

Towards Ubiquitous Mobility Solutions for Body Sensor Networks on HealthCare

July 2012 [IEEE Communications Magazine](#)

The use of electronic health (eHealth) technologies in healthcare improves the quality of health services furnished to patients. The application of these technologies helps physicians and other health professionals to pursue early detection of abnormal status on patients' health. Body sensor networks (BSNs) are a type of wireless sensor networks aimed to be deployed on persons in order to collect physiological parameters for healthcare monitoring purposes. These BSNs are composed by several small sensors placed along patient's body and capable of sending (wirelessly) the collected health parameters to remote providers. BSNs need to operate every time and everywhere to transmit these important parameters to healthcare providers or automatic systems to detect any anomaly in the patient health status. To provide this continuous monitoring of patients, it is mandatory to provide mobility support for the BSN so it can always be connected to some gateway to the Internet and therefore to back-end health providers. Several mechanisms with mobility support for mobile devices have been provided. However, the mobility support of a whole BSN has not been fully addressed. This article overviews available handover mechanisms used for wireless sensors mobility and proposes a new ubiquitous mobility approach for BSNs in healthcare. BSN operating IPv6 over Low-power Personal Area Networks stack (6LoWPANs) are considered. Based on a study of the available solutions in the literature, a new solution for controlled environments (like hospitals, patients homes, nursing homes, and others) where the same nodes tend to be used for a long time is proposed. This approach tries to minimize the messages exchanged between the nodes and their access points (APs) by using a historic cache in the APs. Specifically, a given AP gathers in its historic cache information about all the nodes that have previously registered with it. The AP always tries to reconnect with these nodes by sending them reconnection messages. This approach seems to be more efficient in terms of nodes' battery life due to the elimination of continuous messages exchanges to evaluate the link state between the nodes and APs in their ranges. A case study with this new handover mechanism developed for a hospital infirmary is presented and highlights the gain of performances of the proposed solution.

Title and author(s) of the original paper in IEEE Xplore:

Title: Towards Ubiquitous Mobility Solutions for Body Sensor Networks on HealthCare

Author: João M. L. P. Caldeira, Joel J. P. C. Rodrigues, and Pascal Lorenz

This paper appears in: IEEE Communications Magazine

Issue Date: May 2012

[Back IEEE Xplore Version](#) [Similar Articles](#)

Source URL: <http://www.comsoc.org/ctn/towards-ubiquitous-mobility-solutions-body-sensor-networks-healthcare>

