Performance Evaluation of IP-Ad Hoc Gateways

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Abstract

In this work, we are interested in evaluating the performance of IP-Ad Hoc gateways. Indeed, we modelled the data transmission between a fixed node (router) and a node of ad hoc network by a tandem queues $M / M / 1 / \infty \rightarrow M / M / 1 / N$, where customers are packages, the first queue represents the fixed node and the second queue represents the Ad Hoc node. This model is multidimensional and non-product queuing network, which makes the calculation of its stationary probabilities difficult. In the theory of queuing systems, truncation is to approximate the characteristics of an infinite state Markov chain by the corresponding ones of a Markov chain with finite state space. The study of these methods is initiated by Seneta in 1967. In this we use the strong stability approach to establish analytic error bounds for the truncation of a tandem queue with blocking queue tandem with blocking and infinite buffer ($M / M / 1 / \infty \rightarrow M / M / 1 / N$) by a tandem with blocking and finite buffer ($M / M / 1 / Q \rightarrow M / M / 1 / N$).

Keywords
Performance evaluation, IP-Ad Hoc gateways, modelling, queuing network, truncation.

Biography

Karima Adel-Aissanou was born in Béjaia (Algeria) in 09 November 1974. She received an engineering degree in operation research in 1999, a magister degree in applied mathematics in 2004 from Béjaia University and she received her Ph.D in 2014 in applied mathematics from Béjaia University and she is a lecturer in the department of computer science in Béjaia University. Her research interests include stochastic models, queuing systems, performance evaluation of wireless and ad hoc networks.