

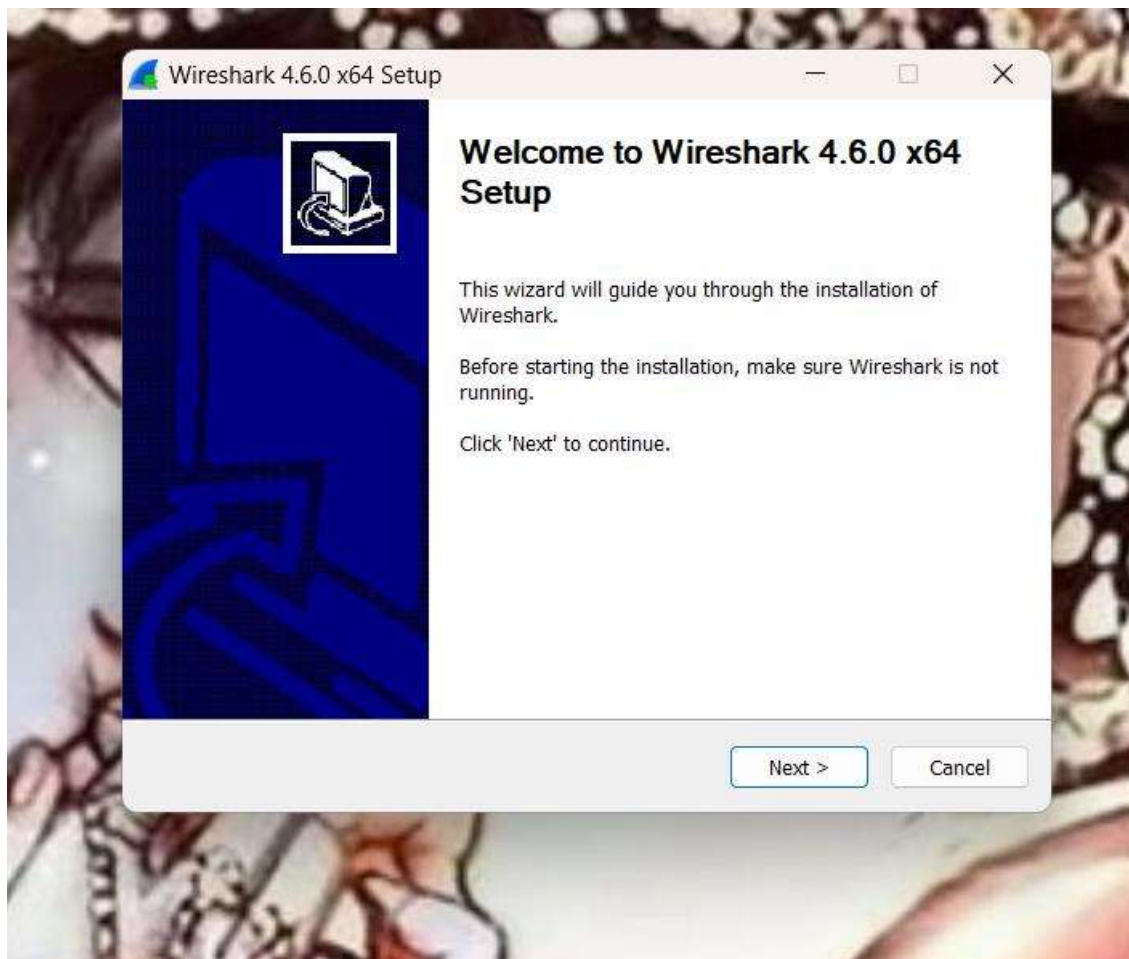
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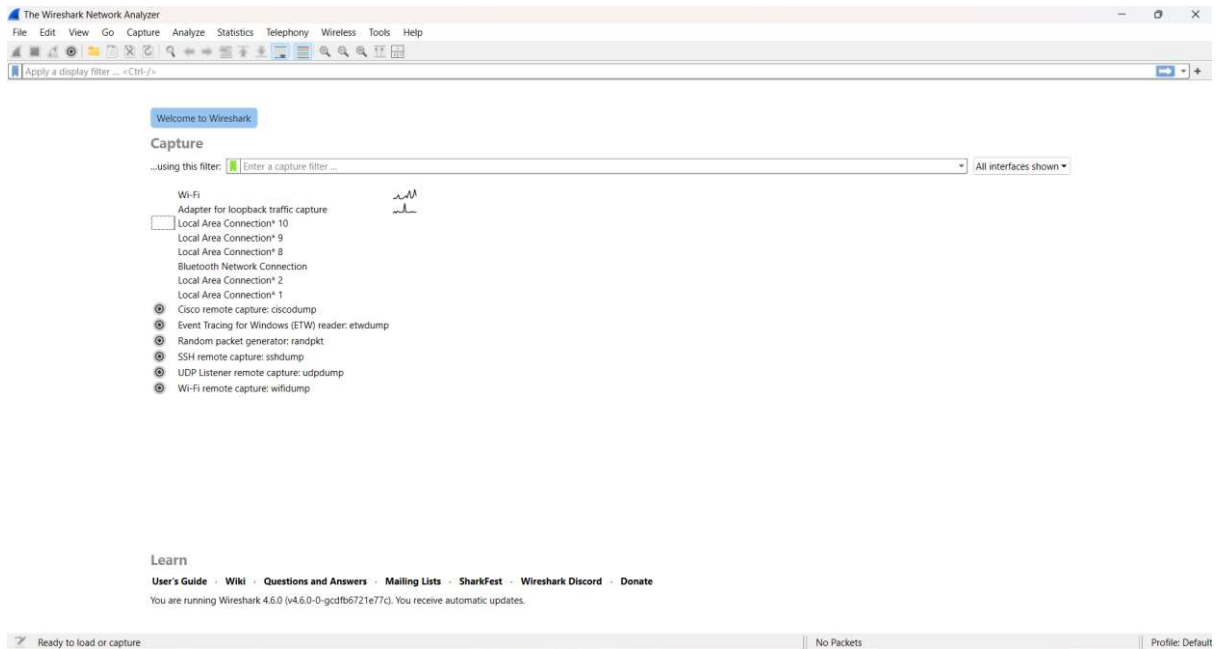
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# Download Wireshark: Your Network Analysis Tool

