



LabSMILING

A SaaS framework, composed of a number of remotely accessible testbed and related SW tools, for analysis, design and management of low data-rate wireless personal area networks based on IEEE 802.15.4

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Introduction

Low data-rate wireless personal area networks (LR-WPANs) are constantly increasing their presence in the fields of IoT, wearable, home automation, health monitoring. The development, deployment and testing of Software based on IEEE 802.15.4 standard (and derivations, e.g. 15.4e), require the exploitation of a testbed as the network grows in complexity and heterogeneity. This demo shows LabSmiling: a Software as a Service framework which connects testbeds deployed in a real-world-environment and the related SW tools that make available a meaningful (but still scalable) number of physical devices (sensor nodes) to developers.

It provides a comfortable out-of-the-box service designed to fulfill developer needs giving them full control on single nodes (program, reset, physical power on/off, up/down data links, send commands/messages/packets in/from the network).

Advanced services are:

- full-customizable testing scenario
- validation/testing protocol compliances/extensions
- run low level packet sniffers with QoS metrics.

Goals

This demo aims to describe the proposed LabSMILING SaaS framework by the means of basic examples. Architecture and user point of view will be discussed with audience.

Demo description

This demo illustrates the architecture of LabSMILING (fig. 1), giving an overview of the whole system. The service layer decouples the low level complexity, providing a high level set of APIs to interact with the testbed. The core is microservice-based and a middleware layer provides a reliable fast and fault-tolerant message-queue based communication system through services (fig.2) and user interface layer. Basic user services are discussed with the audience and some base use cases are illustrated. Deploying a project and run it on the testbed will be illustrated as main use case scenario.

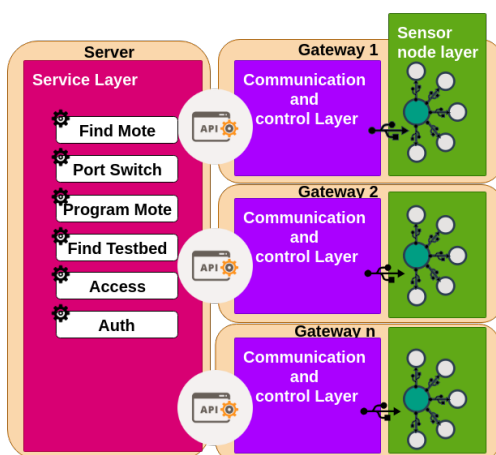


Figure 1

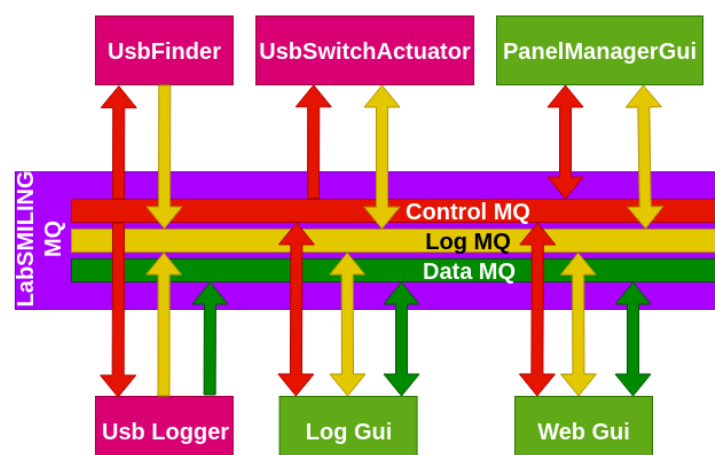


Figure 2