7.1	192.168.12.11	192.168.7.15	255.255.255.0	235	0.0.0.0	0.0.0.0
CUSTOMER-POOL	192.168.8.1	192.168.12.11	192.168.8.15	255.255.255.0	235	0.0.0.0	0.0.0.0
GUEST-POOL	192.168.9.1	192.168.12.11	192.168.9.15	255.255.255.0	235	0.0.0.0	0.0.0.0
ADMIN-POOL	192.168.10.1	192.168.12.11	192.168.10.15	255.255.255.0	235	0.0.0.0	0.0.0.0
ICT-POOL	192.168.11.1	192.168.12.11	192.168.11.15	255.255.255.0	235	0.0.0.0	0.0.0.0
MANAGMENT-POOL	192.168.1.1	192.168.12.11	192.168.1.15	255.255.255.0	235	0.0.0.0	0.0.0.0
MARKETING-POOL	192.168.4.1	192.168.12.11	192.168.4.15	255.255.255.0	235	0.0.0.0	0.0.0.0
HR-POOL	192.168.3.1	192.168.12.11	192.168.3.15	255.255.255.0	235	0.0.0.0	0.0.0.0
RESEARCH-POOL	192.168.2.1	192.168.12.11	192.168.2.15	255.255.255.0	235	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168.12.0	255.255.255.0	512	0.0.0.0	0.0.0.0

Figure 2

10. Configuring SSH for secure Remote access.

MANAGEMENT DEPARTMENT SWITCH	LOGISTICS DEPARTMENT SWITCH
enable	enable
configure terminal	configure terminal
ip domain-name managment.com	ip domain-name logistic.com
crypto key generate rsa	crypto key generate rsa
1024	1024
ip ssh version 2	ip ssh version 2
line vty 0 15	line vty 0 15
login local	login local
transport input ssh	transport input ssh
exit	exit
ip ssh time-out 60	ip ssh time-out 60
ip ssh authentication-retries 3	ip ssh authentication-retries 3
exit	exit
wr	wr
RESEARCH DEPARTMENT SWITCH	**CUSTOMER DEPARTMENT SWITCH**

<table>
<tr>
<td>

enable

configure terminal

ip domain-name research.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td>
<td>

enable

configure terminal

ip domain-name customer.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td>
</tr>
<tr>
<td>

HUAMAN RESOURCE DEPARTMENT SWITCH

enable

configure terminal

ip domain-name hr.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td>
<td>

GUEST DEPARTMENT SWITCH

enable

configure terminal

ip domain-name guest.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td>
</tr>
<tr>
<td>

MARKETING DEPARTMENT SWITCH

enable

configure terminal

</td>
<td>

ADMIN DEPARTMENT SWITCH

enable

configure terminal

</td>
</tr>
</table>

<table>
<tr><td>

ip domain-name marketing.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td><td>

ip domain-name admin.com

crypto key generate rsa

1024

ip ssh version 2

line vty 0 15

login local

transport input ssh

exit

ip ssh time-out 60

ip ssh authentication-retries 3

exit

wr

</td></tr>
</table>

ACCOUNT DEPARTMENT SWITCH	**ICT DEPARTMENT SWITCH**
enable configure terminal ip domain-name account.com crypto key generate rsa 1024 ip ssh version 2 line vty 0 15 login local transport input ssh exit ip ssh time-out 60 ip ssh authentication-retries 3 exit wr	enable configure terminal ip domain-name ict.com crypto key generate rsa 1024 ip ssh version 2 line vty 0 15 login local transport input ssh exit ip ssh time-out 60 ip ssh authentication-retries 3 exit wr
FINANCE DEPARTMENT SWITCH	**SERVER DEPARTMENT SWITCH**
enable configure terminal ip domain-name finance.com crypto key generate rsa	enable configure terminal ip domain-name server.com crypto key generate rsa

