Number of networks: 20

Number of switches :12

Number of routers:4

Number of switches that have VLANs configuration : 10

Total VLANS: 13

159.10.7.0 is the network we want to subnet:

Class b subnetting table :

|  |  |  |
| --- | --- | --- |
| subnet | Host | Subnet mask |
| 1 | 65536 | /16 |
| 2 | 32768 | /17 |
| 4 | 16384 | /18 |
| 8 | 8129 | /19 |
| 16 | 4096 | /20 |
| 32 | 2048 | /21 |
| 64 | 1024 | /22 |
| 128 | 512 | /23 |
| 256 | 256 | /24 |
| 512 | 128 | /25 |
| 1024 | 64 | /26 |
| 2048 | 32 | /27 |
| 4096 | 16 | /28 |
| 8192 | 8 | /29 |
| 16384 | 4 | /30 |
| 32768 | 2 | /31 |
| 65536 | 1 | /32 |

Network subnetting:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Network id | Subnet mask | Number of hosts | Broadcast id | Network /department | Range of ips | Max number of available hosts | branch |
| 159.10.0.0 | /24 | 256 | 159.10.0.255 | Not used | 159.10.0.1-159.10.0.254 | 254 | ----- |
| 159.10.1.0 | /24 | 256 | 159.10.1.255 | Not used | 159.10.1.1-159.10.1.255 | 254 | ------- |
| . | . | . | . | . | . | . | . |
| 159.10.7.0 | /24 | 256 | 159.10.7.255 | Seminar room 1 | 159.10.7.1-159.10.7.254 | 254 | 6th October- |
| 159.10.8.0 | /26 | 64 | 159.10.8.63 | Software developers | 159.10.8.1-  159.10.8.62 | 62 | Alex - vlan |
| 159.10.8.64 | 255.255.255.192 | 64 | 159.10.8.127 | Research and development | 159.10.8.65-159.10.8.126 | 62 | Cairo -vlan |
| 159.10.8.128 | /27 | 32 | 159.10.8.159 | Software dev | 159.10.8.129-159.10.8.158 | 30 | 6th October |
| 159.10.8.160 | 255.255.255.224 | 32 | 159.10.8.191 | Sales and marketing | 159.10.8.161-156.10.8.190 | 30 | Cairo |
| 159.10.8.192 | /27 | 32 | 159.10.8.223 | Management team | 159.10.8.193-159.10.8.222 | 30 | Alex |
| 159.10.8.224 | /27 | 32 | 159.10.8.255 | Tech staff | 159.10.8.225-159.10.8.254 | 30 | 6th October |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 159.10.9.0 | 255.255.255.240 | 16 | 159.10.9.15 | Administration | 159.10.9.1-159.10.9.14 | 14 | cairo |
| 159.10.9.16 | /28 | 16 | 159.10.9.31 | Remote sales | 159.10.9.17-159.10.9.30 | 14 | Cairo |
| 159.10.9.32 | /28 | 16 | 159.10.9.47 | Training room | 159.10.9.33-159.10.9.46 | 14 | Alex |
| 159.10.9.48 | /28 | 16 | 159.10.9.63 | Management and administrative staff | 159.10.9.49-159.10.9.62 | 14 | 6th october |
| 159.10.9.64 | /29 | 8 | 159.10.9.71 | Meeting room | 159.10.9.65-159.10.9.70 | 6 | Alex |
| 159.10.9.72 | /29 | 8 | 159.10.9.79 | Server room | 159.10.9.73-159.10.9.78 | 6 | Alex |
| 159.10.9.80 | /29 | 8 | 159.10.9.87 | Server room | 159.10.9.81-159.10.9.86 | 6 | 6th october |
| 159.10.9.88 | /30 | 4 | 159.10.9.91 | router |  | 2 |  |
| 159.10.9.92 | /30 | 4 | 159.10.9.95 | router |  | 2 |  |
| 159.10.9.96 | /30 | 4 | 159.10.9.99 | router |  | 2 |  |
| 159.10.9.100 | /30 | 4 | 159.10.9.103 | router |  | 2 |  |
| 159.10.9.104 | Not used |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 159.10.10.0 | /24 | 256 | 159.10.10.255 | Seminar room 2 | 159.10.10.1-159.10.10.254 | 254 | 6 october lan |
| 159.10.11.0 | /24 | 256 | 159.10.11.255 | Seminar room 3 | 159.10.11.1-159.10.11.254 | 254 | 6 october lan |

