



Mawlana Bhashani Science and Technology University

Lab-Report

Report No: 05

Course code: ICT-4202

Course title: Wireless and Mobile Communication Lab

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Experiment No: 05

Experiment Name: Comparative Analysis of Wired and Wireless data using Wireshark

Objectives:

1. We have to find out the Wired data packages Using the Wireshark in order to compare with the wireless data packages.
2. Filter the packages
3. Find out the host, IP of the data packages
4. Create the Statistics for both of the data packages.
5. Finally compare the wired and wireless data packages simultaneously with the help of Wireshark.

Capturing Packets:

If we click any menu option, then it will show the available interfaces list.
After clicking the menu, we need to start Capturing on interface that has IP address/Source/Host.

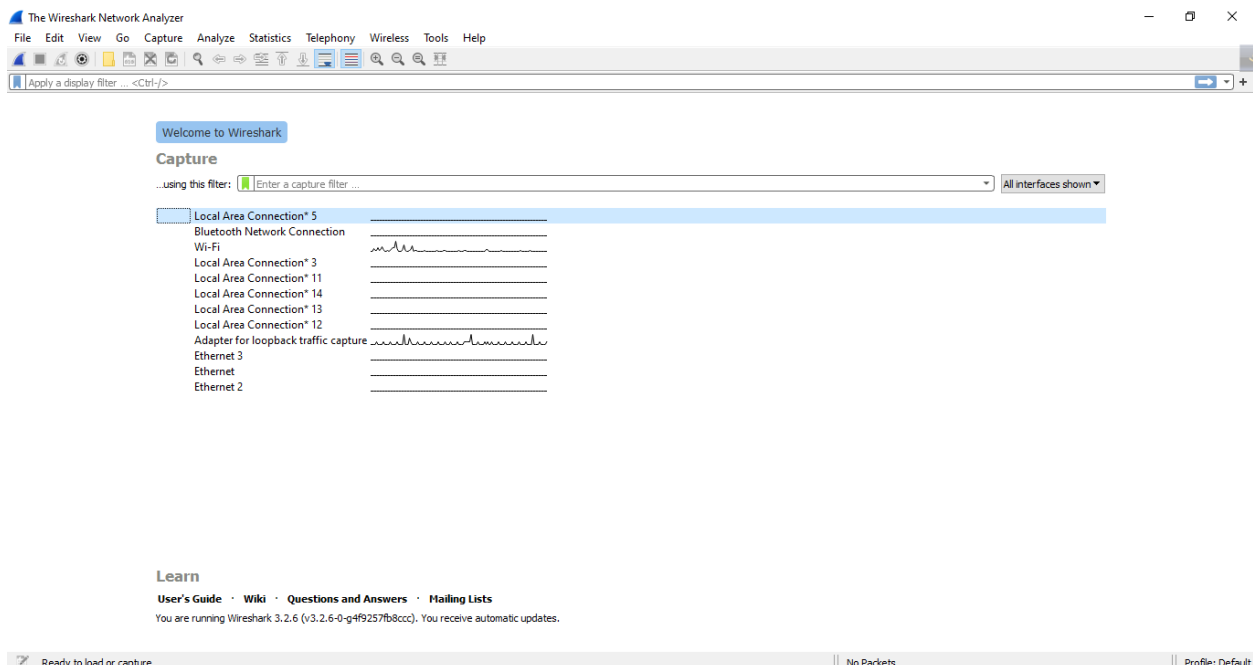


Figure 01: Wireshark Interface List

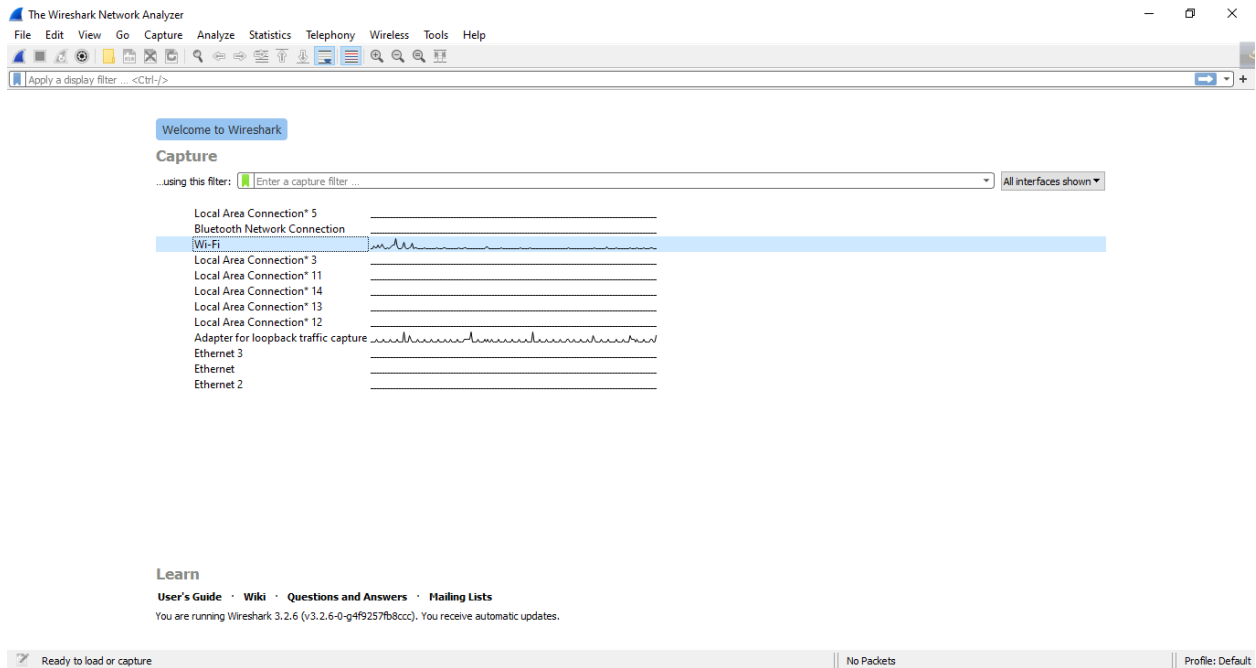


Figure 02-A: Start Capturing Interface that has for Wi-Fi (Wireless)

