

Platforms and Protocols for the Internet of Things

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Abstract

Building a general architecture for the Internet of Things (IoT) is a very complex task, exacerbated by the extremely large variety of devices, link layer technologies, and services that may be involved in such a system. In this paper, we identify the main blocks of a generic IoT architecture, describing their features and requirements, and analyze the most common approaches proposed in the literature for each block. In particular, we compare three of the most important communication technologies for IoT purposes, i.e., REST, MQTT, and AMQP, and we also analyze three IoT platforms: openHAB, Sentilo, and Parse. The analysis will prove the importance of adopting an integrated approach that jointly addresses several issues and is able to flexibly accommodate the requirements of the various elements of the system. We also discuss a use case which illustrates the design challenges and the choices to make when selecting which protocols and technologies to use.

Keywords: Internet of Things, IoT architecture, IoT protocols, REST, MQTT, AMQP, IoT middleware

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