

WEEK-2

PERSISTENT AND NON-PERSISTENT CONNECTIONS

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SECTION-D

SRN-PES2UG19CS203

Non-persistent connection wireshark capture

Wireshark capture of a non-persistent HTTP connection. The packet list shows a GET request for /a.html and subsequent GET requests for images. The packet details pane shows the selected packet (No. 21) with its structure: Ethernet II, Internet Protocol Version 4, Transmission Control Protocol, and Hypertext Transfer Protocol. The packet bytes pane shows the raw data in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
21	4.596406401	10.1.10.140	10.1.10.152	HTTP	404	GET /a.html HTTP/1.1
23	4.597970337	10.1.10.152	10.1.10.140	HTTP	502	HTTP/1.1 200 OK (text/html)
26	4.969394364	10.1.10.140	10.1.10.152	HTTP	352	GET /img1.jpg HTTP/1.1
1679	5.338922126	10.1.10.152	10.1.10.140	HTTP	202	HTTP/1.1 200 OK (JPEG JFIF image)
1681	5.339208441	10.1.10.140	10.1.10.152	HTTP	352	GET /img2.jpg HTTP/1.1
2533	5.435261590	10.1.10.152	10.1.10.140	HTTP	1061	HTTP/1.1 200 OK (JPEG JFIF image)
2535	5.436086929	10.1.10.140	10.1.10.152	HTTP	352	GET /img3.jpg HTTP/1.1
3585	5.678813971	10.1.10.152	10.1.10.140	HTTP	156	HTTP/1.1 200 OK (JPEG JFIF image)
3587	5.714103453	10.1.10.140	10.1.10.152	HTTP	352	GET /img4.jpg HTTP/1.1
4600	5.931043438	10.1.10.152	10.1.10.140	HTTP	1514	HTTP/1.1 200 OK (JPEG JFIF image)
4604	6.355050553	10.1.10.140	10.1.10.152	HTTP	352	GET /img5.jpg HTTP/1.1
5520	6.544111350	10.1.10.152	10.1.10.140	HTTP	948	HTTP/1.1 200 OK (JPEG JFIF image)
5523	6.769985784	10.1.10.140	10.1.10.152	HTTP	352	GET /img6.jpg HTTP/1.1
6585	6.996258730	10.1.10.152	10.1.10.140	HTTP	173	HTTP/1.1 200 OK (JPEG JFIF image)
6588	7.185525006	10.1.10.140	10.1.10.152	HTTP	352	GET /img7.jpg HTTP/1.1
7739	7.293257938	10.1.10.152	10.1.10.140	HTTP	1168	HTTP/1.1 200 OK (JPEG JFIF image)
7742	7.596879349	10.1.10.140	10.1.10.152	HTTP	352	GET /img8.jpg HTTP/1.1
8697	7.762205210	10.1.10.152	10.1.10.140	HTTP	216	HTTP/1.1 200 OK (JPEG JFIF image)
8699	7.968873387	10.1.10.140	10.1.10.152	HTTP	352	GET /img9.jpg HTTP/1.1
10081	8.270655604	10.1.10.152	10.1.10.140	HTTP	1037	HTTP/1.1 200 OK (JPEG JFIF image)
10089	8.685252720	10.1.10.140	10.1.10.152	HTTP	353	GET /img10.jpg HTTP/1.1
12291	9.062731271	10.1.10.152	10.1.10.140	HTTP	166	HTTP/1.1 200 OK (JPEG JFIF image)

