TASK 5: Capture and Analyze Network Traffic Using Wireshark

Objective: Capture and Analyze Network Traffic Using Wireshark.
Tools: Wireshark.

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About Wireshark

- Wireshark is a free, open-source packet analyzer used for network troubleshooting, analysis, and communication protocol development.

- It is a Network Protocol Analyzer (also called as packet sniffer).

- **Key Uses of Wireshark:**

  ★ Network Troubleshooting Helps identify network issues like slow speed, connection drops, or timeouts by viewing real packet traffic.

  ★ Protocol Analysis Allows you to study how protocols like TCP, UDP, HTTP, DNS, and ICMP work and communicate.

  ★ Security Analysis Detects suspicious or malicious network activity (e.g., unauthorized connections or abnormal packets).

  ★ Packet Inspection Shows detailed information about each packet — source/destination IP, port numbers, payload, flags, etc.

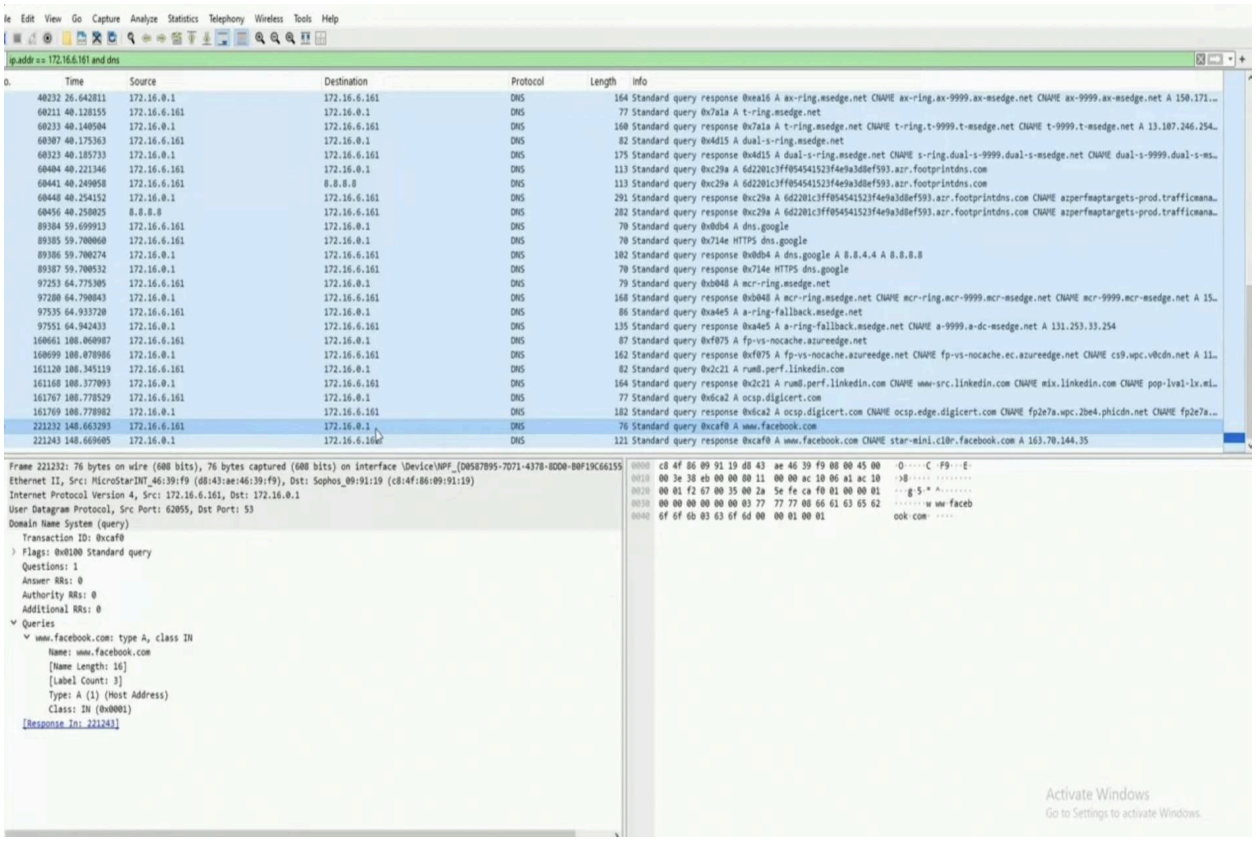
  ★ Learning & Research Used by students and professionals to understand network communication and protocol structures.

