

# Real World Performance Evaluation of FF-MAC Protocol for Real-Time Data Forwarding in WSN

Khalid El Gholami · Kun Mean Hou · Najib Elkamoun ·  
Hong Ling Shi · Xing Liu

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**Abstract** The aim of this paper is to evaluate the real-time performance of our new FF-MAC ‘Fast-Forward MAC’ protocol through a set of real world experiments. This protocol is proposed as an enhancement of the IEEE 802.15.4 standard for time critical applications. Hence, it is compared with the GTS ‘Guaranteed Time Slot’ mechanism of this standard. The obtained experimental results by using real world wireless sensor network nodes are proposed as a complement to the simulation results, previously measured in the Network Simulator 2 ‘NS-2’, in order to prove these improvements from a practical point of view. We introduced a new mechanism to the proposed protocol in order to meet the memory constraint. The goal is to protect the time critical data from being dropped when the coordinator queue is full. The obtained results confirm the viability of our protocol and its performances even in a realistic testing environment, which make it applicable in real world applications.

**Keywords** WSN · FF-MAC · IEEE 802.15.4 · Delay · Test-bed · Performance evaluation

## 1 Introduction

Wireless sensor network “WSN” is one of the hottest topics in today’s research field. Its importance comes from its versatility and the various research fields and applications related

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K. El Gholami (✉) · K. M. Hou · H. L. Shi · X. Liu  
Department of computer science, Blaise Pascal University, 63000 Clermont-Ferrand, France  
e-mail: khalid.elgholami@isima.fr

K. M. Hou  
e-mail: kun-mean.hou@isima.fr

H. L. Shi  
e-mail: hongling.shi@isima.fr

X. Liu  
e-mail: liu@isima.fr

K. El Gholami · N. Elkamoun  
Department of Physics, Chouaib Doukkali University, 24000 El Jadida, Morocco  
e-mail: elkamoun.n@ucd.ac.ma