DISI – University of Trento

Master in Computer Science AA 2014/2015

Simulation and Performance Evaluation

Simulation of a simple queuing network

Configuration for Francesco La Spina

Arrival Process

Customers arrive following a Bursty Poisson process. A Bursty Poisson process means that after one customer has arrived the rate of arrival increases, until one of the inter-arrival times is larger than a given threshold T_s, and then returns to the nominal arrival rate. In other words the arrival process is composed of relatively long periods without customer arrivals followed by a burst of customers that arrive one after the other with short interarrival times. In both cases the interarrival times are exponentially distributed. The average of the long interarrival times is $T_l = 100$, while the average of the fast interarrival times is $T_f = 1$. The threshold is $T_s = 3$.

Stations

QS1: M/M/1/∞/FIFO; the service rate is $\mu = 2$

QS2: –/G/1/10/FIFO; the service is uniformly distributed with service time $T \in (0.2, 3)$.

QS3: –/G/1/10/FIFO; the service is uniformly distributed with service time $T \in (0.5, 2)$.

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	0.0	0.5	0.5
	2	0.0	0.5	0.0
	3	0.0	0.0	0.6
		p_{ij}		