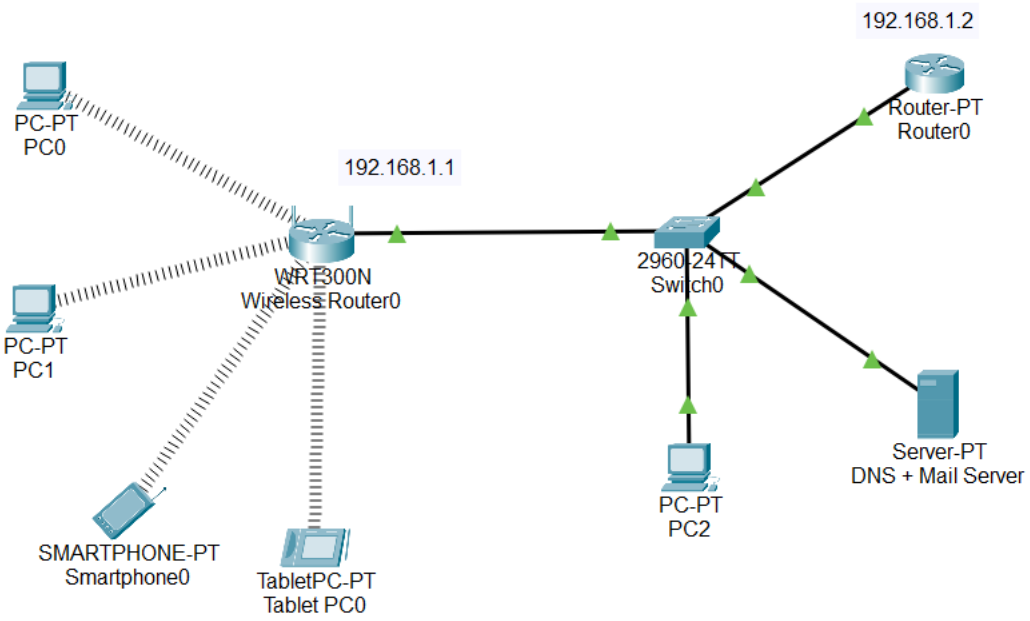
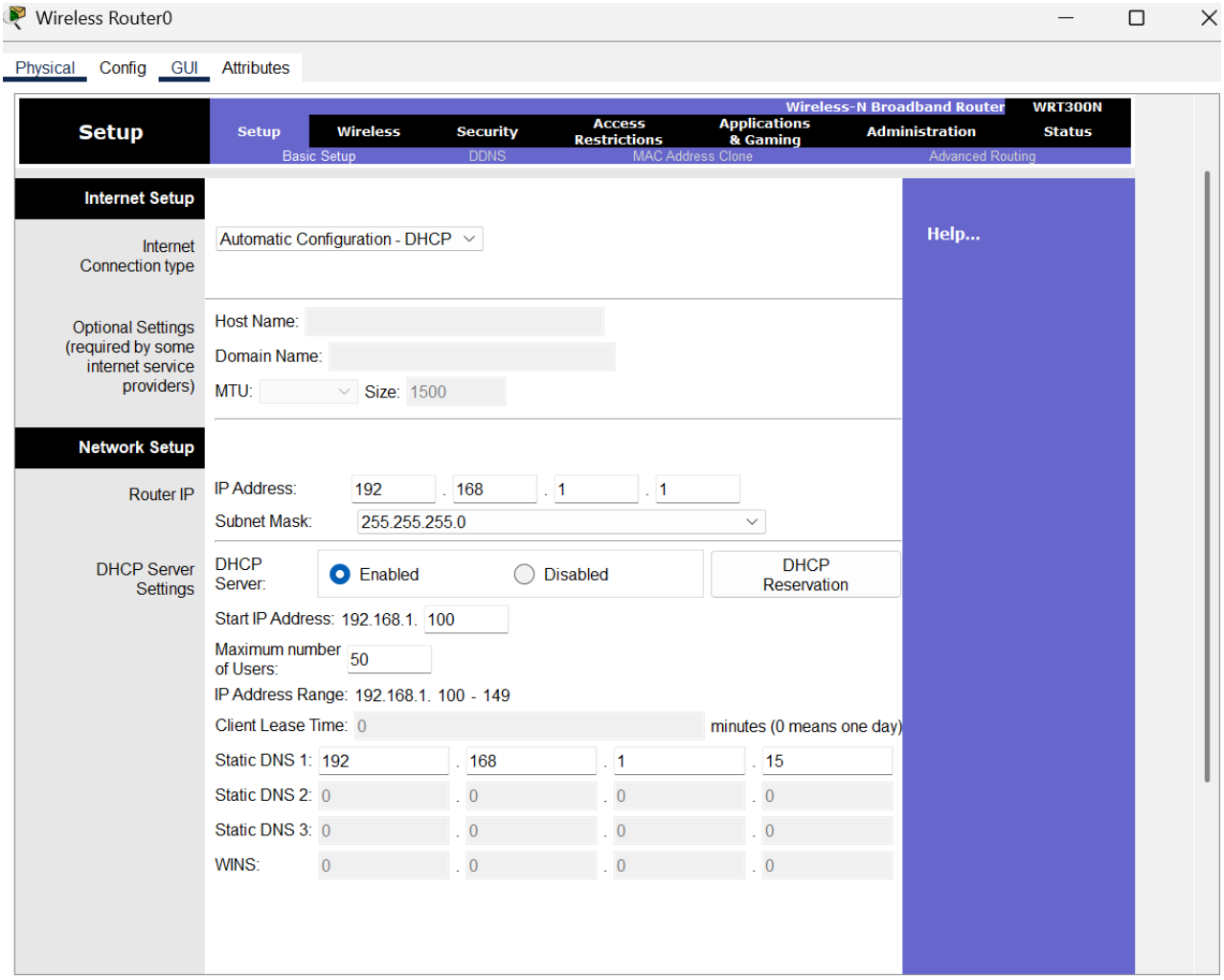
CN LAB 8

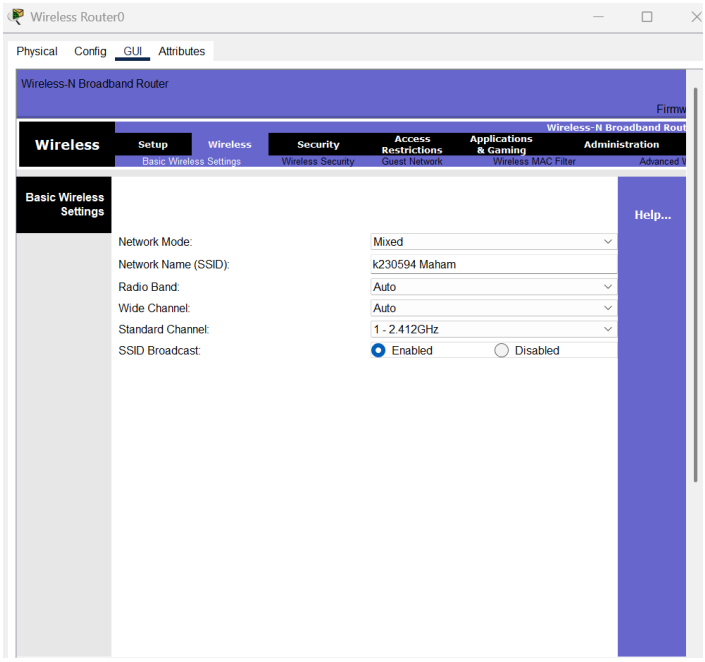
23K-0594

Task 1:

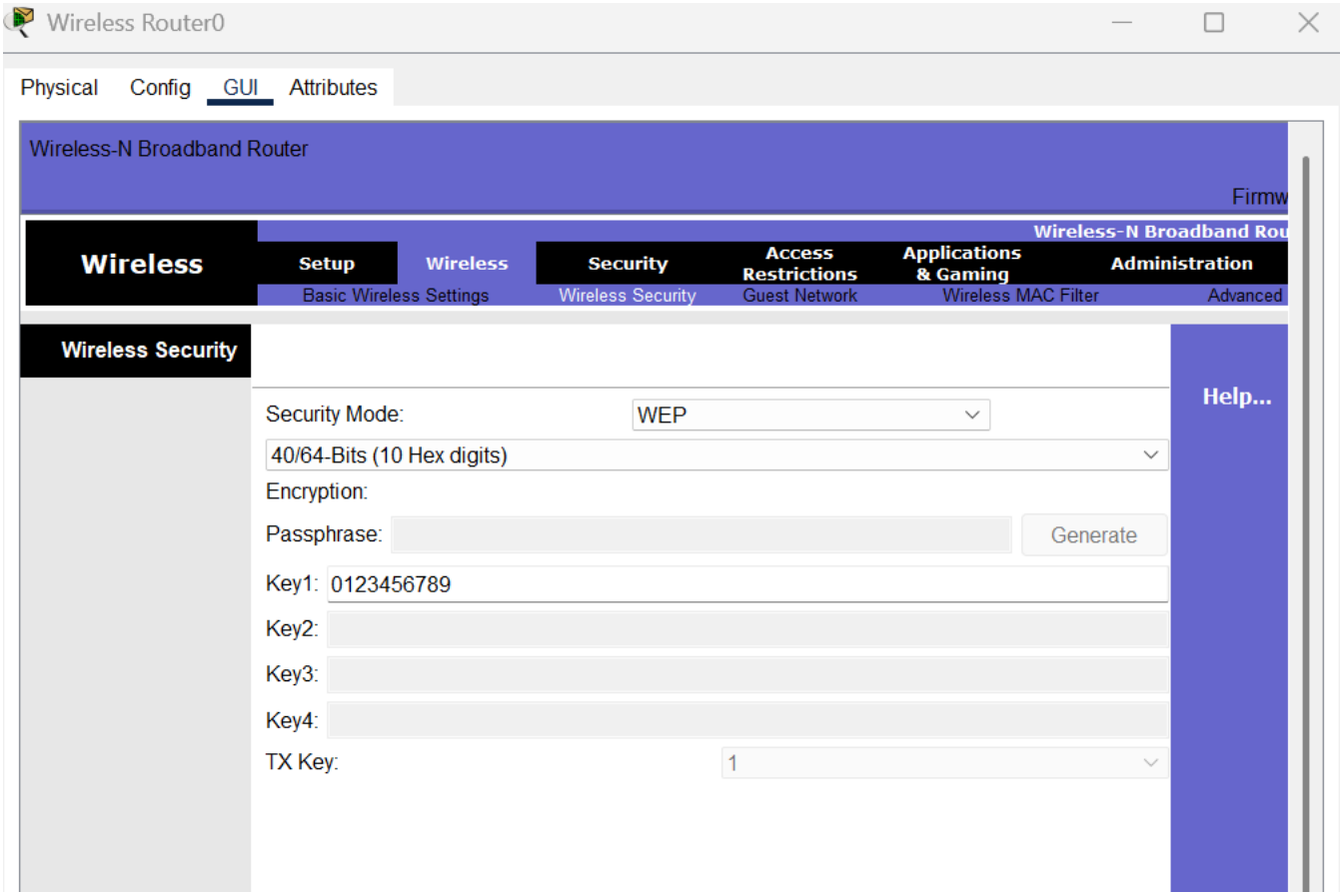


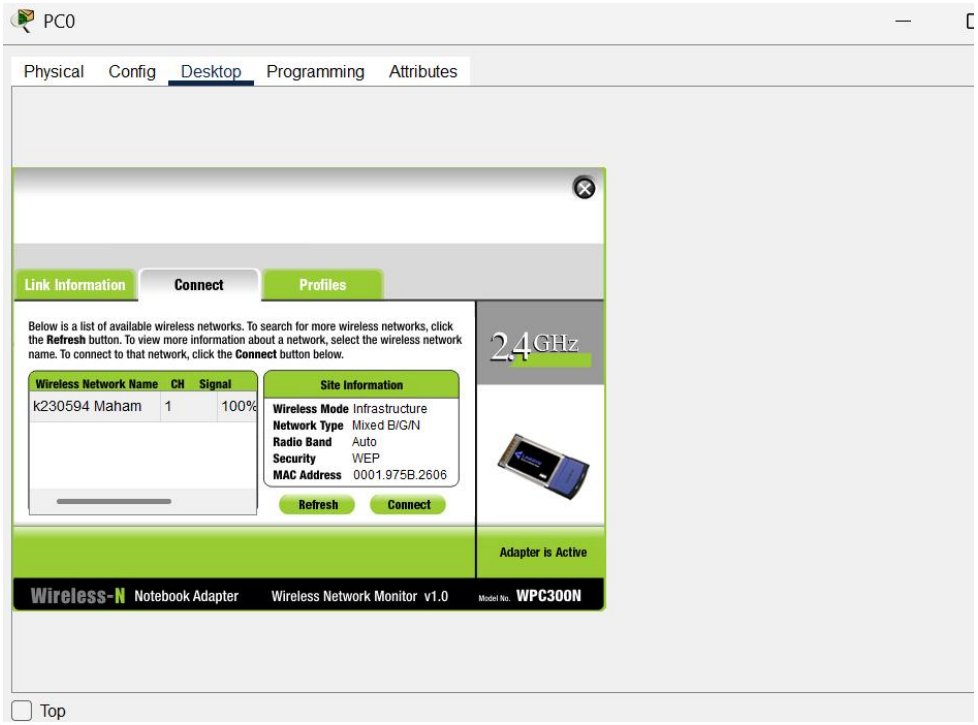


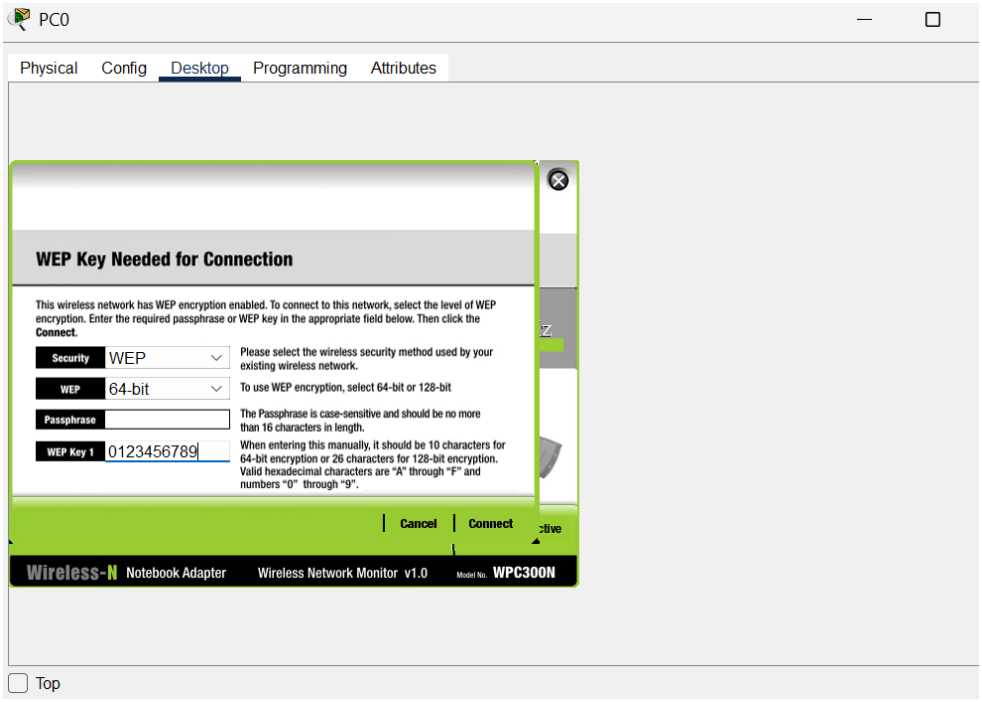
1. Changing the Network of Wireless Router to my StudentID+Name.