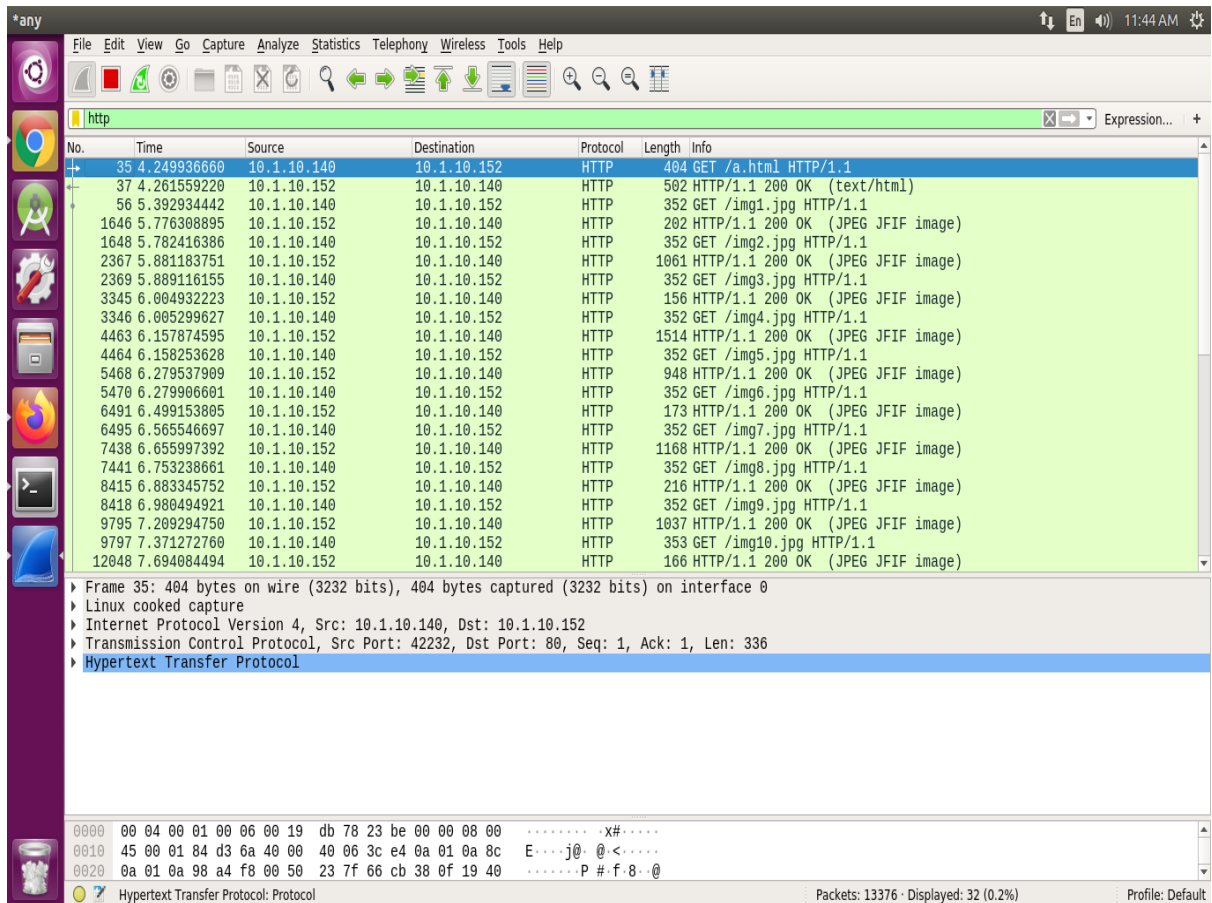
Frame 21: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
Linux cooked capture
Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
Transmission Control Protocol, Src Port: 42278, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
Hypertext Transfer Protocol

0000 00 04 00 01 00 06 00 19 db 78 23 be 00 00 08 00X#.....
0010 45 00 01 84 1d 8a 40 00 40 06 f2 c4 0a 01 0a 8c E.....@: @.....
0020 0a 01 0a 98 a5 26 00 50 27 ae c0 33 2b 91 ca 42&P'...3+...B

Hypertext Transfer Protocol: Protocol Packets: 12373 · Displayed: 24 (0.2%) Profile: Default

TIME TAKEN=9.062731271-4.596406401=4.46632497 s

persistent connection wireshark capture -2



Wireshark network traffic capture showing a persistent HTTP connection. The packet list displays a sequence of GET requests for various image files (img1.jpg through img10.jpg) over the same connection. The packet details pane shows the structure of an HTTP GET request for /a.html. The packet bytes pane shows the raw data of the request.

