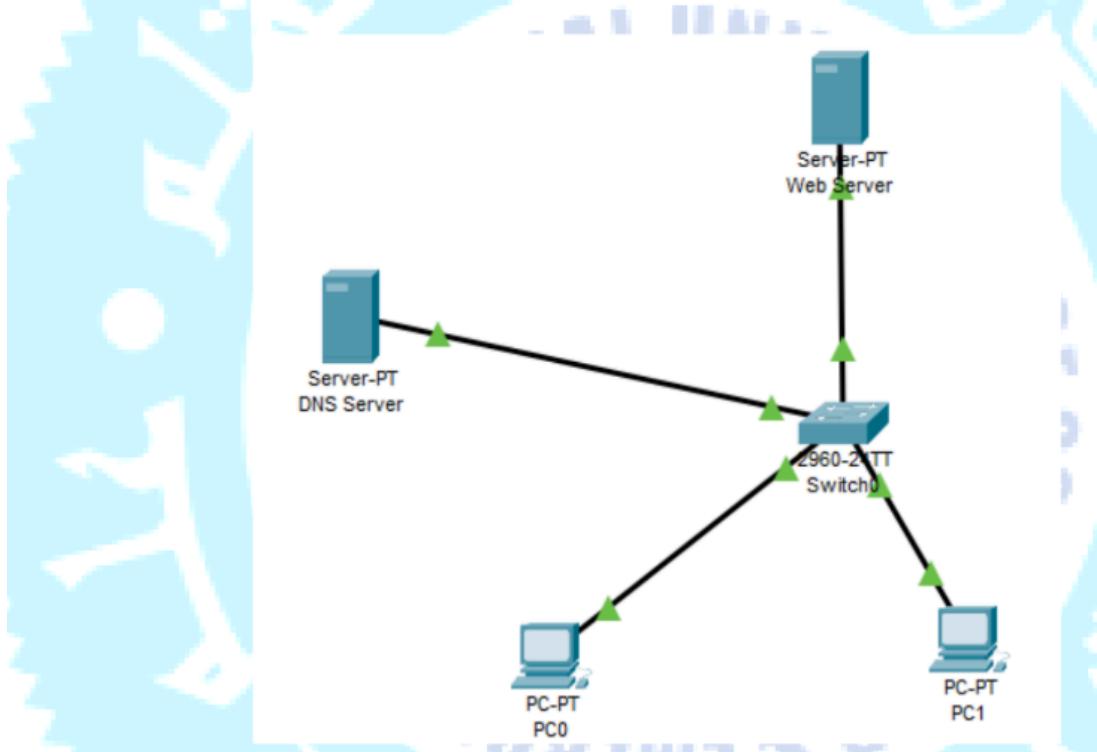


1. Create the following network with a DHCP server. Send DNS packets to your network. Attach a snapshot of each step.



DNS Server

DNS Server 23K-0842

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	192.168.1.3
IPv6 Configuration	

 DNS Server 23K-0842

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: 0.0.0.0

DNS Server: 0.0.0.0

Start IP Address: 192 168 1 0

Subnet Mask: 255 255 255 0

Maximum Number of Users: 512

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
CNLab4	192.168.1.1	192.168.1.2	192.168.1.10	255.255.2...	246	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168.1.0	255.255.2...	512	0.0.0.0	0.0.0.0

Configuring Web Server:

 Web Server 23K-0842

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

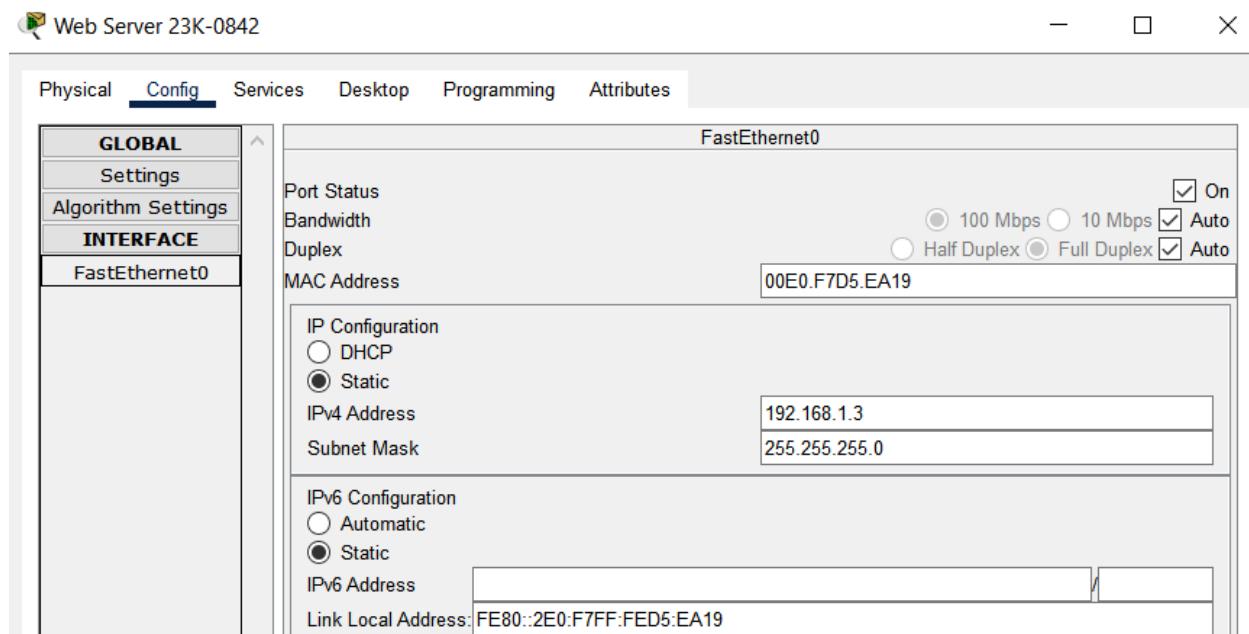
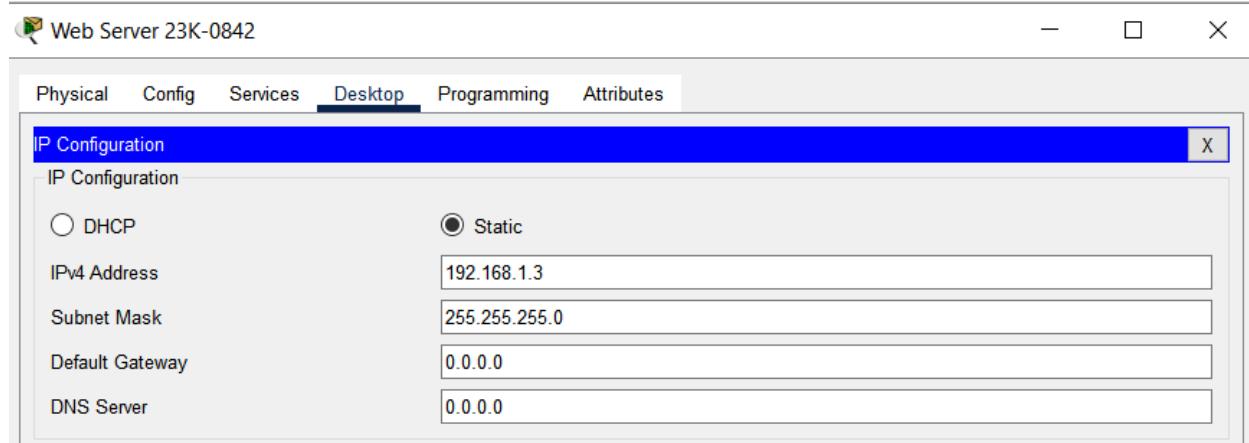
HTTP

HTTP: On Off

HTTPS: On Off

File Manager

File Name	Edit	Delete
1 copyrights.html	(edit)	(delete)
2 cscoptlogo177x111.jpg		(delete)
3 helloworld.html	(edit)	(delete)
4 image.html	(edit)	(delete)
5 index.html	(edit)	(delete)



Web Server 23K-0842

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	Type		
<input type="text"/>	A Record		
<input type="text"/>	<input type="button" value="Add"/> <input type="button" value="Save"/> <input type="button" value="Remove"/>		
No.	Name	Type	Detail
0	www.kinza23k0842.com	A Record	192.168.1.3

PC0:

PC0 23K-0842

Physical Config Desktop Programming Attributes

IP Configuration

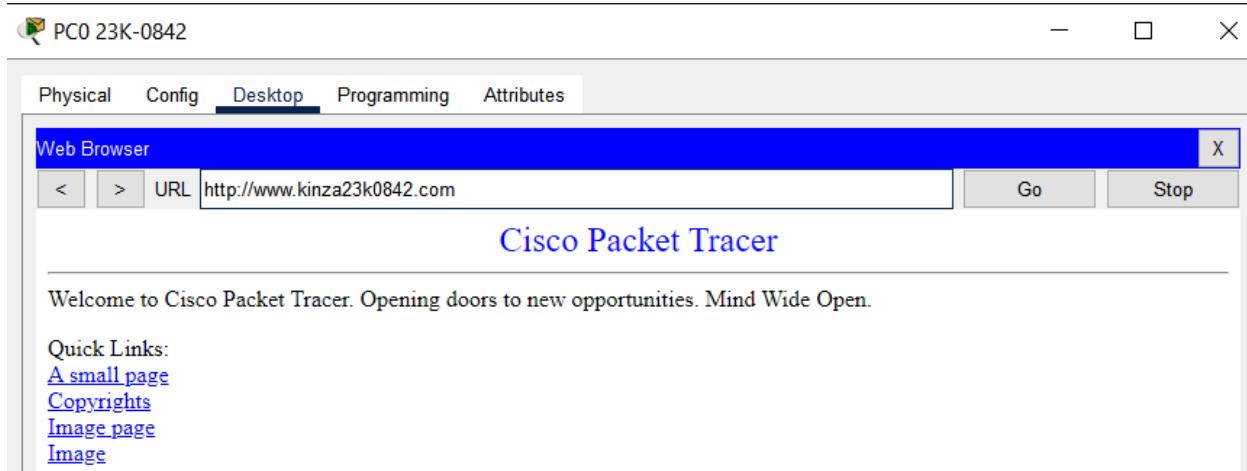
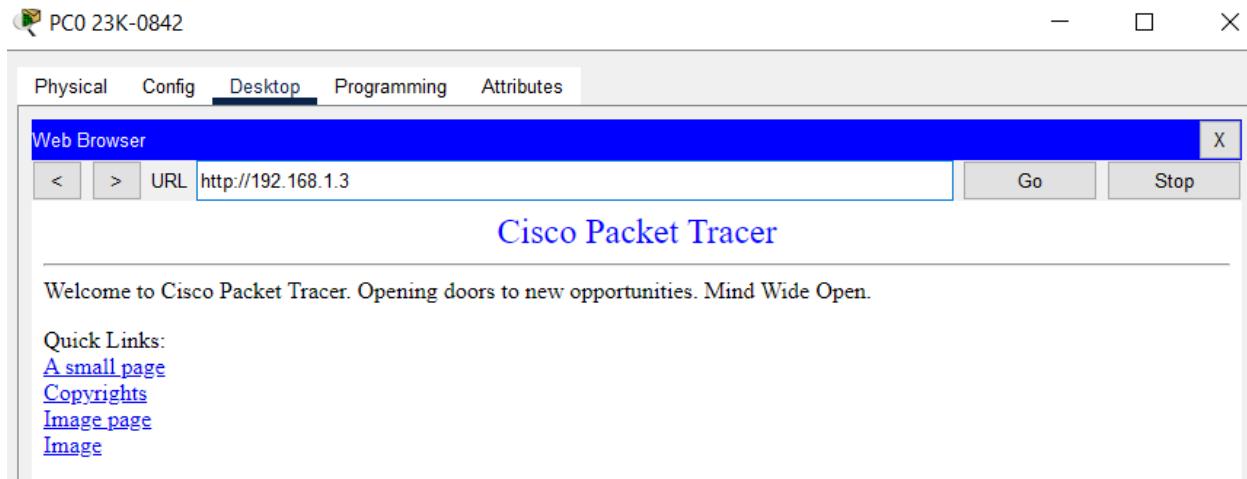
Interface FastEthernet0

IP Configuration

<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	<input type="text" value="192.168.1.1"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="0.0.0.0"/>
DNS Server	<input type="text" value="192.168.1.3"/>

IPv6 Configuration

<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	<input type="text"/> / <input type="text"/>
Link Local Address	<input type="text" value="FE80::202:16FF:FEA1:6C2A"/>
Default Gateway	<input type="text"/>
DNS Server	<input type="text"/>

