

Network Traffic Analysis with Wireshark – Yonase Project

Introduction:

For this project, I captured and analysed my system's network activity using Wireshark. Finding any abnormal traffic that would point to unauthorised connections or malicious activity was the aim. I was able to find other dubious IP addresses through filtering and analysis that were linked to malware and other risks, as confirmed by security tools like VirusTotal.

Setup and Tools:

- **Wireshark:** Network protocol analyser used to capture and inspect the traffic on my local network.
- **VirusTotal:** Online service used to check suspicious IP addresses against security vendor databases for known threats.

Steps:

1. **Installed Wireshark** on my Windows machine and recorded network traffic for a specific duration to capture a range of connections.
2. **Filtered traffic** using specific filters to identify unusual and potentially malicious activity. The filters used include:
 - `tcp.flags.syn == 1 and tcp.flags.ack == 0` (to find SYN packets initiating a connection).
 - `tcp.flags.syn == 1` (to locate connection initiation attempts in general).
3. Analysed the filtered traffic to identify suspicious IP addresses.
4. Cross-referenced the suspicious IPs found using **VirusTotal** to verify their reputation and determine if they are associated with any known malware.

Findings:

Malicious IPs Identified:

Through my analysis, I identified several suspicious IP addresses, all of which were flagged by multiple security vendors on VirusTotal for being associated with malware.

1. 139.45.197.238

- Flagged by Lumu and Dr.Web as being associated with malware.
- Additional detections by SOCradar.

2. 139.45.197.248

- Flagged by Lumu and Dr.Web as being associated with malware.

3. 139.45.197.236

- Flagged by Lumu, Dr.Web, and SOCradar as being associated with various malware strains.

These IP addresses share the same prefix, indicating that they might be part of a broader malicious campaign originating from a similar source.

New Finding:

During additional filtering (`tcp.flags.syn == 1`), I found another IP address that raised suspicion:

- **204.79.197.203**: According to VirusTotal, this IP is flagged as a **criminal IP**. This indicates an additional malicious connection attempt.

Analysis of Findings:

The identified IP addresses initiated **SYN packets**, which is the first step in establishing a TCP connection. This suggests that the malicious actors were trying to initiate a connection with my system, potentially to exploit vulnerabilities or compromise it.

VirusTotal Analysis:

Each suspicious IP address was checked on VirusTotal. The following table summarizes the results:

IP Address	VirusTotal Findings
139.45.197.238	Lumu, Dr.Web, SOCradar - Malware-associated
139.45.197.248	Lumu, Dr.Web - Malware-associated
139.45.197.236	Lumu, Dr.Web, SOCradar - Malware-associated

204.79.197.203

Flagged as a **Criminal IP** by security vendors

System Health Check:

After detecting the suspicious IP addresses, I conducted a full **antivirus scan** of my system to determine if any malware had compromised my machine. According to the scan results, there were no active infections. This suggests that despite attempts to establish malicious connections, there was no successful infiltration.

Here is the final version of your document with the updated content and screenshots:

Network Traffic Analysis with Wireshark

Introduction

For this project, I captured and analyzed my system's network activity using Wireshark. The goal was to identify any abnormal traffic that might indicate unauthorized connections or malicious activity. By filtering and analyzing the captured traffic, I was able to find suspicious IP addresses associated with malware, as confirmed by security tools like VirusTotal.

Setup and Tools

- **Wireshark:** Network protocol analyzer used to capture and inspect the traffic on my local network.
- **VirusTotal:** Online service used to check suspicious IP addresses against security vendor databases for known threats.

Steps

5. Installed Wireshark on my Windows machine and recorded network traffic for a specific duration to capture a range of connections.

6. Filtered traffic using specific filters to identify unusual and potentially malicious activity. The filters used include:
 - `tcp.flags.syn == 1` and `tcp.flags.ack == 0` (to find SYN packets initiating a connection).
 - `tcp.flags.syn == 1` (to locate connection initiation attempts in general).
7. Analyzed the filtered traffic to identify suspicious IP addresses.
8. Cross-referenced the suspicious IPs found using VirusTotal to verify their reputation and determine if they are associated with any known malware.

