Abstract

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Scheduling distributable real-time threads in the presence of crash failures and message losses

We consider the problem of scheduling distributable real- time threads under run-time uncertainties including those on thread execution times, thread arrivals, node failures, and message losses. We present a distributed scheduling algorithm called ACUA that is designed under a partially synchronous model, allowing for probabilistically-described message delays. We show that ACUA satisfies thread time constraints in the presence of crash failures and message losses, is early-deciding, and has an efficient message and time complexity. The algorithm has also better "best-effort" real-time property than past thread scheduling algorithms.