

BLG 433E Computer Communication

Homework II Report

150130032 – Baran Kaya

1) Wireshark

Site request (Ninova):

IP destination and source filters:

ip.src==144.76.20.0/24 and ip.dst==161.9.70.0/24

ip.src==161.9.70.0/24 and ip.dst==144.76.20.0/24

Source port: 443

Destination port: 49663

ACK and SEQ: They started with (0,0) and then started to increase. When data transfer began Seq number increased by data length and reached 47278. Then it decreased to 21058 and increase by data length again. At the same time Ack was changing between 832 and 838 values.

Retransmissions: **ip.src==144.76.20.0/24 and ip.dst==161.9.70.0/24 and tcp.analysis.retransmission or tcp.analysis.fast_retransmission**

- 4 retransmissions occurred

ip.src==161.9.70.0/24 and ip.dst==144.76.20.0/24 and tcp.analysis.duplicate_ack

- Nearly 200 duplicate Ack's detected.

RTT: 0.046883000 seconds, Retransmission RTT: 0.047427000 seconds,

RTT to ACK: 0.000127000 seconds

Packet size:

TCP segment length for ACK: 0 byte

Client key change (Handshake mes.) segment length: 126 bytes

TCP segment length for data: 1380 bytes

Video (Youtube):

IP destination and source filters:

ip.src==185.70.203.0/24 and ip.dst==161.9.70.0/24

ip.src==161.9.70.0/24 and ip.dst==185.70.203.0/24

Source port: 443

Destination port: 49739

ACK and SEQ: Seq number increased with data length and Ack was stabil (1197).

Retransmissions: **ip.src==185.70.203.0/24 and ip.dst==161.9.70.0/24 and tcp.analysis.retransmission or tcp.analysis.fast_retransmission**

- 7 retransmissions occurred.

ip.src==161.9.70.0/24 and ip.dst==185.70.203.0/24 and tcp.analysis.duplicate_ack

- Nearly 500 duplicate Ack's occurred.

RTT: 0.023115000 seconds, Retransmission RTT: 0.023115000 seconds,

RTT to ACK: 0.000110000 s, 0.000086000 s ...(It was not stable)

Packet size:

TCP segment length for ACK: 0 byte

TCP segment length for data: 1380 bytes

Live Stream Video (Twitch):

QUIC (Quick UDP) connection

IP destination and source filters:

ip.src==172.217.16.0/24 and ip.dst==161.9.70.0/24

ip.src==161.9.70.0/24 and ip.dst==172.217.16.0/24

Source port: 443

Destination port: 54973

ACK and SEQ: There was no Ack or Seq, just payloads. Connection started with 'Client Hello' (PKN: 1) message and it was the largest length packet (1392).

Retransmissions: There was no retransmissions.

RTT: -

Packet size:

Data length: 1358

Total length: 1392

- Packets carries encrypted data payloads and they have same CID but different PKN. Packet number increases by one with new every packet.

TCP connection

IP destination and source filters:

ip.src==161.9.70.0/24 and ip.dst==54.230.45.0/24

ip.src==54.230.45.0/24 and ip.dst==161.9.70.0/24

Source port: 443

Destination port: 50049

ACK and SEQ: Seq. was changing by data length and Ack started with 0 after some time it was not changing (1123).

Retransmissions: **ip.src==161.9.70.0/24 and ip.dst==54.230.45.0/24 and**

tcp.analysis.duplicate_ack

- There were 29 duplicate Ack's.

- There were no retransmissions, it only has TCP not captured errors.

RTT: 0.044744000 seconds

Packet size:

TCP segment length for ACK: 0 byte

TCP segment length for data: 1380 bytes (payload)

