

Kyra Helmbold

My IP on kali: 192.168.64.2

cs338.jeffondich.com: 45.79.89.123

Frames:

Seq	Len	Source IP	Destination IP	Protocol	Source Port	Destination Port	Details
403	47.029222323	192.168.64.2	45.79.89.123	HTTP	409	80	<b>GET /basicauth/ HTTP/1.1</b>
404	47.081083396	45.79.89.123	192.168.64.2	TCP	54	80	80 → 41182 [ACK] Seq=1
Ack=356 Win=64128 Len=0							
405	47.081083605	45.79.89.123	192.168.64.2	HTTP	457	80	<b>HTTP/1.1 401 Unauthorized</b>
(text/html)							
406	47.081115855	192.168.64.2	45.79.89.123	TCP	54	41182	41182 → 80 [ACK] Seq=356
Ack=404 Win=64128 Len=0							
< some keeping alive..>							
426	57.971408380	192.168.64.2	45.79.89.123	HTTP	452	80	<b>GET /basicauth/ HTTP/1.1</b>
427	58.023167063	45.79.89.123	192.168.64.2	TCP	54	80	80 → 41182 [ACK] Seq=404
Ack=754 Win=64128 Len=0							
428	58.024974980	45.79.89.123	192.168.64.2	HTTP	458	80	<b>HTTP/1.1 200 OK (text/html)</b>
429	58.025005438	192.168.64.2	45.79.89.123	TCP	54	41182	41182 → 80 [ACK] Seq=754
Ack=808 Win=64128 Len=0							
430	58.081640580	192.168.64.2	45.79.89.123	HTTP	369	80	<b>GET /favicon.ico HTTP/1.1</b>
431	58.134025638	45.79.89.123	192.168.64.2	TCP	54	80	80 → 41182 [ACK] Seq=808
Ack=1069 Win=64128 Len=0							
432	58.134025846	45.79.89.123	192.168.64.2	HTTP	383	80	<b>HTTP/1.1 404 Not Found</b>
(text/html)							
433	58.134061055	192.168.64.2	45.79.89.123	TCP	54	41182	41182 → 80 [ACK] Seq=1069
Ack=1137 Win=64128 Len=0							
<some keeping alive and connections to another server...>							
460	63.677860196	192.168.64.2	45.79.89.123	HTTP	513	80	<b>GET /basicauth/amateurs.txt</b>
HTTP/1.1							
461	63.740239668	45.79.89.123	192.168.64.2	HTTP	375	80	<b>HTTP/1.1 200 OK (text/plain)</b>
462	63.740264002	192.168.64.2	45.79.89.123	TCP	54	41182	41182 → 80 [ACK] Seq=1528
Ack=1458 Win=64128 Len=0							

Process:

1. My computer tries to go to the website

```
0000 d2 88 0c 97 ad 64 12 d3 45 c0 bf d9 08 00 45 00 .....d..E.....E.
0010 01 8b b3 f5 40 00 40 06 fe 02 c0 a8 40 02 2d 4f ....@.@.....@.-O
0020 59 7b a0 de 00 50 ec 6d c7 b0 60 b2 99 0c 50 18 Y{...P.m.`...P.
0030 01 f6 49 6b 00 00 47 45 54 20 2f 62 61 73 69 63 ..lk..GET /basic
0040 61 75 74 68 2f 20 48 54 54 50 2f 31 2e 31 0d 0a auth/ HTTP/1.1..
0050 48 6f 73 74 3a 20 63 73 33 33 38 2e 6a 65 66 66 Host: cs338.jeff
0060 6f 6e 64 69 63 68 2e 63 6f 6d 0d 0a 55 73 65 72 ondich.com..User
0070 2d 41 67 65 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f -Agent: Mozilla/
0080 35 2e 30 20 28 58 31 31 3b 20 4c 69 6e 75 78 20 5.0 (X11; Linux
0090 61 61 72 63 68 36 34 3b 20 72 76 3a 31 30 39 2e aarch64; rv:109.
00a0 30 29 20 47 65 63 6b 6f 2f 32 30 31 30 30 31 30 0) Gecko/2010010
```

