

基于正六边形部署的WSN密钥预分配方案

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基金项目: 浙江省自然科学基金

摘要:

针对无线传感器网络能量、计算能力、存储空间以及带宽等局限性问题, 提出了一种新的无线传感器网络密钥管理方案。该方案采用正六边形对网络进行分区, 在覆盖全网的同时有效的减少了重叠区域。节点仅需预分配数量较少的密钥, 就能够以很高的概率建立共享密钥, 即使存在大量的移动节点仍能保持较高的连通概率。理论与仿真数据表明方案在连通性和安全性方面具有较好的性能。

关键词: 无线传感器网络; 密钥预分配; 正六边形; 安全

Key Pre-distribution Scheme for Wireless Sensor Networks using Regular Hexagon Deployment

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Abstract:

Considering the limitations of power, computation and storage resources in wireless sensor networks, a new key management scheme for wireless sensor networks is presented. In the scheme, the network is divided in regular hexagon grid, and then the good coverage efficiency can be obtained. Nodes only need to preload a few of secret keys, and then can establish shear keys with a very high probability. Wireless sensor networks can maintain a good connectivity even though there are a lot of mobile nodes. Theoretic studies and figures of simulation show that the proposed scheme provides better performance in connectivity and security.

Keywords: wireless sensor networks; key pre-distribution; regular hexagon; security

投稿时间: 2012-08-07

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