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A Retrial Queueing System with two Types of Calls and Geometric Loss

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Abstract

A retrial queueing system with two types of calls are considered. Type I calls arrive in a batch of size k with probability c_k and type II calls arrive singly according to Poisson processes with rates $\lambda_1 \bar{c}$ and λ_2. Service time distributions are independent and identically distributed and are different for both types of calls. If arriving calls are blocked due to server being busy, type I calls are queued in a priority queue of infinite capacity whereas type II calls are entered into the retrial group in order to seek service again after a random amount of time. For this system the joint distribution of the number of calls in the priority queue and in the retrial group in closed form is obtained. The operating characteristics and numerical results are also presented.

Keywords: Retrial Queue, Infinite Capacity, Batch of Calls, Non-Preemptive Priority, Geometric Loss.