

Лабораторная работа №9

Компьютерные сети

Ping

No.	Time	Source	Destination	Protocol	Length	Info
58	9.004910993	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=1/...
59	9.034200775	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=1/...
64	10.006796689	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=2/...
65	10.035380338	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=2/...
66	11.007976689	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=3/...
67	11.035760302	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=3/...
74	12.009100104	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=4/...
75	12.036950937	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=4/...
76	13.010269539	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=5/...
77	13.039620205	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=5/...
78	14.011965232	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=6/...
79	14.041157584	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=6/...
80	15.013509010	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=7/...
81	15.041498505	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=7/...
83	16.014829241	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=8/...
84	16.042973627	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=8/...
85	17.016291541	192.168.0.102	108.157.214.111	ICMP		98 Echo (ping) request id=0x0006, seq=9/...
86	17.044052811	108.157.214.111	192.168.0.102	ICMP		98 Echo (ping) reply id=0x0006, seq=9/...
89	18.018374378	192.168.0.102	108.157.214.111	ICMP		
90	18.048178870	108.157.214.111	192.168.0.102	ICMP		

```

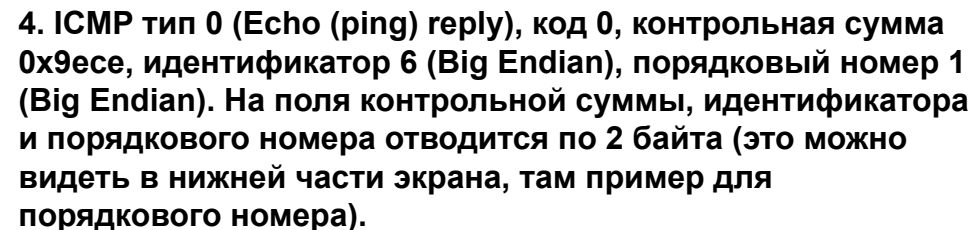
- Frame 58: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
- Ethernet II, Src: 18:26:49:e1:fd:fc (18:26:49:e1:fd:fc), Dst: TendaTec_a:18:26:49:
- Internet Protocol Version 4, Src: 192.168.0.102, Dst: 108.157.214.111
- Internet Control Message Protocol

```

```
Type: 8 (Echo (ping) request)
Code: 0
Checksum: 0x96ce [correct]
[Checksum Status: Good]
Identifier (BE): 6 (0x0006)
Identifier (LE): 1536 (0x0600)
Sequence number (BE): 1 (0x0001)
Sequence number (LE): 256 (0x0100)
[Response frame: 59]
```

[illegible]

1. IP-адрес моего хоста 192.168.0.102, IP-адрес хоста назначения 108.157.214.111 (www.utoronto.ca)
2. ICMP пакет не обладает номерами портов, т.к. он работает на сетевом уровне, а номера портов нужны на транспортном уровне.
3. ICMP тип 8 (Echo (ping) request), код 0, контрольная сумма 0x96ce, идентификатор 6 (Big Endian), порядковый номер 1 (Big Endian). На поля контрольной суммы, идентификатора и порядкового номера отводится по 2 байта (это можно видеть в нижней части экрана, там пример для идентификатора)



Traceroute

No.	Time	Source	Destination	Protocol	Length	Info
	1945 33.603833294	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=1/256, ttl=1 (no response found...
	1946 33.603857308	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=2/512, ttl=1 (no response found...
	1947 33.603863284	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=3/768, ttl=1 (no response found...
	1948 33.603869060	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=4/1024, ttl=2 (no response found...
	1949 33.603874231	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=5/1280, ttl=2 (no response found...
	1950 33.603879453	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=6/1536, ttl=2 (no response found...
	1951 33.603885106	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=7/1792, ttl=3 (no response found...
	1952 33.603890273	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=8/2048, ttl=3 (no response found...
	1953 33.603898830	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=9/2304, ttl=3 (no response found...
	1954 33.603906568	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=10/2560, ttl=4 (no response found...
	1955 33.603914012	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=11/2816, ttl=4 (no response found...
	1956 33.603920704	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=12/3072, ttl=4 (no response found...
	1957 33.603928323	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=13/3328, ttl=5 (no response found...
	1958 33.603935422	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=14/3584, ttl=5 (no response found...
	1959 33.603942323	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=15/3840, ttl=5 (no response found...
	1960 33.603950444	192.168.0.102	65.9.49.75	ICMP		74 Echo (ping) request id=0x0007, seq=16/4096, ttl=6 (no response found...
	1961 33.606609866	192.168.0.1	192.168.0.102	ICMP		70 Time-to-live exceeded (Time to live exceeded in transit)
	1962 33.606929075	192.168.0.1	192.168.0.102	ICMP		70 Time-to-live exceeded (Time to live exceeded in transit)
	1963 33.606929185	192.168.0.1	192.168.0.102	ICMP		70 Time-to-live exceeded (Time to live exceeded in transit)
	1965 33.609977837	195.70.196.3	192.168.0.102	ICMP		70 Time-to-live exceeded (Time to live exceeded in transit)

```

Frame 1945: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface wlp0s20f3, id 0
  Ethernet II, Src: 18:26:49:e1:fd:fc (18:26:49:e1:fd:fc), Dst: TendaTec_a2:d3:d8 (d8:32:14:a2:d3:d8)
  Internet Protocol Version 4, Src: 192.168.0.102, Dst: 65.9.49.75
  Internet Control Message Protocol

