

**Date: 13.8.24**

**Aakash S (231901001)**

**Ex No: 4a     STUDY OF WIRESHARK TOOL FOR PACKET SNIFFING**

**AIM:**

To study packet sniffing concepts using Wireshark Tool.

**DESCRIPTION:**

Wireshark, a network analysis tool formerly known as Ethereal, captures packets in real time and display them in human-readable format. Wireshark includes filters, color coding, and other features that let you dig deep into network traffic and inspect individual packets. You can use Wireshark to inspect a suspicious program's network traffic, analyze the traffic flow on your network, or troubleshoot network problems.

**What we can do with Wireshark:**

- Capture network traffic
- Decode packet protocols using dissectors
- Define filters – capture and display
- Watch smart statistics
- Analyze problems
- Interactively browse that traffic

**Wireshark used for:**

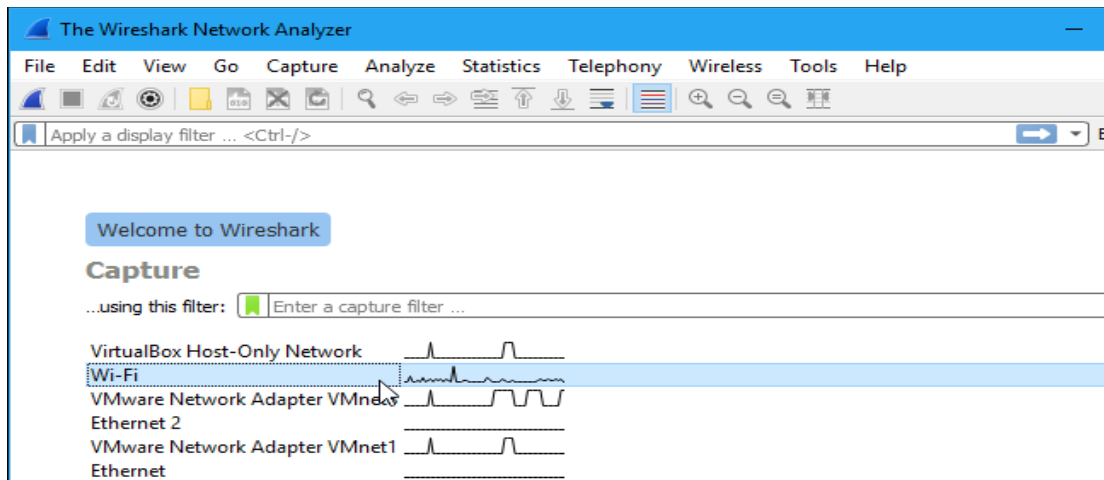
- Network administrators: troubleshoot network problems
- Network security engineers: examine security problems
- Developers: debug protocol implementations
- People: learn **network protocol internals**

**Getting Wireshark**

Wireshark can be downloaded for Windows or macOS from its official website. For Linux or another UNIX-like system, Wireshark will be found in its package repositories. For Ubuntu, Wireshark will be found in the Ubuntu Software Center.

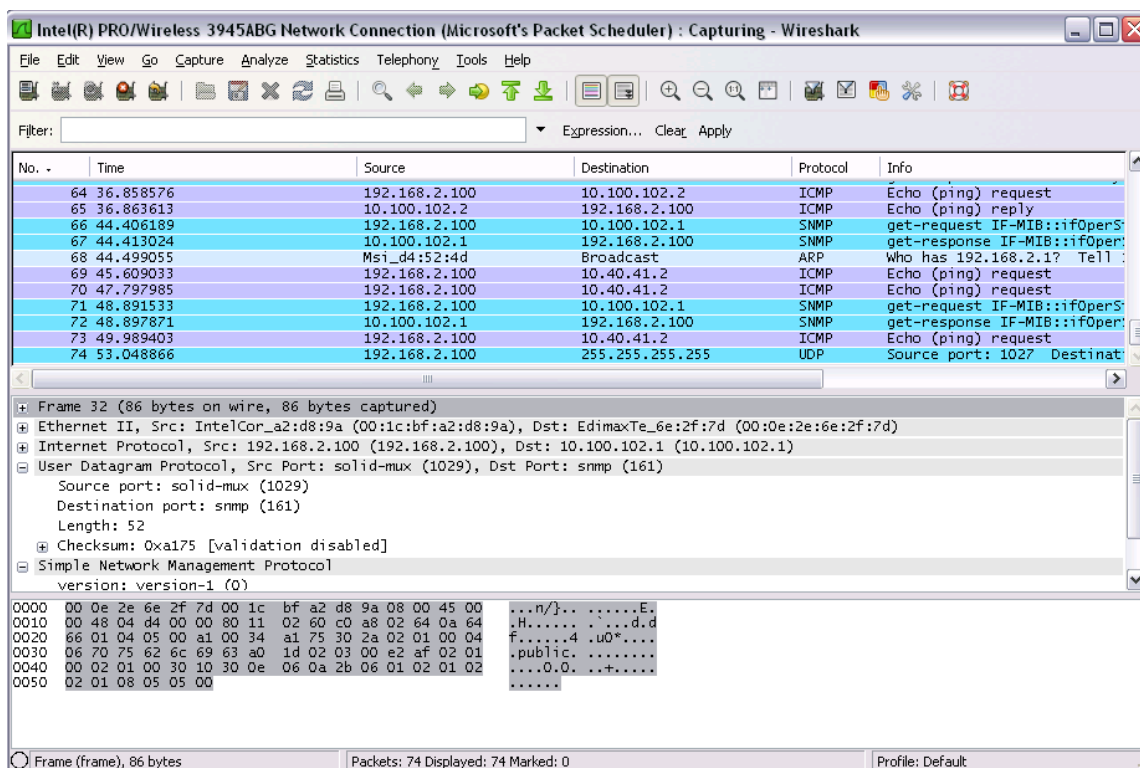
**Capturing Packets**

After downloading and installing Wireshark, launch it and double-click the name of a network interface under Capture to start capturing packets on that interface



As soon as you click the interface's name, you'll see the packets start to appear in real time. Wireshark captures each packet sent to or from your system.

If you have promiscuous mode enabled—it's enabled by default—you'll also see all the other packets on the network instead of only packets addressed to your network adapter. To check if promiscuous mode is enabled, click Capture > Options and verify the -Enable promiscuous mode on all interfaces checkbox is activated at the bottom of this window.



Click the red **-Stop** button near the top left corner of the window when you want to stop capturing traffic.

### **The “Packet List” Pane**

The packet list pane displays all the packets in the current capture file. The **-Packet List** pane Each line in the packet list corresponds to one packet in the capture file. If you select a line in this pane, more details will be displayed in the **-Packet Details** and **-Packet Bytes** panes.

### **The “Packet Details” Pane**

The packet details pane shows the current packet (selected in the **-Packet List** pane) in a more detailed form. This pane shows the protocols and protocol fields of the packet selected in the **-Packet List** pane. The protocols and fields of the packet shown in a tree which can be expanded and collapsed.

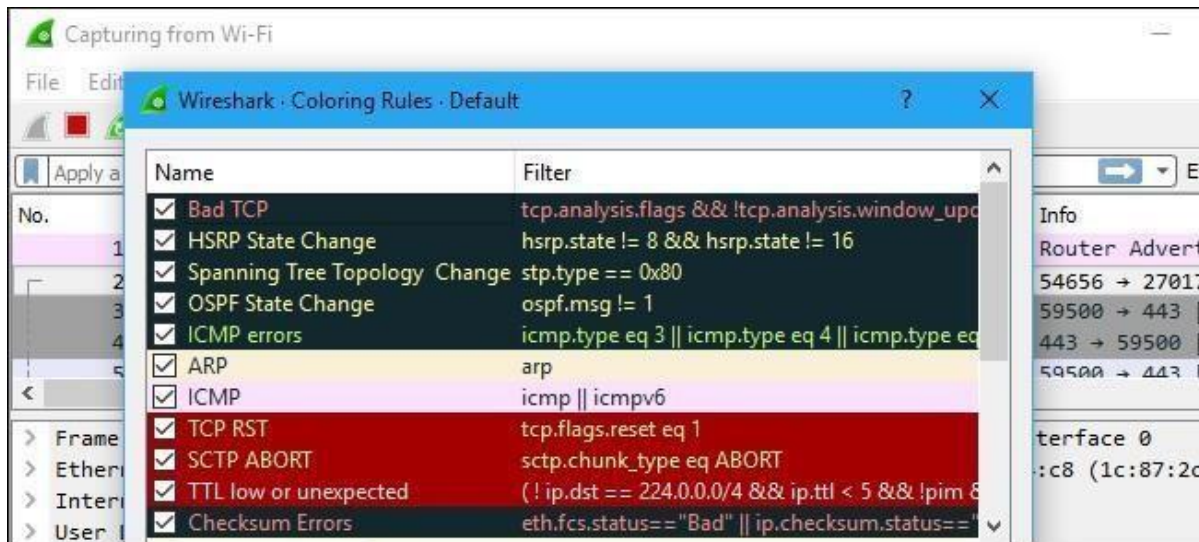
### **The “Packet Bytes” Pane**

The packet bytes pane shows the data of the current packet (selected in the **-Packet List** pane) in a hexdump style.

