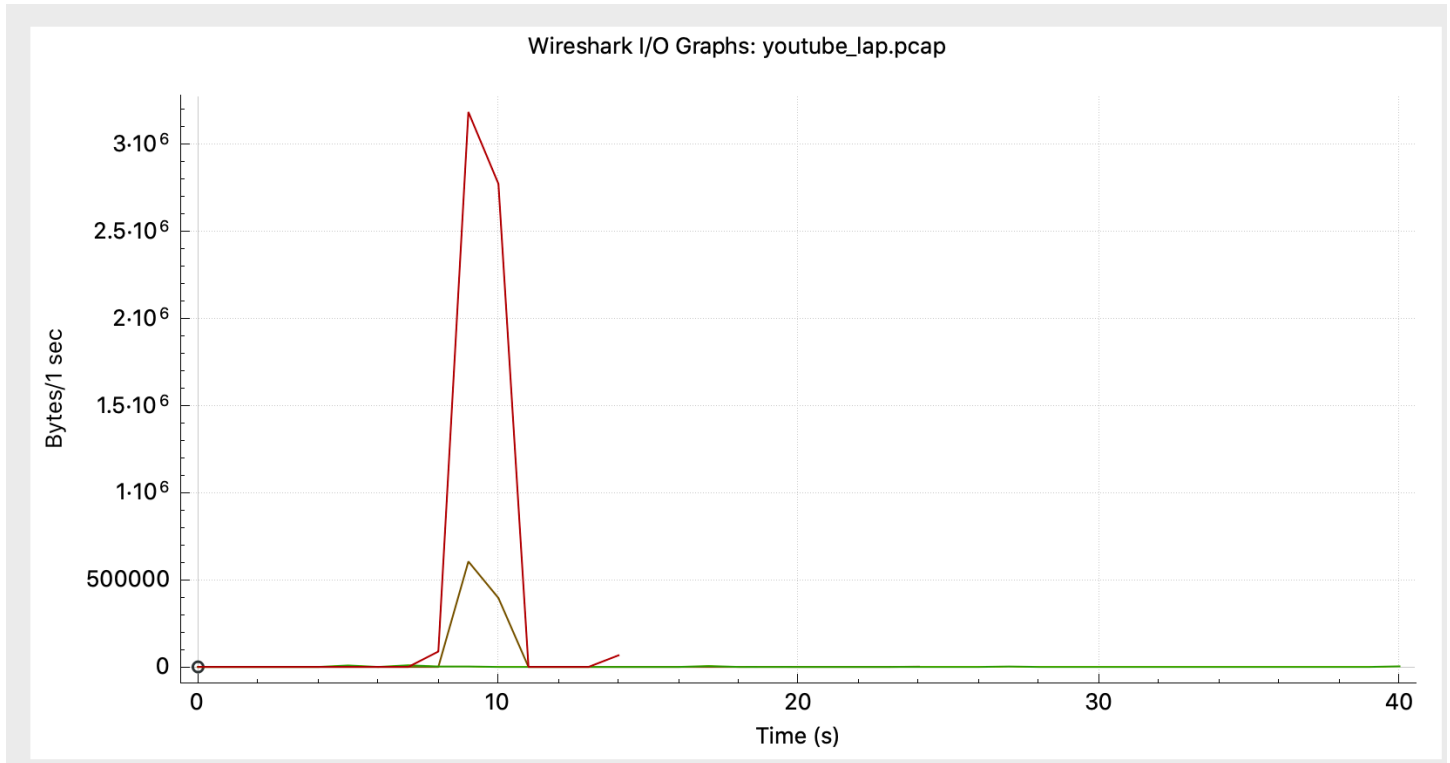


Part B:

We get the bit-rate for each TCP stream with the by plotting the I/O graph. In each trace, we try to look at several relevant connections from the target service (with different ip address) to determine whether the server uses variable bit-rate streaming or constant bit-rate streaming.

