Task-2: Traceroute Protocol Behavior

Team member:

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Objective:

The purpose of this experiment is to understand how the traceroute utility works in Windows and Linux while tracing the route to **www.google.com**, capture the network traffic, and analyze how packets traverse intermediate routers to the destination.

Tools Used:

- Operating Systems: Windows 10, Ubuntu Linux
- Network Capture Tools: Wireshark
- Commands: tracert (Windows), traceroute (Linux)

1. What protocol does Windows tracert use by default, and what protocol does Linux traceroute use by default?

1. Protocols Used

Observation:

- **Windows (tracert www.google.com)**: Uses **ICMP Echo Request** packets. Each hop corresponds to a router replying with an ICMP Echo Reply.
- **Linux (traceroute www.google.com)**: Uses **UDP packets** to high-numbered ports by default. Intermediate routers respond with **ICMP Time Exceeded** messages.

Explanation:

- In Windows, tracert sends ICMP Echo Requests with increasing TTL. When TTL reaches 0 at a router, the router responds with ICMP Time Exceeded. The final destination (**Google server**) replies with ICMP Echo Reply.
- In Linux, traceroute sends UDP packets to an unused port at Google. Intermediate routers respond with ICMP Time Exceeded, and Google responds with ICMP Port Unreachable.

Supporting Evidence:

Command Prompt Screenshot:

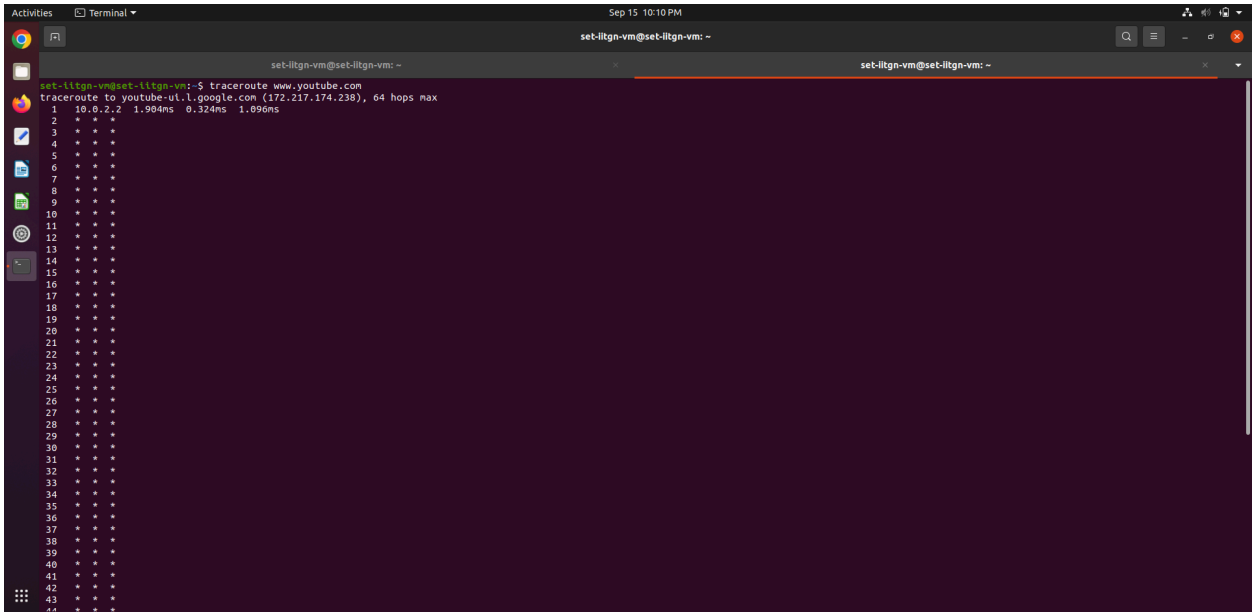
With wireshark running in background(window):

```
C:\Users\GUDA AVINASH REDDY>tracert www.google.com

Tracing route to www.google.com [142.251.222.100]
over a maximum of 30 hops:

  1     2 ms     3 ms     2 ms  10.7.0.5
  2    14 ms     2 ms     2 ms  172.16.4.7
  3     7 ms    11 ms    12 ms  14.139.98.1
  4     3 ms     4 ms     3 ms  10.117.81.253
  5    11 ms     9 ms    12 ms  10.154.8.137
  6    15 ms    10 ms     9 ms  10.255.239.170
  7    12 ms    10 ms    11 ms  10.152.7.214
  8    13 ms    11 ms    12 ms  142.250.172.80
  9    14 ms    12 ms    14 ms  142.251.76.23
 10    14 ms    12 ms    14 ms  142.251.77.97
 11    15 ms    12 ms    12 ms  pnbomb-az-in-f4.1e100.net [142.251.222.100]

Trace complete.
```

Without running WireShark in background(window):

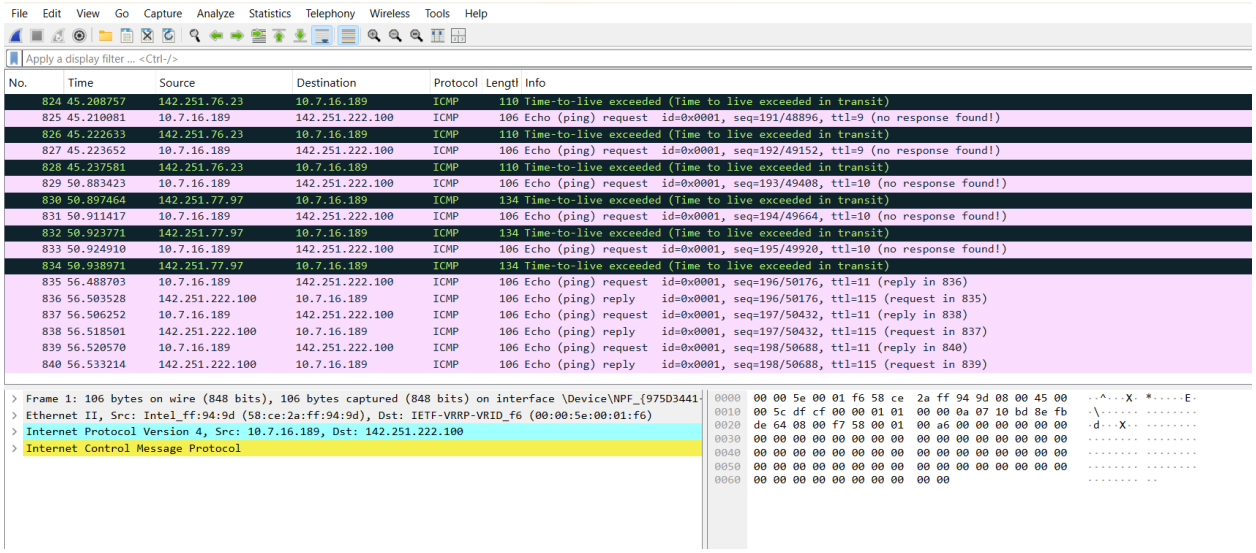
```
C:\Users\GUDA AVINASH REDDY>tracert www.google.com

Tracing route to www.google.com [142.251.220.68]
over a maximum of 30 hops:

  1     4 ms     3 ms     2 ms  10.7.0.5
  2     1 ms     1 ms     1 ms  172.16.4.7
  3     4 ms     3 ms     4 ms  14.139.98.1
  4     3 ms     2 ms     4 ms  10.117.81.253
  5    10 ms    10 ms    10 ms  10.154.8.137
  6    10 ms    10 ms     9 ms  10.255.239.170
  7    14 ms    10 ms     9 ms  10.152.7.214
  8    11 ms    10 ms    10 ms  72.14.204.62
  9    19 ms    19 ms    20 ms  142.251.76.33
 10    11 ms    11 ms    11 ms  142.250.214.103
 11    19 ms    19 ms    20 ms  pnbomb-bd-in-f4.1e100.net [142.251.220.68]

Trace complete.
```

