Advanced Networking 2018

Lab #1: TCP Congestion Control

Report

GROUP: 1

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Q1.1 Plot a graph showing CWND versus time from 0.0s to 100.0s.

Q1.2 Plot a graph showing SSTH versus time from 0.0s to 100.0s.

Q1.3 Find the points where the slow-start, congestion-avoidance, fast retransmit/fast recovery states begin.

Q1.4 Plot a graph showing CWND versus time from 0.0s to 100.0s.

Q1.5 Plot a graph showing SSTH versus time from 0.0s to 100.0s.

Q1.6 Find the points where the slow-start, congestion-avoidance, fast retransmit/fast recovery states begin.

Q1.7 Discuss and motivate the differences you observe between the NewReno and this algorithm.

Q2.1 Plot a graph showing the CWND and ssthresh versus time with all the data you get. These two metrics are in one graph.

Q2.2 Briefly discuss the changing process.

Q2.3 Plot a graph showing CWND versus time with all the data you get.

Q2.4 Compare this graph with the one from

Q2.5 Plot a graph showing CWND and ssthresh versus time with all the data you get.

Q2.6 Compare this graph with the graph of

Q2.7 Zoom in the graph of this scenario (plot some parts of this scenario in a short duration, 10 or 20 seconds). Briefly explain the changing process.

Q2.8 Show a screen capture of the real throughput in this scenario.

Q2.9 Plot a graph showing CWND and ssthresh versus time with all the data you get.

Q2.10 Compare this graph with the graph of

Q2.11 Plot a graph showing CWND and ssthresh versus time with all the data you get.

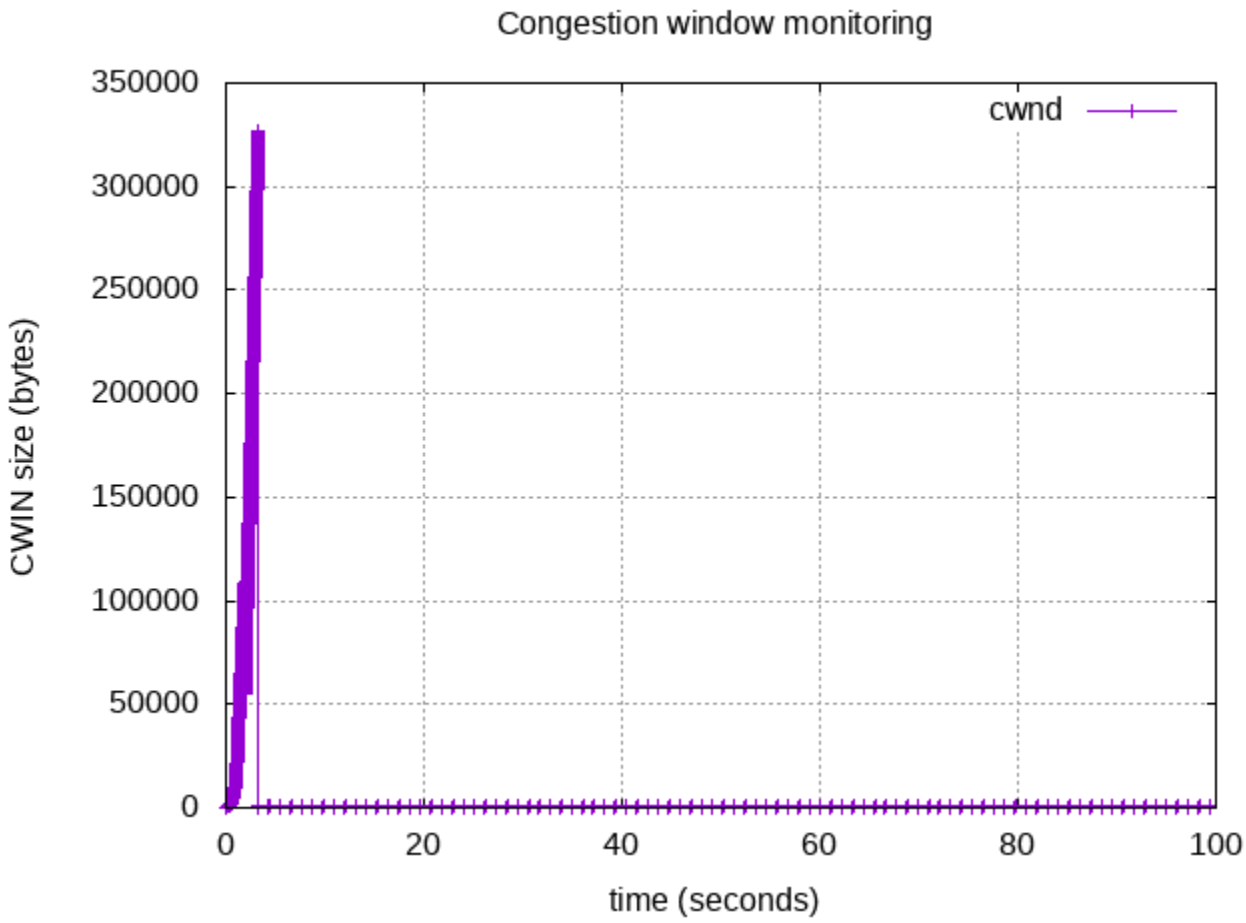
Q2.12 Compare this graph with the graph of scenario three and show the differences.