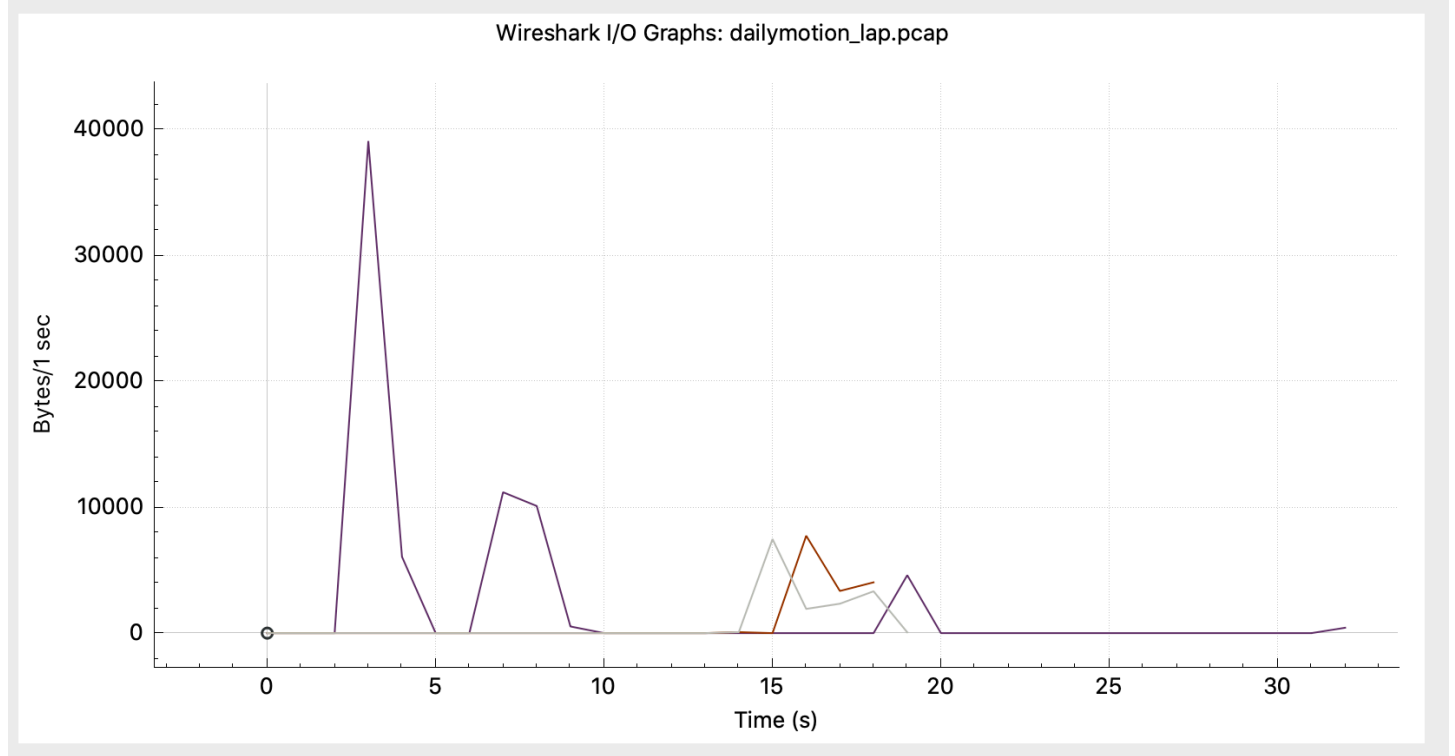


Case a: laptop+wifi

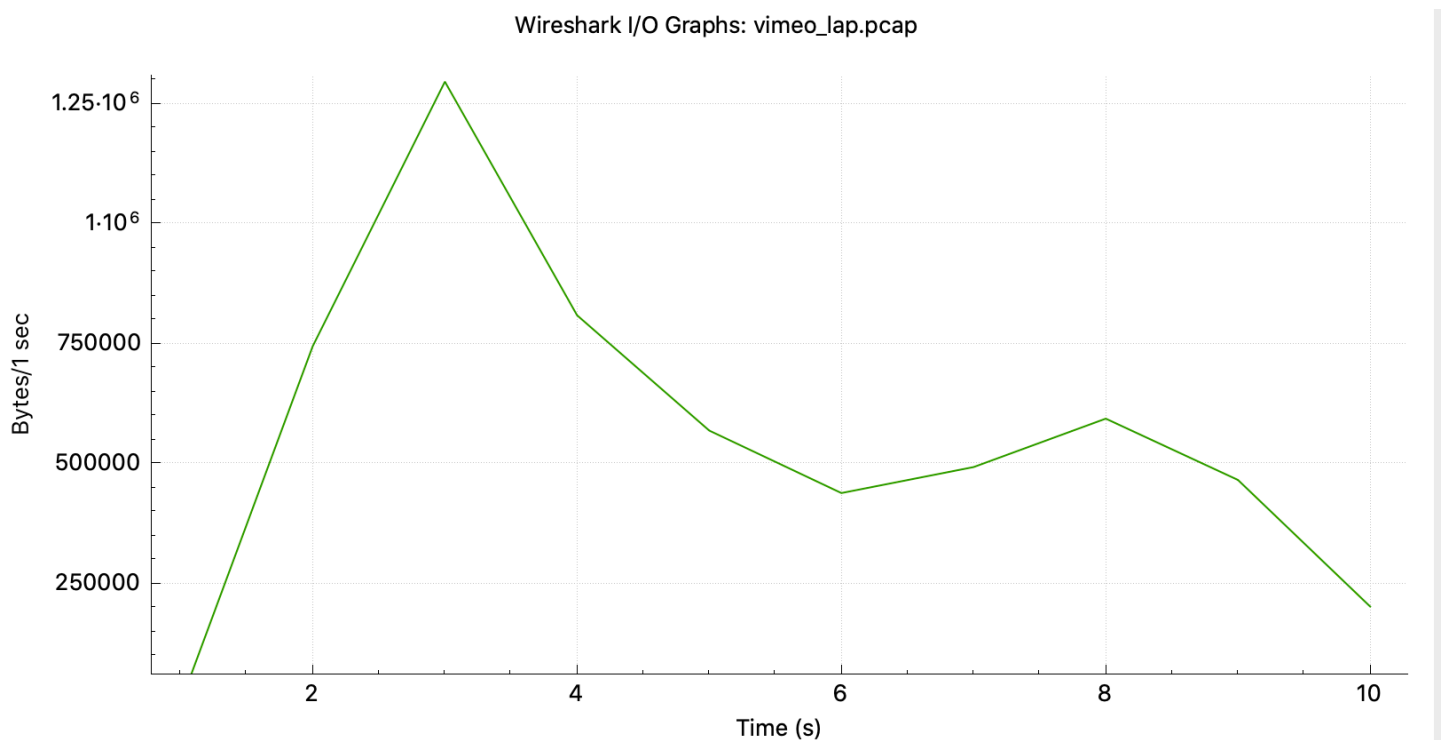
1. YouTube:

For Youtube on laptop, I have chosen three YouTube related connections (ip: 162.216.60.215, 172.217.10.78, 142.250.80.14) : according to graph, the server use variable bit-rate streaming as most bytes sent in about one second. it uses AIMD or some similar strategy. The server raises the bit-rate when the link quality is good, and slashes the bit-rate when the link quality gets worse.

2. For Dailymotion on laptop, I have chosen three Dailymotion related connections (ip: 195.8.215.138 45.126.164.91 198.54.200.91) : according to graph, the server use variable bit-rate streaming as there are several peaks for data transfer and other time it seems no data transfer. The reason is similar as Youtube.

