网络、通信、安全

基于本体的多智能体Internet动态路由研究

林 琪[1, 2],熊 璋[1]

1.北京航空航天大学 计算机学院，北京　100083
2.装备指挥技术学院 电子信息装备体系研究重点实验室，北京　101416

摘要　在Internet路由方面，传统采用的点对点或广播方式不能满足网络信息传输的效率要求，而采用组播方式缓解这个问题的相关研究大多为静态方法，不能很好地解决Internet提出的动态问题。为了实现高效率、自适应的Internet动态路由策略，在多Agent技术和本体论知识基础上，提出基于本体建立开放式多智能体Internet动态路由结构框架的思想。建立了基于多Agent的体系架构，并使用主体开发工具Protégé描述Internet主动路由的概念主体和任务主体模型，以支持Agent之间的知识共享和通信。根据该体系架构建立基于多Agent的Internet路由控制与分析系统（Multi-Agent Internet Routing System，MAIRS）。通过与相同实验环境下NS2的仿真结果进行比较，表明这个结合多Agent技术和本体方法的体系结构能够满足Internet路由的动态性和互操作性的需求。

关键词　 动态路由　 本体　 多Agent　 仿真

分类号

Multi-Agent dynamic routing in Internet based on ontology

LIN Qi[1,2],XIONG Zhang[1]

1.School of Computer，Beijing University of Aeronautics and Astronautics，Beijing 100083，China
2.Key Laboratory of Electronic Information Equipment Architecture，the Academy of Equipment Command & Technology，Beijing
101416，China

Abstract

　Traditional peer-to-peer or broadcast mode cannot meet the efficiency requirements of Internet routing，and most of the approaches used in current researches on the multicast mode to alleviate this problem are static ones，which cannot solve the variableness problem proposed by Internet.In order to implement a kind of efficient and adaptive routing strategy in Internet，a new viewpoint is set forth based on multi-agent techniques and ontology methodology，in which an open multi-agent framework should be set up on the base of ontology to solve the dynamic routing problems in Internet.The multi-agent framework is set up first，and conceptual ontology and task ontology are described by using an ontology-developing tool，Protégé.This ontology model can be used to support the knowledge sharing and communication between agents.A Multi-Agent Internet Routing System（MAIRS） is built according to this framework.By comparing the results obtained by MAIRS and NS2 in the same experimental environment，it is shown that the framework combining multi-agent techniques and ontology approach is suitable to solve the variableness and interoperability requirement of routing in Internet.

Key words　 dynamic routing　 ontology　 multi-agent　 simulation

通讯作者　林 琪 linqi_98@163.com