

# Exp04

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- 1) To identify all the involved systems it is necessary to use the following instruction command line: `"tshark -r traffic1.pcap -T fields -e ip.dst ip.src | sort | uniq"` that extract and sort, uniquely, all the IP addresses into pick-up file from the provided pcap file.

Here there are all the detected addresses:

- 189.126.11.82
- 192.168.115.238
- 200.149.77.224
- 66.7.200.69
- 66.7.200.72
- 8.8.4.4

An alternative way to find them is using Wireshark's file menu bar option *"Statistics -> Endpoints"*

- 2) To identify the geolocalisation we decided to use an online tool (<https://whatismyipaddress.com/ip-lookup>) to try to obtain these information. The obtained results are the following:

- 189.126.11.82  
ISP: Calcontec Tel.ecomunicacoes E Informatica Ltda  
Organization: Calcontec Tel.ecomunicacoes E Informatica Ltda  
Services: None detected  
Assignment: Likely Static IP  
Continent: South America  
Country: Brazil  
Latitude: -22.8305 (22° 49' 49.80" S)  
Longitude: -43.2192 (43° 13' 9.12" W)
- 200.149.77.224  
ISP: Oi Internet  
Organization: Oi Internet  
Services: None detected  
Type: Broadband  
Assignment: Likely Static IP  
Continent: South America  
Country: Brazil  
State/Region: Rio de Janeiro  
City: Niterói  
Latitude: -22.922 (22° 55' 19.20" S)  
Longitude: -43.1025 (43° 6' 9.00" W)
- 66.7.200.69

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ISP: HostDime.com
Organization: HostDime.com
Services: None detected
Type: Corporate
Assignment: Likely Static IP
Continent: North America
Country: United
Latitude: 37.751 (37° 45' 3.60" N)
Longitude: -97.822 (97° 49' 19.20" W)

```

○ **66.7.200.72**

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ISP: HostDime.com
Organization: HostDime.com
Services: None detected
Type: Corporate
Assignment: Likely Static IP
Continent: North America
Country: United
Latitude: 37.751 (37° 45' 3.60" N)
Longitude: -97.822 (97° 49' 19.20" W)

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To identify the location of the hosts, it is also possible to use a bash command or a tool in Wireshark “*Statistics -> Endpoints*”. To use this tool, it is necessary to install download a geolocalisation database (GeoLite2-ASN and GeoLite2-City from <http://www.maxmind.com>) and then insert it in Wireshark. The extracted informations from the captured packet are the following:

Ethernet · 2		IPv4 · 6		IPv6	TCP · 13		UDP · 5				
Address	▼ Packets	Bytes	Tx Packets	Tx Bytes	Rx Packets	Rx Bytes	Country	City	AS Number	AS Organization	
8.8.4.4	8	782	4	464	4	318	United States	—	15169	GOOGLE	
66.7.200.69	424	390 k	255	380 k	169	9,335	United States	—	33182	DIMENOC	
66.7.200.72	18	2,394	8	1,528	10	866	United States	—	33182	DIMENOC	
189.126.11.82	36	1,4094	14	1,476	22	2,618	Brazil	—	270398	CALCONTEC TELECOMUNICACOES E INFORMATICA LTDA	
192.168.115.238	1,762	1,627 k	672	38 k	1,090	1,588 k	—	—	—	—	
200.149.77.224	1,276	1,230 k	809	1,204 k	467	25 k	Brazil	Niterói	7738	Telemar Norte Leste S.A.	

The IP from which the victim download the malware is ‘66.7.200.69’.

