



Network Forensic Investigation

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Note that the information contained in this document is for educational purposes.

Contents

1	Network Forensic Practice and Aims	1
2	Investigative Tools	2
3	Network Data Forensic Analysis	3
3.1	Capture1.pcap	3
3.1.1	Traffic Analysis.....	3
3.1.2	Evidence Analysis	4
3.2	Capture2.pcap	7
3.3.1	Traffic Analysis.....	7
3.3.2	Evidence Analysis	8
3.3	Capture3.pcap	11
3.3.1	Traffic Analysis.....	11
3.3.2	Evidence Analysis	12
4	Discussion	14
4.1	Critical Evaluation.....	14
4.2	Reflective Component	14
	References	15
	Appendices.....	16
	Appendix A – Evidence Hash Values and Locations.....	16
	Appendix B – Capture1.pcap Artefacts.....	18
	Evidence	18
	Out-of-scope Artefacts.....	21
	Appendix C – Capture2.pcap Artefacts	25
	Evidence	25
	Out-of-scope Artefacts.....	25
	Appendix D – Capture3.pcap Artefacts	26
	FreeText Traffic in JSON Format – communications.txt	26
	Geolocation Traffic in CSV Format – geolocations.csv	34
	Geolocation Data in KML Format – geolocations.kml	46

1 NETWORK FORENSIC PRACTICE AND AIMS

Due to suspicions of corruption in an international sporting competition, the analyst was requested to investigate exfiltrated network data from entities of interest. With a total of three provided network captures, the analyst was tasked to identify whether the suspected bribery was legitimate or not. The **pcap** files belong to the network history of Kim Ill-Song.

To efficiently handle the case and the analysis of the files, the analyst carefully read through the brief and the possible required data in each of the captures. By identifying the requirements, the researcher recognised what evidence will be required and what will be out of scope. With this, they researched common ports (file transfer, communications traffic, mail traffic, etc), tools (**Section 2 Investigative Tools**), and techniques. Additionally, as the evidence had to preserve its integrity, the analyst used changed the permissions to read-only and kept track of their hashes. A table of the hashes can be found in **Appendix A**. The investigation methodology utilised the following format:

- Brief analysis;
- Research based on brief hints – ports, the scope of evidence, possible anti-forensic techniques;
- Capture analysis:
 - Entities and timelines;
 - Port filtering;
 - IP filtering;
 - Object Exporting;
 - Traffic analysis.
- Evidence analysis:
 - Anti-forensic practices (decoding, steganography, obfuscation);
 - Data filtering;
 - Data rebuilding.
- Critical Evaluation – Challenges and how they were overcome.

All out-of-scope artefacts are covered in the appendices.

2 INVESTIGATIVE TOOLS

The analyst utilised several tools to efficiently sort through the data and obtain the required evidence. A list of the tools, their features, and use cases can be found in **Figure 3.1.1**.

Tool Name	Effective Features	Use case
Wireshark	A tool for network capture analysis. Exporting objects, following TCP streams, exporting stream data to binaries, and filtering data (both by protocols/IP addresses and searching for strings/hex in packet list/details/bytes) were the most effective features used in this analysis. They allowed the researcher to efficiently sort through the network and obtain only the required evidence.	The tool was used for all three of the provided network captures.
Tshark	Tshark is a tool like TCPDump, however, it provides analysts with some additional options. Its most effective features were: <ul style="list-style-type: none"> • -Y – allows the user to filter data • -T – specifies fields • -e format of printed fields 	The tool was used for Capture3 to filter and export the http message data in JSON format and the geolocation requests in a CSV format.
Binwalk	Binwalk is a tool which analysis a file's binary for other embedded files/archives/binaries. It effectively detected a hidden python script within an image, which was extracted with the -e flag.	The tool was used on the identified evidence to find hidden files.
CyberChef	CyberChef is a tool developed by GCHQ for encoding/encrypting and decoding/decrypting data. One of its most effective features was decoding Base64 strings.	The tool was used for decoding any Base64 text found in Capture1.
HxD	HxD is a hex editor. It allows seamless analysis of binary files and carving of any embedded data. The most effective feature was the "save selection" functionality that lets an analyst save binary data as files.	The tool was used to carve multiple archives from a web conversation in Capture2.
MS Excel	MS Excel is a tool which allows a user to view and edit CSV data.	The tool was used in Capture3 to clean the data extracted with tshark.
Google Earth	Google Earth is an app developed by Google that allows KML data to be uploaded to it. This proved to be effective as it showed a number with pins which was identified in the CSV data.	The tool was used to show the hidden meeting date from Capture3.
CSV to KML converter	An online tool used to convert the cleared CSV output into KLM. The KLM data was then imported into Google Earth.	The tool was used to make the CSV data compatible with Google Earth.
Tree	A Linux command-line tool which shows directories in a tree format. The tool was useful to promptly display any files within directories in an easily readable format.	The tool was used on the obtained Documents directory from Capture1.

Figure 3.1.1 – Tools utilised during the investigation.

3 NETWORK DATA FORENSIC ANALYSIS

3.1 CAPTURE1.PCAP

3.1.1 Traffic Analysis

As with the other captures, the PCAP file was analysed with **Wireshark**. Based on the traffic, the analyst identified that the incident took place on the **11th of July 2014** from **21:11:26** until **21:23:52** based on the timestamps within the captured packets. The brief suggested that the captured network traffic contained file transfers and the files had to be recovered. As there was no **FTP** data, the analyst checked another popular file transferring protocol (**SMB**), as it is used to create file share points (Kumar, 2022).

Substantial **SMB** traffic was revealed after the analyst filtered the traffic. The communication was generated by two hosts – **173.29.1.20** and **173.29.1.23**. In packet **5962** the former announces itself to the **DHCP Server** as **DOG-WS** while the latter announces itself in packet **5857** as **FOX-WS**. (Figure 3.1.1)

5857	234.029929	172.29.1.23	172.29.1.255	BROWSER	243 Host Announcement FOX-WS, Workstation, Server, Print Queue Server, NT Workstation, Potential Browser, Backup Browser
5898	243.765960	172.29.1.23	172.29.1.20	SMB	213 Negotiate Protocol Request
5899	243.766459	172.29.1.20	172.29.1.23	SMB	143 Negotiate Protocol Response
5900	243.934327	172.29.1.23	172.29.1.20	SMB	162 Session Setup AndX Request, NTLMSSP_NEGOTIATE
5901	243.934826	172.29.1.20	172.29.1.23	SMB	319 Session Setup AndX Response, NTLMSSP_CHALLENGE, Error: STATUS_MORE_PROCESSING_REQUIRED
5903	244.118929	172.29.1.23	172.29.1.20	SMB	238 Session Setup AndX Request, NTLMSSP_AUTH, User: \
5904	244.119929	172.29.1.20	172.29.1.23	SMB	175 Session Setup AndX Response
5906	244.275556	172.29.1.23	172.29.1.20	SMB	136 Tree Connect AndX Request, Path: \\DOG-WS\IPC\$
5907	244.275811	172.29.1.20	172.29.1.23	SMB	114 Tree Connect AndX Response
5908	244.336758	172.29.1.23	172.29.1.20	LANMAN	172 NetServerEnum2 Request, Domain Enum
5909	244.337256	172.29.1.20	172.29.1.23	LANMAN	138 NetServerEnum2 Response
5910	244.340753	172.29.1.23	172.29.1.20	LANMAN	186 NetServerEnum2 Request, Workstation, Server, SQL Server, Domain Controller, Backup Controller, Time Source, Apple S
5911	244.341003	172.29.1.20	172.29.1.23	LANMAN	193 NetServerEnum2 Response
5949	257.521807	172.29.1.23	172.29.1.20	SMB	93 Tree Disconnect Request
5950	257.522855	172.29.1.20	172.29.1.23	SMB	93 Tree Disconnect Response
5951	257.594995	172.29.1.23	172.29.1.20	SMB	97 Logoff AndX Request
5952	257.595803	172.29.1.20	172.29.1.23	SMB	97 Logoff AndX Response
5962	261.359260	172.29.1.20	172.29.1.255	BROWSER	260 Local Master Announcement DOG-WS, Workstation, Server, NT Workstation, Potential Browser, Master Browser

Figure 3.1.1 – Discovering the two hosts.

Further analysis of the traffic revealed that **FOX-WS** established a connection with the **IPC** share of **DOG-WS** (packet **23838**), allowing it to read the shares. The account that made the connection, named **fox-ws\test** as seen in packet **23844**, enumerated the SMB shares with **\srvsvc** (Nessus, 2005) (Figure 3.1.2). From packet **23897** (21:22:16) to **24029** (21:22:18), the suspect reads all available shares in **DOG-WS**, including the **\\DOG-WS\DOCUMENTS** share. Afterwards, the **\\DOG-WS\BLAH** share was accessed from packet **24034** (21:22:23) to **24095** (21:22:28).

23844	642.004966	172.29.1.23	172.29.1.20	SMB	504 Session Setup AndX Request, NTLMSSP_AUTH, User: fox-ws\test
23845	642.006724	172.29.1.20	172.29.1.23	SMB	175 Session Setup AndX Response
23848	642.075412	172.29.1.23	172.29.1.20	SMB	136 Tree Connect AndX Request, Path: \\DOG-WS\IPC\$
23849	642.075666	172.29.1.20	172.29.1.23	SMB	114 Tree Connect AndX Response
23850	642.131618	172.29.1.23	172.29.1.20	SMB	158 NT Create AndX Request, FID: 0x4000, Path: \srvsvc

Figure 3.1.2 – fox-ws\test user.

In packet **24186** (21:22:40) the analyst identified that **Documents.zip** was uploaded from **FOX-WS** to the **\\DOG-WS\BLAH** share - an archive suspected to contain the files referred to in the brief. Additional activity regarding a file called **DOCUME~1.zip** was identified, but it is assumed to be a copy or an updated version of the beforementioned archive, which failed to fully transfer (Figure 3.1.3). The suspect accessed multiple other files from the documents share directory, but all of them were default **.ini** files. All files were recovered with **Wireshark**'s built-in "Export Objects" capability.

