

PROJECT REPORT ON
“Design and Implementation of Network for Radeon Company Ltd.”

**Submitted in partial fulfillment of the
requirement for the award of the degree
Bachelor of Computer Applications (BCA)**

SESSION :2022-2025

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Submitted to
Makhnalal Chaturvedi National University of Journalism and Communication, Bhopal

PROJECT CERTIFICATE:

This is to certify that the project report entitled "**Design & Implementation of Network for Radeon Company Ltd.**" submitted to Makhanlal Chaturvedi National University of Journalism & Communication, in partial fulfillment of the requirement for the award of the degree of **Bachelor of Computer Applications(BCA)**, is original work carried out by myself Mr. Htitik Kumar Pandey with enrolment no. AY2060999006 under the Supervision of Dr. RM Sharma & Mr. Amit Verma. The matter embodied in this project is genuine work done by myself and has not been submitted whether to this University or to any other University / Institute for the fulfillment of the requirement of any course of study.

Date:

Name & Signature of the Student :

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Details Verified by the Supervisor

Name & Signature of the Supervisor/s

Date:



ACKNOWLEDGEMENT

This Major Project is the result of contribution of many mind. I would like to acknowledge and thank my project guide : Mr. Amit Verma for his valuable support and guidance. He guided me through the process from conception and till the completion of this project. I would also like to thanks my class teacher and all my faculties. I thank to lab staff members Mr. Anil Saxena and other non-teaching members.

I am very thankful for the open-handed support extended by many people. While no list would be complete, it is my pleasure to acknowledge the assistance of my friends who provided encouragement, knowledge and constructive suggestions.

Signature of Student

(Roll No-----)

(Enrollment No:- AY2060999006)



SELF-CERTIFICATE

This is to certify that the Major Project report entitled "**Design & Implementation of Network for Radeon Company Ltd.**" is done by me, and it is authentic work carried out for the partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Application(BCA) under the guidance Mr. Amit Verma & Dr. R M Sharma. The matter and software embodies in this project has not been submitted earlier for award of any degree or diploma to the best of my knowledge and believes.

Signature of Student

(Roll No-----)

(Enrollment No-----)



CERTIFICATE FROM PROJECT GUIDE

This is certify that this Major Project entitled "**Design & Implementation of Network for Radeon Company Ltd.**" submitted in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Application (BCA) in session years 2022 to 2025 to the Makhanlal Chaturvedi National University of Journalism & Communication, Bhopal, done by H r i t i k K u m a r P a n d e y is an authentic work carried out by him under my guidance. The matter and software embodied in this project work has not been submitted earlier for the award of any degree or diploma to the best of my knowledge and belief.

Signature of BCA
Teacher

(Project Guide)



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Introduction

Radeon Company Ltd. is a India-owned company that deals with Banking and Insurance. The company intends to expand its services across the India having the first branch to be located in Indore Madhya-Pradesh. The company has secured a four-story building to operate within the Indore city. This is the Design and Implementation of a Secure Bank Network for Radeon Company Ltd. This project, will be complete in Cisco Packet Tracer, simulated a real-world enterprise banking infrastructure, focusing on scalability, security, and efficient network management. With increasing cyber-security threats in the financial sector, Radeon Company Ltd. requires a secure and efficient banking network to handle financial transactions, customer data, and internal communications.

Requirements:

- 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: Host-names, Line Console and Enable passwords, Banner messages Disable domain IP lookup, encrypt all configured passwords.
- Each department should be in a different VLAN and sub-network; 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 sub-netting based on the number of hosts in every department as provided above. Identify sub-net mask, usable 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.

Project Scope & Key Features:

1. Hierarchical Network Design (Core, Distribution, and Access Layers)
2. OSPF Routing Protocol for efficient and saleable routing
3. VLAN Segmentation & Inter-VLAN Routing for improved security and performance
4. DHCP & DNS Configuration for automated IP allocation
5. SSH Security & Port Security for secure remote management
6. Wireless Network Deployment for each department
7. HTTP & Email Servers for enterprise operations
8. Sub-netting & IP Addressing based on business requirements

Skills Gained & Technologies Worked With:

- Cisco Networking & Security
 - Network Design & Implementation
 - Routing & Switching (OSPF, VLANs, DHCP, SSH)
 - Troubleshooting & Network Optimization
 - Cisco Packet Tracer for Simulation
-

Network Model & Design

There is the design and implement the network based on the company's needs. Each floor has departments as provided in the table below:

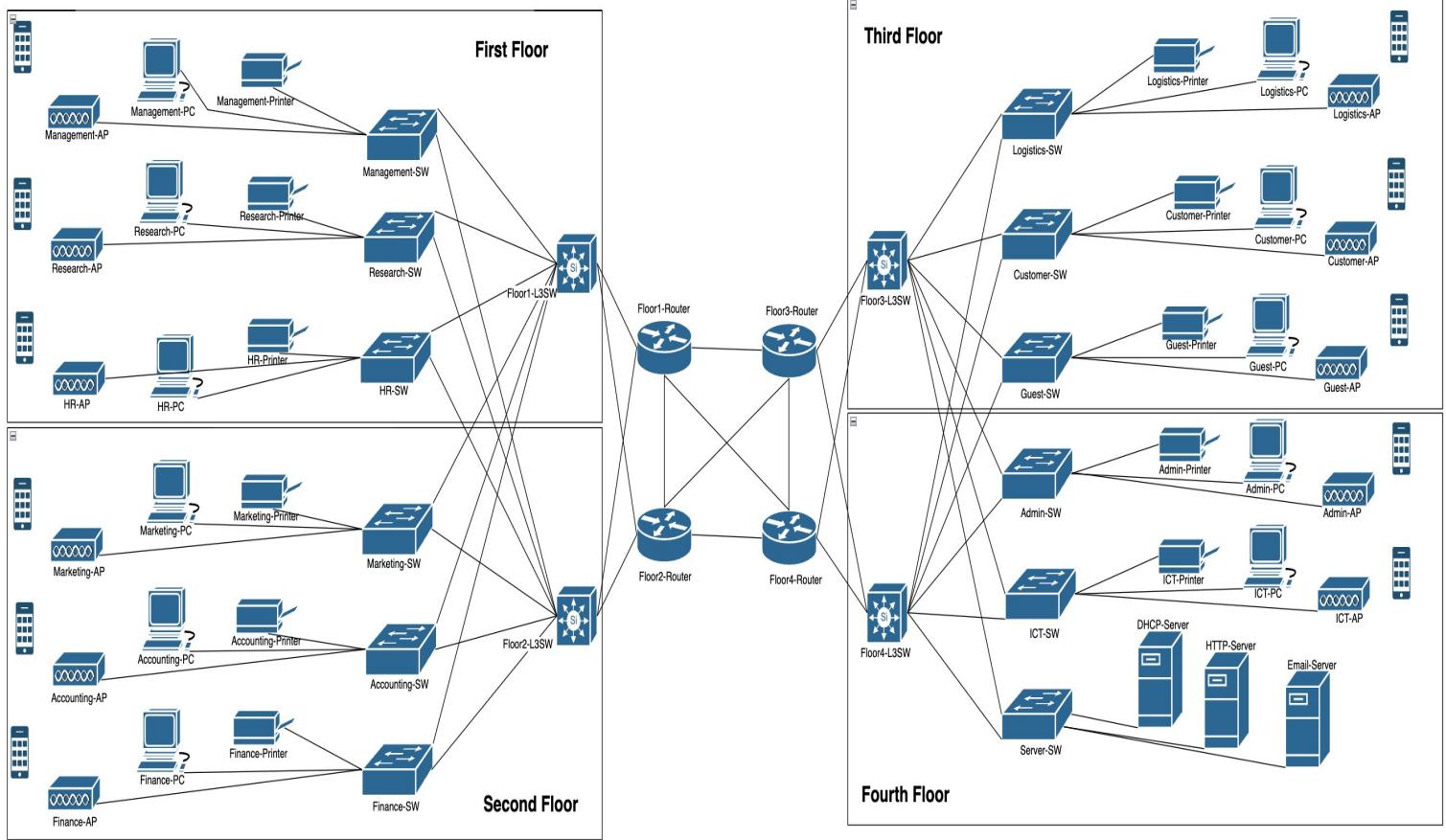
First Floor			
No.	Departments	No. of PC	No. of Printers
1	Management	20	4
2	Research	20	4
3	Human resource	20	4

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

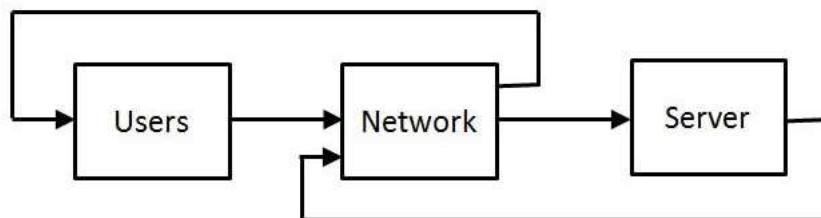
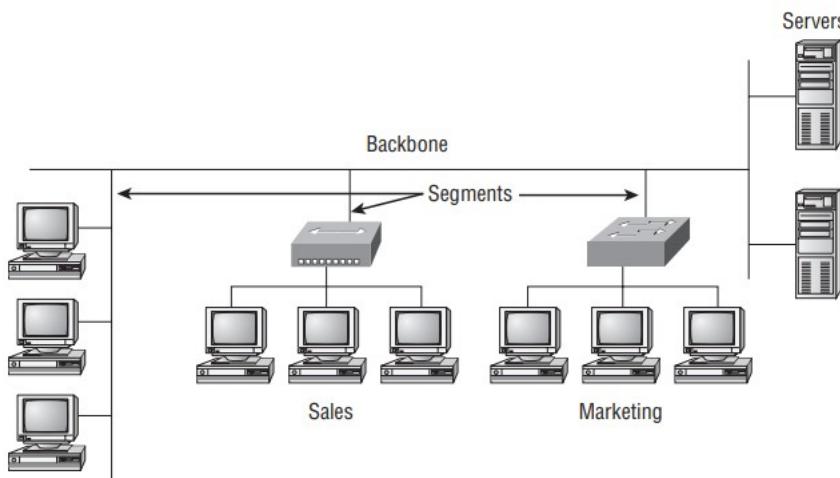
Fourth Floor				
No.	Departments	No. of PC	No. of Printers	No of Servers
1	Administration	20	2	
2	ICT	20	2	
3	Server Room	2 Admin PCs		3 (DHCP, HTTP and Email)

System analysis



General Traffic Principles

- Each floor has its own **router** that aggregates traffic from its departments.
- Department devices (**PCs, printers, APs**) connect to their respective switches, which in turn connect to the **floor's Layer 3 switch (L3SW)**.
- Floor routers are interconnected, enabling cross-floor communication.
- The Fourth Floor contains critical **network services** (e.g., **DHCP, HTTP, Email servers**) used by all other floors.



Software and hardware requirement specifications:-

● System Requirements

Hardware Requirements:

1. Cisco Routers & Switches
2. Firewall appliances (Palo Alto, Fortinet, Cisco ASA)
3. Servers for banking applications & databases
4. Secure Workstations for employees
5. Access Point for wireless connectivity
6. Printers
7. PCs
8. Cables for wired connectivity

Software Requirements:

- **Simulation software:** Cisco Packet tracer or GNS3 for design and implementation.