This is normal Get Request, asks For information at the url (host+ /basicauth)

```

00b0 31 20 46 69 72 65 66 6f 78 2f 31 31 35 2e 30 0d 1 Firefox/115.0.
00c0 0a 41 63 63 65 70 74 3a 20 74 65 78 74 2f 68 74 .Accept: text/ht
00d0 6d 6c 2c 61 70 70 6c 69 63 61 74 69 6f 6e 2f 78 ml,application/x
00e0 68 74 6d 6c 2b 78 6d 6c 2c 61 70 70 6c 69 63 61 html+xml,applica
00f0 74 69 6f 6e 2f 78 6d 6c 3b 71 3d 30 2e 39 2c 69 tion/xml;q=0.9,i
0100 6d 61 67 65 2f 61 76 69 66 2c 69 6d 61 67 65 2f mage/avif,image/
0110 77 65 62 70 2c 2a 2f 2a 3b 71 3d 30 2e 38 0d 0a webp,*/*;q=0.8..
0120 41 63 63 65 70 74 2d 4c 61 6e 67 75 61 67 65 3a Accept-Language:
0130 20 65 6e 2d 55 53 2c 65 6e 3b 71 3d 30 2e 35 0d en-US,en;q=0.5.
0140 0a 41 63 63 65 70 74 2d 45 6e 63 6f 64 69 6e 67 .Accept-Encoding
0150 3a 20 67 7a 69 70 2c 20 64 65 66 6c 61 74 65 0d : gzip, deflate.
0160 0a 43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 65 65 .Connection: kee
0170 70 2d 61 6c 69 76 65 0d 0a 55 70 67 72 61 64 65 p-alive..Upgrade
0180 2d 49 6e 73 65 63 75 72 65 2d 52 65 71 75 65 73 -Insecure-Reques
0190 74 73 3a 20 31 0d 0a 0d 0a ts: 1....

```

2. Jeff's server says I'm not authorized with http status 401 The WWW Authenticate header says that we need basic authentication, and provides a 'challenge' (Basic Realm). This is basically asking the client(browser) to provide the username and password.

\*\*\* not in the frame \*\*\*

The browser reads this and asks the user for the username and password. The user enters the info, and the client/browser reads the input and obtains the user info.

\*\*\*\*\*

- Info on 401 Status code: <https://datatracker.ietf.org/doc/html/rfc7235#section-3.1>
- Info on WWW Authenticate : <https://datatracker.ietf.org/doc/html/rfc7235#section-4.1>