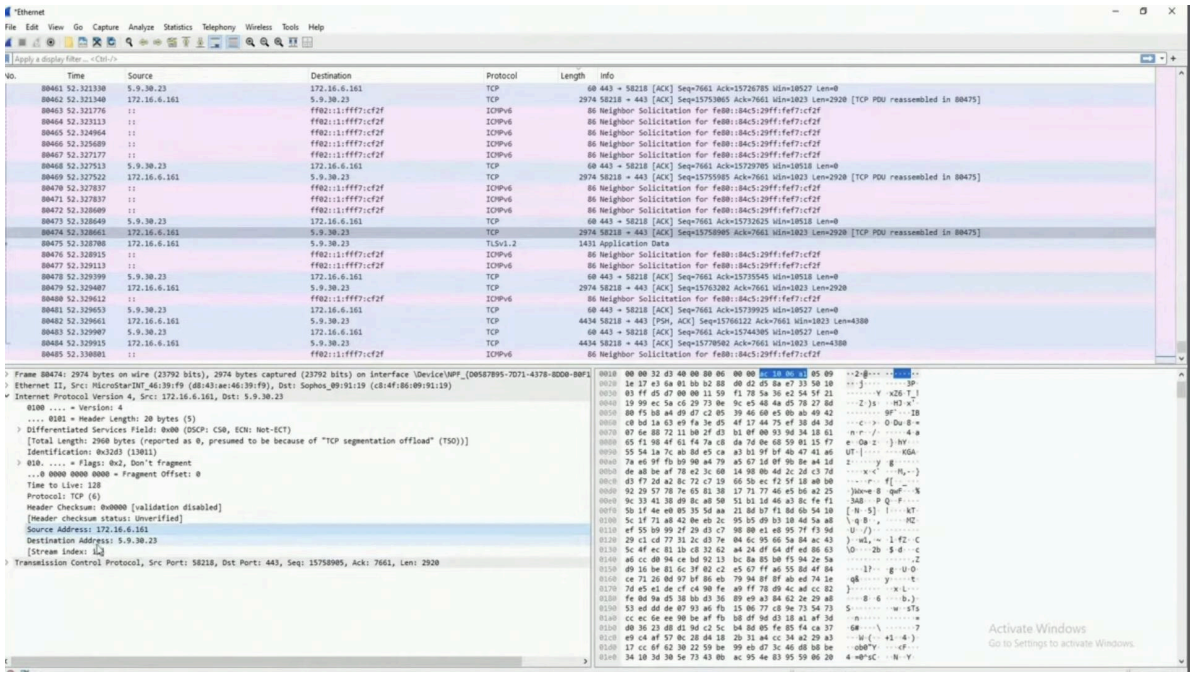
  ★ Network Performance Monitoring Checks latency, packet loss, or retransmissions in a network.