<table>
<tr><td>

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr

</td><td>

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr

</td></tr>
</table>

<table>
<tr><td>

1st FLOOR L3 SWITCH

enable
configure terminal

ip domain-name firstfloormultilayer.com
crypto key generate rsa

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr

</td><td>

3rd FLOOR L3 SWITCH

enable
configure terminal

ip domain-name thirdfloormultilayer.com
crypto key generate rsa

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr

</td></tr>
<tr><td>

2ND FLOOR L3 SWITCH

enable
configure terminal

ip domain-name secondfloormultilayer.com
crypto key generate rsa

1024

</td><td>

4TH FLOOR L3 SWITCH

enable
configure terminal

ip domain-name fourthfloormultilayer.com
crypto key generate rsa

1024

</td></tr>
</table>

ip ssh version 2	ip ssh version 2
line vty 0 15 login local transport input ssh exit ip ssh time-out 60 ip ssh authentication-retries 3 exit wr	line vty 0 15 login local transport input ssh exit ip ssh time-out 60 ip ssh authentication-retries 3 exit wr

| **1ˢᵗ FLOOR ROUTER**

enable
configure terminal

ip domain-name fourthfloorrouter.com
crypto key generate rsa

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr | **3ᴿᴰ FLOOR ROUTER**

enable
configure terminal

ip domain-name thirdfloorrouter.com
crypto key generate rsa

1024

ip ssh version 2

line vty 0 15
login local
transport input ssh
exit

ip ssh time-out 60
ip ssh authentication-retries 3
exit

wr |
| **2ᴺᴰ FLOOR ROUTER**

enable
configure terminal

ip domain-name secondfloorrouter.com
crypto key generate rsa

1024

ip ssh version 2 | **4ᵀᴴ FLOOR ROUTER**

enable
configure terminal

ip domain-name fourthfloorrouter.com
crypto key generate rsa

1024

ip ssh version 2 |

line vty 0 15	line vty 0 15
login local	login local
transport input ssh	transport input ssh
exit	exit
ip ssh time-out 60	ip ssh time-out 60
ip ssh authentication-retries 3	ip ssh authentication-retries 3
exit	exit
wr	wr

11. Configuring OSPF as the routing protocol.

1st FLOOR L3 SWITCH	3rd FLOOR L3 SWITCH
enable	enable
configure terminal	configure terminal
ip routing	ip routing
router ospf 10	router ospf 10
network 10.10.10.0 0.0.0.3 area 0	network 10.10.10.40 0.0.0.3 area 0
network 10.10.10.8 0.0.0.3 area 0	network 10.10.10.44 0.0.0.3 area 0
network 192.168.1.0 0.0.0.255 area 0	network 192.168.7.0 0.0.0.255 area 0
network 192.168.2.0 0.0.0.255 area 0	network 192.168.8.0 0.0.0.255 area 0
network 192.168.3.0 0.0.0.255 area 0	network 192.168.9.0 0.0.0.255 area 0
network 192.168.4.0 0.0.0.255 area 0	network 192.168.10.0 0.0.0.255 area 0
network 192.168.5.0 0.0.0.255 area 0	network 192.168.11.0 0.0.0.255 area 0
network 192.168.6.0 0.0.0.255 area 0	network 192.168.12.0 0.0.0.255 area 0
exit	exit
do wr	do wr
2ND FLOOR L3 SWITCH	4TH FLOOR L3 SWITCH
enable	enable
configure terminal	configure terminal
ip routing	ip routing
router ospf 10	router ospf 10
network 10.10.10.4 0.0.0.3 area 0	network 10.10.10.48 0.0.0.3 area 0
network 10.10.10.12 0.0.0.3 area 0	network 10.10.10.52 0.0.0.3 area 0
network 192.168.1.0 0.0.0.255 area 0	network 192.168.7.0 0.0.0.255 area 0

network 192.168.2.0 0.0.0.255 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 network 192.168.6.0 0.0.0.255 area 0 exit do wr	network 192.168.8.0 0.0.0.255 area 0 network 192.168.9.0 0.0.0.255 area 0 network 192.168.10.0 0.0.0.255 area 0 network 192.168.11.0 0.0.0.255 area 0 network 192.168.12.0 0.0.0.255 area 0 exit do wr

1ST FLOOR ROUTER enable configure terminal router ospf 10 network 10.10.10.0 0.0.0.3 area 0 network 10.10.10.4 0.0.0.3 area 0 network 10.10.10.16 0.0.0.3 area 0 network 10.10.10.28 0.0.0.3 area 0 network 10.10.10.32 0.0.0.3 area 0 exit do wr	**3RD FLOOR ROUTER** enable configure terminal router ospf 10 network 10.10.10.32 0.0.0.3 area 0 network 10.10.10.20 0.0.0.3 area 0 network 10.10.10.36 0.0.0.3 area 0 network 10.10.10.48 0.0.0.3 area 0 network 10.10.10.40 0.0.0.3 area 0 exit do wr
2ND FLOOR ROUTER enable configure terminal router ospf 10 network 10.10.10.12 0.0.0.3 area 0 network 10.10.10.8 0.0.0.3 area 0 network 10.10.10.16 0.0.0.3 area 0 network 10.10.10.20 0.0.0.3 area 0 network 10.10.10.24 0.0.0.3 area 0 exit do wr	**4TH FLOOR ROUTER** enable configure terminal router ospf 10 network 10.10.10.24 0.0.0.3 area 0 network 10.10.10.28 0.0.0.3 area 0 network 10.10.10.36 0.0.0.3 area 0 network 10.10.10.44 0.0.0.3 area 0 network 10.10.10.52 0.0.0.3 area 0 exit do wr

