Kingdom of Saudi Arabia

Ministry of Education

College of Computer

Computer Science Department

المملكة العربية السعودية
وزارة التعليم
كلية الحاسب
قسم علوم الحاسب

CS471 – Web Technologies

Dr. arwa

Wateen Alreshoodi

392206382

This lab session covers the usage of the Wireshark application to monitor and capture the outgoing and incoming packets from a network connection (WIFI, ethernet, etc.). Specifically, students should be able to analyze HTTP, HTTPS, TCP/IP, and UDP protocols using Wireshark, a network protocol analyzer, and draw conclusions.

Pre-lab Preparation:

1. Review the basics and the structure of HTTP, TCP/IP, and UDP protocols,
2. Install Wireshark and ensure it is running on your computer,
3. Create an online, *publically accessible* Git repository to host and upload your work in the labs. We recommend you use GitHub or GitLab.

Lab Activities:

Part 1: Capturing HTTP Traffic.

Task 1: Start Wireshark and capture packets.

Step 1: Open Wireshark.
Step 2: Select the network interface connected to the internet (e.g., Ethernet or Wi-Fi).
Step 3: Click the "Start Capturing Packets" button (the shark fin icon).
Step 4: Open your favorite web browser and navigate to (https://qu.edu.sa) website.
Step 5: After the website has fully loaded, stop capturing packets by clicking the red stop button in Wireshark.

Task 2: Filter HTTP packets and analyze them.
Step 1: In the filter bar, type http and press Enter. This filters out only the HTTP packets from the capture.
Step 2: Select any HTTP packet to view its details.
Step 3: Observe the HTTP request and response messages. Note the method (GET, POST), URL, response codes (200 OK, 404 Not Found), etc.

Part 2: Analyzing TCP/IP Traffic.

Task 1: Filter TCP packets

Step 1: Clear the previous filter and type TCP to focus on TCP packets.
Step 2: Select a TCP packet related to your HTTP request/response.
Step 3: Right-click on the packet and select "Follow" -> "TCP Stream".
Step 4: This shows the entire conversation between the client and server.

Task 2: Analyze TCP handshake and investigate Data Transfer and Termination
Step 1: Find and select packets related to the TCP three-way handshake:
  o SYN: Initiates a connection.
  o SYN-ACK: Acknowledges and responds to the SYN.
  o ACK: Acknowledges the SYN-ACK and establishes the connection.
Step 2: Note the sequence and acknowledgment numbers. Screenshot and upload your image to your online git repository.
Step 3: Observe the data packets exchanged between the client and server. Take a screenshot and upload it to your online git repo.

Step 4: Look at the TCP termination process (FIN, ACK packets).

Part 3: Capturing and Analyzing UDP Traffic

Task 1: Generate UDP traffic and capture packets

Step 1: Open a network application that uses UDP (e.g., streaming video, VoIP software, or custom script).
Step 2: Start the application to generate UDP traffic.
Step 3: Start capturing packets in Wireshark while the UDP application is running.
Step 4: After sufficient traffic is generated, stop capturing packets.

Task 2: Filter and analysis UDP Packets
Step 1: In the filter bar, type UDP and press Enter.
Step 2: This filters out only the UDP packets from the capture.
Step 3: Select any UDP packet to view its details.
Step 4: Observe the source and destination ports, length, and data.
Step 5: Compare the simplicity of UDP headers with TCP headers.

Part 4: Comparing TCP and UDP by filling in the following tables. Save your work (e.g., in an MS Word document), and upload it to your online git repo.

Task 1: Fill in the following table and provide reasons.

	TCP or UDP	Reasons
Reliability and Connection Establishment	TCP	is reliable because it uses a three-way handshake to establish a connection and ensures data delivery.
Data Integrity and Ordering	UDP	is unreliable because it does not use a handshake mechanism and does not guarantee data delivery or ordering.

Task 2: Identify the use Cases and Performance of TCP and UDP.