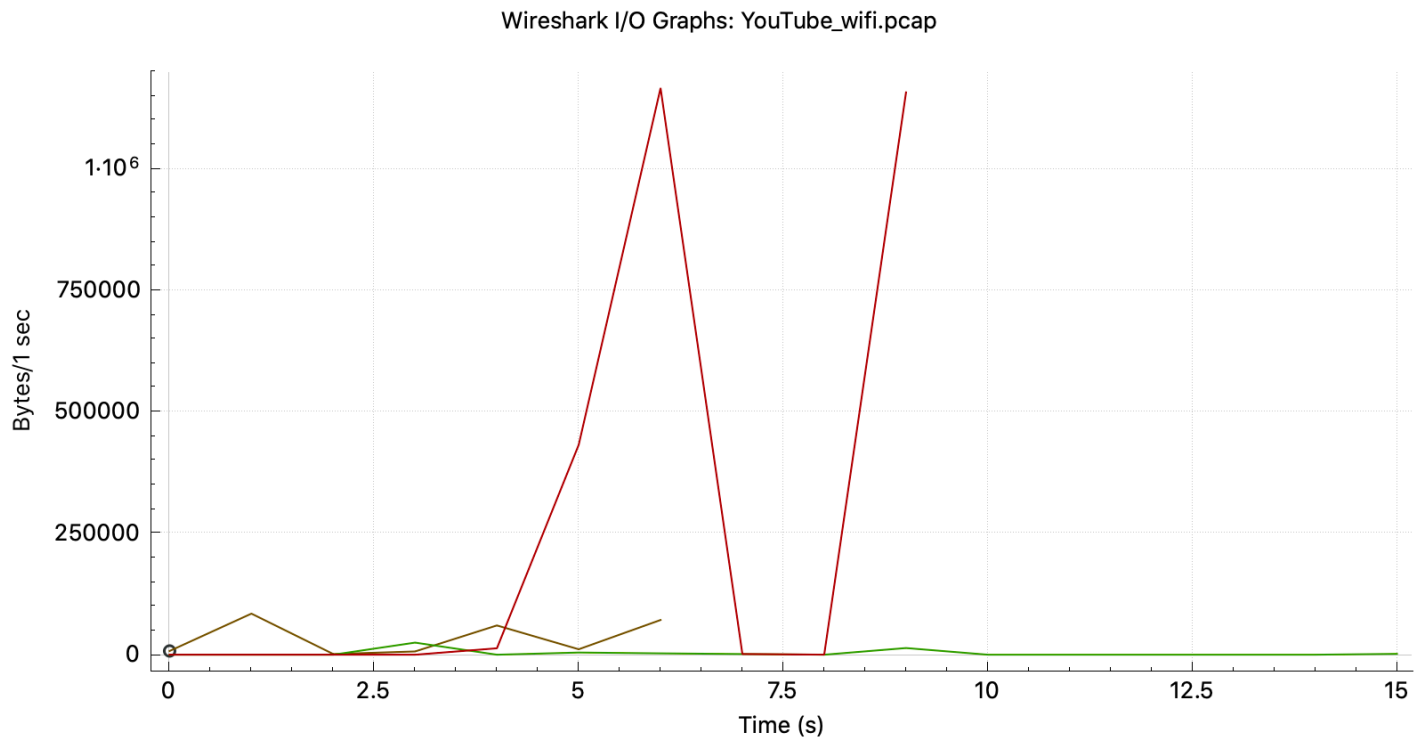


3. For Vimeo on laptop, I have chosen two Vimeo related connections (ip: 151.101.208.217, 151.101.210.109 occupied the graph) : according to graph, the server use variable bit-rate streaming and the reason is similar as above two.

