

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАВЧАЛЬНО-НАУКОВИЙ КОМПЛЕКС
«ІНСТИТУТ ПРИКЛАДНОГО СИСТЕМНОГО АНАЛІЗУ»
НАЦІОНАЛЬНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ УКРАЇНИ
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ ІМЕНІ ІГОРЯ СІКОРСЬКОГО»
КАФЕДРА МАТЕМАТИЧНИХ МЕТОДІВ СИСТЕМНОГО АНАЛІЗУ**

**Практична робота №2
з курсу «Комп'ютерні мережі»**

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lab2_request

No.	Time	Source	Destination	Protocol	Length	Info
39	9.603688	192.168.8.101	128.119.245.12	HTTP	465	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1

Frame 39: 465 bytes on wire (3720 bits), 465 bytes captured (3720 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)
Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 43886, Dst Port: 80, Seq: 1, Ack: 1, Len: 399
Hypertext Transfer Protocol
GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file1.html
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
[HTTP request 1/2]
[Response in frame: 41]
[Next request in frame: 42]

lab2_response

No.	Time	Source	Destination	Protocol	Length	Info
41	9.750065	128.119.245.12	192.168.8.101	HTTP	552	HTTP/1.1 200 OK (text/html)

Frame 41: 552 bytes on wire (4416 bits), 552 bytes captured (4416 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 43886, Seq: 1, Ack: 400, Len: 486
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Fri, 03 Apr 2020 11:21:53 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Fri, 03 Apr 2020 05:59:03 GMT\r\n
ETag: "80-5a25c9d4dfa88"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 128\r\n
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=UTF-8\r\n
\r\n

```

[HTTP response 1/2]
[Time since request: 0.146377000 seconds]
[Request in frame: 39]
[Next request in frame: 42]
[Next response in frame: 44]
[Request URI: http://gaia.cs.umass.edu/favicon.ico]
File Data: 128 bytes
Line-based text data: text/html (4 lines)
<html>\n
Congratulations. You've downloaded the file \n
http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html!\n
</html>\n

```

Контрольні запитання:

- Яку версію протоколу HTTP використовує ваш браузер (1.0 чи 1.1)?
1.1 (GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1)
 Яку версію протоколу використовує сервер?
1.1 (HTTP/1.1 200 OK (text/html))
- Які мови (якщо вказано) браузер може прийняти від сервера?
Російська, Американська англійська
 (Accept-Language: ru-RU;ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n)
- Які IP-адреси вашого комп'ютера та цільового веб-сервера?
192.168.8.101, 128.119.245.12
- Який статусний код сервер повернув у відповіді вашому браузеру?
200
- Коли на сервері в останній раз був модифікований файл, який запитується браузером?
Last-Modified: Fri, 03 Apr 2020 05:59:03 GMT
- Скільки байт контенту повертається сервером?
128
- Переглядаючи нерозібраний байтовий потік пакету, чи бачите ви деякі заголовки в потоці, які не відображаються у вікні деталей пакету? Якщо так, назвіть один з них.
 -

Повторний запит

lab2_re-request

No.	Time	Source	Destination	Protocol	Length	Info
10	0.131507	192.168.8.101	128.119.245.12	HTTP	576	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1

Frame 10: 576 bytes on wire (4608 bits), 576 bytes captured (4608 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
 Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)
 Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
 Transmission Control Protocol, Src Port: 43891, Dst Port: 80, Seq: 1, Ack: 1, Len: 510
 Hypertext Transfer Protocol
 GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n
 [Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n]
 Request Method: GET
 Request URI: /wireshark-labs/HTTP-wireshark-file1.html
 Request Version: HTTP/1.1
 Host: gaia.cs.umass.edu\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
If-Modified-Since: Fri, 03 Apr 2020 05:59:03 GMT\r\n
If-None-Match: "80-5a25c9d4dfa88"\r\n
Cache-Control: max-age=0\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
[HTTP request 1/1]
[Response in frame: 12]

lab2_re-response

No.	Time	Source	Destination	Protocol	Length	Info
12	0.279149	128.119.245.12	192.168.8.101	HTTP	305	HTTP/1.1 304 Not Modified