Key Network Features Ensuring Efficiency

- ◆ **Segmentation** by floors and departments reduces broadcast traffic.
- ◆ **Layer 3 Switches (L3SW)** support VLAN routing within floors.
- ◆ **Dedicated Server Room** (Fourth Floor) centralizes services for performance and security.
- ◆ **Access Points (APs)** on each floor support mobile/wireless devices, especially in guest-heavy zones.
- ◆ **Redundant Routers** allow scalability and potential fail-over.



Technologies Implemented

1. Creating a network topology using Cisco Packet Tracer.
2. Hierarchical Network Design.
3. Connecting Networking devices with Correct cabling.
4. Configuring Basic device settings.
5. Creating VLANs and assigning ports VLAN numbers.
6. Sub-netting and IP Addressing.
7. Configuring Inter-VLAN Routing on the Multi-layer switches (Switch Virtual Interface).
8. Configuring Dedicated DHCP Server device to provide dynamic IP allocation.
9. Configuring SSH for secure Remote access.
10. Configuring OSPF as the routing protocol.
11. Configuring switch-port security or Port-Security on the switches.
12. Configuring WLAN or wireless network (Cisco Access Point).
13. Host Device Configurations.
14. Test and Verifying Network Communication.



Sub-netting the network:

Base Network: 192.168.10.0

No. of subnets required: 3

No. of subnets = 2^n (n = number of bits borrowed)

$2^n = 3$ (n = number of bits borrowed)

$2^2 = 4$

Therefore: $n = 2$

Class C address:

255.255.255.0 = 11111111.11111111.11111111.00000000

Borrowing 4 bits from host portion:

11111111.11111111.11111111.11000000

New subnet mask: 255.255.255.192 or /26

IP Addressing

First Floor

Department	Network Address	Subnet Mask	Host Address Range	Broadcast Address
Management	192.168.10.0	255.255.255.192	192.168.10.1 - 192.168.10.62	192.168.10.63
Research	192.168.10.64	255.255.255.192	192.168.10.65 - 192.168.10.126	192.168.10.127
HR	192.168.10.128	255.255.255.192	192.168.10.129- 192.168.10.190	192.168.10.191

Second Floor

Department	Network Address	Subnet Mask	Host Address Range	Broadcast Address
Marketing	192.168.10.192	255.255.255.192	192.168.10.193- 192.168.10.254	192.168.10.255
Accounting	192.168.11.0	255.255.255.192	192.168.11.1 - 192.168.11.62	192.168.11.63
Finance	192.168.11.64	255.255.255.192	192.168.11.65 - 192.168.11.126	192.168.11.127



Third Floor

Department	Network Address	Subnet Mask	Host Address Range	Broadcast Address
Logistics	192.168.11.128	255.255.255.192	192.168.11.129 - 192.168.11.190	192.168.11.191
Customer	192.168.11.192	255.255.255.192	192.168.11.193 - 192.168.11.254	192.168.11.255
Guest	192.168.12.0	255.255.255.192	192.168.12.1 - 192.168.12.62	192.168.12.63

Fourth Floor

Department	Network Address	Subnet Mask	Host Address Range	Broadcast Address
Admin	192.168.12.64	255.255.255.192	192.168.12.65 - 192.168.12.126	192.168.12.127
ICT	192.168.12.128	255.255.255.192	192.168.12.129- 192.168.12.190	192.168.12.191
Servers	192.168.12.192	255.255.255.192	192.168.12.193- 192.168.12.254	192.168.12.255

Between routers and layer 3 switches:

Base Network Address: 10.10.10.0

No.	Network Address	Subnet Mask	Host Address Range	Broadcast Address
1	10.10.10.0	255.255.255.252	10.10.10.1 - 10.10.10.2	10.10.10.3
2	10.10.10.4	255.255.255.252	10.10.10.5 - 10.10.10.6	10.10.10.7
3	10.10.10.8	255.255.255.252	10.10.10.9 - 10.10.10.10	10.10.10.11
4	10.10.10.12	255.255.255.252	10.10.10.13 - 10.10.10.14	10.10.10.15
5	10.10.10.16	255.255.255.252	10.10.10.17 - 10.10.10.18	10.10.10.19
6	10.10.10.20	255.255.255.252	10.10.10.21 - 10.10.10.22	10.10.10.23
7	10.10.10.24	255.255.255.252	10.10.10.25 - 10.10.10.26	10.10.10.27
8	10.10.10.28	255.255.255.252	10.10.10.29 - 10.10.10.30	10.10.10.31
9	10.10.10.32	255.255.255.252	10.10.10.33 - 10.10.10.34	10.10.10.35
10	10.10.10.36	255.255.255.252	10.10.10.37 - 10.10.10.38	10.10.10.39
11	10.10.10.40	255.255.255.252	10.10.10.41 - 10.10.10.42	10.10.10.43
12	10.10.10.44	255.255.255.252	10.10.10.45 - 10.10.10.46	10.10.10.47
13	10.10.10.48	255.255.255.252	10.10.10.49 - 10.10.10.50	10.10.10.51
14	10.10.10.52	255.255.255.252	10.10.10.53 - 10.10.10.54	10.10.10.55

Configuration & Code Implementation :

- Turning on all necessary router ports:

Floor1-Router:-

```
Router(config)#int se0/0/0
```

```
Router(config-if)#no sh
```

```
LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
```

```
Router(config-if)#int se0/0/1
```

```
Router(config-if)#no sh
```

```
LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
```

```
Router(config-if)#int range gig0/0-2
```

```
Router(config-if-range)#no sh
```

```
Router(config-if-range) #do wr
```

```
Building configuration...
```

```
[OK]
```

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



Floor 2 Router:-

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int se0/0/0

Router(config-if)#no sh

Router(config-if)#int se0/0/1

Router(config-if)#no sh

LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Router(config-if)#int range gig0/0-2

Router(config-if-range)#no sh

19

Router(config-if-range) #do wr

LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up

Building configuration... [OK]

Router(config-if-range)#+

Floor3-Router

Router>en

Router conf t

Enter configuration commands, one per line. End with CNTL/2.

Router(config-if)#no sh

Router(config)#int se0/0/0

Router(config-if)#int se0/0/1

Router(config-if)#no sh

LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Router (config-if)#int range gig0/0-2

Router(config-if-range) #no sh

Router(config-if-range) #do wr

LINK-6-CHANGED: Interface Serial0/0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up

Building configuration...

[OK]

Floor4-Router

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router (config)#int se0/0/0

Router(config-if)#no sh

Router(config-if)#int se0/0/1

Router(config-if)#no sh

LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Router(config-if)#int range gig0/0-2

Router (config-if-range) #no sh

Router(config-if-range) #do wr

LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up

Building configuration...

[OK]

Configuring access layer switches:

Floor1-Management-SW

Switch>

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F1-Mgt-SW

F1-Mgt-SW(config)#banner motd #This Floor1-mgt switch#

F1-Mgt-SW(config)#line console 0

F1-Mgt-SW(config-line)#password cisco

F1-Mgt-SW(config-line)#login

F1- L-Mgt-SW(config-line)#exit

F1- L-Mgt-SW(config)#line vty 0 15

F1-Mgt-SW(config-line)#password cisco

F1-Mgt-SW(config-line)#login

F1-M -Mgt-SW(config-line)#exit

F1-Mgt-SW(Mgt-SW(config)#no ip domain-lookup

1-Mgt-SW(config)#enable password cisco

F1-Mgt-SW(config)#service password-encryption

F1-Mgt-SW(config)#do wr

Building configuration...

[OK]

F1-Mqt-SW(config)#+

Floor1-Research-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F1-Research-SW

F1-Research-SW(config) #banner motd #This Floor1-research switch#

F1-R -Research-SW(config)#line console 0

F1-R -Research-SW(config-line)#password cisco

F1- 1-Research-SW(config-line)#login

F1-1 -Research-SW(config-line)#exit

F1-Research-SW SW(config)#line vty 0 15

F1-Research-SW SW(config-line)#password cisco

-Research-SW(config-line)#login F1-Res

-Research ch-SW (config-line)#exit F1-Re

F1-Research-SW((config)#no ip domain-lookup

F1-Research-SW((config)#enable password cisco

F1 F1-Research-SW(config)#service password-encryption

F1-Research-SW(config)#do wr

Building configuration...

[OK]

F1-Research-SW(config)#+

Floor1-HR-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F1-HR-SW

F1-HR-SW(config)#banner motd #This Floor1-HR switch#

F1-HR-SW(config)#line console 0

F1-F -HR-SW(config-line)#password cisco

F1-6 HR-SW(config-line)#login

F1- 1-HR-SW(config-line)#exit

F1-HR-SW(config)#line vty 0 15

F1-HR-SW(config-line)#password cisco

F1-1-HR-SW(config-line)#login

F1-HR-SW(config-line)#exit

F1-HR-SW(config)#no ip domain-lookup

F1 1-HR-SW(config)#enable password cisco

F1-HR-SW(config)#service password-encryption E

F1-HR-SW(config)#do wr

Building configuration...

[OK]

Floor2-Marketing-SW

Switch>

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F2-Marketing-SW

F2-Marketing-SW(config) #banner motd #This Floor2-Marketing switch#

F2-Marketing-SW(config)#line console 0

F2-Marketing-SW(config-line)#password cisco

F2-Marketing-SW(config-line)#login

F2-Marketing-SW(config-line)#exit

F2-Marketing-SW(config)#line vty 0 15

F2-Marketing-SW(config-line)#password cisco

F2-Marketing-SW(config-line)#login

F2-Marketing-SW(config-line)#exit

F2-Marketing-SW(config)#no ip domain-lookup

F2-Marketing-SW(config)#enable password cisco

F2-Marketing-SW(config)#service password-encryption

F2-Marketing-SW(config)#do wr

Building configuration...

[OK]

Floor2-Accounting-SW

Switch>

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F2-Accounting-SW

F2-Accounting-SW(config) #banner motd #This Floor2-Accounting switch#

F2-Accounting-SW(config)#line console 0

F2-Accounting-SW (config-line)#password cisco

F2-Accounting-SW(config-line)#login

F2-Accounting-SW (config-line)#exit

F2-Accounting-SW(config)#line vty 0 15

F2-Accounting-SW(config-line)#password cisco

F2-Accounting-SW(config-line)#login

F2-Accounting-SW (config-line)#exit

F2-Accounting-SW(config)#no ip domain-lookup

F2-Accounting-SW(config)#enable password cisco

F2-Accounting-SW(config)#service password-encryption

F2-Accounting-SW(config)#do wr

Building configuration...

[OK]

Floor2-Finance-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F2-Finance-SW

F2-Finance-SW (config) #banner motd #This Floor2-Finance switch#

F2-Finance-SW(config)#line console 0

F2-Finance-SW(config-line)#password cisco

F2-Finance-SW (config-line)#login

F2-Finance-SW (config-line)#exit

F2-Finance-SW (config)#line vty 0 15

F2-Finance-SW(config-line)#password cisco

F2-Finance-SW(config-line)#login

F2-Finance-SW(config-line)#exit

F2-Finance-SW(config)#no ip domain-lookup

F2-Finance-SW (config)#enable password cisco

F2-Finance-SW (config)#service password-encryption

F2-Finance-SW(config)#do wr

Building configuration...

