

Name: Khushei Meghana Meda

SRN: PES1201800416

Week number: 2

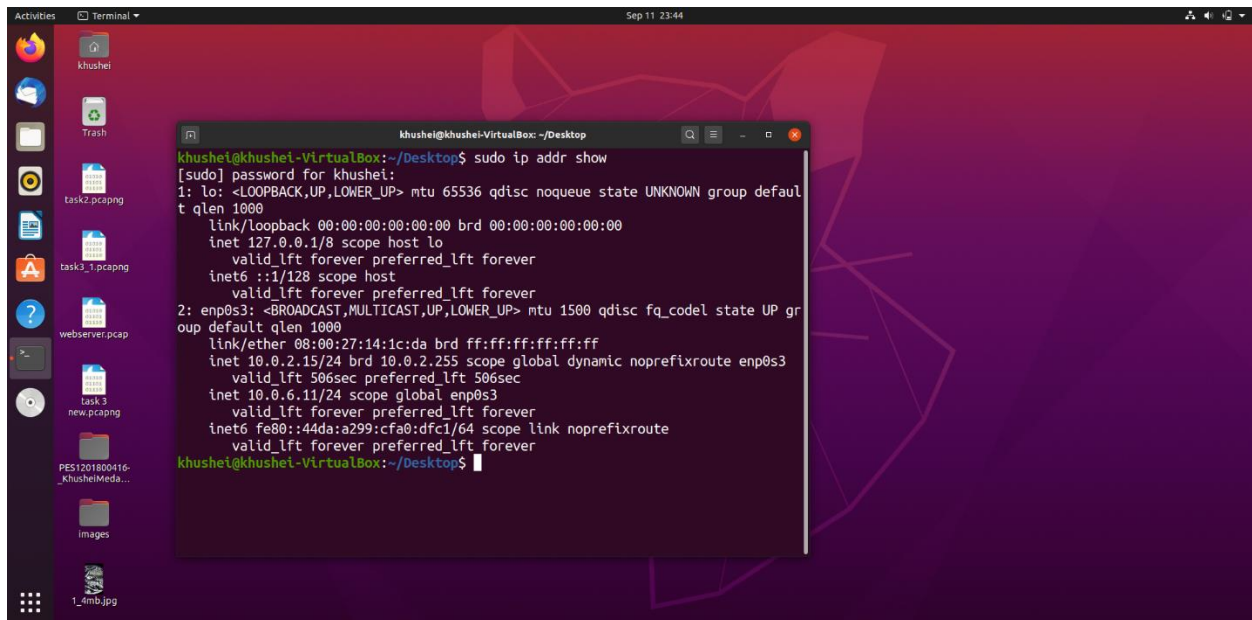
Name of experiment: HTTP Persistent and Non-Persistent Connections

Date: 14-09-2020

Objectives of the experiment: To understand persistent and non-persistent HTTP connections and corresponding performance impact.

