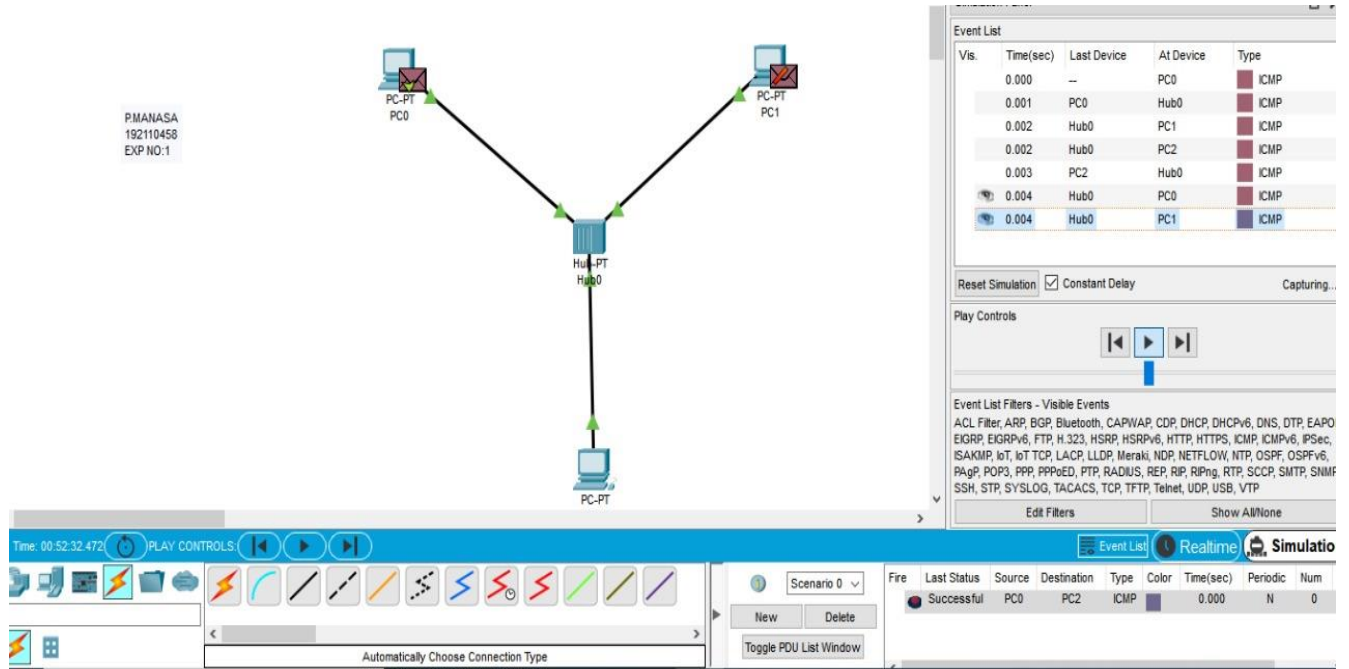
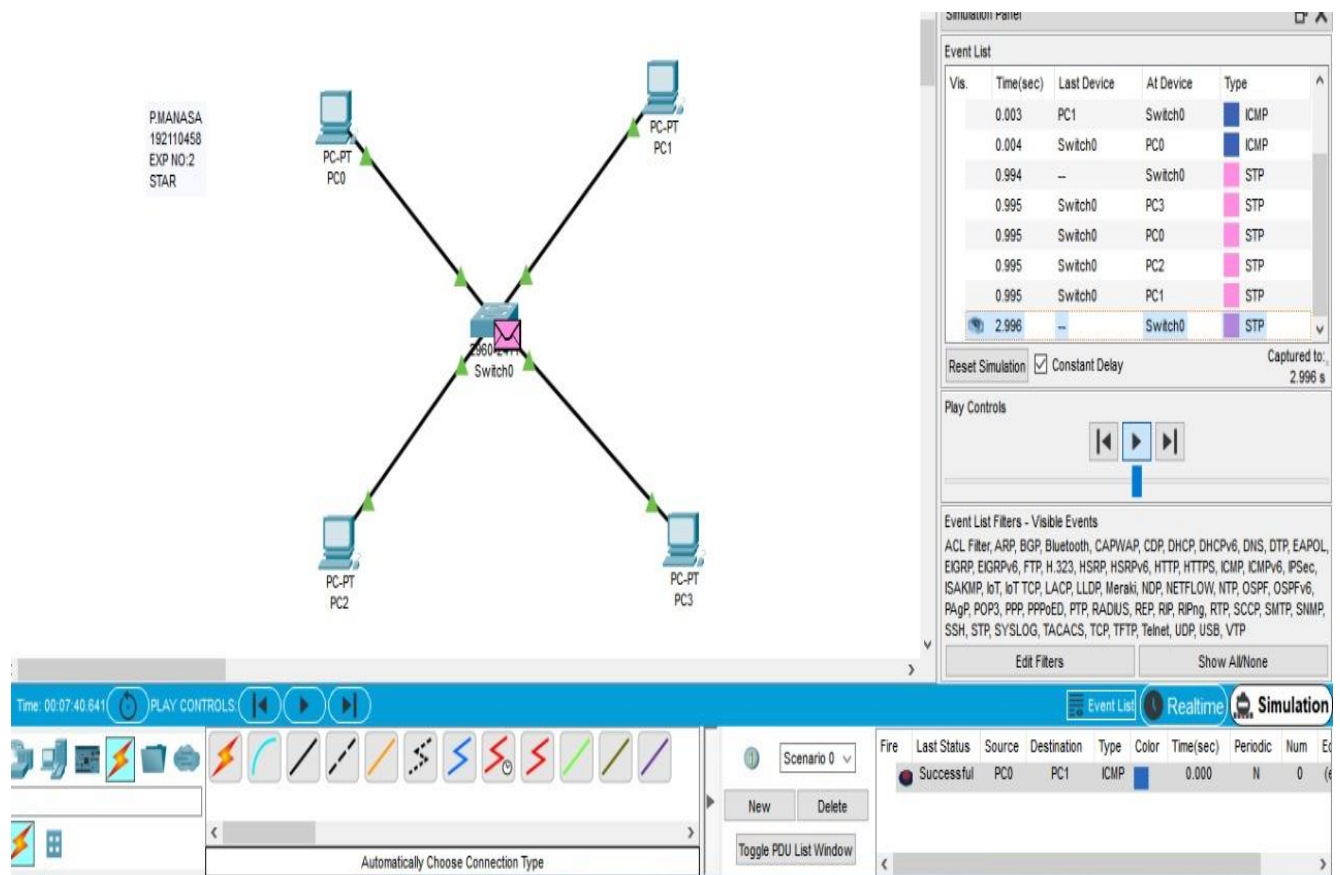


