Abstract
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Currently, the common ways to distribute GNSS data from a reference station, a so-called CORS, are the protocols Ntrip and TCP. Using TCP will be the adequate choice if the GNSS data source and their consumers are in the same LAN. If data should be provided over the internet, the WAN, Ntrip will be the better choice. This protocol has simple security features such as authentication and authorization of connected clients and has been considered as the quasi-standard for GNSS data transmission for decades.
As a matter of fact Ntrip version 1.0 respectively, version 2.0 are further abstractions over HTTP, version 0.9 respectively, version 1.1 which need a special client that is capable to handle this protocol. Furthermore, its main design focuses on transmitting documents like websites instead of continuously streamed binary data. Using a protocol that is more suitable for M2M transmission will improve the provision of GNSS data over the network. MQTT or AMQP are open and reliable protocols that meet this requirement. They have some advantages over Ntrip like a smaller header, delivery guarantees and a security layer to data transmission. Compared to Ntrip and due to its short header and high throughput, especially MQTT will reduce hardware resources to transfer the same amount of data and make it also more energy efficient.
This thesis will mainly focus on the implementation and evaluation of a prototype to compare MQTT and Ntrip from four points of view: the latency of the delivered GNSS data, the system resources used for transmission, the position accuracy and fixing time of a connected GNSS receiver and the lossless data transfer at higher data rates. Therefore, a suitable test scenario must be designed and implemented. Furthermore, since there is no standard for the exchange of information between a GNSS data provider and a consumer, a suitable proof-of-concept will also be introduced for different scenarios.
In summary, the thesis deals with the question if MQTT is a suitable choice for the efficient distribution of GNSS data from one end point to one or many others.