

Thesis
B.Sc.

Thesis
M.Sc.

IDP

Design of a Benchmarking Framework for MASQUE-Proxies

Motivation

Existing proxying technology comes with drawbacks. SOCKS is unencrypted and HTTP CONNECT is currently limited to proxying of TCP data. The MASQUE working group of IETF [1] plans to extend the current HTTP CONNECT with capabilities for proxying UDP and even IP-layer traffic. They focus on HTTP/3 which runs on top of the new transport protocol QUIC, which offers improved performance, embedded security and multiplexing. This technology has already attracted the attention of research [2], with its biggest current use case being Apple's iCloud Private Relay [3]. With many more possible use cases [4], performance and challenges of different scenarios need to be measured and identified. The main goal of this thesis is to design a benchmarking framework running on top of our high-precision timestamping hardware which simulates different static scenarios for MASQUE proxies.



Your Task

- Familiarize yourself with our hardware, the MASQUE documents and the existing implementations
- Find or identify different use case scenarios for MASQUE proxies
- Implement and set them up on our hardware
- Identify and measure different challenges and performance factors

References

- [1] <https://datatracker.ietf.org/wg/masque/about/>
[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://dl.acm.org/doi/abs/10.1145/3472305.3472320>

Requirements

Familiarity with GNU/Linux and network protocols, basic research skills.

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