

# Usage of MASQUE in an anonymization network (Internship/Bachelor Thesis)

## Background

MASQUE is a new proxy protocol which enables the transportation of IP- or UDP-based communication over HTTP. It is currently specified by an IETF working group. Its design provides the possibilities for many different use cases, such as anonymization networks. The idea of this bachelor thesis/internship is to familiarize with the current work and ongoing research activities. Afterwards a basic chat application and a proxy shall be implemented using this communication protocols. Existing projects and implementations can be used and extended. It shall be analyzed and demonstrated how this protocol can be used in new communication services. Due to the current activities of the IETF working group and ongoing research activities the use of communication protocols for the intended application can change.

## Objectives

In this thesis or internship, a communication application based on new protocols shall be implemented and evaluated practically in virtualized or hybrid (real and emulated) environments. The exact task description will be discussed with you, but the main tasks of this thesis are the following:

- familiarization with the MASQUE protocol and existing implementations
- conceptualization and prototypical implementation of a simple communication application and proxy server which uses these protocols in the context of anonymization networks
- evaluation how techniques as cover traffic can influence the anonymity and security of such a communication solution
- documentation and reporting: document your implementation of the protocols, experimental setups, findings, and challenges encountered during the work

## Requirements

Candidates should possess good programming skills (e.g. Python, Rust) and have an interest in communication technologies, communication protocols and network security. Familiarity with network communication architectures, Internet protocols, communication protocol analysis, Linux and shell scripting is advantageous.

## Application Process

All applications must be submitted through the application website INTERAMT:

<https://www.interamt.de/koop/app/trefferliste?partner=339>

(Abschlussarbeiten Bachelor / Master; Pflichtpraktika)

Carefully note the information provided on the site to avoid any issues with your application.

Your application should include

- a short CV
- a current transcript of records
- the keyword “T3-TD-OTT” as a comment

For any questions or further details regarding this thesis and the application process, please feel free to contact ZITiS T3 ([t3@zitis.bund.de](mailto:t3@zitis.bund.de)) or PD Dr. Corinna Schmitt.