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A New Robust Decentralized DMX Algorithm

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Keywords:

Distributed mutual exclusion, DMX or DME, reliability, process concurrency, synchronize fault tolerance

Abstract:

This paper presents a reliable decentralized mutual exclusion algorithm for distributed systems which processes communicate by asynchronous message passing. When any failure happens in the system, the algorithm protects the distributed system against any crash. It also makes possible the recovery of lost data in the system. It requires between $(N-1)$ and $2(N-1)$ messages per critical section access, where N is the number of processes in the system. The exact message complexity is expressed as an order function of clients in computation. The algorithm does not introduce other overhead over Lamport's and Ricart-Agrawala's algorithms, which require $3(N-1)$ messages per critical section access, respectively.

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