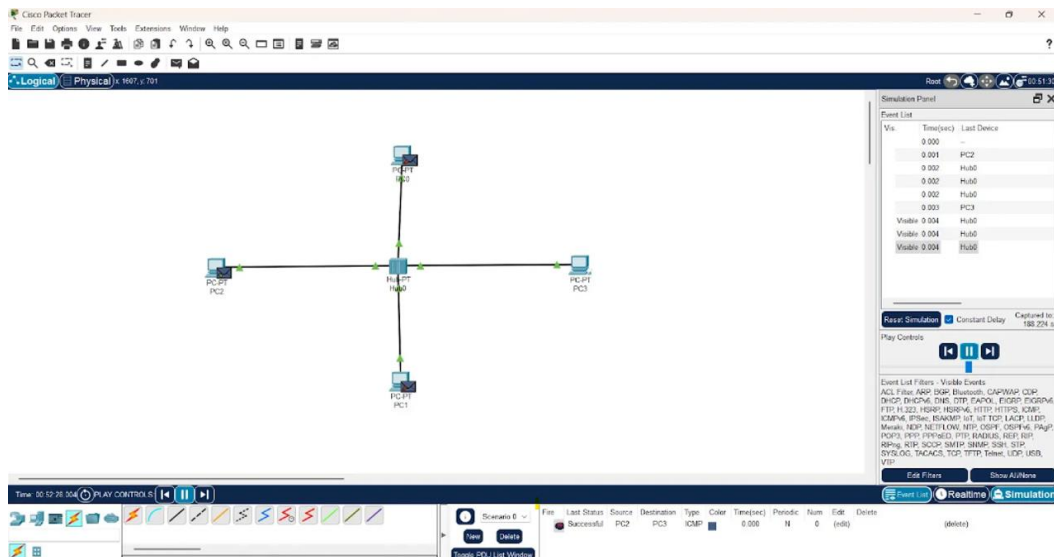
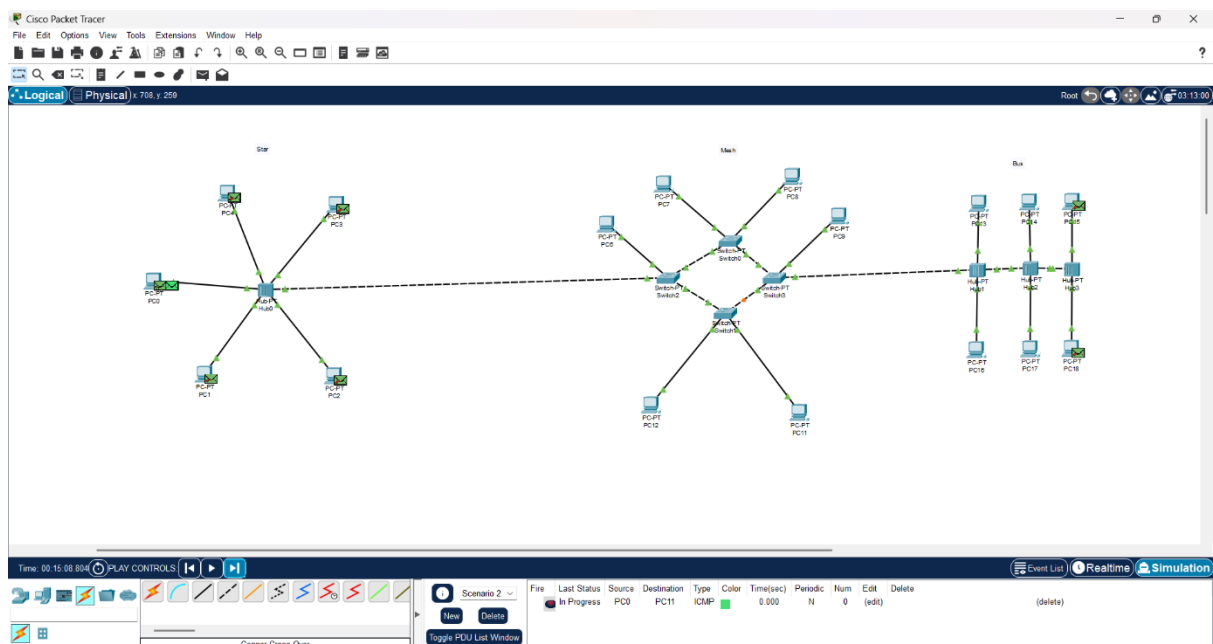