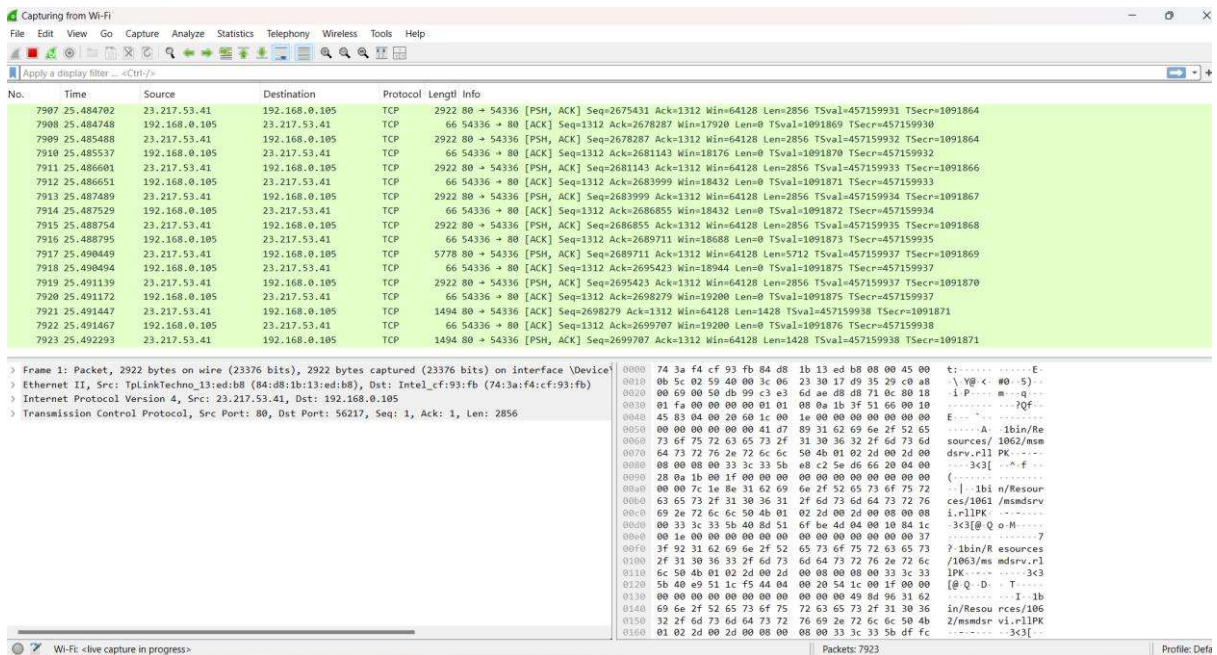
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## Capturing Traffic



