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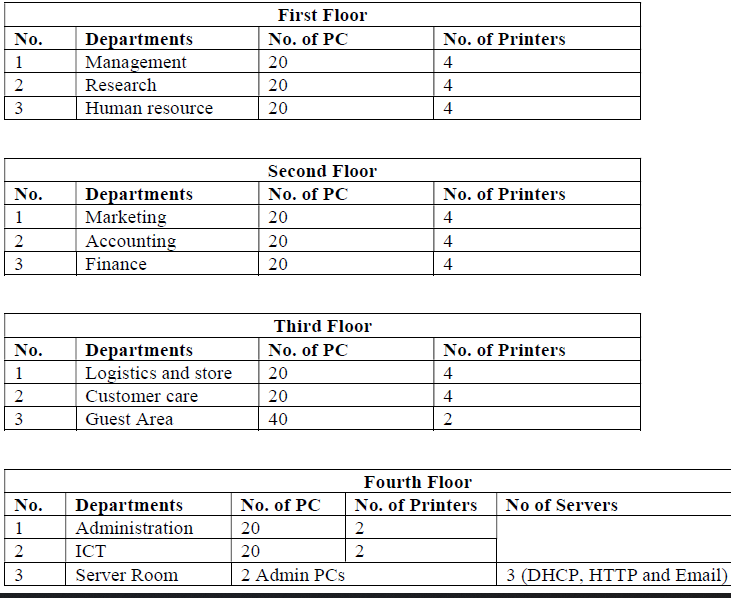
Subash Subedi

Bank System Network Design

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.;



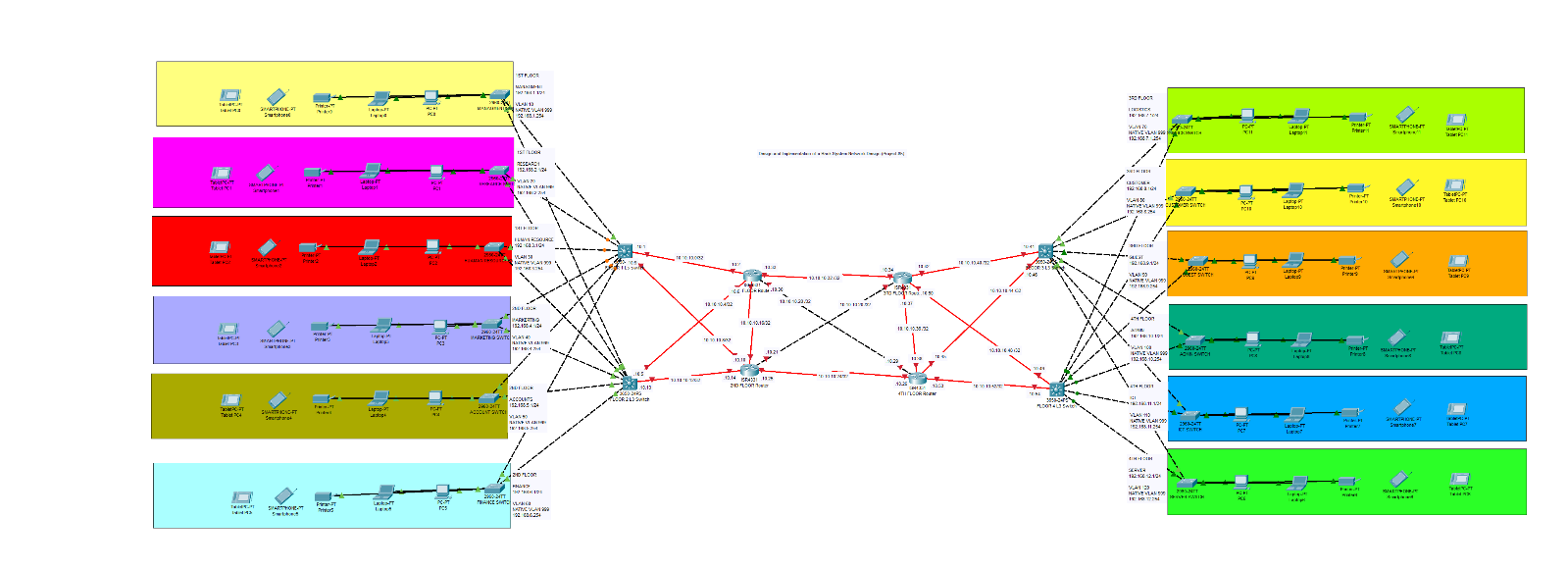
* Use a software modeling tool to visualize the network topology (Use Hierarchical Network Design  
  - Software Modelling Tools: MS Visio, Visual Paradigm, or Draw.io for modeling network design.
* Use any of the following network simulation software to implement the above topology.  
  - Simulation 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.