Server IP address set

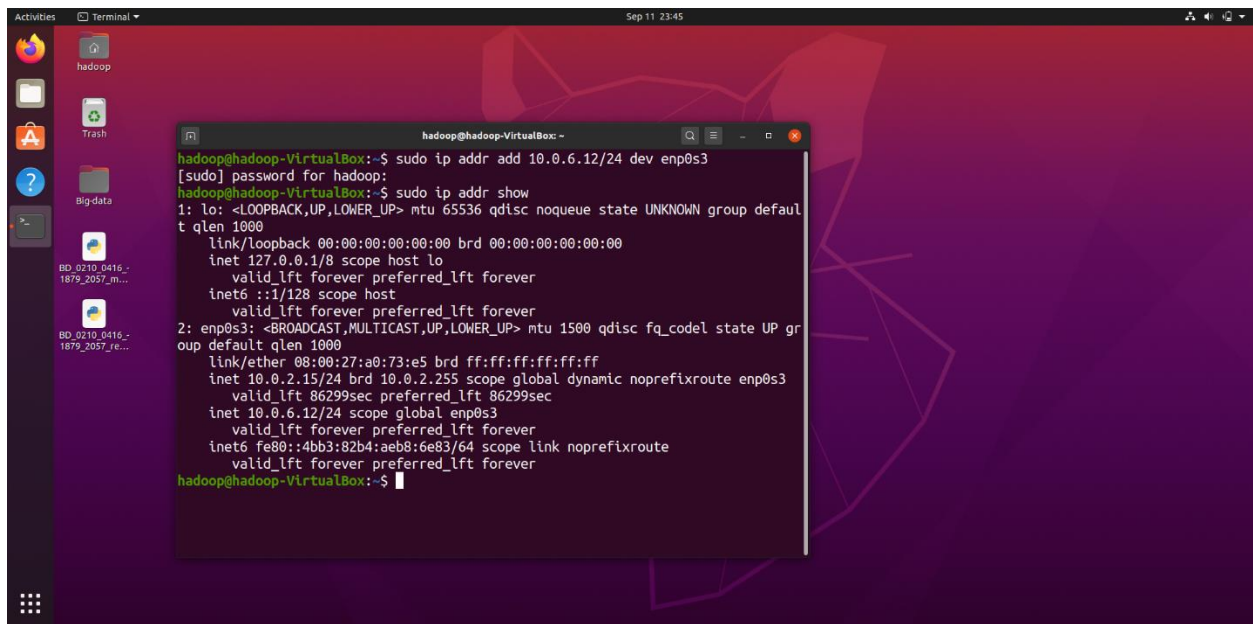
The ip address 10.0.6.11 has been added to the server machine.



```
khushei@khushei-VirtualBox:~/Desktop$ sudo ip addr show
[sudo] password for khushei:
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default
    link/ether 08:00:27:14:1c:da brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 506sec preferred_lft 506sec
    inet 10.0.6.11/24 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::44da:a299:cfa0:dfc1/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
khushei@khushei-VirtualBox:~/Desktop$
```

Client IP address set

The ip address 10.0.6.12 has been added to the client machine.



For the below observations, I have loaded 10 images, each of which is approximately 2mb in size. The path to these images is given in the file named a.html.

Non-persistent connection:

47.716820061 - 46.032421434 = 1.684398627

No.	Time	Source	Destination	Protocol	Length	Info
21	46.032421434	10.0.6.12	10.0.6.11	HTTP	402	GET /a.html HTTP/1.1
22	46.033794187	10.0.6.11	10.0.6.12	HTTP	595	HTTP/1.1 200 OK (text/html)
23	46.445960038	10.0.6.12	10.0.6.11	HTTP	356	GET /images/1_2mb.jpg HTTP/1.1
24	46.568791175	10.0.6.11	10.0.6.12	HTTP	6829	HTTP/1.1 200 OK (JPEG JFIF image)
25	46.584446785	10.0.6.12	10.0.6.11	HTTP	356	GET /images/2_2mb.jpg HTTP/1.1
26	46.727627804	10.0.6.11	10.0.6.12	HTTP	5160	HTTP/1.1 200 OK (JPEG JFIF image)
27	46.776955521	10.0.6.12	10.0.6.11	HTTP	356	GET /images/3_2mb.jpg HTTP/1.1
28	46.802787444	10.0.6.11	10.0.6.12	HTTP	62111	HTTP/1.1 200 OK (JPEG JFIF image)
29	46.840795578	10.0.6.12	10.0.6.11	HTTP	356	GET /images/4_2mb.jpg HTTP/1.1
30	46.964807246	10.0.6.11	10.0.6.12	HTTP	37064	HTTP/1.1 200 OK (JPEG JFIF image)
31	47.052423310	10.0.6.12	10.0.6.11	HTTP	356	GET /images/5_2mb.jpg HTTP/1.1
32	47.084773231	10.0.6.11	10.0.6.12	HTTP	34937	HTTP/1.1 200 OK (JPEG JFIF image)
33	47.118316632	10.0.6.12	10.0.6.11	HTTP	356	GET /images/6_2mb.jpg HTTP/1.1
34	47.172661104	10.0.6.11	10.0.6.12	HTTP	28470	HTTP/1.1 200 OK (JPEG JFIF image)
35	47.230612154	10.0.6.12	10.0.6.11	HTTP	356	GET /images/7_2mb.jpg HTTP/1.1
36	47.337533588	10.0.6.11	10.0.6.12	HTTP	27649	HTTP/1.1 200 OK (JPEG JFIF image)
37	47.429602015	10.0.6.12	10.0.6.11	HTTP	356	GET /images/8_2mb.jpg HTTP/1.1
38	47.472132942	10.0.6.11	10.0.6.12	HTTP	34695	HTTP/1.1 200 OK (JPEG JFIF image)
39	47.530170010	10.0.2.15	10.222.85.5	HTTP	143	GET / HTTP/1.1
40	47.538475821	10.0.6.12	10.0.6.11	HTTP	356	GET /images/9_2mb.jpg HTTP/1.1
41	47.576365249	10.0.6.11	10.0.6.12	HTTP	48876	HTTP/1.1 200 OK (JPEG JFIF image)
42	47.59149932	10.0.6.12	10.0.6.11	HTTP	357	GET /images/10_2mb.jpg HTTP/1.1
43	47.716820061	10.0.6.11	10.0.6.12	HTTP	9041	HTTP/1.1 200 OK (JPEG JFIF image)
44	47.811756360	10.0.2.15	10.2.2.15	HTTP	204	HTTP/1.1 204 No Content
45	47.954859410	10.0.6.12	10.0.6.11	HTTP	317	GET /favicon.ico HTTP/1.1
46	47.959602291	10.0.6.11	10.0.6.12	HTTP	519	HTTP/1.1 404 Not Found (text/html)

