



Mawlana Bhashani Science and Technology University

Lab-Report

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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.

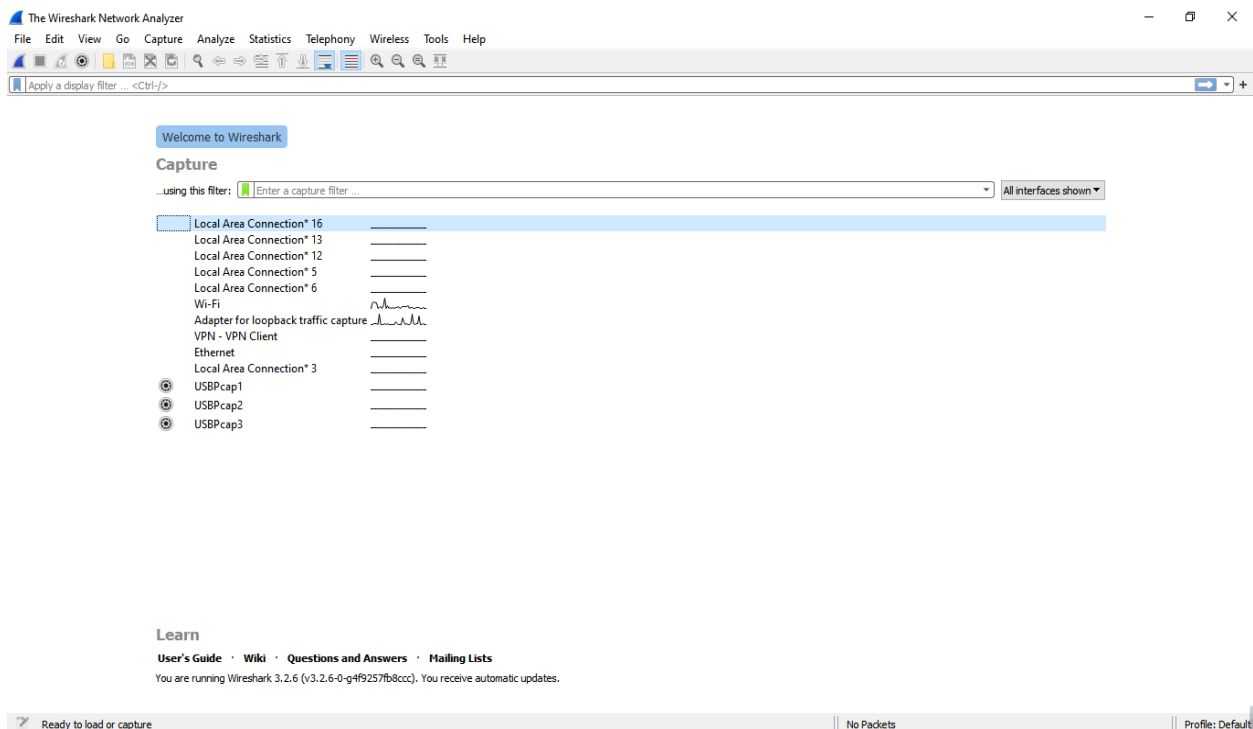


Figure 01: Wireshark Interface List

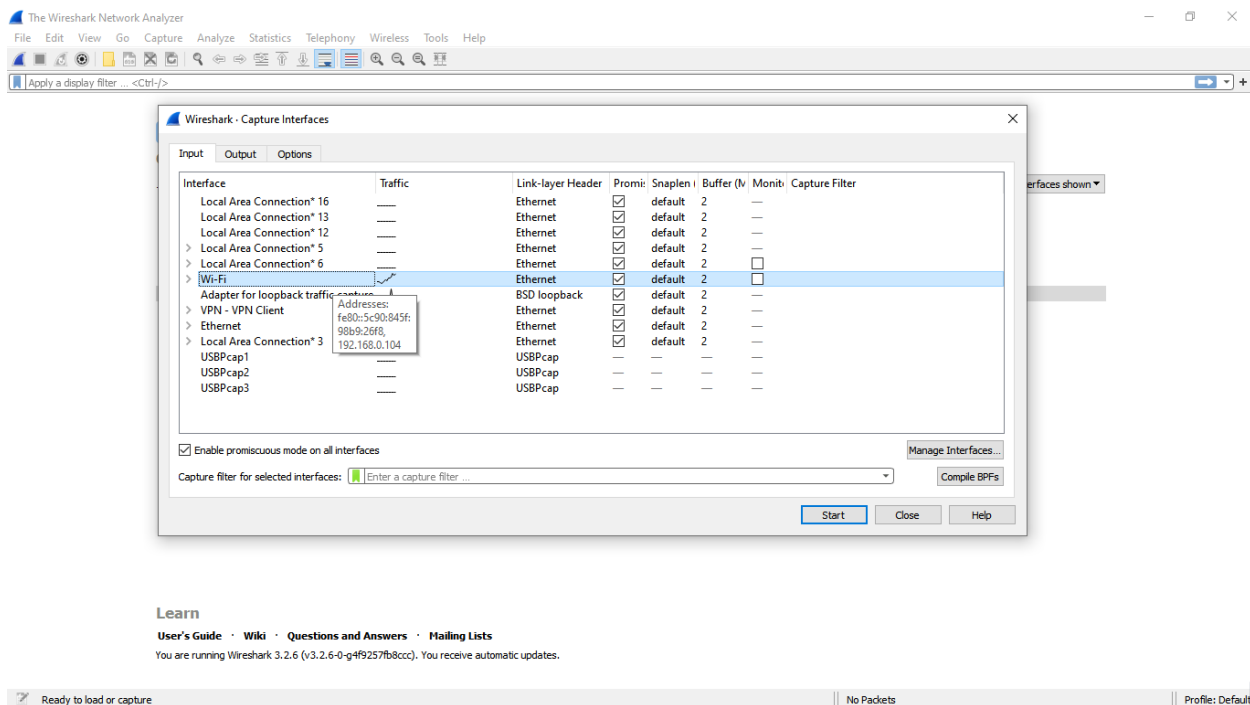


Figure 02-A: Start Capturing Interface that has for Wi-Fi (Wireless)

