Simulation Report

November 9, 2015

Simulation Procedure

Open terminal in the folder where contains ns2.tcl file. Input [ns ns2.tcl (TCP flavor) (case No.)] in command line. For each scenario, type the corresponding TCP flavor and case number. In ns2.tcl, set the time 10.0. So every 10 seconds, terminal will display [Src1: time: (current time) throughput: (average throughput of this 10 seconds), Src2: time: (current time) throughput: (average throughput of this 10 seconds)]. When go through 400 seconds, then automatically calculate the average throughput from time 100 to time 400, then display on terminal the average throughput for each link. At last give the ratio of throughput. Then program stop.

Simulation Result

CaseNo.	Ratio of the average throughput of src1 to src2
1	1.34
2	2.20
3	3.00

Table 1: Simulation Result for TCP/VEGAS

CaseNo.	Ratio of the average throughput of src1 to src2
1	1.10
2	1.20
3	1.30

Table 2: Simulation Result for TCP/SACK

Analysis of Simulation Result

1. For case 1 in both table, the end-to-end RTTs of the two sources src1 to src2 is in the ratio 1:2. For case 2 the same ratio is 1:3 and for case 3 the same ratio is 1:4. In each table, we can see that as the RTT ratio decrease(from case 1 to case 3), the ratio of the average throughput of src1 to src2 is increasing. It's easy to understand because if you increase RTT for src2, then its average throughput will decrease.

2. Now we compare two different TCP flavor, VEGAS and SACK. Take case 3 which RTT ratio is 1:4 for example. In TCP SACK, the ratio of the average throughput is 1.30 while in TCP VEGAS the ratio of the average throughput is 3.00. So in TCP SACK the average thoughput of src1 and src2 are almost the same. However, src2 has 3 times more RTT time than src1. Then we look into TCP VEGAS table, we can see the difference of ratio of the average throughput is big while in TCP SACK table, the ratio of the average throughput is almost unchanged. As a result, we know that SACK performs better which means that when changing RTT, average throughput is stable.