Ojas Platform

Introduction

Objective

Renewable energy generation sources are changing the utilities landscapes. Consumers, both residential and commercial, are leading initiatives toward distributed power generation. Simultaneously, utilities are investing in smart meters and upgrading grid infrastructures to turn the distributed and smart power grid into a reality. With the emergence of new energy resources and technologies, consumer empowerment and efficient demand response aggregation are becoming more prevalent and challenging. Consequently, utilities are evolving their business models to meet consumer requirements and maintain their profitability. Energy trading in Industrial Internet of Things (IIoT), a fundamental approach to realize Industry 4.0, plays a vital role in satisfying energy demands and optimizing system efficiency.

Blockchain-based smart contracts can help accelerate two developments in the energy industry: (1) Bi-directional smart meters; and (2) microgrids. Blockchain-based smart contracts can provide a new, more secure basis for smart meters and, in fact, can take advantage of blockchain's foundations to automate payments as well. Blockchain based smart contracts are already enabling microgrids, and these initial efforts can point the way to broader adoption. Blockchain-based smart contracts can provide the tool to give both utilities and customers the levels of efficiency and effectiveness that both strive for, while delivering both the consumer protections and energy usage accuracy.

We are proposing Ojas, a blockchain- based energy trading platform to record energy transactions along with prevailing tariffs at the time of transactions. The platform allows prosumers to commit energy available for consumers in different timeslots of the day. The utility infrastructure takes care of authentication, energy transmission and final billing for transactions. We leverage anonymous authentication to protect user privacy, and we design a timed commitments-based mechanism to guarantee verifiable fairness during energy trading. Moreover, we utilize fine-grained access control for energy trading services. The platform is built on top of a consortium blockchain among utilities and energy brokers to verify and record energy trading transactions.

Benefits to Utility

- Utility's distribution losses are reduced by encouraging local renewable energy generation.

- Can help utility in meeting their ESG requirements, particularly helps them to buy less Carbon credits.

- P2P energy exchange facilitates decongestion in utility's distribution network.

- Utility currently has to buy solar energy generated by roof-top solar producers which is an extra financial burden.

Features – Ojas Platform

- Blockchain based Peer to Peer power trading platform.

- Supporting Consumer journey from Onboarding to Off boarding.

- UI for prosumer, consumer & Utility.

- Blockchain platform integration with Utility's billing system as a mechanism for financial settlement.

- Integration with MDM/HES/AMR system to fetch the transaction data from meters.

- Smart contract GUI to modify the contract / create new contract / amendment.

- Maintenance of the ledger and review of record.

- Complete solution to be hosted on cloud.

- Follow Regulatory Guidelines for peer-to-peer solar energy transactions.

- Implementation of DISCOM Incentive on every Buy / Sell.

Proposed Solution: Ojas Node

- We would be providing VM appliance setup having all the necessary tools for creating, managing, and scaling the blockchain network.

- It can be deployed on the client servers as well as can be provided as SaaS model.

- It provided fast network creation and deployment of any enterprise-level application.

- It can be seamlessly integrated with other enterprise applications and blockchains.

- As it is built on cloud and have multi-cloud support, the requirements like scaling and connectivity can be meet with ease.