Computer Networks Lab 4

Shane Cincotta

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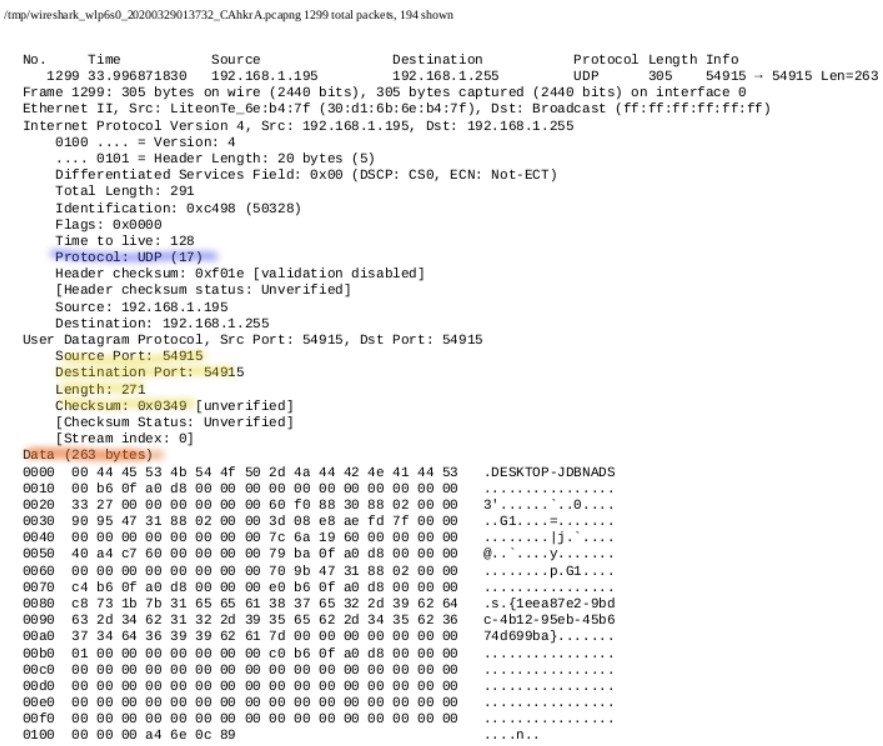

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/tmp/wireshark_wlp6s0_20200329013732_CAhkrA.pcapng 1299 total packets, 194 shown

No.     Time           Source                Destination           Protocol Length Info
   1299 33.996871830   192.168.1.195         192.168.1.255         UDP      305    54915 → 54915 Len=263
Frame 1299: 305 bytes on wire (2440 bits), 305 bytes captured (2440 bits) on interface 0
Ethernet II, Src: LiteonTe_6e:b4:7f (30:d1:6b:6e:b4:7f), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
Internet Protocol Version 4, Src: 192.168.1.195, Dst: 192.168.1.255
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 291
    Identification: 0xc498 (50328)
    Flags: 0x0000
    Time to live: 128
    Protocol: UDP (17)
    Header checksum: 0xf01e [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.1.195
    Destination: 192.168.1.255
User Datagram Protocol, Src Port: 54915, Dst Port: 54915
    Source Port: 54915
    Destination Port: 54915
    Length: 271
    Checksum: 0x0349 [unverified]
    [Checksum Status: Unverified]
    [Stream index: 0]
Data (263 bytes)
0000  00 44 45 53 4b 54 4f 50 2d 4a 44 42 4e 41 44 53   .DESKTOP-JDBNADS
0010  00 b6 0f a0 d8 00 00 00 00 00 00 00 00 00 00 00   ................
0020  33 27 00 00 00 00 00 00 60 f0 88 30 88 02 00 00   3'......`..0....
0030  90 95 47 31 88 02 00 00 3d 08 e8 ae fd 7f 00 00   ..G1....=.......
0040  00 00 00 00 00 00 00 00 7c 6a 19 60 00 00 00 00   ........|j.`....
0050  40 a4 c7 60 00 00 00 00 79 ba 0f a0 d8 00 00 00   @..`....y.......
0060  00 00 00 00 00 00 00 00 70 9b 47 31 88 02 00 00   ........p.G1....
0070  c4 b6 0f a0 d8 00 00 00 e0 b6 0f a0 d8 00 00 00   ................
0080  c8 73 1b 7b 31 65 65 61 38 37 65 32 2d 39 62 64   .s.{1eea87e2-9bd
0090  63 2d 34 62 31 32 2d 39 35 65 62 2d 34 35 62 36   c-4b12-95eb-45b6
00a0  37 34 64 36 39 39 62 61 7d 00 00 00 00 00 00 00   74d699ba}.......
00b0  01 00 00 00 00 00 00 00 c0 b6 0f a0 d8 00 00 00   ................
00c0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
00d0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
00e0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
00f0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
0100  00 00 00 a4 6e 0c 89                              ....n..
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Figure 1:

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

There are four fields in the header: the source port, destination port, length and 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 is always 8 bytes long. 8 bytes total leaves 2 bytes per header field.

3 The value in the Length field is the length of what? (You can consult the text for this answer). Verify your claim with your captured UDP packet.

The value of the length field is the 8 header bytes plus the data bytes. This is verified by my packet as the length is 271, and the data is 263. 271-263 = 8 bytes left over for the header.

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 minus the 8 header bytes. This gives 65,527 bytes.

5 What is the largest possible source port number?

The largest possible port number is the largest possible 16 bit number, which 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 look into the Protocol field of the IP datagram containing this UDP segment

The protocol number for UDP is 0d17 and 0x11.

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. Describe the relationship between the port numbers in the two packets.

The relationship is that the destination port of a sent packet will be the same as the source port on the complementary packet. Also, the source port of the reply will be the destination port of the original packet.