

WAITING TIME ANALYSIS OF INTERDEPENDENT $H_2/M/1$ QUEUEING MODEL

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Abstract

Under equilibrium conditions, the distributions associated with the queue become independent of time, but equilibrium can be reached only under certain conditions. Steady state solutions under these equilibrium conditions exists only if $\lambda < \mu$. For queueing systems where $\lambda > \mu$, queue size never settles down and there is no steady state. Different methods are used to obtain transient distributions associated with any queueing model. These are given in terms of Laplace-Stietje's transform and are much complicated and hard to implement. Mohanty and Penny (1990), Kanwar Sen et al. (1993, 1996, 2002) derived a simpler way of obtaining transient solutions by discretizing the model. This method uses combinatorics and lattice paths giving explicit transient solutions. For M/M/1 interdependent queueing model with $(0, k)$ control policy queue length distribution and waiting time distribution are obtained by Khaparde and Wazalwar ([3], [7]). In this paper we extend the work on waiting time distribution of M/M/1 queueing model to a more general case as $H_2/M/1$ model.

Key Words : *Waiting time, Interdependent queueing model, Hyper exponential distribution, Lattice path.*