



Computer Network 1

LAB 3a

Wireshark lab UDP

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The assignment

- 1) Select one UDP packet from your trace. From this packet, determine how many fields there are in the UDP header. (You shouldn't look in the textbook! Answer these questions directly from what you observe in the packet trace.) Name these fields.

UDP header contains 4 fields:

- 1. Source port
 - 2. Destination port
 - 3. Length
 - 4. Checksum
- 2) By consulting the displayed information in Wireshark's packet content field for this packet, determine the length (in bytes) of each of the UDP header fields

The UDP header has a fixed length of 8 bytes. Each of these 4 header fields is 2 bytes long.

- 3) The value in the Length field is the length of what? (You can consult the text for this answer).

The length field specifies the number of bytes in the UDP segment (header plus data). An explicit length value is needed since the size of the data field may differ from one UDP segment to the next. The length of UDP payload for selected packet is 32 bytes. 40 bytes - 8 bytes = 32 bytes.

- 4) What is the maximum number of bytes that can be included in a UDP payload?

The maximum number of bytes that can be included in a UDP payload is $(2^{16} - 1)$ bytes plus the header bytes. This gives 65535 bytes - 8 bytes = 65527 bytes.

- 5) What is the largest possible source port number?

The largest possible source port number is $(2^{16} - 1) = 65535$.

- 6) What is the protocol number for UDP? Give your answer in both hexadecimal and decimal notation. To answer this question, you'll need to investigate the Protocol field of the IP datagram containing this UDP segment

The IP protocol number for UDP is 0x11 hex, which is 17 in decimal value.

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Internet Protocol Version 4, Src: 142.150.238.40 (142.150.238.40), Dst: 8.8.8.8 (8.8.8.8)
  Version: 4
  Header Length: 20 bytes
  Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00: Not-ECT (Not ECN-Capable Transport))
  Total Length: 60
  Identification: 0xa129 (41257)
  Flags: 0x00
  Fragment offset: 0
  Time to live: 64
  Protocol: UDP (17)
  Header checksum: 0x4cb9 [validation disabled]
  Source: 142.150.238.40 (142.150.238.40)
  Destination: 8.8.8.8 (8.8.8.8)
  [Source GeoIP: Unknown]
0000  00 1e 13 80 bc c0 78 ca 39 b2 bc fd 08 00 45 00  .....x.9....E.
0010  00 3c a1 29 00 00 40 00 4c b9 0e 9e 28 00 00 00  <.)E.L.....
0020  08 08 f9 40 00 35 00 26 19 5e d1 53 01 00 00 01  .@.5.(.^S....
0030  00 00 00 00 00 00 03 77 77 77 06 67 6f 6f 67 6c  .....WWW.googl
0040  65 03 63 6f 6d 00 00 01 00 01                    e.com...

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- 7) Examine a pair of UDP packets in which your host sends the first UDP packet and the second UDP packet is a reply to this first UDP packet. (Hint: for a second packet to be sent in response to a first packet, the sender of the first packet should be the destination of the second packet). Describe the relationship between the port numbers in the two packets.

The source port of the UDP packet sent by the host is the same as the destination port of the reply packet, and conversely the destination port of the UDP packet sent by the host is the same as the source port of the reply packet.

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Frame 67: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface 0
Ethernet II, Src: Apple_b2:bc:fd (78:ca:39:b2:bc:fd), Dst: Cisco_80:bc:c0 (00:1e:13:80:bc:c0)
Internet Protocol Version 4, Src: 142.150.238.40 (142.150.238.40), Dst: 8.8.8.8 (8.8.8.8)
User Datagram Protocol, Src Port: 63808 (63808), Dst Port: 53 (53)
  Source Port: 63808 (63808)
  Destination Port: 53 (53)
  Length: 40
  Checksum: 0x195e [validation disabled]
  [Stream index: 12]
Domain Name System (query)

Frame 68: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on interface 0
Ethernet II, Src: Cisco_80:bc:c0 (00:1e:13:80:bc:c0), Dst: Apple_b2:bc:fd (78:ca:39:b2:bc:fd)
Internet Protocol Version 4, Src: 8.8.8.8 (8.8.8.8), Dst: 142.150.238.40 (142.150.238.40)
User Datagram Protocol, Src Port: 53 (53), Dst Port: 63808 (63808)
  Source Port: 53 (53)
  Destination Port: 63808 (63808)
  Length: 120
  Checksum: 0x949b [validation disabled]
  [Stream index: 12]
Domain Name System (response)

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