With wireshark running in background(linux):

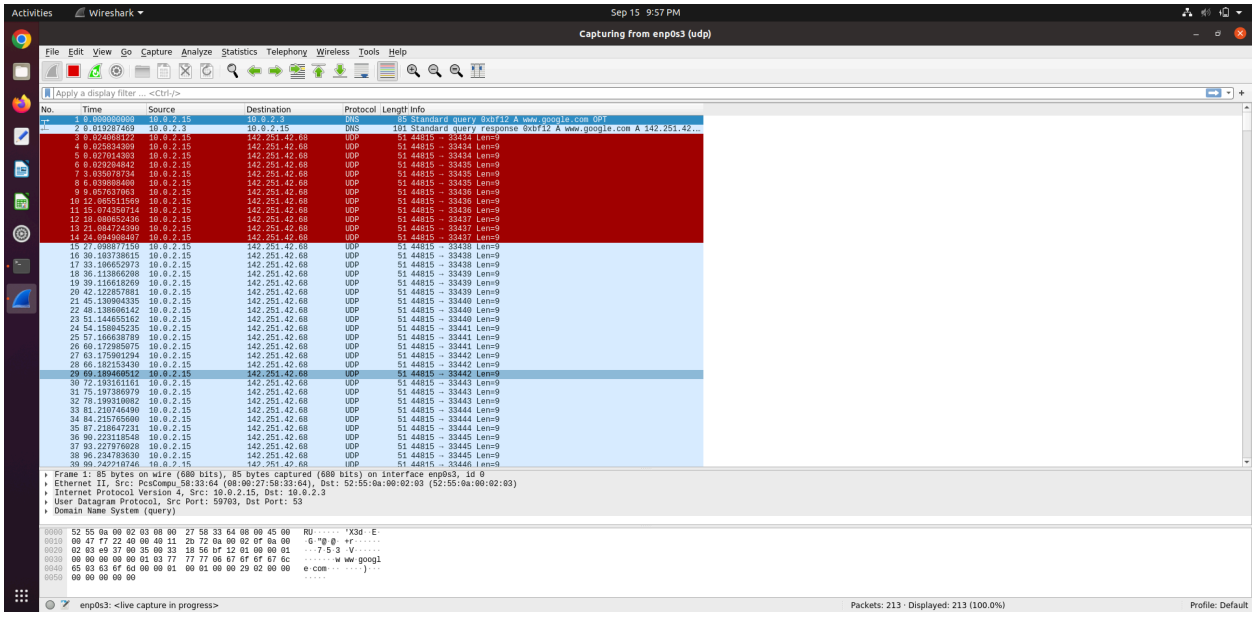


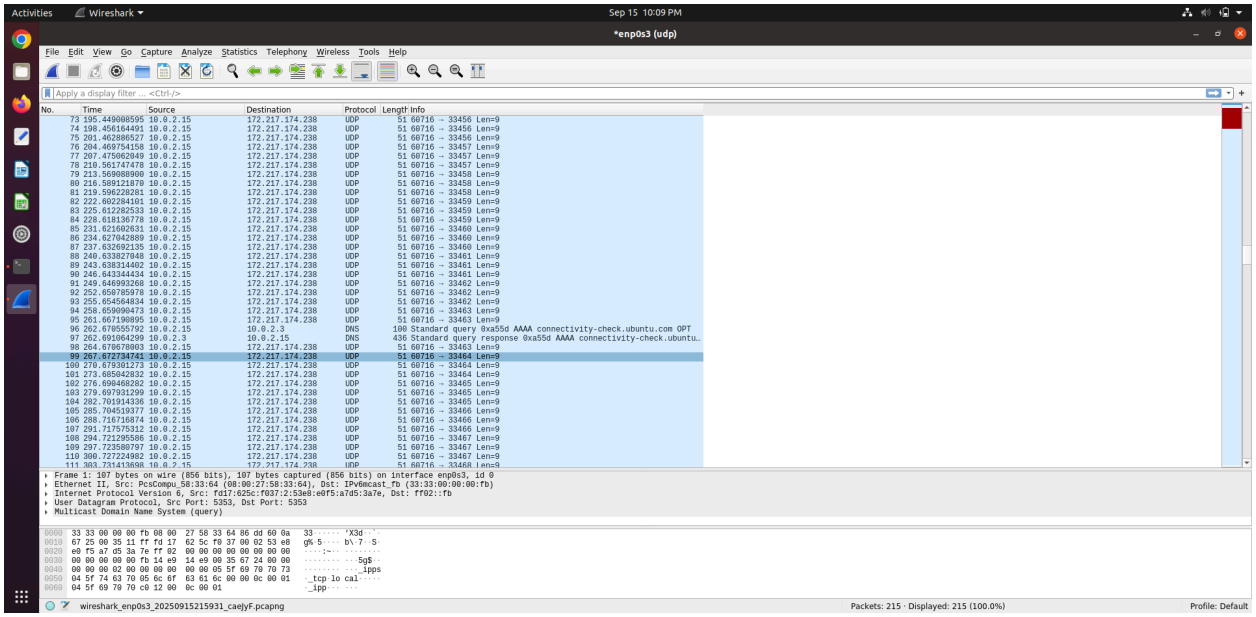
Wireshark Screenshot: Highlight ICMP Echo Requests/Replies (Windows) and UDP probes + ICMP Time Exceeded responses (Linux).

