

博士论坛

Internet宏观拓扑的协议映射与分析

罗桂兰^{1,2}, 赵海¹, 赵明¹

1.东北大学 信息科学与工程学院, 沈阳 110004

2.沈阳师范大学 软件学院, 沈阳 110034

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摘要 从协议角度, 利用拓扑学和图论方法研究了Internet宏观拓扑的网络性能和形成机理。在给定Internet宏观拓扑的图论定义后, 通过找到一个协议通信模式到Internet宏观拓扑的可行映射条件, 进而分析了Internet宏观拓扑的连通度和平均拓扑距离。结果表明Internet宏观拓扑的形成机理源于协议的无限空间换取有限时间效应的设计原理, 使得Internet可以实现实时通信, 即在满足网络可靠性的同时, 又保证网络的有效性。

关键词 [Internet宏观拓扑](#) [形成机理](#) [协议映射](#) [图论](#) [连通度](#)

分类号

Protocol mapping and analysis of Internet macroscopic topology

LUO Gui-lan^{1,2}, ZHAO Hai¹, ZHAO Ming¹

1.School of Information Science & Engineering, Northeastern University, Shenyang 110004, China

2.School of Software, Shenyang Normal University, Shenyang 110034, China

Abstract

The network performance and formation mechanism of Internet macroscopic topology was studied in the view of protocol by means of topology and graphic theory. After giving graphic definition of Internet macroscopic topology, the connectivity and average topological distance of Internet macroscopic topology were analyzed through finding a feasible mapping condition from protocol communication model to Internet macroscopic topology. The results show that the formation mechanism of Internet macroscopic topology can be explained as the design theory of protocols that use the unlimited space to get limited time in return, which makes Internet carry out real-time communication, that is to say, which supplies the reliability of network, and keeps the effectivity of network at the same time.

Key words [Internet Macroscopic Topology \(IMT\)](#) [formation mechanism](#) [protocol mapping](#) [graphic theory](#) [connectivity](#)

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通讯作者 罗桂兰 yongxin_fly@163.com

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