

## Scenario-1

Create a topology where you have a source node (S) and a destination node (D). The duplex link between nodes S and D has a bandwidth of 1Mbps and 50ms latency. Create a TCP connection with an FTP flow running on top of it, with the TCP source at node "S", and the TCP destination at node "D". As default, the maximum size of a packet that a TCP source can generate is 1kbyte. Use DropTail queue of maximum size 10 wherever needed. Have the simulation run from 0 to 51 sec and the FTP run from 0.5 to 50.5 seconds.

Simulate this network scenario in NS2 using a Tcl script. Also write separate AWK scripts to find answers for the following questions:

- 1: What is the minimum and maximum RTT values for the packets generated from node "S".
- 2: What are the various TCP segment sizes sent through the link between S and D? If there is variation in segment sizes, what is the minimum value and maximum value? What is the reason behind this variation?

## Scenario-2

In the above topology, insert an intermediate router R between S and D, with the following details:

*The link between nodes S and R (Link1) has a bandwidth of 1Mbps and 50ms latency. The link between nodes R and D (Link2) has a bandwidth of 100kbps and 10ms latency. Use DropTail queue of maximum size 10 wherever needed.*

Simulate this network scenario in NS2 using a Tcl script. Also write separate AWK scripts to find answers for the following questions:

- 4: What is the variation in minimum and maximum RTT values for the packets generated from node "S" to node "D".
- 5: Find the percentages of packets from node S dropped at the router R.
- 6: If the queue size is increased to 20, what is the new value for the above question 5? What is your observation?

Prepare your NS2 scripts, AWK scripts and the answer files for each question in the format Ans\_1.txt, Ans\_2.txt, ...Ans\_6.txt.