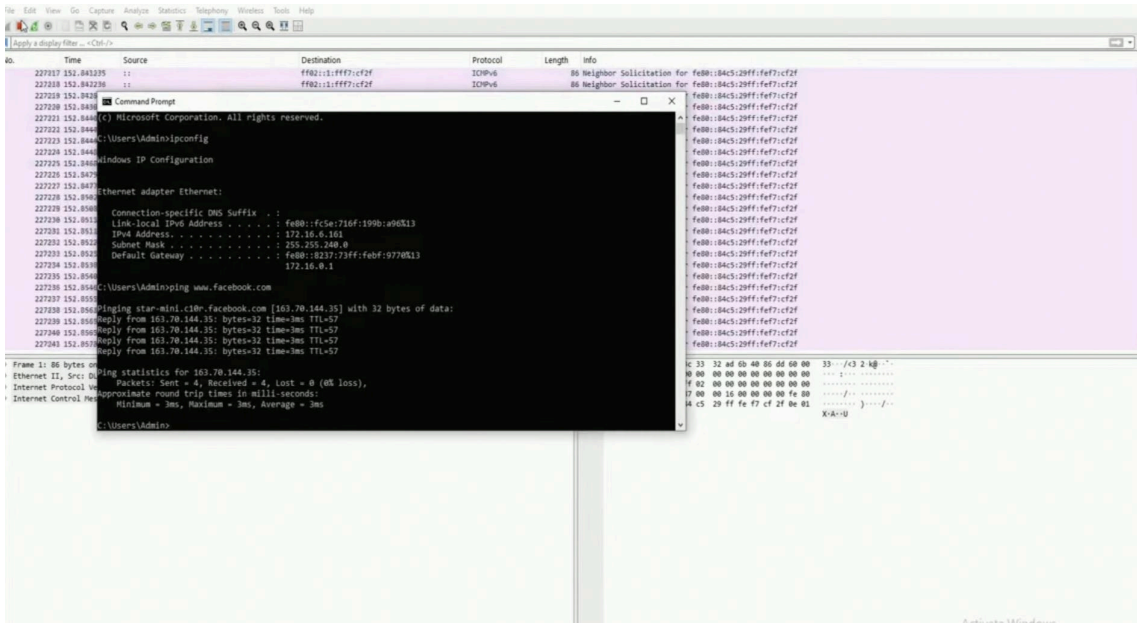
  ★ Verification of Configurations Confirms whether firewalls, routing rules, or network setups are functioning correctly.

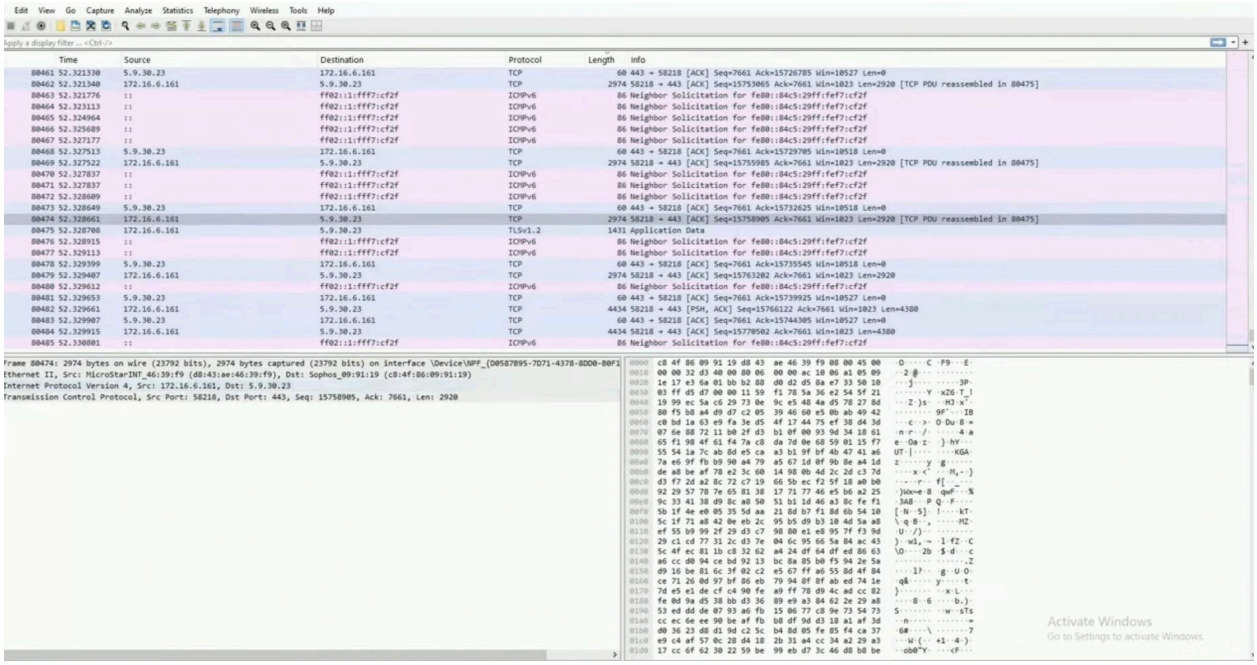
- In this task, we capture live network traffic on an active network interface and analyze different network protocols such as TCP, UDP, DNS, and HTTP.