	TCP	UDP
Use cases		
Performance		

```
GET /gateicfgSCPD.xml HTTP/1.1
Cache-Control: no-cache
Connection: Close
Pragma: no-cache
Accept: text/xml, application/xml
User-Agent: Microsoft-Windows/10.0 UPnP/1.0
Host: 192.168.0.1:1900


HTTP/1.1 200 OK
CONTENT-LENGTH: 4175
CONTENT-TYPE: text/xml
DATE: Fri, 13 Sep 2024 11:07:36 GMT
LAST-MODIFIED: Thu, 01 Jan 1970 00:00:12 GMT
SERVER: Linux/2.6.36, UPnP/1.0, Portable SDK for UPnP devices/1.6.19
X-User-Agent: redsonic
CONNECTION: close

<?xml version="1.0"?>
<scpd xmlns="urn:schemas-upnp-org:service-1-0">
        <specVersion>
                <major>1</major>
                <minor>0</minor>
        </specVersion>
        <actionList>
    <action>
      <name>GetCommonLinkProperties</name>
      <argumentList>
        <argument>
          <name>NewWANAccessType</name>
          <direction>out</direction>
          <relatedStateVariable>WANAccessType</relatedStateVariable>
        </argument>
        <argument>
          <name>NewLayer1UpstreamMaxBitRate</name>
          <direction>out</direction>
          <relatedStateVariable>Layer1UpstreamMaxBitRate</relatedStateVariable>
        </argument>
        <argument>
          <name>NewLayer1DownstreamMaxBitRate</name>
          <direction>out</direction>
```

Packet 153250.) client pkt(s),) server pkt(s),) turn(s). Click to select.

٧٧٢   Stream

Wireshark packet capture screenshots.

