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Abstract

This research paper compares M/M/1 and M/M/N Markovian models to determine a more suitable queuing model for the enhancement of a wireless system's performance. Data traffic was collected from the wireless MikroTik router connecting the overhead satellite to the university Wireless Campus Area Network (WCAN) using "Winbox" software monitoring tool for a period of 11 months from 31th January 2011 to 30th December 2012. The computation of this data traffic gave the average arrival rate of 176.5 kilobits per second, and the average service rate of 746 kilobits per second. By using these values in the analyses, M/M/1 was found to be better than M/M/2 and even far better than M/M/3. The results shows that the higher the number of servers in a queuing model, the more the number of unserviced entities in the system, and in the queue waiting for service, and also the system has slower response time and longer waiting time in the queue.

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Index Terms

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Keywords

WCAN, Router, M/M/1, M/M/N, Queue Discipline.