Data Communication and Networking

Lab

(1 Credit Hour)

DCN Project Report

Project Title: **University Campus Network**

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Submitted To:

Sir Zohaib

DEPARTMENTOF COMPUTERSCIENCE

ABSTRACT

The University Campus Network Project aims to modernize the network infrastructure at Bahria University by upgrading and redesigning the existing system. The project addresses issues such as unreliable connectivity, inadequate security measures, and limited scalability. Key aspects of the project include network segmentation, access control, enhanced security measures, wireless connectivity, network services, redundancy, and high availability. Documentation, monitoring, and reporting are integral components to ensure efficient management and proactive issue resolution. The project's objective is to optimize network performance, promote secure communication and collaboration, and provide seamless access to resources for students, faculty, and staff, thereby enhancing the overall network experience at the university.

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1. Introduction:

This University Campus Network Scenario is about designing a network for a University in which various computers of different departments are set up so that they can interact and communicate with each other by interchanging data. To design a networking scenario for a University which connect various departments to each other's, it puts forward communication among different departments. Cisco Packet Tracer is used to design a systematic and well-planned network, satisfying all the necessities of the University Campus.Cisco Packet Tracer come up with a network with good performance. There are Main Block , Admin Block , Engineering Block, Sir Syed Block, Edhi Block, Iqbal Block, Quaid Block that can have access to have a communication.

2. Problem Statement:

The current network infrastructure at Bahria University is outdated and inadequate to meet the growing demands of the campus community. The network suffers from various issues, including unreliable connectivity, limited security measures, and insufficient capability. These problems hinder effective communication, collaboration, and access to resources for students, faculty, and staff. Therefore, there is a need to revamp and upgrade the university's network infrastructure to address these challenges and provide a robust, secure, and scalable network that meets the evolving needs of the campus community. The goal is to ensure reliable connectivity, enhanced network security, efficient traffic flow, and seamless access to network services across the campus.

3. Scope of Project:

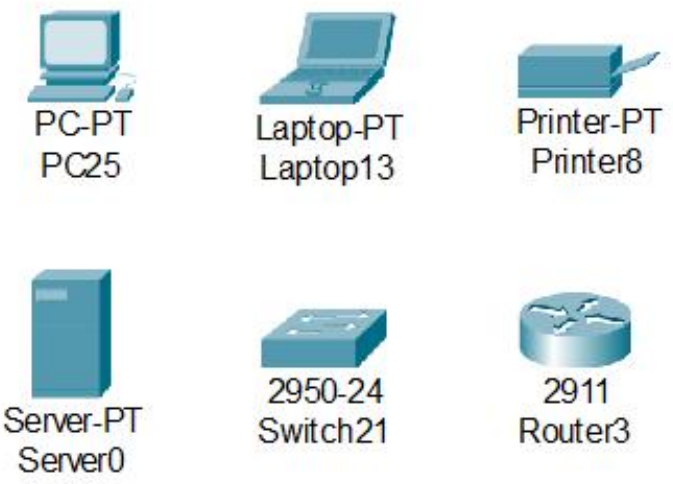
The scope of the project includes designing and configuring the network infrastructure, implementing network security measures, ensuring redundancy and high availability, setting up network services, documenting the network design and configurations, conducting testing and troubleshooting, and considering scalability and future expansion. The project aims to establish a reliable, secure, and scalable campus network that supports seamless connectivity, network

segmentation, user authentication, centralized services, and proactive monitoring. The scope may vary based on specific requirements and available resources.

4. Aims and Objectives:

The main objective of the proposed network is to update the existing network and also enhance its capabilities and increase the flexibility of the network which will eventually provide good security.

5. Devices Used:



6. Functionality:

1. VLAN connectivity

2. ACL is applied.

3. Routers connectivity through RIP Trunking Port Enable.

4. Dynamic and static IP address is Applied.

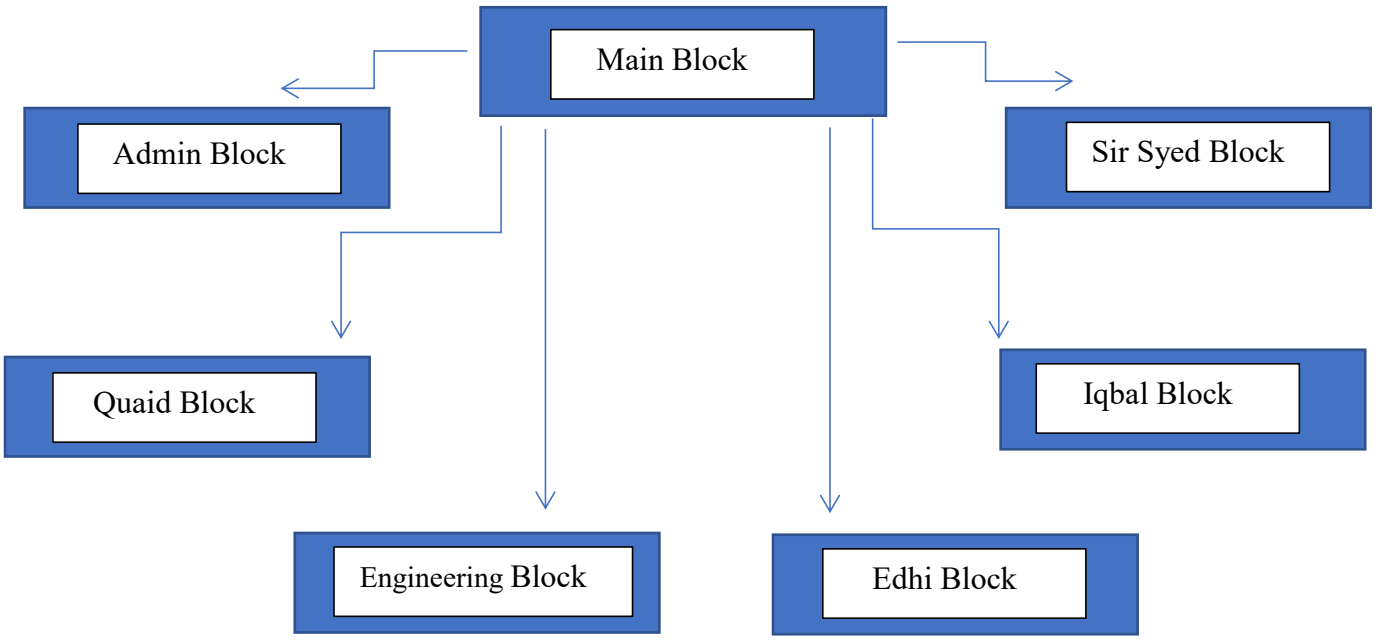
5. Port Security.

6. Permanent Mac Address is applied.

7. Protected/ Secret Password.

7.Working:

Main Block have two router which is then divided into three rooms have two switch. First switch is have three room that is HOD, Teachers and Advisor. Second switch is have two switch which is then divided into two room that is Principal,Vice Principal and printer. And second router have one switch that is connected witch server to provide email services. We have given IPs to them dynamically and they are in VLAN 1 by default. ACL is applied on the second router by which student advisor cant communicate with email server and principal. Port is secured in Email server and PCs of the principal is static.Router of the main block is then connected to the router of **Web Server**. Secret and Privileged mode password is applied to web server.Server is then attached to **Admin** Block and given IPs to the PCs dynamically and then it is dub divided into admin office and reception and given port security and static IPs. **Engineering** Block is then divided into CS and IT department and they can communicate with each other. Port Security and permanent Mac address are applied to them. **Sir Syed** Block have two department EE and CE. Protective password is applied to them. **Quaid** Block have two departments that is English and BBA. Port security and protective password are applied to them.Similar is the case for **Edhi** bock and **Iqbal** block. Every Block can communicate with each other except for main block.

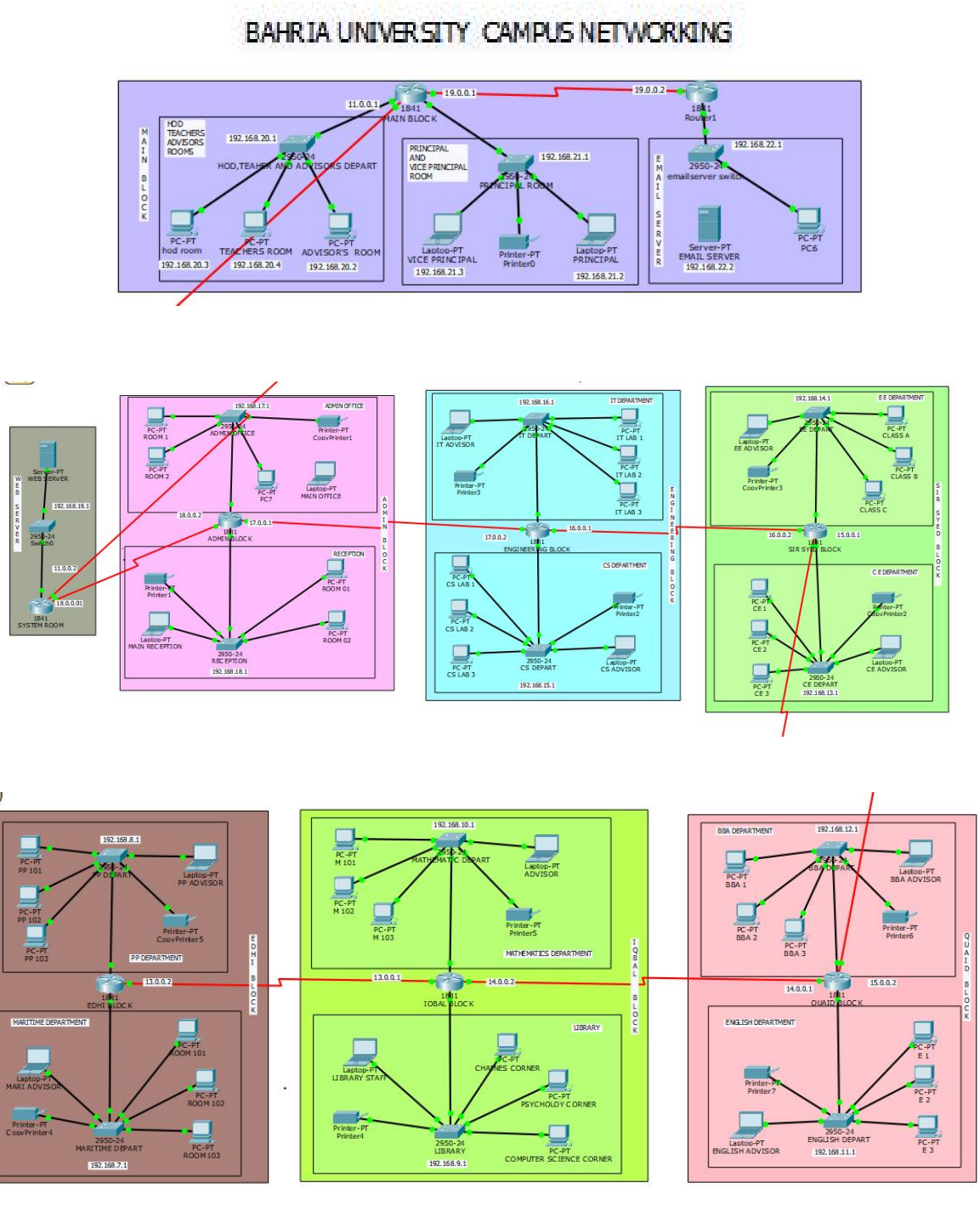


8. Tools/Technology:

8.1. Cisco Packet Tracer:

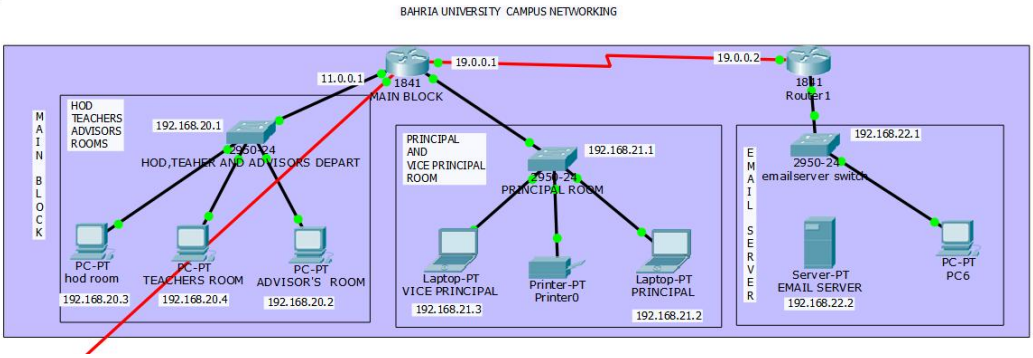
Cisco Packet Tracer is a network simulation and visualization tool designed by Cisco Systems. It is primarily used for educational and training purposes to simulate computer networks and their associated devices. Packet Tracer allows users to create virtual networks, configure network devices, and test network configurations in a simulated environment. It provides a hands-on learning experience for students and professionals to understand and practice networking concepts, such as routing, switching, and network protocols. Packet Tracer is widely used in networking courses and certifications to enhance understanding and skills development in the field of computer networking.

7.Project's Screenshot:

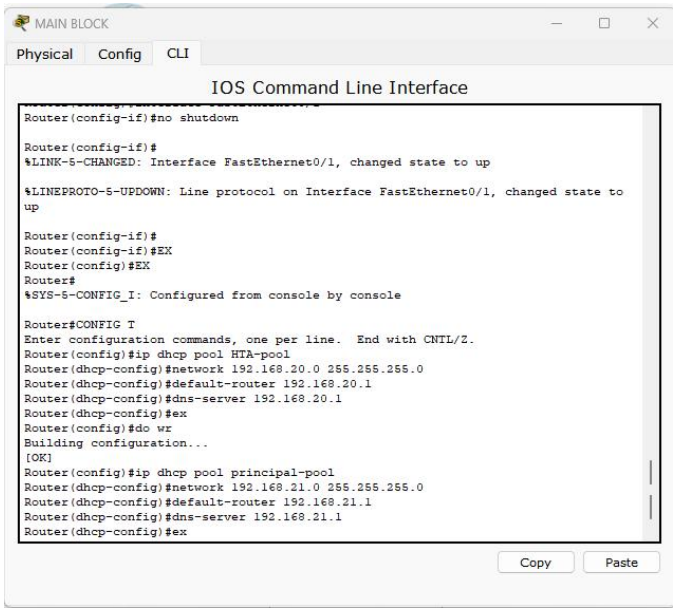


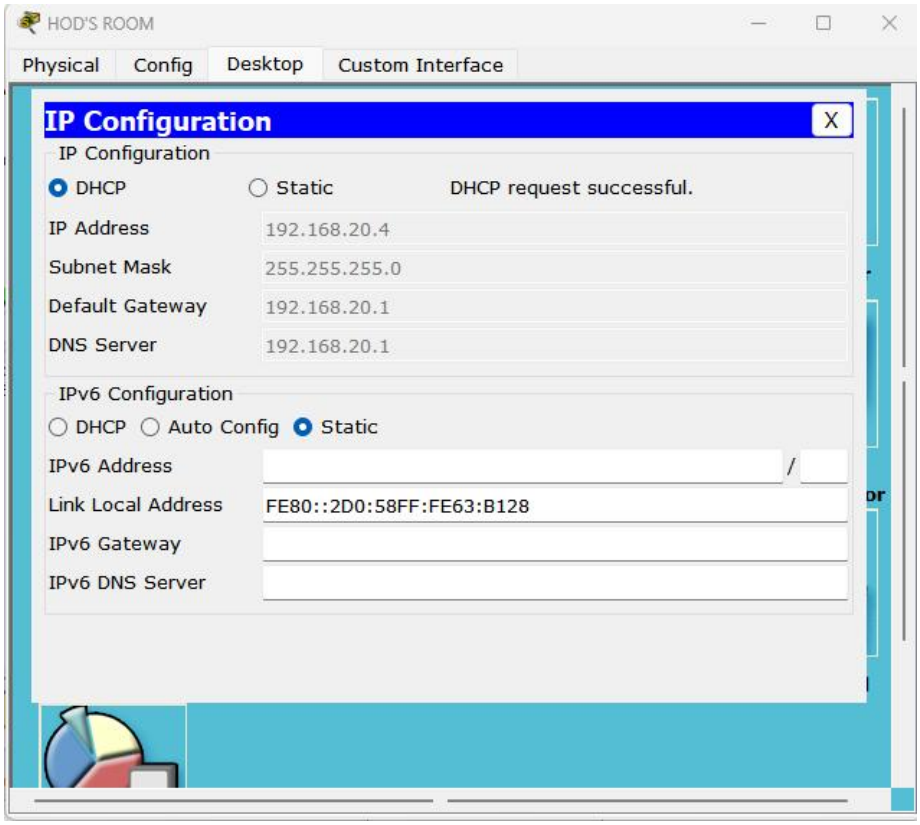
MAIN BLOCK:

