

UNIVERSITY AT BUFFALO

CSE 589 - MODERN NETWORKING CONCEPTS,
FALL 2016

Project 3: Evaluate MAC random transmission protocol using NS-2

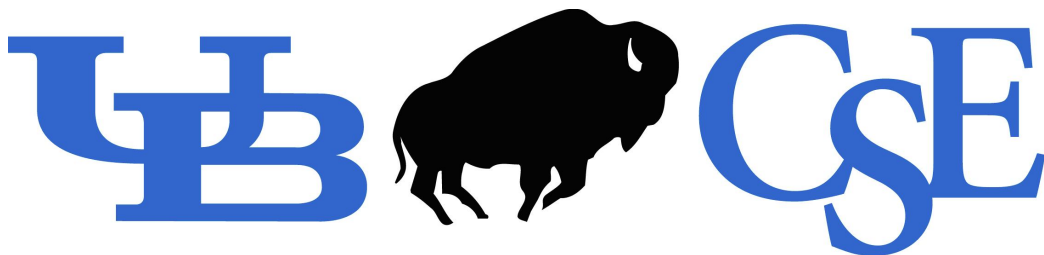
Project Report

Submitted by

Anurag Devulapalli (5020 8153)

Hema Madhav (5020 6563)

December 18, 2016



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
University at Buffalo *The State University of New York*

Contents

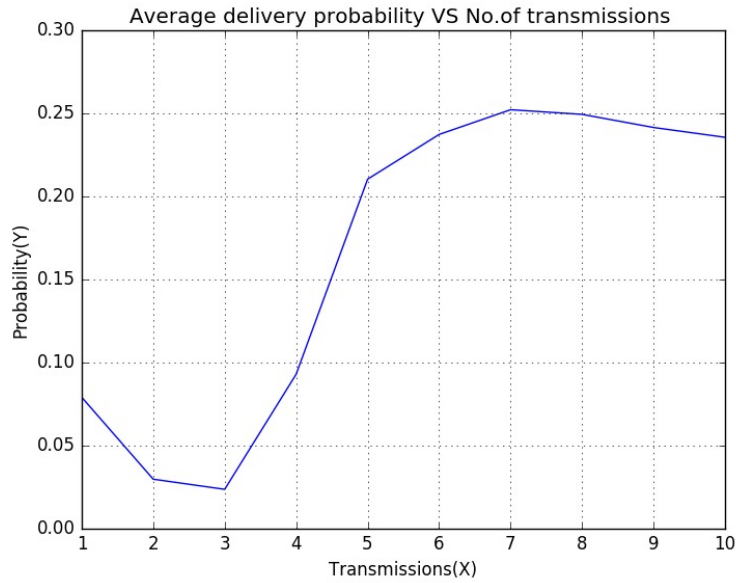
1	Parsing the trace file	2
2	Simulation results	2
3	Analysis	3

1 Parsing the trace file

We need to first parse the generated trace file and collect the statistics to generate the delivery probability versus the Number of transmissions graph. The first field in the generated trace file gives the event type as "Sent(s)" / "Receive(r)" / "Dropped(D)" Then, we filter out the traces which are generated with cbr traffic and from MAC layer. Finally, we calculate the probability by calculating the value of total number of "sent" by "received" .

2 Simulation results

No. of Transmissions	Average Delivery Probability
1	0.0791
2	0.0298
3	0.0237
4	0.093
5	0.2104
6	0.2373
7	0.2522
8	0.2494
9	0.2415
10	0.2356



3 Analysis

The above graph can be analyzed by dividing into three different parts.i.e; (1-3],[3-7],[7-10].

In the first part i.e, (1-3], as the no of transmissions are less and since the network is huge with number of transmission nodes 100, the probability that a particular packet reaching the sink node reduces due to the increase in the number of collisions.

In the second part i.e. (3-7], as the no of transmissions increases certain value i.e, collision threshold of the system, intuitively there is increase in the probability for a certain message to reach the sink node.This happens till to the channel capacity.

In the third part i.e, (7-10], as the transmissions exceeds the channel capacity, the transmissions happen at the channel capacity. In this stage, the probability of a packet received at the sink node approximates to the uniform distribution.

After this point there will not be much change in the probability.

References

- [1] <http://jhshi.me/2013/12/15/simulate-random-mac-protocol-in-ns2-part-iv/index.html>
- [2] <http://www.isi.edu/nsnam/ns/tutorial/nsscript1.html>
- [3] <http://www.isi.edu/nsnam/ns/doc/node46.html>
- [4] <http://www.cs.unc.edu/~clark/ns/rng/rng.pdf>
- [5] mac-simple.cc and mac-simple.h in the default ns folder