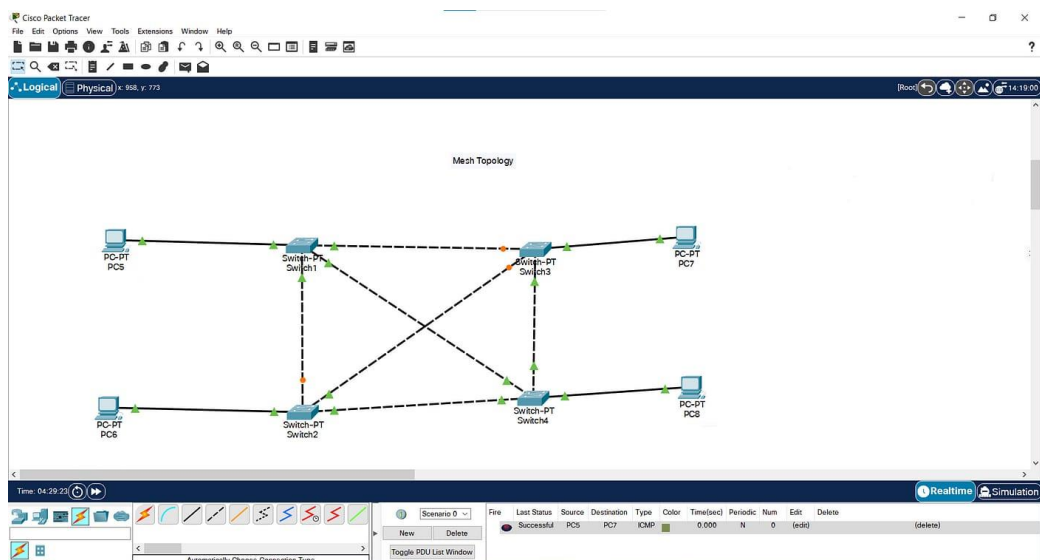
Ex No: 1 Hub Processing

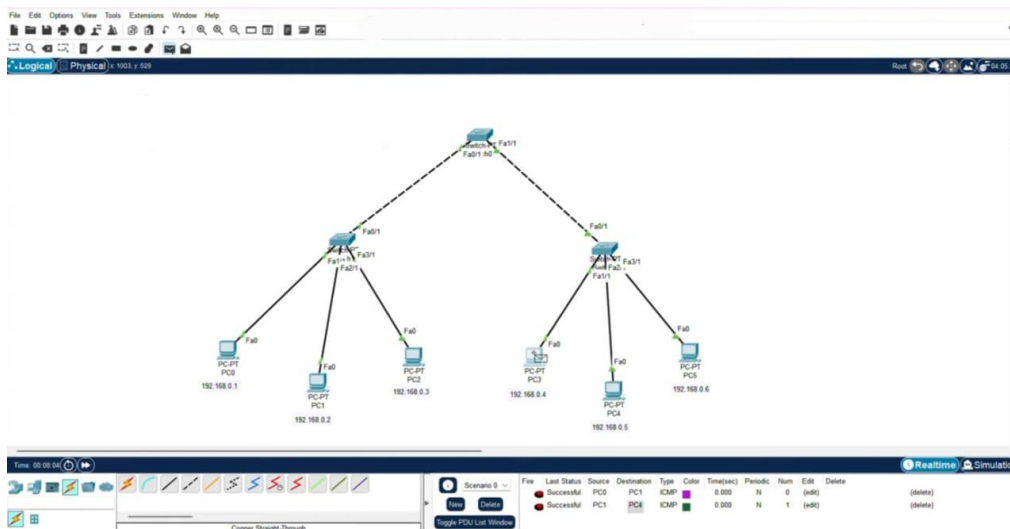


Ex. No: 2 Star,Ring,Bus,Hybrid topology

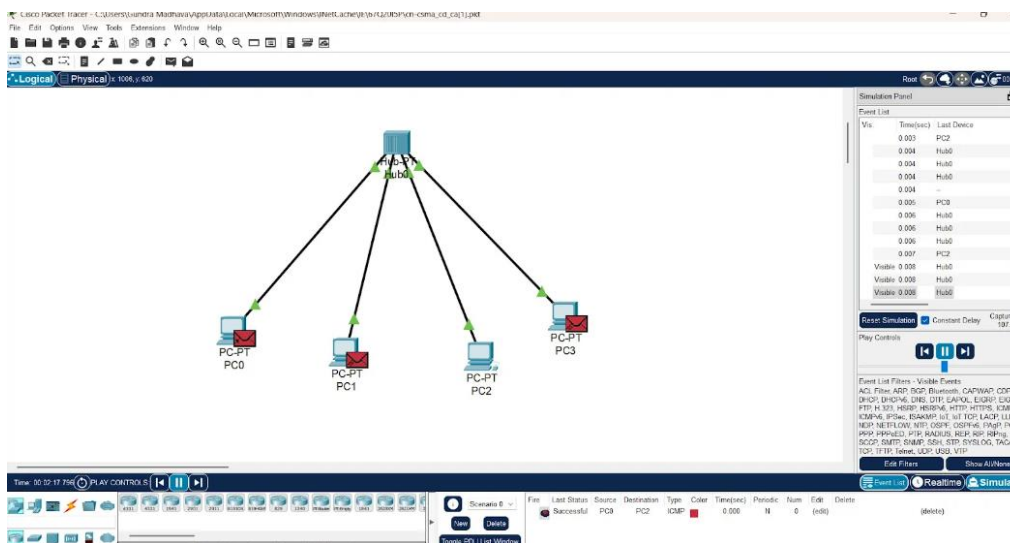


Ex. No:3 Tree,Mesh Topology

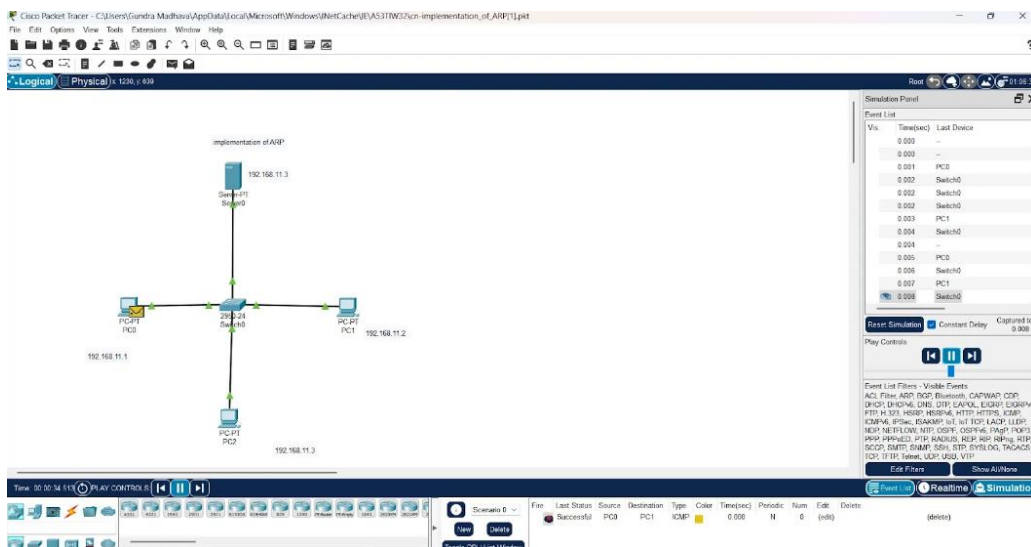