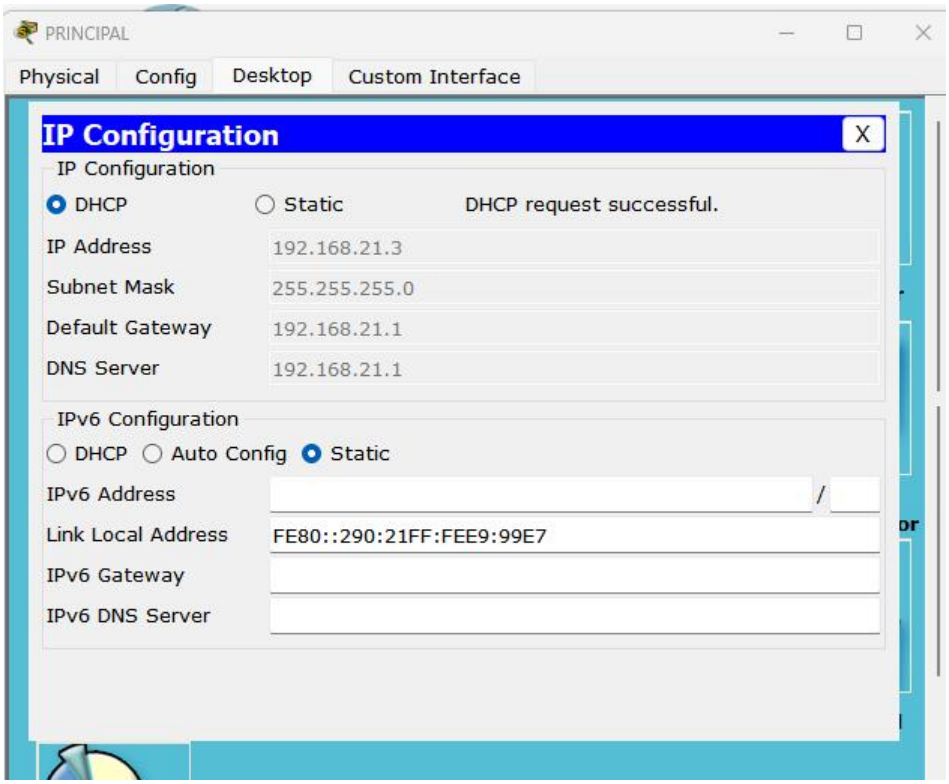
Main Block is divided into sub-department.One switch provides the HOD, Teacher and Adviser connection. Second switch provides the connectivity for Principal and Vice Principal. And the third switch provide the Email connectivity. Router are connected through RIP trunking mode. ACL is applied to……

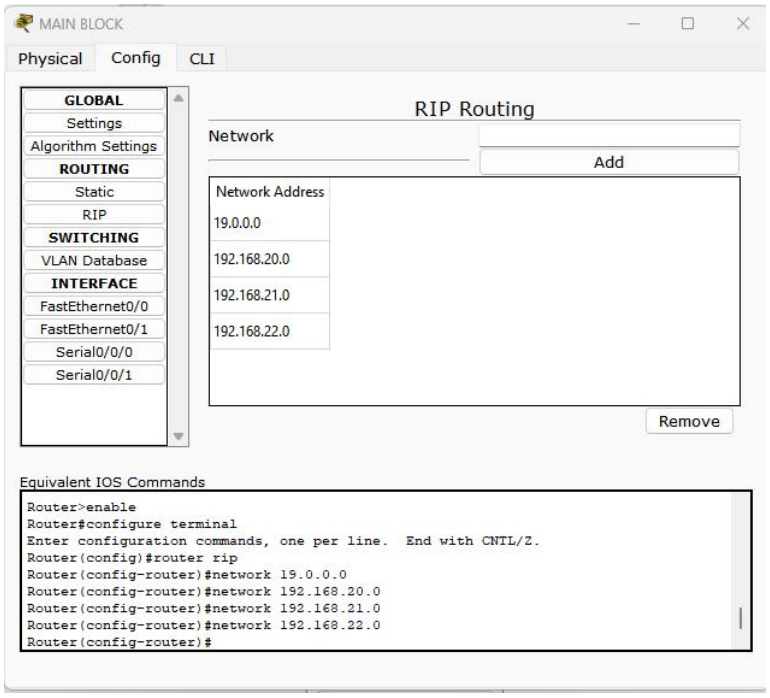


DYNAMIC IPS

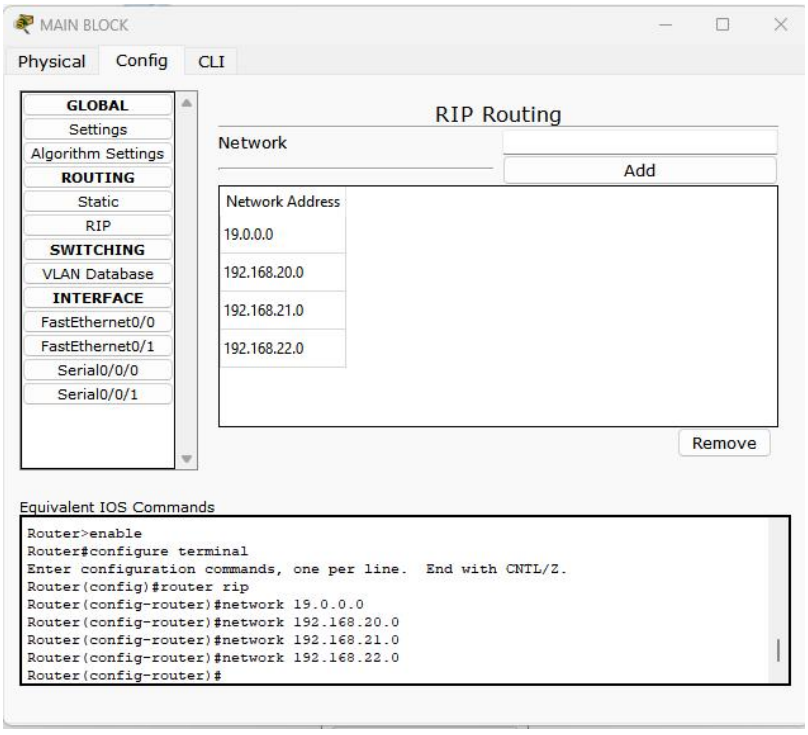



HOD'S ROOM
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
DHCP request successful.
IP Address
192.168.20.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.20.1
DNS Server
192.168.20.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2D0:58FF:FE63:B128
IPv6 Gateway
IPv6 DNS Server

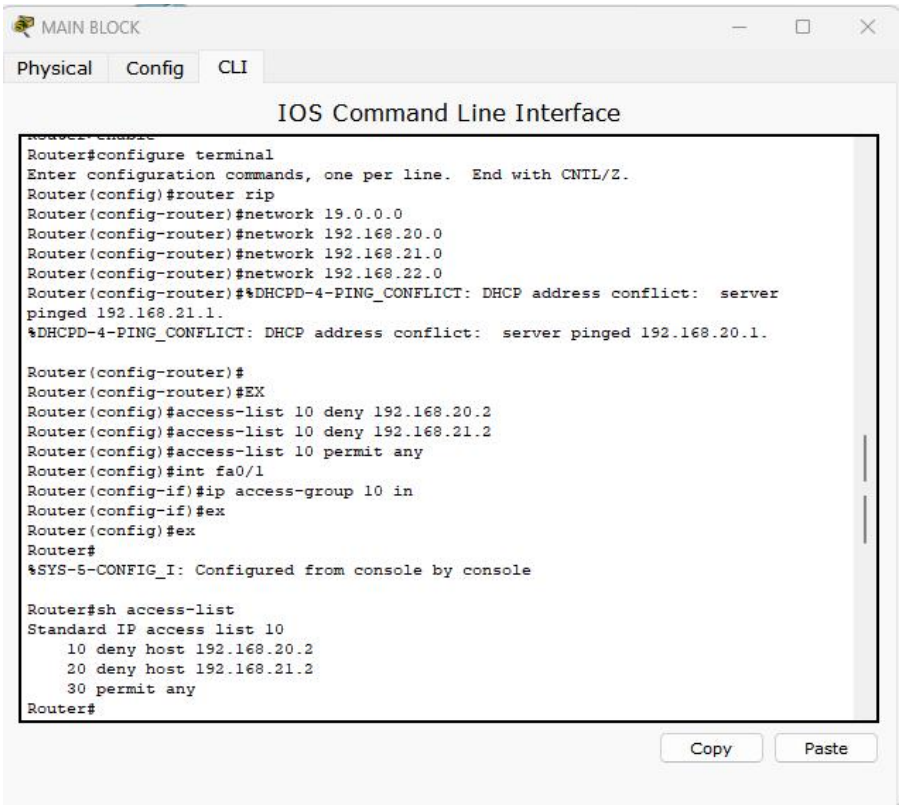

PRINCIPAL
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
DHCP request successful.
IP Address
192.168.21.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.21.1
DNS Server
192.168.21.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::290:21FF:FEE9:99E7
IPv6 Gateway
IPv6 DNS Server

