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Security solutions for the Internet of Things

Title of the dissertation	Security for Ubiquitous Internet-Connected Smart Objects
Contents of the dissertation	The Internet of Things (IoT) is rapidly transforming our lives and society. Everyday devices have become Internet-connected smart objects that understand and react to their environment. However, the security mechanisms for smart objects are still not ready. The existing security solutions are not very usable and it is difficult to configure them on smart objects that have very limited user interfaces. This dissertation presents new secure methods for deployment and communication of connected smart objects. The methods aim to be simple, user friendly, and also energy efficient. The dissertation comprises six peer-reviewed research articles. First, we built a secure and energy-efficient communication model for sensor devices that sleep for long periods during their lifetime. Next, we demonstrated how smart objects can leverage the existing mobile network infrastructure to securely communicate with Internet services. Thereafter, we have developed methods for establishing secure communication between two devices (secure device pairing) and between a device and the cloud. Specific solutions are presented for touch screens and digital signage. The results of the dissertation have lead to implementations and standardization effort at the Internet Engineering Task Force (IETF).
Field of the dissertation	Computer Science
Doctoral candidate	Mohit Sethi, M.Sc. (Tech)
Time of the defence	20.1.2017 at 12:00
Place of the defence	Aalto University School of Science, lecture hall H304, Otakaari 1, Espoo
Opponent	Dr. Iulia Ion, Google Inc., USA
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