

Network Forensic Analysis Report

The Security team requested this analysis because they have evidence that people are misusing the network. Usually, IT wouldn't pay much mind to this behavior, but it seems these people have created their own web server on the corporate network. A number of machines from foreign subnets are sending traffic to this network. They have set up an Active Directory network. Their IP addresses are somewhere in the range 10.6.12.0/24.

So far, Security knows the following about these time thieves:

1. "Time thieves" spotted watching YouTube during work hours - At least two users on the network have been wasting time on YouTube.
2. At least one Windows host is infected with a virus.
3. Noticed some Illegal downloads.

Below is the analysis done on the network traffic capture for the above 3 observations:

Time Thieves

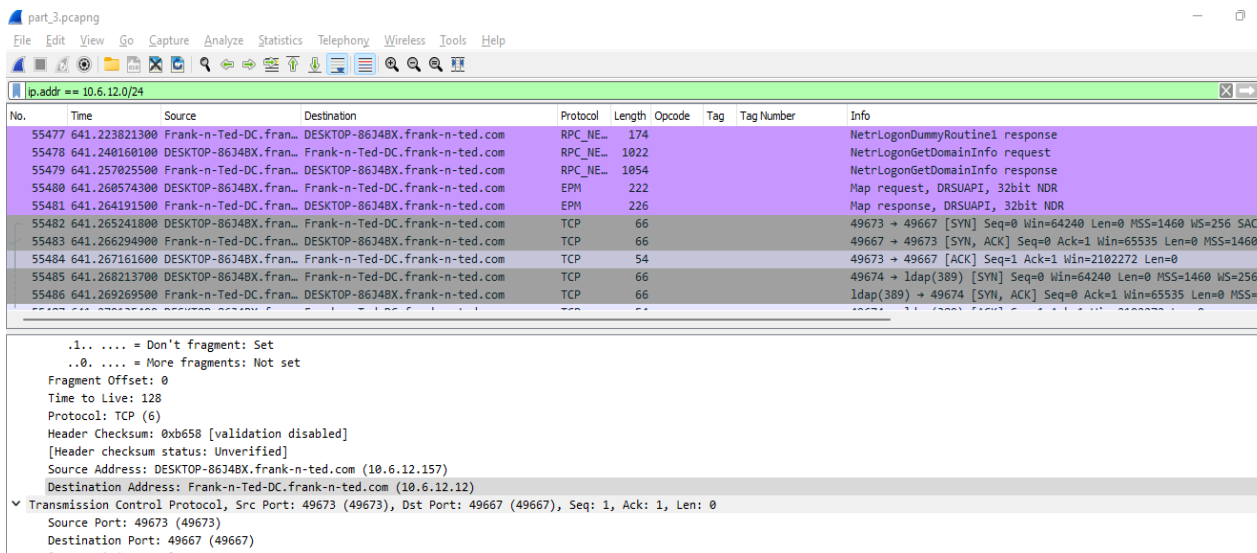
After inspecting the traffic capture the following observations were made:

1. Domain name of the users' custom site **Frank-n-Ted-DC.frank-n-ted.com**

The Wireshark Filter used: **ip.addr==10.6.12.0/24**

Below is a screenshot:

Red-Offensive Vs Blue-Defensive Team (By Kavitha Bangalore)

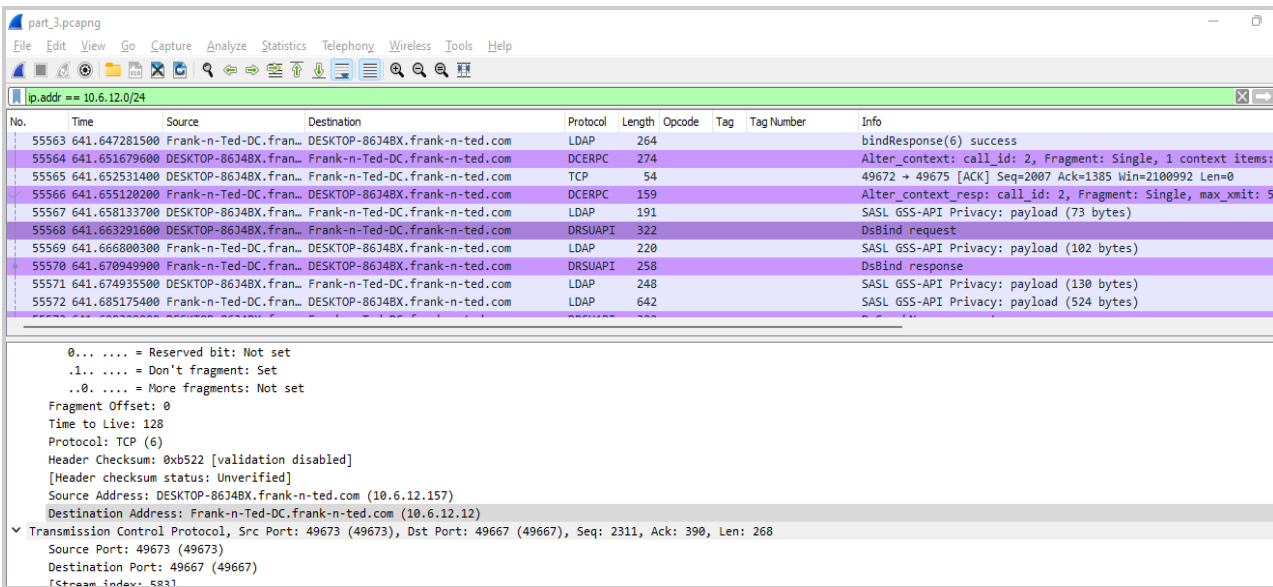


No.	Time	Source	Destination	Protocol	Length	Opcode	Tag	Tag Number	Info
55477	641.223821300	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	RPC_NE...	174				NetrLogonDummyRoutine1 response
55478	641.248160100	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	RPC_NE...	1022				NetrLogonGetDomainInfo request
55479	641.257025500	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	RPC_NE...	1054				NetrLogonGetDomainInfo response
55480	641.268574300	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	EPM	222				Map request, DRSUAPI, 32bit NDR
55481	641.264191500	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	EPM	226				Map response, DRSUAPI, 32bit NDR
55482	641.265241800	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	TCP	66				49673 → 49667 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK...
55483	641.266294900	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	TCP	66				49667 → 49673 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460...
55484	641.267161600	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	TCP	54				49673 → 49667 [ACK] Seq=1 Ack=1 Win=2182272 Len=0
55485	641.268213700	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	TCP	66				49674 → 1dap(389) [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256...
55486	641.269269500	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	TCP	66				1dap(389) → 49674 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1...

..1... .. = Don't fragment: Set
..0... .. = More fragments: Not set
Fragment Offset: 0
Time to Live: 128
Protocol: TCP (6)
Header Checksum: 0xb658 [validation disabled]
[Header checksum status: Unverified]
Source Address: DESKTOP-86J48X.frank-n-ted.com (10.6.12.157)
Destination Address: Frank-n-Ted-DC.frank-n-ted.com (10.6.12.12)
Transmission Control Protocol, Src Port: 49673 (49673), Dst Port: 49667 (49667), Seq: 1, Ack: 1, Len: 0
Source Port: 49673 (49673)
Destination Port: 49667 (49667)

