# KAMATEC Project

## Abbreviations

TDR – Transaction Data Record

RTT – Round Trip Time

## Definitions

1. Inbound – direction from the server to the client
2. Outbound – direction from the client to the server
3. conn\_id – 5 tuple that defines the connection: client\_ip, client\_port, server\_ip, server\_port, l4. Each connection has a timeout of predefine seconds. If no packet has been transferred in both directions within this timeout the connection is closed. Packets with the same 5 tuples that arrive after the connection is closed will be considered as another connection.
4. Client request - a packet from the client to the server with size more than predefine size, I.e., the destination port on the packet is 443.
5. Transaction – All packets, in a specific connection, in both directions, between two requests or between a request and the last packet in this connection. Transaction end when a new transaction begins or when the connection ends.
6. transaction\_id – a unique ID that identified the transaction.
7. RTT inbound – Time from the request until the first packet from the server
8. YouTube Video connection – an UDP connection over server port 443, with total bandwidth of predefine bytes.
9. Packet\_size – payload size of the packet, i.e., the size of the UDP payload data.
10. TDR duration – The time from the request of the duration to the last packet of the TDR

## Goal

1. Create TDR of YouTube videos (from a given PCAP or from live YouTube video streaming) and save them in a CSV file format (each row is a transaction).
2. Optional - Give statistics on the videos (see details below). If the input is a PCAP the statistics should be given after processing the whole PCAP. If the input is live streaming statistics can be given every TBD videos.

## TDR fields

|  |  |
| --- | --- |
| **Field name** | **Description** |
| Conn\_id | Connection id of the transaction |
| 5\_tuple | The 5 Tuple of this connection ID. |
| Transaction\_id | The ID of the transaction in the connection |
| Start time | The time of the request of the transaction |
| num\_inbound\_packets\_in\_range | Number of packets from the server to the client with size in each range. |
| num\_outbound\_packets\_in\_range | Number of packets from the client to the server with size less than request size. |
| max\_packet\_size\_inbound | Max packet size in inbound direction. |
| min\_packet\_size\_inbound | Min packet size in inbound direction. |
| max\_diff\_time\_inbound | Max diff time between two consecutive packets (size more than predefine size) in the inbound direction. |
| min\_diff\_time\_inbound | Min diff time between two consecutive packets (size more than predefined size) in the inbound direction. |
| SumSquareInboundPacketTimeDiff | Sum of squared diff time between two consecutive inbound packets (for variance calculation) |
| RTT | Time between the request until the first packet from the server. |

## Video statistics (optional)

1. How many videos have been watched
2. Average duration of the videos
3. Average size of the videos
4. Average number of TDRs per video
5. Average size of the TDRs per video
6. Average duration of the TDRs per video
7. Average time between two consecutive TDRs

## Configuration file (text file)

1. request\_packet\_threshold – 700B
2. Minimum\_video\_connection\_size – 1MB
3. inbound\_packets\_in\_range\_min – 500B
4. inbound\_packets\_in\_range\_max – 2000B
5. outbound\_packets\_in\_range\_min – 0
6. outbound\_packets\_in\_range\_max – request\_packet\_threshold-1
7. max\_diff\_time\_inbound\_threshold – 500
8. min\_diff\_time\_inbound\_threshold - 500
9. number\_of\_videos\_to\_output\_statistics\_per\_video – 3
10. max\_number\_of\_connections – 1000
11. max\_number\_of\_transaction\_per\_video – 1000
12. video\_connection\_timeout – 20 seconds