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论文

一种基于信任模型的安全度量及安全路由算法设计

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摘要
针对网络路由的攻击普遍且后果严重。目前的研究大多是采用数字签名，消息验证和入侵检测等机制来提高路由控制信息的安全，基本没有考虑机密应用数据的路由安全问题。该文通过分析通信实体的安全机制和安全威胁来测量链路和节点的信任度，建立节点间的信任关系，并基于该信任模型定义和量化一种新的安全度量SM(Security Metric)，提出以SM为选路标准的安全路由算法SMRA(Security Metric based Routing Algorithm)。仿真表明，网络存在攻击时，SMRA算法比OSPF算法有更好的包传输率和路由安全性能。

关键词 路由安全；信任度；信任关系；安全度量

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A Security Metric and Related Security Routing Algorithm Design Based on Trust Model

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Abstract
Network routing-based attacks have become more common and the attack consequence can be more serious than other traditional network attacks. Most schemes on improving routing data security are applied to current routing protocols, e.g. digital signature, message authentication and intrusion detection, etc. But very few design guidelines on how to select a secure path to forward confidential user packets. By analyzing the security mechanisms and security threats over network entities, trust degrees of communication links and routers are measured and trust relations are built among network routers. Based on the trust model, a novel SM (Security Metric) is further defined and quantified as the routing criterion used in the proposed security routing algorithm SMRA (Security Metric based Routing Algorithm). Simulation results show that SMRA gets better performance than OSPF in terms of packets delivery ratio and routing security in unsafe networks.

Key words Routing security Trust degree Trust relation Security Metric (SM)

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