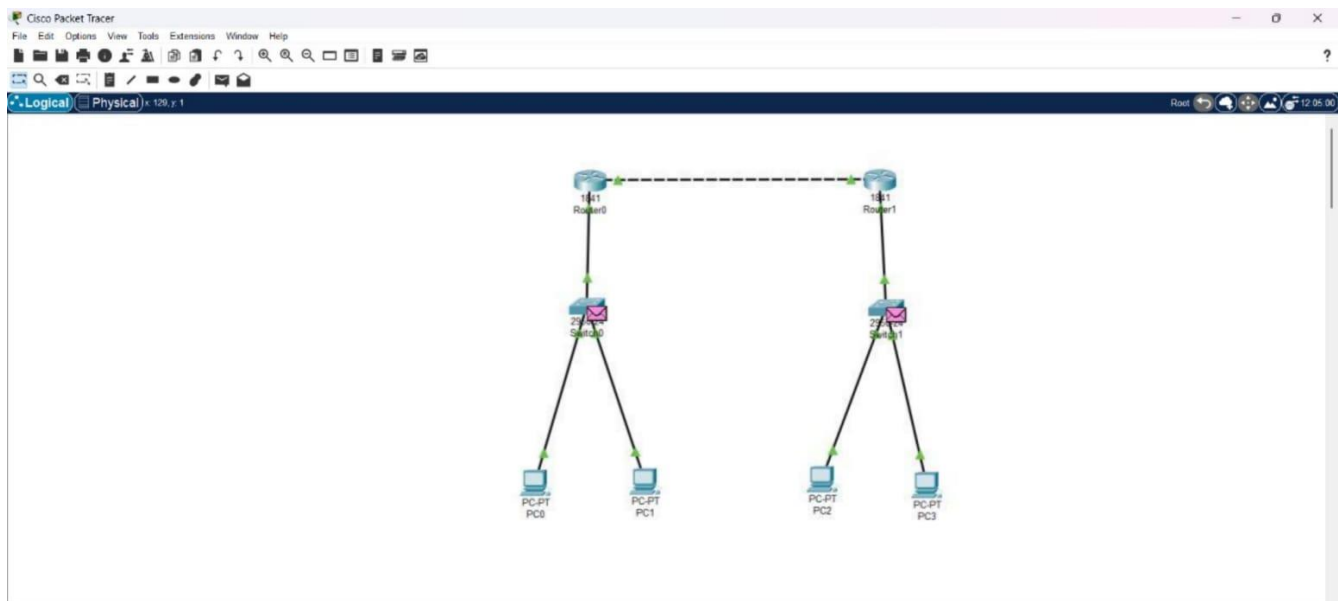
Ex. No:4 CSMA/CD & CSMA/CA



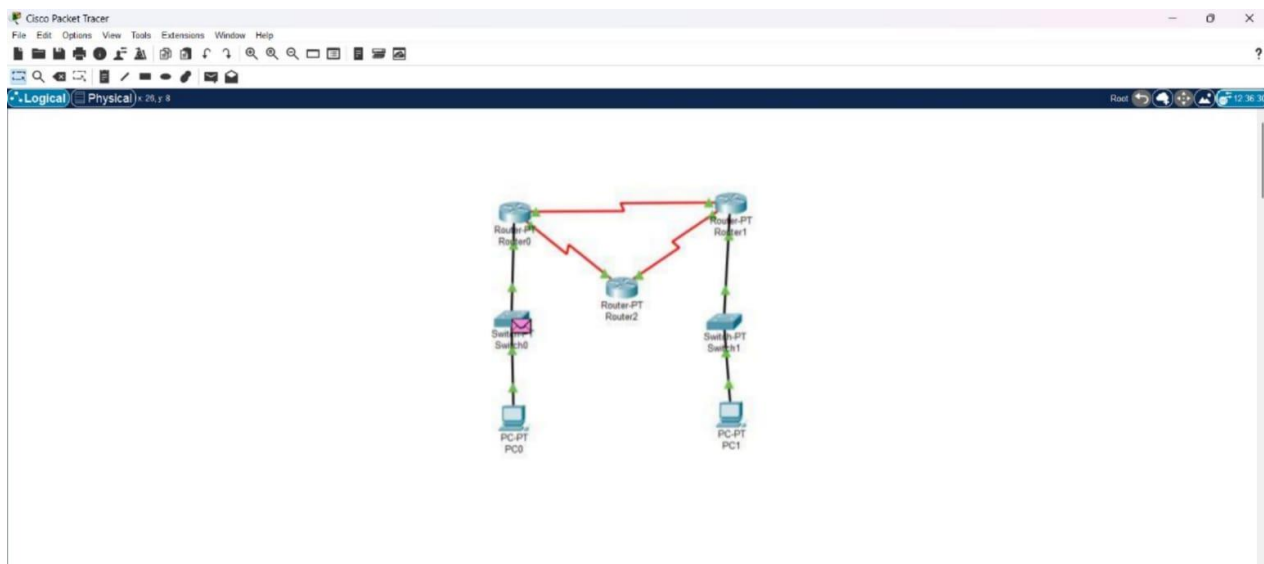
Ex. No:5 ARP



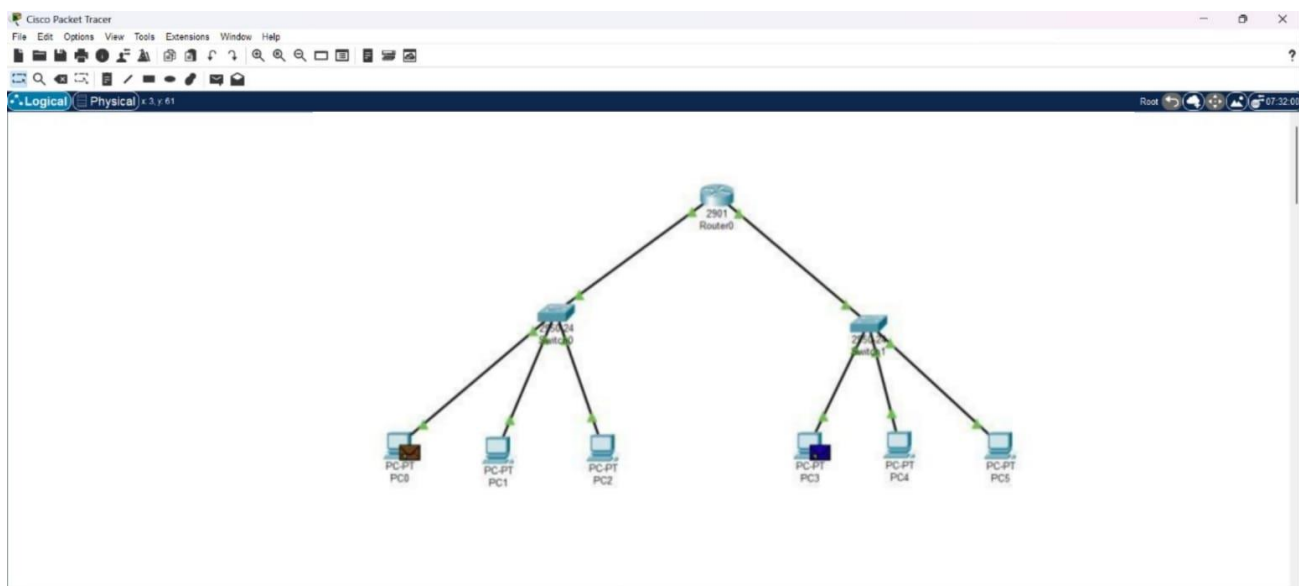
STATIC ROUTING USING PACKET TRACER



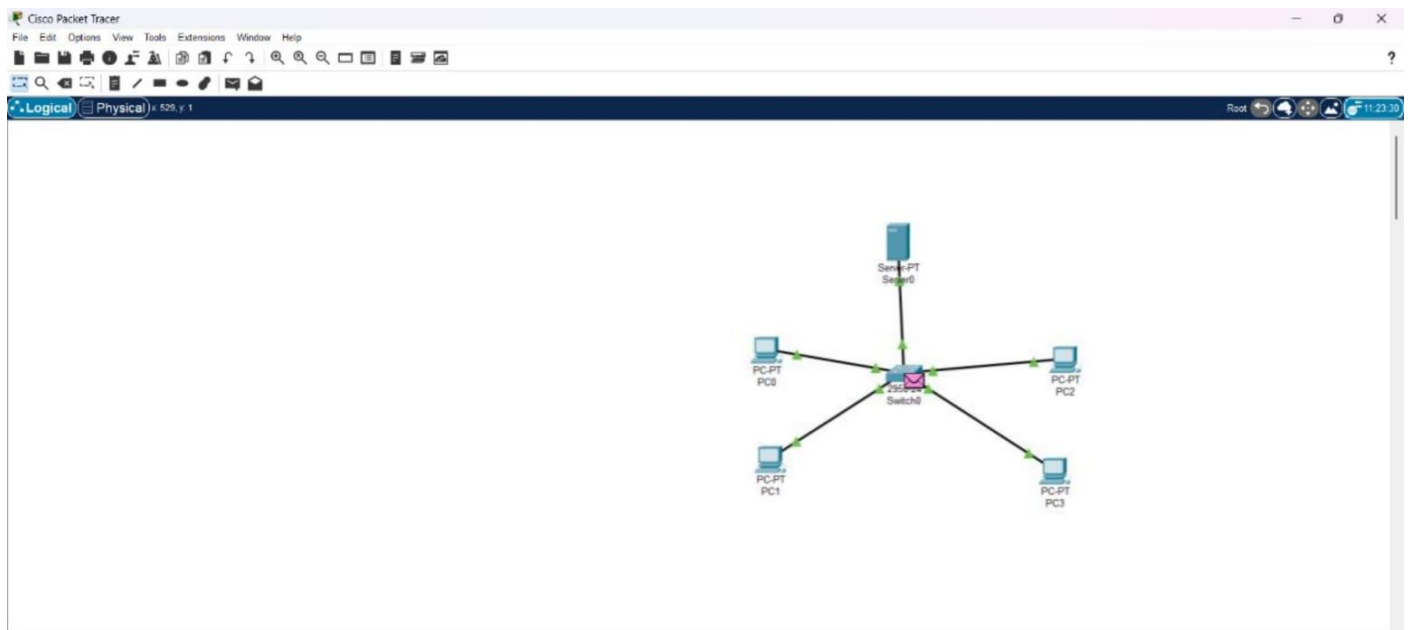