No.	Time	Source	Destination	Protocol	Length	Info
35	4.249936660	10.1.10.140	10.1.10.152	HTTP	404	GET /a.html HTTP/1.1
37	4.261559220	10.1.10.152	10.1.10.140	HTTP	502	HTTP/1.1 200 OK (text/html)
56	5.392934442	10.1.10.140	10.1.10.152	HTTP	352	GET /img1.jpg HTTP/1.1
1646	5.776308895	10.1.10.152	10.1.10.140	HTTP	202	HTTP/1.1 200 OK (JPEG JFIF image)
1648	5.782416386	10.1.10.140	10.1.10.152	HTTP	352	GET /img2.jpg HTTP/1.1
2367	5.881183751	10.1.10.152	10.1.10.140	HTTP	1061	HTTP/1.1 200 OK (JPEG JFIF image)
2369	5.889116155	10.1.10.140	10.1.10.152	HTTP	352	GET /img3.jpg HTTP/1.1
3345	6.004932223	10.1.10.152	10.1.10.140	HTTP	156	HTTP/1.1 200 OK (JPEG JFIF image)
3346	6.005299627	10.1.10.140	10.1.10.152	HTTP	352	GET /img4.jpg HTTP/1.1
4463	6.157874595	10.1.10.152	10.1.10.140	HTTP	1514	HTTP/1.1 200 OK (JPEG JFIF image)
4464	6.158253628	10.1.10.140	10.1.10.152	HTTP	352	GET /img5.jpg HTTP/1.1
5468	6.279537909	10.1.10.152	10.1.10.140	HTTP	948	HTTP/1.1 200 OK (JPEG JFIF image)
5470	6.279906601	10.1.10.140	10.1.10.152	HTTP	352	GET /img6.jpg HTTP/1.1
6491	6.499153805	10.1.10.152	10.1.10.140	HTTP	173	HTTP/1.1 200 OK (JPEG JFIF image)
6495	6.565546697	10.1.10.140	10.1.10.152	HTTP	352	GET /img7.jpg HTTP/1.1
7438	6.655997392	10.1.10.152	10.1.10.140	HTTP	1168	HTTP/1.1 200 OK (JPEG JFIF image)
7441	6.753238661	10.1.10.140	10.1.10.152	HTTP	352	GET /img8.jpg HTTP/1.1
8415	6.883345752	10.1.10.152	10.1.10.140	HTTP	216	HTTP/1.1 200 OK (JPEG JFIF image)
8418	6.980494921	10.1.10.140	10.1.10.152	HTTP	352	GET /img9.jpg HTTP/1.1
9795	7.209294750	10.1.10.152	10.1.10.140	HTTP	1037	HTTP/1.1 200 OK (JPEG JFIF image)
9797	7.371272760	10.1.10.140	10.1.10.152	HTTP	353	GET /img10.jpg HTTP/1.1
12048	7.694084494	10.1.10.152	10.1.10.140	HTTP	166	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 35: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
Linux cooked capture
Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
Transmission Control Protocol, Src Port: 42232, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
Hypertext Transfer Protocol

0000 00 04 00 01 00 06 00 19 db 78 23 be 00 00 08 00x#.....
0010 45 00 01 84 d3 6a 40 00 40 06 3c e4 0a 01 0a 8c E....j@. @.<.....
0020 0a 01 0a 98 a4 f8 00 50 23 7f 66 cb 38 0f 19 40P #.f.8..@

Hypertext Transfer Protocol: Protocol Packets: 13376 - Displayed: 32 (0.2%) Profile: Default

TIME TAKEN=7.694084494-4.249936660=3.44147834 s

persistent connection wireshark capture -4

Wireshark capture showing a persistent HTTP connection between 10.1.10.140 and 10.1.10.152. The capture includes a GET request for /a.html and subsequent GET requests for various image files (img1.jpg through img10.jpg). The status bar at the bottom shows 'Packets: 23395 · Displayed: 24 (0.1%)'.

