

Cyber Threat Intelligence Report on Traffic Light Management System Disruption

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Executive Summary

A new chapter in the history of international conflicts is beginning: the age of psychological warfare. Deepfakes, a weapon in modern psychological warfare, use artificial intelligence (AI) algorithms to create synthetic images, videos, and voices. The creation of fake news and widespread disinformation have thus emerged as the main tools of contemporary psychological warfare, operating under the tenet that "if you can't convince somebody, misinform him or her (Pantserev, 2020). This report presents the findings of a coordinated cyber-psychological attack on the London Traffic Light Management System (TLMS). This sophisticated attack involved both technical and psychological components, with the intent to disrupt Critical National Infrastructure (CNI) of London as the UK's core financial and political hub, trigger global and regional disturbances, cause transportation chaos and accidents, discredit political bodies, and erode public trust through targeted deepfake disinformation and Denial of service (DoS) attack.

This report carried out a thorough examination of a PCAP file that contained network traffic data from the attack as a cyber operation analyst and member of the incident response team. The analysis demonstrated the unauthorized network access by taking advantage of a social vulnerability to obtain initial access to target the critical TLMS. According to deep packet analyses, adversaries use phishing emails to obtain credentials and establish several TCP connections by taking advantage of transportation workers. Suspicious DNS misconfigured signals and possible command and control actions demonstrate lateral movement and reconnaissance. The target TLMS system is then successfully subjected to a denial-of-service attack via an alternative system, leaving it incapable of causing destruction and traffic disruption. A set of excellent deepfake images that depicted several buses and cars colliding in London, system-wide traffic signals malfunctioning, and overloaded roadways were disseminated concurrently with cyber activity.

These artificial intelligence (AI) synthetic media are more difficult to spot at first glance Heidari et al. (2023). Fake misinformed headlines that question public safety leadership and declare an increase in crime, using emotive language like "What has your mayor done for you?

This dual-nature attack demonstrates that state-sponsored hackers specifically created it to undermine public trust, generate panic, cause financial loss, harm political leaders' reputations by manipulating public opinion, and compromise the city's intelligent traffic management system's ability to function. Since there are two components to the attack, this report combining technical indicators with psychological elements to learn more about how the attack occurred, the identity of the attackers, their goals, methods, and consequences. This report outlines threat intelligence for attackers, detailed analysis of the technical part, impact assessment, counter-disinformation tactics, and immediate defense measures to promote quick.

Threat Intelligence Analysis

Every attacker usually follows a predetermined set of procedures and a systematic strategy in order to identify a target, detect and take advantage of vulnerabilities, obtain unauthorized access to a system, and accomplish their goals. Depending on the attacker's motive and type, the goals change. These attack phases, which are typically followed by all attackers, have been thoroughly researched and documented in the form of frameworks like MOC (Motivation, Opportunity, Capability), Cyber Kill Chain, and MITRE ATT&CK (MITRE 2024). Many security researchers examine the actions and mindsets of attackers, state-sponsored actors, advanced persistent threat actors, and other malevolent entities; these are not merely models. These frameworks then break down the attack process into steps to enable cybersecurity professionals better understand, detect, and mitigate attacks.

Attacker Profile

This attack on London TLMS appears to have both disruption and influence-based motivation. The analysis of the London TLMS PCAP files during the attack reveals that the main goal is to mess up traffic light systems, while the broader aim is to weaken trust in the government, cause panic, and spread false information through tactics like deepfake media and misinformation. Analysis of the PCAP files shows that the main objective is to disrupt traffic light coordination and command systems, and the strategic goal is to undermine government competence, create panic situations, erode public trust in social and economic systems, and misinform people through coordinated psychological warfare (deepfakes and misinformation). PCAP files reveal highly sophisticated capabilities such as remote code execution (RCE), DNS tunneling, and credential harvesting. Furthermore, attackers having multiple domains of knowledge show that they are well prepared and have enough expertise to find and exploit the vulnerability by combining cyber and social engineering (phishing), Command and Control (C2) communication and psychological attacks tactics techniques and procedures (TTPs). This report classify the likely threat actor type based on tactics, techniques, and procedures, suspecting either a nation-state advanced persistent threat (APT) or a well-funded hacktivist group. Because of the nature of DDoS attacks, reconnaissance activity like remote code execution, DNS tunneling, and deepfake propaganda goes beyond traditional cybercriminal or script kiddie activity.

Table 1: MOC attributes of attacker profile for London TLMS

Attribute	Details
Motivation (M)	Disruption of critical infrastructure (e.g., traffic light control systems) Data exfiltration for espionage or sabotage Public manipulation via deepfakes and propaganda
Opportunity (O)	Vulnerable traffic system with inadequate segmentation Insufficient monitoring of outbound DNS traffic No social engineering defense mechanisms
Capability (C)	Advanced threat actors with multi-vector capabilities (likely APT group) Ability to create realistic deepfakes and spread them via social media Skilled in low-and-slow DNS tunneling and DoS attack

Disinformation Campaign Analysis

Several deepfake photographs that depicted an extremely chaotic scene on London roads, including traffic accidents, buses, and autos crashing, went popular on the internet. The purpose of these photographs was to distribute false information and generate panic. It is quite likely that these media artifacts were disseminated throughout several social media platforms at the same time that the attacks on the London TLMS were taking place. They may have been presented as updates regarding the safety of the city, taking advantage of the sense of urgency and panic that people would have. Major's target audience for deepfake media consists of people living in London, such as commuters and drivers; people who might work in emergency services and disseminate misinformation or panic; and public media outlets, which are places where propaganda

can quickly spread false information. The purpose of spreading all of this false information is to generate panic, mislead the public about administration that are either unprepared or compromised, and cause social upheaval. Bringing about social and economic upheaval within the city-state is one of the primary goals, and this is typically accomplished because of internal strife or geopolitical tension. Express anarchy implies a breakdown of command over the traffic system in London's transportation system. Techniques of social engineering, such as phishing emails, hacked city communications, malicious URLs, social media botnets, or perhaps any social media platform, are more likely to be used in their propagation. Deepfake evidence is illustrated in **Appendix B**.

Impact Assessment

Operational disruption is one of the main effects of this cyberattack. SYN packets overloaded the traffic control center, and a successful DNS attack used RCE to take over the command interface. A DNS tunneling attempt was then made to collect data. An attempt to alter traffic commands was evident from the use of the port 8080 API endpoint. Another aspect of the operational problems is that the SSH service was inadequate, there was no rate restriction or DDoS protection, and there was insufficient detection for anomalous DNS data. Systematic weaknesses shown by inadequate anomaly detection for malformed DNS packets, a vulnerable SSH service, and a lack of rate limiting/DDoS mitigation are other operational repercussions. Public safety is at danger due to the psychological and sociological effects of malfunctioning traffic lights, which can cause accidents, traffic jams, and delays in emergency services. People's confidence in official communications is eroded by the spread of deepfake media, which can provoke illogical actions like panic, disregarding official warnings, and civil disturbance. A successful attack on the London TLMS, a vital piece of infrastructure, also casts a negative light on cybersecurity, which can affect public policy discussions and political credibility. As was previously mentioned in the attacker

profile, it appears that a nation-state actor has a strong incentive to undermine the political system. This may be construed as cyberwarfare, which could lead to global reactions and online penalties (Dekker and Alevizos 2023).

Technical Analysis of Cyber Components

There was a complete chain of attack evolution that was provided by the detailed technical forensics analysis of the PCAP file that was taken during the attack from the traffic control system in London. Phishing and reconnaissance are launched at the beginning of the attack, which is then followed by remote code execution (RCE). A well-planned and multi-step cyberattack on London's Traffic Management System is demonstrated by the fact that attackers then work on setting up DNS tunneling and API hijacking, which ultimately leads to a large-scale distributed service denial to disrupt the system and erode public faith.

Total packets captured: 36024, and protocol hierarchy statistics show that all communication packets are Internet Protocol Version 4 (IPV4). IPv4 packets are divided into two types: one is User Datagram Protocol (UDP), and the other one is Transmission Control Protocol (TCP). It's shown in the attached screenshot in the appendix. Figure 1 shows 99.9% communication and a total of 36,627 packets are TCP-based communication. Only 2 packets are Secure Socket Shell (SSH) protocol, and one packet is Simple Mail Transfer Protocol (SMTP) and CVS pserver. The other part, UDP, is DNS packets. A total of 50 packets are sent, and all are captured as malformed packets. Conversation, another feature of Wireshark, provides information on which IP address sends packets to whom and the quantity of packets sent. It's an amazing feature that tells about suspicious traffic and IP addresses. As shown in the screenshot, it helps to figure out suspicious IP addresses and abnormalities in traffic, which are more likely to show a

DDoS attack. As four IPs—102.54.32.12, 176.45.33.78, 185.200.50.10, and 198.51.100.23—all send 9006 packets to the same IP, which is 10.100.1.10, it most likely shows the target IP of London TLMS. These hierarchy and conversation statistics before doing a depth analysis give an overall idea of what type of communication is captured and happening during the attack. Refer to **Appendix A** for supporting PCAP analysis screenshots.

1. Initial Access: Phishing Attempt via SMTP

The spear phishing email that was sent from the IP address 176.45.33.78 to the internal host 10.100.1.60 was the first step in the attack. The message that was displayed when the stream flow of packets was performed was as follows: In response to the urgent security update... To update your credentials, please click on this URL, as mentioned in **Appendix A**. This message was sent out using the Simple Mail Transfer Protocol (SMTP) on port 25, with the intention of deceiving customers to send their credentials to a fake domain. The most likely receiver of this mail is an employee working for London TLMS. This typical spear phishing social engineering assault is a known initial access strategy (MITRE T1566.001), and subsequent analysis indicates that the attacker was able to successfully gain access to the system as a result of this email and the sharing of credential submission via HTTP.

2. Credential Harvesting and Exploitation

As can be seen in **Appendix A**, an internal host with the IP address 10.100.1.50 submitted a suspicious HTTP POST request to the IP address 185.200.50.10 shortly after the malicious email was delivered. This data substantiates the fact that credentials were gathered and transmitted to the malicious-site.com domain, which the attacker controls. Additionally, the source TCP is displayed

on port 80, which is an unsecured channel. This provides the attacker with an additional reason to avoid discovery by using encrypted communication.

