

本期目录 | 下期目录 | 过刊浏览 | 高级检索

[打印本页] [关闭]

网络与通信

基于蚁群优化算法的Chord模型

张建伟, 刘 思, 李朝阳, 蔡增玉

(郑州轻工业学院计算机与通信工程学院, 郑州 450002)

摘要: 提出一种具有物理拓扑匹配能力的Chord模型(Ant-Chord),用以存储网络标识间的映射信息。该模型将整个Chord环中的存储节点看成一个旅行商问题(TSP),利用蚁群优化算法对TSP问题进行快速求解,用得到的解构建Chord环,并通过洛阳铲法对Chord环的路由跳数进行优化。Ant-Chord模型实现简单,对原始Chord模型改动不大,路由表的额外存储开销也较小。仿真结果表明,与同类Chord模型相比,Ant-Chord在资源发现的平均路由跳数、时延方面均有明显优势。

关键词: 网络标识分离 Chord模型 蚁群优化算法 旅行商问题 物理拓扑匹配

Chord Model Based on Ant Colony Optimization Algorithm

ZHANG Jian-wei, LIU Si, LI Chao-yang, CAI Zeng-yu

(School of Computer and Communication Engineering, Zhengzhou University of Light Industry, Zhengzhou 450002, China)

Abstract: This paper proposes a Chord model(Ant-Chord) which has an ability of physical topology matching to store the mapping information of identifiers. The ideas of Ant-Chord is to regard the storage nodes in the whole Chord as a TSP problem and solve the TSP problem quickly by using the ant colony algorithm, then to build the Chord with the obtained Traveling Salesman Problem(TSP), and proposes a method which called Luoyang Shovel Method(LSM) to optimize the Ant-Chord's routing hops. The model is simple and easy to implement, which has small changes within the original Chord model and little extra overhead cost in the routing table storage. Simulation results show that Ant-Chord has obvious advantages in average routing hops and delay in comparison with other Chord models.

Keywords: network identifier separation Chord model Ant Colony Optimization(ACO) algorithm Traveling Salesman Problem(TSP) physical topology matching

收稿日期 2011-05-17 修回日期 网络版发布日期 2012-02-20

DOI: 10.3969/j.issn.1000-3428.2012.04.033

基金项目:

国家“973”计划基金资助项目(2007CB307102, 2007CB30 7100); 河南省基础与前沿技术研究计划基金资助项目(0823004102 80)

通讯作者:

作者简介: 张建伟(1971—),男,副教授,主研方向:宽带信息网络,网络安全;刘 思、李朝阳,硕士生;蔡增玉,讲师

通讯作者E-mail: ukyoukyo@yahoo.com.cn

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(336KB)
- ▶ [HTML] 下载
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 网络标识分离
- ▶ Chord模型
- ▶ 蚁群优化算法
- ▶ 旅行商问题
- ▶ 物理拓扑匹配

本文作者相关文章

- ▶ 张建伟
- ▶ 刘思
- ▶ 李朝阳
- ▶ 蔡增玉

PubMed

- ▶ Article by Zhang, J. W.
- ▶ Article by Liu, S.
- ▶ Article by Li, C. Y.
- ▶ Article by Ca, C. Y.

参考文献:

- [1] Mathy L, Lancaster U, Iannone L, et al. LISP-DHT: Towards a DHT to Map Identifiers onto

Locators[EB/OL]. (2008-05-12). <http://inl.info.ucl.ac.be/system/files/draft-mathy-lisp-dht-00.txt>.

- [2] Luo Hongbin, Qin Yajuan. A DHT-based Identifier-to-locator Mapping Approach for a Scalable Internet[J]. IEEE Trans. on Parallel and Distributed Systems. 2009, 20(12): 1790-1802 
- [4] 张宏科, 苏伟. 新网络体系基础研究一体化网络与普适服务[J]. 电子学报. 2007, 35(4): 593-598 
- [5] 董平, 秦雅娟, 张宏科. 支持普适服务的一体化网络研究[J]. 电子学报. 2007, 35(4): 599-606 
- [6] 陈沅涛, 吴海珍. 基于Chord的动态多路由算法[J]. 计算机工程. 2010, 36(4): 97-98 [浏览](#)
- [7] Dorigo M, Gambardella L M. Ant Colony System: A Cooperative Learning Approach to the Traveling Salesman Problem[J]. IEEE Trans. on Evolutionary Computation. 1997, 1(1): 53-66 
- [8] Wu Weiyu. [J]. Chen Yang, Zhang Xinyi, et al. LDHT: Locality-aware Distributed Hash Tables[C]//Proc. of the International Conference on Information Networking. Busan, Korea: [s. n.]. 2008, :- 
- [9] Dabek F. [J]. Li J, Sit E, et al. Designing a DHT for Low Latency and High Throughput [C]//Proc. of the 1st Symposium on Networked System Design and Implementation. [S. l.]: IEEE Press. 2004, :- 
- [11] Xiong Jiping. [J]. Zhang Youwei, Hong P, et al. Chord6: IPv6 Based Topology-aware Chord [C]//Proc. of the Joint International Conference on Autonomic and Autonomous Systems and International Conference on Networking and Services. Papeete, Tahiti: [s. n.]. 2005, :- 
- [13] Magoni D. Nem: A Software for Network Topology Analysis and Modeling[C]//Proc. of MASCOTS'02. [S. l.]: IEEE Computer
- [14] Society. [J]. 2002, :- 
- [15] Magoni D. [J]. Pansiot J J. Internet Topology Modeler Based on Map Sampling[C]//Proc. of the ISCC'02. Taormina, Italy: IEEE Press. 2002, :- 

本刊中的类似文章

- 1. 黄曼, 程良伦. 基于蚁群优化的WSN功率自适应路由算法[J]. 计算机工程, 2012, 38(01): 102-104
- 2. 周波, 钱来, 孟正大, 戴先中. 基于蚁群算法的喷涂机器人路径排序优化[J]. 计算机工程, 2012, 38(01): 192-194, 207
- 3. 李小龙, 罗家祥, 胡跃明. 基于改进ACO算法的印制电路板装配研究[J]. 计算机工程, 2011, 37(8): 241-243
- 4. 崔娇, 黄少荣. 基于差分演化的自适应参数控制蚁群算法[J]. 计算机工程, 2011, 37(6): 190-192
- 5. 陈西宏, 刘少伟, 胡茂凯, 关娇. 基于蚁群遗传混合算法的QoS组播路由[J]. 计算机工程, 2011, 37(4): 99-101
- 6. 朱炯, 郭海锋, 俞立, 洪臻. 基于蚁群算法的城市快速路优化控制[J]. 计算机工程, 2011, 37(23): 174-176, 180
- 7. 邱伟星, 王舒榕, 程栋材, 邢晓伟, 陈春玲, 姜冬健. 求旅行商问题近似解的碰撞算法[J]. 计算机工程, 2011, 37(10): 284-286
- 8. 张蓉; 冯斌. 基于ACO-SVM的质谱数据分析[J]. 计算机工程, 2010, 36(4): 158-160
- 9. 王罡; 冯艳君. 基于蚁群优化算法的旋转货架拣选路径规划[J]. 计算机工程, 2010, 36(3): 221-223
- 10. 叶菁. 基于免疫-蚁群算法的TSP问题研究[J]. 计算机工程, 2010, 36(24): 156-157

文章评论

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text" value="7976"/>

