

# Quic protocol

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## 1. O protocolo Quic

O QUIC é um protocolo de transporte experimental de baixa latência de internet do Google sobre o UDP, um protocolo que é usado frequentemente por jogos, streaming de mídia e serviços VoIP. O nome “QUIC” representa uma conexão rápida de internet UDP.

Com o QUIC o Google visa combinar algumas das melhores características do TCP e UDP com ferramentas de segurança modernas.

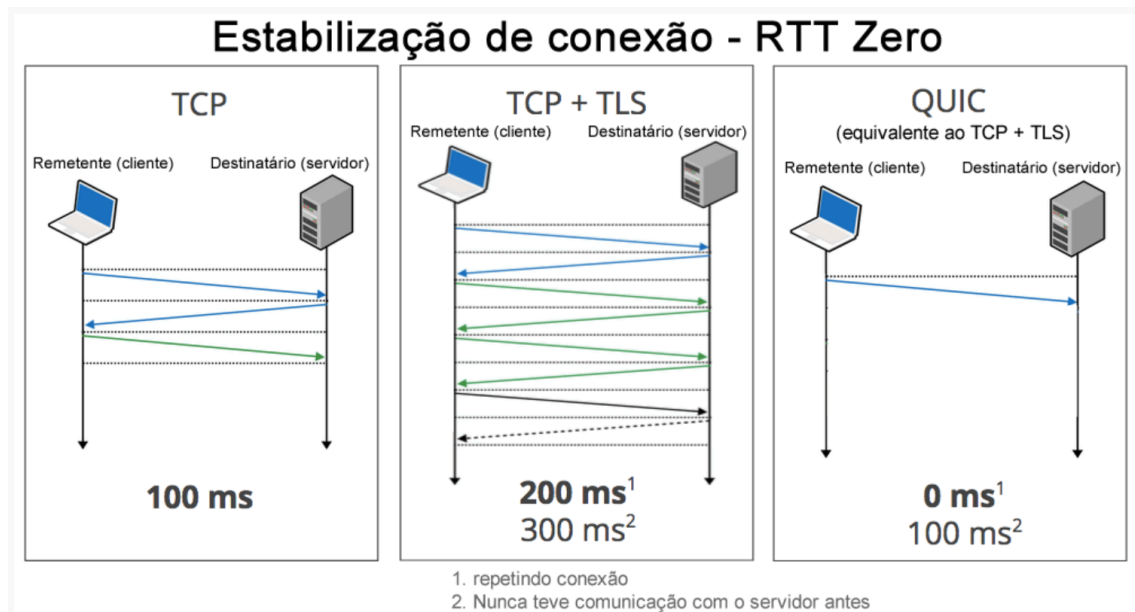


Figure 1. Exemplo Quic

## 2. Wireshark Capture

Foi identificado, primeiramente, uma comunicação entre o minha máquina com o servidor, dando um "Hello" nos primeiros pacotes, a seguir o servidor do video começa a enviar todos os pacotes do vídeo com o payload, como o protocolo é o Quic ele não precisa refazer novas conexões, enviando assim mais rapidamente que o TCP.

No.	Time	Source	Destination	Protocol	Length	Info
1	2019-03-29 18:17:14.069550	192.168.1.155	216.58.202.174	QUIC	1392	Client Hello, PKN: 1, CID: 2180065952752782922
2	2019-03-29 18:17:14.115464	192.168.1.155	216.58.202.174	QUIC	1392	Client Hello, PKN: 2, CID: 2180065952752782922
3	2019-03-29 18:17:14.125957	216.58.202.174	192.168.1.155	QUIC	72	Payload (Encrypted), PKN: 1, CID: 2180065952752782922
4	2019-03-29 18:17:14.146896	216.58.202.174	192.168.1.155	QUIC	1392	Rejection, PKN: 2, CID: 2180065952752782922
5	2019-03-29 18:17:14.146897	216.58.202.174	192.168.1.155	QUIC	1392	Payload (Encrypted), PKN: 3, CID: 2180065952752782922
6	2019-03-29 18:17:14.148159	192.168.1.155	216.58.202.174	QUIC	1392	Client Hello, PKN: 3, CID: 2180065952752782922
7	2019-03-29 18:17:14.198566	216.58.202.174	192.168.1.155	QUIC	72	Payload (Encrypted), PKN: 4, CID: 2180065952752782922
8	2019-03-29 18:17:14.218282	216.58.202.174	192.168.1.155	QUIC	1392	Payload (Encrypted), PKN: 5
9	2019-03-29 18:17:14.218284	216.58.202.174	192.168.1.155	QUIC	73	Payload (Encrypted), PKN: 6
10	2019-03-29 18:17:14.218774	192.168.1.155	216.58.202.174	QUIC	81	Payload (Encrypted), PKN: 4, CID: 2180065952752782922
11	2019-03-29 18:17:14.218864	192.168.1.155	216.58.202.174	QUIC	70	Payload (Encrypted), PKN: 5, CID: 2180065952752782922
12	2019-03-29 18:17:14.267624	216.58.202.174	192.168.1.155	QUIC	62	Payload (Encrypted), PKN: 7
13	2019-03-29 18:17:14.348452	192.168.1.155	216.58.202.174	QUIC	1235	Payload (Encrypted), PKN: 6, CID: 2180065952752782922
14	2019-03-29 18:17:14.350556	192.168.1.155	216.58.202.174	QUIC	142	Payload (Encrypted), PKN: 7, CID: 2180065952752782922
15	2019-03-29 18:17:14.351352	192.168.1.155	216.58.202.174	QUIC	143	Payload (Encrypted), PKN: 8, CID: 2180065952752782922
16	2019-03-29 18:17:14.351567	192.168.1.155	216.58.202.174	QUIC	163	Payload (Encrypted), PKN: 9, CID: 2180065952752782922

> Ethernet II, Src: RivetNet\_f1:6f:df (9c:b6:d0:f1:6f:df), Dst: Tp-LinkT\_46:7b:73 (8c:80:63:46:7b:73)  
 > Internet Protocol Version 4, Src: 192.168.1.155, Dst: 216.58.202.174  
 > User Datagram Protocol, Src Port: 64756, Dst Port: 443  
 > QUIC (Google Quick UDP Internet Connections)  
   > Public Flags: 0x0d  
     CID: 2180065952752782922  
     Version: Q043  
     Packet Number: 1  
     Message Authentication Hash: d67533a506faa8e32a240983  
   > STREAM (Special Frame Type) Stream ID: 1, Type: CHLO (Client Hello)  
     > Frame Type: STREAM (Special Frame Type) (0xa0)  
       Stream ID: 1 (Reserved for (G)QUIC handshake, crypto, config updates...)  
       Data Length: 1024  
       Tag: CHLO (Client Hello)

0000 0c 80 63 46 7b 73 9c b6 d0 f1 6f df 08 00 45 00 ..cF(s...o...E

**Figure 2. Wireshark Quic connection**

## References

Langley, A., Riddoch, A., Wilk, A., Vicente, A., Krasic, C. B., Shi, C., Zhang, D., Yang, F., Kouranov, F., Swett, I., Iyengar, J., Bailey, J., Dorfman, J. C., Roskind, J., Kulik, J., Westin, P. G., Tenneti, R., Shade, R., Hamilton, R., Vasiliev, V., and Chang, W.-T. (2017). The quic transport protocol: Design and internet-scale deployment.

[Langley et al. 2017]