Frame 12: 305 bytes on wire (2440 bits), 305 bytes captured (2440 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 43891, Seq: 1, Ack: 511, Len: 239
Hypertext Transfer Protocol
HTTP/1.1 304 Not Modified\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n
Response Version: HTTP/1.1
Status Code: 304
[Status Code Description: Not Modified]
Response Phrase: Not Modified
Date: Fri, 03 Apr 2020 11:22:23 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Connection: Keep-Alive\r\n
Keep-Alive: timeout=5, max=100\r\n
ETag: "80-5a25c9d4dfa88"\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.147642000 seconds]
[Request in frame: 10]
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]

8. Перевірте вміст першого запиту HTTP GET від вашого браузера до сервера. Чи є в ньому заголовок IF-MODIFIED-SINCE?

Ні

9. Перевірте вміст першої відповіді сервера. Чи повернув сервер вміст файлу безпосередньо у відповіді?

Так

10. Перевірте вміст другого запиту HTTP GET. Чи є в ньому заголовок IF-MODIFIED-SINCE?

Якщо так, яке значення йому відповідає?

If-Modified-Since: Fri, 03 Apr 2020 05:59:03 GMT\r\n

11. Який код та опис статусу другої відповіді сервера? Чи повернув сервер вміст файлу безпосередньо у відповіді?

304 Not Modified, ni.

lab2_image_request

No.	Time	Source	Destination	Protocol	Length	Info
4	0.078680	192.168.8.101	193.109.246.67	HTTP	443	GET /foto/edin_inform.jpg HTTP/1.1

Frame 4: 443 bytes on wire (3544 bits), 443 bytes captured (3544 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)
Internet Protocol Version 4, Src: 192.168.8.101, Dst: 193.109.246.67
Transmission Control Protocol, Src Port: 43994, Dst Port: 80, Seq: 1, Ack: 1, Len: 377
Hypertext Transfer Protocol
GET /foto/edin_inform.jpg HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /foto/edin_inform.jpg HTTP/1.1\r\n]
Request Method: GET
Request URI: /foto/edin_inform.jpg
Request Version: HTTP/1.1
Host: tinkova.ucoz.ru\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
\r\n
[Full request URI: http://tinkova.ucoz.ru/foto/edin_inform.jpg]
[HTTP request 1/2]
[Response in frame: 396]
[Next request in frame: 398]

lab2_image_response

No.	Time	Source	Destination	Protocol	Length	Info
396	0.824631	193.109.246.67	192.168.8.101	HTTP	648	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 396: 648 bytes on wire (5184 bits), 648 bytes captured (5184 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 193.109.246.67, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 43994, Seq: 409829, Ack: 378, Len: 582
[297 Reassembled TCP Segments (410410 bytes): #6(368), #7(1388), #9(1388), #10(1388), #11(1388), #12(1388), #14(1388), #15(1388), #16(1388), #17(1388), #19(1388), #20(1388), #22(1388), #23(1388), #24(1388), #26(1388), #27(1388), #28(1388),]
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Server: nginx/1.8.0\r\n
Date: Fri, 03 Apr 2020 12:42:04 GMT\r\n
Content-Type: image/jpeg\r\n
Content-Length: 410042\r\n

Last-Modified: Wed, 12 Dec 2012 13:27:37 GMT\r\n
Connection: keep-alive\r\n
Keep-Alive: timeout=15\r\n
ETag: "50c88649-641ba"\r\n
Expires: Thu, 23 Apr 2020 12:42:04 GMT\r\n
Cache-Control: max-age=1728000\r\n
X-Frame-Options: SAMEORIGIN\r\n
Accept-Ranges: bytes\r\n
\r\n
[HTTP response 1/2]
[Time since request: 0.745951000 seconds]
[Request in frame: 4]
[Next request in frame: 398]
[Next response in frame: 401]
[Request URI: http://tinkova.ucoz.ru/favicon.ico]
File Data: 410042 bytes
JPEG File Interchange Format

12. Скільки повідомлень HTTP GET було відправлено вашим браузером?

Одне

13. Скільки пакетів TCP було необхідно для доставки одної відповіді HTTP-сервера?

