



CIS 315- PROJECT REPORT

Communication & Network fundamentals

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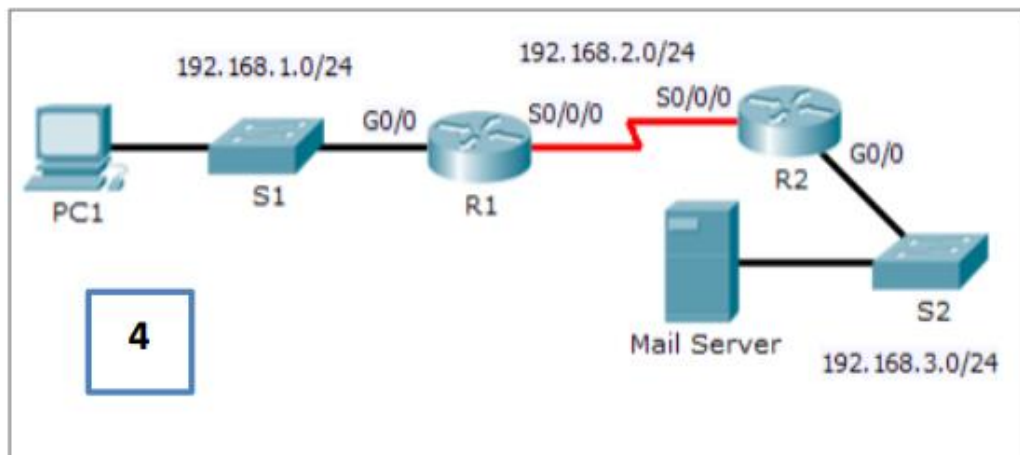
First semester

GROUP 2

ID	Name
[REDACTED]	



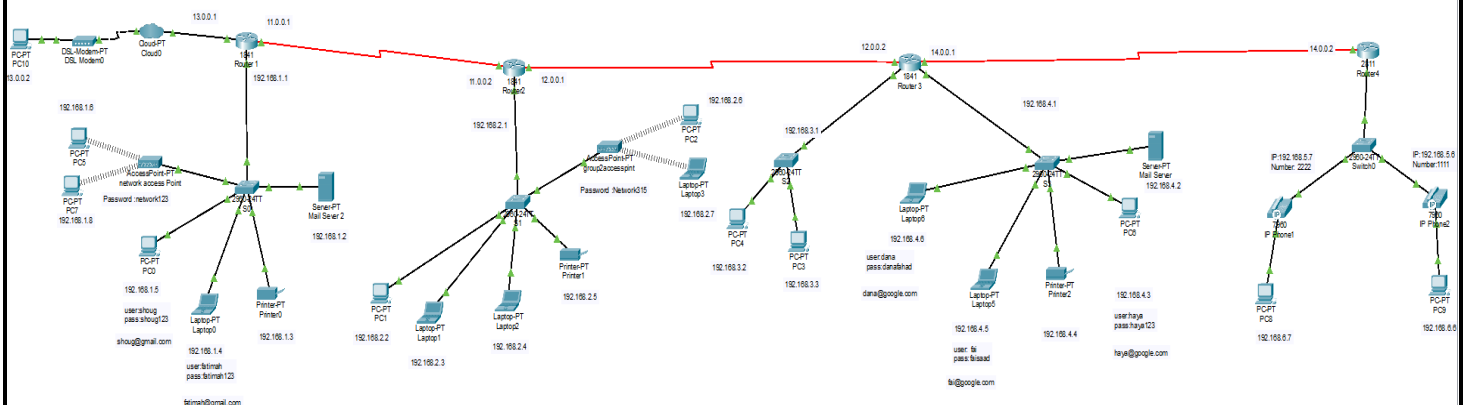
Our Topology:



We used:

Name	Quantity
Router	4
Switches	4
PC'S	11
Laptops	6
IP phones	2
Printer	3
Access Point	2
cloud	1
Server	2
Modem	1
Straight – through cables	28
Phone cables	1
Serial cables	3

Our network:



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Abstract:

In our innovative network project, we've applied concepts from our network course to create a dynamic system representing a school library environment. Each router symbolizes a distinct LAN within the library, fostering efficient communication among various end-devices such as PCs, laptops, printers, and phones. The topology integrates principles of both physical and logical configurations, incorporating IP Phone settings, router configurations, VLANs managed by switches, and the deployment of wireless routers. This interconnected network optimizes communication and resource access, providing a tailored solution for the diverse needs of a bustling school library."

Introduction:

In the realm of connectivity, we've embarked on a transformative journey, applying the fundamental principles acquired from our network courses, we've implemented Cisco technology to craft a dynamic and responsive system designed for a school library. This report is a comprehensive account of our efforts, encapsulating the design, and configuration, of our Cisco network.

In this report, we are going to point out how we smoothly put together the physical and logical parts. Explore the details of things like setting up IP Phones, adjusting router settings. See how we strategically placed wireless access points, creating an invisible connection that reaches every part of the library. This turns it into a lively place where learning and working together become easy and dynamic.

Addressing Table

Device	Interface	IP address	Subnet mask	Default gateway
Router 1	F0/0	192.168.1.1	255.255.255.0	N/A
	F0/1	13.0.0.1	255.255.255.0	N/A
	S0/0	11.0.0.1	255.0.0.0	N/A
Router 2	F0/0	192.168.2.1	255.255.255.0	N/A
	S0/1/0	11.0.0.2	255.0.0.0	N/A
	S0/1/1	12.0.0.1	255.0.0.0	N/A
Router 3	F0/0	192.168.3.1	255.255.255.0	N/A
	F0/1	192.168.4.1	255.255.255.0	N/A
	S0/0	12.0.0.2	255.0.0.0	N/A
	S0/1	14.0.0.1	255.0.0.0	N/A
Router 4	F0/0.5	192.168.5.1	255.255.255.0	N/A
	F0/0.6	192.168.6.1	255.255.255.0	N/A
	S0/2	14.0.0.2	255.0.0.0	N/A
Server1	F0/2	192.168.4.2	255.255.255.0	192.168.4.1
Server2	F0/5	192.168.1.2	255.255.255.0	192.168.1.1
Pc0	F0/1	192.168.1.3 DHCP	255.255.255.0	192.168.1.1
Pc1	F0/2	192.168.2.2	255.255.255.0	192.168.2.1
Pc2	Wireless (access point)	192.168.2.6	255.255.255.0	192.168.2.1
Laptop 0	F0/2	192.168.1.5 DHCP	255.255.255.0	192.168.1.1
Laptop 1	F0/3	192.168.2.3	255.255.255.0	192.168.2.1
Laptop 2	F0/4	192.168.2.4	255.255.255.0	192.168.2.1
Laptop 3	Wireless (access point)	192.168.2.7	255.255.255.0	192.168.2.1
Printer 0	F0/3	192.168.1.4 DHCP	255.255.255.0	192.168.1.1
Printer 2	F0/6	192.168.4.6 DHCP	255.255.255.0	192.168.4.1
Printer 1	F0/5	192.168.2.5	255.255.255.0	192.168.2.1
Pc 5	Wireless (access point)	192.168.1.6 DHCP	255.255.255.0	192.168.1.1
Pc7	Wireless (access point)	192.168.1.7 DHCP	255.255.255.0	192.168.1.1
Pc 10	F0/1 (modem)	13.0.0.2	255.0.0.0	13.0.0.1
PC3	F0/3	192.168.3.3	255.255.255.0	192.168.3.1
PC4	F0/2	192.168.3.2	255.255.255.0	192.168.3.1
Laptop 5	F0/3	192.168.4.3 DHCP	255.255.255.0	192.168.4.1
PC6	F0/5	192.168.4.4 DHCP	255.255.255.0	192.168.4.1
Laptop6	F0/4	192.168.4.5 DHCP	255.255.255.0	192.168.4.1
PC8	F0	192.168.6.6	255.255.255.0	192.168.6.1
PC9	F0	192.168.6.7	255.255.255.0	192.168.6.1
IP Phone 1	Switch	192.168.5.6		192.168.5.1

IP Phone 2	Switch	192.168.5.7		192.168.5.1
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Routing tables

Router 1

Router 1

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.2.0/24 via 11.0.0.2

192.168.3.0/24 via 11.0.0.2

192.168.4.0/24 via 11.0.0.2

12.0.0.0/8 via 11.0.0.2

192.168.6.0/24 via 11.0.0.2

14.0.0.0/8 via 11.0.0.2

192.168.5.0/24 via 11.0.0.2

Remove

Router 2

Router2

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/1/0

Serial0/1/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.1.0/24 via 11.0.0.1

192.168.3.0/24 via 12.0.0.2

192.168.4.0/24 via 12.0.0.2

13.0.0.0/8 via 11.0.0.1

192.168.6.0/24 via 12.0.0.2

14.0.0.0/8 via 12.0.0.2

192.168.5.0/24 via 12.0.0.2

Remove

Router 3

Router4

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/2/0

Serial0/2/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.1.0/24 via 14.0.0.1

192.168.2.0/24 via 14.0.0.1

192.168.3.0/24 via 14.0.0.1

192.168.4.0/24 via 14.0.0.1

11.0.0.0/8 via 14.0.0.1

12.0.0.0/8 via 14.0.0.1

13.0.0.0/8 via 14.0.0.1

Remove

Router 4

Router 3

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/1/0

Serial0/1/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.2.0/24 via 12.0.0.1

192.168.1.0/24 via 12.0.0.1

11.0.0.0/8 via 12.0.0.1

13.0.0.0/8 via 12.0.0.1

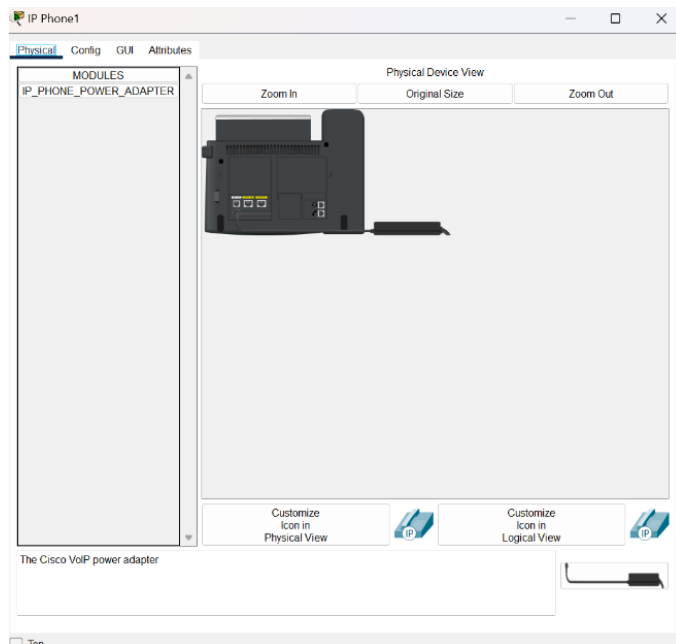
192.168.6.0/24 via 14.0.0.2

192.168.5.0/24 via 14.0.0.2

VOIP Configuration:

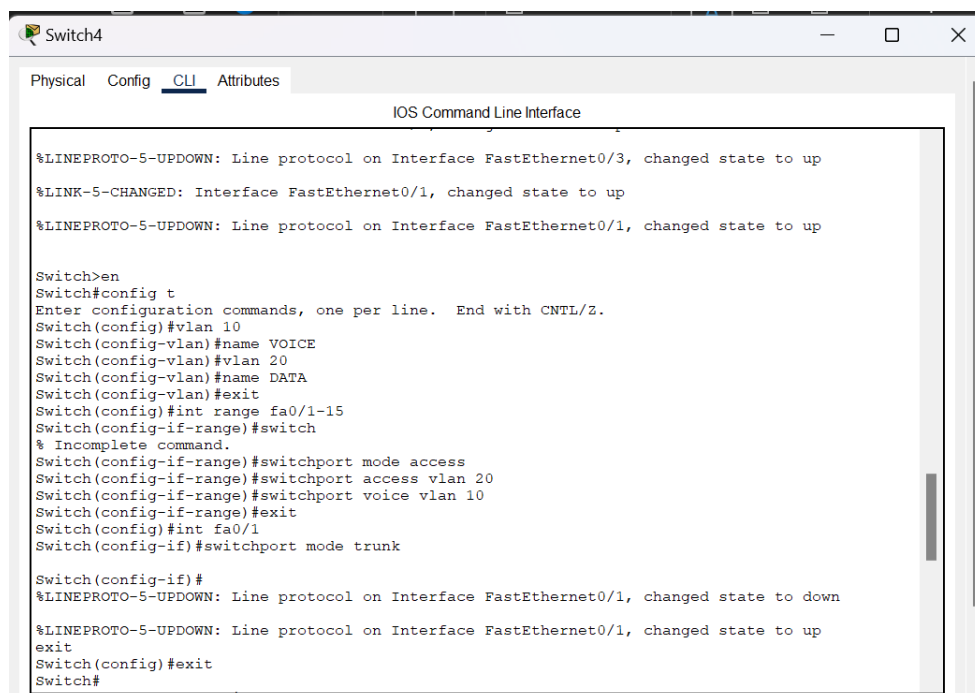
Steps:

