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I. Introduction

Nowadays, keeping track of the domestic energy usage is a common scenario in order to know how much is the real-time watt consumption. Anyway, in the most cases there is a sensor connected to the main safety switch giving the total energy consumption. Instead, our scenario is more accurate since we have a energy sensor for each plug connected to 220V line. In the following paragraphs, we are presenting our *proof of concept* (POC) which consists of three main parts: the smart plugs, the main server and the web interface. In our POC, we have modified the architecture described in [1] obtaining a specific low-energy consume-driven infrastructure. This latter consists of three main parts: the smart plugs, a central processing unit and the web interface. These devices are connected to the a wireless router, so is home scenario described below. It's a simple idea: let's suppose for example to plug both the dishwasher and the washing machine to two different smart plugs, and the user set up the max power consumption available for his house. On the first use of home appliances, a default value is choose in order to avoid blackout, and then we register the maximum power usage for each appliance. The user could turn on only the devices with a power consumption lower than the available watts. This is simple idea opens to possible different security issues, implementations and improvements that will be discussed in the challenges section.

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II. General architecture

As we already said, the architecture implemented is different from the usually provided by this type of system, also because the modern infrastructure relies on cloud computing or external services. Our implementation do not share information about the user, and keeps all the data in the main server, eventually providing the possibility to accessed from outside. Anyway, in this case is not true that a cloud-computing is better, even if is more scalable, if there is no power available at home, the plugs will not be managed correctly either in a decentralized infrastructure. Even worse in a cloud based system, the plugs could not work properly, if there is no internet connection.

After describing some architectural design aspects,

References

[1] Y. Tong and Z. Li, "Design of intelligent socket based on wifi," in *2017 4th International Conference on Information Science and Control Engineering (ICISCE)*, 2017, pp. 952–955.