23854	\\DOG-WS\IPC\$	PIPE (Not Implemented) (0/0) W [0.00%]	0 bytes	\srvsvc
23902	\\DOG-WS\DOCUMENTS	FILE (129/129) R [100.00%]	129 bytes	\desktop.ini
23924	\\DOG-WS\DOCUMENTS	FILE (151/151) R [100.00%]	151 bytes	\My Music\desktop.ini
23932	\\DOG-WS\DOCUMENTS	FILE (150/150) R [100.00%]	150 bytes	\My Pictures\desktop.ini
23940	\\DOG-WS\DOCUMENTS	FILE (151/151) R [100.00%]	151 bytes	\My Videos\desktop.ini
24021	\\DOG-WS\DOCUMENTS	FILE (42/42) R [100.00%]	42 bytes	\My Pictures\Sample Pictures\desktop.ini
24186	\\DOG-WS\BLAH	FILE (1324022/1324022) W [100.00%]	1324 kB	\Documents.zip
25755	\\DOG-WS\BLAH	FILE (1014/1324022) R [0.00%]	1324 kB	\DOCUME~1.ZIP
25785	\\DOG-WS\BLAH	FILE (5110/1324022) R [0.00%]	1324 kB	\DOCUME~1.ZIP

Figure 3.1.3 – Failed and successful file transfers through **SMB**.

3.1.2 Evidence Analysis

As mentioned in the previous section, the evidence was extracted through the “Export Objects” function within **Wireshark**. Extracting the **Documents.zip** archive revealed a total of 10 directories and 15 files (shown with the **tree** command in Linux) (**Figure 3.1.4**)

```
(kali㉿kali)-[~/Desktop]
$ tree Documents
Documents
├── Actual Documents
│   ├── GoT Spoilers.docx
│   ├── NorthKorea.docx
│   └── PiD.docx
├── Chess Boxing
│   ├── NK.jpg
│   ├── Rules 2.docx
│   ├── Rules 3.docx
│   ├── Rules 4.docx
│   ├── Rules 5.docx
│   ├── Rules 6.docx
│   └── Rules 7.docx
├── Enter the WuTang
│   ├── track10.docx
│   └── track6.docx
├── More Documents
│   ├── BillofRights.txt
│   └── NorthKorea.jpeg
├── untitled folder
│   ├── untitled folder
│   │   ├── untitled folder 2
│   │   │   ├── untitled folder
│   │   │   └── untitled folder
│   │   │       └── SilentEye
│   └── untitled folder.zip
└── 10 directories, 15 files
```

Figure 3.1.4 – Documents within the identified archive.

The “**Enter the Wutang**” directory contained two MS-Word files, with their contents encoded in **Base64** (GCHQ, 2016). Both files were created and modified by **Bryan Schmidt**. The first file (“**track6.docx**”) contained a list titled “**The Mystery of Chess Boxing: (usernames)**”. It is assumed that this is the list of the names/nicknames of the potential actors in the case that were requested in the brief. The directory name and the song lyrics may have been potential anti-forensic practices. (**Figure 3.1.5**) The second file (“**track10.docx**”) contained the lyrics of “**Protect Ya Neck**”, which is track 10 on the album “**Enter the Wutang**” (Wu-Tang Clan, 1994).

Output
The Mystery of Chess Boxing: (usernames)
Mr. Method
Kim Ill-Song
Mr. Razor
Mr. Genius
Mr. G. Killah
Matt Cassel
Mr. I. Deck
Mr. M Killa
Mr. O.D.B.
Mr. Raekwon
Mr. U-God
Mr. Cappadonna (possibly)
John Woo?
Mr. Nas

Figure 3.1.5 – Identified usernames.

The last directory, “**More Documents**”, contained a text file covering the **American Bill of Rights (BillOfRights.txt)** and a **JPEG** image of the North Korean flag. Using **binwalk** on the file revealed that a python script (“**broken.py**”) was hidden within it. (**Figure 3.1.6**) The functions within it hinted that it could be used as a cypher, with a variable named “bill”, possibly hinting at the beforementioned text file. The file was later used for evidence in **Capture2.pcap**.

```
(kali㉿kali)-[~/Desktop/Documents/More Documents]
$ binwalk NorthKorea.jpeg
7acbb8f883a9a043131f8eb0d5646725f Documents.zip
DECIMAL      HEXADECIMAL  DESCRIPTION
-----
0            0x0         JPEG image data, JFIF standard 1.01
3453         0xD7D      Zip archive data, at least v2.0 to extract, name: u
ntitled/
3492         0xDA4      Zip archive data, at least v2.0 to extract, compres
sed size: 604, uncompressed size: 1397, name: untitled/broken.py
4263         0x10A7     End of Zip archive, footer length: 22
```

Figure 3.1.6 – Binwalk results for NorthKorea.jpeg.

“Untitled folder.zip” contained multiple directories, the last of which was called **SilentEye** – a steganography tool which indicated that data could be hidden within the discovered images. None of them, however, contained any data related to the tool.

Additional files were discovered but they were out of the investigation’s scope. They can be found in **Appendix B**.

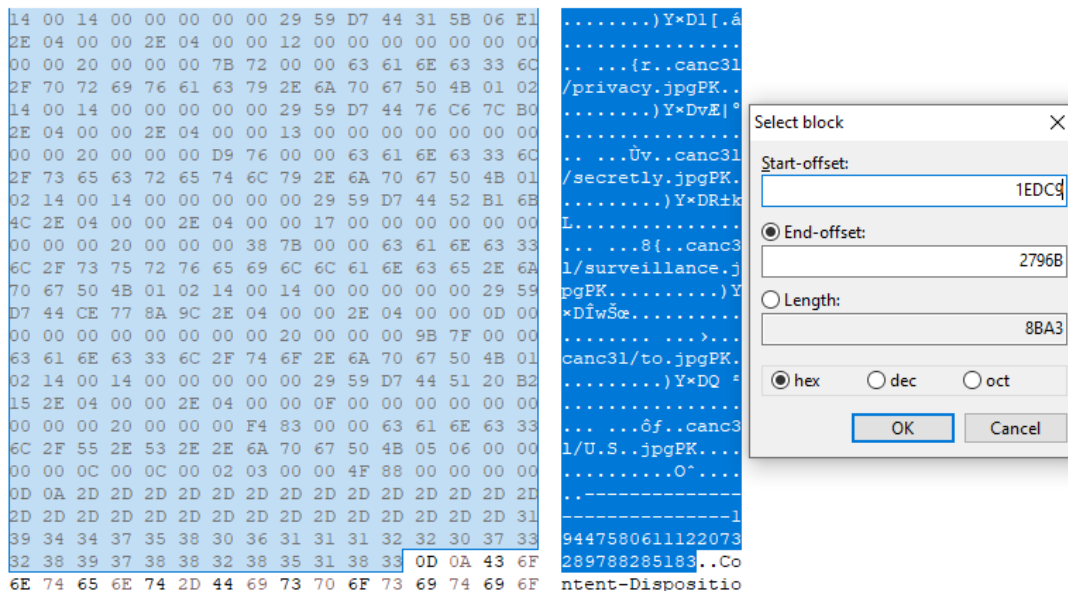


Figure 3.2.4 – Ending of canc3l.zip file in the raw data.

3.2.2 Evidence Analysis

All identified archive files contained images with a **JPG** extension. Inspecting them revealed that they all contained image data, but only some started with **JPG** magic number bytes, hinting that they may be parts of fragmented images. Based on the brief suggestion and the names of the files (individual words which could make sentences), indicated that Edward Snowden's quote might be of use. (**Figure 3.2.5**)

"I can't in good conscience allow the U.S. government to destroy privacy, internet freedom and basic liberties for people around the world with this massive surveillance machine they're secretly building."

Edward Snowden

Figure 3.2.5 – Edward Snowden's quote about privacy.

Looking through all files, the analyst identified that four of the archives contained **JPG** files to make the beforementioned quote. The files were combined using the Linux **cat** command into a new file called **evidence.jpg**. Opening the image revealed a chessboard. (**Figure 3.2.6**)

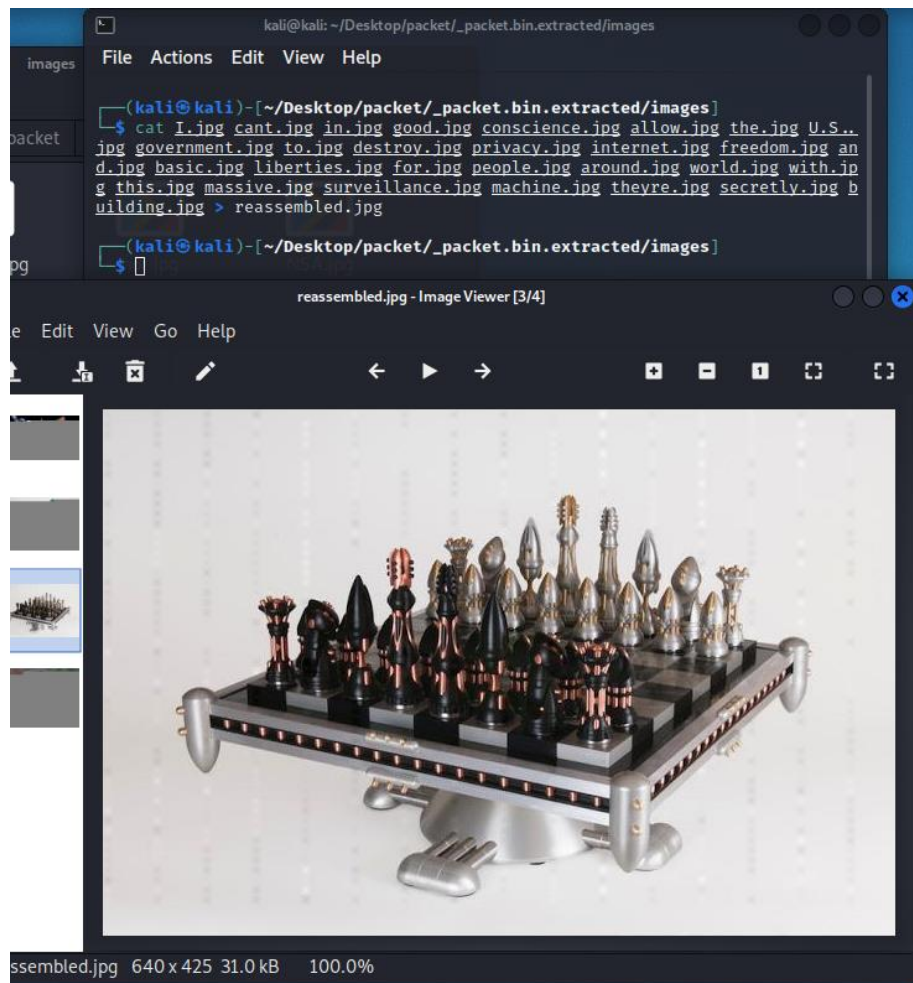


Figure 3.2.6 – Combining the image files.