Findings

Malicious IPs Identified

Through my analysis, I identified several suspicious IP addresses, all of which were flagged by multiple security vendors on VirusTotal for being associated with malware:

- **139.45.197.238**: Flagged by Lumu and Dr.Web as being associated with malware. Additional detections by SOCRadar.
- **139.45.197.248**: Flagged by Lumu and Dr.Web as being associated with malware.
- **139.45.197.236**: Flagged by Lumu, Dr.Web, and SOCRadar as being associated with various malware strains.

These IP addresses share the same prefix, indicating that they might be part of a broader malicious campaign originating from a similar source.

New Finding

During additional filtering using `tcp.flags.syn == 1`, I found another IP address that raised suspicion:

- **204.79.197.203**: According to VirusTotal, this IP is flagged as a criminal IP. This indicates an additional malicious connection attempt.

Analysis of Findings

The identified IP addresses initiated SYN packets, which is the first step in establishing a TCP connection. This suggests that malicious actors were attempting to initiate a connection with my system, potentially to exploit vulnerabilities or compromise it.

VirusTotal Analysis

Each suspicious IP address was checked on VirusTotal. The following table summarizes the results:

IP Address	VirusTotal Findings
139.45.197.23 8	Lumu, Dr.Web, SOCradar - Malware-associated
139.45.197.24 8	Lumu, Dr.Web - Malware-associated
139.45.197.23 6	Lumu, Dr.Web, SOCradar - Malware-associated
204.79.197.20 3	Flagged as a Criminal IP by security vendors

System Health Check

After detecting the suspicious IP addresses, I conducted a full antivirus scan of my system to determine if any malware had compromised my machine. According to the scan results, there were no active infections. This suggests that despite attempts to establish malicious connections, there was no successful infiltration.

Screenshots

Screenshot 1: Wireshark Capturing Live Traffic

Capturing from WiFi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

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

No.	Time	Source	Destination	Protocol	Length	Info
13	3.389025	192.168.1.106	52.108.79.35	TLSv1.2	93	Application Data
14	3.389195	192.168.1.106	52.108.79.35	TCP	1494	41065 → 443 [ACK] Seq=182 Ack=1 Win=516 Le
15	3.389195	192.168.1.106	52.108.79.35	TLSv1.2	754	Application Data
16	3.389727	20.189.173.7	192.168.1.106	TCP	66	443 → 41254 [ACK] Seq=1 Ack=2 Win=16385 Le
17	3.392234	52.108.93.4	192.168.1.106	TCP	66	443 → 41250 [ACK] Seq=1 Ack=2 Win=16381 Le
18	3.408043	192.168.1.106	204.79.197.219	TCP	55	41300 → 443 [ACK] Seq=1 Ack=1 Win=515 Len=
19	3.408043	192.168.1.106	204.79.197.219	TCP	55	41299 → 443 [ACK] Seq=1 Ack=1 Win=515 Len=
20	3.418994	204.79.197.219	192.168.1.106	TCP	66	443 → 41299 [ACK] Seq=1 Ack=2 Win=16385 Le
21	3.418994	204.79.197.219	192.168.1.106	TCP	66	443 → 41300 [ACK] Seq=1 Ack=2 Win=16382 Le
22	3.551539	192.168.1.106	65.8.33.8	TCP	55	41295 → 443 [ACK] Seq=1 Ack=1 Win=513 Len=

< >

> Frame 1: 164 bytes on wire (1312 bits), 164 bytes captured on interface (1312 bits) on WiFi

> Ethernet II, Src: MegaWell_a1:54:9d (10:5b:ad:a1:54:9d), Dst: 08:00:27:00:00:00

> Internet Protocol Version 4, Src: 192.168.1.106, Dst: 192.168.1.106

> Transmission Control Protocol, Src Port: 24186, Dst Port: 443

0000 94 8c d7 c5 9b e2 10 5b ad a1 54 9d 08 00 45 00 .
0010 00 96 9c 5c 40 00 80 06 d9 e5 c0 a8 01 6a c0 a8 .
0020 01 65 5e 7a 1f 49 22 77 12 df f5 ce 33 5e 50 18 .
0030 01 fc dd 3f 00 00 17 03 03 00 69 bb 0d 0c ac 09 .
0040 d0 d8 9d 7f 85 6a 70 50 e2 bb db 6a a9 33 20 19 .
0050 41 86 89 0d ed d5 cc d1 c3 15 42 d2 0c 40 42 12 A
0060 9c f9 f8 d9 78 55 e3 d6 ab 3b e6 3e 62 fc 2d 3a .
0070 92 ed 7d a7 23 be b5 e6 1a 1f 92 6b c2 64 be 96 .
0080 08 c1 5a d3 36 a4 db e7 1d 14 bd 57 c3 ea ec 31 .
0090 7b 5b ec 5f 84 ba 55 b2 68 ea 7a 9c 94 f1 53 32 {
00a0 05 92 2e 6c .

