

Active Queue Management

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I. EINFÜHRUNG UND MOTIVATION

A. Problem

Überall wo Puffer verwendet werden, kann es zu einem Problem kommen, wo der Puffer überläuft. Das Internet hat mittlerweile auch eine Größe erreicht, bei der man sich nicht mehr komplett auf End-To-End Staukontrolle verlassen kann [1].

B. Problemstellung

Die mittlere Pufferauslastung soll gering gehalten werden [2].

II. STAUKONTROLLE IN NETZWERKEN

A. Vorschläge zur Staukontrolle

Vorschläge zur Gewährleistung und Verbesserung der Internetperformance [3].

B. congestion collapse

Congestion collapse und wie man es dazu führt [4].

C. Warum ist das Problem so schwer zu identifizieren

Was sind die Gründe für das Problem [5]?

D. Mechanismen zur Staukontrolle in ATM Netzwerken

Auswahlkriterien zwischen den beiden Ansätzen rate-based und credit-based [6].

E. Standard TCP Verhalten bei Staus

Warum ist es keine gute Idee TCP die Staukontrolle selbst zu machen [7]? Gleichbehandlung aller Datenströme [8].

F. Explicit Congestion Notification

Vor- und Nachteile von ECN bei TCP [9]

III. DEFINITION AND USAGE OF ACTIVE QUEUE MANAGEMENT

Efficient Active Queue Management for Internet Routers http://www.researchgate.net/publication/2621818_Efficient_Active_Queue_Management_for_Internet_Routers

Router Mechanisms to Support End-to-End Congestion Control <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.39.7772>

Sizing router buffers <http://dl.acm.org/citation.cfm?id=1015499>

Stochastic Modeling and the Theory of Queues <http://www.gbv.de/dms/ilmenau/toc/018830102.PDF>

Analysis and simulation of a fair queueing algorithm <http://dl.acm.org/citation.cfm?id=75248>

IV. ALGORITHMS FOR ACTIVE QUEUE MANAGEMENT

A. Passive Techniques

1) *CHOKe*: CHOKe - a stateless active queue management scheme for approximating fair bandwidth allocation http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=832269&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D832269

2) *ECN*: ECN-Explicit Congestion Notification <http://www.hjp.at/doc/rfc/rfc3168.html>

B. Random Early Detection

RED Random early detection gateways for congestion avoidance <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=251892&navigation=1> RED + Vorschläge für Architektur etc. A study of active queue management for congestion control http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=832541&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D832541

RED + Vorschläge für Architektur etc. A study of active queue management for congestion control http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=832541&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D832541

C. Alternatives to RED

1) *PI Controller*: PI On designing improved controllers for AQM routers supporting TCP flows http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=916670&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D916670

Vergleich RED, ARED, PI The effects of active queue management on web performance <http://dl.acm.org/citation.cfm?id=863986>

2) *Adaptive Virtual Queue*: Adaptive virtual Queue + (Vergleich zu RED, REM, PI) Analysis and design of an adaptive virtual queue (AVQ) algorithm for active queue management <http://dl.acm.org/citation.cfm?id=383069>

3) *BLUE*: BLUE The BLUE active queue management algorithms <http://dl.acm.org/citation.cfm?id=581869>

V. CONCLUSION AND FUTURE WORK

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