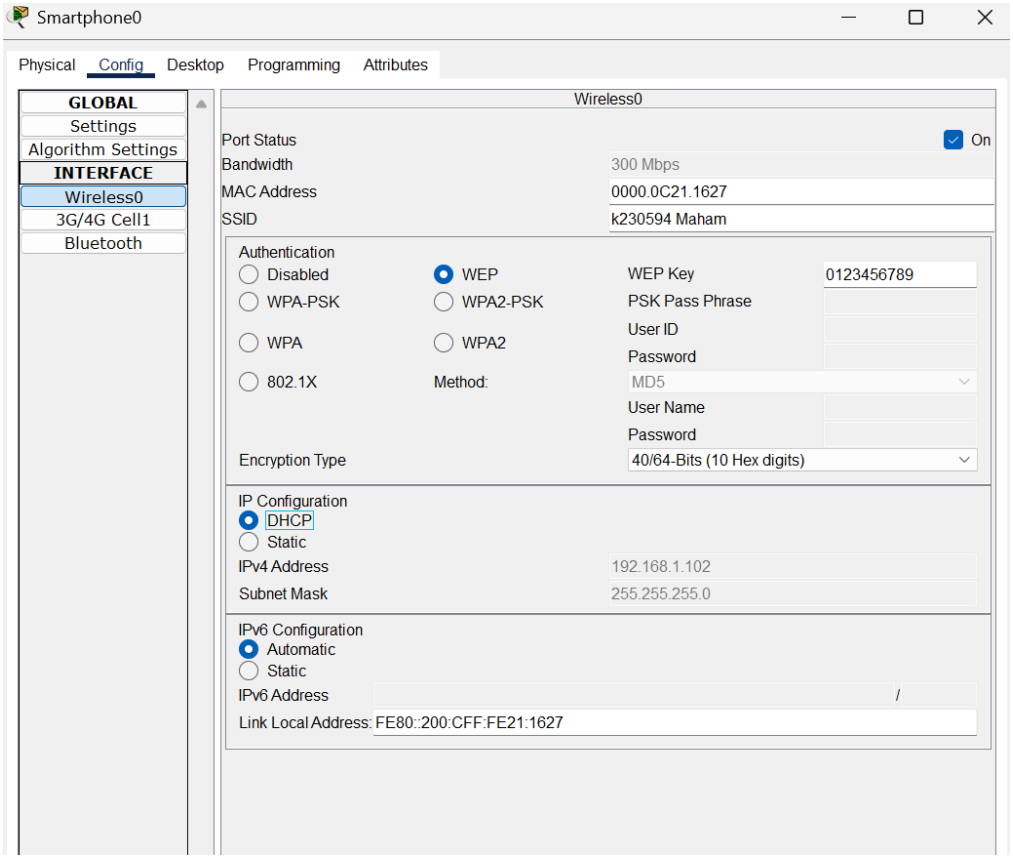
2. Set the key while connecting the wireless router with end devices.

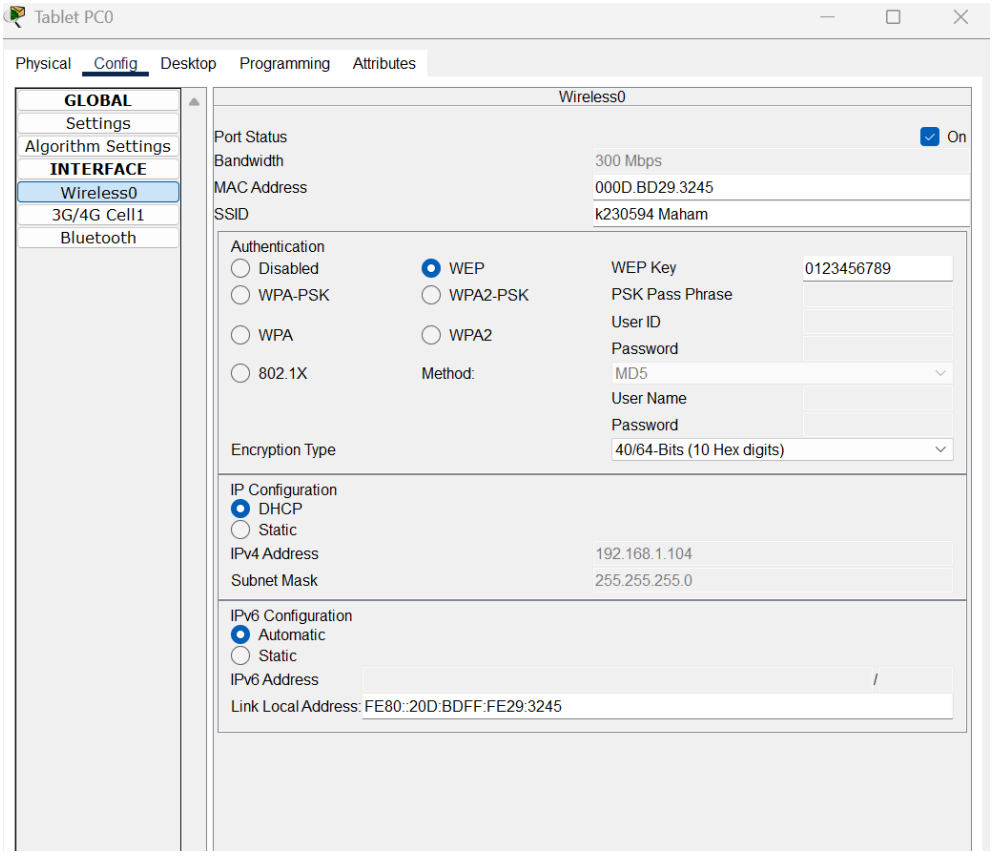


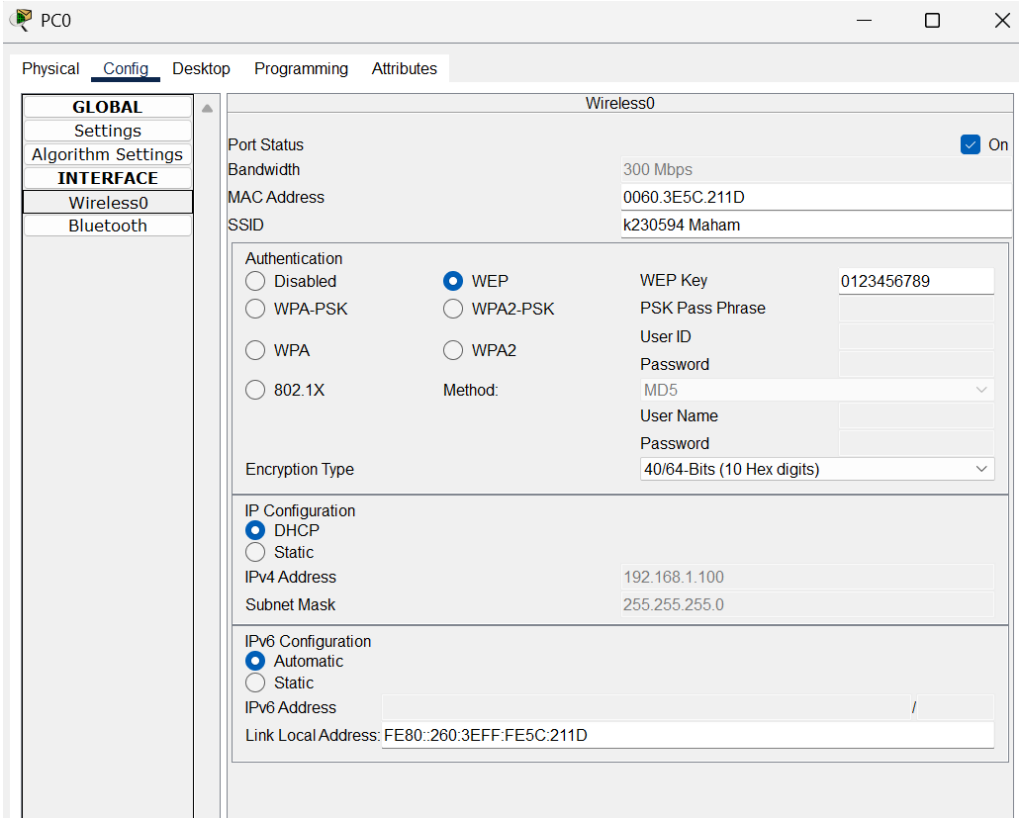



PC0
Physical
Config
Desktop
Programming
Attributes
WEP Key Needed for Connection
This wireless network has WEP encryption enabled. To connect to this network, select the level of WEP encryption. Enter the required passphrase or WEP key in the appropriate field below. Then click the Connect.
Security
WEP
Please select the wireless security method used by your existing wireless network.
WEP
64-bit
To use WEP encryption, select 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 16 characters in length.
WEP Key 1
0123456789
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
Cancel
Connect
Wireless-N Notebook Adapter
Wireless Network Monitor v1.0
Model No. WPC300N
Top

PC0
Physical
Config
Desktop
Programming
Attributes
Link Information
Connect
Profiles
More Information
Infrastructure Mode
2.4GHz
You have successfully connected to the access point
Signal Strength
Link Quality
Adapter is Active
Wireless-N Notebook Adapter
Wireless Network Monitor v1.0
Model No. WPC300N

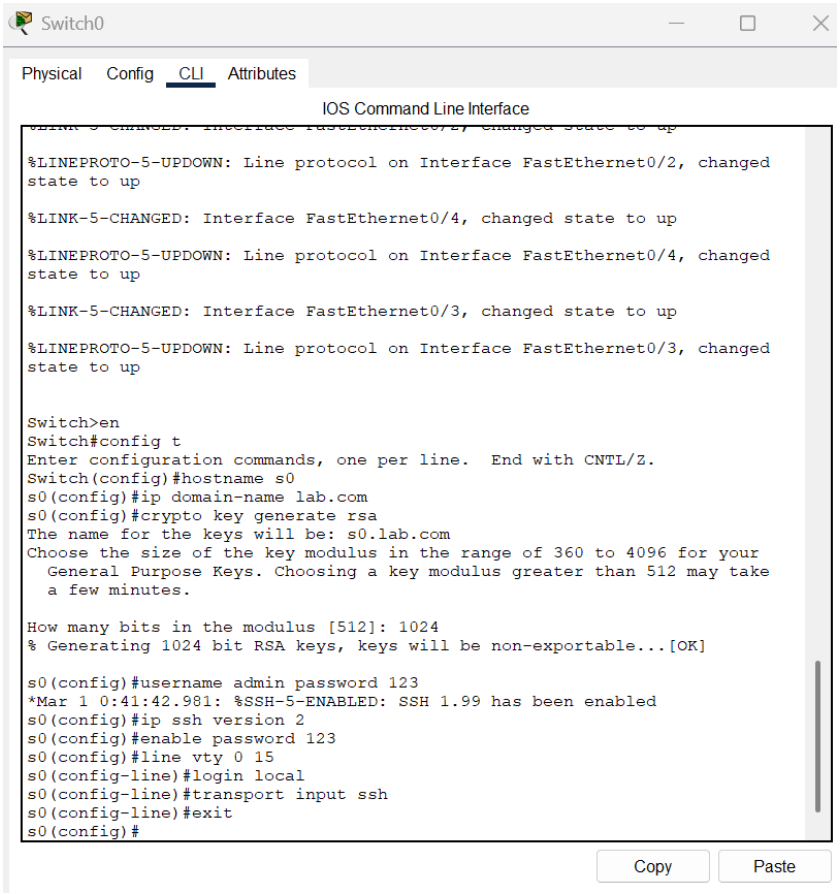

Smartphone0
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
Wireless0
3G/4G Cell1
Bluetooth
Wireless0
Port Status
On
Bandwidth
300 Mbps
MAC Address
0000.0C21.1627
SSID
k230594 Maham
Authentication
Disabled
WEP
WPA-PSK
WPA2-PSK
WPA
WPA2
802.1X
Method:
MD5
WEP Key
0123456789
PSK Pass Phrase
User ID
Password
User Name
Password
Encryption Type
40/64-Bits (10 Hex digits)
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.102
Subnet Mask
255.255.255.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address:
FE80::200:CFF:FE21:1627


Tablet PC0
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
Wireless0
3G/4G Cell1
Bluetooth
Wireless0
Port Status
On
Bandwidth
300 Mbps
MAC Address
000D.BD29.3245
SSID
k230594 Maham
Authentication
Disabled
WEP
WPA-PSK
WPA2-PSK
WPA
WPA2
802.1X
Method:
MD5
WEP Key
0123456789
PSK Pass Phrase
User ID
Password
User Name
Password
Encryption Type
40/64-Bits (10 Hex digits)
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.104
Subnet Mask
255.255.255.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address:
FE80::20D:BDFF:FE29:3245



Similarly done for all other devices connected to wireless.

