Power Consuming Monitoring System

Cloud Server Database structure

### location

location\_id(int), zip\_code(string), create\_date(datetime→ now)

### meter

meter\_id(int), location\_id(int), create\_date(datetime→ now)

### meter\_data

Id(int), meter\_id(int), location\_id(int), power(string), datetime(String), current(string), frequency(string), voltage(string), breaker\_state(string), create\_date(datetime→ now)

Raspberry PI Database structure

### meter\_data

Id(int), meter\_id(int), zip\_code(can get from constant inside project code)(String), power(String), datetime(String), current(String), frequency(String), voltage(String), breaker\_state(String), create\_date(datetime→ now)

**Request and response parameter (RasberryPI to cloud server)**

FYI, please use String for all request/response parameters for avoid previous problem we had in mobile project

## ***1.sendData***

***zipCode, meterId, power, datetime, current, frequency, voltage, breakerState***

* ***Meter read the data and send to XBee, this XBee broadcast this data to receiver XBee and then receiver XBee send data to raspberry PI.***
* ***After that raspberry PI save data in local database***
* ***Send this to cloud by using this command.***

### ***Request***

### ***POST http://eazydelivery.azurewebsites.net/pcm/svc/pcm/sendData Content-Type: application/json {***

***"zipCode": "119615",  
"meterId": "1",  
"power":"2402",  
"datetime":"2016-06-05 23:59:05",  
"current": "13",***

***"frequency": "48",***

***"voltage": "231",***

***"breakerState": "1"  
}***

***Response from server  
{"success":true}***

**Request and response parameter (App to cloud server)**

### 2. loadMeters

Noting need to give client to server

* Load listed meter by its location.

### Request

### POST http://eazydelivery.azurewebsites.net/pcm/svc/pcm/loadMeters Just need to call the command, just need to pass empty body.

{

}

**Response from server**{

"responseData":

[

{

"locationId":”1”,

"zipCode":”119615”,

"Meters":[{"meterId":1},{"meterId":2},{"meterId":3}]

},

{

"locationId":”2”,

"zipCode":”119275”,

"Meters":[{"meterId":1},{"meterId":2}]

}

]

}

### 3. latestStatus

Meter\_id, zipCode

* Load current status of selected meter.

### Request

### POST http://eazydelivery.azurewebsites.net/pcm/svc/pcm/latestStatus Content-Type: application/json {

"meterId": "1",  
"zipCode": "119615"  
}

**Response from server**  
{

"responseData":

[

{

"power":"2402",  
"datetime":"2016-06-05 23:59:05",  
"current": "13",

"frequency": "48",

"voltage": "231",

"breakerState": "1"

}

]

}

### 4. searchHistory

Meter\_id, zipCode, from, to

* Search the history power consuming of target meter.

### Request

### POST http://eazydelivery.azurewebsites.net/pcm/svc/pcm/searchHistory Content-Type: application/json {

"meterId": "1",  
"zipCode": "119615",  
"from":"2016-06-05 23:59:05",  
"to":"2016-06-08 23:59:05"  
}

**Response from server**  
{

"responseData":

[

{

"power":"2402",  
"datetime":"2016-06-05 23:59:05",  
"current": "13",

"frequency": "48",

"voltage": "231",

"breakerState": "1"

},

{

"power":"2503",  
"datetime":"2016-06-05 23:59:08",  
"current": "12",

"frequency": "44",

"voltage": "223",

"breakerState": "1"

},

….(will send according to search from and to interval)

]

}

References:

sqlite

<http://dkiong.no-ip.biz/rp2/08/>

Client App Design

1. Launch application
2. Call loadMeters command to get the all meter list of the system.
3. Show screen with following UI component
   1. Location combo box and meter list combo.
      1. When the location selection is change, the content of meter list combo should also be changed.
      2. Allow user to select one location and one meter.
   2. Check box (Search History) should be false in default
   3. If the searchHistory search box is on, show 2 date input box. The first one for ‘from’ time selection and the second one for ‘to’ selection.
   4. Show load button.
      1. If user click on load button and searchHistory checkbox is off, call currentStatus command and show the result(latest meter status) in next screen.(Current Status Screen)
      2. If user click on load button and searchHistory button is on and both from and to time are filled, call searchHistory command and show the result(1 day or 5 day or 10 day, etc...) in next screen.(History Meter Status screen)