As **SilentEye** was present in **Documents.zip** from the previous section and the image had noise artefacts, the analyst used it on the image to obtain any stenographic evidence. The tool revealed decoded data, which appeared to be in the same format as the python script identified in **Capture1.pcap**. Fixing the script and using it with the decoded message revealed “**Dontry2BruteForceThisPassword**”. (Figure 3.2.7 and 3.2.8)

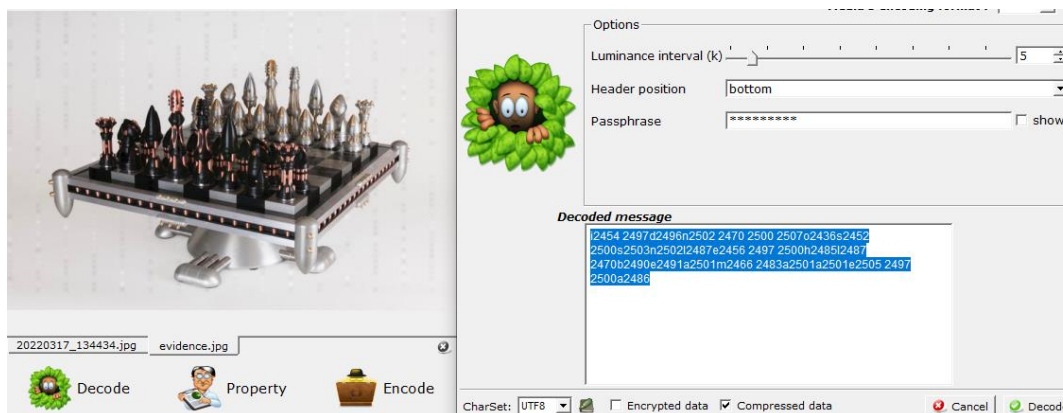


Figure 3.2.7 – Obtaining the decoded message with SilentEye.

```
(kali@kali)-[~/Desktop/Documents/More Documents]
$ python cipher.py -d "i2454 2497d2496n2502 2470 2500 2507o2436s2452 2500s2503n2502l2487e2456 2497 2500h24
85l2487 2470b2490e2491a2501m2466 2483a2501a2501e2505 2497 2500a2486"
DontTry2BruteForceThisPassword
```

Figure 3.2.8 – Decoded password using the fixed python script.

The analyst could not identify a use case for the password, but it is assumed to decrypt encrypted unidentified encrypted files. The other two images had to be brute forced as they did not follow a pattern of words. They also did not appear to be directly connected to the case (**Figure 3.2.9**). All three images can be found in **Appendix C**.

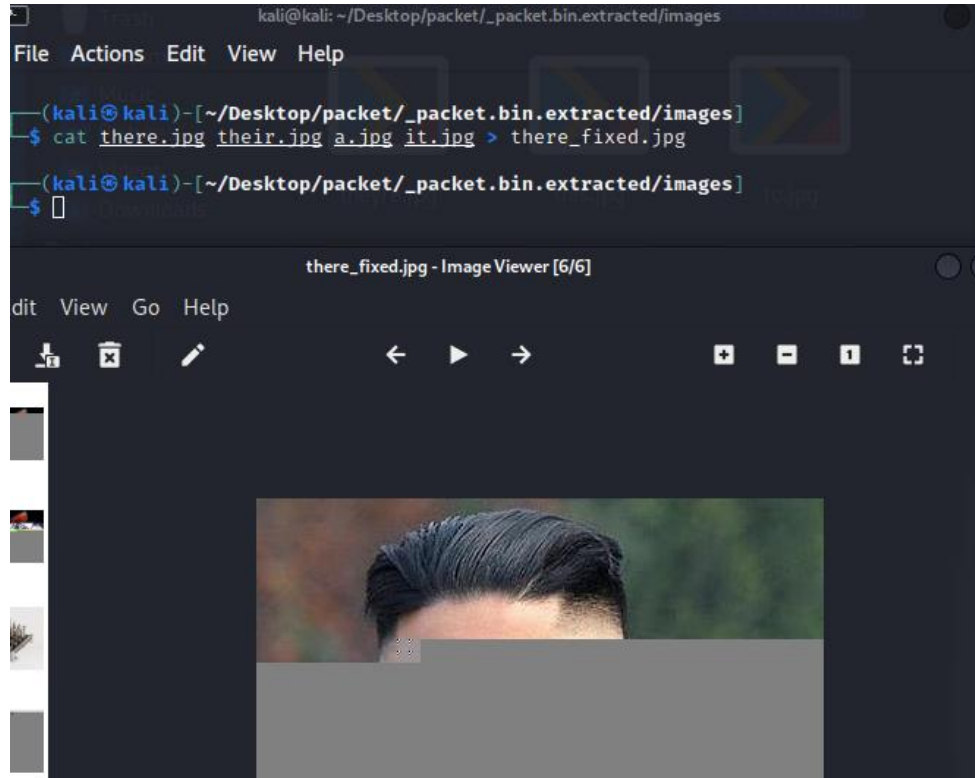
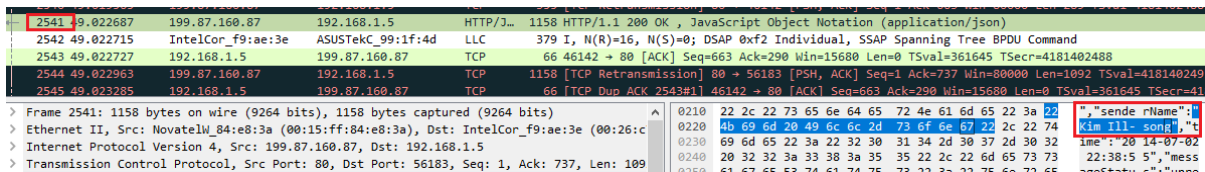


Figure 3.2.9 – Brute forcing the image segments.

3.3 CAPTURE3.PCAP

3.3.1 Traffic Analysis

Based on the capture data, the entirety of the incident took place on the **2nd of July 2014** from **17:38:50 to 17:52:32**. The brief mentioned that a conversation had taken place but there were no mentions of any protocols or applications. For this reason, the analyst searched for the suspect's nickname (**Ill-Song**) in the packet details. This revealed a conversation over HTTP starting at packet **2541**. (Figure 3.3.1)



No.	Time	Source	Destination	Protocol	Length	Info
2541	9.022687	199.87.160.87	192.168.1.5	HTTP	1158	HTTP/1.1 200 OK, JavaScript Object Notation (application/json)
2542	49.022715	IntelCor_f9:ae:3e	ASUSTekC_99:1f:4d	LLC	379	I, N(R)=16, N(S)=0; DSAP 0xf2 Individual, SSAP Spanning Tree BPD Command
2543	49.022727	192.168.1.5	199.87.160.87	TCP	66	46142 → 80 [ACK] Seq=663 Ack=290 Win=15680 Len=0 TSval=361645 TSecr=418140248
2544	49.022963	199.87.160.87	192.168.1.5	TCP	1158	[TCP Retransmission] 80 → 56183 [PSH, ACK] Seq=1 Ack=737 Win=80000 Len=1092 TSval=418140249
2545	49.023285	192.168.1.5	199.87.160.87	TCP	66	[TCP Dup ACK 2543#1] 46142 → 80 [ACK] Seq=663 Ack=290 Win=15680 Len=0 TSval=361645 TSecr=41

> Frame 2541: 1158 bytes on wire (9264 bits), 1158 bytes captured (9264 bits)

> Ethernet II, Src: NovatelW_84:e8:3a (00:15:ff:84:e8:3a), Dst: IntelCor_f9:ae:3e (00:26:c7:c0:00:00)

> Internet Protocol Version 4, Src: 199.87.160.87, Dst: 192.168.1.5

> Transmission Control Protocol, Src Port: 80, Dst Port: 56183, Seq: 1, Ack: 737, Len: 1092

0210 22 2c 22 73 65 6e 64 65 72 4e 61 6d 65 22 3a 02 "send rName:"

0220 4b 69 6d 20 49 6e 6c 2d 73 6f 6e 67 22 2c 22 74 "ie ill-song,"

0230 69 6d 65 22 3a 22 32 30 31 34 2d 30 37 2d 30 32 ime "2014-07-02

0240 20 32 32 3a 33 38 3a 35 35 22 2c 22 6d 65 73 73 22:38:5 S", "mess

0250 61 67 65 53 74 61 74 75 73 73 3a 73 75 6a 73 65 sraStatu c", "mess

Figure 3.3.1 – HTTP conversation.

Examining the packet revealed that the request originated from packet **2505**, which revealed the application and user agent – **TextFree** by **Pinger** and **Nexus 7** (Android 4.3.2) respectively. (Figure 3.3.2)

```
> Frame 2505: 802 bytes on wire (6416 bits), 802 bytes captured (6416 bits)
> Ethernet II, Src: ASUSTekC_99:1f:4d (60:a4:4c:99:1f:4d), Dst: IntelCor_f9:ae:3e (00:26:c7:c0:00:00)
> Internet Protocol Version 4, Src: 192.168.1.5, Dst: 199.87.160.87
> Transmission Control Protocol, Src Port: 56183, Dst Port: 80, Seq: 1, Ack: 1, Len: 736
▼ Hypertext Transfer Protocol
  > POST /1.0/communications?startIndex=0&since=2014-07-02+22%3A34%3A37 HTTP/1.1\r\n
    x-rest-method: GET\r\n
    Content-Type: application/json\r\n
    X-Install-Id: 6965eedb59a7b282f94dd58e7a451474\r\n
    x-client: textfree-android,2.3.2\r\n
    x-os: android,4.2.2\r\n
    x-uid: 580781709\r\n
    x-gid: 0\r\n
    [truncated]Authorization: OAuth realm="http://api.pinger.com", oauth_consumer_key="580"
    User-Agent: Dalvik/1.6.0 (Linux; U; Android 4.2.2; Nexus 7 Build/JDQ39E)\r\n
    Host: api.pinger.com\r\n
    Connection: Keep-Alive\r\n
    Accept-Encoding: gzip\r\n
  > Content-Length: 29\r\n
```

Figure 3.3.2 - App and user agent identification.

Further inspection revealed that the user agent (**199.87.160.87**) belonged to Ann Dercover – one of the names mentioned in the brief. As the data appeared to be in **JSON** format, the analyst extracted all **HTTP** traffic which was sent to or originated to **199.87.160.87** using **tshark** (Wireshark Foundation, 1998 – Present Day). (Figure 3.3.3)

```
(kali@kali)-[~/Desktop]
$ tshark -r Capture\ 3.pcap -Y "http && json && (ip.src == 199.87.160.87 || ip.addr == 199.87.160.87)" -T fields -e http.file_data > communications.txt
```

Figure 3.3.3 – Extracting JSON data with tshark.

