Cloud-based network virtualization: An IoT use case

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Abstract

© Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2015. In light of an overarching scheme about extending the capabilities of Internet of things (IoT) with Cloud-enabled mechanisms, network virtualization is a key enabler of infrastructure-oriented IoT solutions. In particular, without network virtualization infrastructure cannot really be considered flexible enough to meet emerging requirements, and even administrative duties, such as management, maintenance and large-scale automation, would turn out to be brittle and addressed by special casing, leading to loss of generality and a variety of corner cases. We propose a Cloud-based network virtualization approach for IoT, based on the Open- Stack IaaS framework, where its networking subsystem, Neutron, gets extended to accomodate virtual networks and arbitrary topologies among virtualmachines and globally dispersed smart objects, whichever the setup and constraints of the underlying physical networks. This work outlines a motivating use case for our approach, and the ensuing discussion is provided to frame the benefits of the underlying design.

Keywords

Cloud, IoT, Network virtualization, OpenStack, WebSocket