3. Perform secure communication on Switch0 and Router0 and check it through PC0.



Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
s0 con0 is now available



Press RETURN to get started.









s0>en
Password:
s0#config t
Enter configuration commands, one per line.  End with CNTL/Z.
s0(config)#int vlan 1
s0(config-if)#ip address 192.168.1.4 255.255.255.0
s0(config-if)#no shut

s0(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
```

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>en
Router#hostname r1
               ^
% Invalid input detected at '^' marker.

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname r1
r1(config)#ip domain-name lab
r1(config)#crypto key generate rsa
The name for the keys will be: r1.lab
Choose the size of the key modulus in the range of 360 to 2048 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

r1(config)#username admin password 123
*Mar 1 0:48:55.124: %SSH-5-ENABLED: SSH 1.99 has been enabled
r1(config)#enable password 123
r1(config)#line vty 0 15
r1(config-line)#login local
r1(config-line)#transport input ssh
r1(config-line)#exit
r1(config)#ssh version 2
          ^
% Invalid input detected at '^' marker.

r1(config)#ip ssh version 2
r1(config)#exit
r1#
%SYS-5-CONFIG_I: Configured from console by console
```

Copy Paste

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time=25ms TTL=255
Reply from 192.168.1.4: bytes=32 time=37ms TTL=255
Reply from 192.168.1.4: bytes=32 time=44ms TTL=255
Reply from 192.168.1.4: bytes=32 time=28ms TTL=255

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 25ms, Maximum = 44ms, Average = 33ms

C:\>ssh -l admin 192.168.1.4

Password:



s0>config t
         ^
% Invalid input detected at '^' marker.

s0>en
Password:
s0#config t
Enter configuration commands, one per line.  End with CNTL/Z.
s0(config)#exit
s0#exit

[Connection to 192.168.1.4 closed by foreign host]
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=36ms TTL=255
Reply from 192.168.1.2: bytes=32 time=4ms TTL=255
Reply from 192.168.1.2: bytes=32 time=39ms TTL=255
Reply from 192.168.1.2: bytes=32 time=24ms TTL=255
```

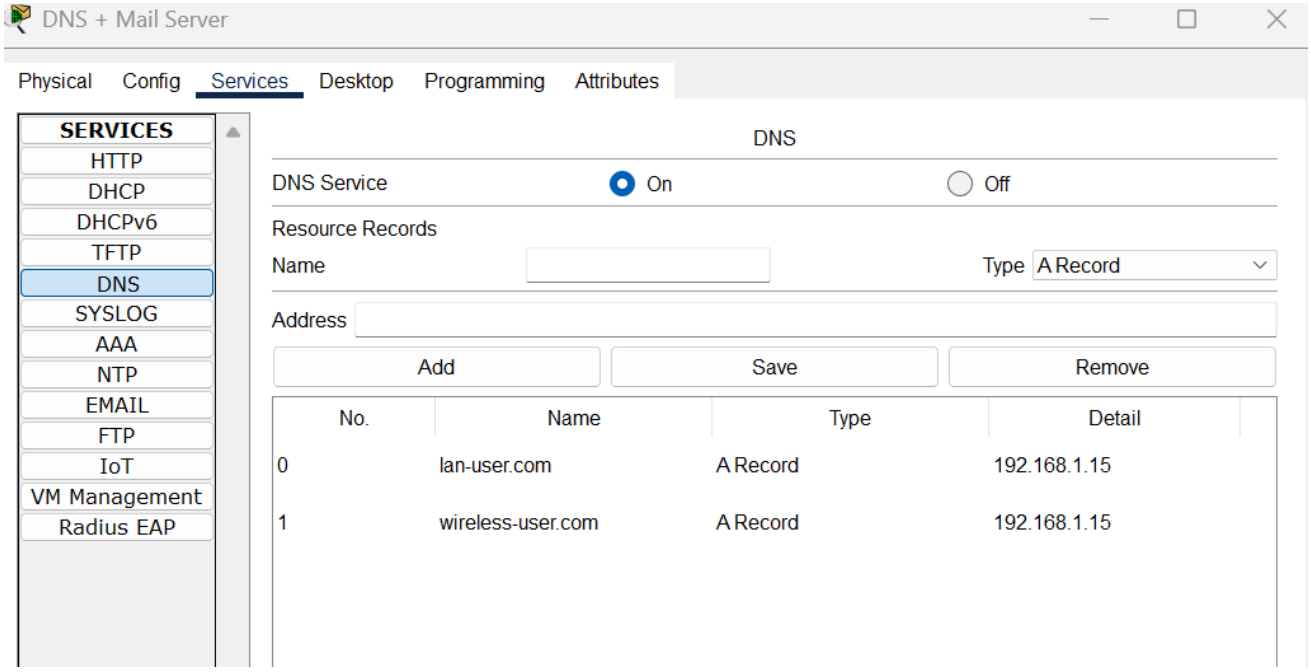
PC0

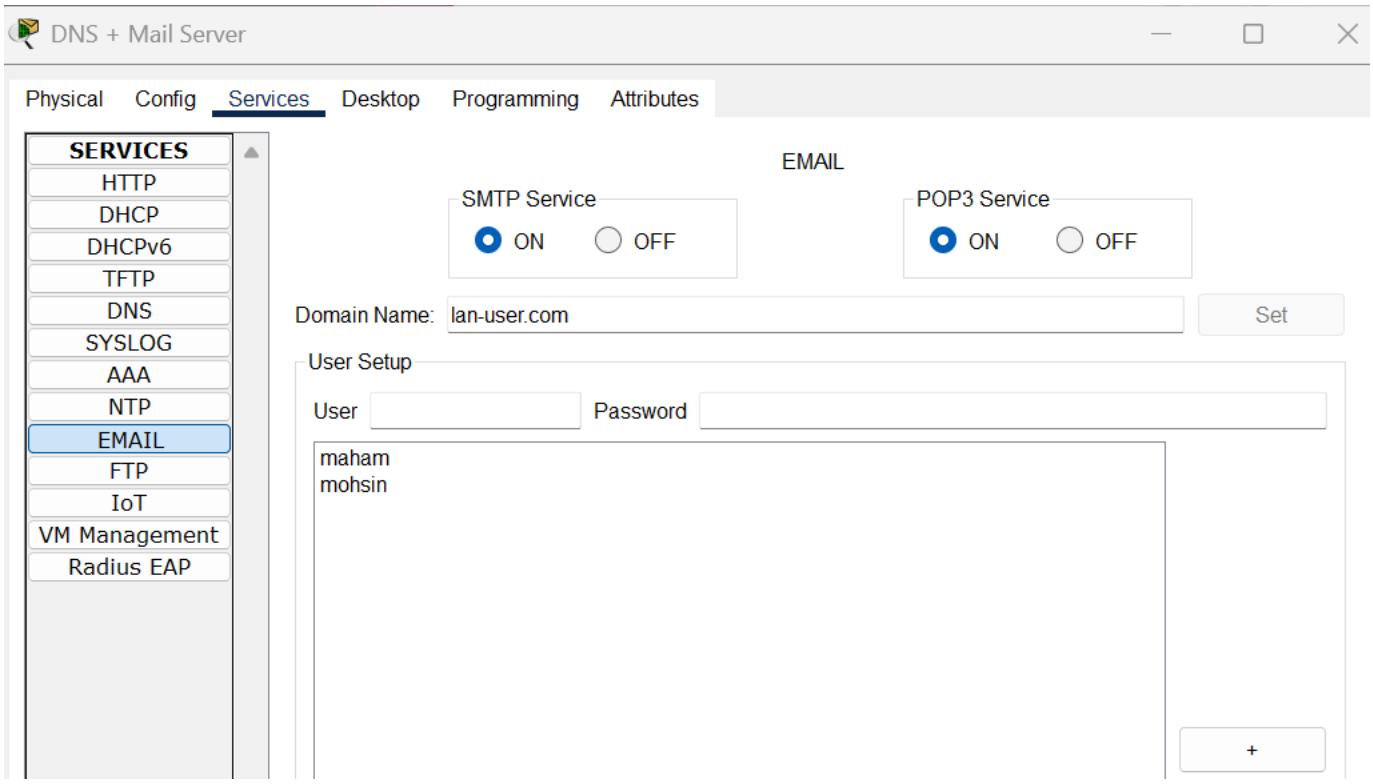
Physical Config Desktop Programming Attributes

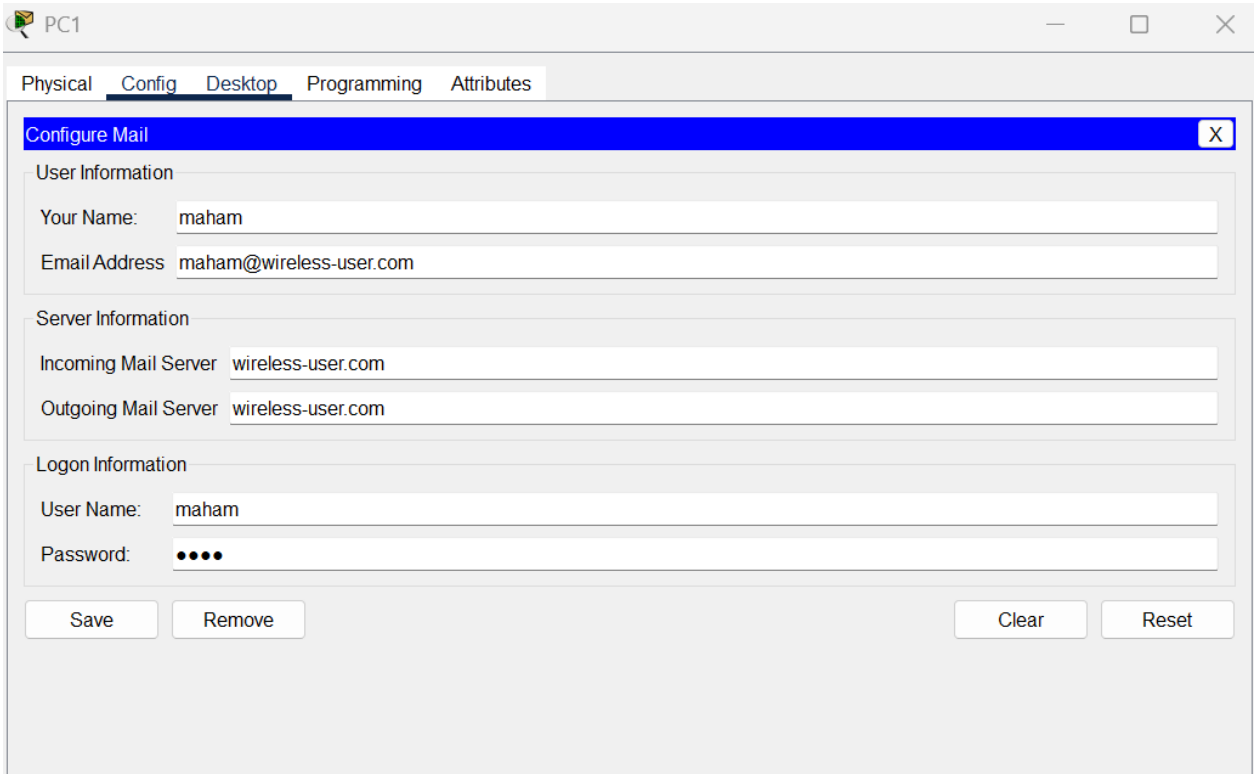
Command Prompt

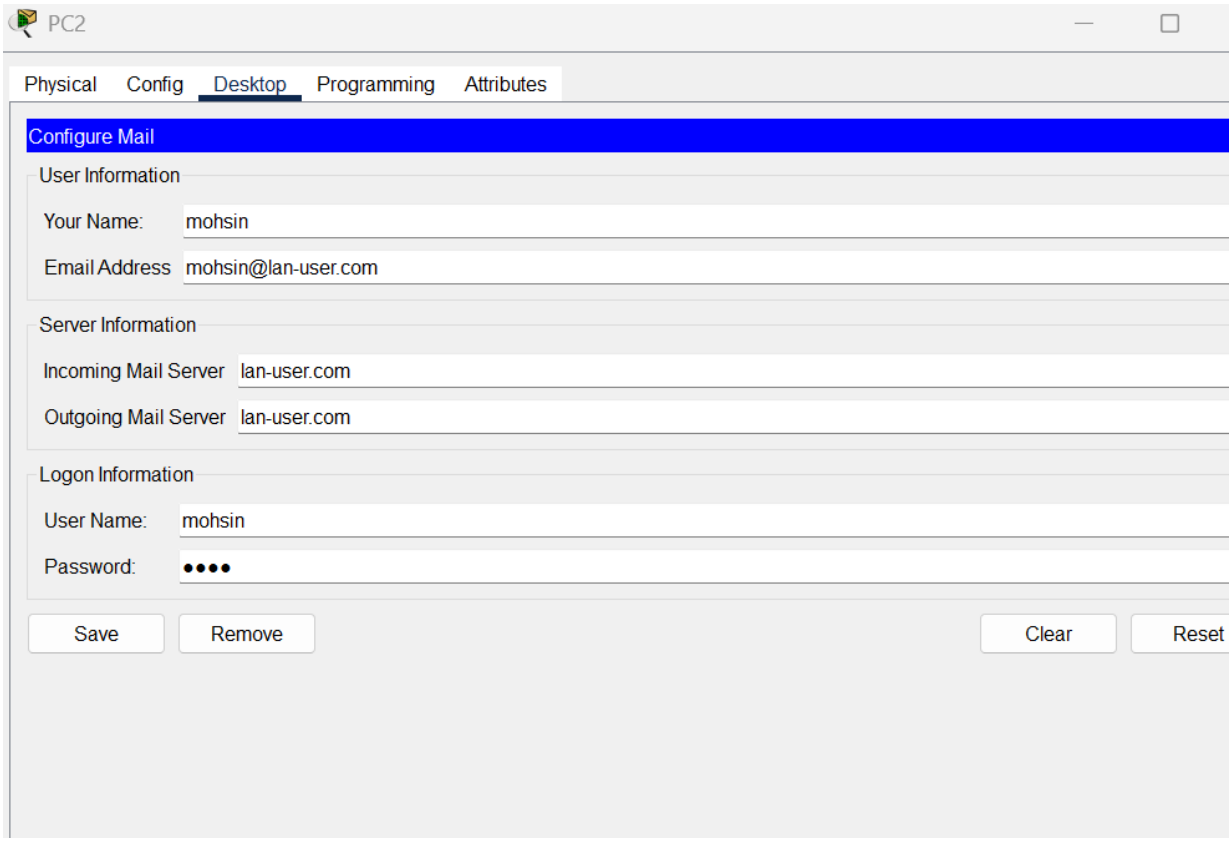
```
Password:



s0>config t
         ^
% Invalid input detected at '^' marker.

s0>en
Password:
s0#config t
Enter configuration commands, one per line.  End with CNTL/Z.
s0(config)#exit
s0#exit

[Connection to 192.168.1.4 closed by foreign host]
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=36ms TTL=255
Reply from 192.168.1.2: bytes=32 time=4ms TTL=255
Reply from 192.168.1.2: bytes=32 time=39ms TTL=255
Reply from 192.168.1.2: bytes=32 time=24ms TTL=255

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 4ms, Maximum = 39ms, Average = 25ms