3) To identify the number of TCP session it is possible to use a bash command (tshark and/or snort) or a tool in Wireshark “*Statistics -> Conversation*”. The obtained results are 9 TCP sessions with a total of 1756 exchanged packets:

- 192.168.115.238 on port 1126 <-> 200.149.77.224 on port 80 packets: 1276
- 192.168.115.238 on port 1127 <-> 66.7.200.69 on port 80 packets: 424
- 192.168.115.238 on port 1128 <-> 66.7.200.72 on port 80 packets: 9
- 192.168.115.238 on port 1129 <-> 189.126.11.82 on port 80 packets: 3
- 192.168.115.238 on port 1130 <-> 66.7.200.72 on port 80 packets: 9
- 192.168.115.238 on port 1131 <-> 189.126.11.82 on port 80 packets: 11
- 192.168.115.238 on port 1132 <-> 189.126.11.82 on port 80 packets: 12
- 192.168.115.238 on port 1133 <-> 189.126.11.82 on port 80 packets: 3
- 192.168.115.238 on port 1136 <-> 189.126.11.82 on port 80 packets: 7

screenshot in wireshark

Ethernet · 1   IPv4 · 5   IPv6   TCP · 9   UDP · 4												
Address A	Port A	Address B	Port B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	
192.168.115.238	1126	200.149.77.224	80	1,276	1,230 k	467	25 k	809	1,204 k	1.546345	65.7965	
192.168.115.238	1127	66.7.200.69	80	424	390 k	169	9,335	255	380 k	22.997932	7.7395	
192.168.115.238	1128	66.7.200.72	80	9	1,197	5	433	4	764	25.550195	0.7188	
192.168.115.238	1129	189.126.11.82	80	3	186	3	186	0	0	27.065005	9.9025	
192.168.115.238	1130	66.7.200.72	80	9	1,197	5	433	4	764	35.900375	0.7514	
192.168.115.238	1131	189.126.11.82	80	11	1,372	6	726	5	646	37.187016	36.5656	
192.168.115.238	1132	189.126.11.82	80	12	1,482	6	834	6	648	49.704174	24.0238	
192.168.115.238	1133	189.126.11.82	80	3	186	3	186	0	0	58.670457	8.9377	
192.168.115.238	1136	189.126.11.82	80	7	868	4	686	3	182	73.716120	0.1064	

screenshot of result using snort

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Stream statistics:
    Total sessions: 13
    TCP sessions: 9
    UDP sessions: 4
    ICMP sessions: 0
    IP sessions: 0
    TCP Prunes: 0
    UDP Prunes: 0
    ICMP Prunes: 0
    IP Prunes: 0
TCP StreamTrackers Created: 9
TCP StreamTrackers Deleted: 9
    TCP Timeouts: 0
    TCP Overlaps: 0
    TCP Segments Queued: 1073
    TCP Segments Released: 1073
    TCP Rebuilt Packets: 100
    TCP Segments Used: 1073
    TCP Discards: 1
    TCP Gaps: 2
    UDP Sessions Created: 4
    UDP Sessions Deleted: 4
    UDP Timeouts: 0
    UDP Discards: 0
    Events: 0
    Internal Events: 0
    TCP Port Filter
        Filtered: 0
        Inspected: 0
        Tracked: 1754
    UDP Port Filter
        Filtered: 0
        Inspected: 0
        Tracked: 4
=====

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- 4) The attack that we detected is a DNS spoofing (DNS Shadow server) on Google DNS “8.8.4.4” after the query request of “[www.brworks.com.br](http://www.brworks.com.br)” that the victim (“192.168.115.238”) does. As this kind of attack is characterized by providing an

answer before the correct answer (from Google DNS in this case) and in this way the answer that arrives late will be discarded from the client as duplicate.

