WSA 3 – ANSWERS / Orçun BAŞŞİMŞEK – 2098804

Note: I worked on Windows and I could not find any flag for -q flag on Windows for executing tracert. Therefore, my execution used default number of probes (which is 3).

1-) Traceroute sent 42 ICMP echo requests for "www.twitch.tv". TTL fields of these packets start with 1 and increase one by one up to 14 for each hop.

2-)

Frame Numbers	Source IP Address for TTL-exceeded responses
39 – 41 – 43	192.168.1.1
109 – 111 – 113	212.156.201.33
124 – 126 – 128	81.212.2.93
136 – 138 – 140	212.156.252.225
146 – 148	81.212.31.240
236	81.212.217.5
279 – 281 – 283	212.156.101.134
289 – 291 – 293	213.198.72.249
299 – 301 – 303	129.250.4.98
323 – 325 – 327	129.250.4.16
334 – 336	129.250.3.77
359 – 361 – 363	129.250.2.109
369 – 371 – 373	81.20.67.250

I also saw same hops from the output of tracert command.

3-) It determines the route by sending ICMP echo packets to destination basically. With these packets, TTL field is started from 1 and then incremented one by one to use TTL as a hop counter for the route. Intermediate routers on the path decrement the TTL value and finally TTL reaches 0 for packets. And then, router sends ICMP Time Exceeded message back to the source. This specific messages show the route basically. For second part, even if I run tracert command 2 times, I saw some differences on outputs. Thus, the route can not be always same because of link down, congestion etc.

4-) It is at frame no 519. IP header length is 20 bytes. Total packet length is 74 bytes. Total frame length is 88 bytes.

5-) I saw UDP (17) for UDP communication and ICMP (1) for ICMP communication.

6-) Yes, it is fragmented. 4 fragments are used because MTU (Maximum Transmission Unit) is 1500 bytes and it is smaller than our data which is 5000 bytes. Thus, we need to 4 fragments which has 1480-1480-1480-568 bytes payload respectively.