A Set Notation Configuration CoAP Scheme for Internet of Things

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Abstract— The Constrained Application Protocol (CoAP) is a lightweight protocol specially designed to support constrained Internet of Things (IoT) devices and networks having limited bandwidth. The current growth of IoT market means more sensors in the networks and increased network traffic congestion. Since IoT clients prefer servers whose sensor values have been simultaneously updated it is of paramount importance that servers be highly efficient in synchronizing message updates from its sensors. Our research however, finds the legacy CoAP not optimally efficient in that it introduces network traffic and message duplication hence consuming extra bandwidth. We propose a new Set theory scheme that optimizes synchronized message delivery in IoT by reducing the number of duplicated messages. Our proposed scheme eliminates unnecessary duplicated messages, hence reducing network traffic. On comparing the number of messages sent by servers, our scheme outperformed the legacy CoAP by up to a 50% reduction in the number of messages sent.

Keyword— CoAP, IoT, Sensors, Set theory, Observe

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