[OK]

Floor3-Logistics-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F3-Logistics-SW

F3-Logistics-SW(config) #banner motd #This Floor2-Logistics switch#

F3-Logistics-SW(config)#line console 0

F3-Logistics-SW(config-line)#password cisco

F3-Logistics-SW(config-line)#login

F3-Logistics-SW(config-line)#exit

F3-Logistics-SW(config)#line vty 0 15

F3-Logistics-SW(config-line)#password cisco

F3-Logistics-SW(config-line)#login

F3-Logistics-SW(config-line)#exit

F3-Logistics-SW(config)#no ip domain-lookup

F3-Logistics-SW(config)#enable password cisco

F3-Logistics-SW(config)#service password-encryption

F3-Logistics-SW(config)#do wr

Building configuration...

[OK]

Floor3-Customer-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config) #hostname F3-Customer-SW

F3-Customer-SW(config) #banner motd #This Floor2-Customer Care switch#

F3-Customer-SW(config)#line console 0

F3-Customer-SW(config-line)#password cisco

F3-Customer-SW(config-line)#login

F3-Customer-SW(config-line)#exit

F3-Customer-SW(config)#line vty 0 15

F3-Customer-SW(config-line)#password cisco

F3-Customer-SW(config-line)#login

F3-Customer-SW(config-line)#exit

F3-Customer-SW(config)#no ip domain-lookup

F3-Customer-SW(config)#enable password cisco

F3-Customer-SW(config)#service password-encryption

F3-Customer-SW(config)#do wr

Building configuration...

[OK]

Floor3-Guest-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F3-Guest-SW

F3-Guest-SW(config)#banner motd #This Floor2-Guest Area switch#

F3-Guest-SW(config)#line console 0

F3-Guest-SW(config-line)#password cisco

F3-Guest-SW(config-line)#login

F3-Guest-SW(config-line)#exit

F3-Guest-SW(config)#line vty 0 15

F3-Guest-SW(config-line)#password cisco

F3-Guest-SW(config-line)#login

F3-Guest-SW(config-line)#exit

F3-Guest-SW(config)#no ip domain-lookup

F3-Guest-SW(config)#enable password cisco

F3-Guest-SW(config)#service password-encryption

F3-Guest-SW(config)#do wr

Building configuration...

[OK]

Floor4-Admin-SW

Router#en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname F4-Admin-SW

F4-Admin-SW(config)#banner motd #This Floor4-Admin switch#

F4-Admin-SW(config)#line console 0

F4-Admin-SW(config-line)#password cisco

F4-Admin-SW(config-line)#login

F4-Admin-SW(config-line)#exit

F4-Admin-SW(config)#line vty 0 15

F4-Admin-SW(config-line)#password cisco

F4-Admin-SW(config-line)#login

F4-Admin-SW(config-line)#exit

F4-Admin-SW(config)#no ip domain-lookup

F4-Admin-SW(config)#enable password cisco

F4-Admin-SW(config)#service password-encryption

F4-Admin-SW(config)#do wr

Building configuration...

[OK]

Floor4-ICT-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F4-ICT-SW

F4-ICT-SW(config)#banner motd #This Floor4-ICT switch#

F4-ICT-SW(config)#line console 0

F4-ICT-SW(config-line)#password cisco

F4-ICT-SW(config-line)#login

F4-ICT-SW(config-line)#exit

F4-ICT-SW(config)#line vty 0 15

F4-ICT-SW(config-line)#password cisco

F4-ICT-SW(config-line)#login

F4-ICT-SW(config-line)#exit

F4-ICT-SW(config)#no ip domain-lookup

F4-ICT-SW(config)#enable password cisco

F4-ICT-SW(config)#service password-encryption

F4-ICT-SW(config)#do wr

Building configuration...

[OK]

Floor4-Server-SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config) #hostname F4-Server-SW

F4-Server-SW(config) #banner motd #This Floor4-Server switch#

F4-Server-SW (config)#line console 0

F4-Server-SW(config-line)#password cisco

F4-Server-SW(config-line)#login

F4-Server-SW(config-line)#exit

F4-Server-SW(config)#line vty 0 15

F4-Server-SW(config-line)#password cisco

F4-Server-SW(config-line)#login

F4-Server-SW(config-line)#exit

F4-Server-SW(config)#no ip domain-lookup

F4-Server-SW(config)#enable password cisco

F4-Server-SW(config)#service password-encryption

F4-Server-SW(config)#do wr

Building configuration...

[OK]

Configuring Distribution layer switches:

Floor1-L3SW

router#en

router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

router(config) #hostname F1-L3SW

F1-L3SW(config)#banner motd #This F1 layer3 switch#

F1-L3SW(config)#line console 0

F1-L3SW(config-line)#password cisco

F1-L3SW(config-line)#login

F1-L3SW(config-line)#exit

F1-L3SW(config)#ip domain-name cisco.net

F1-L3SW(config)#username cisco password cisco

F1-L3SW(config)#crypto key generate rsa

You already have RSA keys defined named F1-L3SW.cisco.net

Do you really want to replace them? (yes/no]: yes

The name for the keys will be: F1-L3SW.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable... [OK]

F1-L3SW(config)#line vty 0 15

*Mar 1 0:37:28.951: SSH-5-ENABLED: SSH 1.99 has been enabled

F1-L3SW(config-line)#login local

F1-L3SW(config-line)#transport input ssh

F1-L3SW(config-line)#exit

F1-L3SW(config)#no ip domain-lookup

F1-L3SW(config)#enable password cisco

F1-L3SW (config)#service password-encryption

F1-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Floor2-L3SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#hostname F2-L3SW

F2-L3SW(config)#banner motd #This F2 layer3 switch#

F2-L3SW(config)#line console 0

F2-L3SW(config-line)#password cisco

F2-L3SW(config-line)#login

F2-L3SW(config-line)#exit

F2-L3SW(config)#ip domain-name cisco.net

F2-L3SW(config) #username cisco password cisco

F2-L3SW(config)#crypto key generate rsa

The name for the keys will be: F2-L3SW.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable... [OK]

F2-L3SW(config)#line vty 0 15

*Mar 1 0:42:52.390: SSH-5-ENABLED: SSH 1.99 has been enabled

F2-L3SW(config-line)#login local

F2-L3SW(config-line)#transport input ssh

F2-L3SW(config-line)#exit

F2-L3SW(config)#no ip domain-lookup

F2-L3SW(config)#enable password cisco

F2-L3SW(config)#service password-encryption

F2-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Floor3-L3SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch (config)#hostname F3-L3SW

F3-L3SW(config)#banner motd #This F3 layer3 switch#

F3-L3SW (config)#line console 0

F3-L3SW(config-line)#password cisco

F3-L3SW(config-line)#login

F3-L3SW (config-line)#exit

F3-L3SW(config)#ip domain-name cisco.net

F3-L3SW(config)#username cisco password cisco

F3-L3SW(config)#crypto key generate rsa

The name for the keys will be: F3-L3SW.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable... [OK]

F3-L3SW(config)#line vty 0 15

*Mar 1 0:43:30.983: SSH-5-ENABLED: SSH 1.99 has been enabled

F3-L3SW(config-line)#login local

F3-L3SW(config-line)#transport input ssh

F3-L3SW(config-line)#exit

F3-L3SW(config)#no ip domain-lookup

F3-L3SW(config)#enable password cisco

F3-L3SW(config)#service password-encryption

F3-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Floor4-L3SW

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#hostname F4-L3SW

F4-L3SW(config)#banner motd #This F4 layer3 switch#

F4-L3SW(config)#line console 0

F4-L3SW(config-line)#password cisco

F4-L3SW(config-line)#login

F4-L3SW(config-line)#exit

F4-L3SW(config)#ip domain-name cisco.net

F4-L3SW(config)#username cisco password cisco

F4-L3SW(config)#crypto key generate rsa

The name for the keys will be: F4-L3SW.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable. [OK]

F4-L3SW(config)#line vty 0 15

*Mar 1 0:52:39.342: SSH-5-ENABLED: SSH 1.99 has been enabled

F4-L3SW(config-line)#login local

F4-L3SW(config-line)#transport input ssh

F4-L3SW(config-line)#exit

F4-L3SW(config)#no ip domain-lookup

F4-L3SW(config)#enable password cisco

F4-L3SW(config)#service password-encryption

F4-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Configuring Core Layer Routers:

Floor1 router

```
Router>en
```

```
Router#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#hostname F1-Router
```

```
F1-Router(config)#banner motd #This F1 core layer router#
```

```
F1-Router(config)#line console 0
```

```
F1-Router(config-line)#password cisco
```

```
F1-Router(config-line)#login
```

```
F1-Router(config-line)#exit
```

```
F1-Router(config)#ip domain-name cisco.net
```

```
F1-Router(config)#username cisco password cisco
```

```
F1-Router(config)#crypto key generate rsa
```

The name for the keys will be: F1-Router.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable... [OK]

```
F1-Router(config)#line vty 0 15
```

```
*Mar 1 0:55:15.928: SSH-5-ENABLED: SSH 1.99 has been enabled
```

```
F1-Router(config-line)#login local
```

```
F1-Router(config-line)#transport input ssh
```

```
F1-Router(config-line)#exit
```

```
F1-Router(config)#no ip domain-lookup
```

```
F1-Router(config)#enable password cisco
```

```
F1-Router(config)#service password-encryption
```

Floor2 router

Router#en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname F2-Router

F2-Router(config)#banner motd #This F2 core layer router#

F2-Router(config)#line console 0

F2-Router(config-line)#password cisco

F2-Router(config-line)#login

F2-Router(config-line)#exit

F2-Router(config)#ip domain-name cisco.net

F2-Router(config)#username cisco password cisco

F2-Router(config)#crypto key generate rsa

You already have RSA keys defined named F2-Router.cisco.net

Do you really want to replace them? (yes/no]: yes

The name for the keys will be: F2-Router.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable... [OK]

F2-Router(config)#line vty 0 15

*Mar 1 3:15:18.275: SSH-5-ENABLED: SSH 1.99 has been enabled

F2-Router(config-line)#login local

F2-Router(config-line)#transport input ssh

F2-Router(config-line)#exit

F2-Router(config)#no ip domain-lookup

F2-Router(config)#enable password cisco

F2-Router(config)#service password-encryption

Floor3 router

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config) #hostname F3-Router

F3-Router(config)#banner motd #This F3 core layer router#

F3-Router(config)#line console 0

F3-Router(config-line)#password cisco

F3-Router(config-line)#login

F3-Router(config-line)#exit

F3-Router(config)#ip domain-name cisco.net

F3-Router(config)#username cisco password cisco

F3-Router(config)#crypto key generate rsa

The name for the keys will be: F3-Router.cisco.net

Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: 1024

Generating 1024 bit RSA keys, keys will be non-exportable. [OK]

F3-Router(config)#line vty 0 15

*Mar 1 3:15:57.478: SSH-5-ENABLED: SSH 1.99 has been enabled

F3-Router(config-line)#login local

F3-Router(config-line)#transport input ssh

F3-Router(config-line)#exit

F3-Router(config)#no ip domain-lookup

F3-Router(config)#enable password cisco

F3-Router(config)#service password-encryption

F3-Router(config)#do wr

Floor4 router

```
router#en
router#conf t
router(config)#hostname F4-Router
F4-Router(config)#banner motd #This F4 core layer router#
F4-Router(config)#line console 0
F4-Router(config-line)#password cisco
F4-Router(config-line)#login
F4-Router(config-line)#exit
F4-Router(config)#ip domain-name cisco.net
F4-Router(config)#username cisco password cisco
F4-Router(config)#crypto key generate rsa
You already have RSA keys defined named F4-L3SW.cisco.net
Do you really want to replace them? (yes/no]: yes
The name for the keys will be: F4-Router.cisco.net
Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key
modulus greater than 512 may take a few minutes.
How many bits in the modulus [512]: 1024
Generating 1024 bit RSA keys, keys will be non-exportable... [OK]
F4-Router(config)#line vty 0 15
*Mar 1 3:16:47.620: SSH-5-ENABLED: SSH 1.99 has been enabled
F4-Router(config-line)#login local
F4-Router(config-line)#transport input ssh
F4-Router(config-line)#exit
F4-Router(config)#no ip domain-lookup
F4-Router(config)#enable password cisco
F4-Router(config)#service password-encryption
F4-Router(config)#do wr
```