Filter: `tcp`

Info	Length	Protocol	Destination	Source	Time	.No
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62884	66	TCP	172.67.9.68	192.168.0.126	0.000000	1
Seq=1 Ack=1 Win=502 Len=0 [FIN, ACK] 62875 → 443	54	TCP	192.168.0.126	95.100.135.50	0.003156	2
Seq=1 Ack=1 Win=1024 Len=0 [ACK] 443 → 62875	54	TCP	95.100.135.50	192.168.0.126	0.003256	3
Seq=0 Ack=1 Win=65535 Len=0 MSS=1400 SACK_PERM WS=8192 [SYN, ACK] 62884 → 443	66	TCP	192.168.0.126	172.67.9.68	0.091433	4
Seq=1 Ack=1 Win=131584 Len=0 [ACK] 443 → 62884	54	TCP	172.67.9.68	192.168.0.126	0.091580	5
Client Hello (SNI=api.reasonsecurity.com)	582	TLSv1.3	172.67.9.68	192.168.0.126	0.092663	6
Seq=1 Ack=529 Win=73728 Len=0 [ACK] 62884 → 443	60	TCP	192.168.0.126	172.67.9.68	0.182660	7
Server Hello, Change Cipher Spec, Application Data	273	TLSv1.3	192.168.0.126	172.67.9.68	0.189250	8
Change Cipher Spec, Application Data, Application Data	656	TLSv1.3	172.67.9.68	192.168.0.126	0.203826	9
Seq=220 Ack=1131 Win=73728 Len=0 [ACK] 62884 → 443	60	TCP	192.168.0.126	172.67.9.68	0.458165	12
Application Data	157	TLSv1.3	172.67.9.68	192.168.0.126	0.458301	13
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62885	66	TCP	86.60.126.106	192.168.0.126	0.487217	16
Seq=0 Ack=1 Win=0 Len=0 MSS=1412 [SYN, ACK] 62885 → 443	58	TCP	192.168.0.126	86.60.126.106	0.554950	17
Seq=220 Ack=1234 Win=73728 Len=0 [ACK] 62884 → 443	60	TCP	192.168.0.126	172.67.9.68	0.554950	18
Seq=1 Ack=1 Win=64240 Len=0 [ACK] 443 → 62885	54	TCP	86.60.126.106	192.168.0.126	0.555203	19
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62886	66	TCP	86.60.126.106	192.168.0.126	0.584113	27
443 → 62885 [ACK] Seq=1 Ack=1 Win=4096 Len=0 [TCP Window Update]	60	TCP	192.168.0.126	86.60.126.106	0.584999	28
Client Hello (SNI=qu.edu.sa)	1805	TLSv1.2	86.60.126.106	192.168.0.126	0.585101	29
Seq=0 Ack=1 Win=0 Len=0 MSS=1412 [SYN, ACK] 62886 → 443	58	TCP	192.168.0.126	86.60.126.106	0.608914	35
Seq=1 Ack=1 Win=64240 Len=0 [ACK] 443 → 62886	54	TCP	86.60.126.106	192.168.0.126	0.609139	36
Seq=1 Ack=1752 Win=5591 Len=0 [ACK] 62885 → 443	60	TCP	192.168.0.126	86.60.126.106	0.612510	37
Server Hello	1334	TLSv1.2	192.168.0.126	86.60.126.106	0.612510	38
Seq=1281 Ack=1752 Win=5591 Len=1280 [TCP PDU reassembled in 40] [PSH, ACK] 62885 → 443	1334	TCP	192.168.0.126	86.60.126.106	0.612510	39
Certificate, Server Key Exchange, Server Hello Done	1046	TLSv1.2	192.168.0.126	86.60.126.106	0.612510	40
Seq=1752 Ack=3553 Win=64952 Len=0 [ACK] 443 → 62885	54	TCP	86.60.126.106	192.168.0.126	0.612713	41
Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message	180	TLSv1.2	86.60.126.106	192.168.0.126	0.616450	44
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62887	66	TCP	172.67.210.5	192.168.0.126	0.617642	45
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62888	66	TCP	172.67.184.158	192.168.0.126	0.619821	52
443 → 62886 [ACK] Seq=1 Ack=1 Win=4096 Len=0 [TCP Window Update]	60	TCP	192.168.0.126	86.60.126.106	0.635397	55
Client Hello (SNI=qu.edu.sa)	1837	TLSv1.2	86.60.126.106	192.168.0.126	0.635484	58
Seq=3553 Ack=1878 Win=5717 Len=0 [ACK] 62885 → 443	60	TCP	192.168.0.126	86.60.126.106	0.643220	63
Change Cipher Spec, Encrypted Handshake Message	105	TLSv1.2	192.168.0.126	86.60.126.106	0.643220	64
Application Data	1202	TLSv1.2	86.60.126.106	192.168.0.126	0.643578	65
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62889	66	TCP	172.165.69.228	192.168.0.126	0.656643	70
Seq=1 Ack=1413 Win=5252 Len=0 [ACK] 443 → 62886	60	TCP	192.168.0.126	86.60.126.106	0.660350	75
Seq=1 Ack=1784 Win=5623 Len=0 [ACK] 62886 → 443	60	TCP	192.168.0.126	86.60.126.106	0.660618	76
Server Hello	1334	TLSv1.2	192.168.0.126	86.60.126.106	0.661600	77
Seq=1281 Ack=1784 Win=5623 Len=1280 [TCP PDU reassembled in 79] [PSH, ACK] 62886 → 443	1334	TCP	192.168.0.126	86.60.126.106	0.663595	78
Certificate, Server Key Exchange, Server Hello Done	1046	TLSv1.2	192.168.0.126	86.60.126.106	0.663595	79
Seq=1784 Ack=3553 Win=64952 Len=0 [ACK] 443 → 62886	54	TCP	86.60.126.106	192.168.0.126	0.663939	

```
0000  70 d8 23 4e e5 d5 68 ff  7b 07 a8 aa 08 00 45 00   p·#N··h· {·····E·
0010  00 34 00 00 40 00 36 06  1e bc ac 43 b8 9e c0 a8   ·4··@·6· ···C····
0020  00 7e 01 bb f5 a8 ec 89  63 7a a3 6b 07 48 80 12   ·~······ cz·k·H··
```
face \Device\NPF_{9108CB4B-96E6-42BF-A038-C5EA26683FFA}, id 0
(68:ff:7b:07:a8:aa), Dst: Intel_4e:e5:d5 (70:d8:23:4e:e5:d5)
t Protocol Version 4, Src: 172.67.184.158, Dst: 192.168.0.126