### **Color Coding**

You’ll probably see packets highlighted in a variety of different colors. Wireshark uses colors to help you identify the types of traffic at a glance. By default, light purple is TCP traffic, light blue is UDP traffic, and black identifies packets with errors—for example, they could have been delivered out of order.

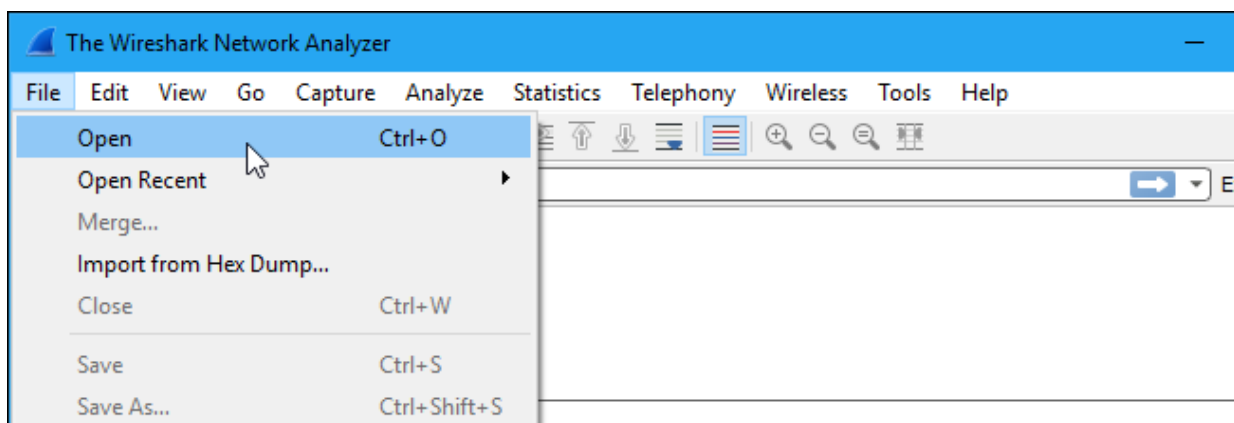
To view exactly what the color codes mean, click **View > Coloring Rules**. You can also customize and modify the coloring rules from here, if you like.



## Sample Captures

If there's nothing interesting on your own network to inspect, Wireshark's wiki has you covered. The wiki contains a [page of sample capture files](#) that you can load and inspect. Click File > Open in Wireshark and browse for your downloaded file to open one.

You can also save your own captures in Wireshark and open them later. Click File > Save to save your captured packets.

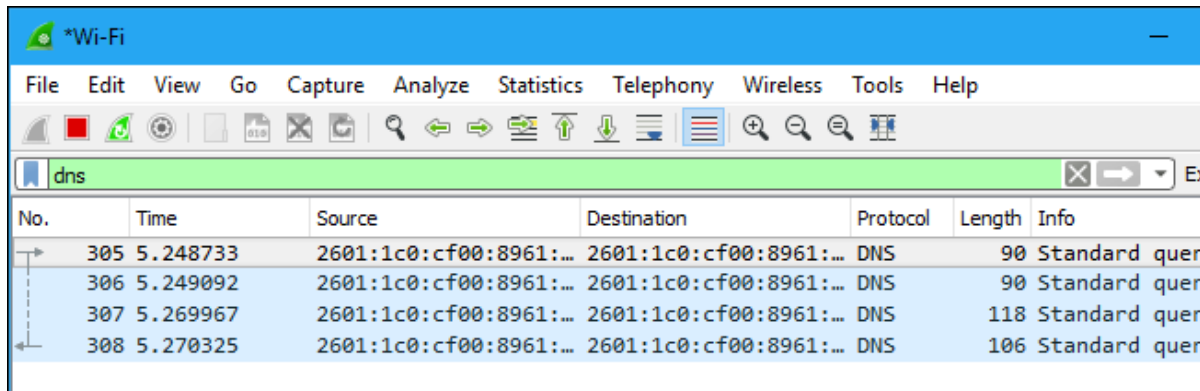


## Filtering Packets

If you're trying to inspect something specific, such as the traffic a program sends when phoning home, it helps to close down all other applications using the network so you can narrow down the

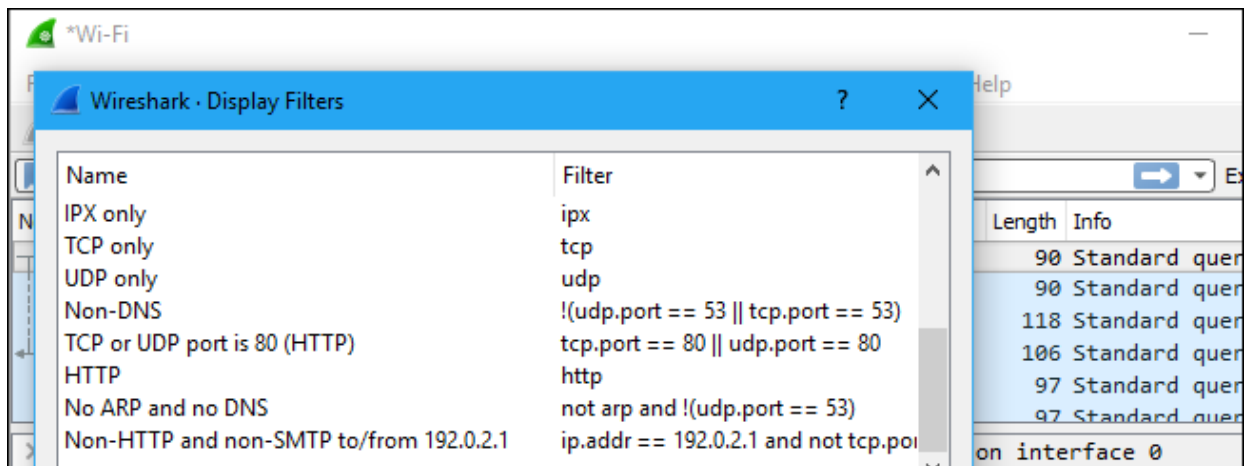
traffic. Still, you'll likely have a large amount of packets to sift through. That's where Wireshark's filters come in.

The most basic way to apply a filter is by typing it into the filter box at the top of the window and clicking Apply (or pressing Enter). For example, type `-dns` and you'll see only DNS packets. When you start typing, Wireshark will help you autocomplete your filter.



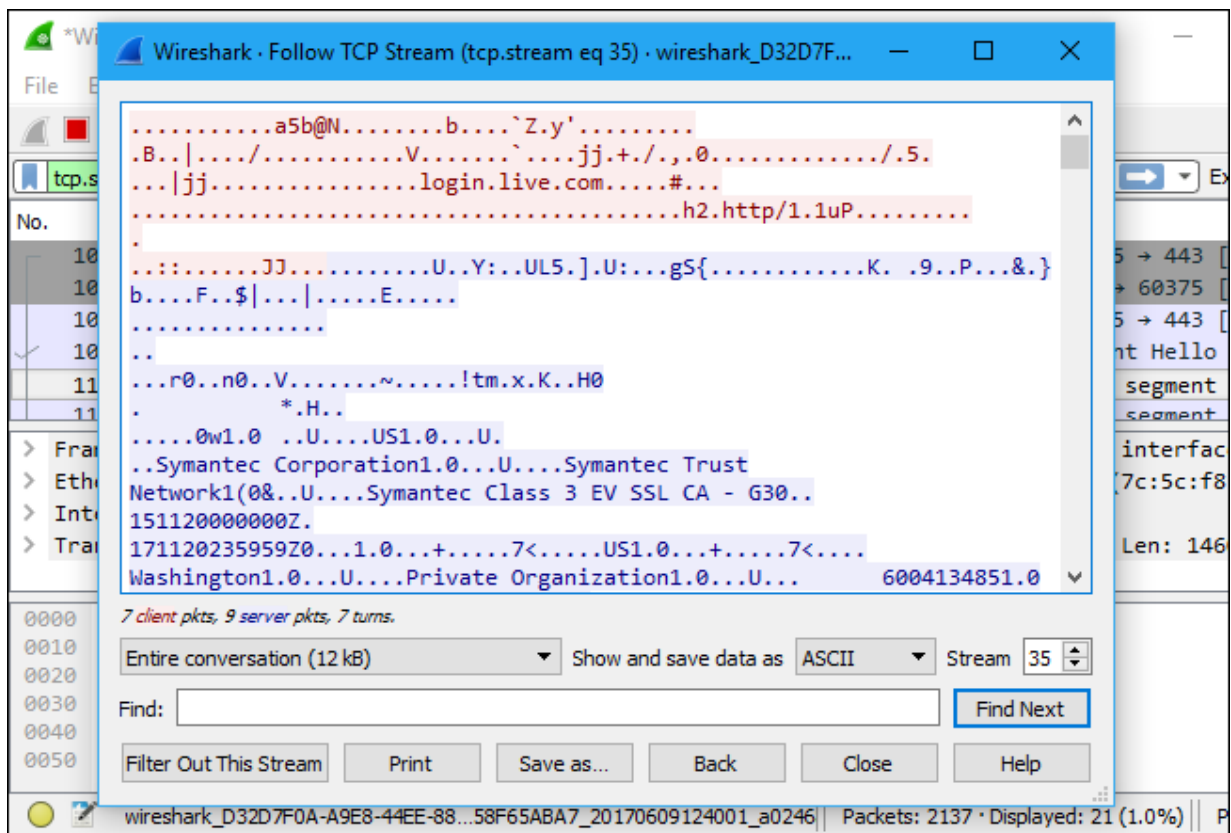
You can also click Analyze > Display Filters to choose a filter from among the default filters included in Wireshark. From here, you can add your own custom filters and save them to easily access them in the future.