Configuring trunk and access ports, VLANS and port security:

Floor1-Management-SW

```
F1-Mgt-SW#show vlan br
F1-Mgt-SW#show vlan brief

VLAN Name                               Status    Ports
---- -----
1   default                             active    Gig0/1, Gig0/2
10  Management                          active    Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                         Fa0/7, Fa0/8, 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, Fa0/24
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                  active
1005 trnet-default                    active

F1-Mgt-SW#show interface trunk
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking    1
Fa0/2     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/2     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,10
Fa0/2     1,10

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,10
Fa0/2     10
```

Configuration Command

F1-Mgt-SW(config)#int range fa0/1-2

F1-Mgt-SW(config-if-range)#switchport mode trunk

F1-Mgt-SW(config-if-range) #

LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

*LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

F1-Mgt-SW(config-if-range)#ex

F1-Mgt-SW (config)#vlan 10

F1-Mgt-SW (config-vlan) #name Management

F1-Mgt-SW(config-vlan)#exit

F1-Mgt-SW(config)#int range fa0/3-24

F1-Mgt-SW(config-if-range)#switchport mode access

F1-Mgt-SW(config-if-range)#switchport access vlan 10

F1-Mgt-SW(config-if-range)#switchport port-security maximum 2

F1-Mgt-SW(config-if-range)#switchport port-security mac-address sticky

F1-M -Mgt-SW(config-if-range) #switchport port-security violation shutdown

F1-Mgt-SW (config-if-range) #do wr

Building configuration...

[OK]

Floor1-Research-SW

```
F1-Research-SW#show vlan Brief

VLAN Name Status Ports
--- -----
1 default active Gig0/1, Gig0/2
20 Research active Fa0/3, Fa0/4, Fa0/5, Fa0/6
Fa0/7, Fa0/8, 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, Fa0/24

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

F1-Research-SW#show int trunk

Port Mode Encapsulation Status Native vlan
Fa0/1 on 802.1q trunking 1
Fa0/2 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa0/1 1-1005
Fa0/2 1-1005

Port Vlans allowed and active in management domain
Fa0/1 1,20
Fa0/2 1,20

Port Vlans in spanning tree forwarding state and not pruned
Fa0/1 1,20
Fa0/2 1,20
```

Floor1-HR-SW

```
F1-HR-SW#show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Gig0/1, Gig0/2
20	VLAN0020	active	
30	HR	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, 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, Fa0/24
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
F1-HR-SW#show int tr
```

Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	1
Fa0/2	on	802.1q	trunking	1

```
Port          Vlans allowed on trunk
```

Port	Vlans allowed on trunk
Fa0/1	1-1005
Fa0/2	1-1005

```
Port          Vlans allowed and active in management domain
```

Port	Vlans allowed and active in management domain
Fa0/1	1,20,30
Fa0/2	1,20,30

```
Port          Vlans in spanning tree forwarding state and not pruned
```

Port	Vlans in spanning tree forwarding state and not pruned
Fa0/1	1,20,30
Fa0/2	30

```
F1-HR-SW#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
F1-HR-SW(config)#int range fa0/1-2
F1-HR-SW(config-if-range)#switchport mode trunk
F1-HR-SW(config-if-range)#ex
F1-HR-SW(config)#vlan 30
F1-HR-SW(config-vlan)#name HR
F1-HR-SW(config-vlan)#ex
F1-HR-SW(config)#int range fa0/3-24
F1-HR-SW(config-if-range)#switchport mode access
F1-HR-SW(config-if-range)#switchport access vlan 30
F1-HR-SW(config-if-range)#switchport port-security maximum 2
F1-HR-SW(config-if-range)#switchport port-security mac-address sticky
F1-HR-SW(config-if-range)#switchport port-security violation shutdown
F1-HR-SW(config-if-range)#do wr
Building configuration...
[OK]
F1-HR-SW(config-if-range)#

```

Floor2-Marketing-SW

VLAN	Name	Status	Ports
1	default	active	Gig0/1, Gig0/2
20	VLAN0020	active	
40	Marketing	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, 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, Fa0/24
1002	fdci-default	active	
1003	token-ring-default	active	
1004	fdinnet-default	active	
1005	trnet-default	active	
F2-Marketing-SW#show int tr			
Port	Mode	Encapsulation	Status Native vlan
Fa0/1	on	802.1q	trunking 1
Fa0/2	on	802.1q	trunking 1
Port	Vlans allowed on trunk		
Fa0/1	1-1005		
Fa0/2	1-1005		
Port	Vlans allowed and active in management domain		
Fa0/1	1,20,40		
Fa0/2	1,20,40		
Port	Vlans in spanning tree forwarding state and not pruned		
Fa0/1	1,20,40		
Fa0/2	40		

```

F2-Marketing-SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-Marketing-SW(config)#int range fa0/1-2
F2-Marketing-SW(config-if-range)#switchport mode trunk
F2-Marketing-SW(config-if-range)#ex
F2-Marketing-SW(config)#vlan 40
F2-Marketing-SW(config-vlan)#name Marketing
F2-Marketing-SW(config-vlan)#ex
F2-Marketing-SW(config)#int range fa0/3-24
F2-Marketing-SW(config-if-range)#switchport mode access
F2-Marketing-SW(config-if-range)#switchport access vlan 40
F2-Marketing-SW(config-if-range)#switchport port-security maximum 2
F2-Marketing-SW(config-if-range)#switchport port-security mac-address sticky
F2-Marketing-SW(config-if-range)#switchport port-security violation shutdown
F2-Marketing-SW(config-if-range)#do wr
Building configuration...
[OK]
F2-Marketing-SW(config-if-range)#

```

Floor2-Accounting-SW

```
password.
F2-Accounting-SW#show vlan br

VLAN Name Status Ports
---- -- -- -----
1 default active Gig0/1, Gig0/2
50 Accounting active Fa0/3, Fa0/4, Fa0/5, Fa0/6
Fa0/7, Fa0/8, 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, Fa0/24

1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
F2-Accounting-SW#sh int tr
Port Mode Encapsulation Status Native vlan
Fa0/1 on 802.1q trunking 1
Fa0/2 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa0/1 1-1005
Fa0/2 1-1005

Port Vlans allowed and active in management domain
Fa0/1 1,50
Fa0/2 1,50

Port Vlans in spanning tree forwarding state and not pruned
Fa0/1 1,50
Fa0/2 50

F2-Accounting-SW#
```

```
F2-Accounting-SW(config-if-range)#ex
F2-Accounting-SW(config)#vlan 50
F2-Accounting-SW(config-vlan)#name Accounting
F2-Accounting-SW(config-vlan)#ex
F2-Accounting-SW(config)#int range fa0/3-24
F2-Accounting-SW(config-if-range)#switchport mode access
F2-Accounting-SW(config-if-range)#switchport access vlan 50
F2-Accounting-SW(config-if-range)#switchport port-security maximum 2
F2-Accounting-SW(config-if-range)#switchport port-security mac-address sticky
F2-Accounting-SW(config-if-range)#switchport port-security violation shutdown
F2-Accounting-SW(config-if-range)#do wr
```

Floor2-Finance-SW

```
F2-Finance-SW#show vlan brief

VLAN Name Status Ports
---- -- -- -----
1 default active Gig0/1, Gig0/2
60 Finance active Fa0/3, Fa0/4, Fa0/5, Fa0/6
Fa0/7, Fa0/8, 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, Fa0/24

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

F2-Finance-SW#show interface trunk

Port Mode Encapsulation Status Native vlan
Fa0/1 on 802.1q trunking 1
Fa0/2 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa0/1 1-1005
Fa0/2 1-1005

Port Vlans allowed and active in management domain
Fa0/1 1,60
Fa0/2 1,60

Port Vlans in spanning tree forwarding state and not pruned
Fa0/1 1,60
Fa0/2 60
```

```
F2-Finance-SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-Finance-SW(config)#int range fa0/1-2
F2-Finance-SW(config-if-range)#switchport mode trunk

F2-Finance-SW(config-if-range)#ex
F2-Finance-SW(config)#vlan 60
F2-Finance-SW(config-vlan)#name Finance
F2-Finance-SW(config-vlan)#ex
F2-Finance-SW(config)#int range fa0/3-24
F2-Finance-SW(config-if-range)#switchport mode access
F2-Finance-SW(config-if-range)#switchport access vlan 60
F2-Finance-SW(config-if-range)#switchport port-security maximum 2
F2-Finance-SW(config-if-range)#switchport port-security mac-address sticky
F2-Finance-SW(config-if-range)#switchport port-security violation shutdown
F2-Finance-SW(config-if-range)#do wr
#LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
```

Floor3-Logistics-SW

```
Password:  
F3-Logistics-SW#sh vlan br  
  
VLAN Name Status Ports  
--- ---  
1 default active Gig0/1, Gig0/2  
70 Logistics active Fa0/3, Fa0/4, Fa0/5, Fa0/6  
Fa0/7, Fa0/8, 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, Fa0/24  
1002 fddi-default active  
1003 token-ring-default active  
1004 fddinet-default active  
1005 trnet-default active  
F3-Logistics-SW#show int tr  
Port Mode Encapsulation Status Native vlan  
Fa0/1 on 802.1q trunking 1  
Fa0/2 on 802.1q trunking 1  
  
Port Vlans allowed on trunk  
Fa0/1 1-1005  
Fa0/2 1-1005  
  
Port Vlans allowed and active in management domain  
Fa0/1 1,70  
Fa0/2 1,70  
  
Port Vlans in spanning tree forwarding state and not pruned  
Fa0/1 1,70  
Fa0/2 70
```

Floor3-Customer-SW

```
F3-Customer-SW#sh vlan br

VLAN Name                               Status    Ports
---- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
1   default                            active    Gig0/1, Gig0/2
80  Customer                           active    Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                         Fa0/7, Fa0/8, 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, Fa0/24
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                  active
1005 trnet-default                   active
F3-Customer-SW#sh int tr
Port      Mode        Encapsulation  Status      Native vlan
Fa0/1     on          802.1q         trunking    1
Fa0/2     on          802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/2     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,80
Fa0/2     1,80

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,80
Fa0/2     80

F3-Customer-SW#
```

Floor 3-Guest-SW

password:

F3-Guest-SW#sh vlan br

VLAN	Name	Status	Ports
1	default	active	Gig0/1, Gig0/2
90	Guest	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, 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, Fa0/24
1002	fdi-default	active	
1003	token-ring-default	active	
1004	fdininet-default	active	
1005	trnet-default	active	
F3-Guest-SW#sh int tr			
Port	Mode	Encapsulation	Status Native vlan
Fa0/1	on	802.1q	trunking 1
Fa0/2	on	802.1q	trunking 1
Port	Vlans allowed on trunk		
Fa0/1	1-1005		
Fa0/2	1-1005		
Port	Vlans allowed and active in management domain		
Fa0/1	1,90		
Fa0/2	1,90		
Port	Vlans in spanning tree forwarding state and not pruned		
Fa0/1	1,90		
Fa0/2	90		

