Computer Network

Assignment – 11

Design Documentation

development of new module for
NS2 (ARQ Support)

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Entry No. 2013EET2369

Contents

1 Problem Statement

- We first design NS2 modules for limited persistence ARQ protocol (sample codes will be provided)
- feedback channel is assumed to be error free
- setup an experiment to show the impact of ARQ module on TCP throughput. Inser an error module with error prob. (make a Tcl simulation script)
- make a folder in /ns-allinone-xxx/ns-xxx/¡yourfolder¿ and copy .c and .h files in this
- 2 copy ns-lib.tcl and ns-link.tcl at their places
- recompile complete ns2 and generate object file
- make tcl simulation script to test your module
- make a error model and set its error rate from the argument passed while running the script
- use link-lossmodel between n1 and n3
- use command link-arq defined in ns-lib.tcl with proper args
- make tcp connection between n1 and n3

2 Assumptions :

Assumptions made are:

- Only two link's are able to sand packet at a time.
- The communication can be only between two distint link's.
- The pkt drop according to the arq model or rate.
- The communication between two nodes are only for 100.1s .

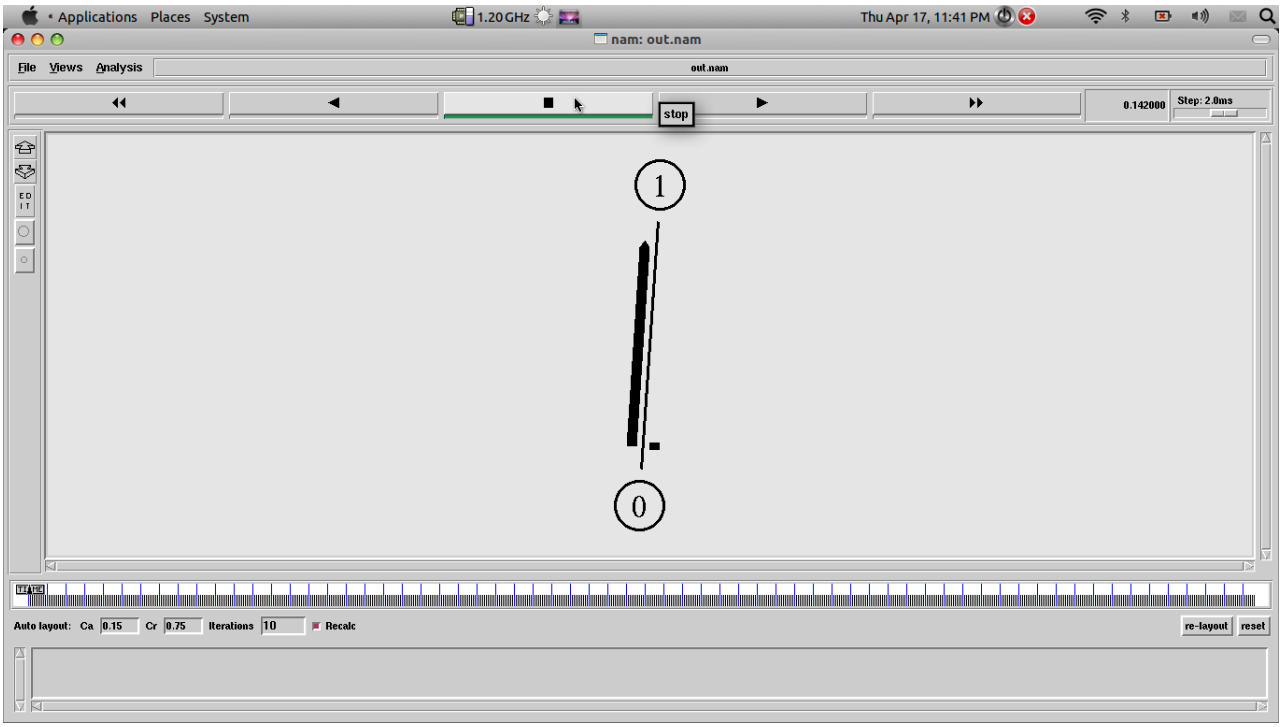
3 Specifications

The following speciations are used in the assignment:

- The link b/w nodes are dupliex.
- The arq model is work perfactly.
- The pkt is drop according to given condiction.

4 Approach :

1. First write a network topology using tcl. Here the connections, source and sink are defined.
2. Sample simulation can be seen using nam.
3. then add the arq model in that script.
4. On the terminal type ns [filename].tcl.
5. It will generate a trace file which contains the details of packet movement through the network.
6. Now write a awk script to parse the trace file can calculate throughput and interarrival time.
7. Write another file using the awk script which contains columans for x and y-axis for the plot.
8. On the terminal type awk -f [filename].awk [tracefile].
9. Use this output file to generate plot. For this, type gnuplot. On the shell, type plot [filename].
10. Analyse the results.