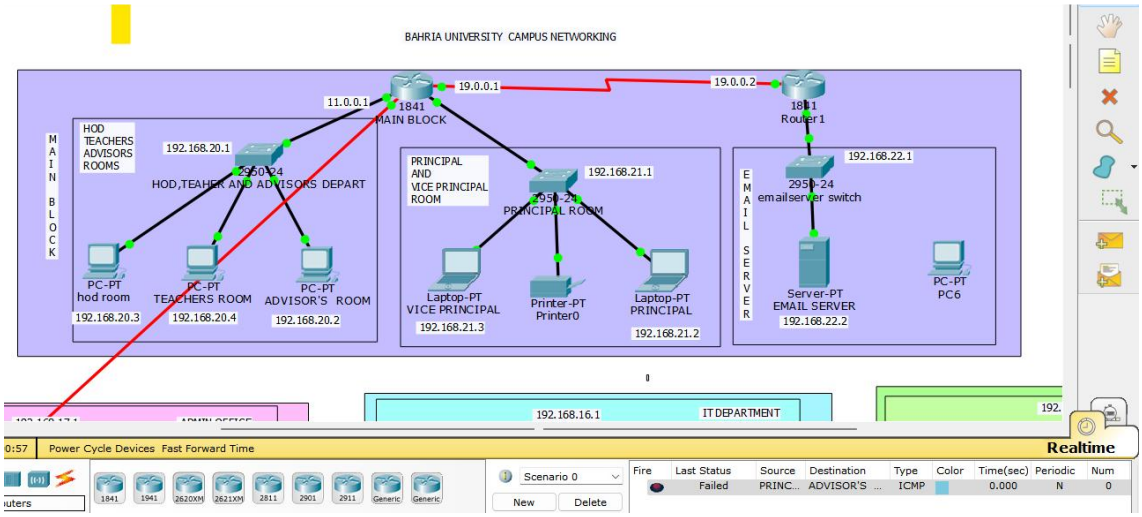


APPLY ACL FOR THE DISCONNECTIVITY BETWEEN ADVISORS AND PRINCIPAL

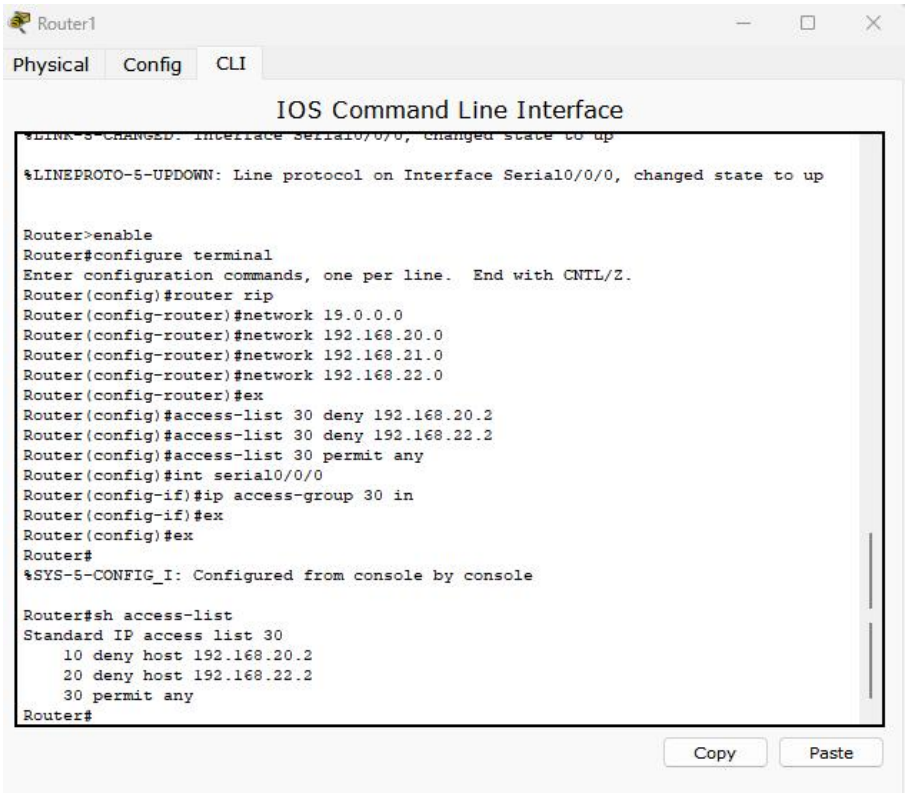


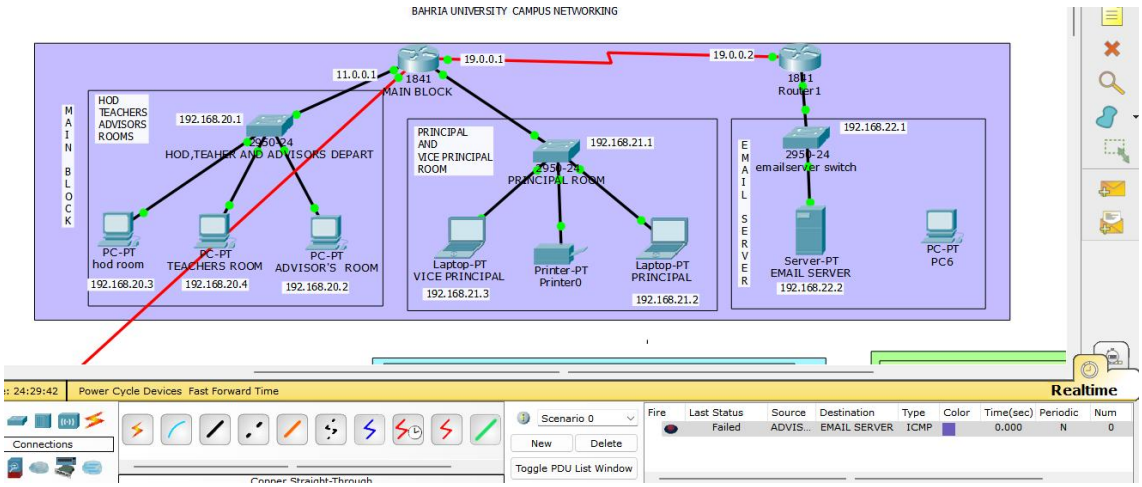
APPLY ACL FOR THE DISCONNECTIVITY BETWEEN ADVISORS AND EMAIL SERVER





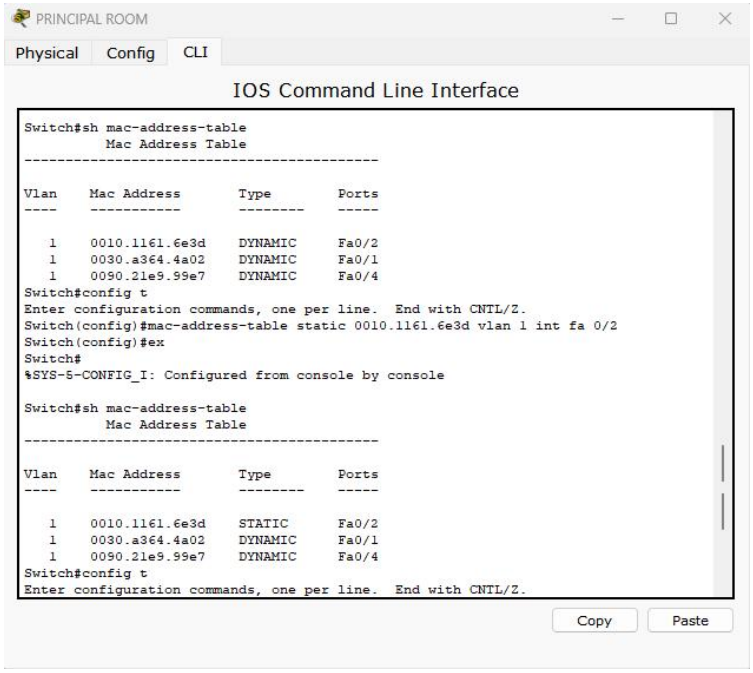
APPLY ACL FOR THE DISCONNECTIVITY BETWEEN ADVISORS AND EMAIL SERVER

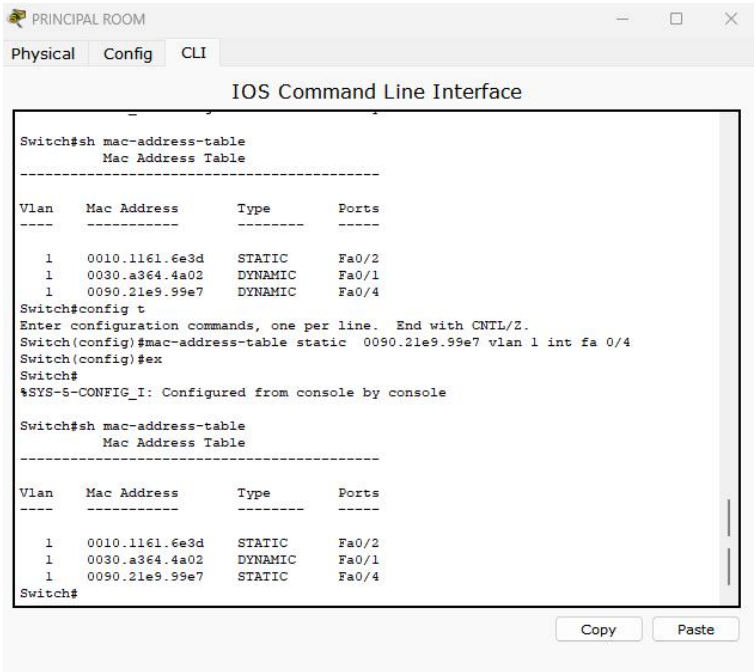




MAC ADDRESS STATIC:

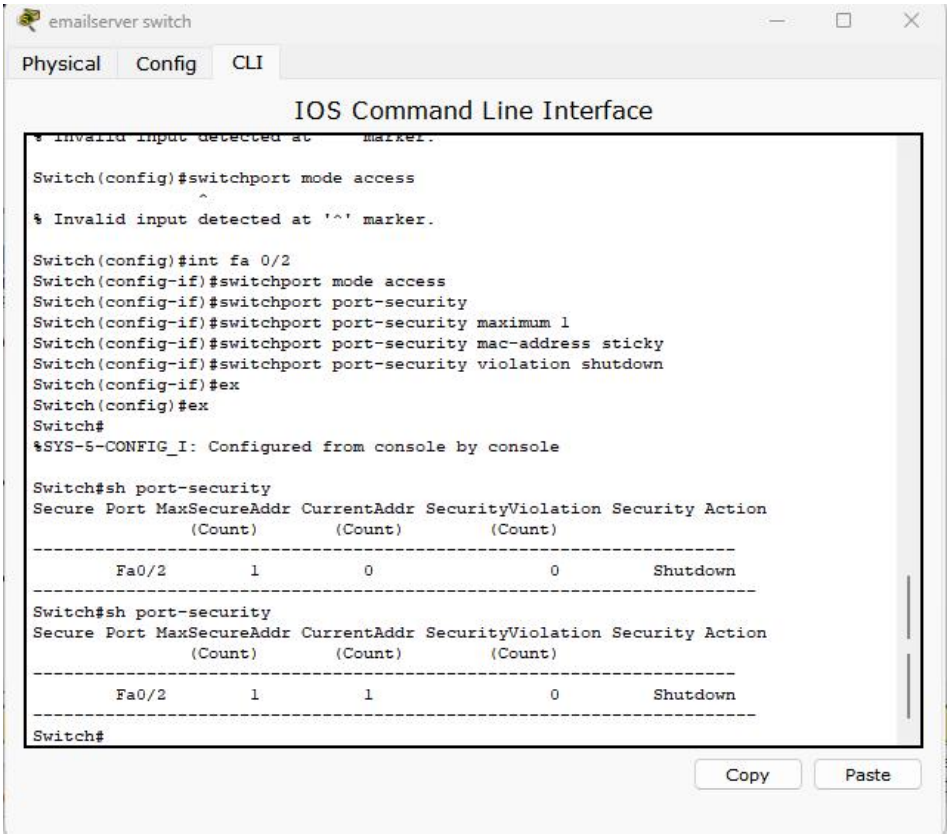
Principal and vice principal

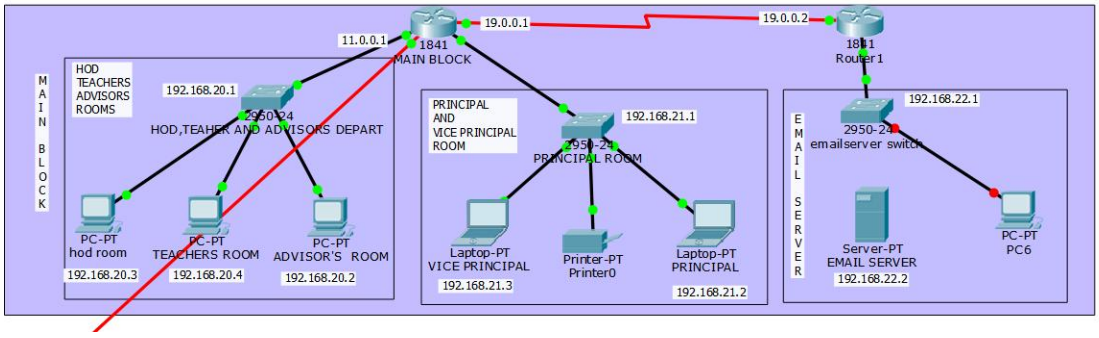




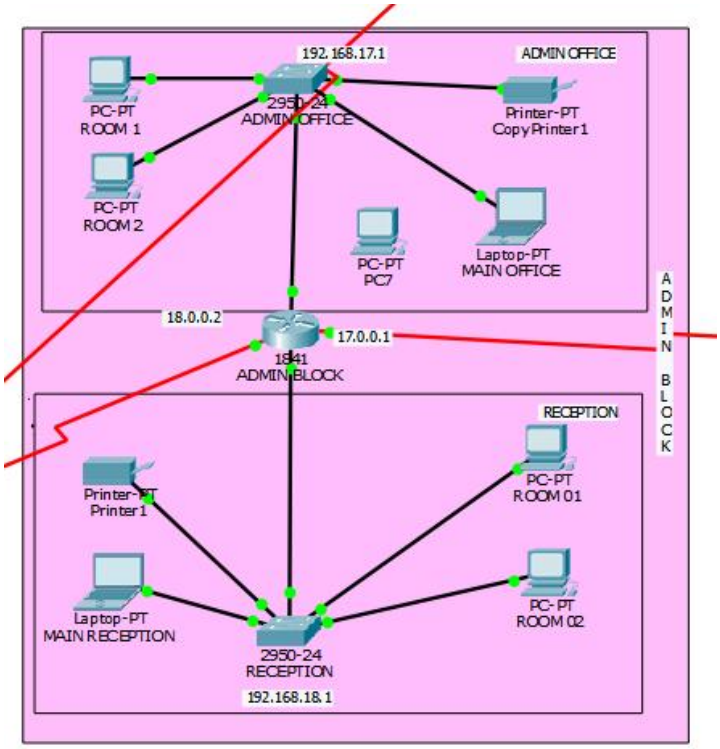
PORT SECURITY:

For Email Server:

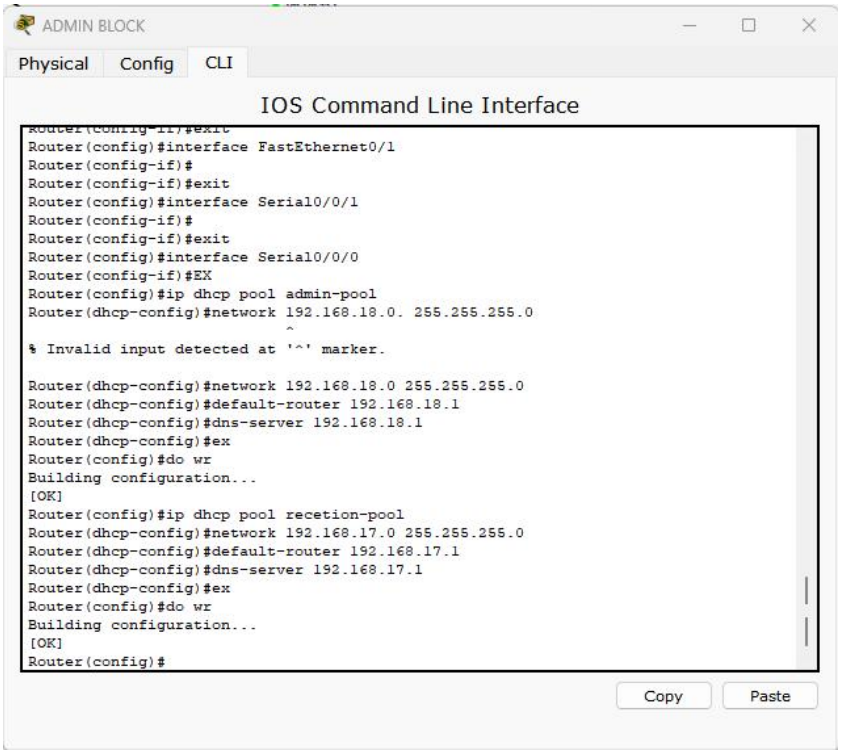


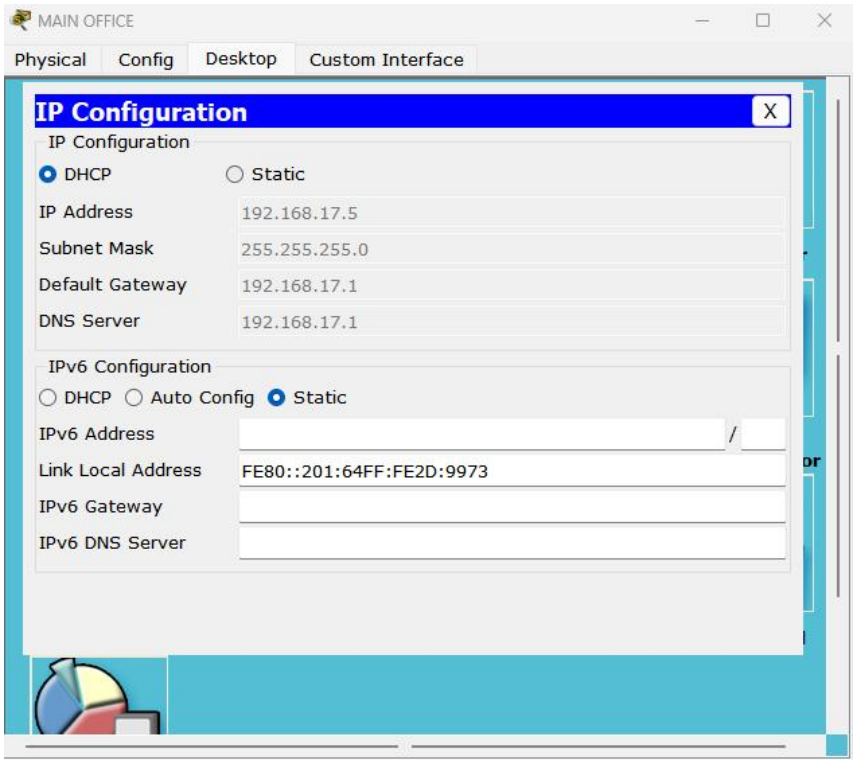


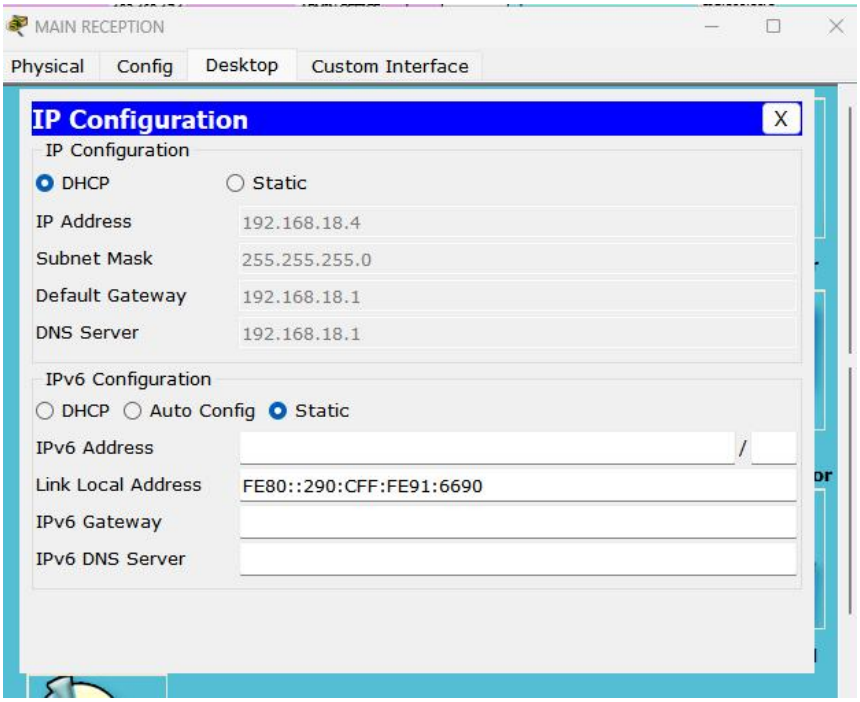
ADMIN BLOCK:



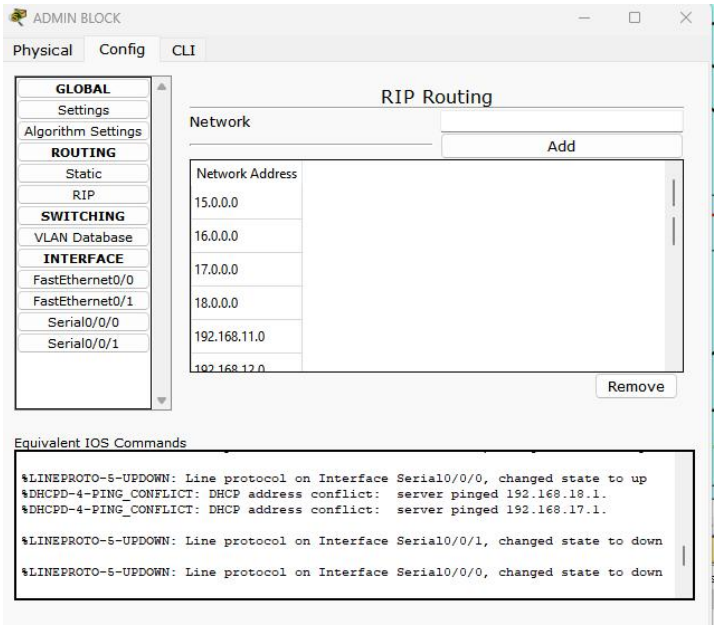
DYNAMIC IPS



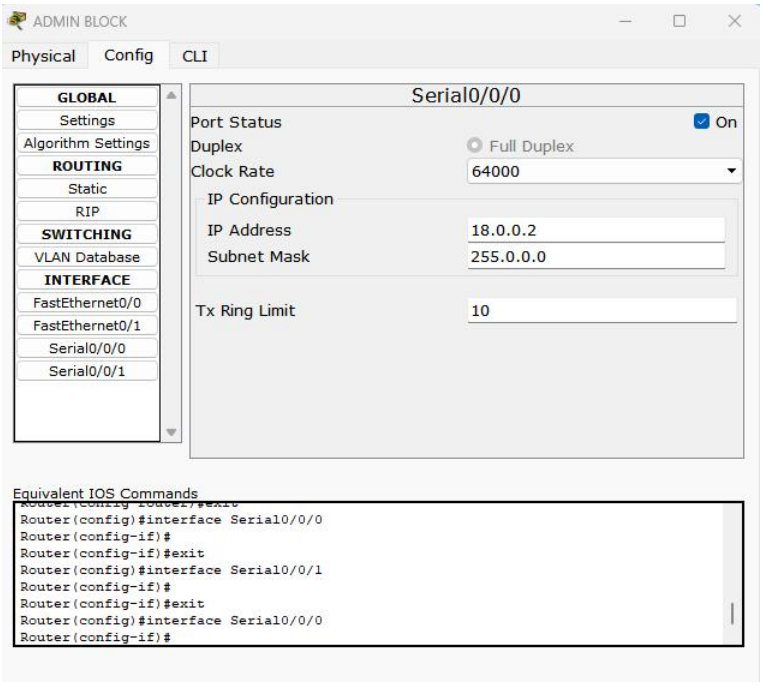

MAIN OFFICE
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.17.5
Subnet Mask
255.255.255.0
Default Gateway
192.168.17.1
DNS Server
192.168.17.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::201:64FF:FE2D:9973
IPv6 Gateway
IPv6 DNS Server


MAIN RECEPTION
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.18.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.18.1
DNS Server
192.168.18.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::290:CFF:FE91:6690
IPv6 Gateway
IPv6 DNS Server

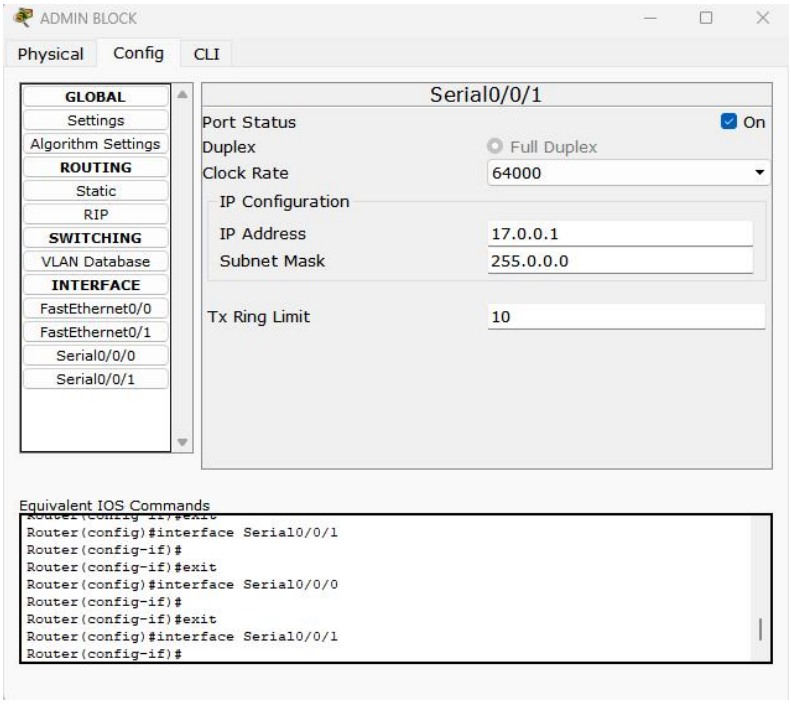
RIP ROUTING



SERIAL 0/0/0

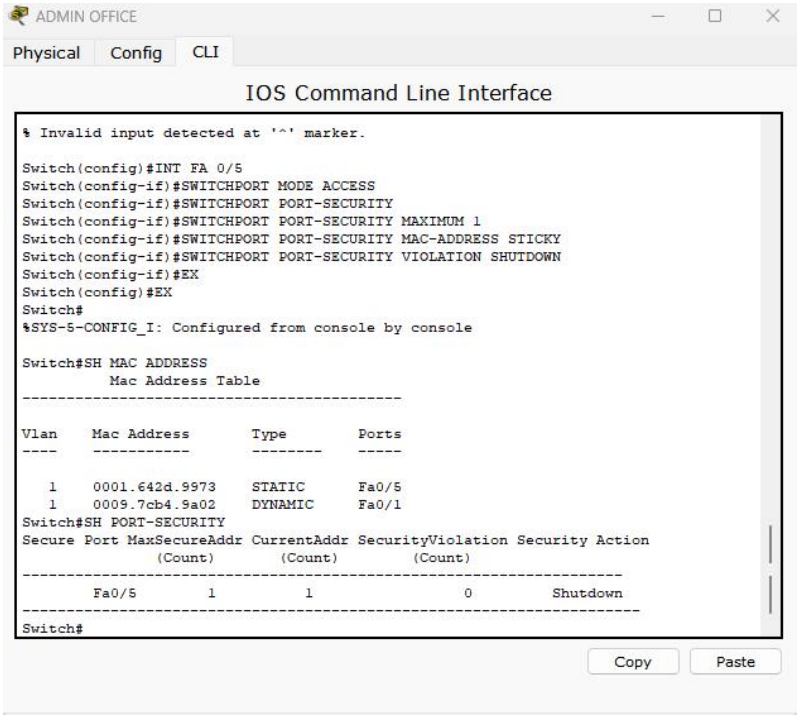


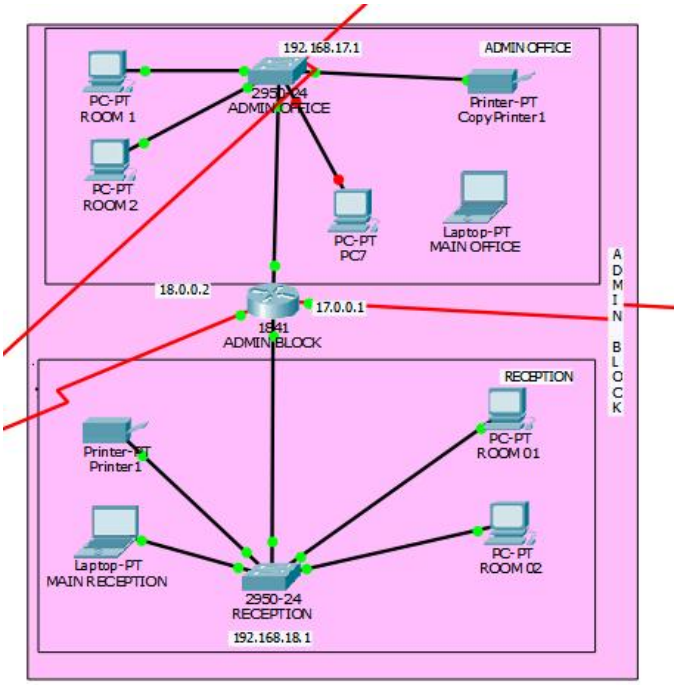
SERIAL0/0/1

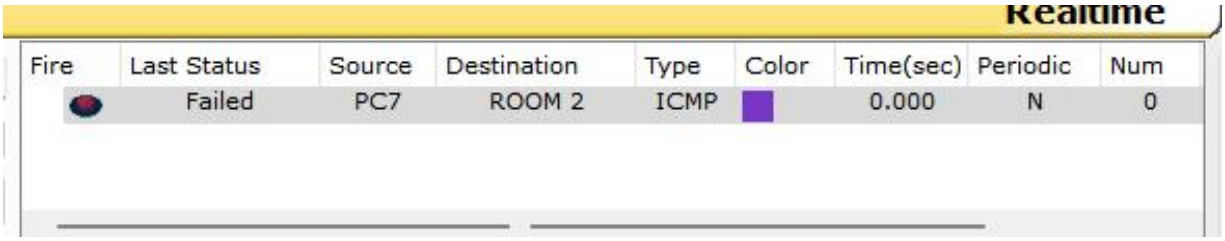


PORT SECURE

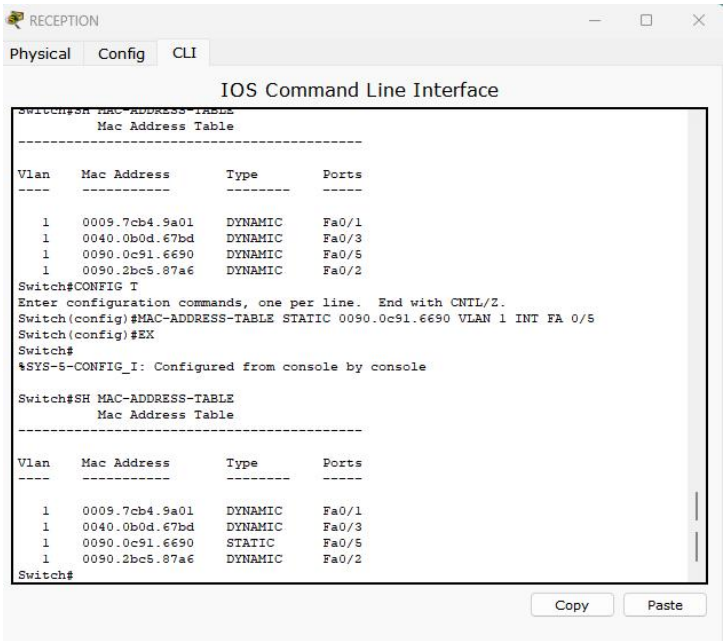
MAIN OFFICE:



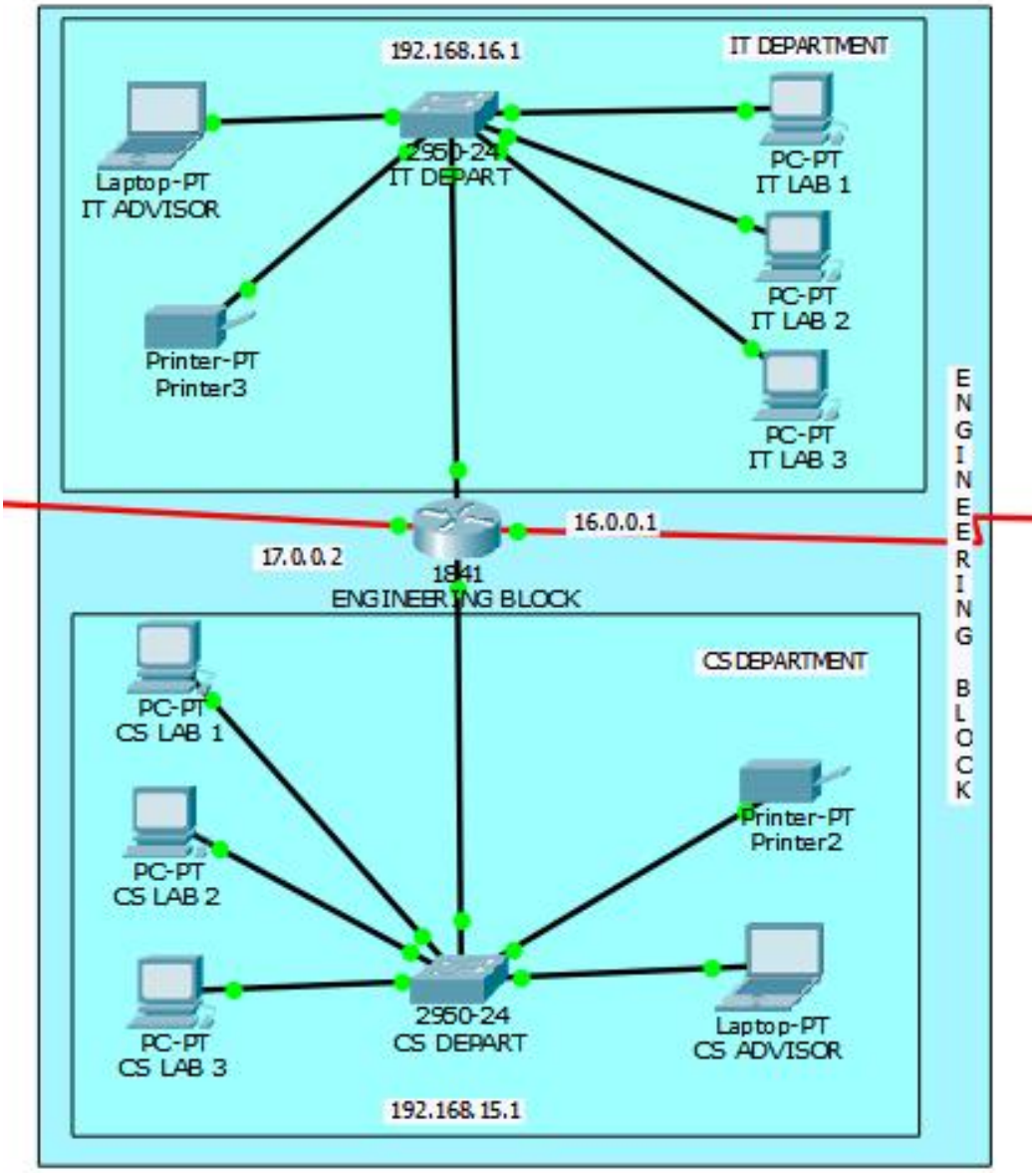




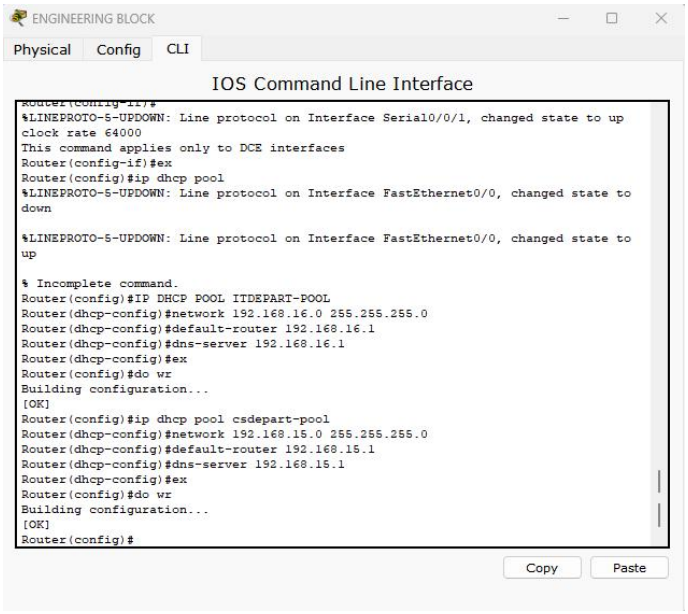
PERMENENT MAC ADDRESS OF MAIN RECEPTION:

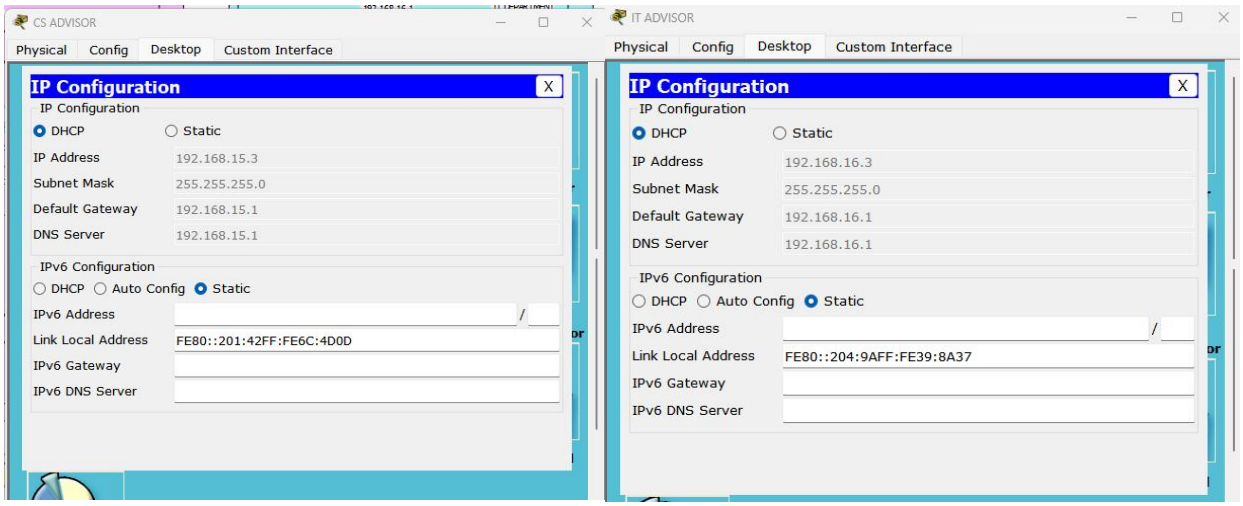


ENGINEERING BLOCK:

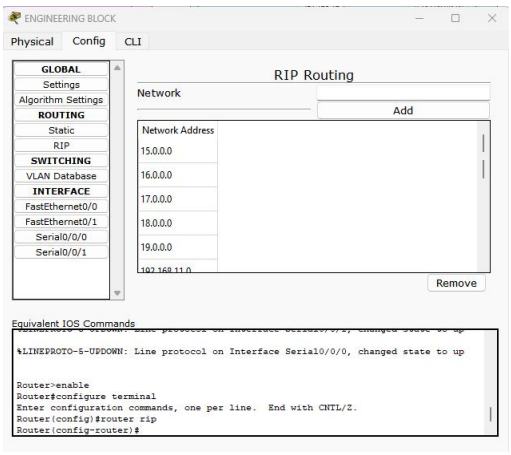


DYNAMIC IPS:

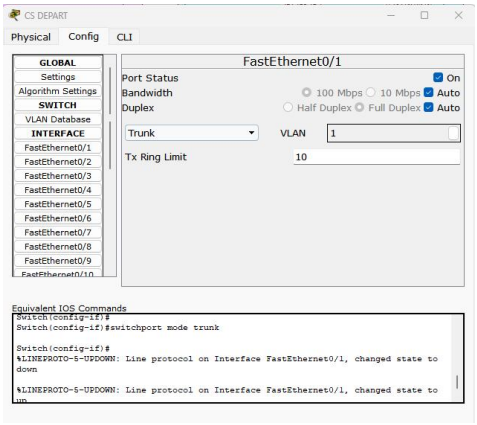

ENGINEERING BLOCK
Physical
Config
CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#ex
Router(config)#ip dhcp pool
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
% Incomplete command.
Router(config)#IP DHCP POOL ITDEPART-POOL
Router(dhcp-config)#network 192.168.16.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.16.1
Router(dhcp-config)#dns-server 192.168.16.1
Router(dhcp-config)#ex
Router(config)#do wr
Building configuration...
[OK]
Router(config)#ip dhcp pool csdepart-pool
Router(dhcp-config)#network 192.168.15.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.15.1
Router(dhcp-config)#dns-server 192.168.15.1
Router(dhcp-config)#ex
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Copy
Paste


CS ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
IP Configuration
DHCP
Static
IP Address 192.168.15.3
Subnet Mask 255.255.255.0
Default Gateway 192.168.15.1
DNS Server 192.168.15.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address FE80::201:42FF:FE6C:4D0D
IPv6 Gateway
IPv6 DNS Server
IT ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
IP Configuration
DHCP
Static
IP Address 192.168.16.3
Subnet Mask 255.255.255.0
Default Gateway 192.168.16.1
DNS Server 192.168.16.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address FE80::204:9AFF:FE39:8A37
IPv6 Gateway
IPv6 DNS Server

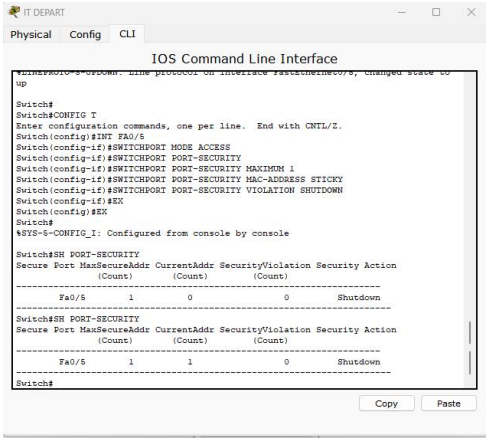
RIP ROUTING:

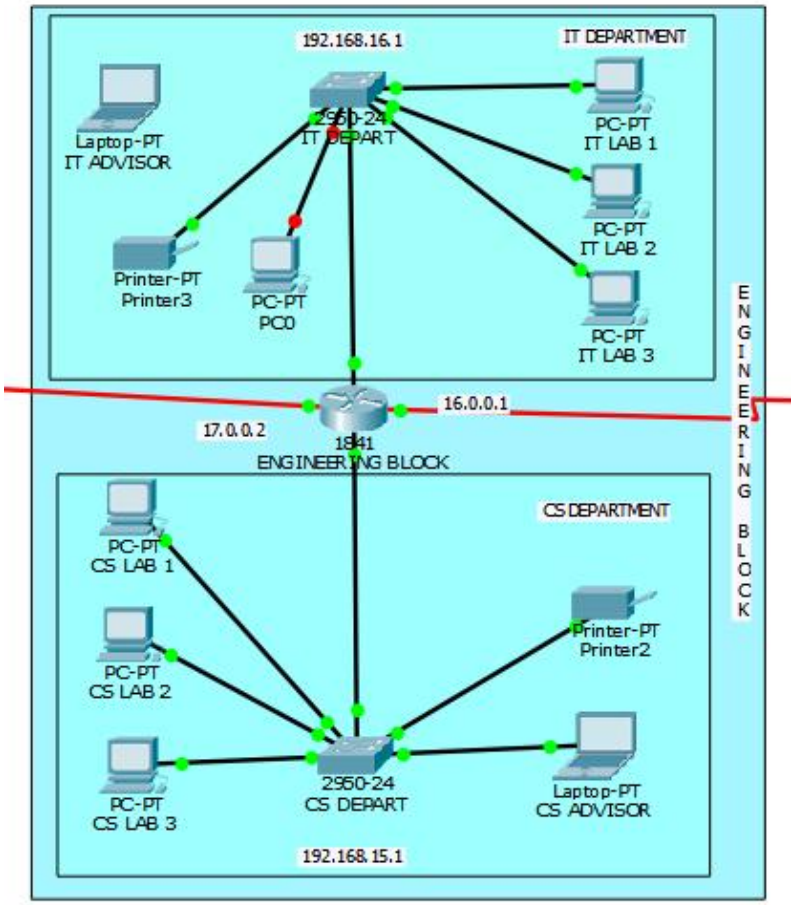


TRUNKING PORT:



PORT SECURE: IT ADVISOR

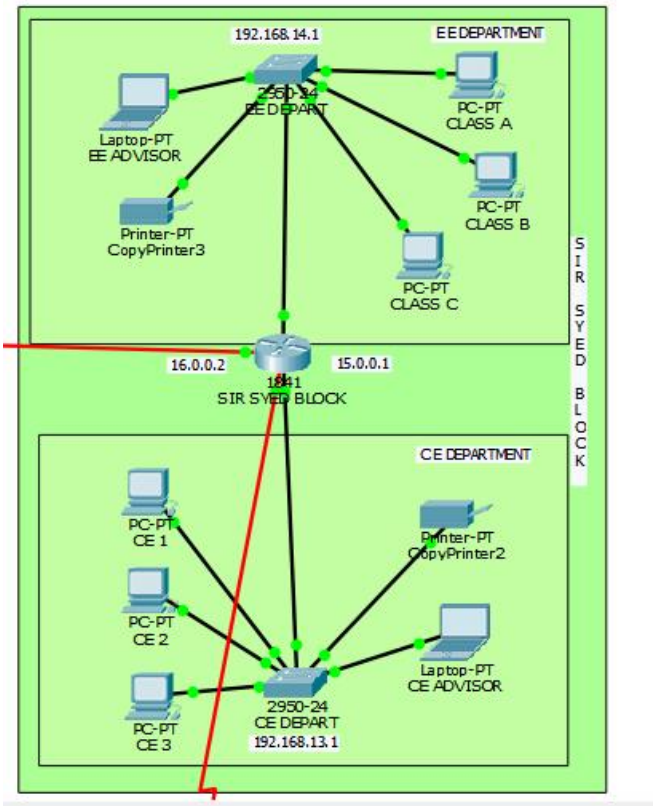




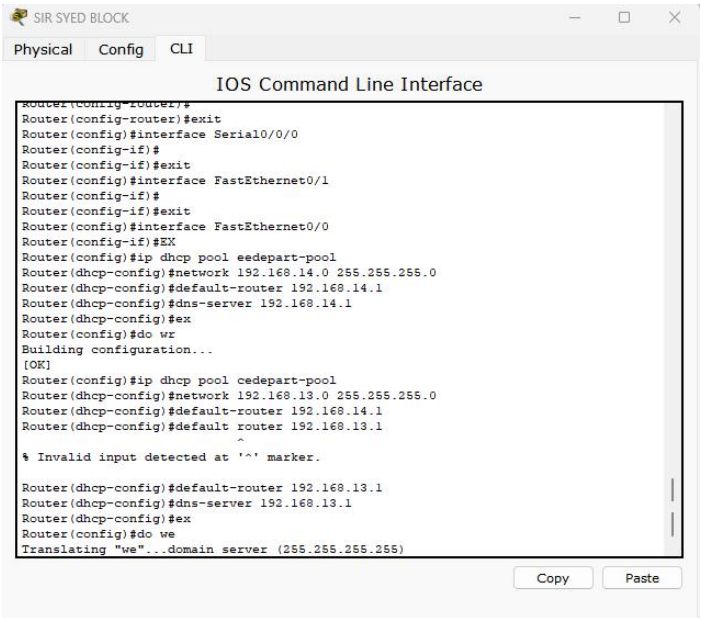
Realtime

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Failed	PC0	IT LAB 1	ICMP		0.000	N	0

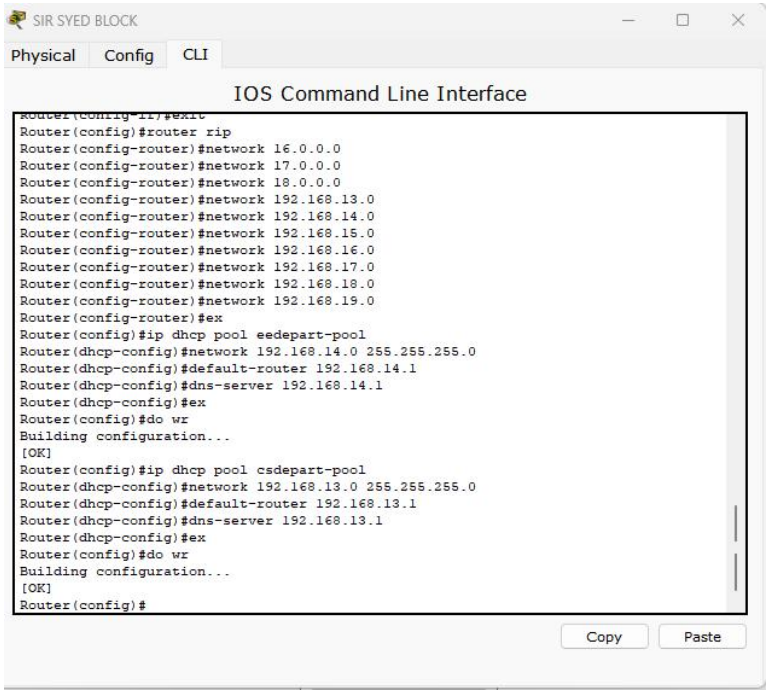
SIR SYED BLOCK:



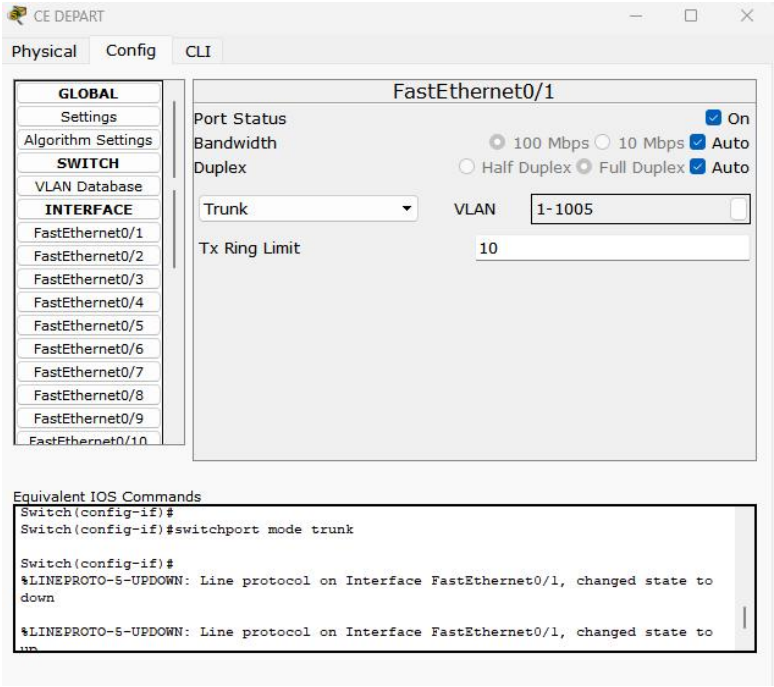
DYNAMIC IPS:



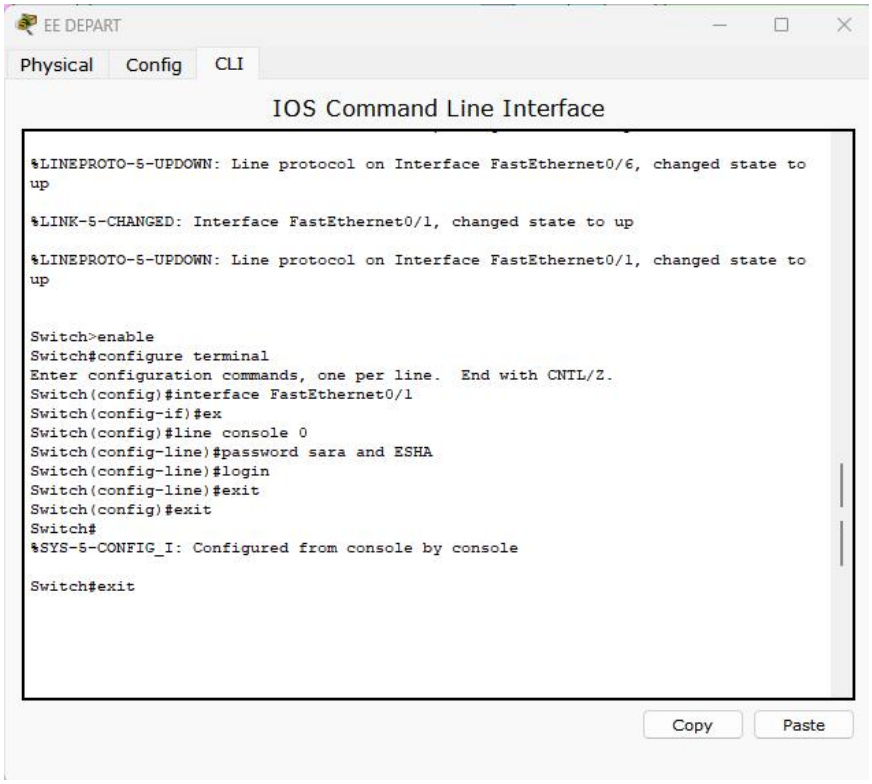
RIP ROUTING:

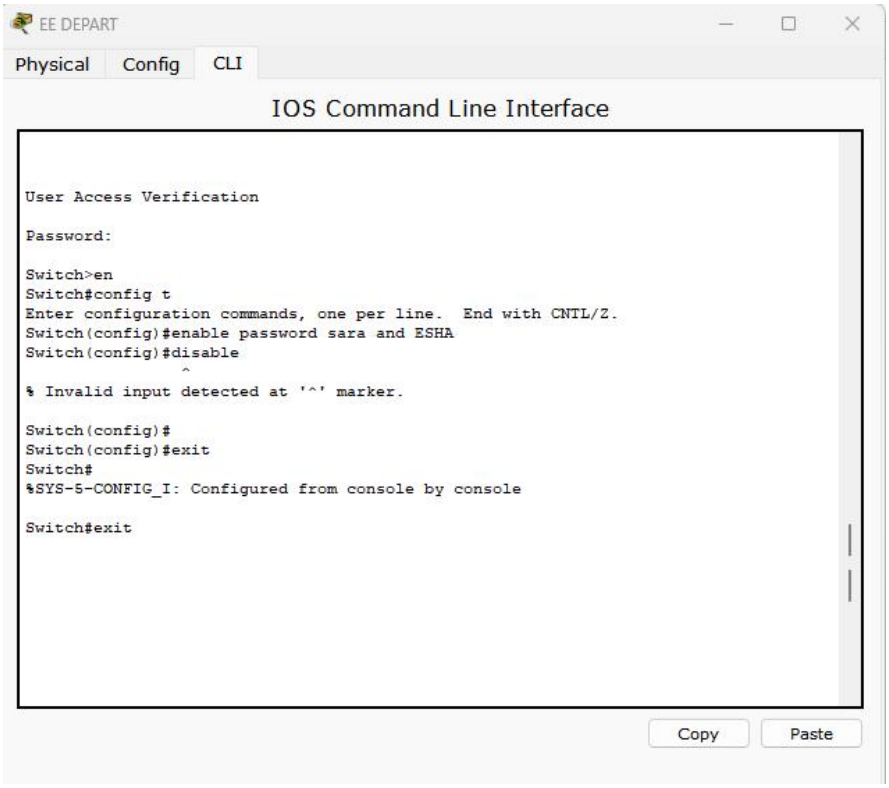


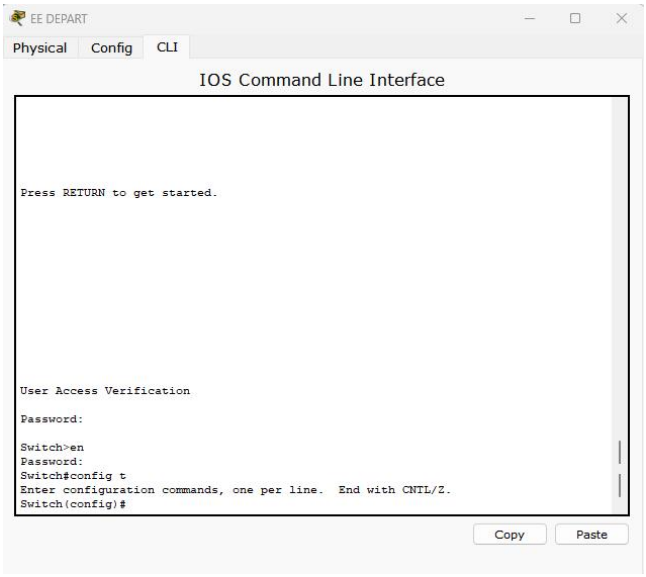
TRUNKING PORT ENABLE:



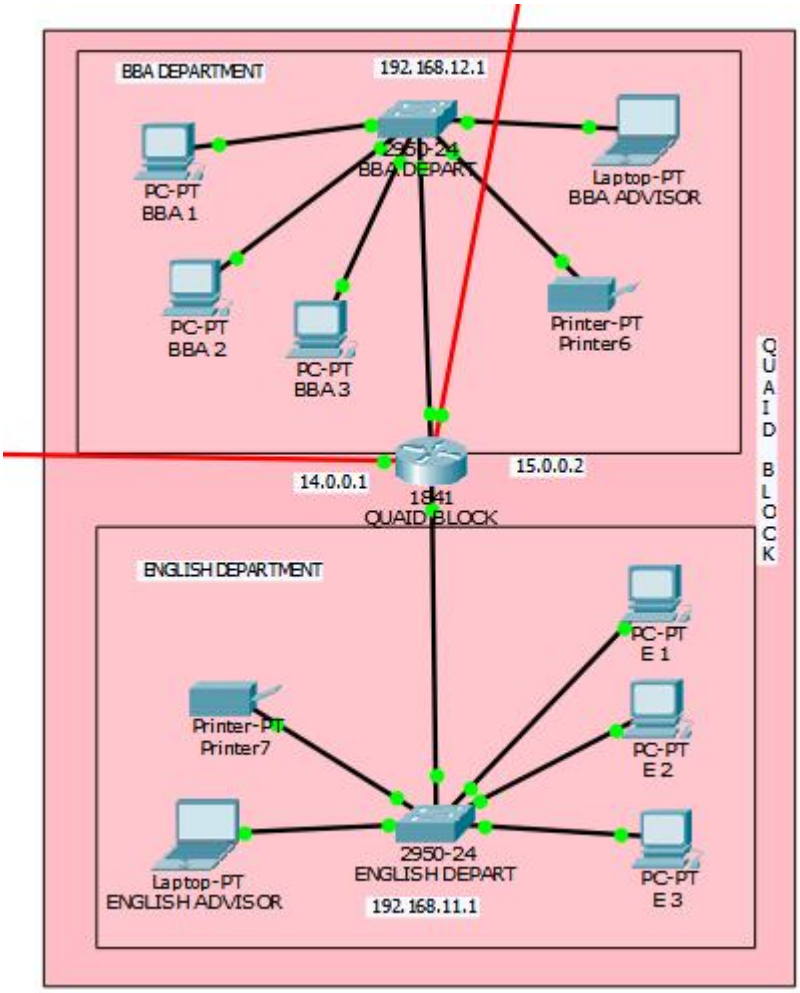
Password protected department:



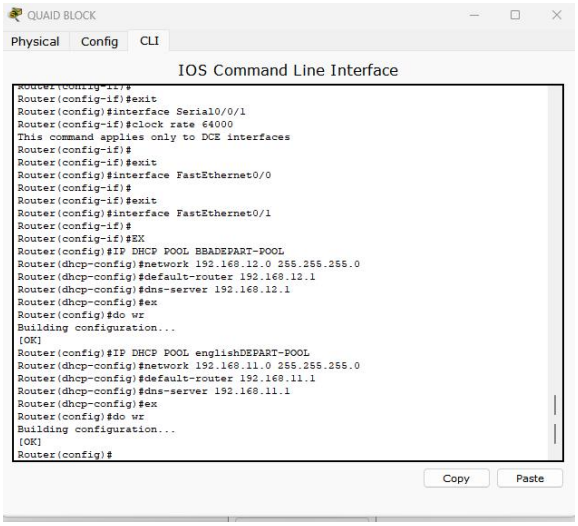


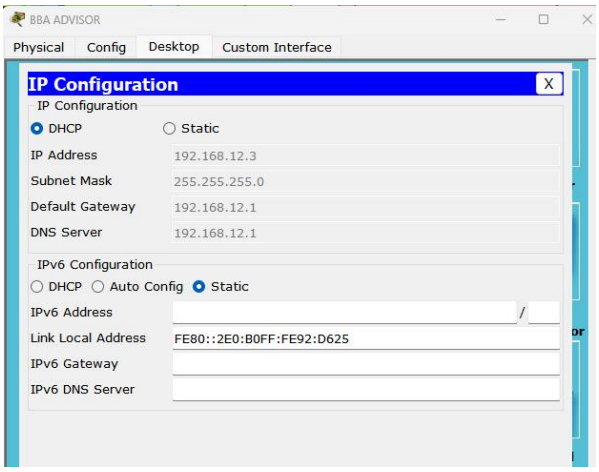

EE DEPART
Physical
Config
CLI
IOS Command Line Interface
Press RETURN to get started.
User Access Verification
Password:
Switch>en
Password:
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
Copy
Paste

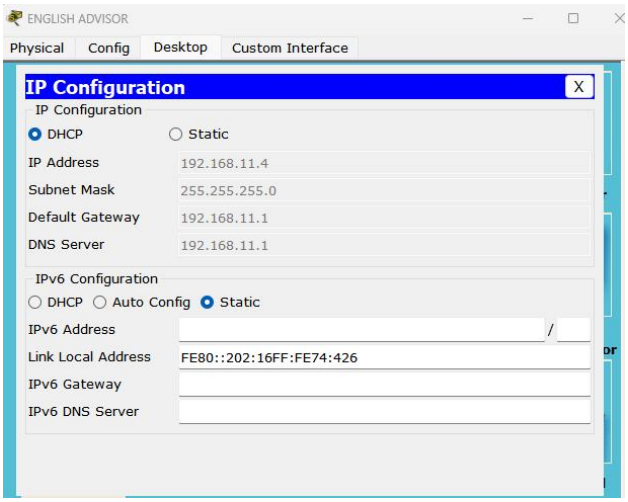
QUAID BLOCK:


BBA DEPARTMENT
192.168.12.1
2950-24
BBA DEPART
PC-PT
BBA 1
Laptop-PT
BBA ADVISOR
PC-PT
BBA 2
PC-PT
BBA 3
Printer-PT
Printer6
14.0.0.1
15.0.0.2
1841
QUAID BLOCK
QUAID BLOCK
ENGLISH DEPARTMENT
PC-PT
E 1
Printer-PT
Printer7
PC-PT
E 2
Laptop-PT
ENGLISH ADVISOR
2950-24
ENGLISH DEPART
192.168.11.1
PC-PT
E 3

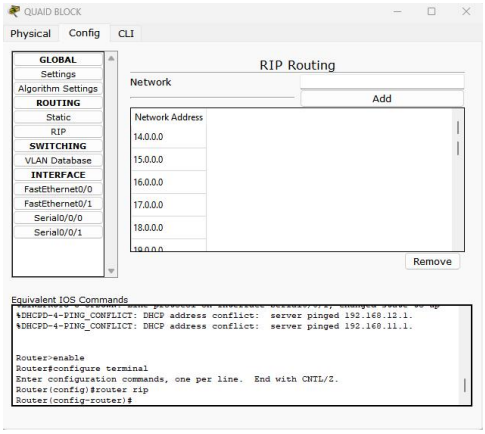
Dynamic ips:


QUAID BLOCK
Physical
Config
CLI
IOS Command Line Interface
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#EX
Router(config)#IP DHCP POOL BBADEPART-POOL
Router(dhcp-config)#network 192.168.12.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.12.1
Router(dhcp-config)#dns-server 192.168.12.1
Router(dhcp-config)#ex
Router(config)#do wr
Building configuration...
[OK]
Router(config)#IP DHCP POOL englishDEPART-POOL
Router(dhcp-config)#network 192.168.11.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.11.1
Router(dhcp-config)#dns-server 192.168.11.1
Router(dhcp-config)#ex
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Copy
Paste

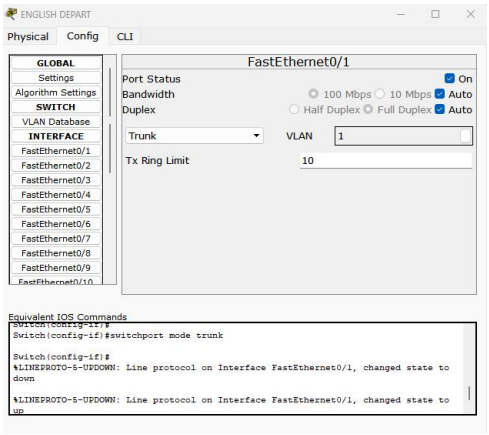

BBA ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.12.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.12.1
DNS Server
192.168.12.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2E0:B0FF:FE92:D625
IPv6 Gateway
IPv6 DNS Server


ENGLISH ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.11.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.11.1
DNS Server
192.168.11.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::202:16FF:FE74:426
IPv6 Gateway
IPv6 DNS Server

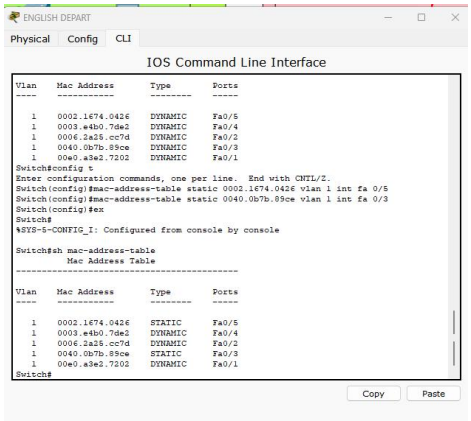
Rip routing:



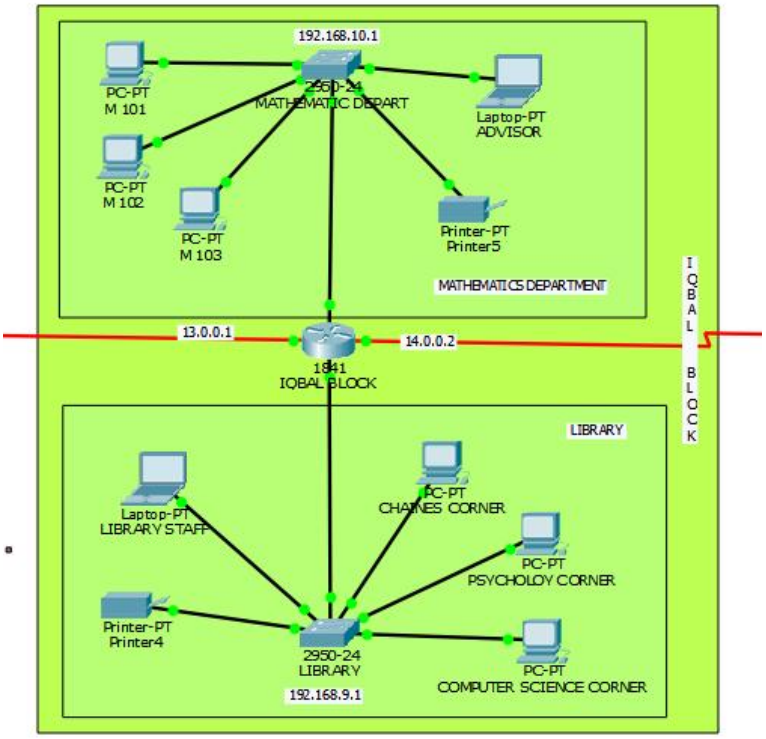
Trunking port enable:



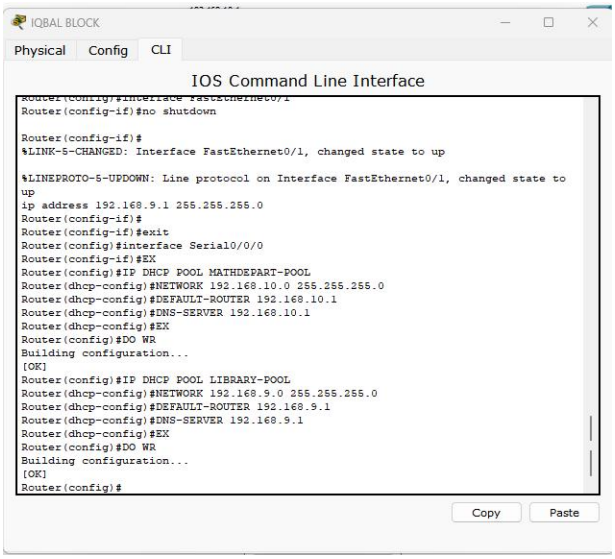
Permanent mac address table:

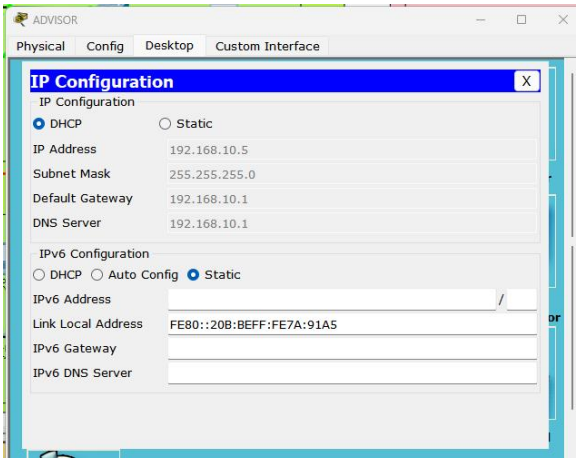


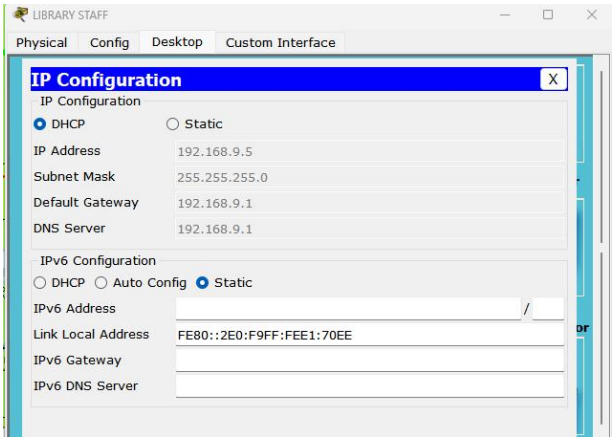
IQBAL BLOCK:



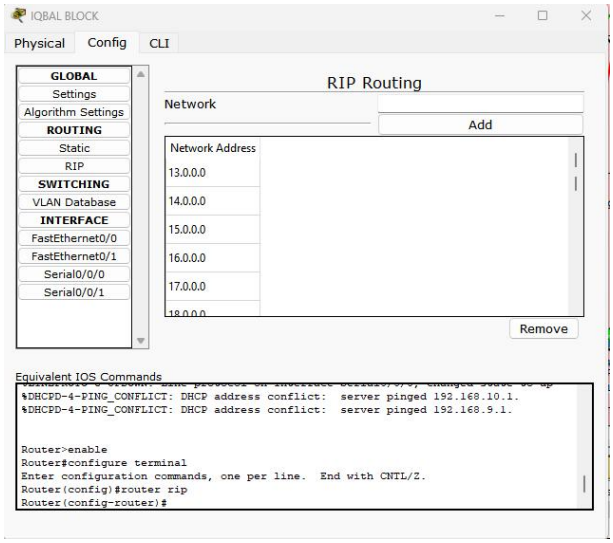
Dynamic ips:

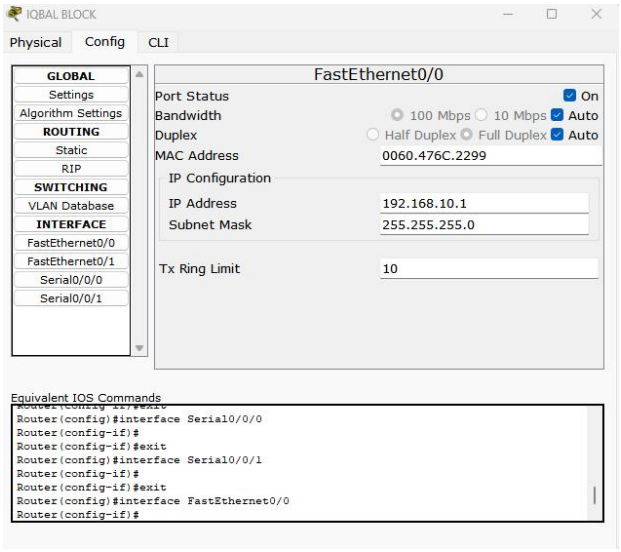


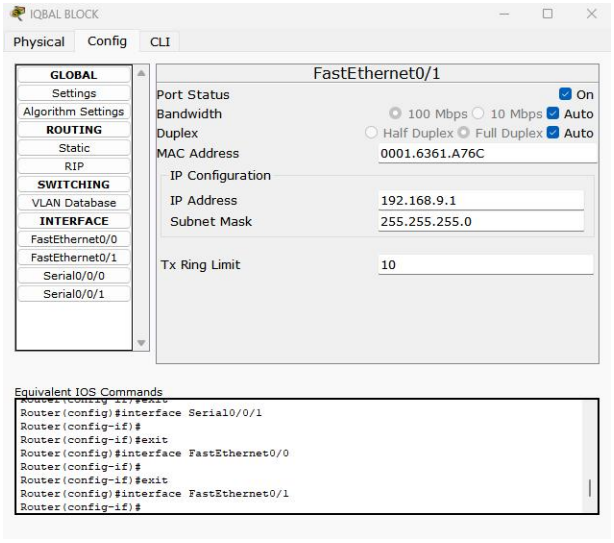

ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.10.5
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
192.168.10.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20B:BEFF:FE7A:91A5
IPv6 Gateway
IPv6 DNS Server

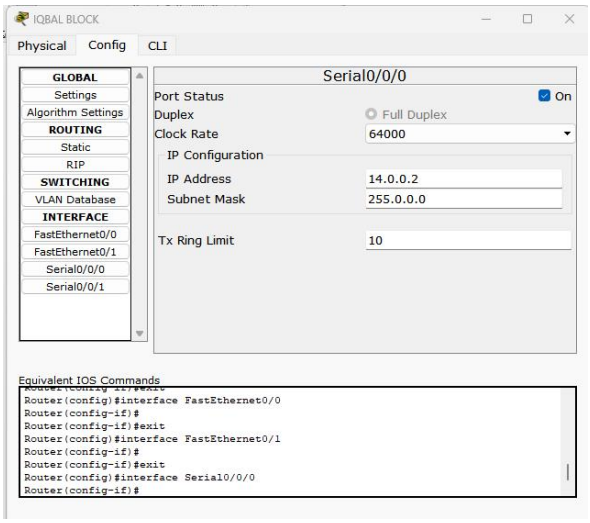

LIBRARY STAFF
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.9.5
Subnet Mask
255.255.255.0
Default Gateway
192.168.9.1
DNS Server
192.168.9.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2E0:F9FF:FEE1:70EE
IPv6 Gateway
IPv6 DNS Server

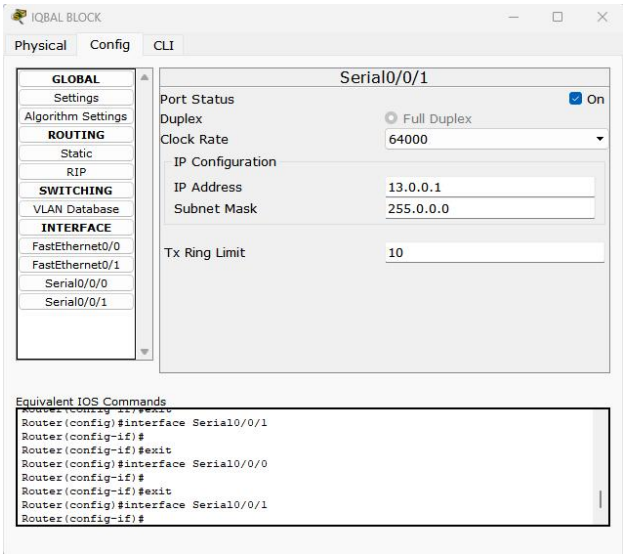
Rip routing:


IQBAL BLOCK
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
RIP Routing
Network
Add
Network Address
13.0.0.0
14.0.0.0
15.0.0.0
16.0.0.0
17.0.0.0
Remove
Equivalent IOS Commands
%DHCPD-4-PING_CONFLICT: DHCP address conflict: server pinged 192.168.10.1.
%DHCPD-4-PING_CONFLICT: DHCP address conflict: server pinged 192.168.9.1.
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#

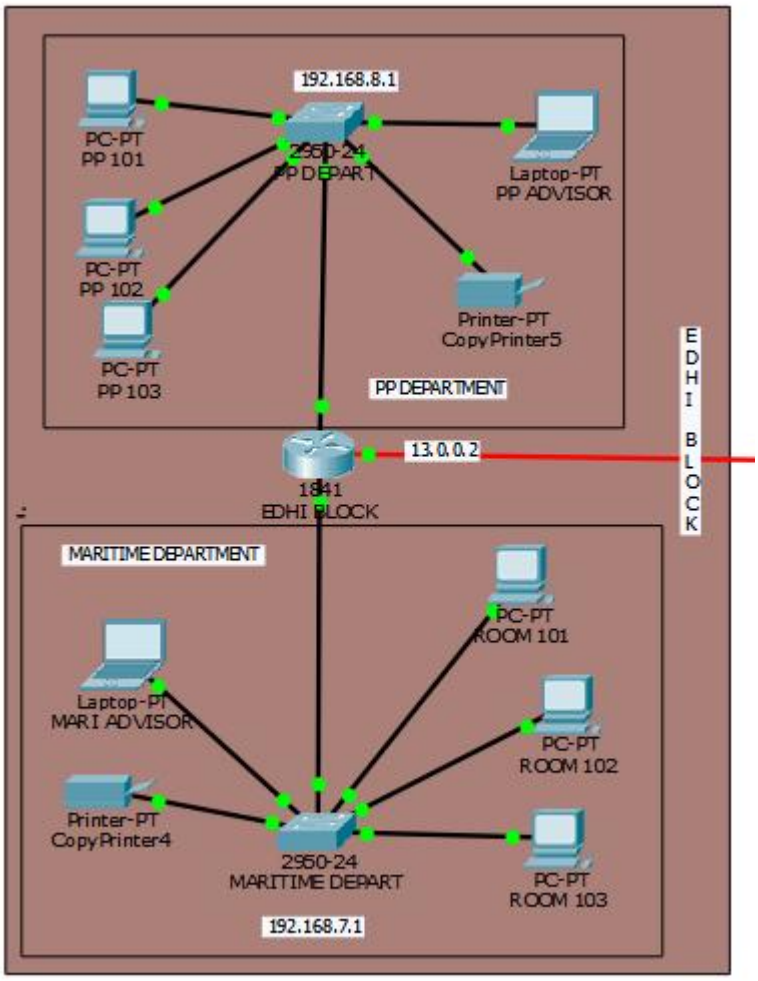

IQBAL BLOCK
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.476C.2299
IP Configuration
IP Address
192.168.10.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#


IQBAL BLOCK
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.6361.A76C
IP Configuration
IP Address
192.168.9.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#

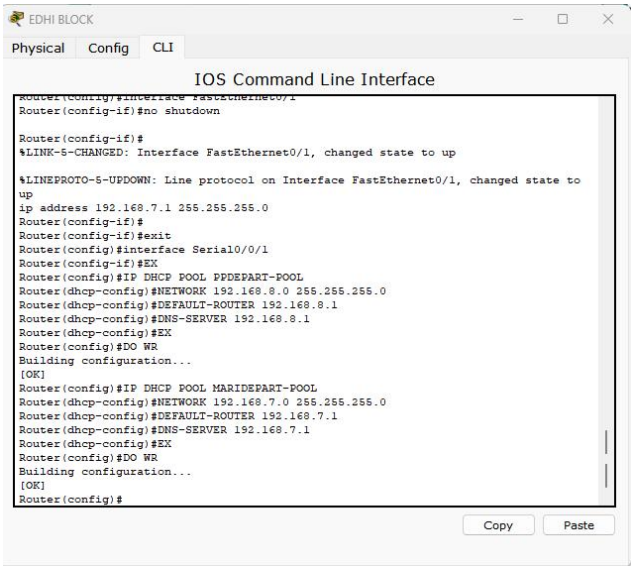

IQBAL BLOCK
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/0/0
Port Status
On
Duplex
Full Duplex
Clock Rate
64000
IP Configuration
IP Address
14.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#

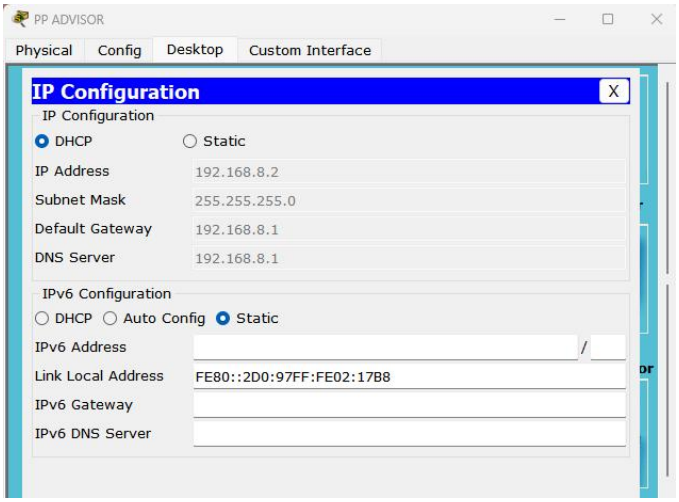

IQBAL BLOCK
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/0/1
Port Status
On
Duplex
Full Duplex
Clock Rate
64000
IP Configuration
IP Address
13.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#