1. Power the phone on:

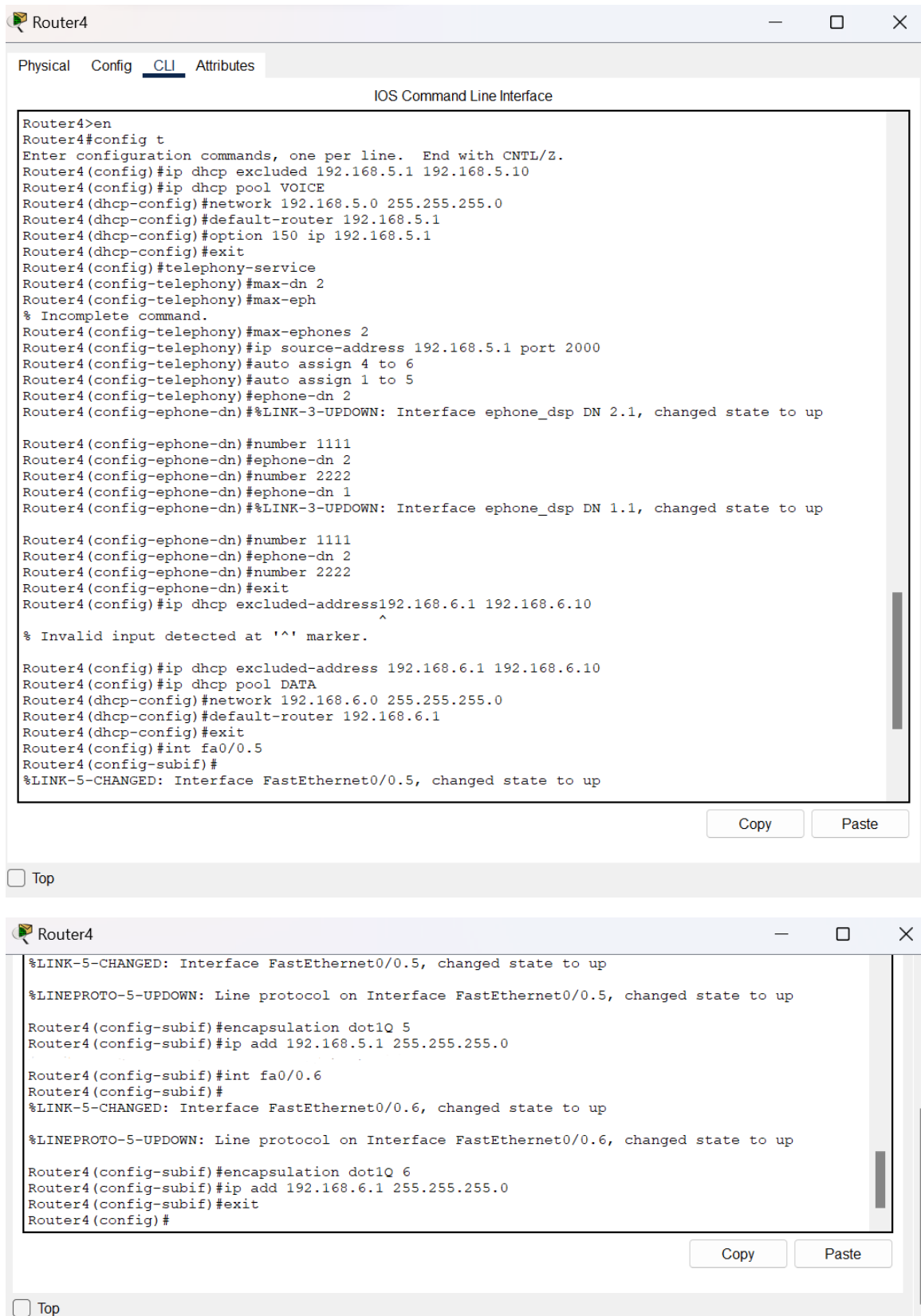


2.configuration on switch and router:

In the switch will assign the vlan and the name.



In the router will assign the Ip address for the phone and the numbers.



The image displays two screenshots of the Router4 CLI interface. The top screenshot shows the configuration of a DHCP pool for voice devices and the setup of two ephone-dn entries. The bottom screenshot shows the configuration of two subinterfaces for data and voice traffic.

```
Router4>en
Router4#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router4(config)#ip dhcp excluded 192.168.5.1 192.168.5.10
Router4(config)#ip dhcp pool VOICE
Router4(dhcp-config)#network 192.168.5.0 255.255.255.0
Router4(dhcp-config)#default-router 192.168.5.1
Router4(dhcp-config)#option 150 ip 192.168.5.1
Router4(dhcp-config)#exit
Router4(config)#telephony-service
Router4(config-telephony)#max-dn 2
Router4(config-telephony)#max-eph
% Incomplete command.
Router4(config-telephony)#max-ephones 2
Router4(config-telephony)#ip source-address 192.168.5.1 port 2000
Router4(config-telephony)#auto assign 4 to 6
Router4(config-telephony)#auto assign 1 to 5
Router4(config-telephony)#ephone-dn 2
Router4(config-ephone-dn)%%LINK-3-UPDOWN: Interface ephone_dsp DN 2.1, changed state to up

Router4(config-ephone-dn)#number 1111
Router4(config-ephone-dn)#ephone-dn 2
Router4(config-ephone-dn)#number 2222
Router4(config-ephone-dn)#ephone-dn 1
Router4(config-ephone-dn)%%LINK-3-UPDOWN: Interface ephone_dsp DN 1.1, changed state to up

Router4(config-ephone-dn)#number 1111
Router4(config-ephone-dn)#ephone-dn 2
Router4(config-ephone-dn)#number 2222
Router4(config-ephone-dn)#exit
Router4(config)#ip dhcp excluded-address192.168.6.1 192.168.6.10
^
% Invalid input detected at '^' marker.

Router4(config)#ip dhcp excluded-address 192.168.6.1 192.168.6.10
Router4(config)#ip dhcp pool DATA
Router4(dhcp-config)#network 192.168.6.0 255.255.255.0
Router4(dhcp-config)#default-router 192.168.6.1
Router4(dhcp-config)#exit
Router4(config)#int fa0/0.5
Router4(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.5, changed state to up
```

Router4

```
%LINK-5-CHANGED: Interface FastEthernet0/0.5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.5, changed state to up

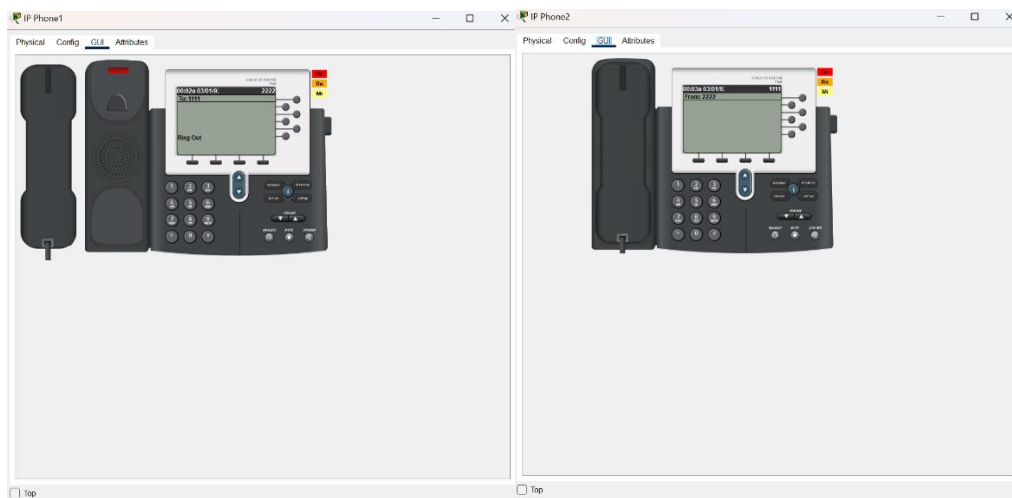
Router4(config-subif)#encapsulation dot1Q 5
Router4(config-subif)#ip add 192.168.5.1 255.255.255.0

Router4(config-subif)#int fa0/0.6
Router4(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.6, changed state to up

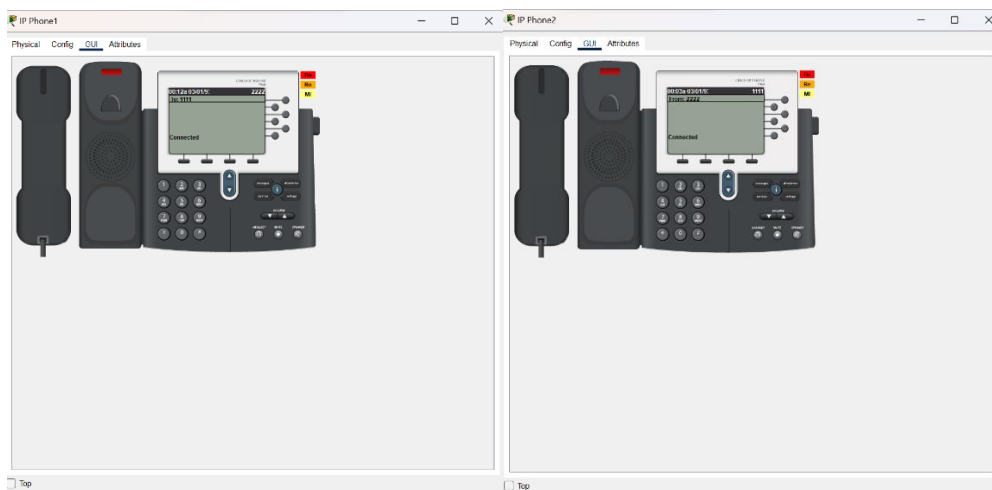
Router4(config-subif)#encapsulation dot1Q 6
Router4(config-subif)#ip add 192.168.6.1 255.255.255.0
Router4(config-subif)#exit
Router4(config)#
```

3. Verify and configure:

We dialed the number 1111 on IP phone 1

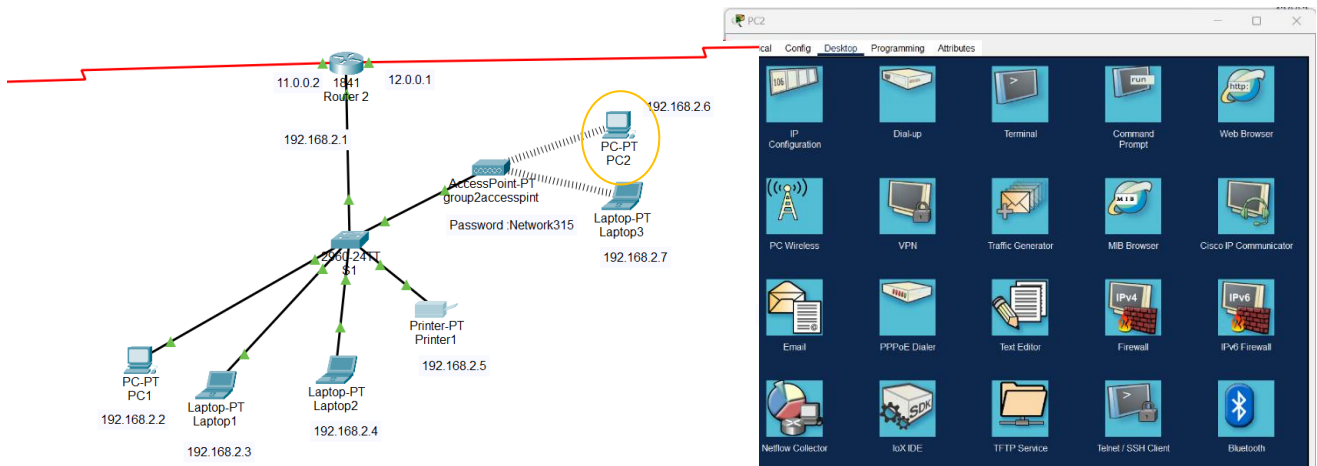


Then we received the call on IP phone 2 as it's shown below it is connected when responding