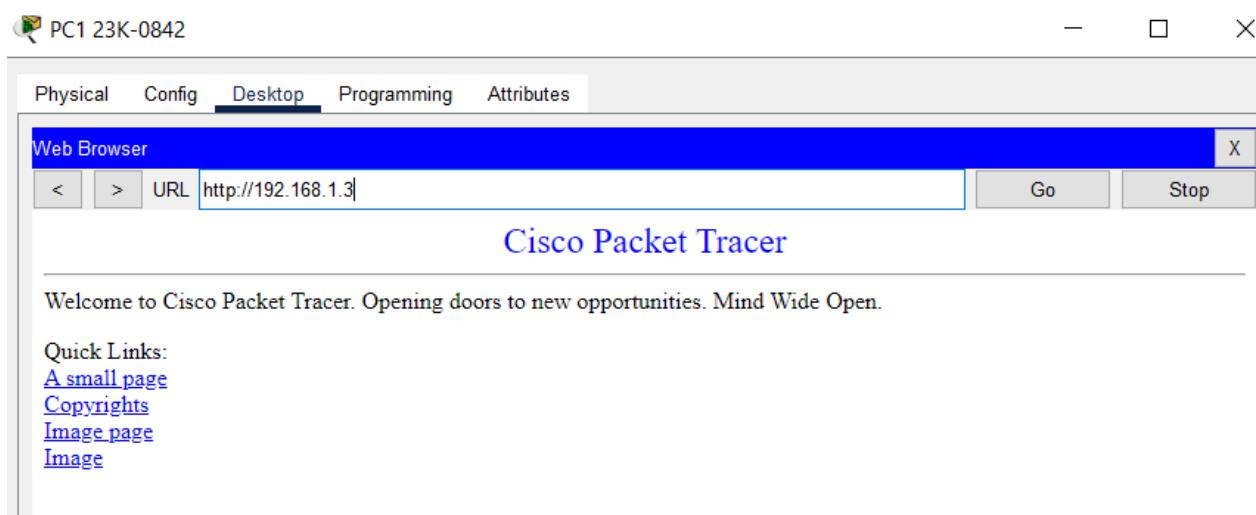
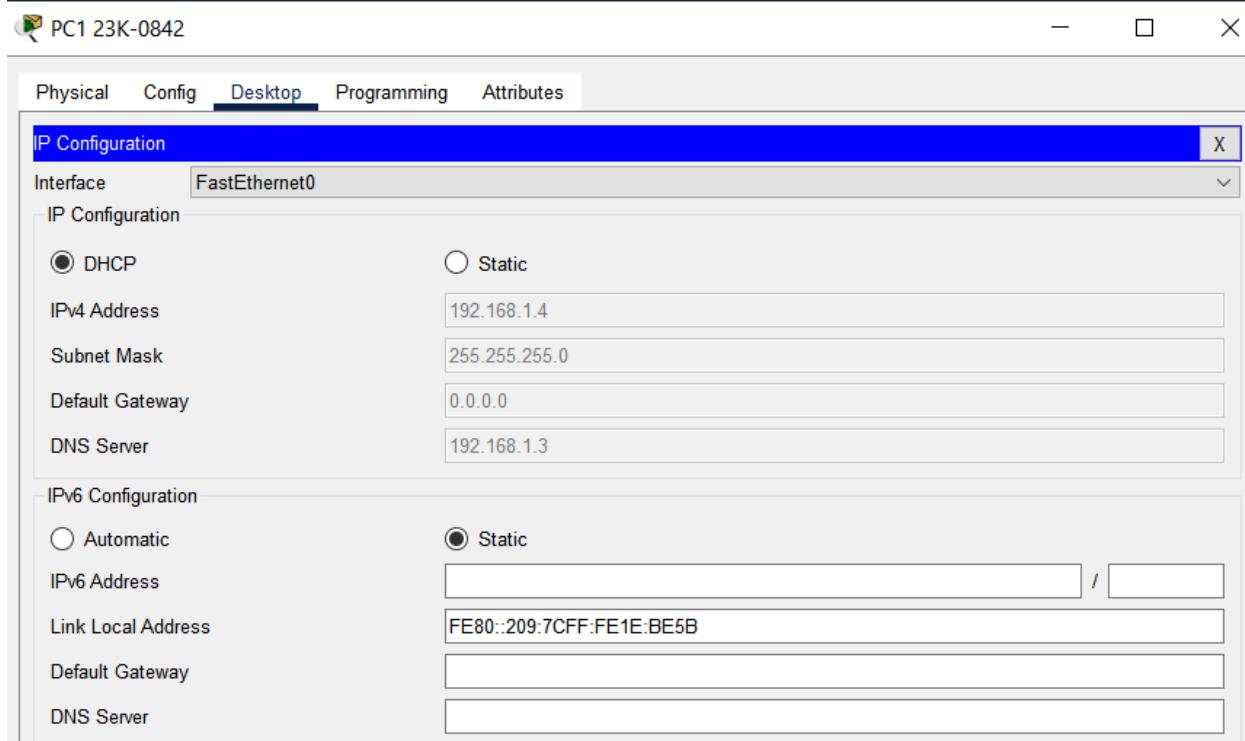


```
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

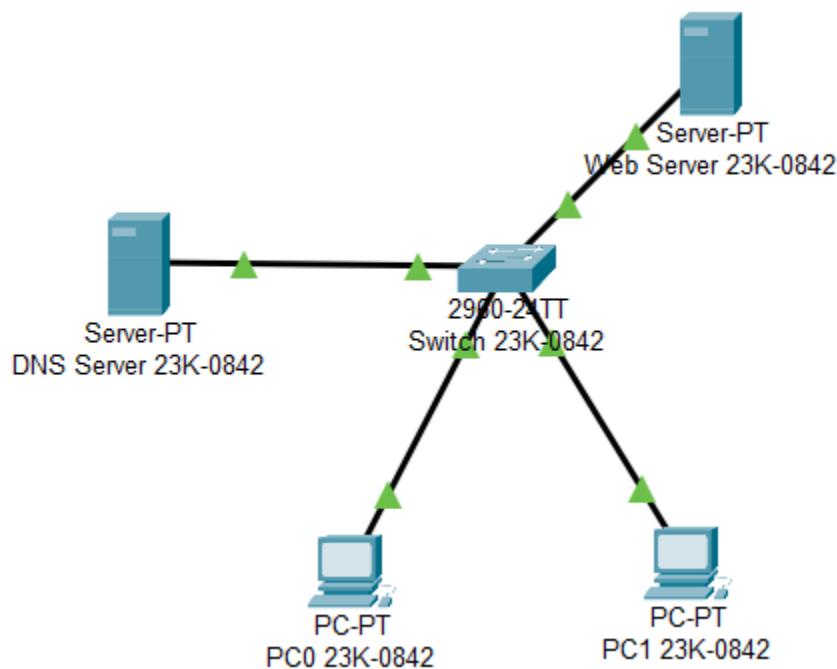
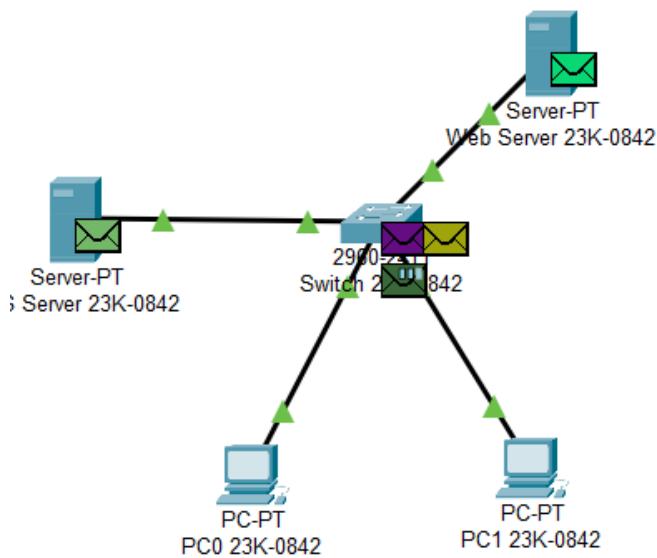
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128

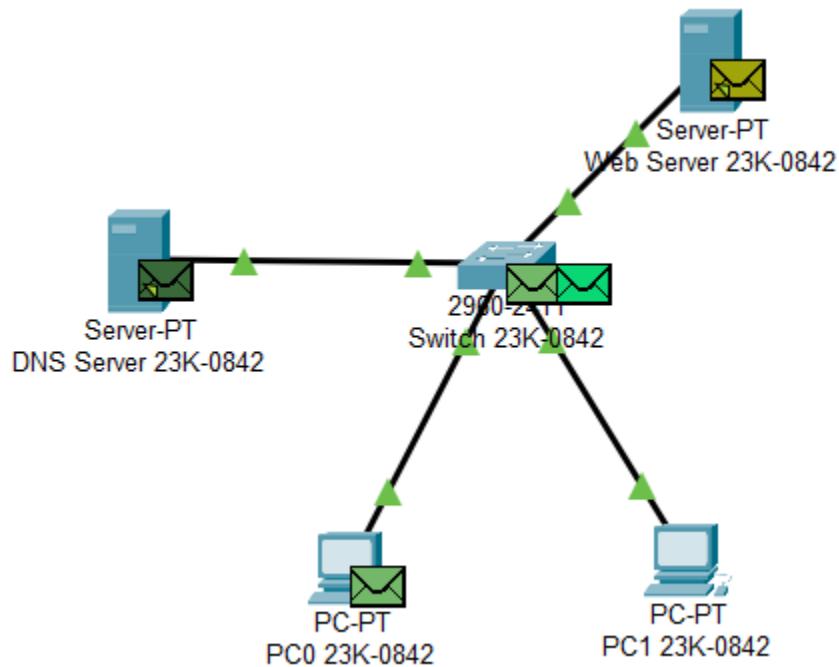
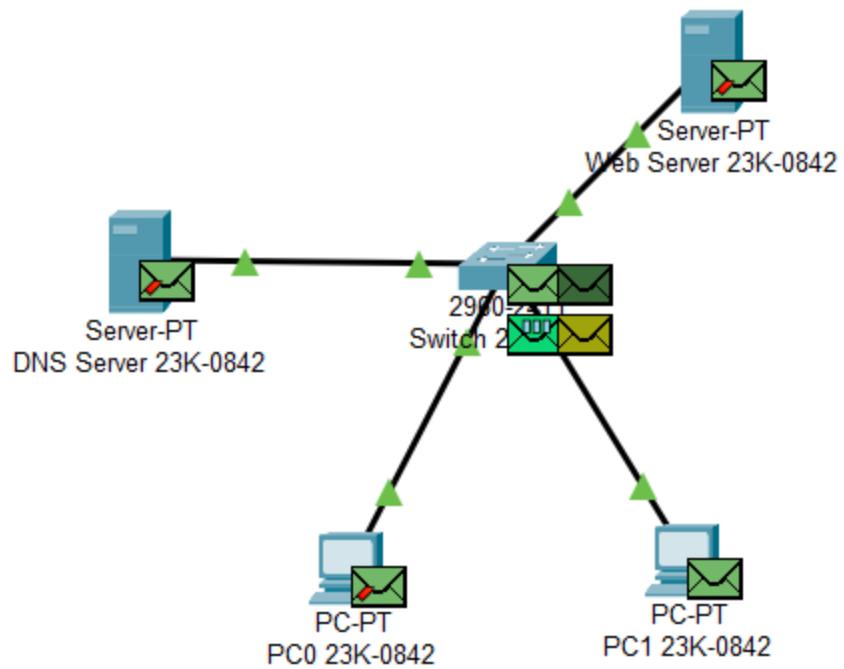
Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

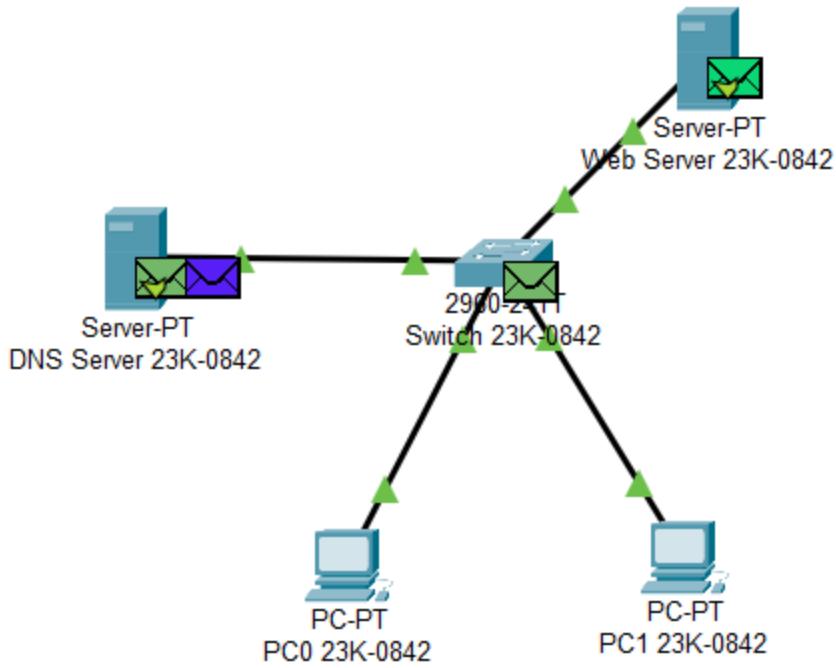
PC1:**Simple PDU Usage Sending DNS packets:**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC0 23K-0842	PC1 23K-0842	ICMP	█	0.000	N	0	(edit)	(delete)	
Successful	Web Server 23K-0842	PC0 23K-0842	ICMP	█	0.000	N	1	(edit)	(delete)	
Successful	Web Server 23K-0842	PC1 23K-0842	ICMP	█	0.000	N	2	(edit)	(delete)	
Successful	DNS Server 23K-0842	PC0 23K-0842	ICMP	█	0.000	N	3	(edit)	(delete)	

Successful	Web Server 23K-0842	PC1 23K-0842	ICMP		0.000	N	2	(edit)	(delete)
Successful	DNS Server 23K-0842	PC0 23K-0842	ICMP		0.000	N	3	(edit)	(delete)

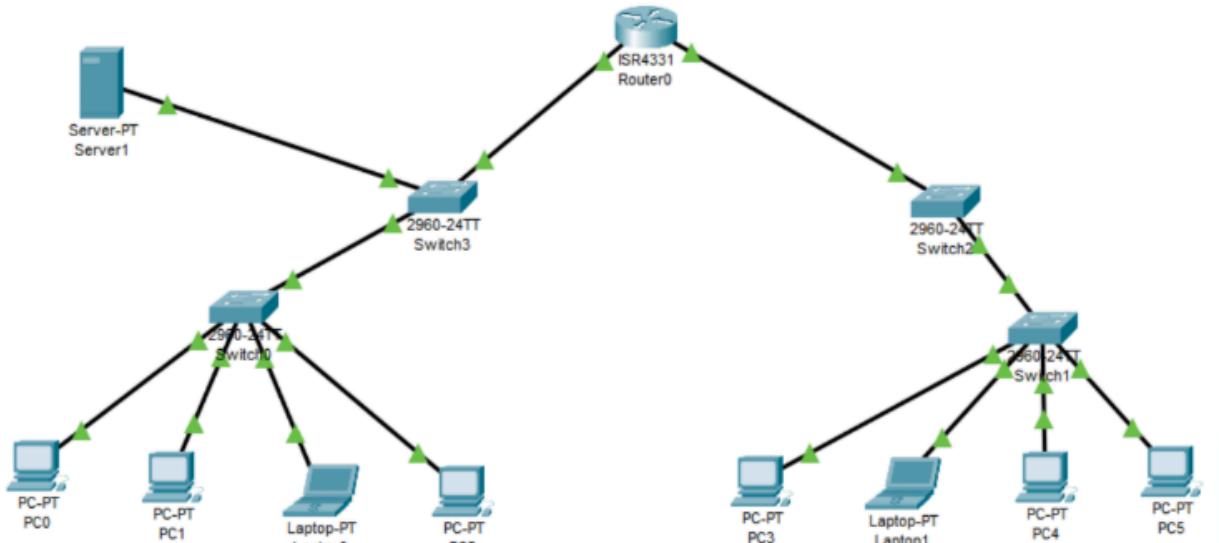
REAL - TIME:**SIMULATION:**





2. Implement the given topology. Add some web servers to your network. Implement DNS & add records of your web servers.

Attach a snapshot of each step.



Server0 23k-0842

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

DHCP Static

IPv4 Address: 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address: /

Link Local Address: FE80::20D:BDFF:FED3:6869

