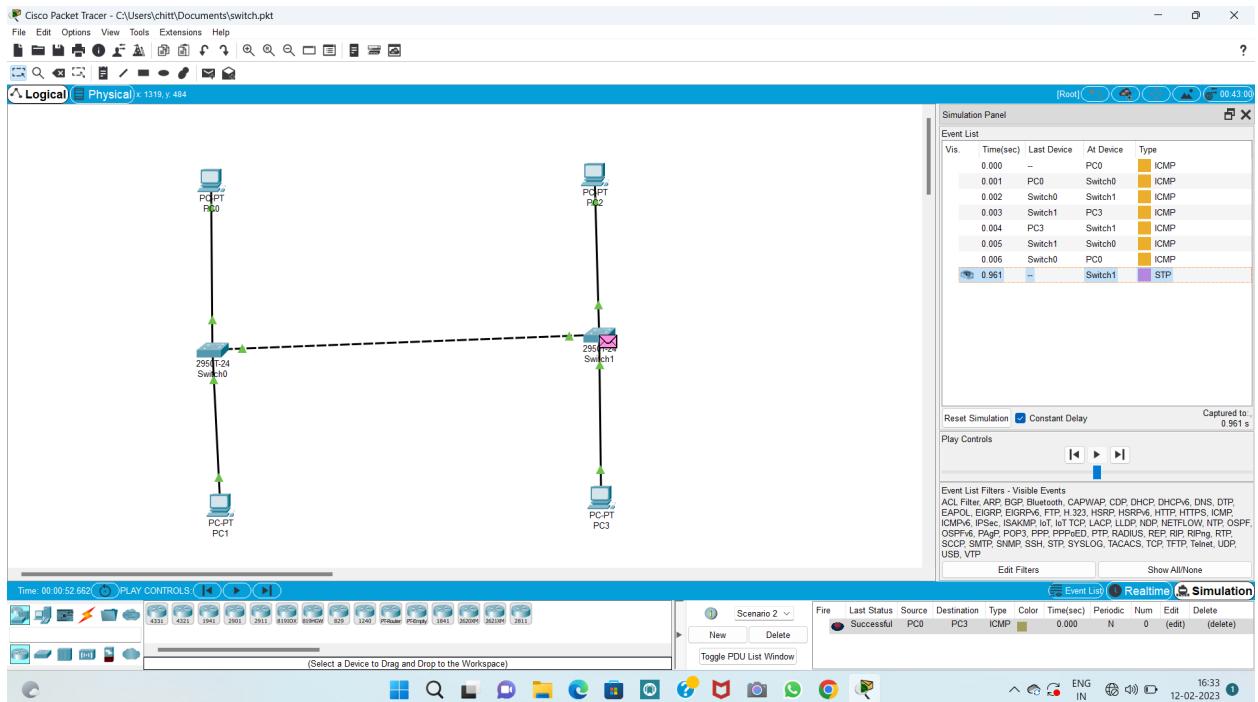
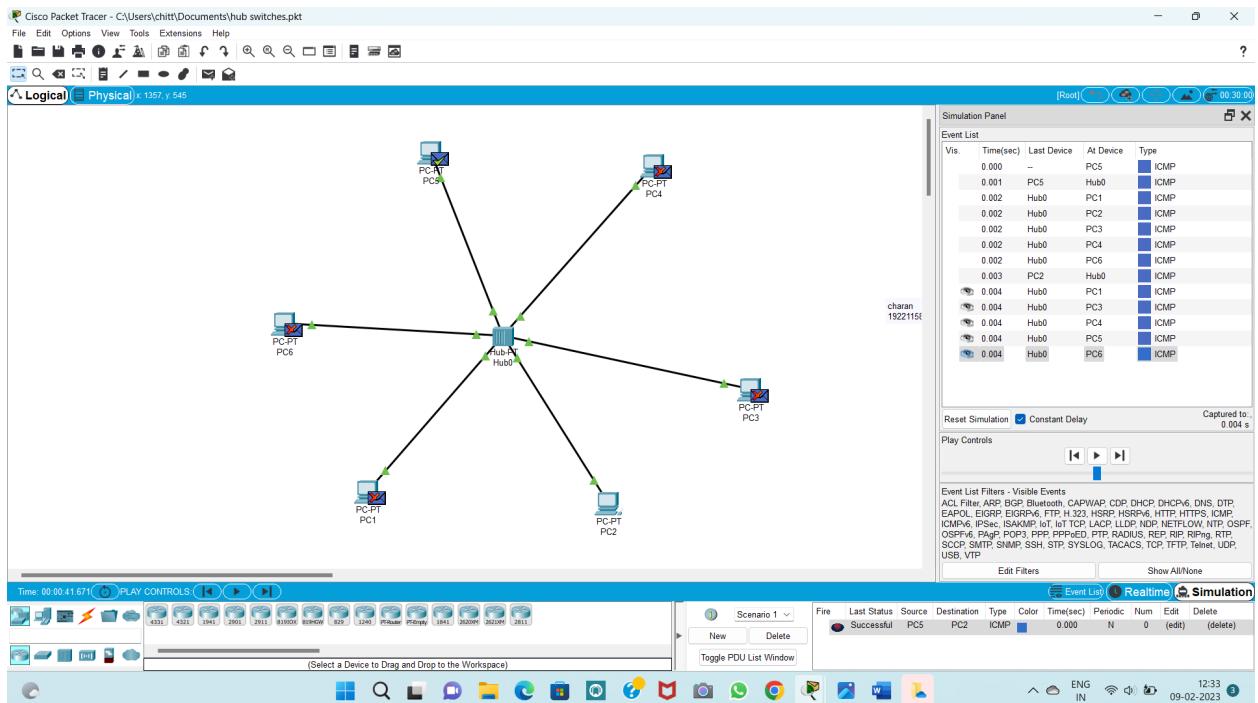