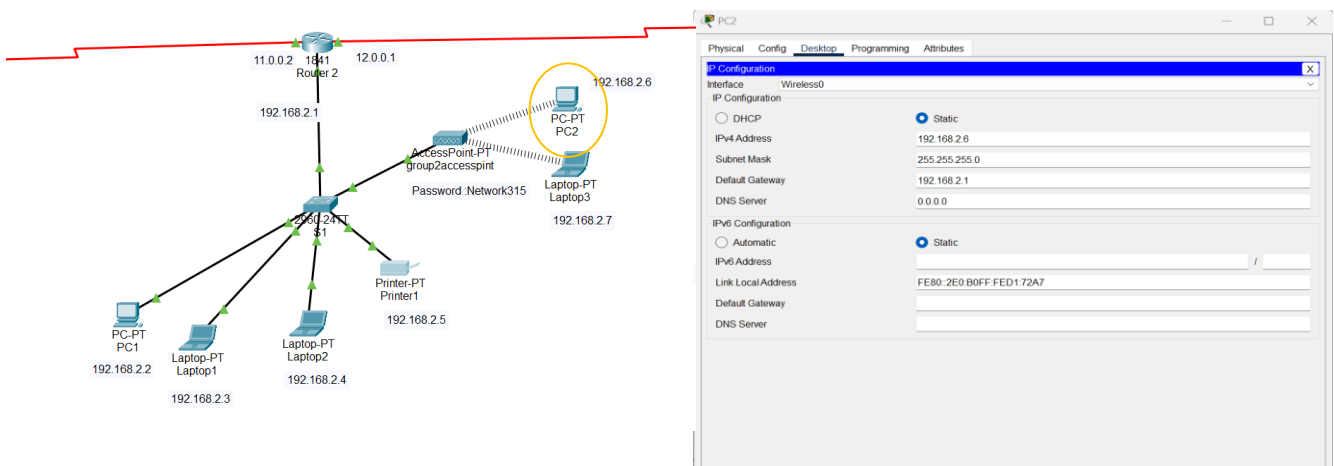


Steps of configuration PCs and Laptops

1- Go to the PC or the Laptop and click on desktop:

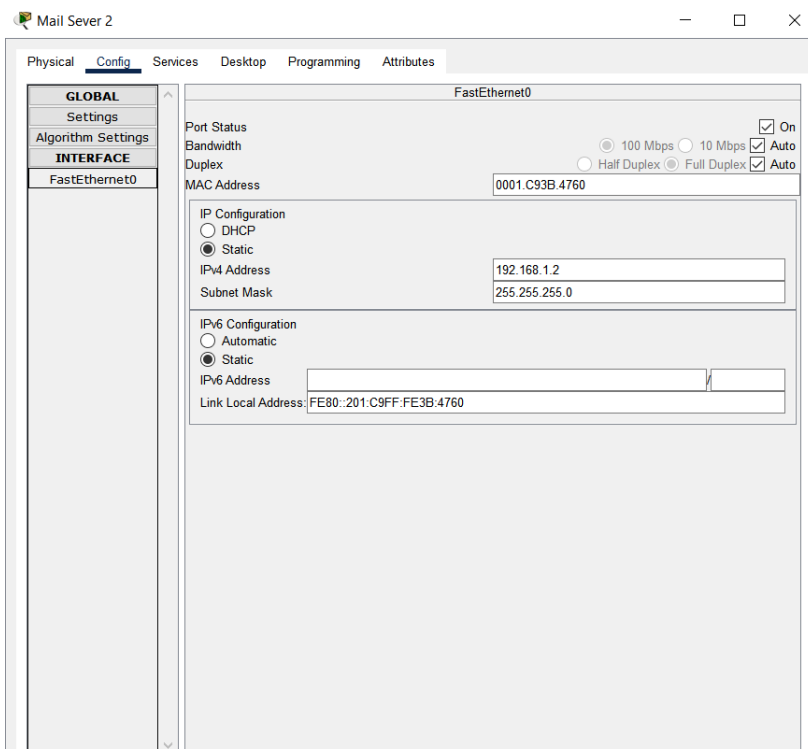
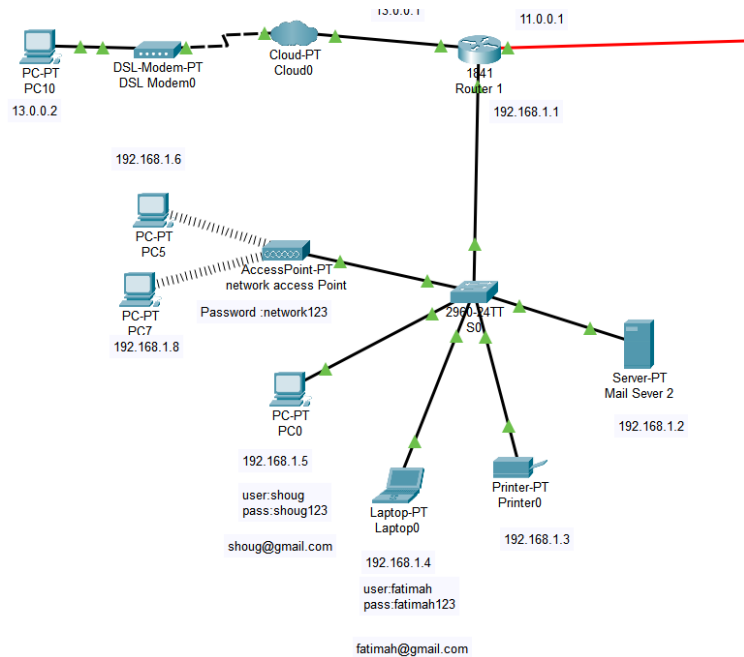


2- Click on IP configuration and enter the IP address:



Steps of configuration the Mail server:

After installing the mail server, we need to address the Ip address and the default gateway then we set the IPs for the devices through services and then DHCP, also we go to the Email, and we set the domain, and we enter the users names and password



Mail Sever 2

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: ☒ On ☐ Off

Pool Name: **serverPool**

Default Gateway: **192.168.1.1**

DNS Server: **0.0.0.0**

Start IP Address: **192** **168** **1** **2**

Subnet Mask: **255** **255** **255** **0**

Maximum Number of Users: **254**

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
serverPool	192.168.1.1	0.0.0.0	192.168.1.2	255.255.255.0	254	0.0.0.0	0.0.0.0

☐ Top

Mail Sever 2

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL**
- FTP
- IoT
- VM Management
- Radius EAP

EMAIL

SMTP Service: ☒ ON ☐ OFF

POP3 Service: ☒ ON ☐ OFF

Domain Name: **gmail.com** **Set**

User Setup

User: Password:

shoug
fatimah

+

-

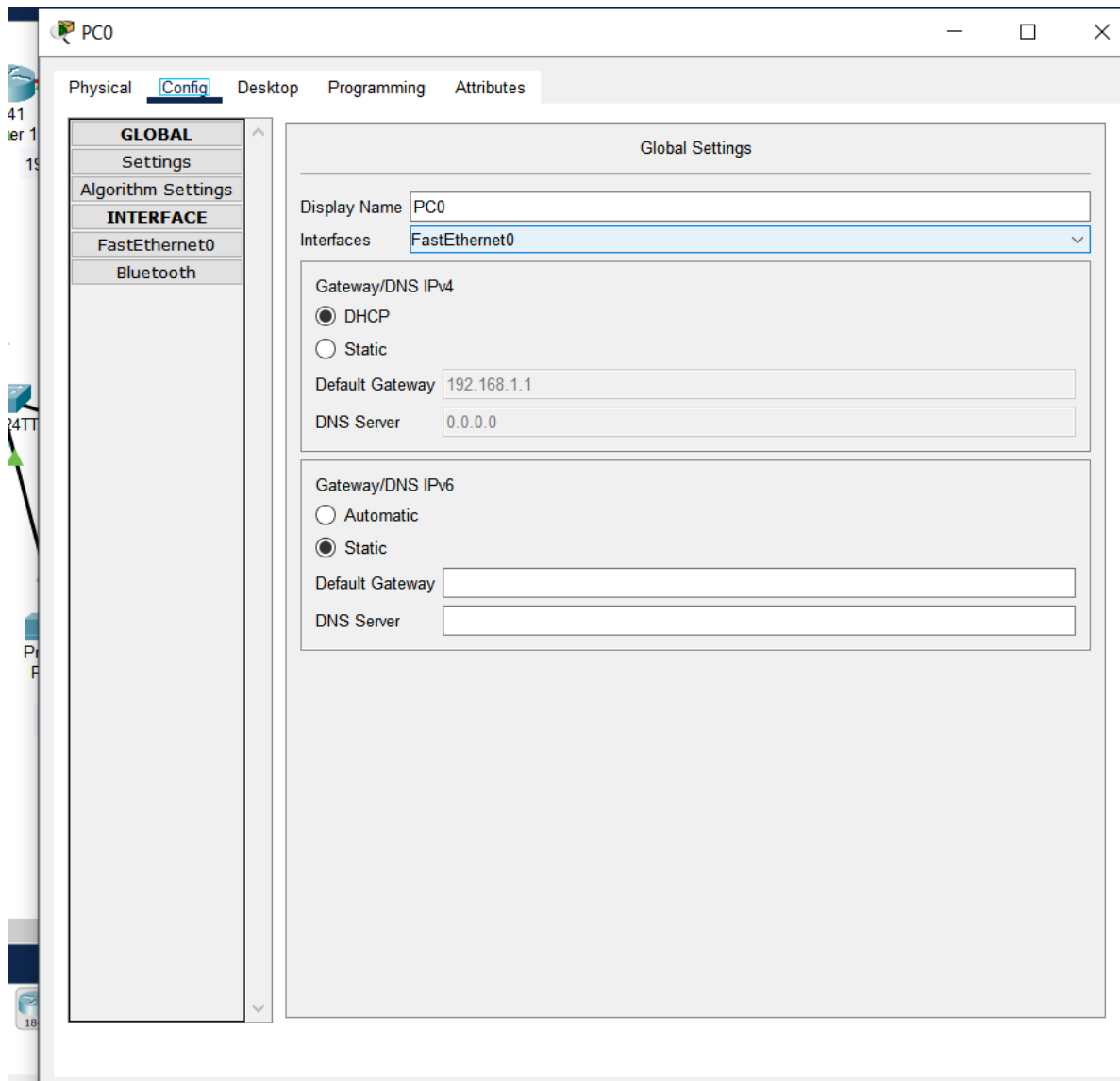
Change

Password

☐ Top

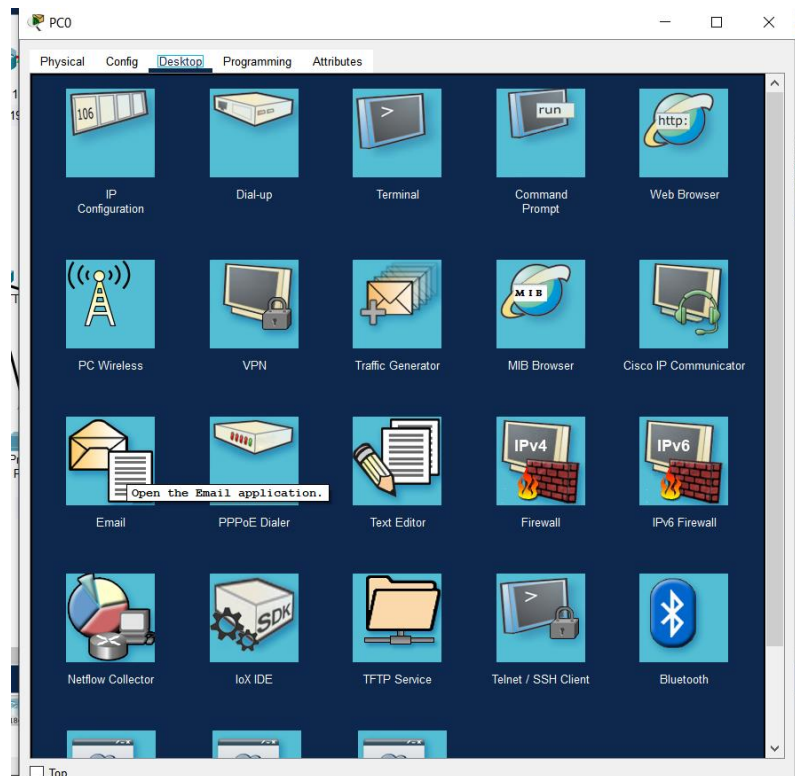
Configuring the devices that are connected to the server:

For the devices that are connected with the server we don't need to do anything other than press DHCP and the IP address and the default gateway will be configured.