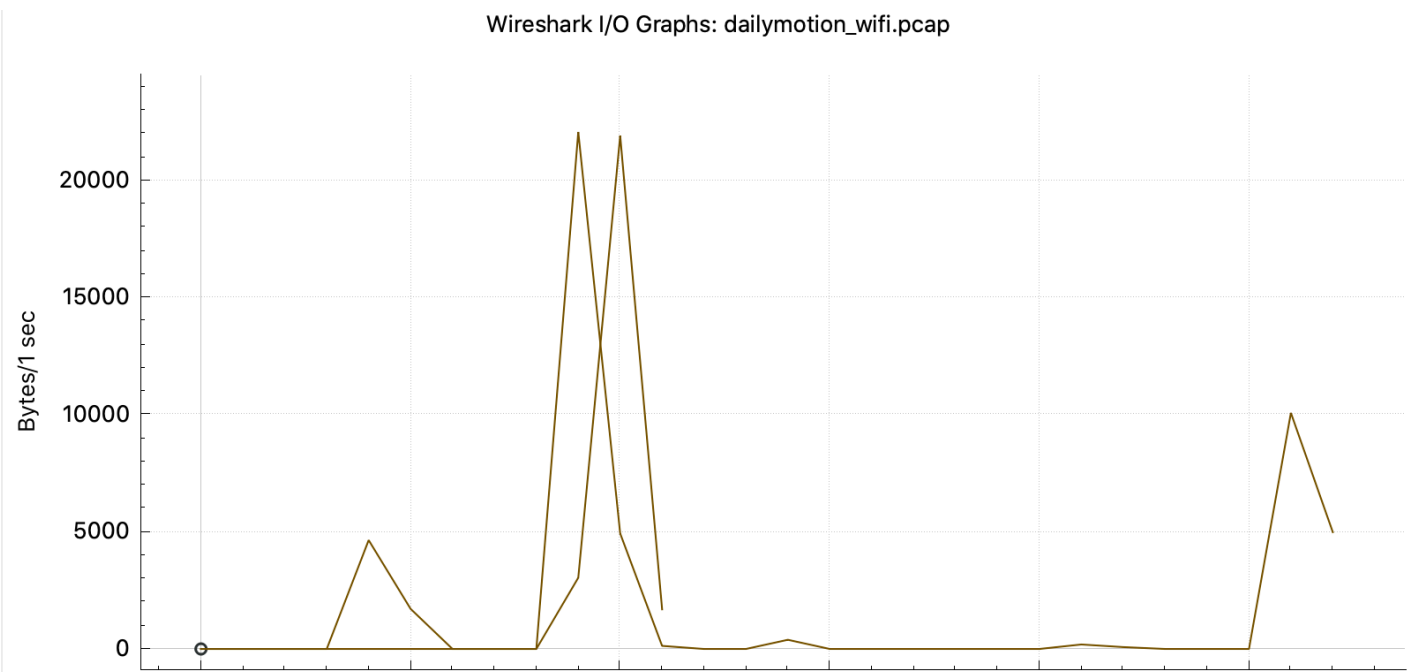


Case b: mobile phone+wifi:

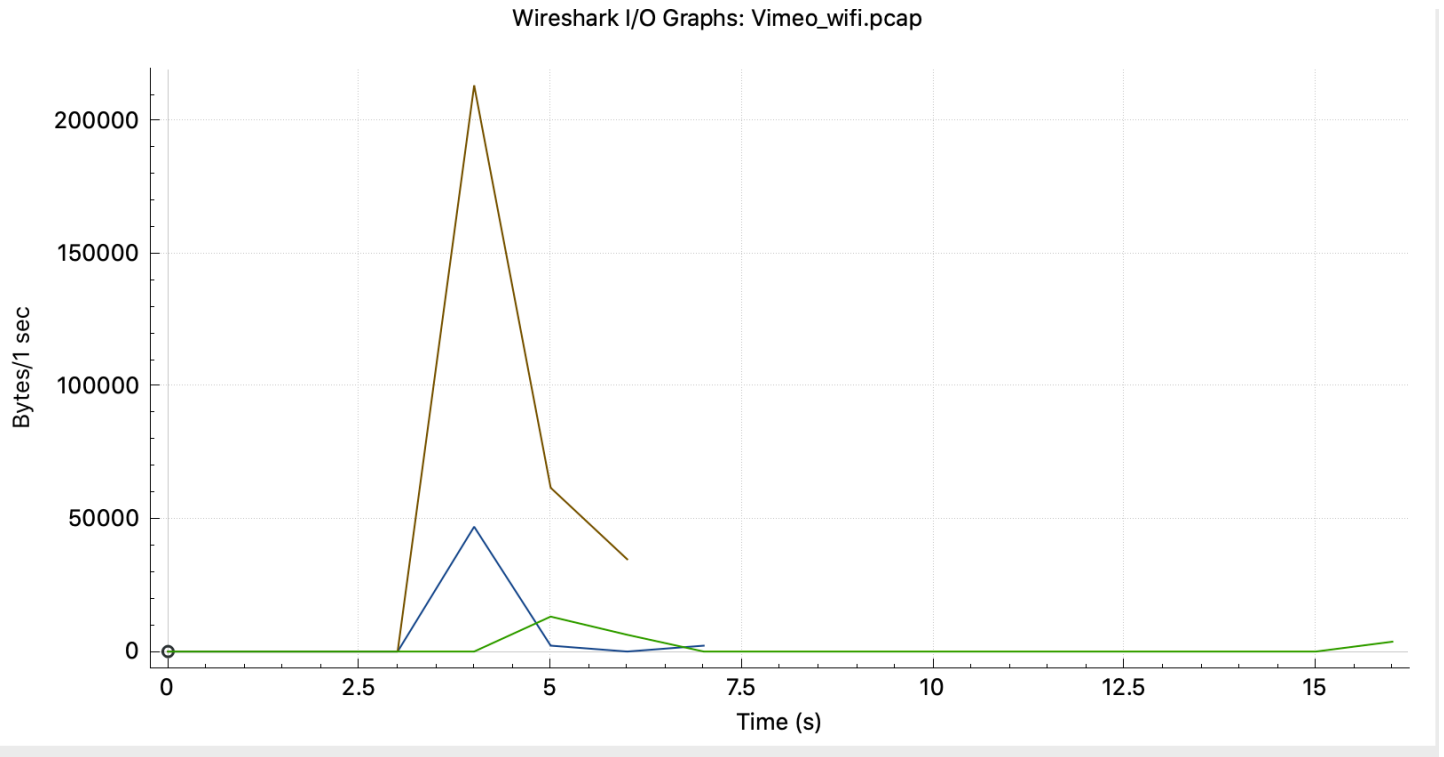
1. Youtube: I have chosen three YouTube related connections (ip: 167.206.10.208 173.194.205.101 172.217.10.234) : according to graph, the server use variable bit-rate streaming as case a.