Frame 405:

```

0000 12 d3 45 c0 bf d9 d2 88 0c 97 ad 64 08 00 45 00 ..E.....d..E.
0010 01 bb f5 5c 00 00 34 06 08 6c 2d 4f 59 7b c0 a8 ...\.4..l-OY{..
0020 40 02 00 50 a0 de 60 b2 99 0c ec 6d c9 13 50 18 @..P..`....m..P.
0030 01 f5 09 c1 00 00 48 54 54 50 2f 31 2e 31 20 34 .....HTTP/1.1 4 Not authorized here :(
0040 30 31 20 55 6e 61 75 74 68 6f 72 69 7a 65 64 0d 01 Unauthorized.
0050 0a 53 65 72 76 65 72 3a 20 6e 67 69 6e 78 2f 31 .Server: nginx/1
0060 2e 31 38 2e 30 20 28 55 62 75 6e 74 75 29 0d 0a .18.0 (Ubuntu)..
0070 44 61 74 65 3a 20 54 75 65 2c 20 31 39 20 53 65 Date: Tue, 19 Se
0080 70 20 32 30 32 33 20 31 37 3a 30 32 3a 30 34 20 p 2023 17:02:04
0090 47 4d 54 0d 0a 43 6f 6e 74 65 6e 74 2d 54 79 70 GMT..Content-Typ
00a0 65 3a 20 74 65 78 74 2f 68 74 6d 6c 0d 0a 43 6f e: text/html..Co
00b0 6e 74 65 6e 74 2d 4c 65 6e 67 74 68 3a 20 31 38 ntent-Length: 18
00c0 38 0d 0a 43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 8..Connection: k
00d0 65 65 70 2d 61 6c 69 76 65 0d 0a 57 57 57 2d 41 eep-alive..WWW-A This has WWA basic
00e0 75 74 68 65 6e 74 69 63 61 74 65 3a 20 42 61 73 uthenticate: Bas authentication; we need
00f0 69 63 20 72 65 61 6c 6d 3d 22 50 72 6f 74 65 63 ic realm="Protec a username & password
0100 74 65 64 20 41 72 65 61 22 0d 0a 0d 0a 3c 68 74 ted Area"....<ht
0110 6d 6c 3e 0d 0a 3c 68 65 61 64 3e 3c 74 69 74 6c ml>..<head><titl
0120 65 3e 34 30 31 20 41 75 74 68 6f 72 69 7a 61 74 e>401 Authorizat
0130 69 6f 6e 20 52 65 71 75 69 72 65 64 3c 2f 74 69 ion Required</ti
0140 74 6c 65 3e 3c 2f 68 65 61 64 3e 0d 0a 3c 62 6f tle></head>..<bo

```

```

0150 64 79 3e 0d 0a 3c 63 65 6e 74 65 72 3e 3c 68 31 dy>..<center><h1
0160 3e 34 30 31 20 41 75 74 68 6f 72 69 7a 61 74 69 >401 Authorizati
0170 6f 6e 20 52 65 71 75 69 72 65 64 3c 2f 68 31 3e on Required</h1>
0180 3c 2f 63 65 6e 74 65 72 3e 0d 0a 3c 68 72 3e 3c </center>..<hr><
0190 63 65 6e 74 65 72 3e 6e 67 69 6e 78 2f 31 2e 31 center>nginx/1.1
01a0 38 2e 30 20 28 55 62 75 6e 74 75 29 3c 2f 63 65 8.0 (Ubuntu)</ce
01b0 6e 74 65 72 3e 0d 0a 3c 2f 62 6f 64 79 3e 0d 0a nter>..</body>..
01c0 3c 2f 68 74 6d 6c 3e 0d 0a </html>..

```

- Client(browser) sends the request to get the info with the username and password encoded (user-pass). The user-pass is the user-id + ':' + the password<sup>1</sup>. This user-pass is encoded in base-64.

See lines 01a0 and 01b0 in the hex below. We say that we are using basic authentication and provide the user-pass: Y3MzMzg6cGFzc3dvcmQ=. When decoded, this is “cs338:password”. This new information is found in the new header Authorization, in line 0190