2) Computer

CPU: Intel i7-4710MQ

RAM: 16GB

OS: Windows 10

Wi-Fi: Intel Wireless

3) Location & Time

Location: ITU Library

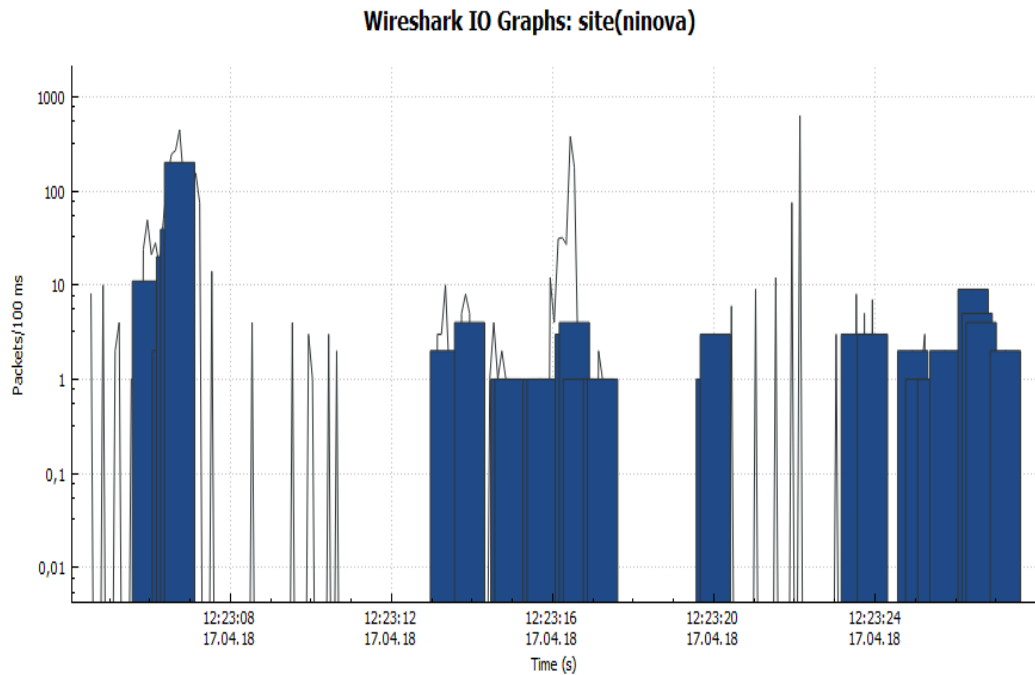
Connection: Eduroam Wi-Fi

Date: 17.04.2018

Time: 12.20 - 12.30

4) Graphs

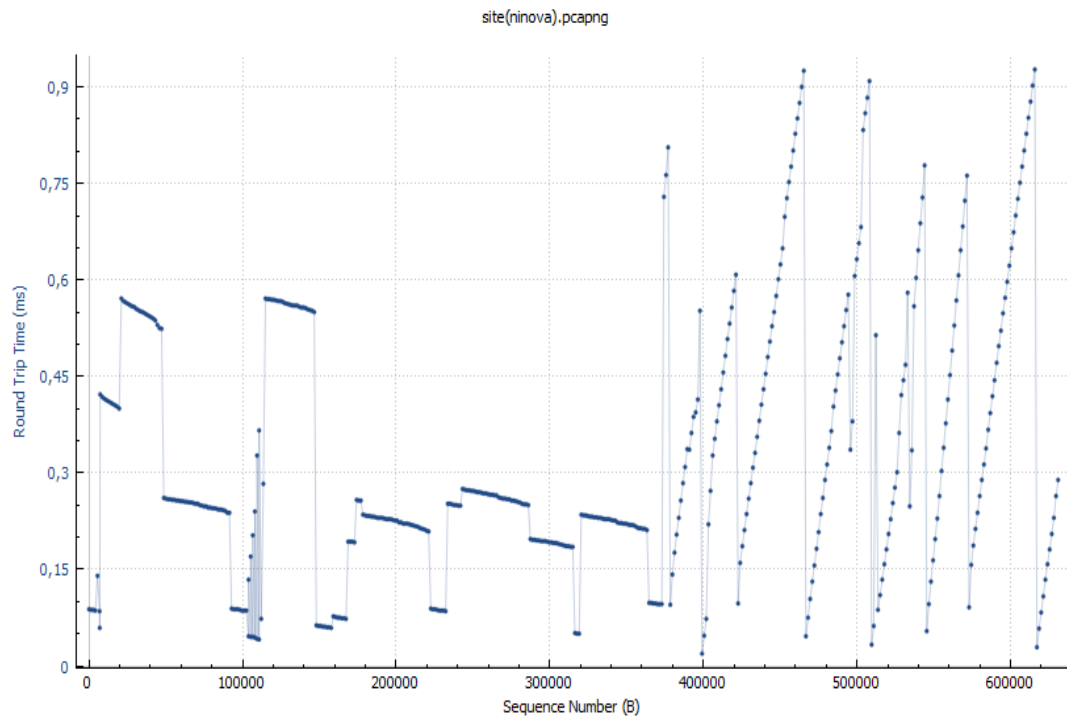
Error graph of site request (Ninova):



Note: Graph uses log scale

RTT graph of site request (Ninova):