C:\>ssh -l admin 192.168.1.2

Password:



r1>en
Password:
r1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
r1(config)#
```

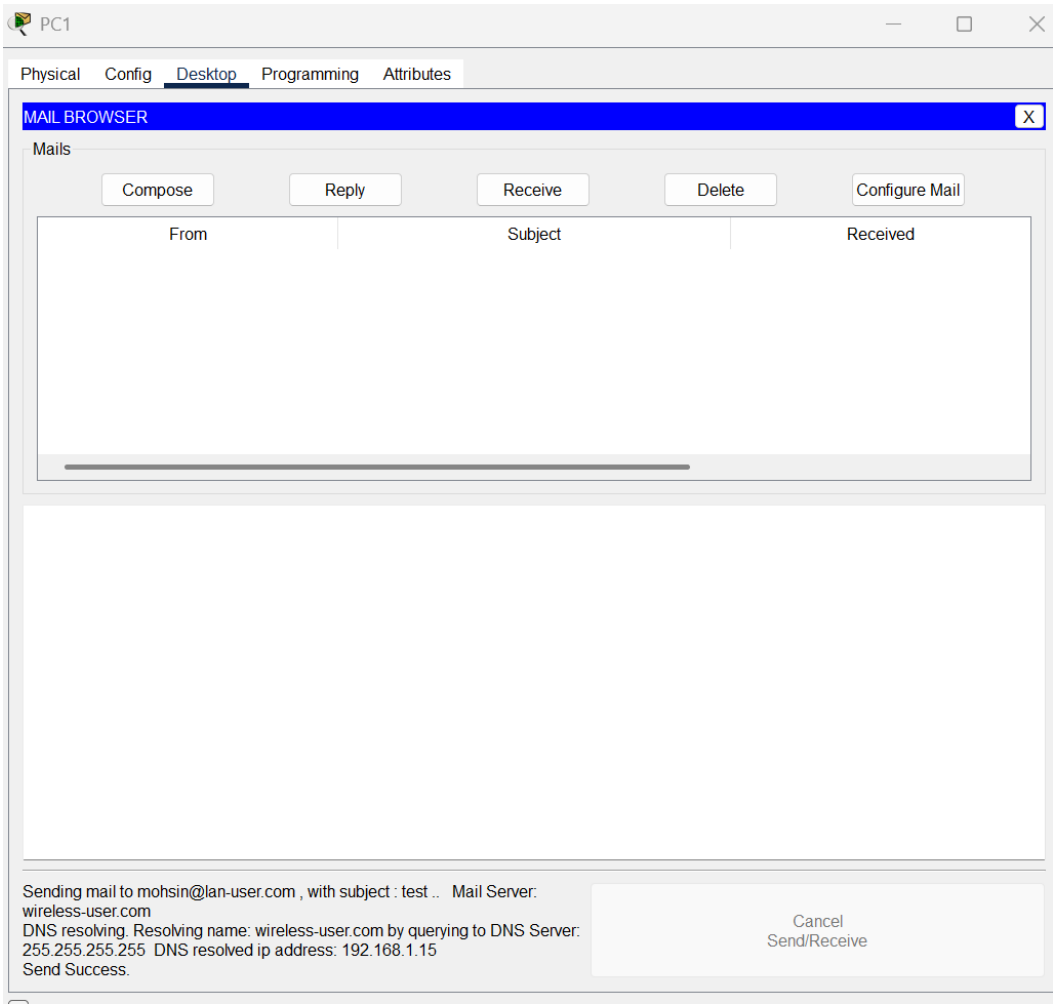
4. Sending mails from Wireless Users to Lan Users by creating different domains.

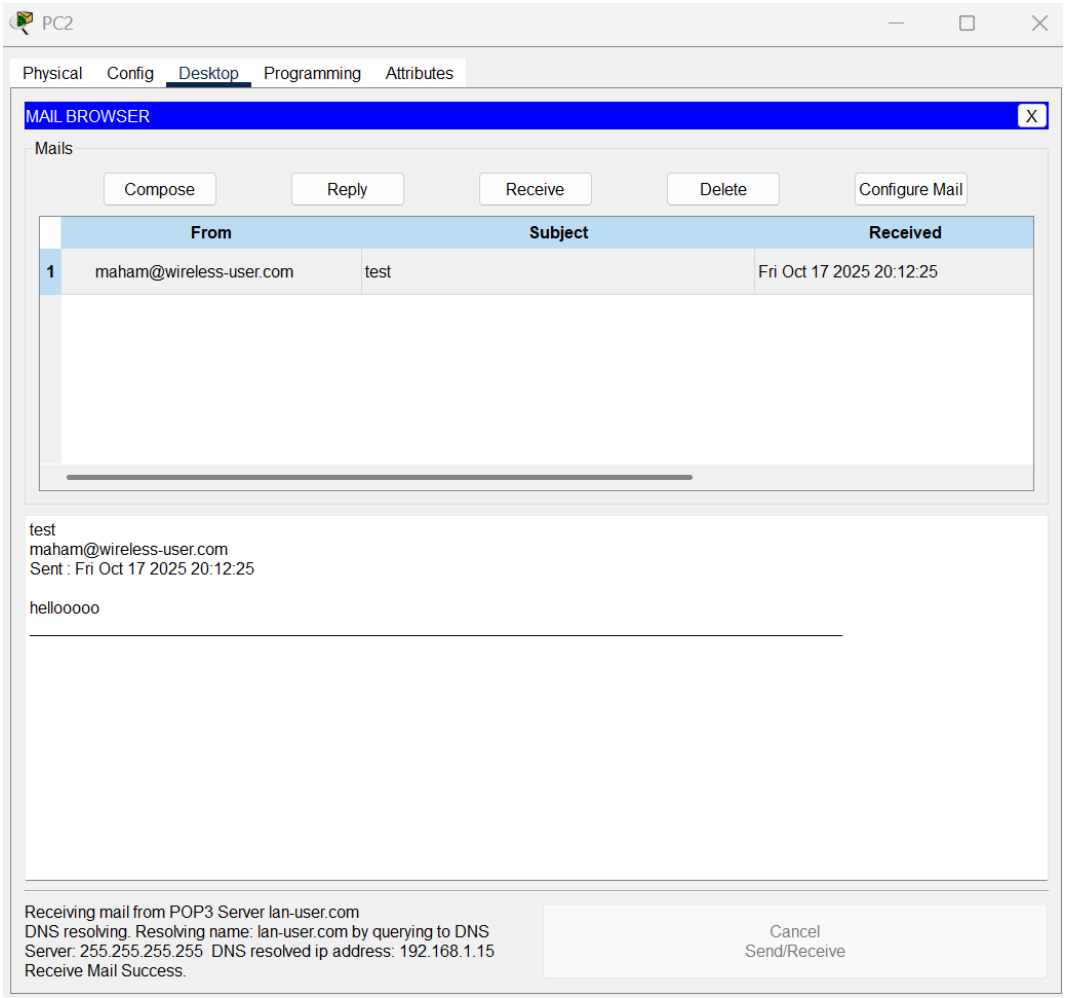




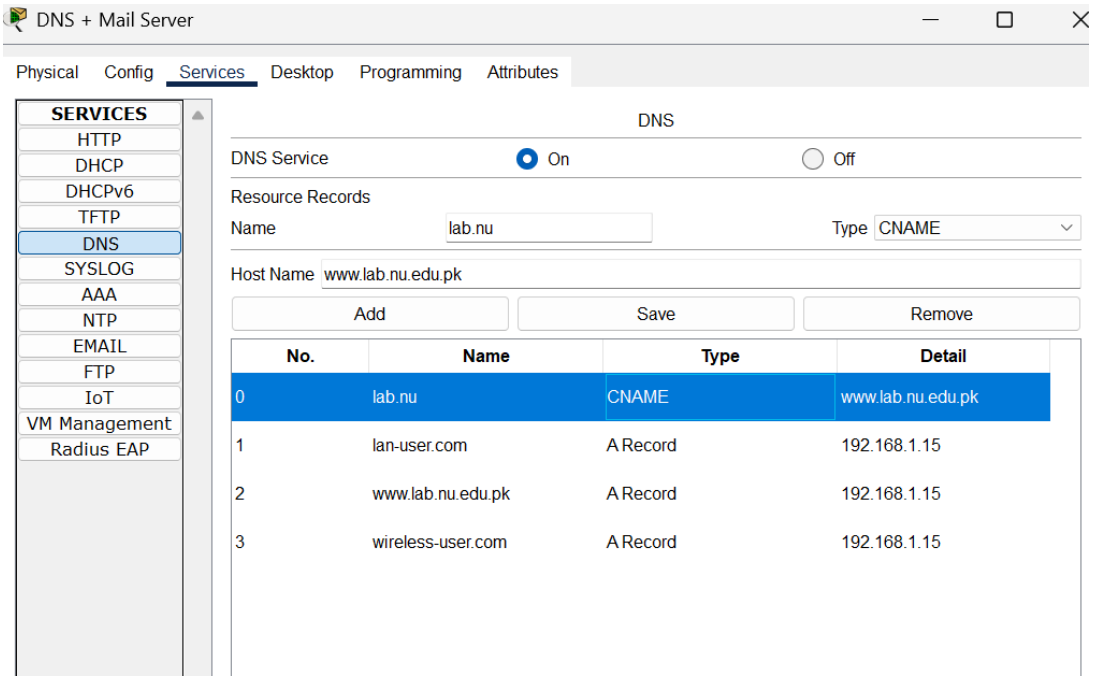

PC1
Physical
Config
Desktop
Programming
Attributes
Configure Mail
X
User Information
Your Name:
maham
Email Address
maham@wireless-user.com
Server Information
Incoming Mail Server
wireless-user.com
Outgoing Mail Server
wireless-user.com
Logon Information
User Name:
maham
Password:
Save
Remove
Clear
Reset

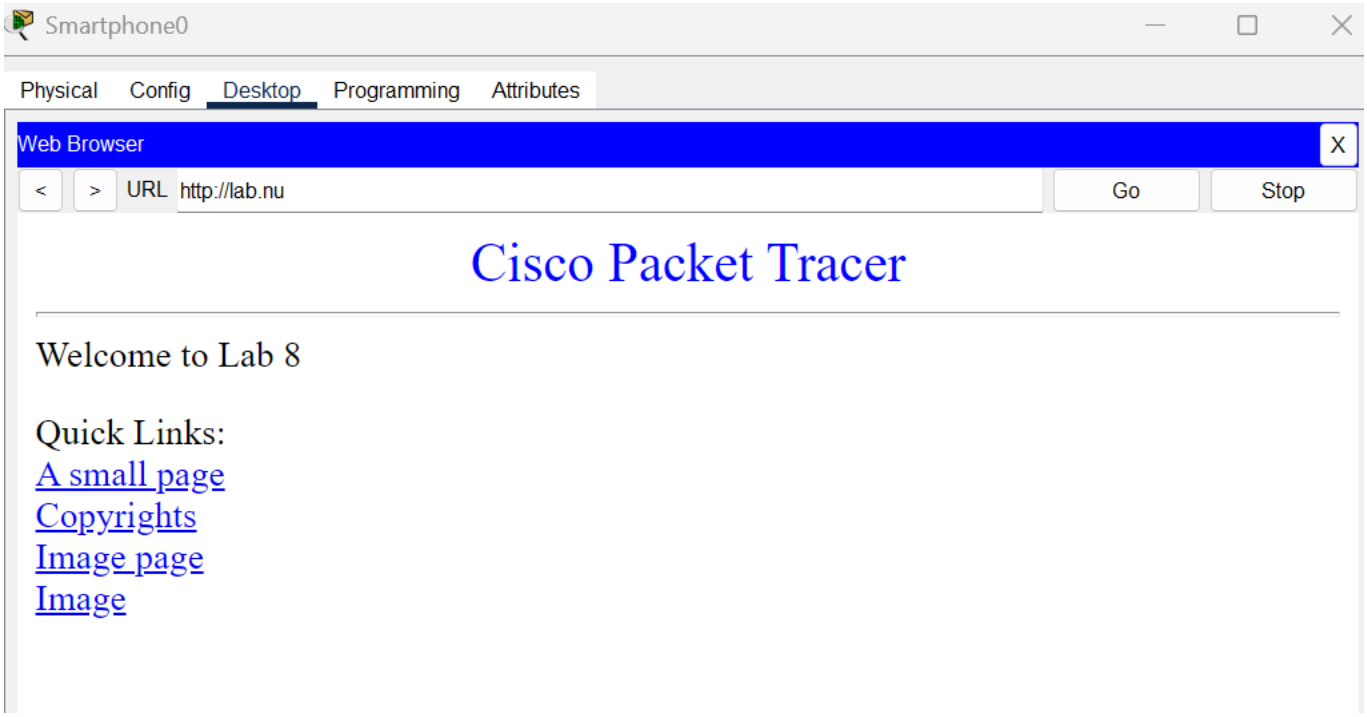

PC2
Physical
Config
Desktop
Programming
Attributes
Configure Mail
User Information
Your Name:
mohsin
Email Address
mohsin@lan-user.com
Server Information
Incoming Mail Server
lan-user.com
Outgoing Mail Server
lan-user.com
Logon Information
User Name:
mohsin
Password:
Save
Remove
Clear
Reset


PC1
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
X
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
Sending mail to mohsin@lan-user.com , with subject : test .. Mail Server: wireless-user.com
DNS resolving. Resolving name: wireless-user.com by querying to DNS Server: 255.255.255.255 DNS resolved ip address: 192.168.1.15
Send Success.
Cancel
Send/Receive

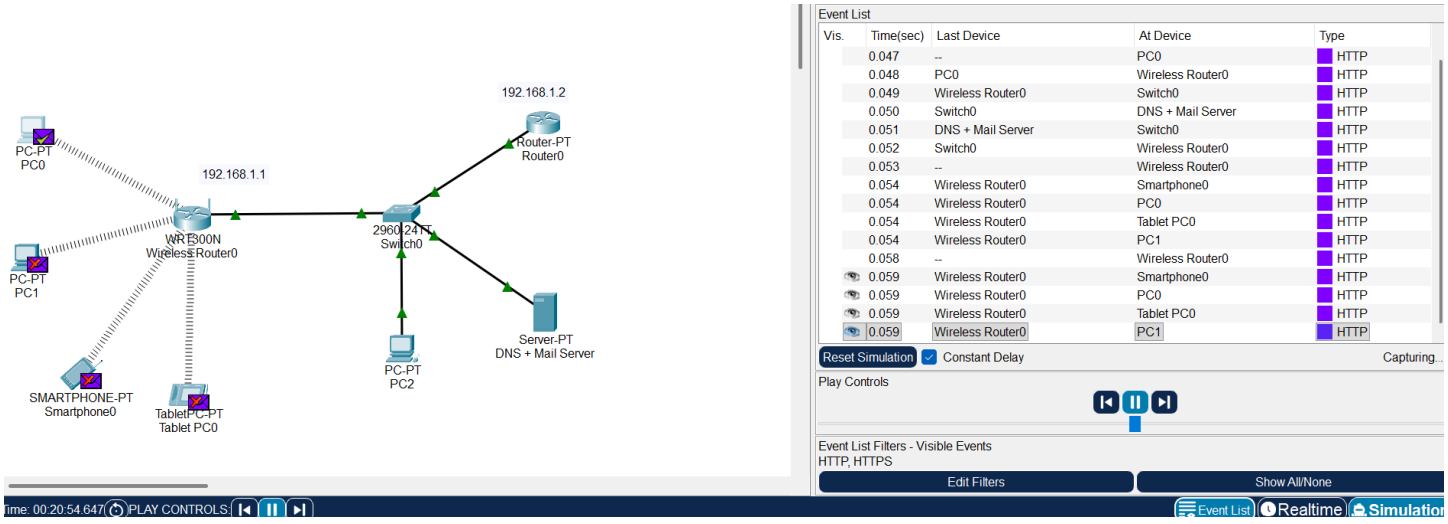


5. Hit the web browser using CNAME.





6. Showing HTTP and HTTPs packet movement by taking screenshots.



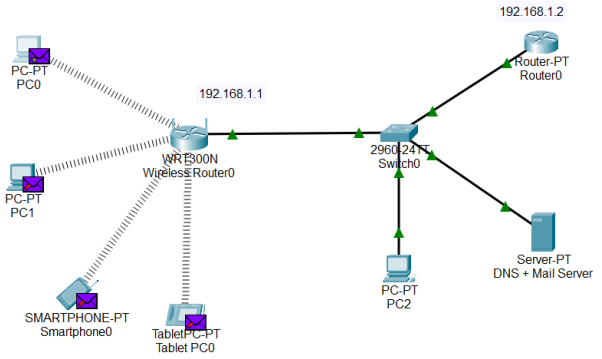
OSI Model | Inbound PDU Details

At Device: PC1
Source: PC1
Destination: HTTP CLIENT

In Layers	Out Layers
Layer 7: HTTP	Layer7
Layer6	Layer6
Layer5	Layer5
Layer 4: TCP Src Port: 80, Dst Port: 1032	Layer4
Layer 3: IP Header Src. IP: 192.168.1.3, Dest. IP: 192.168.0.105	Layer3
Layer 2: Wireless	Layer2
Layer 1: Port Wireless0	Layer1

1. The HTTP client receives a HTTP reply from the server. It displays the page in the web browser.

Challenge Me | << Previous Layer | Next Layer >>



Event List

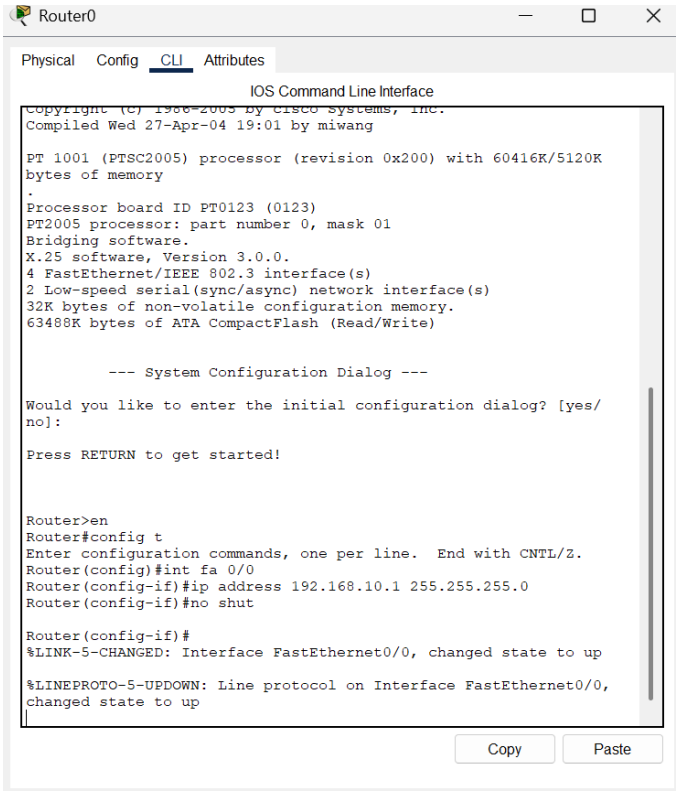
Vis.	Time(sec)	Last Device	At Device	Type
	0.642	--	PC0	HTTPS
	0.643	PC0	Wireless Router0	HTTPS
	0.644	Wireless Router0	Switch0	HTTPS
	0.645	Switch0	DNS + Mail Server	HTTPS
	0.646	DNS + Mail Server	Switch0	HTTPS
	0.647	Switch0	Wireless Router0	HTTPS
	0.727	--	Wireless Router0	HTTPS
	0.728	Wireless Router0	Tablet PC0	HTTPS
	0.728	Wireless Router0	PC1	HTTPS
	0.728	Wireless Router0	Smartphone0	HTTPS
	0.728	Wireless Router0	PC0	HTTPS
	0.733	--	Wireless Router0	HTTPS
	0.734	Wireless Router0	PC0	HTTPS
	0.734	Wireless Router0	Tablet PC0	HTTPS
	0.734	Wireless Router0	PC1	HTTPS
	0.734	Wireless Router0	Smartphone0	HTTPS

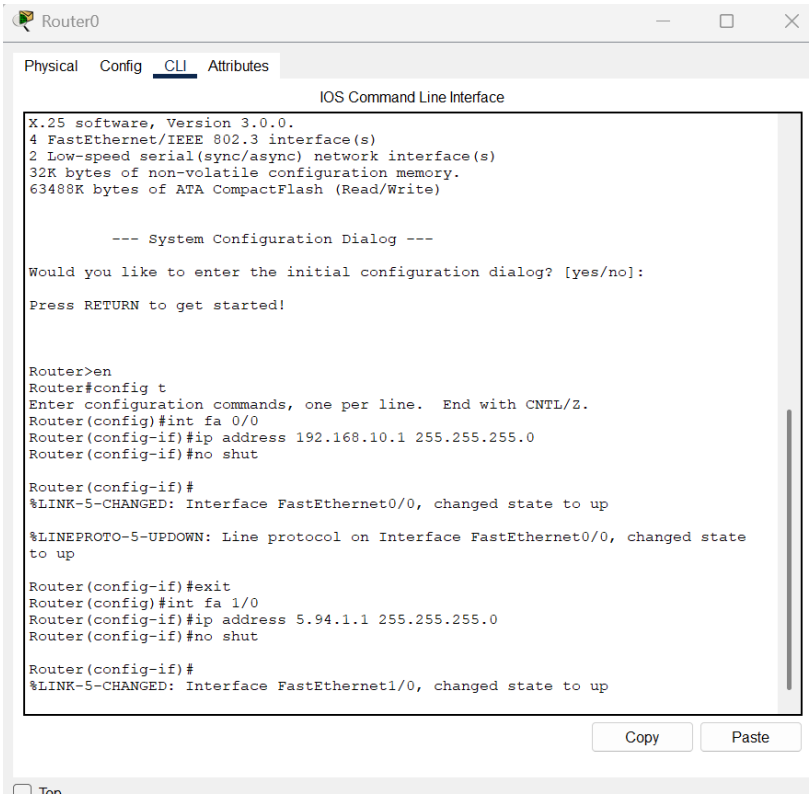
Reset Simulation | Constant Delay | Capturi

Play Controls

Event List Filters - Visible Events
HTTP, HTTPS

Task 2:


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Compiled Wed 27-Apr-04 19:01 by miwang
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]:
Press RETURN to get started!
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shut
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
Copy
Paste


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]:
Press RETURN to get started!
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shut
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)#int fa 1/0
Router(config-if)#ip address 5.94.1.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
Copy
Paste
Top

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!



Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 0/1
%Invalid interface type and number
Router(config)#int fa 0/0
Router(config-if)#ip address 10.0.0.1 255.255.255.0
Router(config-if)#no shut

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)#int fa 1/0
Router(config-if)#ip address 5.94.1.2 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Router(config-if)#
```