Filter: `tcp.port == 80`

Info	Length	Protocol	Destination	Source	Time	.No
QLXDRDM9P665TW442vrsUQQUReuir%2FSSy4IxLVGLp6chnfNtyA8CEAQJGBtf1btmdVNDtW%2BVUAg%3D HTTP/1.1	290	HTTP	192.229.221.95	192.168.0.126	~12.9246	14901
Response	791	OCSP	192.168.0.126	192.229.221.95	~13.0181	14920
I7vkvsUIFlZt%2BlGH3gQUwsS5eyoKo6XqcQPAYPkt9mV1DlgCEAu%2BkTVhN2E%2BV2g%2BYD7FOL0%3D HTTP/1.1	294	HTTP	192.229.221.95	192.168.0.126	~13.0498	14928
Response	791	OCSP	192.168.0.126	192.229.221.95	~13.1525	14944
9Pa8oibmj%2BNSMWsz63kmWgQUuhbZbU2FL3MpdpovdYxqII%2BeyG8CEAxNaXJLlPo8Kko9KQeAPVo%3D HTTP/1.1	290	HTTP	192.229.221.95	192.168.0.126	~13.1880	14955
Response	1047	OCSP	192.168.0.126	192.229.221.95	~13.2769	14976
Seq=713 Ack=2468 Win=512 Len=0 [ACK] 80 → 62873	54	TCP	192.229.221.95	192.168.0.126	~13.3211	14989
Seq=1 Ack=1 Win=512 Len=0 [FIN, ACK] 80 → 62871	54	TCP	204.79.197.203	192.168.0.126	~36.2518	18697
Seq=1 Ack=2 Win=16385 Len=0 [ACK] 62871 → 80	54	TCP	192.168.0.126	204.79.197.203	~36.3434	18698
Seq=1 Ack=2 Win=16385 Len=0 [FIN, ACK] 62871 → 80	54	TCP	192.168.0.126	204.79.197.203	~36.3453	18699
Seq=2 Ack=2 Win=512 Len=0 [ACK] 80 → 62871	54	TCP	204.79.197.203	192.168.0.126	~36.3456	18700
Seq=1 Ack=1 Win=128 Len=0 [FIN, ACK] 80 → 62858	54	TCP	192.168.0.126	192.229.221.95	~39.4520	19005
Seq=1 Ack=1 Win=512 Len=0 [ACK] 62858 → 80	54	TCP	192.229.221.95	192.168.0.126	~39.4521	19006
Seq=1 Ack=1 Win=511 Len=0 [FIN, ACK] 80 → 62853	54	TCP	152.195.132.120	192.168.0.126	~41.1100	19310
Seq=1 Ack=131 Len=0 [FIN, ACK] 62853 → 80	54	TCP	192.168.0.126	152.195.132.120	~41.1924	19321
Seq=2 Ack=2 Win=511 Len=0 [ACK] 80 → 62853	54	TCP	152.195.132.120	192.168.0.126	~41.1928	19322
Seq=1 Ack=1 Win=514 Len=0 [ACK] 80 → 62870	54	TCP	104.18.38.233	192.168.0.126	~90.7251	26725
Seq=713 Ack=2468 Win=512 Len=0 [FIN, ACK] 80 → 62873	54	TCP	192.229.221.95	192.168.0.126	~90.7254	26726
Seq=1 Ack=1 Win=514 Len=0 [FIN, ACK] 80 → 62868	54	TCP	172.64.149.23	192.168.0.126	~90.7257	26727
Seq=1 Ack=2 Win=9 Len=0 [FIN, ACK] 62868 → 80	54	TCP	192.168.0.126	172.64.149.23	~90.7784	26731
Seq=1 Ack=2 Win=9 Len=0 [ACK] 80 → 62870	54	TCP	192.168.0.126	104.18.38.233	~90.7784	26732
Seq=2 Ack=2 Win=514 Len=0 [ACK] 80 → 62868	54	TCP	172.64.149.23	192.168.0.126	~90.7786	26733
Seq=2 Ack=2 Win=514 Len=0 [ACK] 80 → 62870	54	TCP	104.18.38.233	192.168.0.126	~90.7788	26734
Seq=2468 Ack=714 Win=137 Len=0 [FIN, ACK] 62873 → 80	54	TCP	192.168.0.126	192.229.221.95	~90.8223	26735
Seq=714 Ack=2469 Win=512 Len=0 [ACK] 80 → 62873	54	TCP	192.229.221.95	192.168.0.126	~90.8227	26736
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 80 → 62945	66	TCP	192.229.221.95	192.168.0.126	~116.035	28127
