

1. Мой IP: 192.168.0.100, port: 64029

No.	Time	Source	Destination	Protocol	Length	Info
3	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TCP	54	443 → 65456 [ACK] Seq=1 Ack=55 Win=31200 Len=0
4	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TLSv1.2	110	Application Data
5	2022-04-01 19:53:39,449407	192.168.0.100	54.95.144.31	TCP	54	65456 → 443 [ACK] Seq=55 Ack=57 Win=64496 Len=0
7	2022-04-01 19:53:41,049736	192.168.0.100	128.119.245.12	TCP	62	64029 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERFECT
8	2022-04-01 19:53:41,170552	128.119.245.12	192.168.0.100	TCP	62	80 → 64029 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460
9	2022-04-01 19:53:41,170654	192.168.0.100	128.119.245.12	TCP	54	64029 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
10	2022-04-01 19:53:41,171195	192.168.0.100	128.119.245.12	TCP	699	64029 → 80 [PSH, ACK] Seq=1 Ack=1 Win=64240 Len=645 [TCP segment of data length 645 bytes]
11	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=646 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
12	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=2106 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
13	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=3566 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]

> Frame 7: 62 bytes on wire (496 bits), 62 bytes captured (496 bits) on interface \Device\NPF_{AFA1B8C0-2747-4BC5-815A-D8DE55689840}, id 0
> Ethernet II, Src: IntelCon_86:5b:64 (64:5d:86:86:5b:64), Dst: TP-Link_4a:ce:99 (c0:06:c3:4a:ce:99)
> Internet Protocol Version 4, Src: 192.168.0.100, Dst: 128.119.245.12
> Transmission Control Protocol, Src Port: 64029, Dst Port: 80, Seq: 0, Len: 0

2. Gaia IP: 128.119.245.12, port 80

3. Номер 7 в общем списке и номер 0 в своей группе. SYN, потому что проставлен соответствующий флаг

No.	Time	Source	Destination	Protocol	Length	Info
3	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TCP	54	443 → 65456 [ACK] Seq=1 Ack=55 Win=31200 Len=0
4	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TLSv1.2	110	Application Data
5	2022-04-01 19:53:39,449407	192.168.0.100	54.95.144.31	TCP	54	65456 → 443 [ACK] Seq=55 Ack=57 Win=64496 Len=0
7	2022-04-01 19:53:41,049736	192.168.0.100	128.119.245.12	TCP	62	64029 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERFECT
8	2022-04-01 19:53:41,170552	128.119.245.12	192.168.0.100	TCP	62	80 → 64029 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460
9	2022-04-01 19:53:41,170654	192.168.0.100	128.119.245.12	TCP	54	64029 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
10	2022-04-01 19:53:41,171195	192.168.0.100	128.119.245.12	TCP	699	64029 → 80 [PSH, ACK] Seq=1 Ack=1 Win=64240 Len=645 [TCP segment of data length 645 bytes]
11	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=646 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
12	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=2106 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
13	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=3566 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]

[Conversation completeness: Incomplete, DATA (15)]
[TCP Segment Len: 0]
Sequence Number: 0 (relative sequence number)
Sequence Number (raw): 164653705
[Next Sequence Number: 1 (relative sequence number)]
Acknowledgment Number: 0
Acknowledgment number (raw): 0
0111 = Header Length: 28 bytes (7)
> **Flags: 0x002 (SYN)**
Window: 64240
[Calculated window size: 64240]
Checksum: 0xe2d6 [unverified]

4. Номер 8 в общем списке и номер 0 в своей группе.

Поле подтверждения: "Acknowledgment number (raw): 164653706".

164653706 - это (Sequence Number SYN пакета) + 1.

SYNACK, потому что проставлены соответствующие флаги.