Proceeding with the analysis revealed a lot of HTTP packets related to location data being posted to a map API called **mob.mapquestapi.com**. The analyst once again filtered and obtained the required data with **tshark**, exporting them in **CSV** format. (Figure 3.3.4)

```
(kali@kali)-[~/Desktop]
$ tshark -r Capture\ 3.pcap -Y "http.host = mob.mapquestapi.com" > geolocation.csv
```

Figure 3.3.4 – Exporting mapquestapi data accessed by the host.

3.3.2 Evidence Analysis

Clearing the recovered **JSON** data revealed a conversation between Ann Dercover and someone using Kim III-Song's account. This, however, may be a pseudonym or an attempt to blame the mentioned individual - **Castling**. (Figure 3.3.5) The log reveals that they will meet at 5 PM in September, however, a date is not directly revealed.

Recovered Chat Log	
Sender:	Message:
Kim III-Song	Good afternoon, Ann.
Ann Dercover	who is this?
Kim III-Song	Castling.
Ann Dercover	where are you?
Kim III-Song	I know I can't tell you that.
Ann Dercover	Do you know that there are people investigating Kim III-Song?
Kim III-Song	Of course. However, they will never know it is me behind the bribes.
Ann Dercover	still we should be careful. Pay attention. I want to meet in September at 5PM.
Kim III-Song	At our old meetup spot?
Ann Dercover	yes
Kim III-Song	What day?
Ann Dercover	I told you to pay attention.

Figure 3.3.5 – Chat log table.

The analyst then investigated the exported **CSV** file – a total of 114 requests were revealed. They noticed that latitude and longitude coordinates were shown at the end of each request, so they removed the rest of the data and specified the appropriate **Latitude** and **Longitude** columns. The **CSV** file was then uploaded to an online **CSV to KML** converter (Data Design Group, 2013 – Present Day) to generate data that can be imported into Google Maps. Uploading the file displayed 114 location pins that formed the number **17** within **Salt Lake City** in **Utah**. It is not certain whether the location is accurate but combining the chat log with the number infers that they plan to meet on the **17th of September** at **5 PM**. (Figure 3.3.6)



Figure 3.3.6 – KLM data forming the number 17.

The traffic files can be found in **Appendix D** in text format.

4 DISCUSSION

4.1 CRITICAL EVALUATION

Combining the substantial amount of traffic and anti-forensic practices, parts of the investigation became quite complex. One of the most complex parts of the traffic and evidence analysis was connected to Capture2. The obfuscation attempts with the Edward Snowden reference, splitting the files into multiple parts in multiple archives and hiding a cypher message with steganography made its analysis sophisticated and time-consuming.

The evidence reconstruction was achieved through brute forcing the parts into a complete image, however, that may not have been the most efficient attempt at achieving this if there were more files. A script to automate the process could be developed for future cases. As for most parts of the separate data, the last quadrant of pixels remained distorted until the next section was combined with it, the script would walk through the binary data and look for similarities between the colours. This would attempt to automatically rebuild images until an end-of-file marker was reached.

4.2 REFLECTIVE COMPONENT

New anti-forensic and exploitation techniques will proceed to be developed as networks continue to expand. Sophisticated procedures such as bypassing IDS/Firewalls, obfuscation, encryption, and concealing data will possibly slow down or even limit forensic investigations. They could allow adversaries to make data transfers hard to detect as the traffic may appear benign until the full files are rebuilt.

Any misuse of protocols would require a more thorough analysis of large traffic as they might not have easily recognisable behaviour. Furthermore, obscuring any type of data by splitting it into parts and hiding it in numerous archives/packets, embedding it into other files through steganography or encrypting it could be difficult or impossible to rebuild and/or decrypt. Finally, altering metadata, timestamps and geolocation data could mislead investigators into wrong conclusions regarding the case.

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APPENDICES

APPENDIX A – EVIDENCE HASH VALUES AND LOCATIONS

Name	MD5 Hash Value	Location
Capture1.pcap	bae9aade7f29f88494a985cea8ff350f	N/A
Capture2.pcap	bae9aade7f29f88494a985cea8ff350f	N/A
Capture3.pcap	0487b1b8007e68b20e1f6a8c01467d07	N/A
Documents.zip	7acb8f883a9a943131f8e60d5646725f	Capture1.pcap – SMB Traffic
DOCUME~1.zip	3c8c008427a21fcbad3595c74e9d7601	Capture1.pcap – SMB Traffic
DOCUME~1(1).zip	dcd38f51216a27f25a77b0497056a8ca	Capture1.pcap – SMB Traffic
GoT Spoilers.docx	1eb51f7d034177889f6f3c72732bc5b8	Documents.zip – Actual Documents
NorthKorea.docx	fa7bcde867a6f6b9dc3fd80fcc0f4a20	Documents.zip – Actual Documents
PiD.docx	6b02931c09927fdee98784a3286322fd	Documents.zip – Actual Documents
Rules 1..docx	a92f4ac8d7aa49df68c59c3bb119efeb	Documents.zip – Chess Boxing
Rules 2.docx	d00dd61376b4ffb590426ee67d3d1d93	Documents.zip – Chess Boxing
Rules 3.docx	5a32d883e1645623aa16b4f19a7bf2e6	Documents.zip – Chess Boxing
Rules 4.docx	1d117b5db9f36e38a513c8e3e330c146	Documents.zip – Chess Boxing
Rules 5.docx	13b28b2b5ad410722bf423a5c148e9ea	Documents.zip – Chess Boxing
Rules 6.docx	1e68eb1095207247876ee0003b48e72e	Documents.zip – Chess Boxing
Rules 7.docx	b593f455c64512eac07e83cf1e368015	Documents.zip – Chess Boxing
NK.jpg	93dfe22495572a02e89d8f2fe2ba3f5a	Documents.zip – Chess Boxing
track6.docx	6a1ec46e5ed5a9be82a1b4ec6095c8f5	Documents.zip – Enter The WuTang
track10.docx	e8bf606c11f263bbcb81660d2f2dce6f	Documents.zip – Enter The WuTang
BillOfRights.txt	c664b7d04b17aae0122677f5faf4a929	Documents.zip – More Documents
NorthKorea.jpeg	f98a627ad8092fe6530a5b25e492b58b	Documents.zip – More Documents
broken.py	972e2385d71991c822eaaff00a5c00f6	Embedded in NorthKorea.jpeg
cypher.py	4e944c6219ee4c67f071230ce37eeda2	Fixed broken.py
untitled folder.zip	f2bef217d08f3ec001005cbada193b4d	Documents.zip
packet.bin	274eaa049a7498f6f7b68c783b596558	Capture2.pcap webmail traffic
sandofwhich.zip	17008094b1ce9ef009d6c03035e1913d	Capture2.pcap – FTP traffic

ojd34.zip	6df75f688de7b9772d6ca010166784d5	Capture2.pcap – FTP traffic
canc3l.zip	dbe34a03778b9fb133fa351d48aeeafd	packet.bin traffic
34jdsioj.zip	ec44ec1e6e0bb0fbdeab58dcf27033e3	packet.bin traffic
breaking_bad_season_6.zip	36e6b43bd71acb3b2cce31e49d387e60	packet.bin traffic
condone_fixed.jpg	c946c74c15d1c2b2d1bba0474fdda168	Reconstructed image
evidence.jpg	4cb1e622365bcba14b2d9cde6b4322bf	Reconstructed evidence
there_fixed.jpg	f121d4c72eb3817244b20aebfb492d0e	Reconstructed image
communications.txt	d701b9f8d02c96ee14a29606913457ee	Capture3.pcap – TextFree communications
geolocations.csv	618e631b6d741a665dcf9f3bdfe42c5b	Capture3.pcap – Geolocation data
geolocations.kml	f21a7b10fc464d8d57087c808014be7c	Geolocation data in KML format

APPENDIX B – CAPTURE1.PCAP ARTEFACTS

Evidence

Output

The Mystery of Chess Boxing:
(usernames)

Mr. Method

Kim Ill-Song

Mr. Razor

Mr. Genius

Mr. G. Killah

Matt Cassel

Mr. I. Deck

Mr. M Killa

Mr. O.D.B.

Mr. Raekwon

Mr. U-God

Mr. Cappadonna (possibly)

John Woo?

Mr. Nas

Figure 1 – Decoded Chess Boxing Mystery Usernames.



Figure 2 – NorthKorea.jpg

```

def fileToString(pathToFile):
    f = open(pathToFile, "r")
    strs = ""
    #adds each line of the file to the strs string
    for line in f.readlines():
        strs+=line
    return strs

def ASCII():
    #number of ASCII characters
    NumOfASCII = 0
    #returns list of all ASCII characters
    return "".join([chr(i) for i in range(NumOfASCII)])

def sumName(name):
    sums=0
    #sums the indices in ASCII of all the characters in name
    for x in name:
        sums+=ord(x)
    return sums

def indexInFile(password):
    indices = []
    ASCIIArray = ASCII()
    #populates an array of indices to be used by the encoder
    for chrs in password:
        indices.append(ASCIIArray.index(chrs)+sumName(name)*2)
    return indices

def indexInASCII(name):
    indices = []
    ASCIIArray = ASCII()
    #split on all non-numeric characters
    #remove first index because it is blank
    indexList = re.split("[^\d]", encoded)[1:]
    #converts encoded characters to ASCII
    for index in indexList:
        indices.append(ASCIIArray[int(index) - (sumName(name)*2)])
    #returns decoded message
    return "".join(indices)

def encode(name):
    #returns a list of indices to be used for encoding
    indices = indexInFile(password, name)
    #convert file associated with name to a string
    bill = fileToString("./%s.txt"%name)
    encoded = ""
    #add letter in file plus index of the letter in the file to the encoded string
    for index in indices:
        encoded+=bill[index]+str(index)

    return encoded