Floor4-Admin-SW

```
password: F4-Admin-SW#sh vlan br

VLAN Name Status Ports
--- -----
1 default active Gig0/1, Gig0/2
100 Admin active Fa0/3, Fa0/4, Fa0/5, Fa0/6
Fa0/7, Fa0/8, 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, Fa0/24
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
F4-Admin-SW#sh int tr
Port Mode Encapsulation Status Native vlan
Fa0/1 on 802.1q trunking 1
Fa0/2 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa0/1 1-1005
Fa0/2 1-1005

Port Vlans allowed and active in management domain
Fa0/1 1,100
Fa0/2 1,100

Port Vlans in spanning tree forwarding state and not pruned
Fa0/1 1,100
Fa0/2 100
```

```
F4-Admin-SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F4-Admin-SW(config)#int range fa0/1-2
F4-Admin-SW(config-if-range)#switchport mode trunk

F4-Admin-SW(config-if-range)#ex
F4-Admin-SW(config)#vlan 100
F4-Admin-SW(config-vlan)#name Admin
F4-Admin-SW(config-vlan)#ex
F4-Admin-SW(config)#int range fa0/3-24
F4-Admin-SW(config-if-range)#switchport mode access
F4-Admin-SW(config-if-range)#switchport access vlan 100
F4-Admin-SW(config-if-range)#switchport port-security maximum 2
F4-Admin-SW(config-if-range)#switchport port-security mac-address sticky
F4-Admin-SW(config-if-range)#switchport port-security violation shutdown
F4-Admin-SW(config-if-range)#do wr
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
Building configuration...
[OK]
F4-Admin-SW(config-if-range)#

```

Floor4-ICT-SW

Password:

F4-ICT-SW#sh vlan br

VLAN	Name	Status	Ports	
1	default	active	Gig0/1, Gig0/2	
110	ICT	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, 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, Fa0/24	
1002	fdmi-default	active		
1003	token-ring-default	active		
1004	fdmnet-default	active		
1005	trnet-default	active		
F4-ICT-SW#sh int trunk				
Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	1
Fa0/2	on	802.1q	trunking	1
Port	Vlans allowed on trunk			
Fa0/1	1-1005			
Fa0/2	1-1005			
Port	Vlans allowed and active in management domain			
Fa0/1	1,110			
Fa0/2	1,110			
Port	Vlans in spanning tree forwarding state and not pruned			
Fa0/1	1,110			
Fa0/2	110			

```
F4-ICT-SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F4-ICT-SW(config)#int range fa0/1-2
F4-ICT-SW(config-if-range)#switchport mode trunk

F4-ICT-SW(config-if-range)#ex
F4-ICT-SW(config)#vlan 110
F4-ICT-SW(config-vlan)#name ICT
F4-ICT-SW(config-vlan)#ex
F4-ICT-SW(config)#int range fa0/3-24
F4-ICT-SW(config-if-range)#switchport mode access
F4-ICT-SW(config-if-range)#switchport access vlan 110
F4-ICT-SW(config-if-range)#switchport port-security maximum 2
F4-ICT-SW(config-if-range)#switchport port-security mac-address sticky
F4-ICT-SW(config-if-range)#switchport port-security violation shutdown
F4-ICT-SW(config-if-range)#do wr
```

Floor4-Servers-SW

```
F4-Server-SW#sh vlan br

VLAN Name                               Status    Ports
---- -----
1   default                             active    Gig0/1, Gig0/2
120  Servers                            active    Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                         Fa0/7, Fa0/8, 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, Fa0/24
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                  active
1005 trnet-default                   active
F4-Server-SW#sh int tr
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking   1
Fa0/2     on        802.1q         trunking   1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/2     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,120
Fa0/2     1,120

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,120
Fa0/2     1,120
```

```
F4-Server-SW#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
F4-Server-SW(config)#int range fa0/1-2
F4-Server-SW(config-if-range)#switchport mode trunk

F4-Server-SW(config-if-range)#ex
F4-Server-SW(config)#vlan 120
F4-Server-SW(config-vlan)#name Servers
F4-Server-SW(config-vlan)#ex
F4-Server-SW(config)#int range fa0/3-24
F4-Server-SW(config-if-range)#switchport mode access
F4-Server-SW(config-if-range)#switchport access vlan 120
F4-Server-SW(config-if-range)#switchport port-security maximum 2
F4-Server-SW(config-if-range)#switchport port-security mac-address sticky
F4-Server-SW(config-if-range)#switchport port-security violation shutdown
F4-Server-SW(config-if-range)#do wr
```

Configuring trunk and IP address on layer 3 switches:

Floor1-L3SW

```
F1-L3SW#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
F1-L3SW(config)#int range gigl/0/3-8
```

```
F1-L3SW(config-if-range)#switchport mode trunk
```

```
F1-1 1-L3SW(config-if-range) #ex
```

```
F1- -L3SW(config)#int range gigl/0/1-2
```

```
F1-1 -L3SW(config-if-range) #no switchport
```

```
F1-1 -L3SW(config-if-range) #ex
```

```
F1-1-L3SW(config)#int gigl/0/1
```

```
F1-L3SW(config-if)#ip address 10.10.10.1 255.255.255.252
```

```
F1-L3SW(config-if)#ex
```

```
F1-L3SW(config)#int gigl/0/2
```

```
F1-L3SW(config-if)#ip address 10.10.10.9 255.255.255.252
```

```
F1-L3SW(config-if)#ex
```

```
F1-L3SW(config)#do wr
```

```
Building configuration...
```

```
Compressed configuration from 7383 bytes to 3601 bytes [OK]
```

```
[OK]
```

```
F1-L3SW(config)#+
```

Floor2-L3SW

```
F2-L3SW#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
F2-L3SW(config)#int range gigl/0/3-8
```

```
F2-L3SW (config-if-range) #switchport mode trunk
```

```
F2-L3SW(config-if-range) #ex
```

```
F2-L3SW (config)#int range gigl/0/1-2
```

```
F2-L3SW(config-if-range) #no switchport
```

```
F2-L3SW(config-if-range) #ex
```

```
F2-L3SW(config)#int gigl/0/1
```

```
F2-L3SW (config-if)#ip address 10.10.10.13 255.255.255.252
```

```
F2-L3SW (config-if)#ex
```

```
F2-L3SW(config)#int gigl/0/2
```

```
F2-L3SW (config-if)#ip address 10.10.10.5 255.255.255.252
```

```
F2-L3SW (config-if)#ex
```

```
F2-L3SW(config)#do wr
```



Floor3-L3SW

F3-L3SW#conf t

Enter configuration commands, one per line. End with CNTL/Z.

F3-L3SW(config)#int range gigl/0/3-8

F3-L3SW(config-if-range) #switchport mode trunk

F3-L3SW(config-if-range) #ex

F3-L3SW(config)#int range gigl/0/1-2

F3-L3SW(config-if-range) #no switchport

F3-L3SW(config-if-range) #ex

F3-L3SW(config)#int gigl/0/1

F3-L3SW(config-if)#ip address 10.10.10.41 255.255.255.252

F3-L3SW(config-if)#ex

F3-L3SW(config)#int gigl/0/2

(config-if)#ip address 10.10.10.45 255.255.255.252

F3-L3SW(config-if)#ex

F3-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Floor4-L3SW

F4-L3SW#conf t

Enter configuration commands, one per line. End with CNTL/Z.

F4-L3SW(config)#int range gigl/0/3-8

F4-L3SW(config-if-range) #switchport mode trunk

F4-L3SW (config-if-range) #ex

F4-L3SW(config)#int range gigl/0/1-2

F4-L3SW(config-if-range)#no switchport

F4-L3SW (config-if-range) #ex

F4-L3SW(config)#int gigl/0/1

F4-L3SW(config-if)#ip address 10.10.10.49 255.255.255.252

F4-L3SW (config-if)#ex

F4-L3SW (config)#int gigl/0/2

F4-L3SW(config-if)#ip address 10.10.10.53 255.255.255.252

F4-L3SW (config-if)#ex

F4-L3SW(config)#do wr

Building configuration...

Compressed configuration from 7383 bytes to 3601 bytes [OK]

[OK]

Configuring IP Addresses on Core Layer Routers:

Floor1-Router

```
F1-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F1-Router(config)#
F1-Router(config)#int gig0/1
F1-Router(config-if)#ip address 10.10.10.2 255.255.255.252
F1-Router(config-if)#int gig0/2
F1-Router(config-if)#ip address 10.10.10.6 255.255.255.252
F1-Router(config-if)#int gig0/0
F1-Router(config-if)#ip address 10.10.10.29 255.255.255.252
F1-Router(config-if)#int se0/0/0
F1-Router(config-if)#ip address 10.10.10.33 255.255.255.252
F1-Router(config-if)#clock rate 64000
F1-Router(config-if)#int se0/0/1
F1-Router(config-if)#ip address 10.10.10.17 255.255.255.252
F1-Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
F1-Router(config-if)#ex
F1-Router(config)#
Building configuration...
[OK]
F1-Router(config)#

```

Floor2-Router

```
F2-Router#
F2-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-Router(config)#
F2-Router(config)#int gig0/1
F2-Router(config-if)#ip address 10.10.10.14 255.255.255.252
F2-Router(config-if)#int gig0/2
F2-Router(config-if)#ip address 10.10.10.10 255.255.255.252
F2-Router(config-if)#int gig0/0
F2-Router(config-if)#ip address 10.10.10.21 255.255.255.252
F2-Router(config-if)#int se0/0/0
F2-Router(config-if)#ip address 10.10.10.18 255.255.255.252
F2-Router(config-if)#clock rate 64000
F2-Router(config-if)#int se0/0/1
F2-Router(config-if)#ip address 10.10.10.25 255.255.255.252
F2-Router(config-if)#clock rate 64000
F2-Router(config-if)#ex
F2-Router(config)#
Building configuration...
[OK]
F2-Router(config)#

```

Floor3-Router

```
F3-Router#  
F3-Router#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
F3-Router(config)#int gig0/1  
F3-Router(config-if)#ip address 10.10.10.42 255.255.255.252  
F3-Router(config-if)#int gig0/2  
F3-Router(config-if)#ip address 10.10.10.50 255.255.255.252  
F3-Router(config-if)#int gig0/0  
F3-Router(config-if)#ip address 10.10.10.22 255.255.255.252  
F3-Router(config-if)#int se0/0/1  
F3-Router(config-if)#ip address 10.10.10.37 255.255.255.252  
F3-Router(config-if)#clock rate 64000  
F3-Router(config-if)#int se0/0/0  
F3-Router(config-if)#ip address 10.10.10.34 255.255.255.252  
F3-Router(config-if)#ex  
F3-Router(config)#do wr  
Building configuration...  
[OK]  
F3-Router(config)#
```

Floor4-Router

```
F4-Router#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
F4-Router(config)#int gig0/1  
F4-Router(config-if)#ip address 10.10.10.46 255.255.255.252  
F4-Router(config-if)#int gig0/2  
F4-Router(config-if)#ip address 10.10.10.54 255.255.255.252  
F4-Router(config-if)#int gig0/0  
F4-Router(config-if)#ip address 10.10.10.30 255.255.255.252  
F4-Router(config-if)#int se0/0/0  
F4-Router(config-if)#ip address 10.10.10.38 255.255.255.252  
F4-Router(config-if)#int se0/0/1  
F4-Router(config-if)#ip address 10.10.10.26 255.255.255.252  
F4-Router(config-if)#ex  
F4-Router(config)#do wr  
Building configuration...  
[OK]  
F4-Router(config)#
```