7	2022-04-01 19:53:41,049736	192.168.0.100	128.119.245.12	TCP	62	64029 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERFECT
8	2022-04-01 19:53:41,170552	128.119.245.12	192.168.0.100	TCP	62	80 → 64029 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460
9	2022-04-01 19:53:41,170654	192.168.0.100	128.119.245.12	TCP	54	64029 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
10	2022-04-01 19:53:41,171195	192.168.0.100	128.119.245.12	TCP	699	64029 → 80 [PSH, ACK] Seq=1 Ack=1 Win=64240 Len=645 [TCP segment of data length 645 bytes]
11	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=646 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
12	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=2106 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]
13	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=3566 Ack=1 Win=64240 Len=1460 [TCP segment of data length 1460 bytes]

Sequence Number: 0 (relative sequence number)
Sequence Number (raw): 1934103304
[Next Sequence Number: 1 (relative sequence number)]
Acknowledgment Number: 1 (relative ack number)
Acknowledgment number (raw): 164653706
0111 = Header Length: 28 bytes (7)
> **Flags: 0x012 (SYN, ACK)**
Window: 29200
[Calculated window size: 29200]
Checksum: 0xe555 [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0

5. Homework 10

tcp						
No.	Time	Source	Destination	Protocol	Length	Info
3	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TCP	54	443 → 65456 [ACK] Seq=1 Ack=55 Win=31200 Len=0
4	2022-04-01 19:53:39,407783	54.95.144.31	192.168.0.100	TLSv1.2	110	Application Data
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9	2022-04-01 19:53:41,170654	192.168.0.100	128.119.245.12	TCP	54	64029 → 80 [ACK] Seq=1 Ack=1 Win=64240 Len=0
10	2022-04-01 19:53:41,171195	192.168.0.100	128.119.245.12	TCP	699	64029 → 80 [PSH, ACK] Seq=1 Ack=1 Win=64240 Len=645 [TCP segment data (645 bytes)]
11	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=646 Ack=1 Win=64240 Len=1460 [TCP segment data (1460 bytes)]
12	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=2106 Ack=1 Win=64240 Len=1460 [TCP segment data (1460 bytes)]
13	2022-04-01 19:53:41,171392	192.168.0.100	128.119.245.12	TCP	1514	64029 → 80 [ACK] Seq=3566 Ack=1 Win=64240 Len=1460 [TCP segment data (1460 bytes)]
Checksum: 0x0eba [unverified] [Checksum Status: Unverified] Urgent Pointer: 0 [Timestamps] [SEQ/ACK analysis] TCP payload (645 bytes) [Reassembled PDU in frame: 164] TCP segment data (645 bytes)						
0030	fa f0 0e ba 00 00	50 4f 53 54 20 2f 77 69 72 65	POST /wire		
0040	73 68 61 72 6b 2d 6c 61	62 73 2f 6c 61 62 33 2d	shark-lab/lab3-			
0050	31 2d 72 65 70 6c 79 2e	68 74 6d 20 48 54 5a 50	1-reply.htm HTTP			
0060	2f 31 2e 31 0d 0a 48 6f	73 74 3a 20 67 61 69 61	/1.1..Host: gaia			
0070	2e 63 73 2e 75 6d 61 73	73 2e 65 64 75 0d 0a 43	.cs.umas.s.edu..C			
0080	6f 6e 6e 65 63 74 69 6f	6e 3a 20 6b 65 65 70 2d	connection: keep-			
0090	61 6c 69 76 65 0d 0a 43	6f 6e 74 65 6e 74 2d 4c	alive..Content-L			
00a0	65 6e 67 74 68 3a 20 31	35 32 33 32 31 0d 0a 43	length: 152321..C			