3. Reconnaissance: TCP SYN Port Scanning

Subsequently, we conducted a systematic port scan from multiple external IPs against the internal server 10.100.1.10, as illustrated in the following table:

Table 2: Reconnaissance activity performed by attacker for London TLMS attack

Attacker IP	Target	Ports Scanned
185.200.50.10	10.100.1.10	22, 80, 443, 1433, 3389, 8080
102.54.32.12	10.100.1.10	22, 80, 443, 1433, 3389, 8080
198.51.100.23	10.100.1.10	22, 80, 443, 1433, 3389, 8080
176.45.33.78	10.100.1.10	22, 80, 443, 1433, 3389, 8080

As can be seen in of Appendix A, each of the IP addresses that have been stated above initiates the transmission of six SYN packets. This is done in conjunction with a stealthy scan that targets known service ports in order to determine the ports from which any acknowledgment was received (SSH, HTTP, HTTPS, MSSQL, RDP, and HTTP-ALT). This behavior is consistent with the MITRE T1046 standard, which scans network services.

4. Remote Code Execution & Initial C2

The attacker had finished their reconnaissance up until this point; at the moment, 185.200.50.10 was responsible for sending 27 encrypted SSH packets to 10.100.1.50 domains. Exploit: Remote

Code Execution was present in every one of these packets, as demonstrated in Appendix A. Based on this discovery, it is highly probable that the attacker took advantage of a weakness in the SSH service (port 22), which would have allowed them to get shell access. To bypass authentication and gain an initial foothold, the attacker may have utilized a known CVE or a zero-day vulnerability. MITRE T1059.003: Command and Scripting Interpreter: Unix Shell is compatible with this strategy because to its alignment.

5. DNS Tunneling (C2 Channel Establishment)

The host 10.100.1.50 started sending DNS faulty packets to the external server 203.0.113.55 as soon as the RCE was completed. As can be seen in Appendix A, these packets displayed a variety of anomalies, including invalid operation codes, exception flags, and keep-alive signals in the stream that followed. The discovery substantiates the assertion that the attacker utilized DNS as a covert channel to circumvent firewalls and steal data. By MITRE T1071.004, DNS is one of the most well-known and widely used strategies. DNS stands for the Application Layer Protocol.

6. API Hijacking and Internal Pivoting

Through the use of TCP port 8080, host 10.100.1.50 maintained continuous communication with host 10.100.1.30 throughout packets 78 through 177. Every single HTTP packet made use of the POST/api/hijack HTTP/1.1 protocol. The fact that this is the case shows that the API might be manipulated in order to take control of commands or data streams or to internally pivot to other systems in the network. At the same time, one of the packets was recognized as CVSPSERVER, which is an indication that legacy tools or backdoors were utilized to control older subsystems. This is demonstrated in Appendix A.

7. Distributed Denial-of-Service (DDoS) Attack

The large increase in SYN flood traffic that occurred after that is depicted in the table that follows. This increase involved more than 36,000 packets. A textbook TCP SYN flood attack is being carried out, as demonstrated in Appendix A. This assault is forcing the target server to exhaust its resources and ultimately crash. It appears that a botnet-level distributed denial of service attack is taking place. At the end of the day, the objective was to map MITRE T1499 to service deterioration or denials (Ashfaq Ahmad Najar and Manohar Naik S, 2024).

8. Final Stage: SQL Query on Traffic Light DB

Last, from packet 36178 to 36677, the compromised host 10.100.1.10 sent ACK packets to 10.100.1.20 over TCP port 1433 (Microsoft SQL Server), as show in the appendix. A signifies direct access to traffic control databases, possible exfiltration or manipulation of traffic light data, or an attempt to hijack critical infrastructure. This is the final stage of the attack and communication. The attacker successfully gained full access and operational context.

Table 3: MITRE ATT&CK framework mapping of London TLMS attack

Phase	Indicators & Actions
Initial Access	Phishing email via SMTP; credential theft via HTTP
Reconnaissance	Multi-source SYN scans targeting common ports
Exploitation	SSH RCE exploit using encrypted payloads
C2 Establishment	DNS tunneling using malformed DNS to remote server
Lateral Movement	API Hijack via internal host communication over port 8080
DDoS	36,000+ SYN flood packets targeting web services (port 80)
Impact Stage	SQL query to extract traffic light configuration
Social Engineering Attack	Deepfake Disinformation

The successful DDoS attack on the infiltrated London TLMS system by the attacker, including the psychological component of deepfake deception, is described in full in this article. Based on the technical study, it is evident that the system as a whole has several vulnerabilities that allow attackers to obtain initial access and then carry out their final goals. For example, the SSH service is exposed and vulnerable to RCE, there is no inspection of HTTP/SMTP traffic, password theft is permitted, and a lack of email filtering makes phishing possible.

Defense and Counter-Disinformation Strategy

Technical investigation and threat intelligence revealed a well-planned attack against the London TLMS, including phishing, login theft, DNS tunneling, RCE, HTTP hijacking to misuse APIs, and a DDoS SYN flood. These coordinated attacks aim to capture traffic control system data. Meanwhile, deepfake information influenced public sentiment and threatened local government workers and infrastructure. Individuals and infrastructure. The fact that there were a great number of vulnerabilities that had not been discovered and defensive measures that needed to be adopted right away in order to prevent attacks of a similar nature in the future contributed to the success of the attack. A complete strategy and threat intelligence should be prepared by the incident response team in order to put a halt to the attack as quickly as possible and to ensure that they are well prepared for any future attacks (Ankit Kumar Jain, Shukla and Goel 2024).

Technical Security Measures

Technically speaking, London TLMS should strengthen the attacks by implementing a multi-layered defense-in-depth design. Technical study indicates that various IP addresses are thought to be bots that send a large number of SYN requests to the same server to degrade its services. As a result, compromised hosts like 10.100.1.50, 10.100.1.10, and 10.100.1.30 should be

promptly isolated and forensically examined. Another crucial technical step that needs to be done right away is network segmentation, which divides public-facing interfaces and networks from vital infrastructures like databases, traffic light signals, and control systems. Strict firewall rules and updated firewall policies are needed to prevent unwanted external TCP connections, particularly on high-risk ports (22, 80, 443, 8080, 1433, 3389). TLMS should install an Intrusion Detection and Prevention System (IDPS) with the most recent updates to detect anomalous activity and malicious actions to protect against DNS tunneling, SYN floods, and malicious packets. Use secure DNS protocols like DNS over HTTPS (DoH) or DNSSEC to protect DNS traffic, and prevent exfiltration to rogue IPs like 203.0.113.53. Integrating behavioral analytics is necessary to stop credential misuse, including those involving usernames and passwords. Disabling password-based authentication, putting SSH hardening into place, and using key pairs are urgently needed. Enable two- or multiple-factor authentication for administrative access, and keep an eye out for odd login attempts. Additionally, use authentication tokens, rate-limit requests, and input validation to protect API endpoints vulnerable to Post API hijack.

Counter-Disinformation Measures

The other component of the attack, in addition to the distributed denial of service attack, is to simultaneously launch a psychological warfare operation by employing false pictures of artificial intelligence to generate a state of panic and control public decisions through the use of disinformation. Because this could be far more damaging than a technical attack, this must be taken into consideration promptly. It is necessary to quickly implement a rapid media forensics response to combat misinformation. Additionally, it is necessary to deploy advanced techniques that are based on artificial intelligence to identify content that is created or deepfaked before it is shared on social media accounts. Additionally, it is possible to come across it through official

communication that is watermarked with cryptographically verifiable digital signatures through their use. It is also important to collaborate with social media and public broadcasting platforms to provide real-time corrections and verifications prior to the dissemination of any content of this kind. With the help of a centralized information trust portal, residents would be able to verify public announcements, traffic notifications, and emergency information. Additionally, the portal would provide information to warn the general public about scams and other forms of media.

Incident Response Plans

Another defensive action to consider is the implementation of an incident response plan. The teams responsible for cybersecurity at TLMS immediately begin the process of developing a comprehensive Cybersecurity Incident Response Plan (CSIRP), which includes several phases, such as preparedness, investigation, containment, elimination, recovery, and learning from the incident. The initial phase of identification must rely on automated alerting from SIEM systems (for example, the detection of SYN flood from IPs such as 185.200.50.10, 102.54.32.12, and so on). During the containment phase, the DDoS-targeted node located at 10.100.1.10 should be isolated, and legitimate traffic should be redirected by utilizing reverse proxies and DDoS mitigation services (Farok and Zolkipli, 2024). When it comes to any permanent mechanisms and purging of all backdoors, there is the possibility of access log mechanisms. In the phase of eradication, this may be accomplished. Rebuilding from reliable backups and restoring secure settings are both required steps in the recovery process. In conclusion, it is necessary to carry out a comprehensive post-incident evaluation, as well as to compose and disseminate comprehensive internal reports to all relevant stakeholders, highlighting the lessons learned and updating playbooks accordingly.

Immediate Mitigation Measures (Bash Script)

Refer to **Appendix A** for supporting bash script and output analysis screenshots.

```
GNU nano 8.2
/opt/threat_mitigation.sh

#!/bin/bash

# ===== CONFIGURATION =====

# Malicious IPs involved in DNS Tunneling, SYN Flood, and Command-and-Control

MALICIOUS_IPS=(

    "203.0.113.55"
    "185.200.50.10"
    "102.54.32.12"
    "198.51.100.77"

)

# Log file for forensics

LOG_FILE="/var/log/threat_block.log"

DATE=$(date '+%Y-%m-%d %H:%M:%S')

echo "[${DATE}] Starting mitigation..." | tee -a ${LOG_FILE}

# ===== ACTIONS =====

# 1. Block malicious IPs using iptables

for IP in "${MALICIOUS_IPS[@]}"; do

    echo "[${DATE}] Blocking IP: ${IP}" | tee -a ${LOG_FILE}

    iptables -A INPUT -s "${IP}" -j DROP
    iptables -A OUTPUT -d "${IP}" -j DROP

done
```

```
# 2. Detect anomalous traffic (simple SYN flood detection via netstat)
echo "[${DATE}] Checking for SYN flood attempts..." | tee -a $LOG_FILE
netstat -anp | grep 'SYN_RECV' | awk '{print $5}' | cut -d: -f1 | sort | uniq -c | sort -nr | head -n 10
| tee -a $LOG_FILE

# 3. Alert if any IP has >100 SYN_RECV connections (indicating likely DDoS)
SUSPECTS=$(netstat -anp | grep 'SYN_RECV' | awk '{print $5}' | cut -d: -f1 | sort | uniq -c | awk
'$1 > 100 {print $2}')
for SUSPECT in $SUSPECTS; do
    echo "[${DATE}] Possible SYN flood from: $SUSPECT — Blocking immediately." | tee -a
$LOG_FILE
    iptables -A INPUT -s "$SUSPECT" -j DROP
done

# 4. Save iptables rules (persistent across reboot if iptables-persistent is installed)
iptables-save > /etc/iptables/rules.v4

echo "[${DATE}] Mitigation completed. All threats neutralized for now." | tee -a $LOG_FILE
```