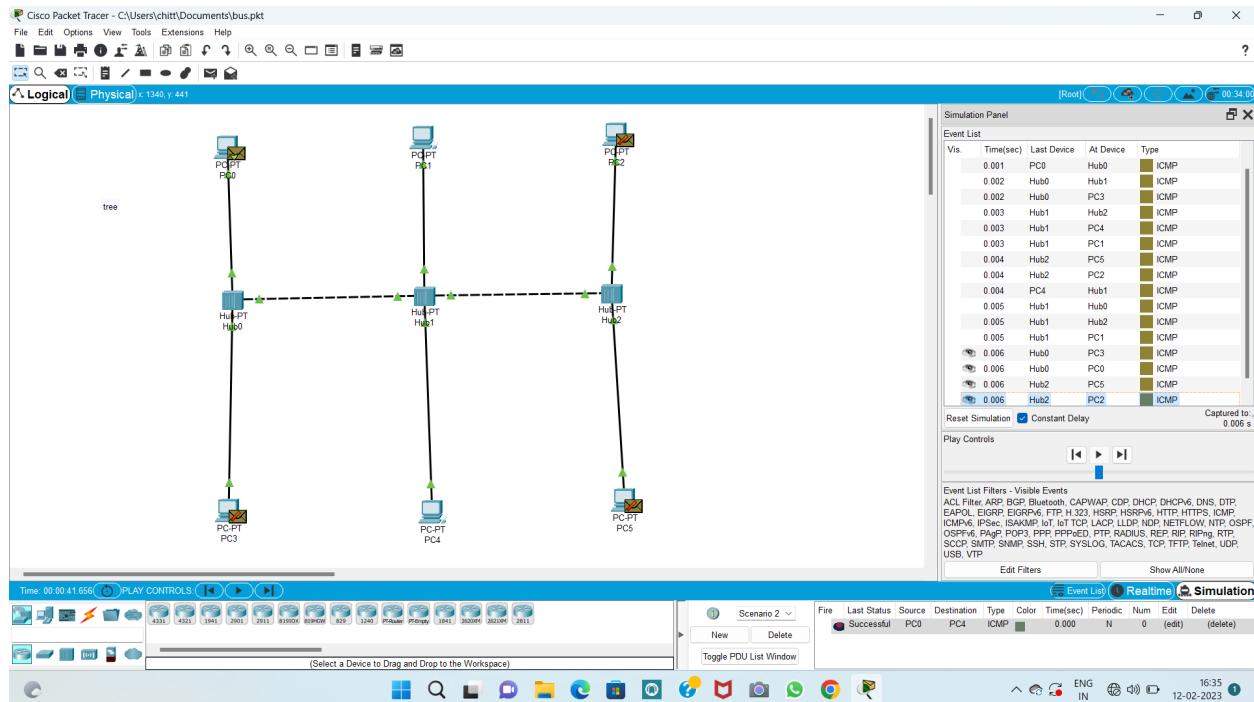
Switch



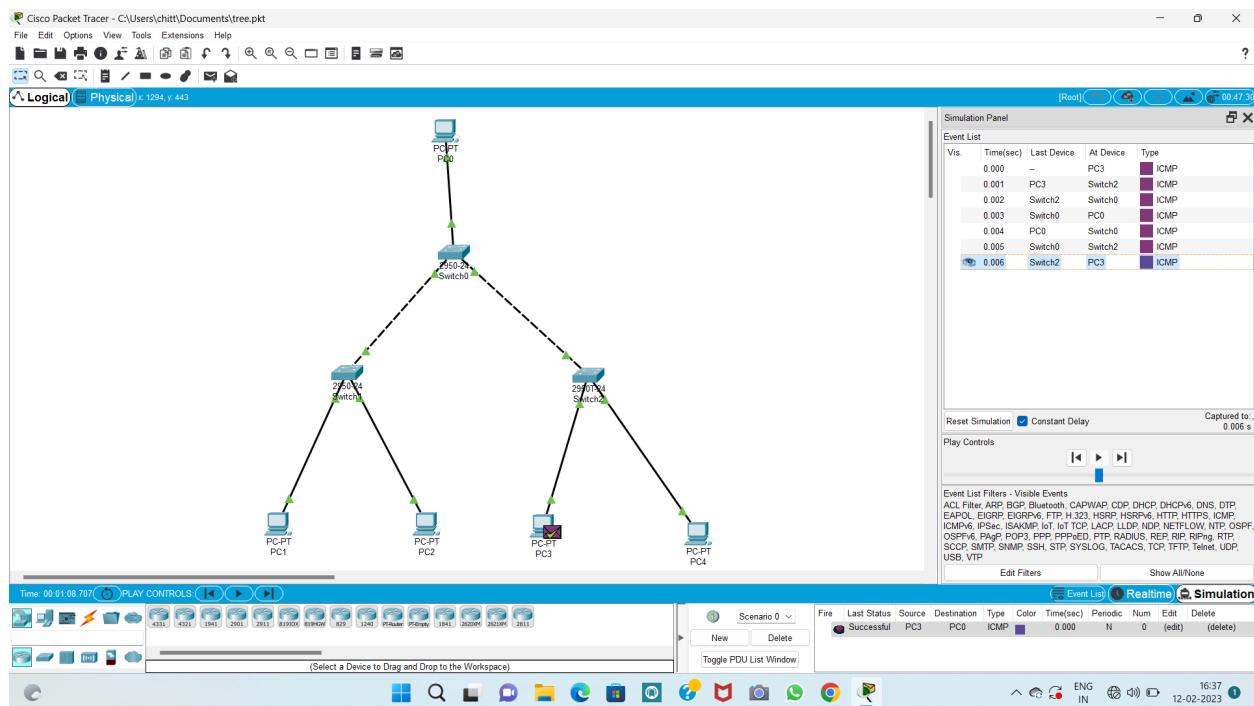
Hub switch



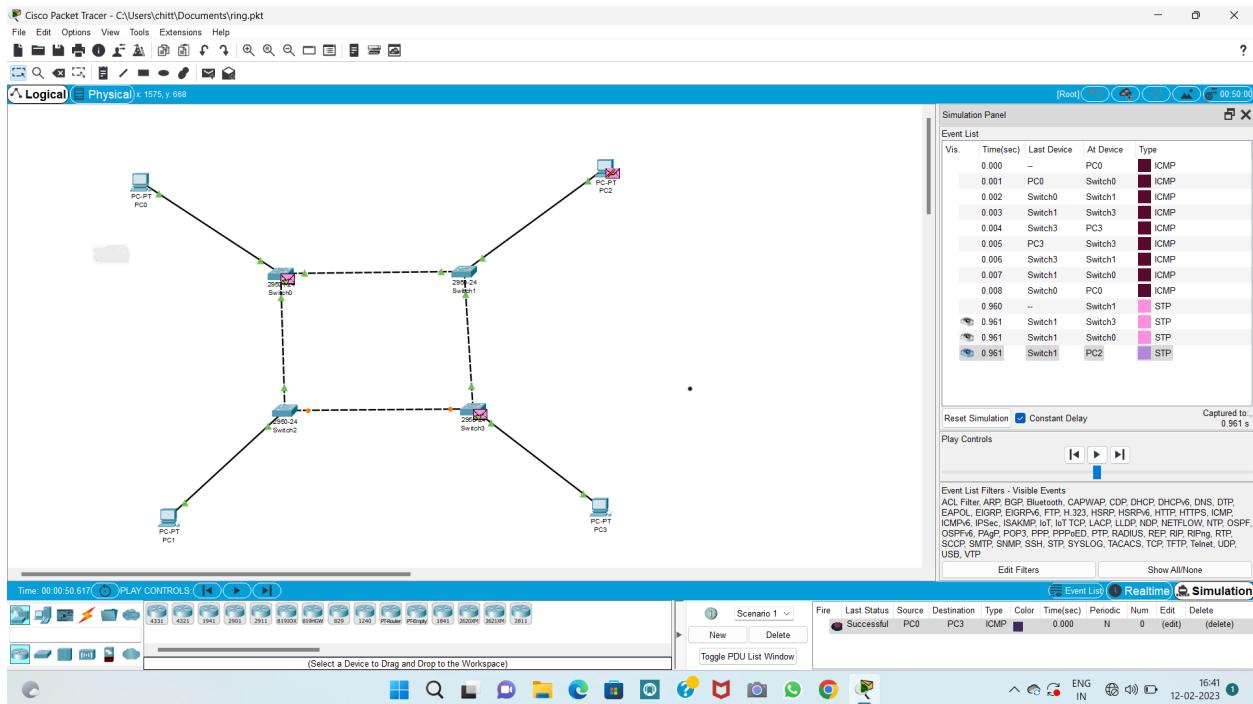
Bus topology



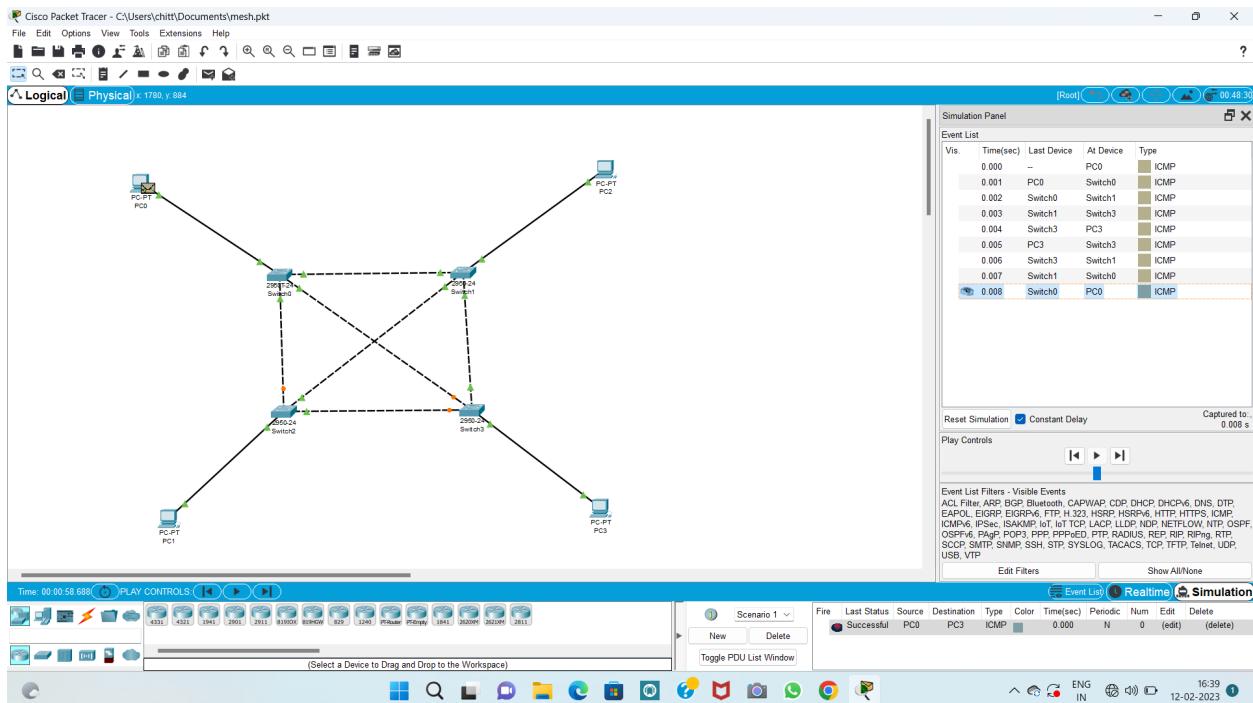
Tree topology



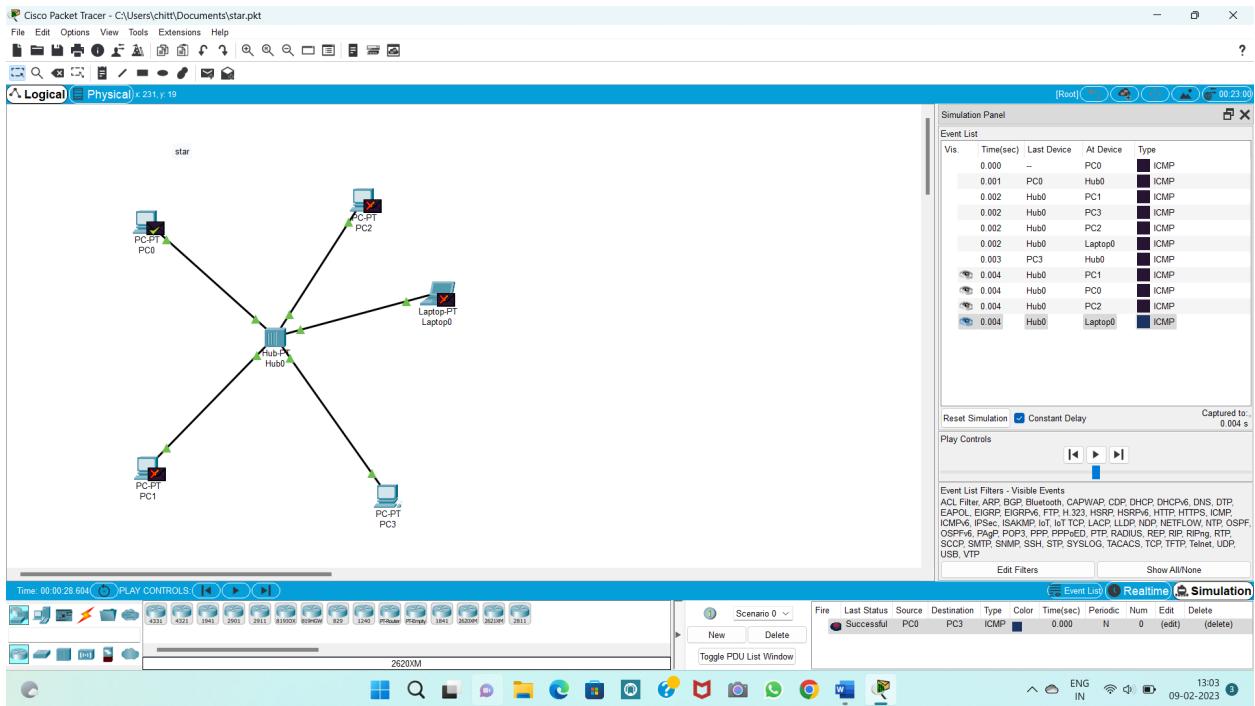
Ring topology



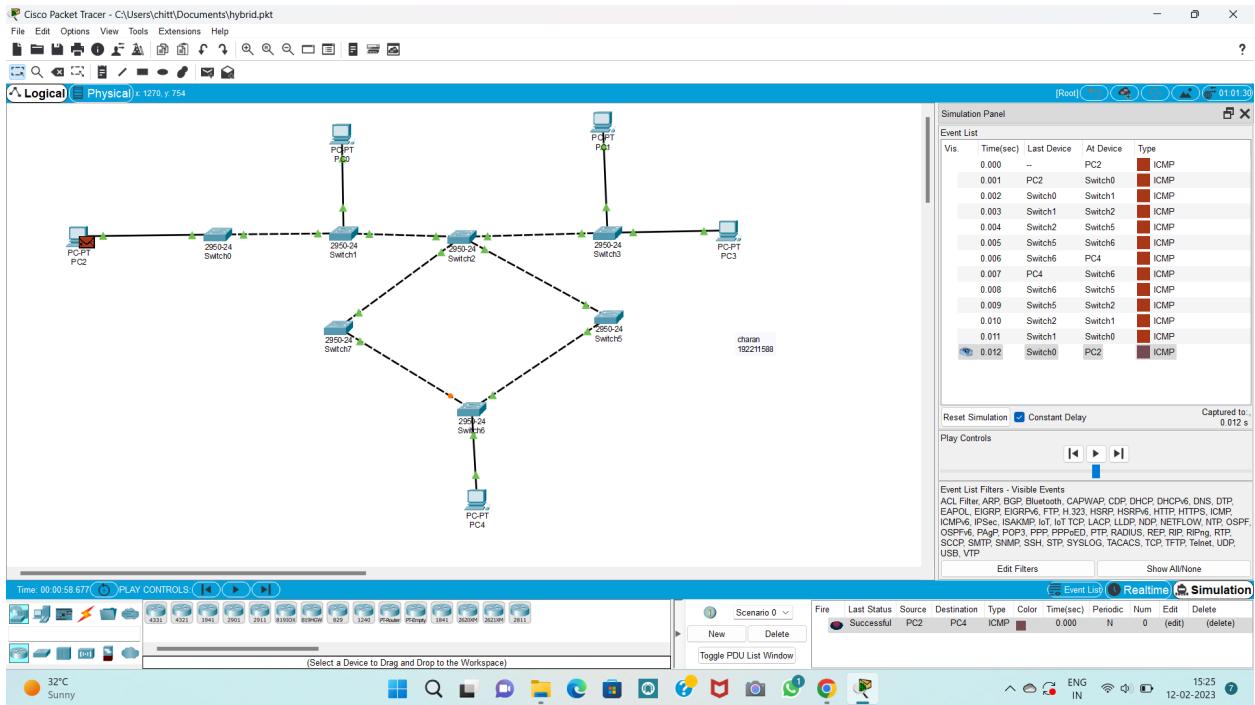
Mesh Topology



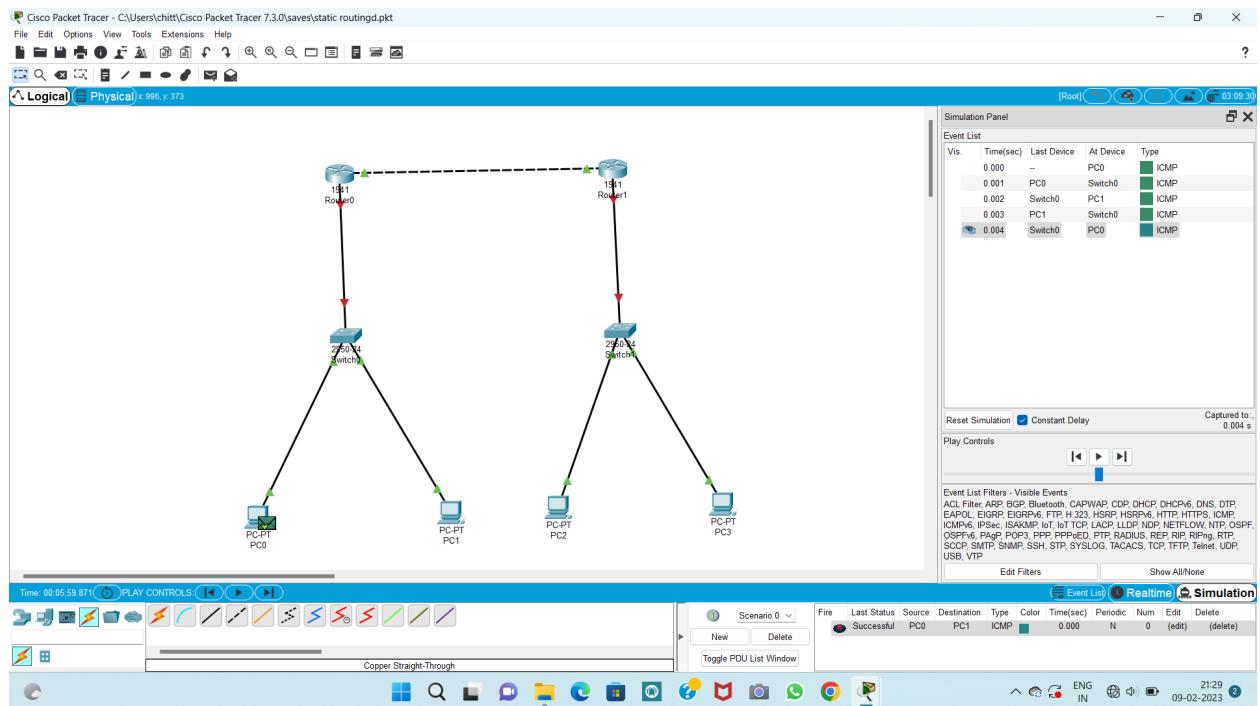
Star topology



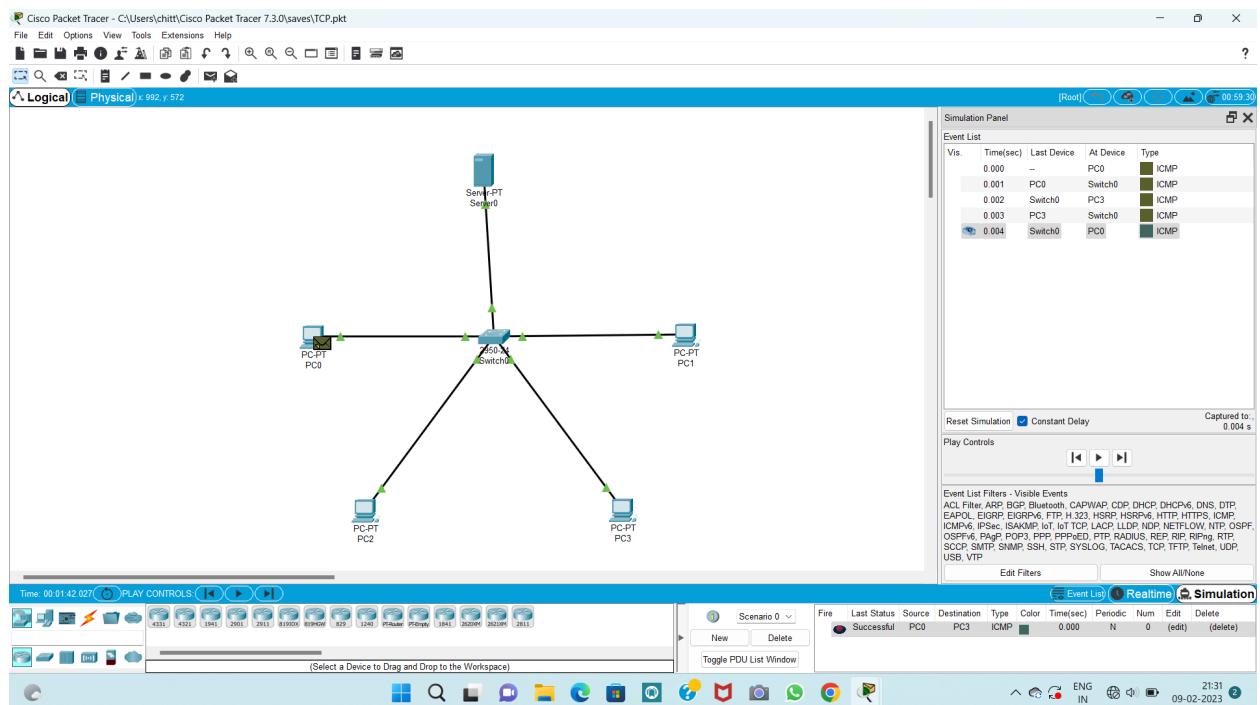
Hybrid Topology



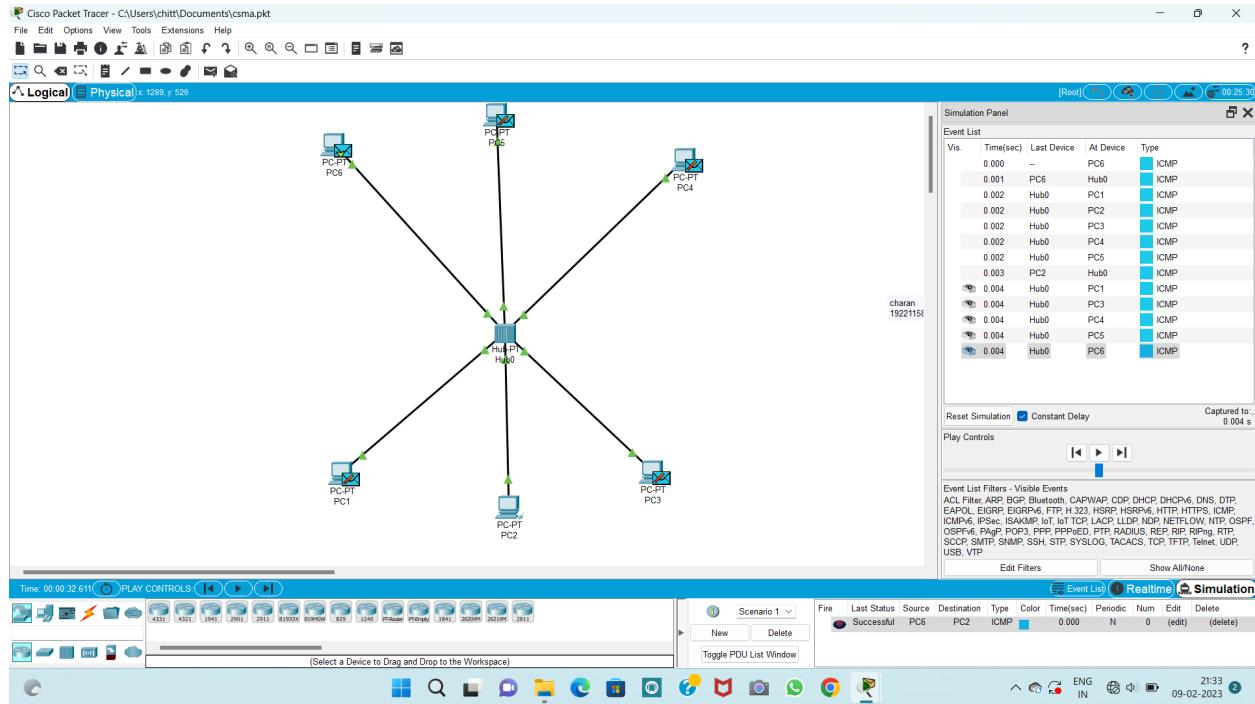
Static routing



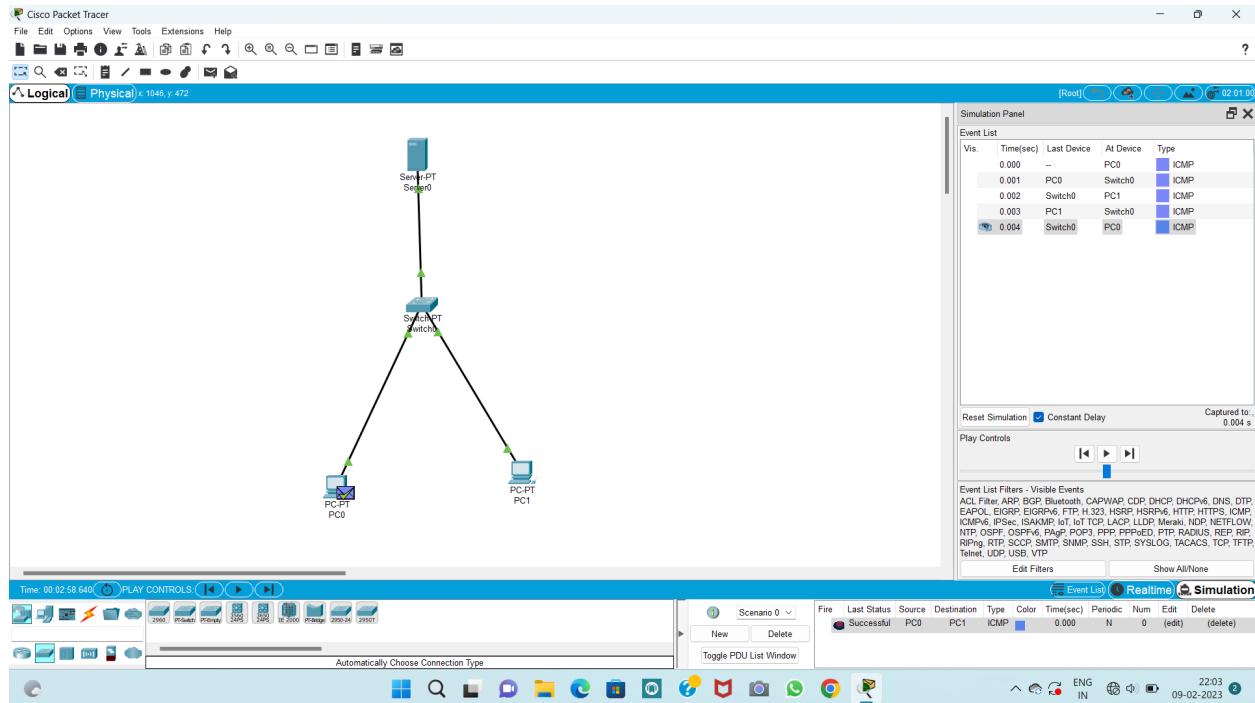
Tcp



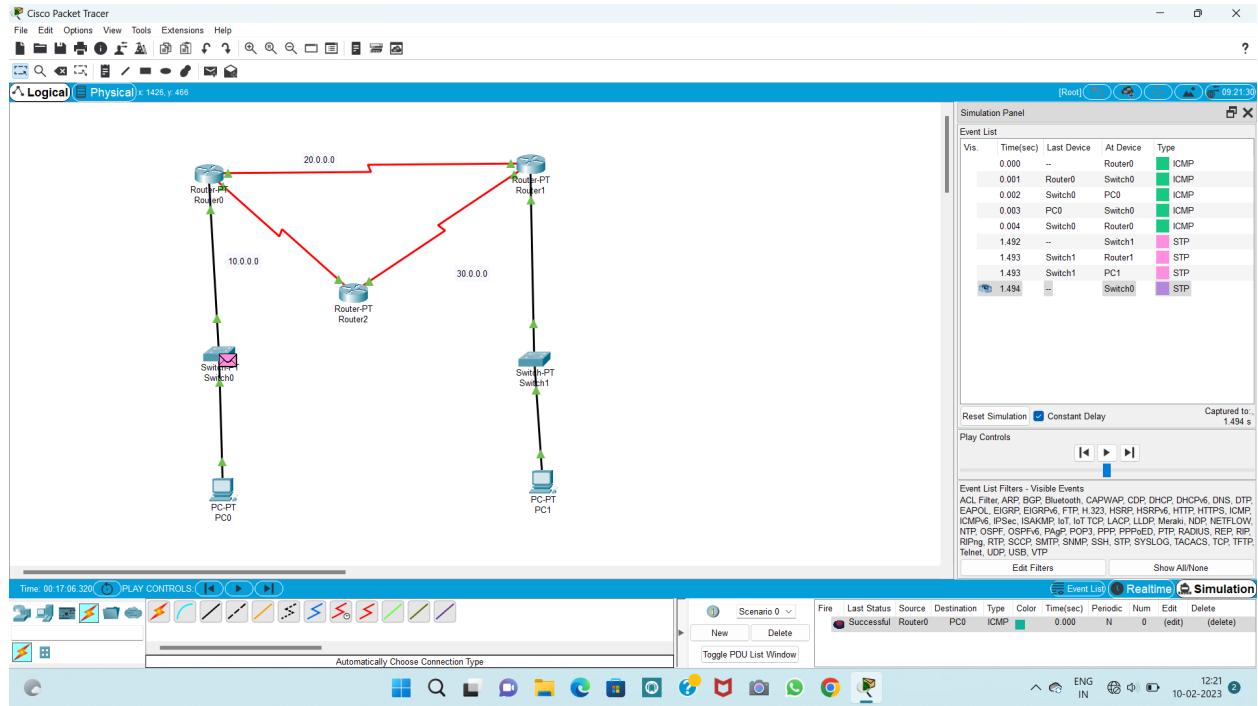
Data CSMA



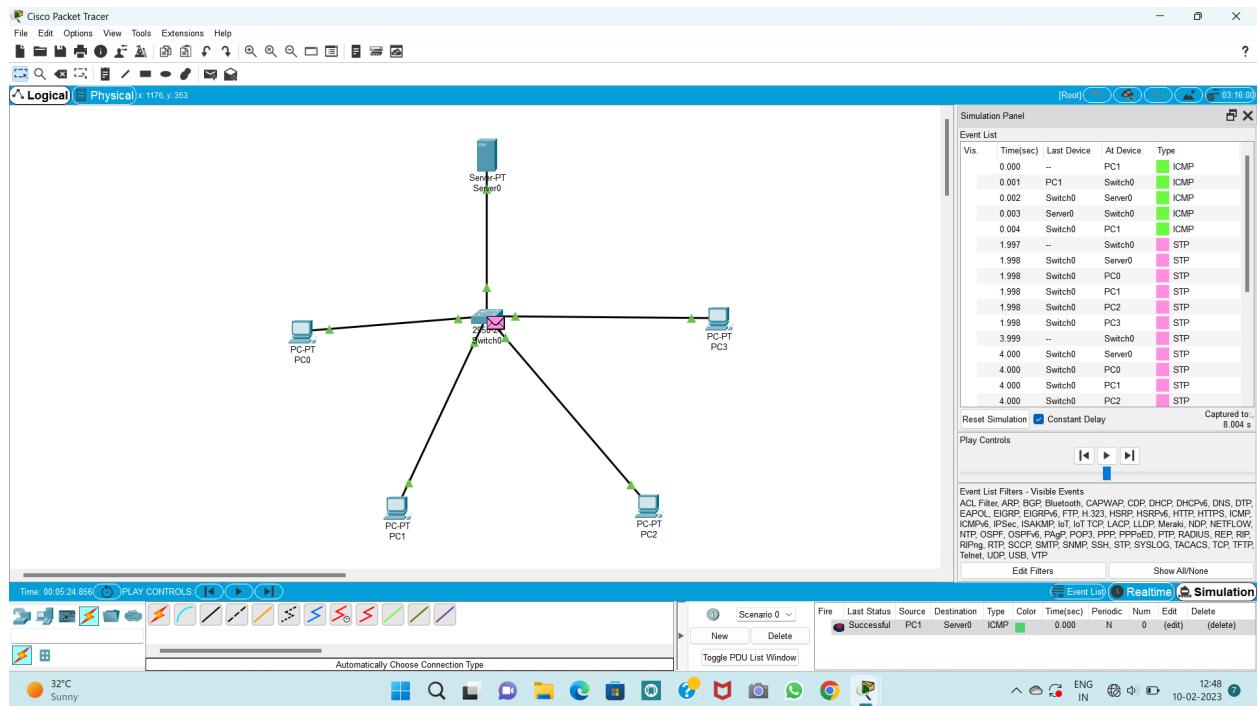
Data ARP



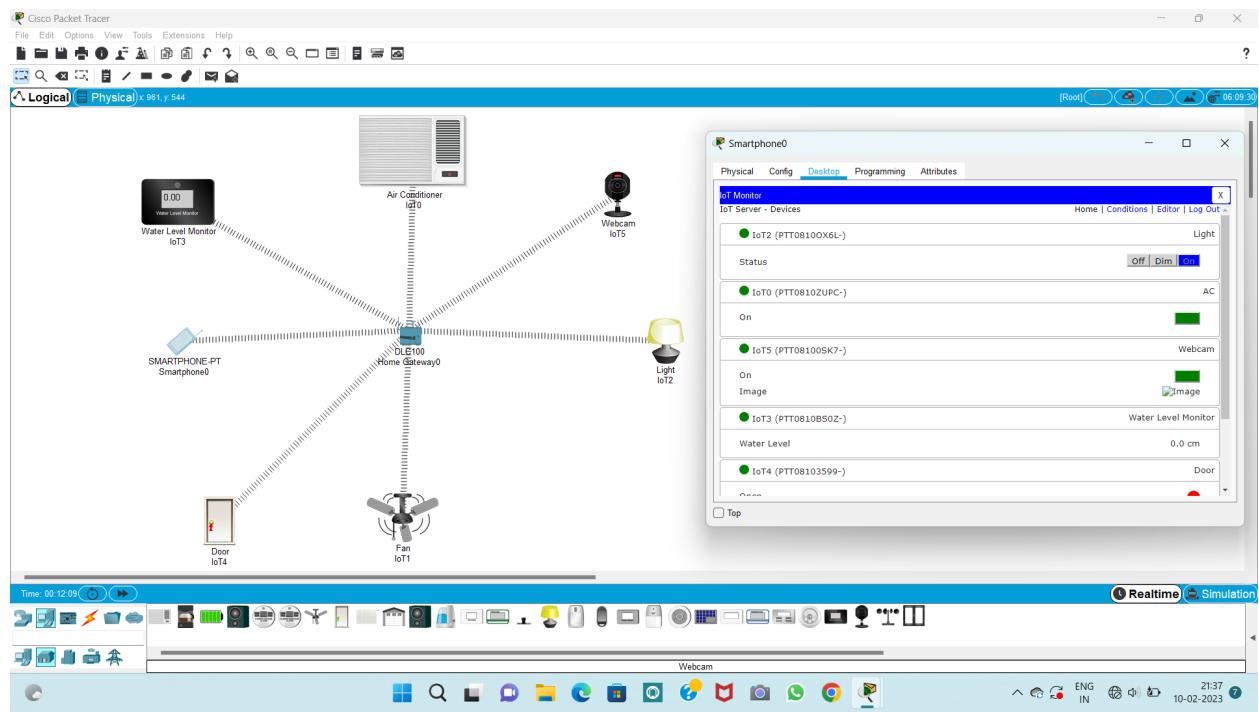
Dynamic routing



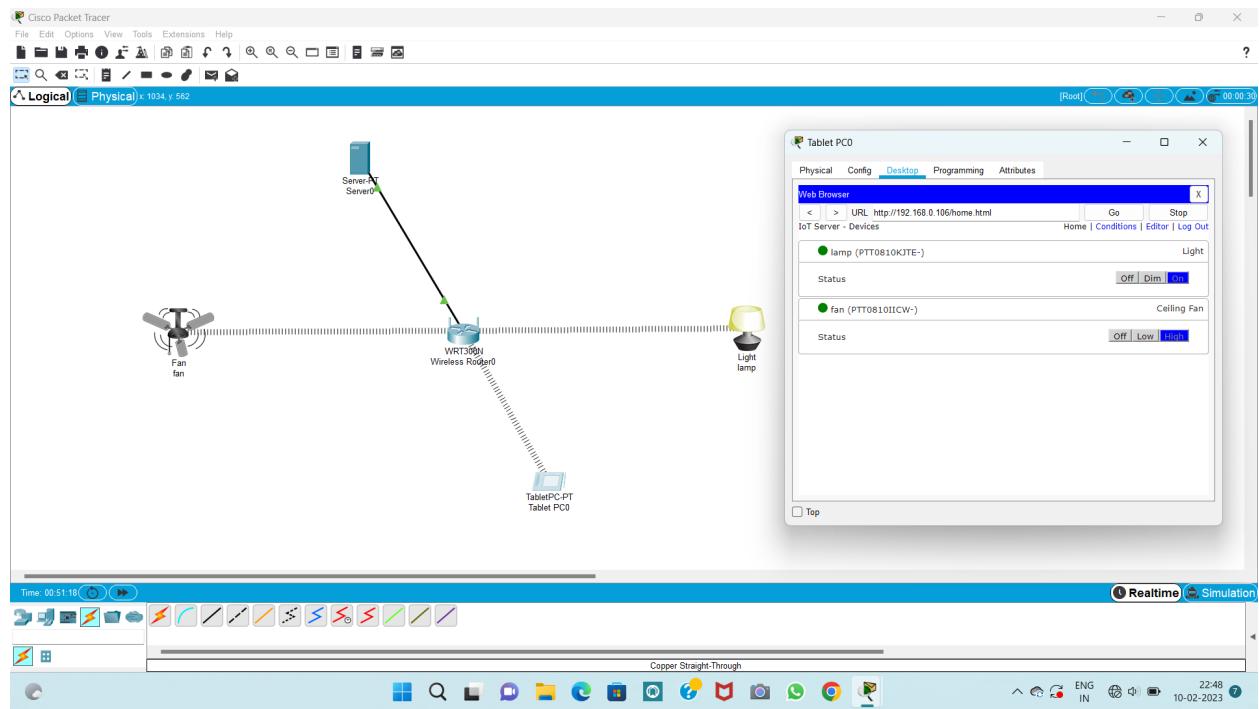
Functional UDP



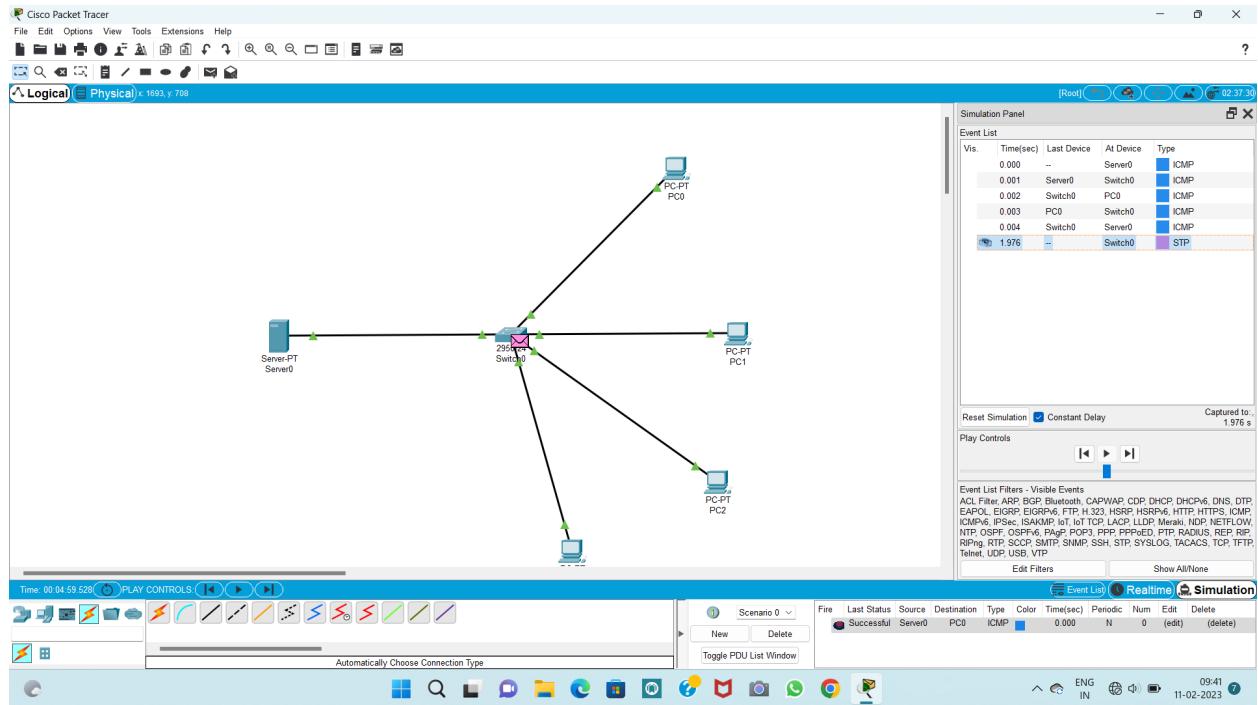
Smart home device



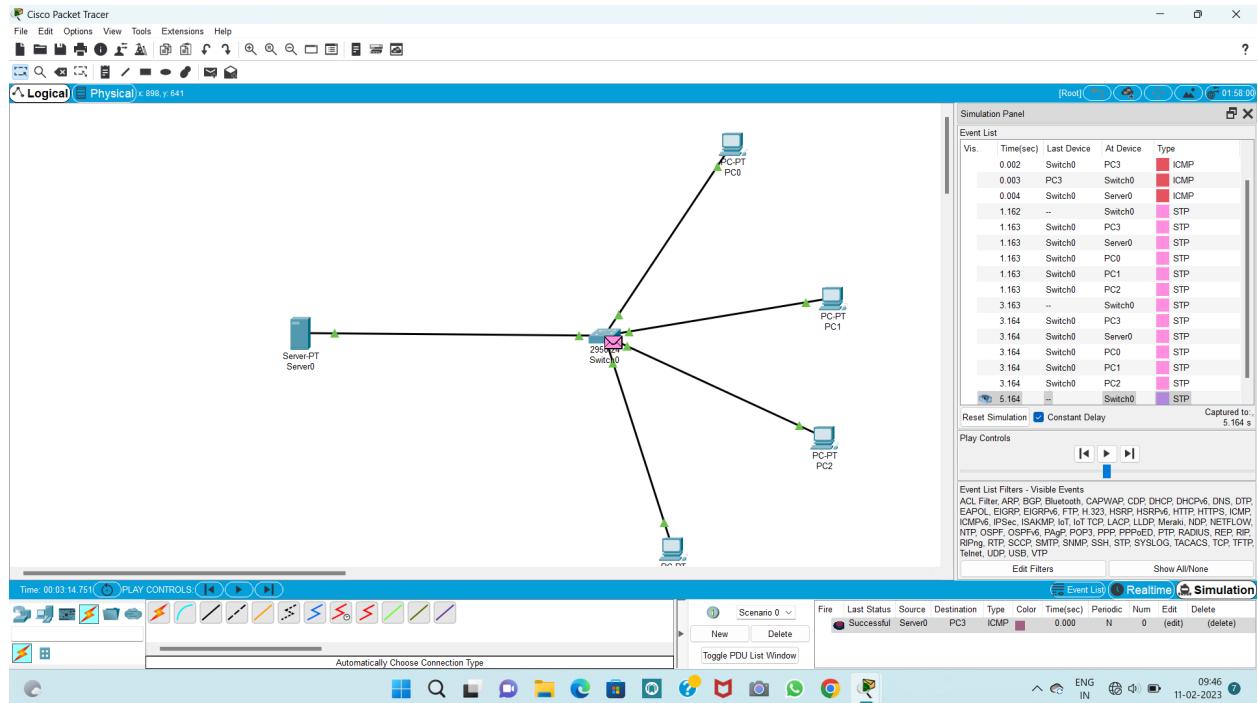
IOT Network



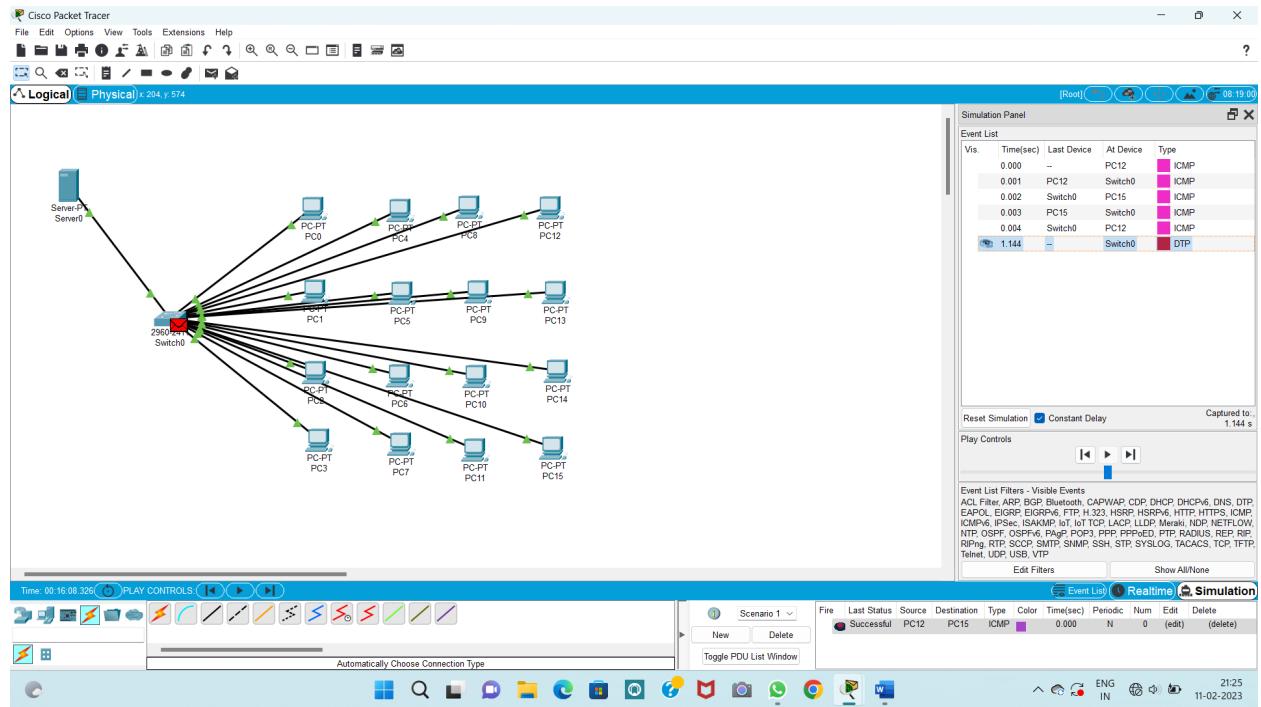
Server client-TCP



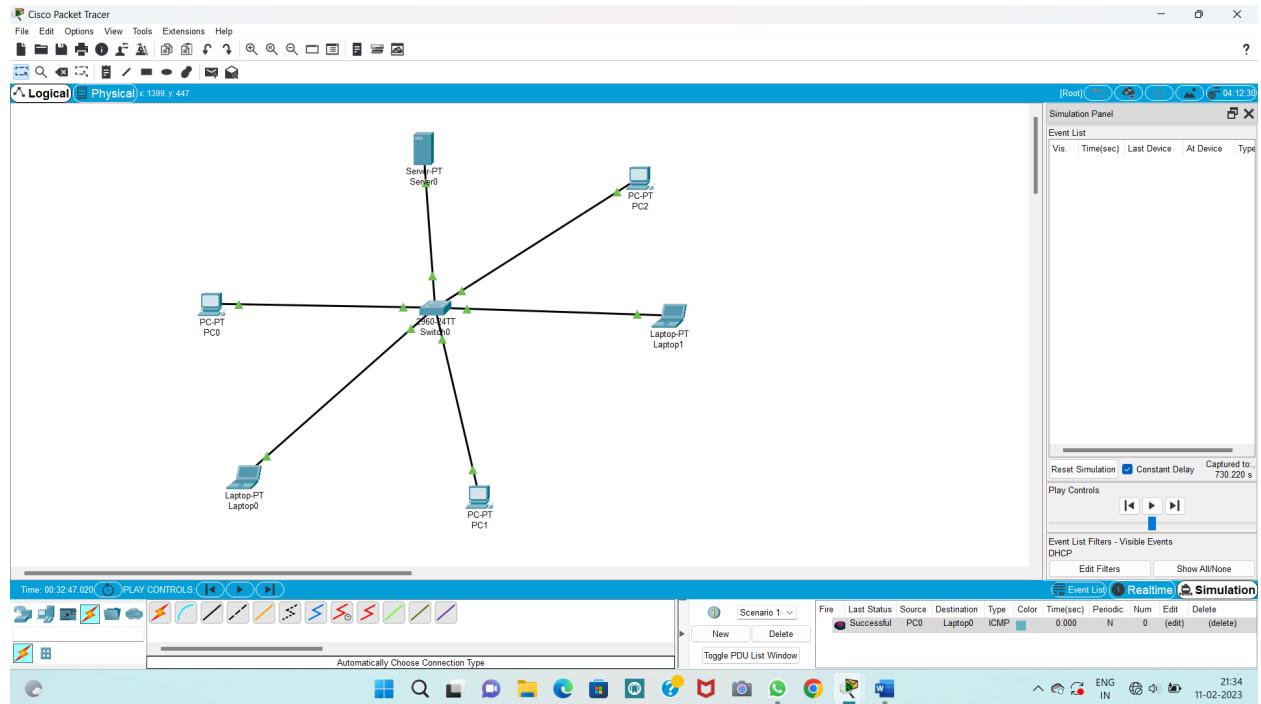
