World Academy of Science, Engineering and Technology
International Journal of Mechanical and Mechatronics Engineering
Vol:12, No:03, 2018

Comparison of Authentication Methods in Internet of Things Technology

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Abstract : Internet of Things (IoT) is a powerful industry system, which end-devices are interconnected and automated, allowing the devices to analyze data and execute actions based on the analysis. The IoT technology leverages the technology of Radio-Frequency Identification (RFID) and Wireless Sensor Network (WSN), including mobile and sensor. These technologies contribute to the evolution of IoT. However, due to more devices are connected each other in the Internet, and data from various sources exchanged between things, confidentiality of the data becomes a major concern. This paper focuses on one of the major challenges in IoT; authentication, in order to preserve data integrity and confidentiality are in place. A few solutions are reviewed based on papers from the last few years. One of the proposed solutions is securing the communication between IoT devices and cloud servers with Elliptic Curve Cryptograhpy (ECC) based mutual authentication protocol. This solution focuses on Hyper Text Transfer Protocol (HTTP) cookies as security parameter. Next proposed solution is using keyed-hash scheme protocol to enable IoT devices to authenticate each other without the presence of a central control server. Another proposed solution uses Physical Unclonable Function (PUF) based mutual authentication protocol. It emphasizes on tamper resistant and resource-efficient technology, which equals a 3-way handshake security protocol.

Keywords : Internet of Things (IoT), authentication, PUF ECC, keyed-hash scheme protocol
Conference Title : ICCTIDR 2018 : International Conference on Cybernetic Technology, Innovative Designs and Robotics
Conference Location : London, United Kingdom
Conference Dates : March 15-16, 2018