## Analyzing and Filtering Packets



Wi-Fi network traffic capture showing packet details and hex data. The packet list shows a sequence of TCP segments from 192.168.0.105 to 192.168.0.105. The packet details pane shows a Frame 281901, Ethernet II, Internet Protocol Version 4, and Transmission Control Protocol. The hex data pane shows the raw packet data in hexadecimal and ASCII.

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Wi-Fi network traffic capture showing packet details and hex data. The packet list shows a sequence of HTTP GET requests from 192.168.0.105 to 192.168.0.105. The packet details pane shows a Frame 281855, Ethernet II, Internet Protocol Version 4, and Hypertext Transfer Protocol. The hex data pane shows the raw packet data in hexadecimal and ASCII.

Wireshark interface showing a packet capture. The top bar includes menus (File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, Help) and a toolbar. The main display area shows a list of captured packets. The selected packet (No. 281805) is expanded, showing details for the User Datagram Protocol (udp) and the data payload (26 bytes). The packet details pane shows the source port (443) and destination port (49767). The packet bytes pane displays the raw data in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
278037	95.047172	192.168.0.105	142.250.192.4	UDP	71	49767 → 443 Len=29
278063	95.055852	142.250.192.4	192.168.0.105	UDP	69	443 → 49767 Len=27
278547	95.260245	192.168.0.105	142.250.192.4	UDP	71	49767 → 443 Len=29
278562	95.264606	142.250.192.4	192.168.0.105	UDP	69	443 → 49767 Len=27
278838	95.355458	192.168.0.105	142.250.192.74	UDP	71	62941 → 443 Len=29
278861	95.362758	142.250.192.74	192.168.0.105	UDP	67	443 → 62941 Len=25
279339	95.479624	192.168.0.105	142.250.192.4	UDP	71	49767 → 443 Len=29
279372	95.491200	142.250.192.4	192.168.0.105	UDP	70	443 → 49767 Len=28
280050	95.607504	192.168.0.105	230.0.0.1	UDP	92	52225 → 6666 Len=50
280503	95.695694	192.168.0.105	142.250.192.4	UDP	71	49767 → 443 Len=29
280563	95.703152	142.250.192.4	192.168.0.105	UDP	70	443 → 49767 Len=28
281652	96.011009	192.168.0.105	142.250.192.4	UDP	589	49767 → 443 Len=547
281673	96.017370	142.250.192.4	192.168.0.105	UDP	70	443 → 49767 Len=28
281782	96.101455	142.250.192.4	192.168.0.105	UDP	278	443 → 49767 Len=236
281784	96.101455	142.250.192.4	192.168.0.105	UDP	65	443 → 49767 Len=23
281792	96.102867	192.168.0.105	142.250.192.4	UDP	82	49767 → 443 Len=40
281805	96.108815	142.250.192.4	192.168.0.105	UDP	68	443 → 49767 Len=26

Frame 281805: Packet, 68 bytes on wire (544 bits), 68 bytes captured (544 bits) on interface \Device\NPF...  
Ethernet II, Src: TplinkTechno\_13:ed:b8 (84:d8:1b:13:ed:b8), Dst: Intel\_cf:93:fb (74:3a:f4:cf:93:fb)  
Internet Protocol Version 4, Src: 142.250.192.4, Dst: 192.168.0.105  
User Datagram Protocol, Src Port: 443, Dst Port: 49767  
Source Port: 443  
Destination Port: 49767  
Length: 34  
Checksum: 0xf021 [unverified]  
[Checksum Status: Unverified]  
[Stream Index: 15]  
[Stream Packet Number: 1175]  
[Timestamps]  
UDP payload (26 bytes)  
Data (26 bytes)

User Datagram Protocol (udp), 8 bytes

Packets: 281917 - Displayed: 2517 (0.9%) - Dropped: 0 (0.0%)

Profile

Wireshark interface showing a packet capture. The top bar includes menus (File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, Help) and a toolbar. The main display area shows a list of captured packets. The selected packet (No. 281805) is expanded, showing details for the User Datagram Protocol (udp) and the data payload (26 bytes). The packet details pane shows the source port (443) and destination port (49767). The packet bytes pane displays the raw data in hexadecimal and ASCII.