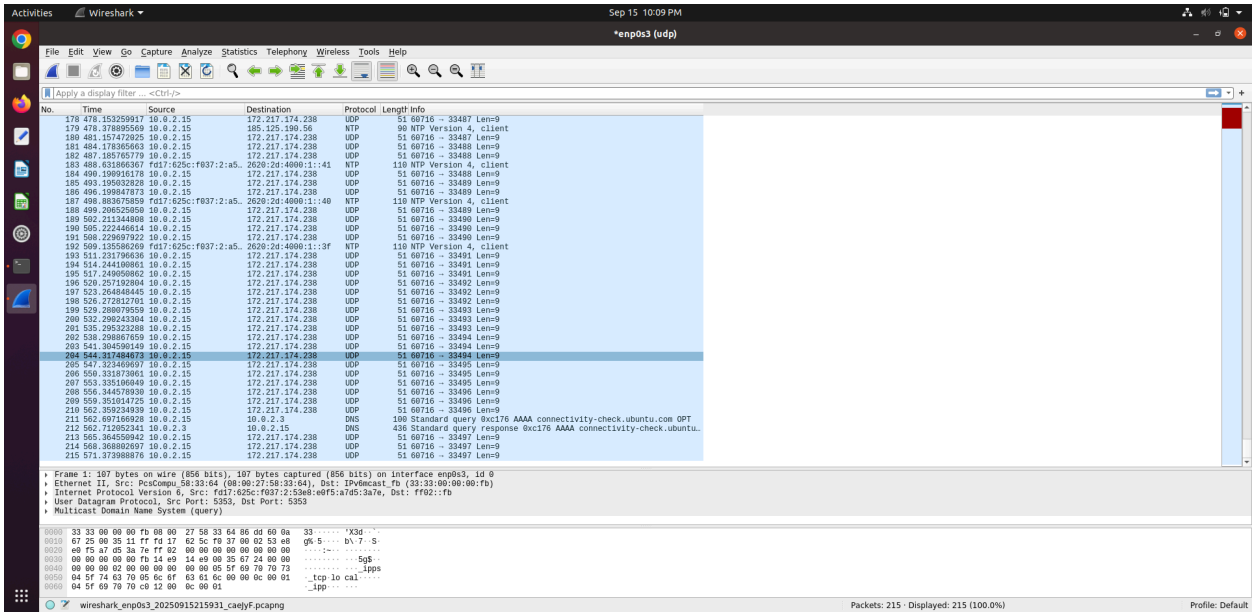
Windows:



Linux:


Activities
Wireshark
Sep 15 9:57 PM
Capturing from enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
1 0.000000000 10.0.2.15 10.0.2.3 DNS 85 Standard query 0xbf12 A www.google.com OPT
2 0.019287469 10.0.2.3 10.0.2.15 DNS 101 Standard query response 0xbf12 A www.google.com A 142.251.42...
3 0.024068122 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
4 0.025834309 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
5 0.027014303 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
6 0.029204842 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
7 3.035078734 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
8 6.039808480 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
9 9.057637063 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
10 12.065511569 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
11 15.074350714 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
12 18.080652436 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
13 21.084724390 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
14 24.094006407 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
15 27.098877150 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
16 30.103738615 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
17 33.106652973 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
18 36.113866208 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
19 39.116618269 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
20 42.122857881 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
21 45.130904335 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
22 48.136606142 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
23 51.144655162 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
24 54.150945235 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
25 57.166638789 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
26 60.172985075 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
27 63.175901294 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
28 66.182153430 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
29 69.189460512 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
30 72.193161161 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
31 75.197386979 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
32 78.199310082 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
33 81.210746490 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
34 84.215765600 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
35 87.218647231 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
36 90.223110548 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
37 93.227976028 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
38 96.234783630 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
39 99.242710746 10.0.2.15 142.251.42.68 UDP 51 44815 → 33446 Len=9
Frame 1: 85 bytes on wire (680 bits), 85 bytes captured (680 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: 52:55:0a:00:02:03 (52:55:0a:00:02:03)
Internet Protocol Version 4, Src: 10.0.2.15, Dst: 10.0.2.3
User Datagram Protocol, Src Port: 59703, Dst Port: 53
Domain Name System (query)
0000 52 55 0a 00 02 03 08 00 27 58 33 64 08 00 45 00 RU····· 'X3d··E·
0010 00 47 f7 22 40 00 40 11 2b 72 0a 00 02 0f 0a 00 ·G·"@·@· +r·····
0020 02 03 e9 37 00 35 00 33 18 56 bf 12 01 00 00 01 ···7·5·3 ·V·····
0030 00 00 00 00 00 01 03 77 77 77 06 67 6f 6f 67 6c ·····ww w.googl
0040 65 03 63 6f 6d 00 00 01 00 01 00 00 29 02 00 00 e·com····· ····)···
0050 00 00 00 00 00 ····· ·····
enp0s3: <live capture in progress>
Packets: 213 · Displayed: 213 (100.0%)
Profile: Default


Activities
Wireshark
Sep 15 10:09 PM
*enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
73 195.449008595 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
74 198.456164491 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
75 201.462886527 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
76 204.469754158 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
77 207.475062049 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
78 210.561747478 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
79 213.569008900 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
80 216.589121870 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
81 219.596228201 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
82 222.602284101 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
83 225.612282533 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
84 228.618136778 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
85 231.621602631 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
86 234.627042889 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
87 237.632692135 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
88 240.633827048 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
89 243.638314402 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
90 246.643444434 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
91 249.646993268 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
92 252.650785978 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
93 255.654564834 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
94 258.659090473 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
95 261.667190895 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
96 262.670555792 10.0.2.15 10.0.2.3 DNS 100 Standard query 0xa55d AAAA connectivity-check.ubuntu.com OPT
97 262.691064299 10.0.2.3 10.0.2.15 DNS 436 Standard query response 0xa55d AAAA connectivity-check.ubuntu...
98 264.670678003 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
99 267.672734741 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
100 270.679301273 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
101 273.685042832 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
102 276.690468282 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
103 279.697931299 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
104 282.701914336 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
105 285.704519377 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
106 288.716716874 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
107 291.717575312 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
108 294.721295586 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
109 297.723580797 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
110 300.727224982 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
111 303.731413698 10.0.2.15 172.217.174.238 UDP 51 60716 → 33468 Len=9
Frame 1: 107 bytes on wire (856 bits), 107 bytes captured (856 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: IPv6mcast_fb (33:33:00:00:00:fb)
Internet Protocol Version 6, Src: fd17:625c:f037:2:53e8:e0f5:a7d5:3a7e, Dst: ff02::fb
User Datagram Protocol, Src Port: 5353, Dst Port: 5353
Multicast Domain Name System (query)
0000 33 33 00 00 00 fb 08 00 27 58 33 64 86 dd 60 0a 33····· 'X3d··`·
0010 67 25 00 35 11 ff fd 17 62 5c f0 37 00 02 53 e8 g%·5···· b\·7··S·
0020 e0 f5 a7 d5 3a 7e ff 02 00 00 00 00 00 00 00 00 ····:~·· ········
0030 00 00 00 00 00 fb 14 e9 14 e9 00 35 67 24 00 00 ········ ···5g$··
0040 00 00 00 02 00 00 00 00 00 00 05 5f 69 70 70 73 ········ ·····ipps
0050 04 5f 74 63 70 05 6c 6f 63 61 6c 00 00 0c 00 01 ·_tcp·lo cal·····
0060 04 5f 69 70 70 c0 12 00 0c 00 01 ·_ipp···· ·····
wireshark_enp0s3_20250915215931_caejyF.pcapng
Packets: 215 · Displayed: 215 (100.0%)
Profile: Default


