

Компьютерные сети

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Wireshark

- 1) Мой ip — 192.168.88.252, сервера — 151.101.246.133
- 2) Номера портов присущи протоколам транспортного уровня, а ICMP — протокол сетевого уровня.
- 3) На поля приходится по два байта

```
Internet Control Message Protocol
  Type: 8 (Echo (ping) request)
  Code: 0
  Checksum: 0x4c7e [correct]
  [Checksum Status: Good]
  Identifier (BE): 1 (0x0001)
  Identifier (LE): 256 (0x0100)
  Sequence Number (BE): 221 (0x00dd)
  Sequence Number (LE): 56576 (0xdd00)
  [Response frame: 332]
  > Data (32 bytes)
```

- 4) Все то же самое, кроме кода

```
Internet Control Message Protocol
  Type: 0 (Echo (ping) reply)
  Code: 0
  Checksum: 0x547e [correct]
  [Checksum Status: Good]
  Identifier (BE): 1 (0x0001)
  Identifier (LE): 256 (0x0100)
  Sequence Number (BE): 221 (0x00dd)
  Sequence Number (LE): 56576 (0xdd00)
  [Request frame: 331]
  [Response time: 17,796 ms]
  > Data (32 bytes)
```

- 5) У этого пакета ttl = 1
- 6) В нём есть ip хедер

```

v Internet Control Message Protocol
  Type: 11 (Time-to-live exceeded)
  Code: 0 (Time to live exceeded in transit)
  Checksum: 0xf4ff [correct]
  [Checksum Status: Good]
  Unused: 00000000
v Internet Protocol Version 4, Src: 192.168.88.252, Dst: 151.101.246.133
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
v Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
  0000 00.. = Differentiated Services Codepoint: Default (0)
  .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
  Total Length: 92
  Identification: 0x3263 (12899)
  > Flags: 0x00
  ...0 0000 0000 0000 = Fragment Offset: 0
v Time to Live: 1
  v [Expert Info (Note/Sequence): "Time To Live" only 1]
    ["Time To Live" only 1]
    [Severity level: Note]
    [Group: Sequence]
  Protocol: ICMP (1)
  Header Checksum: 0xdfae [validation disabled]
  [Header checksum status: Unverified]
  Source Address: 192.168.88.252
  Destination Address: 151.101.246.133
v Internet Control Message Protocol
  Type: 8 (Echo (ping) request)
  Code: 0
  Checksum: 0xf717 [unverified] [in ICMP error packet]
  [Checksum Status: Unverified]
  Identifier (BE): 1 (0x0001)
  Identifier (LE): 256 (0x0100)
  Sequence Number (BE): 231 (0x00e7)
  Sequence Number (LE): 59136 (0xe700)
v Data (64 bytes)
  Data: 0000000000000000000000000000000000000000000000000000000000000000...
  [Length: 64]

```

7) У них type = 0. Обусловлено это тем, что их запросы request успели дойти до хоста пока не истек ttl

8) Нет, такого канала нет

```
C:\Users\cgawr>tracert www.stanford.edu
```

Трассировка маршрута к pantheon-systems.map.fastly.net [151.101.246.133]
с максимальным числом прыжков 30:

```

 1  <1 mc    <1 mc    <1 mc    router.lan [192.168.88.1]
 2    2 ms    1 ms     5 ms    lo0.rt3.spb.citytelecom.ru [31.28.12.1]
 3    2 ms    2 ms     2 ms    31.28.20.5
 4    9 ms    9 ms     9 ms    10.10.13.166
 5   11 ms   15 ms    10 ms    mow-b4-link.ip.twelve99.net [62.115.147.142]
 6   11 ms   11 ms    11 ms    sap-b4-link.ip.twelve99.net [62.115.116.7]
 7   17 ms   17 ms    17 ms    hls-b4-link.ip.twelve99.net [62.115.115.250]
 8   17 ms   17 ms    16 ms    fastly-svc078649-ic368329.c.telia.net [62.115.188.45]
 9   17 ms   17 ms    17 ms    151.101.246.133

```

Трассировка завершена.