

计算机开发与应用

评估STAR网络可靠性的新方法

梁家荣, 花仁杰

(广西大学计算机与电子信息学院, 广西 南宁 530004)

摘要:

针对具有故障部件的STAR互联网络的可靠性问题, 在有条件的容错模型和概率模型的基础上, 提出了一种新的评估STAR网络可靠性的方法。该方法通过网络的二连通率来进行评估。首先提出了一个自适应的容错并行路由算法, 通过该算法的多次执行, 得到用于计算网络二连通率的相关条件参数, 在此基础上建立了用于推断网络二连通率的贝叶斯网模型。然后通过基于贝叶斯网的概率推理, 可得到反映网络可靠性的网络二连通率。研究表明, 该方法拓展了人们在网络可靠性评价方面的视野, 具有一定的理论和实际意义。

关键词: 可靠性 二连通率 概率推理 自适应性 路由算法 贝叶斯网

New method used for evaluating reliability of STAR networks

LIANG Jia-rong, HUA Ren-jie

(Coll. of Computer and Electronic Information, Guangxi Univ., Nanning 530004, China)

Abstract:

To solve reliability problems on STAR interconnection networks with fault parts, under the conditional fault tolerant model and the probabilistic model, a new method used for assessing reliability of STAR networks is proposed. The reliability of networks is evaluated by two connection probability of networks in the method. A adaptive fault tolerant parallel routing algorithm is proposed firstly, and relational condition parameters used for computing two connection probability of networks are derived by its performance at many times, furthermore a Bayesian networks model for deducing two connection probability of networks is also established. The two connection probability of networks used for reflecting reliability of networks is derived by probabilistic inference based on this Bayesian networks. The results show that this method broadens people's horizons toward the evaluation for reliability of networks, so it has certainly theoretical and practical significance.

Keywords: reliability two-connection probability probabilistic inference auto-adapted routing algorithm; Bayesian networks

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者:

作者简介:

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