Frame 426:

```

0000 d2 88 0c 97 ad 64 12 d3 45 c0 bf d9 08 00 45 00 .....d..E.....E.
0010 01 b6 b3 f8 40 00 40 06 fd d4 c0 a8 40 02 2d 4f ....@.@.....@.-O
0020 59 7b a0 de 00 50 ec 6d c9 13 60 b2 9a 9f 50 18 Y{...P.m..`...P.
0030 01 f5 b2 fc 00 00 47 45 54 20 2f 62 61 73 69 63 .....GET /basic
0040 61 75 74 68 2f 20 48 54 54 50 2f 31 2e 31 0d 0a auth/ HTTP/1.1..
0050 48 6f 73 74 3a 20 63 73 33 33 38 2e 6a 65 66 66 Host: cs338.jeff
0060 6f 6e 64 69 63 68 2e 63 6f 6d 0d 0a 55 73 65 72 ondich.com..User
0070 2d 41 67 65 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f -Agent: Mozilla/
0080 35 2e 30 20 28 58 31 31 3b 20 4c 69 6e 75 78 20 5.0 (X11; Linux
0090 61 61 72 63 68 36 34 3b 20 72 76 3a 31 30 39 2e aarch64; rv:109.
00a0 30 29 20 47 65 63 6b 6f 2f 32 30 31 30 30 31 30 0) Gecko/2010010
00b0 31 20 46 69 72 65 66 6f 78 2f 31 31 35 2e 30 0d 1 Firefox/115.0.
00c0 0a 41 63 63 65 70 74 3a 20 74 65 78 74 2f 68 74 .Accept: text/ht
00d0 6d 6c 2c 61 70 70 6c 69 63 61 74 69 6f 6e 2f 78 ml,application/x
00e0 68 74 6d 6c 2b 78 6d 6c 2c 61 70 70 6c 69 63 61 html+xml,applica
00f0 74 69 6f 6e 2f 78 6d 6c 3b 71 3d 30 2e 39 2c 69 tion/xml;q=0.9,i
0100 6d 61 67 65 2f 61 76 69 66 2c 69 6d 61 67 65 2f mage/avif,image/
0110 77 65 62 70 2c 2a 2f 2a 3b 71 3d 30 2e 38 0d 0a webp,*/*;q=0.8..
0120 41 63 63 65 70 74 2d 4c 61 6e 67 75 61 67 65 3a Accept-Language:
0130 20 65 6e 2d 55 53 2c 65 6e 3b 71 3d 30 2e 35 0d en-US,en;q=0.5.
0140 0a 41 63 63 65 70 74 2d 45 6e 63 6f 64 69 6e 67 .Accept-Encoding
0150 3a 20 67 7a 69 70 2c 20 64 65 66 6c 61 74 65 0d : gzip, deflate.
0160 0a 43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 65 65 .Connection: kee
0170 70 2d 61 6c 69 76 65 0d 0a 55 70 67 72 61 64 65 p-alive..Upgrade

```

Another get request

<sup>1</sup> <https://datatracker.ietf.org/doc/html/rfc7617>

0180	2d 49 6e 73 65 63 75 72 65 2d 52 65 71 75 65 73	-Insecure-Reques	
0190	74 73 3a 20 31 0d 0a 41 75 74 68 6f 72 69 7a 61	ts: 1..Authoriza	
01a0	74 69 6f 6e 3a 20 42 61 73 69 63 20 59 33 4d 7a	tion: Basic Y3Mz	This time we provide the
01b0	4d 7a 67 36 63 47 46 7a 63 33 64 76 63 6d 51 3d	Mzg6cGFzc3dvcmQ=	username and password!
01c0	0d 0a 0d 0a		

4. Jeff's server acknowledges the request (frame 427)
5. Jeff's server says ok to the request (http status 200, lines 0030 and 0040) /I'm authorized now, things are encoded (frame 428)