Activities
Wireshark
Sep 15 10:09 PM
*enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
170 478.153259917 10.0.2.15 172.217.174.238 UDP 51 60716 → 33487 Len=9
179 478.378895569 10.0.2.15 185.125.190.56 NTP 90 NTP Version 4, client
180 481.157472025 10.0.2.15 172.217.174.238 UDP 51 60716 → 33487 Len=9
181 484.178365663 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
182 487.185765779 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
183 488.631866367 fd17:625c:f037:2:a5… 2620:2d:4000:1::41 NTP 110 NTP Version 4, client
184 490.190916178 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
185 493.195032828 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
186 496.199847873 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
187 498.883675859 fd17:625c:f037:2:a5… 2620:2d:4000:1::40 NTP 110 NTP Version 4, client
188 499.206525050 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
189 502.211344808 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
190 505.222446614 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
191 508.229697922 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
192 509.135586269 fd17:625c:f037:2:a5… 2620:2d:4000:1::3f NTP 110 NTP Version 4, client
193 511.231796836 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
194 514.244100861 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
195 517.249050862 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
196 520.257192804 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
197 523.264848445 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
198 526.272812701 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
199 529.280079559 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
200 532.290243304 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
201 535.295323288 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
202 538.298867659 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
203 541.304590149 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
204 544.317484673 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
205 547.323460697 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
206 550.331873061 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
207 553.335106049 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
208 556.344578930 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
209 559.351014725 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
210 562.359234939 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
211 562.697166928 10.0.2.15 10.0.2.3 DNS 100 Standard query 0xc176 AAAA connectivity-check.ubuntu.com OPT
212 562.712952341 10.0.2.3 10.0.2.15 DNS 436 Standard query response 0xc176 AAAA connectivity-check.ubuntu…
213 565.364550942 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
214 568.368802697 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
215 571.373988876 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
Frame 1: 107 bytes on wire (856 bits), 107 bytes captured (856 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: IPv6mcast_fb (33:33:00:00:00:fb)
Internet Protocol Version 6, Src: fd17:625c:f037:2:53e8:e0f5:a7d5:3a7e, Dst: ff02::fb
User Datagram Protocol, Src Port: 5353, Dst Port: 5353
Multicast Domain Name System (query)
0000 33 33 00 00 00 fb 08 00 27 58 33 64 86 dd 60 0a 33····· 'X3d··`·
0010 67 25 00 35 11 ff fd 17 62 5c f0 37 00 02 53 e8 g%·5···· b\·7··S·
0020 e0 f5 a7 d5 3a 7e ff 02 00 00 00 00 00 00 00 00 ····:~·· ········
0030 00 00 00 00 00 fb 14 e9 14 e9 00 35 67 24 00 00 ·········· ···5g$··
0040 00 00 00 02 00 00 00 00 00 00 05 5f 69 70 70 73 ·········· ···_ipps
0050 04 5f 74 63 70 05 6c 6f 63 61 6c 00 00 0c 00 01 ·_tcp·lo cal·····
0060 04 5f 69 70 70 c0 12 00 0c 00 01 ·_ipp····· ·····
wireshark_enp0s3_20250915215931_caeJyF.pcapng
Packets: 215 · Displayed: 215 (100.0%)
Profile: Default

2. Reasons for *** in traceroute output

Observation:
Some hops may display *** in Linux outputs while tracing Google.in .windows i didn't get any *** sysmbols

Possible Reasons:

1. **Router or Firewall Blocking:** Some routers or Google's intermediate network devices may block ICMP or UDP probe responses.

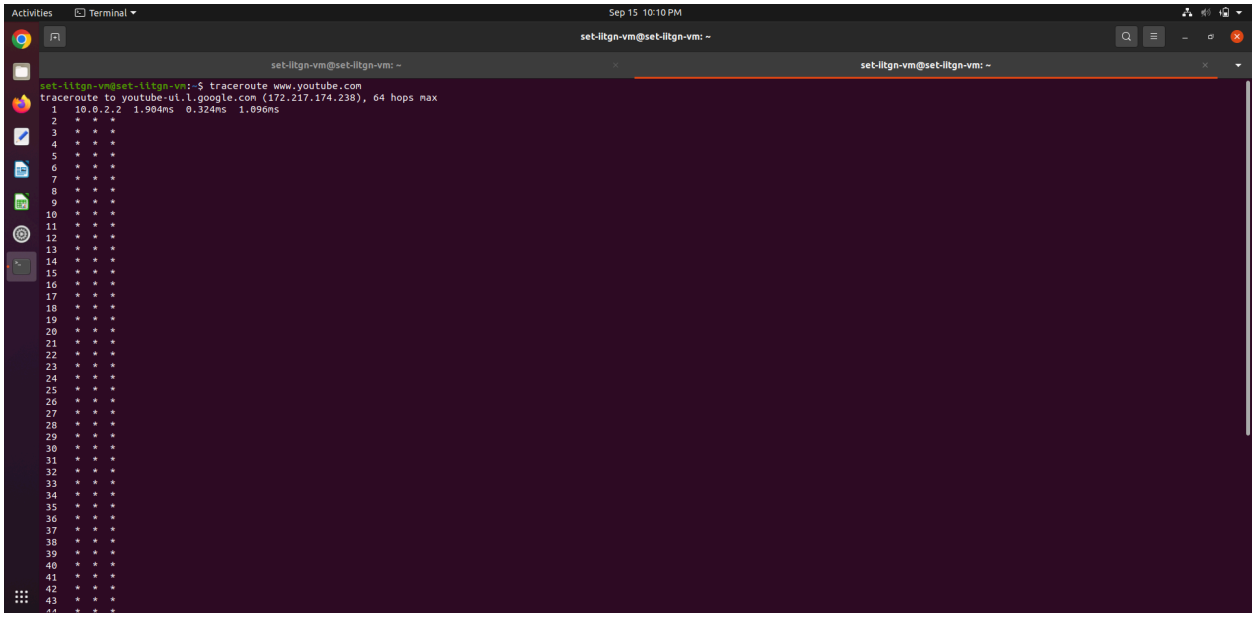
2. **Router Prioritization:** Routers focus on forwarding traffic instead of responding to traceroute probes.

3. **Packet Loss or Network Congestion:** Temporary delays or packet drops may prevent the probes from receiving replies.

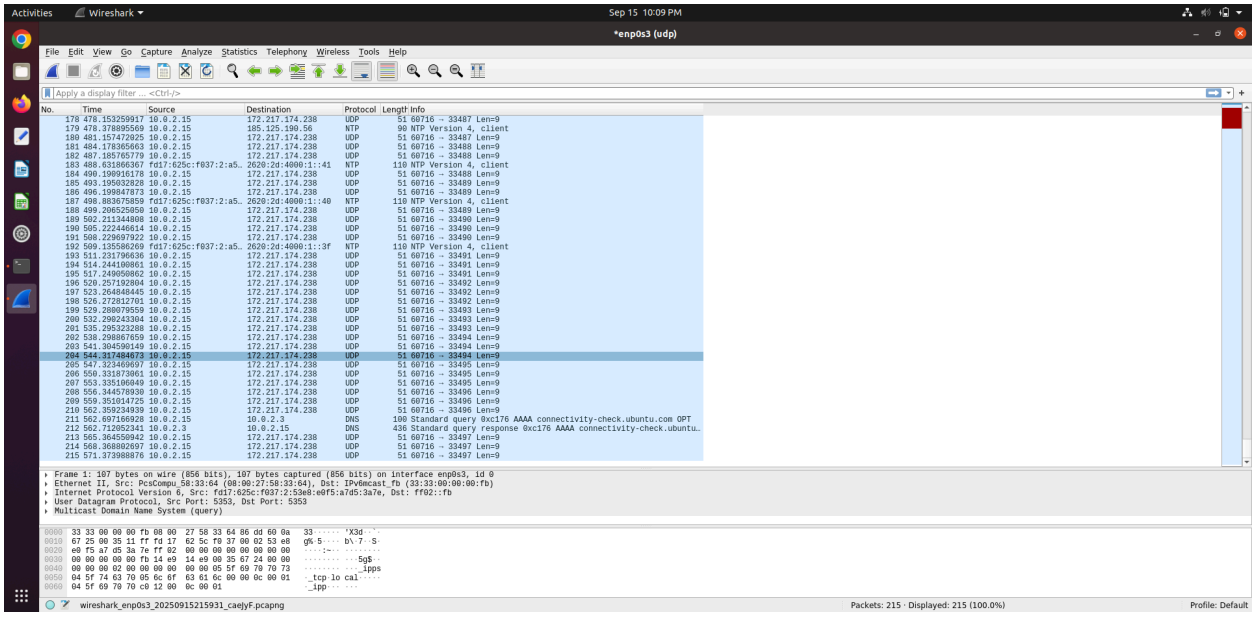
Supporting Evidence:

- **Command Prompt Screenshot:** Highlight hops showing ***.

