

2019 CSEE Computer Networks

Project 1: Video CDN

Student: Qiaoyu Gu

UNI: qg 2172

1. $\alpha=0.1$

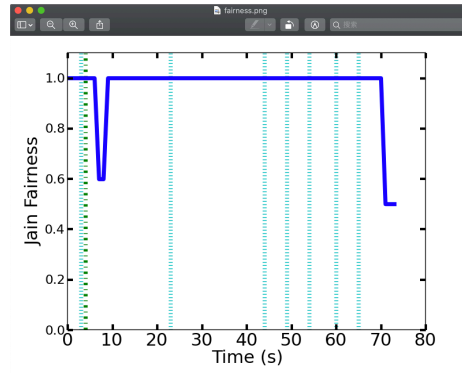


Figure 1.1 Fairness, $\alpha=0.1$

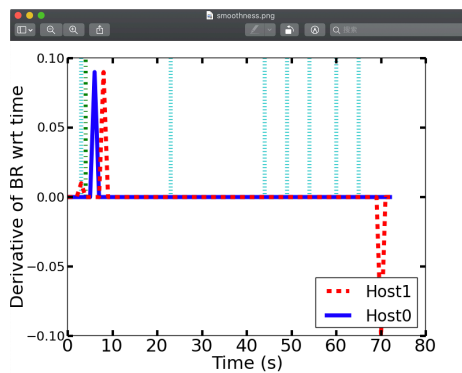


Figure 1.2 Smoothness, $\alpha=0.1$

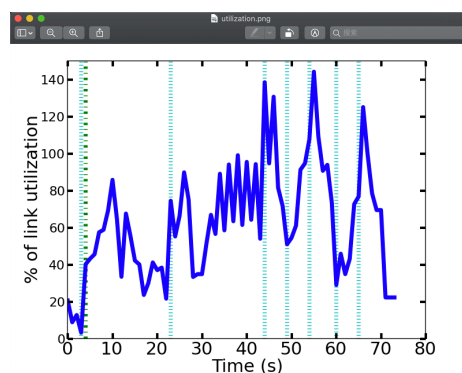


Figure 1.3 Utilization, $\alpha=0.1$

2. $\alpha=0.5$

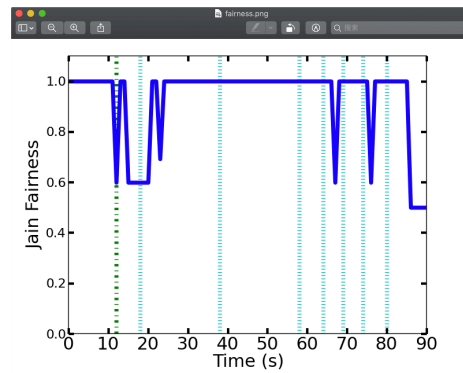


Figure 2.1 Fairness, $\alpha=0.5$

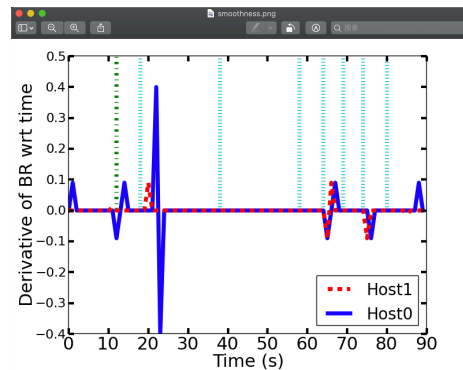


Figure 2.2 Smoothness, $\alpha=0.5$

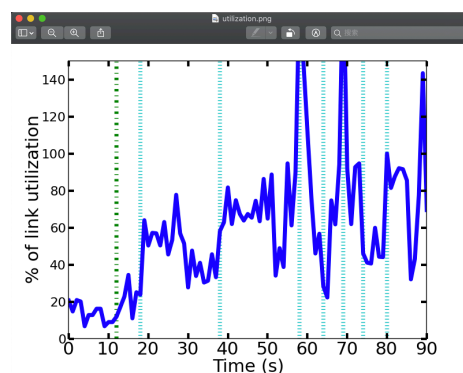


Figure 2.3 Utilization, $\alpha=0.5$

3. $\alpha=0.9$

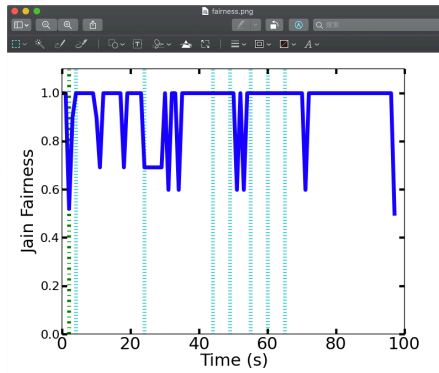


Figure 3.1 Fairness, $\alpha=0.9$

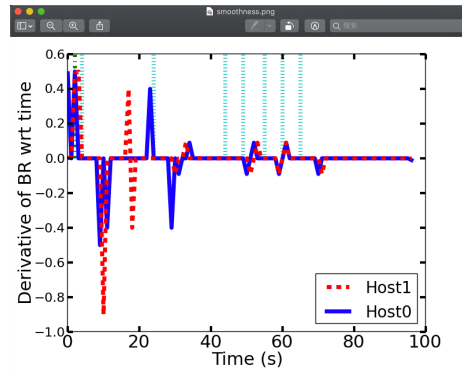


Figure 3.2 Smoothness, $\alpha=0.9$

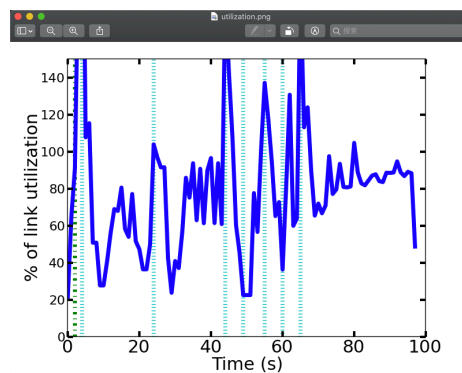


Figure 3.3 Utilization, $\alpha=0.9$

Discussion:

α is a constant ranging from 0 to 1, which is used to control the fluctuation of real-time throughput.

In fairness part, when $\alpha=0.1$, fairness curve is comparatively stable. Namely, the fairness value keeps 1 at most of time, with a few grooves. However, with the increasement of α , there are more and more grooves, which means that fairness cannot be guaranteed when α is larger.

In smoothness part, the figure of $\alpha=0.1$ is obviously smoother than other 2 figures. It has peak deviation value less than 0.1 and its deviation is 0 at most of time period. Both peak value of deviation and amount of glitches will increase when α is becoming larger.

In utilization part, there are no obvious difference among three figures. In all three figures, percentage of utilization value begins at a low value (less than 30%) and increase gradually, up to 140% in maximum and fluctuates continuously. These three figures shows that α has no significant influence on network utilization.