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«Київський політехнічний інститут
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Навчально-науковий комплекс
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Лабораторна робота №2
з дисципліни: “Комп’ютерні мережі ”

Виконала: студентка III курсу
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Пакети для відповідей 1-7 та 8-11:

No.	Time	Source	Destination	Protocol	Length	Info
739	8.917047	192.168.0.102	128.119.245.12	HTTP	453	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1

Frame 739: 453 bytes on wire (3624 bits), 435 bytes captured (3624 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102 (192.168.0.102), Dst: 128.119.245.12 (128.119.245.12)

Transmission Control Protocol, Src Port: 5520 (5520), Dst Port: http (80), Seq: 1, Ack: 1, Len: 399

Hypertext Transfer Protocol

GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n

Host: gaia.cs.umass.edu\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) Gecko/20100101 Firefox/45.0\r\n

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

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: 748]

No.	Time	Source	Destination	Protocol	Length	Info
748	9.038187	128.119.245.12	192.168.1.245	HTTP	540	HTTP/1.1 200 OK (text/html)

Frame 748: 540 bytes on wire (4320 bits), 540 bytes captured (4320 bits) on interface 0

Ethernet II, Src: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)

Internet Protocol Version 4, Src: 128.119.245.12 (128.119.245.12), Dst: 192.168.0.102 (192.168.0.102)

Transmission Control Protocol, Src Port: http (80), Dst Port: 5520 (5520), Seq: 1, Ack: 400, Len: 486

Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

Date: Sun, 08 Mar 2020 21:17:11 GMT\r\n

Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n

Last-Modified: Sun, 08 Mar 2020 06:59:03 GMT\r\n

ETag: "80-5a0526c077876"\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: 0.121140000 seconds]

[Request in frame: 739]

Line-based text data: text/html

<html>\n

Congratulations. You've downloaded the file \n

<http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html>!\n

</html>\n

No.	Time	Source	Destination	Protocol	Length	Info
754	9.107576	192.168.0.102	128.119.245.12	HTTP	334	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1

Frame 754: 334 bytes on wire (2672 bits), 334 bytes captured (2672 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99) , Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102 (192.168.0.102), Dst: 128.119.245.12 (128.119.245.12)

Transmission Control Protocol, Src Port: 5521 (5521), Dst Port: http (80), Seq: 1, Ack: 1, Len: 280

Hypertext Transfer Protocol

GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1\r\n

Host: gaia.cs.umass.edu\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) Gecko/20100101 Firefox/45.0\r\n

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

Accept-Encoding: gzip, deflate\r\n

Connection: keep-alive\r\n

Last-Modified: Sun, 08 Mar 2020 06:59:03 GMT\r\n

ETag: "80-5a0526c077876"\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: 762]

No.	Time	Source	Destination	Protocol	Length	Info
762	9.224545	128.119.245.12	192.168.0.102	HTTP	539	HTTP/1.1 304 Not Modified

Frame 762: 539 bytes on wire (4312 bits), 539 bytes captured (4312 bits) on interface 0

Ethernet II, Src: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)

Internet Protocol Version 4, Src: 128.119.245.12 (128.119.245.12), Dst: 192.168.0.102 (192.168.0.102)

Transmission Control Protocol, Src Port: http (80), Dst Port: 5521 (5521), Seq: 1, Ack: 281, Len: 485

Hypertext Transfer Protocol

HTTP/1.1 304 Not Modified\r\n

Date: Sun, 08 Mar 2020 21:17:11 GMT\r\n

Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n

Connection: Keep-Alive\r\n

Keep-Alive: timeout=5, max=100\r\n

ETag: "80-5a0526c077876"\r\n

\r\n

[HTTP response 1/1]

[Time since request: 0.116969000 seconds]

[Request in frame: 754]

Пакети для відповідей 12-15:

No.	Time	Source	Destination	Protocol	Length	Info
535	17.445530	192.168.0.102	178.18.231.115	HTTP	373	GET /success.txt HTTP/1.1

Frame 535: 373 bytes on wire (2984 bits), 373 bytes captured (2984 bits) on interface 0
Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)
Internet Protocol Version 4, Src: 192.168.0.102 (192.168.0.102), Dst: 178.18.231.115 (178.18.231.115)
Transmission Control Protocol, Src Port: 1141 (1141), Dst Port: http (80), Seq: 1, Ack: 1, Len: 319
Hypertext Transfer Protocol

GET /success.txt HTTP/1.1\r\n

[Expert Info (Chat/Sequence): GET /success.txt HTTP/1.1\r\n]

[Message: GET /success.txt HTTP/1.1\r\n]

[Severity level: Chat]

[Group: Sequence]

Request Method: GET

Request URI: /success.txt

Request Version: HTTP/1.1

Host: detectportal.firefox.com\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:73.0) Gecko/20100101 Firefox/73.0\r\n