DYNAMIC ROUTING USING PACKET TRACER



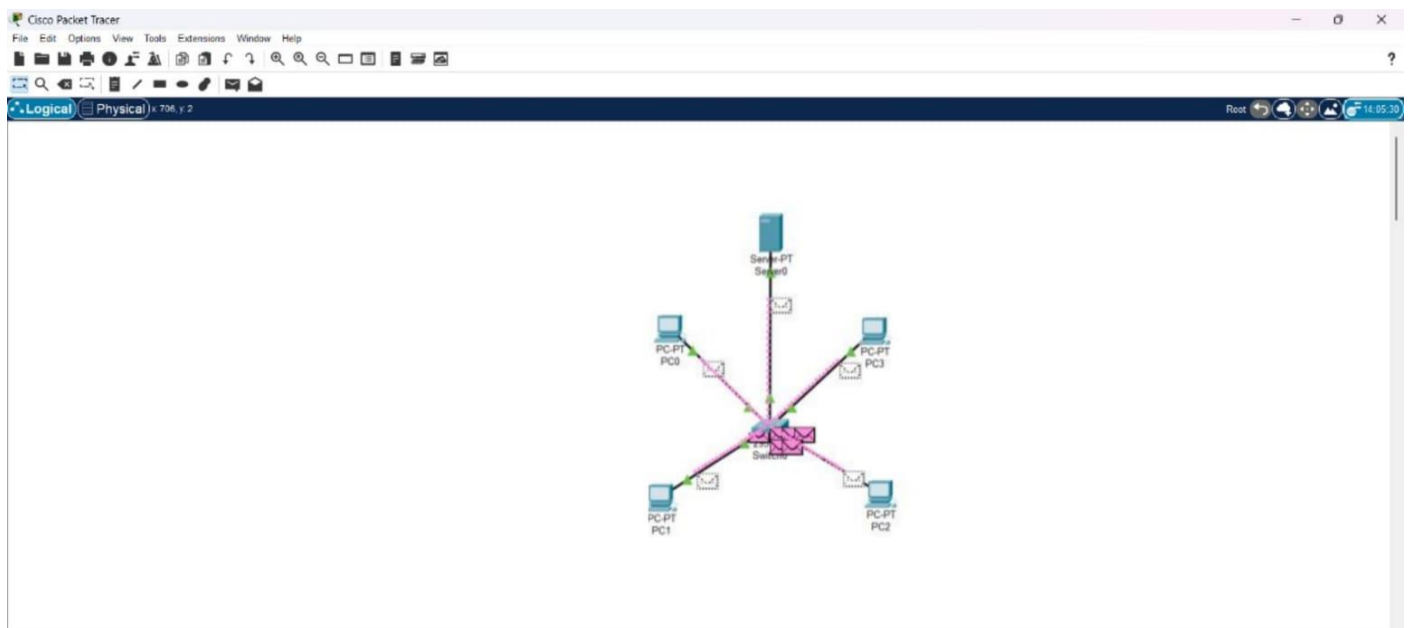
SUBNETTING-CLASS C ADDRESSING



FUNCTIONALITIES OF TCP,UDP



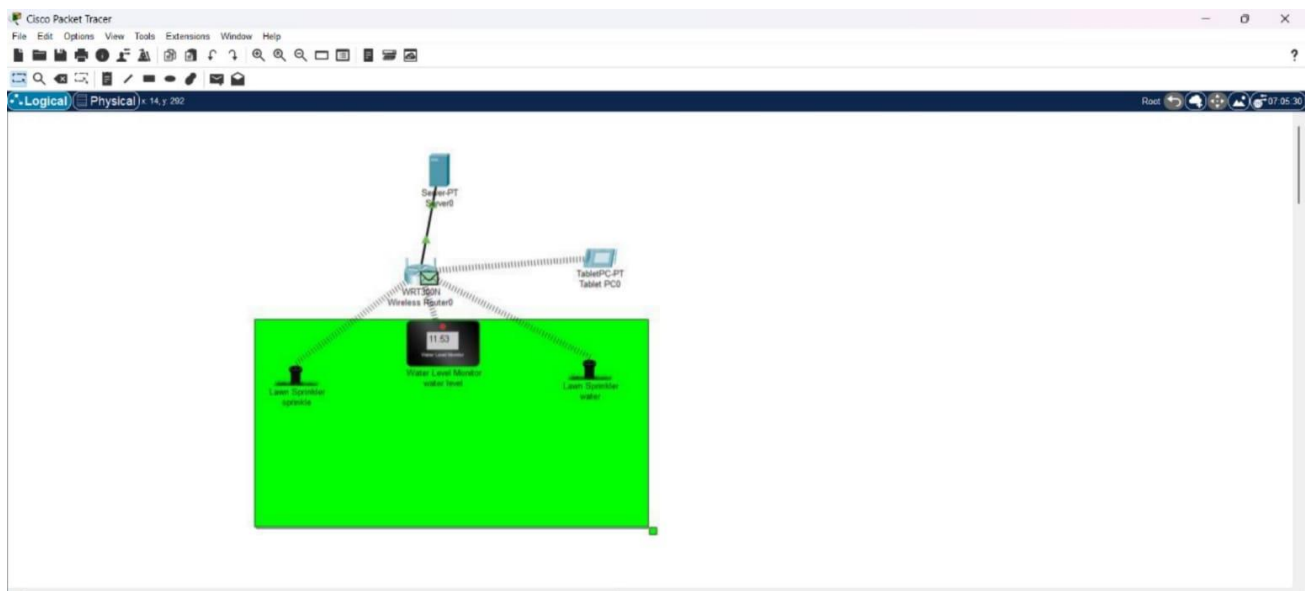
TCP,UDP EXPLORATION SOLUTION



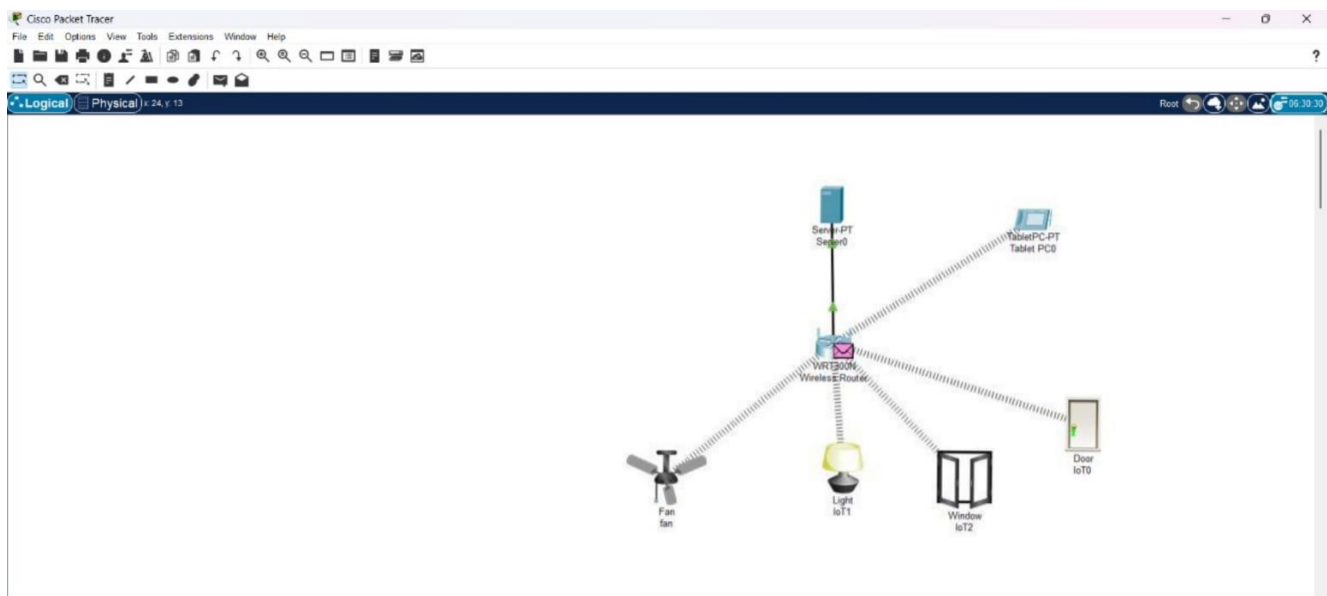