Default Gateway:

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

Server0 23k-0842

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

HTTP

HTTP: On Off

HTTPS

HTTPS: On Off

File Manager

File Name	Edit	Delete
1 copyrights.html	(edit)	(delete)
2 cscoptlogo177x111.jpg		(delete)
3 helloworld.html	(edit)	(delete)
4 image.html	(edit)	(delete)
5 index.html	(edit)	(delete)

Server0 23k-0842

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: Type: **A Record**

Address:

Add **Save** **Remove**

No.	Name	Type	Detail
0	www.server123k0842.com	A Record	192.168.1.2

Router0 23k-0842

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**

 - Static
 - RIP

- SWITCHING**
- VLAN Database
- INTERFACE**

GigabitEthernet0/0/0

Port Status On

Bandwidth 1000 Mbps 100 Mbps 10 Mbps Auto

Duplex Half Duplex Full Duplex Auto

MAC Address: 00D0.BCAB.5201

IP Configuration

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Tx Ring Limit: 10

Router0 23k-0842

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**

 - Static
 - RIP

- SWITCHING**
- VLAN Database
- INTERFACE**

GigabitEthernet0/0/1

Port Status On

Bandwidth 1000 Mbps 100 Mbps 10 Mbps Auto

Duplex Half Duplex Full Duplex Auto

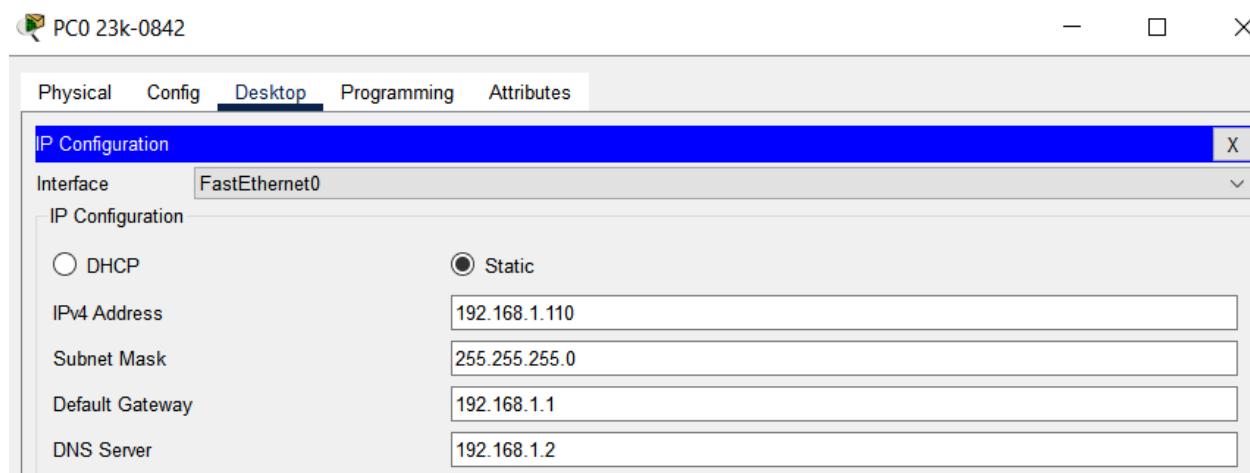
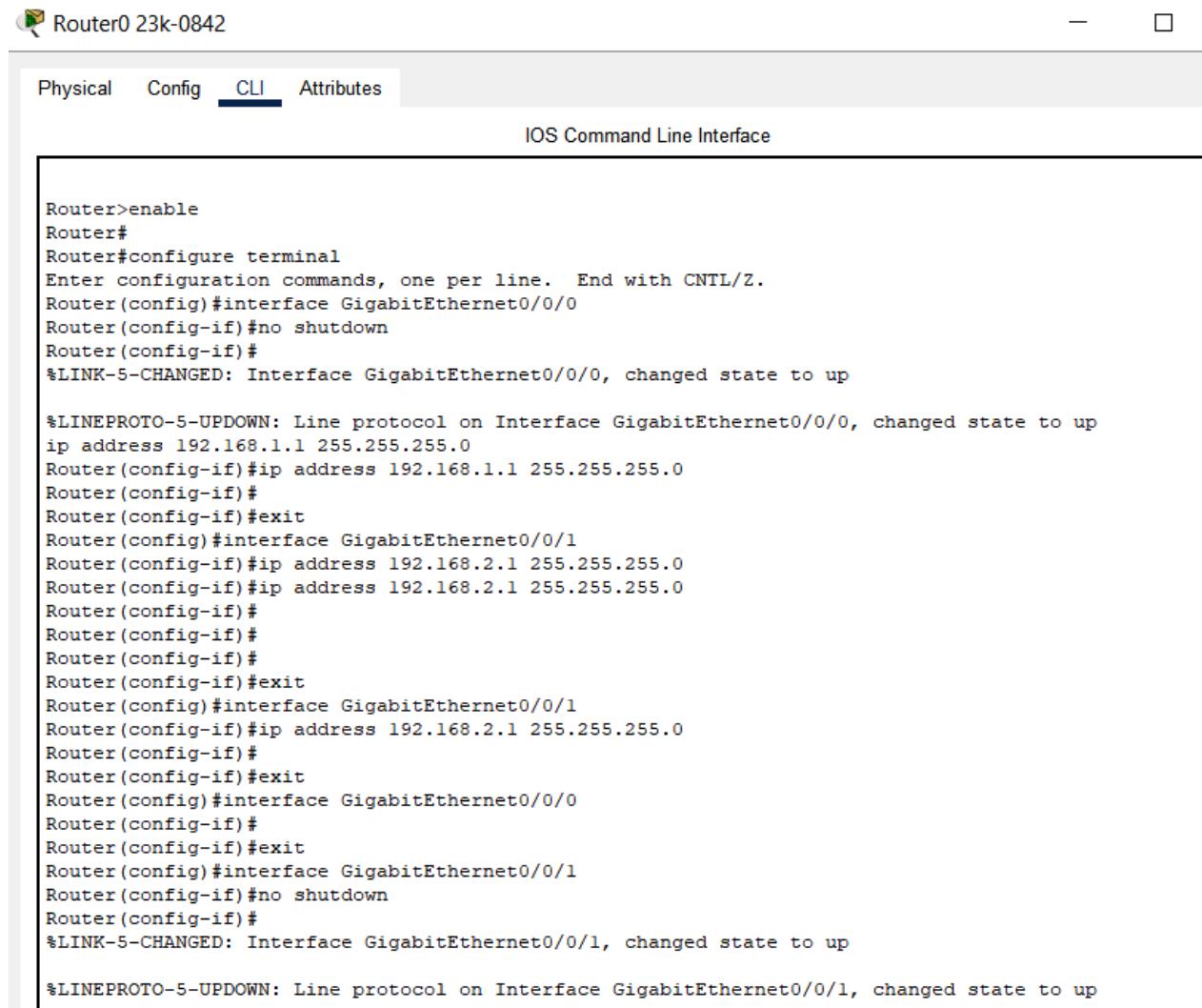
MAC Address: 00D0.BCAB.5202

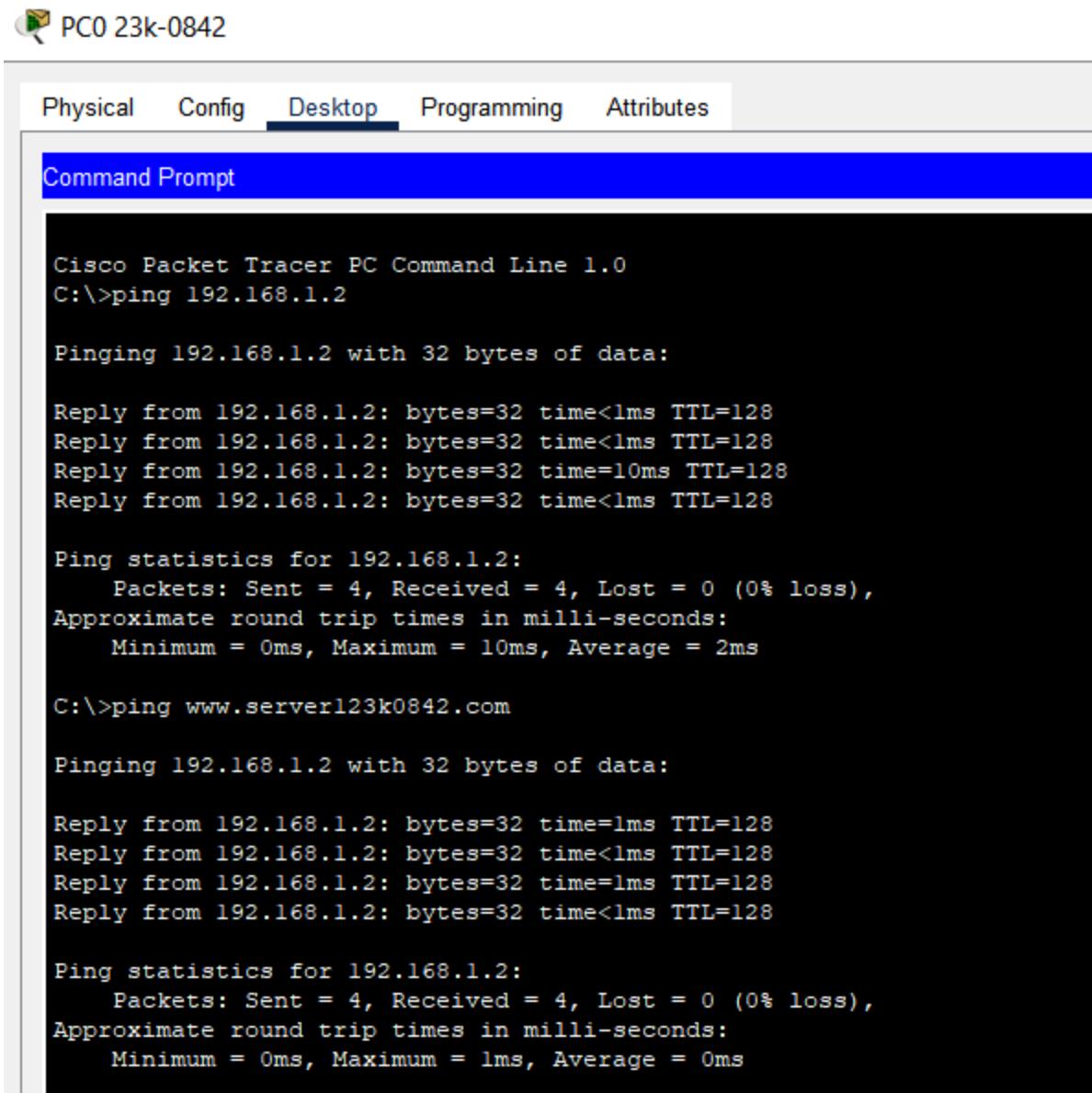
IP Configuration

IPv4 Address: 192.168.2.1

Subnet Mask: 255.255.255.0

Tx Ring Limit: 10





