CS348 Computer Networks
Lab Excercises 2

Indian Institute of Technology, Patna

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Instructions: This assignment is in continuation to Assignment 1. But you have to submit the solutions in a different tgz file with name assign2.tgz. The submission date is 23.01.2016

Consider the packet switching case of the problem given in Assignment 1. In this assignment rather than using a uniform distribution for the generation time between two consecutive packets, we will now use certain distributions and observe their effects. Further we will also relax the case of same sized packets. We will summarize our old assumptions and introduce two important assumptions:

1. The time between generation of two consecutive packets at a source is a random number following a uniform distribution.
2. The length of each packet is same.

   Our new assumptions are as follows:

3. The packet generation at each source follows a Poisson distribution with a given rate λ, which is equivalent to the fact that the generation time between two consecutive packets at each source follows an exponential distribution.
4. The length of each packet follows a pareto distribution, with pdf given as $f(x) = \frac{\alpha}{k}(\frac{k}{x})^{\alpha+1}$, with $x > k$ and $\alpha > 0$.

You are now supposed to do the following:

1. Observe the number of packets dropped at switch queue (with fixed given size) and the link utilization from switch to sink when
   (a) Using assumptions 1 and 4 for different values of α.
   (b) Using assumptions 2 and 3 for different values of λ.