«ІНСТИТУТ ПРИКЛАДНОГО СИСТЕМНОГО АНАЛІЗУ»

НАЦІОНАЛЬНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ УКРАЇНИ «КПІ»

КАФЕДРА МАТЕМАТИЧНИХ МЕТОДІВ СИСТЕМНОГО АНАЛІЗУ

Лабораторна робота №2

з курсу «Комп'ютерні мережі»

на тему: «Протокол HTTP»

Виконала: студентка 3 курсу

групи КА-74

Лященко К. С.

Прийняв: Кухарєв С. О.

Київ – 2020

Запит:

No. Time Source Destination Protocol Length Info 278 16.711598 172.20.10.2 128.119.245.12 HTTP 465 GET /
wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
Frame 278: 465 bytes on wire (3720 bits), 465 bytes captured (3720 bits) on interface en0, id 0 Ethernet II,
Src: Apple_78:53:31 (f0:18:98:78:53:31), Dst: 62:83:73:40:a9:64 (62:83:73:40:a9:64) Internet Protocol
Version 4, Src: 172.20.10.2, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 55695, 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]
[GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n] [Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file1.html Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
Upgrade-Insecure-Requests: 1\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_3) AppleWebKit/605.1.15 (KHTML,
like Gecko) Version/13.0.5 Safari/605.1.15\r\n Accept-Language: uk-ua\r\n Accept-Encoding: gzip,
deflate\r\n Connection: keep-alive\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: 280]

Відповідь:

No. Time Source Destination Protocol Length Info
280 16.864364 128.119.245.12 172.20.10.2 HTTP 552 HTTP/1.1 200
OK (text/html)
Frame 280: 552 bytes on wire (4416 bits), 552 bytes captured (4416 bits) on interface en0, id 0 Ethernet II,
Src: 62:83:73:40:a9:64 (62:83:73:40:a9:64), Dst: Apple_78:53:31 (f0:18:98:78:53:31) Internet Protocol
Version 4, Src: 128.119.245.12, Dst: 172.20.10.2
Transmission Control Protocol, Src Port: 80, Dst Port: 55695, 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]
[HTTP/1.1 200 OK\r\n] [Severity level: Chat] [Group: Sequence]
Response Version: HTTP/1.1 Status Code: 200
[Status Code Description: OK] Response Phrase: OK
    Date: Wed, 11 Mar 2020 09:11:46 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: Wed, 11 Mar 2020 05:59:01 GMT\r\n ETag: "80-5a08deed6bfee"\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 1/1]
[Time since request: 0.152766000 seconds]
[Request in frame: 278]
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html] 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

Запит:

No. Time Source Destination Protocol Length Info 323 114.955373 172.20.10.2 128.119.245.12 HTTP 465 GET /
wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
Frame 323: 465 bytes on wire (3720 bits), 465 bytes captured (3720 bits) on interface en0, id 0 Ethernet II,
Src: Apple_78:53:31 (f0:18:98:78:53:31), Dst: 62:83:73:40:a9:64 (62:83:73:40:a9:64) Internet Protocol
Version 4, Src: 172.20.10.2, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 55900, 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]
[GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n] [Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file1.html Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
Upgrade-Insecure-Requests: 1\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_3) AppleWebKit/605.1.15 (KHTML,
like Gecko) Version/13.0.5 Safari/605.1.15\r\n Accept-Language: uk-ua\r\n Accept-Encoding: gzip,
deflate\r\n Connection: keep-alive\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: 325]

Відповідь:

No. Time Source Destination Protocol Length Info
325 115.246315 128.119.245.12 172.20.10.2 HTTP 552 HTTP/1.1 200
OK (text/html)
Frame 325: 552 bytes on wire (4416 bits), 552 bytes captured (4416 bits) on interface en0, id 0 Ethernet II,
Src: 62:83:73:40:a9:64 (62:83:73:40:a9:64), Dst: Apple_78:53:31 (f0:18:98:78:53:31) Internet Protocol
Version 4, Src: 128.119.245.12, Dst: 172.20.10.2
Transmission Control Protocol, Src Port: 80, Dst Port: 55900, 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]
[HTTP/1.1 200 OK\r\n] [Severity level: Chat] [Group: Sequence]
Response Version: HTTP/1.1 Status Code: 200
[Status Code Description: OK] Response Phrase: OK
    Date: Wed, 11 Mar 2020 09:32:58 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: Wed, 11 Mar 2020 05:59:01 GMT\r\n ETag: "80-5a08deed6bfee"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 128\r\n
[Content length: 128]
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 1/1]
[Time since request: 0.290942000 seconds]
[Request in frame: 323]
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html] 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

15.

