

# PERFORMANCE ANALYSIS OF JOINING THE SHORTEST QUEUE MODEL AMONG A LARGE NUMBER OF QUEUES

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**Abstract:** Consider a queueing network with  $N$  nodes in which each queue has a dedicated input stream and  $N$  is large. There is an extra input stream, which balances the load of the network by directing its arriving customers to the shortest queue. A mean field interaction model is set up to study the performance of this network in terms of limiting results. One of our results shows that the stationary behavior of any of the queues is approximated by that of the  $M/M/1$  queue with a modified boundary transition rate.