

무선 인체통신 네트워크를 위한 복합 우선순위 MAC 기 Hybrid Priority MAC Mechanism For WBAN

동 동, 임현택, 조성래

Dong Dong, Hyuntaek Lim, and Sungrae Cho

Chung-Ang University

dong@uclab.re.kr, htlim@uclab.re.kr, srcho@cau.ac.kr

[Abstract] Last few years, wireless body area network (WBAN) has been widely researched for various (e.g., realtime healthcare, non-medical service, patient's urgent state monitoring system, etc.). Because of hardware conditions (e.g., energy and memory), we need to design a high-efficient MAC layer to improve the transmission efficiency of WBAN. In addition, when the emergency situation happens to a patient, it is necessitated for a urgent message to get through to the final destination. This paper presents a priority MAC as hybrid priority MAC for WBAN. By simulation, we show the proposed MAC protocol can minimize latency.

[Key Words] wireless body area network, priority MAC, and on-body device.

1. Introduction

The WBAN technology is still in its primitive stage and is being widely researched. This technology once accepted and adopted is expected to be a breakthrough invention in healthcare leading to concepts like telemedicine and mHealth becoming in practice. WBAN provides short range, low power and highly reliable wireless communication for use in close proximity to or inside body. Typical communication range is around 2 meters and which can be extended to 5 meters optionally. Various applications can be supported by WBAN.

IEEE 802.15.6 is the task group for BAN. The performance of a Wireless Body Area Network (WBAN) to integration is required by miniaturized, realtime transmitted, intelligent, in-body and on-body sensor nodes to monitor body condition and the emergence of the urgent information. In-body sensor can obtain much information, because of the limitations of cost, it is unfavorable to popularize [1]. Therefore, on-body monitoring device has many advantages (Easy to install, Real-time monitoring, low cost, etc.) to popularize. Also In-body sensor node and on-body sensor node are used different channel to communicate with final destination.

In this paper, we propose a new priority MAC mechanism when used on-body as it only using one channel. How can priority send the urgent information first is an important issue. We synchronize monitoring a wide range of information using one On-body sensor node. When the patients has the emergency

situation (Normally the sensor node second corresponding priority and will message, so patients can get adequate priority MAC can send the emergency emergency signal will be confirmed again if no emergency signal was received emergency signal again until they wait patients have an emergency situation time and medical treatment time for patients this area has high practical significance

2. Related work

In the past period of time, some research mechanism for priority MAC. The on-body nodes are required to by self triggered threshold for emergency situation. critical and high reliability. The point is to adapt for emergency and non-emergency traffic nodes have larger initial back-off with nodes [3] [4]. This mechanism could results in lower latency using smaller. The other mechanism was proposed categories. (Normal Traffic, On-Demand Traffic.) Different types of data use 802.15.4 GTS(Guaranteed Time slot) (