```

Figure 3 – broken.py code.

```

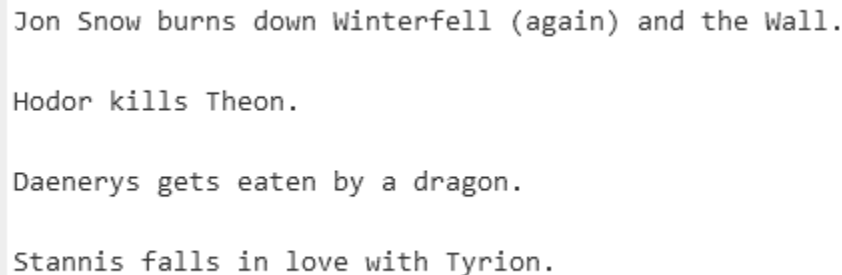
1 import re
2 import sys
3
4 def fileToString(pathToFile):
5     f = open(pathToFile, "r")
6     strs = ""
7
8     #adds each line of the file to the strs string
9     for line in f.readlines():
10         strs+=line
11     return strs
12
13 def ASCII():
14     #number of ASCII characters
15     NumOfASCII = 200
16
17     #returns list of all ASCII characters
18     return "".join([chr(i) for i in range(NumOfASCII)])
19
20 def sumName(name):
21     sums=0
22
23     #sums the indices in ASCII of all the characters in name
24     for x in name:
25         sums+=ord(x)
26     return sums
27
28 def indexInFile(password,name):
29     indices = []
30     ASCIIArray = ASCII()
31
32     #populates an array of indices to be used by the encoder
33     for chrs in password:
34         indices.append(ASCIIArray.index(chrs)+sumName(name)*2)
35     return indices
36
37 def indexInASCII(name,encoded):
38     indices = []
39     ASCIIArray = ASCII()
40     #split on all non-numeric characters
41     #remove first index because it is blank
42     indexList = re.split("[^\\d]",encoded)[1:]
43
44     #converts encoded characters to ASCII
45     for index in indexList:
46         indices.append(ASCIIArray[int(index) - (sumName(name)*2)])
47     #returns decoded message
48     return "".join(indices)
49
50 def encode(name,password):
51     #returns a list of indices to be used for encoding
52     indices = indexInFile(password,name)
53
54     #convert file associated with name to a string
55     bill = fileToString("./%s.txt"%name)
56     encoded = ""
57
58     #add letter in file plus index of the letter in the file to the encoded string
59     for index in indices:
60         encoded+=bill[index]+str(index)
61     return encoded
62
63 # If argument length is different than 3 (script name, flag, message)
64 if (len(sys.argv) != 3):
65     print("use '-e [message]' to encode or '-d [message]' to decode")
66 # -d for indexInASCII method
67 elif (sys.argv[1] == "-d"):
68     print(indexInASCII("BillOfRights", sys.argv[2]))
69 # -e for encode method
70 elif (sys.argv[1] == "-e"):
71     print(encode("BillOfRights", sys.argv[2]))
72 #Else print message showing how to use it
73 else:
74     print("use '-e [message]' to encode or '-d [message]' to decode")

```

Figure 4 – Fixed version of broken.py.

Out-of-scope Artefacts

The **Actual Documents** directory contained several files with text encoded in **Base64**. All of them were created by **Eric** and last modified by **Bryan Schmidt** based on the metadata of the **MS Word** files. “**GoT Spoilers.docx**” (**Figure 5**) contained spoilers for the TV show Game of Thrones. “**NorthKorea.docx**” (**Figure 6**) contained Russian text about insider information regarding time-travel technology developed by the North Korean government. The text referred to an entity named “Obi-Wan” as the recipient. The last file, “**PiD.docx**” (**Figure 7**), was a letter from an individual claiming to be William Campbell and stating that they have replaced Paul McCartney after he passed away in 1966. The files are not within the scope of the requested information.



```
Jon Snow burns down Winterfell (again) and the Wall.  
  
Hodor kills Theon.  
  
Daenerys gets eaten by a dragon.  
  
Stannis falls in love with Tyrion.
```

Figure 5 – *GoT Spoilers.docx*

Для кого это может касаться:

Я был свидетелем, что Ким Чен Ун и правительство Северной Кореи разработали программу, которая позволяет им путешествовать во времени. С использованием этой технологии, я считаю, что они намерены двигаться вперед и изменить результаты войны в Корею.

Пожалуйста, Оби-Ван, ты моя единственная надежда.

Whoever it may concern,

I am a witness that Kim Jong-un and the North Korean government have developed a program, which allows time travel. By using this technology, I believe they intend to move and change the outcome of the Korean War.

Please, Obi-Wan, you are my only hope.

Figure 6 – *NorthKorea.docx decoded message and translation*

Dear Ed,
Yeah I totally took over for Paul after he died in '66. You got me. As you can see, we don't even look that much alike:



Before(Paul)



After(Me)

We aren't even the same height! What can I say, people are stupid.

Thanks for the inquiry,

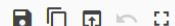
William Campbell
(Paul McCartney)

Figure 7 – PiD.docx decoded.

The “**Chess Boxing**” directory contained a total of 8 files – 7 MS-Word files and a JPG image. The text files (“**Rules 1.docx**” to “**Rules 7.docx**” – sample in **Figure 8**) contained the rules of **Chess Boxing**, indicating that this is the sports discipline suspected of corruption. The files were once again respectively created and last edited by the beforementioned entities. The image file (“**NK.jpg**”) (**Figure 9**) contained the North Korean flag, indicating that the country may be involved in the corruption case. Using a tool called **binwalk** (ReFirmLabs, 2013) on the files did not discover any hidden executables or archives.

Output

start: 3234 time: 3ms
end: 3234 length: 3283
length: 0 lines: 19



1. SUMMARY OF RULES. MAIN POINTS.
TOUCH MOVE rule strictly applies.

- If a piece is touched, then it must be moved (if a legal move is available)
- If an opponent's piece is touched, it must be taken (if legal).

COUNTDOWN IF STALLING FOR TIME. In general a player manages how much or little time to take for each move, and this is fine! However, if a player clearly plays far too slowly for the specific position, for example when he is facing unavoidable checkmate, the arbiter will do a countdown. He will point at the board, and warn the player by counting to 10 with his hands (just like a boxing referee). If the player has not moved by the count of 10, he loses the game and the match. Note there is no minimum time to make a move! Also, even if there is only 1 legal move, the player should be allowed some time to psychologically compose themselves. It should be considered that a weak player may not realise he only has 1 legal move.

CHESS CLOCK PROTOCOL. The chess clock must be pressed with the SAME HAND that moves the piece.

PRESSING CHECK CLOCK. It is the player's responsibility to press his or her clock between chess moves. The competitors may agree in advance to allow the arbiter to issue reminders - especially if both fighters are new to chessboxing.

PIECES KNOCKED DOWN OR NOT PROPERLY ON A SQUARE. If a player knocks down a piece whilst making a move or does not put it properly on a square, he should properly re-position or re-centre the piece in HIS OWN clock time. An offence that puts off the opponent could be punished by adding time to the opponent's clock.

OTHER RULES to NOTE

- Resignation protocol. For the benefit of the audience, players are strongly encouraged to play until checkmate. If you want to resign (submit) prior to checkmate, do this by knocking over your king and offering a handshake.
- Illegal move. An illegal move must be retracted. The arbiter has the discretion to punish with a time penalty, or disqualify after 3 illegal moves. Extra allowances can be made for novice players.
- Speaking to the arbiter. If a player needs to speak to the arbiter during the chess game, he should remove his headphones. The arbiter will then stop the clock to listen.
- Playing to win on time. If a position is a completely drawn position, and the arbiter believes a player is quickly moving pieces only to win on time, then the arbiter can declare the game a draw.
- Chess Draw. A chess draw will be followed by one boxing round (unless the maximum number of boxing rounds has already happened). The chessboxing bout will therefore be won by whoever has amassed the most boxing points - judged by punches thrown and overall aggression.
- Drinks. Fighters are allowed to bring water to the chess table.
- Cuts. In most cases, except for the most superficial examples, a cut will lead to the fight being stopped and a TKO declared.
- General Advice. Competitors are reminded that they do not need to move quickly, even if their opponent moves quickly. Adrenaline drastically changes your sense of time. Experience shows that a player is OK until he has 2 minutes of time remaining on the clock, when moves should be speeded up.

Figure 8 – Rules 1.docx



Figure 9 – NK.jpg

```
Output
start: 5346    time: 2ms
end: 5346    length: 5344
length: 0    lines: 146

"Protect Ya Neck"
"So what's up man?"
Cooling man"
"Chilling chilling?"
"Yo you know I had to call, you know why right?"
"Why?"
"Because, yo, I never ever call and ask, you to play something right?"
"Yeah"
"You know what I wanna hear right?"
"What you wanna hear?"
I wanna hear that Wu-Tang joint"
"Wu-Tang again?"
"Ah yeah, again and again!"

[sounds of fighting]

[RZA] Wu-Tang Clan coming at you, protect your neck kid, so set it off the Inspector Deck
[Meth] watch your step kid [8X]

[Inspector Deck]
I smoke on the mic like smoking Joe Frazier
The hell raiser, raising hell with the flavor
Terrorize the jam like troops in Pakistan
Swinging through your town like your neighborhood Spiderman
So uhh, tic toc and keep ticking
While I get you flipping off the shit I'm kicking
The Lone Ranger, code red, danger!
Deep in the dark with the art to rip charts apart
The vandal, too hot to handle
you battle, you're saying Goodbye like Tevin Campbell
Roughneck, Inspector Deck's on the set
The rebel, I make more noise than heavy metal
```

Figure 10 – track10.docx decoded sample.

The Bill of Rights: A Transcription

The Preamble to The Bill of Rights

Congress of the United States
begun and held at the City of New-York, on
Wednesday the fourth of March, one thousand seven hundred and eighty nine.

THE Conventions of a number of the States, having at the time of their adopting the Constitution, expressed a desire, in order to prevent misconstruction or abuse of its powers, that further declaratory and restrictive clauses should be added: And as extending the ground of public confidence in the Government, will best ensure the beneficent ends of its institution.

RESOLVED by the Senate and House of Representatives of the United States of America, in Congress assembled, two thirds of both Houses concurring, that the following Articles be proposed to the Legislatures of the several States, as amendments to the Constitution of the United States, all, or any of which Articles, when ratified by three fourths of the said Legislatures, to be valid to all intents and purposes, as part of the said Constitution; viz.

ARTICLES in addition to, and Amendment of the Constitution of the United States of America, proposed by Congress, and ratified by the Legislatures of the several States, pursuant to the fifth Article of the original Constitution.

Note: The following text is a transcription of the first ten amendments to the Constitution in their original form. These amendments were ratified December 15, 1791, and form what is known as the "Bill of Rights."

Amendment I

Figure 11 – BillOfRights.txt

APPENDIX C – CAPTURE2.PCAP ARTEFACTS

Evidence



Figure 12 – Reconstructed image with embedded cypher.

Out-of-scope Artefacts



Figure 13 – Second reconstructed image.



Figure 14 – Third reconstructed image.