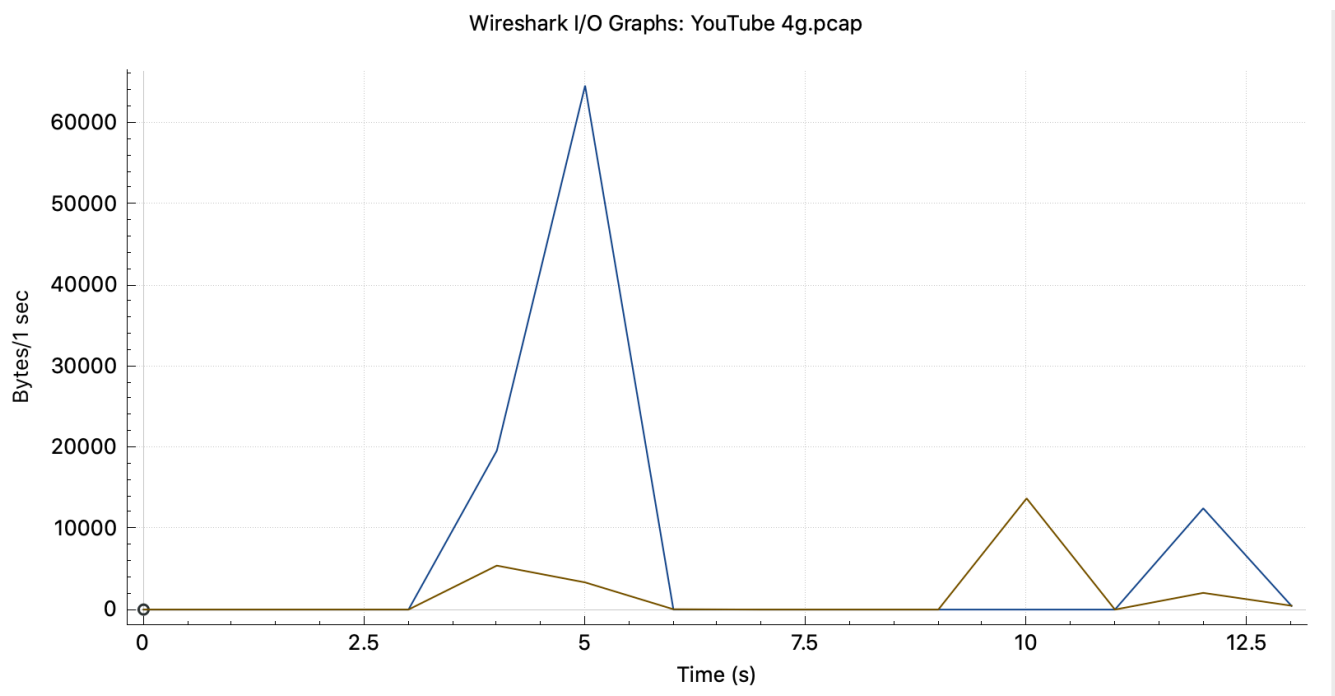
2. For Dailymotion on case b, I have chosen two Dailymotion related connections (ip: 195.8.215.138, 34.96.118.203) : according to graph, the server use variable bit-rate streaming as above case.