0000	12 d3 45 c0 bf d9 d2 88 0c 97 ad 64 08 00 45 00	..E.....d..E.	
0010	01 bc f5 5f 00 00 34 06 08 68 2d 4f 59 7b c0 a8	..._.4..h-OY{..	
0020	40 02 00 50 a0 de 60 b2 9a 9f ec 6d ca a1 50 18	@..P..`....m..P.	
0030	01 f5 e6 ca 00 00 48 54 54 50 2f 31 2e 31 20 32	.....HTTP/1.1 2	Server says ok :)
0040	30 30 20 4f 4b 0d 0a 53 65 72 76 65 72 3a 20 6e	00 OK..Server: n	
0050	67 69 6e 78 2f 31 2e 31 38 2e 30 20 28 55 62 75	ginx/1.18.0 (Ubu	
0060	6e 74 75 29 0d 0a 44 61 74 65 3a 20 54 75 65 2c	ntu)..Date: Tue,	
0070	20 31 39 20 53 65 70 20 32 30 32 33 20 31 37 3a	19 Sep 2023 17:	
0080	30 32 3a 31 35 20 47 4d 54 0d 0a 43 6f 6e 74 65	02:15 GMT..Conte	
0090	6e 74 2d 54 79 70 65 3a 20 74 65 78 74 2f 68 74	nt-Type: text/ht	
00a0	6d 6c 0d 0a 54 72 61 6e 73 66 65 72 2d 45 6e 63	ml..Transfer-Enc	
00b0	6f 64 69 6e 67 3a 20 63 68 75 6e 6b 65 64 0d 0a	oding: chunked..	
00c0	43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 65 65 70	Connection: keep	
00d0	2d 61 6c 69 76 65 0d 0a 43 6f 6e 74 65 6e 74 2d	-alive..Content-	
00e0	45 6e 63 6f 64 69 6e 67 3a 20 67 7a 69 70 0d 0a	Encoding: gzip..	
00f0	0d 0a 63 64 0d 0a 1f 8b 08 00 00 00 00 00 04 03	..cd.....	
0100	8d 91 cb 0a 83 30 10 45 f7 85 fe 43 70 af 63 82	.....0.E...Cp.c.	
0110	ad 50 a6 81 2e fb 19 a3 89 46 f0 45 8c 60 ff be	.P.....F.E.`..	
0120	3e 2a 48 4b d1 2c 02 33 99 c3 61 72 d1 b8 aa 94	>*HK,,3..ar....	
0130	e7 13 1a 4d 4a a2 2b 5c a9 e5 b3 56 7a 60 4d c6	...MJ.+...\Vz'M.	
0140	20 a1 ae 48 a9 77 06 10 96 37 84 79 72 24 92 46	..H.w...7.yr\$.F	
0150	bd 66 92 ff 01 0c 97 68 ac c4 d6 6a 89 c4 8c d5	.f.....h...j....	
0160	d9 dd 0b 02 f0 e4 78 21 d0 04 af 6d aa c8 e9 de	.....x!...m....	
0170	76 81 1b 9c 27 b7 d5 34 c8 8e 9d 30 f2 1f ad f5	v...'.4...0....	
0180	45 28 04 e3 d1 8d 87 bf 58 7c d9 4a 6d a5 95 9f	E(.....X Jm...	
0190	f7 64 d5 2a fe ea 1c 94 ef 8b f9 95 6f c4 8a ea	.d.*.....o....	
01a0	b4 a8 f3 65 d9 4d 71 50 37 af b5 ef 14 22 1e 9d	...e.MqP7...."..	
01b0	30 7f ff 94 03 ac 89 c1 27 f4 37 86 48 91 bf fd	0.....'.7.H...	
01c0	01 00 00 0d 0a 30 0d 0a 0d 0a	.....0....	

6. My computer acknowledges the ok (frame 429)
7. My computer asks for favicon.ico (frame 430) GET /favicon.ico HTTP/1.1
  - a. Jeff's server says ok I got the request (frame 431)
  - b. Jeff's server says I don't have it (frame 432) HTTP/1.1 404 Not Found
8. Some things happen with a different ip that are not relevant (frames 440-453)

