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Implementation of a Real-time Multi-Channel Gateway Server in Ubiquitous Integrated Biotelemetry System for Emergency Care (UIBSEC)

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We developed a gateway server to support various types of bio-signal monitoring devices for ubiquitous emergency healthcare in a reliable, effective, and scalable way. The server provides multiple channels supporting real-time N-to-N client connections. We applied our system to four types of health monitoring devices including a 12-channel electrocardiograph (ECG), oxygen saturation (SpO2), and medical imaging devices (a ultrasonograph and a digital skin microscope). Different types of telecommunication networks were tested: WIBRO, CDMA, wireless LAN, and wired internet. We measured the performance of our system in terms of the transmission rate and the number of simultaneous connections. The results show that the proposed network communication strategy can be successfully applied to the ubiquitous emergency healthcare service by providing a fast rate enough for real-time video transmission and multiple connections among patients and medical personnel.

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