APPENDIX D – CAPTURE3.PCAP ARTEFACTS

FreeText Traffic in JSON Format – communications.txt

```
{
  "durationSeconds":12,"userId":"580781709","udid":"332281036089711","appKey":"textfree-android"}

{"device":"grouper","startType":"normal","udid":"332281036089711","versionOS":"4.3.2","version":"3.3.2"}

{"success":"Exit logged"}\n

{"success":"OK","result":{"userId":"580781709","fname":"Ann","lname":"Dercover","countryCode":"US","gender":"female","age":22,"zipCode":"59801","birthday":"1992-01-01","deviceEmail":"","showAds":"1","profilePicUrl":"","notifyTextFree":0,"textfreeNotifEmail":"","textfreePendingNotifEmail":"ann_dercover@aol.com","textfreeIntercept":0,"textfreeInterceptPhone":"","textfreeInterceptPendingPhone":"","textfreeSignature":"-Sent from Textfree","textfreeNotificationPrivacy":"0","autoAddTile":"0","msgStatusPrivacy":"0","notifyAPNSToken":"APA91bFhhBnWsrCE3W5EYZhWsgscpm_vs0pQg1oor0wa-YrCE9RGEicI5S6Lpktlq_ex27FovS1WVqelmpHTO-57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-CnHA492_CL_qYJWvbwdJ-kUY19QN1363MQ","notifyAPNSStatus":1,"notifyAPNSBadgeNumber":7,"notificationToken":"APA91bFhhBnWsrCE3W5EYZhWsgscpm_vs0pQg1oor0wa-YrCE9RGEicI5S6Lpktlq_ex27FovS1WVqelmpHTO-57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-CnHA492_CL_qYJWvbwdJ-kUY19QN1363MQ","notificationStatus":1,"notificationBadgeNumber":7,"forgotPasswordEmail":"ann_
```

```

dercover@aol.com", "language": "en-
us", "voicemail": "A", "facebookId": "", "facebookToken": "", "networkDetails": {} } } \n
{"success": "Alerts retrieved", "result": {"alerts": [] } } \n
{"supportedMessages": ["bsm"] }
{"success": "hide ads retrieved", "result": {"hideAds": "0" } } \n
{"success": "balance retrieved", "result": {"balance": "600", "callingCreditBalance": "600" } } \n
{"success": "messages
retrieved", "result": {"recMessages": [{"messageId": "45b537c51e5cf2f90f31779e9ec8fc46", "messageType": "normal", "messageText": "Good afternoon,
Ann.", "recipientType": "phone", "recipientId": "14068522589", "senderType": "phone", "senderId": "140692
43754", "senderName": "Kim Ill-song", "time": "2014-07-02
22:38:55", "messageStatus": "unread", "deliveryMethod": "onnet"}], "sentMessages": [{"messageId": "d275
712ce4c2b1b420bd1ba0728b79af", "messageType": "normal", "messageText": "this is a
test", "recipientType": "phone", "recipientId": "14069243754", "senderType": "phone", "senderId": "140685
22589", "senderName": "Ann Dercover", "time": "2014-07-02
22:34:13", "messageStatus": "read", "deliveryMethod": "onnet"}], "brandedSystemMessages": [], "calls": [], "
voicemails": [], "now": "2014-07-02
22:38:57", "largestCount": 1, "smsCreditBalance": 0, "callingCreditBalance": 0, "numTextsSent": 0, "numTexts
Rec": 0, "inviteCount": 0 } } } \n
{"calls": [], "voicemails": [], "messages": [{"messageId": "45b537c51e5cf2f90f31779e9ec8fc46", "messageSta
tus": "read", "time": "2014-07-02 22:38:55"} ] } }
{"success": "phoneNumber status retrieved", "result": {"now": "2014-07-02
22:37:31", "phoneNumbers": [] } } \n
{"success": "messages updated" } \n
{"supportedMessages": ["bsm"] }
{"success": "messages
retrieved", "result": {"recMessages": [{"messageId": "45b537c51e5cf2f90f31779e9ec8fc46", "messageType": "normal", "messageText": "Good afternoon,
Ann.", "recipientType": "phone", "recipientId": "14068522589", "senderType": "phone", "senderId": "140692
43754", "senderName": "Kim Ill-song", "time": "2014-07-02
22:38:55", "messageStatus": "read", "deliveryMethod": "onnet"}], "sentMessages": [], "brandedSystemMess
ages": [], "calls": [], "voicemails": [], "now": "2014-07-02
22:38:57", "largestCount": 1, "smsCreditBalance": 0, "callingCreditBalance": 0, "numTextsSent": 0, "numTexts
Rec": 0, "inviteCount": 0 } } } \n
{"success": "phoneNumber status retrieved", "result": {"now": "2014-07-02
22:37:35", "phoneNumbers": [] } } \n
{"senderId": "14068522589", "senderName": "Ann", "recipientId": "+14069243754", "messageTxt": "who is
this?", "senderType": "phone", "sendAsSms": 0, "recipientType": "phone" }

```

```

{"success":"message sent","result":{"timeSent":"2014-07-02 22:39:15","now":"2014-07-02
22:39:16","messageId":"eb232446d54193d00876830421797030","i2iUpsellPopup":0,"callingCreditBala
nce":0,"smsCreditBalance":0,"creditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"45b537c51e5cf2f90f31779e9ec8fc46","messageType
":"normal","messageText":"Good afternoon,
Ann.","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"140692
43754","senderName":"Kim Ill-song","time":"2014-07-02
22:38:55","messageStatus":"read","deliveryMethod":"onnet"},{"messageId":"c113ed366ab0fba64f6215
f41d6fb127","messageType":"normal","messageText":"Castling.","recipientType":"phone","recipientId":
"14068522589","senderType":"phone","senderId":"14069243754","senderName":"Kim Ill-
song","time":"2014-07-02
22:39:31","messageStatus":"unread","deliveryMethod":"onnet"}],"sentMessages":[{"messageId":"eb23
2446d54193d00876830421797030","messageType":"normal","messageText":"who is
this?","recipientType":"phone","recipientId":"14069243754","senderType":"phone","senderId":"140685
22589","senderName":"Ann Dercover","time":"2014-07-02
22:39:15","messageStatus":"read","deliveryMethod":"onnet"}],"brandedSystemMessages":[],"calls":[],"
voicemails":[],"now":"2014-07-02
22:39:32","largestCount":2,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"calls":[],"voicemails":[],"messages":[{"messageId":"c113ed366ab0fba64f6215f41d6fb127","messageSt
atus":"read","time":"2014-07-02 22:39:31"}]}

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:38:02","phoneNumbers":[]}}\n

{"success":"messages updated"}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"c113ed366ab0fba64f6215f41d6fb127","messageTyp
e":"normal","messageText":"Castling.","recipientType":"phone","recipientId":"14068522589","senderTy
pe":"phone","senderId":"14069243754","senderName":"Kim Ill-song","time":"2014-07-02
22:39:31","messageStatus":"read","deliveryMethod":"onnet"}],"sentMessages":[],"brandedSystemMess
ages":[],"calls":[],"voicemails":[],"now":"2014-07-02
22:39:32","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:38:11","phoneNumbers":[]}}\n

{"senderId":"14068522589","senderName":"Ann","recipientId":"+14069243754","messageTxt":"where
are you?","senderType":"phone","sendAsSms":0,"recipientType":"phone"}

```

```

{"success":"message sent","result":{"timeSent":"2014-07-02 22:39:46","now":"2014-07-02
22:39:47","messageId":"4125737ad17157e816310b4f2f98752a","i2iUpsellPopup":0,"callingCreditBalanc
e":0,"smsCreditBalance":0,"creditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"c113ed366ab0fba64f6215f41d6fb127","messageTyp
e":"normal","messageText":"Castling.","recipientType":"phone","recipientId":"14068522589","senderTy
pe":"phone","senderId":"14069243754","senderName":"Kim Ill-song","time":"2014-07-02
22:39:31","messageStatus":"read","deliveryMethod":"onnet"}],"sentMessages":[{"messageId":"412573
7ad17157e816310b4f2f98752a","messageType":"normal","messageText":"where are
you?","recipientType":"phone","recipientId":"14069243754","senderType":"phone","senderId":"140685
22589","senderName":"Ann Dercover","time":"2014-07-02
22:39:46","messageStatus":"read","deliveryMethod":"onnet"}],"brandedSystemMessages":[],"calls":[],"
voicemails":[],"now":"2014-07-02
22:39:54","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:38:30","phoneNumbers":[]}}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"dc821c4eeacd713cfef5cea15e803040","messageTyp
e":"normal","messageText":"I know I can't tell you
that.","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"140692
43754","senderName":"Kim Ill-song","time":"2014-07-02
22:40:05","messageStatus":"unread","deliveryMethod":"onnet"}],"sentMessages":[],"brandedSystemM
essages":[],"calls":[],"voicemails":[],"now":"2014-07-02
22:40:06","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"calls":[],"voicemails":[],"messages":[{"messageId":"dc821c4eeacd713cfef5cea15e803040","messageSt
atus":"read","time":"2014-07-02 22:40:05"}]}

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:38:44","phoneNumbers":[]}}\n

{"success":"messages updated"}\n

{"senderId":"14068522589","senderName":"Ann","recipientId":"+14069243754","messageTxt":"Do you
know that there are people investigating Kim Ill-
Song?","senderType":"phone","sendAsSms":0,"recipientType":"phone"}

{"success":"message sent","result":{"timeSent":"2014-07-02 22:41:25","now":"2014-07-02
22:41:26","messageId":"bdc2b81acb8e3bff28a1e87ff44ee5d7","i2iUpsellPopup":0,"callingCreditBalance
":0,"smsCreditBalance":0,"creditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

