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Mutual Authentication for Sensor-to-Sensor Communications in IoT Infrastructure

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Abstract : Internet of things is a new concept that its emergence has caused ubiquity of sensors in human life, so that at any time, all data are collected, processed and transmitted by these sensors. In order to establish a secure connection, the first challenge is authentication between sensors. However, this challenge also requires some features so that the authentication is done properly. Anonymity, untraceability, and being lightweight are among the issues that need to be considered. In this paper, we have evaluated the authentication protocols and have analyzed the security vulnerabilities found in them. Then an improved light weight authentication protocol for sensor-to-sensor communications is presented which uses the hash function and logical operators. The analysis of protocol shows that security requirements have been met and the protocol is resistant against various attacks. In the end, by decreasing the number of computational cost functions, it is argued that the protocol is lighter than before.

Keywords : anonymity, authentication, Internet of Things, lightweight, un-traceability
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