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

- DHCP
- Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.10.1

DNS Server 10.0.0.4

IPv6 Configuration

- Automatic
- Static

IPv6 Address

Link Local Address FE80::2D0:BCFF:FE6B:9555

Default Gateway

DNS Server

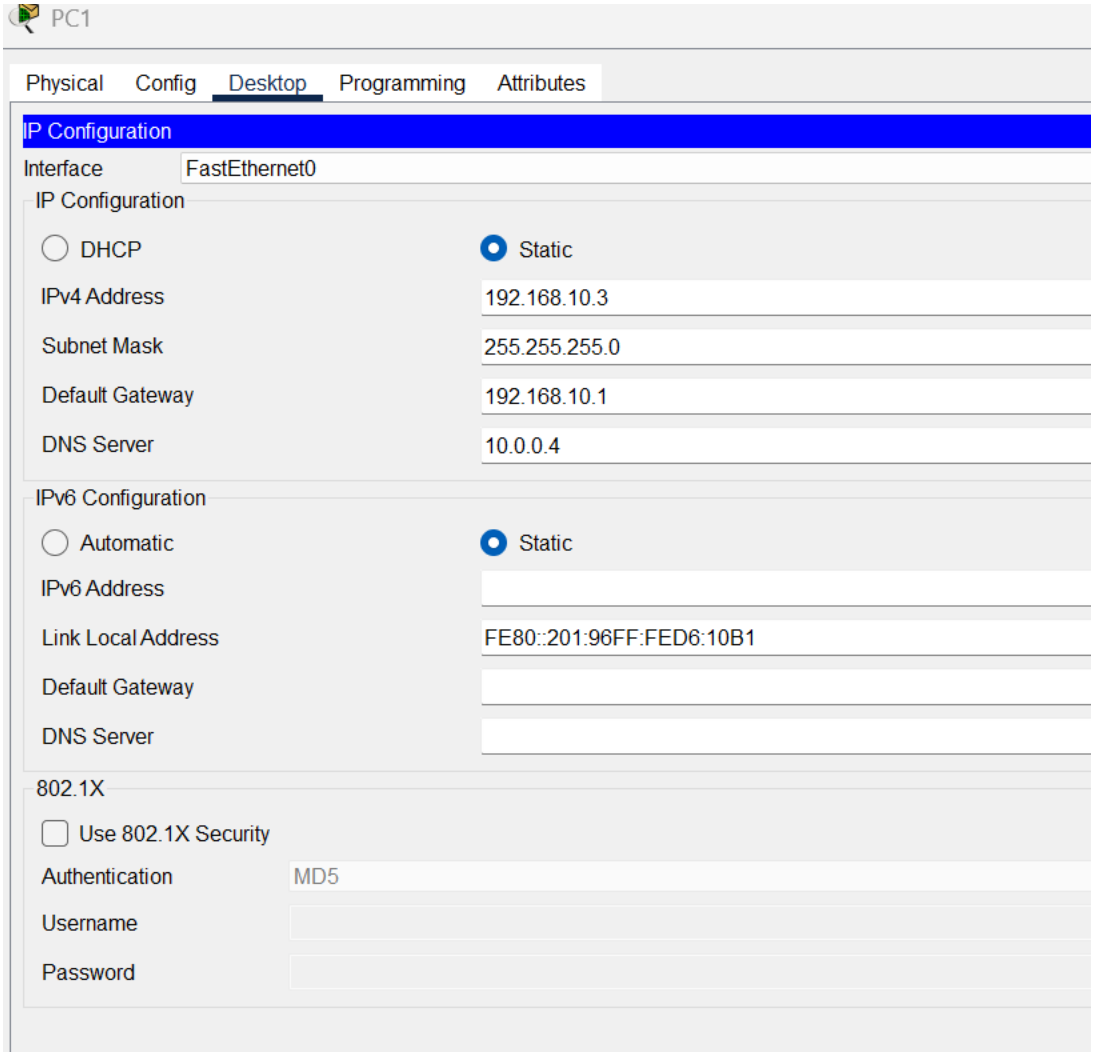
802.1X

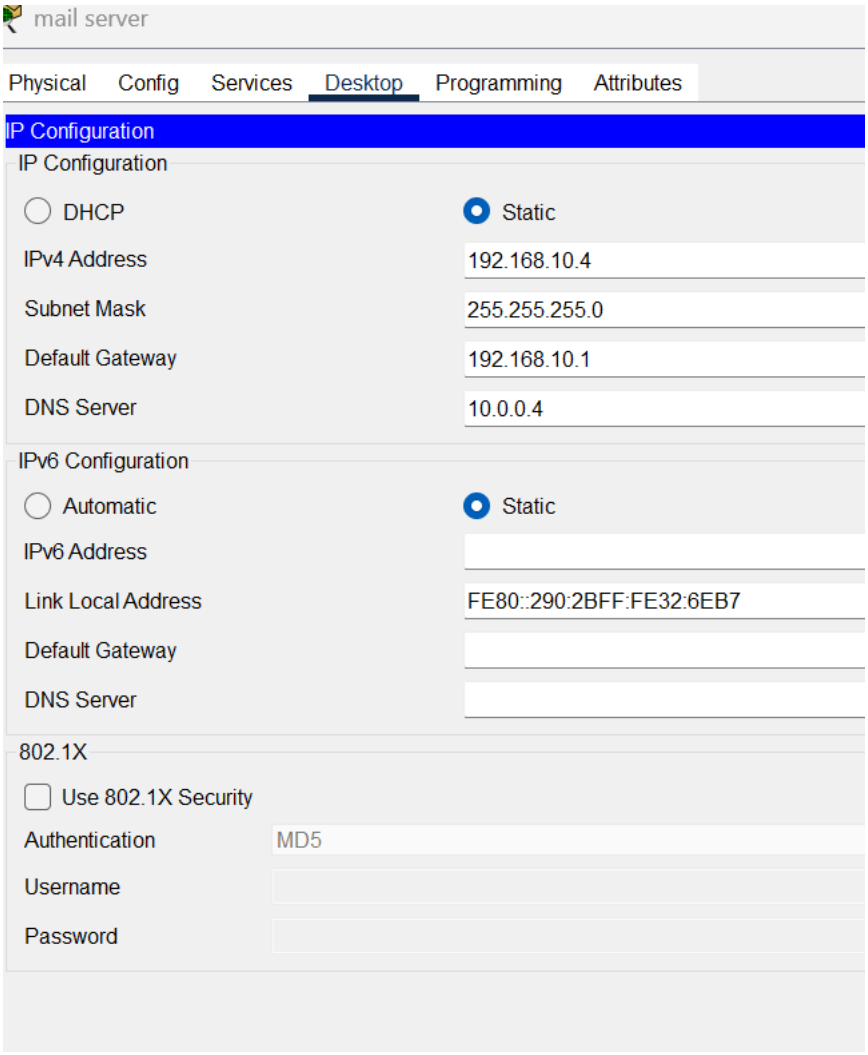
- [ ] Use 802.1X Security

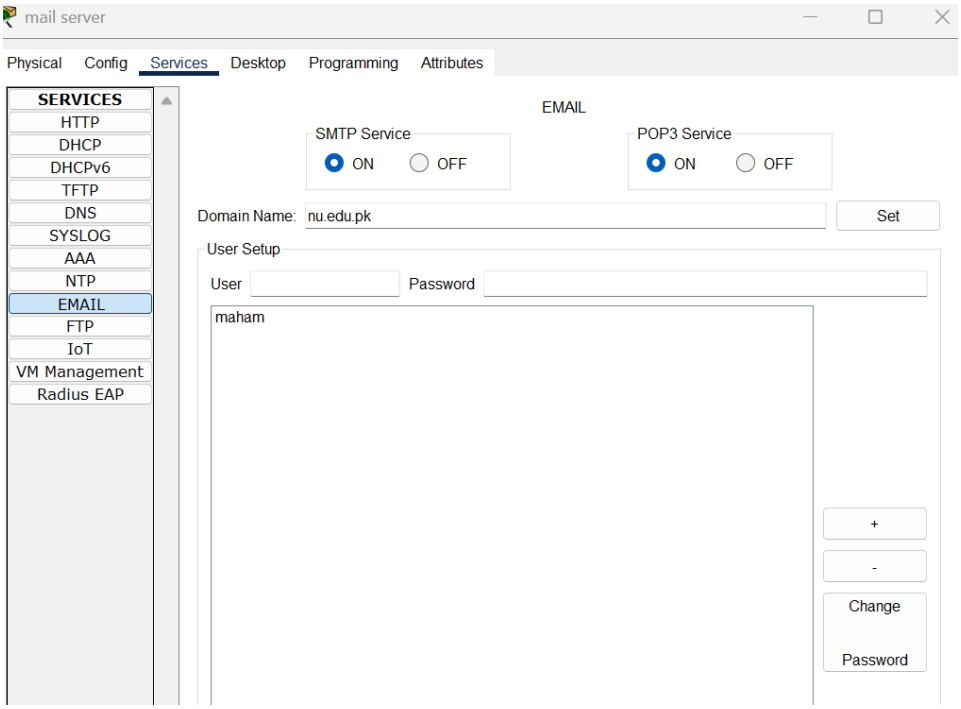
Authentication MD5

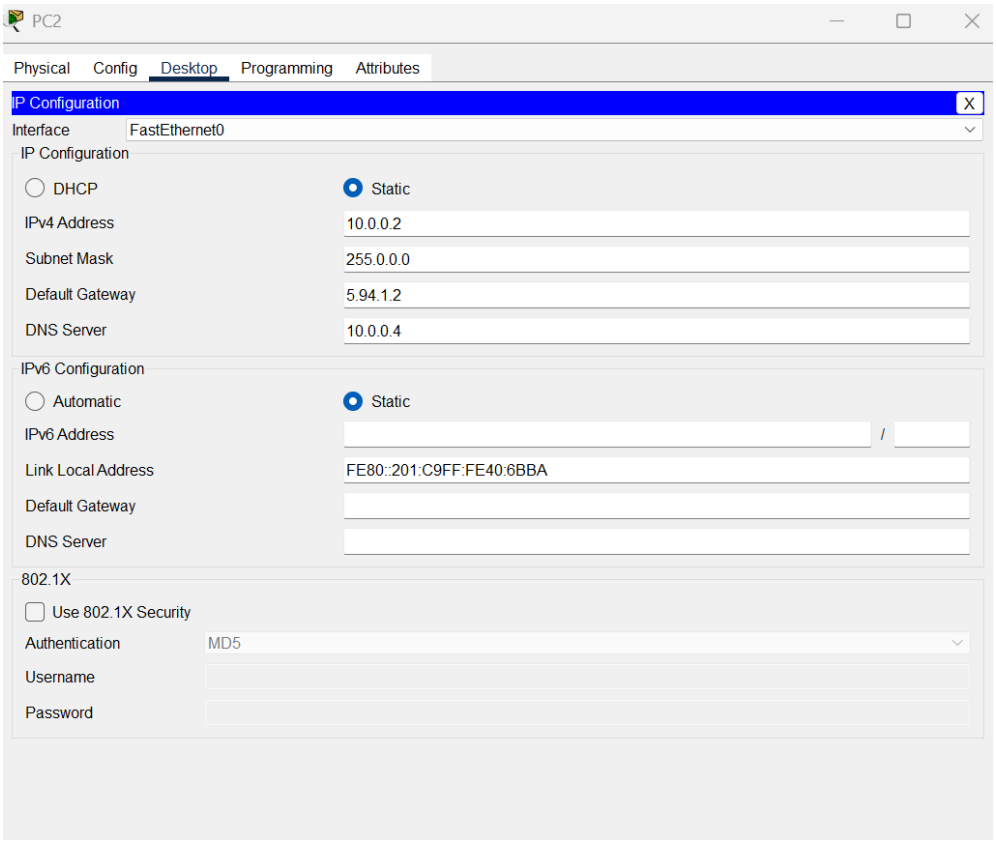
Username

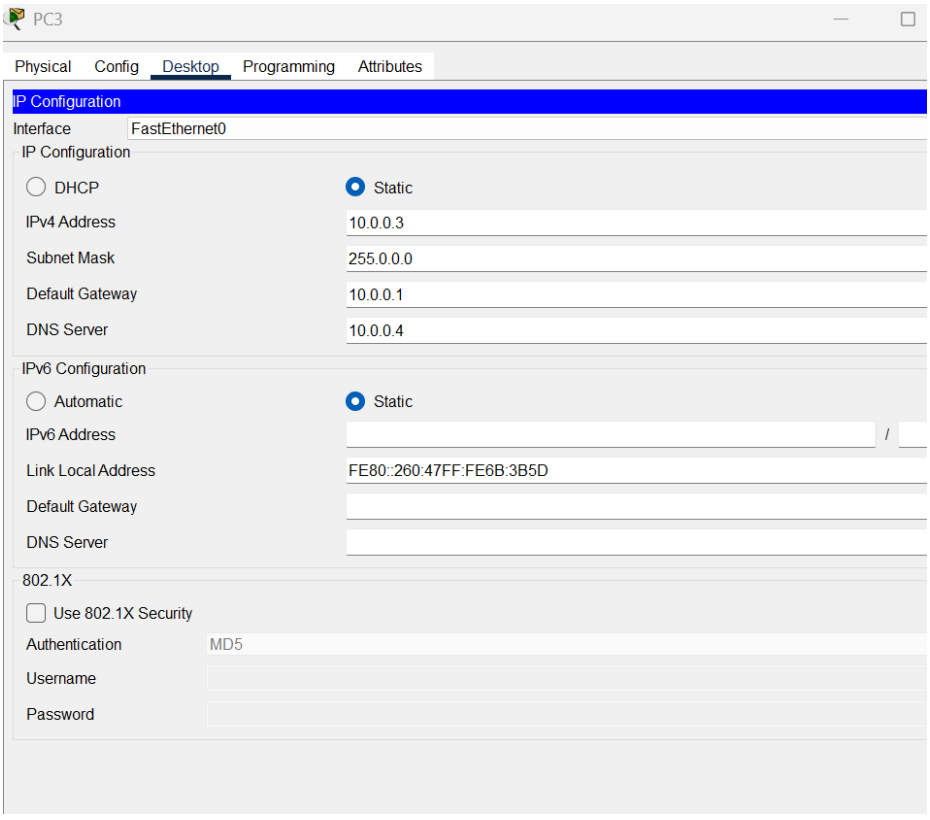
Password

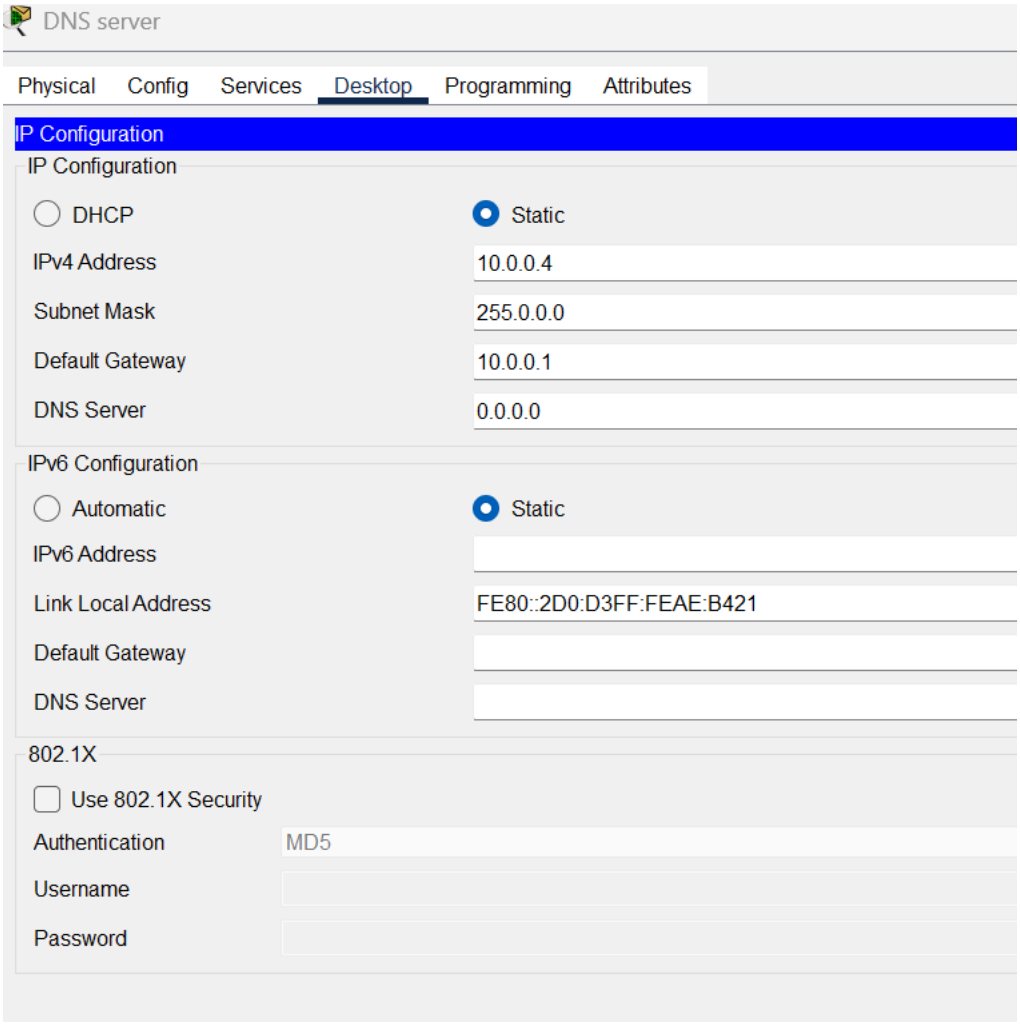

PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