The attack lasts the time needed by the attacker to answer before Google DNS so as

1276	22.962820	192.168.115.238	8.8.4.4	DNS	78 Standard query 0x6b3e A www.brworks.com.br
1277	22.977502	8.8.4.4	192.168.115.238	DNS	108 Standard query response 0x6b3e A www.brworks.com.br CNAME brworks.com.br A 66.7.200.69
1278	22.997932	192.168.115.238	66.7.200.69	TCP	62 1127 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 SACK_PERM=1
1279	23.217219	66.7.200.69	192.168.115.238	TCP	62 80 → 1127 [SYN, ACK] Seq=0 Win=5840 Len=0 MSS=1460 SACK_PERM=1
1280	23.217611	192.168.115.238	66.7.200.69	TCP	54 1127 → 80 [ACK] Seq=1 Ack=1 Win=65535 Len=0
1281	23.219190	192.168.115.238	66.7.200.69	HTTP	255 GET /images/get_wabs.jpg HTTP/1.1
1282	23.435947	66.7.200.69	192.168.115.238	TCP	60 80 → 1127 [ACK] Seq=1 Ack=202 Win=6432 Len=0
1283	23.436275	66.7.200.69	192.168.115.238	TCP	1514 80 → 1127 [ACK] Seq=1 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]
1284	23.436483	66.7.200.69	192.168.115.238	TCP	1514 80 → 1127 [ACK] Seq=1461 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]
1285	23.436705	192.168.115.238	66.7.200.69	TCP	54 1127 → 80 [ACK] Seq=202 Ack=2921 Win=65535 Len=0
1286	23.651452	66.7.200.69	192.168.115.238	TCP	1514 80 → 1127 [ACK] Seq=2921 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]
1287	23.651982	192.168.115.238	66.7.200.69	TCP	54 1127 → 80 [ACK] Seq=2821 Ack=4381 Win=65535 Len=0
1288	23.652103	66.7.200.69	192.168.115.238	TCP	1514 80 → 1127 [ACK] Seq=4381 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]

it is possible to observe it takes 0.0014682 seconds.

In this second case instead we try to emulate the same query with our PC and as we

No.	Time	Source	Destination	Protocol	Length	Info
1059	18.254976398	10.0.2.15	192.168.2.1	DNS	89	Standard query 0x5ffc A www.brworks.com.br OPT
1072	18.299875727	192.168.2.1	10.0.2.15	DNS	105	Standard query response 0x5ffc A www.brworks.com.br A 177.12.164.19 OPT
1073	18.309358927	10.0.2.15	177.12.164.19	TCP	74	44062 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=2204120667 TSecr=0 WS=128
1075	18.338424158	177.12.164.19	10.0.2.15	TCP	60	80 → 44062 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460
1076	18.338466415	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
1077	18.339450451	10.0.2.15	177.12.164.19	HTTP	517	GET / HTTP/1.1
1078	18.339852102	177.12.164.19	10.0.2.15	TCP	60	80 → 44062 [ACK] Seq=1 Ack=464 Win=65535 Len=0
1081	18.389206201	177.12.164.19	10.0.2.15	TCP	1494	80 → 44062 [PSH, ACK] Seq=1 Ack=464 Win=65535 Len=1440 [TCP segment of a reassembled PDU]
1082	18.389220573	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=464 Ack=1441 Win=63900 Len=0
1083	18.389508807	177.12.164.19	10.0.2.15	TCP	1494	80 → 44062 [PSH, ACK] Seq=1441 Ack=464 Win=65535 Len=1440 [TCP segment of a reassembled PDU]
1084	18.389528552	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=464 Ack=2881 Win=63900 Len=0
1085	18.432639091	177.12.164.19	10.0.2.15	TCP	5734	80 → 44062 [ACK] Seq=2881 Ack=464 Win=65535 Len=5680 [TCP segment of a reassembled PDU]
1086	18.432660607	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=464 Ack=8561 Win=61060 Len=0
1087	18.432965198	177.12.164.19	10.0.2.15	HTTP	4160	HTTP/1.1 200 OK (text/html)
1090	18.432370214	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=464 Ack=12667 Win=62480 Len=0
1903	23.392465963	177.12.164.19	10.0.2.15	TCP	60	80 → 44062 [FIN, ACK] Seq=12667 Ack=464 Win=65535 Len=0
1904	23.436117963	10.0.2.15	177.12.164.19	TCP	54	44062 → 80 [ACK] Seq=464 Ack=12668 Win=63900 Len=0

can see we receive a different IP (the right one): ‘177.12.164.19’.

The duration of the total connection and consequently download the file ‘get\_wabs.jpg’ (that is the malware that we identify as malicious) and finally close the session with ‘66.7.200.69’: so 7,7395 seconds.