2. IP address of the Domain Controller (DC) of the AD network: **10.6.12.12**
(Frank-n-Ted-DC.frank-n-ted.com)

The Wireshark Filter used: **ip.addr==10.6.12.0/24**



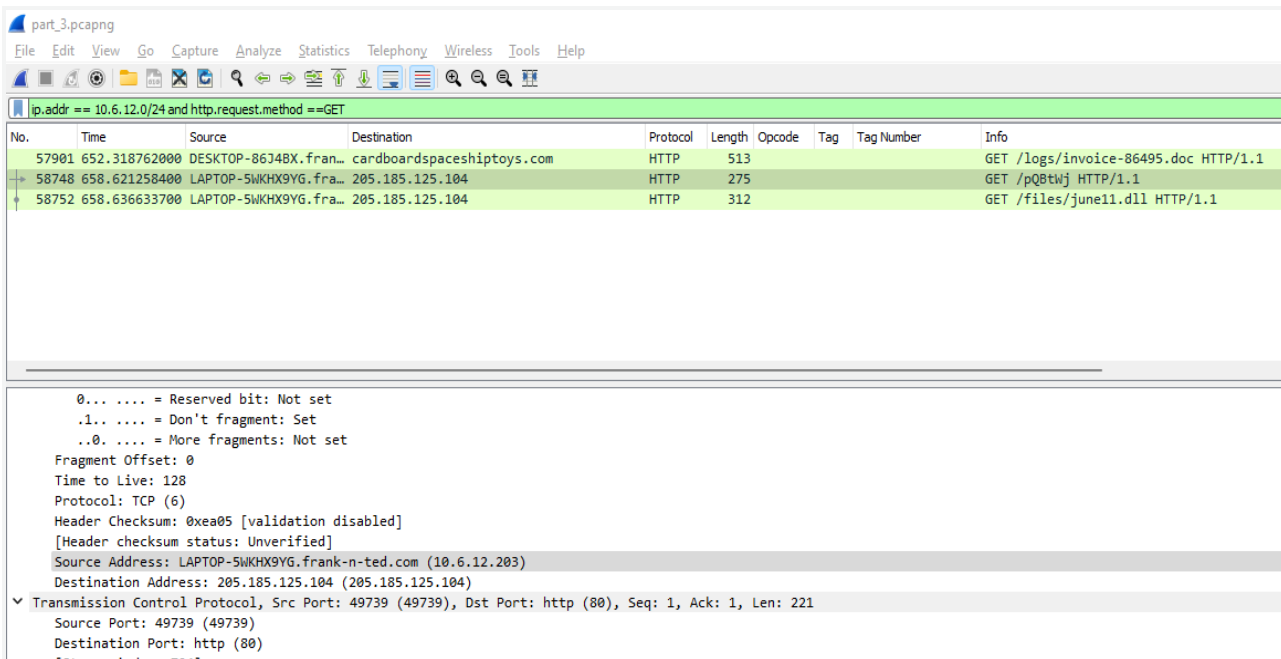
No.	Time	Source	Destination	Protocol	Length	Opcode	Tag	Tag Number	Info
55563	641.647281500	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	LDAP	264				bindResponse(6) success
55564	641.651679600	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	DCERPC	274				Alter_context: call_id: 2, Fragment: Single, 1 context items:
55565	641.652531400	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	TCP	54				49672 → 49675 [ACK] Seq=2007 Ack=1385 Win=2100992 Len=0
55566	641.655120200	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	DCERPC	159				Alter_context_resp: call_id: 2, Fragment: Single, max_xmit: 58
55567	641.658133700	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	LDAP	191				SASL GSS-API Privacy: payload (73 bytes)
55568	641.663291600	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	DRSUAPI	322				Dsbind request
55569	641.666800300	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	LDAP	220				SASL GSS-API Privacy: payload (102 bytes)
55570	641.670949900	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	DRSUAPI	258				Dsbind response
55571	641.674935500	DESKTOP-86J48X.fran...	Frank-n-Ted-DC.frank-n-ted.com	LDAP	248				SASL GSS-API Privacy: payload (130 bytes)
55572	641.685175400	Frank-n-Ted-DC.fran...	DESKTOP-86J48X.frank-n-ted.com	LDAP	642				SASL GSS-API Privacy: payload (524 bytes)

0... .. = Reserved bit: Not set
..1... .. = Don't fragment: Set
..0... .. = More fragments: Not set
Fragment Offset: 0
Time to Live: 128
Protocol: TCP (6)
Header Checksum: 0xb522 [validation disabled]
[Header checksum status: Unverified]
Source Address: DESKTOP-86J48X.frank-n-ted.com (10.6.12.157)
Destination Address: Frank-n-Ted-DC.frank-n-ted.com (10.6.12.12)
Transmission Control Protocol, Src Port: 49673 (49673), Dst Port: 49667 (49667), Seq: 2311, Ack: 390, Len: 268
Source Port: 49673 (49673)
Destination Port: 49667 (49667)
[Stream index: 583]

3. Name of the malware downloaded to the 10.6.12.203 machine: **june11.dll**

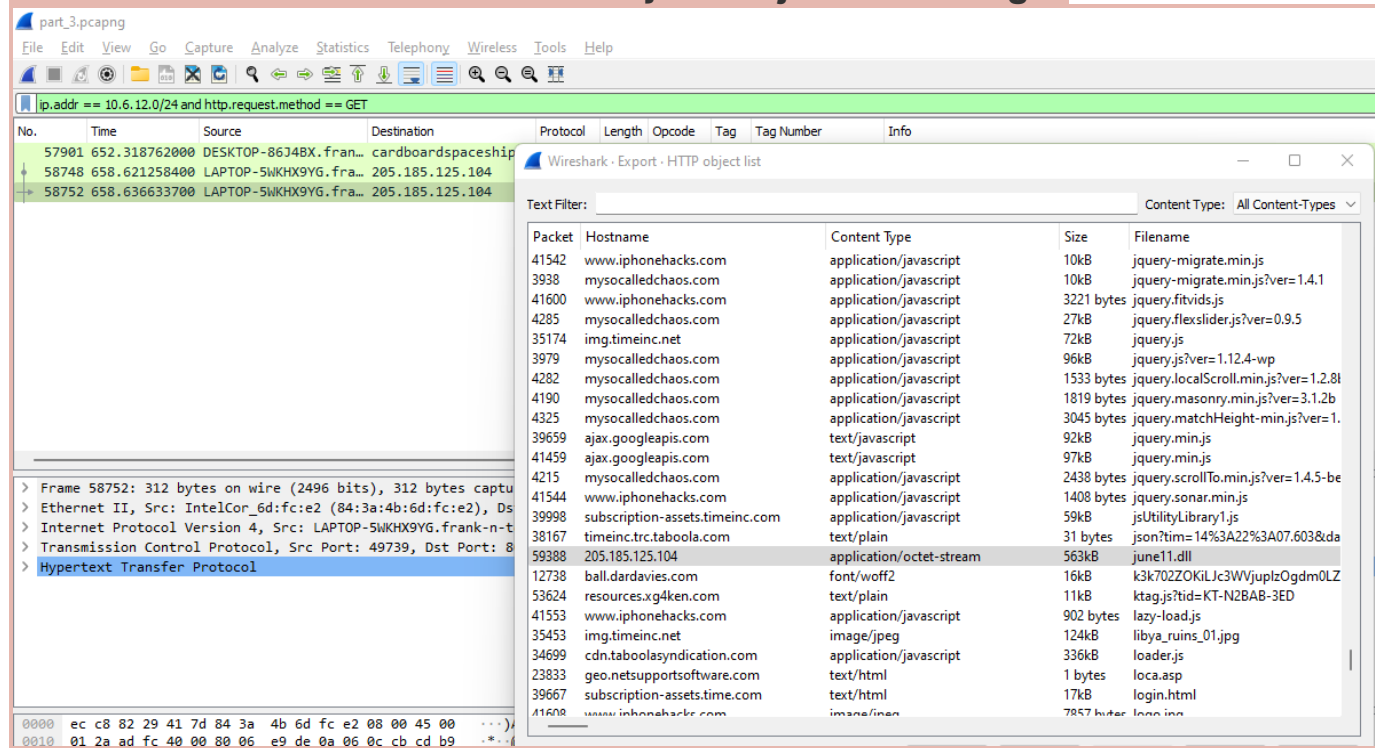
The Wireshark Filter used: **ip.addr==10.16.12.203 and http.request.method==GET**

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- Exporting this file to Kali machine's desktop, it was uploaded to [VirusTotal.com](https://www.virustotal.com) to check if it was a malware. The file did classify as malware.