9. My computer asks for amateurs.txt, using the authorization header in lines 0160-0190 with the encoded user pass (username and password, Y3MzMzg6cGFzc3dvcmQ=, or “cs338:password”).

```
0000 d2 88 0c 97 ad 64 12 d3 45 c0 bf d9 08 00 45 00 .....d.E.....E.
0010 01 f3 b3 fc 40 00 40 06 fd 93 c0 a8 40 02 2d 4f ....@.@.....@.-O
0020 59 7b a0 de 00 50 ec 6d cb dc 60 b2 9d 7c 50 18 Y{...P.m.`.|P.
0030 01 f5 d3 28 00 00 47 45 54 20 2f 62 61 73 69 63 ...(..GET /basic          Get cs338.jeffondich.com
0040 61 75 74 68 2f 61 6d 61 74 65 75 72 73 2e 74 78 auth/amateurs.tx        /basicauth/amateurs.txt
0050 74 20 48 54 54 50 2f 31 2e 31 0d 0a 48 6f 73 74 t HTTP/1.1..Host
0060 3a 20 63 73 33 33 38 2e 6a 65 66 66 6f 6e 64 69 : cs338.jeffondi
0070 63 68 2e 63 6f 6d 0d 0a 55 73 65 72 2d 41 67 65 ch.com..User-Age
0080 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f 35 2e 30 20 nt: Mozilla/5.0
0090 28 58 31 31 3b 20 4c 69 6e 75 78 20 61 61 72 63 (X11; Linux aarc
00a0 68 36 34 3b 20 72 76 3a 31 30 39 2e 30 29 20 47 h64; rv:109.0) G
00b0 65 63 6b 6f 2f 32 30 31 30 30 31 30 31 20 46 69 ecko/20100101 Fi
00c0 72 65 66 6f 78 2f 31 31 35 2e 30 0d 0a 41 63 63 refox/115.0..Acc
00d0 65 70 74 3a 20 74 65 78 74 2f 68 74 6d 6c 2c 61 ept: text/html,a
00e0 70 70 6c 69 63 61 74 69 6f 6e 2f 78 68 74 6d 6c pplication/xhtml
00f0 2b 78 6d 6c 2c 61 70 70 6c 69 63 61 74 69 6f 6e +xml,application
0100 2f 78 6d 6c 3b 71 3d 30 2e 39 2c 69 6d 61 67 65 /xml;q=0.9,image
0110 2f 61 76 69 66 2c 69 6d 61 67 65 2f 77 65 62 70 /avif,image/webp
0120 2c 2a 2f 2a 3b 71 3d 30 2e 38 0d 0a 41 63 63 65 ,/*;q=0.8..Acce
0130 70 74 2d 4c 61 6e 67 75 61 67 65 3a 20 65 6e 2d pt-Language: en-
0140 55 53 2c 65 6e 3b 71 3d 30 2e 35 0d 0a 41 63 63 US,en;q=0.5..Acc
0150 65 70 74 2d 45 6e 63 6f 64 69 6e 67 3a 20 67 7a ept-Encoding: gz
0160 69 70 2c 20 64 65 66 6c 61 74 65 0d 0a 41 75 74 ip, deflate..Aut          Here's the username and password
0170 68 6f 72 69 7a 61 74 69 6f 6e 3a 20 42 61 73 69 horization: Basi        again!
0180 63 20 59 33 4d 7a 4d 7a 67 36 63 47 46 7a 63 33 c Y3MzMzg6cGFzc3
0190 64 76 63 6d 51 3d 0d 0a 43 6f 6e 6e 65 63 74 69 dvcmQ=..Connecti
01a0 6f 6e 3a 20 6b 65 65 70 2d 61 6c 69 76 65 0d 0a on: keep-alive..
01b0 52 65 66 65 72 65 72 3a 20 68 74 74 70 3a 2f 2f Referer: http://
01c0 63 73 33 33 38 2e 6a 65 66 66 6f 6e 64 69 63 68 cs338.jeffondich
01d0 2e 63 6f 6d 2f 62 61 73 69 63 61 75 74 68 2f 0d .com/basicauth/.
01e0 0a 55 70 67 72 61 64 65 2d 49 6e 73 65 63 75 72 .Upgrade-Insecur
01f0 65 2d 52 65 71 75 65 73 74 73 3a 20 31 0d 0a 0d e-Requests: 1...
0200 0a
```

