

EXCIPIO

Excipio GmbH
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Tracing Protocol (Database Excerpt with Network Traffic)

Customer: Crystalis Entertainment UG (haftungsbeschränkt)

Authorised Party: Hedman Partners Attorneys

Title, Work: Black Sails (XVIII.) [S02E10]

Archive Name (Torrent): Black.Sails.S02E10.HDTV.x264-ASAP[ettv]

Hash value (Torrent): D8C9F8798EB35A270CCD4E1ED323605D9CC96414

IP Address: 84.250.83.179

Tracing Software: NARS (Network Activity Recording and Supervision)

Network Monitoring Software: tcpdump 4.0.0 (libpcap 1.0.0)

Traced Legal Violation(s)

Our system has determined unauthorised distribution of the aforementioned copyright-protected titles/works on the aforementioned IP addresses during the following points in time by downloading a piece of a file contained in the relevant work and by recording the tracing procedures on the network level. If there are multiple hits related to the work mentioned here on the IP addresses mentioned here, i.e. several legal violations have been established and documented, the hits relevant to the procedure are highlighted in bold font. The time when the user transferred a certain piece to us on the IP address traced is identified as the "End of Download" and is delivered to our customer for the purposes of gaining information about the subscriber data.

Connection Established	Beginning of Download	End of Download	End of Connection	File Name
Mar 29, 2015 13:28:44	Mar 29, 2015 13:30:54	Mar 29, 2015 13:30:56	Mar 29, 2015 13:31:14	Black.Sails.S02E10.HDTV.x264-ASAP.mp4
Mar 29, 2015 13:24:05	Mar 29, 2015 13:32:15	Mar 29, 2015 13:32:17	Mar 29, 2015 13:32:35	Black.Sails.S02E10.HDTV.x264-ASAP.mp4
Mar 29, 2015 13:35:40	Mar 29, 2015 13:38:33	Mar 29, 2015 13:38:35	Mar 29, 2015 13:38:53	Black.Sails.S02E10.HDTV.x264-ASAP.mp4

Network Traffic

The total TCP/IP data traffic between our tracing software and the internet connection identified on the basis of the traced IP address was recorded by the programme "Tcpdump" at the network level, signed as per the German signature law to ensure integrity and then archived on a WORM Tape (Write-Once-Read-Many) in an edit-proof way, i.e. the data can no longer be manipulated later and hence is counterfeit-proof.

On the basis of this data (network traffic), it is always possible to comprehend the complete tracing procedure including the download. The raw data are available in the form of the so-called PCAP data file for an expert assessment.

The network traffic displayed below constitutes the communication procedure, including data transfer (download) between the file-sharer or the traced internet connection and our systems. For security reasons, Excipio GmbH's systems are located between firewalls and are then replaced by the placeholder "Excipio GmbH".

The following network traffic was recorded in relation to the hit relevant to the procedure:

#	Date, Time	Source (IP:Port)	Target (IP:Port)	Protocol	Description
1	Mar 29, 2015 13:35:40	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [SYN] Seq=0 Win=5840 Len=0 MSS=1460 SACK_PERM=1 TSval=330272156 TSecr=0 WS=512
2	Mar 29, 2015 13:35:40	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1 TSval=105067848 TSecr=330272156
3	Mar 29, 2015 13:35:40	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=1 Ack=1 Win=6144 Len=0 TSval=330272162 TSecr=105067848
4	Mar 29, 2015 13:35:41	Excipio GmbH	84.250.83.179:6881	BitTorrent	Handshake Extended d8c9f8798eb35a270ccd4e1ed323605d9cc96414
5	Mar 29, 2015 13:35:41	84.250.83.179:6881	Excipio GmbH	BitTorrent	Handshake Extended Bitfield, Len:0xcb Have Port d8c9f8798eb35a270ccd4e1ed323605d9cc96414
6	Mar 29, 2015 13:35:41	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=147 Ack=933 Win=8192 Len=0 TSval=330272236 TSecr=105067923
7	Mar 29, 2015 13:35:42	Excipio GmbH	84.250.83.179:6881	BitTorrent	Port
8	Mar 29, 2015 13:35:42	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [ACK] Seq=933 Ack=154 Win=66560 Len=0 TSval=105068012 TSecr=330272300
9	Mar 29, 2015 13:35:42	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
10	Mar 29, 2015 13:35:42	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=154 Ack=939 Win=8192 Len=0 TSval=330272335 TSecr=105068022
11	Mar 29, 2015 13:35:42	84.250.83.179:6881	Excipio GmbH	BitTorrent	Extended
12	Mar 29, 2015 13:35:42	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=154 Ack=1375 Win=9728 Len=0 TSval=330272342 TSecr=105068028
13	Mar 29, 2015 13:36:41	Excipio GmbH	84.250.83.179:6881	BitTorrent	Interested
14	Mar 29, 2015 13:36:41	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [ACK] Seq=1375 Ack=159 Win=66560 Len=0 TSval=105073927 TSecr=330278214
15	Mar 29, 2015 13:36:42	Excipio GmbH	84.250.83.179:6881	BitTorrent	BitTorrent