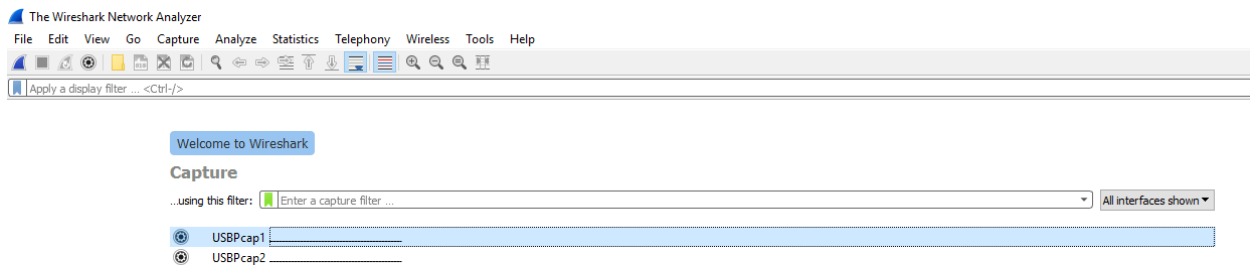


Figure 02-B: Start Capturing Interface that has for USB Tethering(Wired)

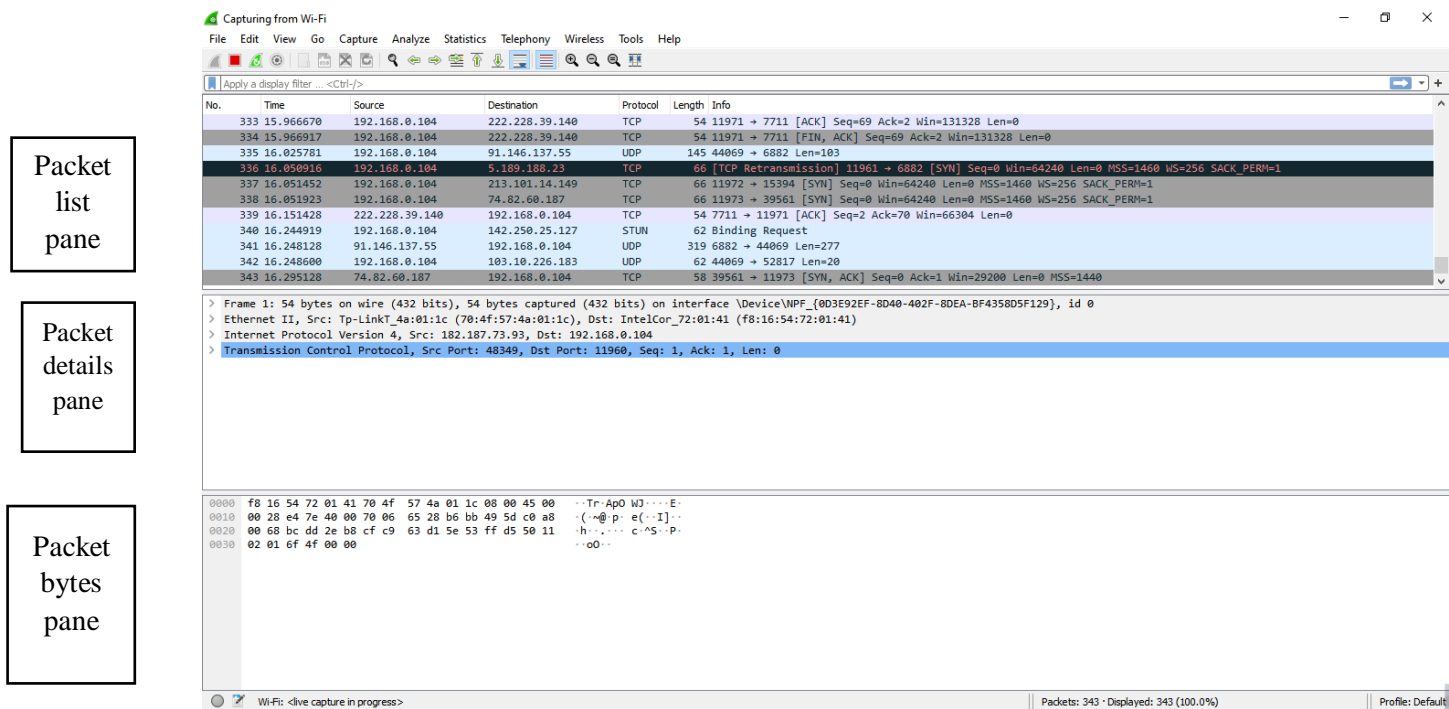


Figure 03-A: A sample packet capture window for Wireless Data Pack

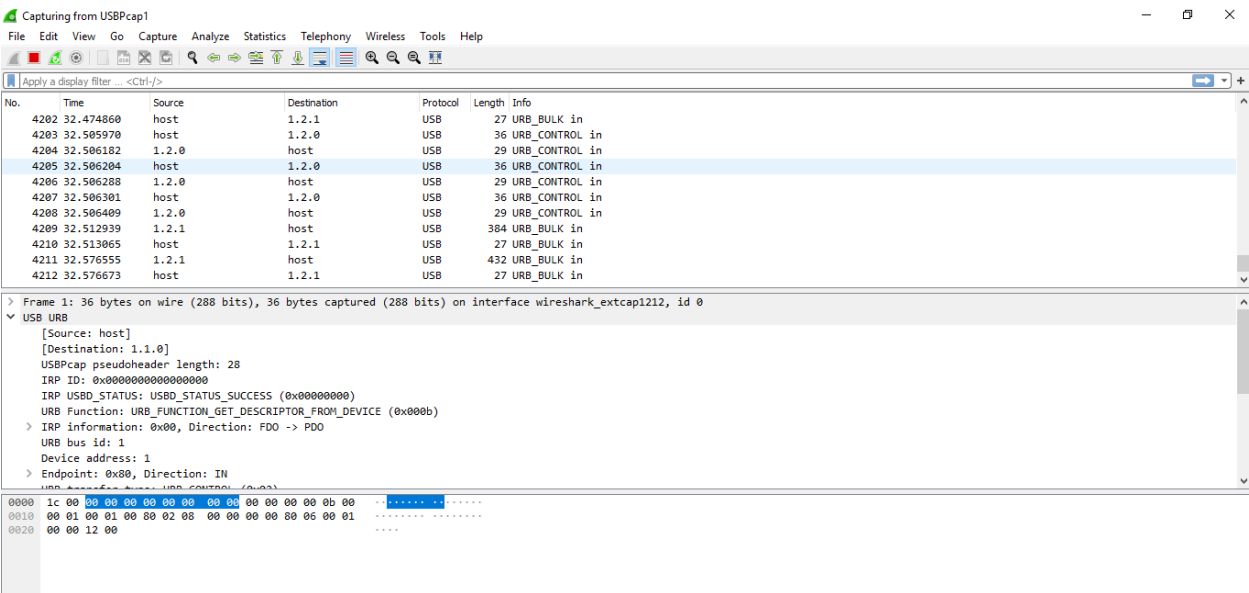


Figure 03-B: A sample packet capture window for Wired Data Pack

Capturing from Adapter for loopback traffic capture

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help



Apply a display filter ... <Ctrl-/>

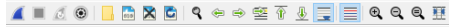
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.0.111	239.255.255.250	IGMPv2	36	Membership Report group 239.255.255.250
2	0.075019	192.168.0.111	239.255.255.250	SSDP	205	M-SEARCH * HTTP/1.1
3	1.075675	192.168.0.111	239.255.255.250	SSDP	205	M-SEARCH * HTTP/1.1

> Frame 1: 36 bytes on wire (288 bits), 36 bytes captured (288 bits) on interface \Device\NPF_{Loopback}, id 0
 > Null/Loopback
 > Internet Protocol Version 4, Src: 192.168.0.111, Dst: 239.255.255.250
 > Internet Group Management Protocol

```
0000 02 00 00 00 46 00 00 20 87 93 00 00 01 02 00 00  ....F...
0010 c0 a8 00 6f ef ff ff fa 94 04 00 00 16 00 fa 04  ...o....