No.	Time	Source	Destination	Protocol	Length	Info
1761	5.538570055	10.1.10.140	10.1.10.152	HTTP	404	GET /a.html HTTP/1.1
1763	5.539736967	10.1.10.152	10.1.10.140	HTTP	502	HTTP/1.1 200 OK (text/html)
1811	5.795821774	10.1.10.140	10.1.10.152	HTTP	352	GET /img1.jpg HTTP/1.1
2176	5.922546047	10.1.10.140	10.1.10.152	HTTP	352	GET /img2.jpg HTTP/1.1
2463	6.044530077	10.1.10.140	10.1.10.152	HTTP	352	GET /img5.jpg HTTP/1.1
2466	6.044688749	10.1.10.140	10.1.10.152	HTTP	352	GET /img4.jpg HTTP/1.1
2469	6.044833225	10.1.10.140	10.1.10.152	HTTP	352	GET /img3.jpg HTTP/1.1
2473	6.045030513	10.1.10.140	10.1.10.152	HTTP	352	GET /img7.jpg HTTP/1.1
2476	6.045154027	10.1.10.140	10.1.10.152	HTTP	352	GET /img6.jpg HTTP/1.1
2738	6.061392715	10.1.10.140	10.1.10.152	HTTP	352	GET /img8.jpg HTTP/1.1
8238	6.565948295	10.1.10.152	10.1.10.140	HTTP	174	HTTP/1.1 200 OK (JPEG JFIF image)
9239	6.669767672	10.1.10.152	10.1.10.140	HTTP	1062	HTTP/1.1 200 OK (JPEG JFIF image)
9369	6.703968026	10.1.10.140	10.1.10.152	HTTP	352	GET /img9.jpg HTTP/1.1
10914	6.865243945	10.1.10.152	10.1.10.140	HTTP	202	HTTP/1.1 200 OK (JPEG JFIF image)
10970	6.871469181	10.1.10.140	10.1.10.152	HTTP	353	GET /img10.jpg HTTP/1.1
11108	6.887101833	10.1.10.152	10.1.10.140	HTTP	949	HTTP/1.1 200 OK (JPEG JFIF image)
11243	6.900861001	10.1.10.152	10.1.10.140	HTTP	1169	HTTP/1.1 200 OK (JPEG JFIF image)
11802	6.953917281	10.1.10.152	10.1.10.140	HTTP	1515	HTTP/1.1 200 OK (JPEG JFIF image)
12128	6.980519762	10.1.10.152	10.1.10.140	HTTP	157	HTTP/1.1 200 OK (JPEG JFIF image)
13102	7.177411490	10.1.10.152	10.1.10.140	HTTP	217	HTTP/1.1 200 OK (JPEG JFIF image)
14048	7.873205517	10.1.10.152	10.1.10.140	HTTP	1037	HTTP/1.1 200 OK (JPEG JFIF image)
15376	8.665766904	10.1.10.152	10.1.10.140	HTTP	166	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 1761: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
Linux cooked capture
Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
Transmission Control Protocol, Src Port: 42408, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
Hypertext Transfer Protocol

0000 00 04 00 01 00 06 00 19 db 78 23 be 00 00 08 00x#....
0010 45 00 01 84 79 fc 40 00 40 06 96 52 0a 01 0a 8c E...y@.@..R...
0020 0a 01 0a 98 a5 a8 00 50 c9 cf 4d 18 ef 54 56 edP..M..TV..

Hypertext Transfer Protocol: Protocol Packets: 23395 · Displayed: 24 (0.1%) Profile: Default

TIME TAKEN=8.665766904-5.538570055=3.127196849

S

persistent connection wireshark capture -6

The image shows a Wireshark capture of an HTTP persistent connection. The packet list displays a series of requests and responses between 10.1.10.140 and 10.1.10.152. The details pane for the selected frame (No. 31) shows the following structure:

- Frame 31: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
- Linux cooked capture
- Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
- Transmission Control Protocol, Src Port: 42338, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
- Hypertext Transfer Protocol

The packet bytes pane shows the raw data for the selected frame:

```
0000 00 04 00 01 00 06 00 19 db 78 23 be 00 00 08 00 .....x#.....
0010 45 00 01 84 e5 28 40 00 40 06 2b 26 0a 01 0a 8c E....(@. @ +&....
0020 0a 01 0a 98 a5 62 00 50 4b 70 aa 25 42 cd a0 7e ....b P Kp %B ~
```