The malware was identified as a Trojan: Trojan.Mint.Zamg.O



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49 security vendors and 1 sandbox flagged this file as malicious

d3636666b407fe5527b96696377ee7ba9b609c8ef4561fa76af218ddd764dec

Googleipdate.exe

549.84 KB
Size

2022-02-17 02:16:52 UTC
7 days ago

invalid-signature overlay pedll signed spreader

DETECTION DETAILS RELATIONS BEHAVIOR COMMUNITY 4

Ad-Aware	Trojan.Mint.Zamg.O	AhnLab-V3	Malware/Win32.RL_Generic.R346613
Alibaba	TrojanSpy:Win32/Yakes.O454a340	ALYac	Trojan.Mint.Zamg.O
Antiy-AVL	Trojan/Generic.ASCommon.1BE	Avast	Win32:DangerousSig [Trj]
AVG	Win32:DangerousSig [Trj]	Avira (no cloud)	TR/AD.ZLoader.ladbd
BitDefender	Trojan.Mint.Zamg.O	BitDefenderTheta	Gen:NN.ZedlaF.34212.lu9@aul7OOgi
Bkav Pro	W32.AIDetect.malware2	CAT-QuickHeal	Ransom.LockyCiR
CrowdStrike Falcon	Win/malicious_confidence_100%(W)	Cylance	Unsafe

Vulnerable Windows Machine

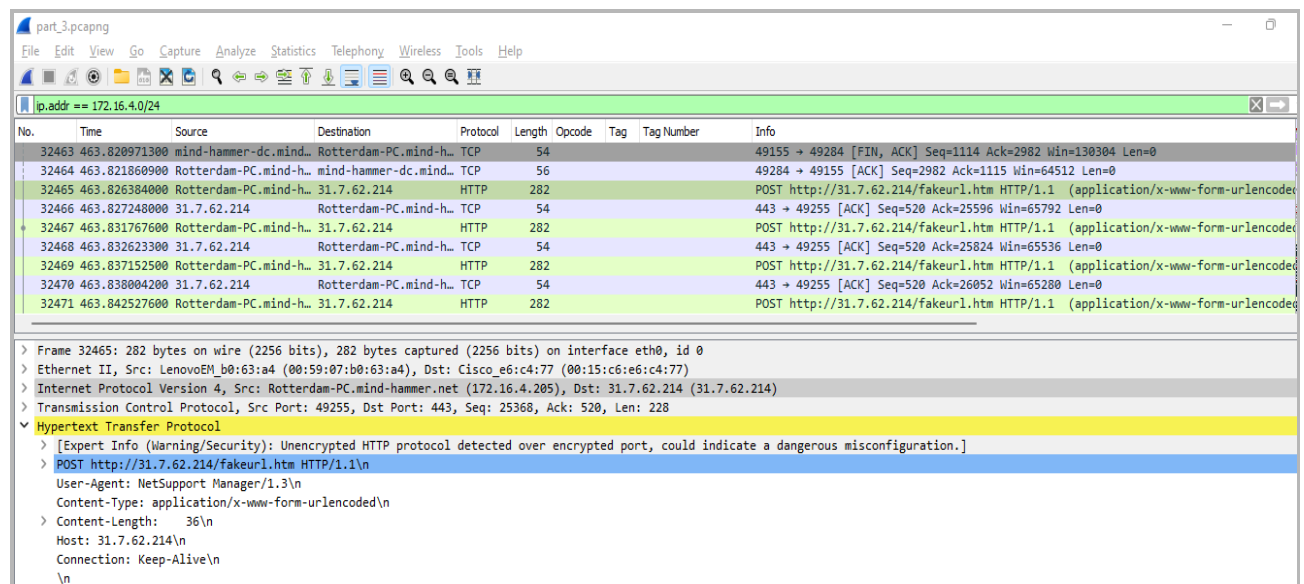
The Security team has received reports of an infected Windows host on the network. They know the following:

- Machines in the network live in the range 172.16.4.0/24.
- The domain mind-hammer.net is associated with the infected computer.
- The DC for this network lives at 172.16.4.4 and is named Mind-Hammer-DC.
- The network has standard gateway and broadcast addresses.

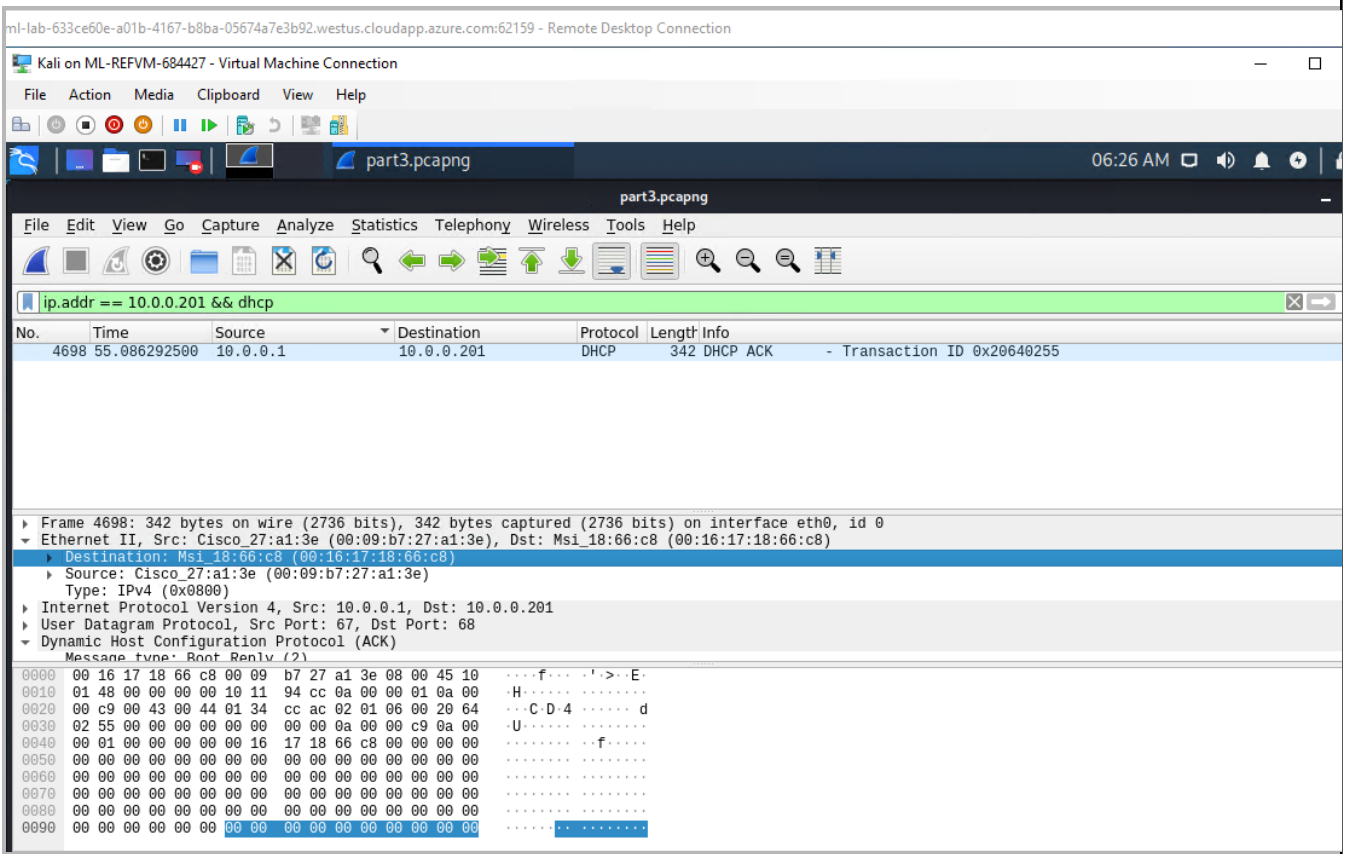
Inspecting the traffic, below are the findings:

1. The following information was found about the infected Windows machine:
 - o Host name : **ROTTERDAM-PC**
 - o IP address: **172.16.4.205**
 - o MAC address: **00:59:07:b0:63:a4**

