

A Single Server Retrial Queue with Two Types of Calls and Recurrent Repeated Calls

R. Kalyanaraman

Annamalai University

India

B. Srinivasan

Annamalai University

India

Abstract

A single server retrial queueing system with type I calls, transit type II calls and K recurrent calls are considered. Type I and transit type II calls arrive according to Poisson processes with rates λ_1 and λ_2 . If an arriving calls are blocked due to server being busy, type I calls are queued in a priority queue of infinite capacity whereas transit type II calls are entered into the retrial group in order to get service again after a random amount of time. Retrial group consists transit type II calls and a fixed number of K recurrent calls. Service time distributions are independent and identically distributed and are different for both priority calls and calls in the retrial group. For this system, the joint distribution of number of calls in the priority queue and in the retrial group in closed form is obtained. The operating characteristics and numerical results are presented.

Keywords: Retrial Queue, Infinite Capacity, Transit Calls, Recurrent Calls, Non-Preemptive Priority.