

Adaptive polling enhances quality and energy saving for multimedia over Bluetooth

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Abstract— Bluetooth has become an ubiquitous technology present in almost every electronic device. A question often asked by manufacturers and final users is whether it can be used for other uses different from the ones for which it was designed.

In particular, for improved multimedia traffic support, with the fewest modifications in the implementation of the protocol (both hardware and software). In this paper we analyze the impact on performance of the lowest levels of the Bluetooth architecture through a relevant parameter known as the polling time, T_{poll} . We propose a novel algorithm (EMAAA T_{poll}) that allows to adapt dynamically the value of the T_{poll} parameter during the transmission. Our results provide definite criteria about how to optimize the transmission of multimedia traffic over piconets at the lowest layers of the Bluetooth architecture. Specifically, we show that our algorithm can result in a significant energy saving (of 10%-20%) with respect to the Bluetooth specification.

Index Terms— Bluetooth, polling, QoS, energy saving, T_{poll} , power consumption, performance, piconet, quality of service

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