Q2.13 Zoom in the graph of this scenario (plot some parts of this scenario in a short duration, 10 or 20 seconds). Briefly explain the changing process and compare it with the graph of

Q2.14 Show a screen capture of the real throughput and compare it with throughput of

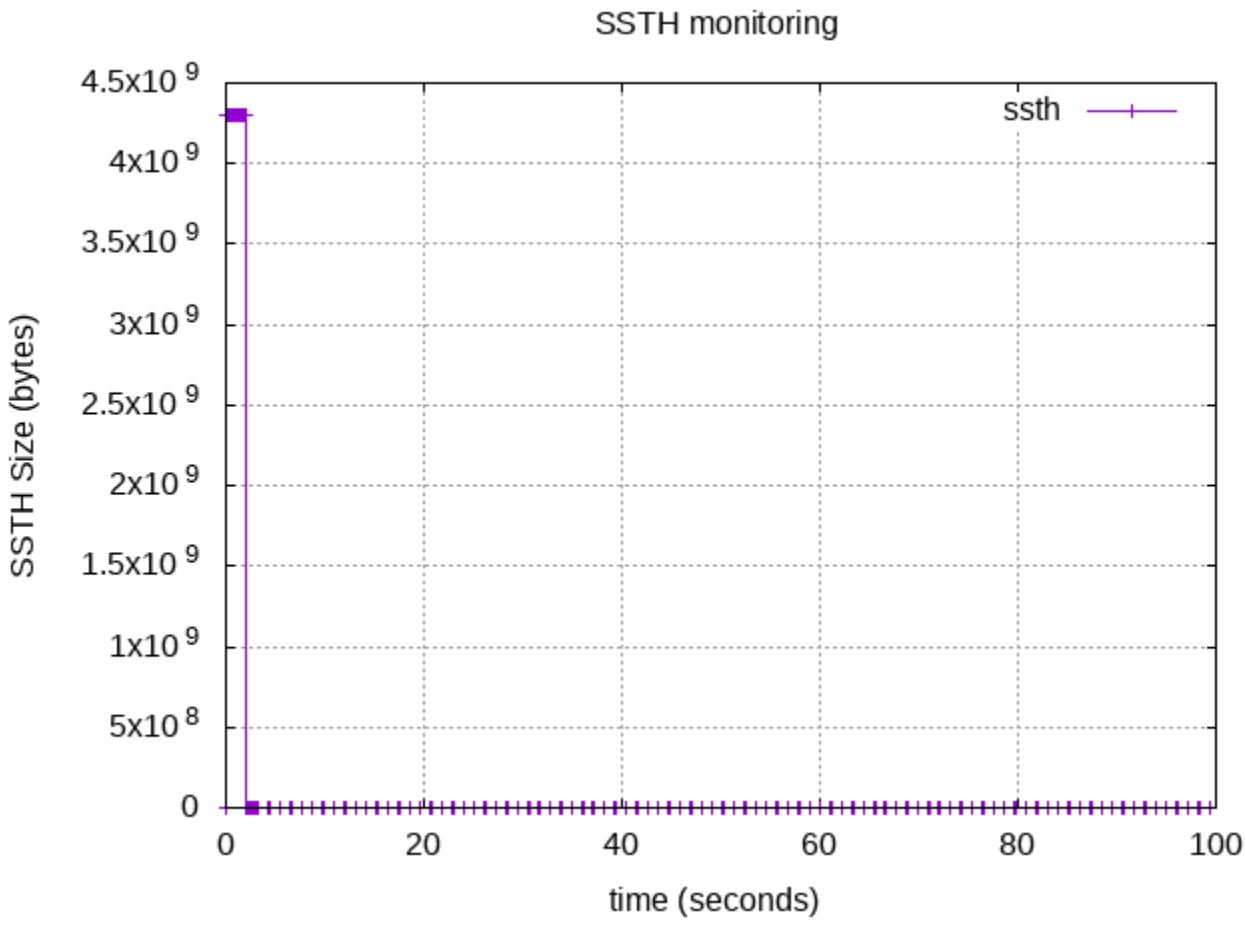
Q3.1 Explain what an LFN network is. Change the simulation parameters to your likings and demonstrate that TcpNewReno is not suitable for LFN networks.