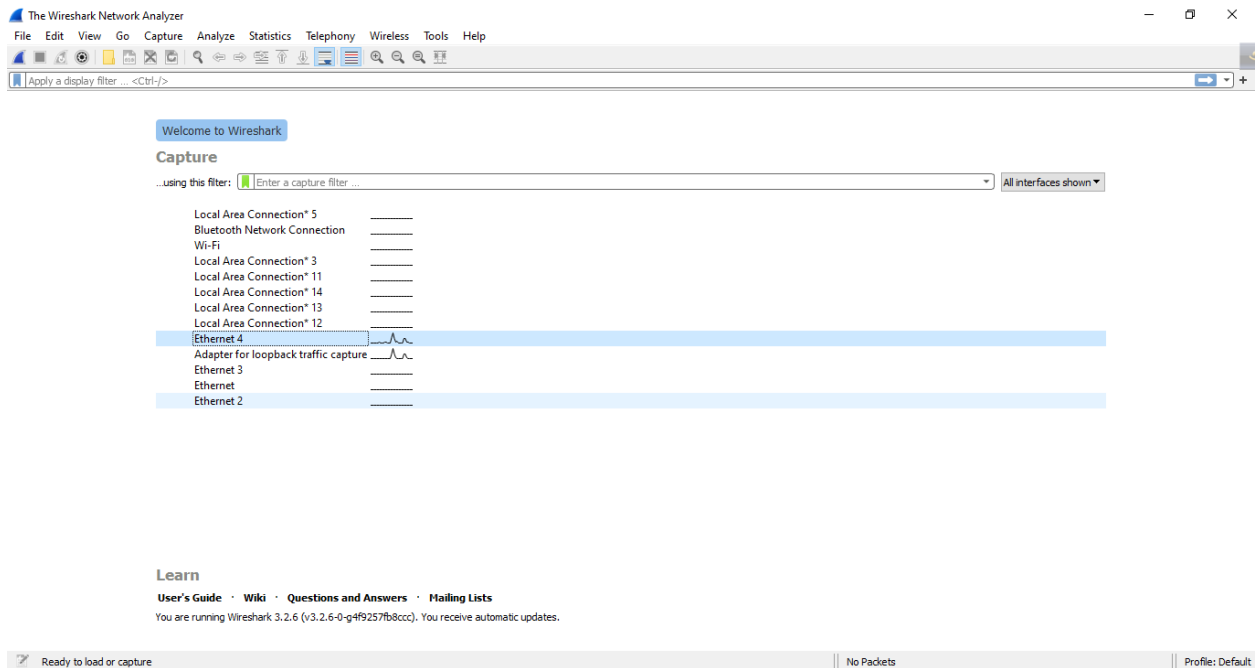


Figure 02-B: Start Capturing Interface that has for Ethernet Tethering(Wired)