  Linux:



- **Wireshark Screenshot:** Show missing UDP responses at those hops.



3. Field Changing Between Successive Probes (Linux)

Observation:
The **TTL (Time To Live)** in the IP header changes in successive probes while tracing Google.

Explanation:

- Linux traceroute starts with TTL = 1, increasing by 1 for each set of probes.
- Each router decrements TTL; when TTL = 0, the router replies with ICMP Time Exceeded, revealing its IP and latency.

Supporting Evidence:

- **Command Prompt Screenshot:** Show hop numbers increasing (1, 2, 3 … up to Google).

- **Wireshark Screenshot:** Highlight TTL values in successive UDP packets.

4. Difference Between Final Hop and Intermediate Hop

Observation:

- **Intermediate hops:** Respond with ICMP Time Exceeded (Type 11).
- **Final hop (Google):** Responds with ICMP Port Unreachable (Linux) or ICMP Echo Reply (Windows).

Explanation:

- Intermediate routers are not the destination, so they only indicate TTL expiration.
- The final Google server replies differently depending on protocol: ICMP Echo Reply for Windows and ICMP Port Unreachable for Linux UDP probes.

Supporting Evidence:

- **Command Prompt Screenshot:** Highlight last hop showing Google's IP.
- **Wireshark Screenshot:** Highlight ICMP type/code difference between intermediate and final responses.

5. Effect of Firewall Blocking UDP but Allowing ICMP

Scenario:

- Firewall blocks UDP traffic but allows ICMP.

Observation:

- **Linux traceroute (UDP):** Mostly fails to reach Google; many hops show ***.
- **Windows tracert (ICMP):** Works normally; ICMP Echo Requests and Replies are allowed.

Explanation:

- Linux traceroute relies on UDP packets to high-numbered ports. Blocking these prevents reaching Google's final hop.
- Windows tracert uses ICMP, which the firewall allows, so it completes successfully.

Supporting Evidence:

- **Command Prompt Screenshot:** Compare Linux showing *** vs. Windows reaching Google.
- **Wireshark Screenshot:** Show blocked UDP packets vs. successful ICMP packets.

Conclusion

- Traceroute behavior depends on both OS and protocol: ICMP for Windows, UDP for Linux.
- Firewalls and router configurations can prevent responses, resulting in *** hops.
- TTL is the key mechanism enabling sequential hop discovery.
- Using both Command Prompt outputs and Wireshark captures provides a clear visualization of how packets reach Google servers.

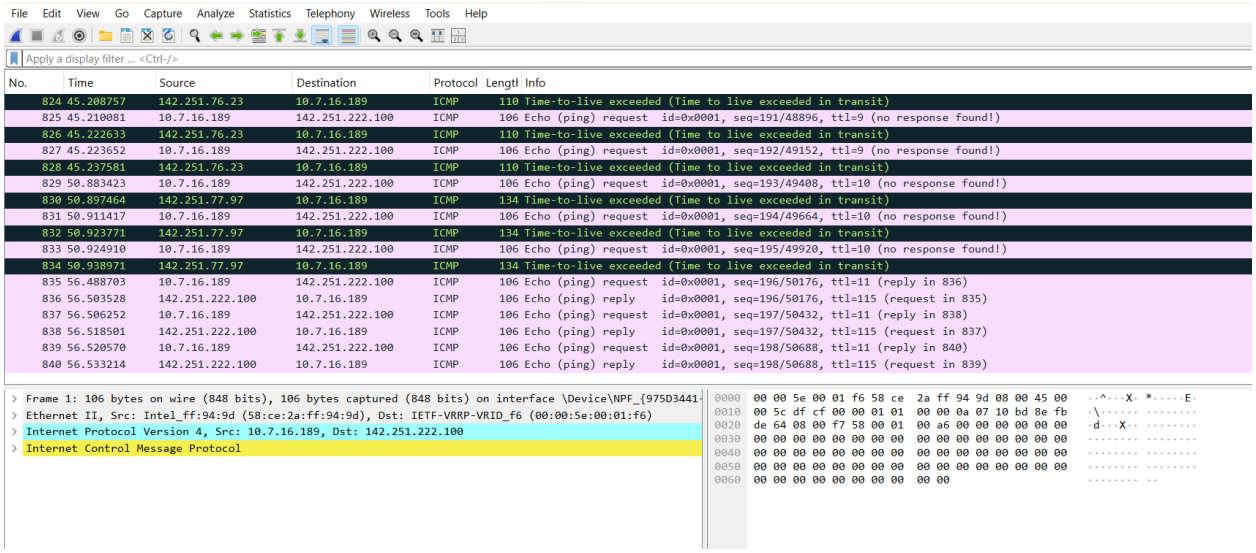
SCREENSHOTS:

Windows:

CommandPrompt:

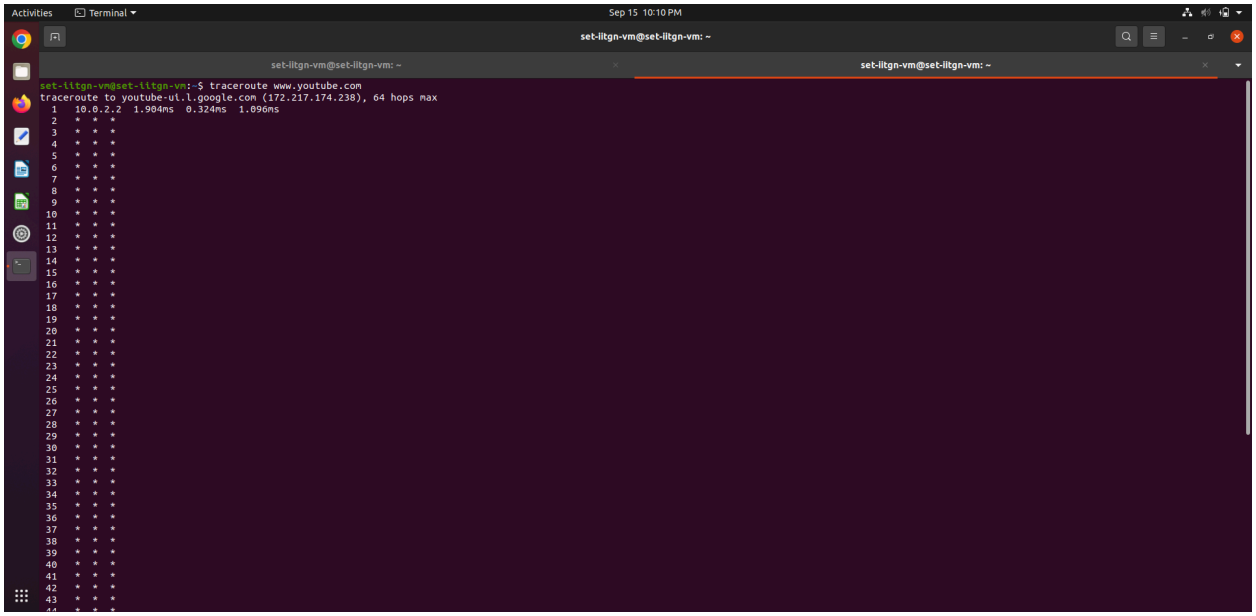
```
C:\Users\GUDA AVINASH REDDY>tracert www.google.com

Tracing route to www.google.com [142.251.222.100]
over a maximum of 30 hops:

  1     2 ms     3 ms     2 ms  10.7.0.5
  2    14 ms     2 ms     2 ms  172.16.4.7
  3     7 ms    11 ms    12 ms  14.139.98.1
  4     3 ms     4 ms     3 ms  10.117.81.253
  5    11 ms     9 ms    12 ms  10.154.8.137
  6    15 ms    10 ms     9 ms  10.255.239.170
  7    12 ms    10 ms    11 ms  10.152.7.214
  8    13 ms    11 ms    12 ms  142.250.172.80
  9    14 ms    12 ms    14 ms  142.251.76.23
 10    14 ms    12 ms    14 ms  142.251.77.97
 11    15 ms    12 ms    12 ms  pnbomb-az-in-f4.1e100.net [142.251.222.100]

Trace complete.
```

wireShark:

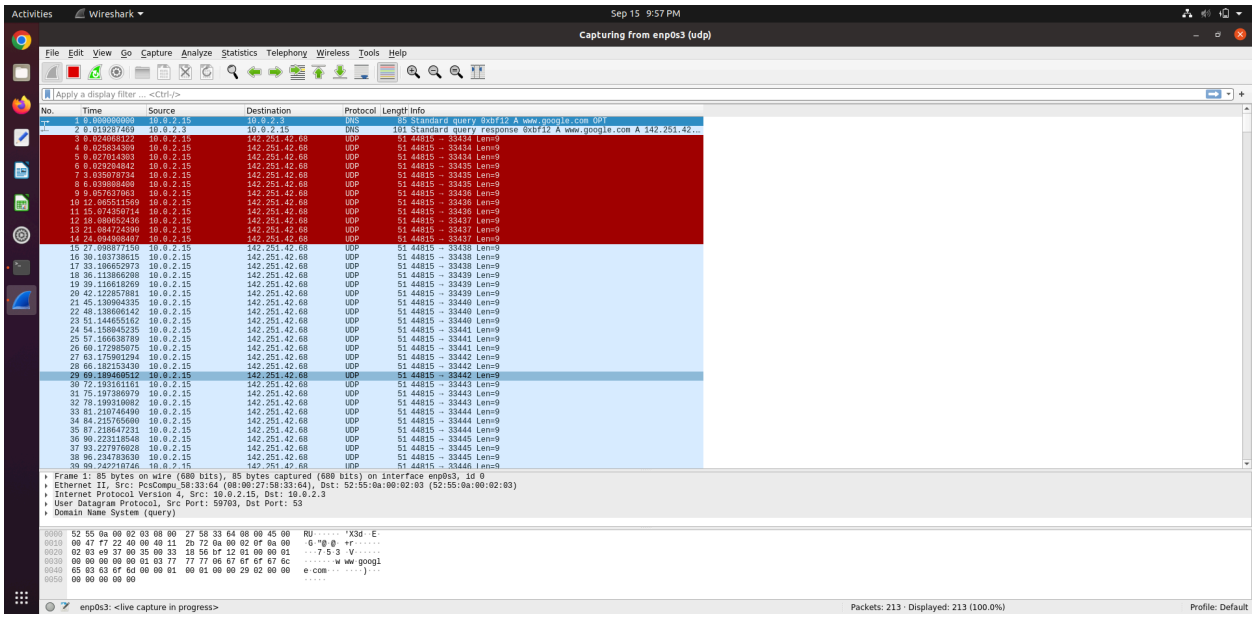


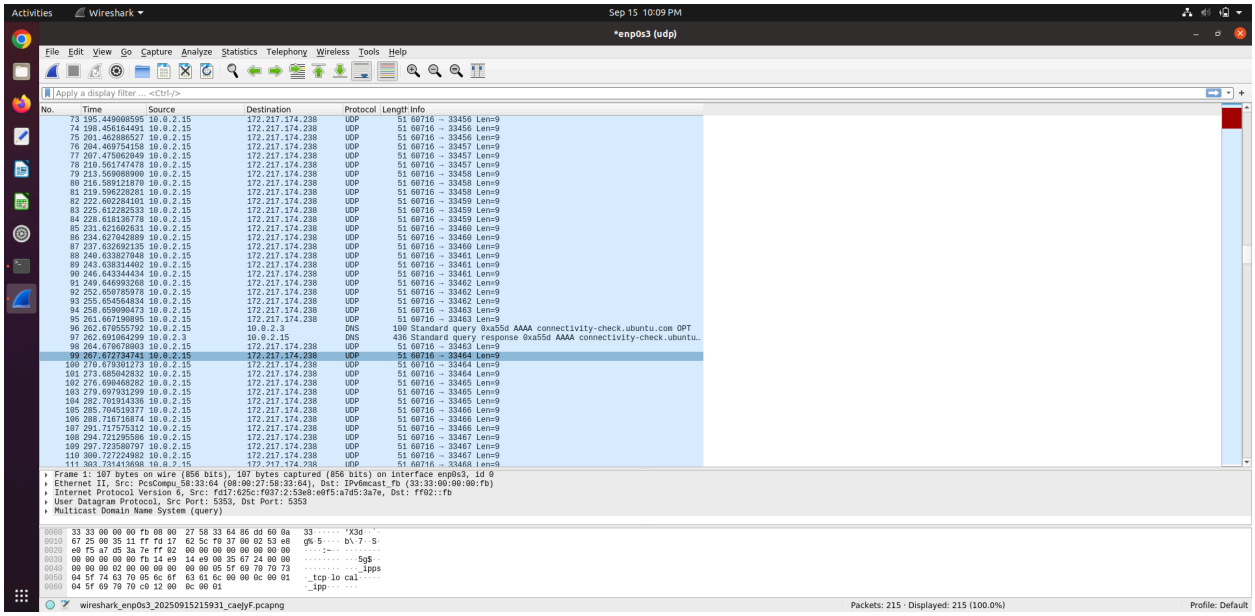
Ubuntu LINUX:

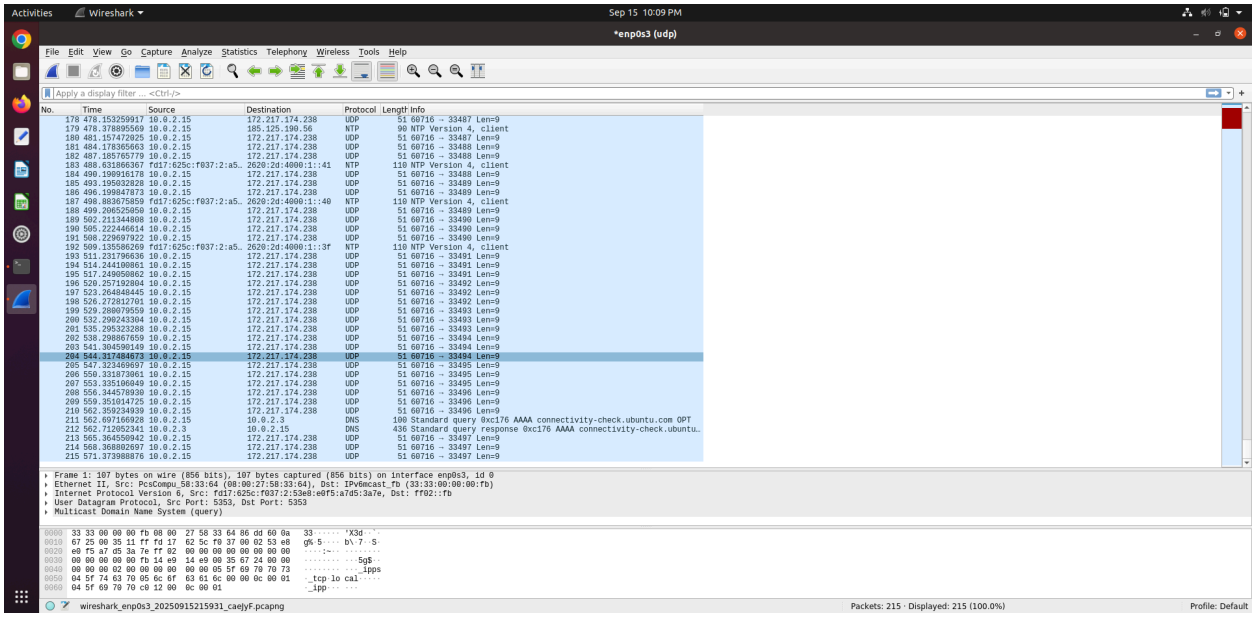
Comandpromt


Activities
Terminal
Sep 15 10:10 PM
set-iitgn-vm@set-iitgn-vm: ~
set-iitgn-vm@set-iitgn-vm: ~
set-iitgn-vm@set-iitgn-vm: ~
set-iitgn-vm@set-iitgn-vm:~$ traceroute www.youtube.com
traceroute to youtube-ui.l.google.com (172.217.174.238), 64 hops max
1 10.0.2.2 1.904ms 0.324ms 1.096ms
2 * * *
3 * * *
4 * * *
5 * * *
6 * * *
7 * * *
8 * * *
9 * * *
10 * * *
11 * * *
12 * * *
13 * * *
14 * * *
15 * * *
16 * * *
17 * * *
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
25 * * *
26 * * *
27 * * *
28 * * *
29 * * *
30 * * *
31 * * *
32 * * *
33 * * *
34 * * *
35 * * *
36 * * *
37 * * *
38 * * *
39 * * *
40 * * *
41 * * *
42 * * *
43 * * *

Wireshark:


Activities
Wireshark
Sep 15 9:57 PM
Capturing from enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
1 0.000000000 10.0.2.15 10.0.2.3 DNS 85 Standard query 0xbf12 A www.google.com OPT
2 0.010287469 10.0.2.3 10.0.2.15 DNS 101 Standard query response 0xbf12 A www.google.com A 142.251.42...
3 0.024068122 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
4 0.025834309 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
5 0.027014303 10.0.2.15 142.251.42.68 UDP 51 44815 → 33434 Len=9
6 0.029204842 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
7 3.035078734 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
8 6.039008400 10.0.2.15 142.251.42.68 UDP 51 44815 → 33435 Len=9
9 9.057637063 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
10 12.065511569 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
11 15.074350714 10.0.2.15 142.251.42.68 UDP 51 44815 → 33436 Len=9
12 18.080652436 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
13 21.084724390 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
14 24.094008407 10.0.2.15 142.251.42.68 UDP 51 44815 → 33437 Len=9
15 27.098877150 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
16 30.103738615 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
17 33.106652973 10.0.2.15 142.251.42.68 UDP 51 44815 → 33438 Len=9
18 36.113866208 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
19 39.116618269 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
20 42.122857881 10.0.2.15 142.251.42.68 UDP 51 44815 → 33439 Len=9
21 45.130904335 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
22 48.138606142 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
23 51.144655162 10.0.2.15 142.251.42.68 UDP 51 44815 → 33440 Len=9
24 54.158045235 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
25 57.166638789 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
26 60.172985075 10.0.2.15 142.251.42.68 UDP 51 44815 → 33441 Len=9
27 63.175901294 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
28 66.182153430 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
29 69.189460512 10.0.2.15 142.251.42.68 UDP 51 44815 → 33442 Len=9
30 72.193161161 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
31 75.197386979 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
32 78.199310082 10.0.2.15 142.251.42.68 UDP 51 44815 → 33443 Len=9
33 81.210746490 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
34 84.215765600 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
35 87.218647231 10.0.2.15 142.251.42.68 UDP 51 44815 → 33444 Len=9
36 90.223118548 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
37 93.227976028 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
38 96.234783630 10.0.2.15 142.251.42.68 UDP 51 44815 → 33445 Len=9
39 99.242710746 10.0.2.15 142.251.42.68 UDP 51 44815 → 33446 Len=9
Frame 1: 85 bytes on wire (680 bits), 85 bytes captured (680 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: 52:55:0a:00:02:03 (52:55:0a:00:02:03)
Internet Protocol Version 4, Src: 10.0.2.15, Dst: 10.0.2.3
User Datagram Protocol, Src Port: 59703, Dst Port: 53
Domain Name System (query)
0000 52 55 0a 00 02 03 08 00 27 58 33 64 08 00 45 00 RU····· 'X3d··E·
0010 00 47 f7 22 40 00 40 11 2b 72 0a 00 02 0f 0a 00 ·G·"@·@· +r·····
0020 02 03 e9 37 00 35 00 33 18 56 bf 12 01 00 00 01 ···7·5·3 ·V·····
0030 00 00 00 00 00 01 03 77 77 77 06 67 6f 6f 67 6c ·····ww www.googl
0040 65 03 63 6f 6d 00 00 01 00 01 00 00 29 02 00 00 e·com·····)···
0050 00 00 00 00 00 ·····
enp0s3: <live capture in progress>
Packets: 213 · Displayed: 213 (100.0%)
Profile: Default