0020 ef ff ff fa                                     ....
```

*Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help



Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
1636	81.421334	192.168.0.104	41.217.98.32	UDP	1467	44069 → 58486 Len=1425
1637	81.421459	192.168.0.104	41.217.98.32	UDP	1467	44069 → 58486 Len=1425
1638	81.945144	103.79.168.115	192.168.0.104	UDP	62	22367 → 44069 Len=20
1639	81.945399	192.168.0.104	103.79.168.115	UDP	62	44069 → 22367 Len=20
1640	82.022035	192.168.0.104	51.158.112.213	TCP	54	12020 → 6881 [FIN, ACK] Seq=69 Ack=1 Win=132352 Len=0
1641	82.117032	192.168.0.104	103.135.137.130	TCP	54	11919 → 55842 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
1642	82.117395	192.168.0.104	147.135.117.186	UDP	62	44069 → 6881 Len=20
1643	82.117570	192.168.0.104	65.49.14.178	UDP	62	44069 → 35795 Len=20
1644	82.152007	192.168.0.104	45.121.91.238	TCP	54	11917 → 1032 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
1645	82.258924	51.158.112.213	192.168.0.104	TCP	54	6881 → 12020 [FIN, ACK] Seq=1 Ack=70 Win=29440 Len=0
1646	82.259006	192.168.0.104	51.158.112.213	TCP	54	12020 → 6881 [ACK] Seq=70 Ack=2 Win=132352 Len=0