TIME TAKEN=8.225838716-5.47695407=2.748884669 s

persistent connection wireshark capture -8

The image shows a Wireshark network traffic capture of an HTTP session. The packet list displays 24 packets, all of which are GET requests for various resources (a.html, img1.jpg through img10.jpg) from 10.1.10.140 to 10.1.10.152. The packet details pane shows the structure of the selected packet (Frame 43), including the Ethernet II header, Internet Protocol Version 4 header, and Hypertext Transfer Protocol header. The packet bytes pane shows the raw data of the selected packet, which is the start of an HTML document.

No.	Time	Source	Destination	Protocol	Length	Info
43	5.711165873	10.1.10.140	10.1.10.152	HTTP	404	GET /a.html HTTP/1.1
45	5.712777207	10.1.10.152	10.1.10.140	HTTP	502	HTTP/1.1 200 OK (text/html)
47	5.802397235	10.1.10.140	10.1.10.152	HTTP	352	GET /img1.jpg HTTP/1.1
236	5.939671016	10.1.10.140	10.1.10.152	HTTP	352	GET /img2.jpg HTTP/1.1
240	5.939785106	10.1.10.140	10.1.10.152	HTTP	352	GET /img4.jpg HTTP/1.1
243	5.939881372	10.1.10.140	10.1.10.152	HTTP	352	GET /img3.jpg HTTP/1.1
256	5.940231186	10.1.10.140	10.1.10.152	HTTP	352	GET /img8.jpg HTTP/1.1
259	5.940328966	10.1.10.140	10.1.10.152	HTTP	352	GET /img7.jpg HTTP/1.1
260	5.940420946	10.1.10.140	10.1.10.152	HTTP	352	GET /img6.jpg HTTP/1.1
263	5.940516109	10.1.10.140	10.1.10.152	HTTP	352	GET /img5.jpg HTTP/1.1
268	5.940684475	10.1.10.140	10.1.10.152	HTTP	353	GET /img10.jpg HTTP/1.1
271	5.940781367	10.1.10.140	10.1.10.152	HTTP	352	GET /img9.jpg HTTP/1.1
8037	6.655546750	10.1.10.152	10.1.10.140	HTTP	949	HTTP/1.1 200 OK (JPEG JFIF image)
9303	6.793036350	10.1.10.152	10.1.10.140	HTTP	157	HTTP/1.1 200 OK (JPEG JFIF image)
9337	6.797123875	10.1.10.152	10.1.10.140	HTTP	217	HTTP/1.1 200 OK (JPEG JFIF image)
9377	6.802015290	10.1.10.152	10.1.10.140	HTTP	1169	HTTP/1.1 200 OK (JPEG JFIF image)
9919	6.866487635	10.1.10.152	10.1.10.140	HTTP	1062	HTTP/1.1 200 OK (JPEG JFIF image)
11327	7.006346700	10.1.10.152	10.1.10.140	HTTP	174	HTTP/1.1 200 OK (JPEG JFIF image)
11922	7.059771521	10.1.10.152	10.1.10.140	HTTP	1515	HTTP/1.1 200 OK (JPEG JFIF image)
12427	7.591022932	10.1.10.152	10.1.10.140	HTTP	202	HTTP/1.1 200 OK (JPEG JFIF image)
13287	7.819327397	10.1.10.152	10.1.10.140	HTTP	1038	HTTP/1.1 200 OK (JPEG JFIF image)
13761	8.212010595	10.1.10.152	10.1.10.140	HTTP	167	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 43: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
Linux cooked capture
Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
Transmission Control Protocol, Src Port: 42446, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
Hypertext Transfer Protocol