IOT BASED SMART HOME



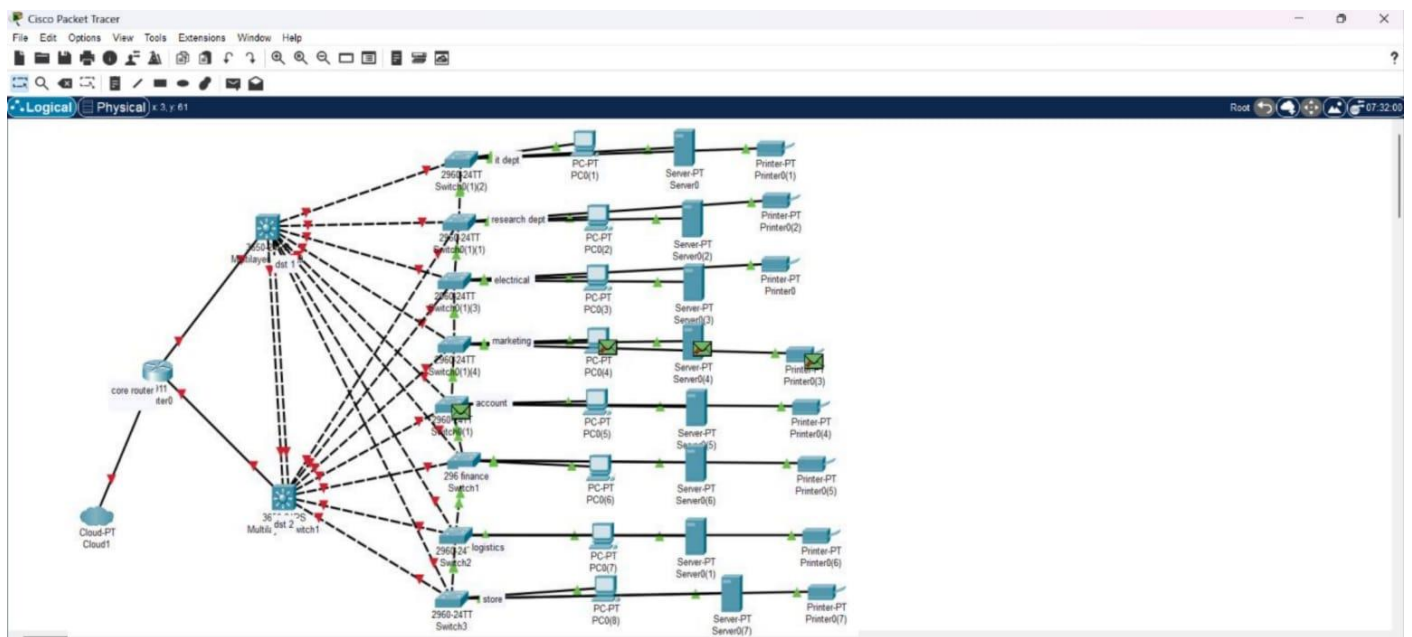
SMART GARDEN



IOT DEVICES IN NETWORKING



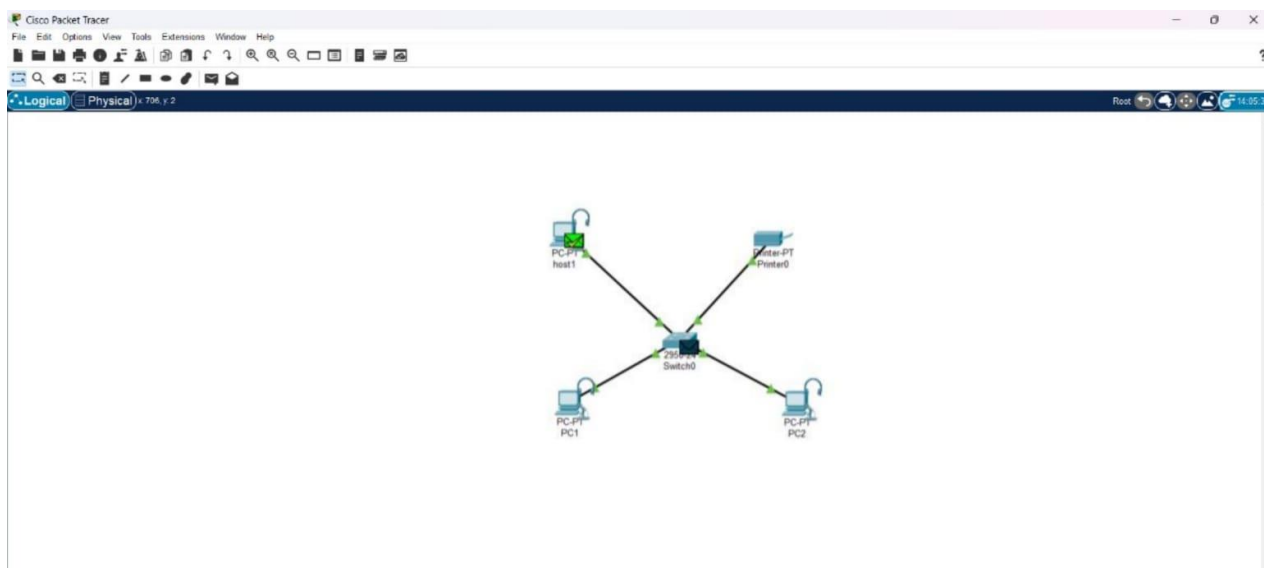
SIMULATING X,Y,Z COMPANY NETWORK DESIGN



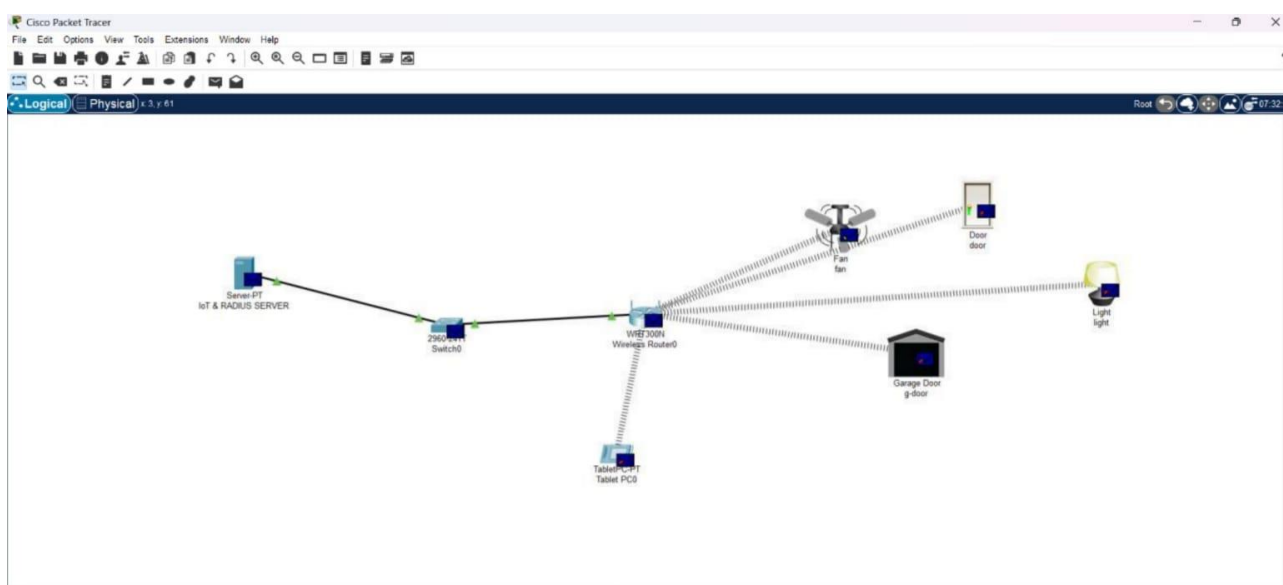
MAKE COMPUTER LAB