Configuring OSPF on routers and layer 3 switches:

Floor1-Router

```
F1-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F1-Router(config)#router ospf 10
F1-Router(config-router)#network 10.10.10.0 0.0.0.3 area 0
F1-Router(config-router)#network 10.10.10.4 0.0.0.3 area 0
F1-Router(config-router)#network 10.10.10.16 0.0.0.3 area 0
F1-Router(config-router)#network 10.10.10.28 0.0.0.3 area 0
F1-Router(config-router)#network 10.10.10.32 0.0.0.3 area 0
F1-Router(config-router)#ex
F1-Router(config)#do wr
Building configuration...
[OK]
F1-Router(config)#+
```

Floor2-Router

```
F2-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-Router(config)#router ospf 10
F2-Router(config-router)#network 10.10.10.12 0.0.0.3 area 0
F2-Router(config-router)#network 10.10.10.8 0.0.0.3 area 0
F2-Router(config-router)#network 10.10.10.16 0.0.0.3 area 0
F2-Router(config-router)#network 10.10.10.20 0.0.0.3 area 0
F2-Router(config-router)#network 10.10.10.24 0.0.0.3 area 0
F2-Router(config-router)#ex
F2-Router(config)#do wr
```

Floor3-Router

```
F3-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z
F3-Router(config)#router ospf 10
F3-Router(config-router)#network 10.10.10.32 0.0.0.3 area 0
F3-Router(config-router)#network 10.10.10.40 0.0.0.3 area 0
F3-Router(config-router)#network 10.10.10.48 0.0.0.3 area 0
F3-Router(config-router)#network 10.10.10.36 0.0.0.3 area 0
F3-Router(config-router)#network 10.10.10.20 0.0.0.3 area 0
F3-Router(config-router)#ex
F3-Router(config)#do wr
Building configuration...
[OK]
F3-Router(config)#+
```

Floor4-Router

```
F4-Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F4-Router(config)#router ospf 10
F4-Router(config-router)#network 10.10.10.24 0.0.0.3 area 0
F4-Router(config-router)#network 10.10.10.28 0.0.0.3 area 0
F4-Router(config-router)#network 10.10.10.36 0.0.0.3 area 0
F4-Router(config-router)#network 10.10.10.44 0.0.0.3 area 0
F4-Router(config-router)#network 10.10.10.52 0.0.0.3 area 0
F4-Router(config-router)#ex
F4-Router(config)#do wr
Building configuration...
[OK]
F4-Router(config)#

```

Floor1-L3SW

```
F1-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F1-L3SW(config)#ip routing
F1-L3SW(config)#router ospf 10
F1-L3SW(config-router)#network 10.10.10.0 0.0.0.3 area 0
F1-L3SW(config-router)#network 10.10.10.8 0.0.0.3 area 0
F1-L3SW(config-router)#network 192.168.10.0 0.0.0.63 area 0
F1-L3SW(config-router)#network 192.168.10.64 0.0.0.63 area 0
F1-L3SW(config-router)#network 192.168.10.128 0.0.0.63 area 0
F1-L3SW(config-router)#network 192.168.10.192 0.0.0.63 area 0
F1-L3SW(config-router)#network 192.168.11.0 0.0.0.63 area 0
F1-L3SW(config-router)#network 192.168.11.64 0.0.0.63 area 0
F1-L3SW(config-router)#ex
F1-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F1-L3SW(config)#

```

Floor2-L3SW

```
F2-L3SW#  
F2-L3SW#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
F2-L3SW(config)#ip routing  
F2-L3SW(config)#router ospf 10  
F2-L3SW(config-router)#network 10.10.10.4 0.0.0.3 area 0  
F2-L3SW(config-router)#network 10.10.10.12 0.0.0.3 area 0  
F2-L3SW(config-router)#network 192.168.10.0 0.0.0.63 area 0  
F2-L3SW(config-router)#network 192.168.10.64 0.0.0.63 area 0  
F2-L3SW(config-router)#network 192.168.10.128 0.0.0.63 area 0  
F2-L3SW(config-router)#network 192.168.10.192 0.0.0.63 area 0  
F2-L3SW(config-router)#network 192.168.11.0 0.0.0.63 area 0  
F2-L3SW(config-router)#network 192.168.11.64 0.0.0.63 area 0  
F2-L3SW(config-router)#ex  
F2-L3SW(config)#do wr  
Building configuration...  
Compressed configuration from 7383 bytes to 3601 bytes[OK]  
[OK]  
F2-L3SW(config)#+
```

Floor3-L3SW

```
F3-L3SW#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
F3-L3SW(config)#ip routing  
F3-L3SW(config)#router ospf 10  
F3-L3SW(config-router)#network 10.10.10.40 0.0.0.3 area 0  
F3-L3SW(config-router)#network 10.10.10.44 0.0.0.3 area 0  
F3-L3SW(config-router)#network 192.168.11.128 0.0.0.63 area 0  
F3-L3SW(config-router)#network 192.168.11.192 0.0.0.63 area 0  
F3-L3SW(config-router)#network 192.168.12.0 0.0.0.63 area 0  
F3-L3SW(config-router)#network 192.168.12.64 0.0.0.63 area 0  
F3-L3SW(config-router)#network 192.168.12.128 0.0.0.63 area 0  
F3-L3SW(config-router)#network 192.168.12.192 0.0.0.63 area 0  
F3-L3SW(config-router)#ex  
F3-L3SW(config)#do wr  
Building configuration...  
Compressed configuration from 7383 bytes to 3601 bytes[OK]  
[OK]  
F3-L3SW(config)#+
```

Floor4-L3SW

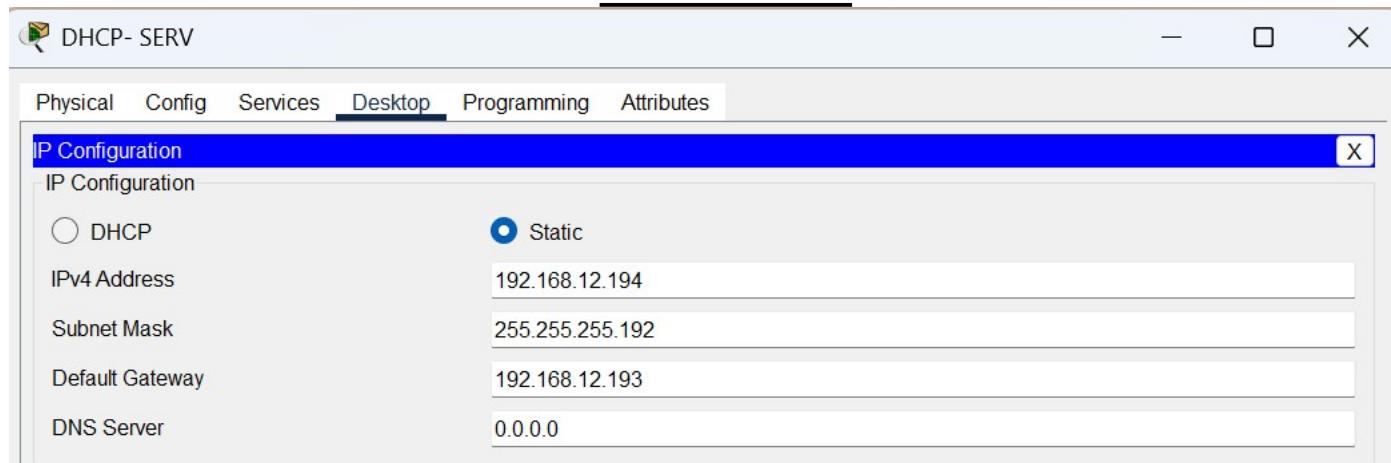
```
F4-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F4-L3SW(config)#ip routing
F4-L3SW(config)#router ospf 10
F4-L3SW(config-router)#network 10.10.10.48 0.0.0.3 area 0
F4-L3SW(config-router)#network 10.10.10.52 0.0.0.3 area 0
F4-L3SW(config-router)#network 192.168.11.128 0.0.0.63 area 0
F4-L3SW(config-router)#network 192.168.11.192 0.0.0.63 area 0
F4-L3SW(config-router)#network 192.168.12.0 0.0.0.63 area 0
F4-L3SW(config-router)#network 192.168.12.64 0.0.0.63 area 0
F4-L3SW(config-router)#network 192.168.12.128 0.0.0.63 area 0
F4-L3SW(config-router)#network 192.168.12.192 0.0.0.63 area 0
F4-L3SW(config-router)#ex
F4-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F4-L3SW(config)#

```

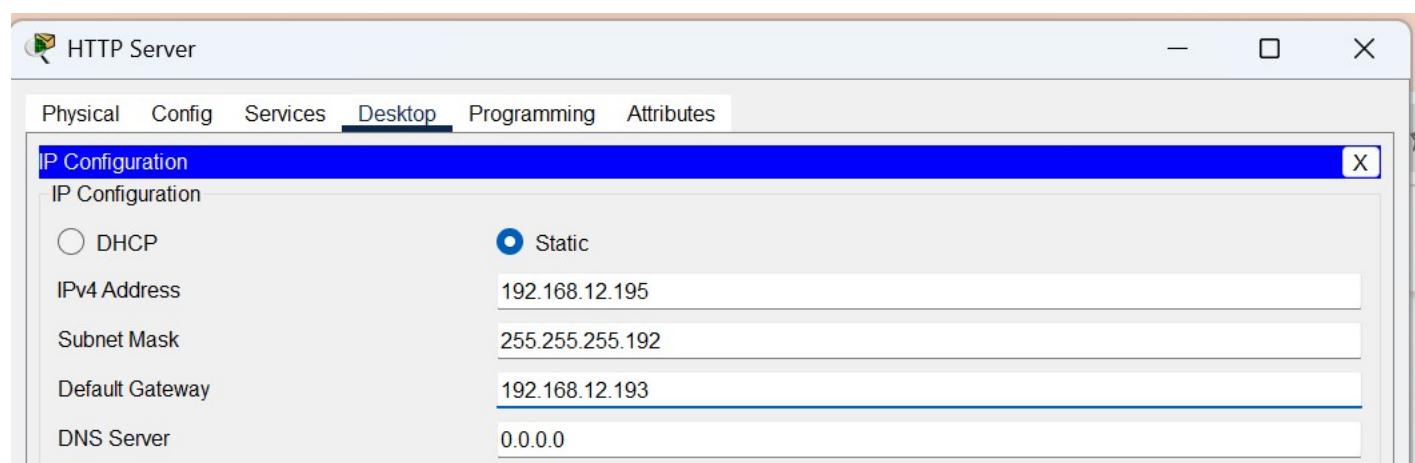
```
router ospf 10
  log-adjacency-changes
  network 10.10.10.48 0.0.0.3 area 0
  network 10.10.10.52 0.0.0.3 area 0
  network 192.168.11.128 0.0.0.63 area 0
  network 192.168.11.192 0.0.0.63 area 0
  network 192.168.12.0 0.0.0.63 area 0
  network 192.168.12.64 0.0.0.63 area 0
  network 192.168.12.128 0.0.0.63 area 0
  network 192.168.12.192 0.0.0.63 area 0
!
  ip classless
!
  ip flow-export version 9
!
```