Accept: */*\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

Accept-Encoding: gzip, deflate\r\n

Connection: keep-alive\r\n

\r\n

[Full request URI: http://www.detectportal.firefox.com/success.txt]

[HTTP request 1/1]

[Response in frame: 658]

No.	Time	Source	Destination	Protocol	Length	Info
658	17.678662	178.18.231.83	192.168.0.102	HTTP	438	HTTP/1.1 200 OK (text/plain)

Frame 658: 438 bytes on wire (3504 bits), 438 bytes captured (3504 bits) on interface 0
Ethernet II, Src: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)
Internet Protocol Version 4, Src: 178.18.231.83, Dst: 192.168.0.102
Transmission Control Protocol, Src Port: 80, Dst Port: 2286, Seq: 1, Ack: 320, Len: 384
Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]

[Message: HTTP/1.1 200 OK\r\n]

[Severity level: Chat]

[Group: Sequence]

Request Version: HTTP/1.1

Status Code: 200

Response Phrase: OK

Last-Modified: Mon, 15 May 2017 18:04:40 GMT\r\n

ETag: "ae780585f49b94ce1444eb7d28906123"\r\n

Accept-Ranges: bytes\r\n

Server: AmazonS3\r\n

Cache-Control: no-cache, no-store, must-revalidate\r\n

Date: Mon, 09 Mar 2020 16:58:33 GMT\r\n

Connection: keep-alive\r\n

\r\n

[HTTP response 1/1]

[Request URI: http://detectportal.firefox.com/success.txt]

File Data: 8 bytes

Line-based text data: text/plain (1 lines)

Пакети для відповідей 16-17:

861 6.299418 192.168.0.102 128.119.245.12 HTTP 549 GET /wireshark-labs/HTTP-wireshark-file4.html
HTTP/1.1

Frame 861: 549 bytes on wire (4392 bits), 549 bytes captured (4392 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102, Dst: 128.119.245.12

Transmission Control Protocol, Src Port: 2378, Dst Port: 80, Seq: 1, Ack: 1, Len: 495

Hypertext Transfer Protocol

GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n

Host: gaia.cs.umass.edu\r\n

Connection: keep-alive\r\n

Upgrade-Insecure-Requests: 1\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/80.0.3987.132 Safari/537.36\r\n

Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9\r\n

Accept-Encoding: gzip, deflate\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

\r\n

[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html]

[HTTP request 1/3]

[Response in frame: 884]

[Next request in frame: 949]

No.	Time	Source	Destination	Protocol	Length	Info
884	6.425154	128.119.245.12	192.168.0.102	HTTP	1127	HTTP/1.1 200 OK (text/html)

Frame 884: 1127 bytes on wire (9016 bits), 1127 bytes captured (9016 bits) on interface 0

Ethernet II, Src: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)

Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.102

Transmission Control Protocol, Src Port: 80, Dst Port: 2378, Seq: 1, Ack: 496, Len: 1073

Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

Date: Mon, 09 Mar 2020 18:26:30 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: Mon, 09 Mar 2020 05:59:01 GMT\r\n

ETag: "2ca-5a065b3267fa9"\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: 0.125736000 seconds]

[Request in frame: 861]

[Next request in frame: 949]

[Next response in frame: 1023]

[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
949	6.520478	192.168.0.102	128.119.245.12	HTTP	481	GET /pearson.png HTTP/1.1

Frame 949: 481 bytes on wire (3848 bits), 481 bytes captured (3848 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ac:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102, Dst: 128.119.245.12

Transmission Control Protocol, Src Port: 2378, Dst Port: 80, Seq: 496, Ack: 1074, Len: 427

Hypertext Transfer Protocol

GET /pearson.png HTTP/1.1\r\n

Host: gaia.cs.umass.edu\r\n

Connection: keep-alive\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/80.0.3987.132 Safari/537.36\r\n

Accept: image/webp,image/apng,image/*,*/*;q=0.8\r\n

Referer: <http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html>\r\n

Accept-Encoding: gzip, deflate\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

\r\n

[Full request URI: <http://gaia.cs.umass.edu/pearson.png>]

[HTTP request 2/3]

[Prev request in frame: 861]

[Response in frame: 1023]

[Next request in frame: 1732]

No.	Time	Source	Destination	Protocol	Length	Info
1023	6.659942	128.119.245.12	192.168.0.102	HTTP	745	HTTP/1.1 200 OK (PNG)

Frame 1023: 745 bytes on wire (5960 bits), 745 bytes captured (5960 bits) on interface 0

Ethernet II, Src: Tp-LinkT_ac:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)

Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.102

Transmission Control Protocol, Src Port: 80, Dst Port: 2378, Seq: 3994, Ack: 923, Len: 691

[3 Reassembled TCP Segments (3611 bytes): #1021(1460), #1022(1460), #1023(691)]