Activities
Wireshark
Sep 15 10:09 PM
*enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
73 195.449008595 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
74 198.456164491 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
75 201.462886527 10.0.2.15 172.217.174.238 UDP 51 60716 → 33456 Len=9
76 204.469754158 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
77 207.475062049 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
78 210.561747478 10.0.2.15 172.217.174.238 UDP 51 60716 → 33457 Len=9
79 213.569088900 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
80 216.589121878 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
81 219.596228281 10.0.2.15 172.217.174.238 UDP 51 60716 → 33458 Len=9
82 222.602284101 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
83 225.612282533 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
84 228.618136778 10.0.2.15 172.217.174.238 UDP 51 60716 → 33459 Len=9
85 231.621602631 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
86 234.627042809 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
87 237.632692135 10.0.2.15 172.217.174.238 UDP 51 60716 → 33460 Len=9
88 240.633827048 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
89 243.638314402 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
90 246.643344434 10.0.2.15 172.217.174.238 UDP 51 60716 → 33461 Len=9
91 249.646993268 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
92 252.650785978 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
93 255.654564834 10.0.2.15 172.217.174.238 UDP 51 60716 → 33462 Len=9
94 258.659090473 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
95 261.667190895 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
96 262.670555792 10.0.2.15 10.0.2.3 DNS 100 Standard query 0xa55d AAAA connectivity-check.ubuntu.com OPT
97 262.691064299 10.0.2.3 10.0.2.15 DNS 436 Standard query response 0xa55d AAAA connectivity-check.ubuntu…
98 264.670678003 10.0.2.15 172.217.174.238 UDP 51 60716 → 33463 Len=9
99 267.672734741 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
100 270.678301273 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
101 273.685042832 10.0.2.15 172.217.174.238 UDP 51 60716 → 33464 Len=9
102 276.690468282 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
103 279.697931299 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
104 282.701914336 10.0.2.15 172.217.174.238 UDP 51 60716 → 33465 Len=9
105 285.704519377 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
106 288.716716874 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
107 291.717575312 10.0.2.15 172.217.174.238 UDP 51 60716 → 33466 Len=9
108 294.721295586 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
109 297.723580797 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
110 300.727224982 10.0.2.15 172.217.174.238 UDP 51 60716 → 33467 Len=9
111 303.731413698 10.0.2.15 172.217.174.238 UDP 51 60716 → 33468 Len=9
Frame 1: 107 bytes on wire (856 bits), 107 bytes captured (856 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: IPv6mcast_fb (33:33:00:00:00:fb)
Internet Protocol Version 6, Src: fd17:625c:f037:2:53e8:e0f5:a7d5:3a7e, Dst: ff02::fb
User Datagram Protocol, Src Port: 5353, Dst Port: 5353
Multicast Domain Name System (query)
0000 33 33 00 00 00 fb 08 00 27 58 33 64 86 dd 60 0a 33·····'X3d··`·
0010 67 25 00 35 11 ff fd 17 62 5c f0 37 00 02 53 e8 g%·5····b\·7··S·
0020 e0 f5 a7 d5 3a 7e ff 02 00 00 00 00 00 00 00 00 ····:~··· ·····
0030 00 00 00 00 fb 14 e9 14 e9 00 35 67 24 00 00 ··········5g$··
0040 00 00 00 02 00 00 00 00 00 00 05 5f 69 70 70 73 ··········_ipps
0050 04 5f 74 63 70 05 6c 6f 63 61 6c 00 00 0c 00 01 ·_tcp·lo cal·····
0060 04 5f 69 70 70 c0 12 00 0c 00 01 ·_ipp·····
wireshark_enp0s3_20250915215931_caejyF.pcapng
Packets: 215 · Displayed: 215 (100.0%)
Profile: Default


Activities
Wireshark
Sep 15 10:09 PM
*enp0s3 (udp)
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
178 478.153259917 10.0.2.15 172.217.174.238 UDP 51 60716 → 33487 Len=9
179 478.378895569 10.0.2.15 185.125.190.56 NTP 90 NTP Version 4, client
180 481.157472025 10.0.2.15 172.217.174.238 UDP 51 60716 → 33487 Len=9
181 484.178365663 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
182 487.185765779 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
183 488.631866367 fd17:625c:f037:2:a5… 2620:2d:4000:1::41 NTP 110 NTP Version 4, client
184 490.199916178 10.0.2.15 172.217.174.238 UDP 51 60716 → 33488 Len=9
185 493.195032828 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
186 496.199847873 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
187 498.883675859 fd17:625c:f037:2:a5… 2620:2d:4000:1::40 NTP 110 NTP Version 4, client
188 499.206525050 10.0.2.15 172.217.174.238 UDP 51 60716 → 33489 Len=9
189 502.211344808 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
190 505.222446614 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
191 508.229697922 10.0.2.15 172.217.174.238 UDP 51 60716 → 33490 Len=9
192 509.135586269 fd17:625c:f037:2:a5… 2620:2d:4000:1::3f NTP 110 NTP Version 4, client
193 511.231796636 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
194 514.244100861 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
195 517.249050862 10.0.2.15 172.217.174.238 UDP 51 60716 → 33491 Len=9
196 520.257192804 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
197 523.264048445 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
198 526.272812701 10.0.2.15 172.217.174.238 UDP 51 60716 → 33492 Len=9
199 529.280679559 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
200 532.290243304 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
201 535.295323288 10.0.2.15 172.217.174.238 UDP 51 60716 → 33493 Len=9
202 538.298867650 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
203 541.304590149 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
204 544.317484673 10.0.2.15 172.217.174.238 UDP 51 60716 → 33494 Len=9
205 547.323469697 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
206 550.331873061 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
207 553.335106949 10.0.2.15 172.217.174.238 UDP 51 60716 → 33495 Len=9
208 556.344578930 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
209 559.351014725 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
210 562.359234939 10.0.2.15 172.217.174.238 UDP 51 60716 → 33496 Len=9
211 562.697166928 10.0.2.15 10.0.2.3 DNS 100 Standard query 0xc176 AAAA connectivity-check.ubuntu.com OPT
212 562.712052341 10.0.2.3 10.0.2.15 DNS 436 Standard query response 0xc176 AAAA connectivity-check.ubuntu…
213 565.364550942 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
214 568.368802097 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
215 571.373988876 10.0.2.15 172.217.174.238 UDP 51 60716 → 33497 Len=9
Frame 1: 107 bytes on wire (856 bits), 107 bytes captured (856 bits) on interface enp0s3, id 0
Ethernet II, Src: PcsCompu_58:33:64 (08:00:27:58:33:64), Dst: IPv6mcast_fb (33:33:00:00:00:fb)
Internet Protocol Version 6, Src: fd17:625c:f037:2:53e8:e0f5:a7d5:3a7e, Dst: ff02::fb
User Datagram Protocol, Src Port: 5353, Dst Port: 5353
Multicast Domain Name System (query)
0000 33 33 00 00 00 fb 08 00 27 58 33 64 86 dd 60 0a 33·····'X3d··`·
0010 67 25 00 35 11 ff fd 17 62 5c f0 37 00 02 53 e8 g%·5····b\·7··S·
0020 e0 f5 a7 d5 3a 7e ff 02 00 00 00 00 00 00 00 00 ····:~··· ·····
0030 00 00 00 00 fb 14 e9 14 e9 00 35 67 24 00 00 ··········5g$··
0040 00 00 00 02 00 00 00 00 00 00 05 5f 69 70 70 73 ··········_ipps
0050 04 5f 74 63 70 05 6c 6f 63 61 6c 00 00 0c 00 01 ·_tcp·lo cal·····
0060 04 5f 69 70 70 c0 12 00 0c 00 01 ·_ipp·····
wireshark_enp0s3_20250915215931_caejyF.pcapng
Packets: 215 · Displayed: 215 (100.0%)
Profile: Default