Server client- UDP



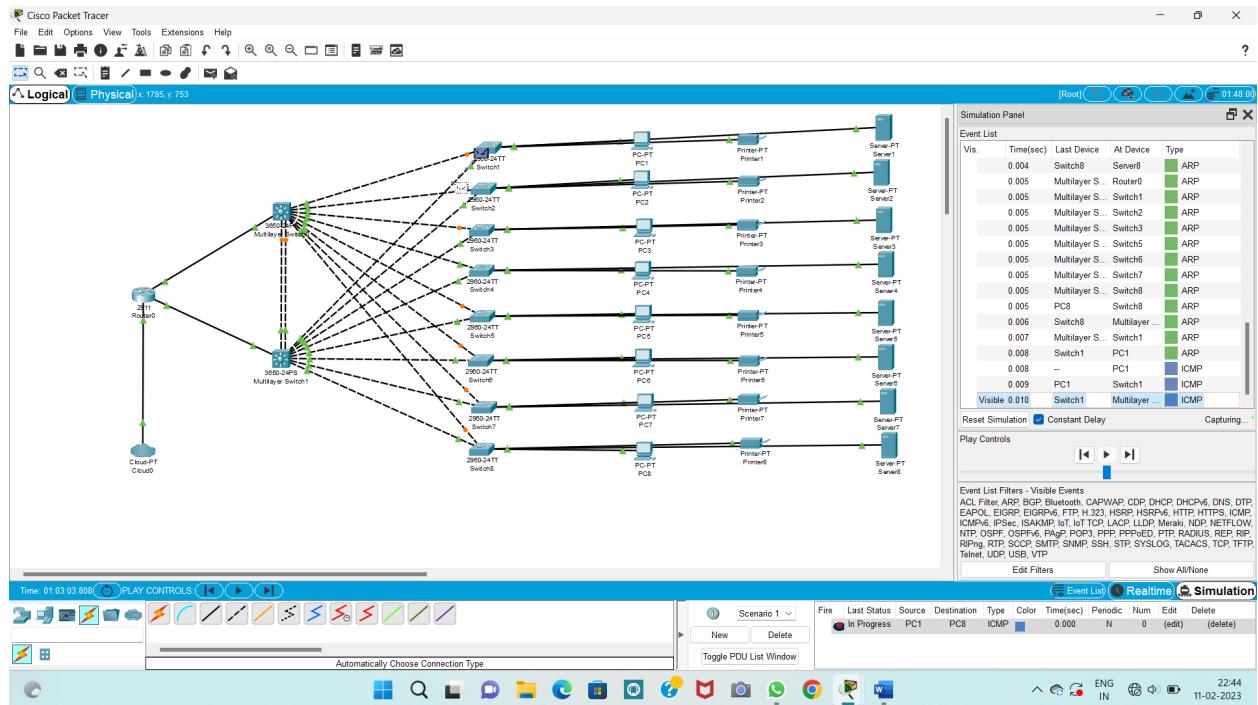
LAB



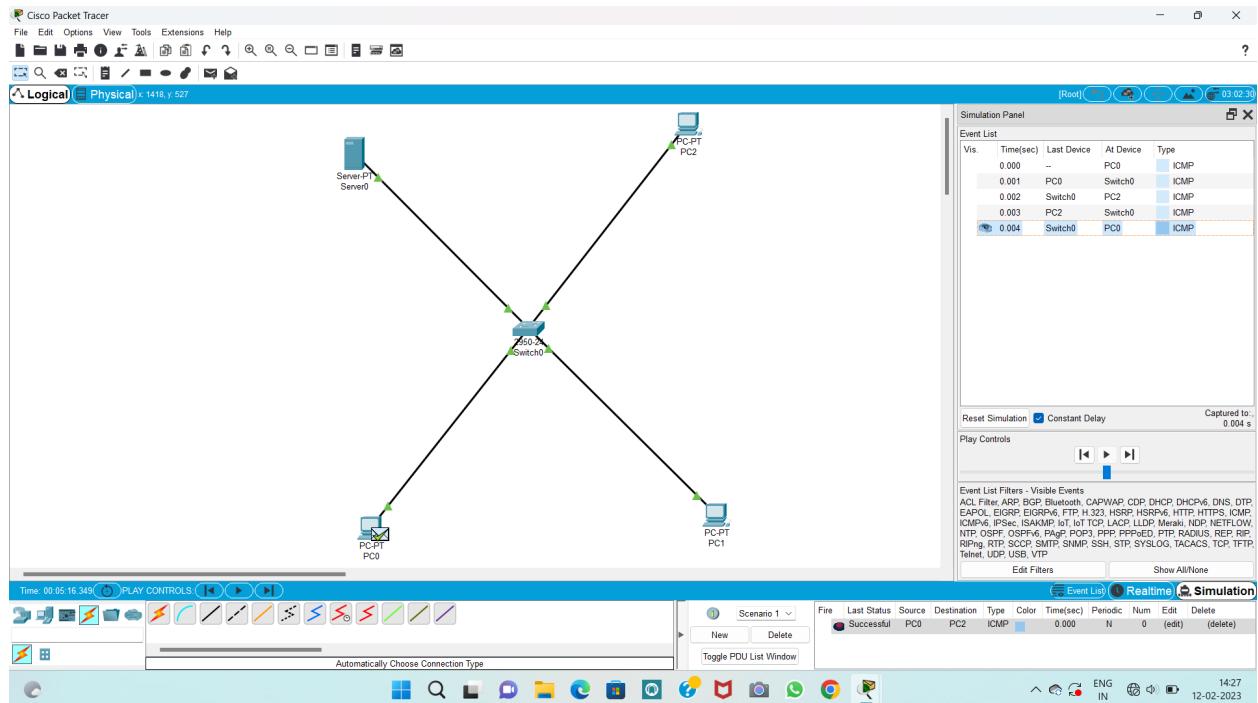
DHCP



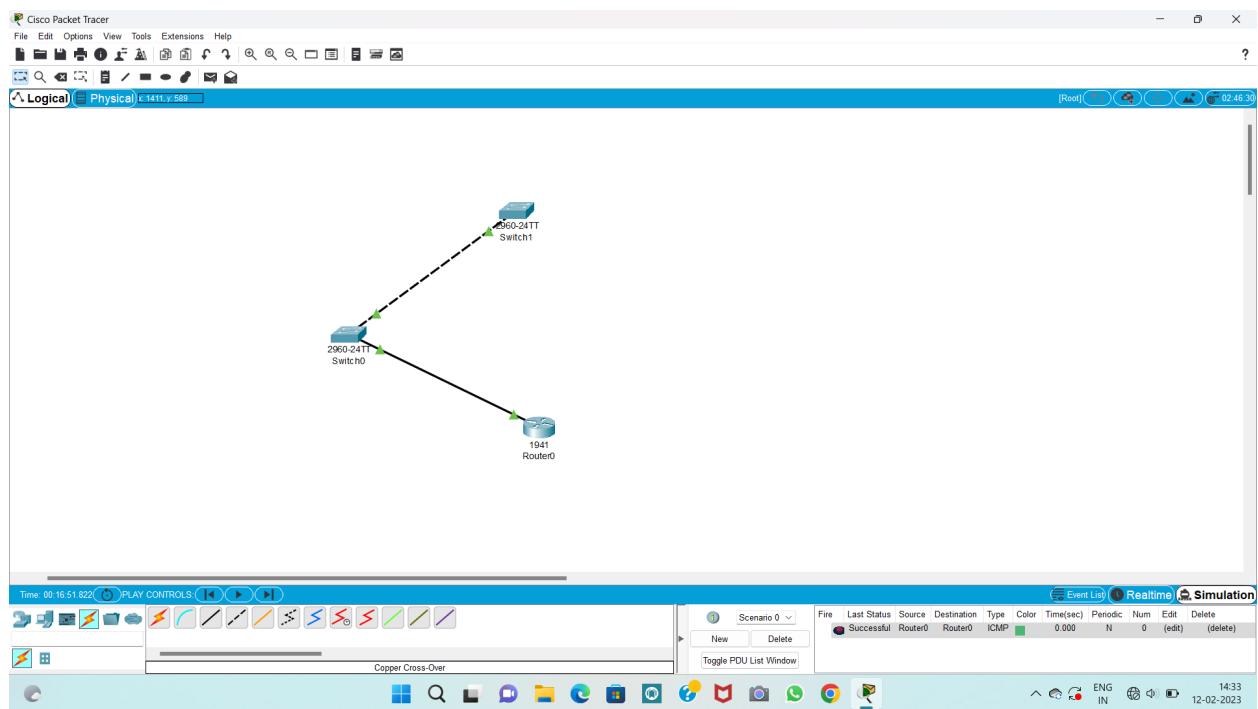
XYZ Simulation



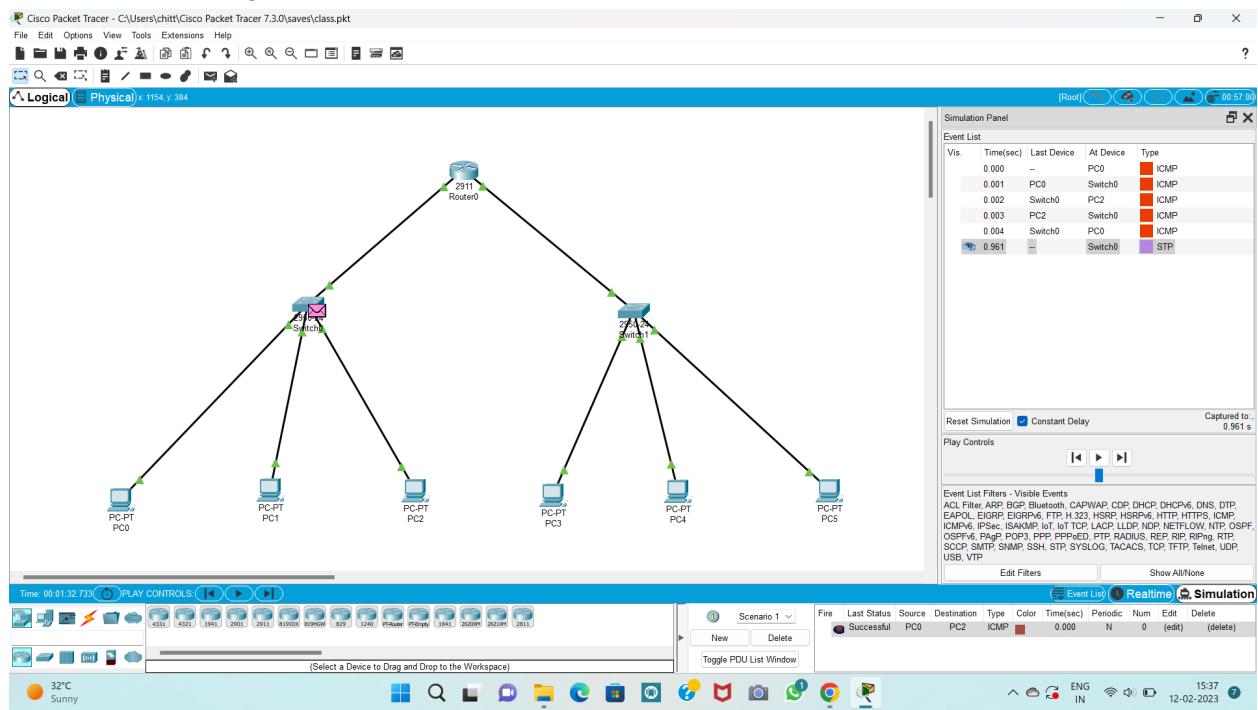
Fire wall



Data IIDP



Class C Addressing



TCP

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tcp

No.	Time	Source	Destination	Protocol	Length	Info
194	15.322898	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	74	58633 → 443 [ACK] Seq=502 Ack=6401 Win=64768 Len=0
195	15.355298	64:ff9b::d6b:2a0c	2409:40f4:1019:775e..	TCP	1354	443 → 58633 [ACK] Seq=6401 Ack=502 Win=4194048 Len=1280 [TCP segment of a reassembled PDU]
196	15.401265	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	74	58633 → 443 [ACK] Seq=502 Ack=7681 Win=66048 Len=0
197	15.496497	64:ff9b::d6b:2a0c	2409:40f4:1019:775e..	TCP	189	[TCP Previous segment not captured] 443 → 58633 [PSH, ACK] Seq=8961 Ack=502 Win=4194048 Len=115 [TCP segment of a reassembled PDU]