2 persistent connections:

1.258040623 - 0.000676122 = 1.257364501

*any

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000000000	10.0.0.11	10.0.0.11	HTTP	402	GET /a.html HTTP/1.1
5	0.001000010	10.0.0.11	10.0.0.12	HTTP	591	HTTP/1.1 200 OK (text/html)
6	0.047000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/1_2nd.jpg HTTP/1.1
7	0.050700010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/2_2nd.jpg HTTP/1.1
8	0.052800010	10.0.0.12	10.0.0.11	HTTP	1551	HTTP/1.1 200 OK (JPEG JFIF image)
9	0.050700010	10.0.0.12	10.0.0.11	HTTP	10993	HTTP/1.1 200 OK (JPEG JFIF image)
10	0.074700010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/3_2nd.jpg HTTP/1.1
11	0.075200010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/4_2nd.jpg HTTP/1.1
12	0.076100010	10.0.0.12	10.0.0.11	HTTP	34599	HTTP/1.1 200 OK (JPEG JFIF image)
13	0.076000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/5_2nd.jpg HTTP/1.1
14	0.076000010	10.0.0.12	10.0.0.11	HTTP	26145	HTTP/1.1 200 OK (JPEG JFIF image)
15	0.081700010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/6_2nd.jpg HTTP/1.1
16	0.081700010	10.0.0.12	10.0.0.11	HTTP	1715	HTTP/1.1 200 OK (JPEG JFIF image)
17	0.087500010	10.0.0.12	10.0.0.11	HTTP	41678	HTTP/1.1 200 OK (JPEG JFIF image)
18	0.092000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/7_2nd.jpg HTTP/1.1
19	0.092000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/8_2nd.jpg HTTP/1.1
20	0.092000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/9_2nd.jpg HTTP/1.1
21	0.092000010	10.0.0.12	10.0.0.11	HTTP	18712	HTTP/1.1 200 OK (JPEG JFIF image)
22	0.100000010	10.0.0.12	10.0.0.11	HTTP	356	GET /images/10_2nd.jpg HTTP/1.1
23	0.100000010	10.0.0.12	10.0.0.11	HTTP	357	GET /images/10_2nd.jpg HTTP/1.1
24	0.100000010	10.0.0.12	10.0.0.11	HTTP	24225	HTTP/1.1 200 OK (JPEG JFIF image)
25	0.100000010	10.0.0.12	10.0.0.11	HTTP	10763	HTTP/1.1 200 OK (JPEG JFIF image)
26	0.100000010	10.0.0.12	10.0.0.11	HTTP	317	GET /favicon.ico HTTP/1.1
27	0.100000010	10.0.0.12	10.0.0.11	HTTP	519	HTTP/1.1 404 Not Found (text/html)