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 SACK_PERM WS=512 [SYN, ACK] 62945 → 80	66	TCP	192.168.0.126	192.229.221.95	~116.116	28129
Seq=1 Ack=1 Win=131072 Len=0 [ACK] 80 → 62945	54	TCP	192.229.221.95	192.168.0.126	~116.117	28130
0Ztl%2Bz8SiPI7wEWVxDlQQUTiJUIBiV5uNu5g%2F6%2BrkS7QYXjzkCEAn5bsKVVV8kdJ6vHl3O1J0%3D HTTP/1.1	294	HTTP	192.229.221.95	192.168.0.126	~116.118	28131
Seq=1 Ack=241 Win=67072 Len=0 [ACK] 62945 → 80	60	TCP	192.168.0.126	192.229.221.95	~116.204	28133
Response	790	OCSP	192.168.0.126	192.229.221.95	~116.204	28134
Seq=241 Ack=737 Win=130560 Len=0 [ACK] 62945 → 80	54	TCP	192.229.221.95	192.168.0.126	~116.246	28137
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 80 → 62950	66	TCP	192.229.221.95	192.168.0.126	~118.650	28254
Seq=0 Ack=1 Win=64240 Len=0 MSS=1412 SACK_PERM WS=128 [SYN, ACK] 80 → 62950	66	TCP	192.168.0.126	23.200.213.221	~118.744	28256
Seq=1 Ack=1 Win=131072 Len=0 [ACK] 80 → 62950	54	TCP	23.200.213.221	192.168.0.126	~118.744	28257
GET /pki/certs/MicTesRooCerAut_2010-06-17.crt HTTP/1.1	212	HTTP	23.200.213.221	192.168.0.126	~118.745	28258
Seq=1 Ack=159 Win=64128 Len=0 [ACK] 62950 → 80	60	TCP	192.168.0.126	23.200.213.221	~118.932	28259
Seq=1 Ack=159 Win=64128 Len=1412 [TCP PDU reassembled in 28261] [ACK] 62950 → 80	1466	TCP	192.168.0.126	23.200.213.221	~118.932	28260
HTTP/1.1 200 OK (application/octet-stream)	711	HTTP	192.168.0.126	23.200.213.221	~118.932	28261
Seq=159 Ack=2070 Win=131072 Len=0 [ACK] 62950 → 80	54	TCP	23.200.213.221	192.168.0.126	~118.933	28262

```
0000  68 ff 7b 07 a8 aa 70 d8  23 4e e5 d5 08 00 45 00   h·{···p· #N····E·
0010  01 14 5d 2b 40 00 80 06  00 00 c0 a8 00 7e c0 e5   ··]+@··· ·····~··
0020  dd 5f f5 99 00 50 e6 b8  4d c3 ea fa 8c 63 50 18   ·_···P·· M····cP·
0030  01 fd 60 72 00 00 47 45  54 20 2f 4d 46 45 77 54   ··`r··GE T /MFEwT
0040  7a 42 4e 4d 45 73 77 53  54 41 4a 42 67 55 72 44   zBNMEswS TAJBgUrD
0050  67 4d 43 47 67 55 41 42  42 54 33 78 4c 34 4c 51   gMCGgUAB BT3xL4LQ
0060  4c 58 44 52 44 4d 39 50  36 36 35 54 57 34 34 32   LXDRDM9P 665TW442
0070  76 72 73 55 51 51 55 52  65 75 69 72 25 32 46 53   vrsUQQUR euir%2FS
0080  53 79 34 49 78 4c 56 47  4c 70 36 63 68 6e 66 4e   Sy4IxLVG Lp6chnfN
0090  74 79 41 38 43 45 41 51  4a 47 42 74 66 31 62 74   tyA8CEAQ JGBtf1bt
00a0  6d 64 56 4e 44 74 57 25  32 42 56 55 41 67 25 33   mdVNDtW% 2BVUAg%3
```
face \Device\NPF_{9108CB4B-96E6-42BF-A038-C5EA26683FFA}, id 0
:23:4e:e5:d5), Dst: TpLinkTechno_07:a8:aa (68:ff:7b:07:a8:aa)
t Protocol Version 4, Src: 192.168.0.126, Dst: 192.229.221.95
col, Src Port: 62873, Dst Port: 80, Seq: 1, Ack: 1, Len: 236
Hypertext Transfer Protocol