References

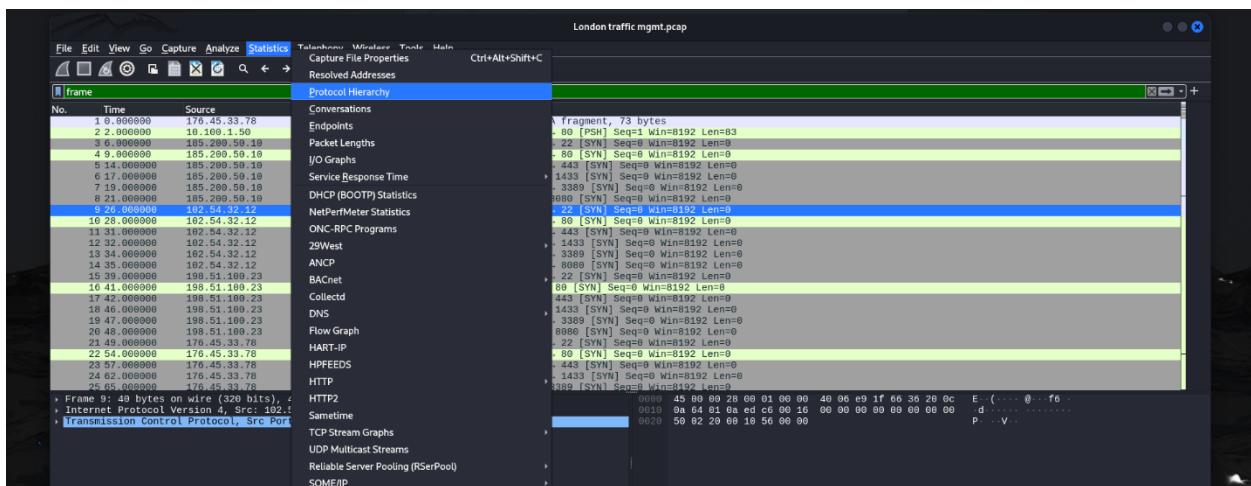
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- MITRE (2024). *MITRE ATT&CK*. [online] Mitre.org. Available at: <https://attack.mitre.org/>.

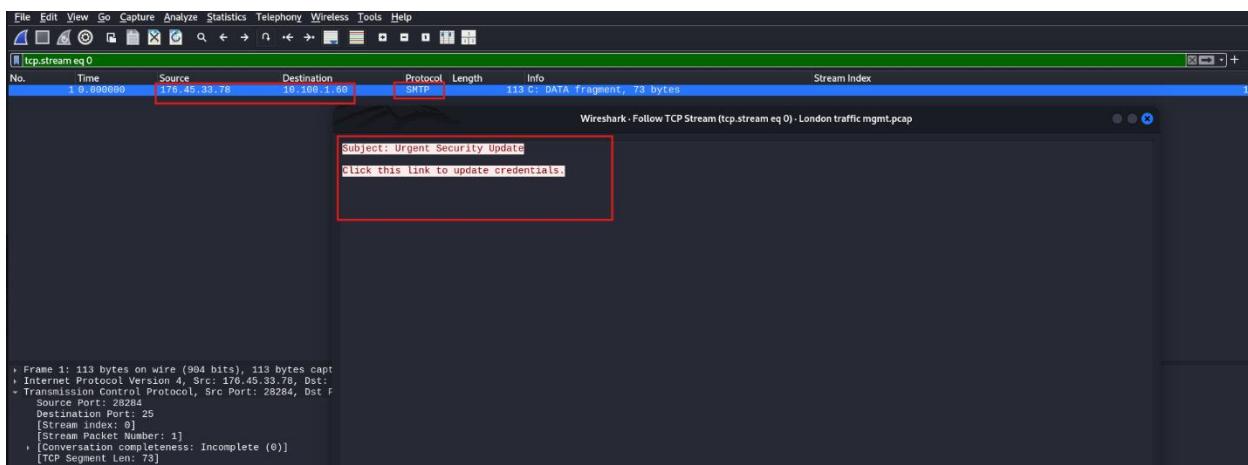
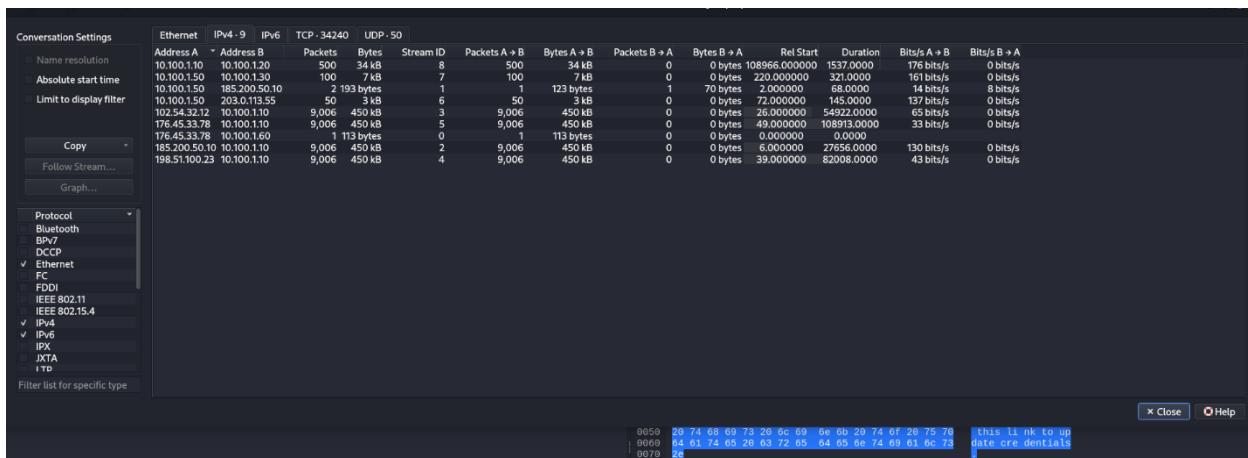
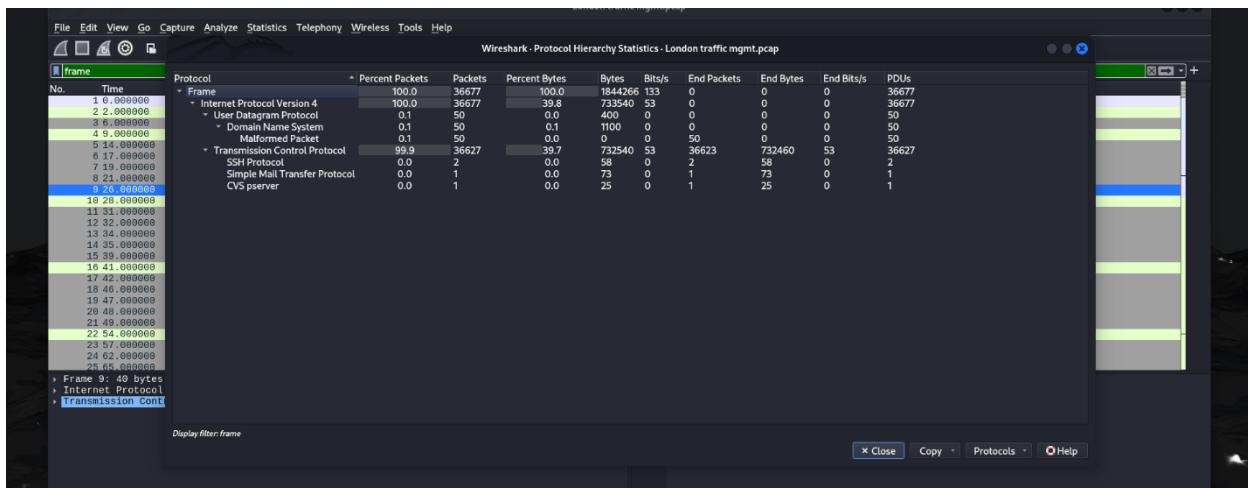
Pantserev, K.A. (2020). The Malicious Use of AI-Based Deepfake Technology as the New Threat to Psychological Security and Political Stability. *Advanced Sciences and Technologies for Security Applications*, pp.37–55. doi:<https://doi.org/10.1007/978-3-030-35746-6>