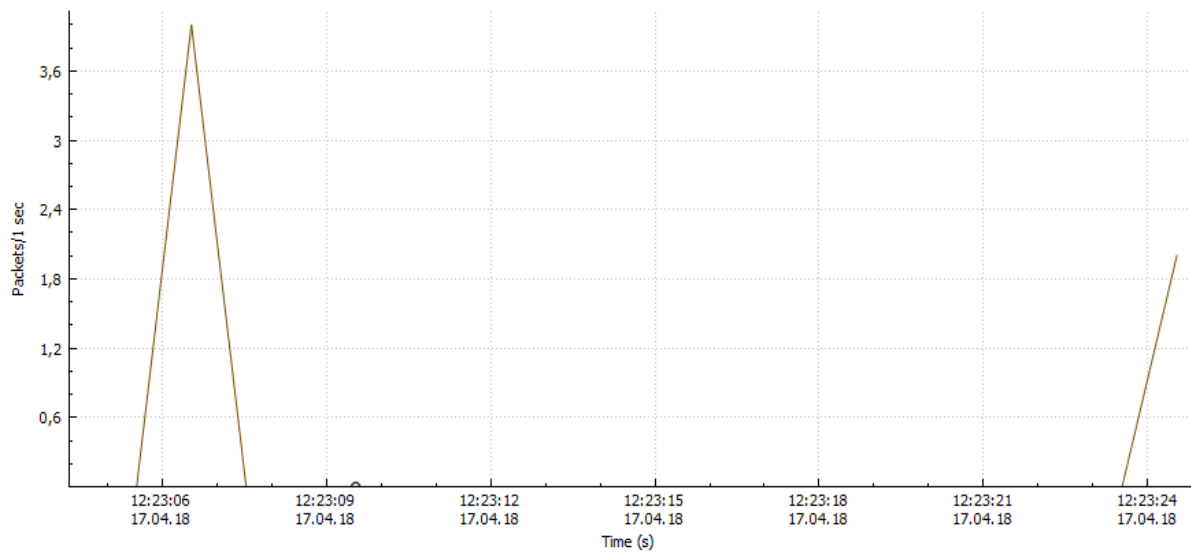
Round Trip Time for 144.76.20.58:443 → 161.9.70.65:49669



RTT increases until data cannot be received from destination then RTT decreases.

Retransmission graph of site request (Ninova):

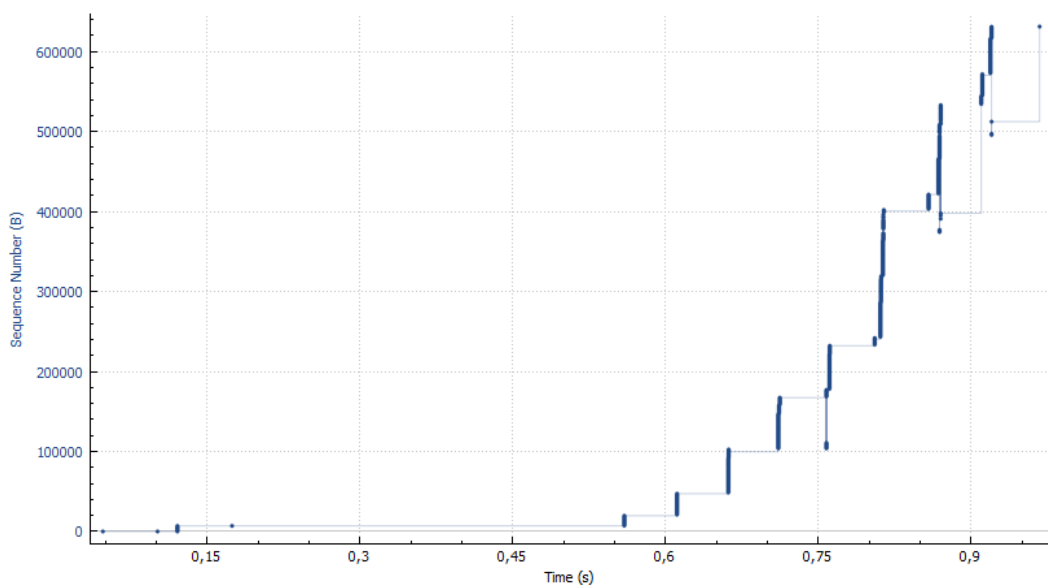
Wireshark IO Graphs: site(ninova)



Sequence number graph of site request (Ninova):