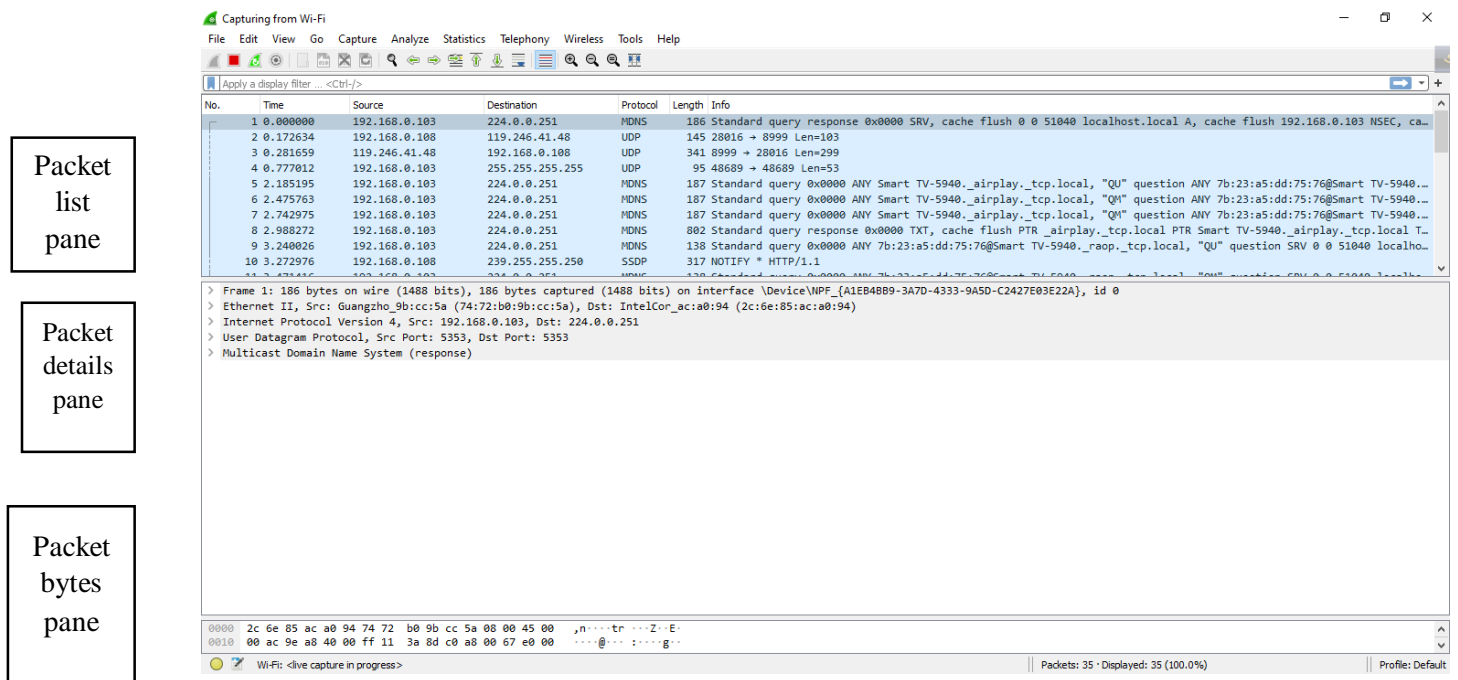


Figure 03-A: A sample packet capture window for Wireless Data Pack

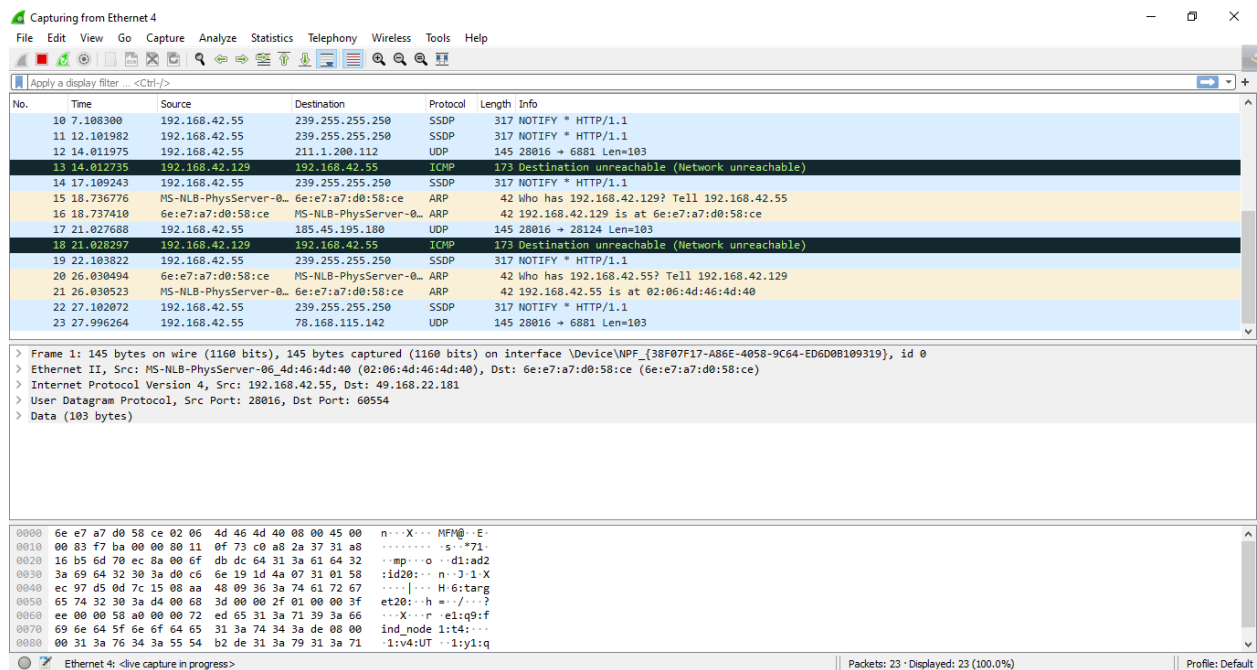


Figure 03-B: A sample packet capture window for Wired Data Pack