```
Cisco Packet Tracer PC Command Line 1.0
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<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time=10ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>ping www.server123k0842.com

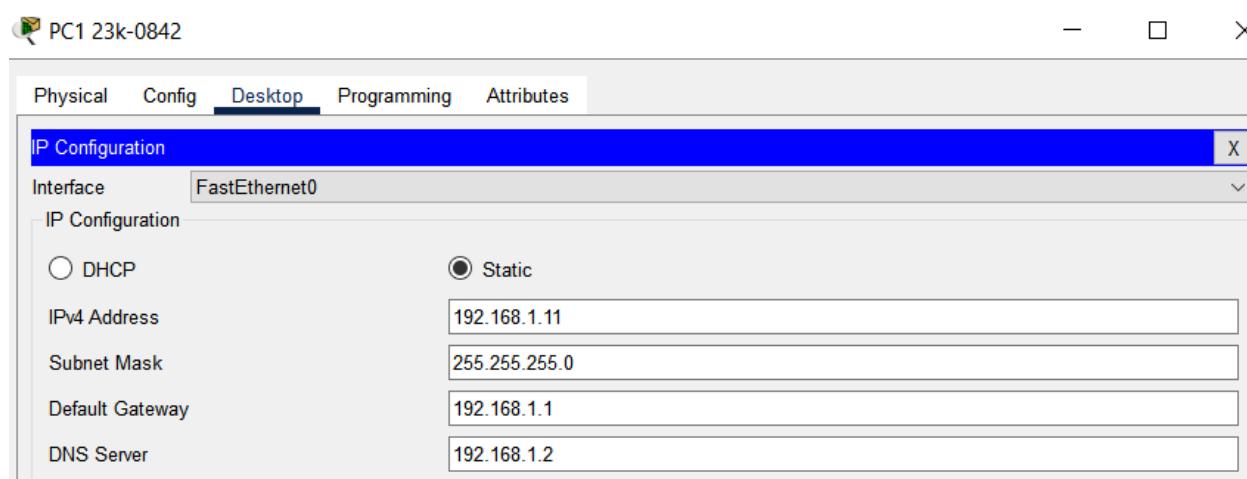
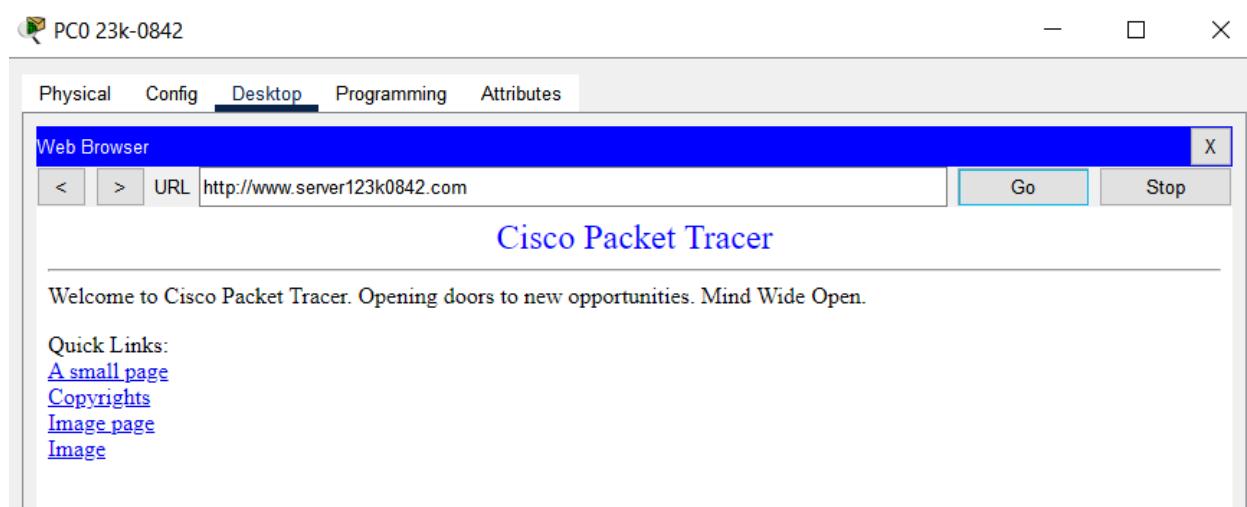
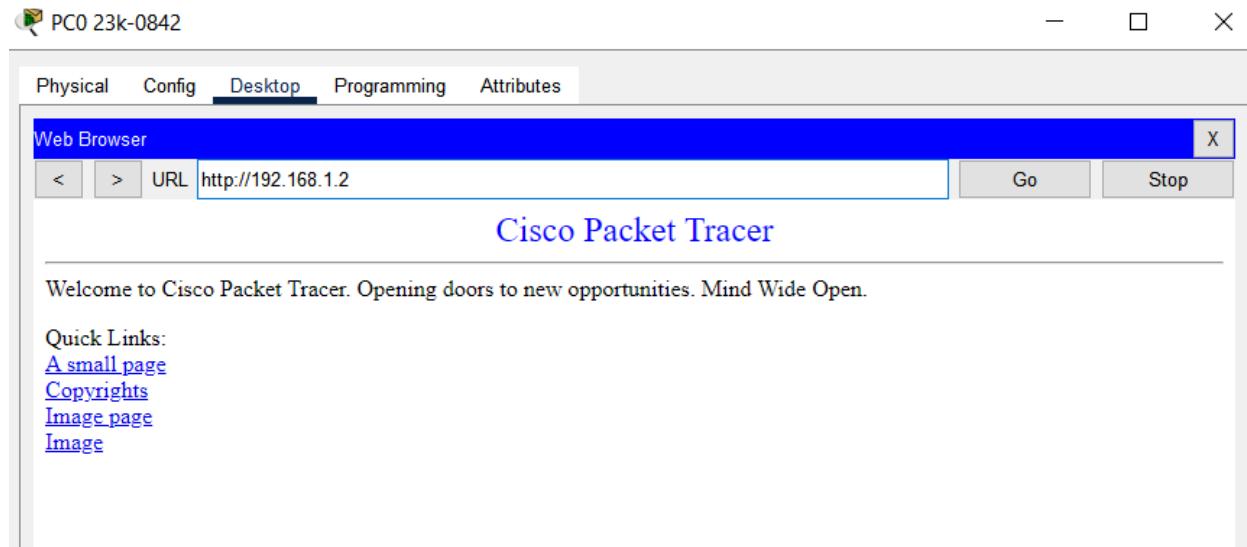
Pinging 192.168.1.2 with 32 bytes of data:

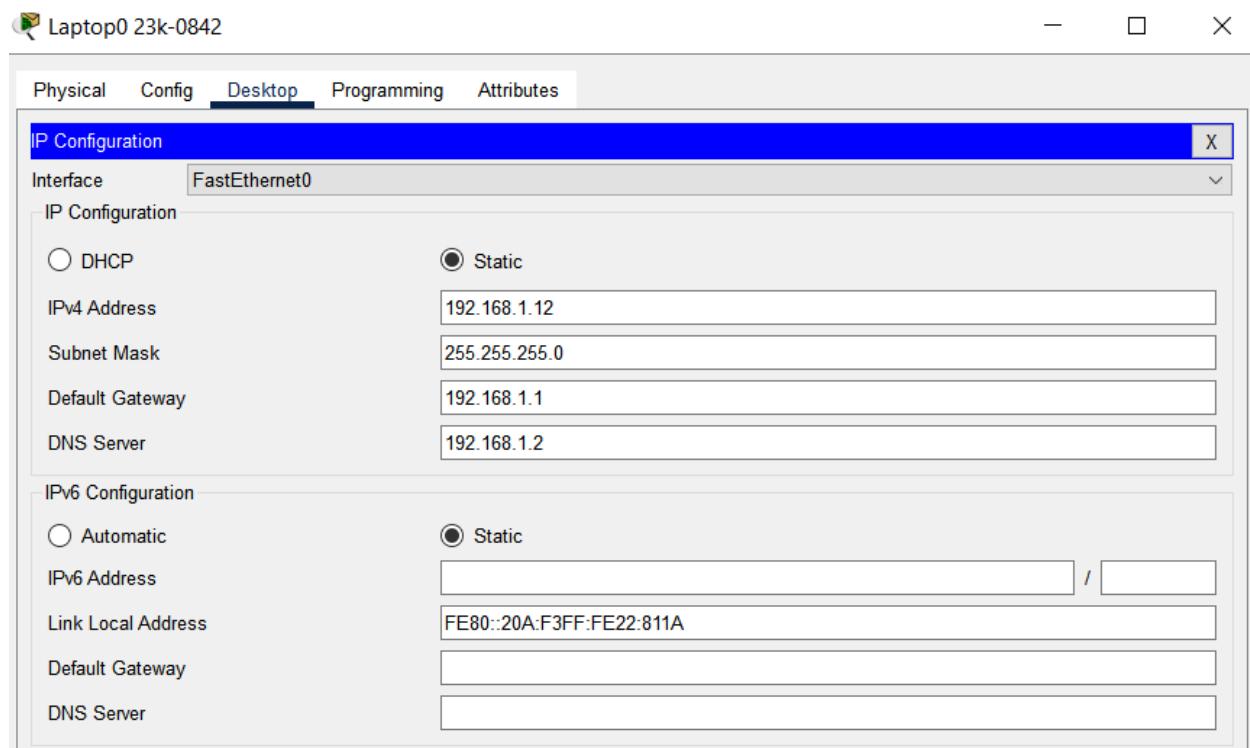
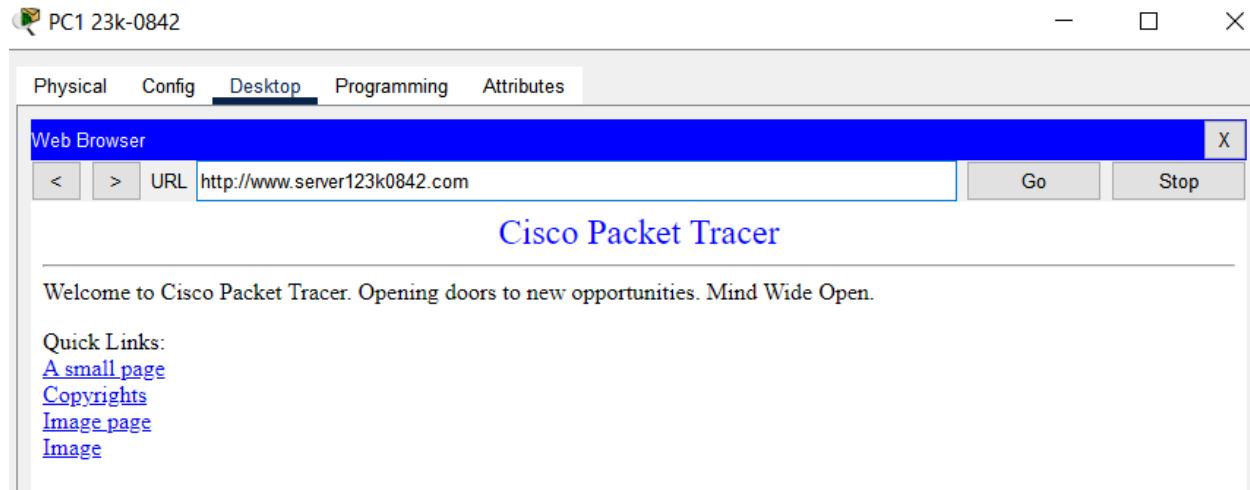
Reply from 192.168.1.2: bytes=32 time=1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time=1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

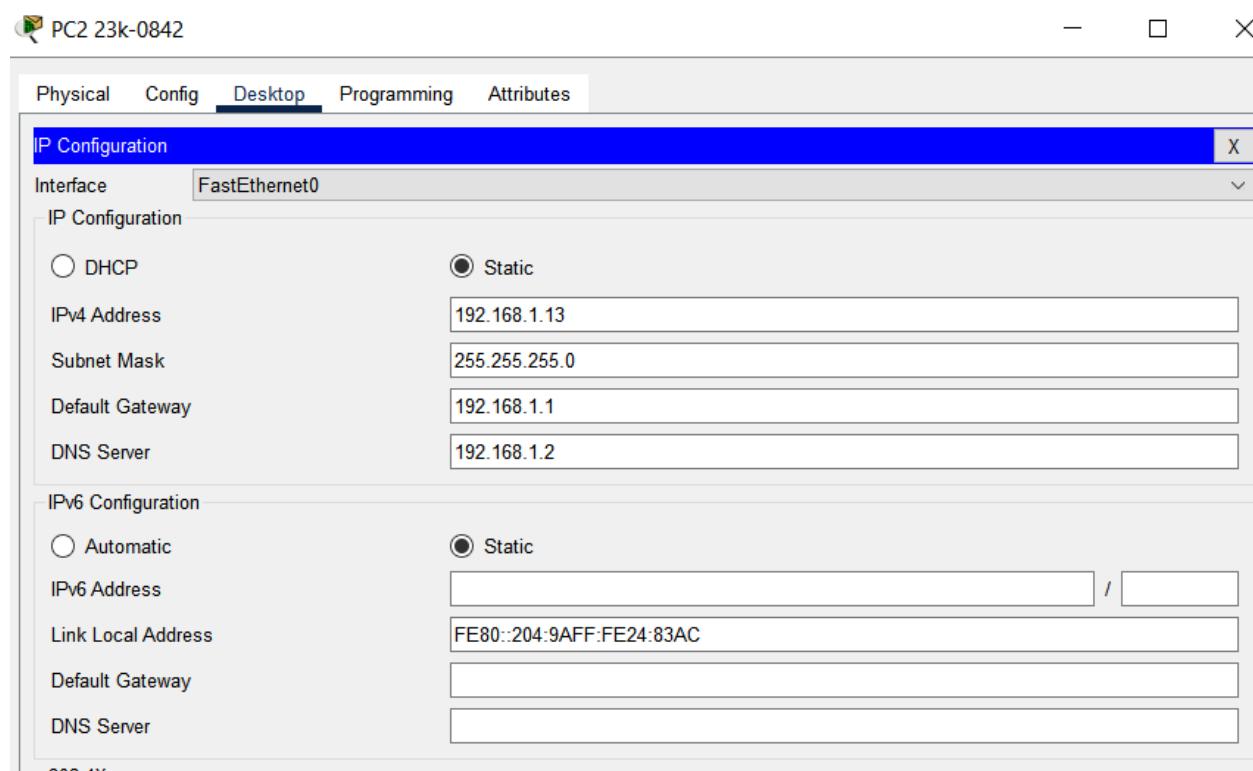
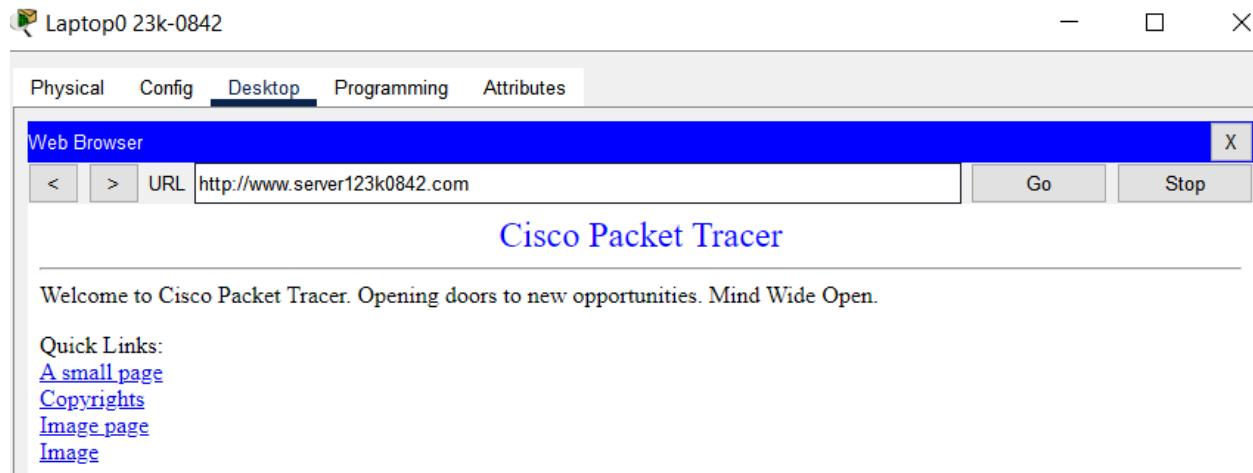
Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

