

Thesis
B.Sc.

Thesis
M.Sc.

IDP,
Guided
Research

Forward Erasure Correction Coding in QUIC

Introduction

Forward error correction (FEC) is a method to add redundant data before transmission over an unreliable network to account for potential packet losses (“erasures”) and to avoid retransmissions. QUIC is a modern transport protocol which is increasingly deployed on the internet. There are ongoing discussions about integration of FEC schemes into QUIC.

In this thesis you will work on incorporating FEC into a QUIC library and assess its effects.

Tasks

- familiarize yourself with FEC and available QUIC FEC approaches
- identify a suitable QUIC library
- integrate a FEC approach into the QUIC library
- assess the impact of your changes based on reproducible measurements

Related Work

- [1] P. Garrido, I. Sanchez, S. Ferlin, R. Agüero, and O. Alay. rQUIC: Integrating FEC with QUIC for robust wireless communications. In *2019 IEEE Global Communications Conference (GLOBECOM)*, pages 1–7. IEEE, 2019.
- [2] F. Michel, A. Cohen, D. Malak, Q. De Coninck, M. Médard, and O. Bonaventure. FIEC: Enhancing QUIC with application-tailored reliability mechanisms. *IEEE/ACM Transactions on Networking*, 2022.
- [3] F. Michel, Q. D. Coninck, and O. Bonaventure. Adding Forward Erasure Correction to QUIC. *CoRR*, abs/1809.04822, 2018.
- [4] F. Michel, Q. De Coninck, and O. Bonaventure. QUIC-FEC: Bringing the benefits of Forward Erasure Correction to QUIC. In *2019 IFIP Networking Conference (IFIP Networking)*, pages 1–9. IEEE, 2019.

Requirements

- experience with C or C++
- structured work style

Contact

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