IP mobility adoption in e-health services: a solution to modern healthcare monitoring system

Riaz Ahmed Khan*

Department of Computer Science and Engineering,
Islamic University of Science and Technology (IUST),
Kashmir, India
Email: riazk3@gmail.com
*Corresponding author

Ajaz Hussain Mir

Department of Electronics and Communication Engineering,
National Institute of Technology (NIT),
Srinagar, India
Email: ahmir@nitsri.net

Abstract: Modern healthcare systems use wearable sensor devices that facilitate the data aggregation which is used for real time patient monitoring. The scenario may be static or a mobile healthcare system where the mobility of a patient can be tracked inside the hospital premises. For this reason, the hospital wireless network needs to be equipped with an efficient mobility management scheme that enables the transmission of aggregated data without loss and delay to the monitoring station. In this context, this paper proposes a mobility scheme based on the PMIPv6 protocol that utilises pre-registration feature of FMIPv6 to trigger the handover process, which helps in reducing the hand-off (HO) delay and eventually leads to the reduced packet loss. The proposed scheme is analysed theoretically first, followed by its evaluation using NS2 simulator. Data results depict that the proposed scheme outperforms the traditional PMIPv6 in terms of HO-delay, packet loss and signalling cost.

Keywords: IP mobility; e-health; handover; communication; hospital wireless network; patient monitoring.

Reference to this paper should be made as follows: Khan, R.A. and Mir, A.H. (2019) 'IP mobility adoption in e-health services: a solution to modern healthcare monitoring system', *Int. J. Healthcare Technology and Management*, Vol. 17, No. 4, pp.278–297.

Biographical notes: Riaz Ahmed Khan is an Assistant Professor at the Islamic University of Science and Technology, Kashmir, India. He received his BTech in Computer Science Engineering from the University of Jammu, J&K, India, in 2008. He received his MTech in Communication and Information Technology (CIT) and PhD in Computer Networks from the National Institute of Technology Srinagar, India, in 2012 and 2018, respectively. His areas of interest are computer networks, network security, IoT, WSN, etc.

Ajaz Hussain Mir is a Professor in the Department of Electronics and Communication Engineering at National Institute of Technology, Srinagar. He received his BE in Electrical Engineering with specialisation in Electronics and