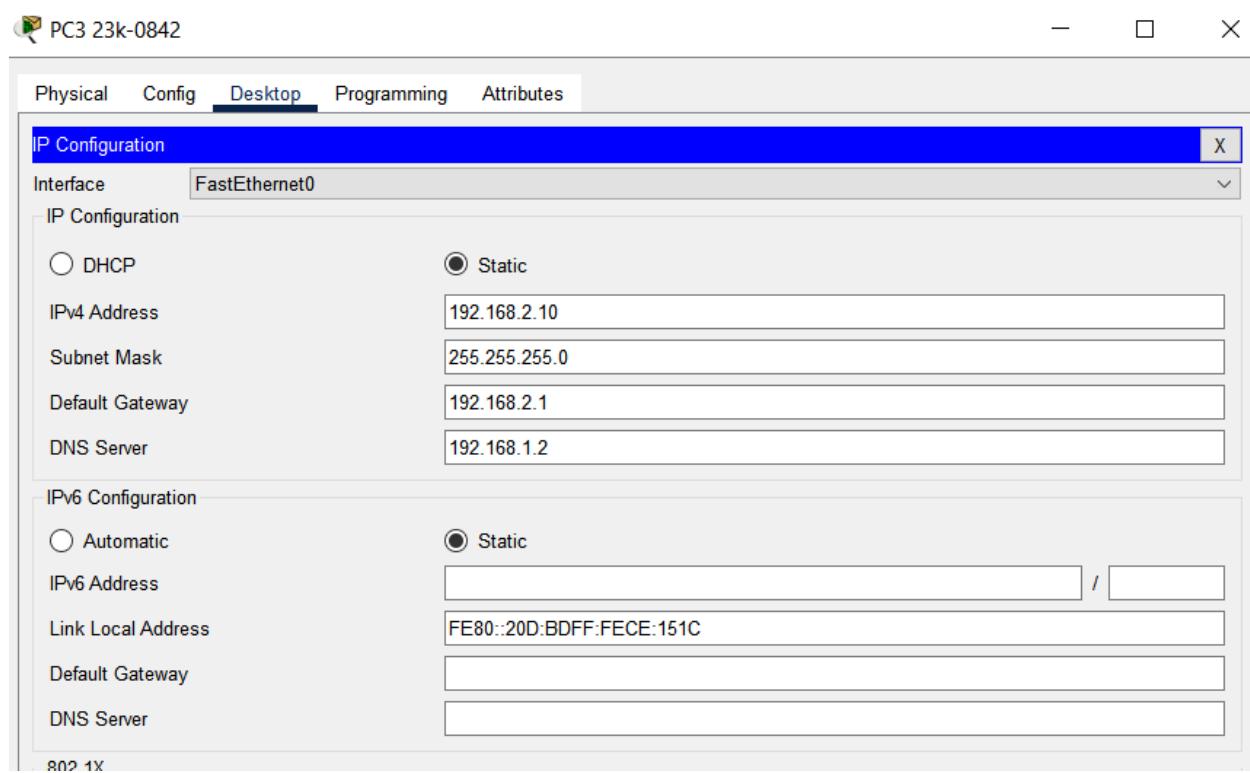
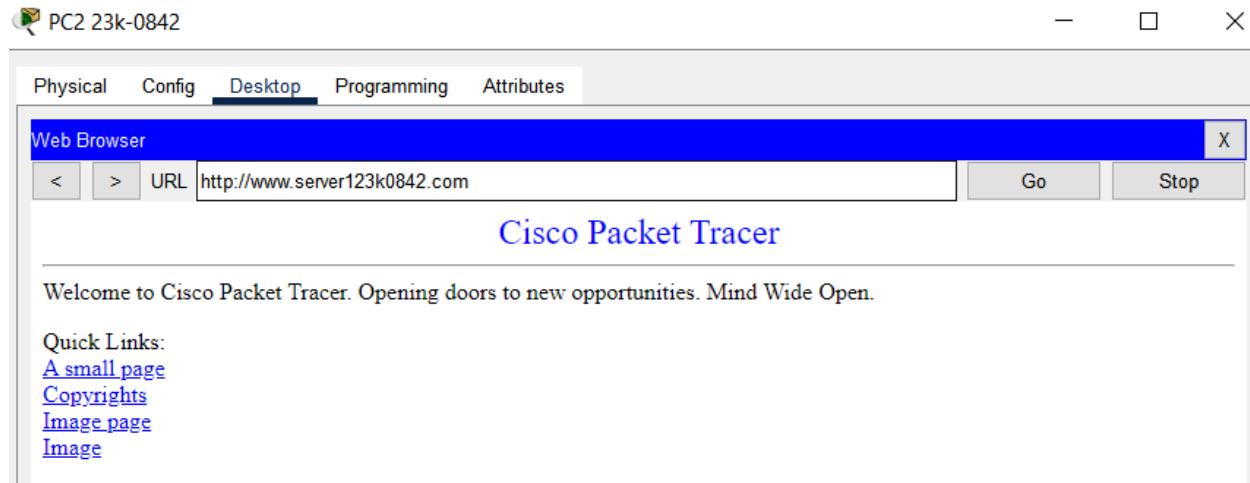
Ping www.server123k0842.com gives answer means that DNS server is able to resolve the hostname to IP address 192.168.1.2

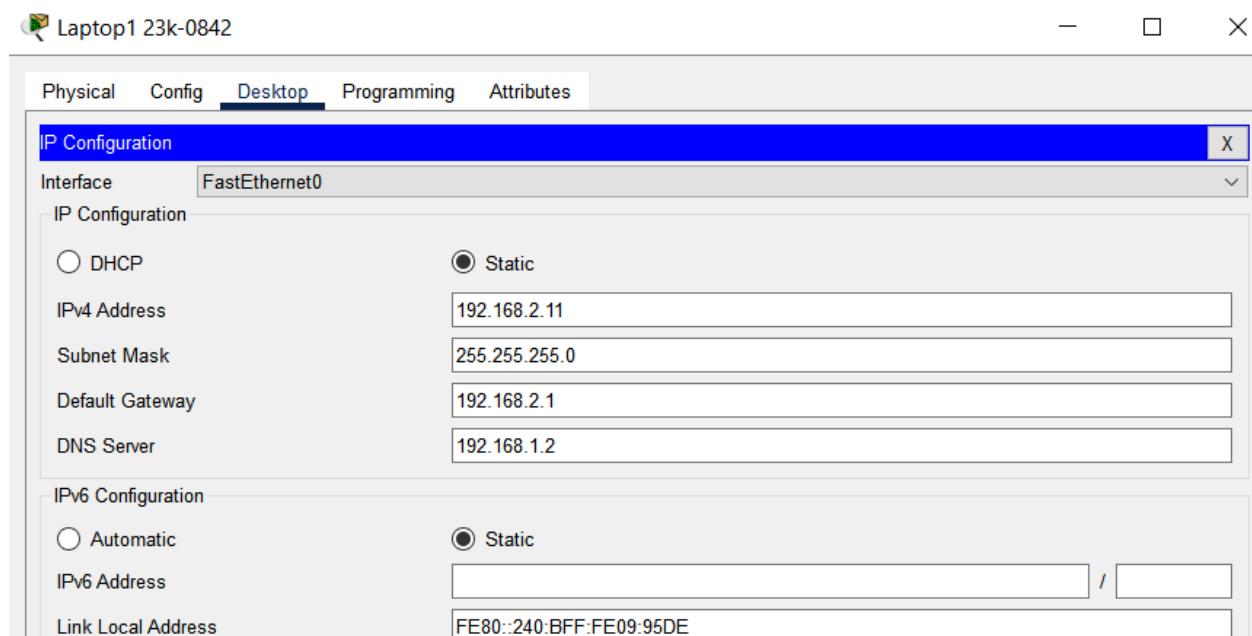
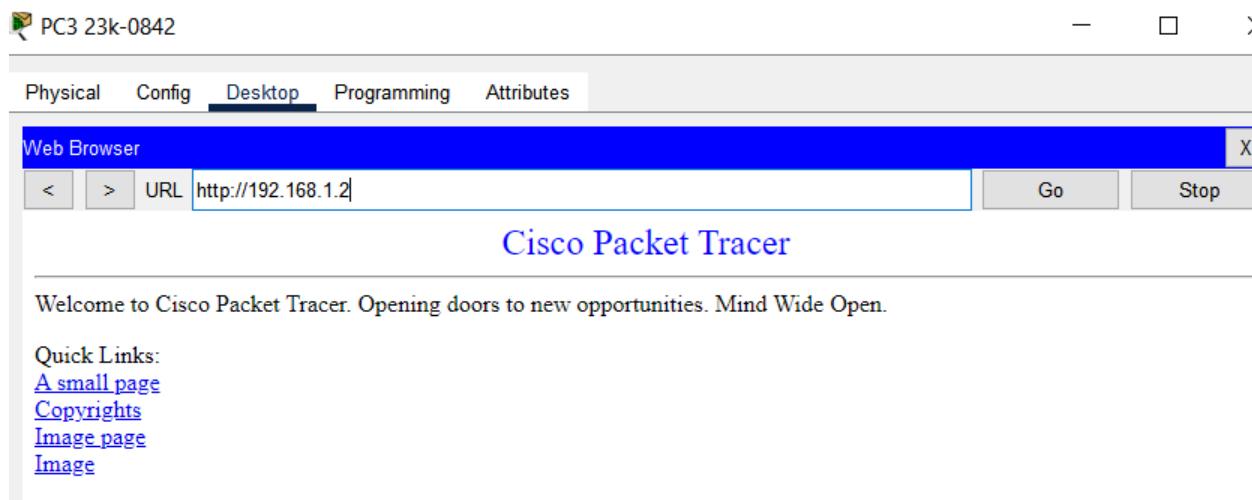
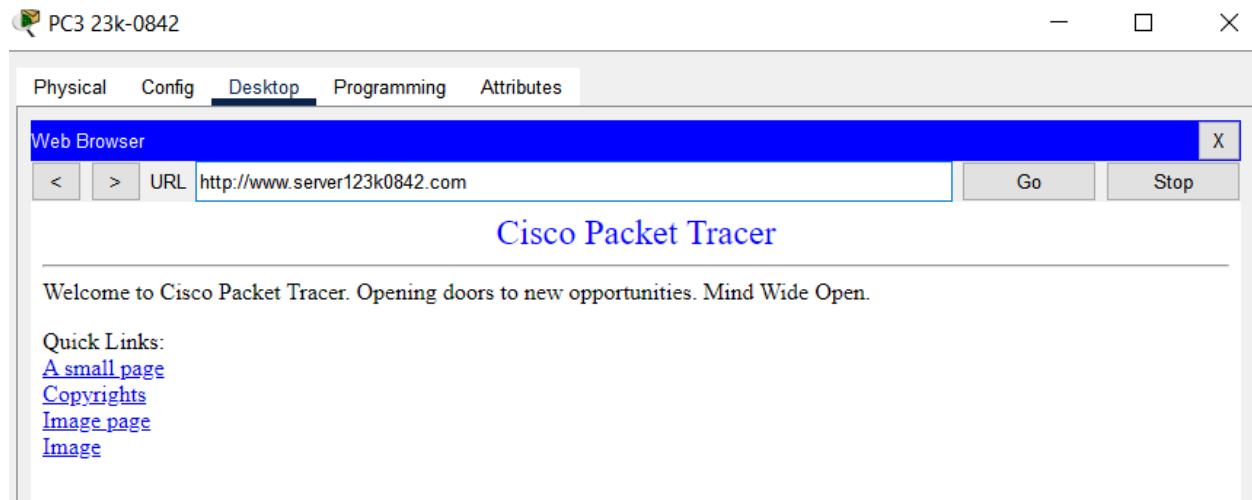
The DNS server is correctly resolving the hostname www.server123k0842.com → 192.168.1.2.

