

Thesis
B.Sc.

Thesis
M.Sc.

IDP

Implementation of IP-Layer MASQUE-Proxying

Motivation

New transport protocols such as QUIC offer improved performance, security, and, with extensions such as MASQUE [1], possibilities for secure connection tunnelling. This technology has already attracted the attention of research [2], but is still relatively unknown and has especially seen only very few implementations. Apart from closed source implementations such as in Apple Private Relay [3], we only found the quiche library from Google [4]. While MASQUE is planned to support the proxying of arbitrary data on HTTP, QUIC, UDP or even IP-Layer, quiche currently only supports proxied HTTP requests. The goal of this thesis is to modify quiche such that data forwarding on lower layers, preferably to IP-Layer, is possible.



Your Task

- Familiarize yourself with QUIC, MASQUE drafts and quiche
- Implement support for lower-layer proxying in quiche
- Test and benchmark your implementation

References

- [1] <https://datatracker.ietf.org/wg/masque/documents/>
[2] <https://dl.acm.org/doi/10.1145/3488660.3493806>
[3] https://www.apple.com/icloud/docs/iCloud_Private_Relay_Overview_Dec2021.pdf
[4] <https://github.com/google/quiche>

Requirements

Good programming skills in C++, familiarity with GNU/Linux.

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