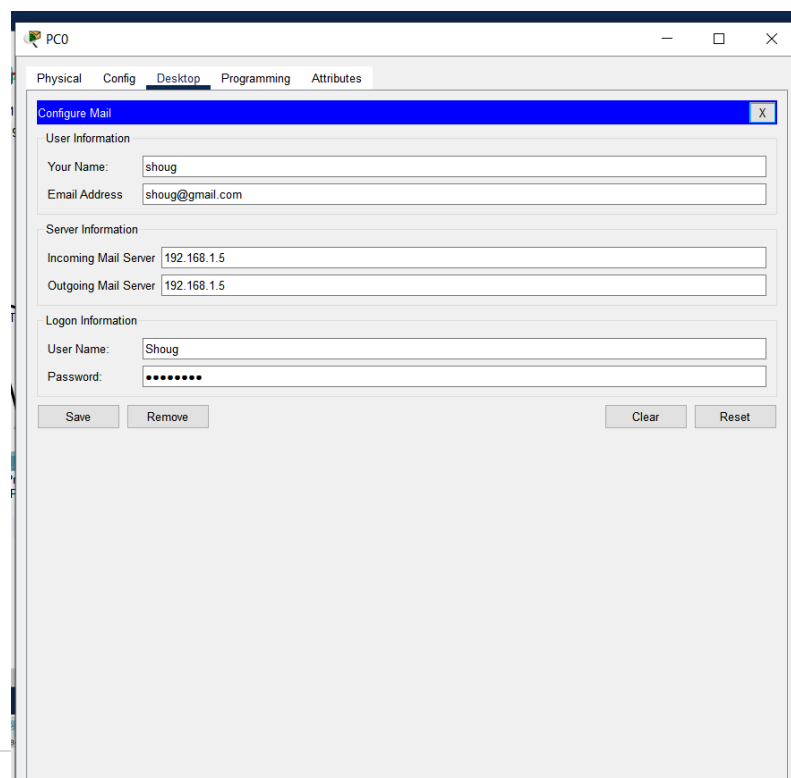


Assigning emails for the devices for the mail server:

Step 1: go to the device and then press desktop, lastly choose Email.

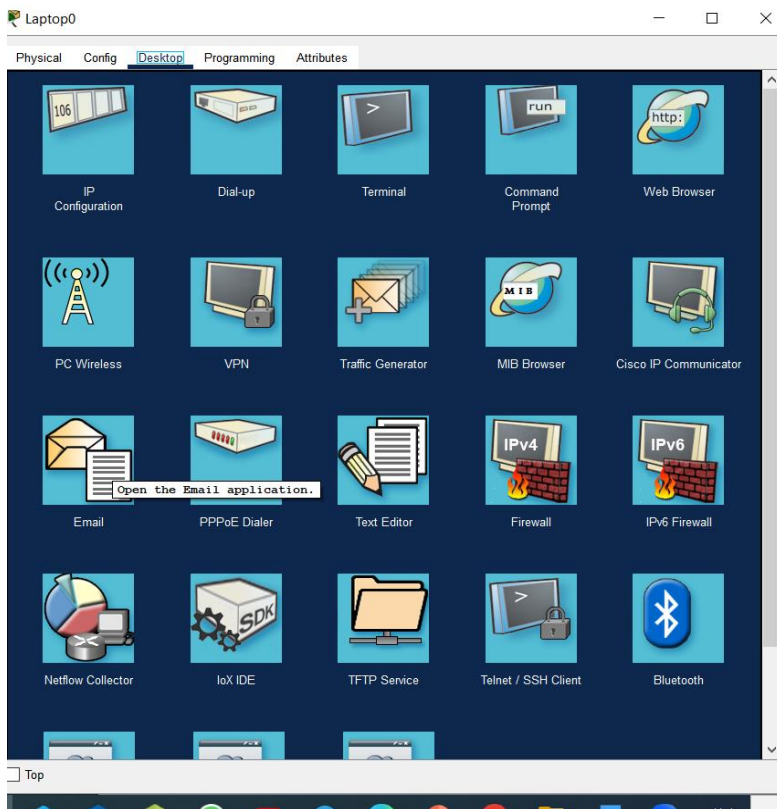


Step 2: enter all the required information and the user and the password that was added in the mail server and the Email will work successfully.

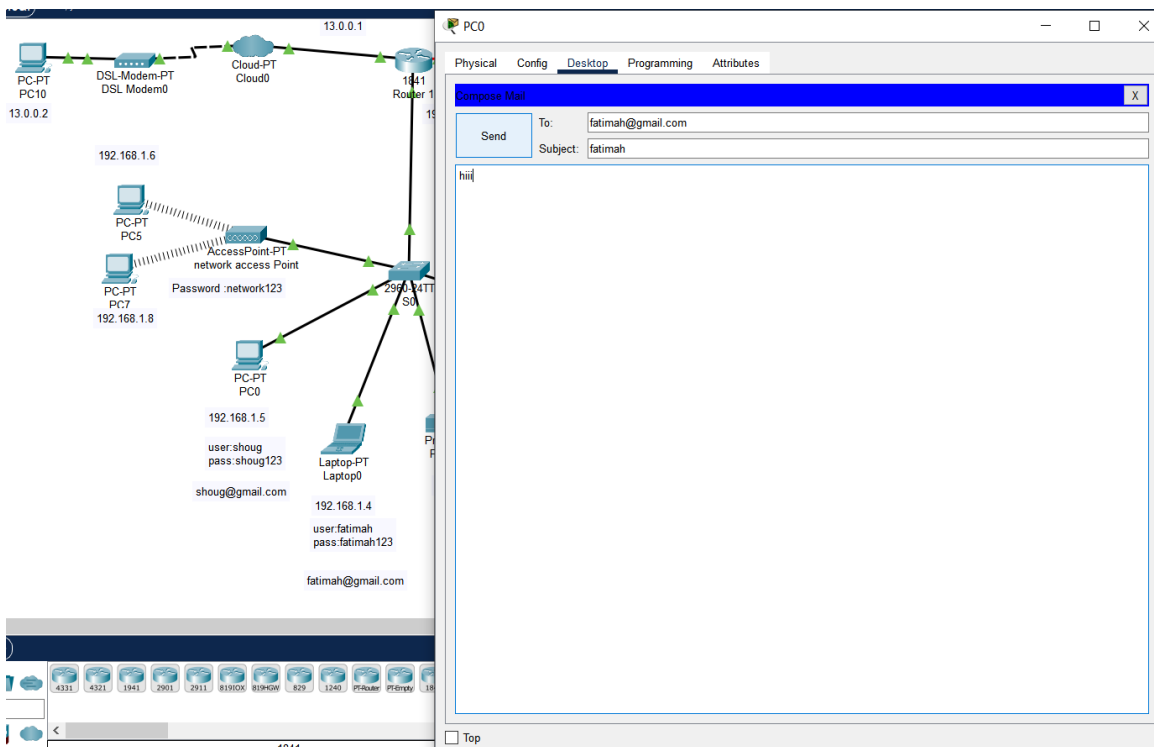


Testing the emails:

Step 1: go to the device, desktop and press Email

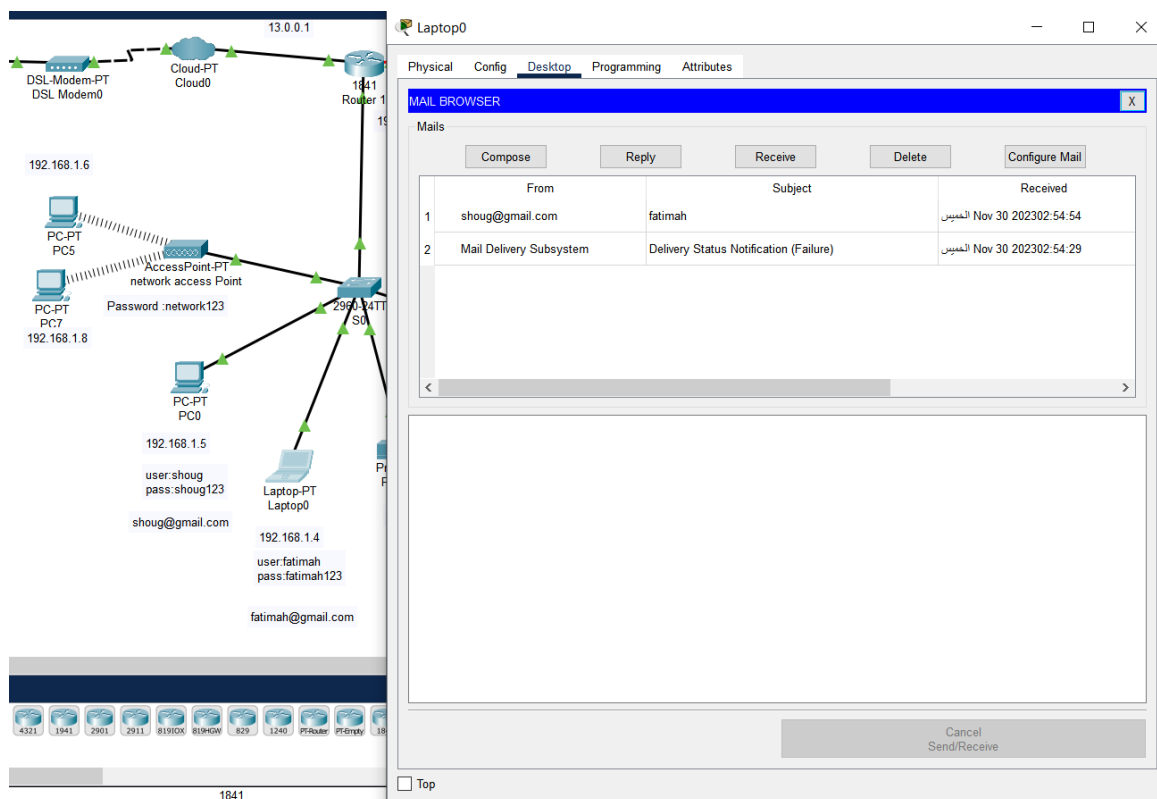


Step 2: press compose to send an email and write down the email and the subject lastly the content.

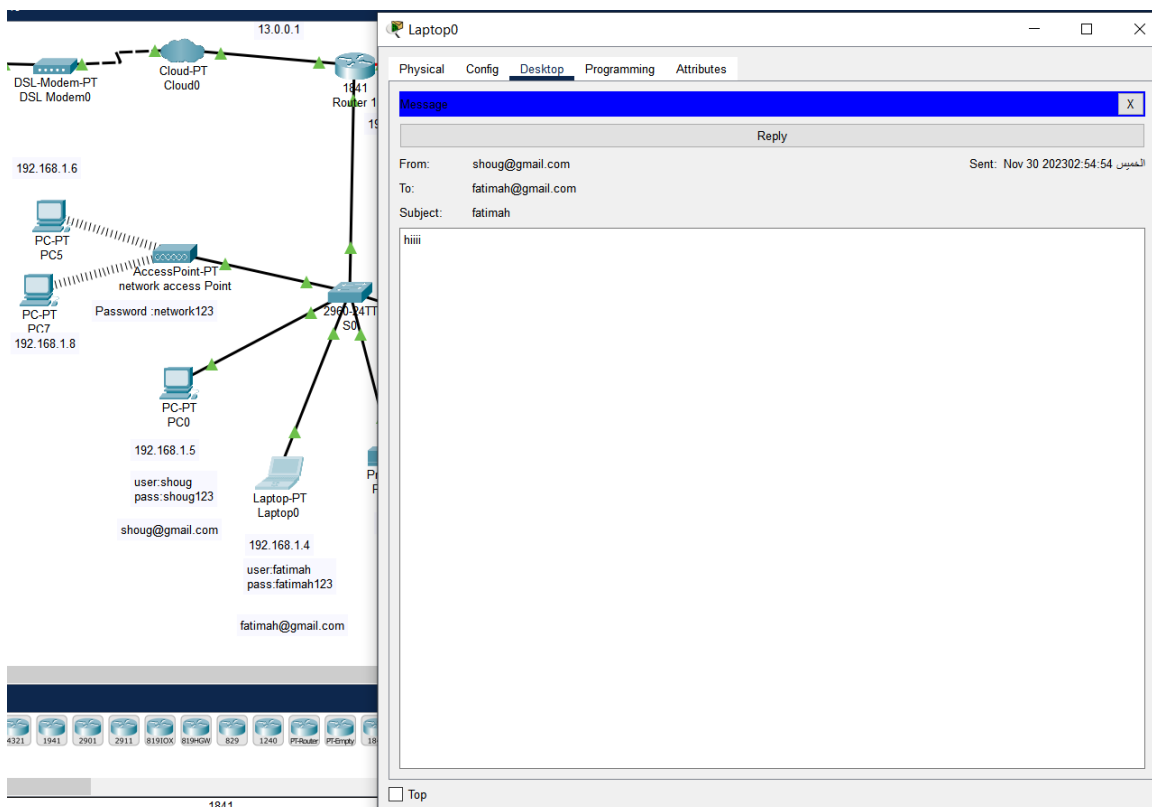


Step 1: TO OPEN THE EMAIL, You Need to Do Repeat the First Step

Step 2: you will see the received emails and by pressing them the email will be displayed.