12. Configuring switchport security or Port-Security on the switches.
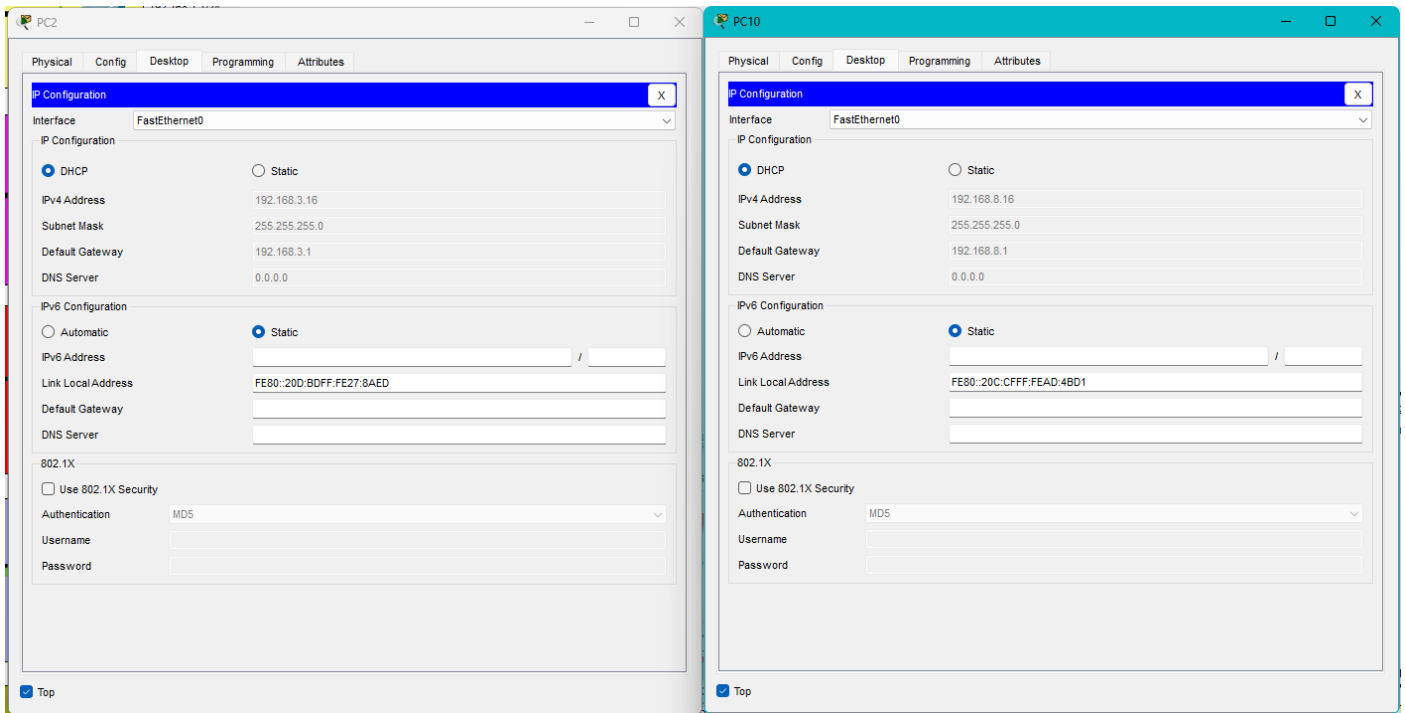
L2 SWITCH

enable
configure terminal

interface range fastEthernet 0/1-23, gigabitEthernet 0/1-2
switchport port-security
switchport port-security maximum 1
switchport port-security violation shutdown
switchport port-security mac-address sticky
exit

L3 SWITCH

enable
configure terminal

interface range gigabitEthernet 1/0/1-23
switchport port-security
switchport port-security maximum 1
switchport port-security violation shutdown
switchport port-security mac-address sticky
exit

13. Host Device Configurations.

14. Test and Verifying Network Communication.