10. Jeff's server says ok (http status 200) and sends it. The text of the file is found in lines 0120-0170

```
0000 12 d3 45 c0 bf d9 d2 88 0c 97 ad 64 08 00 45 00 ..E.....d.E.
0010 01 69 f5 62 00 00 34 06 08 b8 2d 4f 59 7b c0 a8 .i.b..4...-OY{..
0020 40 02 00 50 a0 de 60 b2 9d 7c ec 6d cd a7 50 18 @..P.`..|.m..P.
0030 01 f5 92 0b 00 00 48 54 54 50 2f 31 2e 31 20 32 .....HTTP/1.1 2          Server says ok!
0040 30 30 20 4f 4b 0d 0a 53 65 72 76 65 72 3a 20 6e 00 OK..Server: n
0050 67 69 6e 78 2f 31 2e 31 38 2e 30 20 28 55 62 75 ginx/1.18.0 (Ubu
0060 6e 74 75 29 0d 0a 44 61 74 65 3a 20 54 75 65 2c ntu)..Date: Tue,
```

0070	20 31 39 20 53 65 70 20 32 30 32 33 20 31 37 3a	19 Sep 2023 17:	
0080	30 32 3a 32 30 20 47 4d 54 0d 0a 43 6f 6e 74 65	02:20 GMT..Conte	
0090	6e 74 2d 54 79 70 65 3a 20 74 65 78 74 2f 70 6c	nt-Type: text/pl	
00a0	61 69 6e 0d 0a 43 6f 6e 74 65 6e 74 2d 4c 65 6e	ain.. <b>Content-Len</b>	How much content we got!
00b0	67 74 68 3a 20 37 35 0d 0a 4c 61 73 74 2d 4d 6f	<b>gth: 75</b> ..Last-Mo	
00c0	64 69 66 69 65 64 3a 20 4d 6f 6e 2c 20 30 34 20	dified: Mon, 04	
00d0	41 70 72 20 32 30 32 32 20 31 34 3a 31 30 3a 35	Apr 2022 14:10:5	
00e0	31 20 47 4d 54 0d 0a 43 6f 6e 6e 65 63 74 69 6f	1 GMT..Connectio	
00f0	6e 3a 20 6b 65 65 70 2d 61 6c 69 76 65 0d 0a 45	n: keep-alive..E	
0100	54 61 67 3a 20 22 36 32 34 61 66 63 36 62 2d 34	Tag: "624afc6b-4	
0110	62 22 0d 0a 41 63 63 65 70 74 2d 52 61 6e 67 65	b"...Accept-Range	
0120	73 3a 20 62 79 74 65 73 0d 0a 0d 0a 22 41 6d 61	s: bytes...." <b>Ama</b>	The text we recieved
0130	74 65 75 72 73 20 68 61 63 6b 20 73 79 73 74 65	<b>teurs hack syste</b>	
0140	6d 73 2c 20 70 72 6f 66 65 73 73 69 6f 6e 61 6c	<b>ms, professional</b>	
0150	73 20 68 61 63 6b 20 70 65 6f 70 6c 65 2e 22 0a	<b>s hack people."</b>	
0160	0a 20 20 20 20 2d 2d 20 42 72 75 63 65 20 53 63	. -- <b>Bruce Sc</b>	
0170	68 6e 65 69 65 72 0a	<b>hneier.</b>	

Some additional information present in a lot of the frames that hasn't been explained yet...