```

```
Type: 8 (Echo (ping) request)
Code: 0
Checksum: 0x8272 [correct]
[Checksum Status: Good]
Identifier (BE): 7 (0x0007)
Identifier (LE): 1792 (0x0700)
Sequence number (BE): 1 (0x0001)
Sequence number (LE): 256 (0x0100)
[No response seen]
```

0000	d8 32 14 a2 d3 d8 18 26	49 e1 fd fc 08 00 45 00	· 2 · · · · · & I · · · · · E ·
0010	00 3c f3 3f 00 00 01 01	93 1f c0 a8 00 66 41 09	· < · ? · · · · · · · · · FA ·
0020	31 4b 08 00 82 72 00 07	00 01 48 49 4a 4b 4c 4d	1K · · · · · r · · · · · HIJKLM
0030	4e 4f 50 51 52 53 54 55	56 57 58 59 5a 5b 5c 5d	NOQRSTUVWXYZ VWXYZ[]
0040	5e 5f 60 61 62 63 64 65	66 67	^ ` abcde fg

1. Отличается размер Data в пакете, в traceroute меньше. Отличается TTL. В ping запросе всегда 128, а в traceroute зависит от правила, например, для первого пакета 1.

No.	Time	Source	Destination	Protocol	Length	Info
	1958 33.603935422	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=14/3584, ttl=5 (no response fou...
	1959 33.603942323	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=15/3840, ttl=5 (no response fou...
	1960 33.603950444	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=16/4096, ttl=6 (no response fou...
	1961 33.606609866	192.168.0.1	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1962 33.606929075	192.168.0.1	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1963 33.606929185	192.168.0.1	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1965 33.609977837	195.70.196.3	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1966 33.610091184	195.70.196.3	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1967 33.610557179	195.70.196.3	192.168.0.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
	1968 33.611181299	81.211.104.177	192.168.0.102	ICMP	110	Time-to-live exceeded (Time to live exceeded in transit)
	1969 33.611181463	81.211.104.177	192.168.0.102	ICMP	110	Time-to-live exceeded (Time to live exceeded in transit)
	1970 33.611528409	81.211.104.177	192.168.0.102	ICMP	110	Time-to-live exceeded (Time to live exceeded in transit)
	1972 33.613804685	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=17/4352, ttl=6 (no response fou...
	1973 33.613851128	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=18/4608, ttl=6 (no response fou...
	1974 33.613858691	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=19/4864, ttl=7 (no response fou...
	1975 33.613863643	192.168.0.102	65.9.49.75	ICMP	74	Echo (ping) request id=0x0007, seq=20/5120, ttl=7 (no response fou...

Internet Control Message Protocol

Type: 11 (Time-to-live exceeded)

Code: 0 (Time to live exceeded in transit)

Checksum: 0x6a85 [correct]

[Checksum Status: Good]

Unused: 00000000

```
Internet Protocol Version 4, Src: 192.168.0.102, Dst: 65.9.49.75
```

- Internet Control Message Protocol

Type: 8 (Echo (ping) request)

Code: 0

```
Checksum: 0x8272 [unverified] [in ICMP error packet]
```

[Checksum Status: Unverified]

Identifier (BE): 7 (0x0007)

Identifier (LE): 1792 (0x0700)

Sequence number (BE): 1 (0x0001)

Sequence number (LE): 256 (0x0100)

```
0000 18 26 49 e1 fd fc d8 32 14 a2 d3 d8 08 00 45 00 .&I...2 .....E.
0010 00 38 ba eb 00 00 40 01 3e 22 c0 a8 00 01 c0 a8 .8...@. >".....
0020 00 66 0b 00 6a 85 00 00 00 00 45 00 00 3c f3 3f .f..j....E.<.?
0030 00 00 01 01 93 1f c0 a8 00 66 41 09 31 4b 08 00 .....fA.1K.
0040 82 72 00 07 00 01 .....r.....
```

2. Добавились IP-адреса отправителя и получателя и ICMP исходного эхо запроса.

wireshark_wlp0s20f3_20220423232839_dQ86sP.pcapng		Packets: 2734 · Displayed: 90 (3.3%) · Dropped: 0 (0.0%)	Profile: Default
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