A Lightweight Secure Object Tracking Protocol for Internet of Things

The Internet of Things (IoT) raises to the ever-rising system of physical objects that feature an IPv6 address for internet connectivity and the message that takes place between these objects and other internet-enabled devices and systems. It is provided with unique identifiers and the ability to transmit data over a net. Among several issues, the tracking and tracing of the path travelled by objects is an important problem. Though, there exist many techniques to track the moving objects, many of them are unsafe. Hence, there is a need for secure tracking of the objects. A secure object tracking protocol should ensure the visibility and traceability of an object along the travel path to support the Internet of Things (IoT). The existing protocol is based on Radio Frequency Identification (RFID) system for global unique identification of IoT objects. The existing does not provide authentication of objects, leads to injection of fake objects. The energy consumption is high. The proposed protocol enhances secure object tracking using lightweight cryptographic primitives and modelled the protocol using Security Protocol Description Language (SPDL). The proposed protocol is intended to provide authentication, integrity, confidentiality and encryption. For ensuring secure object tracking, the

Abstract

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The proposed protocol uses the lightweight cryptographic primitives which uses the concept of Hash Message Authentication Code (HMAC) which is used to verify the authenticity of an object. The protocol is also based on Cooperative Message Authentication Code (CMAC) which is used to reduce energy consumption with less overhead. Through network simulation, the performance of the protocol is evaluated and found to be more secure and require less computation when compared with existing protocols.

References


Index Terms

Computer Science
Security
Keywords