297

14. Який код та опис статусу був у відповіді сервера?

200 OK

15. Чи зустрічаються у даних пакетів-продовжень протоколу TCP стрічки з кодом та описом статусу відповіді, або ж якісь заголовки протоколу HTTP

Так, таким чином починається перший пакет протоколу TCP.

final.pdf

No.	Time	Source	Destination	Protocol	Length	Info
61	6.950214	192.168.8.101	128.119.245.12	HTTP	465	GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1

Frame 61: 465 bytes on wire (3720 bits), 465 bytes captured (3720 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)
Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 44025, Dst Port: 80, Seq: 1, Ack: 1, Len: 399
Hypertext Transfer Protocol
GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file4.html
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
\r\n

[Full request URI: <http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html>]
[HTTP request 1/3]
[Response in frame: 63]
[Next request in frame: 64]

No.	Time	Source	Destination	Protocol	Length	Info
63	7.092268	128.119.245.12	192.168.8.101	HTTP	1139	HTTP/1.1 200 OK (text/html)

Frame 63: 1139 bytes on wire (9112 bits), 1139 bytes captured (9112 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 44025, Seq: 1, Ack: 400, Len: 1073
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Fri, 03 Apr 2020 13:06:43 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Fri, 03 Apr 2020 05:59:03 GMT\r\n
ETag: "2ca-5a25c9d4ca2c6"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 714\r\n
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=UTF-8\r\n
\r\n
[HTTP response 1/3]
[Time since request: 0.142054000 seconds]
[Request in frame: 61]
[Next request in frame: 64]
[Next response in frame: 69]
[Request URI: <http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html>] File Data: 714 bytes
Line-based text data: text/html (17 lines)

No.	Time	Source	Destination	Protocol	Length	Info
64	7.112832	192.168.8.101	128.119.245.12	HTTP	422	GET /pearson.png HTTP/1.1

Frame 64: 422 bytes on wire (3376 bits), 422 bytes captured (3376 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)
Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 44025, Dst Port: 80, Seq: 400, Ack: 1074, Len: 356
Hypertext Transfer Protocol
GET /pearson.png HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /pearson.png HTTP/1.1\r\n]
Request Method: GET
Request URI: /pearson.png
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: image/webp,*/*\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n \r\n
[Full request URI: http://gaia.cs.umass.edu/pearson.png]
[HTTP request 2/3]
[Prev request in frame: 61]
[Response in frame: 69]
[Next request in frame: 71]

No.	Time	Source	Destination	Protocol	Length	Info
69	7.255829	128.119.245.12	192.168.8.101	HTTP	901	HTTP/1.1 200 OK (PNG)

Frame 69: 901 bytes on wire (7208 bits), 901 bytes captured (7208 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 44025, Seq: 3850, Ack: 756, Len: 835
[3 Reassembled TCP Segments (3611 bytes): #67(1388), #68(1388), #69(835)]
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Fri, 03 Apr 2020 13:06:43 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Sat, 06 Aug 2016 10:08:14 GMT\r\n
ETag: "cc3-539645c7flee7"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 3267\r\n
Keep-Alive: timeout=5, max=99\r\n
Connection: Keep-Alive\r\n
Content-Type: image/png\r\n
\r\n
[HTTP response 2/3]
[Time since request: 0.142997000 seconds]
[Prev request in frame: 61]
[Prev response in frame: 63]
[Request in frame: 64]
[Next request in frame: 71]
[Next response in frame: 78]
[Request URI: http://gaia.cs.umass.edu/pearson.png]
File Data: 3267 bytes
Portable Network Graphics

No.	Time	Source	Destination	Protocol	Length	Info
71	7.352414	192.168.8.101	128.119.245.12	HTTP	346	GET /favicon.ico HTTP/1.1

Frame 71: 346 bytes on wire (2768 bits), 346 bytes captured (2768 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)

Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 44025, Dst Port: 80, Seq: 756, Ack: 4685, Len: 280
Hypertext Transfer Protocol
GET /favicon.ico HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /favicon.ico HTTP/1.1\r\n]
Request Method: GET
Request URI: /favicon.ico
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: image/webp, */*\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/favicon.ico]
[HTTP request 3/3]
[Prev request in frame: 64]
[Response in frame: 78]