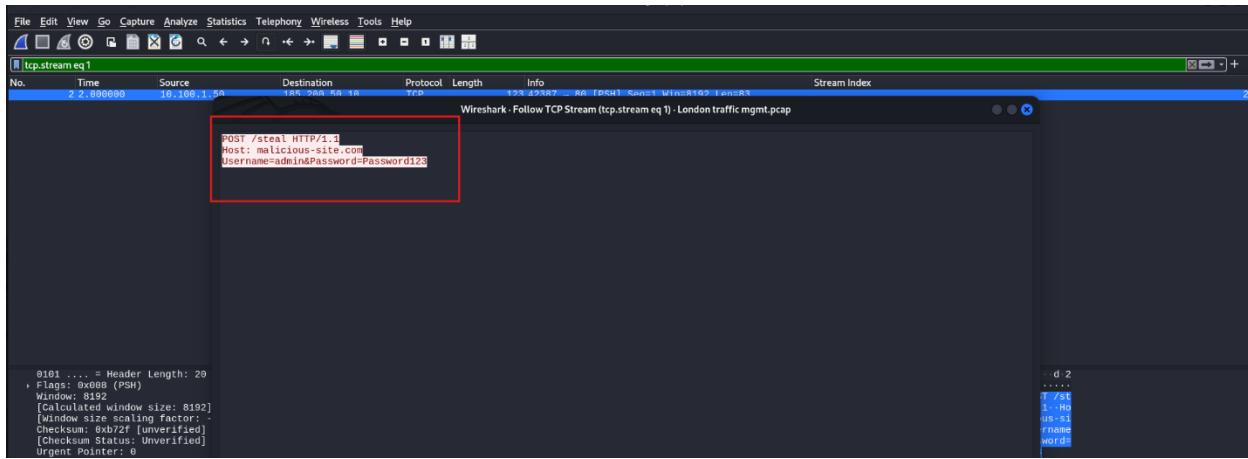
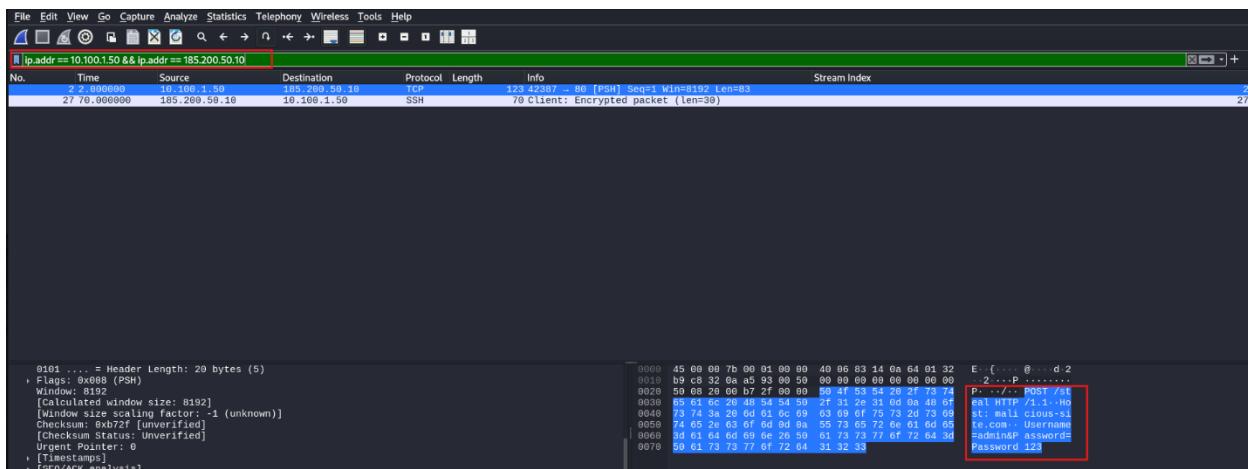
7_3.

Appendix

Appendix A







File Edit View Go Capture Analyze Statistics Telephone Wireless Tools Help

tcp.flags.syn == T & tcp.flags.ack == 0 & ip.dst == 10.100.1.10

No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
3	6.000000	185.200.50.10	10.100.1.10	TCP	40	21236 -> 22 [SYN] Seq=0 Win=8192 Len=0	3
4	9.000000	185.200.50.10	10.100.1.10	TCP	40	25544 -> 80 [SYN] Seq=0 Win=8192 Len=0	4
5	14.000000	185.200.50.10	10.100.1.10	TCP	40	37699 -> 443 [SYN] Seq=0 Win=8192 Len=0	5
6	17.000000	185.200.50.10	10.100.1.10	TCP	40	38901 -> 1333 [SYN] Seq=0 Win=8192 Len=0	6
7	19.000000	185.200.50.10	10.100.1.10	TCP	40	38901 -> 3309 [SYN] Seq=0 Win=8192 Len=0	7
8	21.000000	185.200.50.10	10.100.1.10	TCP	40	795 -> 8088 [SYN] Seq=0 Win=8192 Len=0	8
9	26.000000	192.54.32.12	10.100.1.10	TCP	40	60870 -> 22 [SYN] Seq=0 Win=8192 Len=0	9
10	28.000000	192.54.32.12	10.100.1.10	TCP	40	51037 -> 80 [SYN] Seq=0 Win=8192 Len=0	10
11	30.000000	192.54.32.12	10.100.1.10	TCP	40	49988 -> 80 [SYN] Seq=0 Win=8192 Len=0	11
12	32.000000	192.54.32.12	10.100.1.10	TCP	40	48973 -> 1433 [SYN] Seq=0 Win=8192 Len=0	12
13	34.000000	192.54.32.12	10.100.1.10	TCP	40	56299 -> 3309 [SYN] Seq=0 Win=8192 Len=0	13
14	35.000000	192.54.32.12	10.100.1.10	TCP	40	45919 -> 8088 [SYN] Seq=0 Win=8192 Len=0	14
15	39.000000	198.51.100.23	10.100.1.10	TCP	40	35740 -> 22 [SYN] Seq=0 Win=8192 Len=0	15
16	41.000000	198.51.100.23	10.100.1.10	TCP	40	48966 -> 80 [SYN] Seq=0 Win=8192 Len=0	16
17	42.000000	198.51.100.23	10.100.1.10	TCP	40	2329 -> 443 [SYN] Seq=0 Win=8192 Len=0	17
18	46.000000	198.51.100.23	10.100.1.10	TCP	40	1302 -> 1433 [SYN] Seq=0 Win=8192 Len=0	18
20	48.000000	198.51.100.23	10.100.1.10	TCP	40	25613 -> 3309 [SYN] Seq=0 Win=8192 Len=0	19
21	50.000000	198.51.100.23	10.100.1.10	TCP	40	1247 -> 8088 [SYN] Seq=0 Win=8192 Len=0	20
22	54.000000	176.45.33.78	10.100.1.10	TCP	40	40096 -> 22 [SYN] Seq=0 Win=8192 Len=0	21
23	57.000000	176.45.33.78	10.100.1.10	TCP	40	11398 -> 80 [SYN] Seq=0 Win=8192 Len=0	22
24	62.000000	176.45.33.78	10.100.1.10	TCP	40	32241 -> 443 [SYN] Seq=0 Win=8192 Len=0	23
25	65.000000	176.45.33.78	10.100.1.10	TCP	40	58215 -> 1433 [SYN] Seq=0 Win=8192 Len=0	24
26	68.000000	176.45.33.78	10.100.1.10	TCP	40	60966 -> 3309 [SYN] Seq=0 Win=8192 Len=0	25
27	69.000000	176.45.33.78	10.100.1.10	TCP	40	45877 -> 8088 [SYN] Seq=0 Win=8192 Len=0	26
178	546.000000	185.200.50.10	10.100.1.10	TCP	50	59364 -> 80 [SYN] Seq=0 Win=8192 Len=10	178

Frame 31: 40 bytes on wire (320 bits), 40 bytes captured (320 bits)
Internet Protocol Version 4, Src: 185.200.50.10, Dst: 10.100.1.10
Transmission Control Protocol, Src Port: 21236, Dst Port: 22, Seq: 0, Len: 0

Activate Windows
Go to Settings to activate Windows Profile: Default

Packets: 36677 · Displayed: 36024 (98.2%)

London traffic mgmt.pcap

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London traffic mgmt.pcap

ip.addr == 185.200.50.10 & p.addr == 10.100.1.50 & tcp.port == 22

No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
27	70.000000	185.200.50.10	10.100.1.50	SSH	70	Client: Encrypted packet (len=30)	27

Frame 27: 70 bytes on wire (560 bits), 70 bytes captured (560 bits)
Internet Protocol Version 4, Src: 185.200.50.10, Dst: 10.100.1.50
Transmission Control Protocol, Src Port: 39041, Dst Port: 22, Seq: 1, Len: 30
Source Port: 39041
Destination Port: 22
[Stream index: 2]
[Conversation Number: 1]
[Conversation completeness: Incomplete (1)]
[TCP Segment Len: 36]
Sequence Number (raw): 0
[Next Sequence Number: 1 (relative sequence number)]

0000 45 00 00 46 00 01 00 00 40 00 03 40 b0 c9 32 0a E: F...@.I.2.
0001 0a e4 01 32 75 50 00 10 00 00 00 00 00 00 00 00 00 00 P->CWT:
0002 50 00 20 00 07 9e 00 00 45 58 50 4c 4f 49 54 3a EXPLOIT:
0003 29 52 65 6d 6f 74 65 20 43 6f 64 65 20 45 78 65 Remote Code Execution
0040 63 75 74 69 6f 6e

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London traffic mgmt.pcap

tcp.stream eq 26

No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
27	70.000000	185.200.50.10	10.100.1.50	SSH	70	Client: Encrypted packet (len=30)	27

Wireshark - Follow TCP Stream (tcp.stream eq 26) - London traffic mgmt.pcap

EXPL0IT: Remote Code Execution

Frame 27: 70 bytes on wire (560 bits), 70 bytes captured (560 bits)
Internet Protocol Version 4, Src: 185.200.50.10, Dst: 10.100.1.50
Transmission Control Protocol, Src Port: 39041, Dst Port: 22
[Stream index: 2]

London traffic mgmt.pcap

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dns & ip addr == 203.0.113.55

No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
28	72.866996	10.100.1.50	203.0.113.55	DNS	58	58 Unknown operation [10] 0x444e[Malformed Packet]	28
29	79.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	29
31	80.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	31
32	85.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	32
33	89.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	33
34	90.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	34
35	91.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	35
36	93.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	36
37	98.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	37
38	99.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	38
39	104.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	39
40	107.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	40
41	118.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	41
42	115.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	42
43	120.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	43
44	122.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	44
45	127.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	45
46	131.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	46
47	133.000990	10.100.1.50	203.0.113.55	DNS	58	58 Unknown operation [10] 0x444e[Malformed Packet]	47
48	137.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	48
49	138.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	49
50	141.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	50
51	143.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	51
52	145.000990	10.100.1.50	203.0.113.55	DNS	50	50 Unknown operation [10] 0x444e[Malformed Packet]	52

Frame 28: 50 bytes on wire (400 bits), 50 bytes captured (400 bits)
 Internet Protocol Version 4, Src: 10.100.1.50, Dst: 203.0.113.55
 User Datagram Protocol, Src Port: 28746, Dst Port: 53
 Source Port: 28746
 Destination Port: 53
 Length: 50
 Checksum: 0x1d9c7 [unverified]
 [Checksum Status: Unverified]
 [Stream index: 0]
 [Stream Packet Number: 1]
 [Timestamp]
 [UDP payload: (22 bytes) .
 London traffic mgmt.pcap

Activate Windows
[Go to Settings to activate Windows](#) Profile: Default

Packets: 36677 - Displayed: 50 (0.1%)