Screenshots:






Command Prompt
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin>ipconfig
Windows IP Configuration
Ethernet adapter Ethernet:
Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::fc5e:716f:199b:a96%13
IPv4 Address. . . . . : 172.16.6.161
Subnet Mask . . . . . : 255.255.240.0
Default Gateway . . . . . : fe80::8237:73ff:febf:9770%13
172.16.0.1
C:\Users\Admin>ping www.facebook.com
Pinging star-mini.c10r.facebook.com [163.70.144.35] with 32 bytes of data:
Reply from 163.70.144.35: bytes=32 time=3ms TTL=57
Reply from 163.70.144.35: bytes=32 time=3ms TTL=57
Reply from 163.70.144.35: bytes=32 time=3ms TTL=57
Reply from 163.70.144.35: bytes=32 time=3ms TTL=57
Ping statistics for 163.70.144.35:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 3ms, Maximum = 3ms, Average = 3ms
C:\Users\Admin>


Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Time Source Destination Protocol Length Info
80461 52.321330 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15726785 Win=10527 Len=0
80462 52.321340 172.16.6.161 5.9.30.23 TCP 2974 58218 → 443 [ACK] Seq=15753065 Ack=7661 Win=1023 Len=2920 [TCP PDU reassembled in 80475]
80463 52.321776 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80464 52.323113 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80465 52.324964 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80466 52.325689 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80467 52.327177 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80468 52.327513 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15729705 Win=10518 Len=0
80469 52.327522 172.16.6.161 5.9.30.23 TCP 2974 58218 → 443 [ACK] Seq=15755985 Ack=7661 Win=1023 Len=2920 [TCP PDU reassembled in 80475]
80470 52.327837 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80471 52.327837 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80472 52.328609 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80473 52.328649 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15732625 Win=10518 Len=0
80474 52.328661 172.16.6.161 5.9.30.23 TCP 2974 58218 → 443 [ACK] Seq=15758905 Ack=7661 Win=1023 Len=2920 [TCP PDU reassembled in 80475]
80475 52.328708 172.16.6.161 5.9.30.23 TLSv1.2 1431 Application Data
80476 52.328915 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80477 52.329113 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80478 52.329399 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15735545 Win=10518 Len=0
80479 52.329407 172.16.6.161 5.9.30.23 TCP 2974 58218 → 443 [ACK] Seq=15763202 Ack=7661 Win=1023 Len=2920
80480 52.329612 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
80481 52.329653 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15739925 Win=10527 Len=0
80482 52.329661 172.16.6.161 5.9.30.23 TCP 4434 58218 → 443 [PSH, ACK] Seq=15766122 Ack=7661 Win=1023 Len=4380
80483 52.329907 5.9.30.23 172.16.6.161 TCP 60 443 → 58218 [ACK] Seq=7661 Ack=15744305 Win=10527 Len=0
80484 52.329915 172.16.6.161 5.9.30.23 TCP 4434 58218 → 443 [ACK] Seq=15770502 Ack=7661 Win=1023 Len=4380
80485 52.330801 :: ff02::1:fff7:cf2f ICMPv6 86 Neighbor Solicitation for fe80::84c5:29ff:fef7:cf2f
Frame 80474: 2974 bytes on wire (23792 bits), 2974 bytes captured (23792 bits) on interface \Device\NPF_{00587895-7D71-4378-8DD0-B0F1
Ethernet II, Src: MicroStarINT_46:39:f9 (d8:43:ae:46:39:f9), Dst: Sophos_09:91:19 (c8:4f:86:09:91:19)
Internet Protocol Version 4, Src: 172.16.6.161, Dst: 5.9.30.23
Transmission Control Protocol, Src Port: 58218, Dst Port: 443, Seq: 15758905, Ack: 7661, Len: 2920
Activate Windows
Go to Settings to activate Windows.