User Manual
EFR32 IOT Gateway Mobile Application

Version	2.0
Status	Baseline
Date	28-Aug-2020

Confidentiality Notice

CONTENTS

TABLES

1 DOCUMENT DETAILS

1.1 Document History

Version	Author		Reviewer		Approver	
	Name	**Date (DD-MM-YYYY)**	**Name**	**Date (DD-MMM-YYYY)**	**Name**	**Date (DD-MM-YYYY)**
Draft 0.1	Anagha Mhetre	27-07-2020	Viren Moradiya	30-07-2020	Mukund Ubhadiya	31-07-2020
Baseline 1.0	Viren Moradiya	17-08-2020	Viren Moradiya	17-08-2020		
Baseline 2.0	Viren Moradiya	25-08-2020	Viren Moradiya	27-08-2020		

Version	Description of Change
Draft 0.1	Created initial draft version (M2 Milestone)
Baseline 1.0	Added new UI snapshot of application
Baseline 2.0	Added new screen UI snapshot & Gateway access detail

Table 1: Document History

1.2 Definition, Acronyms and Abbreviations

Definition/Acronym/Abbreviation	Description
User	Admin user of EFR32 IOT Gateway
IOT	Internet Of Things
Gateway	An IOT Gateway.
BLE	Bluetooth Low Energy

Table 2: Definition, Acronyms and Abbreviations

1.3 References

No.	Document	Version	Remarks
1	ei_EFR32_IoT_Gateway_SystemRequirementSpecification.doc	1.0	System Requirement Specification Document
2			