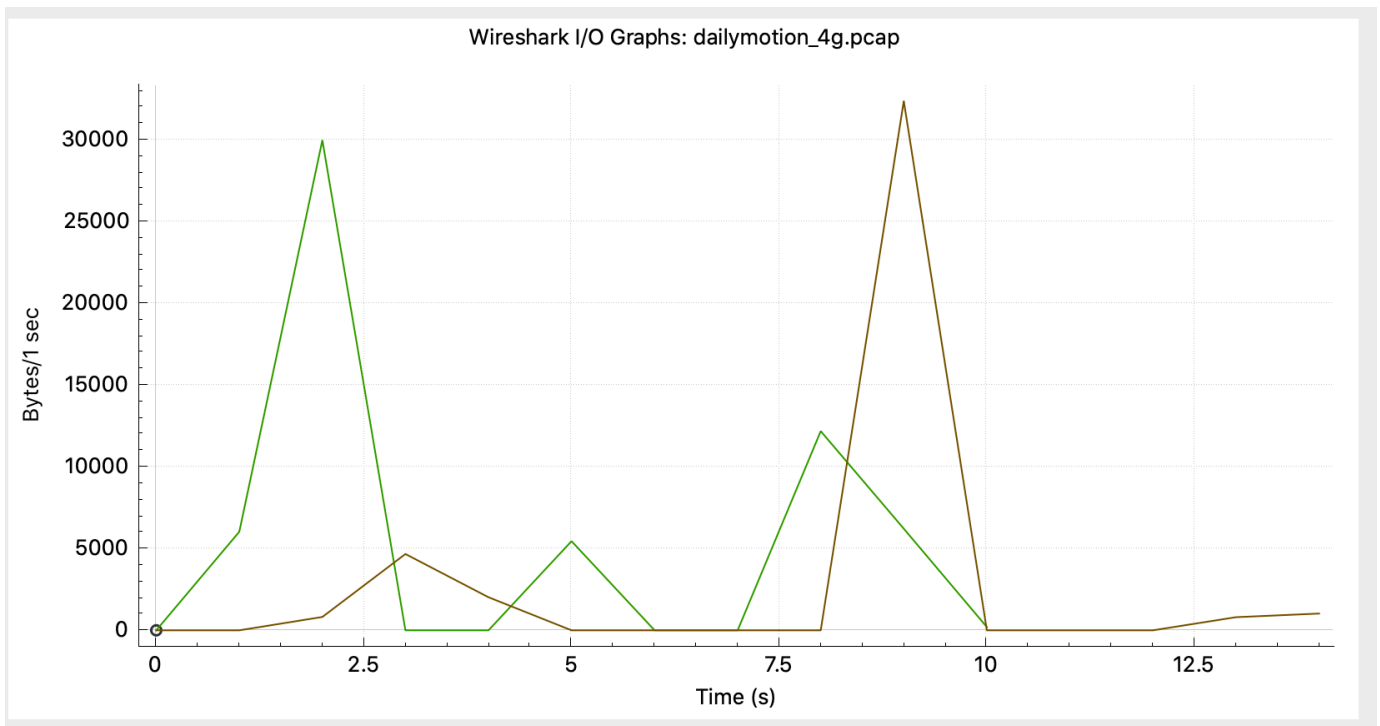
3. For Vimeo on case b, I have chosen three Vimeo related connections (ip: 151.101.64.217 151.101.210.109, 34.120.202.204) : according to graph, the server use variable bit-rate streaming as above case.



Case c: mobile+4g



1. Youtube: I have chosen two YouTube related connections (ip: 172.217.12.138, 209.85.201.139) : according to graph, the server use variable bit-rate streaming as above cases.
2. For Dailymotion on case c, I have chosen two Dailymotion related connections (ip: 195.8.215.138, 34.96.118.203) : according to graph, the server use variable bit-rate streaming as above case.



3. For Vimeo on case c, I have chosen three Vimeo related connections (ip: 199.232.38.109, 34.120.202.204) : according to graph, the server use variable bit-rate streaming as above case.