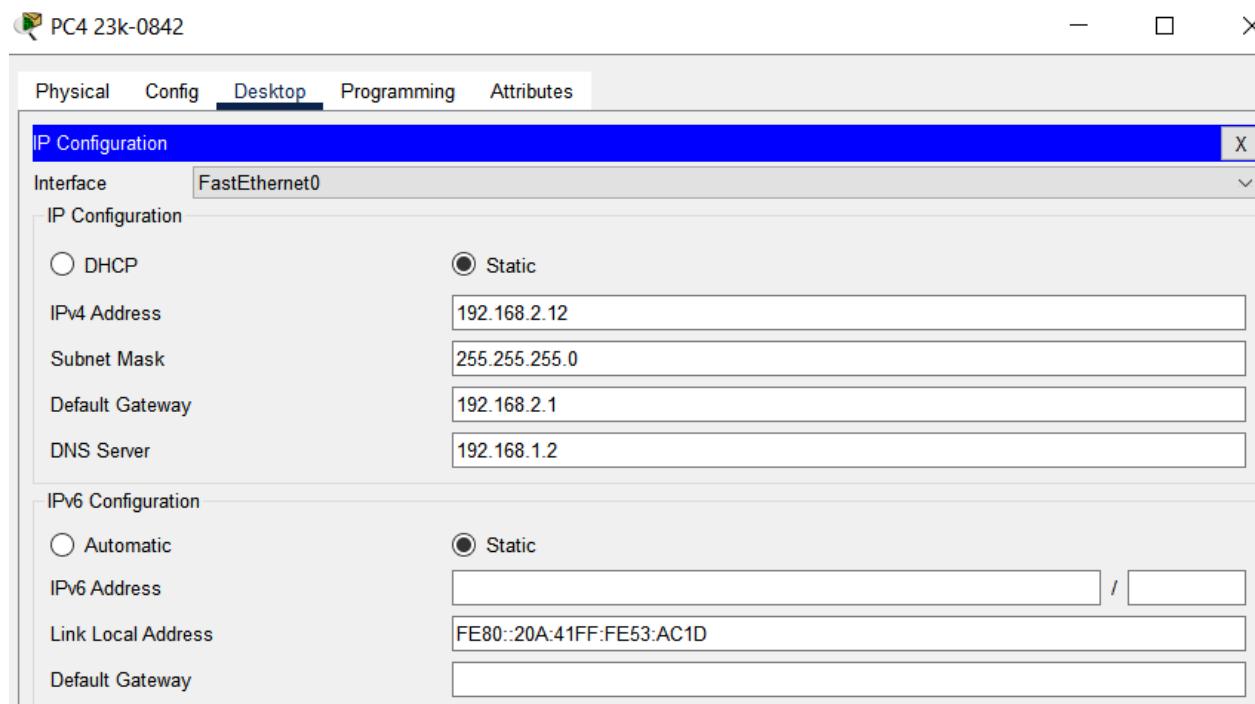
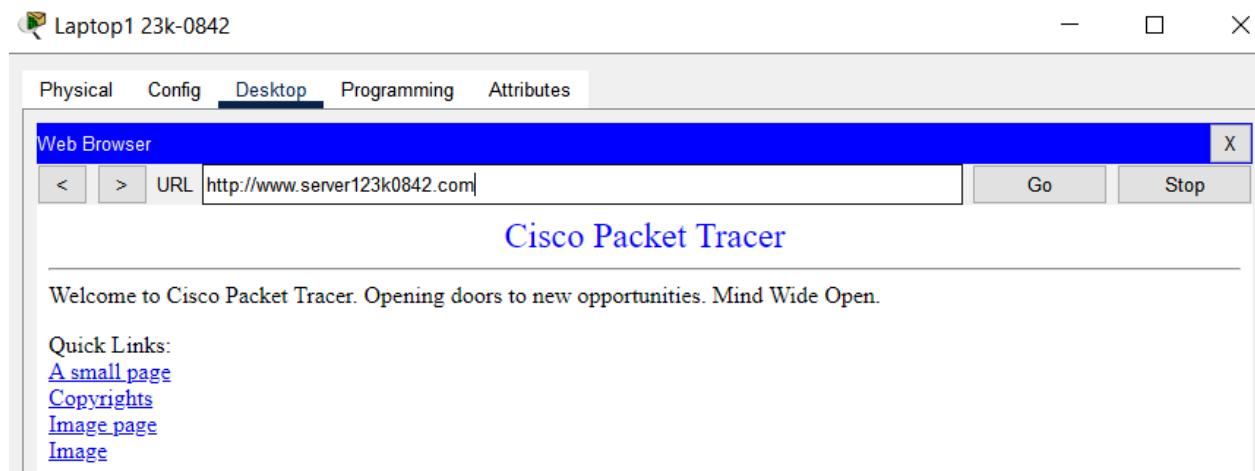


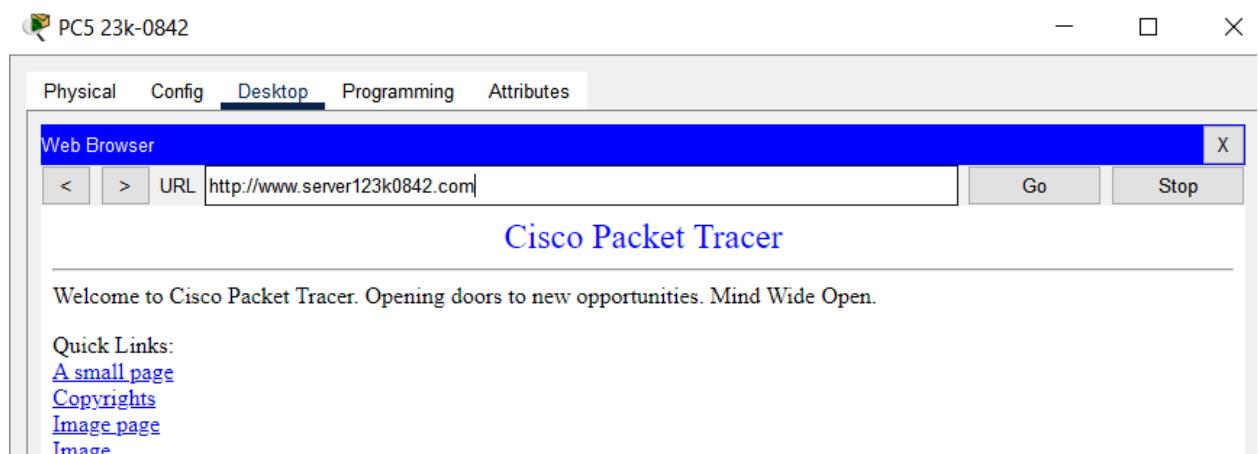
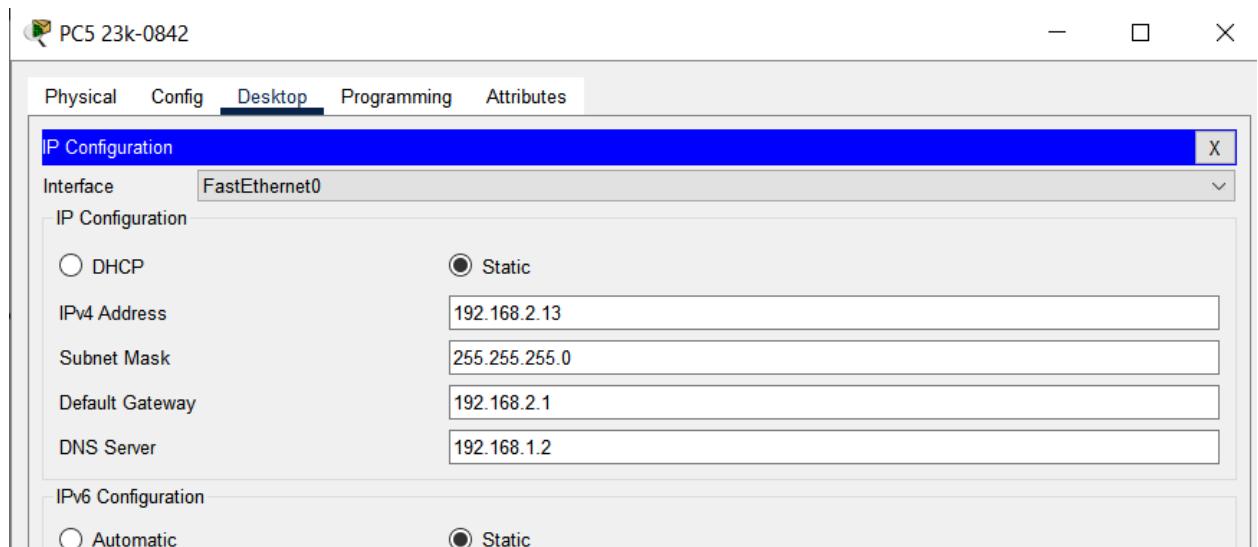
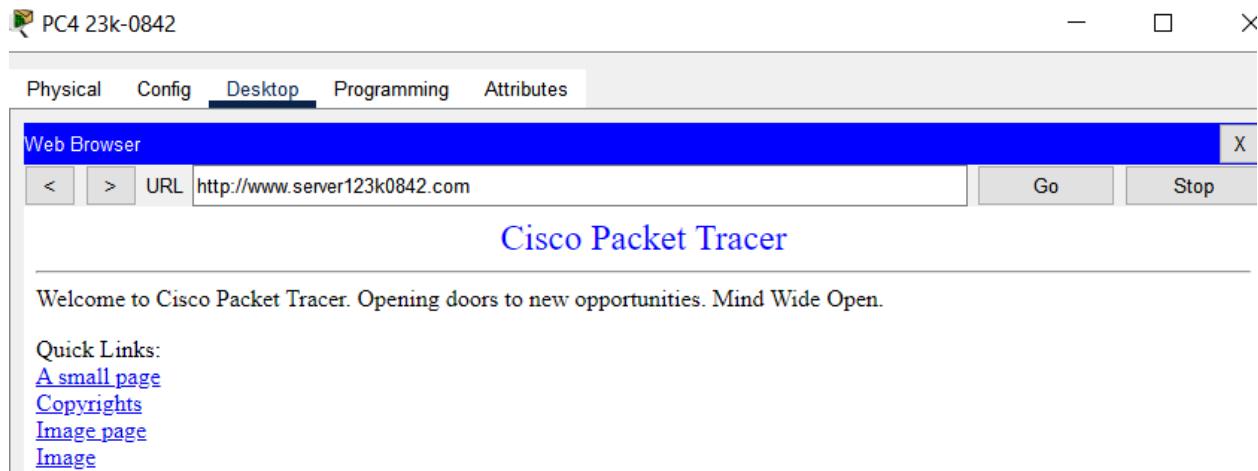


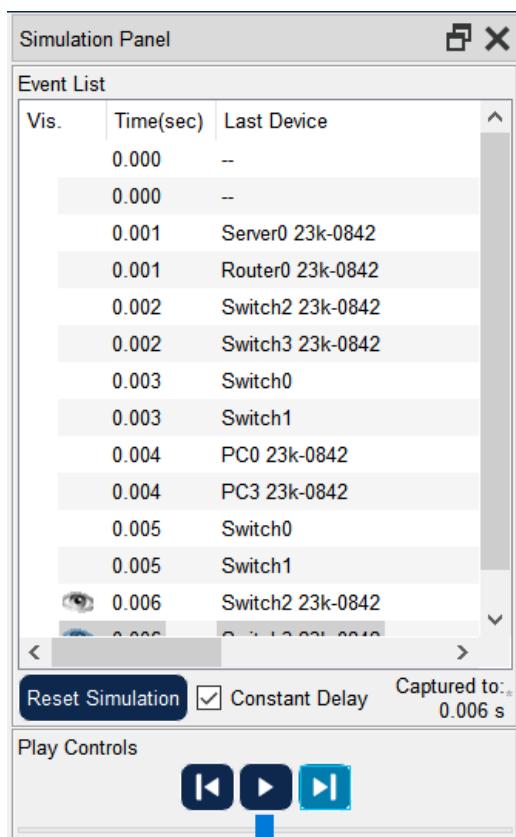
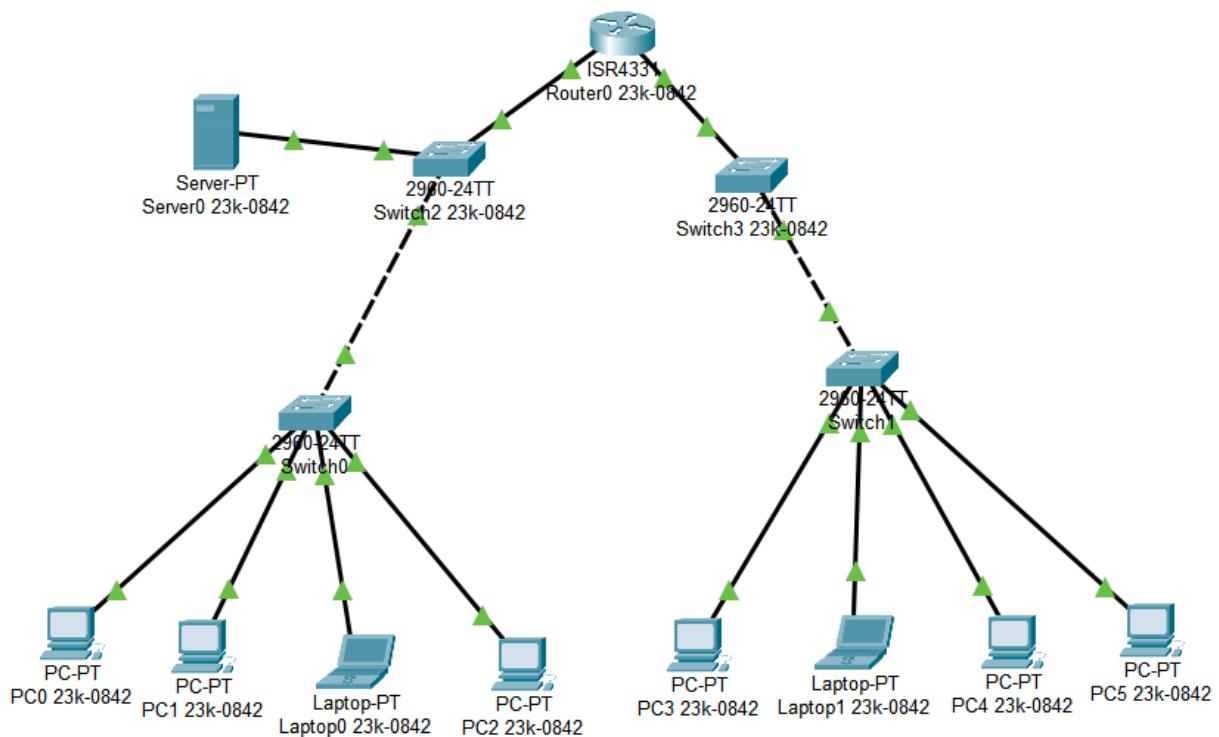




