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一种新的故障链路识别算法RPI

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A Novel Algorithm for Lossy Link Identification

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摘要 针对目前大多数故障链路识别算法不能兼顾良好稳定性和低计算复杂性的问题，该文提出一种基于参考路径的故障链路识别算法RPI (Reference Path based lossy link Identification algorithm)。该算法根据路径间的性能差异，从经过同一链路的所有路径中选取一部分作为该链路的参考路径，然后采用启发式方法根据参考路径间的性能相关性识别该链路的状态。相较已有算法，RPI更充分地利用了测量数据的可用信息，具有更好的稳定性，同时启发式估计策略保证了算法的低计算复杂性。仿真结果表明RPI能够在多种网络场景下较同类算法更精确地识别出故障链路。

关键词： 网络监测 故障链路识别 网络层析成像 端到端测量

Abstract： Most present lossy link identification algorithms do not achieve both high stability and low computation complexity. A novel Reference Path based lossy link Identification algorithm (RPI) is proposed to address this problem. RPI first selects reference paths from the paths passing through a link according to the measured performance differences, and then employs a heuristic method to infer the state of the link based on the correlation of its reference paths. Compared with other algorithms, RPI has high stability because of using the information of measurement data sufficiently. It also achieves low computation complexity due to the heuristic link state inference method. Simulation results show that RPI can identify lossy links more accurately than other algorithms.

Keywords： Network monitoring Lossy link identification Network tomography End-to-end measurement

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