DISI – University of Trento

Master in Computer Science AA 2014/2015

Simulation and Performance Evaluation

Simulation of a simple queuing network

Configuration for Tiziano Ianes

Arrival Process

Customers arrive following a Rayleigh distribution with $\sigma = 0.3$, i.e., the interarrival times of customers are i.i.d. RV that follows the law

$$f_T(t) = \frac{t}{\sigma_2} e^{-\frac{t^2}{2\sigma^2}}; \quad t \geq 0; \quad \sigma = 0.2$$

Stations

QS1: –/G/1/10000/FIFO; services follow a Weibull distribution with $\lambda = 1.2$; $k = 0.6$, i.e., the interarrival times of customers are i.i.d. RV that follows the law

$$f_T(t) = \frac{k}{\lambda} \left(\frac{t}{\lambda}\right)^{k-1} e^{-(\frac{t}{\lambda})^k}; \quad t \geq 0; \quad \lambda = 1.2; \quad k = 0.6$$

QS2: –/M/4/20/FIFO; the average service time is $T_s = 2$

QS3: –/M/1/100/FIFO; average service rate $\mu = 1.5$.

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	0.0	0.0	1.0
	2	0.0	0.0	0.0
	3	0.0	1.0	0.0
		p_{ij}		