10.0.0.4
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::201:96FF:FED6:10B1
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password

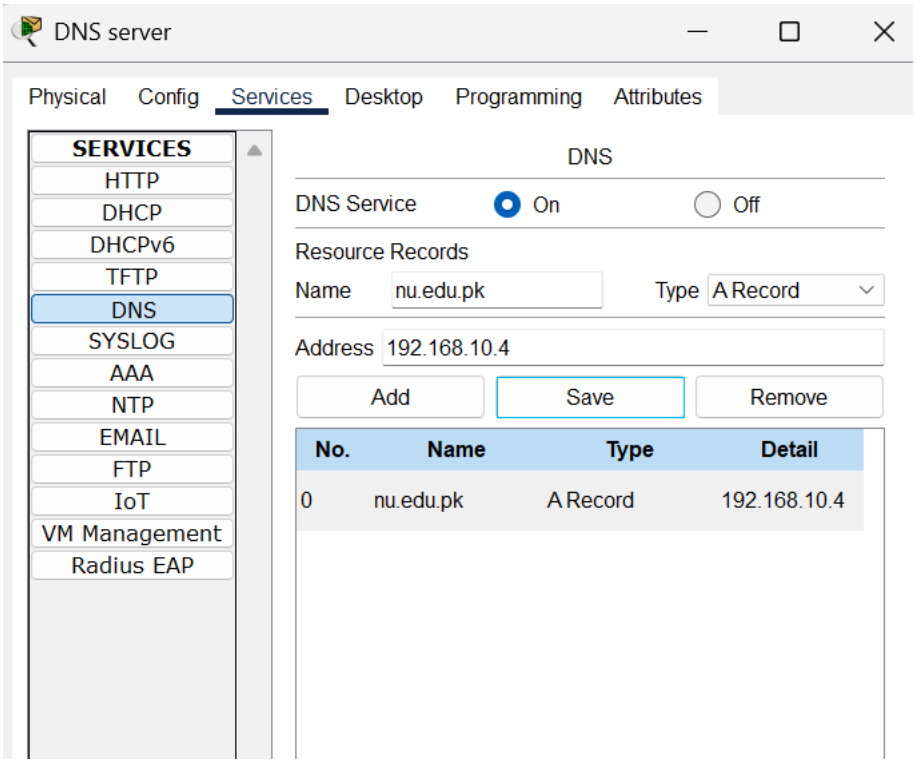

mail server
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
10.0.0.4
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::290:2BFF:FE32:6EB7
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password

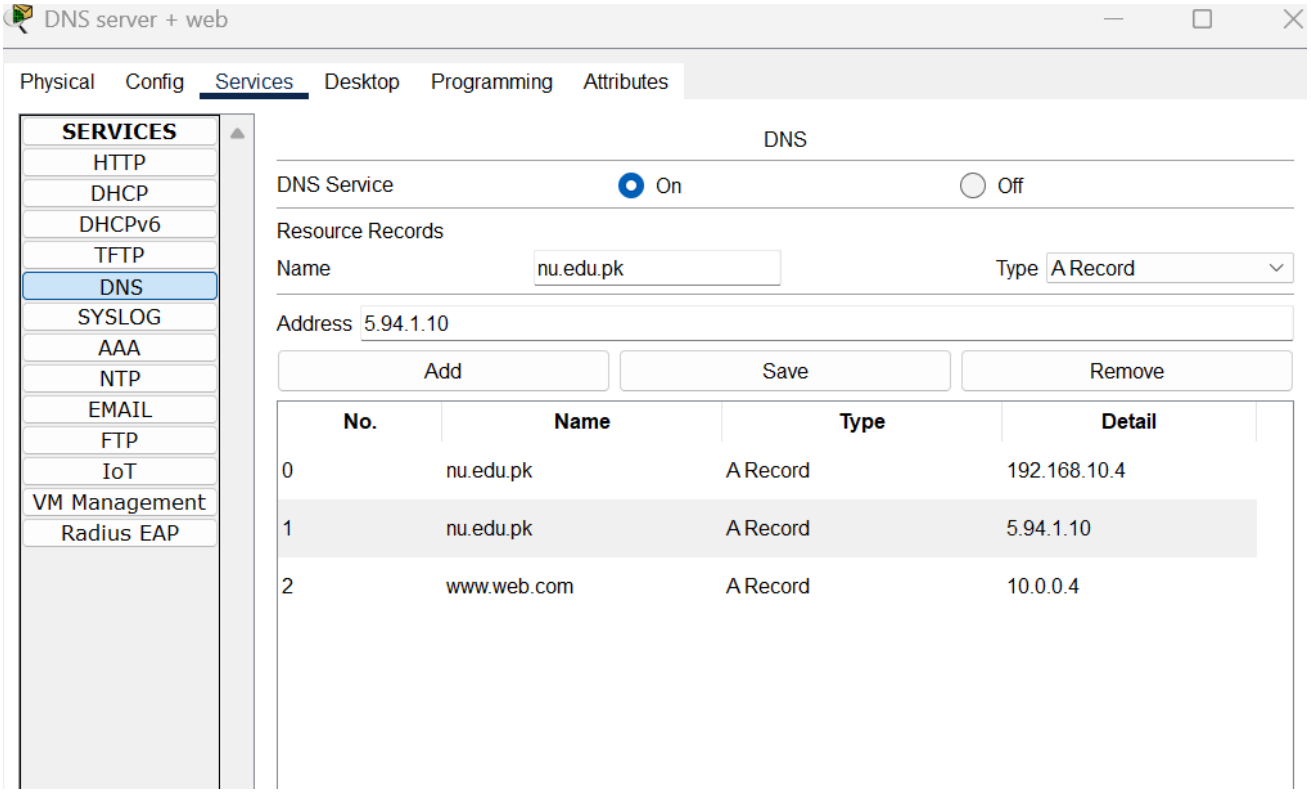

mail server
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
EMAIL
SMTP Service
ON
OFF
POP3 Service
ON
OFF
Domain Name:
nu.edu.pk
Set
User Setup
User
Password
maham
+
-
Change
Password