For more information on Wireshark's display filtering language, read the [Building display filter expressions](#) page in the official Wireshark documentation.

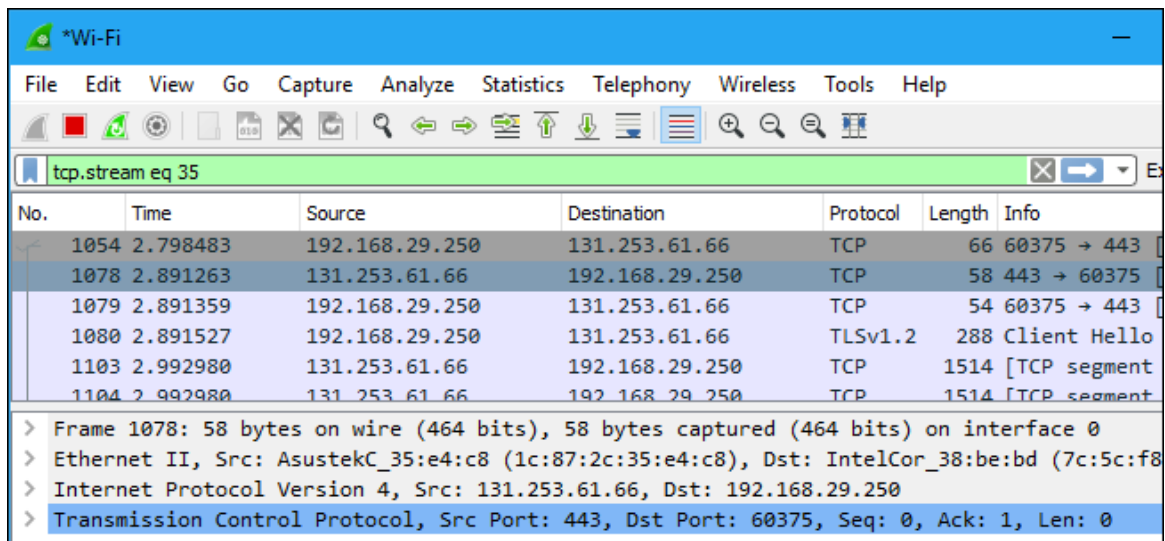


Another interesting thing you can do is right-click a packet and select Follow > TCP Stream.

You'll see the full TCP conversation between the client and the server. You can also click other protocols in the Follow menu to see the full conversations for other protocols, if applicable.



Close the window and you'll find a filter has been applied automatically. Wireshark is showing you the packets that make up the conversation.



## Inspecting Packets

Click a packet to select it and you can dig down to view its details.

\*Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.stream eq 35

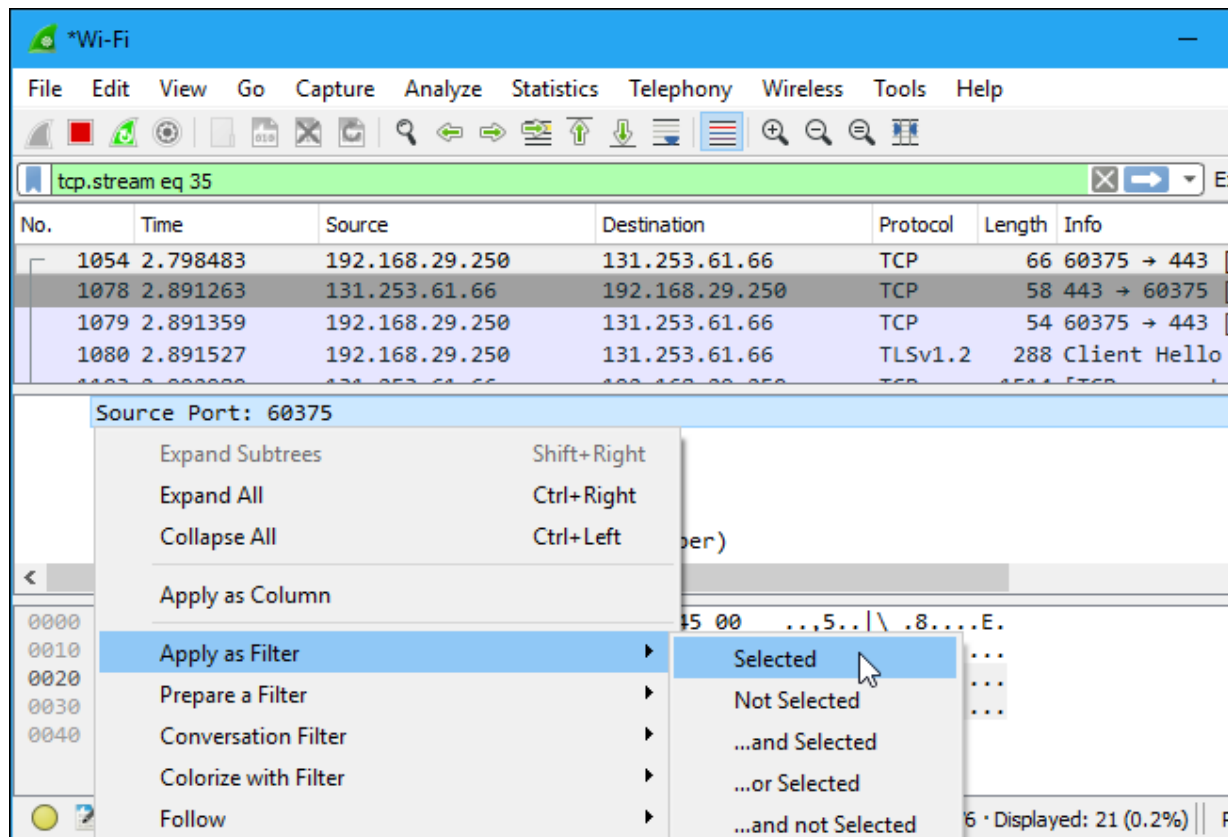
No.	Time	Source	Destination	Protocol	Length	Info
1054	2.798483	192.168.29.250	131.253.61.66	TCP	66	60375 → 443
1078	2.891263	131.253.61.66	192.168.29.250	TCP	58	443 → 60375
1079	2.891359	192.168.29.250	131.253.61.66	TCP	54	60375 → 443
1080	2.891527	192.168.29.250	131.253.61.66	TLSv1.2	288	Client Hello

▼ Frame 1054: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0  
 Interface id: 0 (\Device\NPF\_{D32D7F0A-A9E8-44EE-88DC-DFD58F65ABA7})  
 Encapsulation type: Ethernet (1)  
 Arrival Time: Jun 9, 2017 12:40:04.140141000 Pacific Daylight Time  
 [Time shift for this packet: 0.000000000 seconds]  
 Epoch Time: 1497037204.140141000 seconds

0000	1c 87 2c 35 e4 c8 7c 5c f8 38 be bd 08 00 45 00	..,5.. \ .8....E.
0010	00 34 0b 5d 40 00 80 06 4f 85 c0 a8 1d fa 83 fd	.4.]@... O.....
0020	3d 42 eb d7 01 bb 22 52 7b 69 00 00 00 00 80 02	=B...."R {i.....
0030	fa f0 48 ef 00 00 02 04 05 b4 01 03 03 08 01 01	..H.....
0040	04 02	..