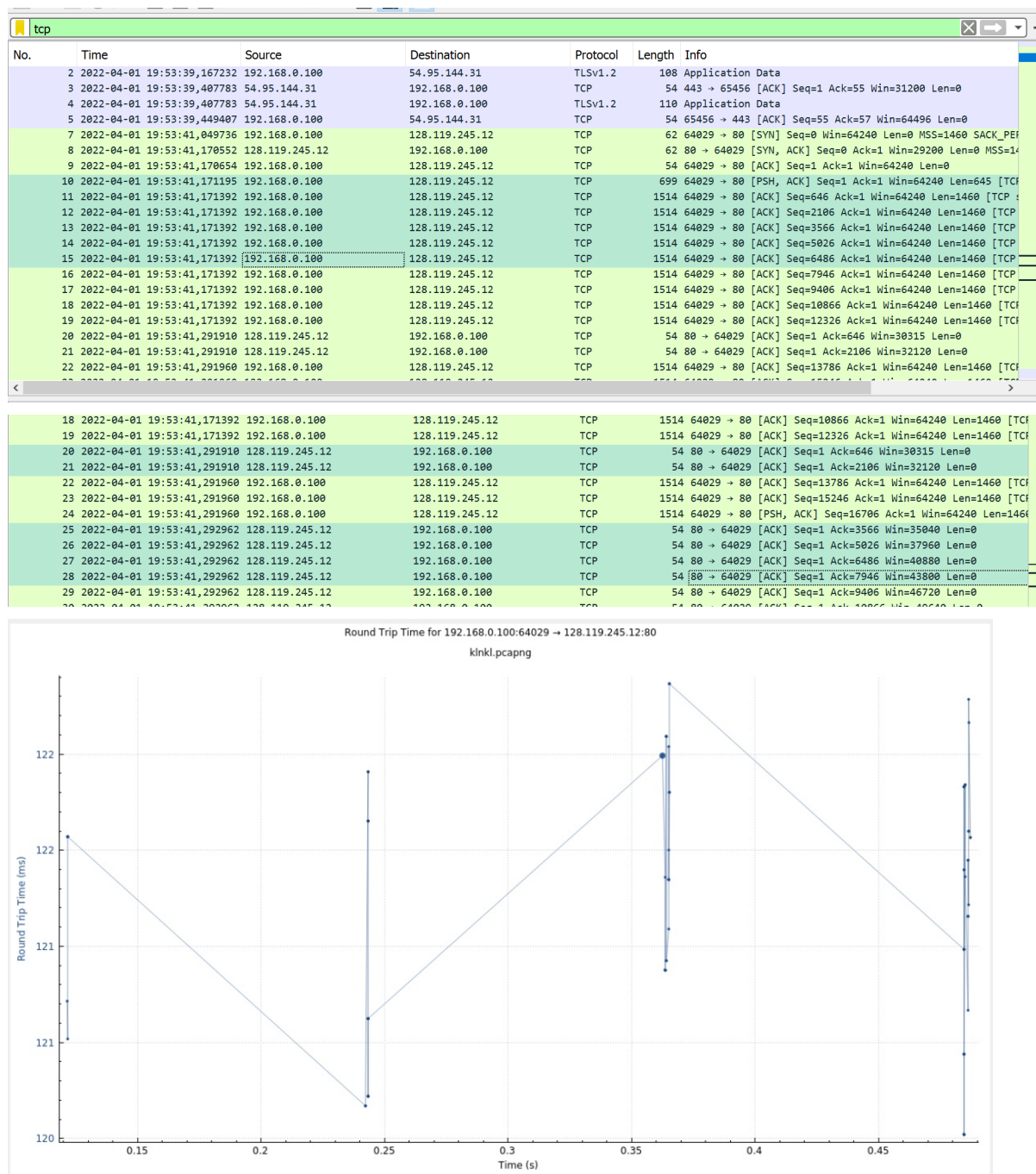
6. Номера 10..15.

Время отправки пакетов с данными видно на скрине #1

Время получения ACK пакетов от сервера на скрине #2

(по номерам Seq и Ack можно убедиться, что это нужные ACK пакеты)

RTT на скрине #3



7. Время отправки первого SYN пакета на сервер - 19:53:41,049736

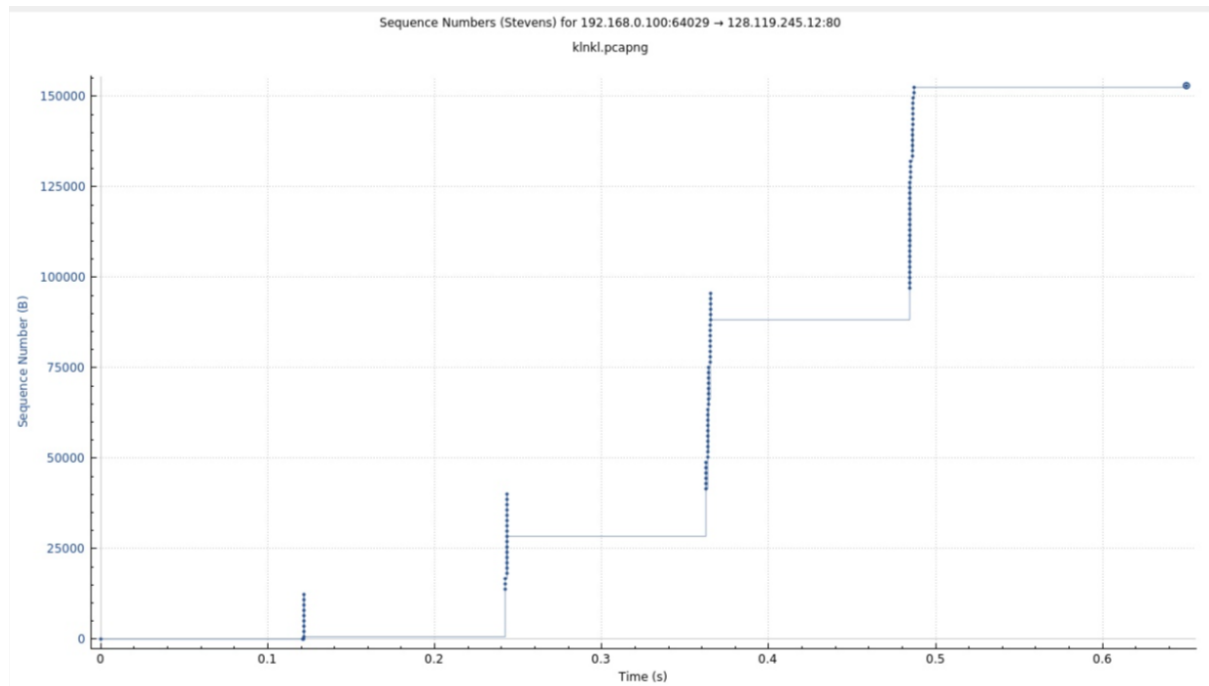
Время получения последнего ACK пакета - 19:53:41,658424

