

Abstract

This thesis presents a new smart energy (SE) system with distributed access control. Many other SE systems to date support remote control and automation but not access control, making them applicable to homes but not offices or other public settings. Even if they implement access control, virtually all existing SE systems suffer from central point of failure. To address these problems, we propose a new SE system that supports not only access control but also distributed access from multiple devices without relying on centralized control. In addition to access-control list, we also take advantage of the proximity tag feature supported by the Bluetooth Low Energy (BLE) protocol without requiring users to take out their identifying BLE devices from their pockets as one would have to do with RFID tags. Experimental results show that our SE system to offer the security features required for public deployment with minimal power, latency, and cost overhead.