

网络与通信

基于网络编码的传染路由协议性能

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摘要: 针对传染路由(ER)网络中容易出现多种通信半径的通信节点,导致网络性能不稳定的问题,提出了一种网络编码与传染路由相结合的网络模型。该模型在经典传染路由中结合网络编码的方式进行数据传输,并且为了对改进后的网络性能进行有效地评估,为传染路由网络中的传输时延建立了概率模型。使用该概率模型对网络进行评估的结果显示,在多种传输环境下与经典传染路由相比,基于网络编码的传染路由(NCER)具有高效、稳定的优点,并于离散事件仿真实验结果中得到了验证。最后,根据该概率模型的评估结果,提出了一种进一步降低网络传输时延的方案。

关键词: 网络编码 传染路由 概率模型 传输时延 通信半径

Performance of network coding protocol based epidemic routing

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Abstract: Many different communication radius of the communication nodes that may cause an unstable network performance can be easily found in Epidemic Routing (ER) network. A network model that combines network coding and epidemic routing can solve this problem. Compared with the traditional epidemic routing, the Network Coding Based Epidemic Routing (NCER) can transmit packets with network coding. In order to compare the performances of the ER and NCER, a probability model of the transmission delay of the network was built. The comparative results between the two protocols with the probability model above show that NCER can be more efficient and stable than ER. The correctness of this probability model has been proved in the simulation. Finally, according to the model evaluation results, a scheme has been given to reduce the network transmission delay.

Keywords: network coding Epidemic Routing (ER) probability model transmission delay transmission radius

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