Morrison, John A.
Processor sharing for two queues with vastly different rates. (English) | Zbl 1128.60081
Queueing Syst. 57, No. 1, 19-28 (2007).

Summary: We consider a 2-class queueing system, operating under a generalized processor-sharing discipline, in an asymptotic regime where the arrival and service rates of the two classes are vastly different. We use regular and singular perturbation analyses in a small parameter measuring this difference in rates. It is assumed that the system is stable, and not close to instability. Three different regimes are analyzed, corresponding to an underloaded, an overloaded and a critically loaded fast queue, respectively. In the first two regimes the lowest order approximation to the joint stationary distribution of the queue lengths is derived. For a critically loaded fast queue only the mean queue lengths are investigated, and the asymptotic matching, to lowest order, with the results for an underloaded and an overloaded fast queue is established.

MSC:

60K30	Applications of queueing theory (congestion, allocation, storage, traffic, etc.)
90B22	Queues and service in operations research

Cited in **6** Documents

Keywords:

asymptotics; matching; processor sharing; singular perturbations

Full Text: DOI

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