- 5) To identify the attack we have analyzed all the packet using the default view and the flow graph using “Statistics->FLoW Graph”.

No.	Time	Source	Destination	Protocol	Length	Info
533	2.359727	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=492021 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
534	2.359930	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=493481 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
535	2.359945	200.149.77.224	192.168.115.238	TCP	60	1126 → 80 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=5069541
536	2.373544	200.149.77.224	192.168.115.238	TCP	1514	[TCP Previous segment not captured] 80 → 1126 [ACK] Seq=506021 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
537	2.374101	192.168.115.238	200.149.77.224	TCP	66	[TCP Dup ACK 535#1] 1126 → 80 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=5068881
538	2.374296	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=506881 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
539	2.374479	192.168.115.238	200.149.77.224	TCP	60	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=5069541
540	2.374570	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=509541 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
541	2.374671	192.168.115.238	200.149.77.224	TCP	66	[TCP Dup ACK 535#3] 1126 → 80 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=511001
542	2.374746	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=511001 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
543	2.374815	192.168.115.238	200.149.77.224	TCP	60	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=51461
544	2.374917	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=512461 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
545	2.375013	192.168.115.238	200.149.77.224	TCP	66	[TCP Dup ACK 535#5] 1126 → 80 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=513921
546	2.381096	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=513921 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
547	2.381174	192.168.115.238	200.149.77.224	TCP	60	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=51381
548	2.381401	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=515381 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
549	2.381502	192.168.115.238	200.149.77.224	TCP	66	[TCP Dup ACK 535#7] 1126 → 80 [ACK] Seq=219 Ack=494941 Win=22205 Len=0 SLE=506021 SRE=516841
550	2.381880	200.149.77.224	192.168.115.238	TCP	1514	[TCP Fast Retransmission] 80 → 1126 [ACK] Seq=484941 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
551	2.389327	200.149.77.224	192.168.115.238	TCP	1514	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=494941 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
552	2.389576	192.168.115.238	200.149.77.224	TCP	66	1126 → 80 [ACK] Seq=219 Ack=497861 Win=19285 Len=0 SLE=506621 SRE=516841
553	2.389670	200.149.77.224	192.168.115.238	TCP	1514	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=497861 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
554	2.389782	200.149.77.224	192.168.115.238	TCP	1514	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=498321 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
555	2.390307	192.168.115.238	200.149.77.224	TCP	60	1126 → 80 [ACK] Seq=219 Ack=500781 Win=16365 Len=0 SLE=506621 SRE=516841
556	2.390971	200.149.77.224	192.168.115.238	TCP	1514	[TCP Out-Of-Order] 80 → 1126 [ACK] Seq=500781 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
557	2.395435	200.149.77.224	192.168.115.238	TCP	1514	[TCP Retransmission] 80 → 1126 [ACK] Seq=502241 Ack=219 Win=18760 Len=1460
558	2.395762	192.168.115.238	200.149.77.224	TCP	66	1126 → 80 [ACK] Seq=219 Ack=503781 Win=13445 Len=0 SLE=506621 SRE=516841
559	2.405804	200.149.77.224	192.168.115.238	TCP	1135	[TCP Retransmission] 80 → 1126 [ACK] Seq=503781 Ack=219 Win=18760 Len=1460
560	2.404823	192.168.115.238	200.149.77.224	TCP	1514	[TCP Retransmission] 80 → 1126 [ACK] Seq=505101 Ack=219 Win=18760 Len=1460
561	2.405104	192.168.115.238	200.149.77.224	TCP	54	1126 → 80 [ACK] Seq=219 Ack=516841 Win=385 Len=0
562	2.447834	192.168.115.238	200.149.77.224	TCP	54	[TCP Window Update] 1126 → 80 [ACK] Seq=219 Ack=516841 Win=65535 Len=0
563	2.407299	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=516841 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]
564	2.407592	200.149.77.224	192.168.115.238	TCP	1514	80 → 1126 [ACK] Seq=518301 Ack=219 Win=18760 Len=1460 [TCP segment of a reassembled PDU]

In this first analysis we just note some packets loss, that were detected by WireShark and after a while retransmitted as expected for the TCP protocol.