Encapsulation type (frame.encap\_type) | Packets: 8136 · Displayed: 21 (0.3%)

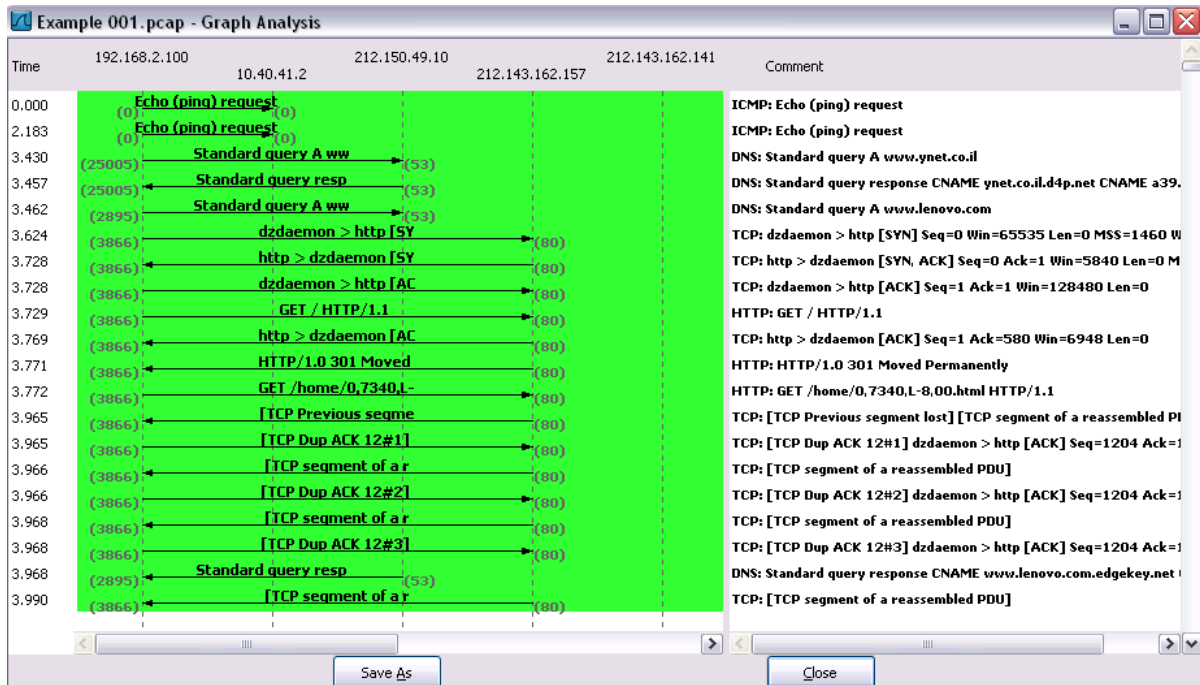
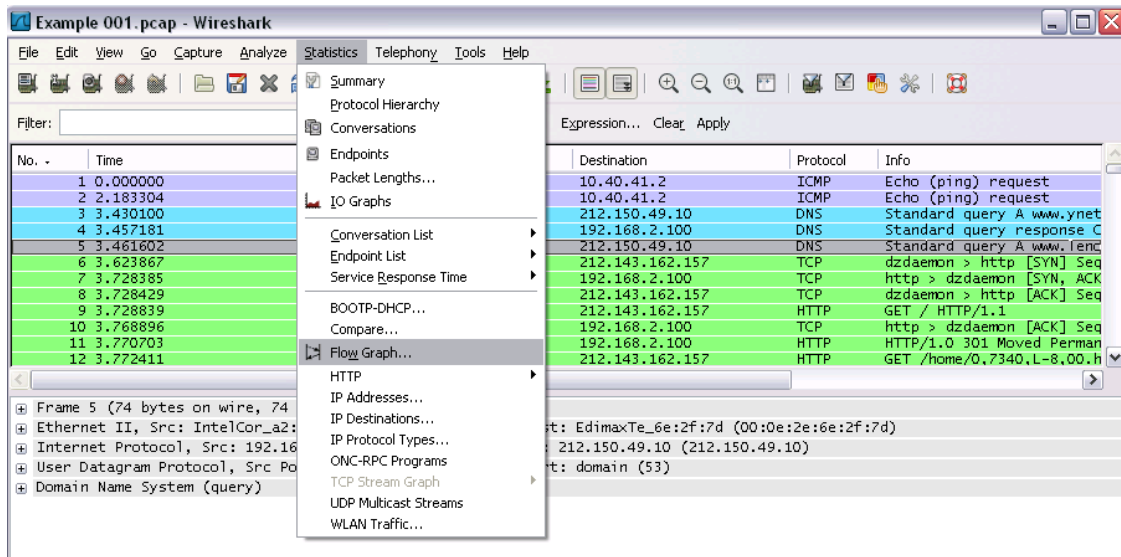
You can also create filters from here — just right-click one of the details and use the Apply as Filter submenu to create a filter based on it.



Wireshark is an extremely powerful tool, and this tutorial is just scratching the surface of what you can do with it. Professionals use it to debug network protocol implementations, examine security problems and inspect network protocol internals.

**Flow Graph:** Gives a better understanding of what we see.





Date : 19.8.24

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Ex No: 4 b

## PACKET SNIFFING USING WIRESHARK


AIM:

To capture, save, filter and analyze network traffic on TCP / UDP / IP / HTTP / ARP /DHCP /ICMP /DNS using Wireshark Tool

## Exercises

1. Capture 100 packets from the Ethernet: IEEE 802.3 LAN Interface and save it.

## Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Save the packets.



## Output

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	172.16.8.111	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
2	0.003427	MicroStarINT_c5:icb:: Broadcast		ARP	60	Who has 169.254.189.79? Tell 172.16.10.43
3	0.004362	172.16.9.25	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
4	0.078130	ASUSTekCPU_94:cd:: Broadcast		ARP	60	Who has 172.16.8.207? Tell 172.16.11.220
5	0.078670	fe80::c37f0a25f0a42::ff02::1c		SSDP	208	H-SEARCH * HTTP/1.1
6	0.081610	MicroStarINT_c5:cd:: Broadcast		ARP	60	Who has 172.16.9.70? Tell 172.16.10.115
7	0.107866	172.16.9.140	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
8	0.127783	EliteGroupC_35:icb:: Broadcast		ARP	60	Who has 169.254.189.254? Tell 172.16.10.191
9	0.152017	3d:cd:nb:ccc:d1:03	HewlettPacka_bee5::	ARP	60	Gratuitous ARP for 172.16.9.65 (Reply)
10	0.204400	172.16.9.67	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
11	0.205956	172.16.8.50	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
12	0.214772	172.16.8.212	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
13	0.222079	172.16.9.43	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
14	0.235331	Dell_35:12:64	Broadcast	ARP	60	Who has 172.16.10.190? Tell 172.16.11.217
15	0.284300	172.16.8.171	172.16.11.255	NDNS	92	Name query NB DCSKTOP-LL305E<ic>
16	0.299961	8a:9d:af:a4:48:ad	Broadcast	ARP	60	Who has 172.16.9.100? (ARP Probe)
17	0.302304	172.16.9.47	239.255.255.250	SSDP	179	H-SEARCH * HTTP/1.1
18	0.303862	172.16.8.100	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
19	0.317400	172.16.9.167	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
20	0.349590	172.16.10.100	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
21	0.380882	Dell_35:0f:08	Broadcast	ARP	60	Who has 172.16.52.140? Tell 172.16.8.100
22	0.380882	Dell_35:0f:08	Broadcast	ARP	60	Who has 172.16.11.121? Tell 172.16.8.100
23	0.400441	fe80::64db3acc:00b::ff02::112		DHCPv6	156	Solicit XID: 0xdc0a4ff CID: 00010001247d733a00270e13ed7c
24	0.426073	172.16.8.190	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
25	0.446664	HP_36:3f:49	Broadcast	ARP	60	Who has 172.16.10.205? Tell 172.16.8.187
26	0.456672	172.16.11.230	239.255.255.250	SSDP	218	H-SEARCH * HTTP/1.1
27	0.467009	172.16.8.32	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
28	0.504511	172.16.8.226	239.255.255.250	SSDP	218	H-SEARCH * HTTP/1.1
29	0.516629	172.16.8.8	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
30	0.544027	172.16.8.170	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
31	0.559187	MicroStarINT_c5:cd:: Broadcast		ARP	60	Who has 172.16.9.200? Tell 172.16.10.39
32	0.578334	ASUSTekCPU_94:cd:: Broadcast		ARP	60	Who has 172.16.10.140? Tell 172.16.11.220
33	0.604482	172.16.10.179	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
34	0.635811	fe80::f0d1eada169a::ff02::112		DHCPv6	157	Solicit XID: 0xb091513 CID: 000100012b08532a5094c34d073
35	0.648760	Dell_34:86:ff	Broadcast	ARP	60	Who has 172.16.10.93? Tell 172.16.9.180
36	0.650612	Dell_09:7a:cf	Broadcast	ARP	60	Who has 172.16.9.80? Tell 172.16.8.57
37	0.678211	Dell_09:7f:c9	Broadcast	ARP	60	Who has 172.16.10.00? Tell 172.16.8.41
38	0.737970	RealtekSmi_42:b6:c	Broadcast	ARP	60	Who has 172.16.0.17 Tell 172.16.11.126
39	0.801075	172.16.10.9	172.16.8.172	TCP	60	56015 → 7400 [FIR, ACK] Seq=1 Ack=2 Win=0 Len=0
40	0.821335	172.16.8.172	172.16.10.3	TCP	54	7400 → 56015 [ACK] Seq=1 Ack=2 Win=4100 Len=0
41	0.822204	172.16.8.172	172.16.10.3	TCP	54	7400 → 56015 [FIR, ACK] Seq=1 Ack=2 Win=4100 Len=0
42	0.823092	172.16.10.3	172.16.8.172	TCP	60	56015 → 7400 [ACK] Seq=2 Ack=2 Win=4100 Len=0
43	0.852075	172.16.10.93	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1
44	0.875465	172.16.8.225	224.0.0.251	NDNS	85	Standard query 0x0000 PTR _microsoft_mcc._tcp.local, "Q"
45	0.875465	fe80::ca61cd8cfe08::ff02::fb		NDNS	105	Standard query 0x0000 PTR _microsoft_mcc._tcp.local, "Q"
46	0.923861	MicroStarINT_c5:icb:: Broadcast		ARP	60	Who has 172.16.10.40? Tell 172.16.10.52
47	0.925190	HP_35:00:31	Broadcast	ARP	60	Who has 172.16.11.211? Tell 172.16.8.177
48	0.974410	172.16.10.203	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
49	0.980770	172.16.9.227	239.255.255.250	SSDP	217	H-SEARCH * HTTP/1.1
50	0.980170	ASUSTekCPU_94:cd:: Broadcast		ARP	60	Who has 172.16.11.223? Tell 172.16.11.220
51	0.980170	ASUSTekCPU_94:cd:: Broadcast		ARP	60	Who has 172.16.8.112? Tell 172.16.11.220
52	0.980170	ASUSTekCPU_94:cd:: Broadcast		ARP	60	Who has 172.16.9.70? Tell 172.16.11.220
53	1.011735	EliteGroupC_35:icb:: Broadcast		ARP	60	Who has 169.254.189.254? Tell 172.16.10.191
54	1.012781	172.16.8.111	239.255.255.250	SSDP	216	H-SEARCH * HTTP/1.1