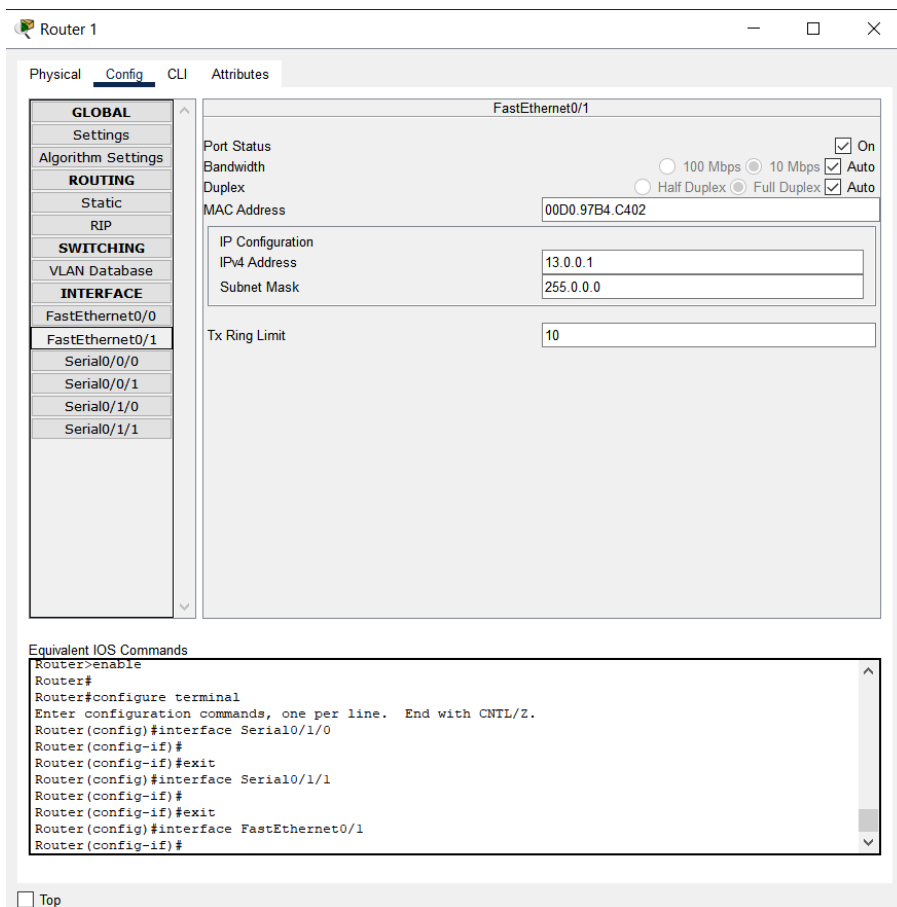
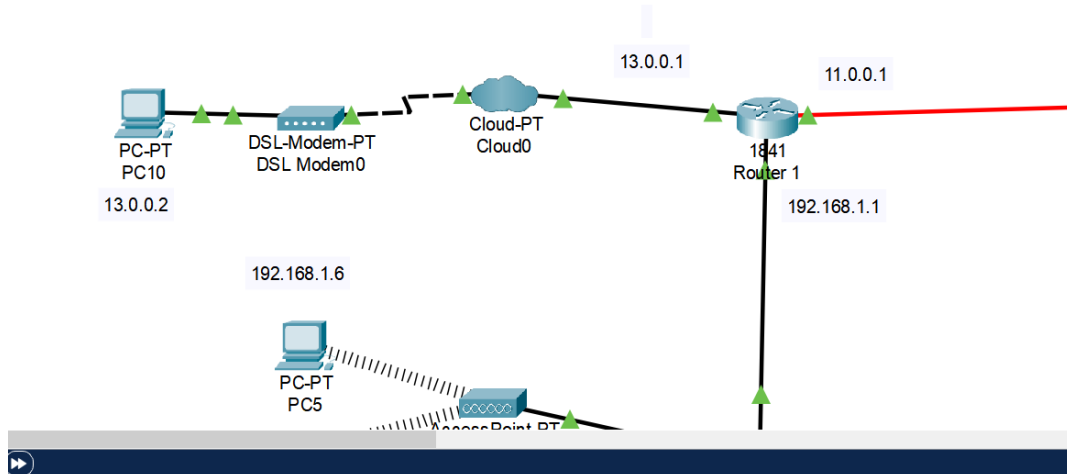


Step 3: to reply just press reply.



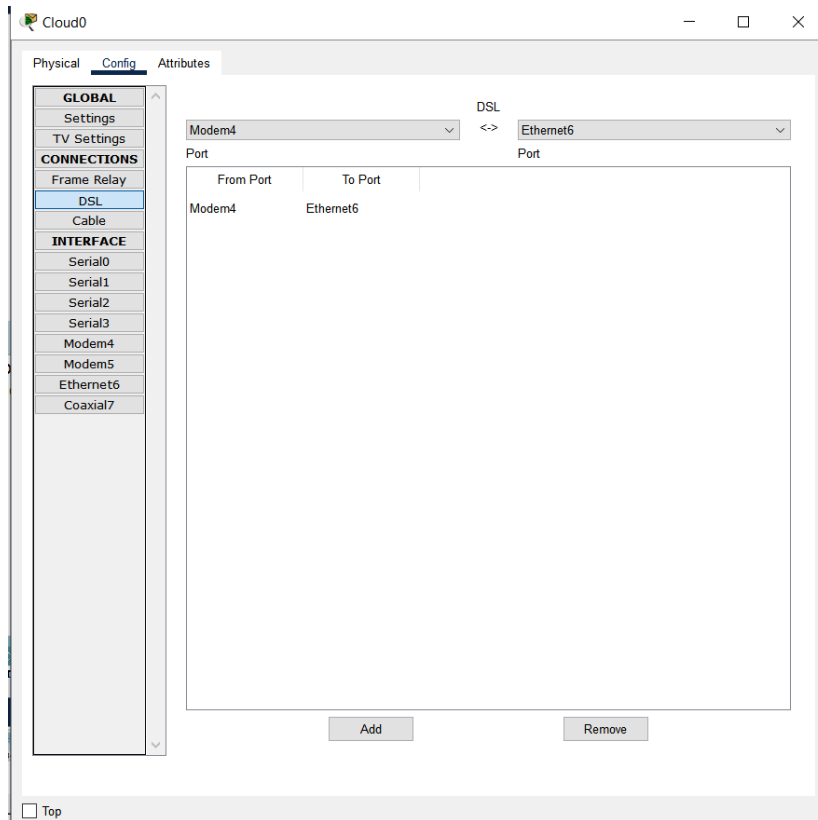
Steps of configuration a modem:

Step1: add the cloud, the modem, the pc and connect it with the router through a Cable.

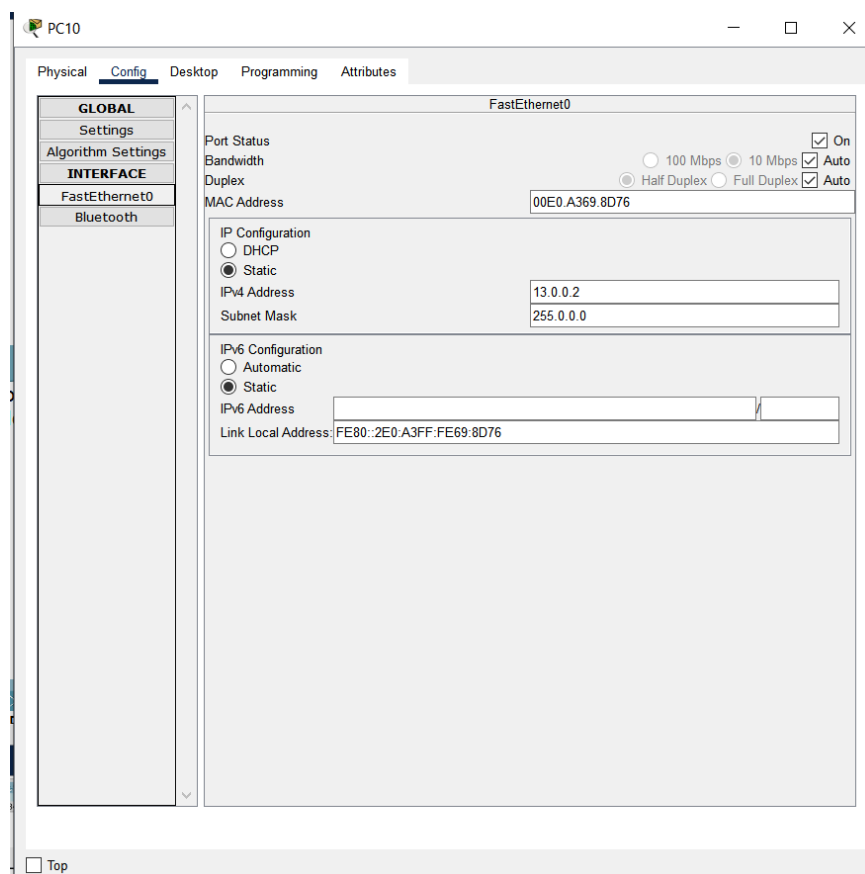


Step 2: go to the router then enter the ip address through F0/1.

step 3: go to the cloud- DSL- choose modem 4 and ethernet then press add

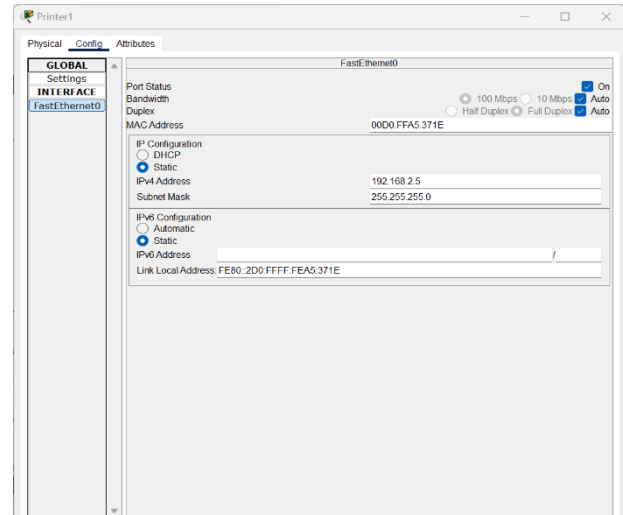
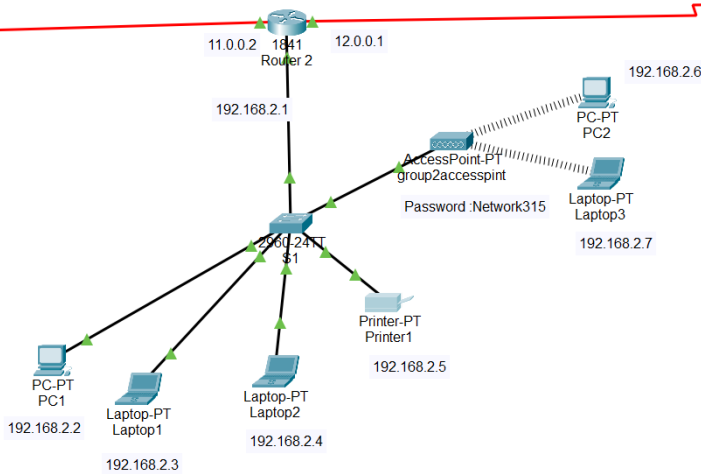


step 4: configure the pc and press on.

