Active Queue Management

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I. Einführung und Motivation

A. Problem

Das Internet hat mittlerweile 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 und Anwendung von Active Queue Management

A. Effizientes Active Queue Management in Internet Routern

[10]

B. Router Mechanismen zur Staukontrolle

[1]

C. Dimensionierung von Router Puffern

[11]

D. Stochastische Modellierung und die Theorie von Queues

[12]

E. Analyse und Simulation eines gleichbehandelnden Queue Algorithmus

[13]

IV. Active Queue Management Algorithmen

A. Passive Techniques

1) CHOKe: [14]
2) ECN: [15]

B. Random Early Detection

[16] [17] Adaptive RED [18]

C. Alternativen zu RED

1) PI Controller: [19]
2) Vergleich RED, ARED, PI: [2]
3) REM: [20]
4) Adaptive Virutal Queue + Vergleich zu RED, REM, PI: [21]
5) BLUE: [22]
6) Vergleich RED, BLUE, ARED, PI, ECN, REM: [23]

V. Ausblick und zukünftige Arbeiten

Ein wirklich optimaler Algorithmus muss noch gefunden werden [23].

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