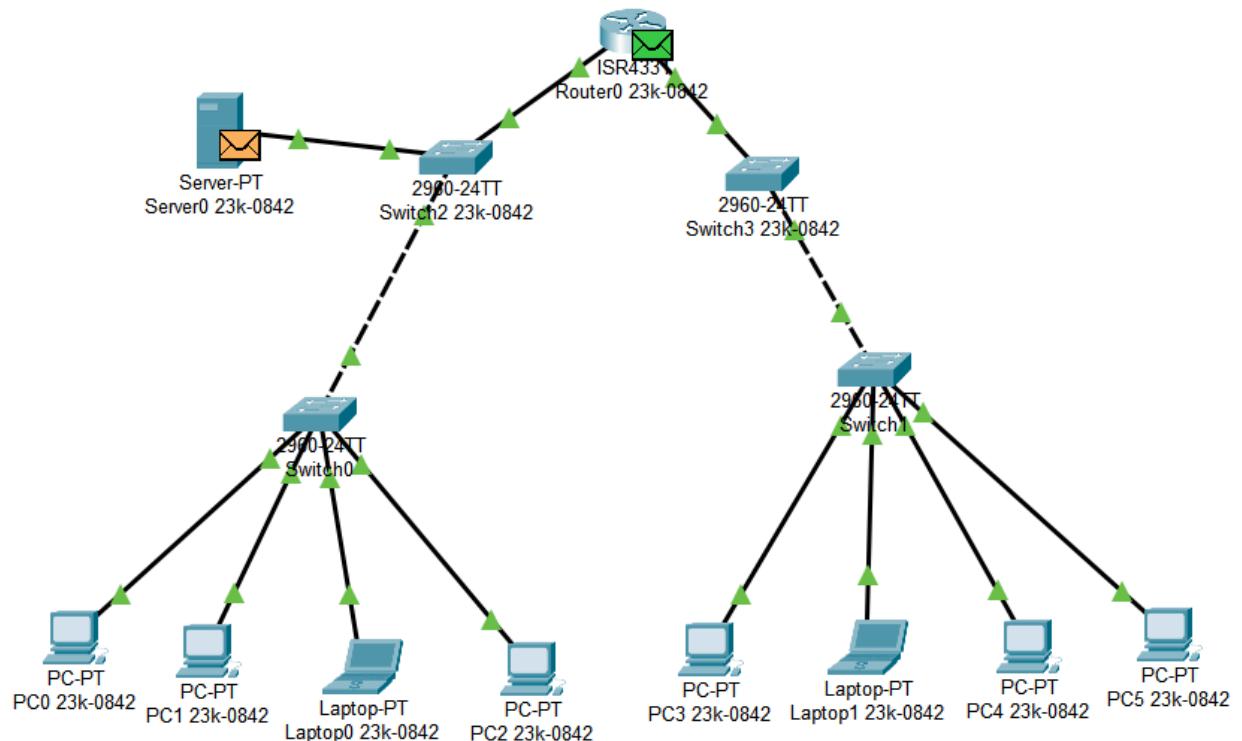


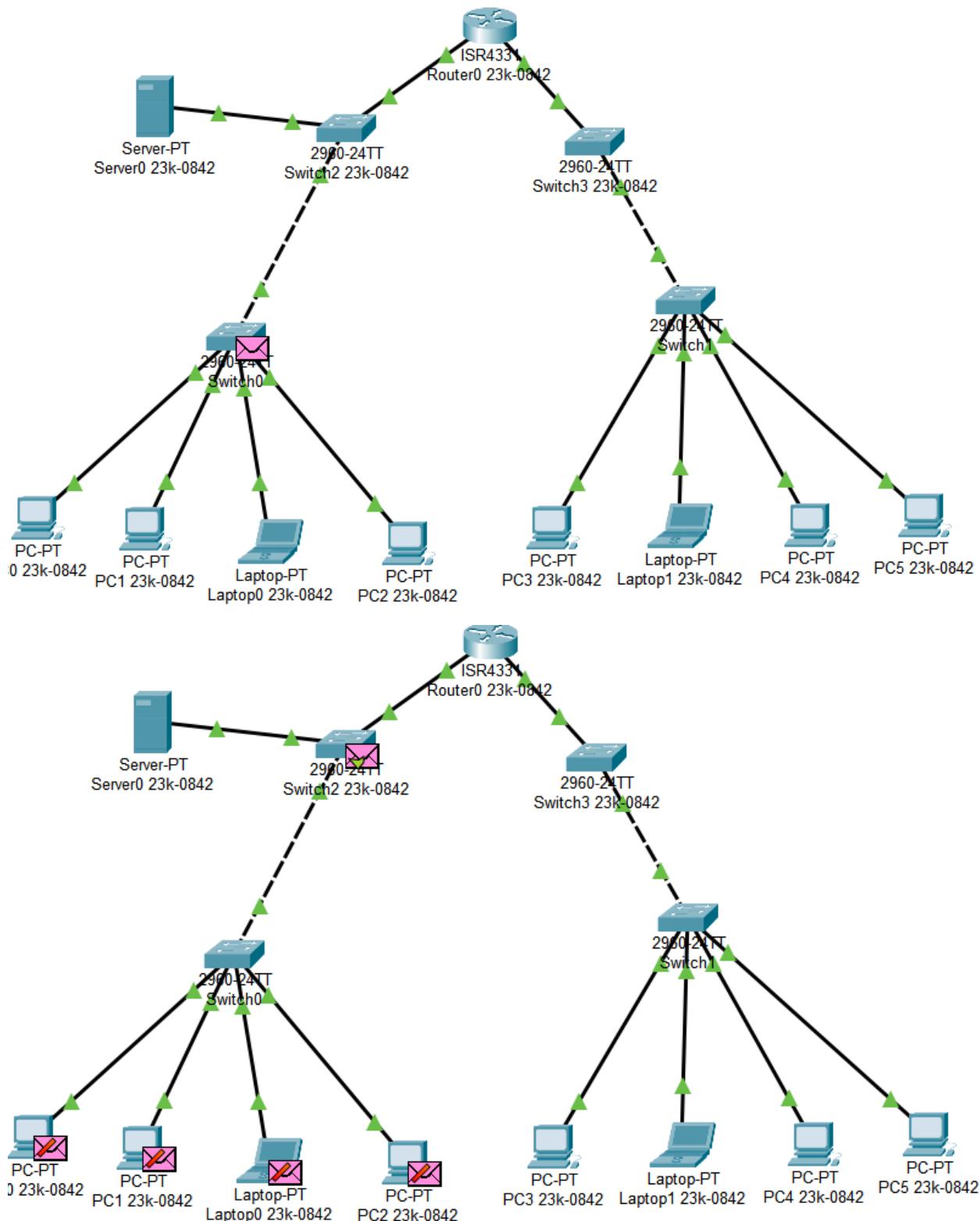


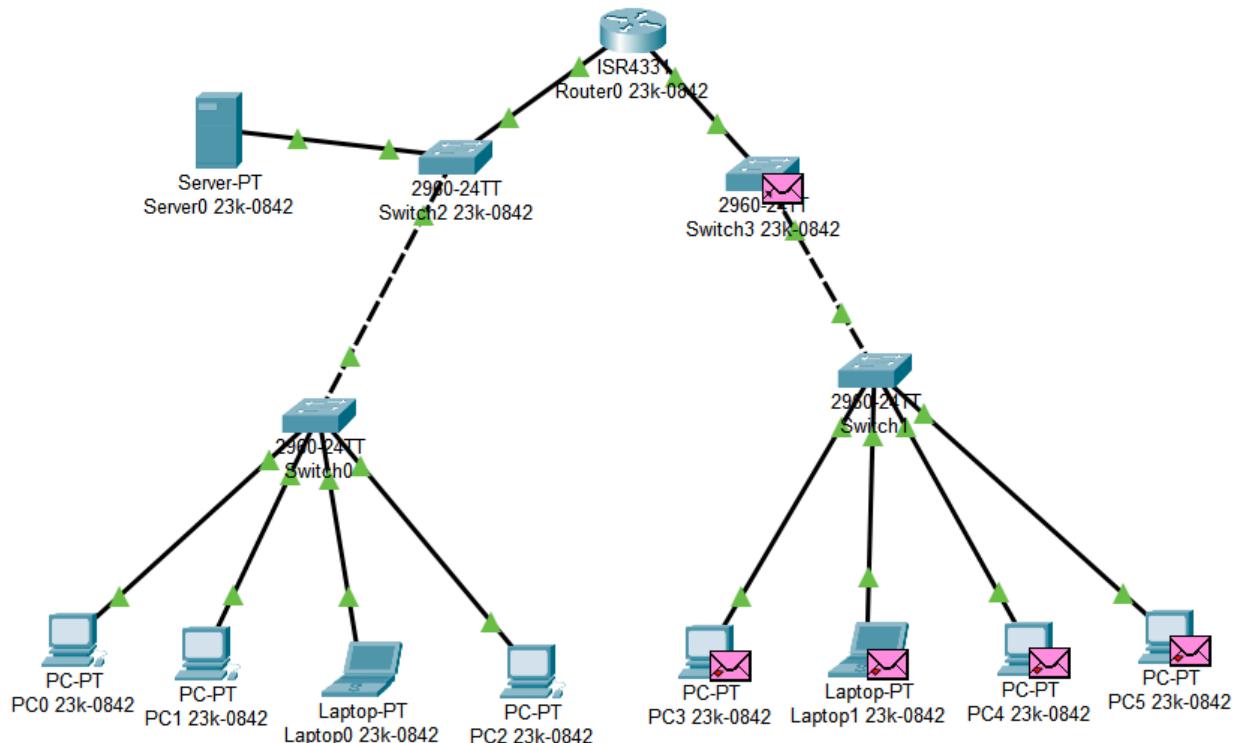
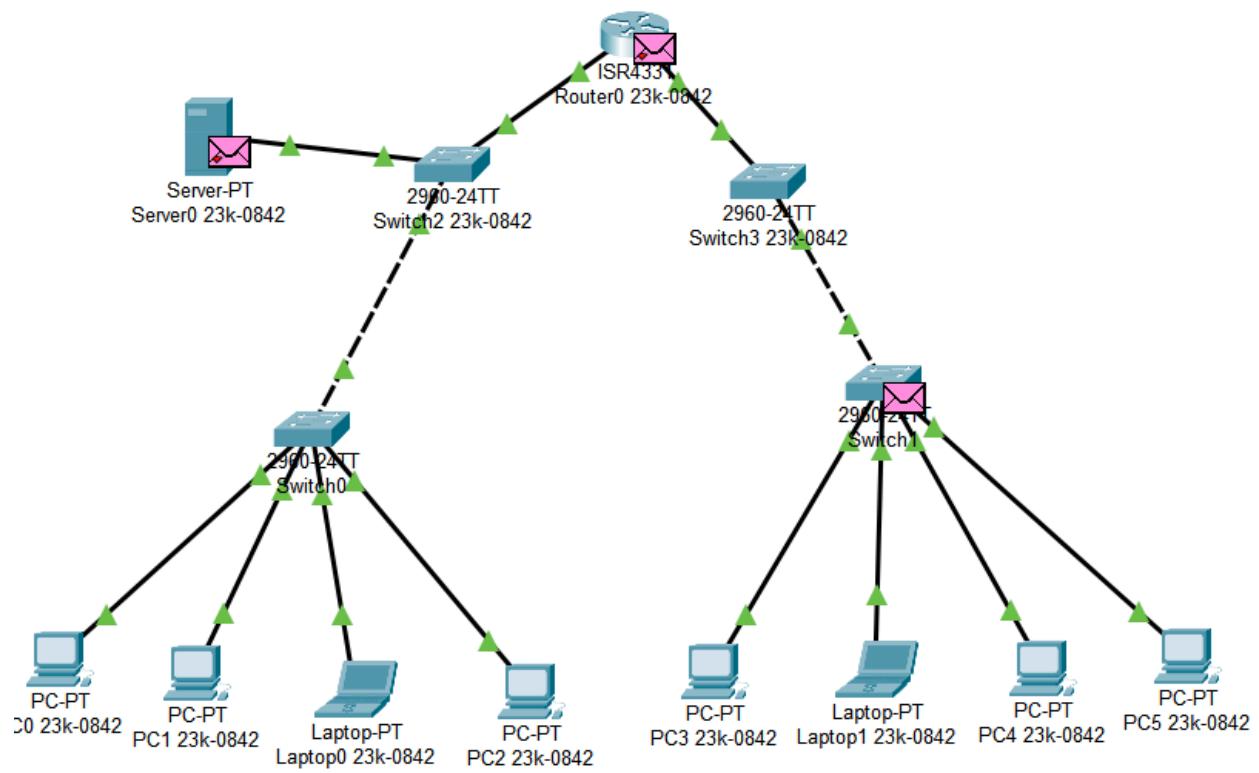


REAL TIME:

Vis.	Time(sec)	Last Device
	1.667	--
	1.668	Switch0
	1.669	Switch2 23k-0842
	1.669	Switch2 23k-0842
	1.669	--
👁	1.670	Switch1







3. Which HTTP header sets a "best before" date for cached items?

Expires header, It specifies the date/time after which the cached response is considered stale.