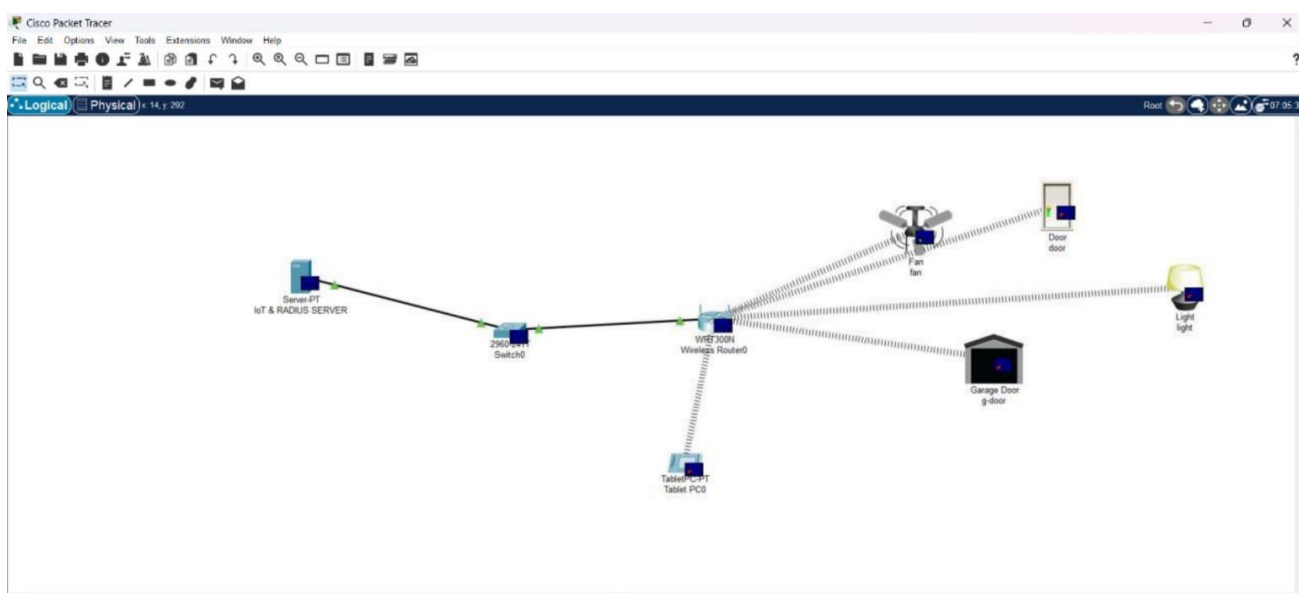
SIMULATE A MULTIMEDIA NETWORK



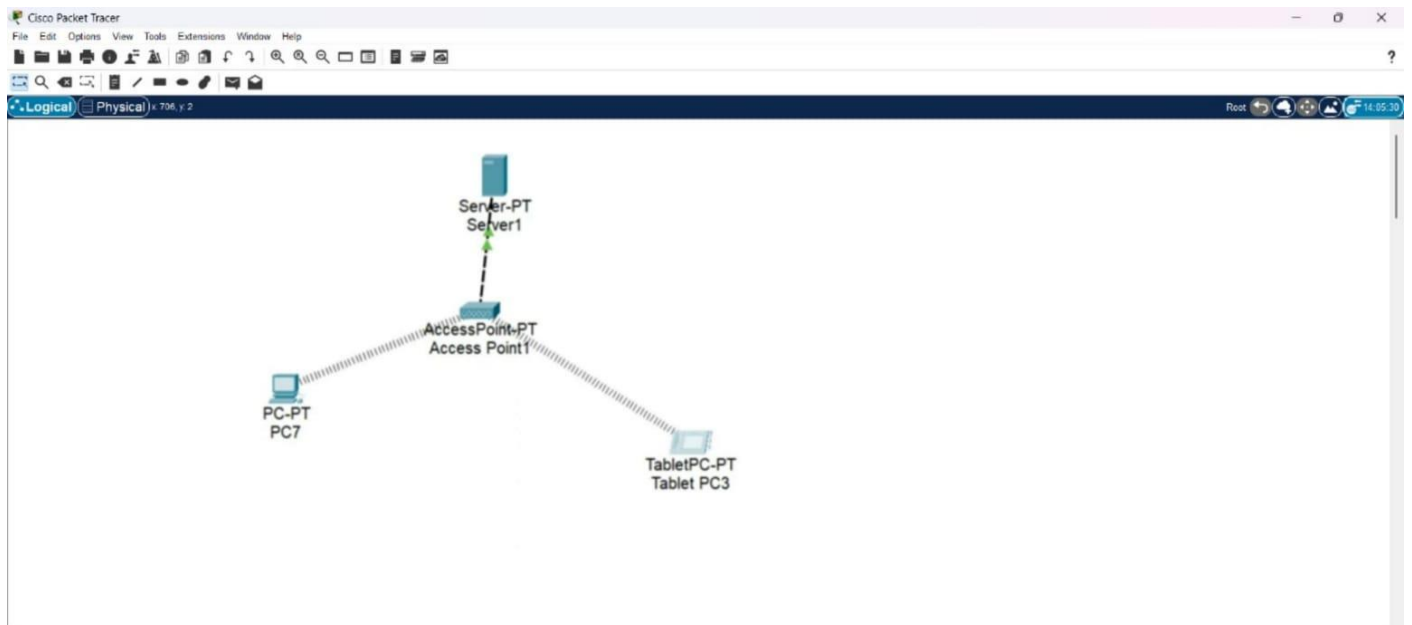
AAA LOCAL AND SERVER BASED AUTHENTICATION CONFIGURATION



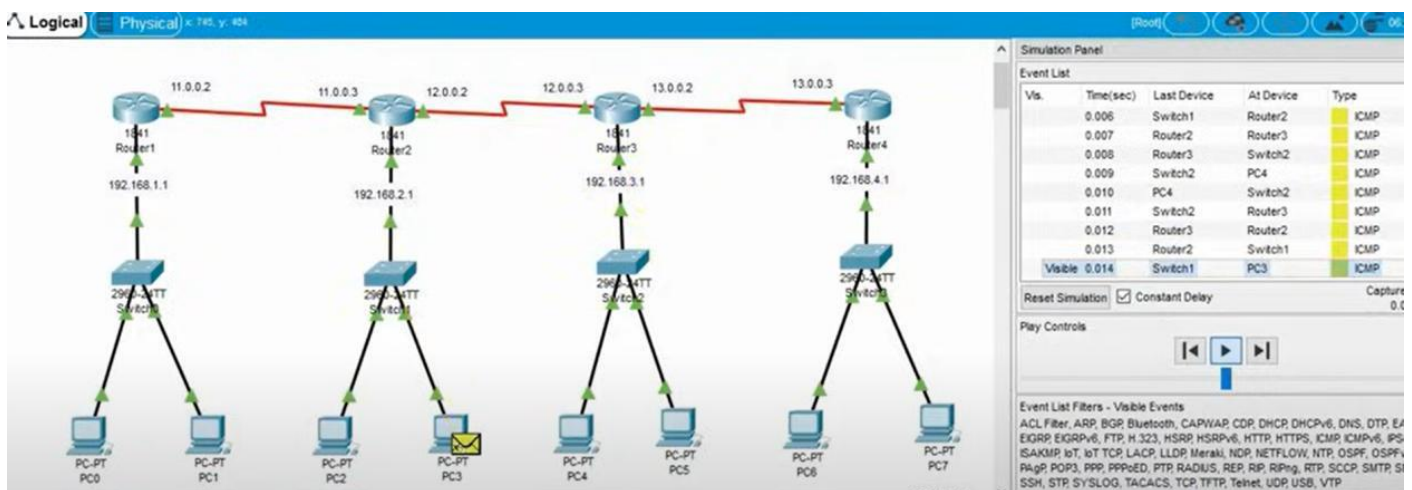
IOT BASED SMART HOME USING WPA SECURITY AND RADIUS SERVER