Frame 4: 402 bytes on wire (3216 bits), 402 bytes captured (3216 bits) on interface any, id 0

- Linux cooked capture
- Internet Protocol Version 4, Src: 10.0.0.12, Dst: 10.0.0.11
- Transmission Control Protocol, Src Port: 57496, Dst Port: 80, Seq: 1, Ack: 1, Len: 334
- Hypertext Transfer Protocol

4 persistent connections:

1.174087127 - 0.000493221 = 1.173593906

*any

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000493221	10.0.0.11	10.0.0.11	HTTP	402	GET /a.html HTTP/1.1
5	0.000493221	10.0.0.11	10.0.0.12	HTTP	574	HTTP/1.1 200 OK (text/html)
6	0.001421336	10.0.0.12	10.0.0.11	HTTP	356	GET /images/1_2nd.jpg HTTP/1.1
7	0.011714506	10.0.0.12	10.0.0.11	HTTP	356	GET /images/2_2nd.jpg HTTP/1.1
8	0.026608522	10.0.0.12	10.0.0.11	HTTP	356	GET /images/4_2nd.jpg HTTP/1.1
9	0.026608522	10.0.0.12	10.0.0.11	HTTP	356	GET /images/5_2nd.jpg HTTP/1.1
10	0.026608522	10.0.0.12	10.0.0.11	HTTP	24025	HTTP/1.1 200 OK (JPEG JFIF image)
11	0.032348865	10.0.0.12	10.0.0.11	HTTP	854	HTTP/1.1 200 OK (JPEG JFIF image)
12	0.034078172	10.0.0.12	10.0.0.11	HTTP	12078	HTTP/1.1 200 OK (JPEG JFIF image)
13	0.032348865	10.0.0.12	10.0.0.11	HTTP	12821	HTTP/1.1 200 OK (JPEG JFIF image)
14	0.034078172	10.0.0.12	10.0.0.11	HTTP	356	GET /images/6_2nd.jpg HTTP/1.1
15	0.034078172	10.0.0.12	10.0.0.11	HTTP	356	GET /images/6_2nd.jpg HTTP/1.1
16	0.034078172	10.0.0.12	10.0.0.11	HTTP	356	GET /images/7_2nd.jpg HTTP/1.1
17	0.034078172	10.0.0.12	10.0.0.11	HTTP	8980	HTTP/1.1 200 OK (JPEG JFIF image)
18	0.034078172	10.0.0.12	10.0.0.11	HTTP	4030	HTTP/1.1 200 OK (JPEG JFIF image)
19	0.034078172	10.0.0.12	10.0.0.11	HTTP	10229	HTTP/1.1 200 OK (JPEG JFIF image)
20	0.034078172	10.0.0.12	10.0.0.11	HTTP	356	GET /images/8_2nd.jpg HTTP/1.1
21	0.034078172	10.0.0.12	10.0.0.11	HTTP	356	GET /images/9_2nd.jpg HTTP/1.1
22	0.034078172	10.0.0.12	10.0.0.11	HTTP	357	GET /images/10_2nd.jpg HTTP/1.1
23	0.034078172	10.0.0.12	10.0.0.11	HTTP	2746	HTTP/1.1 200 OK (JPEG JFIF image)
24	0.034078172	10.0.0.12	10.0.0.11	HTTP	353	HTTP/1.1 200 OK (JPEG JFIF image)
25	0.034078172	10.0.0.12	10.0.0.11	HTTP	1057	HTTP/1.1 200 OK (JPEG JFIF image)
26	0.034078172	10.0.0.12	10.0.0.11	HTTP	317	GET /favicon.ico HTTP/1.1
27	0.034078172	10.0.0.12	10.0.0.11	HTTP	554	HTTP/1.1 404 Not Found (text/html)