Размер данных: 152138 байт

Тогда скорость передачи (полезных) данных

$$= 152138 / (0.658424 - 0.049736) = 249944 \text{ байт/сек}$$

8. Time-Sequence-Graph (Stevens):



2.1. FileZilla:

test-user@127.0.0.1 - FileZilla

Administration interface - FileZilla Server 1.3.0

Host: 127.0.0.1, Username: test-user, Password: [redacted], Port: [redacted]

Локальный сайт: C:\Users\Xiaomi\, Удаленный сайт: /

19 файлов и 55 каталогов. Общий размер: 8 596 658 байт. 3 файла и 9 каталогов. Общий размер: 3 826 байт.

Создать каталог

Введите имя создаваемого каталога:

/111111

OK, Отмена

Удаленный сайт: /111111

6-JVM, 6-ML, 6-Network, 6-NLP

Log messages:

- 01.04.20... FTP Session... Comm... PASV
- 01.04.20... FTP Session... Respo... 227 Entering Passive Mode (127,0,0,1,241,23)
- 01.04.20... FTP Session... Comm... MLSD
- 01.04.20... FTP Session... Error... Entry '/' has empty native path and no mount nodes: this should never happen. P...
- 01.04.20... FTP Session... Respo... 550 Couldn't open the file or directory
- 01.04.20... FTP Session... Error... GnuTLS error -110: The TLS connection was non-properly terminated.
- 01.04.20... FTP Session... Status... Client did not properly shut down TLS connection
- 01.04.20... FTP Session... Error... Failed connection for data socket. Reason: ECONNABORTED - Connection aborted.
- 01.04.20... FTP Session... Status... Settings written to C:\WINDOWS\system32\config\systemprofile\AppData\Local...
- 01.04.20... FTP Session... Comm... AUTH TLS
- 01.04.20... FTP Session... Respo... 234 Using authentication type TLS.
- 01.04.20... FTP Session... Comm... USER test-user
- 01.04.20... FTP Session... Respo... 331 Please, specify the password.
- 01.04.20... FTP Session... Comm... PASS ****
- 01.04.20... FTP Session... Respo... 230 Login successful.
- 01.04.20... FTP Session... Comm... PWD
- 01.04.20... FTP Session... Respo... 257 "/" is current directory.
- 01.04.20... FTP Session... Comm... TYPE I
- 01.04.20... FTP Session... Respo... 200 Type set to I
- 01.04.20... FTP Session... Comm... PASV
- 01.04.20... FTP Session... Respo... 227 Entering Passive Mode (127,0,0,1,241,72)
- 01.04.20... FTP Session... Comm... MLSD
- 01.04.20... FTP Session... Respo... 150 About to start data transfer.
- 01.04.20... FTP Session... Respo... 226 Operation successful

Transfer progress table:

Date	Session	Username	Host	Transfer	Path	Size	Inst. S...	Avg. S...	Progress
01.04.20...	1	test-user	127.0.0.1	idle					
01.04.20...	2	test-user	127.0.0.1	idle					