Exploring the Impact of Workload Distribution in a Hybrid Edge and Cloud Application for Smart Grids

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Abstract

Sensor networks have become ubiquitous through the advent of Internet of Things, spreading from smartphones to smart grids, generating increasing amounts of data in each time smaller time intervals.

However, the ability to aggregate and act upon such data gathered by sensors is still a significant research and industrial challenge. Devices that are able to collect and act on data at network edges are bounded by the amount of data that can be sent over networks.

In this paper, we analyse the impact of workload distribution in a smart grid application, evaluating how we can increase processing rates by leveraging each time more powerful edge node processors. Our results show that our test bed application is able to achieve processing rates of approximately 800k measurements per second using four edge node processors and a single cloud node.