WLAN USING CISCO PACKET TRACER



CONOTL OF FAN,LIGHT,WINDOW AND APPLICATION



TCP

No.	Time	Source	Destination	Protocol	Length	Info
13254	1722.138698	2409:40f4:4104:991f...	64:ff9b::22ed:495f	TCP	74	64041 → 443 [ACK] Seq=15237 Ack=17280 Win=64256 Len=0
13255	1728.187767	2409:40f4:4104:991f...	64:ff9b::34bb:4f6d	TCP	75	[TCP Keep-Alive] 55545 → 443 [ACK] Seq=463 Ack=414 Win=255 Len=1
13256	1728.299083	64:ff9b::34bb:4f6d	2409:40f4:4104:991f...	TCP	86	[TCP Keep-Alive ACK] 443 → 55545 [ACK] Seq=414 Ack=464 Win=251 Len=0 SLE=463 SRE=464
13257	1737.597166	2409:40f4:4104:991f...	64:ff9b::22ed:495f	TLSv1.3	312	Application Data
13258	1738.166136	64:ff9b::22ed:495f	2409:40f4:4104:991f...	TLSv1.3	336	Application Data
13259	1738.213653	2409:40f4:4104:991f...	64:ff9b::22ed:495f	TCP	74	64041 → 443 [ACK] Seq=15475 Ack=17542 Win=65280 Len=0
13260	1742.467229	64:ff9b::34bb:4f6d	2409:40f4:4104:991f...	TLSv1.2	133	Application Data
13261	1742.468682	2409:40f4:4104:991f...	64:ff9b::34bb:4f6d	TLSv1.2	140	Application Data
13262	1742.538128	64:ff9b::34bb:4f6d	2409:40f4:4104:991f...	TCP	76	443 → 55545 [ACK] Seq=473 Ack=530 Win=251 Len=0
13263	1748.721896	2603:1046:c06:896::2	2409:40f4:4104:991f...	TCP	74	443 → 63807 [RST] Seq=1 Win=8211 Len=0
13264	1749.535381	2603:1046:c06:896::2	2409:40f4:4104:991f...	TCP	74	443 → 63808 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0

> Frame 13: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF_{82450A38-509B-4539-97EB-2E34474303BE}, id 0

> Ethernet II, Src: 2c:9c:58:b8:09:5b (2c:9c:58:b8:09:5b), Dst: 2a:d0:49:cb:b6:74 (2a:d0:49:cb:b6:74)

> Internet Protocol Version 6, Src: 2409:40f4:4104:991f:434:7f09:30a8:c12d, Dst: 2405:200:1607:1731::312c:8318

▼ Transmission Control Protocol, Src Port: 63835, Dst Port: 443, Seq: 1, Ack: 1, Len: 0

Source Port: 63835

Destination Port: 443

[Stream index: 10]

[Conversation completeness: Incomplete (60)]

[TCP Segment Len: 0]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 2286129668

[Next Sequence Number: 2 (relative sequence number)]

Acknowledgment Number: 1 (relative ack number)

Acknowledgment number (raw): 1314373348

0101 = Header Length: 20 bytes (5)

> **Flags: 0x011 (FIN, ACK)**

Window: 254

[Calculated window size: 254]

[Window size scaling factor: -1 (unknown)]

Checksum: 0xd084 [unverified]

[Checksum Status: Unverified]

Urgent Pointer: 0

> [Timestamps]

SMTP

Not working

ICMP

No.	Time	Source	Destination	Protocol	Length	Info
185	12.999683	fe80::28d0:49ff:fec...	2409:40f4:4104:991f...	ICMPv6	86	Neighbor Solicitation for 2409:40f4:4104:991f:434:7f09:30a8:c12d from 2a:d0:49:cb:b6:74
186	12.999779	2409:40f4:4104:991f...	fe80::28d0:49ff:fec...	ICMPv6	86	Neighbor Advertisement 2409:40f4:4104:991f:434:7f09:30a8:c12d (sol, ovr) is at 2c:9c:58:b8:09:5b
289	37.180640	fe80::28d0:49ff:fec...	2409:40f4:4104:991f...	ICMPv6	86	Neighbor Solicitation for 2409:40f4:4104:991f:434:7f09:30a8:c12d from 2a:d0:49:cb:b6:74
290	37.180736	2409:40f4:4104:991f...	fe80::28d0:49ff:fec...	ICMPv6	86	Neighbor Advertisement 2409:40f4:4104:991f:434:7f09:30a8:c12d (sol, ovr) is at 2c:9c:58:b8:09:5b
340	66.867214	fe80::28d0:49ff:fec...	2409:40f4:4104:991f...	ICMPv6	86	Neighbor Solicitation for 2409:40f4:4104:991f:434:7f09:30a8:c12d from 2a:d0:49:cb:b6:74
341	66.867332	2409:40f4:4104:991f...	fe80::28d0:49ff:fec...	ICMPv6	86	Neighbor Advertisement 2409:40f4:4104:991f:434:7f09:30a8:c12d (sol, ovr) is at 2c:9c:58:b8:09:5b
833	90.622290	fe80::28d0:49ff:fec...	2409:40f4:4104:991f...	ICMPv6	86	Neighbor Solicitation for 2409:40f4:4104:991f:434:7f09:30a8:c12d from 2a:d0:49:cb:b6:74
834	90.622412	2409:40f4:4104:991f...	fe80::28d0:49ff:fec...	ICMPv6	86	Neighbor Advertisement 2409:40f4:4104:991f:434:7f09:30a8:c12d (sol, ovr) is at 2c:9c:58:b8:09:5b
2760	110.056792	fe80::c21e:7522:c2f...	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
2762	110.088146	fe80::c21e:7522:c2f...	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
2764	110.089946	fe80::c21e:7522:c2f...	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
2766	110.090510	fe80::c21e:7522:c2f...	ff02::16	ICMPv6	90	Multicast Listener Report Message v2

> Frame 185: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface \Device\NPF_{82450A38-509B-4539-97EB-2E34474303BE}, id 0

> Ethernet II, Src: 2a:d0:49:cb:b6:74 (2a:d0:49:cb:b6:74), Dst: 2c:9c:58:b8:09:5b (2c:9c:58:b8:09:5b)

> Internet Protocol Version 6, Src: fe80::28d0:49ff:fecb:b674, Dst: 2409:40f4:4104:991f:434:7f09:30a8:c12d

▼ Internet Control Message Protocol v6

Type: Neighbor Solicitation (135)

Code: 0

Checksum: 0xbd99 [correct]

[Checksum Status: Good]

Reserved: 00000000

Target Address: 2409:40f4:4104:991f:434:7f09:30a8:c12d

> ICMPv6 Option (Source link-layer address : 2a:d0:49:cb:b6:74)