16	Mar 29, 2015 13:36:42	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [ACK] Seq=1375 Ack=163 Win=66560 Len=0 TSval=105074032 TSecr=330278319
17	Mar 29, 2015 13:36:42	84.250.83.179:6881	Excipio GmbH	BitTorrent	BitTorrent
18	Mar 29, 2015 13:36:42	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=163 Ack=1379 Win=9728 Len=0 TSval=330278347 TSecr=105074034
19	Mar 29, 2015 13:36:43	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
20	Mar 29, 2015 13:36:43	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=163 Ack=1385 Win=9728 Len=0 TSval=330278448 TSecr=105074134
21	Mar 29, 2015 13:36:43	84.250.83.179:6881	Excipio GmbH	BitTorrent	Extended
22	Mar 29, 2015 13:36:43	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=163 Ack=1663 Win=11776 Len=0 TSval=330278454 TSecr=105074140
23	Mar 29, 2015 13:37:43	84.250.83.179:6881	Excipio GmbH	BitTorrent	BitTorrent
24	Mar 29, 2015 13:37:43	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=163 Ack=1667 Win=11776 Len=0 TSval=330284461 TSecr=105080148
25	Mar 29, 2015 13:37:43	Excipio GmbH	84.250.83.179:6881	BitTorrent	BitTorrent
26	Mar 29, 2015 13:37:44	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [ACK] Seq=1667 Ack=167 Win=66560 Len=0 TSval=105080192 TSecr=330284480
27	Mar 29, 2015 13:37:44	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
28	Mar 29, 2015 13:37:44	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=167 Ack=1673 Win=11776 Len=0 TSval=330284561 TSecr=105080248
29	Mar 29, 2015 13:37:44	84.250.83.179:6881	Excipio GmbH	BitTorrent	Extended
30	Mar 29, 2015 13:37:44	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=167 Ack=1906 Win=13312 Len=0 TSval=330284567 TSecr=105080254
31	Mar 29, 2015 13:38:32	84.250.83.179:6881	Excipio GmbH	BitTorrent	Unchoke
32	Mar 29, 2015 13:38:32	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=167 Ack=1911 Win=13312 Len=0 TSval=330289371 TSecr=105085058
33	Mar 29, 2015 13:38:33	Excipio GmbH	84.250.83.179:6881	BitTorrent	Request, Piece (Idx:0x202,Begin:0x0,Len:0x4000)
34	Mar 29, 2015 13:38:33	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
35	Mar 29, 2015 13:38:33	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=2049 Win=15360 Len=0 TSval=330289421 TSecr=105085107
36	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
37	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=3473 Win=18432 Len=0 TSval=330289650 TSecr=105085337
38	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
39	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP Dup ACK 104#1] 56504 > 6881 [ACK] Seq=184 Ack=3473 Win=18432 Len=0 TSval=330289656 TSecr=105085337 SLE=6393 SRE=7817
40	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP segment of a reassembled PDU]
41	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP Dup ACK 104#2] 56504 > 6881 [ACK] Seq=184 Ack=3473 Win=18432 Len=0 TSval=330289656 TSecr=105085337 SLE=6393 SRE=9241
42	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP Retransmission] [TCP segment of a reassembled PDU]
43	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP Retransmission] [TCP segment of a reassembled PDU]
44	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP Retransmission] [TCP segment of a reassembled PDU]
45	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=4897 Win=20992 Len=0 TSval=330289662 TSecr=105085349 SLE=6393 SRE=9241
46	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=6321 Win=24064 Len=0 TSval=330289662 TSecr=105085349 SLE=6393 SRE=9241
47	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=9241 Win=27136 Len=0 TSval=330289662 TSecr=105085349 SLE=6393 SRE=7745
48	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	TCP	[TCP Retransmission] [TCP segment of a reassembled PDU]

