Secure real-time routing protocol with load distribution in wireless sensor networks

Abstract

Wireless sensor network (WSN) is a wireless ad hoc network that consists of a very large number of tiny sensor nodes communicating with each other with limited power and memory constrain. WSN demands real-time forwarding which means messages in the network are delivered according to their end-to-end deadlines (packet lifetime). Since many sensor networks will be deployed in critical applications, security is essential. Recently, many real-time routing protocols have been proposed, but none is designed with security. This paper proposes a novel secure real-time with load distribution (SRTLD) routing protocol that provides secure real-time data transfer and efficient distributed energy usage in WSN. The SRTLD routing protocol ensures high packet throughput and minimized packet overhead. It has been successfully studied and verified through simulation and real test bed implementation.