شبكة* Wi-Fi

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tcp.flags.fin == 1

Info	Length	Protocol	Destination	Source	Time	.No
Seq=484 Ack=2078 Win=144384 Len=0 [FIN, ACK] 62920 → 443	54	TCP	192.168.0.126	162.247.243.29	…21.9052	16619
Seq=1 Ack=1 Win=512 Len=0 [FIN, ACK] 80 → 62871	54	TCP	204.79.197.203	192.168.0.126	…36.2518	18697
Seq=1 Ack=2 Win=16385 Len=0 [FIN, ACK] 443 → 80	54	TCP	192.168.0.126	204.79.197.203	…36.3453	18699
Seq=1 Ack=128 Win=128 Len=0 [FIN, ACK] 62858 → 80	54	TCP	192.168.0.126	192.229.221.95	…39.4520	19005
Seq=1 Ack=511 Win=511 Len=0 [FIN, ACK] 80 → 62853	54	TCP	152.195.132.120	192.168.0.126	…41.1100	19310
Seq=1 Ack=2 Win=131 Len=0 [FIN, ACK] 443 → 80	54	TCP	192.168.0.126	152.195.132.120	…41.1924	19321
Seq=861 Ack=3410 Win=146944 Len=0 [FIN, ACK] 62930 → 443	54	TCP	192.168.0.126	162.247.243.29	…42.9014	19600
Seq=3410 Ack=862 Win=130560 Len=0 [FIN, ACK] 443 → 62930	54	TCP	162.247.243.29	192.168.0.126	…42.9031	19603
Seq=1397 Ack=6477 Win=130304 Len=0 [FIN, ACK] 443 → 62931	54	TCP	18.65.82.37	192.168.0.126	…43.1228	19666
62930 → 443 [FIN, ACK] Seq=3410 Ack=862 Win=130560 Len=0 [TCP Retransmission]	54	TCP	162.247.243.29	192.168.0.126	…43.2095	19684
Seq=6477 Ack=1398 Win=69632 Len=0 [FIN, ACK] 62931 → 443	54	TCP	192.168.0.126	18.65.82.37	…43.2126	19687
Seq=6511 Ack=1070 Win=31872 Len=0 [FIN, ACK] 62932 → 443	54	TCP	192.168.0.126	40.85.174.12	…58.6212	22211
Seq=1101 Ack=6512 Win=131072 Len=0 [FIN, ACK] 443 → 62932	54	TCP	40.85.174.12	192.168.0.126	…58.6223	22214
Seq=5779 Ack=1931 Win=4096 Len=0 [FIN, ACK] 62933 → 443	54	TCP	192.168.0.126	172.190.140.60	…76.9614	25552
Seq=1962 Ack=5780 Win=131072 Len=0 [FIN, ACK] 443 → 62933	54	TCP	172.190.140.60	192.168.0.126	…76.9619	25556
Seq=1 Ack=2 Win=9 Len=0 [FIN, ACK] 62878 → 443	54	TCP	104.26.10.240	192.168.0.126	…88.8598	26691
Seq=1 Ack=1 Win=514 Len=0 [FIN, ACK] 443 → 62878	54	TCP	104.26.10.240	192.168.0.126	…88.9567	26693
Seq=1 Ack=1 Win=514 Len=0 [FIN, ACK] 80 → 62870	54	TCP	104.18.38.233	192.168.0.126	…90.7251	26725
Seq=713 Ack=2468 Win=512 Len=0 [FIN, ACK] 80 → 62873	54	TCP	192.168.0.126	192.168.0.126	…90.7254	26726
Seq=1 Ack=1 Win=514 Len=0 [FIN, ACK] 80 → 62868	54	TCP	172.64.149.23	192.168.0.126	…90.7257	26727