London traffic mgmt.pcap

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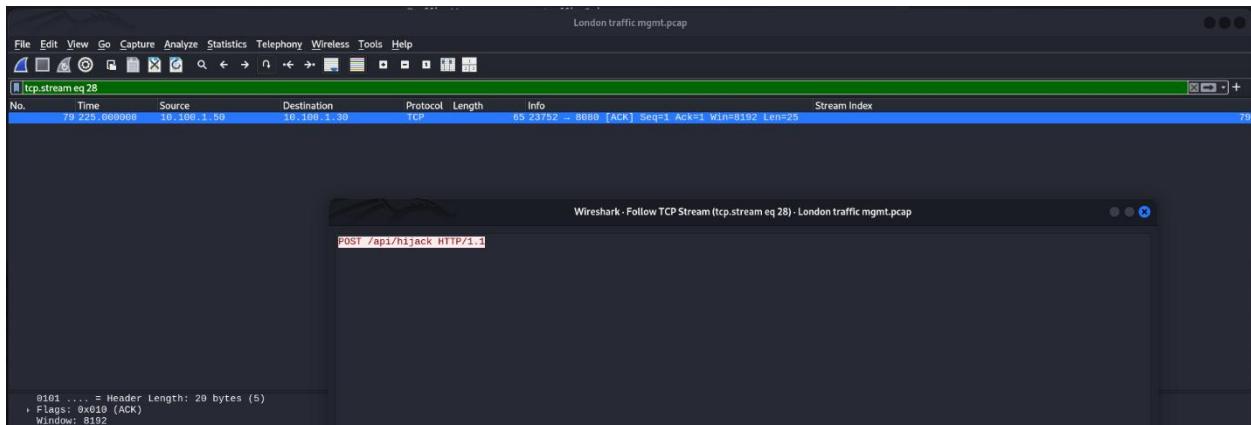
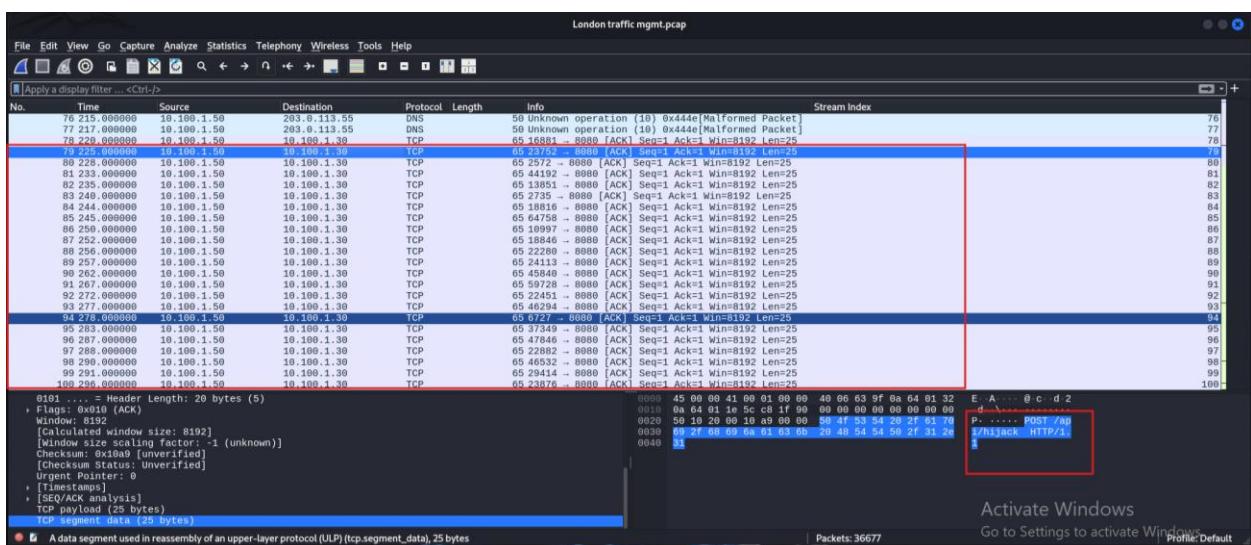
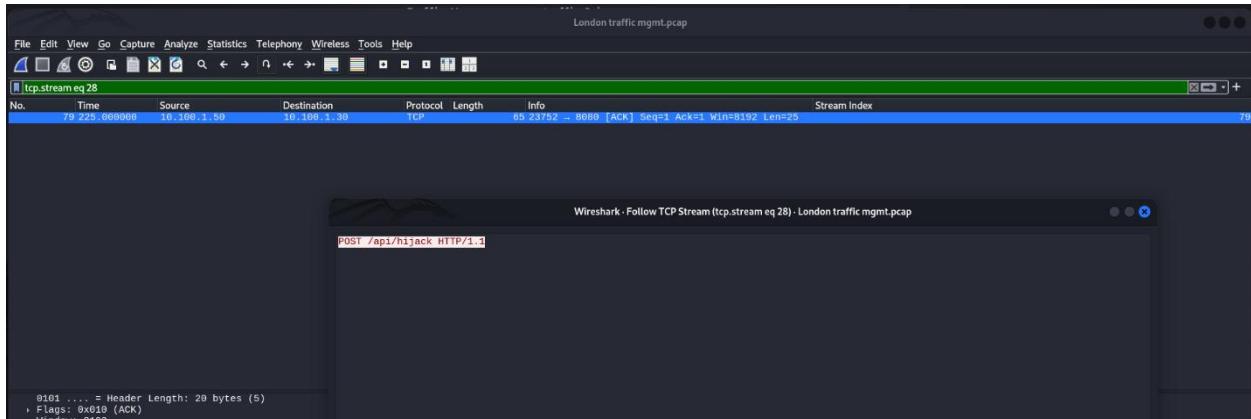
udp.stream eq 0

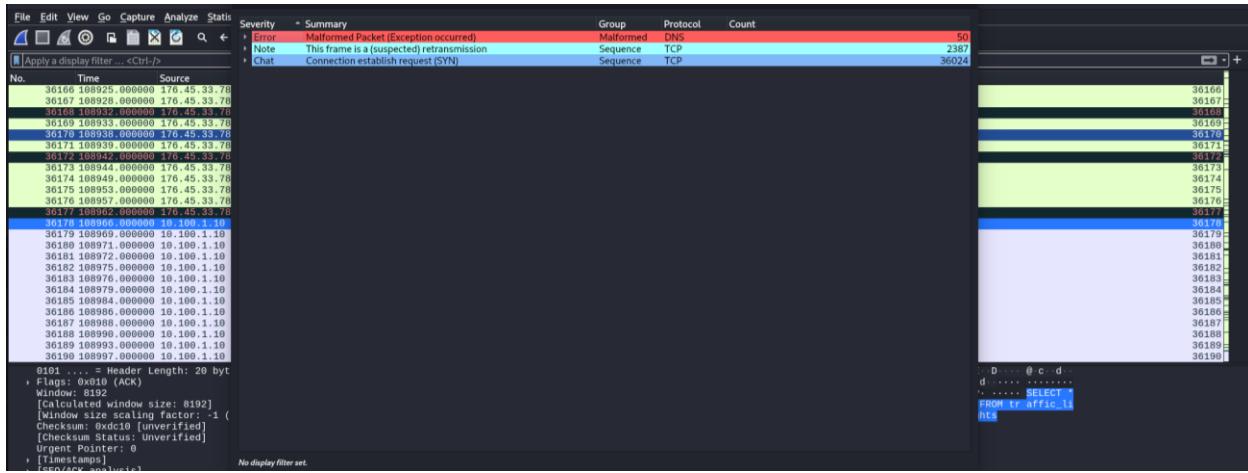
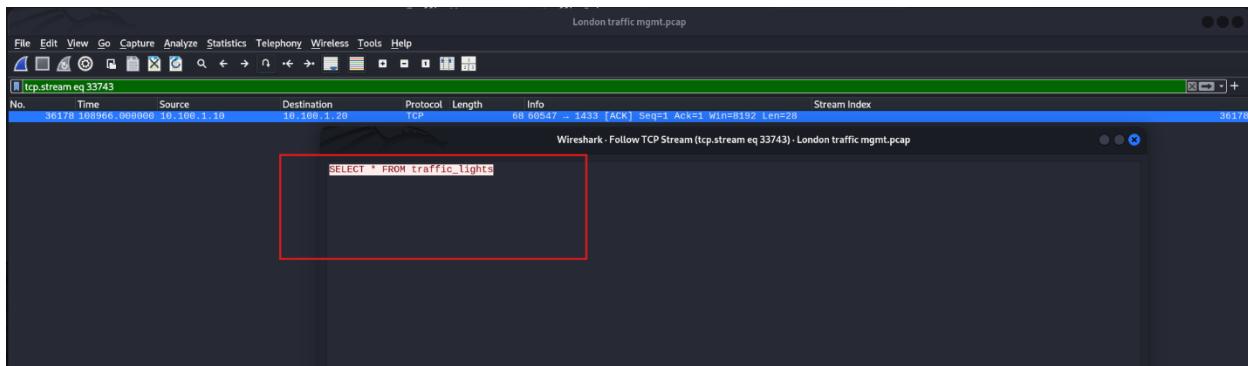
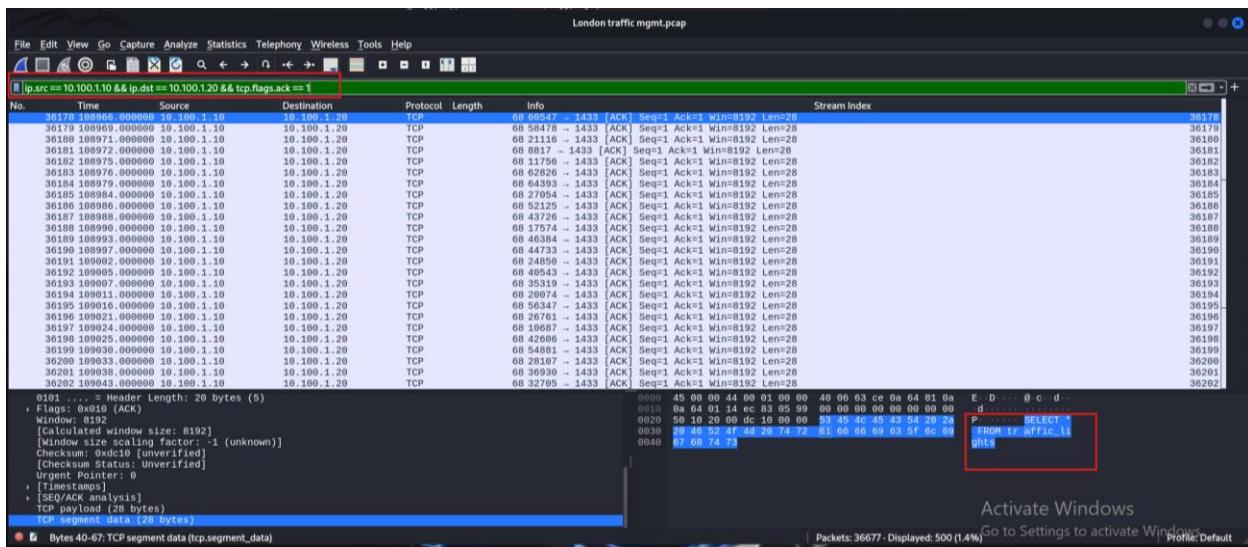
No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
28	72.966996	10.100.1.50	203.0.113.55	DNS	58	58 Unknown operation [10] 0x444e[Malformed Packet]	28