198	15.496579	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	86	[TCP Dup ACK 196#1] 58633 → 443 [ACK] Seq=502 Ack=7681 Win=6048 Len=0 SLE=8961 SRE=9076
199	15.496645	64:ff9b::d6b:2a0c	2409:40f4:1019:775e..	TCP	86	443 → 58626 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1300 WS=1 SACK_PERM=1
200	15.496748	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	74	58626 → 443 [ACK] Seq=1 Ack=1 Win=66048 Len=0
201	15.496952	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	74	58626 → 443 [FIN, ACK] Seq=1 Ack=1 Win=66048 Len=0
202	15.627092	64:ff9b::d6b:2a0c	2409:40f4:1019:775e..	TCP	76	443 → 58626 [ACK] Seq=1 Ack=2 Win=8192 Len=0
203	15.687855	2409:40f4:1019:775e..	64:ff9b::d6b:2a0c	TCP	1374	[TCP Out-Of-Order] 49426 → 443 [PSH, ACK] Seq=343 Ack=4189 Win=66048 Len=1300

> Frame 197: 189 bytes on wire (1512 bits), 189 bytes captured (1512 bits) on interface \Device\NPF_{BF4511D0-9A24-4DAB-95E4-1AA786A6B698}, id 0
> Ethernet II, Src: AzurNav_29:78:ff (42:9b:02:73:61:5f), Dst: AzureNav_29:78:ff (14:13:33:29:78:ff)