Frame 4: 402 bytes on wire (3216 bits), 402 bytes captured (3216 bits) on interface any, id 0

- Linux cooked capture
- Internet Protocol Version 4, Src: 10.0.0.12, Dst: 10.0.0.11
- Transmission Control Protocol, Src Port: 59448, Dst Port: 80, Seq: 1, Ack: 1, Len: 334
- Hypertext Transfer Protocol

6 persistent connections:

1.112436953 - 0.000547332 = 1.111889621

*any

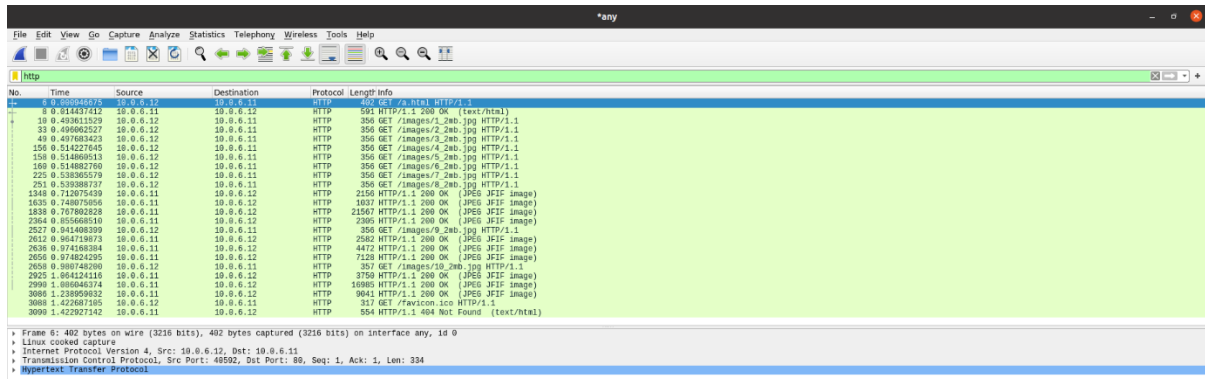
No.	Time	Source	Destination	Protocol	Length	Info
4	0.000547332	10.0.0.12	10.0.0.11	HTTP	402	GET /a.html HTTP/1.1
5	0.000547332	10.0.0.12	10.0.0.11	HTTP	574	HTTP/1.1 200 OK (text/html)
6	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/1_2nd.jpg HTTP/1.1
7	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/2_2nd.jpg HTTP/1.1
8	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/3_2nd.jpg HTTP/1.1
9	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/4_2nd.jpg HTTP/1.1
10	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/5_2nd.jpg HTTP/1.1
11	0.001420627	10.0.0.12	10.0.0.11	HTTP	6029	HTTP/1.1 200 OK (JPEG JFIF image)
12	0.001420627	10.0.0.12	10.0.0.11	HTTP	857	HTTP/1.1 200 OK (JPEG JFIF image)
13	0.001420627	10.0.0.12	10.0.0.11	HTTP	21567	HTTP/1.1 200 OK (JPEG JFIF image)
14	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/7_2nd.jpg HTTP/1.1
15	0.001420627	10.0.0.12	10.0.0.11	HTTP	1134	HTTP/1.1 200 OK (JPEG JFIF image)
16	0.001420627	10.0.0.12	10.0.0.11	HTTP	2302	HTTP/1.1 200 OK (JPEG JFIF image)
17	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/8_2nd.jpg HTTP/1.1
18	0.001420627	10.0.0.12	10.0.0.11	HTTP	356	GET /images/9_2nd.jpg HTTP/1.1
19	0.001420627	10.0.0.12	10.0.0.11	HTTP	1668	HTTP/1.1 200 OK (JPEG JFIF image)
20	0.001420627	10.0.0.12	10.0.0.11	HTTP	5885	HTTP/1.1 200 OK (JPEG JFIF image)
21	0.001420627	10.0.0.12	10.0.0.11	HTTP	357	GET /images/10_2nd.jpg HTTP/1.1
22	0.001420627	10.0.0.12	10.0.0.11	HTTP	2784	HTTP/1.1 200 OK (JPEG JFIF image)
23	0.001420627	10.0.0.12	10.0.0.11	HTTP	1780	HTTP/1.1 200 OK (JPEG JFIF image)
24	0.001420627	10.0.0.12	10.0.0.11	HTTP	29313	HTTP/1.1 200 OK (JPEG JFIF image)
25	0.001420627	10.0.0.12	10.0.0.11	HTTP	317	GET /favicon.ico HTTP/1.1
26	0.001420627	10.0.0.12	10.0.0.11	HTTP	554	HTTP/1.1 404 Not Found (text/html)

