

Author's Accepted Manuscript

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PII: S1084-8045(17)30060-7
DOI: <http://dx.doi.org/10.1016/j.jnca.2017.01.039>
Reference: YJNCA1855

To appear in: *Journal of Network and Computer Applications*

Received date: 29 June 2015
Revised date: 21 October 2016
Accepted date: 30 January 2017

Cite this article as: Mohammed I. Alghamdi, Xunfei Jiang, Ji Zhang, Jifu Zhang, Minghua Jiang and Xiao Qin, Towards Two-Phase Scheduling of Real-time Applications in Distributed Systems, *Journal of Network and Computer Applications*, <http://dx.doi.org/10.1016/j.jnca.2017.01.039>

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Towards Two-Phase Scheduling of Real-time Applications in Distributed Systems

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Abstract

In this work we propose a two-phase scheduling technique (TOPS) for distributed real-time systems. Our TOPS scheduling approach has two distinct phases. The first phase is in charge of producing a scheduling sequence, whereas the second phase aims to dispatch tasks to computing nodes of a distributed system. The second phase also judiciously determines the starting time of each task. One salient feature of our approach lies in high flexibility, which allows system developers to apply multiple policies in each phase. The two phases are independent of one another; therefore, one can change a policy in one phase without configuring another phase. With TOPS in place, we are able to observe the impacts of sorting policies on the performance of scheduling policies. We implement a prototype of TOPS, where the first phase is comprised of three sorting policies, and the second phase consists of two scheduling policies. TOPS enables us to discover that combining the

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Preprint submitted to Journal of Networking and Computer Application February 7, 2017

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