UDP

No.	Time	Source	Destination	Protocol	Length	Info
231	31.216615	192.168.162.60	192.168.162.90	DNS	79	Standard query 0x2655 AAAA aefd.nelreports.net
232	31.219471	192.168.162.60	192.168.162.90	DNS	79	Standard query 0x23f3 A aefd.nelreports.net
233	31.219697	192.168.162.60	192.168.162.90	DNS	79	Standard query 0x3230 HTTPS aefd.nelreports.net
235	31.337926	192.168.162.90	192.168.162.60	DNS	184	Standard query response 0x2655 AAAA aefd.nelreports.net CNAME aefd.nelreports.net.akamaized.net CNAME a1851.dscg2.akamai.net A 18...
236	31.342714	192.168.162.90	192.168.162.60	DNS	221	Standard query response 0x3230 HTTPS aefd.nelreports.net CNAME aefd.nelreports.net.akamaized.net CNAME a1851.dscg2.akamai.net A 18...
237	31.343869	192.168.162.90	192.168.162.60	DNS	188	Standard query response 0x23f3 A aefd.nelreports.net CNAME aefd.nelreports.net.akamaized.net CNAME a1851.dscg2.akamai.net A 18...
238	31.345638	2409:40f4:4104:991f...	2405:200:1607:1731::	QUIC	1292	Initial, DCID=5269075e383a78b7, PKN: 1, PADDING, CRYPTO, PADDING, PING, PADDING, CRYPTO, PADDING, CRYPTO, PADDING, PING, CRYPT...
239	31.345743	2409:40f4:4104:991f...	2405:200:1607:1731::	QUIC	1292	Initial, DCID=5269075e383a78b7, PKN: 2, CRYPTO, PING, PING, PING, PING, PING, CRYPTO, PADDING, CRYPTO, CRYPTO, CRYPTO, PADDING...
240	31.367101	2405:200:1607:1731::	2409:40f4:4104:991f...	QUIC	1292	Initial, SCID=0be676c74200321e, PKN: 1, ACK, PADDING
241	31.369917	2405:200:1607:1731::	2409:40f4:4104:991f...	QUIC	1292	Initial, SCID=0be676c74200321e, PKN: 2, CRYPTO, PADDING
242	31.371687	2405:200:1607:1731::	2409:40f4:4104:991f...	QUIC	1292	Handshake, SCID=0be676c74200321e
243	31.371687	2405:200:1607:1731::	2409:40f4:4104:991f...	QUIC	1292	Handshake, SCID=0be676c74200321e

> Frame 231: 79 bytes on wire (632 bits), 79 bytes captured (632 bits) on interface \Device\NPF_{82450A38-509B-4539-97EB-2E34474303BE}, id 0

> Ethernet II, Src: 2c:9c:58:b8:09:5b (2c:9c:58:b8:09:5b), Dst: 2a:d0:49:cb:b6:74 (2a:d0:49:cb:b6:74)

> Internet Protocol Version 4, Src: 192.168.162.60, Dst: 192.168.162.90

> User Datagram Protocol, Src Port: 55140, Dst Port: 53

▼ Domain Name System (query)

Transaction ID: 0x2655

> Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

> Queries

[Response In: 235]

ARP

No.	Time	Source	Destination	Protocol	Length	Info
14	2.465166	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	Who has 192.168.162.60? Tell 192.168.162.90
15	2.465205	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	192.168.162.60 is at 2c:9c:58:b8:09:5b
285	35.965894	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	Who has 192.168.162.90? Tell 192.168.162.60
286	35.990266	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	192.168.162.90 is at 2a:d0:49:cb:b6:74
287	36.662422	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	Who has 192.168.162.60? Tell 192.168.162.90
288	36.662463	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	192.168.162.60 is at 2c:9c:58:b8:09:5b
338	64.517844	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	Who has 192.168.162.60? Tell 192.168.162.90
339	64.517875	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	192.168.162.60 is at 2c:9c:58:b8:09:5b
362	81.472814	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	Who has 192.168.162.90? Tell 192.168.162.60
363	81.496596	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	192.168.162.90 is at 2a:d0:49:cb:b6:74
737	89.289655	2a:d0:49:cb:b6:74	2c:9c:58:b8:09:5b	ARP	42	Who has 192.168.162.60? Tell 192.168.162.90
738	89.289701	2c:9c:58:b8:09:5b	2a:d0:49:cb:b6:74	ARP	42	192.168.162.60 is at 2c:9c:58:b8:09:5b

> Frame 15: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface \Device\NPF_{82450A38-509B-4539-97EB-2E34474303BE}, id 0
> Ethernet II, Src: 2c:9c:58:b8:09:5b (2c:9c:58:b8:09:5b), Dst: 2a:d0:49:cb:b6:74 (2a:d0:49:cb:b6:74)
> Address Resolution Protocol (reply)
 Hardware type: Ethernet (1)
 Protocol type: IPv4 (0x0800)
 Hardware size: 6
 Protocol size: 4
 Opcode: reply (2)
 Sender MAC address: 2c:9c:58:b8:09:5b (2c:9c:58:b8:09:5b)
 Sender IP address: 192.168.162.60
 Target MAC address: 2a:d0:49:cb:b6:74 (2a:d0:49:cb:b6:74)
 Target IP address: 192.168.162.90

HTTP

No.	Time	Source	Destination	Protocol	Length	Info
45	2409..	64:ff9b..		HTTP	228	GET /connecttest.txt HTTP/1.1
45	2409..	2405:20..		HTTP	229	GET /connecttest.txt HTTP/1.1
45	2405..	2409:40..		HTTP	261	HTTP/1.1 200 OK (text/plain)
45	64:f..	2409:40..		HTTP	261	HTTP/1.1 200 OK (text/plain)
45	2409..	2405:20..		HTTP	186	GET /connecttest.txt HTTP/1.1
45	2405..	2409:40..		HTTP	261	HTTP/1.1 200 OK (text/plain)
45	2409..	64:ff9b..		HTTP	185	GET /connecttest.txt HTTP/1.1
45	2409..	64:ff9b..		HTTP	310	GET /MFEwTzBNMEswSTA3BgUrdpKCGuABBSAUQYBMq2awm1Rh6Doh%2FsBYgFV7gQUA9SQNVbRTLtm8KPiGcvDl7I90VJCEAfY81yHqHeveu%2FpR5k1Jb0%3D HTTP/1.1
45	2409..	64:ff9b..		HTTP	308	GET /MFEwTzBNMEswSTA3BgUrdpKCGuABBTTrjrydRyt%2BApF3GSPypFHBxR5XtQQUs9tIpPmhxdIUkHHEWlpYim8SYCEAI9PUjXAKJafLQcAA018o%3D HTTP/1.1
45	64:f..	2409:40..		HTTP	261	HTTP/1.1 200 OK (text/plain)
45	64:f..	2409:40..		OCSP	787	Response
45	64:f..	2409:40..		OCSP	945	Response

> Internet Protocol Version 6, Src: 2409:40f4:2b:723d:3559:8d6b:eabd:e3ea, Dst: 64:ff9b::312c:7439
> Transmission Control Protocol, Src Port: 55320, Dst Port: 80, Seq: 1, Ack: 1, Len: 154
> Hypertext Transfer Protocol
 GET /connecttest.txt HTTP/1.1\r\n
 Cache-Control: no-cache\r\n
 Connection: Close\r\n
 Pragma: no-cache\r\n
 User-Agent: Microsoft MCSI\r\n
 Host: www.msftconnecttest.com\r\n
 \r\n
 [Full request URI: http://www.msftconnecttest.com/connecttest.txt]
 [HTTP request 1/1]
 [Response in frame: 39824]

C programming

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main.c

Run

Output

Clear

```
1 #include<stdio.h>
2 #include<string.h>
3 int main()
4 {
5     int i=0,count=0;
6     char databits[80];
7     printf("Enter Data Bits: ");
8     scanf("%s",databits);
9     printf("\nData Bits After Bit stuffing: ");
10    for(i=0; i<strlen(databits); i++)
11    {
12        if(databits[i]=='1')
13            count++;
14        else
15            count=0;
16        printf("%c",databits[i]);
17        if(count==5)
18        {
19            printf("0");
20            count=0;
21        }
22    }
23    return 0 ;
24 }
```

Enter Data Bits: 10111110111

Data Bits After Bit stuffing: 101111100111

=== Code Execution Successful ===

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Windows 11