No.	Time	Source	Destination	Protocol	Length	Info
55	1.044275	172.16.8.171	172.16.11.255	NBNS	92	Name query NB DESKTOP-ELL365E<*>
56	1.044734	172.16.9.218	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
57	1.072784	172.16.9.218	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
58	1.073346	fe80::f0b8::1031::be6	fe82::1:2	DHCPv6	157	Solicit XID: bddcf6f7 CID: 000100012ab75a3c1da745d3
59	1.077590	ASUSTORPCMU_14c8::	Broadcast	ARP	60	Who has 172.16.8.207 Tell 172.16.11.220
60	1.112729	172.16.11.220	224.0.0.77,77	UDP	148	12177 -> 12177 Len=80
61	1.122961	172.16.9.140	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
62	1.124616	172.16.11.220	224.0.0.77,77	UDP	148	12177 -> 12177 Len=80
63	1.125277	172.16.10.15	172.16.10.172	TCP	60	51557 -> 7680 [SYN] Seq=181 win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
64	1.126172	172.16.10.172	172.16.10.15	TCP	66	7680 -> 51557 [SYN, ACK] Seq=181 win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
65	1.134829	172.16.10.15	172.16.10.172	TCP	60	51557 -> 7680 [ACK] Seq=181 win=262856 Len=0
66	1.134829	172.16.10.15	172.16.10.172	HS-00	129	Handshake Message (Request)
67	1.135115	172.16.10.172	172.16.10.15	HS-00	129	Handshake Message (Reply)
68	1.137726	172.16.10.15	172.16.10.172	HS-00	159	Bitfield Message (has 70 of 800 pieces)
69	1.137805	172.16.10.172	172.16.10.15	HS-00	159	Bitfield Message (has 2 of 800 pieces)
70	1.138991	172.16.10.172	172.16.10.15	TCP	54	7680 -> 51557 [RST, ACK] Seq=181 win=0 Len=0
71	1.139995	172.16.10.15	172.16.10.172	TCP	60	51557 -> 7680 [ACK] Seq=181 win=262400 Len=0
72	1.139995	172.16.10.15	172.16.10.172	TCP	60	51557 -> 7680 [FIN, ACK] Seq=181 win=262400 Len=0
73	1.140862	172.16.10.172	172.16.10.15	TCP	54	7680 -> 51557 [ACK] Seq=182 win=0 Len=0
74	1.207554	172.16.9.47	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
75	1.213734	De11.691f7c1c	Broadcast	ARP	60	Who has 172.16.9.007 Tell 172.16.8.57
76	1.207182	0a:ef:af:a1:4d:a8	Broadcast	ARP	60	ARP Announcement For 172.16.9.103
77	1.207182	0a:ef:af:a1:4d:a8	Broadcast	ARP	60	Who has 172.16.8.17 Tell 172.16.9.103
78	1.209997	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Multicast Listener Report Message v2
79	1.209997	172.16.9.103	224.0.0.22	DHCPv6	90	Membership Report / Leave group 224.0.0.251
80	1.209997	172.16.9.103	224.0.0.22	DHCPv6	90	Membership Report / Leave group 224.0.0.251
81	1.204767	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Multicast Listener Report Message v2
82	1.295508	172.16.9.103	224.0.0.22	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
83	1.295508	172.16.9.103	224.0.0.22	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
84	1.295508	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
85	1.295508	172.16.9.103	224.0.0.251	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
86	1.296559	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
87	1.296559	172.16.9.103	224.0.0.252	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
88	1.300848	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
89	1.300848	172.16.9.103	224.0.0.251	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
90	1.312443	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
91	1.312443	172.16.9.103	224.0.0.22	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
92	1.312443	fe80::a325:7c3e:f75::f62	172.16.9.103	DHCPv6	90	Membership Report / Join group 224.0.0.251 for any sources
93	1.313648	172.16.8.84	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
94	1.316815	172.16.8.100	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1

## 2. Create a Filter to display only TCP/UDP packets, inspect the packets and provide the flow graph.

## Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Search TCP packets in search bar.
- To see flow graph click Statistics  Flow graph.
- Save the packets.

**Output:**


No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	172.16.8.172	172.16.8.163	MS-DO	58	KeepAlive Message
14	0.053403	172.16.8.163	172.16.8.172	TCP	60	50130 → 7680 [ACK] Seq=1 Ack=5 Win=1026 Len=0
16	0.060472	172.16.10.49	172.16.8.172	TCP	66	60679 → 7680 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
17	0.060625	172.16.8.172	172.16.10.49	TCP	66	7680 → 60679 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
19	0.061601	172.16.10.49	172.16.8.172	TCP	60	60679 → 7680 [ACK] Seq=1 Ack=1 Win=131328 Len=0
20	0.061839	172.16.10.49	172.16.8.172	MS-DO	129	Handshake Message (Request)
21	0.062029	172.16.8.172	172.16.10.49	MS-DO	129	Handshake Message (Reply)
23	0.063515	172.16.10.49	172.16.8.172	MS-DO	91	BitField Message (has 44 of 256 pieces)
24	0.063569	172.16.8.172	172.16.10.49	MS-DO	91	BitField Message (has 2 of 256 pieces)
25	0.063699	172.16.8.172	172.16.10.49	TCP	54	7680 → 60679 [FIN, ACK] Seq=113 Ack=113 Win=1049600 Len=0
26	0.064508	172.16.10.49	172.16.8.172	TCP	60	60679 → 7680 [ACK] Seq=113 Ack=114 Win=131072 Len=0
28	0.064970	172.16.10.49	172.16.8.172	TCP	60	60679 → 7680 [FIN, ACK] Seq=113 Ack=114 Win=131072 Len=0
29	0.065009	172.16.8.172	172.16.10.49	TCP	54	7680 → 60679 [ACK] Seq=114 Ack=114 Win=1049600 Len=0
56	0.609533	172.16.10.200	172.16.8.172	MS-DO	60	KeepAlive Message
62	0.651125	172.16.8.172	172.16.10.200	TCP	54	7680 → 59408 [ACK] Seq=1 Ack=5 Win=4099 Len=0
80	0.924162	172.16.10.190	172.16.8.172	TCP	66	51020 → 7680 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
81	0.924326	172.16.8.172	172.16.10.190	TCP	66	7680 → 51020 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
82	0.924981	172.16.10.190	172.16.8.172	TCP	60	51020 → 7680 [ACK] Seq=1 Ack=1 Win=262656 Len=0
83	0.924981	172.16.10.190	172.16.8.172	MS-DO	129	Handshake Message (Request)
84	0.925334	172.16.8.172	172.16.10.190	MS-DO	129	Handshake Message (Reply)
85	0.925798	172.16.10.190	172.16.8.172	MS-DO	68	BitField Message (has 18 of 72 pieces)
86	0.925839	172.16.8.172	172.16.10.190	MS-DO	68	BitField Message (has 4 of 72 pieces)
87	0.925983	172.16.8.172	172.16.10.190	TCP	54	7680 → 51020 [FIN, ACK] Seq=90 Ack=90 Win=1049600 Len=0
88	0.926651	172.16.10.190	172.16.8.172	TCP	60	51020 → 7680 [ACK] Seq=90 Ack=91 Win=262656 Len=0
89	0.926651	172.16.10.190	172.16.8.172	TCP	60	51020 → 7680 [FIN, ACK] Seq=90 Ack=91 Win=262656 Len=0
90	0.926695	172.16.8.172	172.16.10.190	TCP	54	7680 → 51020 [ACK] Seq=91 Ack=91 Win=1049600 Len=0
91	0.967290	172.16.10.62	172.16.8.172	MS-DO	60	KeepAlive Message
97	1.010286	172.16.8.172	172.16.10.62	TCP	54	51865 → 7680 [ACK] Seq=1 Ack=5 Win=4100 Len=0
192	2.111639	172.16.8.172	172.16.10.200	TCP	66	52059 → 7680 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
193	2.113222	172.16.10.200	172.16.8.172	TCP	66	7680 → 52059 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
194	2.113304	172.16.8.172	172.16.10.200	TCP	54	52059 → 7680 [ACK] Seq=1 Ack=1 Win=131328 Len=0
195	2.113477	172.16.8.172	172.16.10.200	MS-DO	129	Handshake Message (Request)
196	2.115006	172.16.10.200	172.16.8.172	MS-DO	129	Handshake Message (Reply)
197	2.115006	172.16.10.200	172.16.8.172	TCP	60	7680 → 52059 [FIN, ACK] Seq=76 Ack=76 Win=2097920 Len=0
198	2.115074	172.16.8.172	172.16.10.200	TCP	54	52059 → 7680 [ACK] Seq=76 Ack=77 Win=131072 Len=0
199	2.115178	172.16.8.172	172.16.10.200	TCP	54	52059 → 7680 [FIN, ACK] Seq=76 Ack=77 Win=131072 Len=0
200	2.115858	172.16.10.200	172.16.8.172	TCP	60	7680 → 52059 [ACK] Seq=77 Ack=77 Win=2097920 Len=0