> Frame 1: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface \Device\NPF_{0D3E92EF-8D40-402F-8DEA-BF4358D5F129}, id 0
 > Ethernet II, Src: Tp-LinkT_4a:01:1c (70:4f:57:4a:01:1c), Dst: IntelCor_72:01:41 (f8:16:54:72:01:41)
 > Internet Protocol Version 4, Src: 182.187.73.93, Dst: 192.168.0.104
 > Transmission Control Protocol, Src Port: 48349, Dst Port: 11960, Seq: 1, Ack: 1, Len: 0

```
0000 f8 16 54 72 01 41 70 4f 57 4a 01 1c 00 00 45 00  ..Tr-ApO W.....E.
0010 00 28 e4 7e 40 00 70 06 65 28 b6 bb 49 5d c0 a8  ..(..@p.e{..I}..
0020 00 68 bc dd 2e b8 cf c9 63 d1 5e 53 ff d5 50 11  ..h.....c^S..P.
0030 02 01 6f 4f 00 00                                ...o...
```

wireshark_Wi-Fi_20200918175613_a09508.pcapng

Packets: 1647 · Displayed: 1647 (100.0%)

Profile: Default

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

The screenshot shows the USBPCap application interface. At the top is a menu bar with File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons. A status bar at the bottom indicates "Apply a display filter ... <Ctrl>->".

The main window displays a list of captured packets. The columns are No., Time, Source, Destination, Protocol, Length, and Info.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	host	1.1.0	USB	36	GET_DESCRIPTOR Request DEVICE
2	0.000000	1.1.0	host	USB	46	GET_DESCRIPTOR Response DEVICE
3	0.000000	host	1.1.0	USB	36	GET_DESCRIPTOR Request CONFIGURATION
4	0.000000	1.1.0	host	USB	53	GET_DESCRIPTOR Response CONFIGURATION
5	0.000000	host	1.1.0	USB	36	SET_CONFIGURATION Request
6	0.000000	1.1.0	host	USB	28	SET_CONFIGURATION Response
7	0.000000	host	1.2.0	USB	36	GET_DESCRIPTOR Request DEVICE
8	0.000000	1.2.0	host	USB	46	GET_DESCRIPTOR Response DEVICE
9	0.000000	host	1.2.0	USB	36	GET_DESCRIPTOR Request CONFIGURATION
10	0.000000	1.2.0	host	USB	74	GET_DESCRIPTOR Response CONFIGURATION
11	0.000000	host	1.2.0	USB	36	SET_CONFIGURATION Request

Below the packet list, there is a detailed view of the selected packet (No. 1). It shows:

- > Endpoint: 0x80, Direction: IN
- URB transfer type: URB_CONTROL (0x02)
- Packet Data Length: 8
- [Response in: 2]
- Control transfer stage: Setup (0)

Under the "Setup Data" section, it lists:

- bmRequestType: 0x80
- bRequest: GET_DESCRIPTOR (6)
- Descriptor Index: 0x00
- bDescriptorType: DEVICE (0x01)
- Language Id: no language specified (0x0000)
- wLength: 18

At the bottom, there is a hex dump of the packet data:

```

0000  1c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0010  00 01 00 01 00 00 02 08 00 00 00 00 00 06 00 01 .....
0020  00 00 12 00 .....
  
```

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

Filtering:

Wireshark · Flow · Adapter for loopback traffic capture

Time	192.168.0.111	239.255.255.250	224.0.0.252	192.168.0.255	224.0.0.251	Comment
0.000000		Membership Report group 239.255.255.250				IGMPv2: Membership Report group 239.255.255.250
0.075019	63167	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
1.075675	63167	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
117.499355		Membership Report group 224.0.0.252				IGMPv2: Membership Report group 224.0.0.252
118.077445	55798	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
119.077709	55798	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
120.078329	55798	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
121.079517	55798	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
238.074823	52827	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
239.075395	52827	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
240.075834	52827	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
241.076551	52827	M-SEARCH * HTTP/1.1	1900			SSDP: M-SEARCH * HTTP/1.1
242.499368		Membership Report group 239.255.255.250				IGMPv2: Membership Report group 239.255.255.250
244.499264		Membership Report group 224.0.0.252				IGMPv2: Membership Report group 224.0.0.252
275.599165	137	Name query NB WPAD<00>	137			NBNS: Name query NB WPAD<00>
275.599569	5353	Standard query 0x0000 A wpad.local, "QM" question			5353	MDNS: Standard query 0x0000 A wpad.local, "Q..."
275.599904						MDNS: Standard query 0x0000 A wpad.local, "Q..."
275.641400	54161	Standard query 0x17e8 A wpad	5355			LMNR: Standard query 0x17e8 A wpad
275.641566						LMNR: Standard query 0x17e8 A wpad
276.051372						LMNR: Standard query 0x17e8 A wpad
276.051499	54161	Standard query 0x17e8 A wpad	5355			LMNR: Standard query 0x17e8 A wpad