Wireshark Filter used: **ip.src==172.16.4.0/24**



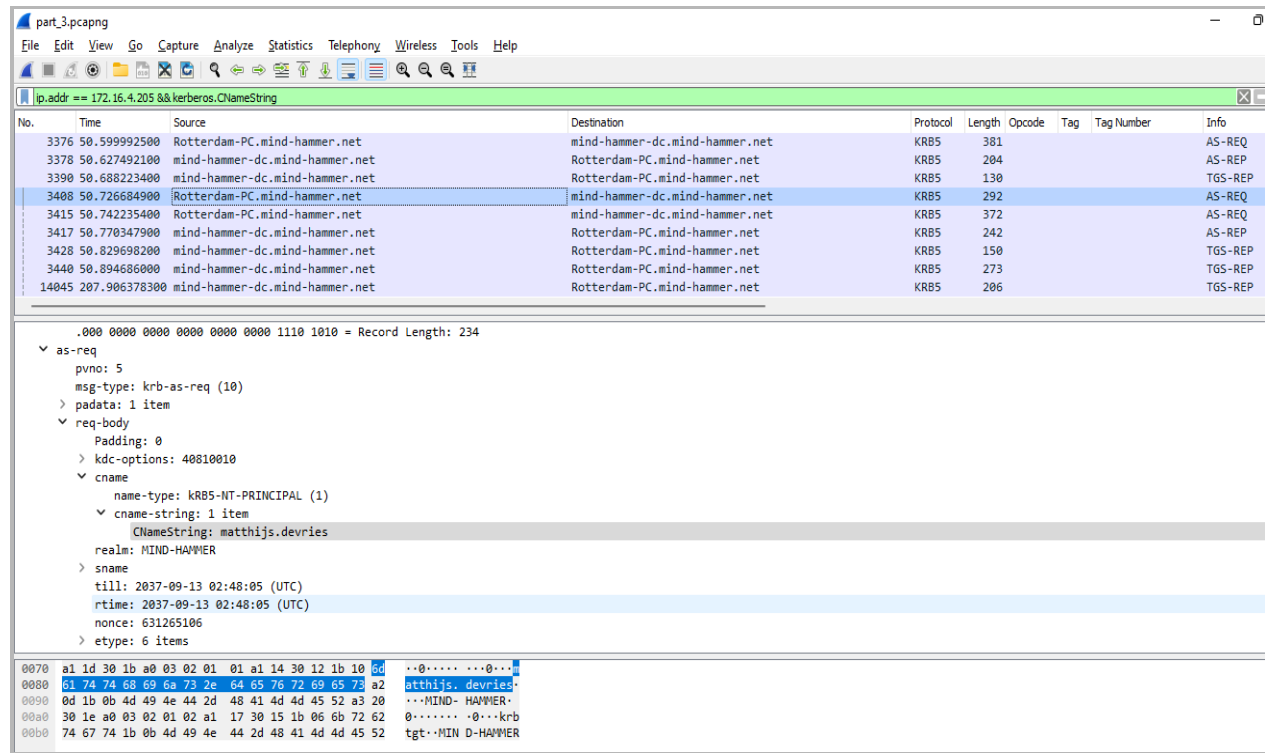
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2. Username of the Windows user whose computer is infected: **matthijs.devries**.

Wireshark Filter used: **ip.src==172.16.4.205 and kerberos.CNameString**

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No.	Time	Source	Destination	Protocol	Length	Opcode	Tag	Tag Number	Info
3376	50.599992500	Rotterdam-PC.mind-hammer.net	mind-hammer-dc.mind-hammer.net	KRBS	381				AS-REQ
3378	50.627492100	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	204				AS-REP
3390	50.688223400	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	130				TGS-REP
3408	50.726684900	Rotterdam-PC.mind-hammer.net	mind-hammer-dc.mind-hammer.net	KRBS	292				AS-REQ
3415	50.742235400	Rotterdam-PC.mind-hammer.net	mind-hammer-dc.mind-hammer.net	KRBS	372				AS-REQ
3417	50.770347900	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	242				AS-REP
3428	50.829698200	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	150				TGS-REP
3440	50.894686000	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	273				TGS-REP
14045	207.906378300	mind-hammer-dc.mind-hammer.net	Rotterdam-PC.mind-hammer.net	KRBS	206				TGS-REP

.000 0000 0000 0000 0000 1110 1010 = Record Length: 234

as-req
pvno: 5
msg-type: krb-as-req (10)
> padata: 1 item
req-body
padding: 0
> kdc-options: 40810010
cname
name-type: KRBS-NT-PRINCIPAL (1)
cname-string: 1 item
CNameString: matthijs.devries
realm: MIND-HAMMER
> sname
till: 2037-09-13 02:48:05 (UTC)
rtime: 2037-09-13 02:48:05 (UTC)
nonce: 631265106
> etype: 6 items

0070 a1 1d 30 1b a0 03 02 01 01 a1 14 30 12 1b 10 6d ..0.....0...
0080 61 74 74 68 69 6a 73 2e 64 65 76 72 69 65 73 a2 atthijs.devries
0090 0d 1b 0b 4d 49 4e 44 2d 48 41 4d 4d 45 52 a3 20 ...MIND- HAMMER
00a0 30 1e a0 03 02 01 02 a1 17 30 15 1b 06 6b 72 62 0.....0...krb
00b0 74 67 74 1b 0b 4d 49 4e 44 2d 48 41 4d 4d 45 52 tgt::MIND-HAMMER

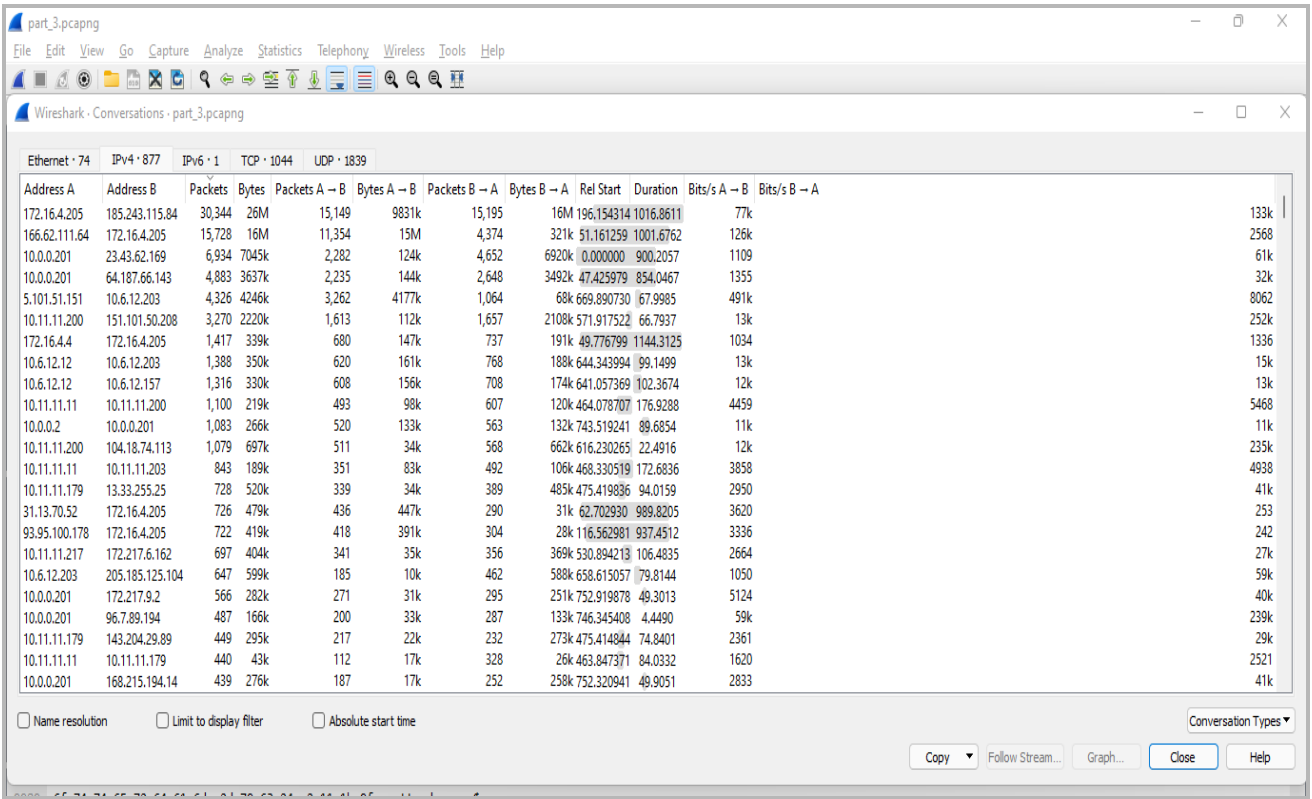
3. IP addresses used in the actual infection traffic:

Found 4 IP addresses: 172.16.4.205, 185.243.115.84, 64.187.66.143 and 23.43.62.169

Wireshark Filter used: `ip.addr==172.16.4.205 and kerberos.CNameString` (same as used for previous)

I have used the Statistics feature of wireshark to filter the I/P addresses with the highest traffic. Select Statistics -> Select Conversation -> Select IPv4 -> Sort Packets high to low. The above mentioned 4 IP addresses have the highest no. of packets downloaded, hence indicating where the actual infection traffic is located.