Head office building Cairo branch floor 1,2,3 switches configuration:

Connected to a main switch and the router is connected using router on a stick technique

Each vlan has its own server and both are on Floor 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Switch name | model | Ip address | Vlan number | VLan name | Default gateway |
| Floor1 | 2960-24TT | 159.10.8.162 | Vlan 20 | sales | 159.10.8.161 |
| Floor 1 | 2960-24TT | 159.10.8.66 | Vlan 10 | res&dev | 159.10.8.65 |
| Floor2 | 2960-24TT | 159.10.8.162 | Vlan 20 | sales | 159.10.8.161 |
| Floor 2 | 2960-24TT | 159.10.8.66 | Vlan 10 | res&dev | 159.10.8.65 |
| Floor3 | 2960-24TT | 159.10.8.162 | Vlan 20 | sales | 159.10.8.161 |
| Floor 3 | 2960-24TT | 159.10.8.66 | Vlan 10 | res&dev | 159.10.8.65 |

Cairo Administration Building consists of two switches each has 1 lan

Each lan has a dhcp server

Aministration server: 159.10.9.2

Remote sales server : 159.10.9.18

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Switch name | model | Ip address | Vlan number | VLan name | Default gateway |
| Administration | 2960-24TT | 159.10.9.0 |  |  | 159.10.9.1 |
| Remote sales | 2960-24TT | 159.10.9.16 |  |  | 159.10.9.17 |

Alex building :

There are two two floors

Floor 3 has a switch that has 2 vlans

Floor 4 has a switch that ahs 3 vlans

There is one dhcp server in the server room: 159.10.9.74

it has pool set for all VLANs

the server room also has an internal webserver server of ip address : 159.10.9.76

it has the Https service set for all networks in the company :www.internal.com

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Switch name | | model | Ip address | Vlan number | VLan name | Default gateway | |
| Floor 3 | 2960-24TT | 159.10.8.2/26 | Vlan 10 | Se\_dev | | 159.10.8.1/26 | |
| Floor 3 | 2960-24TT | 159.10.8.194/27 | Vlan 20 | Management teams | | 159.10.8.193/27 | |
| Floor 4 | 2960-24TT | 159.10.9.66/29 | Vlan 10 | Meeting rooms | | 159.10.9.65/29 | |
| Floor 4 | 2960-24TT | 159.10.9.34/28 | Vlan 20 | Training room | | 159.10.9.33/28 | |
| Floor 4 | 2960-24TT | 159.10.9.74/29 | Vlan 30 | Server room | | 159.10.9.73/29 | |
|  | 2960-24TT |  |  |  | |  | |

6th October Building:

Has 7 networks in total :

Floor 1 has 2 vlans : the Software developers and the management&administration

Floor 2 has 3 vlans : seminar rooms 1,2,3

Seminar room three has an access point for students and clients to connect of password:1234567890

Floor 3 has 2 vlans:

the server room that has:

DHCP server:159.10.9.83/29 has pools set for all of 6th October branch

DNS server:159.10.9.84/29 that is set for internal and external websites

Externalserver:159.10.9.85/29 has the https serveice set for : [www.aast.edu.eg](http://www.aast.edu.eg)

Email server: 159.10.9.86/29 that has the email service set with domain:mail.aast.edu.eg

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Switch name | model | Ip address | Vlan number | VLan name | Default gateway |
| Floor1 | 2960-24TT | 159.10.9..50/28 | Vlan 10 | Management | 159.10.9.49/28 |
| Floor 1 | 2960-24TT | 159.10.8.130/27 | Vlan 20 | Se\_dev | 159.10.8.129/27 |
| Floor2 | 2960-24TT | 159.10.7.2/24 | Vlan 30 | Seminar 1 | 159.10.7.1/24 |
| Floor 2 | 2960-24TT | 159.10.10.2/24 | Vlan 40 | Seminar 2 | 159.10.10.1/24 |
| Floor 2 | 2960-24TT | 159.10.11.2/24 | Vlan 50 | Seminar 3 | 159.10.11.1/24 |
| Floor 3 | 2960-24TT | 159.10.9.82/29 | Vlan 60 | Server room | 159.10.9.81/29 |
| Floor 3 | 2960-24TT | 159.10.8.226/27 | Vlan 70 | Tech staff | 159.10.8.225/27 |
|  |  |  |  |  |  |

All Routers are connect static

All Passwords in the project in :cisco

Except the access point password is :1234567890