

Cluster-based CoAP for Message Queueing in Internet-of-Things Networks

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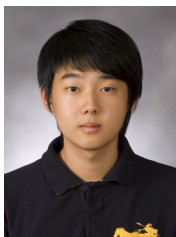
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Abstract— The interest in Internet of Things (IoT) has been increased. The IoT can be used to exchange information between people and physical devices or between devices and devices. For constrained IoT network environments, the lightweight application protocols have recently been proposed, which include Constrained Application Protocol (CoAP) and Message Queuing Telemetry Transport (MQTT). However, those protocols still have the scalability problem in the network with a large number of sensors. In this paper, we propose a simple extension of CoAP using a clustering approach, in which a set of CoAP sensors are grouped into a cluster, and a cluster head is used for message aggregation and transmission for the sensors associated with the cluster. By implementation and experimentation, we can see that the proposed cluster-based CoAP provides the performance gains over the existing CoAP and MQTT protocols in terms of bandwidth consumption and transmission time.

Keyword— cluster, CoAP, IoT, MQTT



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