Wireshark - Follow UDP Stream (udp.stream eq 0) - London traffic mgmt.pcap

DNS_TUNNEL: Keep Alive

Frame 28: 50 bytes on wire (400 bits), 50 bytes captured (400 bits)
 Internet Protocol Version 4, Src: 10.100.1.50 , Dst: 203.0.113.55
 User Datagram Protocol , Src Port: 28746 ,
 Source Port: 28746
 Destination Port: 53





London traffic mgmt.pcap

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Wireshark - Endpoints - London traffic mgmt.pcap

Endpoint Settings														
Name resolution		Ethernet	IPv4 - 10	IPv6	TCP - 34248	UDP - 51								
Limit to display filter		Address	Packets	Bytes	Tx Packets	Tx Bytes	Rx Packets	Rx Bytes	Country	City	Latitude	Longitude	AS Number	Organization
Copy		10.100.1.10	36524	2 MB	500	34 kB	36,024	2 MB					2 MB	
Map		10.100.1.20	500	34 kB	0	0 bytes	500	34 kB					34 kB	
		10.100.1.30	100	7 kB	0	0 bytes	100	7 kB					7 kB	
		10.100.1.50	152	9 kB	151	9 kB	1	70 bytes					9 kB	
		10.100.1.60	1	113 bytes	0	0 bytes	1	113 bytes					113 bytes	
		102.54.32.12	9,006	450 kB	9,006	450 kB	0	0 bytes					450 kB	
		176.45.33.78	9,007	450 kB	9,007	450 kB	0	0 bytes					450 kB	
		188.51.100.10	9,008	450 kB	9,008	450 kB	1	123 bytes					450 kB	
		188.51.100.23	9,009	450 kB	9,009	450 kB	0	0 bytes					450 kB	
		203.0.13.55	50	3 kB	0	0 bytes	50	3 kB					3 kB	

Protocol: Ethernet, Bluetooth, BP7, DCCP, ✓ Ethernet, FC, FDDI, IEEE 802.11, IEEE 802.15.4, ✓ IPv4, ✓ IPv6, ✓ IPX, ✓ IXTA, LTP

London traffic mgmt.pcap

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Wireshark - London traffic mgmt.pcap

Filter: !(tcp.port == 80 || tcp.port == 443 || tcp.port == 21 || tcp.port == 8080 || udp.port == 53)

No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
36154	10:45:33.78	10.100.1.10	TCP	50	52559 - 80 [SYN] Seq=0 Win=8192 Len=10		36154
36155	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36155
36156	10:45:33.78	10.100.1.10	TCP	50	61708 - 80 [SYN] Seq=0 Win=8192 Len=10		36156
36157	10:45:33.78	10.100.1.10	TCP	50	42565 - 80 [SYN] Seq=0 Win=8192 Len=10		36157
36158	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36158
36159	10:45:33.78	10.100.1.10	TCP	50	32597 - 80 [SYN] Seq=0 Win=8192 Len=10		36159
36160	10:45:33.78	10.100.1.10	TCP	50	22865 - 80 [SYN] Seq=0 Win=8192 Len=10		36160
36161	10:45:33.78	10.100.1.10	TCP	50	69266 - 80 [SYN] Seq=0 Win=8192 Len=10		36161
36162	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36162
36163	10:45:33.78	10.100.1.10	TCP	50	12150 - 80 [SYN] Seq=0 Win=8192 Len=10		36163
36164	10:45:33.78	10.100.1.10	TCP	50	39749 - 80 [SYN] Seq=0 Win=8192 Len=10		36164
36165	10:45:33.78	10.100.1.10	TCP	50	28365 - 80 [SYN] Seq=0 Win=8192 Len=10		36165
36166	10:45:33.78	10.100.1.10	TCP	50	655 - 80 [SYN] Seq=0 Win=8192 Len=10		36166
36167	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36167
36168	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36168
36169	10:45:33.78	10.100.1.10	TCP	50	4335 - 80 [SYN] Seq=0 Win=8192 Len=10		36169
36170	10:45:33.78	10.100.1.10	TCP	50	42938 - 80 [SYN] Seq=0 Win=8192 Len=10		36170
36171	10:45:33.78	10.100.1.10	TCP	50	27292 - 80 [SYN] Seq=0 Win=8192 Len=10		36171
36172	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36172
36173	10:45:33.78	10.100.1.10	TCP	50	31794 - 80 [SYN] Seq=0 Win=8192 Len=10		36173
36174	10:45:33.78	10.100.1.10	TCP	50	47453 - 80 [SYN] Seq=0 Win=8192 Len=10		36174
36175	10:45:33.78	10.100.1.10	TCP	50	11574 - 80 [SYN] Seq=0 Win=8192 Len=10		36175
36176	10:45:33.78	10.100.1.10	TCP	50	6376 - 80 [SYN] Seq=0 Win=8192 Len=10		36176
36177	10:45:33.78	10.100.1.10	TCP	50	51585 - 80 [SYN] Seq=0 Win=8192 Len=10		36177

Frame 36177: 50 bytes on wire (400 bits), 50 bytes captured (400 bits)
Internet Protocol Version 4, Src: 176.45.33.78, Dst: 10.100.1.10
Transmission Control Protocol, Src Port: 28137, Dst Port: 80, Seq: 0, Len: 10
Source: 176.45.33.78 (176.45.33.78)
Destination: 10.100.1.10 (10.100.1.10)
[Stream index: 27613]
[Stream Packet Number: 2]
[Conversation Completeness: Incomplete (9)]
[Total Conversation Len: 10]
Sequence Number: a (relative sequence number)
Sequence Number: b (relative sequence number)
[Next Sequence Number: 11 (relative sequence number)]
[Next Sequence Number: 12 (relative sequence number)]
[**Dos** FLOOD]

Activate Windows
Go to Settings to activate Windows
Profile: Default

Packets: 36677 - Displayed: 36163 (98.6%)