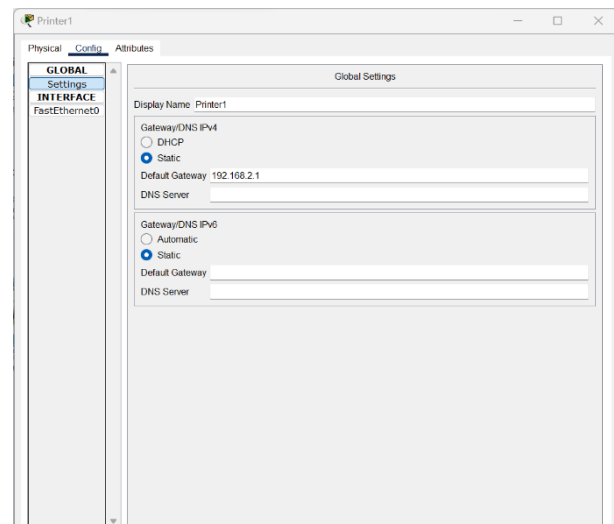
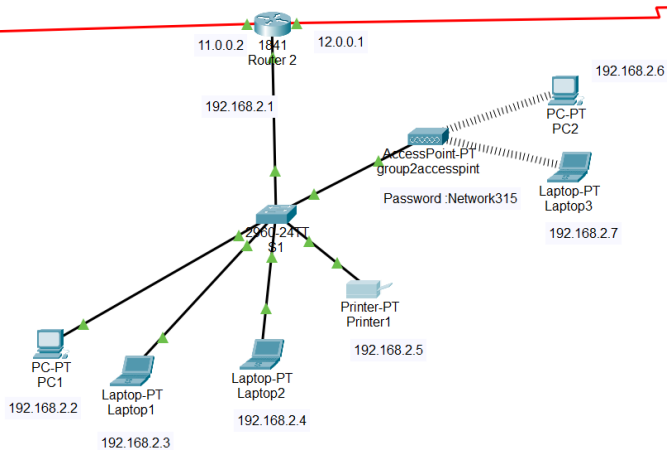


Steps of Configuration Printer

1- Assign the IP address and subnet mask:

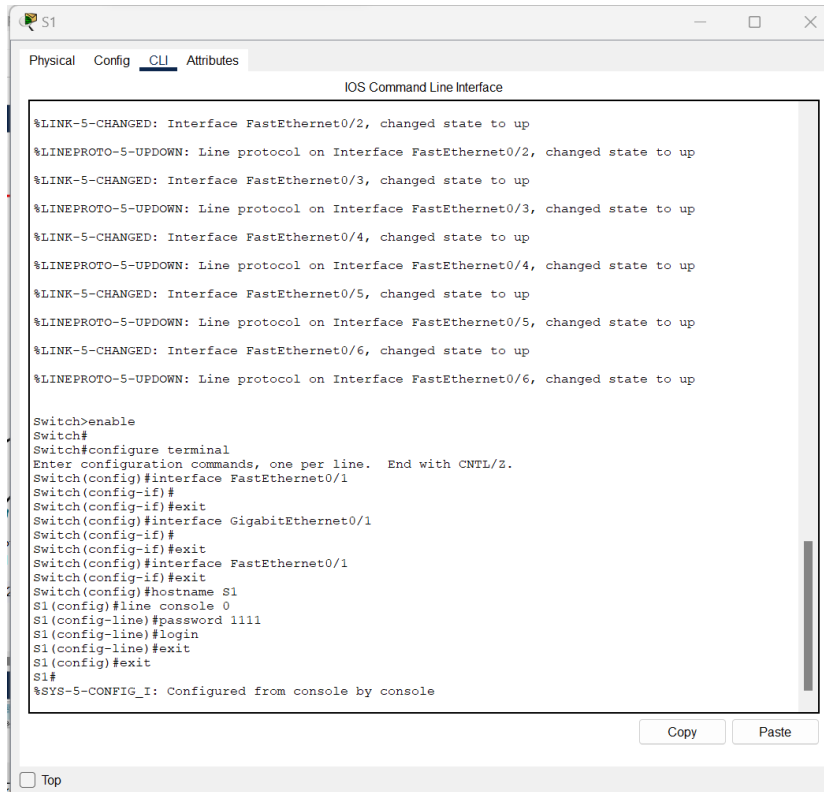


2- Assign the default gateway:



Switch & Router configuration:

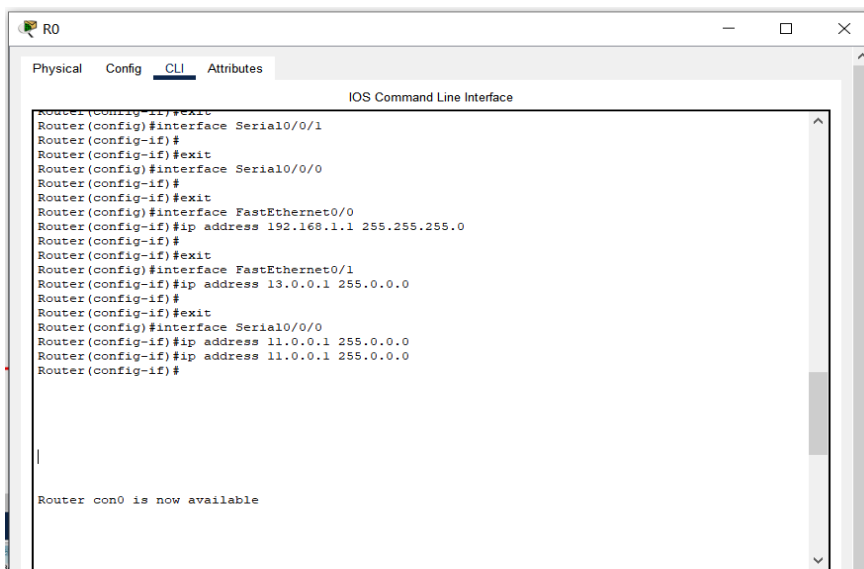
Switch 1 configuration:



```
Switch>enable
Switch#
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface GigabitEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/3
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/4
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/5
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/6
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#hostname S1
S1(config)#line console 0
S1(config-line)#password 1111
S1(config-line)#login
S1(config-line)#exit
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console
```

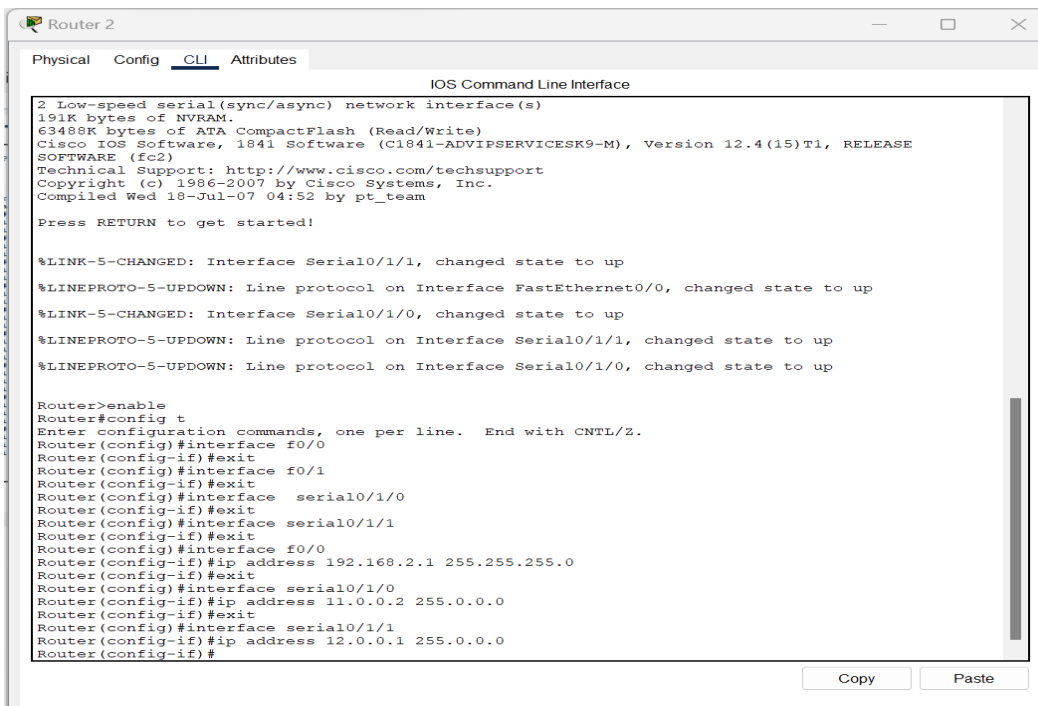
to **configure routers** we need just to enter the address to the interfaces and add the other routers addresses to the routing table using the closest interface of the next router.

Router1 Configuration:



```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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 FastEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 13.0.0.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 11.0.0.1 255.0.0.0
Router(config-if)#ip address 11.0.0.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router#
Router con0 is now available
```

Router2 Configuration:

A screenshot of a network configuration window titled "Router 2". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main area is titled "IOS Command Line Interface" and contains a pre-configured script. The script starts with system information, followed by status messages for interfaces Serial0/1/1 and FastEthernet0/0. It then enters a configuration mode where several interfaces (f0/0, f0/1, serial0/1/0, serial0/1/1) are configured with specific IP addresses. At the bottom, there are "Copy" and "Paste" buttons.

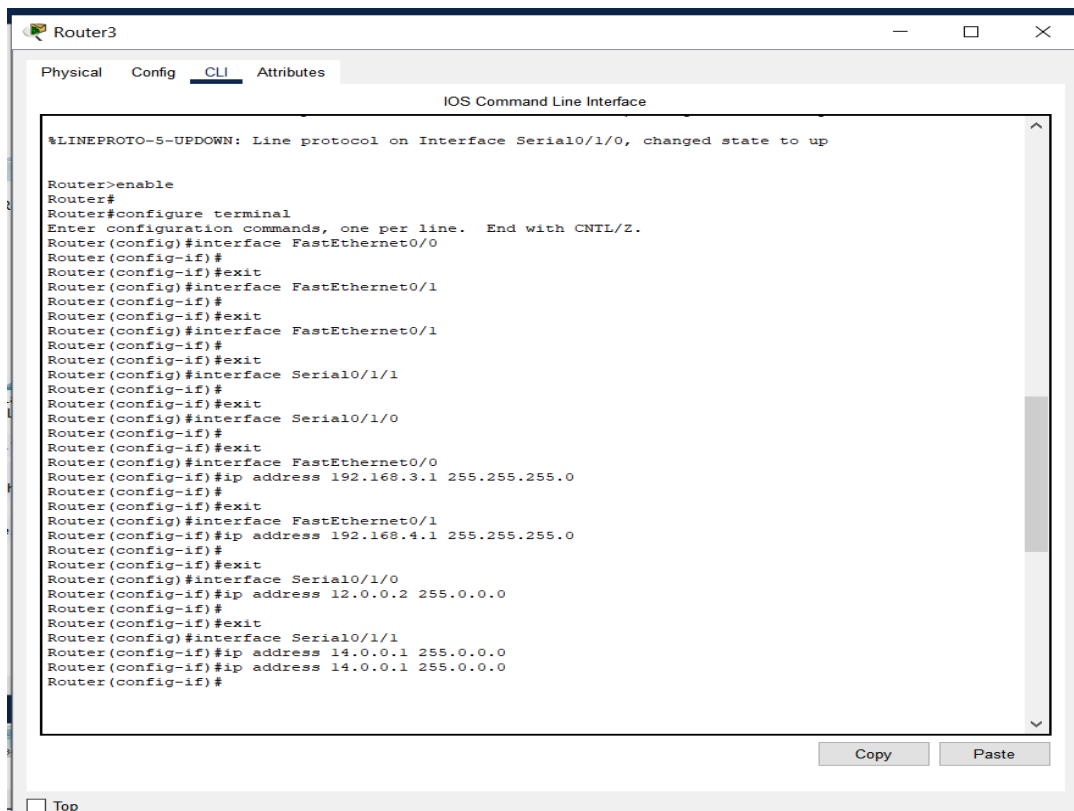
```
2 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1, RELEASE
SOFTWARE (fc2)
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Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface f0/0
Router(config-if)#exit
Router(config)#interface f0/1
Router(config-if)#exit
Router(config)#interface serial0/1/0
Router(config-if)#exit
Router(config)#interface serial0/1/1
Router(config-if)#exit
Router(config)#interface f0/0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface serial0/1/0
Router(config-if)#ip address 11.0.0.2 255.0.0.0
Router(config-if)#exit
Router(config)#interface serial0/1/1
Router(config-if)#ip address 12.0.0.1 255.0.0.0
Router(config-if)#
```

Router3 Configuration:

A screenshot of a network configuration window titled "Router3". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main area is titled "IOS Command Line Interface" and contains a configuration script. The script starts with a status message for Serial0/1/0, then enters a configuration mode where multiple interfaces (FastEthernet0/0, FastEthernet0/1, Serial0/1/1, Serial0/1/0) are configured with specific IP addresses. At the bottom, there are "Copy" and "Paste" buttons.