> Internet Protocol Version 6, Src: 64:ff9b::d6b:2a0c, Dst: 2409:40f4:1019:775e::e52a:c59f:dbd:e049
> Transmission Control Protocol, Src Port: 443, Dst Port: 58633, Seq: 8961, Ack: 502, Len: 115

```

0000 14 13 33 29 78 ff 42 9b 02 73 61 5f 86 dd 60 00 ..-3)x. B. sa_...-.
0001 00 00 00 87 00 00 71 60 ff 9b 00 00 00 00 00 .....q.d.....
0002 00 00 00 00 ab 2a 0c 24 09 00 14 19 77 05 2a .....k^$. @-w^*.
0030 c5 9f db ad e9 01 bb e5 09 78 b0 b0 49 10 aa .....x. I-.
0040 80 b1 50 18 3f ff 16 9f 00 00 4e b8 e5 d4 c1 ..P?.....NK-d.
0050 64 ce 54 0d 6a 75 63 55 1c 57 a6 af b3 8a 07 72 d-T-juU W- r
0060 b1 7c 95 dd 80 a0 c6 52 55 0e ce a9 08 f1 88 d9 |.....R U-.
0070 57 6c 9f 02 c8 9f 72 b2 1a f0 b1 3b 81 20 de 74 Wl.....r-; ; -t
0080 a8 c5 e6 46 6f c3 60 84 22 58 2b 09 6f bc f7 00 ...Fo-.*[+o-.
0090 00 1d ae 76 68 0c cc b7 4e 17 a4 38 d9 83 e7 9d ..v-.....N-8-.
00a0 91 42 76 87 e2 e3 3b c7 23 d0 bf 1c 83 a7 89 b1 Bv-.-; #-----.
00b0 26 70 c7 37 e1 4c fe 8d 14 0e 00 00 00 8p-7 L-.....

```

wireshark_Wi-Fi45V2Z1.pcapng 91°F Sunny 12:43 IN 10-02-2023

