DISI – University of Trento

Master in Computer Science AA 2014/2015

Simulation and Performance Evaluation

Simulation of a simple queuing network

Configuration Kristian Segnana

Arrival Process

Customers arrive following a Weibull distribution with $\lambda = 2;\ k = 0.5$, i.e., the interarrival times of customers are i.i.d. RV that follows the law

$$f_T(t) = \frac{k}{\lambda}\left(\frac{t}{\lambda}\right)^{k-1} e^{-(\frac{t}{\lambda})^k};\quad t \geq 0;\quad \lambda = 2;\quad k = 0.5$$

Stations

QS1: –/G/1/5/FIFO; the service time follows also a Weibull distribution, but with $\lambda = 1;\ k = 0.5$, so that the average service time is two times faster than the average arrival rate.

QS2: –/G/2/20/FIFO; the service time is uniformly distributed between 0 and 10.

QS3: –/M/∞; average service rate (per server) $\mu = 0.1$.

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	0.8	0.1
	2	0.0	0.0	0.0
	3	0.0	0.5	0.0
		p_{ij}		