

Incast number	Egress bandwidth	Parameter(chaging higher threshold)
15	75Mbps	double Alpha = 0.1; double AI = 1.0; double MD = 0.07; double Hth = 11000; double Lth = 500; double initial_rate = 5; uint32_t n = 5; // HAI
15	75Mbps	double Alpha = 0.1; double AI = 1.0; double MD = 0.07; double Hth = 5000; double Lth = 500; double initial_rate = 5; uint32_t n = 5; // HAI
15	75Mbps	double Alpha = 0.1; double AI = 1.0; double MD = 0.07; double Hth = 3500; double Lth = 500; double initial_rate = 5; uint32_t n = 5; // HAI
15	75Mbps	double Alpha = 0.1; double AI = 1.0; double MD = 0.07; double Hth = 1000; double Lth = 500; double initial_rate = 5; uint32_t n = 5; // HAI

TCP TIMELY

99-percentile RTT: 17144 μ s
Median RTT: 12575 μ s
Average RTT: 12683.1 μ s
AVG queue occupancy: 13.9053 pkts
AVG Throughput: 49.7158Mbps

99-percentile RTT: 8021 μ s
Median RTT: 5665 μ s
Average RTT: 5890.99 μ s
AVG queue occupancy: 8.23599 pkts
AVG Throughput: 49.1703Mbps

99-percentile RTT: 6169 μ s
Median RTT: 3962 μ s
Average RTT: 4247.64 μ s
AVG queue occupancy: 7.58459 pkts
AVG Throughput: 49.0603Mbps

99-percentile RTT: 148063 μ s
Median RTT: 5705 μ s
Average RTT: 21419.3 μ s
AVG queue occupancy: 9.41936 pkts
AVG Throughput: 0.676218Mbps

Comments

With a super large high threshold, we would get large avg throughput but much larger RTTs and queue occupancy.

Lower the high threshold usually gives lower RTT, queue occupancy and throughput. (Compare to row 1)

As we can see, there are tradeoffs whether we would like to drop a bit throughput to get obviously better RTT.

There would be cases that if one sends too low high threshold, the sending rate drops too fast and no longer exists.

failure