Frame 4: 402 bytes on wire (3216 bits), 402 bytes captured (3216 bits) on interface any, id 0

- Linux cooked capture
- Internet Protocol Version 4, Src: 10.0.0.12, Dst: 10.0.0.11
- Transmission Control Protocol, Src Port: 59474, Dst Port: 80, Seq: 1, Ack: 1, Len: 334
- Hypertext Transfer Protocol

8 persistent connections:

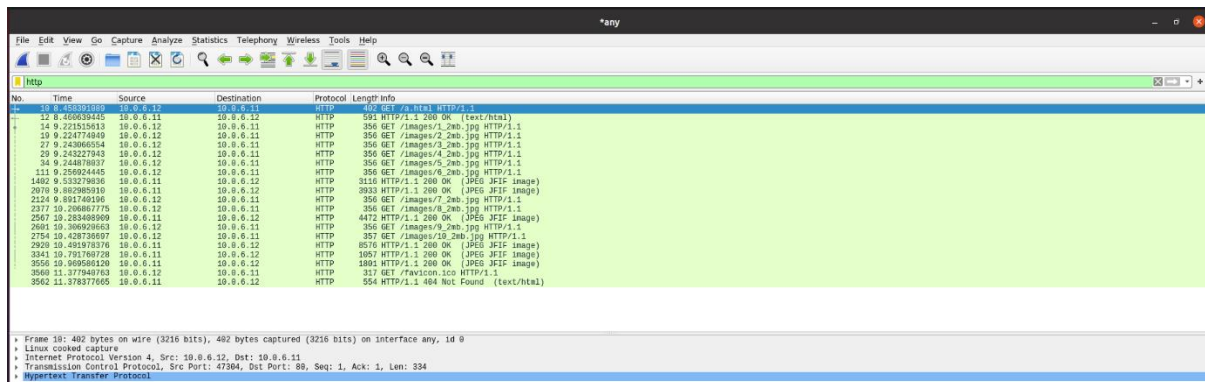
1.238959032-0.000946675 = 1.237065682



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.0.0.12	10.0.6.11	HTTP	402	GET /a.html HTTP/1.1
2	0.000000	10.0.6.11	10.0.6.12	HTTP	554	HTTP/1.1 200 OK (text/html)
3	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/1_240.jpg HTTP/1.1
4	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/2_240.jpg HTTP/1.1
5	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/3_240.jpg HTTP/1.1
6	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/4_240.jpg HTTP/1.1
7	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/5_240.jpg HTTP/1.1
8	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/6_240.jpg HTTP/1.1
9	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/7_240.jpg HTTP/1.1
10	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/8_240.jpg HTTP/1.1
11	0.000000	10.0.6.12	10.0.6.11	HTTP	2156	HTTP/1.1 200 OK (JPEG JFIF image)
12	0.000000	10.0.6.12	10.0.6.11	HTTP	1037	HTTP/1.1 200 OK (JPEG JFIF image)
13	0.000000	10.0.6.12	10.0.6.11	HTTP	21567	HTTP/1.1 200 OK (JPEG JFIF image)
14	0.000000	10.0.6.12	10.0.6.11	HTTP	2385	HTTP/1.1 200 OK (JPEG JFIF image)
15	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/9_240.jpg HTTP/1.1
16	0.000000	10.0.6.12	10.0.6.11	HTTP	2562	HTTP/1.1 200 OK (JPEG JFIF image)
17	0.000000	10.0.6.12	10.0.6.11	HTTP	4472	HTTP/1.1 200 OK (JPEG JFIF image)
18	0.000000	10.0.6.12	10.0.6.11	HTTP	7128	HTTP/1.1 200 OK (JPEG JFIF image)
19	0.000000	10.0.6.12	10.0.6.11	HTTP	357	GET /images/10_240.jpg HTTP/1.1
20	0.000000	10.0.6.12	10.0.6.11	HTTP	3759	HTTP/1.1 200 OK (JPEG JFIF image)
21	0.000000	10.0.6.12	10.0.6.11	HTTP	16985	HTTP/1.1 200 OK (JPEG JFIF image)
22	0.000000	10.0.6.12	10.0.6.11	HTTP	9641	HTTP/1.1 200 OK (JPEG JFIF image)
23	0.000000	10.0.6.12	10.0.6.11	HTTP	317	GET /favicon.ico HTTP/1.1
24	0.000000	10.0.6.12	10.0.6.11	HTTP	554	HTTP/1.1 404 Not Found (text/html)