No.	Time	Source	Destination	Protocol	Length	Info
77	7.496176	192.168.8.101	128.119.245.12	HTTP	436	GET /~kurose/cover_5th_ed.jpg HTTP/1.1

Frame 77: 436 bytes on wire (3488 bits), 436 bytes captured (3488 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0 Ethernet II, Src: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb), Dst: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26)

Internet Protocol Version 4, Src: 192.168.8.101, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 44028, Dst Port: 80, Seq: 1, Ack: 1, Len: 370
Hypertext Transfer Protocol

GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n]
Request Method: GET
Request URI: /~kurose/cover_5th_ed.jpg
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n
Accept: image/webp, */*\r\n
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.5,en;q=0.3\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: keep-alive\r\n
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n \r\n
[Full request URI: http://manic.cs.umass.edu/~kurose/cover_5th_ed.jpg]
[HTTP request 1/1]
[Response in frame: 173]

No.	Time	Source	Destination	Protocol	Length	Info
78	7.496639	128.119.245.12	192.168.8.101	HTTP	550	HTTP/1.1 404 Not Found (text/html)

Frame 78: 550 bytes on wire (4400 bits), 550 bytes captured (4400 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0

Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)

Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 44025, Seq: 4685, Ack: 1036, Len: 484
Hypertext Transfer Protocol

HTTP/1.1 404 Not Found\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 404 Not Found\r\n]
Response Version: HTTP/1.1
Status Code: 404
[Status Code Description: Not Found]
Response Phrase: Not Found
Date: Fri, 03 Apr 2020 13:06:44 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Content-Length: 209\r\n
Keep-Alive: timeout=5, max=98\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=iso-8859-1\r\n
\r\n
[HTTP response 3/3]
[Time since request: 0.144225000 seconds]
[Prev request in frame: 64]
[Prev response in frame: 69]
[Request in frame: 71]
[Request URI: http://gaia.cs.umass.edu/favicon.ico]
File Data: 209 bytes
Line-based text data: text/html (7 lines)

No.	Time	Source	Destination	Protocol	Length	Info
173	8.067318	128.119.245.12	192.168.8.101	HTTP	1448	HTTP/1.1 200 OK (JPEG JFIF image)

Frame 173: 1448 bytes on wire (11584 bits), 1448 bytes captured (11584 bits) on interface \Device\NPF_{5AE84093-EF24-46FA-B051-D503C3E8D1AB}, id 0
Ethernet II, Src: HuaweiTe_cb:fe:26 (1c:15:1f:cb:fe:26), Dst: IntelCor_c7:13:bb (e4:b3:18:c7:13:bb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.8.101
Transmission Control Protocol, Src Port: 80, Dst Port: 44028, Seq: 99937, Ack: 371, Len: 1382
[73 Reassembled TCP Segments (101318 bytes): #81(1388), #82(1388), #83(1388), #84(1388), #86(1388), #87(1388), #88(1388), #90(1388), #92(1388), #93(1388), #95(1388), #96(1388), #97(1388), #98(1388), #100(1388), #101(1388), #102(1388), #103(1388)]
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Fri, 03 Apr 2020 13:06:44 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Tue, 15 Sep 2009 18:23:27 GMT\r\n
ETag: "18a68-473a1e0e6e5c0"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 100968\r\n
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: image/jpeg\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.571142000 seconds]

[Request in frame: 77]
[Request URI: http://manic.cs.umass.edu/~kurose/cover_5th_ed.jpg]
File Data: 100968 bytes
JPEG File Interchange Format

16. Скільки запитів HTTP GET було відправлено вашим браузером? Якими були цільові IP-адреси запитів?

4 запити

128.119.245.12

128.119.245.12

128.119.245.12

128.119.245.12

17. Чи можете ви встановити, чи були ресурси отримані паралельно чи послідовно? Яким чином?

Послідовно, за часом надходження відповідей та адресами.

Висновки: виконуючи роботу, я ознайомився з деталями роботи з протоколом HTML.