Forensics Readiness for Wireless Body Area Network (WBAN) System

Abdul Fuad Abdul Rahman¹, Rabiah Ahmad², Sofia Najwa Ramli³

¹National Vulnerability Assessment Centre (MyVAC), Department of Security Assurance, Cybersecurity Malaysia, Seri Kembangan, Selangor, Malaysia
²Centre for Research Innovation Management (CRIM), Universiti Teknikal Malaysia Melaka (UTeM), Malaysia
³Centre of Advanced Computing Technology (C-ACT), Faculty of Information Technology and Communication (FTMK)

Email: abdfuad@cybersecurity.my, rabiah@utem.edu.my, sofia.najwa@yahoo.co.uk

Abstract — Wireless Body Area Network (WBAN) is a wireless network that can be attached or implanted onto the human body by using wireless sensor. Since WBAN developed for medical devices, the system should be design for a wide range of end user with different professional skill groups. This require WBAN system to be open, accurate and efficient. As from our previous experienced, any open system is vulnerable, similar to any other current available wireless systems such as Wireless Local Area Network (WLAN). However, currently there were not many discussions on the WBAN security vulnerability and security threats and if there is any, the issues were discussed through theoretical, concept and simulation data. In this paper, we discuss potential WBAN security vulnerability and threats using Practical Impact Assessment (PIA) conducted in real environment so that we are able to identify the problem area in details and develop potential solutions to produce a forensics readiness secure network architecture for WBAN system.

Keywords — Forensics Readiness, Information Security, Practical Impact Assessment, Secure Network Architecture, Wireless Body Area Network (WBAN)

Abdul Fuad Abdul Rahman was born on 3rd of May 1983 in Johor Bahru, Johor. He received his Bachelor of Science degree (BSc) in applied physics from the University of Malaya (UM), Kuala Lumpur, Malaysia. He is currently working as a Senior Analyst with The National Vulnerability Assessment Centre of Cybersecurity Malaysia. He has been involved in the Information Technology field for the past 8 years and has focused on Vulnerability Assessment and Penetration Testing for the past 6 years. He received his professional certifications System Security Certified Practitioner (SSCP) from The International Information Systems Security Certification Consortium (ISC)², GIAC Assessing Wireless Network (GAWN) from SANS Institute of United State of America and he is a Certified Network Engineer IPv6 (CNE6). He is currently focusing his time on wireless security research and development on Wireless Body Area Network (WBAN). His interests are in wireless penetration testing and research on the vulnerabilities especially in wireless technologies.

Rabiah Ahmad was born on 20th Ogos 1974 in Melaka, Malaysia. She received her Ph.D in Health Informatics at University of Sheffield (UK) and Master of Science in Information Security from Royal Holloway University of London (UK). She is currently as senior lecturer (Associate Professor) with Universiti Teknikal Malaysia Melaka (UTeM). In the same time she is representing Malaysia for member of World Standard in Information Security Technique Working Group (Identity Management). She also certified as members of MyCC Scheme Certification Committee organized by Cybersecurity Malaysia. In addition, she is appointed as high committee members of Malaysia Society of Cryptology Research.

Sofia Najwa Ramli was born in Hospital Daerah Batu Pahat, Johor, Malaysia on 17th September 1986. She received the B. Eng degree in biomedical engineering and the M. Eng degree in electrical-electronics and telecommunications from Universiti Teknologi Malaysia (UTM), Skudai, Johor, Malaysia in 2009 and 2011 respectively. She is pursuing the Ph.D degree at the Faculty of Information Technology and Communication, Universiti Teknikal Malaysia Melaka, Melaka, Malaysia. Currently, Ministry of Higher Education Malaysia (MOHE) funds her Ph.D degree under MyPhD program and the research under the Exploratory Research Grant Scheme (ERGS). Her current research interests are in the field of biometric authentication and the lightweight security system of Wireless Body Area Network (WBAN).