At this point the only weird behaviour is that the first connection was closed just after a long time, after all the other connection were closed. Another anomaly was in the SYN packet (1712) for the website “trabucar.com.br” in the last connection ‘189.126.11.82’. As after a long time the client did not received a response, the SYN is retransmitted by the client in the packet 1713 (after 3 seconds) and then again after 6 seconds in 1726 (from the second retransmission).



After that preliminary analyses we didn't find any anomaly, so at this point we decided to use the tool “*Analysis->Expert information*” and as we can observe at the packet 1703 on 66.7.200.69 connection, is detected a malformed packet.

Severity	Summary	Group	Protocol	Count
Warning	Connection reset (RST)	Sequence	TCP	2
Warning	ACKed segment that wasn't captured (common at capture s...	Sequence	TCP	16
Warning	This frame is a (suspected) out-of-order segment	Sequence	TCP	6
Warning	Previous segment(s) not captured (common at capture start)	Sequence	TCP	4
Warning	TCP Zero Window segment	Sequence	TCP	6
Warning	TCP window specified by the receiver is now completely full	Sequence	TCP	12
Note	HTTP body subdissector failed, trying heuristic subdissector	Malformed	HTTP	1
1703	HTTP/1.1 200 OK (image/jpeg)	Malformed	HTTP	
Note	This frame is a (suspected) fast retransmission	Sequence	TCP	3
Note	This frame is a (suspected) retransmission	Sequence	TCP	11
Note	Duplicate ACK (#1)	Sequence	TCP	14
Chat	Connection finish (FIN)	Sequence	TCP	9
Chat	TCP window update	Sequence	TCP	38
Chat	GET /DATA-FILES/ARQUIVO12.XLS HTTP/1.1\r\n	Sequence	HTTP	12
Chat	Connection establish acknowledge (SYN+ACK): server port 80	Sequence	TCP	7
Chat	Connection establish request (SYN): server port 80	Sequence	TCP	13

Now, knowing that it is possible to make some specific analysis on these packet (around 1703) with flow graph and it is possible to note that the client make a query request to download an image: ‘*get\_wabs.jpg*’.

As it is explained in answer 6 we export this file to be able to analyse it in VirusTotal website and this file was identified as a malware.

Knowing that we continued our analysis and because of this image is the malware, downloaded on client (victim's machine), now it is necessary to understand why the victim downloaded this file.

Time	192.168.115.238	8.8.4.4	200.149.77.224	66.7.200.69	66.7.200.72	189.126.11.82	Comment
25.686035	1127	80 → 1127 [ACK] Seq=356241 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=356241 Ack=202 Win=6432...
25.686309	1127	80 → 1127 [ACK] Seq=357701 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=357701 Ack=202 Win=6432...
25.686493	1127	1127 → 80 [ACK] Seq=202 Ack=359161 Win=6215 Len=0		80			TCP: 1127 → 80 [ACK] Seq=202 Ack=359161 Win=6215...
25.686589	1127	80 → 1127 [ACK] Seq=359161 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=359161 Ack=202 Win=6432...
25.686703	1127	80 → 1127 [ACK] Seq=360621 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=360621 Ack=202 Win=6432...
25.686812	1127	1127 → 80 [ACK] Seq=202 Ack=362081 Win=59695 Len=0		80			TCP: 1127 → 80 [ACK] Seq=202 Ack=362081 Win=59695...
25.686890	1127	80 → 1127 [ACK] Seq=362081 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=362081 Ack=202 Win=6432...
25.687002	1127	80 → 1127 [ACK] Seq=363541 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=363541 Ack=202 Win=6432...
25.687109	1127	1127 → 80 [ACK] Seq=202 Ack=365001 Win=56775 Len=0		80			TCP: 1127 → 80 [ACK] Seq=202 Ack=365001 Win=56775...