UDP

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udp

No.	Time	Source	Destination	Protocol	Length	Info
1085	17.234977	64:ff9b::d6b:2a0c	2409:40f4:100d:c6fa..	TCP	1354	443 → 59184 [ACK] Seq=7681 Ack=502 Win=4194048 Len=1280 [TCP segment of a reassembled PDU]
1086	17.234977	64:ff9b::d6b:2a0c	2409:40f4:100d:c6fa..	TLSv1.2	189	Server Hello, Certificate, Certificate Status, Server Key Exchange, Server Hello Done
1087	17.235144	[2409:40f4:100d:c6fa..]	64:ff9b::d6b:2a0c	TCP	74	59184 → 443 [ACK] Seq=502 Ack=9076 Win=66048 Len=0
1088	17.241998	2409:40f4:100d:c6fa..	64:ff9b::d6b:2a0c	TLSv1.2	232	Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message
1089	17.300329	2409:40f4:100d:c6fa..	64:ff9b::d7d:2a0c	TCP	448	[TCP Retransmission] 59156 → 443 [PSH, ACK] Seq=1 Ack=1 Win=66048 Len=374
1090	17.300329	2409:40f4:100d:c6fa..	64:ff9b::d7d:2a0c	TCP	40	126..17.133..
1091	17.300598	192.168.178.250	40.126.17.133..	TCP	40	342 [TCP Retransmission] 59160 → 443 [PSH, ACK] Seq=1 Ack=1 Win=66048 Len=388