4. HTTP PUT and POST methods are different or not? Explain the reason in one line.

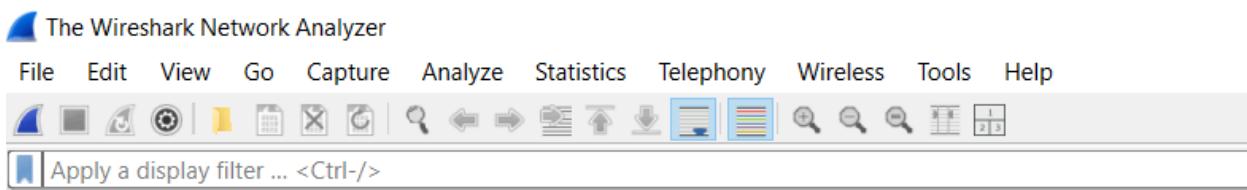
Yes they are different. POST creates a new resource (non-idempotent), while PUT updates a resource at a specific URI (idempotent).

Wireshark Lab Exercise

1. Follow the **Wireshark HTTP Analysis** steps for HTTPS. Take a Snapshot of each Step, and Explain in a one-line answer, what do you understand here?
2. Apply the following filters. Attach a snapshot of each step.
 1. Tcp
 2. Udp
 3. IP address equal to

Step 1: Capture

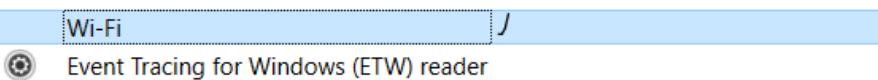
Captured using Wi-Fi



Welcome to Wireshark

Capture

...using this filter: Enter a capture filter ...



Step 2: For https we can apply filter tcp.port==443

Capturing from Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port==443

No.	Time	Source	Destination	Protocol	Length	Info
1003	33.055352	192.168.100.9	142.250.200.238	TCP	54	49400 → 443 [ACK] Seq=3 Ack=2 Win=259 Len=0
1004	33.156052	142.250.200.238	192.168.100.9	UDP	109	443 → 65031 Len=67
1005	33.187936	192.168.100.9	142.250.200.238	UDP	76	65031 → 443 Len=34
1006	33.191415	142.250.200.238	192.168.100.9	UDP	68	443 → 65031 Len=26
1007	33.403204	192.168.100.9	142.250.200.238	UDP	71	65031 → 443 Len=29
1008	33.680747	142.250.200.238	192.168.100.9	UDP	68	443 → 65031 Len=26
1009	33.888271	192.168.100.9	142.250.200.238	UDP	71	65031 → 443 Len=29
1010	34.170449	142.250.200.238	192.168.100.9	UDP	68	443 → 65031 Len=26
1011	34.371889	192.168.100.9	142.250.200.238	UDP	71	65031 → 443 Len=29
1012	34.722617	142.250.200.238	192.168.100.9	UDP	68	443 → 65031 Len=26
1013	34.937709	192.168.100.9	142.250.200.238	UDP	71	65031 → 443 Len=29
1014	35.215103	142.250.200.238	192.168.100.9	UDP	68	443 → 65031 Len=26

This filter shows only encrypted HTTPS packets (port 443).

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port==443

No.	Time	Source	Destination	Protocol	Length	Info
3	0.670007	192.168.100.9	172.64.155.209	TCP	55	49359 → 443 [ACK] Seq=1 Ack=1 Win=257 Len=1
4	0.680104	172.64.155.209	192.168.100.9	TCP	66	443 → 49359 [ACK] Seq=1 Ack=2 Win=19 Len=0 SLE=1 SRE=2
50	4.029732	172.64.148.235	192.168.100.9	TLSv1.2	78	Application Data
51	4.029984	192.168.100.9	172.64.148.235	TLSv1.2	82	Application Data
52	4.044891	172.64.148.235	192.168.100.9	TCP	60	443 → 63530 [ACK] Seq=25 Ack=29 Win=16 Len=0
60	4.328217	192.168.100.9	52.123.129.14	TCP	66	51543 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
61	4.369758	52.123.129.14	192.168.100.9	TCP	66	443 → 51543 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM
62	4.369859	192.168.100.9	52.123.129.14	TCP	54	51543 → 443 [ACK] Seq=1 Ack=1 Win=262144 Len=0
63	4.370381	192.168.100.9	52.123.129.14	TLSv1.2	543	Client Hello (SNI=ecs.office.com)
64	4.431552	52.123.129.14	192.168.100.9	TCP	54	443 → 51543 [ACK] Seq=1 Ack=490 Win=12583168 Len=0
65	4.431552	52.123.129.14	192.168.100.9	TLSv1.2	199	Server Hello, Change Cipher Spec, Encrypted Handshake Message
66	4.431609	192.168.100.9	52.123.129.14	TCP	54	51543 → 443 [ACK] Seq=490 Ack=146 Win=261888 Len=0
67	4.432433	192.168.100.9	52.123.129.14	TLSv1.2	105	Change Cipher Spec, Encrypted Handshake Message
68	4.442987	192.168.100.9	52.123.129.14	TLSv1.2	674	Application Data
69	4.458323	52.123.129.14	192.168.100.9	TCP	60	443 → 51543 [ACK] Seq=146 Ack=541 Win=12583168 Len=0
70	4.470067	52.123.129.14	192.168.100.9	TCP	60	443 → 51543 [ACK] Seq=146 Ack=1161 Win=12582400 Len=0
80	4.592274	52.123.129.14	192.168.100.9	TLSv1.2	934	Application Data
81	4.592327	192.168.100.9	52.123.129.14	TCP	54	51543 → 443 [ACK] Seq=1161 Ack=1026 Win=260864 Len=0

Frame 3: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface \Device\NPF_{96C9F77D} ^

Section number: 1

Interface id: 0 (\Device\NPF_{96C9F77D-A52E-464F-84AB-A7E8ABD2330D})

Encapsulation type: Ethernet (1)

Arrival Time: Sep 11, 2025 09:49:38.852769000 Pakistan Standard Time

UTC Arrival Time: Sep 11, 2025 04:49:38.852769000 UTC

Epoch Arrival Time: 1757566178.852769000

[Time shift for this packet: 0.000000000 seconds]

[Time delta from previous captured frame: 0.388538000 seconds]

[Time delta from previous displayed frame: 0.000000000 seconds]

[Time since reference or first frame: 0.670007000 seconds]

Frame Number: 3

Frame Length: 55 bytes (440 bits)

Capture Length: 55 bytes (440 bits)

[Frame is marked: False]

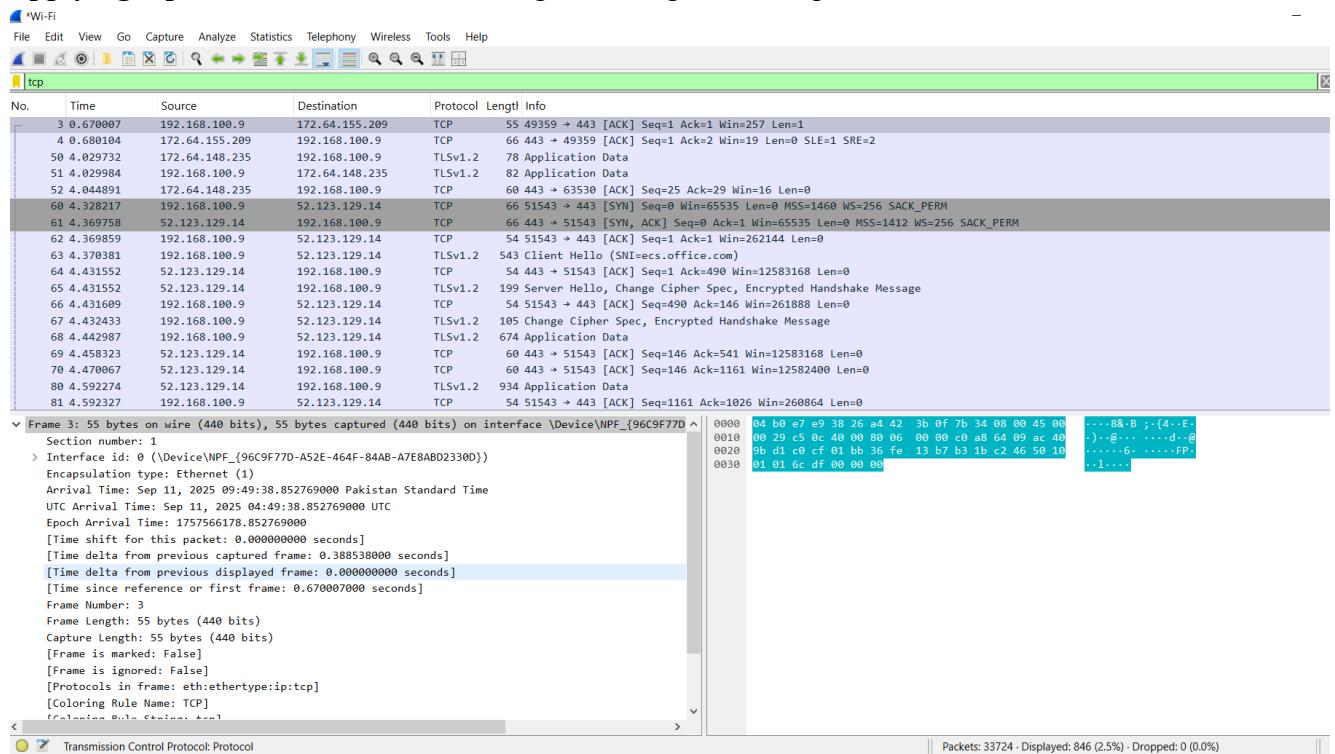
[Frame is ignored: False]

[Protocols in frame: eth:ethertype:ip:tcp]

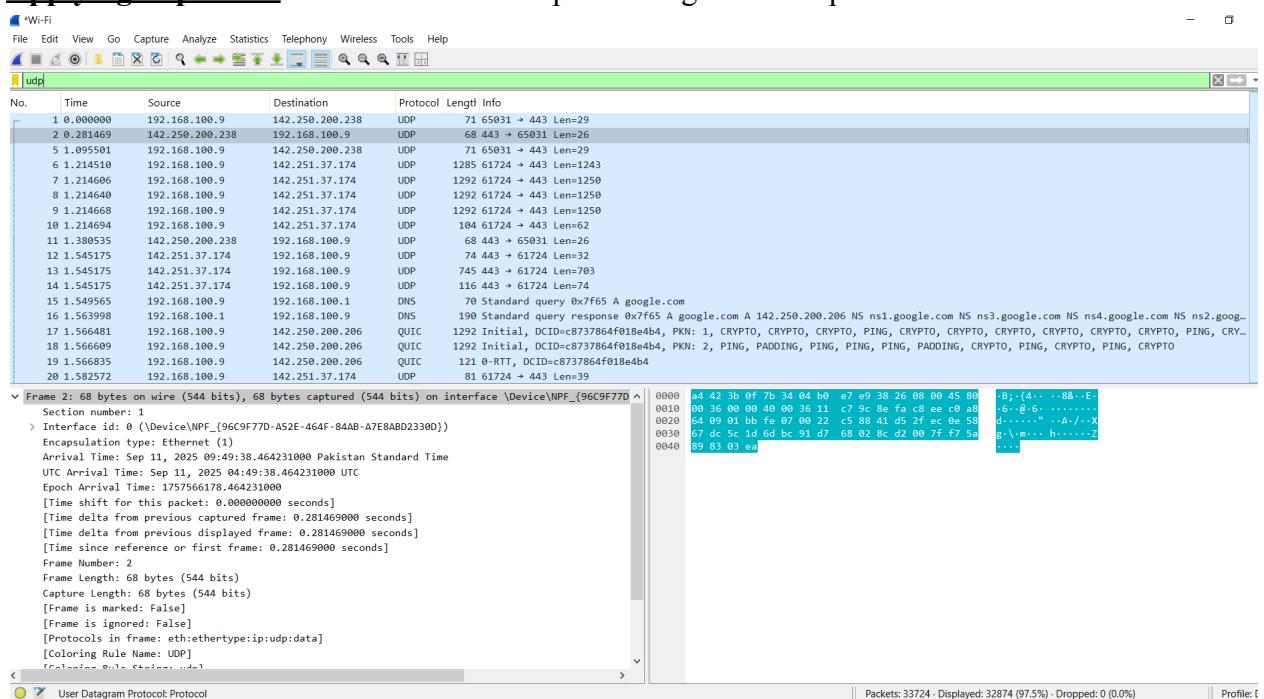
[Coloring Rule Name: TCP]

[Coloring Rule String: TCP]

Applying tcp filter: This shows all TCP packets regardless of port.



Applying udp filter: This shows all UDP packets regardless of port.



Filtering out by my IP address: Using ipconfig command to find my device's IP address

```
C:\Users\Kinza>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::c7fc:481%9
  IPv4 Address. . . . . : 192.168.56.1
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 11:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 12:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::7bee:8fce%14
  IPv4 Address. . . . . : 192.168.100.9
  Subnet Mask . . . . . : 255.255.255.0
```

ip.addr == 192.168.100.9