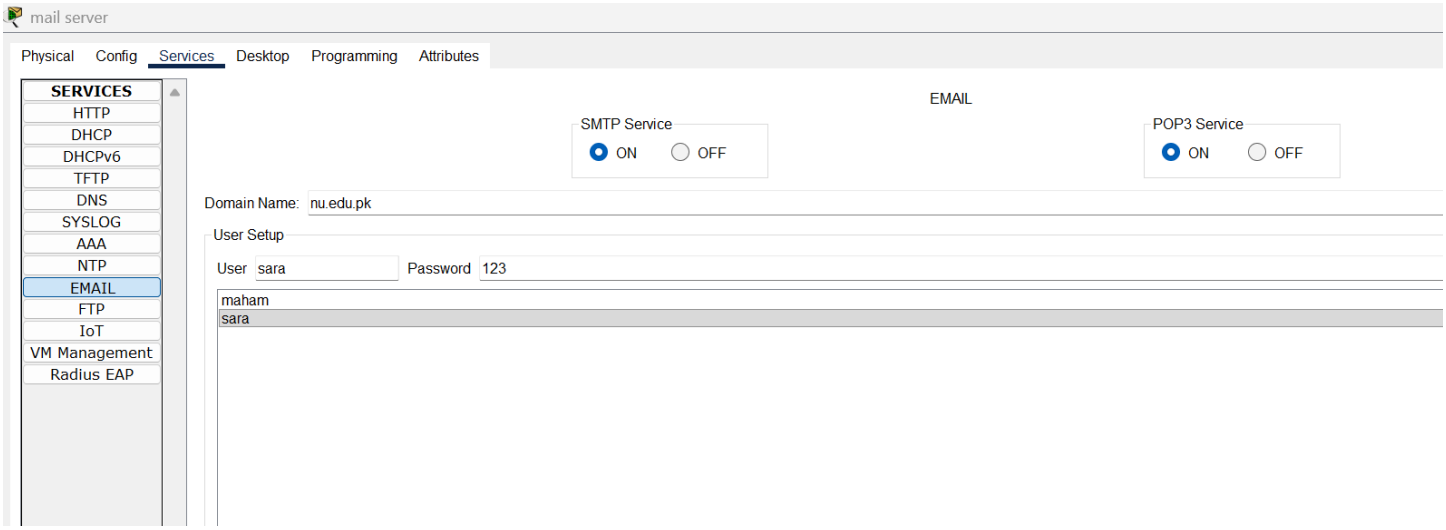

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
10.0.0.2
Subnet Mask
255.0.0.0
Default Gateway
5.94.1.2
DNS Server
10.0.0.4
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::201:C9FF:FE40:6BBA
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password


PC3
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
10.0.0.3
Subnet Mask
255.0.0.0
Default Gateway
10.0.0.1
DNS Server
10.0.0.4
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::260:47FF:FE6B:3B5D
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password


DNS server
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
IP Configuration
DHCP
Static
IPv4 Address
10.0.0.4
Subnet Mask
255.0.0.0
Default Gateway
10.0.0.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::2D0:D3FF:FEAE:B421
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password


DNS server
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
nu.edu.pk
Type
A Record
Address
192.168.10.4
Add
Save
Remove
No.
Name
Type
Detail
0
nu.edu.pk
A Record
192.168.10.4


DNS server + web
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
nu.edu.pk
Type
A Record
Address
5.94.1.10
Add
Save
Remove
No.
Name
Type
Detail
0
nu.edu.pk
A Record
192.168.10.4
1
nu.edu.pk
A Record
5.94.1.10
2
www.web.com
A Record
10.0.0.4


mail server
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:
nu.edu.pk
User Setup
User
sara
Password
123
maham
sara

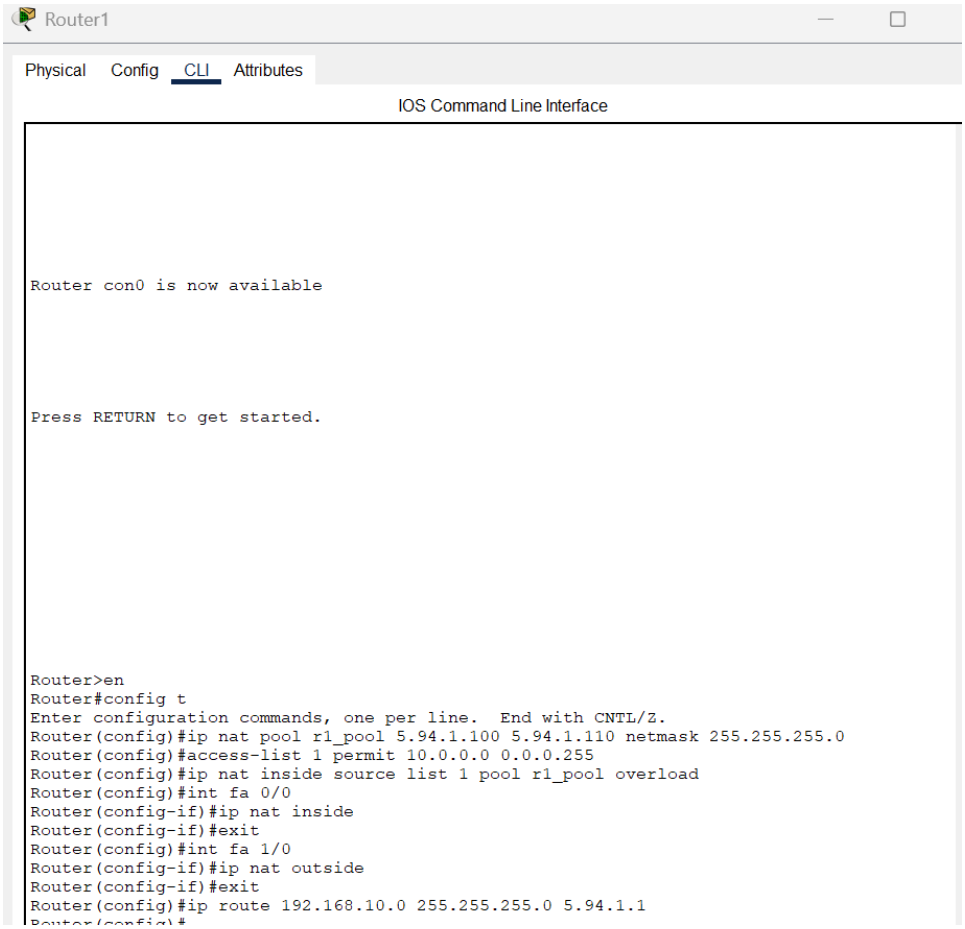
Router0

Physical Config CLI Attributes

IOS Command Line Interface

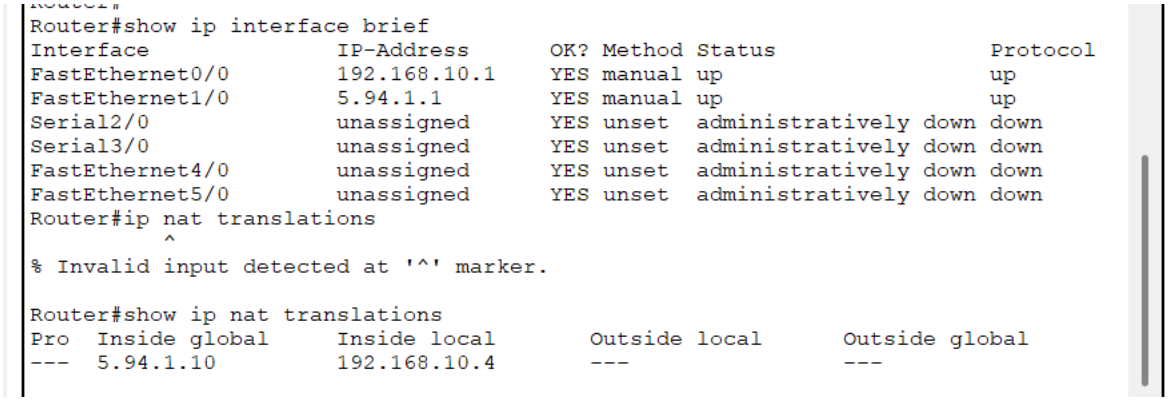
```
Software clause at DFARS sec. 252.227-7013.

           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706



Cisco Internetwork Operating System Software
IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

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 FastEthernet1/0, changed state to up


Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip nat inside source static 192.168.10.4 5.94.1.10
Router(config)#int fa 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int fa 1/0
Router(config-if)#ip nat outside
```

```
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip nat inside source static 192.168.10.4 5.94.1.10
Router(config)#int fa 0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int fa 1/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#ip route 10.0.0.0 255.255.255.0 5.94.1.2
```



Verifying nat:

Router 0:



PC1

Physical Config Desktop Programming Attributes

Command Prompt

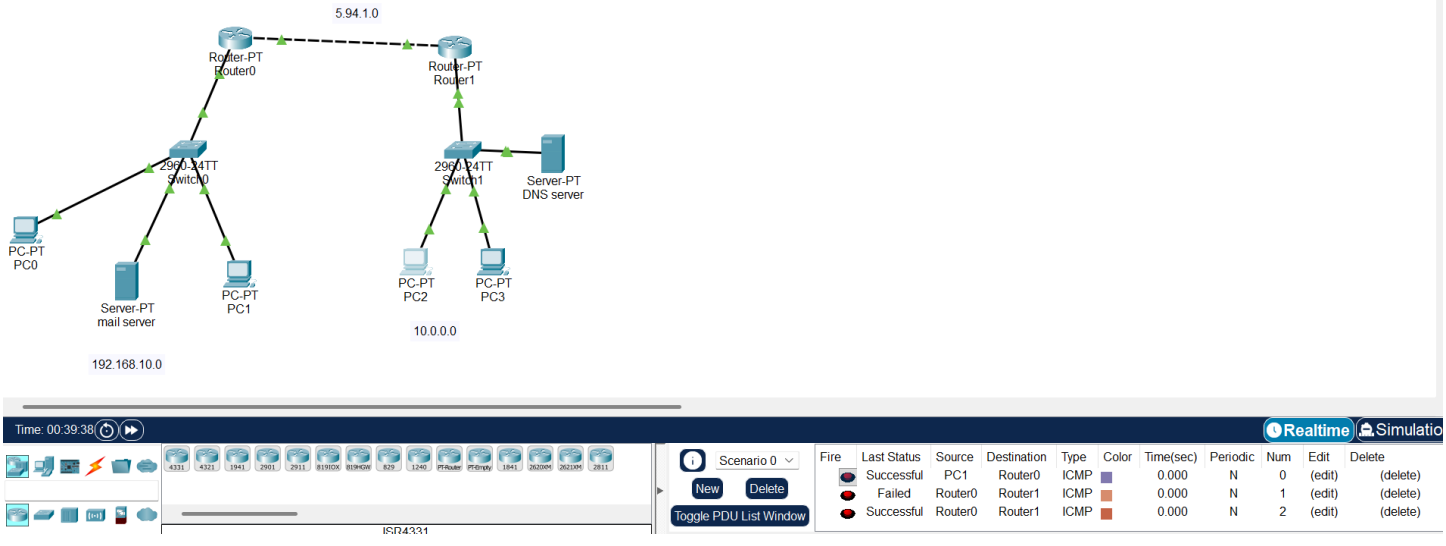
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC2

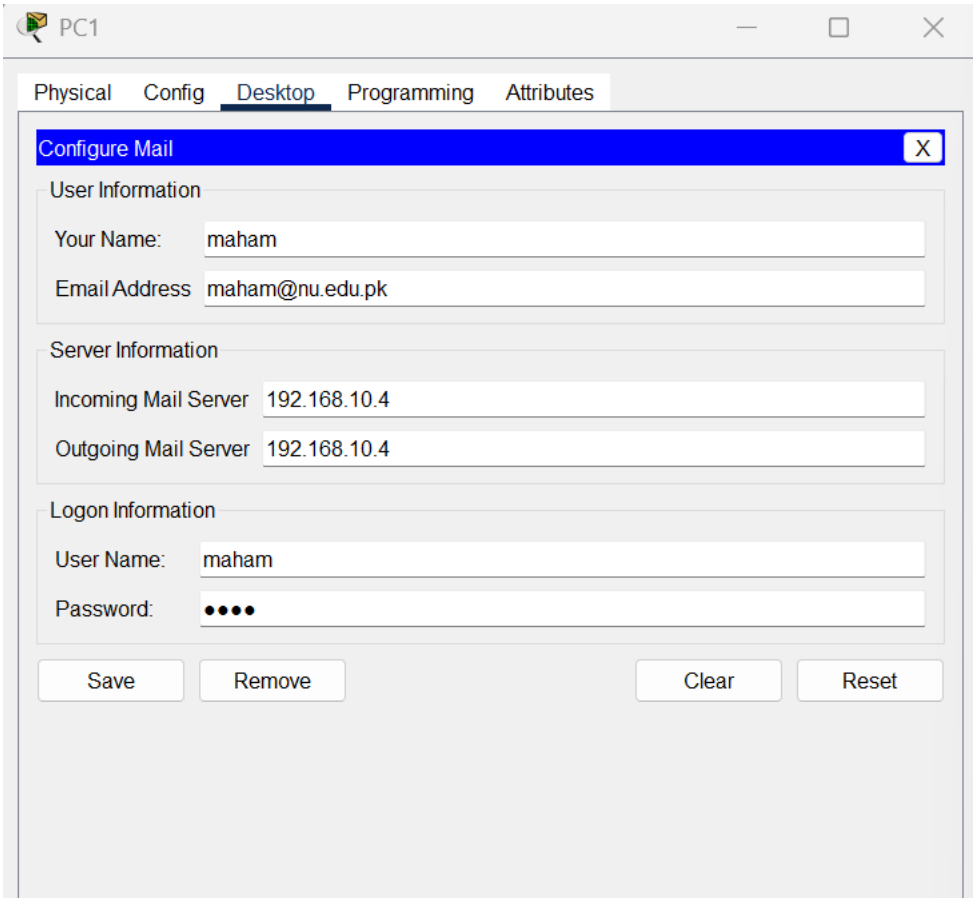
Physical Config Desktop Programming Attributes