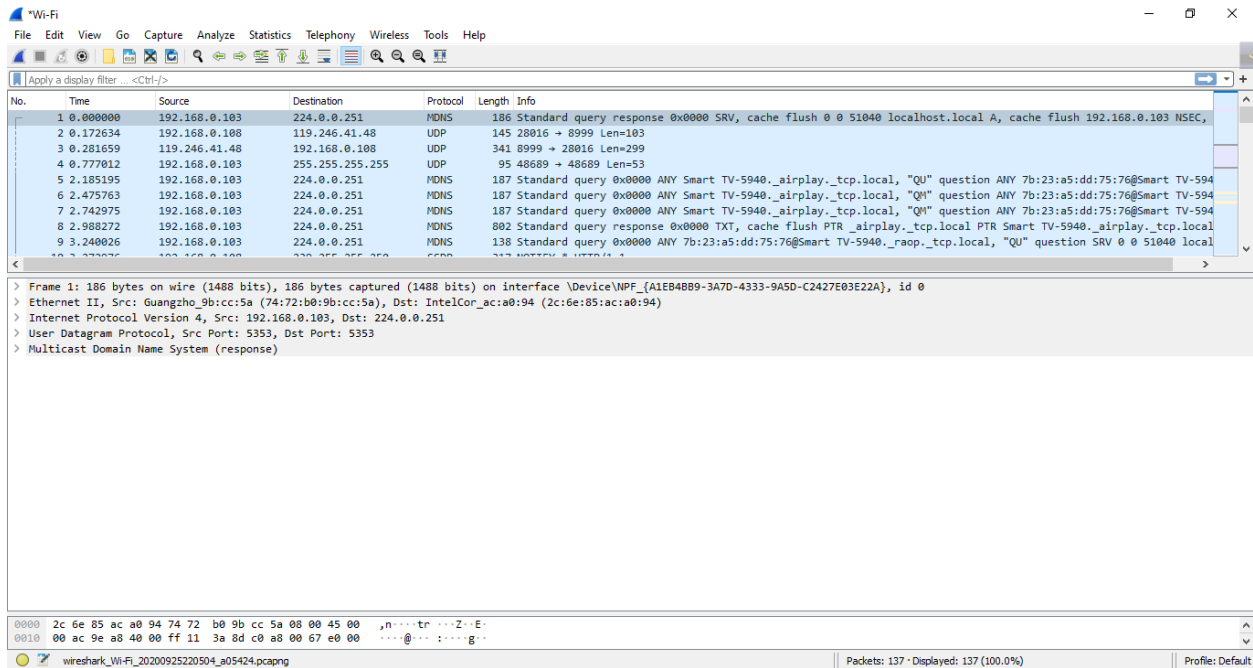


Figure 04-A: Stopping Capture for Wi-Fi (Wireless)

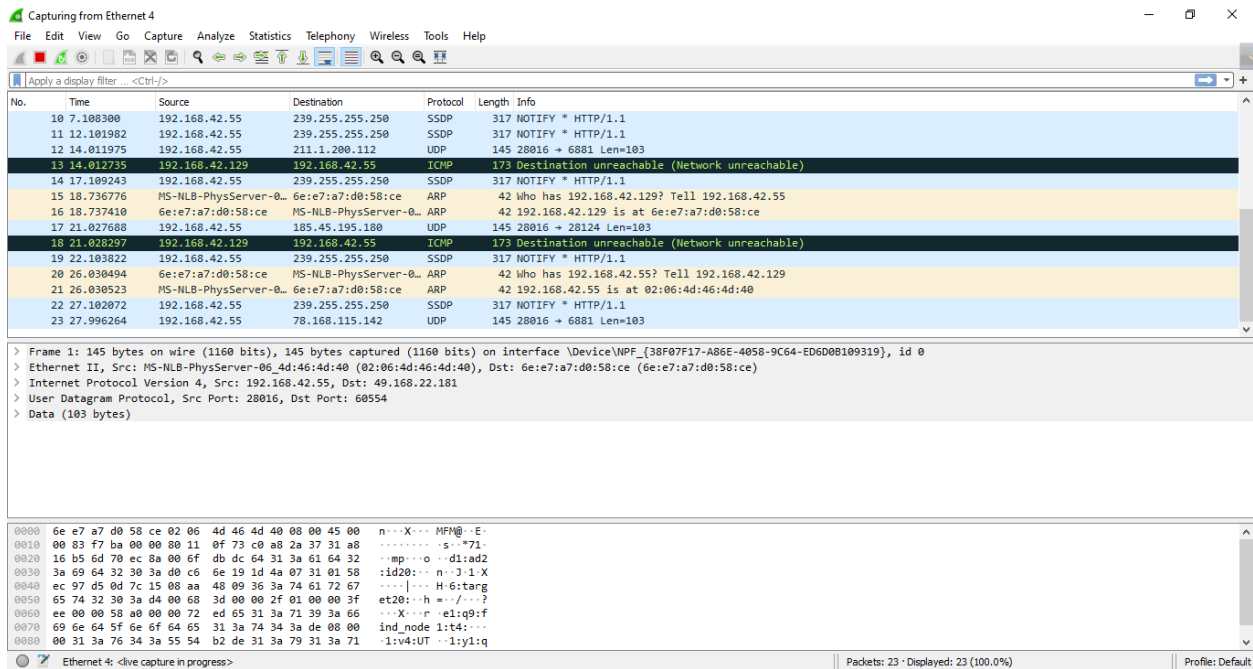


Figure 04-B: Stopping Capture for Wi-Fi (Wired)

Filtering:

The image shows a Wireshark capture of wireless data packages, filtered by UDP. The capture is titled "Wi-Fi". The packet list shows 21 packets, all of which are UDP. The packet details pane shows the details of the selected packet (packet 1), which is a Standard query response from 192.168.0.103 to 224.0.0.251. The packet bytes pane shows the raw data of the selected packet.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.0.103	224.0.0.251	MDNS	186	Standard query response 0x0000 SRV, cache flush 0 0 51040 localhost.local A, cache flush 192.168.0.103 NSEC,
2	0.172634	192.168.0.108	119.246.41.48	UDP	145	28016 → 8999 Len=103
3	0.281659	119.246.41.48	192.168.0.108	UDP	341	8999 → 28016 Len=299
4	0.777012	192.168.0.103	255.255.255.255	UDP	95	48689 → 48689 Len=53
5	2.185195	192.168.0.103	224.0.0.251	MDNS	187	Standard query 0x0000 ANY Smart TV-5940._airplay._tcp.local, "QU" question ANY 7b:23:a5:dd:75:76@Smart TV-594
6	2.475763	192.168.0.103	224.0.0.251	MDNS	187	Standard query 0x0000 ANY Smart TV-5940._airplay._tcp.local, "QM" question ANY 7b:23:a5:dd:75:76@Smart TV-594
7	2.742975	192.168.0.103	224.0.0.251	MDNS	187	Standard query 0x0000 ANY Smart TV-5940._airplay._tcp.local, "QM" question ANY 7b:23:a5:dd:75:76@Smart TV-594
8	2.988272	192.168.0.103	224.0.0.251	MDNS	802	Standard query response 0x0000 TXT, cache flush PTR _airplay._tcp.local PTR Smart TV-5940._airplay._tcp.local
9	3.240026	192.168.0.103	224.0.0.251	MDNS	138	Standard query response 0x0000 ANY 7b:23:a5:dd:75:76@Smart TV-5940._raop._tcp.local, "QU" question SRV 0 0 51040 local
10	3.272976	192.168.0.108	239.255.255.250	SSDP	317	NOTIFY * HTTP/1.1
11	3.471416	192.168.0.103	224.0.0.251	MDNS	138	Standard query 0x0000 ANY 7b:23:a5:dd:75:76@Smart TV-5940._raop._tcp.local, "QM" question SRV 0 0 51040 local
12	3.789818	192.168.0.103	224.0.0.251	MDNS	138	Standard query 0x0000 ANY 7b:23:a5:dd:75:76@Smart TV-5940._raop._tcp.local, "QM" question SRV 0 0 51040 local
13	4.027199	192.168.0.103	224.0.0.251	MDNS	436	Standard query response 0x0000 TXT, cache flush PTR _airplay._tcp.local PTR Smart TV-5940._airplay._tcp.local
14	4.136001	192.168.0.103	224.0.0.251	MDNS	446	Standard query response 0x0000 TXT, cache flush PTR 7b:23:a5:dd:75:76@Smart TV-5940._raop._tcp.local SRV, cac
15	4.770219	192.168.0.103	255.255.255.255	UDP	95	48689 → 48689 Len=53
20	5.977968	192.168.0.103	224.0.0.251	MDNS	436	Standard query response 0x0000 TXT, cache flush PTR _airplay._tcp.local PTR Smart TV-5940._airplay._tcp.local
21	7.147898	192.168.0.108	185.45.195.182	UDP	145	28016 → 28055 Len=103

Frame 1: 186 bytes on wire (1488 bits), 186 bytes captured (1488 bits) on interface \Device\NPF_{A1E848B9-3A7D-4333-9A5D-C2427E03E22A}, id 0
> Ethernet II, Src: Guanghe 9b:cc:5a (74:72:b0:9b:cc:5a), Dst: IntelCor_ac:a0:94 (2c:6e:85:ac:a0:94)
> Internet Protocol Version 4, Src: 192.168.0.103, Dst: 224.0.0.251
> User Datagram Protocol, Src Port: 5353, Dst Port: 5353
> Multicast Domain Name System (response)

0000 2c 6e 85 ac a0 94 74 72 b0 9b cc 5a 08 00 45 00 ,n...tr...Z...E
0010 00 ac 9e a8 40 00 ff 11 3a 8d c0 a8 00 67 e0 00@...:....g...

User Datagram Protocol: Protocol

Packets: 137 · Displayed: 105 (76.6%) · Dropped: 0 (0.0%)

Profile: Default

Figure 05-A: Filter by Protocol Wireless Data Packages

The image shows a Wireshark capture of wired data packages, filtered by TCP. The capture is titled "Ethernet 4". The packet list shows 18 packets, all of which are TCP. The packet details pane shows the details of the selected packet (packet 100), which is a SYN packet from 192.168.42.55 to 40.90.189.152. The packet bytes pane shows the raw data of the selected packet.

No.	Time	Source	Destination	Protocol	Length	Info
100	62.748001	192.168.42.55	40.90.189.152	TCP	66	7025 → 443 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 WS=256 SACK_PERM=1
101	62.748009	192.168.42.55	40.90.189.152	TCP	66	7024 → 443 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 WS=256 SACK_PERM=1
104	63.748539	192.168.42.55	40.90.189.152	TCP	66	[TCP Retransmission] 7024 → 443 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 WS=256 SACK_PERM=1
105	63.748557	192.168.42.55	40.90.189.152	TCP	66	[TCP Retransmission] 7025 → 443 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 WS=256 SACK_PERM=1
109	64.746703	40.90.189.152	192.168.42.55	TCP	66	443 → 7025 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1400 WS=1 SACK_PERM=1
110	64.746842	192.168.42.55	40.90.189.152	TCP	54	7025 → 443 [ACK] Seq=1 Ack=1 Win=8704 Len=0
111	64.748233	192.168.42.55	40.90.189.152	TLSv1.2	232	Client Hello
112	64.757604	192.168.42.55	52.184.80.179	TCP	66	7026 → 443 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 WS=256 SACK_PERM=1
113	65.001929	40.90.189.152	192.168.42.55	TCP	114	[TCP Previous segment not captured] 443 → 7025 [PSH, ACK] Seq=1401 Ack=179 Win=8014 Len=60
114	65.002010	192.168.42.55	40.90.189.152	TCP	66	[TCP Dup ACK 110#1] 7025 → 443 [ACK] Seq=179 Ack=1 Win=8704 Len=0 SLE=1401 SRE=1461
115	65.002153	40.90.189.152	192.168.42.55	TCP	1454	443 → 7025 [ACK] Seq=1461 Ack=179 Win=8014 Len=1400
116	65.002194	192.168.42.55	40.90.189.152	TCP	66	[TCP Dup ACK 110#2] 7025 → 443 [ACK] Seq=179 Ack=1 Win=8704 Len=0 SLE=1401 SRE=2861
117	65.002260	40.90.189.152	192.168.42.55	TLSv1.2	114	Ignored Unknown Record
118	65.002308	192.168.42.55	40.90.189.152	TCP	66	[TCP Dup ACK 110#3] 7025 → 443 [ACK] Seq=179 Ack=1 Win=8704 Len=0 SLE=1401 SRE=2861