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281805	96.108815	142.250.192.4	192.168.0.105	UDP	68	443 → 49767 Len=26

[Stream index: 0]  
Internet Protocol Version 4, Src: 142.250.192.4, Dst: 192.168.0.105  
0100 .... = Version: 4  
... 0101 = Header Length: 20 bytes (5)  
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)  
Total Length: 56  
Identification: 0x0000 (0)  
0100 .... = Flags: 0x2, Don't fragment  
... 0 0000 0000 0000 = Fragment Offset: 0  
Time to Live: 60  
Protocol: UDP (17)  
Header Checksum: 0x2ea5 [validation disabled]  
[Header checksum status: Unverified]  
Source Address: 142.250.192.4  
Destination Address: 192.168.0.105  
[Stream index: 40]  
User Datagram Protocol, Src Port: 443, Dst Port: 49767  
Source Port: 443

74 3a f4 cf 93 fb 84 d8 1b 13 ed b8 08 00 45 00 t:.....E:  
00 36 00 00 40 00 3c 11 2e a7 8e fa c0 04 c0 a8 :6 @ < .....  
00 69 01 b6 c2 67 00 24 2a 70 50 27 72 d 6f a9 :g: \$ \*pP'r-o:  
d0 a2 e8 14 7b fd 71 3b 30 ac 9a 10 fb 10 d2 7f :{; 0 .....  
16 99 7c cb fd 61 :|~a



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# Npcap

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**Packet capture library for Windows**

Npcap is the Nmap Project's packet capture (and sending) library for Microsoft Windows. It implements the open [Pcap API](#) using a custom Windows kernel driver alongside our Windows build of [the excellent libpcap library](#). This allows Windows software to capture raw network traffic (including wireless networks, wired ethernet, localhost traffic, and many VPNs) using a simple, portable API. Npcap allows for sending raw packets as well. Mac and Linux systems already include the Pcap API, so Npcap allows popular software such as [Nmap](#) and [Wireshark](#) to run on all these platforms (and more) with a single codebase. Npcap began in 2013 as some improvements to the (now discontinued) WinPcap library, but has been largely rewritten since then with [hundreds of releases](#) improving Npcap's speed, portability, security, and efficiency. In particular, Npcap now offers:

- **Loopback Packet Capture and Injection:** Npcap is able to sniff loopback packets (transmissions between services on the same machine) by using the [Windows Filtering Platform \(WFP\)](#). After installation, Npcap supplies an interface named NPF\_Loopback, with the description "Adapter for loopback capture". Wireshark users can choose this adapter to capture all loopback traffic the same way as other non-loopback adapters. Packet injection works as well with the [pcap\\_inject\(\) function](#).
- **Support for all Current Windows Releases:** Npcap supports all versions of Windows and Windows Server that Microsoft themselves still support. To avoid limiting ourselves just to the features and APIs of our oldest supported Windows release, we build and ship drivers for each major platform generation. That way we can use all of Microsoft's latest technology in our Win10 driver while still supporting legacy systems. Npcap works on Windows 7 and later by making use of the [NDIS 6 Light-Weight Filter \(LWF\)](#) API. It's faster than the deprecated [NDIS 5](#) API used by WinPcap. Also, the driver is signed with our EV certificate and countersigned by Microsoft so that it works even with the stricter driver signing requirements imposed by Windows 10. We don't know exactly when Microsoft will remove NDIS 5 or cease the grandfathering of older less secure driver signatures, but WinPcap will cease working when that happens.
- **Libpcap API:** Npcap uses the excellent [Libpcap library](#), enabling Windows applications to use a portable packet capturing API that is also supported on Linux and MacOS. While WinPcap was based on LibPcap 1.0.0 from 2009, Npcap includes the latest Libpcap release along with all of the improvements we contribute back upstream to them.
- **Support for all Windows architectures (x86, x86-64, and ARM):** Npcap has always supported both Windows 64-bit and 32-bit Intel