1092	17.413397	2409:40f4:100d:c6fa..	ff02::1:ff73:615f	ICMPv6	86	Neighbor Solicitation for fe80::409b:2ff:fe73:615f from 14:13:33:29:78:ff
1093	17.451252	64:ff9b::d6b:2a0c	2409:40f4:100d:c6fa..	TCP	1354	[TCP Spurious Retransmission] 443 → 59184 [PSH, ACK] Seq=7796 Ack=502 Win=4194048 Len=1280
1094	17.451340	2409:40f4:100d:c6fa..	64:ff9b::d6b:2a0c	TCP	86	[TCP Dup ACK 1007#1] 59184 → 443 [ACK] Seq=660 Ack=9076 Win=66048 Len=0 SLE=7796 SRE=9076
1095	17.451674	2600:9000:2409:00..	2409:40f4:100d:c6fa..	TCP	1294	443 → 59188 [ACK] Seq=268 Ack=694 Win=68096 Len=1220 [TCP segment of a reassembled PDU]

> Frame 1007: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF_{BF4511D0-9A24-4DAB-95E4-1AA786A6B698}, id 0
> Ethernet II, Src: AzurNav_29:78:ff (14:13:33:29:78:ff), Dst: ee:95:f0:0f:38:e1 (ee:95:f0:0f:38:e1)
> Internet Protocol Version 6, Src: 2409:40f4:100d:c6fa:c84:b1ed:29bb:1592, Dst: 64:ff9b::d6b:2a0c
> Transmission Control Protocol, Src Port: 443, Dst Port: 59184, Seq: 502, Ack: 9076, Len: 0