Frame 100: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{38F07F17-A86E-4058-9C64-ED6D0B109319}, id 0
> Ethernet II, Src: MS-NLB-PhysServer-06_4d:46:4d:40 (02:06:4d:46:4d:40), Dst: 6e:e7:a7:d0:58:ce (6e:e7:a7:d0:58:ce)
> Internet Protocol Version 4, Src: 192.168.42.55, Dst: 40.90.189.152
> Transmission Control Protocol, Src Port: 7025, Dst Port: 443, Seq: 0, Len: 0

0000 6e e7 a7 d0 58 ce 02 06 4d 46 4d 40 08 00 45 00 n...X...MFN@...E
0010 00 34 81 13 40 00 80 06 a8 de c0 a8 2a 37 28 5a 4...@...*7(Z
0020 bd 98 1b 71 01 bb e7 7b 84 a3 00 00 00 00 00 02 ...q{
0030 22 38 f2 ba 00 00 02 04 05 b4 01 03 03 08 01 01 "8.....
0040 04 02 ..

Transmission Control Protocol: Protocol

Packets: 141 · Displayed: 35 (24.8%) · Dropped: 0 (0.0%)

Profile: Default

Figure 05-B: Filter by Protocol Wired Data Packages

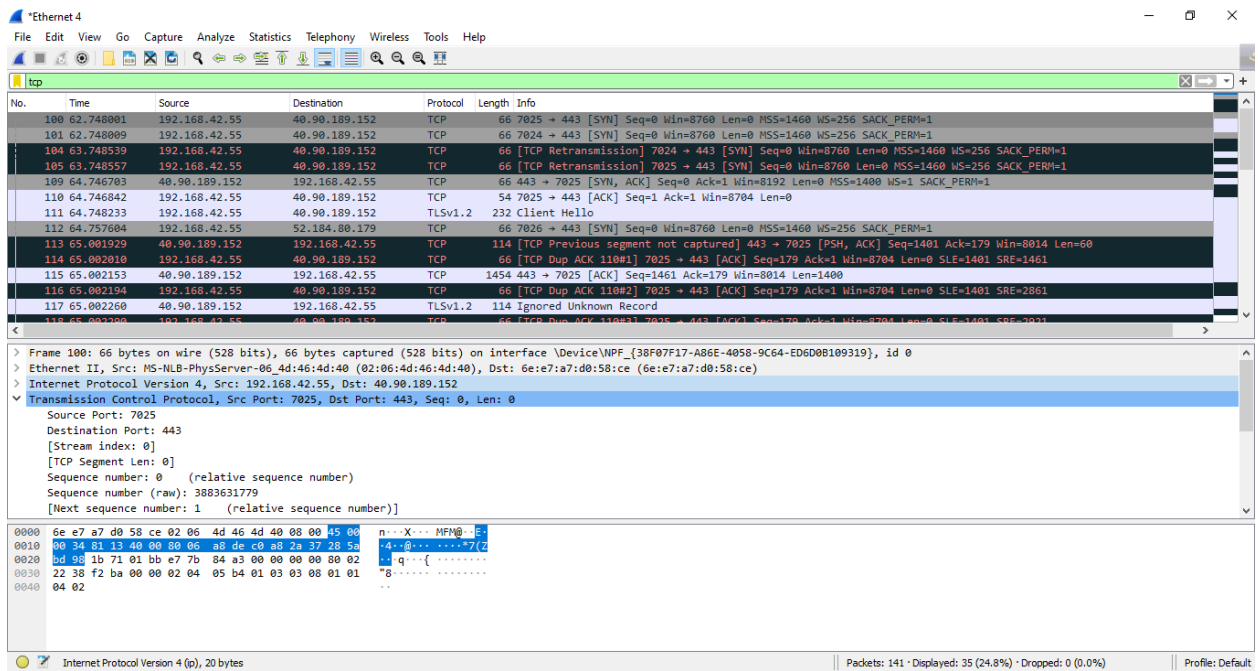


Figure 06-A: Packet Details Pane (Frame segment) for Wired Data Packages.