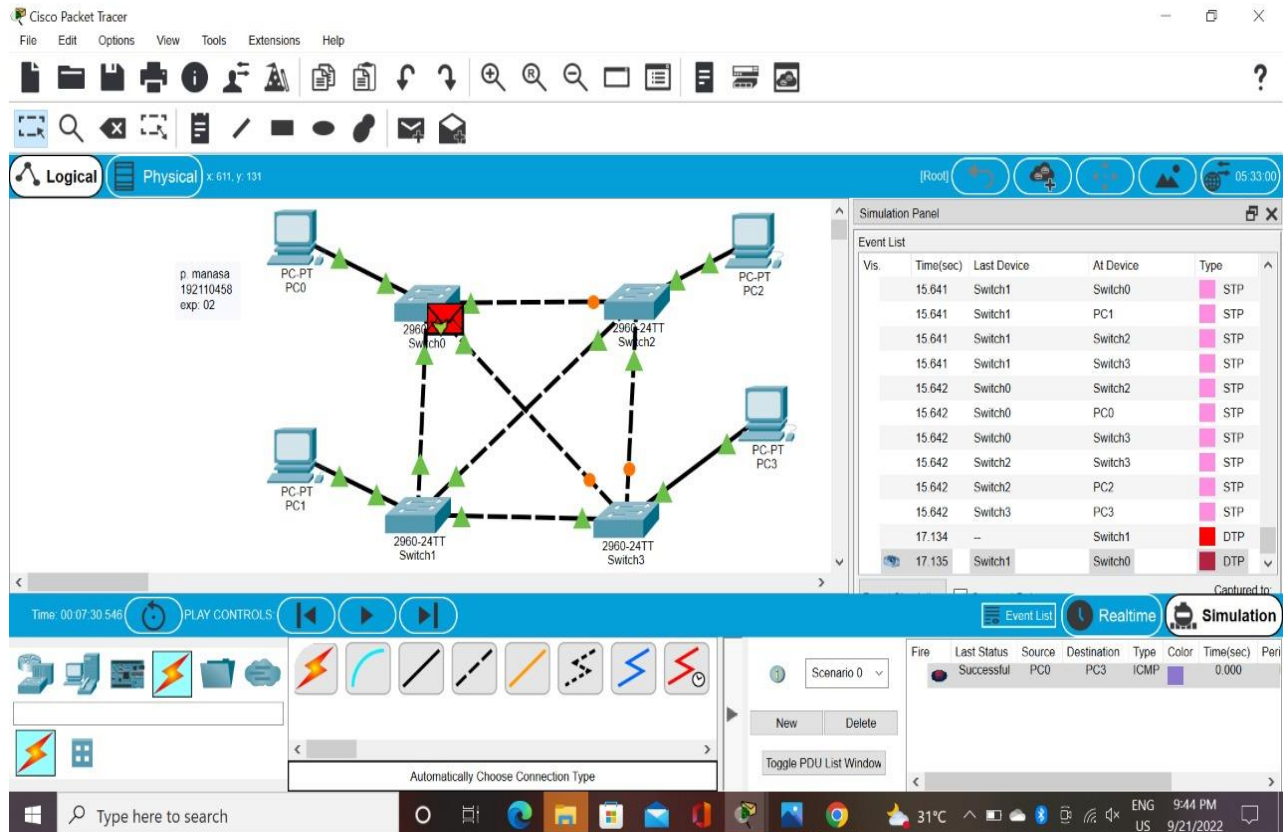
EXPERIMENT-1 (HUB)



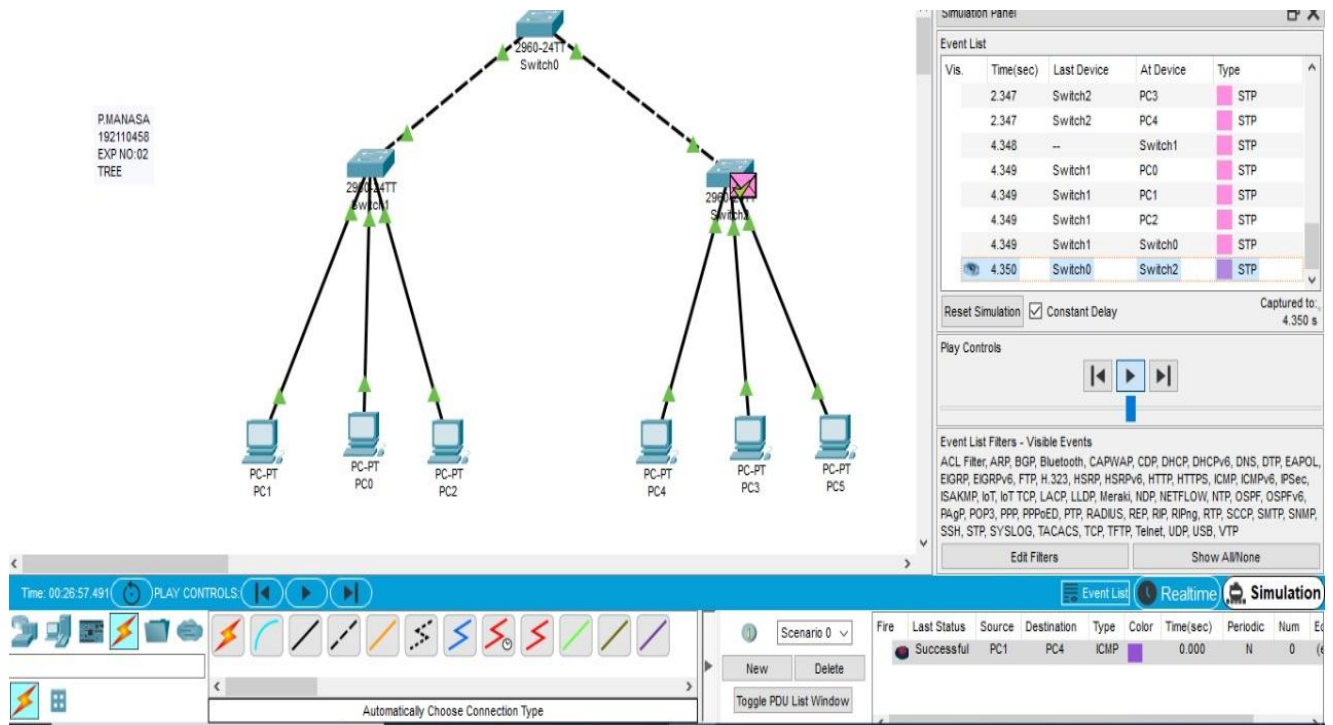
EXPERIMENT-2(STAR)



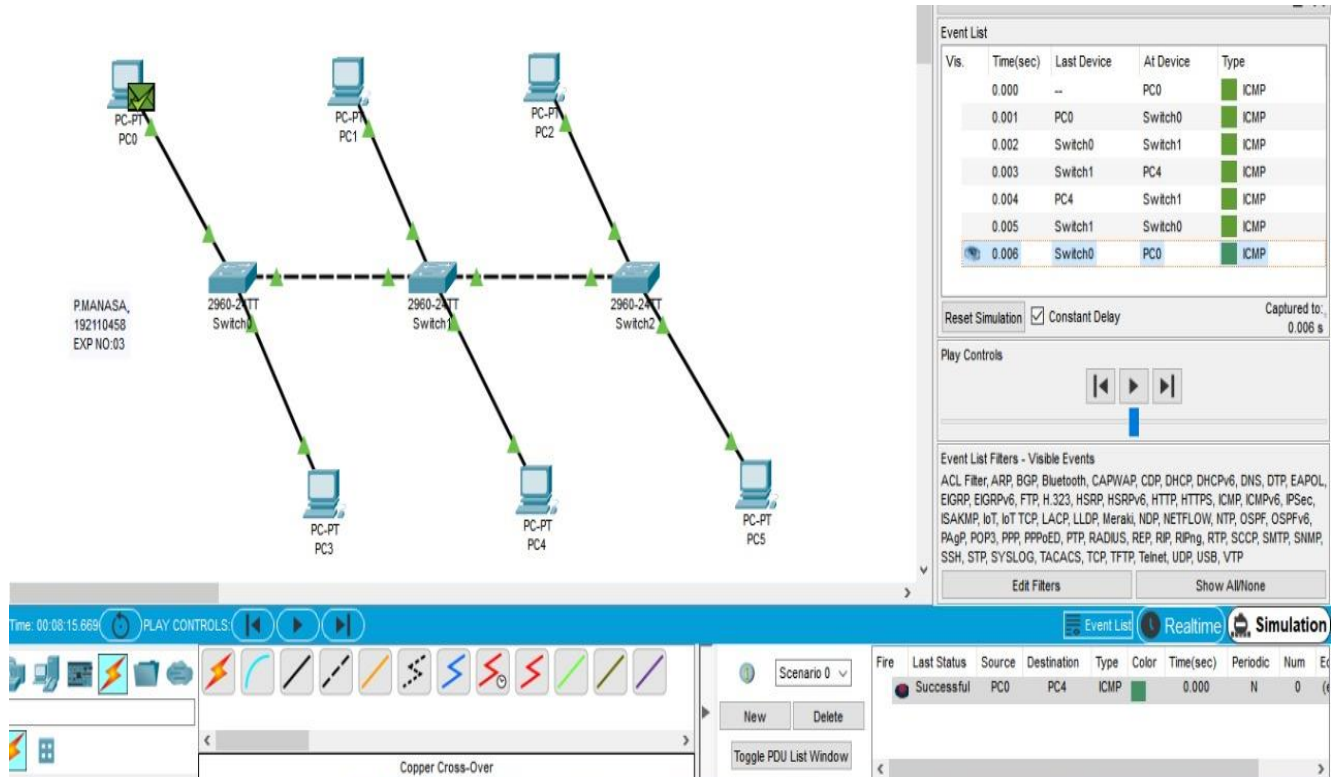
EXPERIMENT-2 (MESH)



