Chair of Network Architectures and Services
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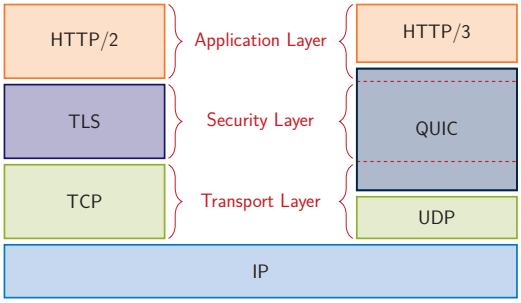
Thesis B.Sc. Thesis M.Sc. IDP

Analyzing QUIC v1 in the wild

Motivation

In May 2021 QUIC was finally specified by the IETF [1], a lot of implementations exist [2] and as shown by related work [3] and a previous Masters Thesis [4], deployment is on the rise. A major goal of QUIC is to combine a fast connection establishment, with reduced overhead and early encryption.



Therefore, it builds on UDP and directly incorporates TLS. UDP provides a lightweight transport protocol with widespread compatibility in network devices, while TLS, majorly version 1.3, provides state-of-the-art encryption and 0-RTT or 1-RTT handshakes.
This makes the analysis of configurations and real-world behavior based on passive traffic captures nearly impossible. Thus, a proper analysis requires active scans.
This work focuses on the analysis of deployed devices and their behavior in a stateful approach using and extending a previously devloped scanner.

Your Task

- Analyze regular QUIC scans
- Analyze the behavior of targets and differences to a TLS + TCP setup
- Identify sources of error
- Optimize scans if possible/necessary

Requirements

- Basic programming knowledge in Python or Go
- Familiarity with GIYF-Based work approaches

Bibliography

[1] https://datatracker.ietf.org/doc/html/rfc9000
[2] https://github.com/quicwg/base-drafts/wiki/Implementations
[3] Rüth, Jan, et al. ”A First Look at QUIC in the Wild.” International Conference on Passive and Active Network Measurement. 2018.
[4] Buschmann Phillipe. ”Analyzing Quic in the wild.” Masters Thesis. TUM. 2021.

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