**Technologies Implemented**

# Creating a network topology using Cisco Packet Tracer.

Mesh Topology

# Hierarchical Network Design.



# 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

Optical Fiber

Serial DCE

# Configuring Basic device settings.

|  |  |
| --- | --- |
| ***MANAGEMENT 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 | ***LOGISTICS DEPARTMENT SWITCH***  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***  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  exit  no ip domain lookup  do wr  end  exit | ***CUSTOMER DEPARTMENT SWITCH***  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 |
| ***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  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 | ***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  service password-encryption  line console 0  motd-banner  login local  exit  no ip domain lookup  do wr  end  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  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 | ***SERVER DEPARTMENT SWITCH***  enable  configure terminal  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 |

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| ***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  end  exit | ***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 |
| ***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 |

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| --- | --- |
| ***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  line console 0  motd-banner  login local  exit  no ip domain lookup  do wr  end  exit | ***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 |
| ***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 |

# Creating VLANs and assigning ports VLAN numbers.

|  |  |
| --- | --- |
| ***MANAGEMENT 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 | ***LOGISTICS DEPARTMENT SWITCH***  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***  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  ip default-gateway 192.168.2.1  interface range fastethernet 0/1-24  switchport mode access  switchport access vlan 10  no shutdown  exit  end  wr | ***CUSTOMER DEPARTMENT SWITCH***  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 192.168.8.1  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  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 | ***ADMIN DEPARTMENT SWITCH***  enable  configure terminal  vlan 100  name ADMIN-4TH-FLOOR  exit  vlan 999  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  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 | ***SERVER DEPARTMENT SWITCH***  enable  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 |

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| ***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  name ACCOUNT-2ND-FLOOR  exit  vlan 60  name FINANCE-2ND-FLOOR  exit  vlan 999  name NATIVE  exit  end  wr | ***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 ICT-4TH-FLOOR  exit  vlan 120  name SERVER-4TH-FLOOR  exit  vlan 999  name NATIVE  exit  end  wr |

# 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 |

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

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| --- | --- |
| ***MANAGEMENT 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 10  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 10  switchport nonegotiate  exit  do wr | ***LOGISTICS 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 70  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 70  switchport nonegotiate  exit  do wr |
| ***RESEARCH 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 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 | ***CUSTOMER 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 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  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 | ***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 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  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 40  switchport nonegotiate  exit  do wr | ***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 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 100  switchport nonegotiate  exit  do wr |
| ***ACCOUNT 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 50  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 50  switchport nonegotiate  exit  do wr | ***ICT 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 110  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 110  switchport nonegotiate  exit  do wr |
| ***FINANCE 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 60  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 60  switchport nonegotiate  exit  do wr | ***SERVER 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 120  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 120  switchport nonegotiate  exit  do wr |

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| ***1st & 2ND 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 | ***3rd & 4TH FLOOR L3 SWITCH***  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  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 | enable  configure terminal  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  description \*\* ACCOUNT TRUNK INTERFACE LACP ETHERCHANNEL \*\*  shutdown  channel-protocol lacp  channel-group 5 mode active  no shutdown  exit  interface port-channel 5  switchport mode trunk  switchport trunk native vlan 999  switchport trunk allowed vlan 50  switchport nonegotiate  no shutdown  exit  end  wr | enable  configure terminal  interface GigabitEthernet 1/0/7  description \*\* ICT TRUNK INTERFACE LACP ETHERCHANNEL \*\*  shutdown  channel-protocol lacp  channel-group 11 mode active  no shutdown  exit  interface port-channel 11  switchport mode trunk  switchport trunk native vlan 999  switchport trunk allowed vlan 110  switchport nonegotiate  no shutdown  exit  end  wr |
| enable  configure terminal  interface GigabitEthernet 1/0/8  description \*\* FINANCE TRUNK INTERFACE LACP ETHERCHANNEL \*\*  shutdown  channel-protocol lacp  channel-group 6 mode active  no shutdown  exit  interface port-channel 6  switchport mode trunk  switchport trunk native vlan 999  switchport trunk allowed vlan 60  switchport nonegotiate  no shutdown  exit  end  wr | enable  configure terminal  interface GigabitEthernet 1/0/8  description \*\* SERVER TRUNK INTERFACE LACP ETHERCHANNEL \*\*  shutdown  channel-protocol lacp  channel-group 12 mode active  no shutdown  exit  interface port-channel 12  switchport mode trunk  switchport trunk native vlan 999  switchport trunk allowed vlan 120  switchport nonegotiate  no shutdown  exit  end  wr |

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

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

# Configuring SSH for secure Remote access.

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| ***MANAGEMENT DEPARTMENT SWITCH***  enable  configure terminal    ip domain-name managment.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 | ***LOGISTICS DEPARTMENT SWITCH***  enable  configure terminal    ip domain-name logistic.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 |
| ***RESEARCH DEPARTMENT SWITCH***  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 | ***CUSTOMER DEPARTMENT SWITCH***  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 |
| ***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 | ***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 |
| ***MARKETING DEPARTMENT SWITCH***  enable  configure terminal    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 | ***ADMIN DEPARTMENT SWITCH*** |
| ***ACCOUNT 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 | ***ICT DEPARTMENT SWITCH*** |
| ***FINANCE DEPARTMENT SWITCH***  enable  configure terminal    ip domain-name finance.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 | ***SERVER DEPARTMENT SWITCH*** |

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| ***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 | ***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 |
| ***2ND FLOOR L3 SWITCH***  enable  configure terminal    ip domain-name secondfloormultilayer.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 | ***4TH FLOOR L3 SWITCH***  enable  configure terminal    ip domain-name fourthfloormultilayer.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 |

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| ***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  line vty 0 15  login local  transport input ssh  exit    ip ssh time-out 60  ip ssh authentication-retries 3  exit    wr | ***4TH 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 |

# Configuring OSPF as the routing protocol.

# Configuring switchport security or Port-Security on the switches.

# Configuring WLAN or wireless network (Cisco Access Point).

# Host Device Configurations.

# Test and Verifying Network Communication.