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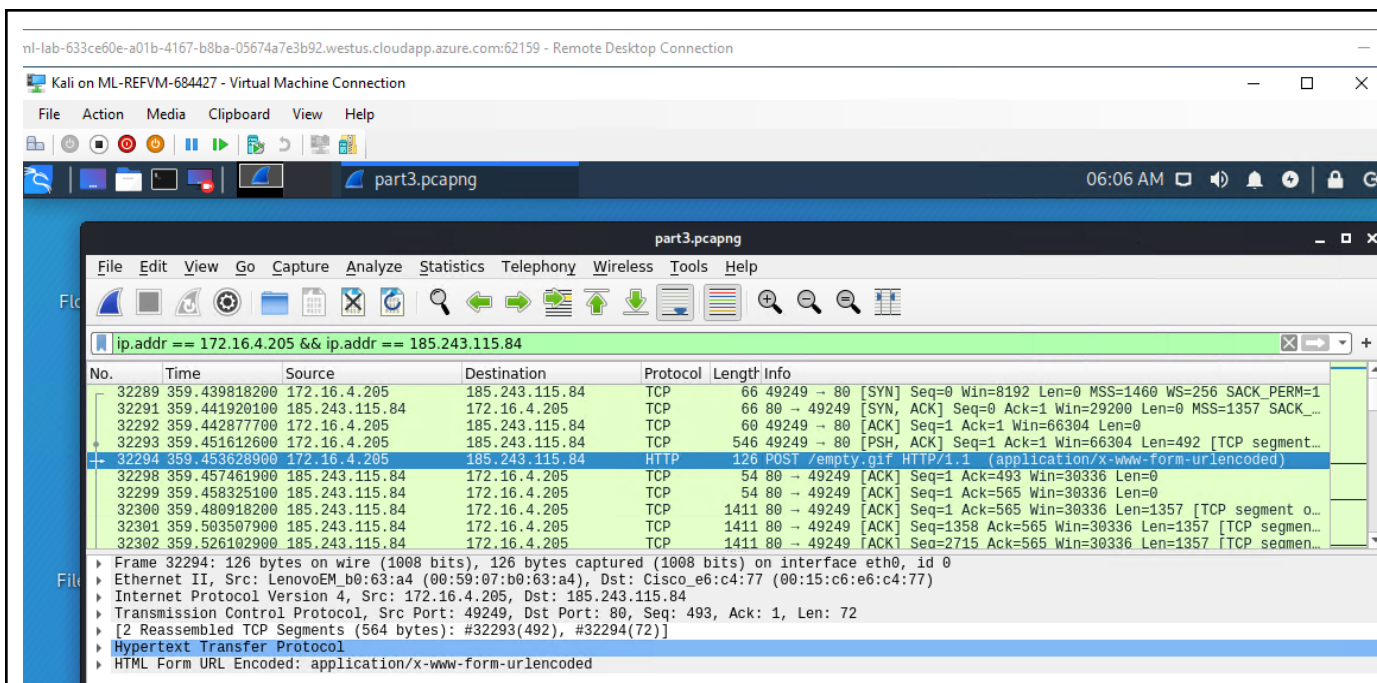
Address A	Address B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	Bits/s A → B	Bits/s B → A
172.16.4.205	185.243.115.84	30,344	26M	15,149	9831k	15,195	16M	196.154314	1016.8611	77k	133k
166.62.111.64	172.16.4.205	15,728	16M	11,354	15M	4,374	321k	51.161259	1001.6762	126k	2568
10.0.0.201	23.43.62.169	6,934	7045k	2,282	124k	4,652	6920k	0.000000	900.2057	1109	61k
10.0.0.201	64.187.66.143	4,883	3637k	2,235	144k	2,648	3492k	47.425979	854.0467	1355	32k
5.101.51.151	10.6.12.203	4,326	4246k	3,262	4177k	1,064	68k	669.890730	67.9985	491k	8062
10.11.11.200	151.101.50.208	3,270	2220k	1,613	112k	1,657	2108k	571.917522	66.7937	13k	252k
172.16.4.4	172.16.4.205	1,417	339k	680	147k	737	191k	49.776799	1144.3125	1034	1336
10.6.12.12	10.6.12.203	1,388	350k	620	161k	768	188k	644.343994	99.1499	15k	15k
10.6.12.12	10.6.12.157	1,316	330k	608	156k	708	174k	641.057369	102.3674	12k	13k
10.11.11.11	10.11.11.200	1,100	219k	493	98k	607	120k	464.078707	176.9288	4459	5468
10.0.0.2	10.0.0.201	1,083	266k	520	133k	563	132k	743.519241	89.6854	11k	11k
10.11.11.200	104.18.74.113	1,079	697k	511	34k	568	662k	616.230265	22.4916	12k	235k
10.11.11.11	10.11.11.203	843	189k	351	83k	492	106k	468.330519	172.6836	3858	4938
10.11.11.179	13.33.255.25	728	520k	339	34k	389	485k	475.419836	94.0159	2950	41k
31.13.70.52	172.16.4.205	726	479k	436	447k	290	31k	62.702930	989.8205	3620	253
93.95.100.178	172.16.4.205	722	419k	418	391k	304	28k	116.562981	937.4512	3336	242
10.11.11.217	172.217.6.162	697	404k	341	35k	356	369k	530.894213	106.4835	2664	27k
10.6.12.203	205.185.125.104	647	599k	185	10k	462	588k	658.615057	79.8144	1050	59k
10.0.0.201	172.217.9.2	566	282k	271	31k	295	251k	752.919878	49.3013	5124	40k
10.0.0.201	96.7.89.194	487	166k	200	33k	287	133k	746.345408	4.4490	59k	239k
10.11.11.179	143.204.29.89	449	295k	217	22k	232	273k	475.414844	74.8401	2361	29k
10.11.11.11	10.11.11.179	440	43k	112	17k	328	26k	463.847371	84.0332	1620	2521
10.0.0.201	168.215.194.14	439	276k	187	17k	252	258k	752.320941	49.9051	2833	41k

4. Below are the screenshots related to getting the desktop background of the Windows host:

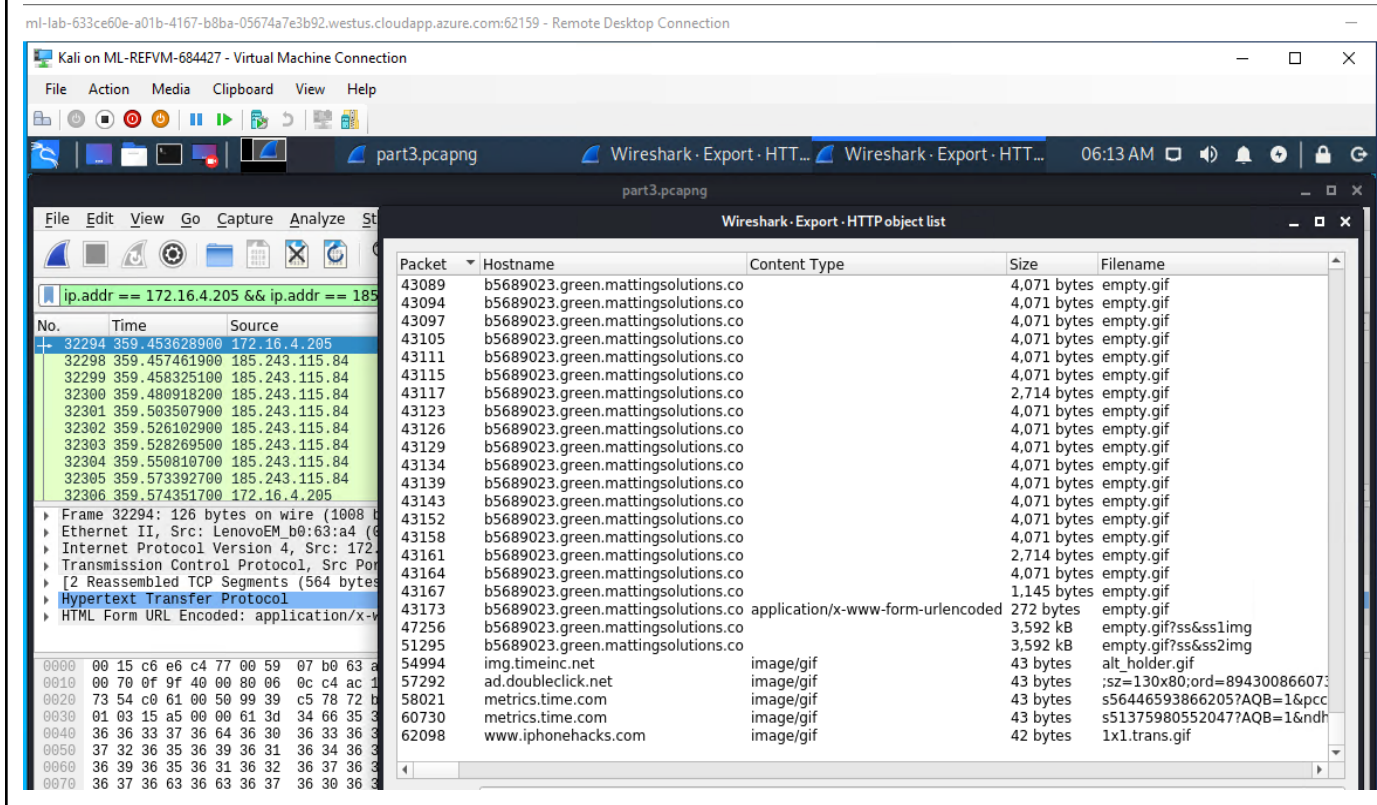
Wireshark Filter used: **ip.addr == 172.16.4.205 && ip.addr == 185.243.115.84**

Using the source and destination address of the related computers, trying to filter and find the images/objects present in the network traffic capture for that specific filter. The images will be captured in the HTTP request.