## Flow Graph output



## 3. Create a Filter to display only ARP packets and inspect the packets.

## Procedure


- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Search ARP packets in search bar.
- Save the packets.

## Output

No.	Time	Source	Destination	Protocol	Length	Info
15	0.065677	0a:e0:af:f1:0d:1f	Broadcast	ARP	60	Who has 172.16.8.164? Tell 172.16.8.234
16	0.077547	0a:e0:af:b3:03:76	Broadcast	ARP	60	Who has 172.16.8.91? Tell 172.16.8.55
17	0.093423	Dell_34:d4:f5	Broadcast	ARP	60	Who has 169.254.114.31? (ARP Probe)
21	0.106485	MicroStarInt_ad:3b:...	Broadcast	ARP	60	Who has 172.16.9.135? Tell 172.16.8.27
29	0.166240	0a:e0:af:b3:03:76	Broadcast	ARP	60	Who has 172.16.10.72? Tell 172.16.8.55
49	0.462514	EliteGroupCo_15:e7:...	Broadcast	ARP	60	Who has 172.16.8.230? Tell 172.16.10.194
52	0.496368	Dell_34:d3:d8	Broadcast	ARP	60	Who has 172.16.11.141? Tell 172.16.9.70
69	0.535712	HonHaiPrecis_82:6d:...	Broadcast	ARP	60	Who has 172.16.8.228? (ARP Probe)
78	0.564074	HonHaiPrecis_82:6d:...	Broadcast	ARP	60	Who has 172.16.8.1? Tell 172.16.8.228
79	0.564074	HonHaiPrecis_82:6d:...	Broadcast	ARP	60	Who has 172.16.8.174? Tell 172.16.8.228
88	0.564303	HonHaiPrecis_82:6d:...	Broadcast	ARP	60	Who has 172.16.8.228? (ARP Probe)
89	0.564303	HonHaiPrecis_82:6d:...	Broadcast	ARP	60	Who has 172.16.8.174? Tell 172.16.8.228
110	0.727860	Dell_34:d4:f5	Broadcast	ARP	60	Who has 169.254.49.49? Tell 169.254.114.31
111	0.728166	Dell_34:d4:f5	Broadcast	ARP	60	Who has 169.254.181.116? Tell 169.254.114.31
115	0.836101	EliteGroupCo_14:72:...	Broadcast	ARP	60	Who has 172.16.9.56? Tell 172.16.10.200
116	0.867534	EliteGroupCo_14:83:...	Broadcast	ARP	60	Who has 172.16.10.191? Tell 172.16.10.171
117	0.879128	MicroStarINT_c5:ca:...	Broadcast	ARP	60	Who has 172.16.9.206? Tell 172.16.10.110
121	0.932642	0a:e0:af:ad:48:ad	Broadcast	ARP	60	Who has 172.16.8.1? Tell 172.16.11.250
124	0.982647	Dell_34:d7:0c	Broadcast	ARP	60	Who has 172.16.11.121? Tell 172.16.9.191
125	1.001803	ASUSTekCOMPU_94:c8:...	Broadcast	ARP	60	Who has 172.16.8.165? Tell 172.16.11.220
130	1.092009	Dell_34:d4:f5	Broadcast	ARP	60	Who has 169.254.114.31? (ARP Probe)
133	1.125080	RealtekSemi_c_42:be:...	Broadcast	ARP	60	Who has 172.16.8.1? Tell 172.16.11.126
136	1.239714	MicroStarINT_c5:cd:...	Broadcast	ARP	60	Who has 172.16.8.94? Tell 172.16.8.208
153	1.458611	Dell_35:11:44	Broadcast	ARP	60	Who has 172.16.8.208? Tell 172.16.8.107
155	1.467944	EliteGroupCo_15:e7:...	Broadcast	ARP	60	Who has 172.16.8.230? Tell 172.16.10.194
156	1.477482	Pegatron_e0:78:08	Broadcast	ARP	60	Who has 172.16.10.229? Tell 172.16.9.134
159	1.500563	Dell_34:d3:d8	Broadcast	ARP	60	Who has 172.16.11.141? Tell 172.16.9.70
169	1.654706	ASUSTekCOMPU_94:c8:...	Broadcast	ARP	60	Who has 172.16.8.165? Tell 172.16.11.220
172	1.694843	Dell_69:7a:cf	Broadcast	ARP	60	Who has 172.16.11.85? Tell 172.16.8.57
173	1.699449	Dell_90:45:97	Broadcast	ARP	60	Who has 172.16.8.117? Tell 172.16.8.63
179	1.781615	EliteGroupCo_14:83:...	Broadcast	ARP	60	Who has 169.254.169.254? Tell 172.16.10.171
180	1.802211	Dell_34:d7:0c	Broadcast	ARP	60	Who has 172.16.11.121? Tell 172.16.9.191
181	1.812859	Dell_35:11:6e	Broadcast	ARP	60	Who has 172.16.11.96? Tell 172.16.9.174
182	1.834082	EliteGroupCo_14:72:...	Broadcast	ARP	60	Who has 172.16.9.56? Tell 172.16.10.200
183	1.852789	0a:e0:af:ad:48:ad	Broadcast	ARP	60	Who has 172.16.8.1? Tell 172.16.11.250
188	1.951037	Sophos_cf:be:45	Broadcast	ARP	60	Who has 172.16.9.48? Tell 172.16.8.1
196	2.006005	MicroStarInt_ad:3c:...	Broadcast	ARP	60	Who has 172.16.10.72? Tell 172.16.11.228
202	2.060422	Dell_df:06:80	Broadcast	ARP	60	Who has 169.254.169.254? Tell 172.16.9.66
204	2.091797	Dell_34:d4:f5	Broadcast	ARP	60	ARP Announcement for 169.254.114.31
218	2.168545	Pegatron_e0:78:08	Broadcast	ARP	60	Who has 172.16.10.229? Tell 172.16.9.134
223	2.272385	Dell_69:7a:cf	Broadcast	ARP	60	Who has 172.16.11.85? Tell 172.16.8.57

## 4. Create a Filter to display only DNS packets and provide the flow graph.

### Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.



- Search DNS packets in search bar.
- To see flow graph click Statistics📊Flow graph.
- Save the packets.

## Output


No.	Time	Source	Destination	Protocol	Length	Info
286	3.267412	172.16.8.172	172.16.8.1	DNS	92	Standard query 0xa1fb A mobile.events.data.microsoft.com
287	3.296678	172.16.8.172	172.16.8.1	DNS	92	Standard query 0xa1fb A mobile.events.data.microsoft.com
288	3.297795	172.16.8.1	172.16.8.172	DNS	212	Standard query response 0xa1fb A mobile.events.data.microsoft.com CNAME mobile.events.data.trafficmanager.net CNAME onedcolprdeus17.eastus.cloudapp.azure.com A 28.42.65.91
289	3.297795	172.16.8.1	172.16.8.172	DNS	212	Standard query response 0xa1fb A mobile.events.data.microsoft.com CNAME mobile.events.data.trafficmanager.net CNAME onedcolprdeus17.eastus.cloudapp.azure.com A 28.42.65.91

## Flow Graph output

Time	172.16.8.172	172.16.8.1	Comment
3.267412	53007 → Standard query 0xa1fb A mobile.events.data.microsoft.com → 53		DNS Standard query 0xa1fb A mobile.events.data.microsoft...
3.296678	53007 → Standard query 0xa1fb A mobile.events.data.microsoft.com → 53		DNS Standard query 0xa1fb A mobile.events.data.microsoft...
3.297795	53007 ← Standard query response 0xa1fb A mobile.events.data.microsoft.com ← 53		DNS Standard query response 0xa1fb A mobile.events.dat...
3.297795	53007 ← Standard query response 0xa1fb A mobile.events.data.microsoft.com ← 53		DNS Standard query response 0xa1fb A mobile.events.dat...