London traffic mgmt.pcap

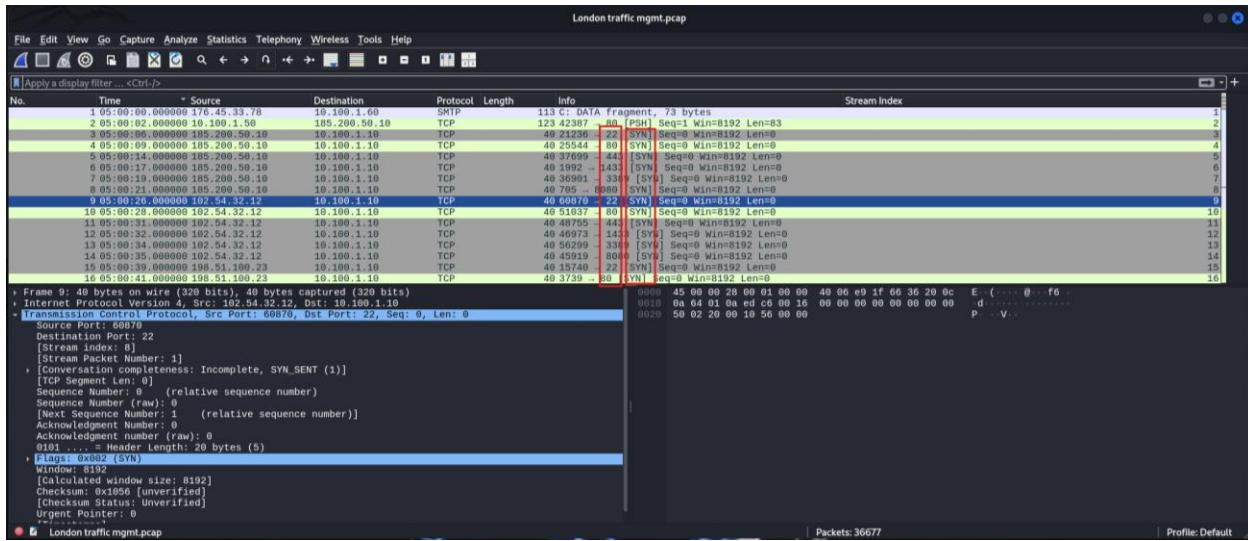
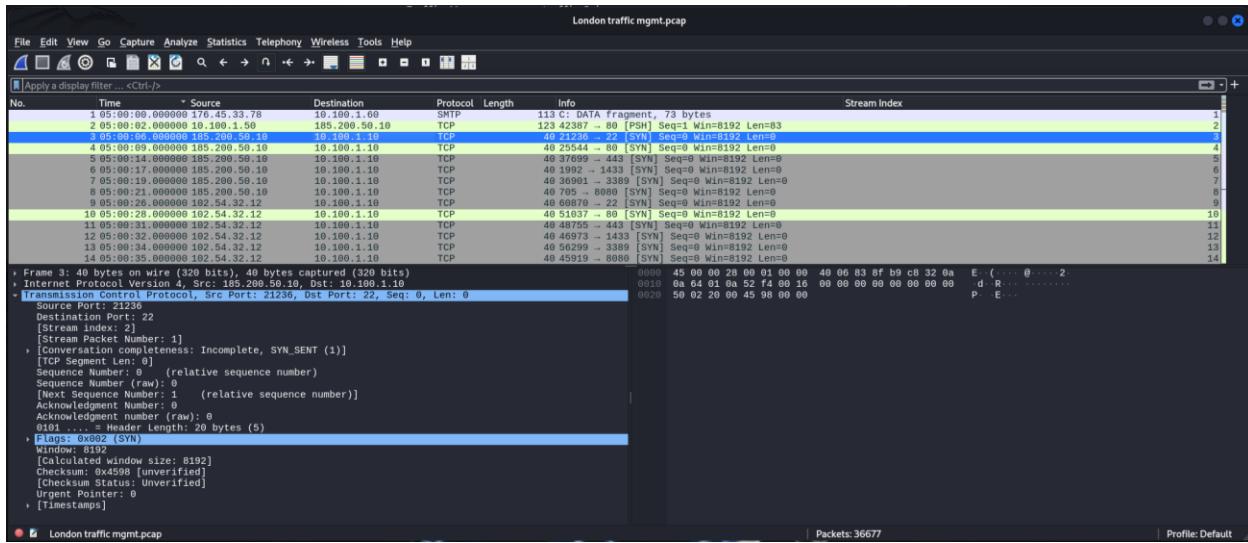
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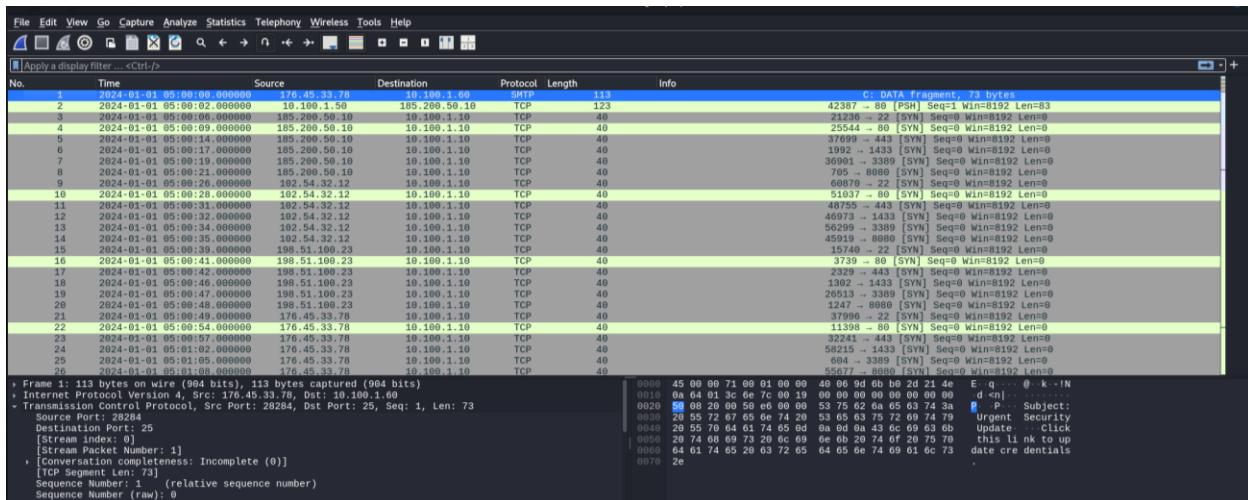
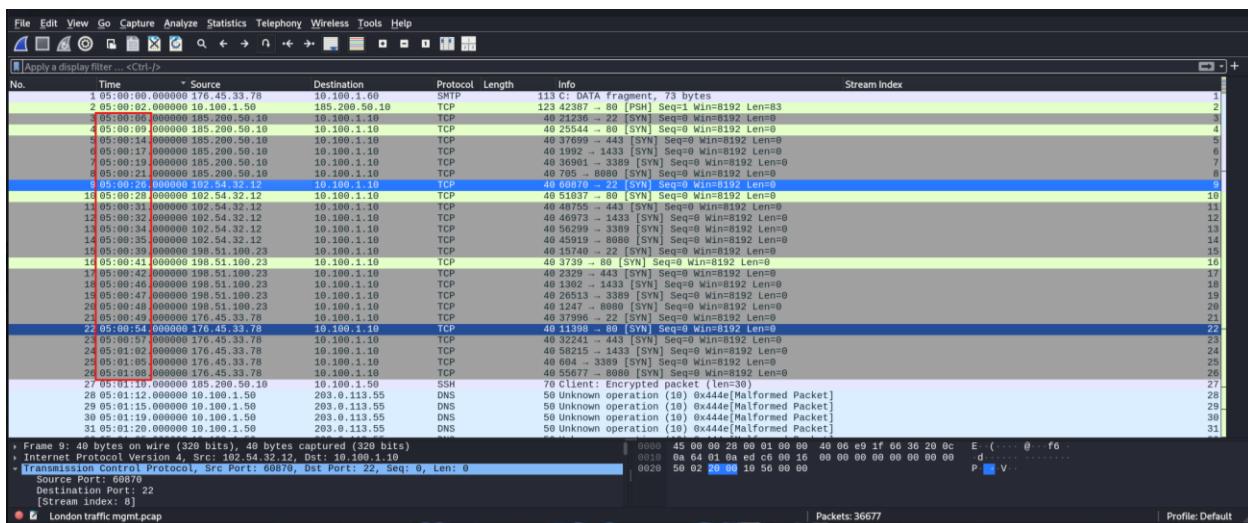
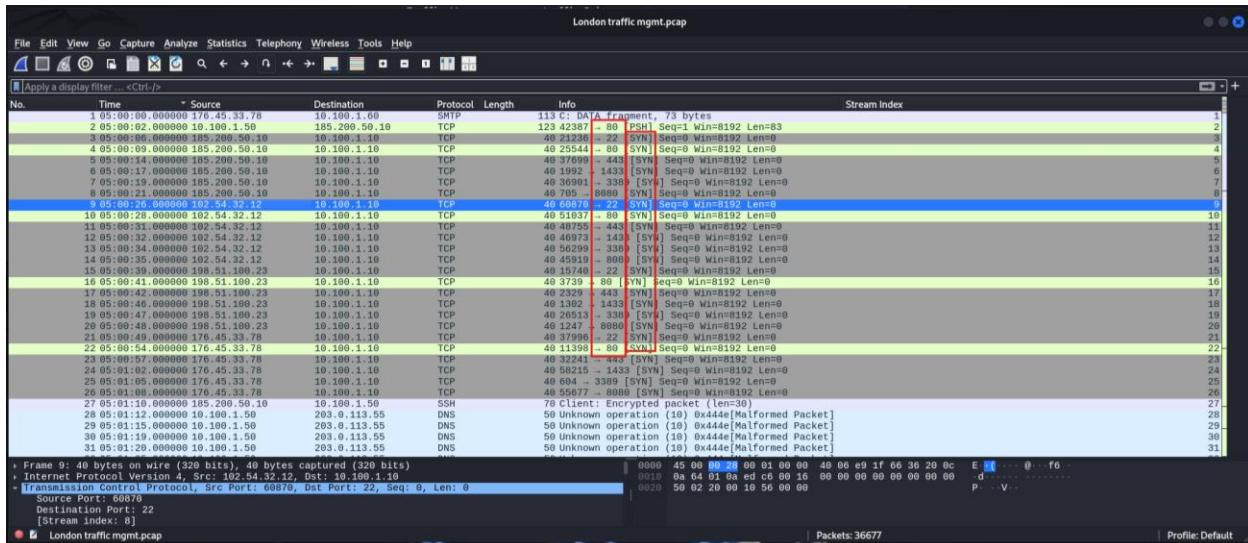
Wireshark - Follow TCP Stream (tcp.stream eq 27613) - London traffic mgmt.pcap