Seq=1 Ack=2 Win=9 Len=0 [FIN, ACK] 62868 → 80	54	TCP	192.168.0.126	172.64.149.23	…90.7784	26731
Seq=1 Ack=2 Win=9 Len=0 [FIN, ACK] 62870 → 80	54	TCP	192.168.0.126	104.18.38.233	…90.7784	26732
Seq=2468 Ack=714 Win=137 Len=0 [FIN, ACK] 62873 → 80	54	TCP	192.168.0.126	192.229.221.95	…90.8223	26735
Seq=2030 Ack=1904 Win=131584 Len=0 [FIN, ACK] 443 → 62923	54	TCP	104.18.35.28	192.168.0.126	…92.9221	26765
Seq=2057 Ack=1904 Win=131584 Len=0 [FIN, ACK] 443 → 62922	54	TCP	172.64.155.209	192.168.0.126	…92.9226	26766
Seq=1904 Ack=2058 Win=73728 Len=0 [FIN, ACK] 62922 → 443	54	TCP	192.168.0.126	172.64.155.209	…92.9757	26778
Seq=1904 Ack=2031 Win=73728 Len=0 [FIN, ACK] 62923 → 443	54	TCP	192.168.0.126	104.18.35.28	…92.9757	26779
Seq=2731 Ack=6659 Win=131072 Len=0 [FIN, ACK] 62925 → 443	54	TCP	20.189.173.2	192.168.0.126	…111.633	27566
Seq=121825 Ack=20238 Win=131072 Len=0 [FIN, ACK] 443 → 62939	54	TCP	20.91.147.72	192.168.0.126	…116.319	28144
Seq=20238 Ack=121826 Win=525056 Len=0 [FIN, ACK] 62939 → 443	54	TCP	192.168.0.126	20.91.147.72	…116.434	28152
Application Data	354	TLSv1.2	192.168.0.126	20.190.181.0	…116.921	28185
Seq=7321 Ack=21253 Win=131072 Len=0 [FIN, ACK] 443 → 62946	54	TCP	20.190.181.0	192.168.0.126	…116.925	28188
Application Data	738	TLSv1.2	20.190.181.0	20.190.181.0	…118.546	28248
Seq=7301 Ack=21637 Win=131072 Len=0 [FIN, ACK] 443 → 62952	54	TCP	20.190.181.0	192.168.0.126	…118.547	28251
Seq=20952 Ack=7287 Win=4194816 Len=300 [FIN, PSH] 62952 → 443	354	TCP	192.168.0.126	20.190.181.0	…120.500	28328
Seq=7318 Ack=21253 Win=131072 Len=0 [FIN, ACK] 443 → 62952	54	TCP	20.190.181.0	192.168.0.126	…120.780	28341
Seq=4848 Ack=13541 Win=130560 Len=0 [FIN, ACK] 443 → 62953	54	TCP	52.236.189.96	192.168.0.126	…121.613	28358
Seq=13541 Ack=4849 Win=525056 Len=0 [FIN, ACK] 62953 → 443	54	TCP	192.168.0.126	52.236.189.96	…121.743	28360
Seq=9587 Ack=1220 Win=130304 Len=0 [FIN, ACK] 443 → 62934	54	TCP	162.247.243.29	192.168.0.126	…121.970	28372

```
0000  68 ff 7b 07 a8 aa 70 d8  23 4e e5 d5 08 00 45 00   h·{···p· #N····E·
0010  00 28 1d 65 40 00 80 06  00 00 c0 a8 00 7e ac 40   ·(·e@··· ·····~·@
0020  95 17 f5 94 00 50 73 94  7c 58 ab 9c 14 29 50 11   ·····Ps· |X···)P·
0030  02 02 02 99 00 00                                  ······
```