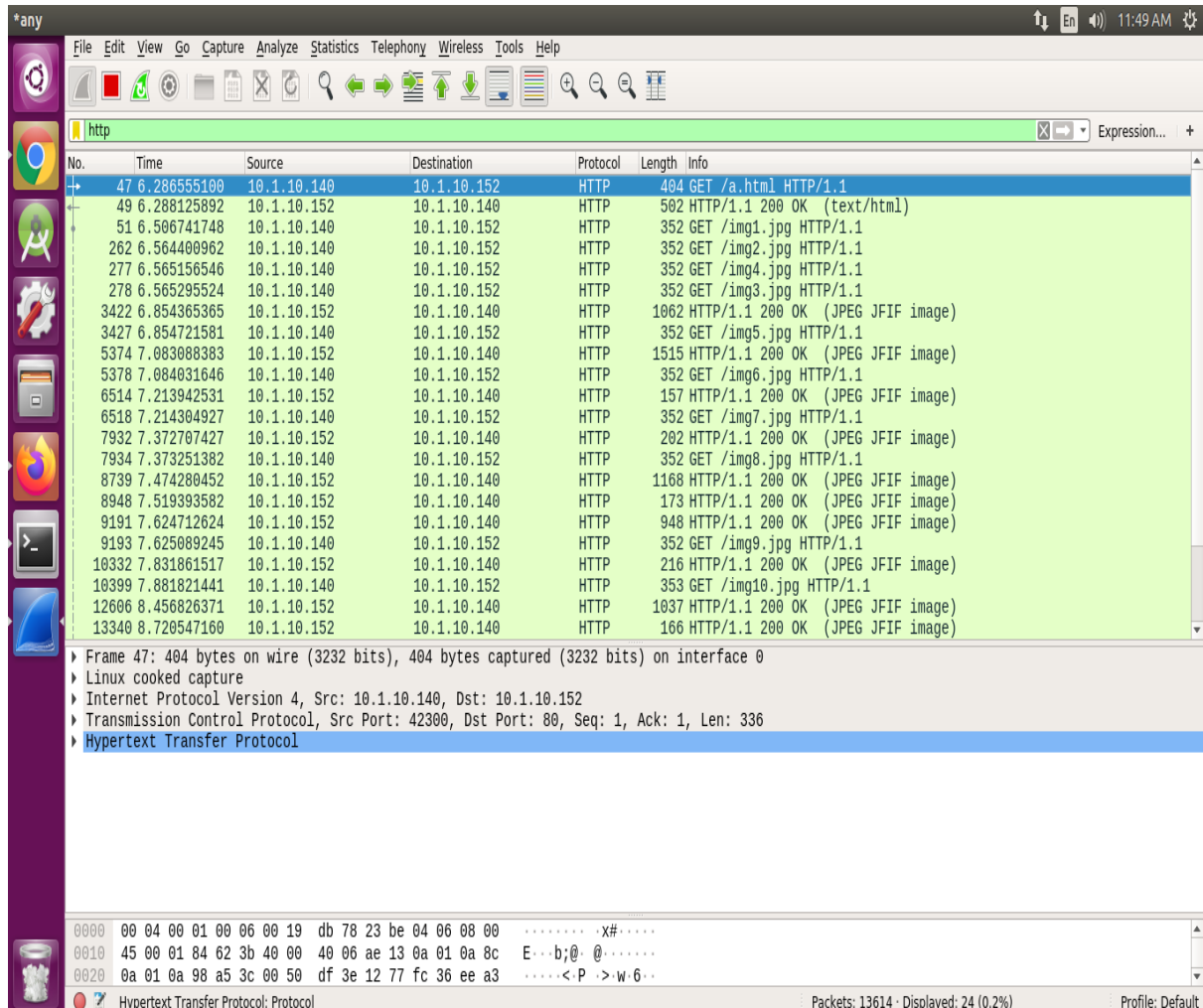
0000 00 04 00 01 00 06 00 19 db 78 23 be 00 00 08 00x#.....
0010 45 00 01 84 43 8d 40 00 40 06 cc c1 0a 01 0a 8c E...C.@. @.....
0020 0a 01 0a 98 a5 ce 00 50 5e 9b 03 a6 b7 dd f1 83P ^.....