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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 FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.4.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 12.0.0.2 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 14.0.0.1 255.0.0.0
Router(config-if)#ip address 14.0.0.1 255.0.0.0
Router(config-if)#
```

Router4 Configuration:

Router4

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
ip address 192.168.5.1 255.255.255.0
Router(config-if)#ip address 192.168.5.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#ip address 14.0.0.2 255.0.0.0
Router(config-if)#ip address 14.0.0.2 255.0.0.0
Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
en
Router#hostname Router4
^
% Invalid input detected at '^' marker.

Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Router4
Router4(config)#exit
```

Copy Paste

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Router4

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    11.0.0.0/8 [1/0] via 14.0.0.1
S    12.0.0.0/8 [1/0] via 14.0.0.1
S    13.0.0.0/8 [1/0] via 14.0.0.1
     14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C     14.0.0.0/8 is directly connected, Serial0/2/0
L     14.0.0.2/32 is directly connected, Serial0/2/0
S    192.168.1.0/24 [1/0] via 14.0.0.1
S    192.168.2.0/24 [1/0] via 14.0.0.1
S    192.168.3.0/24 [1/0] via 14.0.0.1
S    192.168.4.0/24 [1/0] via 14.0.0.1
C     192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C     192.168.5.0/24 is directly connected, FastEthernet0/0.5
L     192.168.5.1/32 is directly connected, FastEthernet0/0.5
     192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks
C     192.168.6.0/24 is directly connected, FastEthernet0/0.6
L     192.168.6.1/32 is directly connected, FastEthernet0/0.6

Router#
```

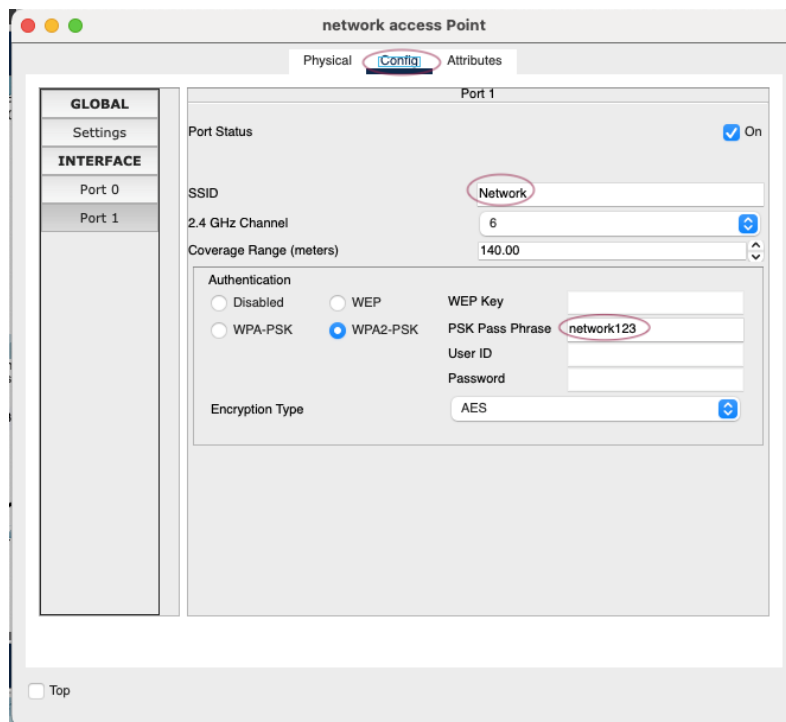
Copy Paste

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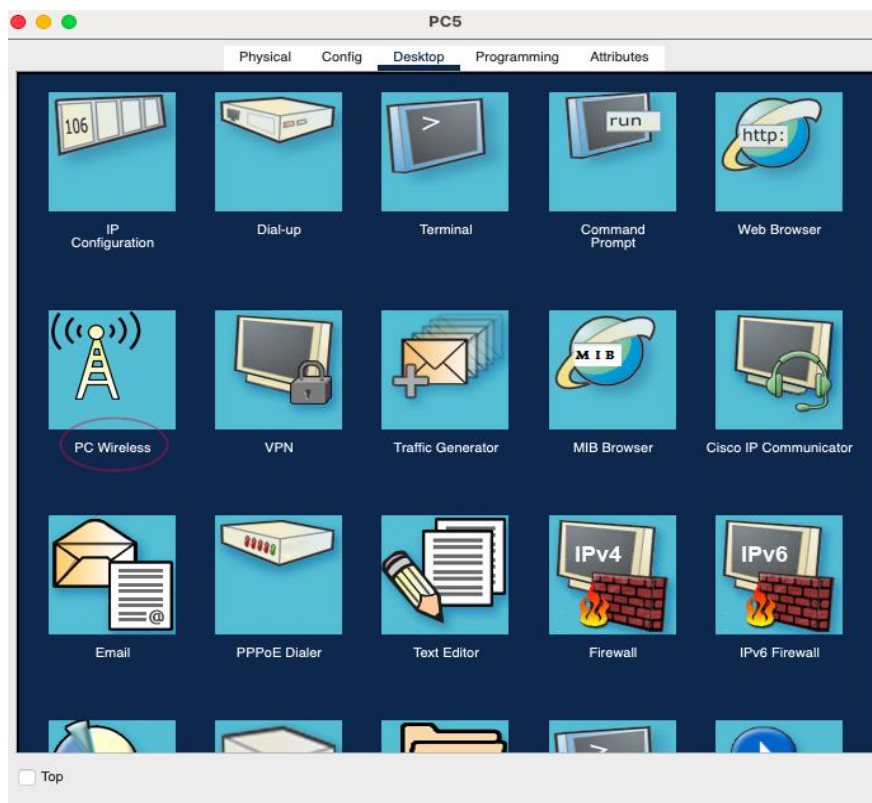
Access Point Configuration:

1- Assign SSID name and its password.

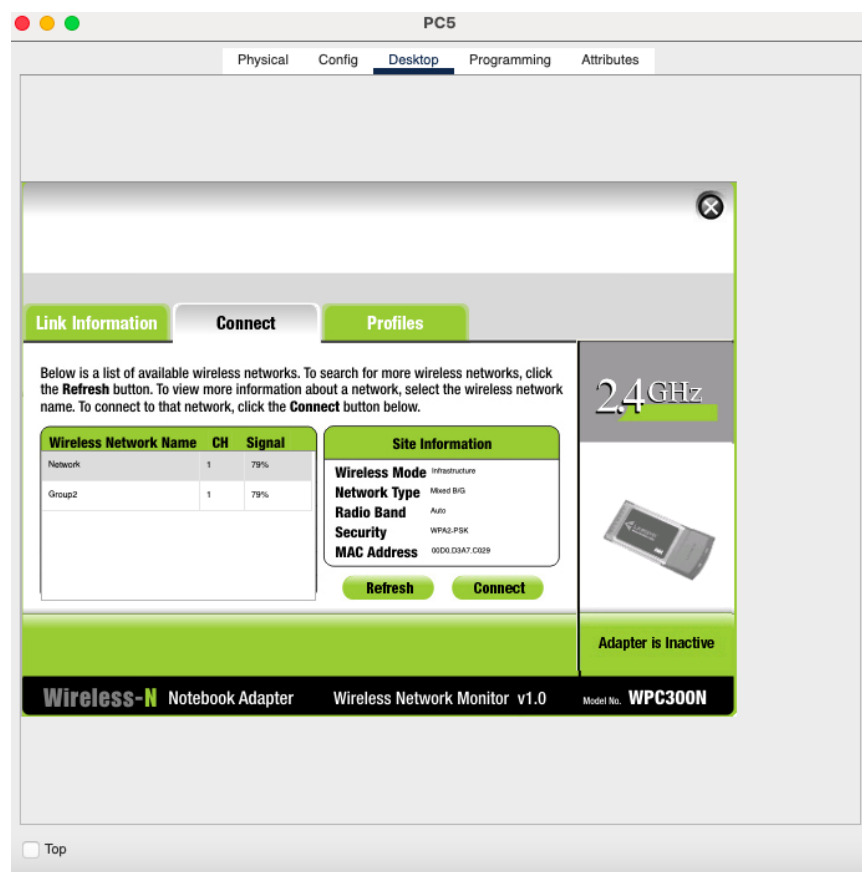
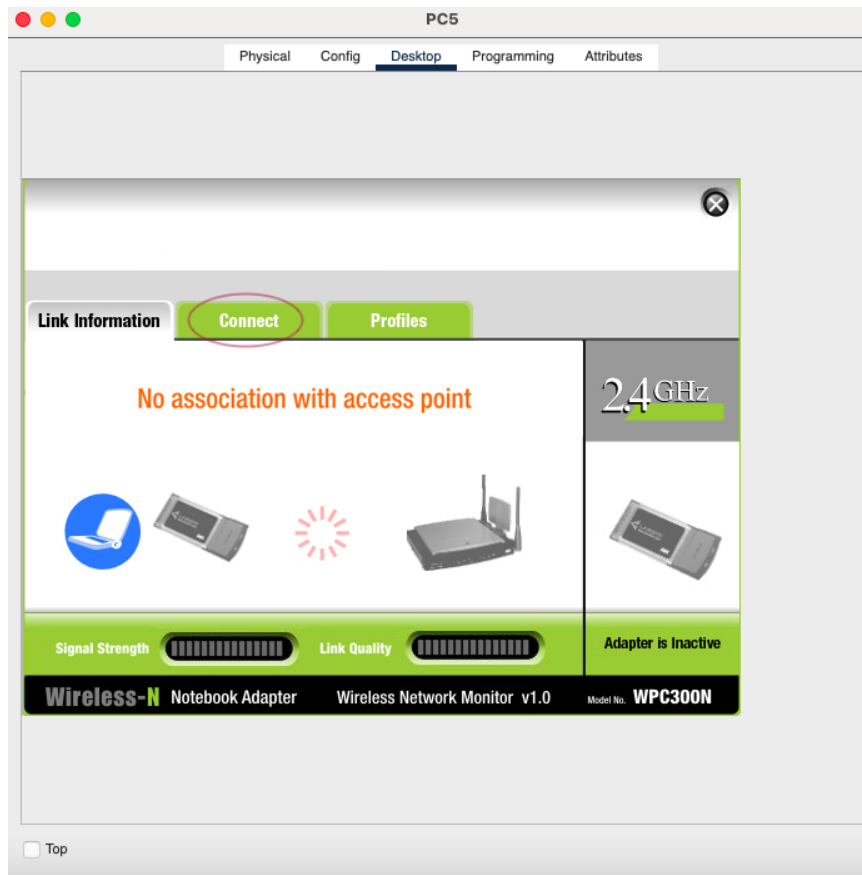
“WPA2-PSK” is a system of encryption used to authenticate users on wireless LAN.



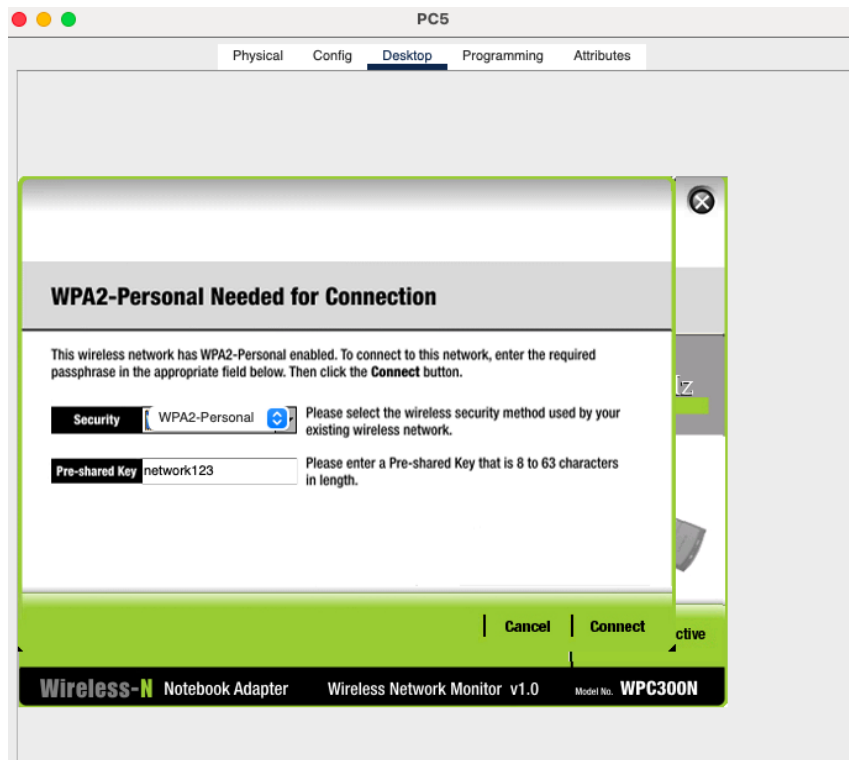
2- Connecting PC 5 & PC 7 to the Access Point 1 (Network)



3- Click Connect then choose wireless network name:



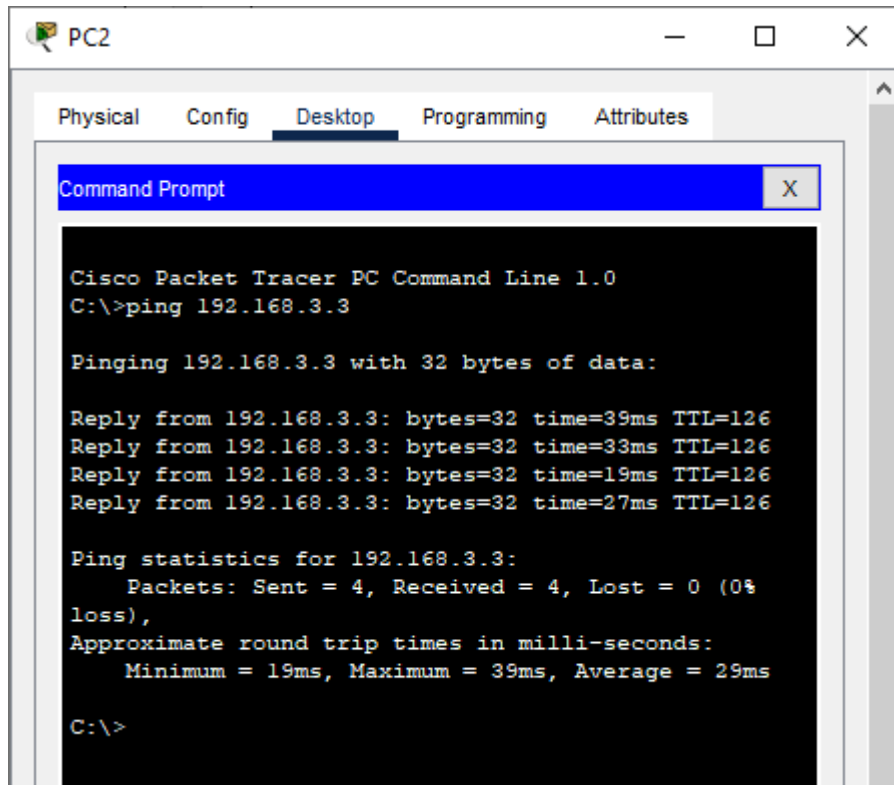
4- Enter the password then click connect:



Note: Same steps applied for configuring Access point 2 (group2) and connecting PC2 & Laptop3.

Verification part

Verifying configuration with ping command from PC2 to PC3:



The screenshot shows the 'Desktop' tab of PC2 in Cisco Packet Tracer. A 'Command Prompt' window is open, displaying the output of the 'ping 192.168.3.3' command. The output shows four successful replies with varying times and a 0% loss rate.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.3

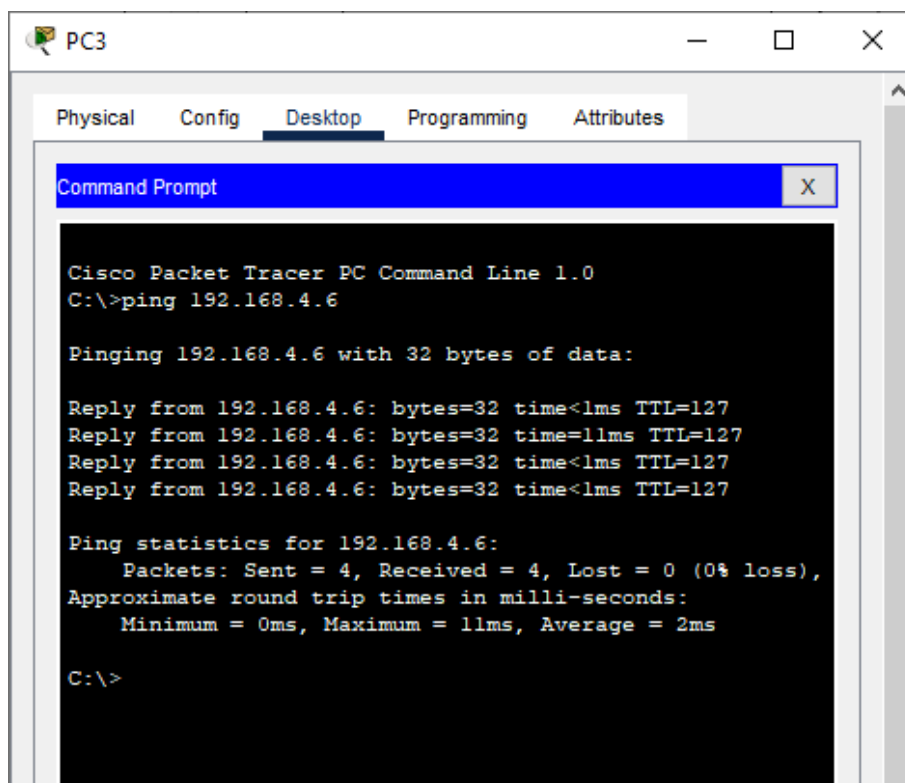
Pinging 192.168.3.3 with 32 bytes of data:

Reply from 192.168.3.3: bytes=32 time=39ms TTL=126
Reply from 192.168.3.3: bytes=32 time=33ms TTL=126
Reply from 192.168.3.3: bytes=32 time=19ms TTL=126
Reply from 192.168.3.3: bytes=32 time=27ms TTL=126

Ping statistics for 192.168.3.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
loss),
    Approximate round trip times in milli-seconds:
        Minimum = 19ms, Maximum = 39ms, Average = 29ms

C:\>
```