Table 3: References

2 INTRODUCTION

2.1 About EFR32 IOT Gateway System

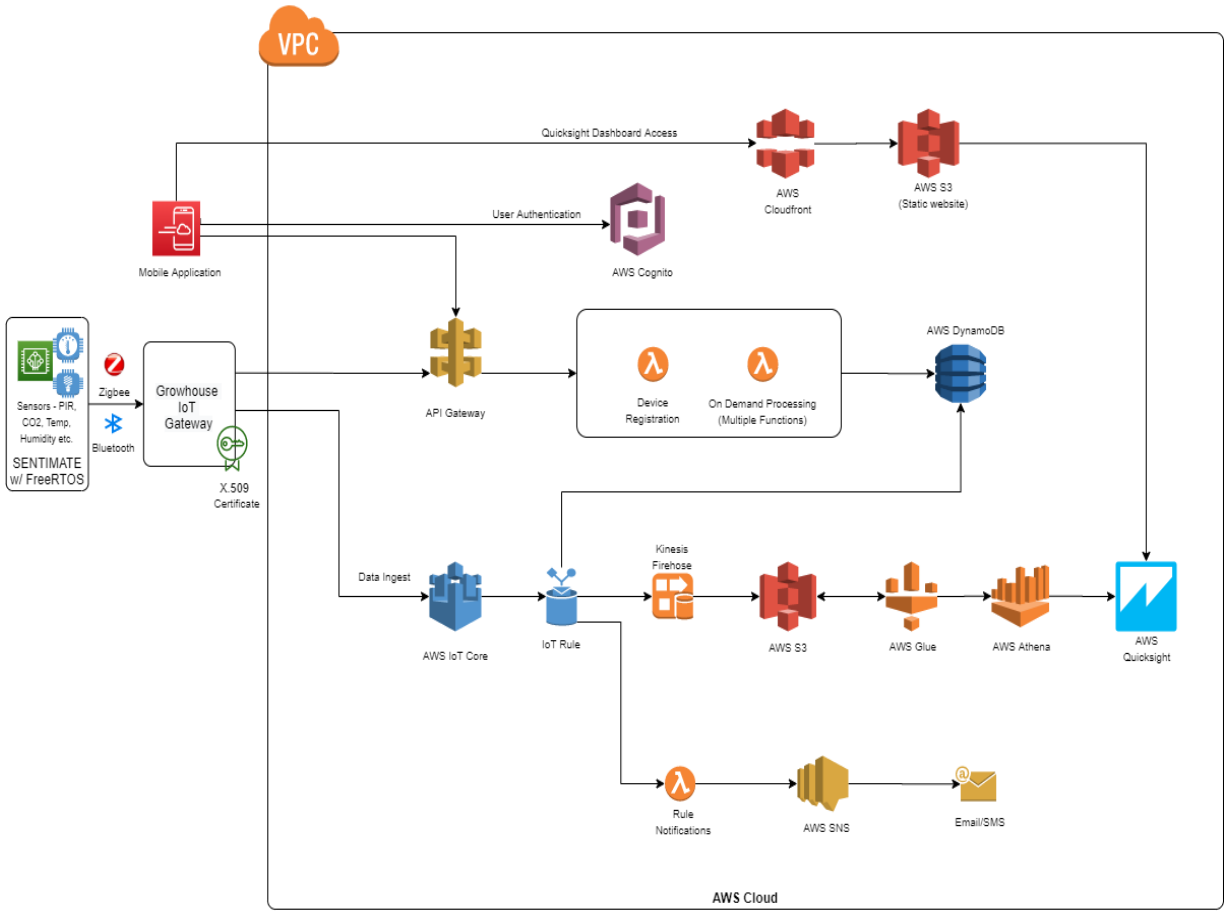


Figure 1: Top Level EFR32 IOT Gateway System Diagram

2.1.1 Key Features

- EFR32 IOT Gateway Provisioning.
- EFR32 IOT Devices (Sensors) Provisioning.
- Viewing Gateway/Devices.
- Deleting Gateway/Devices.
- Viewing Sensor history data chart
- Set threshold value for user notification

2.2 Kit Contents

NA.

3 SYSTEM REQUIREMENTS

- Android Mobile Device with minimum Android OS version 6 (Marshmallow).
- Gateways should be setup during Provisioning.

3.1 Typical Setup Requirements

- User's permission like Bluetooth and Location services is required.

3.2 Special Configuration and environment

- Internet connectivity is required on Mobile Device.
- User should be nearer to the Gateway (around 20ft radius) during provisioning of Gateway & Device(s).

3.3 Support Documentation list

NA

4 GETTING STARTED

4.1 Installation

- Copy the **EFR32_Gateway.apk** file into your Android Mobile Phone.
- Install the application by running apk file.

4.2 Sign Up

- Launch EFR32 IOT Gateway Application from Mobile Device.
- User will see the loading of IOT logo. Once IOT logo loading completed user will see “Sign up” screen.

Figure 1: Logo Screen

- Click on Sign Up button to create user account.

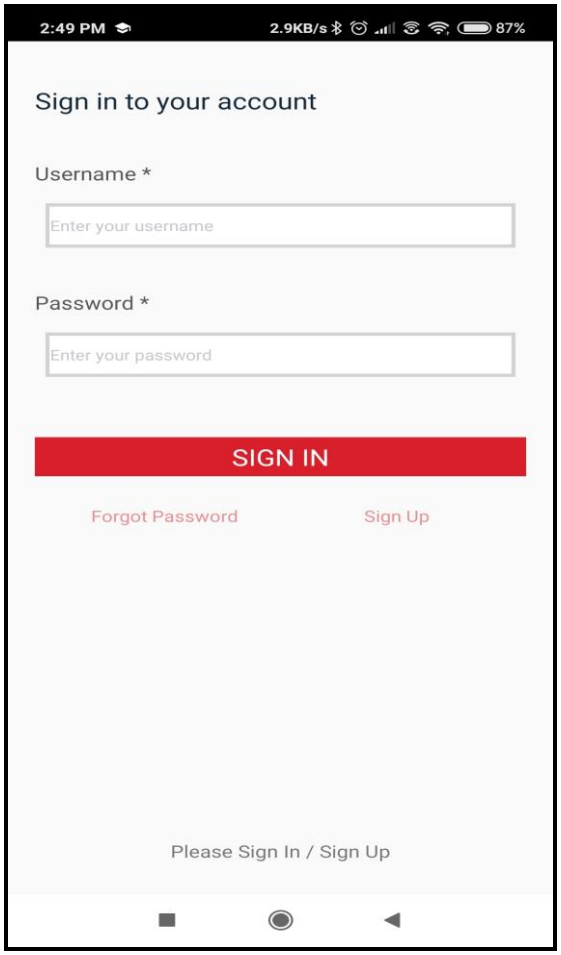


Figure 2: Sign in Screen

- Enter username, password, email and phone number. Confirmation code will be sent on given email.

