Ultra Low Cost IoT Home Gateway

Worldwide leader in universal control and sensing technologies wanted a ultra low cost IoT Home Gateway with associated cloud and mobile applications for securing home against fire, flood and freeze.

Project Size: 15 members
Project Duration: 9 months
Technology Used: MT7688**,** Zwave, SubGHz RF, OpenWRT, IoTivity, Node.js, iOS/Android, AWS
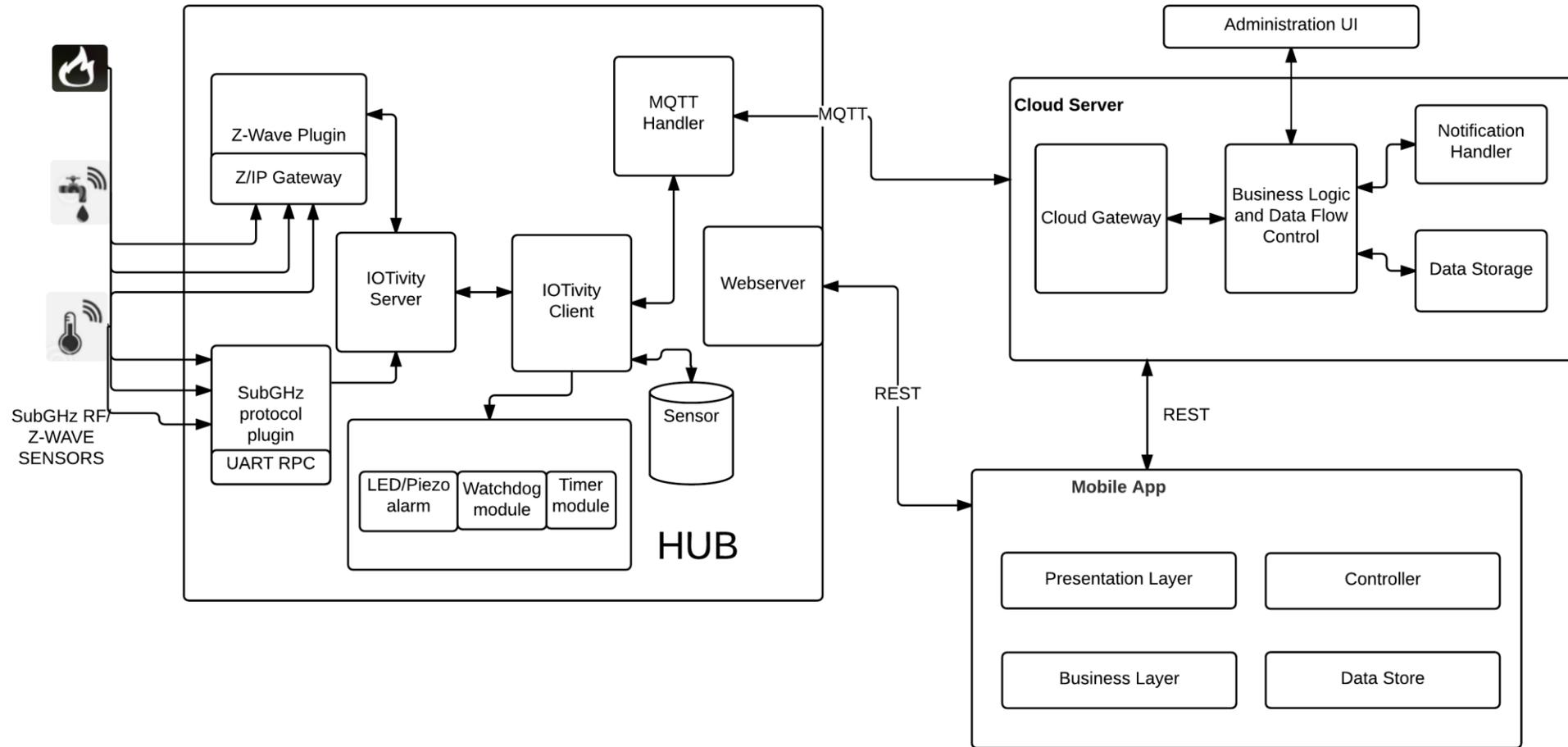
Challenge

- Bringing down the overall cost of the system down to few tens of dollars

Outcome

- Simple and reliable Hub at a very low cost for securing home against fire, flood and freeze
- Supports multiple wireless technologies for sensor and actuators ie 433MHz and Z-wave
- Uses the home router for connection to the internet either using WiFi or ethernet

Ultra Low Cost Hub – System Architecture

WHAT DID GADGEON DO?	PLATFORMS/ TECHNOLOGIES USED
1) Architecture for complete system including Hub, Cloud and mobile application	Requirements Gathering & Analysis, Uses cases, Architecture development, identification of functional components.
2) Hardware design with low cost optimization, prototyping, board bring up	Cadence allegro
3) Hub Firmware	U boot, board bring up IOTVity framework, MQTT for cloud communication, ZIP Gateway for Z-wave integration, Firmware upgrade support, 433MHz support for sensor integration
4) Cloud server	Cloud server hosted in Amazon. AWS IoT for communication with Hub over MQTT and HTTP. AWS API Gateway for communication with the mobile App. AWS Lambda is used as a server less compute service that runs code in response to events and automatically manages the compute resources required. Amazon SNS messaging service is used to send notifications to Apple iOS, Android and other mobile devices, send emails and text messages. Amazon DynamoDB. NoSQL database is used for storage
5) Android and iOS Mobile App design and development for controlling and managing the hub	MVC architecture, real-time notifications using APNS and FCM, REST API for direct configuration of the Hub, Followed the recommended design patterns from Apple and Google.

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