Packet 22: NBNS: Name query: NB WPAD<00>

☐ Limit to display filter

Flow type: All Flows

Addresses: Any

Save As... Reset Diagram Close Help

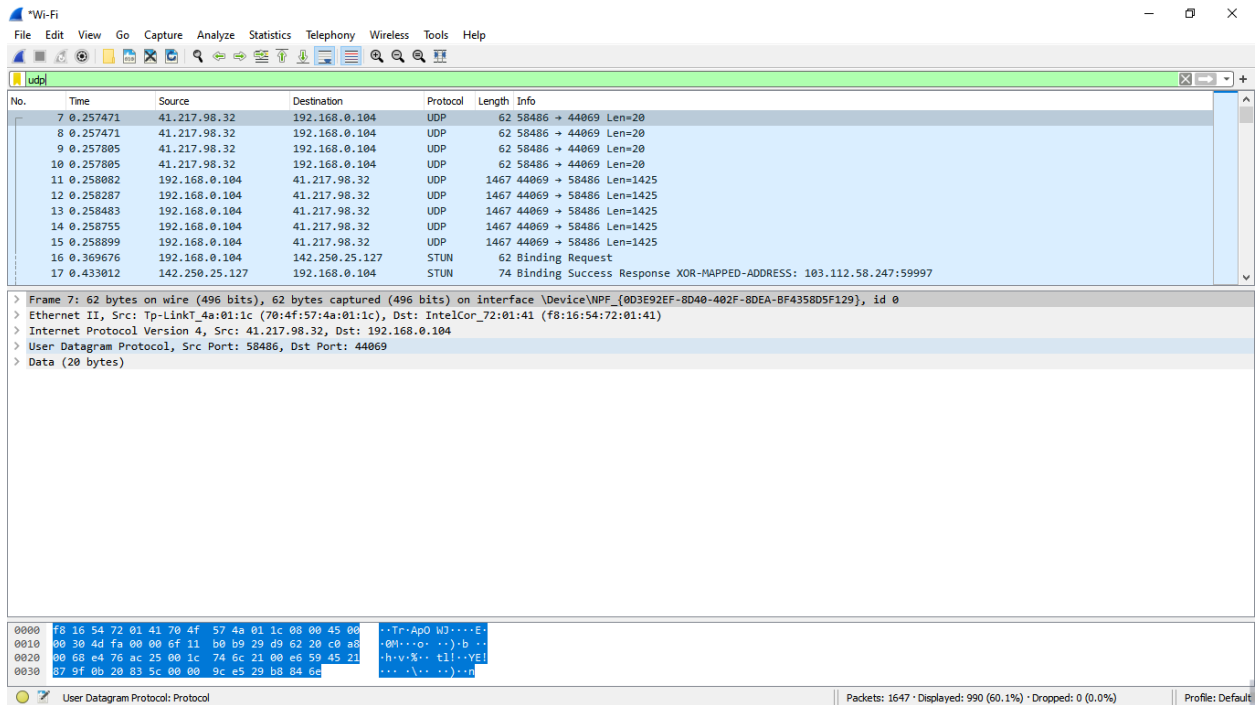


Figure 05-A: Filter by Protocol Wireless Data Packages

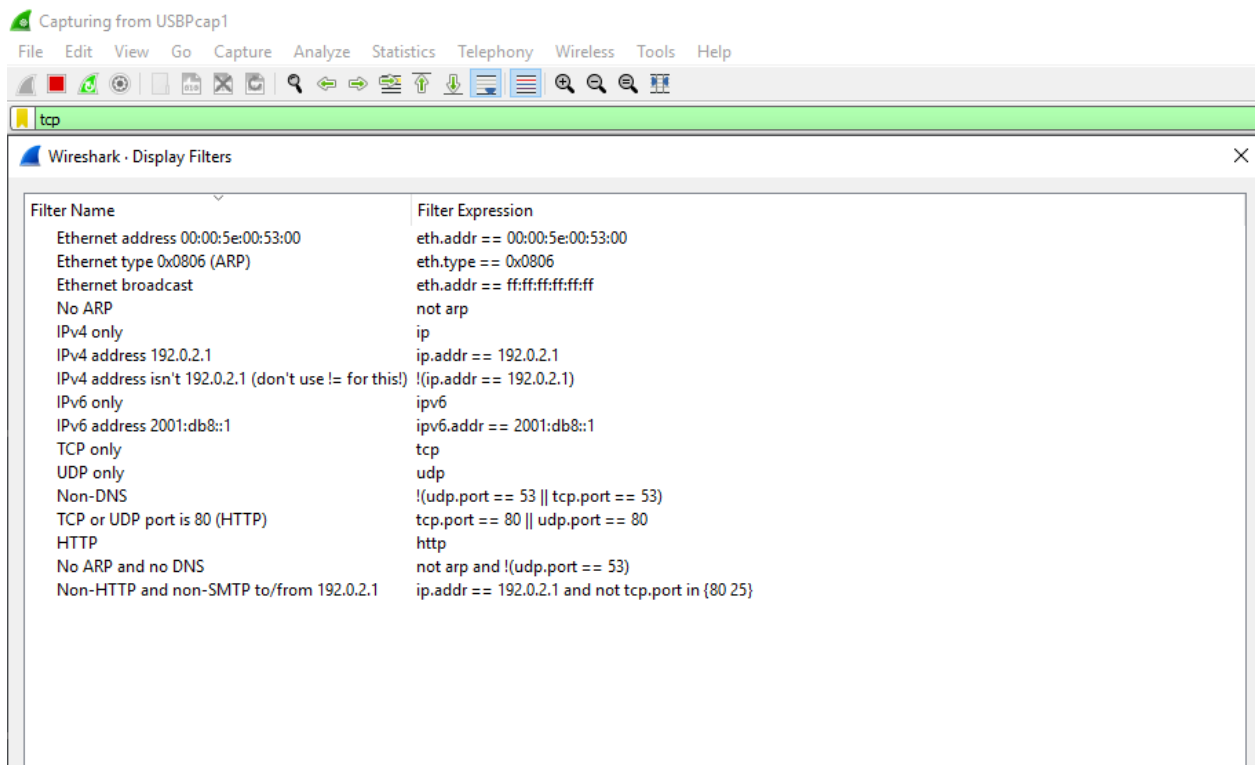