nterface \Device\NPF_{9108CB4B-96E6-42BF-A038-C5EA26683FFA}, id 0
0:d8:23:4e:e5:d5), Dst: TpLinkTechno_07:a8:aa (68:ff:7b:07:a8:aa)
ternet Protocol Version 4, Src: 192.168.0.126, Dst: 172.64.149.23
l Protocol, Src Port: 62868, Dst Port: 80, Seq: 1, Ack: 1, Len: 0

شبكة* Wi-Fi

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tcp.flags.syn == 1

Info	Length	Protocol	Destination	Source	Time	.No
Seq=0 Ack=1 Win=0 Len=0 MSS=1412 [SYN, ACK] 62926 → 443	58	TCP	192.168.0.126	86.60.126.106	…32.8878	18539
Seq=0 Ack=1 Win=0 Len=0 MSS=1412 [SYN, ACK] 62927 → 443	58	TCP	192.168.0.126	86.60.126.106	…32.8965	18541
Seq=0 Ack=1 Win=65535 Len=0 MSS=1400 SACK_PERM WS=8192 [SYN, ACK] 62929 → 443	66	TCP	192.168.0.126	172.67.184.158	…33.0328	18552
Seq=0 Ack=1 Win=65535 Len=0 MSS=1400 SACK_PERM WS=8192 [SYN, ACK] 62928 → 443	66	TCP	192.168.0.126	172.67.210.5	…33.0328	18555
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62930	66	TCP	162.247.243.29	192.168.0.126	…42.4949	19502
Seq=0 Ack=1 Win=65535 Len=0 MSS=1400 SACK_PERM WS=512 [SYN, ACK] 62930 → 443	66	TCP	192.168.0.126	162.247.243.29	…42.5774	19515
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62931	66	TCP	18.65.82.37	192.168.0.126	…42.6879	19543
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 SACK_PERM WS=512 [SYN, ACK] 62931 → 443	66	TCP	192.168.0.126	18.65.82.37	…42.7767	19561
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62932	66	TCP	40.85.174.12	192.168.0.126	…52.6651	21584
Seq=0 Ack=1 Win=32120 Len=0 MSS=1412 SACK_PERM WS=128 [SYN, ACK] 62932 → 443	66	TCP	192.168.0.126	40.85.174.12	…52.8536	21586
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62933	66	TCP	172.190.140.60	192.168.0.126	…53.6748	21811
Seq=0 Ack=1 Win=2920 Len=0 MSS=1412 SACK_PERM WS=2048 [SYN, ACK] 62933 → 443	66	TCP	192.168.0.126	172.190.140.60	…53.8625	21847
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62934	66	TCP	162.247.243.29	192.168.0.126	…63.0003	22890
Seq=0 Ack=1 Win=65535 Len=0 MSS=1400 SACK_PERM WS=512 [SYN, ACK] 62934 → 443	66	TCP	192.168.0.126	162.247.243.29	…63.0812	22914
Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62935	66	TCP	20.190.181.0	192.168.0.126	…82.6724	26433
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62935 → 443	66	TCP	192.168.0.126	20.190.181.0	…82.8257	26459
Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62936	66	TCP	20.190.181.0	192.168.0.126	…88.8961	26692
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62936 → 443	66	TCP	192.168.0.126	20.190.181.0	…90.0382	26695
Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62937	66	TCP	20.190.181.0	192.168.0.126	…90.5335	26724
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62937 → 443	66	TCP	192.168.0.126	20.190.181.0	…90.7475	26728
Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62938	66	TCP	20.190.181.0	192.168.0.126	…101.636	26824
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62938 → 443	66	TCP	192.168.0.126	20.190.181.0	…101.846	26828
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62939	66	TCP	20.91.147.72	192.168.0.126	…102.695	27000
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62939 → 443	66	TCP	192.168.0.126	20.91.147.72	…102.836	27017
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62940	66	TCP	18.65.82.125	192.168.0.126	…111.633	27566
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62941	66	TCP	13.107.42.16	192.168.0.126	…111.633	27568
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62940 → 443	66	TCP	192.168.0.126	18.65.82.125	…111.724	27569
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62941 → 443	66	TCP	192.168.0.126	13.107.42.16	…111.733	27572
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62942	66	TCP	52.113.194.132	192.168.0.126	…112.571	27655
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62942 → 443	66	TCP	192.168.0.126	52.113.194.132	…112.645	27656
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62943	66	TCP	20.189.173.16	192.168.0.126	…115.050	28044
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62944	66	TCP	13.35.198.127	192.168.0.126	…115.303	28051
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62943 → 443	66	TCP	192.168.0.126	20.189.173.16	…115.308	28052
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62944 → 443	66	TCP	192.168.0.126	13.35.198.127	…115.391	28057
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 80 → 62945	66	TCP	192.229.221.95	192.168.0.126	…116.035	28127
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 SACK_PERM WS=512 [SYN, ACK] 62945 → 80	66	TCP	192.168.0.126	192.229.221.95	…116.116	28129
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62946	66	TCP	20.190.181.0	192.168.0.126	…116.120	28132
Seq=0 Ack=1 Win=65535 Len=0 MSS=1412 WS=256 SACK_PERM [SYN, ACK] 62946 → 443	66	TCP	192.168.0.126	20.190.181.0	…116.264	28140
Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM [SYN] 443 → 62947	66	TCP	20.69.137.228	192.168.0.126	…116.368	28147

```
0000  70 d8 23 4e e5 d5 68 ff  7b 07 a8 aa 08 00 45 00   p·#N··h· {·····E·
0010  00 34 7a 77 40 00 6d 06  08 68 14 be b5 00 c0 a8   ·4zw@·m· ·h······
0020  00 7e 01 bb f5 d9 44 a6  eb 8b 6f 65 a2 24 80 12   ·~····D· ··oe·$··
0030  ff ff fa fa 00 00 02 04  05 84 01 03 03 08 01 01   ················
0040  04 02                                             ··
```

nterface \Device\NPF_{9108CB4B-96E6-42BF-A038-C5EA26683FFA}, id 0
8:aa (68:ff:7b:07:a8:aa), Dst: Intel_4e:e5:d5 (70:d8:23:4e:e5:d5)
nternet Protocol Version 4, Src: 20.190.181.0, Dst: 192.168.0.126
Protocol, Src Port: 443, Dst Port: 62937, Seq: 0, Ack: 1, Len: 0