Chapter 9

Security Issues in the Internet of Things: A Review

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ABSTRACT

Internet of Things (IoT) is one of the most active and hot topics these days in which most of our everyday objects are connected with each other over internal and external networks. As in any data communication paradigm there are security aspects that should be taken care of. The traditional security mechanisms are usually not applicable in IoT because there are different standards involved, this make the security preservation is one of the main challenges in IoT. According to previous surveys, there are many of security issues in regards to IoT. In this chapter, five issues from the security issues in IoT are discussed; Access Control, Authentication, Privacy, Policy Enforcement, and Trust. After that, major proposed solutions from the literature is listed and compared according to the strength and weakness points for each of them.

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INTRODUCTION

Internet of Things (IoT) can be defined as huge network that consist of a massive number of heterogeneous computing systems, sensors, devices, equipment, software and information services, and applications are connecting together (Samani, Ghenniwa, & Wahaishi, 2015). IoT can be divided into three layers: perception, transmission, and application layer. Each layer has its own responsibilities, perception layer is responsible for collecting data from the physical system, transmission layer is responsible for transmitting the collected data, and the application layer is responsible for processing the data and providing the needed services (Aljawarneh et al., 2016; Aljawarneh et al., 2017). In each IoT layers, there are security issues that must be solved.

An object in IoT can be attacked if no secure and reliable communication is developed, so it is important to ensure the security and reliability between IoT objects (devices). The devices in IoT are not homogenous, this property is one of the main challenges when developing security mechanisms, and the other main challenge is the ambiguity of the information which is collected from IoT devices. Figure 1 show the main security issues in IoT (Sicari, Rizzardi, Grieco & Coen-Porisini, 2015). In this chapter five issues from the security issues in IoT will be discussed, these issues are: Access Control, Authentication, Privacy, Policy Enforcement, and Trust.

Figure 1. The main security issues in IoT
Sicari et al., 2015.
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