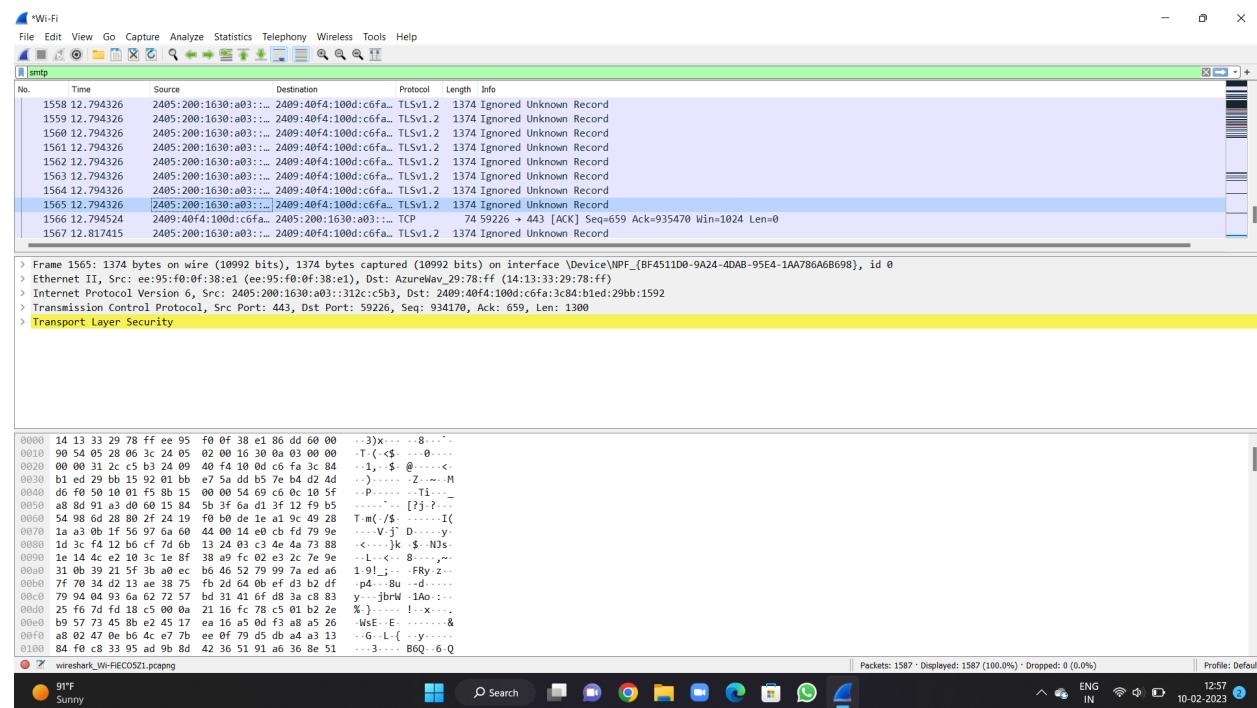
```

0000 ee 95 f0 0f 38 e1 14 13 33 29 78 ff 86 dd 60 02 ...-8... 3)x.-.
0010 56 aa 00 14 06 3f 24 09 40 f4 10 0d c6 fa 3c 84 V-7s @-0--<-
0020 b1 ed 29 bb 15 92 00 64 ff 9b 00 00 00 00 00 ..)-.d-.....
0030 00 00 00 6b 2a 0c 30 01 bb a7 9e d7 c4 31 e0 ..k*-0-1-.
0040 ab 3c 50 10 01 02 c8 2b 00 00 -<p---+...

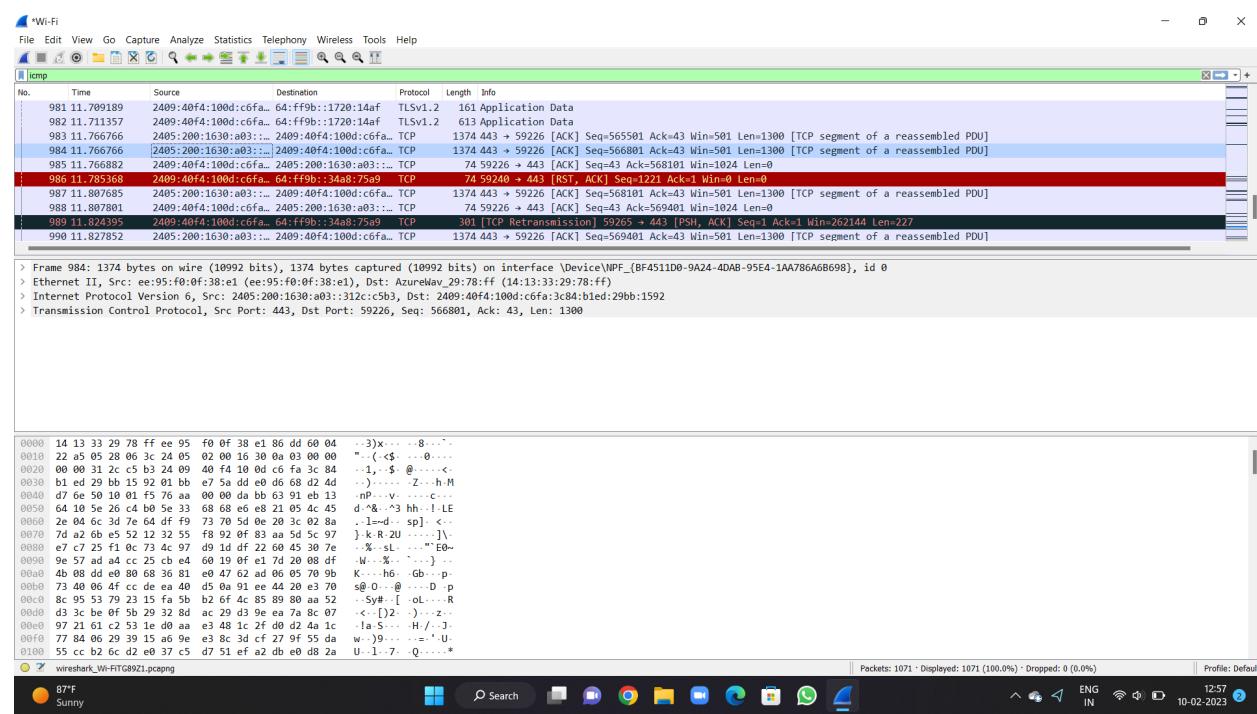
```

wireshark_Wi-FiVGK6Z1.pcapng 91°F Sunny 12:55 IN 10-02-2023

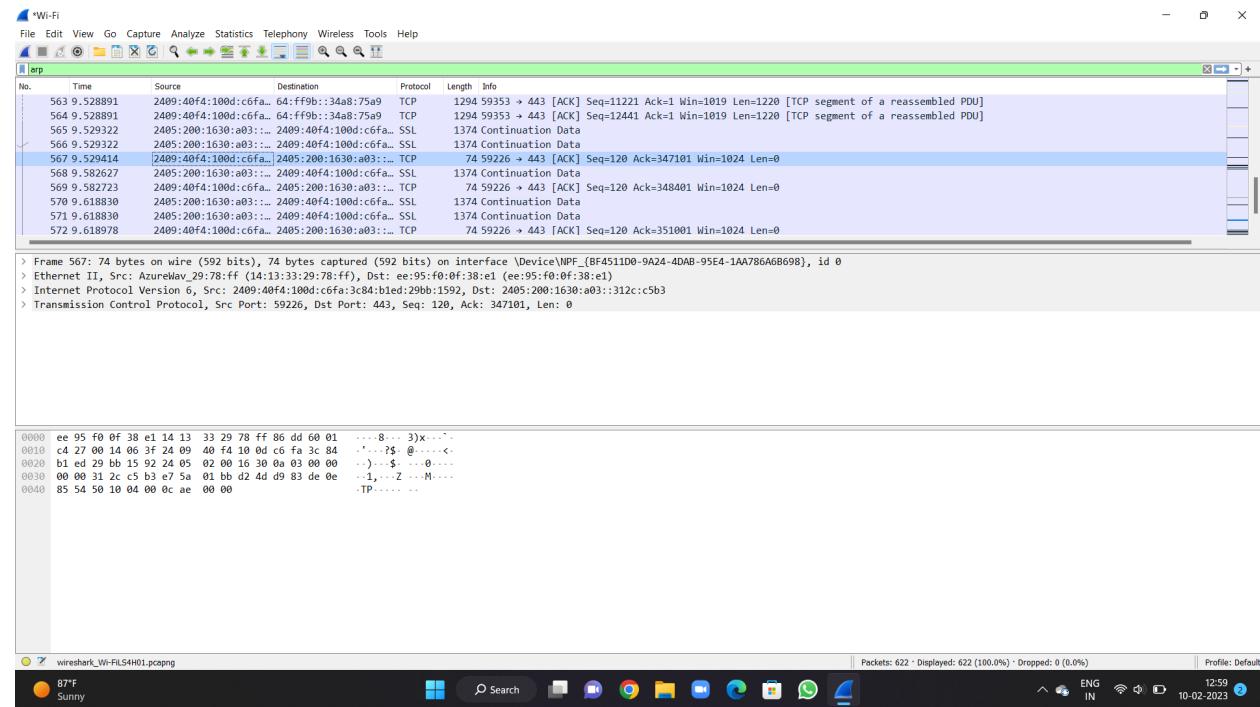
SMTP



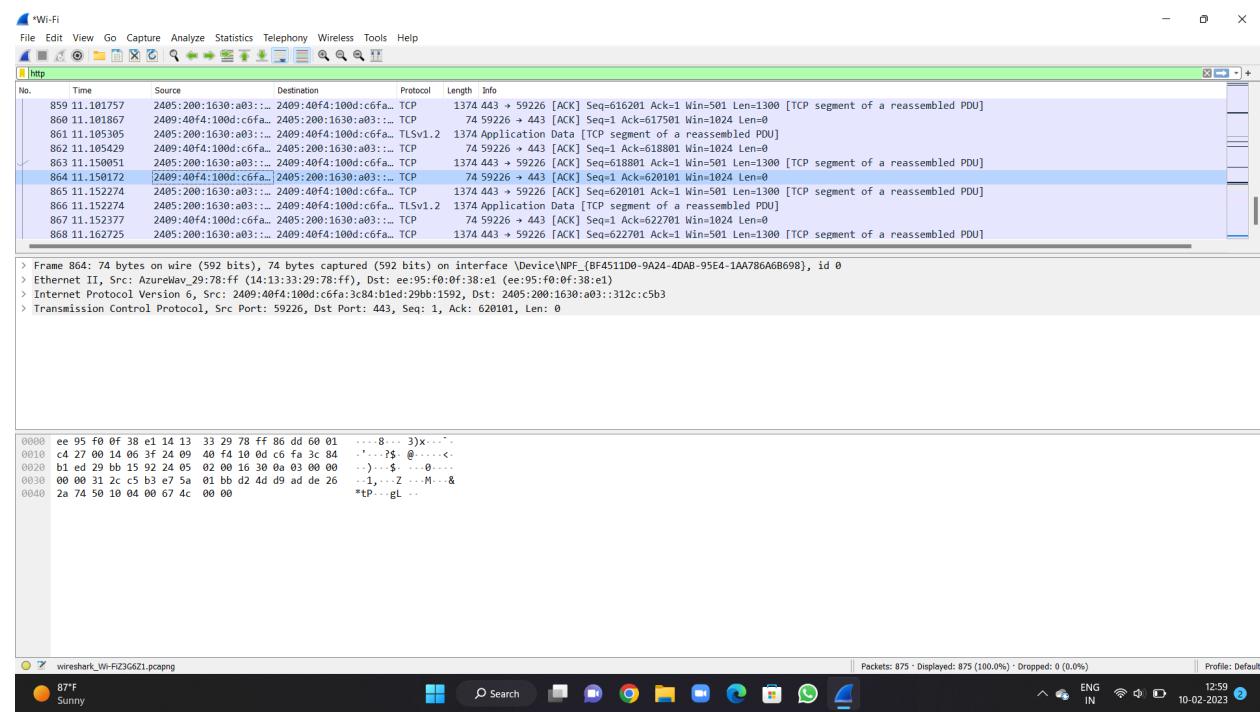
ICMP



ARP



HTTP



```

//BIT Stuffing:
# include<stdio.h>
#include<string.h>
int main()
{
    int a[20],b[30],i,j,k,count,n;
    printf("Enter frame size (Example: 8):");
    scanf("%d",&n);
    printf("Enter the frame in the form of 0 and 1 :");
    for(i=0; i<n; i++)
        scanf("%d",&a[i]);
    i=0;
    count=1;
    j=0;
    while(i<n)
    {
        if(a[i]==1)
        {
            b[j]=a[i];
            for(k=i+1; a[k]==1 && k<n && count<5; k++)
            {
                j++;
                b[j]=a[k];
                count++;
                if(count==5)
                {
                    j++;
                    b[j]=0;
                }
                i=k;
            }
        }
        else
        {
            b[j]=a[i];
        }
        i++;
        j++;
    }
    printf("After Bit Stuffing :");
    for(i=0; i<j; i++)
        printf("%d",b[i]);
    return 0;
}

```