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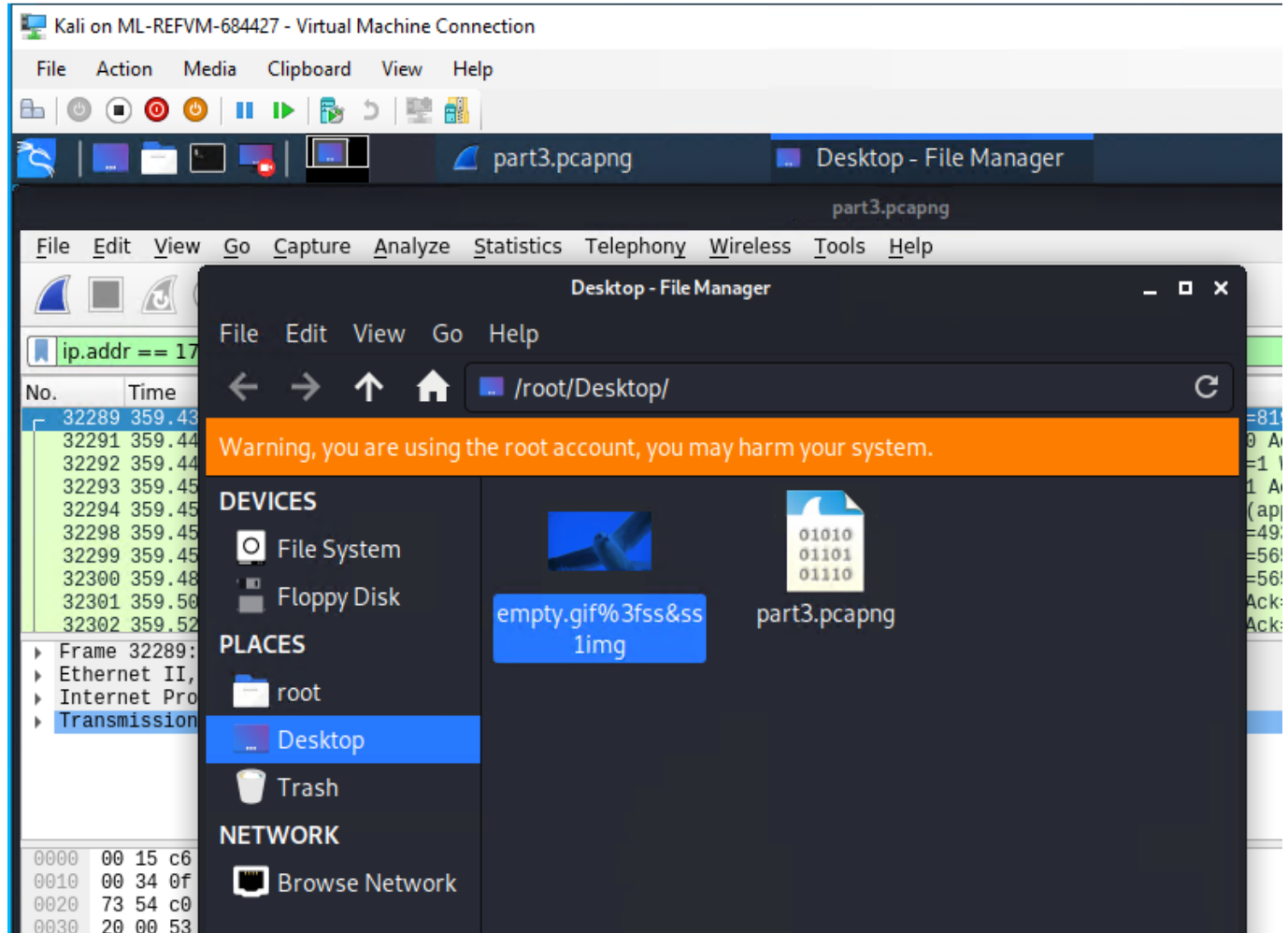
Using the Import feature of wireshark, selecting the HTTP object, as that's where the image resides, the empty.gif image, which is the desktop image is downloaded.



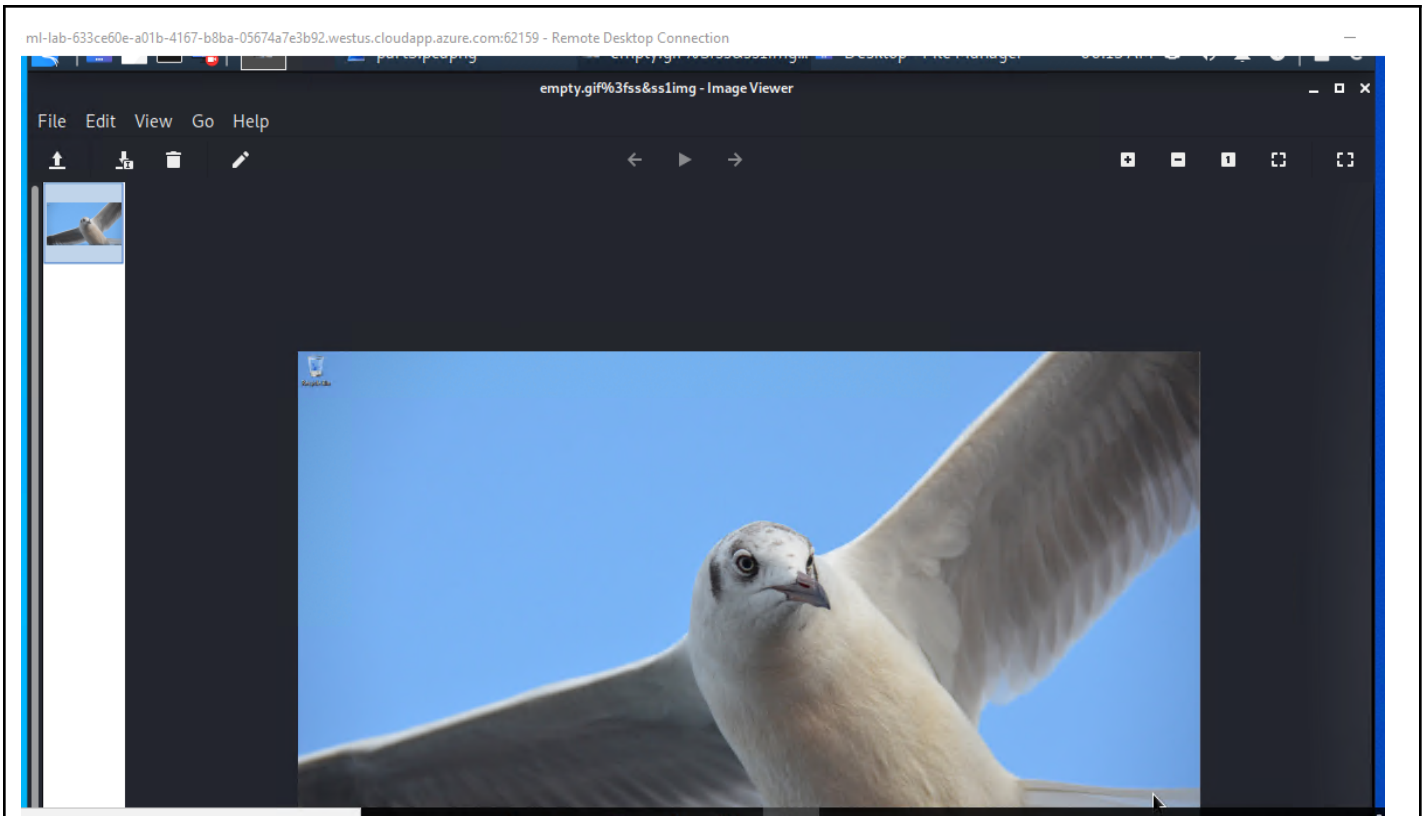
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I have downloaded the image on the desktop.

ml-lab-633ce60e-a01b-4167-b8ba-05674a7e3b92.westus.cloudapp.azure.com:62159 - Remote Desktop Connection



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Illegal Downloads

IT was informed that some users are torrenting on the network. The Security team does not forbid the use of torrents for legitimate purposes, such as downloading operating systems. However, they have a strict policy against copyright infringement.