Hypertext Transfer Protocol

HTTP/1.1 200 OK\r\n

Date: Mon, 09 Mar 2020 18:26:31 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: 0.139464000 seconds]

[Prev request in frame: 861]

[Prev response in frame: 884]

[Request in frame: 949]

[Next request in frame: 1732]

[Next response in frame: 1856]

[Request URI: http://gaia.cs.umass.edu/pearson.png]

File Data: 3267 bytes

Portable Network Graphics

No.	Time	Source	Destination	Protocol	Length	Info
1031	6.661353	192.168.0.102	128.119.245.12	HTTP	495	GET /~kurose/cover_5th_ed.jpg HTTP/1.1

Frame 1031: 495 bytes on wire (3960 bits), 495 bytes captured (3960 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102, Dst: 128.119.245.12

Transmission Control Protocol, Src Port: 2381, Dst Port: 80, Seq: 1, Ack: 1, Len: 441

Hypertext Transfer Protocol

GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n

Host: manic.cs.umass.edu\r\n

Connection: keep-alive\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)

Chrome/80.0.3987.132 Safari/537.36\r\n

Accept: image/webp,image/apng,image/*,*/*;q=0.8\r\n

Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n

Accept-Encoding: gzip, deflate\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

\r\n

[Full request URI: http://manic.cs.umass.edu/~kurose/cover_5th_ed.jpg]

[HTTP request 1/1]

No.	Time	Source	Destination	Protocol	Length	Info
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1732	7.417241	192.168.0.102	128.119.245.12	HTTP	481	GET /favicon.ico HTTP/1.1
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Frame 1732: 481 bytes on wire (3848 bits), 481 bytes captured (3848 bits) on interface 0

Ethernet II, Src: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99), Dst: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa)

Internet Protocol Version 4, Src: 192.168.0.102, Dst: 128.119.245.12

Transmission Control Protocol, Src Port: 2378, Dst Port: 80, Seq: 923, Ack: 4685, Len: 427

Hypertext Transfer Protocol

GET /favicon.ico HTTP/1.1\r\n

Host: gaia.cs.umass.edu\r\n

Connection: keep-alive\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/80.0.3987.132 Safari/537.36\r\n

Accept: image/webp,image/apng,image/*,*/*;q=0.8\r\n

Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n

Accept-Encoding: gzip, deflate\r\n

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

\r\n

[Full request URI: http://gaia.cs.umass.edu/favicon.ico]

[HTTP request 3/3]

[Prev request in frame: 949]

[Response in frame: 1856]

No.	Time	Source	Destination	Protocol	Length	Info
-----	------	--------	-------------	----------	--------	------

1856	7.544480	128.119.245.12	192.168.0.102	HTTP	538	HTTP/1.1 404 Not Found (text/html)
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Frame 1856: 538 bytes on wire (4304 bits), 538 bytes captured (4304 bits) on interface 0

Ethernet II, Src: Tp-LinkT_ae:15:aa (30:b5:c2:ae:15:aa), Dst: 42:9f:54:41:b6:99 (42:9f:54:41:b6:99)

Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.102

Transmission Control Protocol, Src Port: 80, Dst Port: 2378, Seq: 4685, Ack: 1350, Len: 484

Hypertext Transfer Protocol

HTTP/1.1 404 Not Found\r\n

Date: Mon, 09 Mar 2020 18:26:32 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: 0.127239000 seconds]

[Prev request in frame: 949]

[Prev response in frame: 1023]

[Request in frame: 1732]

[Request URI: http://gaia.cs.umass.edu/favicon.ico]

File Data: 209 bytes

Line-based text data: text/html (7 lines)

Контрольні запитання:

1. Яку версію протоколу HTTP використовує ваш браузер (1.0 чи 1.1)? Яку версію протоколу використовує сервер?

Обидва використовують версію 1.1

2. Які мови (якщо вказано) браузер може прийняти від сервера?

Американську англійську мову

Accept-Language: ru,en-US;q=0.8,en;q=0.5,uk;q=0.3

3. Які IP-адреси вашого комп'ютера та цільового веб-сервера?

Мого комп'ютера: 192.168.0.102

Веб-сервера: 128.119.245.12

4. Який статусний код сервер повернув у відповіді вашому браузеру?

200 OK

5. Коли на сервері в останній раз був модифікований файл, який запитується браузером?

Sun, 08 Mar 2020 06:59:03 GMT

6. Скільки байт контенту повертається сервером?

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7. 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.

Не помітила

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

Ні, немає

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?

Ні, немає

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

304 Not Modified, ні

12. Скільки повідомлень HTTP GET було відправлено вашим браузером?

Одне

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

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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

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

6 запитів.

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

Послідовно, за часом надходження відповідей та адресами.

Висновки: В процесі виконання даної лабораторної роботи ми розглядали протоколи HTTP, досліджували їх з метою отримання більшої інформації про дослідження мережевих протоколів.