10 persistent connections:

10.969586120-8.458391089 = 2.511195031



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.0.0.12	10.0.6.11	HTTP	402	GET /a.html HTTP/1.1
2	0.000000	10.0.6.11	10.0.6.12	HTTP	554	HTTP/1.1 200 OK (text/html)
3	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/1_240.jpg HTTP/1.1
4	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/2_240.jpg HTTP/1.1
5	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/3_240.jpg HTTP/1.1
6	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/4_240.jpg HTTP/1.1
7	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/5_240.jpg HTTP/1.1
8	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/6_240.jpg HTTP/1.1
9	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/7_240.jpg HTTP/1.1
10	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/8_240.jpg HTTP/1.1
11	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/9_240.jpg HTTP/1.1
12	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/10_240.jpg HTTP/1.1
13	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/11_240.jpg HTTP/1.1
14	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/12_240.jpg HTTP/1.1
15	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/13_240.jpg HTTP/1.1
16	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/14_240.jpg HTTP/1.1
17	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/15_240.jpg HTTP/1.1
18	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/16_240.jpg HTTP/1.1
19	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/17_240.jpg HTTP/1.1
20	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/18_240.jpg HTTP/1.1
21	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/19_240.jpg HTTP/1.1
22	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/20_240.jpg HTTP/1.1
23	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/21_240.jpg HTTP/1.1
24	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/22_240.jpg HTTP/1.1
25	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/23_240.jpg HTTP/1.1
26	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/24_240.jpg HTTP/1.1
27	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/25_240.jpg HTTP/1.1
28	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/26_240.jpg HTTP/1.1
29	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/27_240.jpg HTTP/1.1
30	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/28_240.jpg HTTP/1.1
31	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/29_240.jpg HTTP/1.1
32	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/30_240.jpg HTTP/1.1
33	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/31_240.jpg HTTP/1.1
34	0.000000	10.0.6.12	10.0.6.11	HTTP	356	GET /images/32_240.jpg HTTP/1.1

Observations:

No. of persistent connections	Time taken to display entire page
0	1.684398627
2	1.257364501
4	1.173593906
6	1.111889621
8	1.237065682
10	2.511195031

So, we notice that the time taken decreases up to 6 persistent connections and increases beyond that. 6 is the optimal number of persistent connections.

In its simplest implementation, a HTTP client creates a new TCP connection to the destination server, writes the request, and receives the response. The server then closes the TCP connection to release resources. Creating a new TCP connection requires a 'three-way handshake', and tearing it down also involves a two-way shutdown procedure. Repeatedly creating and closing TCP connections, one for each message, is inefficient. Using keepalive connections to hold open the TCP connection between the client and the server after a HTTP transaction has completed so that if the client needs to conduct another HTTP transaction, reduces the latency, as we notice up to 6 persistent connections.

However, after 6 persistent connections, the time increases. This could be because the size of each connection reduces and thus the throughput as well reduces. The number of optimal persistent connections is based on a collection of trade-offs: the higher the limit, the higher the client and server overhead, but at the additional benefit of higher request parallelism. Six connections per host is simply a safe middle ground.