chownIoT: Secure Handling of Smart Home IoT Devices
Ownership Change

Abstract:

Considering the increasing deployment of IoT devices, their ownership is likely to change during their life cycle. Personal IoT devices used in smart home environment contain privacy sensitive user data. Ownership change of such devices can introduce threats against privacy sensitive data handled by them. To address this problem, we present a system called chownIoT for securely handling ownership change of IoT devices. chownIoT introduces a privacy enhancement protocol that leverages authentication and data encryption for protecting owner privacy. We also present an owner profile management scheme for better management of owners during the life cycle of a device. For automatic detection of ownership change, we use a simple technique which leverage the context of a device. Finally, we present a prototype that implements chownIoT including the privacy enhancement protocol and the owner profile management scheme.

Samuel Marchal:

Samuel Marchal is currently a Postdoctoral Researcher at Aalto University in the Secure Systems Research Group. He is involved in the Intel Collaborative Research Institute for Secure Computing (ICRI-SC) where he works on innovative techniques for website content classification, phishing websites detection and protection of cloud communications. He received the engineering degree and M.Sc. degree in computer science in 2011 from TELECOM Nancy, France. He received the Ph.D. degree jointly from the University of Luxembourg, Luxembourg and the University of Lorraine, France, in 2015. He conducted his doctoral research at the Interdisciplinary Centre for Security, Reliability and Trust (SnT) in Luxembourg. He works mostly on network traffic analysis and usage of machine learning techniques, natural language processing to improve security. He applied these techniques to detect malicious domain names involved in botnet communications and phishing attacks. His interests lie in web security, network security, machine learning and intrusion detection techniques.