## 5. Create a Filter to display only HTTP packets and inspect the packets

### Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Search HTTP packets in the search bar.
- Save the packets.

### Output


No.	Time	Source	Destination	Protocol	Length	Info
1871	17.243880	172.16.8.172	23.47.228.163	HTTP	281	GET / HTTP/1.1
1880	17.319132	23.47.228.163	172.16.8.172	HTTP	375	HTTP/1.1 304 Not Modified
1888	17.320963	172.16.8.172	142.250.77.131	HTTP	256	GET //gar1.cr1 HTTP/1.1
1898	17.337672	142.250.77.131	172.16.8.172	HTTP	359	HTTP/1.1 304 Not Modified
1896	17.347680	172.16.8.172	199.232.210.172	HTTP	335	GET /msdownload/update/v3/static/trusted/en/authrootstl.cab?deb25c894cffffdc HTTP/1.1
1935	17.794679	199.232.210.172	172.16.8.172	HTTP	298	HTTP/1.1 304 Not Modified
1936	17.802814	172.16.8.172	142.250.77.131	HTTP	254	GET //r4.cr1 HTTP/1.1
1938	17.808853	142.250.77.131	172.16.8.172	HTTP	359	HTTP/1.1 304 Not Modified
1939	17.811345	172.16.8.172	199.232.210.172	HTTP	348	GET /msdownload/update/v3/static/trusted/en/disallowedcertstl.cab?1be63c96d887e00 HTTP/1.1
1961	18.834882	199.232.210.172	172.16.8.172	HTTP	289	HTTP/1.1 304 Not Modified

### Flow Graph output

Time	172.16.8.172	23.47.228.163	142.250.77.131	199.252.210.172	Comment
17.243800	12.279	SET / HTTP/1.1	80		HTTP GET / HTTP/1.1
17.319132	12.279	HTTP/1.1 304 Not Modified	80		HTTP HTTP/1.1 304 Not Modified
17.329963	12.279	GET /script.js HTTP/1.1	80		HTTP GET /script.js HTTP/1.1
17.337672	12.279	HTTP/1.1 304 Not Modified	80		HTTP HTTP/1.1 304 Not Modified
17.347600	12.277	GET /media/download/uploads/v3/static/trustee/en/wholesale/cap/labels/15-0344.png HTTP/1.1	80		HTTP GET /media/download/uploads/v3/static/trustee/en/wholesale/cap/labels/15-0344.png HTTP/1.1
17.394679	12.277	HTTP/1.1 304 Not Modified	80		HTTP HTTP/1.1 304 Not Modified
17.802014	12.276	GET /v4/en HTTP/1.1	80		HTTP GET /v4/en HTTP/1.1
17.808053	12.276	HTTP/1.1 304 Not Modified	80		HTTP HTTP/1.1 304 Not Modified
17.811345	12.277	GET /media/download/uploads/v3/static/trustee/en/wholesale/download/cap/labels/15-0344.png HTTP/1.1	80		HTTP GET /media/download/uploads/v3/static/trustee/en/wholesale/download/cap/labels/15-0344.png HTTP/1.1
18.034062	12.277	HTTP/1.1 304 Not Modified	80		HTTP HTTP/1.1 304 Not Modified

## 6. Create a Filter to display only IP/ICMP packets and inspect the packets.

## Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Search ICMP/IP packets in search bar.
- Save the packets

## Output

## ICMP:



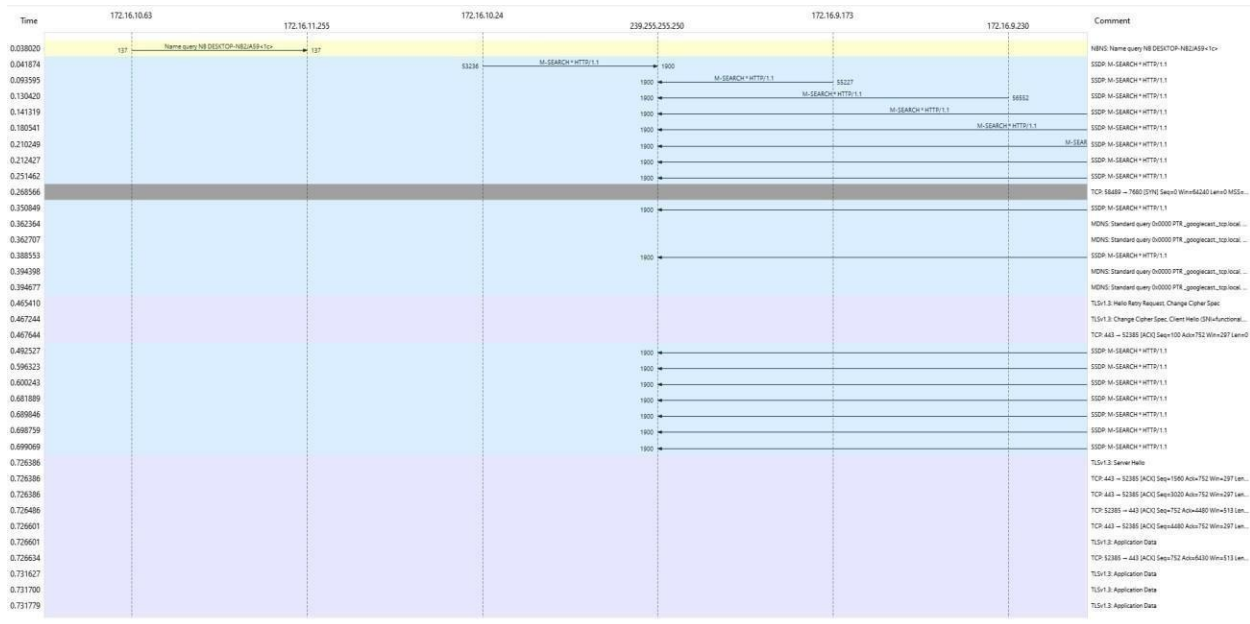
No.	Time	Source	Destination	Protocol	Length	Info
3378	33.142368	172.16.8.1	172.16.9.288	ICMP	62	Echo (ping) request id=0x00a3, seq=0/0, ttl=64 (no response found)
14526	159.511703	172.16.8.1	172.16.9.288	ICMP	62	Echo (ping) request id=0xf05f, seq=0/0, ttl=64 (no response found)
18787	289.577475	172.16.8.1	172.16.11.215	ICMP	62	Echo (ping) request id=0xb8c8, seq=0/0, ttl=64 (no response found)

IP:

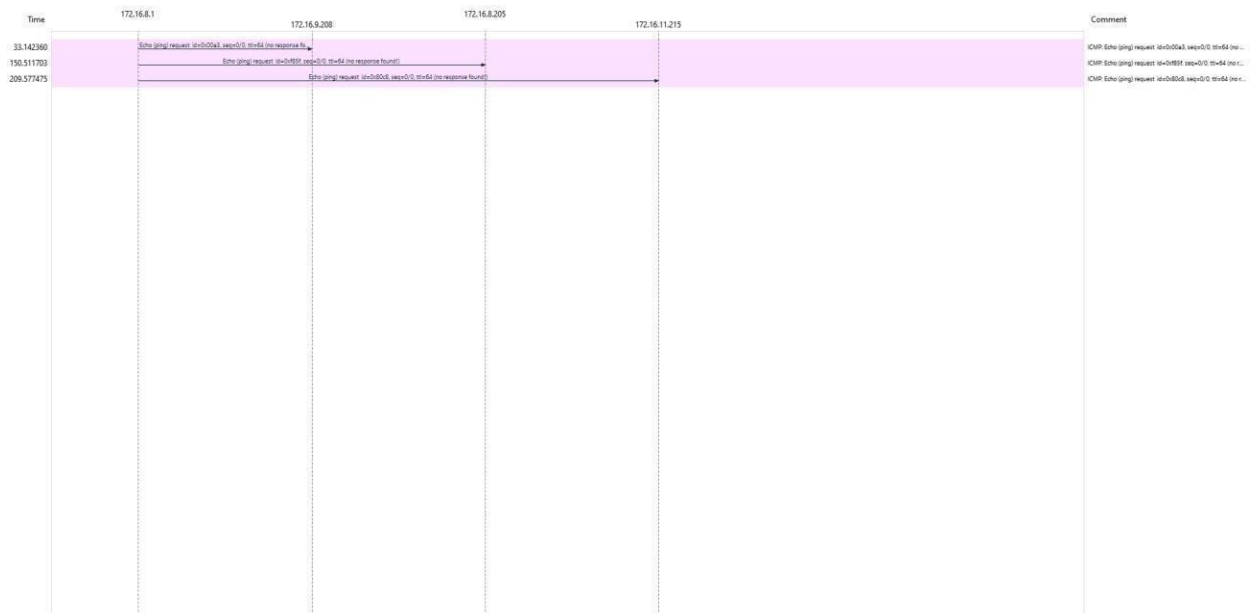
No.	Time	Source	Destination	Protocol	Length	Info
2	0.810820	172.16.18.63	172.16.11.255	NBNS	92	Name query NB DESKTOP-NB23A59<ic>
3	0.841874	172.16.18.24	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
4	0.891959	172.16.9.173	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
5	0.130428	172.16.9.230	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
7	0.141319	172.16.11.138	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
8	0.189541	172.16.18.152	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
9	0.218249	169.254.89.232	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
10	0.212427	172.16.9.66	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
11	0.251462	172.16.9.188	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
12	0.268566	172.16.8.35	172.16.8.223	TCP	66	34848 -> 7648 [SYN] Seq=0 Wln=64248 Len=0 MSS=1460 W=256 SACK_PERM
13	0.358849	172.16.18.44	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
14	0.362364	172.16.11.117	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _gongiclast._tcp.local, "QI" question
16	0.362707	172.16.11.117	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _gongiclast._tcp.local, "QI" question
18	0.388553	172.16.18.9	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
19	0.394398	172.16.11.117	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _gongiclast._tcp.local, "QI" question
21	0.394677	172.16.11.117	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _gongiclast._tcp.local, "QI" question
23	0.405418	13.89.179.13	172.16.8.172	TLSv1.3	153	Hello Retry Request, Change Cipher Spec
24	0.447244	172.16.8.172	13.89.179.13	TLSv1.3	885	Change Cipher Spec, Client Hello (SNI=functional.events.data.microsoft.com)
25	0.447644	13.89.179.13	172.16.8.172	TCP	68	443 -> 52385 [ACK] Seq=188 Ack=752 Wln=297 Len=0
30	0.492527	172.16.9.144	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
33	0.596323	172.16.18.161	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
34	0.686243	172.16.9.221	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
38	0.681889	172.16.9.284	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
39	0.689846	172.16.18.47	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
40	0.698759	172.16.18.164	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
41	0.699869	172.16.18.164	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
43	0.726386	13.89.179.13	172.16.8.172	TLSv1.3	1514	Server Hello
44	0.726386	13.89.179.13	172.16.8.172	TCP	1514	443 -> 52385 [ACK] Seq=1500 Ack=752 Wln=297 Len=1468 [TCP segment of a reassembled PDU]
45	0.726386	13.89.179.13	172.16.8.172	TCP	1514	443 -> 52385 [ACK] Seq=3020 Ack=752 Wln=297 Len=1468 [TCP segment of a reassembled PDU]
46	0.726406	172.16.8.172	13.89.179.13	TCP	54	52385 -> 443 [ACK] Seq=752 Ack=4400 Wln=513 Len=0
47	0.726681	13.89.179.13	172.16.8.172	TCP	1514	443 -> 52385 [ACK] Seq=4480 Ack=752 Wln=297 Len=1468 [TCP segment of a reassembled PDU]
48	0.726681	13.89.179.13	172.16.8.172	TLSv1.3	1444	Application Data
49	0.726634	172.16.8.172	13.89.179.13	TCP	54	52385 -> 443 [ACK] Seq=752 Ack=6430 Wln=513 Len=0
50	0.731827	172.16.8.172	13.89.179.13	TLSv1.3	128	Application Data
51	0.731788	172.16.8.172	13.89.179.13	TLSv1.3	146	Application Data
52	0.731779	172.16.8.172	13.89.179.13	TLSv1.3	404	Application Data
53	0.731794	13.89.179.13	172.16.8.172	TCP	68	443 -> 52385 [ACK] Seq=6430 Ack=826 Wln=297 Len=0
54	0.731799	172.16.8.172	13.89.179.13	TLSv1.3	878	Application Data
55	0.731869	13.89.179.13	172.16.8.172	TCP	68	443 -> 52385 [ACK] Seq=6430 Ack=918 Wln=297 Len=0
56	0.732046	13.89.179.13	172.16.8.172	TCP	68	443 -> 52385 [ACK] Seq=6430 Ack=1358 Wln=320 Len=0
57	0.732046	13.89.179.13	172.16.8.172	TCP	68	443 -> 52385 [ACK] Seq=6430 Ack=2174 Wln=343 Len=0
58	0.740132	172.16.11.219	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
59	0.743349	172.16.9.38	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
61	0.790631	172.16.18.63	172.16.11.255	NBNS	92	Name query NB DESKTOP-NB23A59<ic>
62	0.797895	172.16.8.263	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
63	0.807064	172.16.11.75	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
64	0.807064	172.16.11.75	239.255.255.250	SSDP	218	M-SEARCH * HTTP/1.1
65	0.829977	172.16.11.9	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
67	0.873233	172.16.9.228	224.0.0.251	MDNS	279	Standard query 0x0000 PTR _companion-link._tcp.local, "QI" question PTR _dlink._tcp.local, "QI" question PTR lb._dns-sd._udp.local, "QI" question PTR _sleep-proxy._udp.local, "QI" qu-
69	0.881946	172.16.8.174	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
70	0.919908	172.16.8.91	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
71	0.965944	172.16.9.78	224.0.0.251	MDNS	468	Standard query response 0x0000 PTR Asus's MacBook Pro_companion-link._tcp.local TXT TXT, cache flush AAAA, cache flush fe80::1cca:1289:5de9:16f1 A, cache flush 172.16.9.78 SRV, cach-
75	1.085987	13.89.179.13	172.16.8.172	TLSv1.3	157	Application Data
77	1.024955	13.89.179.13	172.16.8.172	TLSv1.3	116	Application Data

Flow Graph output:

ICMP:




IP:



7. Create a Filter to display only DHCP packets and inspect the packets.

Procedure

- Select Local Area Connection in Wireshark.
- Go to capture  option
- Select stop capture automatically after 100 packets.
- Then click Start capture.
- Search DHCP packets in search bar.
- Save the packets

## Output

No.	Time	Source	Destination	Protocol	Length	Info
3378	33.142368	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a6d82483
3442	34.399930	0.0.0.0	255.255.255.255	DHCP	368	DHCP Request - Transaction ID 0a6d82483
6238	65.127734	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a7d7e8f2
6231	65.127741	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a7d7e8f2
6489	67.846631	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a8b8f057
6488	67.846692	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a8b8f057
8829	85.392866	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a12bfadcc
8838	85.392927	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a12bfadcc
8398	91.378312	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0ae7524d08
8399	91.378372	0.0.0.0	255.255.255.255	DHCP	358	DHCP Request - Transaction ID 0ae7524d08
8946	181.523138	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a0f4793c1
8967	181.523148	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a0f4793c1
9738	188.166259	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a396d312e
9739	188.166318	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a396d312e
14525	198.511559	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a24ae2882
14681	151.512849	172.16.8.1	255.255.255.255	DHCP	342	DHCP Offer - Transaction ID 0a24ae2882
15468	148.795688	172.16.11.89	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0a609527ac
15866	166.678887	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a8d168963
15862	166.813281	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a24ae2882
15883	166.813715	172.16.8.1	255.255.255.255	DHCP	342	DHCP Offer - Transaction ID 0a24ae2882
15962	167.793575	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a3c65f522
16652	177.323319	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a3d3d5033
16653	177.323388	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a3d3d5033
17847	195.377939	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a8d168964
18493	286.429183	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a2fed0e22
18780	289.577476	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a3e5a1e56
18752	218.188147	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a3f6cd352
18848	211.502699	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a3e5a1e56
18879	212.318888	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a3f6cd352
19411	216.562778	0.0.0.0	255.255.255.255	DHCP	352	DHCP Request - Transaction ID 0a6f78a4987
19487	216.592588	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a3f65a33a
20548	223.728384	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a4d4d8531
24045	241.855956	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a3e9ff6c4
24271	243.229535	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0a8d168965
24323	243.636723	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a4d6d9fce
24445	244.638332	172.16.8.1	255.255.255.255	DHCP	342	DHCP Offer - Transaction ID 0a4d6d9fce
24471	244.837885	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a4d6d9fce
24472	244.837844	0.0.0.0	255.255.255.255	DHCP	378	DHCP Request - Transaction ID 0a4d6d9fce
24649	247.539957	172.16.8.1	255.255.255.255	DHCP	342	DHCP ACK - Transaction ID 0a4d6d9fce
24658	247.539958	0.0.0.0	255.255.255.255	DHCP	378	DHCP Request - Transaction ID 0a4d6d9fce
24713	248.355129	0.0.0.0	255.255.255.255	DHCP	364	DHCP Request - Transaction ID 0a705d1331
24827	249.331968	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0a1eff80c
24956	258.332981	0.0.0.0	255.255.255.255	DHCP	378	DHCP Request - Transaction ID 0a1eff80c