No. Time Source Destination Protocol Length Info
167 14.826803 172.20.10.2 66.6.101.171 HTTP 481 GET /dyn/
str_strip/000000000/00000000/0000000/000000/70000/3000 HTTP/1.1
Frame 167: 481 bytes on wire (3848 bits), 481 bytes captured (3848 bits) on interface en0, id 0 Ethernet II,
Src: Apple_78:53:31 (f0:18:98:78:53:31), Dst: 62:83:73:40:a9:64 (62:83:73:40:a9:64) Internet Protocol
Version 4, Src: 172.20.10.2, Dst: 66.6.101.171
Transmission Control Protocol, Src Port: 55943, Dst Port: 80, Seq: 1, Ack: 1, Len: 415
   Source Port: 55943
   Destination Port: 80
   [Stream index: 6]
   [TCP Segment Len: 415]
   Sequence number: 1 (relative sequence number)
   Sequence number (raw): 2114700274
[Next sequence number: 416 (relative sequence number)] Acknowledgment number: 1 (relative ack
number)
Acknowledgment number (raw): 1926260372
1000 .... = Header Length: 32 bytes (8)
Flags: 0x018 (PSH, ACK)
Window size value: 65535
[Calculated window size: 65535]
[Window size scaling factor: -2 (no window scaling used)]
Checksum: 0x8b94 [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
Options: (12 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps [SEQ/ACK
analysis] [Timestamps]
TCP payload (415 bytes)

19.

No.	Time	Source	Destination	Protocol	Length	Info
433	5.849305	172.20.10.2	128.119.245.12	HTTP	465	GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1
438	6.013074	128.119.245.12	172.20.10.2	HTTP	1139	HTTP/1.1 200 OK (text/html)
440	6.022043	172.20.10.2	128.119.245.12	HTTP	480	GET /pearson.png HTTP/1.1
468	6.181329	128.119.245.12	172.20.10.2	HTTP	901	HTTP/1.1 200 OK (PNG)
474	6.211735	172.20.10.2	128.119.245.12	HTTP	494	GET /~kurose/cover_5th_ed.jpg HTTP/1.1
615	7.029706	128.119.245.12	172.20.10.2	HTTP	1448	HTTP/1.1 200 OK (JPEG JFIF image)
620	7.204789	172.20.10.2	128.119.245.12	HTTP	422	GET /favicon.ico HTTP/1.1
622	7.381276	128.119.245.12	172.20.10.2	HTTP	551	HTTP/1.1 404 Not Found (text/html)

Контрольні запитання

1. 1.1, 1.1
2. uk-ua
3. Комп'ютера: 172.20.10.2, Веб-сервера: 128.119.245.12
4. 200 OK
5. Wed, 11 Mar 2020 05:59:01 GMT
6. 128
7. Всі відображаються
8. Немає
9. Так. Congratulations. You've downloaded the file \n
10. Hi
11. Congratulations. You've downloaded the file \n
12. 7
13. No. Time Source Destination Protocol Length Info
    167 14.826803 172.20.10.2 66.6.101.171 HTTP 481 GET /dyn/
    str_strip/000000000/00000000/0000000/000000/70000/3000 HTTP/1.1 Frame 167: 481 bytes on wire (3848
    bits), 481 bytes captured (3848 bits) on interface en0, id 0 Ethernet II, Src: Apple_78:53:31
    (f0:18:98:78:53:31), Dst: 62:83:73:40:a9:64 (62:83:73:40:a9:64) Internet Protocol Version 4, Src:
    172.20.10.2, Dst: 66.6.101.171
    Transmission Control Protocol, Src Port: 55943, Dst Port: 80, Seq: 1, Ack: 1,
    Len: 415

    Source Port: 55943
    Destination Port: 80
    [Stream index: 6]
    [TCP Segment Len: 415]
    Sequence number: 1   (relative sequence number)
    Sequence number (raw): 2114700274

    [Next sequence number: 416 (relative sequence number)] Acknowledgment
    number: 1 (relative ack number) Acknowledgment number (raw): 1926260372
    1000 .... = Header Length: 32 bytes (8)

    Flags: 0x018 (PSH, ACK)
    Window size value: 65535
    [Calculated window size: 65535]
    [Window size scaling factor: -2 (no window scaling used)]
    Checksum: 0x8b94 [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
    Options: (12 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps [SEQ/ACK analysis]
    [Timestamps]
    TCP payload (415 bytes)

14. HTTP/1.1 301 Moved Permanently
15. Не зустрічаються
16. 4 запити
    Цільова адреса: 128.119.245.12
17. Вони були отримані послідовно, це ми можемо встановити за часом,
    коли вони були отримані.

Висновок: У ході виконання даної лабораторної роботи було покращено навички використання програми Wireshark для захоплення пакетів. Було проаналізовано протоколи HTTP та було проведено аналіз деталей роботи даних протоколів.