Figure 05-B: Filter by Protocol Wired Data Packages

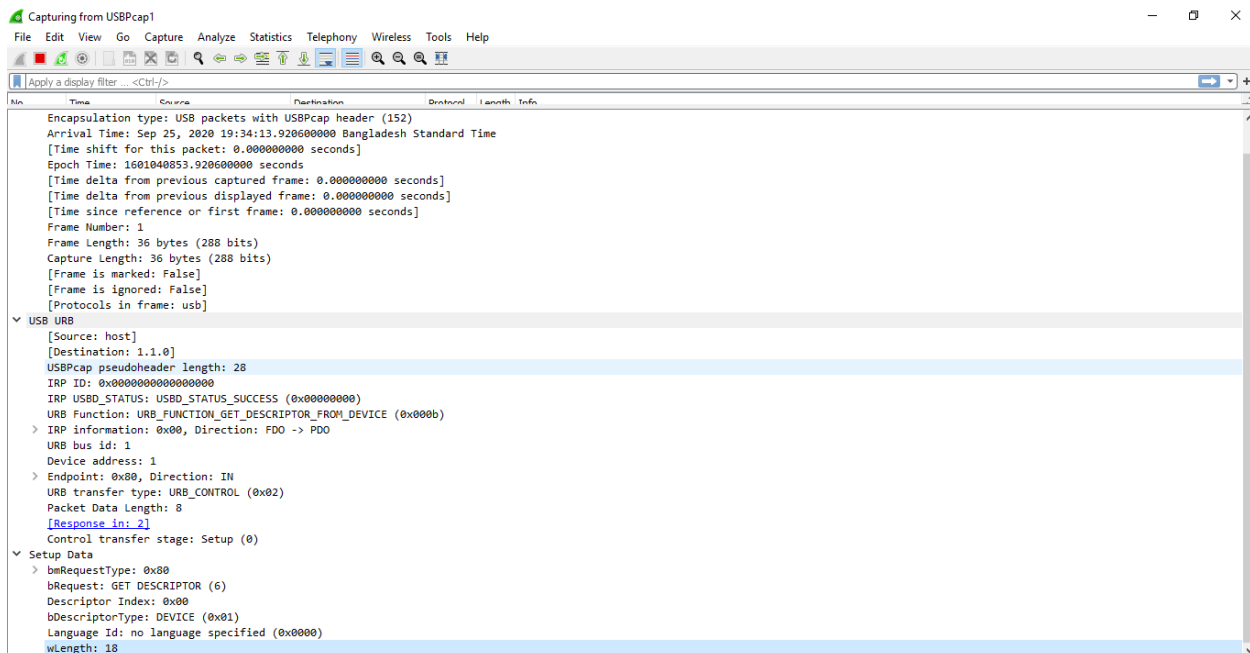


Figure 06-A: Packet Details Pane (Frame segment) for Wired Data Packages.

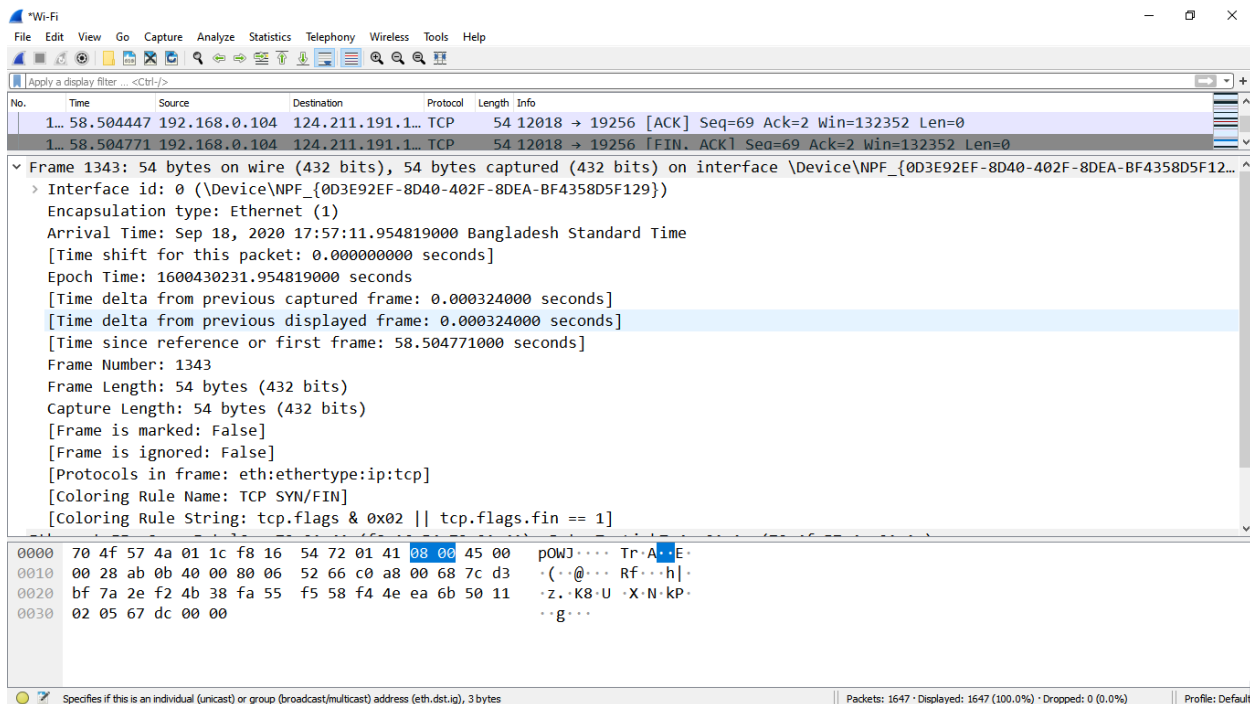


Figure 06-B: Packet Details Pane (Frame segment) for Wireless Data Packages.