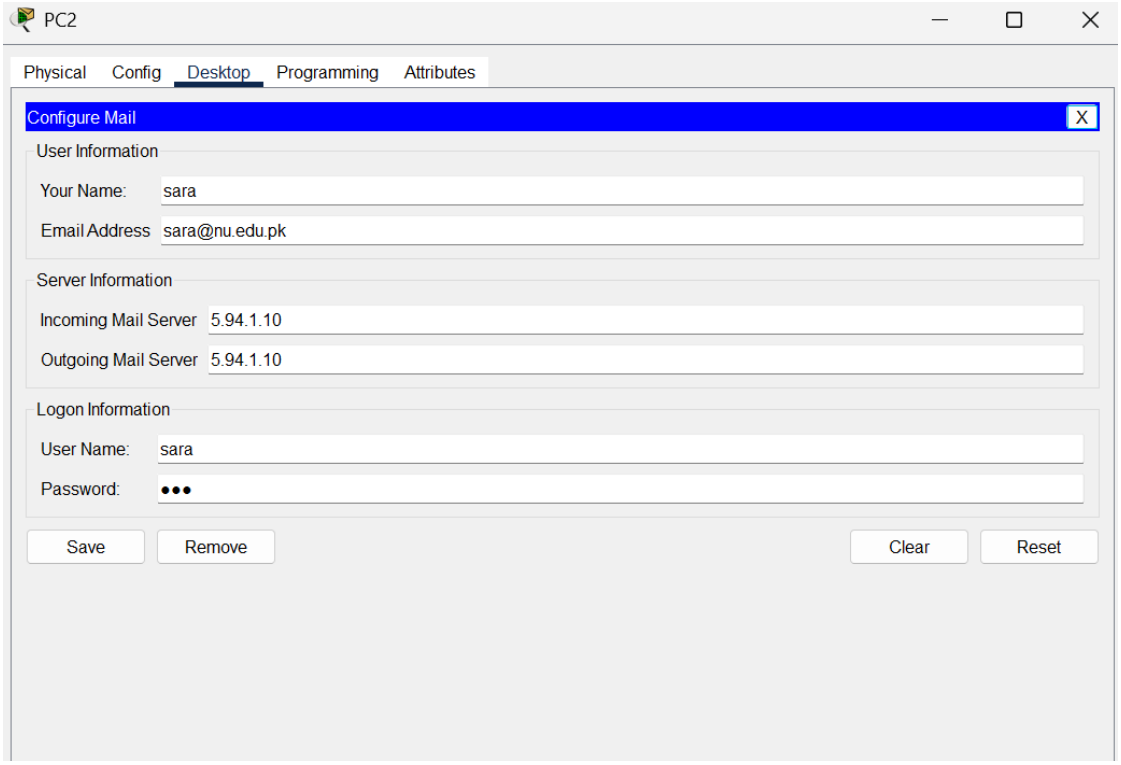
Command Prompt

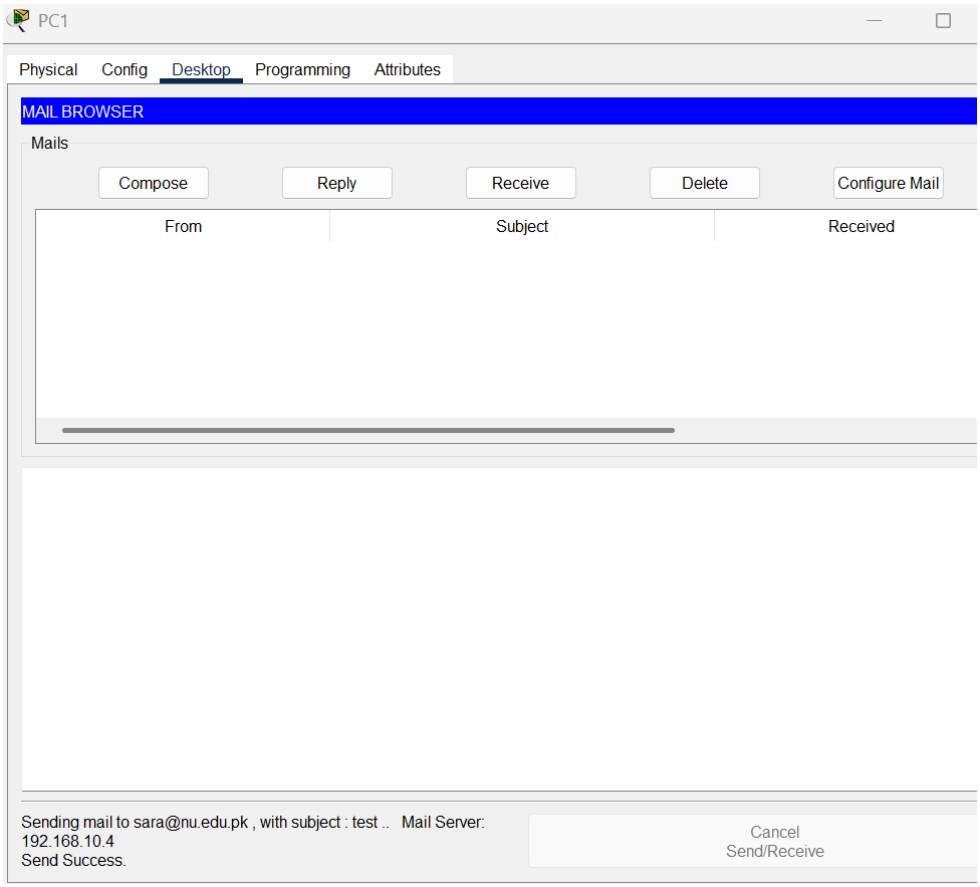
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time<1ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255
Reply from 10.0.0.1: bytes=32 time<1ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

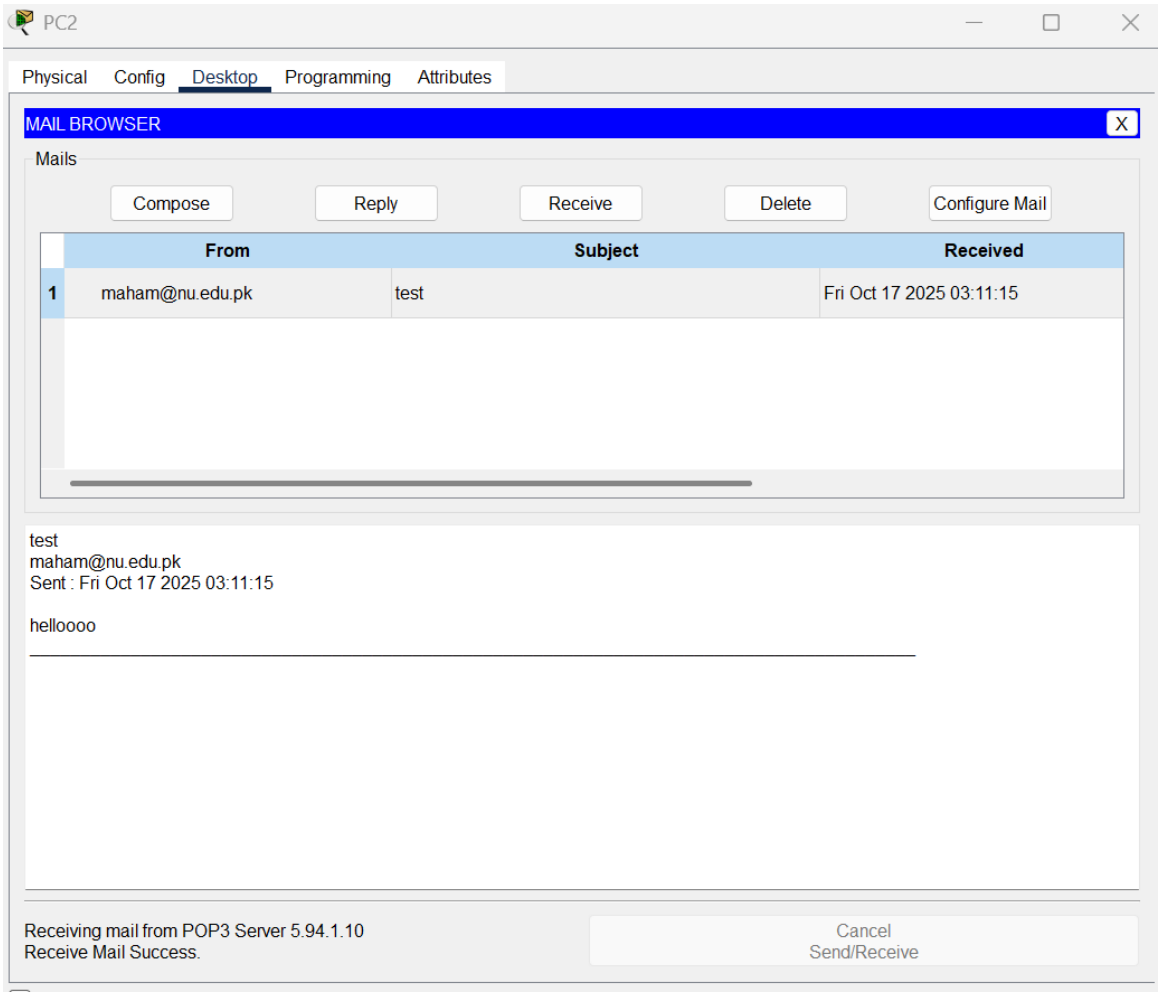
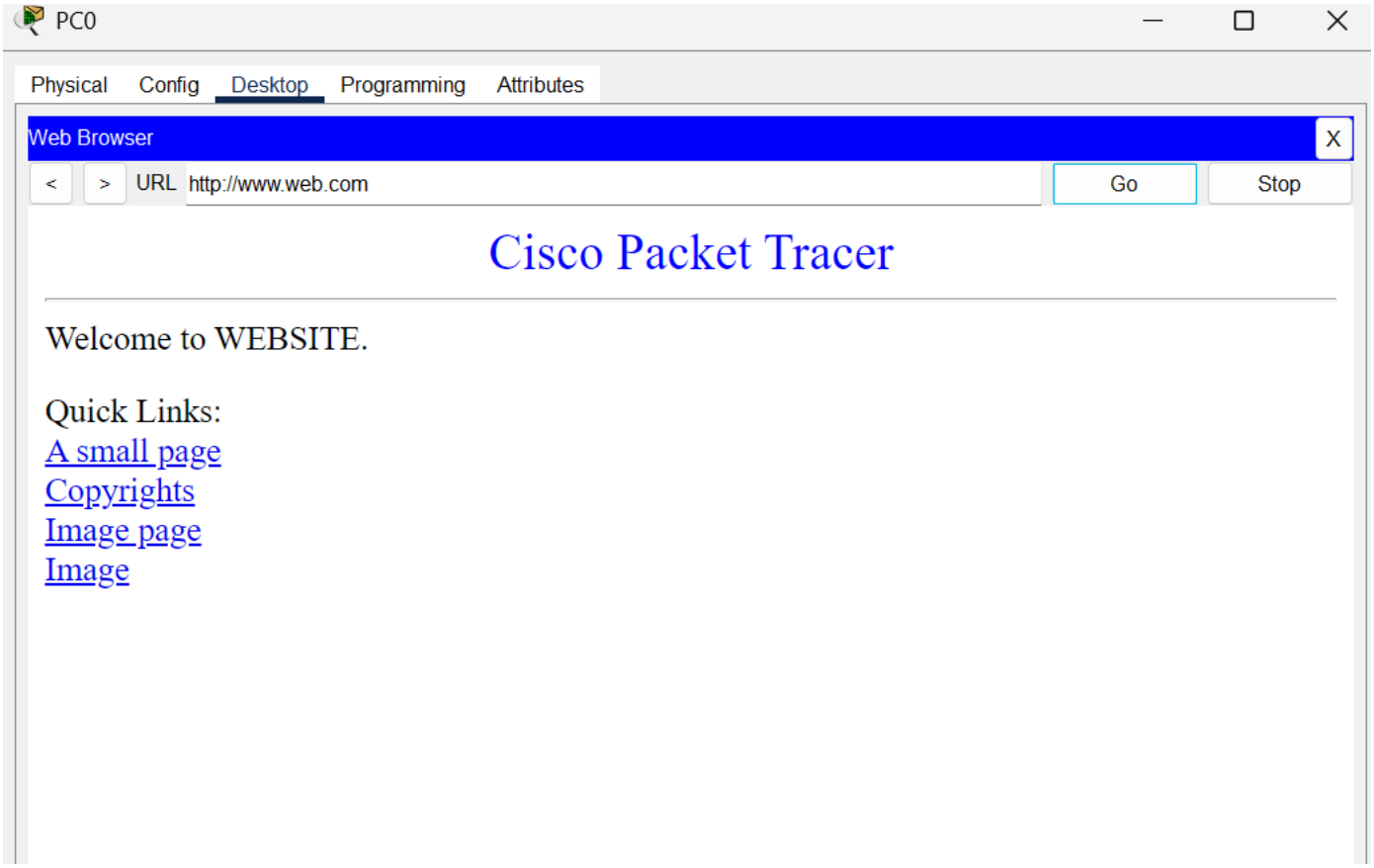


Sending mail from PC1 to PC2:






PC1
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
Sending mail to sara@nu.edu.pk , with subject : test .. Mail Server:
192.168.10.4
Send Success.
Cancel
Send/Receive


PC2
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
X
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
1
maham@nu.edu.pk
test
Fri Oct 17 2025 03:11:15
test
maham@nu.edu.pk
Sent : Fri Oct 17 2025 03:11:15
helloooo
Receiving mail from POP3 Server 5.94.1.10
Receive Mail Success.
Cancel
Send/Receive

hit the website from PC0.