Configuring static Ips on servers:

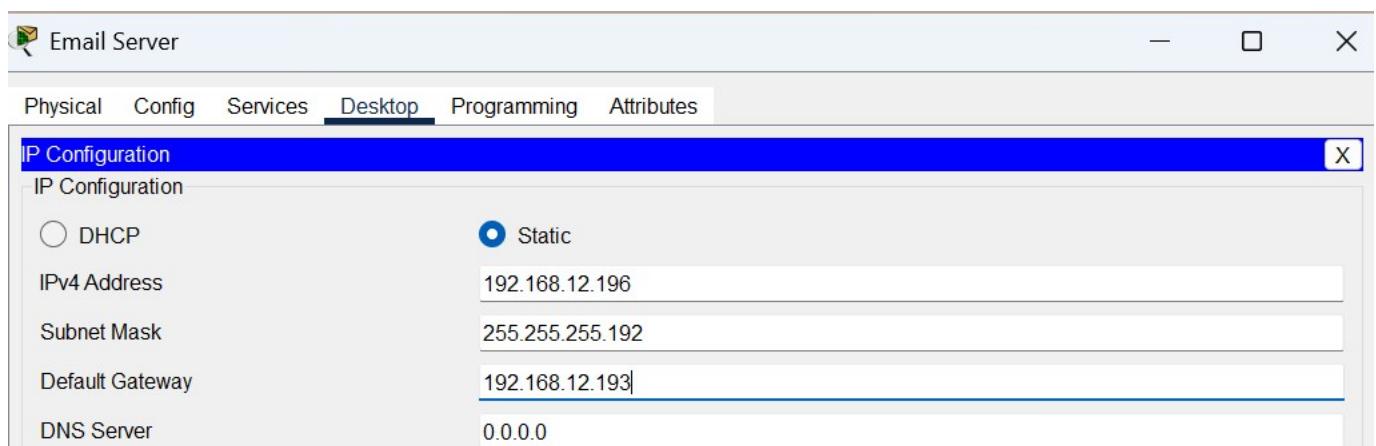
DHCP Server



HTTP Server



Email Server



Configuring DHCP Server pools:

DHCP-SERV

Physical Config Services Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPV6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface	FastEthernet0	Service	<input checked="" type="radio"/> On	<input type="radio"/> Off
Pool Name	HR-Pool			
Default Gateway	192.168.10.129			
DNS Server	8.8.8.8			
Start IP Address :	192	168	10	134
Subnet Mask:	255	255	255	192
Maximum Number of Users :	58			
TFTP Server:	0.0.0.0			
WLC Address:	0.0.0.0			

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
HR-Pool	192.168.10.129	8.8.8.8	192.168.10.134	255.255.255.192	58	0.0.0.0	0.0.0.0
Fin-Pool	192.168.11.65	8.8.8.8	192.168.11.70	255.255.255.192	58	0.0.0.0	0.0.0.0
Mkt-Pool	192.168.10.192	8.8.8.8	192.168.10.197	255.255.255.192	58	0.0.0.0	0.0.0.0
Mgt-Pool	192.168.10.1	8.8.8.8	192.168.10.6	255.255.255.192	58	0.0.0.0	0.0.0.0
Rsc-Pool	192.168.10.65	8.8.8.8	192.168.10.70	255.255.255.192	58	0.0.0.0	0.0.0.0
Acc-Pool	192.168.11.1	8.8.8.8	192.168.11.5	255.255.255.192	58	0.0.0.0	0.0.0.0
Log-Pool	192.168.11.129	8.8.8.8	192.168.11.134	255.255.255.192	58	0.0.0.0	0.0.0.0
Cust-Pool	192.168.11.193	8.8.8.8	192.168.11.198	255.255.255.192	58	0.0.0.0	0.0.0.0

Guest-Pool 192.168.12.1 8.8.8.8 192.168.12.5 255.255.255.192 58 0.0.0.0 0.0.0.0

Admin-Pool 192.168.12.65 8.8.8.8 192.168.12.70 255.255.255.192 58 0.0.0.0 0.0.0.0

ICT-Pool 192.168.12.129 8.8.8.8 192.168.12.134 255.255.255.192 58 0.0.0.0 0.0.0.0

serverPool 0.0.0.0 0.0.0.0 192.168.12.192 255.255.255.192 512 0.0.0.0 0.0.0.0

HTTP- Server

HTTP SERV

Physical Config Services Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCIPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

HTTP

HTTP On Off

HTTPS On Off

File Manager

	File Name	Edit	Delete
1	Finance.jpg		(delete)
2	Tidel_Park.jpg		(delete)
3	account.jpg		(delete)
4	contact.jpg		(delete)
5	fincope.jpg		(delete)
6	gt.jpg		(delete)
7	hr.jpg		(delete)
8	index.css	(edit)	(delete)
9	index.html	(edit)	(delete)
10	index.js	(edit)	(delete)
11	managment.jpg		(delete)
12	marketing-image.jpg		(delete)
13	nb.png		(delete)
14	nextgen.jpg		(delete)
15	research.jpg		(delete)

New File Import

Configuring inter VLAN routing:

Floor1-L3SW

```
F1-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F1-L3SW(config)#vlan 10
F1-L3SW(config-vlan)#vlan 20
F1-L3SW(config-vlan)#vlan 30
F1-L3SW(config-vlan)#vlan 40
F1-L3SW(config-vlan)#vlan 50
F1-L3SW(config-vlan)#vlan 60
F1-L3SW(config-vlan)#

```

```
F1-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z
F1-L3SW(config)#int vlan 10
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#int vlan 20
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#int vlan 30
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#int vlan 40
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#int vlan 50
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#int vlan 60
F1-L3SW(config-if)#no sh
F1-L3SW(config-if)#ip helper-address 192.168.12.194
F1-L3SW(config-if)#ex
F1-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F1-L3SW(config)#
```

Floor2-L3SW

```
F2-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-L3SW(config)#vlan 10
F2-L3SW(config-vlan)#vlan 20
F2-L3SW(config-vlan)#vlan 30
F2-L3SW(config-vlan)#vlan 40
F2-L3SW(config-vlan)#vlan 50
F2-L3SW(config-vlan)#vlan 60
F2-L3SW(config-vlan)#

```

```
F2-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F2-L3SW(config)#int vlan 10
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#int vlan 20
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#int vlan 30
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#int vlan 40
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#int vlan 50
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#int vlan 60
F2-L3SW(config-if)#no sh
F2-L3SW(config-if)#ip helper-address 192.168.12.194
F2-L3SW(config-if)#ex
F2-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F2-L3SW(config)#

```

Floor3-L3SW

```
F3-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z
F3-L3SW(config)#vlan 70
F3-L3SW(config-vlan)#vlan 80
F3-L3SW(config-vlan)#vlan 90
F3-L3SW(config-vlan)#vlan 100
F3-L3SW(config-vlan)#vlan 110
F3-L3SW(config-vlan)#vlan 120
F3-L3SW(config-vlan)#int vlan 70
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#int vlan 80
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#int vlan 90
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#int vlan 100
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#int vlan 110
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#int vlan 120
F3-L3SW(config-if)#no sh
F3-L3SW(config-if)#ip helper-address 192.168.12.194
F3-L3SW(config-if)#ex
F3-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F3-L3SW(config)#
```

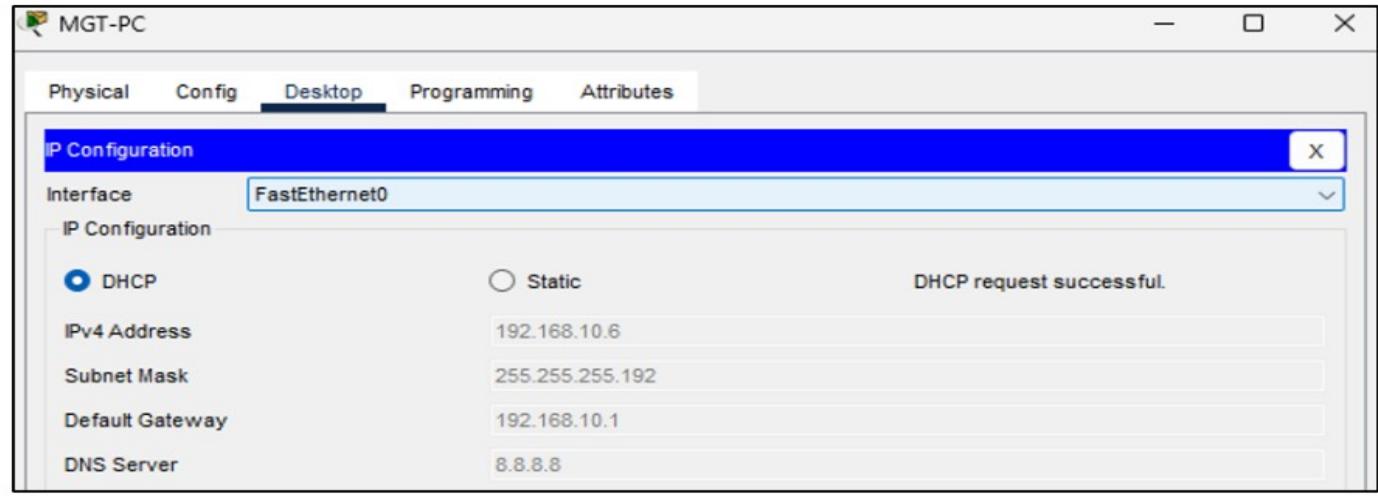
Floor4-L3SW

```
F4-L3SW#conf t
Enter configuration commands, one per line. End with CNTL/Z.
F4-L3SW(config)#vlan 70
F4-L3SW(config-vlan)#vlan 80
F4-L3SW(config-vlan)#vlan 90
F4-L3SW(config-vlan)#vlan 100
F4-L3SW(config-vlan)#vlan 110
F4-L3SW(config-vlan)#vlan 120
F4-L3SW(config-vlan)#int vlan 70
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#int vlan 80
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#int vlan 90
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#int vlan 100
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#int vlan 110
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#int vlan 120
F4-L3SW(config-if)#no sh
F4-L3SW(config-if)#ip helper-address 192.168.12.194
F4-L3SW(config-if)#ex
F4-L3SW(config)#do wr
Building configuration...
Compressed configuration from 7383 bytes to 3601 bytes[OK]
[OK]
F4-L3SW(config)$
```

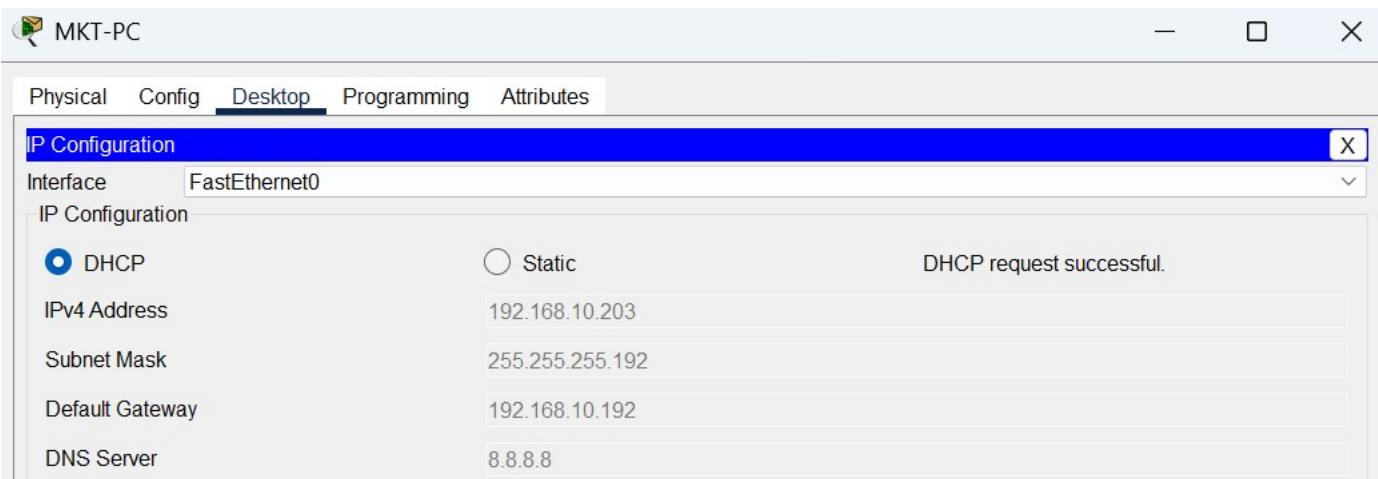
Testing

Checking if DHCP is successful:

Management-PC



Marketing-PC



Logestic-PC

The screenshot shows the IP Configuration window for the Logestic-PC. The interface selected is FastEthernet0. The configuration is set to DHCP, which is successful. The IPv4 Address is 192.168.11.136, Subnet Mask is 255.255.255.192, Default Gateway is 192.168.11.129, and DNS Server is 8.8.8.8.