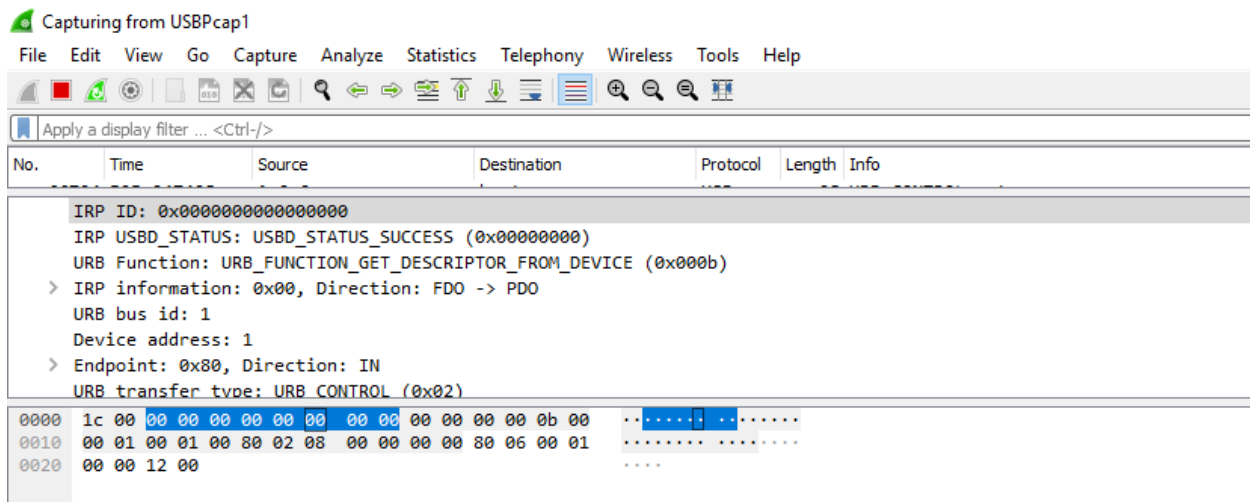


Figure 07-A: Packet Byte Pane for Wireless (USB Tethering)

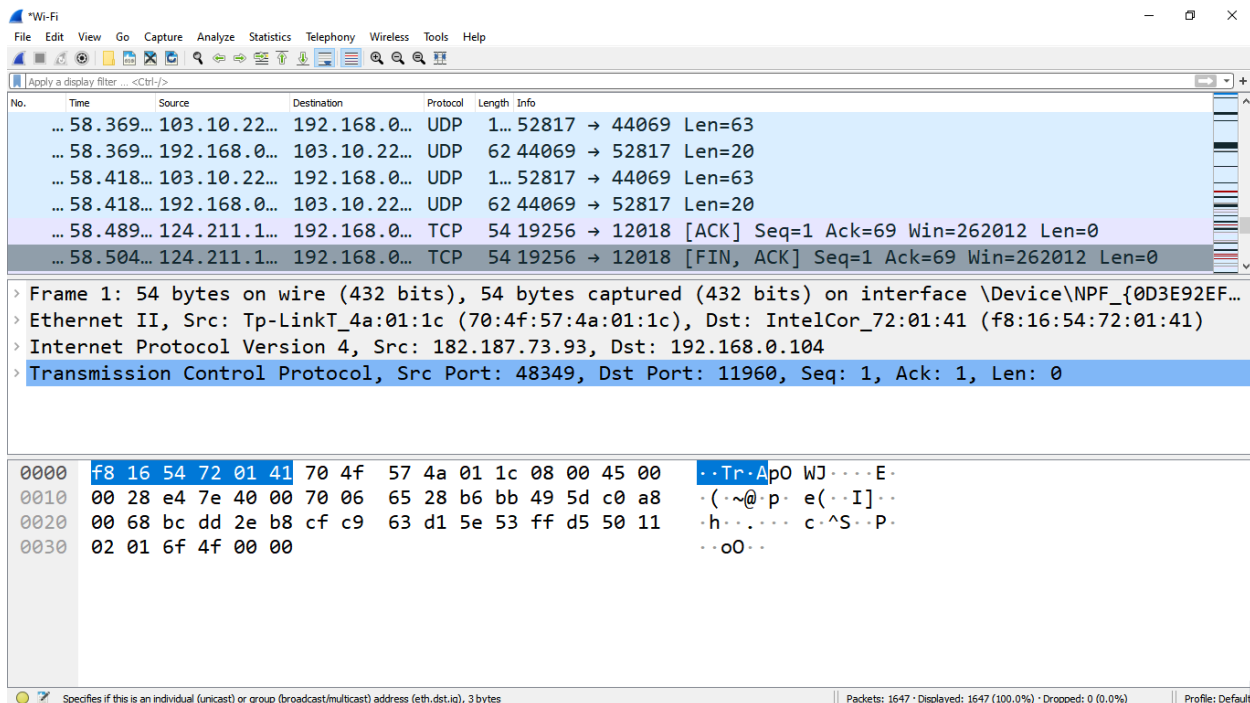


Figure 07-B: Packet Byte Pane (For Wi-Fi)

