

Modeling and Implementation of QoS Algorithms using Network Calculus

Motivation

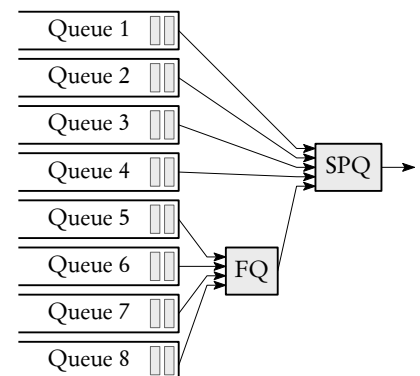
Many networking applications require service guarantees. Service guarantees can be provided by using Quality of Service (QoS) algorithms. Network Calculus provides the mathematical guarantees that those QoS algorithms can provide a certain service level. Meaning there is a need for modeling those QoS algorithms using Network Calculus.

Network Calculus is a theoretical framework for calculating service guarantees, such as latency

bounds for flows or buffer backlog bounds for network nodes. Network Calculus is implemented in many tools, for example DiscoDNC [1].

Many different QoS algorithms exist, among others Weighted Fair Queuing, Credit Based Shaper, Time Aware Shaper, Deficit Round Robin Scheduler and Priority Queuing.

The first part of your task will be to model different QoS algorithms and implement them in DiscoDNC. The second part will consist of verifying your models using measurements. The last part consists of evaluating the impact of different QoS algorithms using example network topologies.



[1] <https://github.com/NetCal/DNC>

Your Task

- Familiarize with DiscoDNC
- Model different QoS algorithms using Network Calculus
- Implement those models in DiscoDNC
- Verify models using measurements
- Evaluate impact of different QoS algorithms

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