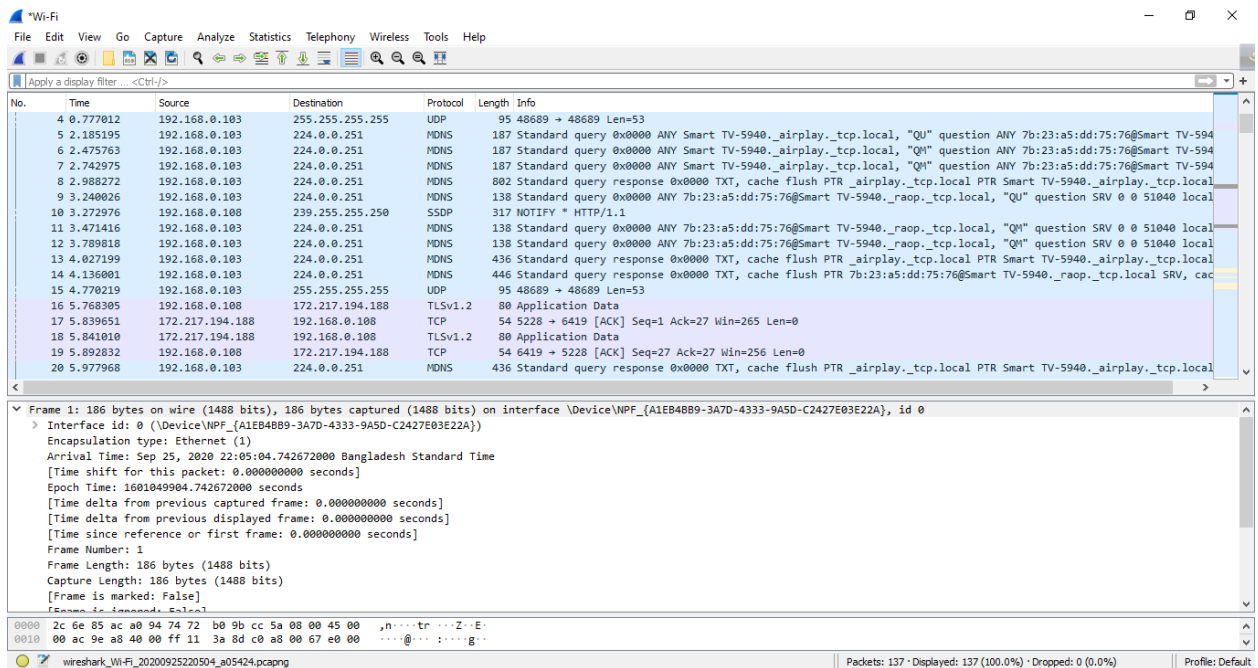


Figure 06-B: Packet Details Pane (Frame segment) for Wireless Data Packages.

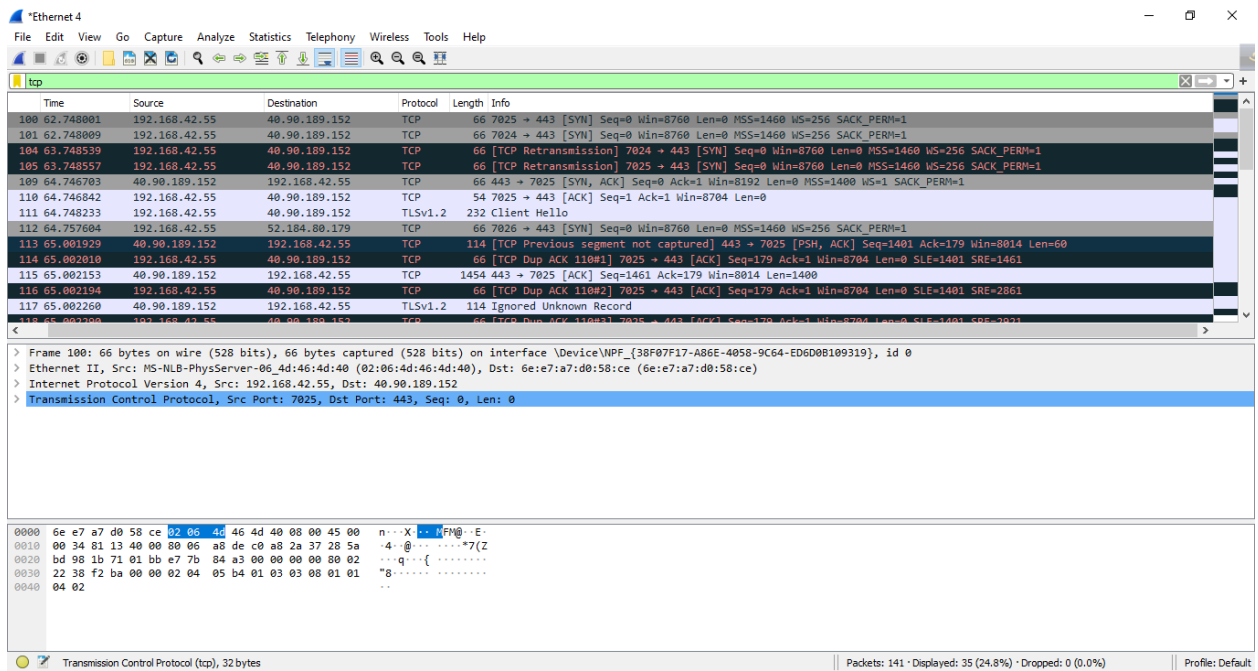


Figure 07-A: Packet Byte Pane for Wireless (Ethernet)