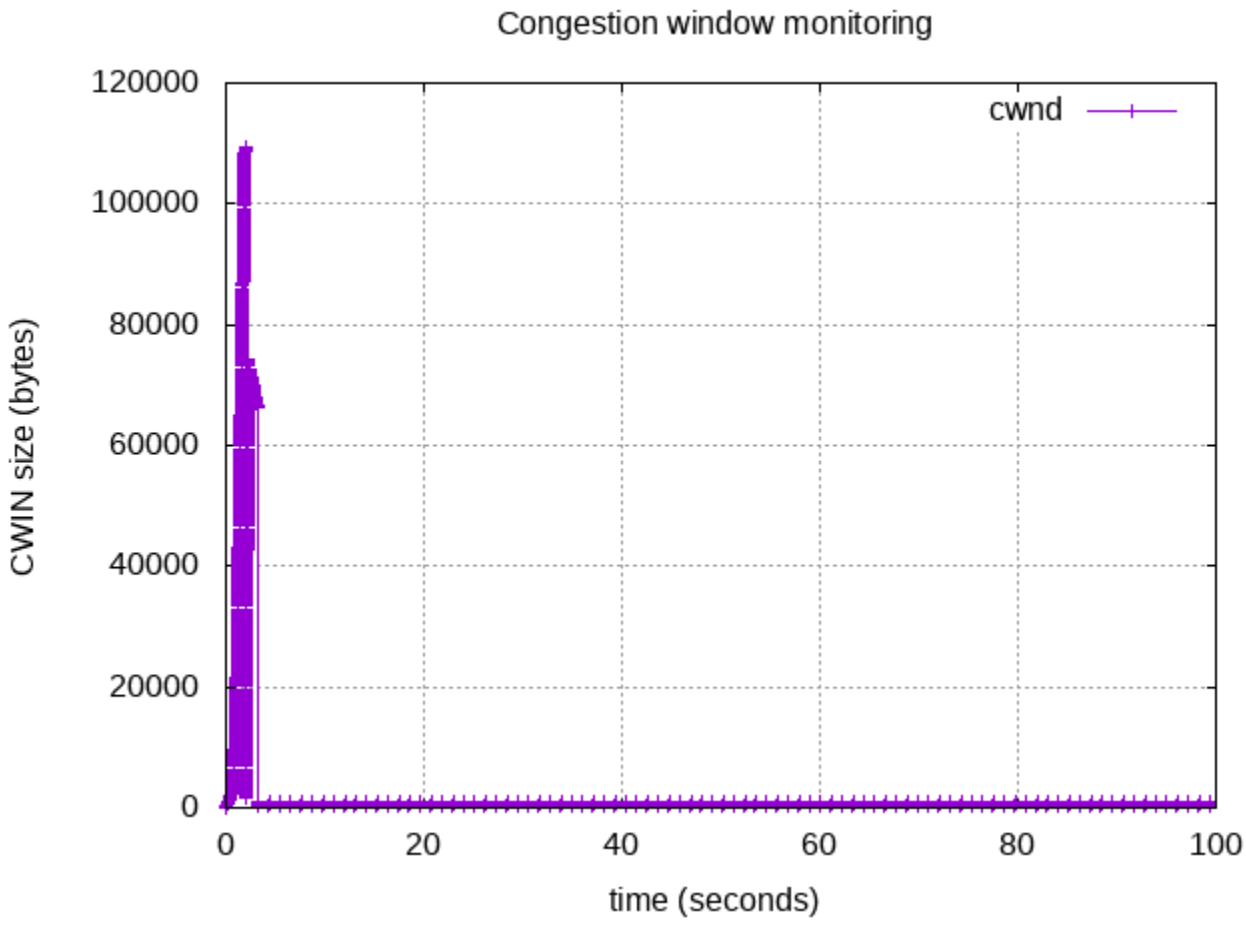
Q3.2 Explain SACK does. Change the simulation parameters to your likings and