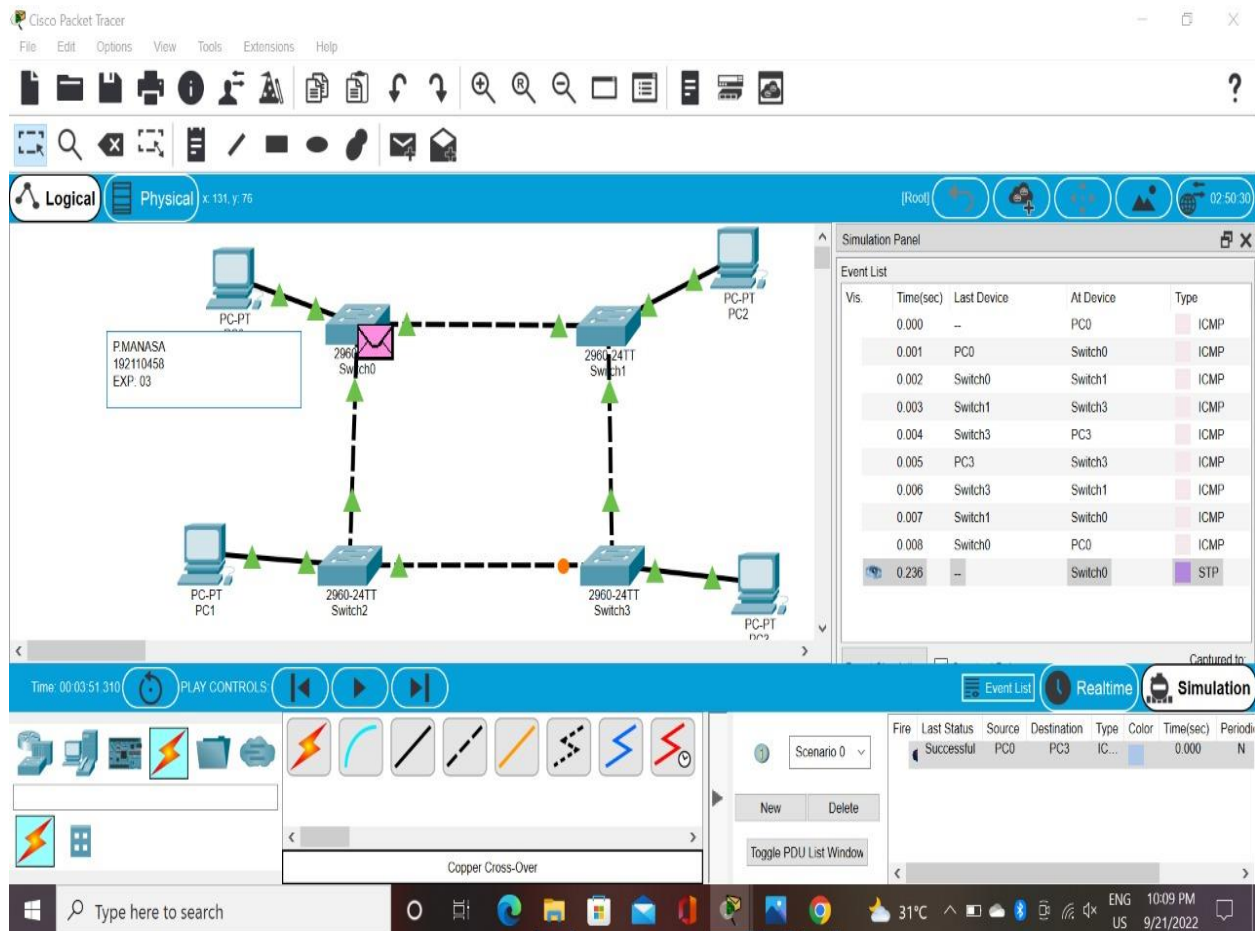
EXPERIMENT-2(TREE)



EXPERIMENT-3(BUS)



EXPERIMENT-3(RING)



EXPERIMENT-3(HYBRID)

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical x:199, y:103

[Root]

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.008	Switch6	Switch3	ICMP
	0.009	Switch3	Switch2	ICMP
	0.010	Switch2	Switch1	ICMP
	0.011	Switch1	Switch0	ICMP
	0.012	Switch0	PC3	ICMP
	0.764	--	Switch1	STP
	0.765	Switch1	Switch0	STP
	0.765	Switch1	PC4	STP
	0.765	Switch1	Switch2	STP
	0.766	Switch0	PC3	STP
	0.766	Switch2	PC5	STP
	0.766	Switch2	Switch3	STP

Time: 00:13:58.578

PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic

Successful	PC3	PC0	IC...	0.000	N
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Copper Straight-Through

Type here to search

30°C

ENG 10:26 PM 9/21/2022

EXPERIMENT-4

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical x 370, y 230

Simulation Panel

Event List

Vis	Time(sec)	Last Device	At Device	Type
	0.006	Hub4	PC4	ICMP
	0.006	PC3	Hub3	ICMP
	0.007	Hub3	Hub2	ICMP
	0.007	Hub3	Hub4	ICMP
	0.008	Hub2	Hub1	ICMP
	0.008	Hub2	PC2	ICMP
	0.008	Hub4	Printer0	ICMP
	0.008	Hub4	PC4	ICMP
	0.009	Hub1	Hub0	ICMP
	0.009	Hub1	PC1	ICMP
	0.010	Hub0	Server0	ICMP
	0.010	Hub0	PC0	ICMP

Time: 00:12:11.530

PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic
	Successful	PC0	PC3	IC...		0.000	N

ENG 10:40 PM 9/21/2022

EXPERIMENT-5

PMANASA
192110458
EXP NO:05

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	—	PC0	ICMP
	0.001	PC0	Hub0	ICMP
	0.002	Hub0	Server0	ICMP
	0.002	Hub0	PC1	ICMP
	0.003	PC1	Hub0	ICMP
	0.004	Hub0	Server0	ICMP
	0.004	Hub0	PC0	ICMP

Reset Simulation ☒ Constant Delay Captured to: 1036.111 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Time: 00:21:48.932 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Automatically Choose Connection Type

Fire Last Status Source Destination Type Color Time(sec) Periodic Num E

Successful	PC0	PC1	ICMP		0.000	N	0	(
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EXPERIMENT-6

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical x 556, y 255 [Root]

P. MANASA
192110458
EXP N0:06

PC0
PC1

2955-24TT Switch0
2955-24TT Switch1

ISR4331 Router0

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	-	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Switch1	ICMP
	0.004	Switch1	PC1	ICMP