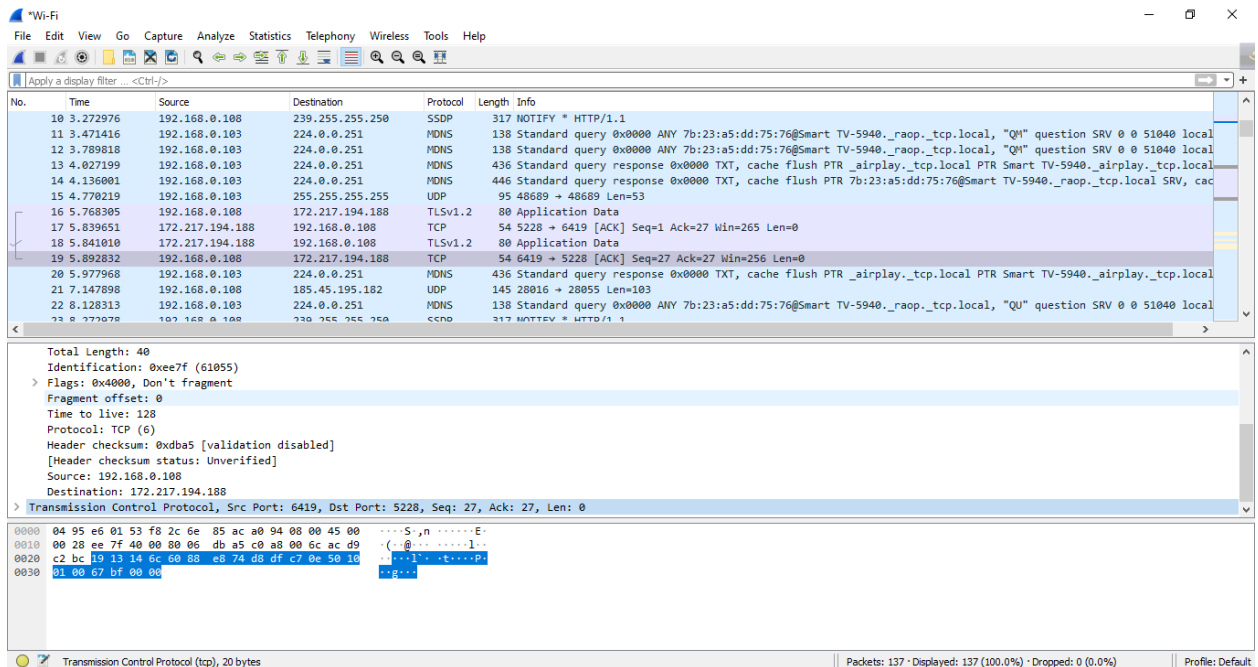


Figure 07-B: Packet Byte Pane (For Wi-Fi)



Figure 08-A: Statistics- Flow Graph -All Flows for Wi-Fi (Wireless Data Packages)

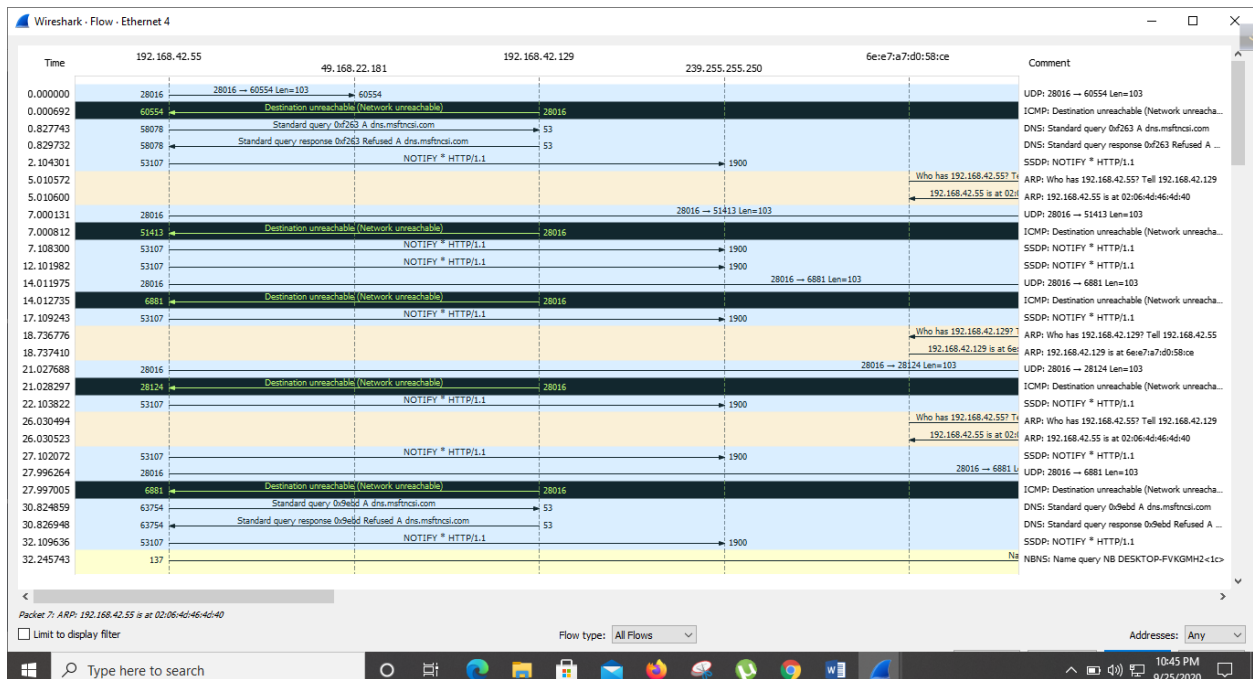


Figure 08-B: Statistics- Flow Graph -All Flows for Wi-Fi (Wired Data Packages)

Conclusion:

We can see the packet exchanging rate of wired and wireless medium from the above. From the lab we can decide that wired data are more secure and high speedy, On the other hand wireless data are less secure and low speedy.

Between Wired and Wireless Network, wired network is much more efficient than wireless network. Because Wired data packages transfer rate are very much smoother than Wireless.