< >

WiFi: <live capture in progress> || Packets: 22 || Profile: Default

Screenshot 2: SYN Packet Filter Results

wifi test.pcap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.flags.syn == 1 and tcp.flags.ack == 0

No.	Time	Source	Destination	Protocol	Length	Info
5317	10.905549	192.168.1.106	139.45.197.236	TCP	66	31004 → 443 [SYN] Seq=0 Win=64240 Len=
17668	124.946464	192.168.1.106	139.45.197.236	TCP	66	31257 → 443 [SYN] Seq=0 Win=64240 Len=
20029	134.847432	192.168.1.106	139.45.197.236	TCP	66	31283 → 443 [SYN] Seq=0 Win=64240 Len=
25704	203.650738	192.168.1.106	139.45.197.236	TCP	66	31367 → 443 [SYN] Seq=0 Win=64240 Len=
26133	204.492927	192.168.1.106	139.45.197.236	TCP	66	31387 → 443 [SYN] Seq=0 Win=64240 Len=
72243	498.537625	192.168.1.106	139.45.197.236	TCP	66	31565 → 443 [SYN] Seq=0 Win=64240 Len=
72561	499.288546	192.168.1.106	139.45.197.236	TCP	66	31577 → 443 [SYN] Seq=0 Win=64240 Len=
79189	507.593161	192.168.1.106	139.45.197.236	TCP	66	31609 → 443 [SYN] Seq=0 Win=64240 Len=
89803	617.339875	192.168.1.106	139.45.197.236	TCP	66	31729 → 443 [SYN] Seq=0 Win=64240 Len=
93420	623.991471	192.168.1.106	139.45.197.236	TCP	66	31760 → 443 [SYN] Seq=0 Win=64240 Len=

< >

> Frame 77580: 66 bytes on wire (528 bits), 66 bytes captured
> Ethernet II, Src: MegaWell_a1:54:9d (10:5b:ad:a1:54:9d), D
> Internet Protocol Version 4, Src: 192.168.1.106, Dst: 139.
> Transmission Control Protocol, Src Port: 31595, Dst Port: 443

0000 7c 8b ca e5 5e 9f 10 5b ad a1 54 9d 08 00 45 00
0010 00 34 df 71 40 00 80 06 08 1e c0 a8 01 6a 8b 2d
0020 c5 f4 7b 6b 01 bb 2c 90 fa f7 00 00 00 00 80 02
0030 fa f0 bc 3c 00 00 02 04 05 b4 01 03 03 08 01 01
0040 04 02

< >

wifi test.pcap

Packets: 108816 · Displayed: 967 (0.9%) | Profile: Defau

Screenshot 3: VirusTotal Analysis for IP 204.79.197.203

204.79.197.203

Did you intend to search across the file corpus instead? [Click here](#)

1 / 94
Community Score -152

1/94 security vendor flagged this IP address as malicious

204.79.197.203 (204.79.197.0/24)
AS 8068 (MICROSOFT-CORP-MSN-AS-BLOCK)

REANALYZE SIMILAR

DETECTION DETAILS RELATIONS COMMUNITY 30+

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Security vendors' analysis

Vendor	Analysis
Criminal IP	Malicious
Abusix	Clean
Acronis	Clean
ADMINUSLabs	Clean
AILabs (MONITORAPP)	Clean
AlienVault	Clean

Conclusion:

I was able to identify multiple suspicious IP addresses trying to connect to my system from the Wireshark analysis. VirusTotal confirmed that these IPs were connected to known malware and criminal activity. However, thanks to active system defences, my machine remained uncompromised.

This exercise highlights how crucial it is to regularly monitor network traffic and understanding connection attempts . It also demonstrates the value of leveraging tools like Wireshark and VirusTotal in order to stay ahead of potential security risks.