Hypertext Transfer Protocol: Protocol Packets: 13931 - Displayed: 24 (0.2%) Profile: Default

TIME TAKEN=8.212010595-5.711165873=2.500844722

S

persistent connection wireshark capture -10



No.	Time	Source	Destination	Protocol	Length	Info
47	6.286555100	10.1.10.140	10.1.10.152	HTTP	404	GET /a.html HTTP/1.1
49	6.288125892	10.1.10.152	10.1.10.140	HTTP	502	HTTP/1.1 200 OK (text/html)
51	6.506741748	10.1.10.140	10.1.10.152	HTTP	352	GET /img1.jpg HTTP/1.1
262	6.564400962	10.1.10.140	10.1.10.152	HTTP	352	GET /img2.jpg HTTP/1.1
277	6.565156546	10.1.10.140	10.1.10.152	HTTP	352	GET /img4.jpg HTTP/1.1
278	6.565295524	10.1.10.140	10.1.10.152	HTTP	352	GET /img3.jpg HTTP/1.1
3422	6.854365365	10.1.10.152	10.1.10.140	HTTP	1062	HTTP/1.1 200 OK (JPEG JFIF image)
3427	6.854721581	10.1.10.140	10.1.10.152	HTTP	352	GET /img5.jpg HTTP/1.1
5374	7.083088383	10.1.10.152	10.1.10.140	HTTP	1515	HTTP/1.1 200 OK (JPEG JFIF image)
5378	7.084031646	10.1.10.140	10.1.10.152	HTTP	352	GET /img6.jpg HTTP/1.1
6514	7.213942531	10.1.10.152	10.1.10.140	HTTP	157	HTTP/1.1 200 OK (JPEG JFIF image)
6518	7.214304927	10.1.10.140	10.1.10.152	HTTP	352	GET /img7.jpg HTTP/1.1
7932	7.372707427	10.1.10.152	10.1.10.140	HTTP	202	HTTP/1.1 200 OK (JPEG JFIF image)
7934	7.373251382	10.1.10.140	10.1.10.152	HTTP	352	GET /img8.jpg HTTP/1.1
8739	7.474280452	10.1.10.152	10.1.10.140	HTTP	1168	HTTP/1.1 200 OK (JPEG JFIF image)
8948	7.519393582	10.1.10.152	10.1.10.140	HTTP	173	HTTP/1.1 200 OK (JPEG JFIF image)
9191	7.624712624	10.1.10.152	10.1.10.140	HTTP	948	HTTP/1.1 200 OK (JPEG JFIF image)
9193	7.625089245	10.1.10.140	10.1.10.152	HTTP	352	GET /img9.jpg HTTP/1.1
10332	7.831861517	10.1.10.152	10.1.10.140	HTTP	216	HTTP/1.1 200 OK (JPEG JFIF image)
10399	7.881821441	10.1.10.140	10.1.10.152	HTTP	353	GET /img10.jpg HTTP/1.1
12606	8.456826371	10.1.10.152	10.1.10.140	HTTP	1037	HTTP/1.1 200 OK (JPEG JFIF image)
13340	8.720547160	10.1.10.152	10.1.10.140	HTTP	166	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 47: 404 bytes on wire (3232 bits), 404 bytes captured (3232 bits) on interface 0
Linux cooked capture
Internet Protocol Version 4, Src: 10.1.10.140, Dst: 10.1.10.152
Transmission Control Protocol, Src Port: 42300, Dst Port: 80, Seq: 1, Ack: 1, Len: 336
Hypertext Transfer Protocol

0000 00 04 00 01 00 06 00 19 db 78 23 be 04 06 08 00x#.....
0010 45 00 01 84 62 3b 40 00 40 06 ae 13 0a 01 0a 8c E..b;@. @.....
0020 0a 01 0a 98 a5 3c 00 50 df 3e 12 77 fc 36 ee a3<.P ->w6..

Hypertext Transfer Protocol: Protocol Packets: 13614 · Displayed: 24 (0.2%) Profile: Default

TIME TAKEN=8.720547160-6.286555100=2.43399206 s

OPTIMAL SOLUTION -10 PERSISTENT
CONNECTIONS(LEAST TIME TAKEN)