IT shared the following about the torrent activity:

1. The machines using torrents live in the range 10.0.0.0/24 and are clients of an AD domain.
2. The DC of this domain lives at 10.0.0.2 and is named DogOfTheYear-DC.
3. The DC is associated with the domain dogoftheyear.net.

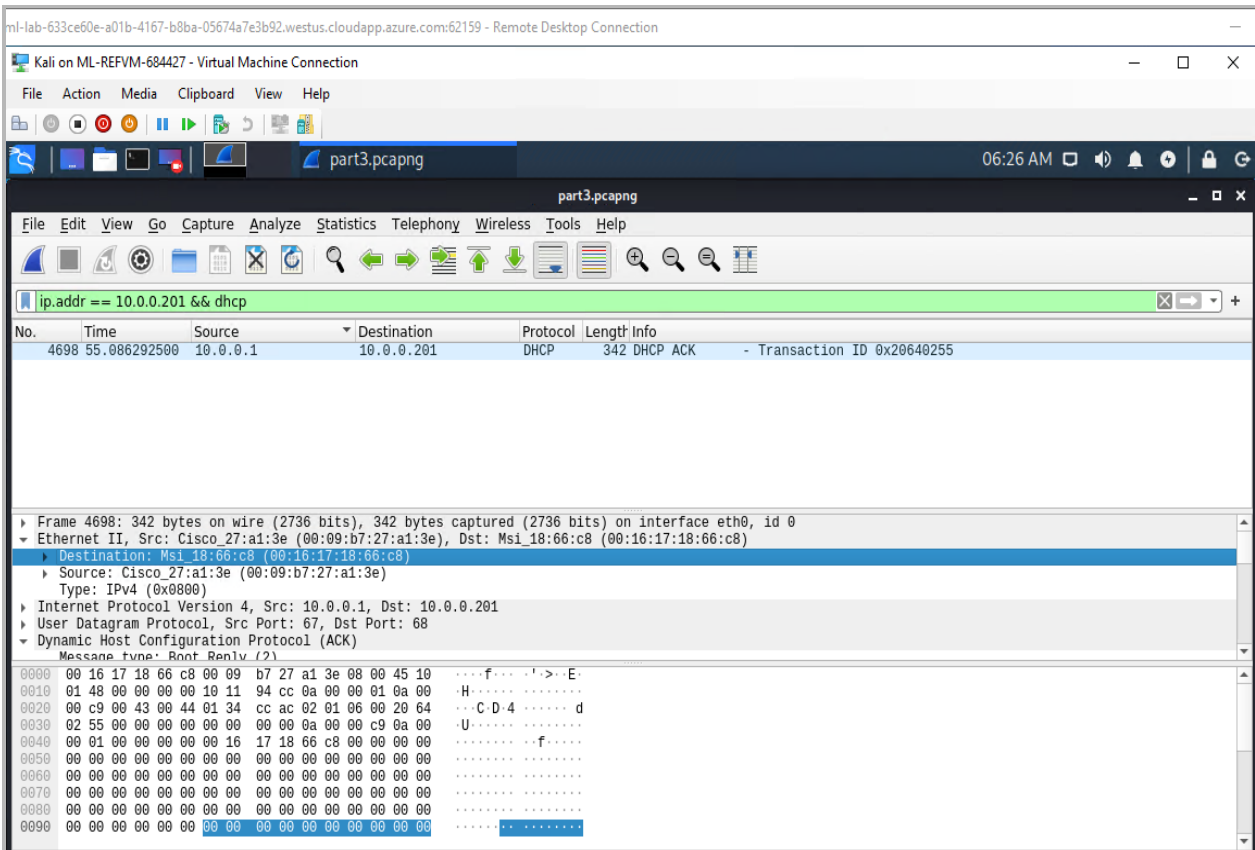
After isolating the torrent traffic below are the observations:

1. The following information is found about the machine with IP address 10.0.0.201:
 - a. MAC address: **00:16:17:18:66:c8**
 - b. Windows username: **elmer.blanco**
 - c. OS version: **BLANCO-DESKTOP** Windows NT 10.0

Wireshark Filter Used: **ip.src==10.0.0.201 and dhcp**

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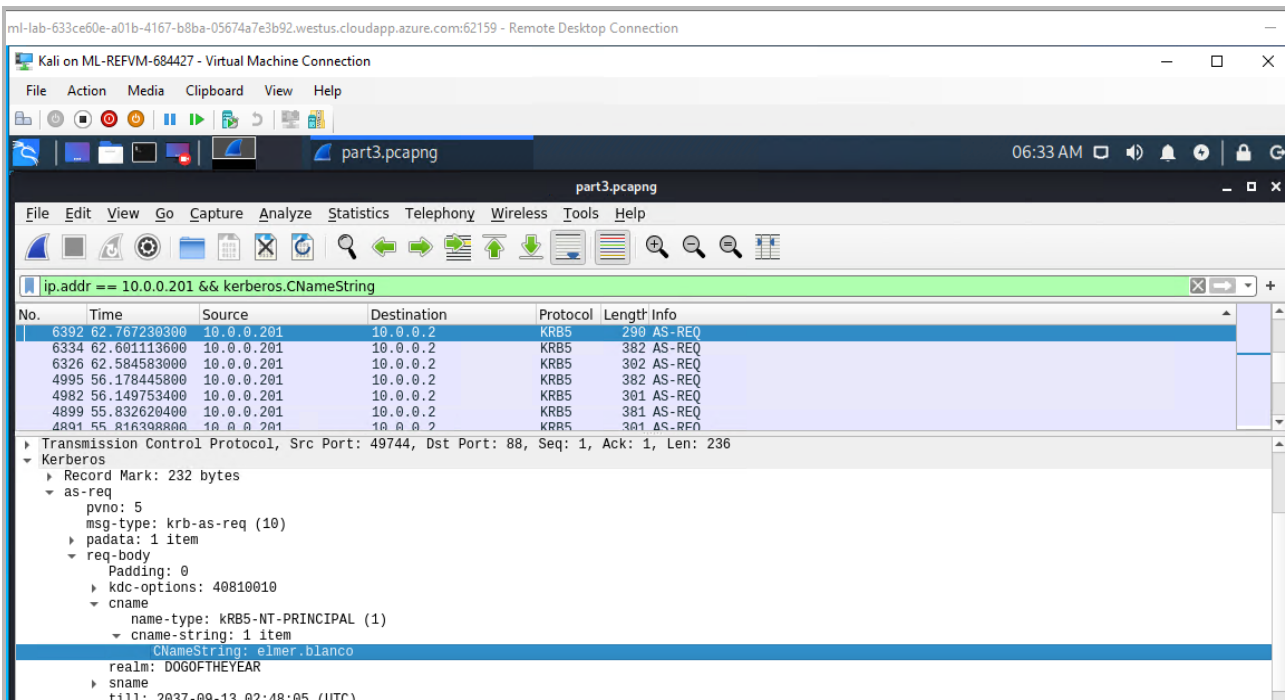
We know the IP address of the machine to be 10.0.0.201, to get the mac address, we use the above filter, dhcp configures the IP addresses and the filter helps find the machine details specifically.