Sequence Numbers (Stevens) for 144.76.20.58:443 → 161.9.70.65:49669

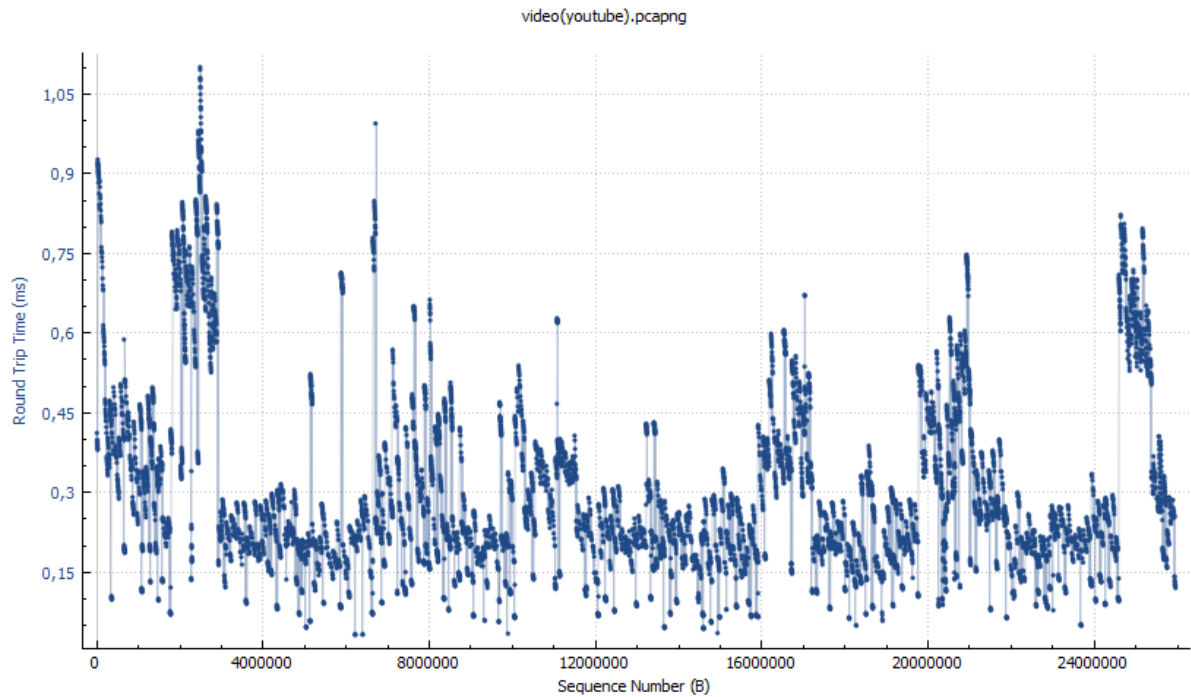
site(ninova).pcapng



Sequence number increased by data length with every packet

RTT graph of video (Youtube):

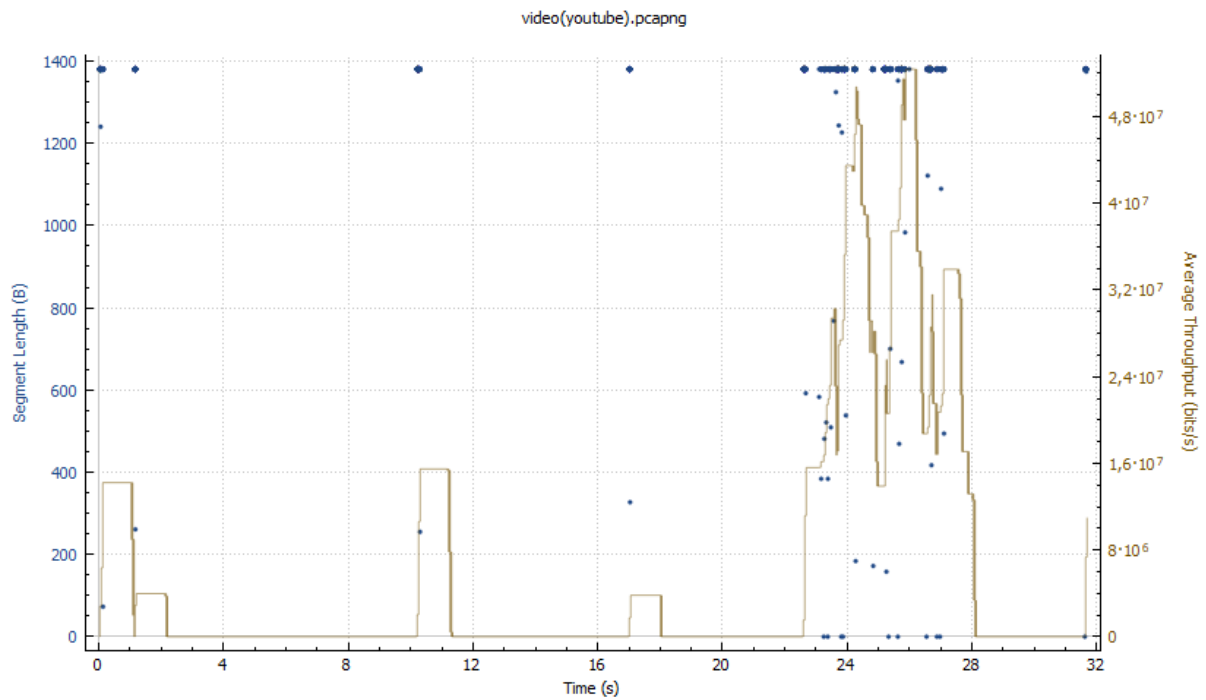
Round Trip Time for 185.70.203.143:443 → 161.9.70.65:49739