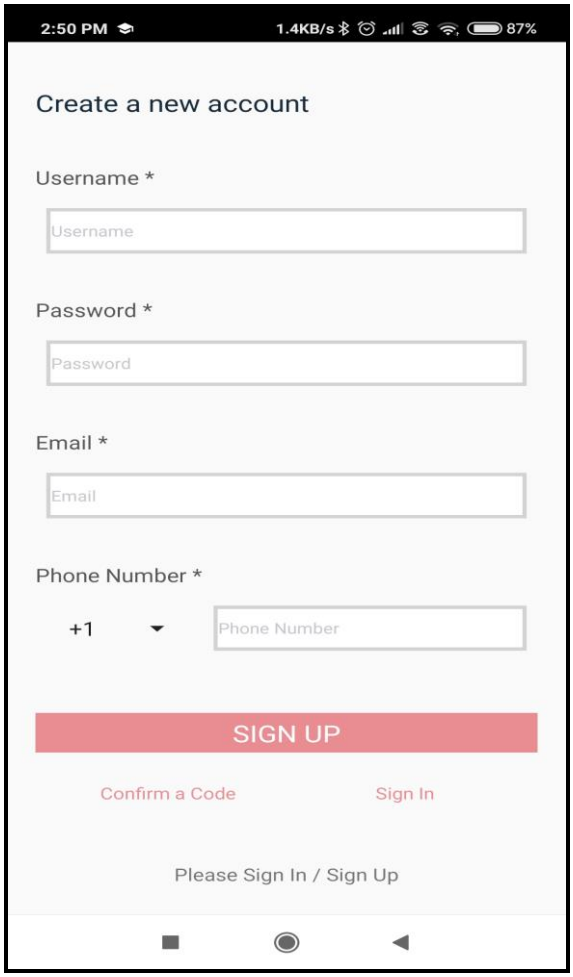


Figure 3: Create Account Screen

- Enter username and confirmation code. Click on Confirm.

4.3 Logging In.

- Enter username and password.
- Click on “SIGN IN” button.

4.4 Home Page

- After successful Sign In, user will see the Home page screen as below
- User can navigate to Setting page, Sensor view page, Gateway view page by clicking on specific button in mobile Application.

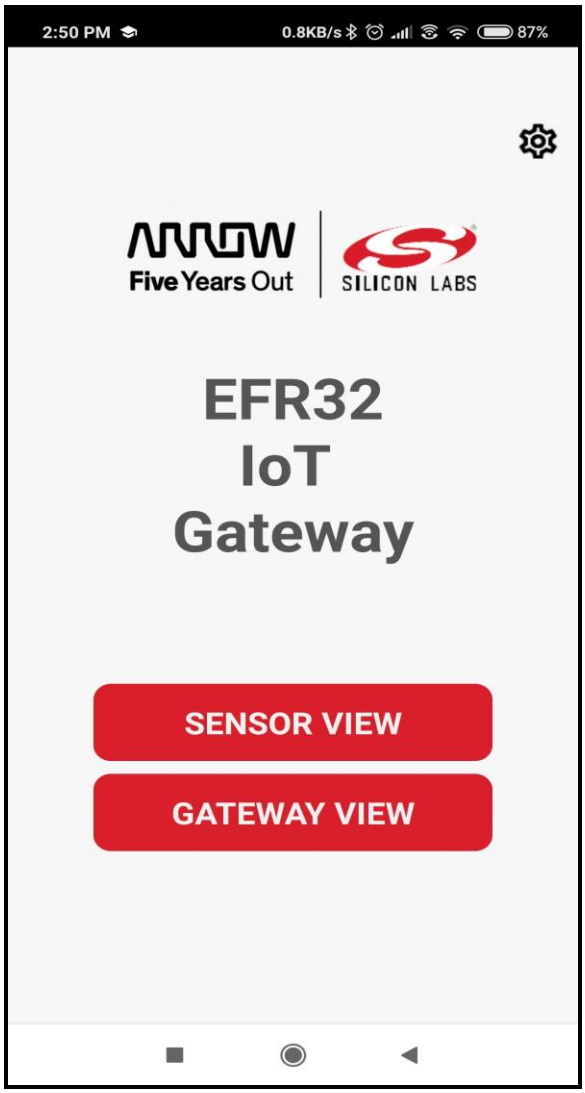


Figure 4: Home Screen

4.4.1 Sensor View page

- Tap on ‘Sensor View’ button to navigate to Sensor View page.

