

## Security Review and Performance Analysis of QUIC and TCP

### Abstract

The QUIC protocol is a secure and encrypted transport protocol, characterized by multiplexing and low-latency capabilities. Its primary goal is to enhance the performance of HTTPS traffic. Recently standardized as RFC 9000, QUIC is poised to supplant TCP as the dominant transport protocol on the internet. The present research project entails a comparative analysis of TCP and QUIC, focusing on performance and security. The investigation will employ open-source implementations of both protocols.

### Project objective

1. Compare QUIC and TCP in terms of performance and security.

### Project overview

1. Review literature.
2. Define Key Performance Indicators (KPIs) and the tests setup accordingly.
3. Ramp-up TCP and QUIC client and server.
4. Run simulations and perform analysis of fairness.
5. Write project report, final presentation and a poster for the project.

### Project Milestones

1. 02.04.2023 – CDR
  - a. Theoretical Review: Paper overview (see ref [1]).
  - b. QUIC implementations review  
Describe the available QUIC implementations and choose the most suitable implementation for this project.
    - 1.
  - c. Workplan for the rest of the semester
    - i. Goals
    - ii. Schedule
2. 03.07.2023 Final Presentation
  - a. PowerPoint Presentation (In person)
  - b. Final Report – Draft
  - c. Project Poster - Draft
3. 20.07.2023
  - a. Final Report
  - b. Project Poster

## Notes

1. The above list is an estimate. Goals and tasks may be modified during the first few weeks of the semester.
2. General requirements for all LCCN Projects are specified at the lab website:  
<https://lccn.cs.technion.ac.il/lab-courses/>

## Prerequisites:

1. Introduction to computer networks (236334) – Mandatory.

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## References

[1] Security Review and Performance Analysis of QUIC and TCP Protocols

<https://ieeexplore.ieee.org/abstract/document/9931821>