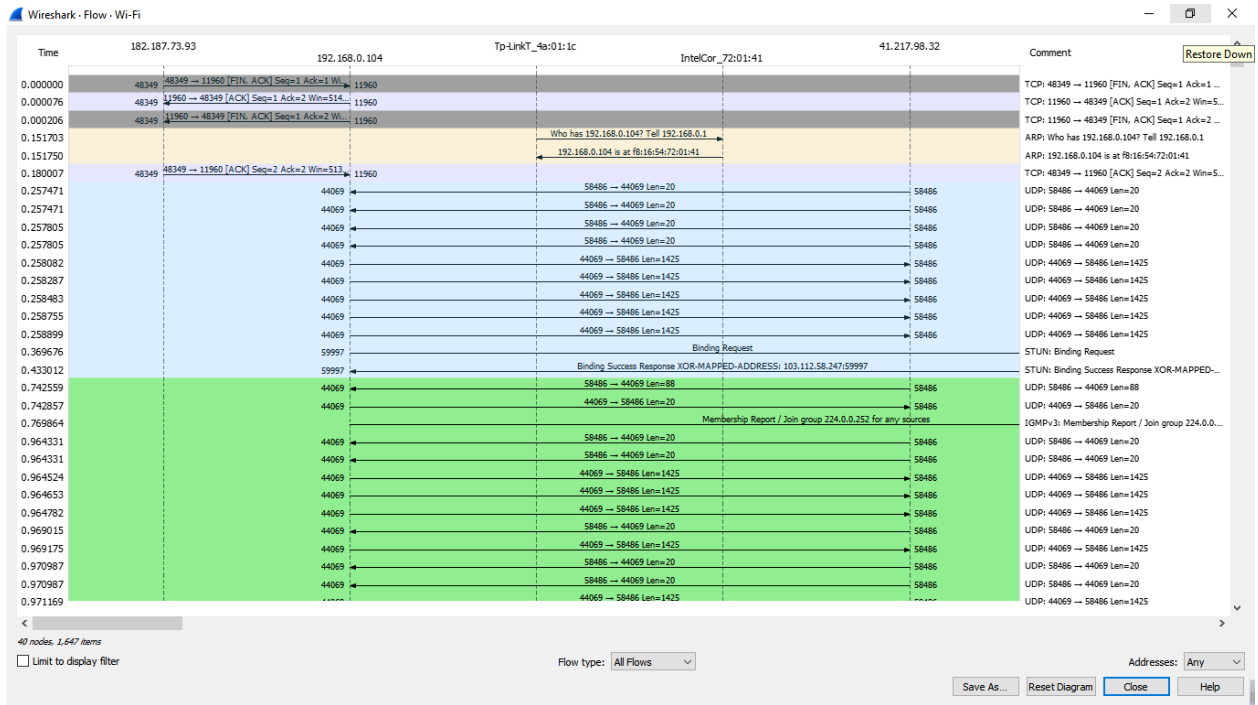


Figure 08-A: Statistics- Flow Graph -All Flows for Wi-Fi (Wireless Data Packages)

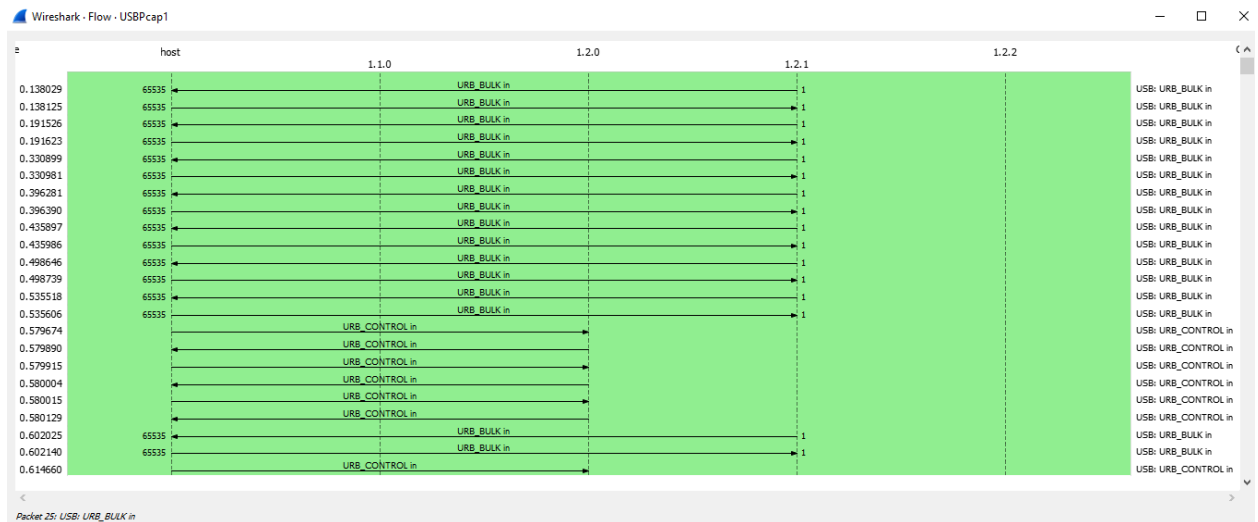


Figure 08-B: Statistics- Flow Graph -All Flows for Wi-Fi (Wired Data Packages)



Conclusion:

From above experiment we come to know that 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.

Wired data are more secure and high speedy. On the other hand wireless data are less secure and low speedy compare to wired data transfer.