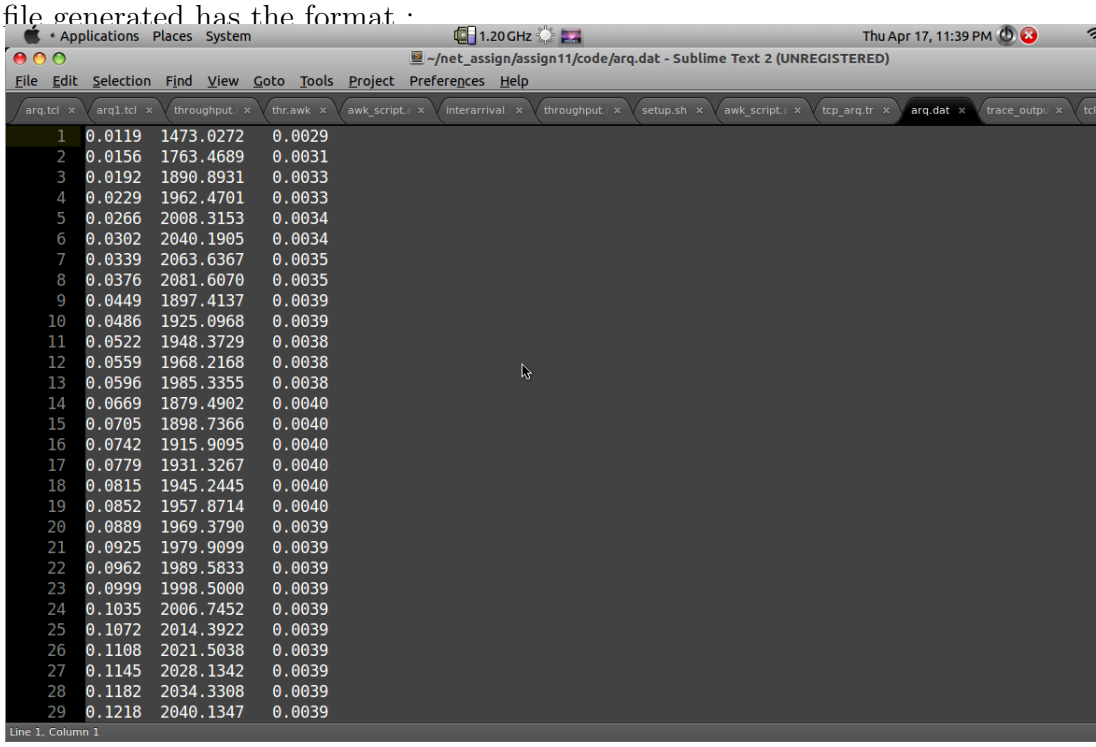

• Applications Places System
1.20 GHz
Thu Apr 17, 11:41 PM
nam: out.nam
File Views Analysis
out.nam
stop
0.142000
Step: 2.0ms
1
0
Auto layout: Ca 0.15 Cr 0.75 Iterations 10 Recalc
re-layout
reset