25.729299	1127	[TCP Window Update] 1127 → 80 [ACK] Seq=202 Ack=365001 Win=5535 Len=0		80			TCP: [TCP Window Update] 1127 → 80 [ACK] Seq=202...
25.756698	1128	80 → 1128 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1		80			TCP: 80 → 1128 [SYN, ACK] Seq=0 Ack=1 Win=5840...
25.757095	1128	1128 → 80 [ACK] Seq=1 Ack=1 Win=65535 Len=0		80			TCP: 1128 → 80 [ACK] Seq=1 Ack=1 Win=65535 Len=0...
25.762012	1128	GET /logg/lopp.txt HTTP/1.1		80			HTTP: GET /logg/lopp.txt HTTP/1.1
25.778908	1127	80 → 1127 [ACK] Seq=365001 Ack=202 Win=6432 Len=1460 [TCP segment of a reassembled PDU]		80			TCP: 80 → 1127 [ACK] Seq=365001 Ack=202 Win=6432...
25.779203	1127	HTTP/1.1 200 OK (image/jpeg)		80			HTTP: HTTP/1.1 200 OK (image/jpeg)
25.779550	1127	1127 → 80 [ACK] Seq=202 Ack=367200 Win=65535 Len=0		80			TCP: 1127 → 80 [ACK] Seq=202 Ack=367200 Win=65535...
25.982846	1128	80 → 1128 [ACK] Seq=1 Ack=156 Win=6432 Len=0		80			TCP: 80 → 1128 [ACK] Seq=1 Ack=156 Win=6432 Len=0...
25.983153	1128	HTTP/1.1 200 OK (text/plain)		80			HTTP: HTTP/1.1 200 OK (text/plain)
26.057774	1128	1128 → 80 [FIN, ACK] Seq=156 Ack=529 Win=63007 Len=0		80			TCP: 1128 → 80 [FIN, ACK] Seq=156 Ack=529 Win=63007...
26.268630	1128	80 → 1128 [FIN, ACK] Seq=529 Ack=157 Win=6432 Len=0		80			TCP: 80 → 1128 [FIN, ACK] Seq=529 Ack=157 Win=6432...
26.268981	1128	1128 → 80 [ACK] Seq=157 Ack=530 Win=65007 Len=0		80			TCP: 1128 → 80 [ACK] Seq=157 Ack=530 Win=65007...
27.047416	62039	Standard query 0xe92d A trabucar.com.br	53				DNS: Standard query 0xe92d A trabucar.com.br
27.061100	62039	Standard query response 0xe92d A trabucar.com.br	53				DNS: Standard query response 0xe92d A trabucar.com.br
27.065005	1129	1129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 SACK_PERM=1		80			TCP: 1129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460...
30.123981	1129	[TCP Retransmission] 1129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 SACK_PERM=1		80			TCP: [TCP Retransmission] 1129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460...
30.655506	1127	80 → 1127 [FIN, ACK] Seq=367200 Ack=202 Win=6432 Len=0		80			TCP: 80 → 1127 [FIN, ACK] Seq=367200 Ack=202 Win=6432...
30.658536	1127	1127 → 80 [ACK] Seq=202 Ack=367201 Win=65535 Len=0		80			TCP: 1127 → 80 [ACK] Seq=202 Ack=367201 Win=65535...
30.737479	1127	1127 → 80 [RST, ACK] Seq=202 Ack=367201 Win=0 Len=0		80			TCP: 1127 → 80 [RST, ACK] Seq=202 Ack=367201 Win=0...
35.900375	1130	1130 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 SACK_PERM=1		80			TCP: 1130 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460...
36.107922	1130	80 → 1130 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 SACK_PERM=1		80			TCP: 80 → 1130 [SYN, ACK] Seq=0 Ack=1 Win=5840...
36.108945	1130	1130 → 80 [ACK] Seq=1 Ack=1 Win=65535 Len=0		80			TCP: 1130 → 80 [ACK] Seq=1 Ack=1 Win=65535 Len=0...
