Analysis of the Increase and Decrease Algorithms for Congestion Avoidance in Computer Networks

Original authors: Dah-Ming CHIU and Raj JAIN
Summarized by Wenjie XU

September 12, 2018

1 Justification

- Throughput and response time are the two main factors affecting the quality of service in computer networks. Both of them are a function of load. There is a point called *cliff* after which the throughput drops and the response time increases drastically. There is also a point called *knee* after which the increase in the throughput is small but a significant increase in the response time results.
- Traditional congestion control schemes try to keep the network operating in the zone to the left of the *cliff*. However, this paper considers a class of congestion avoidance schemes called increase/decrease algorithms aiming to keep the network operating around *knee*.

2 Assumptions

- All the users sharing the same bottleneck will receive the same feedback.
- The feedback and control loop for all users are synchronous.

3 System Model

The paper considers the control model as shown in

$$y(t) = \begin{cases} 1 \Longrightarrow \text{Increase load} \\ 0 \Longrightarrow \text{Decrease load.} \end{cases}$$

4 Main Points

-
-

5 Results

-

6 Future Work