A Survey on Security Issues of M2M Communications in Cyber-Physical Systems

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Abstract

In this paper, we present a survey of security and privacy preserving issues in M2M communications in Cyber-Physical Systems. First, we discuss the security challenges in M2M communications in wireless networks of Cyber-Physical Systems and outline the constraints, attack issues, and a set of challenges that need to be addressed for building secure Cyber-Physical Systems. Then, a secure architecture suitable for Cyber-Physical Systems is proposed to cope with these security issues. Eventually, the corresponding countermeasures to the security issues are discussed from four aspects: access control, intrusion detection, authentication and privacy preserving, respectively. Along the way we highlight the advantages and disadvantages of various existing security schemes and further compare and evaluate these schemes from each of these four aspects. We also point out the open research issues in each subarea and conclude with possible future research directions on security in Cyber-Physical Systems. It is believed that once these challenges are surmounted, applications with intrinsic security considerations will become immediately realizable.

Keywords: M2M, security, privacy preserving, cyber-physical systems

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