Reset Simulation ☒ Constant Delay Captured to: 0.004 s

Time: 00:05:37.688 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Period

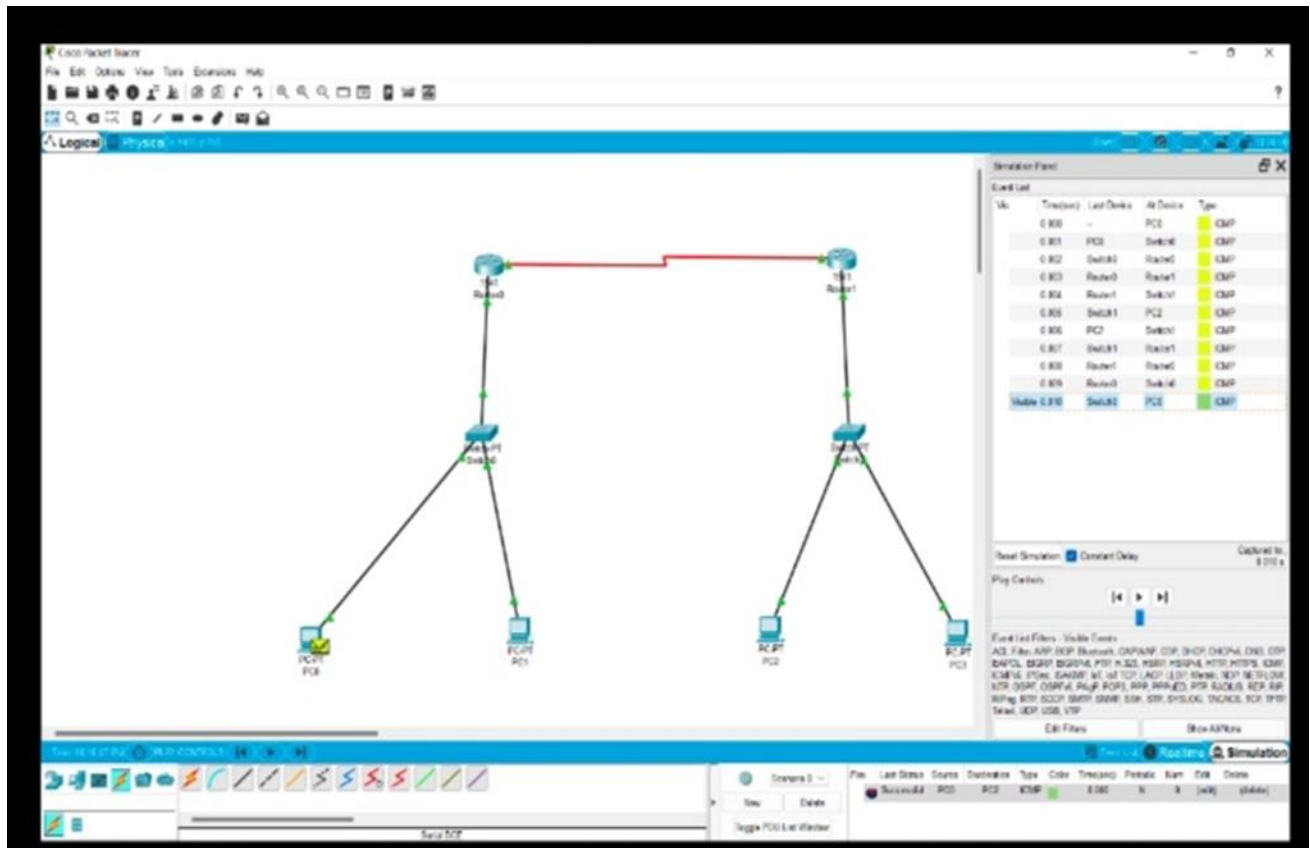
Successful	PC0	Router0	IC...		0.000	N
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Console

Type here to search

36°C 4:12 PM 9/21/2022

EXPERIMENT-7



EXPERIMENT-8

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical x 501, y 299 [Root]

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Switch1	ICMP
	0.004	Switch1	PC4	ICMP
	0.005	PC4	Switch1	ICMP
	0.006	Switch1	Router0	ICMP
	0.007	Router0	Switch0	ICMP
	0.008	Switch0	PC0	ICMP

Time: 00:57:56.656 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

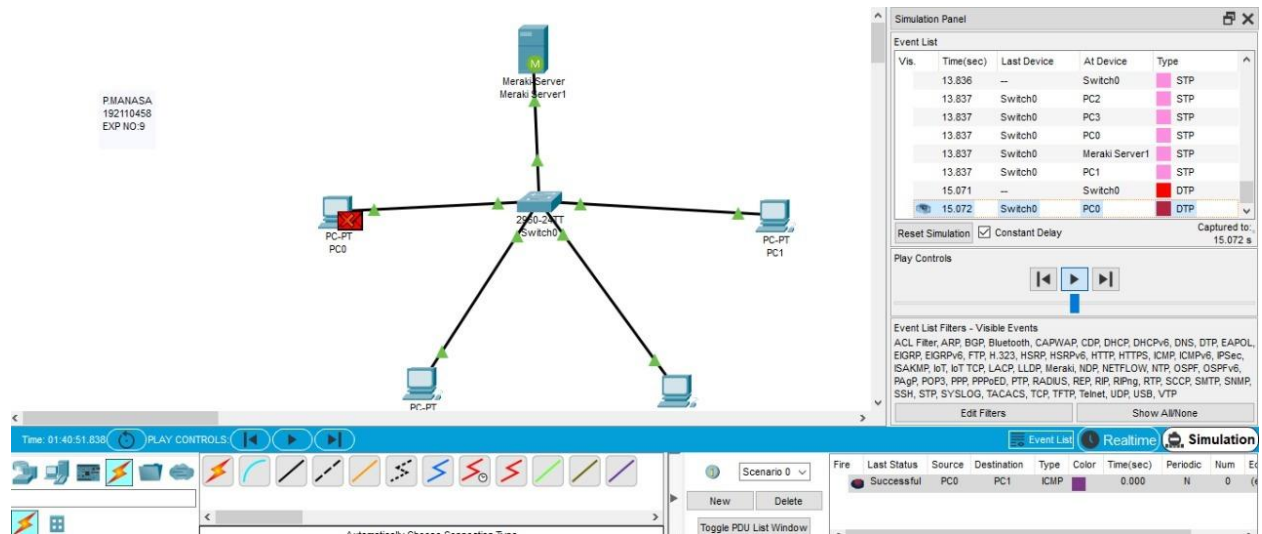
Fire Last Status Source Destination Type Color Time(sec) Period

Successful	PC0	PC4	IC...	0.000	N
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ENG 10:48 AM 9/22/2022

