

DISI – UNIVERSITY OF TRENTO

Master in Computer Science AA 2014/2015

Simulation and Performance Evaluation

Simulation of a simple queuing network

Configuration for Alessio Zamboni

Arrival Process

Customers arrive following a Hyperexponential distribution with two phases characterized by $\lambda_1 = 1$ and $\lambda_2 = 10$ and equally probable. In other words the interarrival times of customers are i.i.d. RV that follows the law

$$f_T(t) = \frac{\lambda_1}{2} e^{-\lambda_1 t} + \frac{\lambda_2}{2} e^{-\lambda_2 t}$$

Stations

QS1: -/G/1/10/FIFO; where G is an Erlang distribution with the two service rates equal to the arrival rates of the arrival process. Clearly this queue is overloaded.

QS2: -/M/2/20/FIFO; the service rate (for each server) is $\mu = 1.0$.

QS3: -/M/2/20/FIFO; the service rate (for each server) is $\mu = 0.5$.

Routing probabilities

$p_{i,j}$ is the probability that a customer services in queue i goes to queue j .

		j		
		1	2	3
i	1	0.1	0.4	0.4
	2	0.0	0.0	1.0
	3	0.0	0.5	0.0
		p_{ij}		