Setting	Value	Status
IPv4 Address	192.168.11.136	
Subnet Mask	255.255.255.192	
Default Gateway	192.168.11.129	
DNS Server	8.8.8.8	

Admin-PC

The screenshot shows the IP Configuration window for the Admin-PC. The interface selected is FastEthernet0. The configuration is set to DHCP, which is successful. The IPv4 Address is 192.168.12.73, Subnet Mask is 255.255.255.192, Default Gateway is 192.168.12.65, and DNS Server is 8.8.8.8.

Setting	Value	Status
IPv4 Address	192.168.12.73	
Subnet Mask	255.255.255.192	
Default Gateway	192.168.12.65	
DNS Server	8.8.8.8	

ICT- PC

The screenshot shows the IP Configuration window for the ICT-PC. The interface selected is FastEthernet0. The configuration is set to DHCP, which is successful. The IPv4 Address is 192.168.12.138, Subnet Mask is 255.255.255.192, Default Gateway is 192.168.12.129, and DNS Server is 8.8.8.8.

Setting	Value	Status
IPv4 Address	192.168.12.138	
Subnet Mask	255.255.255.192	
Default Gateway	192.168.12.129	
DNS Server	8.8.8.8	

Configuring Access points:

Research-AP

RSC-AP

Physical Config Attributes

GLOBAL	Port 1		
Settings	Port Status		
INTERFACE	SSID		
Port 0	RSC-WIFI		
Port 1	2.4 GHz Channel		
	6		
	Coverage Range (meters)		
	140.00		
Authentication			
<input type="radio"/> Disabled		<input type="radio"/> WEP	WEP Key
<input type="radio"/> WPA-PSK		<input checked="" type="radio"/> WPA2-PSK	PSK Pass Phrase
		User ID	
		Password	
		Encryption Type	AES

Testing Research-Laptop

Laptop76

Physical Config Desktop Programming Attributes

GLOBAL	Wireless0		
Settings	Port Status		
Algorithm Settings	Bandwidth		
INTERFACE	11 Mbps		
Wireless0	On		
Bluetooth			
MAC Address			
000A.F3A6.B17C			
SSID			
RSC-WIFI			
Authentication			
<input type="radio"/> Disabled		<input type="radio"/> WEP	WEP Key
<input type="radio"/> WPA-PSK		<input checked="" type="radio"/> WPA2-PSK	PSK Pass Phrase
<input type="radio"/> WPA		<input type="radio"/> WPA2	User ID
<input type="radio"/> 802.1X		Method:	Password
		MD5	User Name
			Password
		AES	Encryption Type
IP Configuration			
<input checked="" type="radio"/> DHCP			
<input type="radio"/> Static			
IPv4 Address			
192.168.10.77			
Subnet Mask			
255.255.255.192			
IPv6 Configuration			
<input checked="" type="radio"/> Automatic			
<input type="radio"/> Static			
IPv6 Address			
/			
Link Local Address: FE80::20A:F3FF:FEA6:B17C			

Guest-Access Point

The screenshot shows the configuration interface for a Guest-Access Point (GST-AP). The left sidebar lists GLOBAL, Settings, INTERFACE, Port 0, and Port 1. The selected tab is Port 1. The main panel displays Port 1 settings:

Port 1		
Port Status	<input checked="" type="checkbox"/> On	
SSID	Default	
2.4 GHz Channel	6	
Coverage Range (meters)	140.00	
Authentication		
<input type="radio"/> Disabled	<input type="radio"/> WEP	WEP Key
<input type="radio"/> WPA-PSK	<input checked="" type="radio"/> WPA2-PSK	PSK Pass Phrase
		Guest123
		User ID
		Password
		AES
Encryption Type		

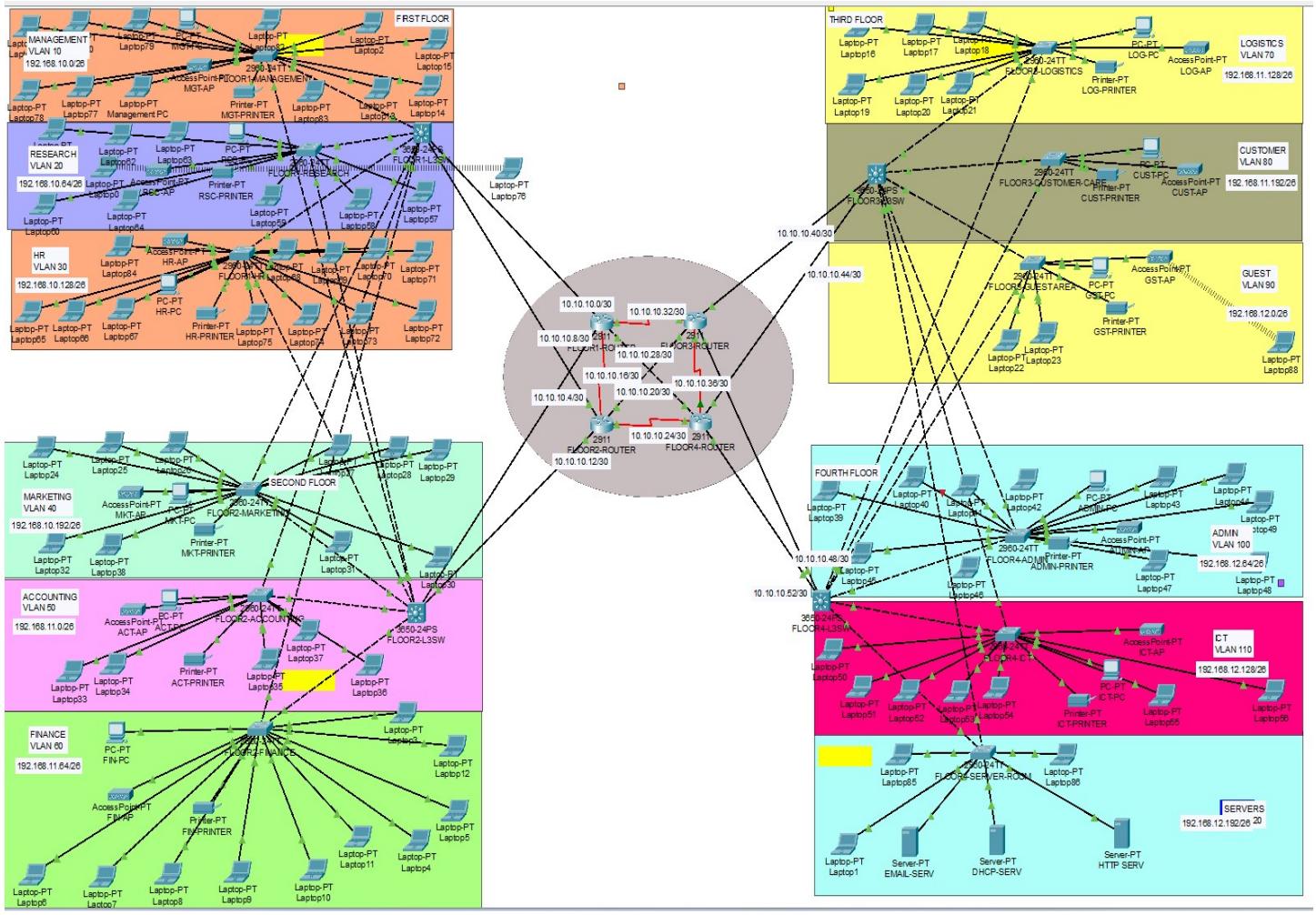
Guest Laptop

The screenshot shows the configuration interface for a Guest Laptop (Laptop88). The left sidebar lists GLOBAL, Settings, Algorithm Settings, INTERFACE, Wireless0, and Bluetooth. The selected tab is Wireless0. The main panel displays Wireless0 settings:

Wireless0		
Port Status	<input checked="" type="checkbox"/> On	
Bandwidth	18 Mbps	
MAC Address	0005.5EA1.504B	
SSID	Default	
Authentication		
<input type="radio"/> Disabled	<input type="radio"/> WEP	WEP Key
<input type="radio"/> WPA-PSK	<input checked="" type="radio"/> WPA2-PSK	PSK Pass Phrase
<input type="radio"/> WPA	<input type="radio"/> WPA2	User ID
<input type="radio"/> 802.1X	Method:	Password
		MD5
		User Name
		Password
		AES
Encryption Type		
IP Configuration		
<input type="radio"/> DHCP		
<input checked="" type="radio"/> Static		
IPv4 Address	192.168.12.8	
Subnet Mask	255.255.255.192	

Screenshots

Final Network in Packet Tracer



Conclusion

In conclusion, this computer networking project successfully achieved the objective of designing a scalable, structured, and secure enterprise network infrastructure for a multi-floor organization. Each of the four floors was carefully segmented to serve specific departments such as Management, Research, HR, Finance, Marketing, Logistics, Customer Support, Admin, and ICT, ensuring optimized communication, resource allocation, and security.

Through the use of Layer 3 switches on each floor and interconnecting routers, the network provides robust inter-floor routing and logical segmentation. Department-specific switches and dedicated wireless access points were deployed to support both wired and wireless connectivity, with separate access for guests to maintain network security.

A central server infrastructure, located on the fourth floor, was implemented to manage DHCP, HTTP, and email services, enabling centralized administration and seamless service delivery. The inclusion of VLANs, inter-VLAN routing, and access control mechanisms further enhanced the network's reliability, scalability, and security posture.

This project enhanced our practical skills in network design, IP planning, VLAN configuration, server integration, and troubleshooting. The experience reinforced the importance of a modular and layered approach in enterprise network architecture. In the future, the network could be further improved by integrating advanced security measures such as firewalls, centralized authentication, and redundancy protocols to ensure high availability and better fault tolerance.

Expected Outcome

- **A highly secure banking network** resistant to cyber threats
- **. Fast and reliable transaction processing** across branches.
- **Secure communication** between employees and customers.
- **Minimal downtime** with disaster recovery mechanisms in place.