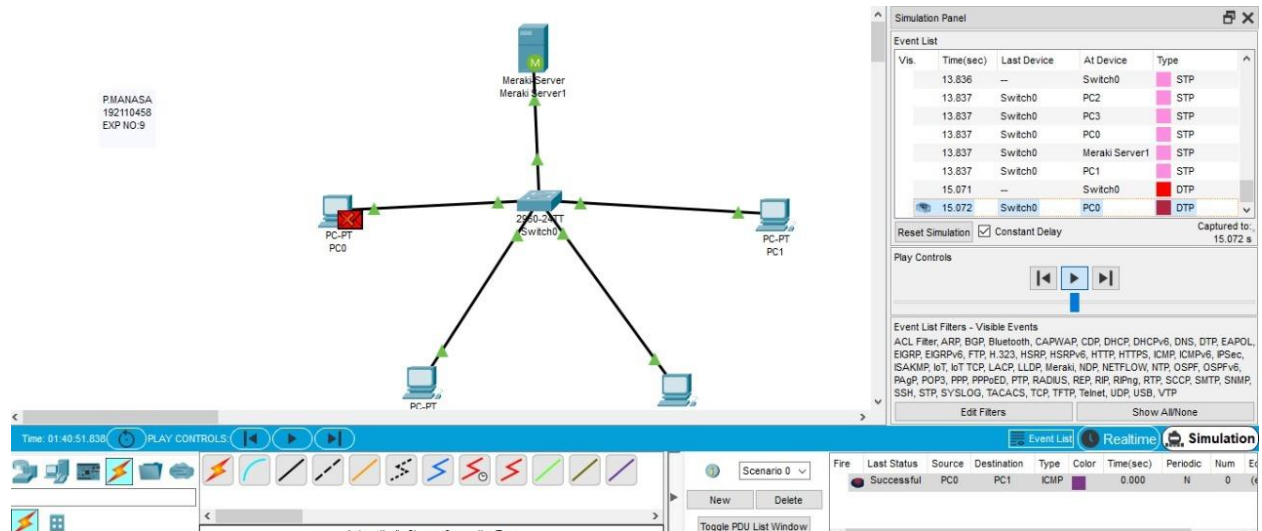
EXPERIMENT-9

Functionalities of UDP

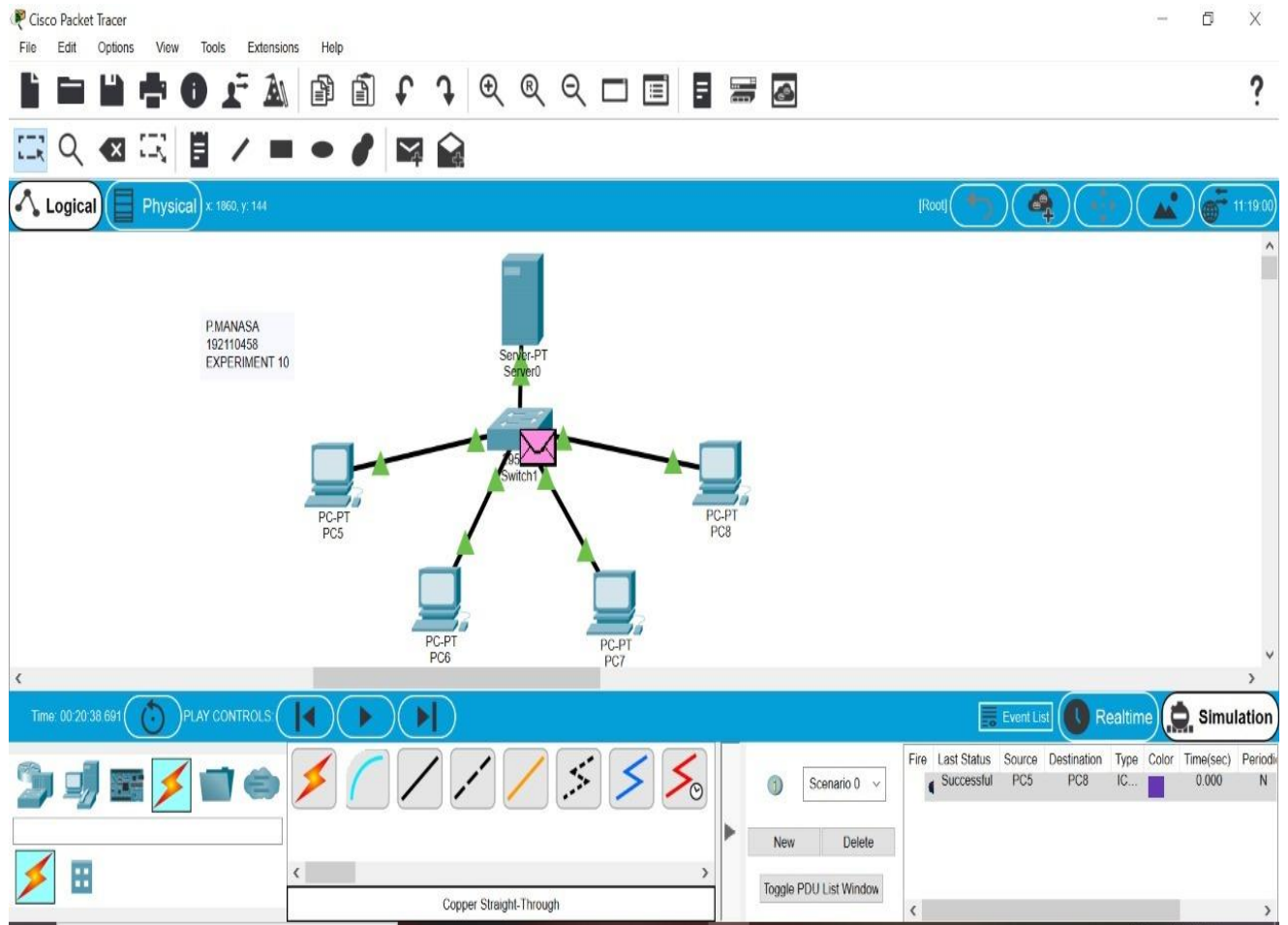


EXPERIMENT-9

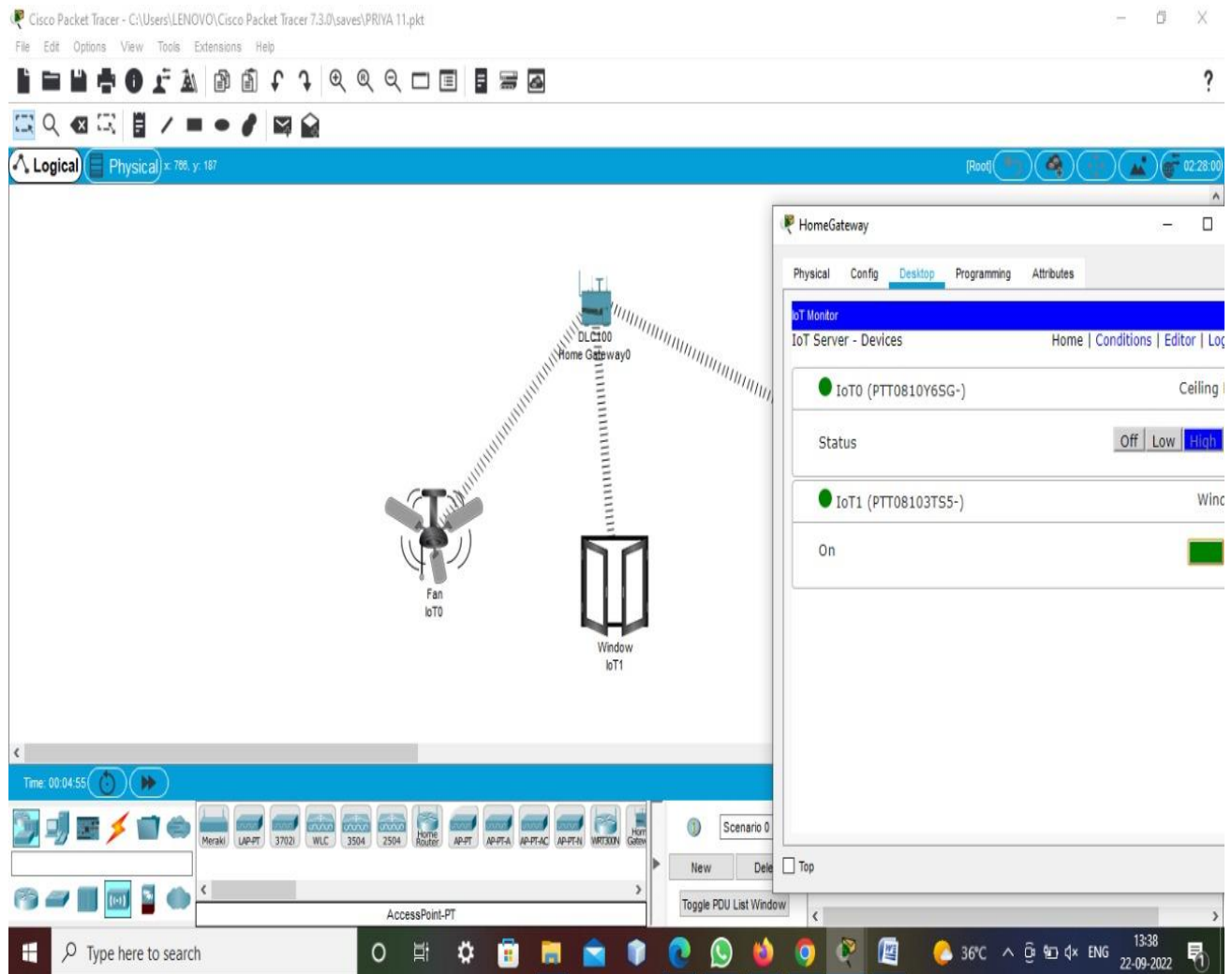