RTT increases until packet loss then it decreases RTT

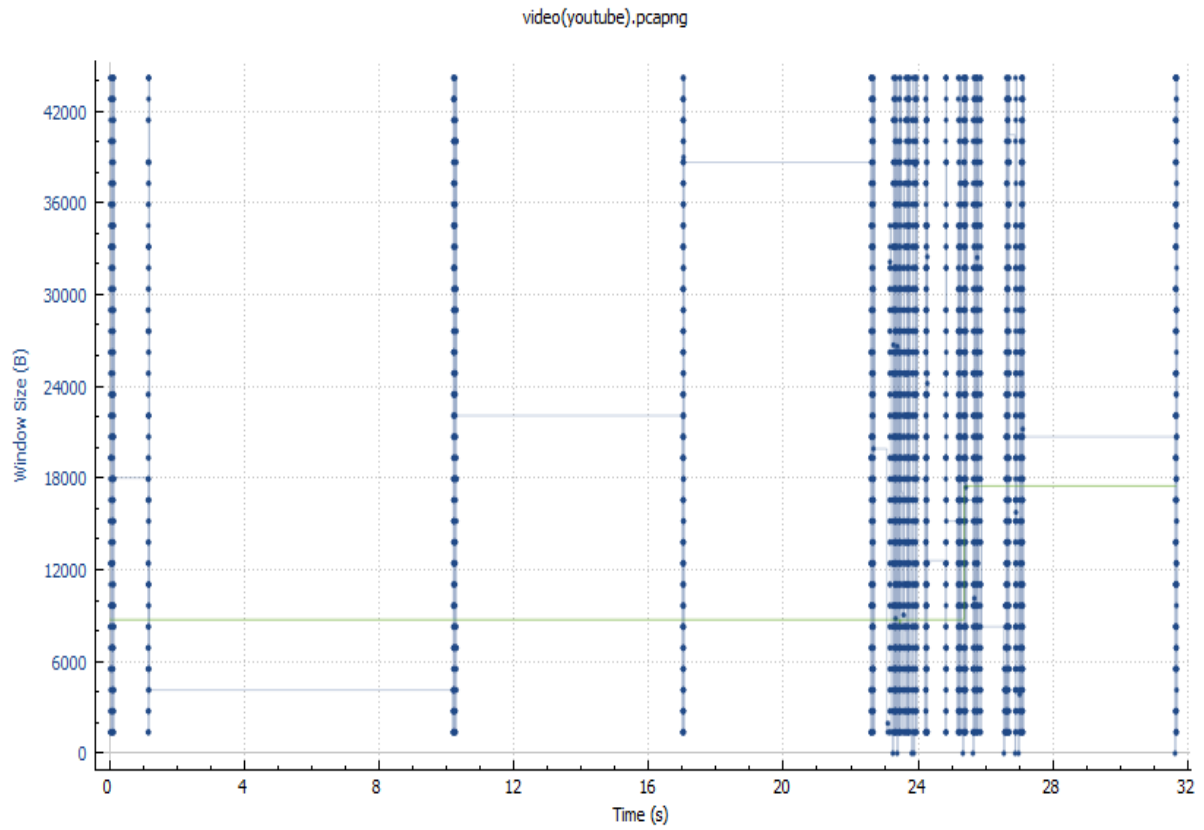
Throughput graph of video (Youtube):

Throughput for 185.70.203.143:443 → 161.9.70.65:49739 (MA)



Window scale graph of video (Youtube):

Window Scaling for 185.70.203.143:443 → 161.9.70.65:49739



Note: I couldn't find any logical graph filter for QUIC (UDP) connection so there is no graph for that connection.

150130032
Baran Kaya