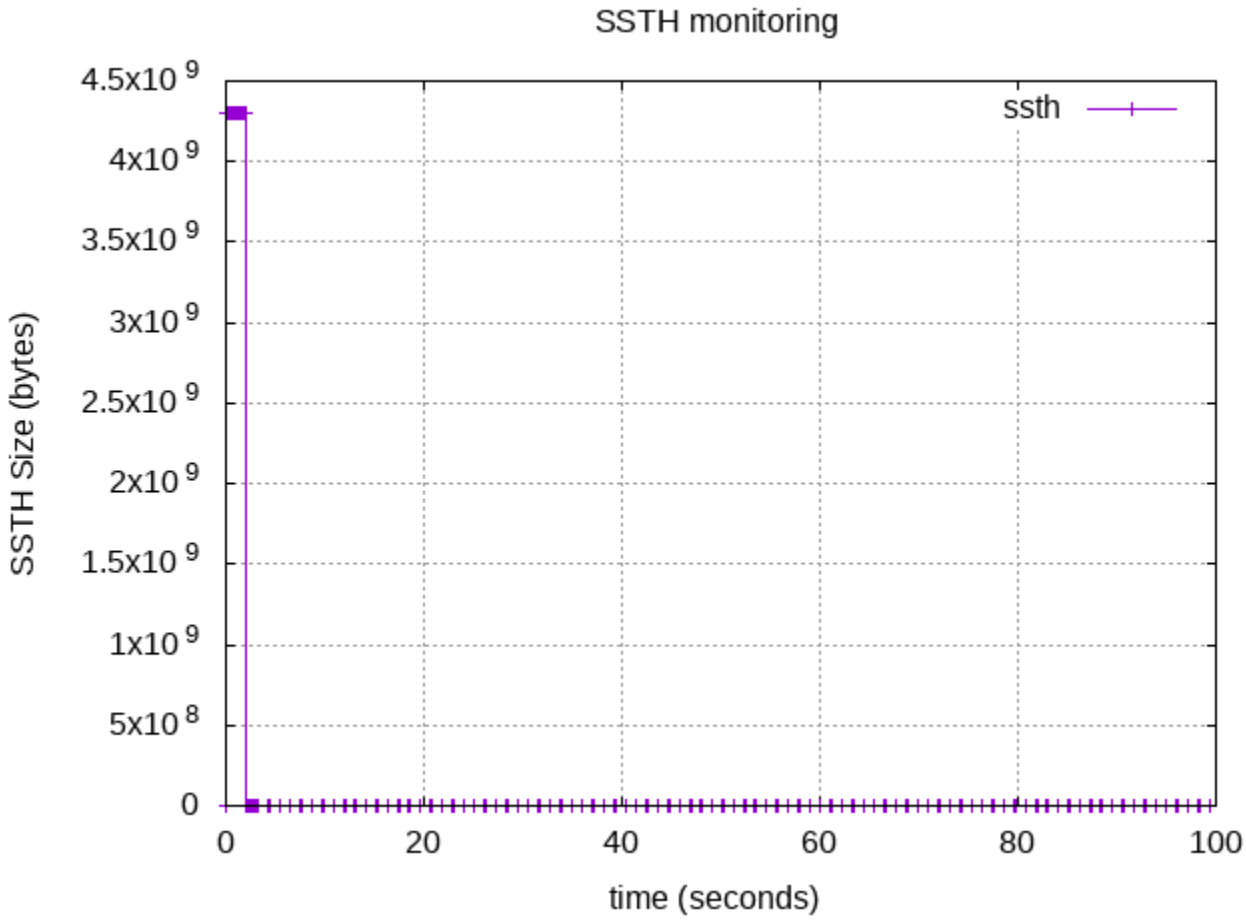


Time (s)	Current CWND (bytes)	New CWND (bytes)	New State	Event
0.00000	0	340	slow-start	start
1.93189	109 480	55 590	fast-recovery	dupACKcount==3
3.26916	326 570	340	slow-start	timeout
3.30286	340	680	congestion-avoidance	cwnd>=ssthtresh

Time (s)	Current CWND (bytes)	New CWND (bytes)	New State	Event
0.00000	0	340	slow-start	start
1.21176	163 882	82 790	fast-recovery	dupACKcount==3
???????	326 570	340	slow-start	timeout
2.54903	151 810	340	fast-recovery	TODO


SSTH monitoring
ssth
SSTH Size (bytes)
4.5x10 9
4x10 9
3.5x10 9
3x10 9
2.5x10 9
2x10 9
1.5x10 9
1x10 9
5x10 8
0
0
20
40
60
80
100
time (seconds)


Congestion window monitoring
cwnd
CWIN size (bytes)
120000
100000
80000
60000
40000
20000
0
0
20
40
60
80
100
time (seconds)



lab1-group1-task2-question1.png

lab1-group1-task2-question3.png