Functionalities of TCP



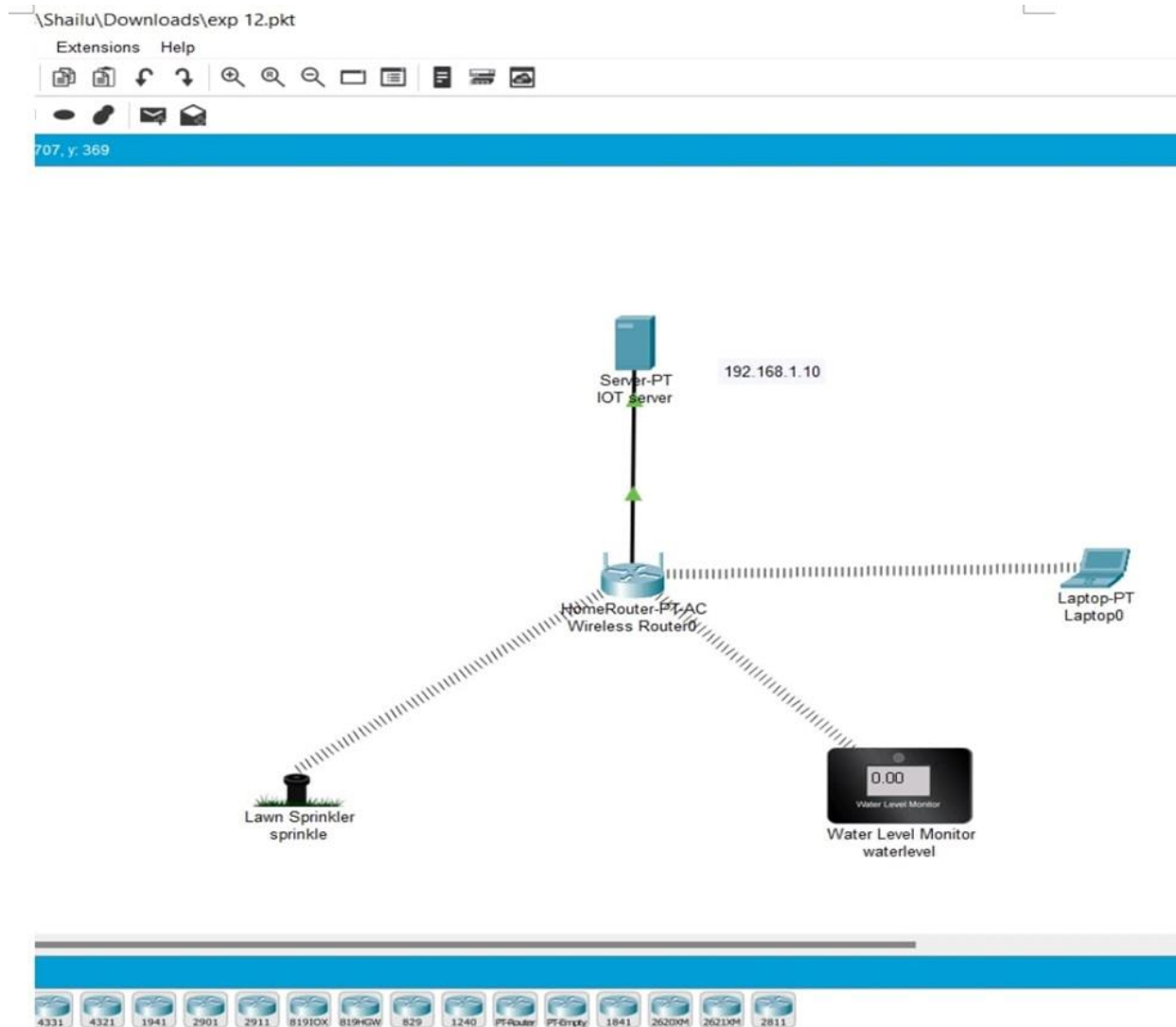
EXPERIMENT-10



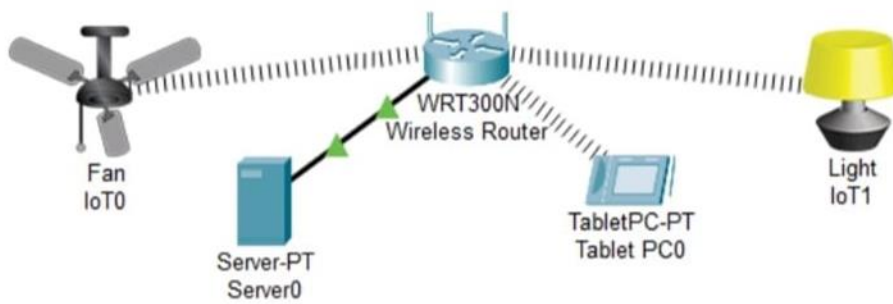
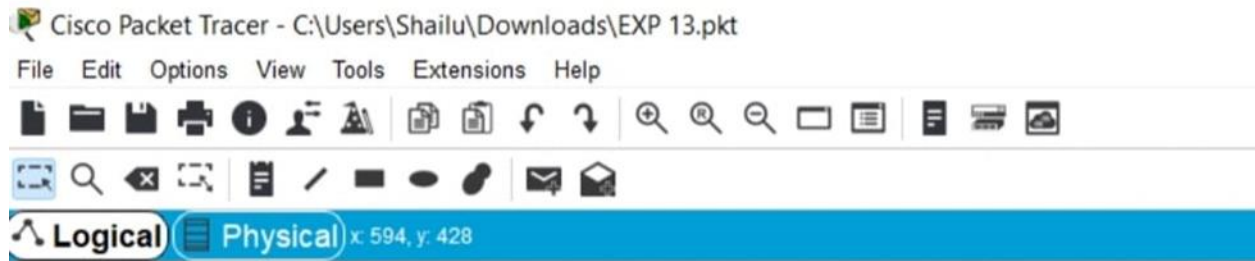
EXPERIMENT-11