```



```
{"supportedMessages":["bsm"]}
```

```
{"success":"messages  
retrieved","result":{"recMessages":[{"messageId":"dc821c4eeacd713cfef5cea15e803040","messageType":"normal","messageText":"I know I can't tell you  
that.", "recipientType":"phone", "recipientId":"14068522589", "senderType":"phone", "senderId":"14069243754", "senderName":"Kim Ill-song", "time":"2014-07-02  
22:40:05", "messageStatus":"read", "deliveryMethod":"onnet"}], "sentMessages":[{"messageId":"bdc2b81acb8e3bff28a1e87ff44ee5d7", "messageType":"normal", "messageText":"Do you know that there are  
people investigating Kim Ill-  
Song?", "recipientType":"phone", "recipientId":"14069243754", "senderType":"phone", "senderId":"14068522589", "senderName":"Ann Dercover", "time":"2014-07-02  
22:41:25", "messageStatus":"read", "deliveryMethod":"onnet"}], "brandedSystemMessages":[], "calls":[], "voicemails":[], "now":"2014-07-02  
22:41:31", "largestCount":1, "smsCreditBalance":0, "callingCreditBalance":0, "numTextsSent":0, "numTextsRec":0, "inviteCount":0}}\n
```

```
{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02  
22:40:08", "phoneNumbers":[]}}\n
```

```
{"supportedMessages":["bsm"]}
```

```
{"success":"messages  
retrieved","result":{"recMessages":[{"messageId":"8197385d4b4222e32ec474fa497b70d8", "messageType":"normal", "messageText":"Of course. However, they will never know it is me behind the  
bribes.", "recipientType":"phone", "recipientId":"14068522589", "senderType":"phone", "senderId":"14069243754", "senderName":"Kim Ill-song", "time":"2014-07-02  
22:41:47", "messageStatus":"unread", "deliveryMethod":"onnet"}], "sentMessages":[], "brandedSystemMessages":[], "calls":[], "voicemails":[], "now":"2014-07-02  
22:41:48", "largestCount":1, "smsCreditBalance":0, "callingCreditBalance":0, "numTextsSent":0, "numTextsRec":0, "inviteCount":0}}\n
```

```
{"calls":[], "voicemails":[], "messages":[{"messageId":"8197385d4b4222e32ec474fa497b70d8", "messageStatus":"read", "time":"2014-07-02 22:41:47"}]}
```

```
{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02  
22:40:23", "phoneNumbers":[]}}\n
```

```
{"success":"messages updated"}\n
```

```
{"senderId":"14068522589", "senderName":"Ann", "recipientId":"+14069243754", "messageText":"still we  
should be careful. Pay attention. I want to meet in September at  
5PM.", "senderType":"phone", "sendAsSms":0, "recipientType":"phone"}
```

```
{"success":"message sent","result":{"timeSent":"2014-07-02 22:42:54", "now":"2014-07-02  
22:42:55", "messageId":"700b4051723f212b979cf068e59067b9", "i2iUpsellPopup":0, "callingCreditBalance":0, "smsCreditBalance":0, "creditBalance":0, "numTextsSent":0, "numTextsRec":0, "inviteCount":0}}\n
```

```
{"supportedMessages":["bsm"]}
```



```

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"8197385d4b4222e32ec474fa497b70d8","messageType":"normal","messageText":"Of course. However, they will never know it is me behind the bribes.","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"14069243754","senderName":"Kim Ill-song","time":"2014-07-02 22:41:47","messageStatus":"read","deliveryMethod":"onnet"}],"sentMessages":[{"messageId":"700b4051723f212b979cf068e59067b9","messageType":"normal","messageText":"still we should be careful. Pay attention. I want to meet in September at 5PM.","recipientType":"phone","recipientId":"14069243754","senderType":"phone","senderId":"14068522589","senderName":"Ann Dercover","time":"2014-07-02 22:42:54","messageStatus":"read","deliveryMethod":"onnet"}],"brandedSystemMessages":[],"calls":[],"voicemails":[],"now":"2014-07-02 22:42:58","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02 22:41:32","phoneNumbers":[]}}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"e5d6be661c5ed90cfb27a0fb50b33bf2","messageType":"normal","messageText":"At our old meetup spot?","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"14069243754","senderName":"Kim Ill-song","time":"2014-07-02 22:43:06","messageStatus":"unread","deliveryMethod":"onnet"}],"sentMessages":[],"brandedSystemMessages":[],"calls":[],"voicemails":[],"now":"2014-07-02 22:43:07","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"calls":[],"voicemails":[],"messages":[{"messageId":"e5d6be661c5ed90cfb27a0fb50b33bf2","messageStatus":"read","time":"2014-07-02 22:43:06"}]}

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02 22:41:41","phoneNumbers":[]}}\n

{"success":"messages updated"}\n

{"senderId":"14068522589","senderName":"Ann","recipientId":"+14069243754","messageText":"yes","senderType":"phone","sendAsSms":0,"recipientType":"phone"}

{"success":"message sent","result":{"timeSent":"2014-07-02 22:43:28","now":"2014-07-02 22:43:29","messageId":"9854f7107287ad4d6a6a69b25fc3da57","i2iUpsellPopup":0,"callingCreditBalance":0,"smsCreditBalance":0,"creditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"e5d6be661c5ed90cfb27a0fb50b33bf2","messageType

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```

e":"normal","messageText":"At our old meetup
spot?","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"14069
243754","senderName":"Kim Ill-song","time":"2014-07-02
22:43:06","messageStatus":"read","deliveryMethod":"onnet"},"messageId":"b5860bdea833df4231c31
dfbecbedf0d","messageType":"normal","messageText":"What
day?","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"140692
43754","senderName":"Kim Ill-song","time":"2014-07-02
22:43:44","messageStatus":"unread","deliveryMethod":"onnet"},"sentMessages":[{"messageId":"9854f
7107287ad4d6a6a69b25fc3da57","messageType":"normal","messageText":"yes","recipientType":"phon
e","recipientId":"14069243754","senderType":"phone","senderId":"14068522589","senderName":"Ann
Dercover","time":"2014-07-02
22:43:28","messageStatus":"read","deliveryMethod":"onnet"},"brandedSystemMessages":[],"calls":[],"
voicemails":[],"now":"2014-07-02
22:43:45","largestCount":2,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"calls":[],"voicemails":[],"messages":[{"messageId":"b5860bdea833df4231c31dfbecbedf0d","messageSt
atus":"read","time":"2014-07-02 22:43:44"}]}

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:42:15","phoneNumbers":[]}}\n

{"success":"messages updated"}\n

{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"b5860bdea833df4231c31dfbecbedf0d","messageTyp
e":"normal","messageText":"What
day?","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"140692
43754","senderName":"Kim Ill-song","time":"2014-07-02
22:43:44","messageStatus":"read","deliveryMethod":"onnet"},"sentMessages":[],"brandedSystemMess
ages":[],"calls":[],"voicemails":[],"now":"2014-07-02
22:43:45","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02
22:42:21","phoneNumbers":[]}}\n

{"durationSeconds":42,"userId":"580781709","udid":"332281036089711","appKey":"textfree-android"}

{"device":"grouper","startType":"normal","udid":"332281036089711","versionOS":"4.3.2","version":"3.
3.2"}

{"success":"Exit logged"}\n

{"success":"OK","result":{"userId":"580781709","fname":"Ann","lname":"Dercover","countryCode":"US"
,"gender":"female","age":22,"zipCode":"59801","birthday":"1992-01-
01","deviceEmail":"","showAds":"1","profilePicUrl":"","notifyTextFree":0,"textfreeNotifEmail":"","textfr

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eePendingNotifEmail":"ann_dercover@aol.com","textfreeIntercept":0,"textfreeInterceptPhone":"","textfreeInterceptPendingPhone":"","textfreeSignature":"-Sent from Textfree","textfreeNotificationPrivacy":"0","autoAddTile":"0","msgStatusPrivacy":"0","notifyAPNSToken":"APA91bFhhBnWsrCE3W5EYZhwSgscpm_vs0pQg1oor0wa-YrCE9RGEicI5S6LpktIq_ex27FovS1WVqelmpHTO-57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-CnHA492_CL_qYJWvbwdJ-kUY19QN1363MQ","notifyAPNSStatus":1,"notifyAPNSBadgeNumber":"13","notificationToken":"APA91bFhhBnWsrCE3W5EYZhwSgscpm_vs0pQg1oor0wa-YrCE9RGEicI5S6LpktIq_ex27FovS1WVqelmpHTO-57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-CnHA492_CL_qYJWvbwdJ-kUY19QN1363MQ","notificationStatus":1,"notificationBadgeNumber":"13","forgotPasswordEmail":"ann_dercover@aol.com","language":"en-us","voicemail":"A","facebookId":"","facebookToken":"","networkDetails":[]}\n

{"success":"Alerts retrieved","result":{"alerts":[]}}\n

{"supportedMessages":["bsm"]}

{"success":"messages retrieved","result":{"recMessages":[],"sentMessages":[],"brandedSystemMessages":[],"calls":[],"voicemails":[],"now":"2014-07-02 22:43:45","largestCount":0,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"success":"balance retrieved","result":{"balance":"600","callingCreditBalance":"600"}}\n

{"success":"hide ads retrieved","result":{"hideAds":"0"}}\n

{"success":"phoneNumber status retrieved","result":{"now":"2014-07-02 22:48:31","phoneNumbers":[]}}\n

{"senderId":"14068522589","senderName":"Ann","recipientId":"+14069243754","messageTxt":"I told you to pay attention.","senderType":"phone","sendAsSms":0,"recipientType":"phone"}

{"success":"message sent","result":{"timeSent":"2014-07-02 22:50:32","now":"2014-07-02 22:50:33","messageId":"3ceedc119a0225656c73b3fbfd3418f","i2iUpsellPopup":0,"callingCreditBalance":0,"smsCreditBalance":0,"creditBalance":0,"numTextsSent":0,"numTextsRec":0,"inviteCount":0}}\n

{"durationSeconds":8,"userId":"580781709","udid":"332281036089711","appKey":"textfree-android"}

{"device":"grouper","startType":"normal","udid":"332281036089711","versionOS":"4.3.2","version":"3.3.2"}

{"success":"Exit logged"}\n

{"success":"Alerts retrieved","result":{"alerts":[]}}\n

{"success":"OK","result":{"userId":"580781709","fname":"Ann","lname":"Dercover","countryCode":"US","gender":"female","age":22,"zipCode":"59801","birthday":"1992-01-01","deviceEmail":"","showAds":"1","profilePicUrl":"","notifyTextFree":0,"textfreeNotifEmail":"","textfreePendingNotifEmail":"ann_dercover@aol.com","textfreeIntercept":0,"textfreeInterceptPhone":"","text