#### Frame 26 (again, sorry!!!)

0000	d2 88 0c 97 ad 64 12 d3 45 c0 bf d9 08 00 45 00	.....d..E.....E.	
0010	01 b6 b3 f8 40 00 40 06 fd d4 c0 a8 40 02 2d 4f	....@.@.....@.-O	
0020	59 7b a0 de 00 50 ec 6d c9 13 60 b2 9a 9f 50 18	Y{...P.m..`...P.	
0030	01 f5 b2 fc 00 00 47 45 54 20 2f 62 61 73 69 63	.....GET /basic	
0040	61 75 74 68 2f 20 48 54 54 50 2f 31 2e 31 0d 0a	auth/ HTTP/1.1..	
0050	48 6f 73 74 3a 20 63 73 33 33 38 2e 6a 65 66 66	<b>Host: cs338.jeff</b>	Here, we are saying what we want
0060	6f 6e 64 69 63 68 2e 63 6f 6d 0d 0a 55 73 65 72	<b>ondich.com..User</b>	is on Jeff's Server <sup>2</sup>
0070	2d 41 67 65 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f	<b>-Agent: Mozilla/</b>	Here, we are providing information
0080	35 2e 30 20 28 58 31 31 3b 20 4c 69 6e 75 78 20	<b>5.0 (X11; Linux</b>	about ourselves, i.e., where the
0090	61 61 72 63 68 36 34 3b 20 72 76 3a 31 30 39 2e	<b>aarch64; rv:109.</b>	Request started. <sup>3</sup>
00a0	30 29 20 47 65 63 6b 6f 2f 32 30 31 30 30 31 30	<b>0) Gecko/2010010</b>	
00b0	31 20 46 69 72 65 66 6f 78 2f 31 31 35 2e 30 0d	<b>1 Firefox/115.0.</b>	
00c0	0a 41 63 63 65 70 74 3a 20 74 65 78 74 2f 68 74	<b>.Accept: text/ht</b>	Here, we are saying we will accept
00d0	6d 6c 2c 61 70 70 6c 69 63 61 74 69 6f 6e 2f 78	<b>ml,application/x</b>	so many things! <sup>4</sup>
00e0	68 74 6d 6c 2b 78 6d 6c 2c 61 70 70 6c 69 63 61	<b>html+xml,applica</b>	
00f0	74 69 6f 6e 2f 78 6d 6c 3b 71 3d 30 2e 39 2c 69	<b>tion/xml;q=0.9,i</b>	
0100	6d 61 67 65 2f 61 76 69 66 2c 69 6d 61 67 65 2f	<b>mage/avif,image/</b>	

<sup>2</sup> <https://www.rfc-editor.org/rfc/rfc2616#section-14.23>

<sup>3</sup> <https://www.rfc-editor.org/rfc/rfc2616#page-145>

<sup>4</sup> <https://www.rfc-editor.org/rfc/rfc2616#page-100>

0110 77 65 62 70 2c 2a 2f 2a 3b 71 3d 30 2e 38 0d 0a **webp,\*/\*;q=0.8..**  
0120 41 63 63 65 70 74 2d 4c 61 6e 67 75 61 67 65 3a **Accept-Language:**  
0130 20 65 6e 2d 55 53 2c 65 6e 3b 71 3d 30 2e 35 0d **en-US,en;q=0.5.**  
0140 0a 41 63 63 65 70 74 2d 45 6e 63 6f 64 69 6e 67 **.Accept-Encoding**  
0150 3a 20 67 7a 69 70 2c 20 64 65 66 6c 61 74 65 0d **: gzip, deflate.**  
0160 0a 43 6f 6e 6e 65 63 74 69 6f 6e 3a 20 6b 65 65 .Connection: keep-alive..Upgrade  
0170 70 2d 61 6c 69 76 65 0d 0a 55 70 67 72 61 64 65 -Insecure-Request: 1..Authorization: Basic Y3Mz  
0180 2d 49 6e 73 65 63 75 72 65 2d 52 65 71 75 65 73 Mzg6cGFzc3dvcmQ=  
0190 74 73 3a 20 31 0d 0a 41 75 74 68 6f 72 69 7a 61  
01a0 74 69 6f 6e 3a 20 42 61 73 69 63 20 59 33 4d 7a  
01b0 4d 7a 67 36 63 47 46 7a 63 33 64 76 63 6d 51 3d  
01c0 0d 0a 0d 0a