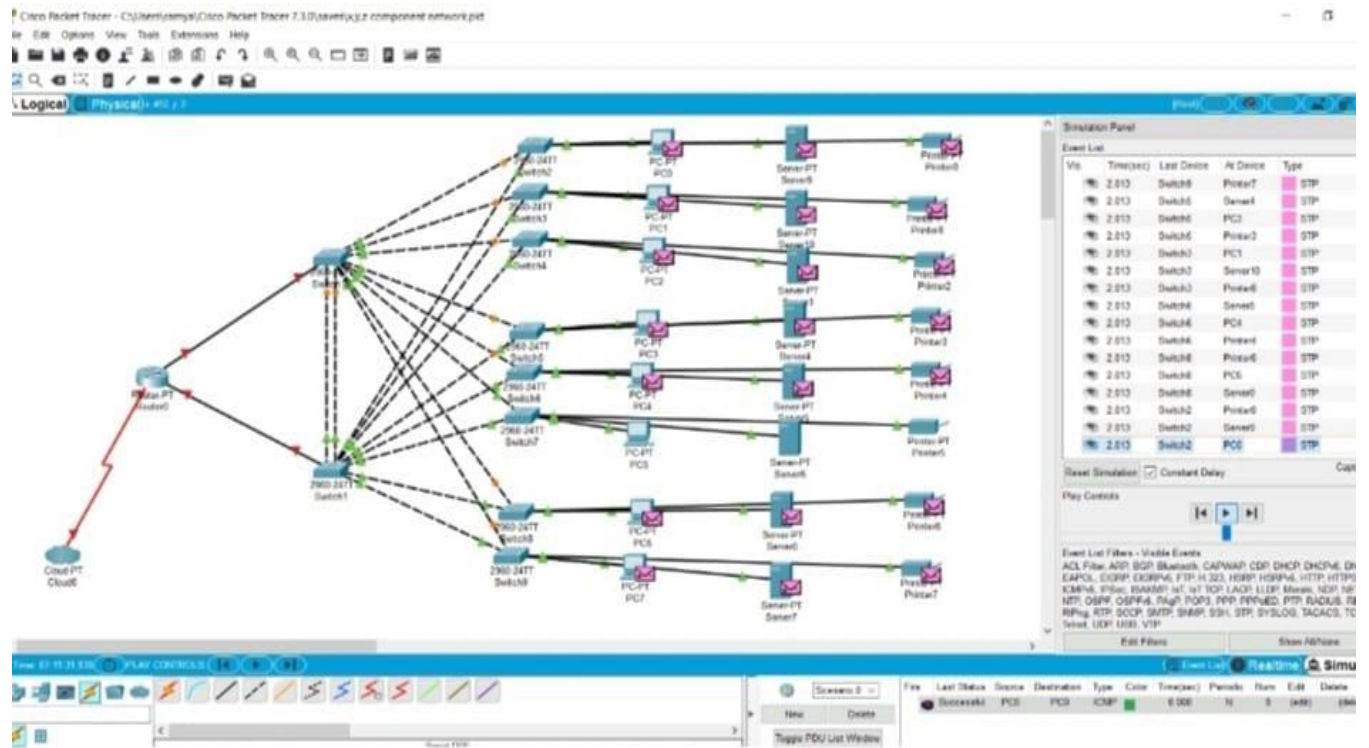
EXPERIMENT-12



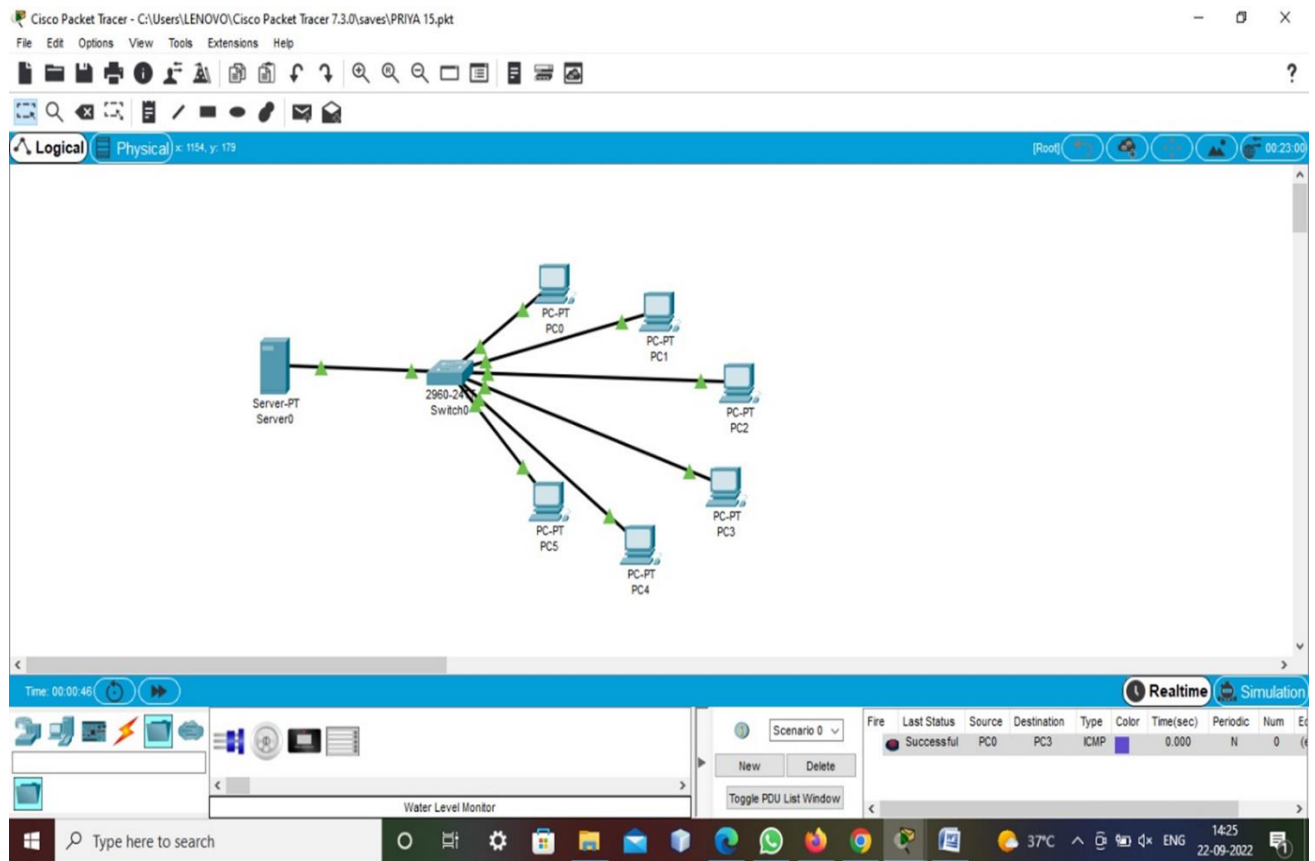
EXPERIMENT-13



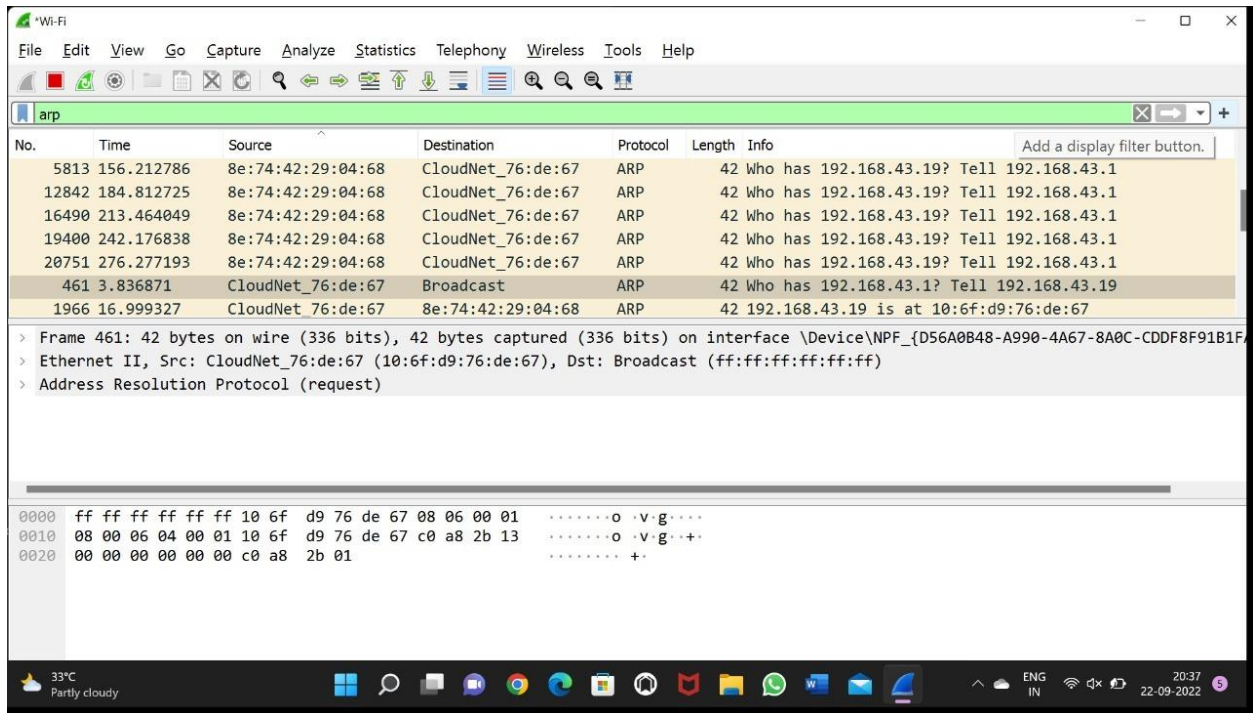
EXPERIMENT-14



EXPERIMENT-15



EXPERIMENT-16



Wireshark capture of an ARP request. The filter is set to 'arp'. The packet list shows several ARP requests from CloudNet_76:de:67 to 192.168.43.19. The selected packet (No. 461) is an ARP request for 192.168.43.19. The packet details show the Ethernet II header, the ARP request, and the raw data.