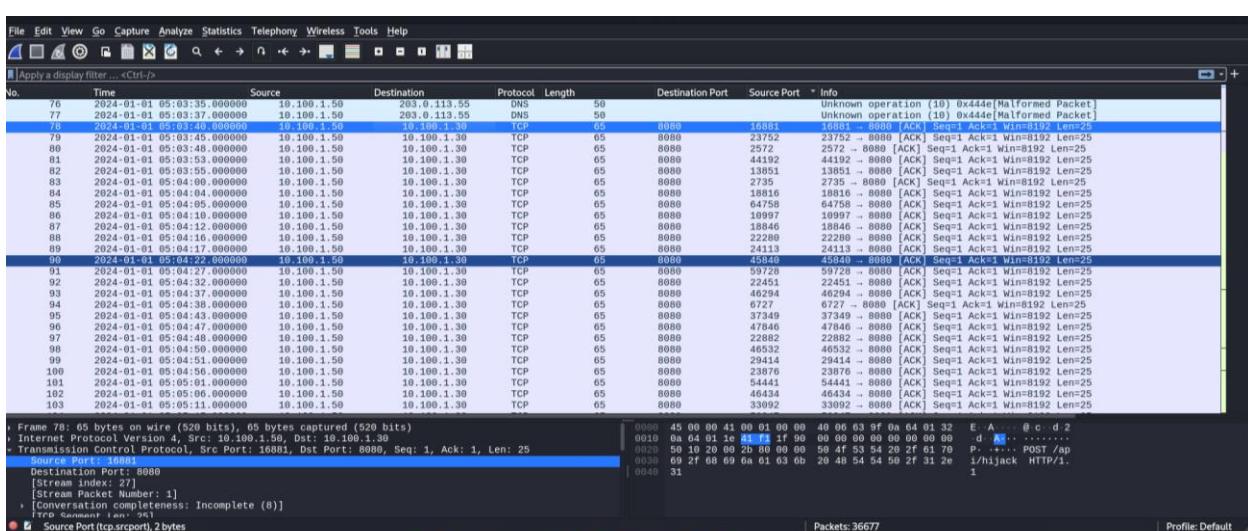
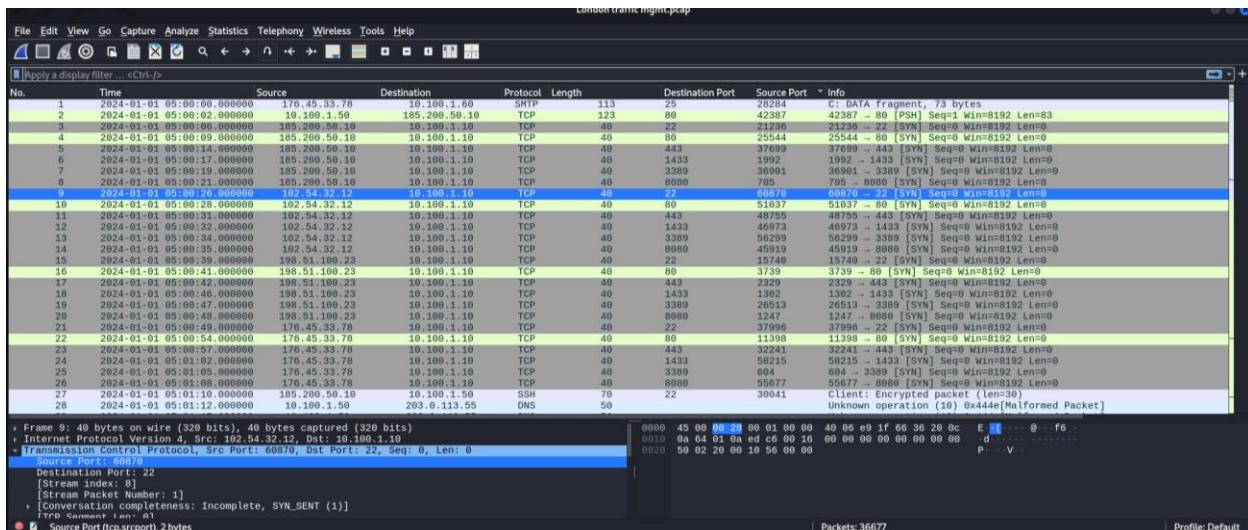
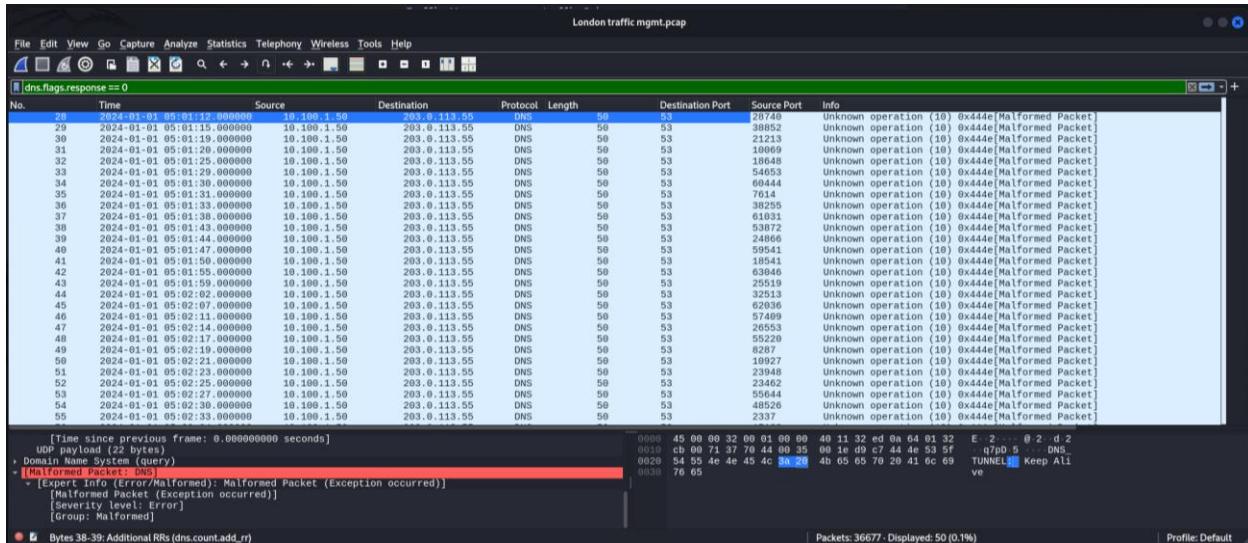
Reduction: 100% | Stream: 27613 | Filter: (tcp.stream == 27613) & !(tcp.port == 80 || tcp.port == 443 || tcp.port == 21 || tcp.port == 8080 || udp.port == 53)

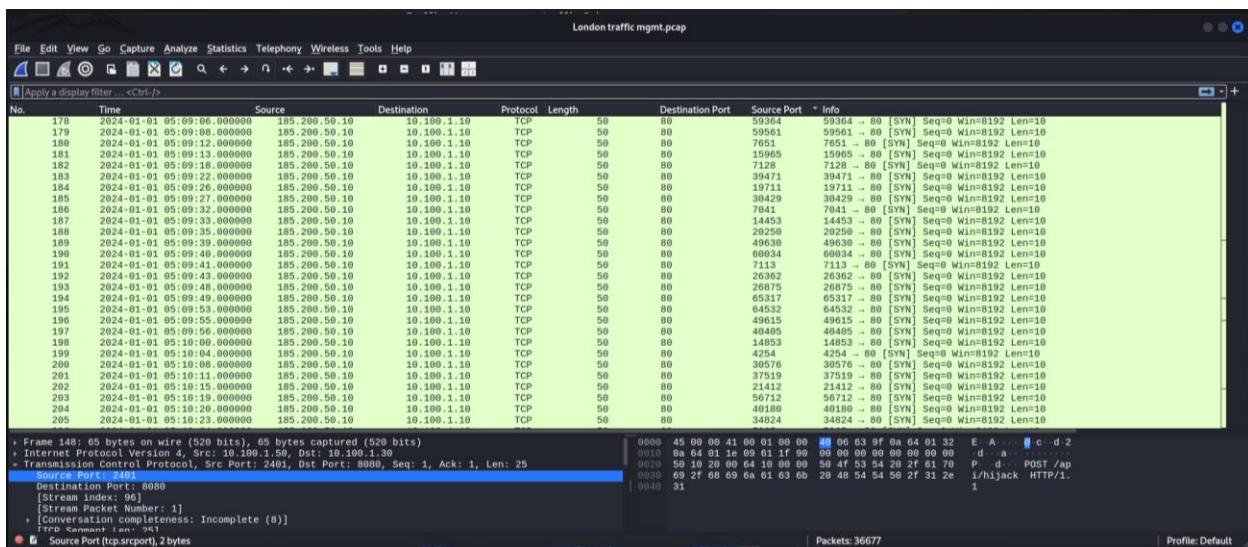
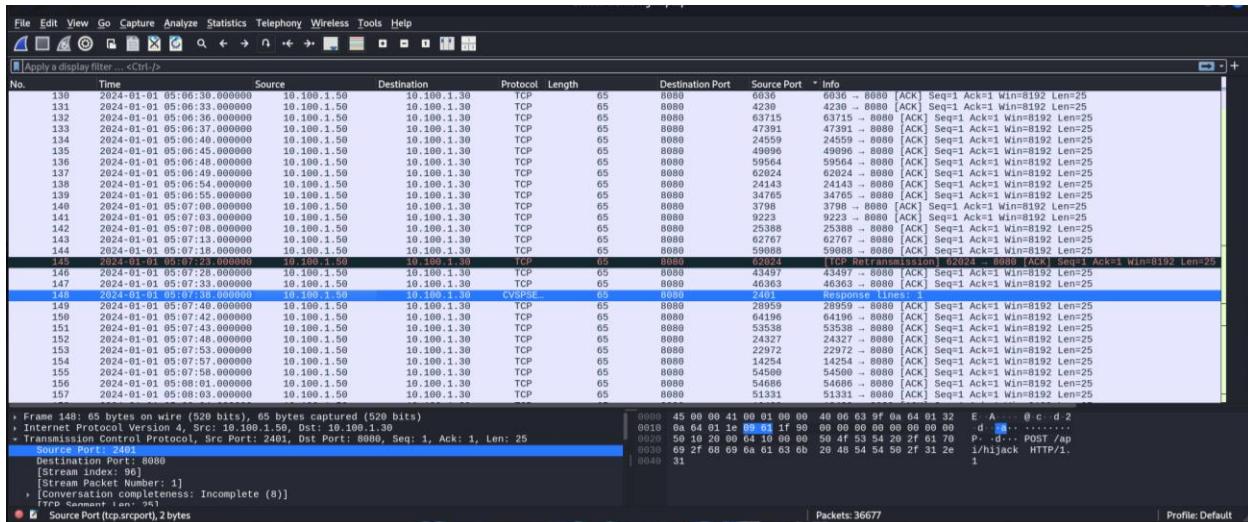
No.	Time	Source	Destination	Protocol	Length	Info	Stream Index
1*	29478	188.51.100.23	TCP	50	28137 - 80 [SYN] Seq=0 Win=8192 Len=10		29478
1*	36177	188.51.100.23	TCP	50	[TCP Retransmission] 28137 - 80 [SYN] Seq=0 Win=8192 Len=10		36177

Dos FLOOD









```
GNU nano 8.2
ALICIOUS_IPS<
"203.0.113.55"
"105.200.50.16"
"203.0.113.17"
"198.51.100.77"

Log file for forensics
LOG_FILE="/var/log/threat_block.log"
DATE=$(date "+%Y-%m-%d %H:%M:%S")

echo "[${DATE}] Starting mitigation..." | tee -a $LOGFILE

***** ACTIONS *****
1. Block malicious IPs using iptables
for IP in ${ALICIOUS_IPS[@]}; do
    echo "[${DATE}] Blocking IP: ${IP}" | tee -a $LOGFILE
    iptables -A INPUT -s "$IP" -j DROP
    iptables -A OUTPUT -d "$IP" -j DROP
done

2. Detect anomalous traffic (simple SYN flood detection via netstat)
echo "[${DATE}] Checking for SYN flood attempts..." | tee -a $LOGFILE
netstat -anp | grep 'SYN_RECV' | awk '{print $5}' | cut -d: -f1 | sort | uniq -c | sort -nr | head -n 10 | tee -a $LOGFILE
netstat -anp | grep 'SYN_RECV' | awk '{print $5}' | cut -d: -f1 | sort | uniq -c | awk '$1 > 100 {print $2}'
echo "[${DATE}] Possible SYN flood from: ${$SUSPECT}" | tee -a $LOGFILE
iptables -A INPUT -s "${$SUSPECT}" -j DROP
done

3. Save iptables rules (persistent across reboot if iptables-persistent is installed)
iptables-save > /etc/iptables/rules.v4

echo "[${DATE}] Mitigation completed. All threats neutralized for now." | tee -a $LOGFILE
|
```

```
[root@kali ~]# sudo /opt/threat_mitigation.sh  
2025-04-25 00:13:26 Starting mitigation..  
2025-04-25 00:13:26 Blocking IP: 203.0.113.55  
2025-04-25 00:13:26 Blocking IP: 185.200.50.10  
2025-04-25 00:13:26 Blocking IP: 102.24.32.12  
2025-04-25 00:13:26 Blocking IP: 102.24.32.17  
2025-04-25 00:13:26 Checking for SYN flood attempts..  
opt/threat_mitigation.sh: line 36: /etc/iptables.rules.v4: No such file or directory  
2025-04-25 00:13:26 Mitigation completed. All threats neutralized for now.
```