6 Conclusion

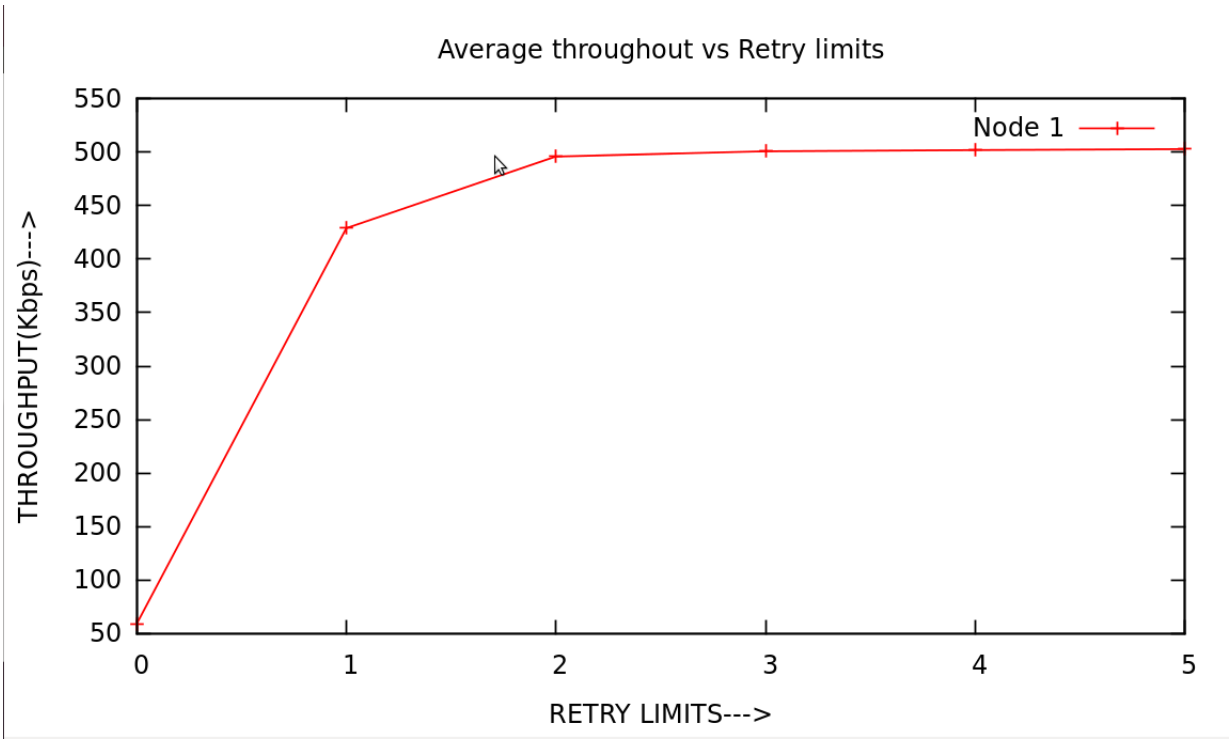
- The topology has been made using tcl.
- The throughput has been calculated.
- The graph for inter arrival time vs sequence number has been plotted.
- We observe that the throughput is upper bounded by Minimum of link capacity and sending rate.
- In case of TCP, it automatically adapts its rate based on the congestion.

7 Implementation :

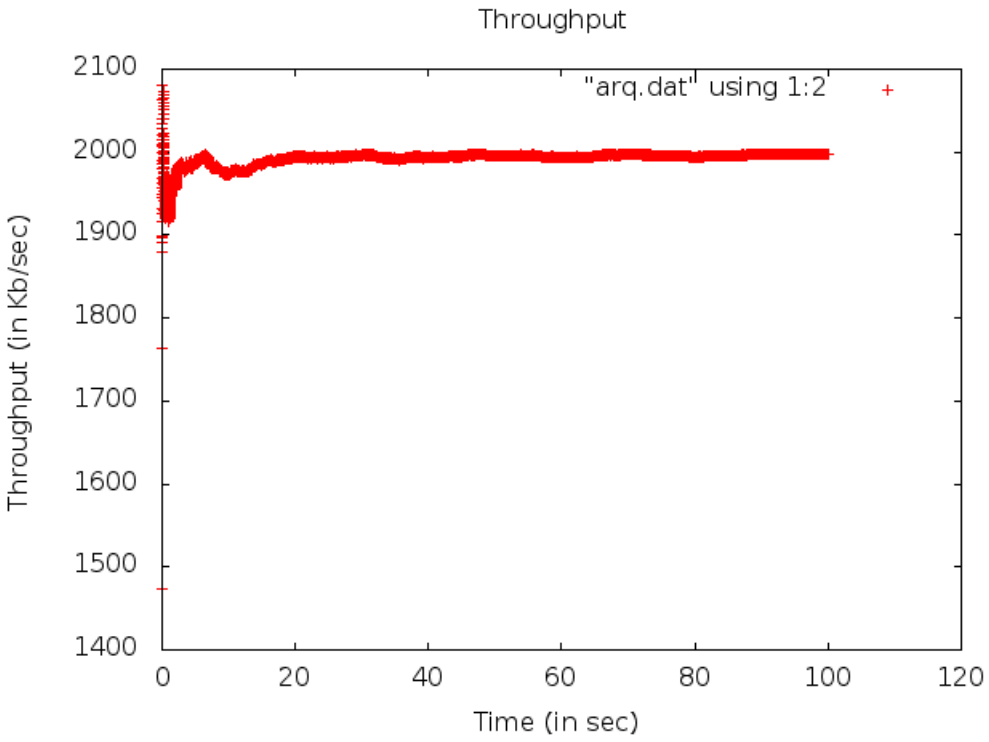
- The trace file generated has the format :



- Plot the graph between retry limites and throwput.



- Plot the graph of Throughput.



- Plot the graph of Interarrival Time.