Performance Evaluation of SDN and RPL in Wireless Sensor Networks

Eleftherios Tsapardakis, Mike Ojo, Periklis Chatzimisios, Stefano Giordano

Abstract— Ensuring high quality of service and reliability are the key essential requirements in industrial type applications. Routing is an essential way in realizing these requirements as it determines the reliability, lifetime, end-to-end delay of a network. Software Defined Networking (SDN) delivers a promising solution to Wireless sensor networks (WSN) in providing flexibility in network management decisions such as routing, scheduling, just to mention a few. On the other hand, IPv6 Routing Protocol for Low-Power and Lossy Networks (RPL) is considered as the standardized routing protocol for industrial-type applications. Due to the rapid technological growth in WSN, which increases its challenges, a need to provide a detailed performance evaluation of SDN and RPL is consequential. In this paper, we investigate on the performance of SDN and RPL by providing a performance analysis on real-hardware based experimental measurements using OpenMote-CC2538. The results were compared with the simulated nodes in terms of reliability, packet loss and end-to-end delay.

For the published version of record document, go to:
http://dx.doi.org/10.1109/GIIS.2018.8635599