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Abstract:

In this work, we present Dribble a learn-based timer scheme selector to manage topology changes caused by mobility in the Internet of Things (IoT) context. IoT has turned smart devices part of our everyday lives. They are in everywhere with many shapes, sizes, and capabilities. For IoT to become even more ubiquitous, it is necessary to overcome the challenges posed by mobility. One of them is the management of topology changes, especially at the network layer. Currently, routing protocols check the topology through an advertisement timer scheme. Such schemes face a basic trade-off between being fast to find topology problems and concurrently be energy and overhead control saver. Although there are timer schemes designed to mobile context, all devices are governed by the same one, which is a hard assumption since IoT is heterogeneous and naturally, devices have different behaviors. Thus, Dribble learns the devices' mobility pattern and then it assigns a custom-made timer scheme conveniently for each device. Our results show that personalized timer schemes present better performance than single traditional timer schemes such as Trickle Timer (TT) and Reverse Trickle Timer (RevTT).

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Contents

I. Introduction

Smart devices have begun to be part of our daily routine. They can be attached to infrastructures, wearable, and be moving by itself. When those devices are networked and connected to the Internet, they form the so-called Internet of Things (IoT). Nonetheless, they introduce new challenges from the network lens, because they are heterogeneous (e.g., TVs, smartphones, vehicles, etc.) and have different degrees of freedom concerning mobility. Thus, manageability and scalability are examples of key issues that ask for so Stitionis, tespentarly extreading mobility factor is present. Until recently, most of IoT's proposed solutions were for static networks [1]. Only a few attempts took the mobile context into consideration [2], [3]. In the mobile and wireless environment, the routing protocol is a key component to enable mobility to the IoT. Mostly of routing protocols for mobile IoT have one timer scheme that governs the communication structure construction and maintenance by triggering from time to time control advertisements.

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