



Thesis  
B.Sc.

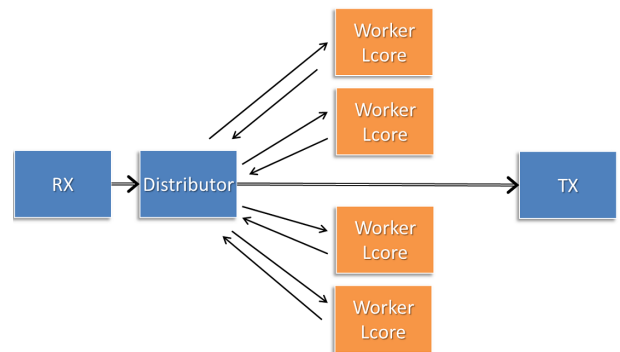
Thesis  
M.Sc.

IDP,  
Guided  
Research

## Comparison of Queuing Data Structures for Traffic Analysers

### Motivation

Distributing incoming packets to different tasks and CPU cores is a basic functionality of network traffic analysers. There are multiple implementations of queues for this task, e.g., the DPDK pipelining and ring buffer data structures. General-purpose queuing data structures can also be used. However, traffic analysers have special requirements which are often not fulfilled by these data structures. For example, they are often tolerant to small latencies in the millisecond-range while other applications are not.



Therefore, we designed a new data structure called QQ specifically for packet analysers that trades latency for throughput. Unlike other commonly used queues, it does not build on lock-free data structures and is kept relatively simple. Initial experiments show that QQ outperforms all other queuing data structures usually used for this task.

Come talk to me if you are interested in data structures, benchmarking, and high-speed packet processing or to learn more about QQ. Some experience in C or C++ is required.

■ Design a realistic test case

■ Compare existing queuing data structures

■ Implement QQ (proof-of-concept in C++ exists) and benchmark it

### Your Task

- Design a realistic test case
- Compare existing queuing data structures
- Implement QQ (proof-of-concept in C++ exists) and benchmark it

### Contact

Paul Emmerich [emmericp@net.in.tum.de](mailto:emmericp@net.in.tum.de)

