

# Jordan University of Science and Technology

## Energy Saving in Constrained Application Protocol of Internet of Things

**Authors:** Muneer Bani Yassein, Qusai Abuein, Ahmad Bani Amer

**Abstract:** The centralized resource discovery approach in the Constrained Application Protocol (CoAP) is based on the resource directory (RD) model, this directory contains a description for resources held in the servers (sensors and actuators), in which the servers register their resources in the RD while the clients are allowed to perform a lookup operation on these resources, and ask for any resource using single request. In order of making the resource directory fully updated, all nodes are periodically sending update messages (after fixed period of time) to the RD contains the latest status of their information. However, these update messages will result in extra signaling overhead and consume more power from node's battery, this will drain the batteries and reduce the overall network lifetime, as well as increase the probability of nodes failure. Thus, we have proposed a dynamic tuning technique to adjust the update message interval in CoAP, the proposed algorithm is depending on the battery level of the sending node, in which as battery level decreased the update interval increased, this will reduce the signaling overhead and prolong the node's battery, which will reflect on the network and prolong its lifetime. Our approach is evaluated using ContikiCooja simulator, where the results of experiments show that the dynamic approach can extend the network lifetime by 25% in comparison with the network lifetime of the standard CoAP