36.114900	1130	GET /logg/lopp.txt HTTP/1.1		80			HTTP: GET /logg/lopp.txt HTTP/1.1
36.321253	1130	80 → 1130 [ACK] Seq=1 Ack=156 Win=6432 Len=0		80			TCP: 80 → 1130 [ACK] Seq=1 Ack=156 Win=6432 Len=0...
36.324589	1130	HTTP/1.1 200 OK (text/plain)		80			HTTP: HTTP/1.1 200 OK (text/plain)

As it is possible to observe the client/victim, make a query request to access on “<https://www.brworks.com.br/>” and he received back “66.7.200.69”. Now as it is explained in answer 4 the attacker (that is a man in the middle) carry out a DNS spoofing (Shadow server) attack.

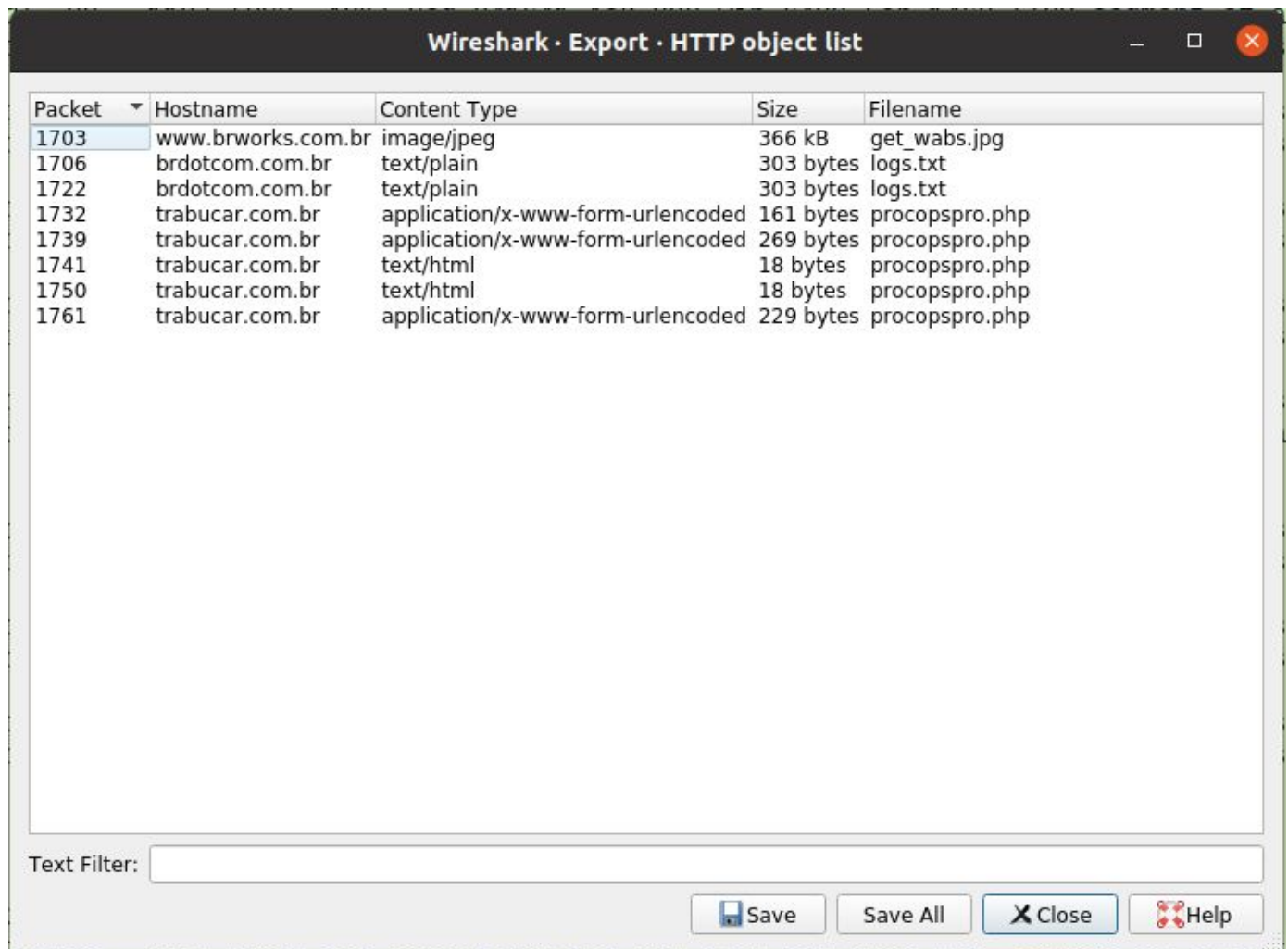
We can just suppose that this is the attack, as we didn't identify an evident prove that this kind of attack has been carried out by a man in the middle. In fact for this reason it is much better to sniff not on the client-local NS but on geographical route, for example, between the local-NS and the root-NS. So if a wrong answer is provided to local-NS, this will be cached and therefore will be provided to all clients on the local network that will make this query.