49	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP ACKed unseen segment] 56504 > 6881 [ACK] Seq=184 Ack=10593 Win=29696 Len=0 TSval=330289668 TSecr=105085355 SLE=9169 SRE=9241
50	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
51	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=12017 Win=32768 Len=0 TSval=330289668 TSecr=105085355
52	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
53	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
54	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=13441 Win=35840 Len=0 TSval=330289668 TSecr=105085355
55	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=14865 Win=38400 Len=0 TSval=330289668 TSecr=105085355
56	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
57	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
58	Mar 29, 2015 13:38:35	84.250.83.179:6881	Excipio GmbH	BitTorrent	Piece, Idx:0x202,Begin:0x0,Len:0x4000
59	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=16289 Win=41472 Len=0 TSval=330289675 TSecr=105085361
60	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=17713 Win=44544 Len=0 TSval=330289675 TSecr=105085361
61	Mar 29, 2015 13:38:35	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=18308 Win=47104 Len=0 TSval=330289675 TSecr=105085361
62	Mar 29, 2015 13:38:45	Excipio GmbH	84.250.83.179:6881	TCP	[TCP segment of a reassembled PDU]
63	Mar 29, 2015 13:38:45	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=18398 Win=47104 Len=0 TSval=330290683 TSecr=105086370
64	Mar 29, 2015 13:38:46	Excipio GmbH	84.250.83.179:6881	BitTorrent	Extended
65	Mar 29, 2015 13:38:46	Excipio GmbH	84.250.83.179:6881	TCP	56504 > 6881 [ACK] Seq=184 Ack=18561 Win=50176 Len=0 TSval=330290694 TSecr=105086380
66	Mar 29, 2015 13:38:46	Excipio GmbH	84.250.83.179:6881	TCP	[TCP Retransmission] 6881 > 56504 [PSH, ACK] Seq=18398 Ack=184 Win=66560 Len=163 TSval=105086410 TSecr=330290683[Reassembly error, protocol TCP: New fragment overlaps old data (retransmission?)]
67	Mar 29, 2015 13:38:46	Excipio GmbH	84.250.83.179:6881	TCP	[TCP Dup ACK 132#1] 56504 > 6881 [ACK] Seq=184 Ack=18561 Win=50176 Len=0 TSval=330290723 TSecr=105086410 SLE=18398 SRE=18561
68	Mar 29, 2015 13:38:53	84.250.83.179:6881	Excipio GmbH	TCP	6881 > 56504 [RST, ACK] Seq=18561 Ack=184 Win=0 Len=0

Description of the columns from network traffic

#	Continuous packet numbering
Date, Time	Time of communication. All time information is in UTC.
Source (IP:Port), Target (IP:Port)	Source describes the sender of a data packet, the target describes the recipient of a data packet.
Protocol	Describes the network protocol through which the packet was sent.
Description	Brief information on the network packet exchanged.

Description of the rows from network traffic

Row # Description (All time information is in UTC)

- 2 Beginning of the connection with the counterpart.
- 5 Opponent sent information about pieces that already have been downloaded successfully.
- 13 The tracing software expresses interest in the relevant work.
- 31 The file-sharer confirms to us that we can make enquiries.
- 33 The tracing software makes an inquiry about a piece.
- 58 The file-sharer sends a piece from the requested file, which contains the work from our customer (for download).
- 68 End of connection with the counterpart.

Time Synchronisation

The system is constantly synchronised with several German time servers with the aid of the network time protocol (at least every 16 seconds). These time servers are the servers from PTB (Physikalisch-Technische Bundesanstalt, the National Metrology Institute of Germany).

To guarantee the best security possible for synchronisation, two of our own strata-1 time servers are also in operation and they are directly synchronised by separate GPS sources.

By doing this it is always guaranteed that the system clock and the tracing data (time of legal violation) are synchronous with UTC time and deviations are only in milliseconds, which cannot be avoided technically and are also not relevant because between the start of the connection ("connection established") and the beginning of the download, and between the end of the download the end of connection is always a buffer of at least 2 seconds.

In relation to the current legal violations, no significant deviations were established with the time synchronisation. In the concrete case, deviations were (information in seconds):

Point in time when synchronisation is measured:: 29.03.2015 13:35:07

Time Server	Time mismatch (information in seconds)
ptbtime2.ptb.de	-0.005411
ntp1.sul.t-onli	-0.000987
ntps1-1.eecsit.tu-berlin.de	-0.000259
rustime01.rus.uni-stuttgart.de	0.001190
ntp1.belwue.de	-0.000374
ntp0.rrze.uni-erlangen.de	0.004755

Point in time when synchronisation is measured:: 29.03.2015 13:39:01

Time Server	Time mismatch (information in seconds)
ptbtime2.ptb.de	-0.005428
ntp1.sul.t-onli	-0.000851
ntps1-1.eecsit.tu-berlin.de	-0.000405
rustime01.rus.uni-stuttgart.de	0.001428
ntp1.belwue.de	-0.000174
ntp0.rrze.uni-erlangen.de	0.003968