No.	Time	Source	Destination	Protocol	Length	Info
5813	156.212786	8e:74:42:29:04:68	CloudNet_76:de:67	ARP	42	Who has 192.168.43.19? Tell 192.168.43.1
12842	184.812725	8e:74:42:29:04:68	CloudNet_76:de:67	ARP	42	Who has 192.168.43.19? Tell 192.168.43.1
16490	213.464049	8e:74:42:29:04:68	CloudNet_76:de:67	ARP	42	Who has 192.168.43.19? Tell 192.168.43.1
19400	242.176838	8e:74:42:29:04:68	CloudNet_76:de:67	ARP	42	Who has 192.168.43.19? Tell 192.168.43.1
20751	276.277193	8e:74:42:29:04:68	CloudNet_76:de:67	ARP	42	Who has 192.168.43.19? Tell 192.168.43.1
461	3.836871	CloudNet_76:de:67	Broadcast	ARP	42	Who has 192.168.43.1? Tell 192.168.43.19
1966	16.999327	CloudNet_76:de:67	8e:74:42:29:04:68	ARP	42	192.168.43.19 is at 10:6f:d9:76:de:67

Frame 461: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface \Device\NPF_{D56A0B48-A990-4A67-8A0C-CDDF8F91B1F}

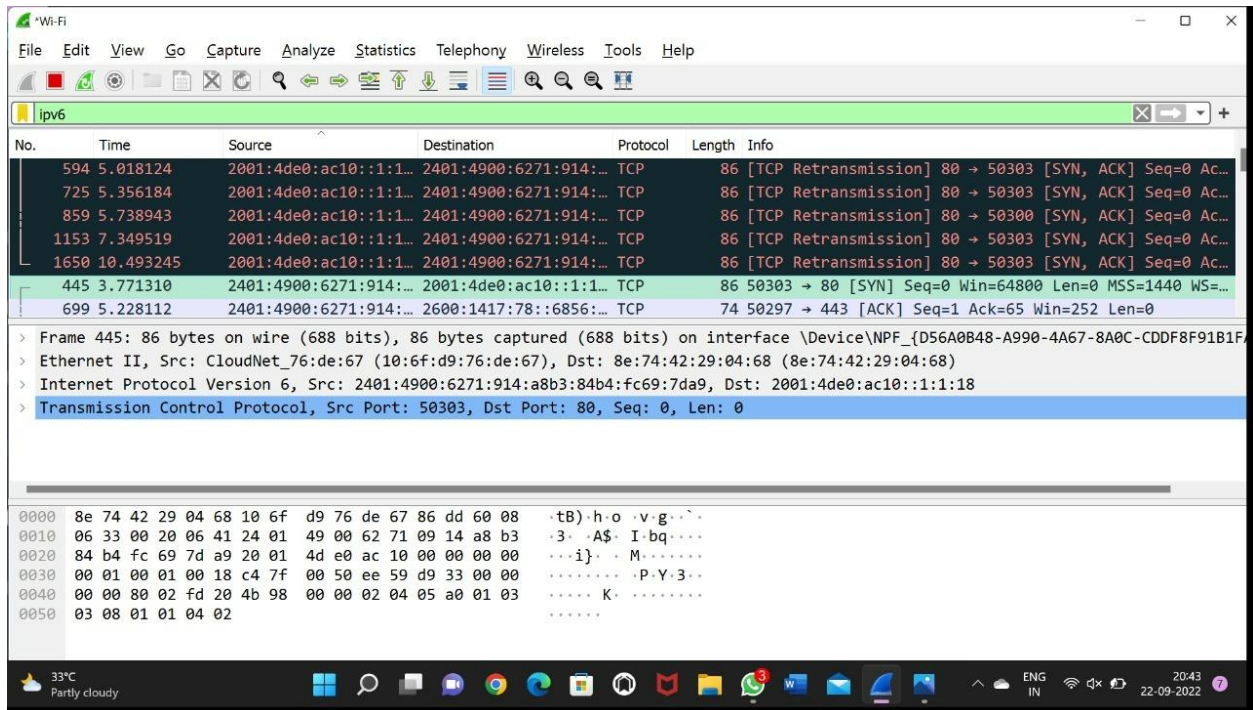
Ethernet II, Src: CloudNet_76:de:67 (10:6f:d9:76:de:67), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

Address Resolution Protocol (request)

Raw data:

```
0000 ff ff ff ff ff 10 6f d9 76 de 67 08 06 00 01 .....o..v.g....
0010 08 00 06 04 00 01 10 6f d9 76 de 67 c0 a8 2b 13 .....o..v.g...+
0020 00 00 00 00 00 00 c0 a8 2b 01 .....+..
```

EXPERIMENT-17



Wireshark capture of a TCP SYN packet. The filter is set to 'ip6'. The packet list shows several TCP retransmissions and a successful SYN packet. The selected packet (No. 445) is a TCP SYN packet from 2401:4900:6271:914::1 to 2001:4de0:ac10::1:1. The packet details show the Ethernet II header, the Internet Protocol Version 6 header, and the Transmission Control Protocol header.

No.	Time	Source	Destination	Protocol	Length	Info
594	5.018124	2001:4de0:ac10::1:1	2401:4900:6271:914::1	TCP	86	[TCP Retransmission] 80 → 50303 [SYN, ACK] Seq=0 Ac...
725	5.356184	2001:4de0:ac10::1:1	2401:4900:6271:914::1	TCP	86	[TCP Retransmission] 80 → 50303 [SYN, ACK] Seq=0 Ac...
859	5.738943	2001:4de0:ac10::1:1	2401:4900:6271:914::1	TCP	86	[TCP Retransmission] 80 → 50300 [SYN, ACK] Seq=0 Ac...
1153	7.349519	2001:4de0:ac10::1:1	2401:4900:6271:914::1	TCP	86	[TCP Retransmission] 80 → 50303 [SYN, ACK] Seq=0 Ac...
1650	10.493245	2001:4de0:ac10::1:1	2401:4900:6271:914::1	TCP	86	[TCP Retransmission] 80 → 50303 [SYN, ACK] Seq=0 Ac...
445	3.771310	2401:4900:6271:914::1	2001:4de0:ac10::1:1	TCP	86	50303 → 80 [SYN] Seq=0 Win=64800 Len=0 MSS=1440 WS=...
699	5.228112	2401:4900:6271:914::1	2600:1417:78::6856::	TCP	74	50297 → 443 [ACK] Seq=1 Ack=65 Win=252 Len=0

Frame 445: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface \Device\NPF_{D56A0B48-A990-4A67-8A0C-CDDF8F91B1F}

Ethernet II, Src: CloudNet_76:de:67 (10:6f:d9:76:de:67), Dst: 8e:74:42:29:04:68 (8e:74:42:29:04:68)

Internet Protocol Version 6, Src: 2401:4900:6271:914:a8b3:84b4:fc69:7da9, Dst: 2001:4de0:ac10::1:1:18

Transmission Control Protocol, Src Port: 50303, Dst Port: 80, Seq: 0, Len: 0

Raw data:

```
0000 8e 74 42 29 04 68 10 6f d9 76 de 67 86 dd 60 08 ..tB)..h.o..v.g...
0010 06 33 00 20 06 41 24 01 49 00 62 71 09 14 a8 b3 ..3..A$.I..bq...
0020 84 b4 fc 69 7d a9 20 01 4d e0 ac 10 00 00 00 00 ..i}..M.....
0030 00 01 00 01 00 18 c4 7f 00 50 ee 59 d9 33 00 00 .....P.Y.3...
0040 00 00 80 02 fd 20 4b 98 00 00 02 04 05 a0 01 03 .....K.....
0050 03 08 01 01 04 02 ..... .....
```