

**Distribution of the Busy Period in a
Controllable $M/G/2$ Queue with $(0, K, N, M)$ Policy**

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Abstract

We consider an $M/G/2$ queuing system with removable service-stations operating under steady-state conditions. We assume that the number of operating service stations can be adjusted at customer's arrival or service completion epochs depending on the number of customers in the system. The objective of this paper is to obtain the distribution of the busy period using the theory of gambler's ruin problem. As a special case, the distribution of the busy periods for an $M/M/2$ is also obtained.