

A Discrete Time (a, c, d) Policy Bulk Service Queue with State Dependent Service Rates

C. Baburaj

GPM Government College Manjeswaram

Abstract

This paper presents a discrete time bulk service queue under the policy (a, c, d) with state dependent service rates. The inter-arrival times are assumed to be independent and geometrically distributed. The customers are served by a single server under the policy (a, c, d) with state dependent service rates. In this model the server begins service only when there are at least c units in the queue and he serves a maximum of d units in a batch. The server continues to serve even when the queue size is less than c but not less than a secondary limit a after a service completion epoch, but with a different service rate. If after a service completion epoch the queue size is less than a , the server becomes idle. The service times are also assumed to be independent and geometrically distributed. The steady state probabilities and some performance measures of the model are computed.

Keywords: (a, c, d) policy, Discrete time queues, state dependent service rates batch service, geometric distribution, steady state distribution, expected queue length.