Note: we can't know if this IP is changed in these years as the capture is made in the year 2010 and the emulation in 2020.


- 6) Yes, we identify the file '*get\_wabs.jpg*' as malicious file through the webapp [virustotal.com](https://www.virustotal.com) that analyse an uploaded file using a lot different antivirus in parallel.

We have followed the following steps to recognize the malicious file:

- a) In Wireshark we have downloaded all the files downloaded during the traffic.pcap capture using the window bar function "*File->Export Objects->HTTP*" and clicked on save all to take all the files.



b) Upload all files on virustotal.com and find out if the uploaded file is a malware.  
This is the result with the file 'get\_wabs.jpg' downloaded from 66.7.200.69:



55 / 68

Community Score

55 engines detected this file
🔄 📄


97e365181f730b393e9dc38e83c18ce0b4e01c5dfb5c2a79c36886357ad8c35d

get\_wabs.jpg

overlay peexe thinstall

358.31 KB  
Size

2018-10-07 23:59:41 UTC  
1 year ago



DETECTION	DETAILS	RELATIONS	BEHAVIOR	COMMUNITY <span style="background-color: black; color: white; border-radius: 50%; padding: 0 5px;">1</span>
Ad-Aware	① Trojan.Generic.KDV.604151	AegisLab	① Trojan.Win32.Homa.atc	
AhnLab-V3	① Trojan/Win32.Banki.C2231696	ALYac	① Trojan.Generic.KDV.604151	
Antiy-AVL	① Trojan/Win32.TGeneric	Arcabit	① Trojan.Generic.KDV.D937F7	
Avast	① Win32:Malware-gen	AVG	① Win32:Malware-gen	
Avira (no cloud)	① TR/Dropper.Gen	AVware	① Trojan.Win32.Generic!BT	
BitDefender	① Trojan.Generic.KDV.604151	Bkav	① W32.eHeur.Virus02	
Cybereason	① Malicious.ef0bed	Cylance	① Unsafe	
Cyren	① W32/Risk.MJIC-1164	DrWeb	① Trojan.PWS.Banker.51815	
Emsisoft	① Trojan.Generic.KDV.604151 (8)	Endgame	① Malicious (high Confidence)	
eScan	① Trojan.Generic.KDV.604151	ESET-NOD32	① Win32/Spy.Banker.SWH	
F-Prot	① W32/MalwareF.FMWV	F-Secure	① Trojan.Generic.KDV.604151	
Fortinet	① W32/Homa.AXO!tr.dldr	GData	① Trojan.Generic.KDV.604151	
Ikarus	① Trojan-Spy.Agent	Jiangmin	① TrojanDownloader.Homa.apy	
K7AntiVirus	① Spyware ( 004d0dfc1 )	K7GW	① Spyware ( 004d0dfc1 )	

As it is possible to observe the 'get\_wabs.jpg' is detected by 55 over 68 antivirus like a malware: some identify it like a trojan other like a Spyware, but in general like a malware.