

Handling Multiple Faults in Wormhole Mesh Networks

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Abstract

We present a fault tolerant method tailored for n-dimensional mesh networks that is able to handle multiple faults, even for two dimensional meshes. The method does not require existence of virtual channels. The traditional way of achieving fault tolerance based on adaptivity and adding virtual channels as the main mechanisms, has not shown the ability to handle multiple faults in wormhole mesh networks. In this paper we propose another strategy to provide high degree of fault-tolerance, we describe a technique which alters the routing function on the fly. The alteration action is always taken locally and distributed to a limited number of non-neighbor nodes. Our simulation results in presence of faults show graceful degradation in performance, especially for non-uniform traffic and low number of faults.

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