Verifying configuration with ping command from PC3 to Laptop6:



The screenshot shows the 'Desktop' tab of PC3 in Cisco Packet Tracer. A 'Command Prompt' window is open, displaying the output of the 'ping 192.168.4.6' command. The output shows four successful replies with very low times and a 0% loss rate.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.4.6

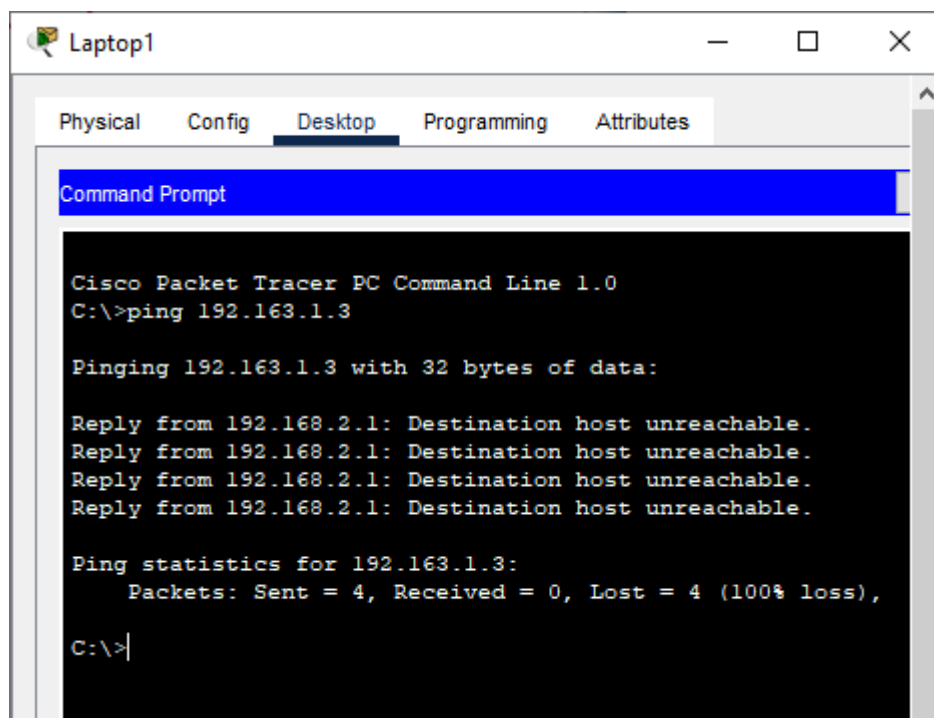
Pinging 192.168.4.6 with 32 bytes of data:

Reply from 192.168.4.6: bytes=32 time<1ms TTL=127
Reply from 192.168.4.6: bytes=32 time=11ms TTL=127
Reply from 192.168.4.6: bytes=32 time<1ms TTL=127
Reply from 192.168.4.6: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.4.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 2ms

C:\>
```

Verifying configuration with ping command from Laptop1 to Printer0:



The screenshot shows a window titled "Laptop1" with a "Desktop" tab selected. Inside the window is a "Command Prompt" window. The text in the Command Prompt is as follows:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.163.1.3

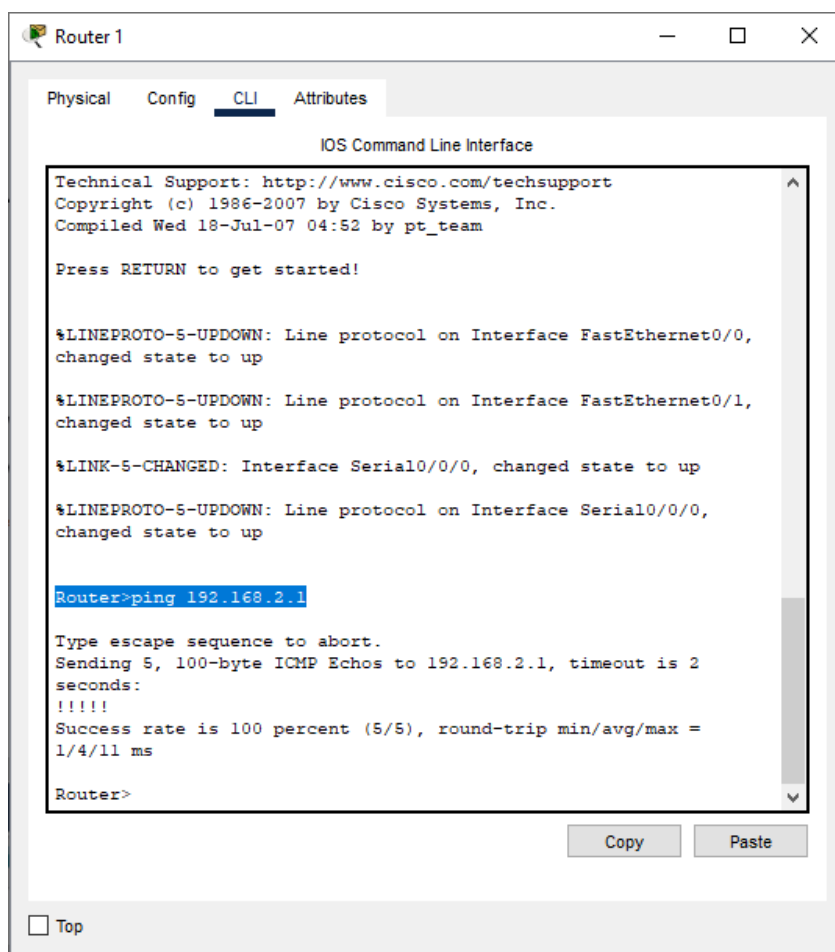
Pinging 192.163.1.3 with 32 bytes of data:

Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.

Ping statistics for 192.163.1.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Verifying configuration with CLI from Router1 to Router2:



The screenshot shows a window titled "Router 1" with a "CLI" tab selected. The text in the CLI window is as follows:

```
IOS Command Line Interface

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Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
%LINK-5-CHANGED: Interface Serial10/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial10/0/0,
changed state to up

Router>ping 192.168.2.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2
seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
1/4/11 ms

Router>
```

Conclusion:

To sum up, after we create, set up and configure the LAN-LAN network including VOIP, switches, routers, and so many other devices, now there is direct communication between every employee in the office building. So, any two network sites can successfully complete a connection test, allowing us to ultimately achieve our objectives and intended outcomes. The foundation of any successful business is a computer network .

Glossary

IP Address (Internet Protocol Address):	A unique numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication.
Routing Table:	A data table stored in a router or a networked computer that lists the routes to particular network destinations.
Router:	A networking device that forwards data packets between computer networks. Routers operate at the network layer of the OSI model and use routing tables to determine the best path for forwarding packets.
Switch:	A network device that operates at the data link layer (Layer 2) of the OSI model. Switches use MAC addresses to forward data within a local area network (LAN). They are more efficient than traditional hubs in managing network traffic.
VoIP (Voice over Internet Protocol):	A technology that enables the transmission of voice and multimedia content over the Internet, typically used for making phone calls.
Wireless Access Point (WAP):	A wireless access point is a device that allows wireless communication devices, such as laptops, smartphones, or tablets, to connect to a wired network using Wi-Fi. It acts as a bridge between the wired and wireless network
SSID	stands for service set identifier. It's a technical way to refer to a network's name. When you see a list of available Wi-Fi hotspots on your device, you're looking at a list of SSIDs. They can be up to 32 characters long.