```

```

tfreeInterceptPendingPhone":"","textfreeSignature":"-Sent from
Textfree","textfreeNotificationPrivacy":"0","autoAddTile":"0","msgStatusPrivacy":"0","notifyAPNSToken
":"APA91bFhhBnWsrCE3W5EYZhwSgscpm_vs0pQg1oor0wa-
YrCE9RGEicl5S6Lpktlq_ex27FovS1WVqelmpHtO-57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-
CnHA492_CL_qYJWvbwdJ-
kUY19QN1363MQ","notifyAPNSStatus":1,"notifyAPNSBadgeNumber":"13","notificationToken":"APA91b
FhhBnWsrCE3W5EYZhwSgscpm_vs0pQg1oor0wa-YrCE9RGEicl5S6Lpktlq_ex27FovS1WVqelmpHtO-
57TVEIZpymx6nk-EQTX_mFQTPbOCMXf4jlgKHv0lv-CnHA492_CL_qYJWvbwdJ-
kUY19QN1363MQ","notificationStatus":1,"notificationBadgeNumber":"13","forgotPasswordEmail":"ann
_dercover@aol.com","language":"en-
us","voicemail":"A","facebookId":"","facebookToken":"","networkDetails":{}}\n
{"supportedMessages":["bsm"]}

{"success":"messages
retrieved","result":{"recMessages":[{"messageId":"b5860bdea833df4231c31dfbecbedf0d","messageTyp
e":"normal","messageText":"What
day?","recipientType":"phone","recipientId":"14068522589","senderType":"phone","senderId":"140692
43754","senderName":"Kim Ill-song","time":"2014-07-02
22:43:44","messageStatus":"read","deliveryMethod":"onnet"}],"sentMessages":[{"messageId":"3ceeadc
119a0225656c73b3fbfd3418f","messageType":"normal","messageText":"I told you to pay
attention.","recipientType":"phone","recipientId":"14069243754","senderType":"phone","senderId":"1
4068522589","senderName":"Ann Dercover","time":"2014-07-02
22:50:32","messageStatus":"read","deliveryMethod":"onnet"}],"brandedSystemMessages":[],"calls":[],"
voicemails":[],"now":"2014-07-02
22:50:45","largestCount":1,"smsCreditBalance":0,"callingCreditBalance":0,"numTextsSent":0,"numTexts
Rec":0,"inviteCount":0}}\n

```

Geolocation Traffic in CSV Format – geolocations.csv

```

7087 424.397103 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85661315917969%2C-114.01860809326172
HTTP/1.1

```

```

7349 428.309472 193.168.1.5 → 207.200.103.1 HTTP 255 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85693359375%2C-114.01863098144531 HTTP/1.1

```

```

7577 430.891308 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85727310180664%2C-114.01868438720703
HTTP/1.1

```

```

7790 434.185345 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-

```

gzb0&inFormat=kvp&outFormat=json&location=46.857601165771484%2C-114.01866912841797
HTTP/1.1

7897 438.492045 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.858055114746094%2C-114.01866149902344
HTTP/1.1

7982 440.028336 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.8582878112793%2C-114.01864624023438
HTTP/1.1

8140 442.411987 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.858524322509766%2C-114.01863861083984
HTTP/1.1

8260 445.148333 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.858734130859375%2C-114.01864624023438
HTTP/1.1

8333 445.431337 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85884475708008%2C-114.01864624023438
HTTP/1.1

8425 445.836687 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.858943939208984%2C-114.01864624023438
HTTP/1.1

8516 446.670234 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.859046936035156%2C-114.01864624023438
HTTP/1.1

8610 448.630310 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85914993286133%2C-114.01864624023438
HTTP/1.1

8714 451.796770 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.859466552734375%2C-114.01864624023438
HTTP/1.1

8788 452.048548 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85957717895508%2C-114.01864624023438
HTTP/1.1

8899 452.948538 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85969161987305%2C-114.01864624023438
HTTP/1.1

9080 454.066550 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85980987548828%2C-114.01864624023438
HTTP/1.1

9177 455.137429 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85993194580078%2C-114.01864624023438
HTTP/1.1

9286 458.446295 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86029052734375%2C-114.01863098144531
HTTP/1.1

9374 460.409459 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86052322387695%2C-114.01863861083984
HTTP/1.1

9473 463.150637 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.860755920410156%2C-114.01863098144531
HTTP/1.1

9567 463.990485 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86098861694336%2C-114.01863098144531
HTTP/1.1

9663 466.047194 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.861228942871094%2C-114.01863861083984
HTTP/1.1

9758 467.567998 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-

gzb0&inFormat=kvp&outFormat=json&location=46.86147689819336%2C-114.01863098144531
HTTP/1.1

9871 469.731793 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86159896850586%2C-114.01863098144531
HTTP/1.1

10000 473.100544 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86183547973633%2C-114.01862335205078
HTTP/1.1

10043 472.789075 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.862064361572266%2C-114.01861572265625
HTTP/1.1

10133 474.840279 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.862281799316406%2C-114.01860046386719
HTTP/1.1

10229 476.813205 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86248779296875%2C-114.01860046386719
HTTP/1.1

10317 478.421735 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86260223388672%2C-114.01859283447266
HTTP/1.1

10552 480.291389 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86282730102539%2C-114.0185775756836
HTTP/1.1

10646 482.083307 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86306381225586%2C-114.0185775756836
HTTP/1.1

10747 483.866181 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86330032348633%2C-114.01856231689453
HTTP/1.1

10843 485.082151 193.168.1.5 → 207.200.103.1 HTTP 255 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.863426208496094%2C-114.0185546875 HTTP/1.1

10955 486.587657 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86355209350586%2C-114.01854705810547
HTTP/1.1

11047 487.350725 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86367416381836%2C-114.01853942871094
HTTP/1.1

11142 488.219219 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.8637809753418%2C-114.01853942871094
HTTP/1.1

11239 489.248421 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86387252807617%2C-114.0185317993164
HTTP/1.1

11949 538.606644 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.863704681396484%2C-114.01164245605469
HTTP/1.1

12156 540.279622 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86370849609375%2C-114.01163482666016
HTTP/1.1

12383 542.725817 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864017486572266%2C-114.01107025146484
HTTP/1.1

12595 544.932316 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864044189453125%2C-114.01074981689453
HTTP/1.1

12763 546.463833 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86404800415039%2C-114.01071166992188
HTTP/1.1

12945 548.530566 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86408996582031%2C-114.01042175292969
HTTP/1.1

13135 550.207286 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86408996582031%2C-114.01012420654297
HTTP/1.1

13277 551.742654 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864078521728516%2C-114.00962829589844
HTTP/1.1

13376 553.179346 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864070892333984%2C-114.0094223022461
HTTP/1.1

13464 555.114211 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86406707763672%2C-114.00910186767578
HTTP/1.1

13555 556.406306 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86407470703125%2C-114.00875854492188
HTTP/1.1

13651 559.229346 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86408233642578%2C-114.0084228515625
HTTP/1.1

13884 565.042119 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.0074691772461
HTTP/1.1

13975 566.918158 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864044189453125%2C-114.00716400146484
HTTP/1.1

14073 569.049250 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-

gzb0&inFormat=kvp&outFormat=json&location=46.864044189453125%2C-114.00694274902344
HTTP/1.1

14169 571.129789 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86404800415039%2C-114.00680541992188
HTTP/1.1

14265 573.163967 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86405563354492%2C-114.00670623779297
HTTP/1.1

14361 575.602187 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00662231445313
HTTP/1.1

14458 576.681149 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00646209716797
HTTP/1.1

14547 578.683388 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00627899169922
HTTP/1.1

14709 580.735637 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00605773925781
HTTP/1.1

14807 583.347224 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00592803955078
HTTP/1.1

14901 584.161308 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86405944824219%2C-114.00563049316406
HTTP/1.1

14999 586.367916 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86405944824219%2C-114.00534057617188
HTTP/1.1

15096 587.993204 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86405563354492%2C-114.00506591796875
HTTP/1.1

15192 589.946228 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00477600097656
HTTP/1.1

15288 591.982801 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864051818847656%2C-114.00452423095703
HTTP/1.1

15409 594.803096 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864044189453125%2C-114.0042724609375
HTTP/1.1

15481 595.283713 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.864044189453125%2C-114.00414276123047
HTTP/1.1

15592 597.285802 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86404037475586%2C-114.00392150878906
HTTP/1.1

15987 600.731288 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.863983154296875%2C-114.00354766845703
HTTP/1.1

16084 604.790035 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86393356323242%2C-114.0035171508789
HTTP/1.1

16181 606.859028 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86381912231445%2C-114.00352478027344
HTTP/1.1

16268 608.668586 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-

gzb0&inFormat=kvp&outFormat=json&location=46.863643646240234%2C-114.0035400390625
HTTP/1.1

16374 610.328544 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86354446411133%2C-114.00354766845703
HTTP/1.1

16468 613.491811 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86325454711914%2C-114.00360107421875
HTTP/1.1

16567 614.925542 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86309051513672%2C-114.00376892089844
HTTP/1.1

16669 616.665236 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86293411254883%2C-114.00396728515625
HTTP/1.1

16762 618.608186 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86286163330078%2C-114.00408172607422
HTTP/1.1

16856 620.164335 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.862701416015625%2C-114.00432586669922
HTTP/1.1

16948 621.716922 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86253356933594%2C-114.00457763671875
HTTP/1.1

17057 624.885665 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.862361907958984%2C-114.00481414794922
HTTP/1.1

17257 626.808213 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86210632324219%2C-114.00520324707031
HTTP/1.1

17419 630.388711 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86183547973633%2C-114.0055923461914
HTTP/1.1

17519 633.246429 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86166000366211%2C-114.00584411621094
HTTP/1.1

17612 634.075989 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86148452758789%2C-114.00609588623047
HTTP/1.1

17706 637.047433 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86122131347656%2C-114.00647735595703
HTTP/1.1

17797 638.988104 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86103057861328%2C-114.00672912597656
HTTP/1.1

17886 641.139213 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.860843658447266%2C-114.00699615478516
HTTP/1.1

17988 643.288021 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86065673828125%2C-114.00727081298828
HTTP/1.1

18090 646.268138 193.168.1.5 → 207.200.103.1 HTTP 257 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.86037063598633%2C-114.0076675415039
HTTP/1.1

18372 650.348977 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.859989166259766%2C-114.00820922851563
HTTP/1.1

18473 651.583456 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-

gzb0&inFormat=kvp&outFormat=json&location=46.85979080200195%2C-114.00848388671875
HTTP/1.1

18568 653.419694 193.168.1.5 → 207.200.103.1 HTTP 258 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.85969161987305%2C-114.00862121582031
HTTP/1.1

18664 654.970810 193.168.1.5 → 207.200.103.1 HTTP 259 GET
/geocoding/v1/reverse?key=Cmjtd%7Cluaa2qu2nd%2Cb5%3Do5-
gzb0&inFormat=kvp&outFormat=json&location=46.859500885009766%2C-114.00887298583984
HTTP/1.1

18774 657.116963 193.168.1.5 → 207.200.103.1 HTTP 258 GET
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gzb0&inFormat=kvp&outFormat=json&location=46.85930252075195%2C-114.00914001464844
HTTP/1.1

18857 658.546607 193.168.1.5 → 207.200.103.1 HTTP 258 GET
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HTTP/1.1

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Geolocation Data in KML Format – geolocations.kml

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```

APPENDIX E – INVESTIGATION OUTPUT ARCHIVE

Due to constraints in MyLearningSpace, the zip file for the investigation output requested in the brief is embedded into the report.



Investigation_Output.zip