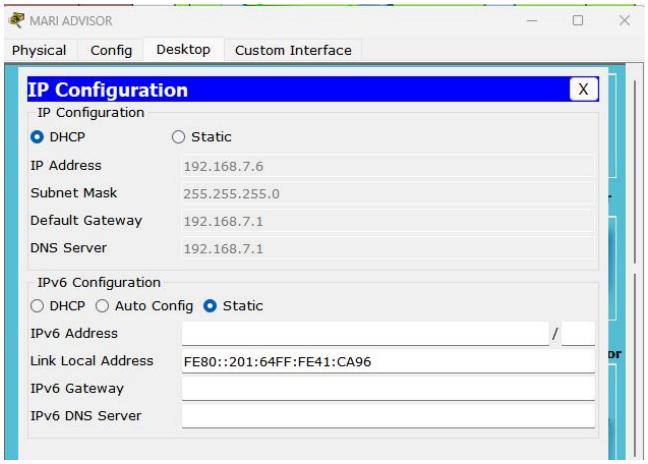
EDHI BLOCK:


192.168.8.1
PC-PT
PP 101
2960-24
PP DEPART
Laptop-PT
PP ADVISOR
PC-PT
PP 102
Printer-PT
CopyPrinter5
PC-PT
PP 103
PP DEPARTMENT
13.0.0.2
1841
EDHI BLOCK
EDHI BLOCK
MARITIME DEPARTMENT
PC-PT
ROOM 101
Laptop-PT
MARI ADVISOR
PC-PT
ROOM 102
Printer-PT
CopyPrinter4
2960-24
MARITIME DEPART
PC-PT
ROOM 103
192.168.7.1

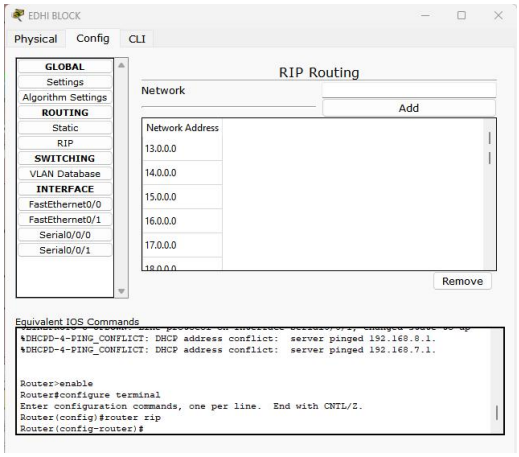
Dynamic ips:


EDHI BLOCK
Physical
Config
CLI
IOS Command Line Interface
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
ip address 192.168.7.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#EX
Router(config)#IP DHCP POOL PPDEPART-POOL
Router(dhcp-config)#NETWORK 192.168.8.0 255.255.255.0
Router(dhcp-config)#DEFAULT-ROUTER 192.168.8.1
Router(dhcp-config)#DNS-SERVER 192.168.8.1
Router(dhcp-config)#EX
Router(config)#DO WR
Building configuration...
[OK]
Router(config)#IP DHCP POOL MARIDEPART-POOL
Router(dhcp-config)#NETWORK 192.168.7.0 255.255.255.0
Router(dhcp-config)#DEFAULT-ROUTER 192.168.7.1
Router(dhcp-config)#DNS-SERVER 192.168.7.1
Router(dhcp-config)#EX
Router(config)#DO WR
Building configuration...
[OK]
Router(config)#
Copy
Paste

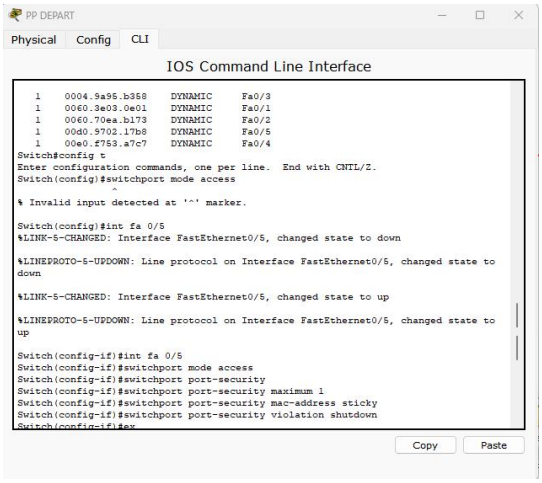

PP ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.8.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.8.1
DNS Server
192.168.8.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2D0:97FF:FE02:17B8
IPv6 Gateway
IPv6 DNS Server

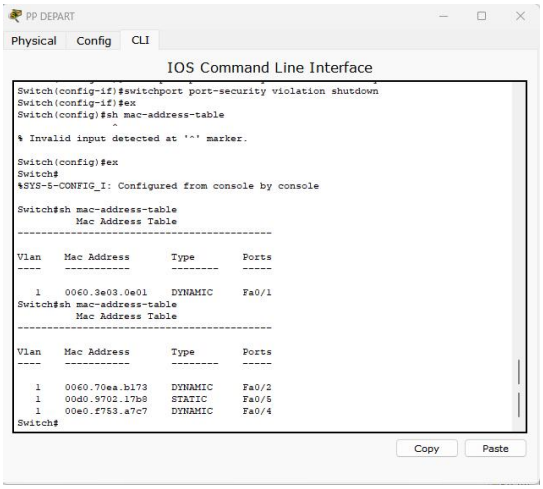

MARI ADVISOR
Physical
Config
Desktop
Custom Interface
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.7.6
Subnet Mask
255.255.255.0
Default Gateway
192.168.7.1
DNS Server
192.168.7.1
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::201:64FF:FE41:CA96
IPv6 Gateway
IPv6 DNS Server

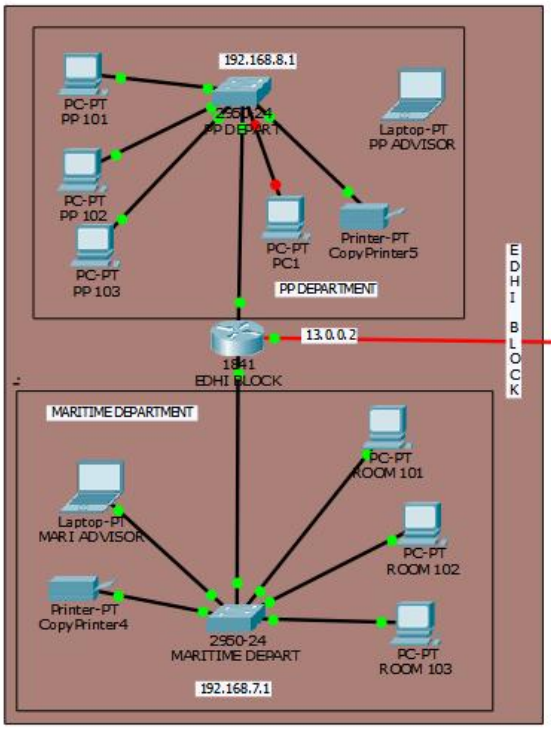
Rip routing:

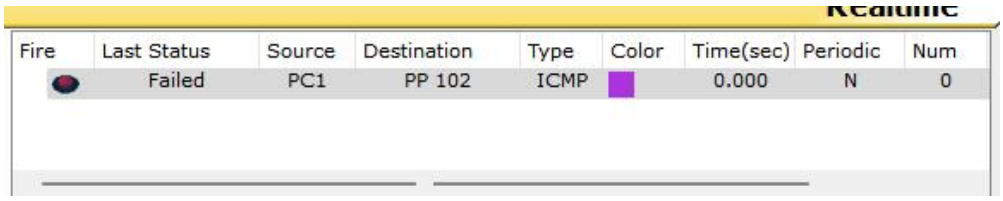


Port security for pp advisor:



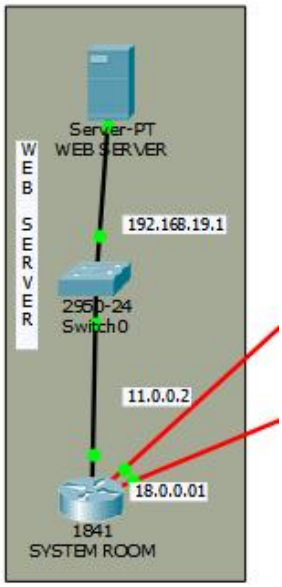


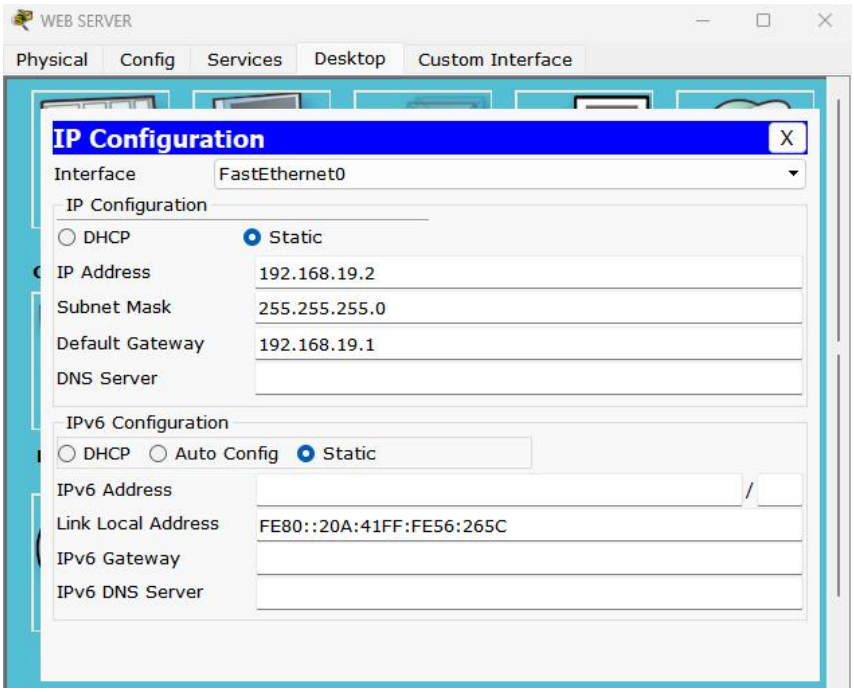


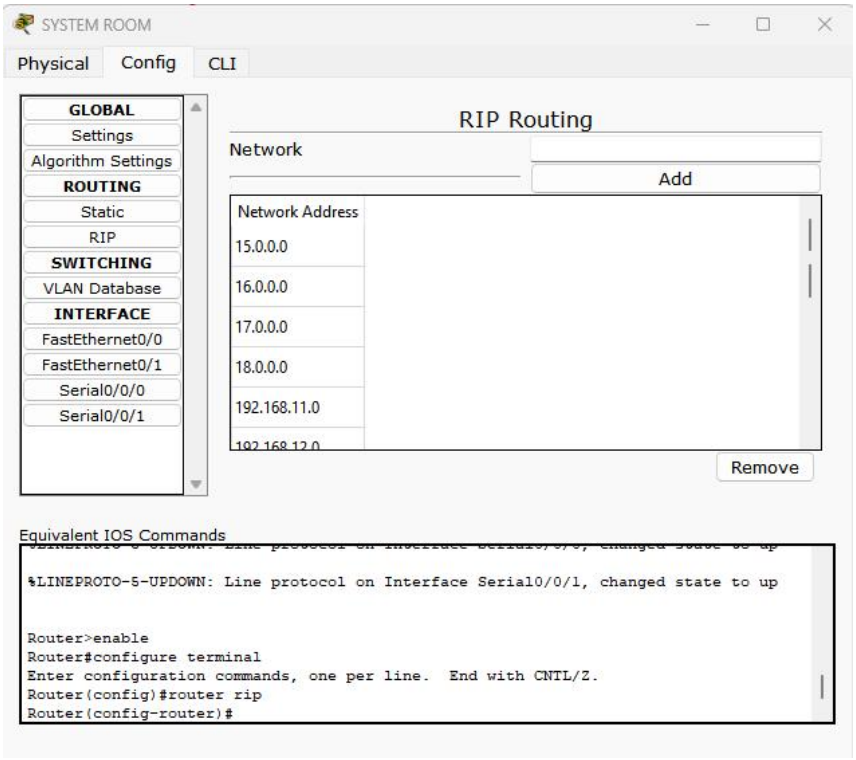


Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Failed	PC1	PP 102	ICMP		0.000	N	0

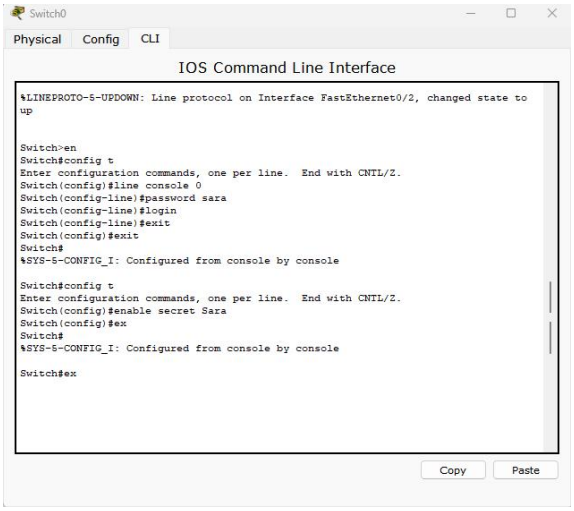
System room:

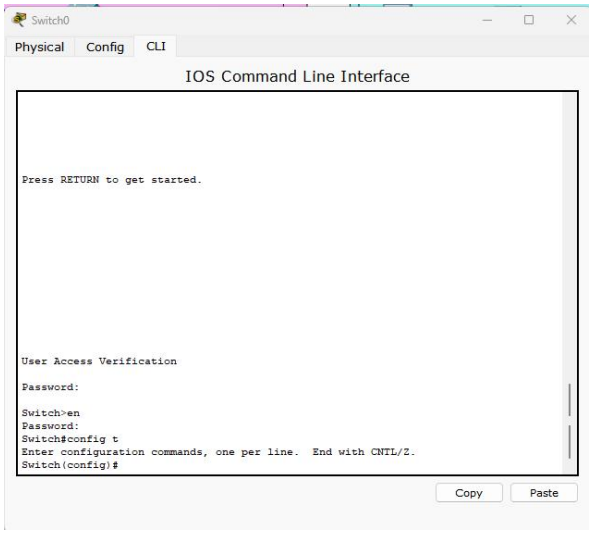



WEB SERVER
Physical
Config
Services
Desktop
Custom Interface
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IP Address
192.168.19.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.19.1
DNS Server
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20A:41FF:FE56:265C
IPv6 Gateway
IPv6 DNS Server


SYSTEM ROOM
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/0/0
Serial0/0/1
RIP Routing
Network
Add
Network Address
15.0.0.0
16.0.0.0
17.0.0.0
18.0.0.0
192.168.11.0
Remove
Equivalent IOS Commands
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#

Password protective:





9. Conclusion:

The designed University campus network in Cisco Packet Tracer provides a robust, secure, and scalable infrastructure to meet the networking needs of Bahria University. It ensures reliable connectivity, efficient traffic flow, and enhanced network security. The network design promotes effective communication and collaboration across various departments and offers a seamless user experience for students, faculty, and staff.