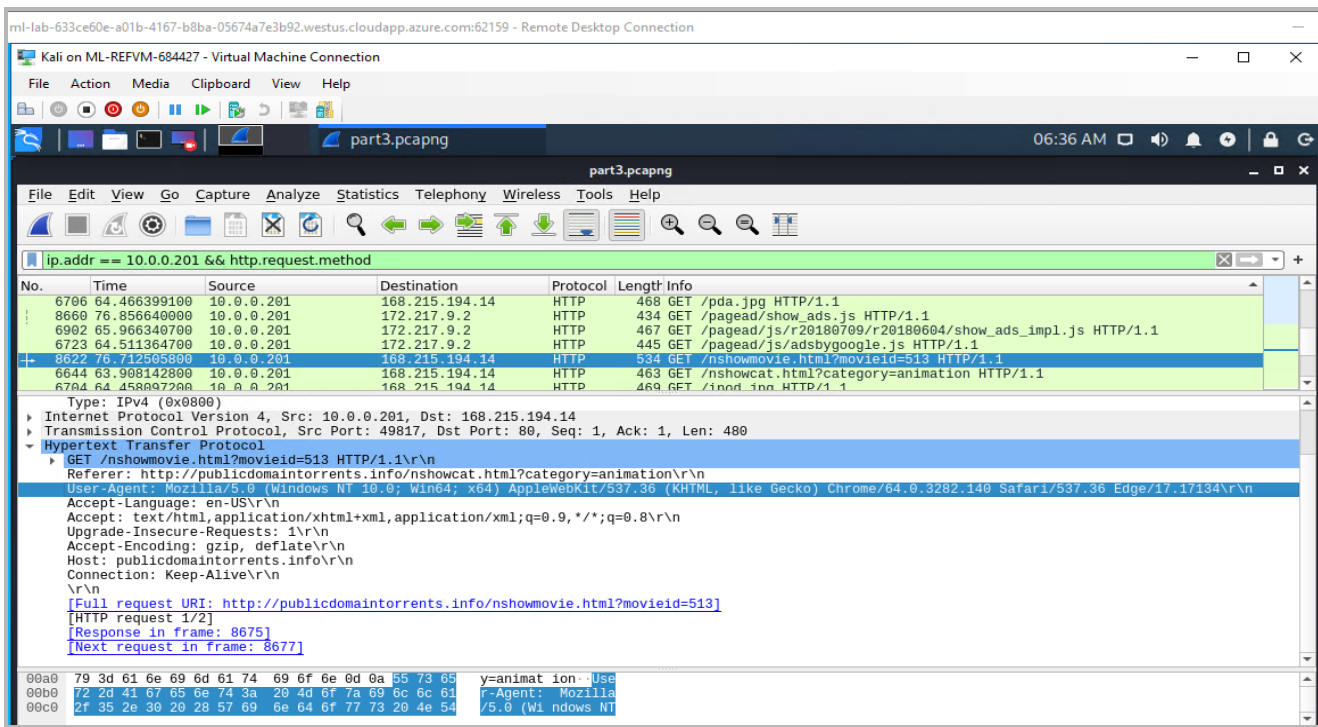
To find the username, the below is used:

Wireshark Filter used: **ip.addr == 10.0.0.201 and kerberos.CNameString**

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To get the OS Type and Version, Wireshark Filter used: `ip.addr == 10.0.0.201` and `http.request.method == GET`

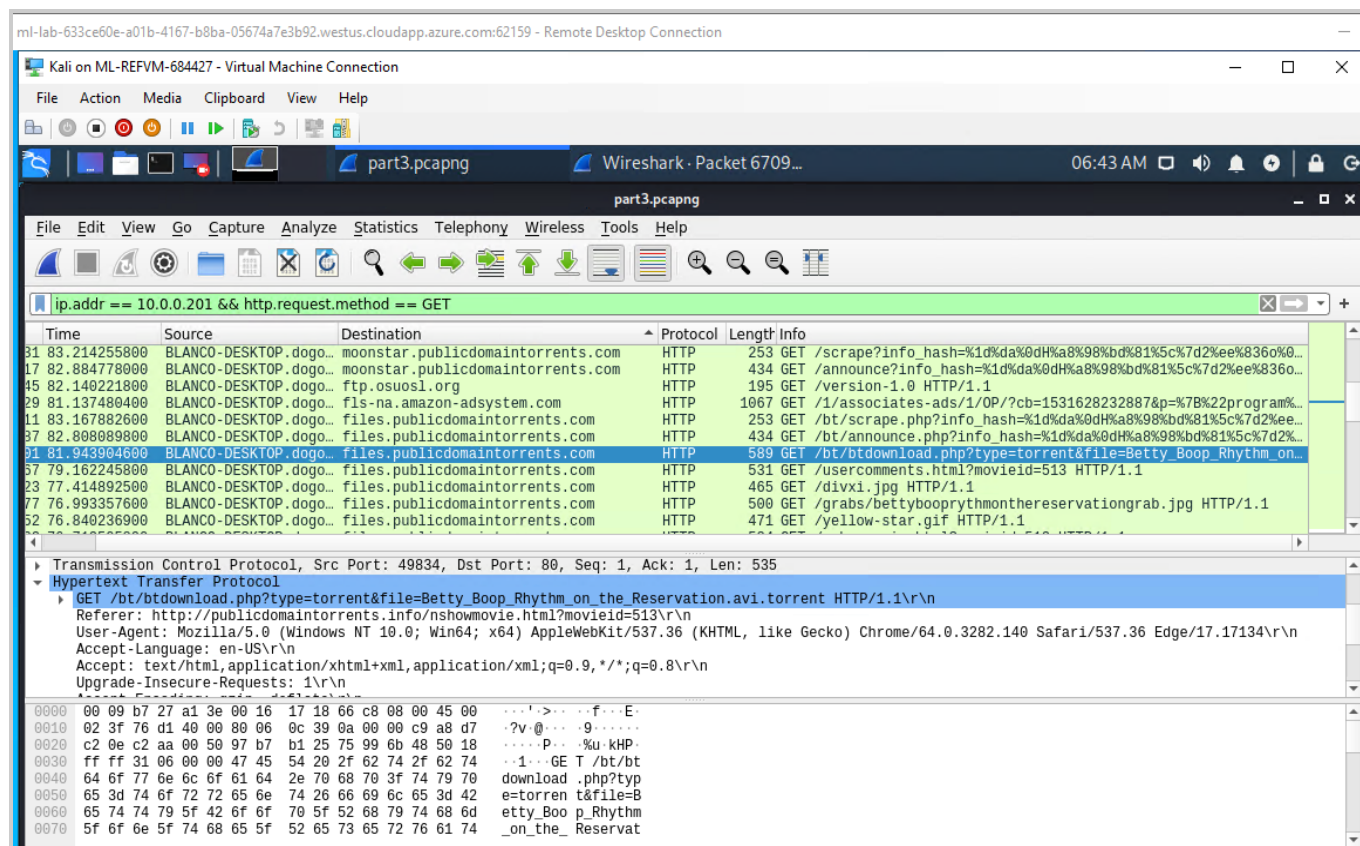


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2. The torrent file the user downloaded was:
Betty_Boop_Rythm_on_the_Reservation.avi.torrent.

Wireshark Filter used: **ip.addr==10.0.0.201 and http.request.method==GET**

There are quite a few downloads made, hence to find the specific torrent file - I looked specifically for download requests to find it.



I retrieved the movie clip snapshot using the URL which I got from the above screenshot:
<http://publicdomaintorrents.info/nshowmovie.html?movieid=513>

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Betty Boop - Rythm on the Reser

←

→

×

🏠

⚠ Not secure | publicdomaintorrents.info/nshowmovie.html?movieid=513

Movie Categories

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[Top Twenty Seeded](#)
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[WATCH LIVE](#)
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[Comedy](#)
[Drama](#)
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[War](#)
[Westerns](#)
[Links](#)
[Feedback](#)
[PDA/Mobile FAQ](#)
[My Blog](#)

DeepLearningAI

★★★★★
113,592 ratings

Starts Feb. 26

File Name: Betty_Boop_Rhythm_on_the_Reservation.avi
File Size: 100.50 MB
Resolution: 720x480
Duration: 00:06:02

00:00:11

00:00:23

00:00:35

00:00:46

00:00:58

00:01:10

00:01:21

00:01:33

00:01:45

00:01:56

00:02:08

00:02:20

00:02:32

00:02:43

00:02:55

00:03:07

00:03:18

00:03:30

00:03:42

00:03:53

00:04:05

00:04:17

00:04:29

00:04:40

00:04:52

00:05:04

00:05:16

00:05:28

00:05:40

00:05:52