

论文

Star图互连网络的容错性分析

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摘要:

限制连通度和限制容错直径是衡量互连网络可靠性的两个重要参数。当考察这两个参数时, 总假设网络中和一台计算机相连接的所有计算机不会同时出现故障。该文证明了Star图互连网络的极小分离集和极小限制分离集的唯一性, 然后得到了Star图的限制连通度是 $2n-4$, 当 $n=3,5$ 和 $n \geq 7$ 时, 它的限制容错直径是 $\lfloor \frac{3(n-1)}{2} \rfloor + 2$, 对于 $n=4, 6$, 限制容错直径是 $\lfloor \frac{3(n-1)}{2} \rfloor + 3$, 即限制容错直径只比它的容错直径大1。

关键词: Star图 连通度 容错性; 限制连通度 限制容错直径 分离集

分类号:

O5C05; O5C50

The Fault Tolerant Analysis of Star Graph Interconnection Network

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Abstract:

The restricted connectivity and the restricted fault diameter are two reliability measures for interconnection networks, in which the authors assume that all the neighbors of a vertex do not fail at the same time. In this paper, the authors show the uniqueness of minimal (vertex) separating sets and of minimal restricted separating sets in the star graphs. The authors present that for the n star graph S_n , its restricted connectivity is $2n - 4$ and its restricted fault diameter is $\lfloor \frac{3(n-1)}{2} \rfloor + 2$ and $n \geq 7$ and $\lfloor \frac{3(n-1)}{2} \rfloor + 3$ for $n=4,6$, i.e., its fault diameter plus one.

Keywords: Star graph Connectivity Fault tolerance Restricted connectivity Restricted fault diameter Separating set

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