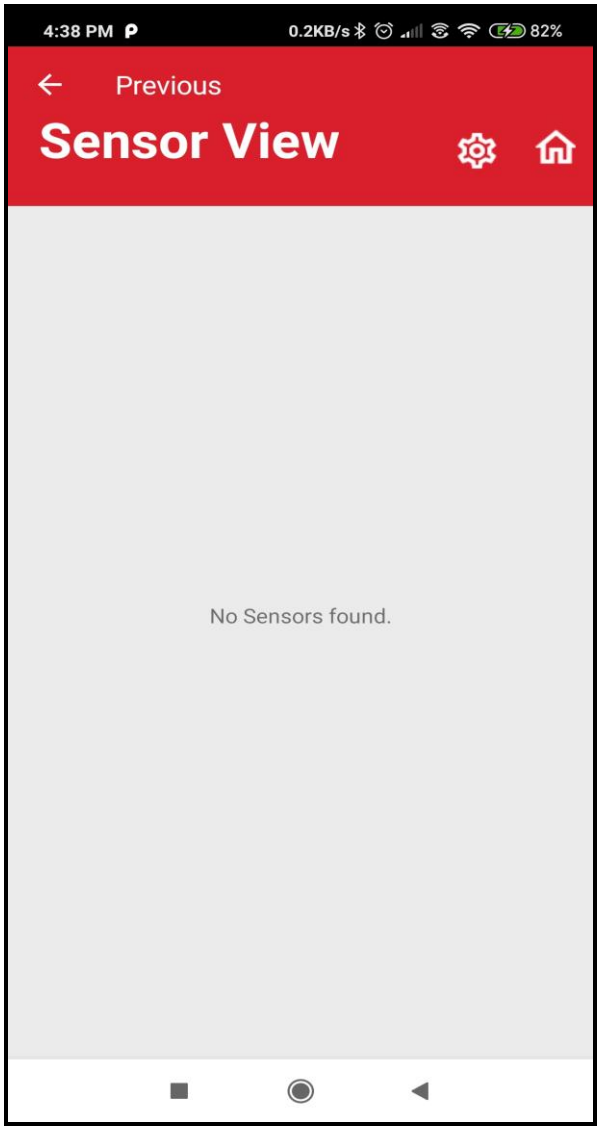


Figure 3: Sensor View page

4.4.2 Gateway View page

- Tap on ‘Gateway View’ button to navigate to Gateways page.
- Gateway screen shows the provisioned Gateway under the User account.

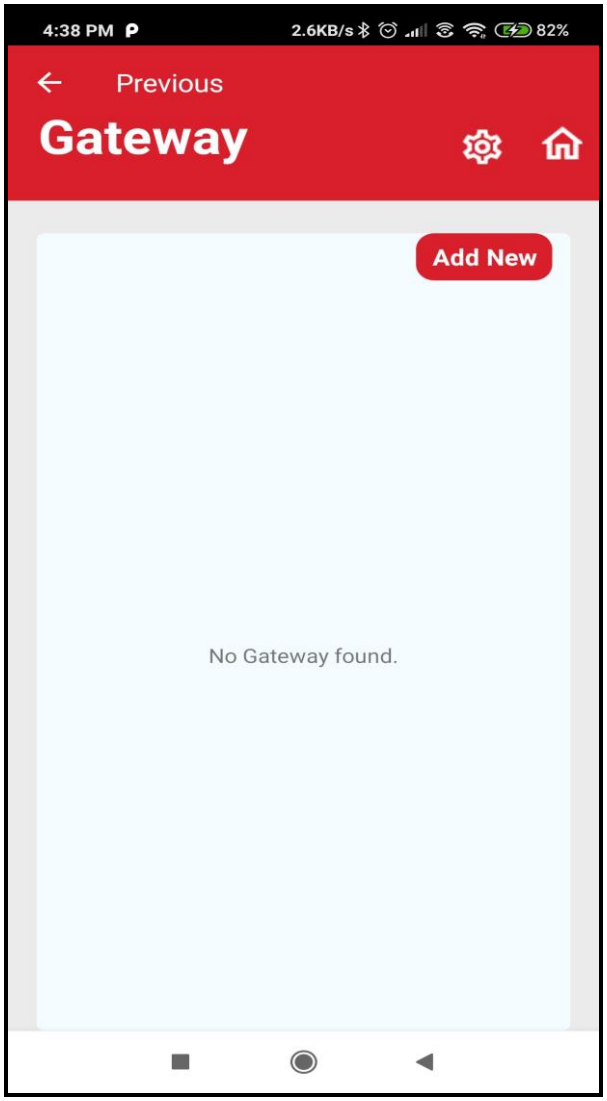


Figure 6: Gateway page

4.4.3 Settings page

- Tap on Settings button to navigate to settings page.
- Settings screen shows the User customization option.
  Settings screen having buttons for configure Gateway & Sensor.

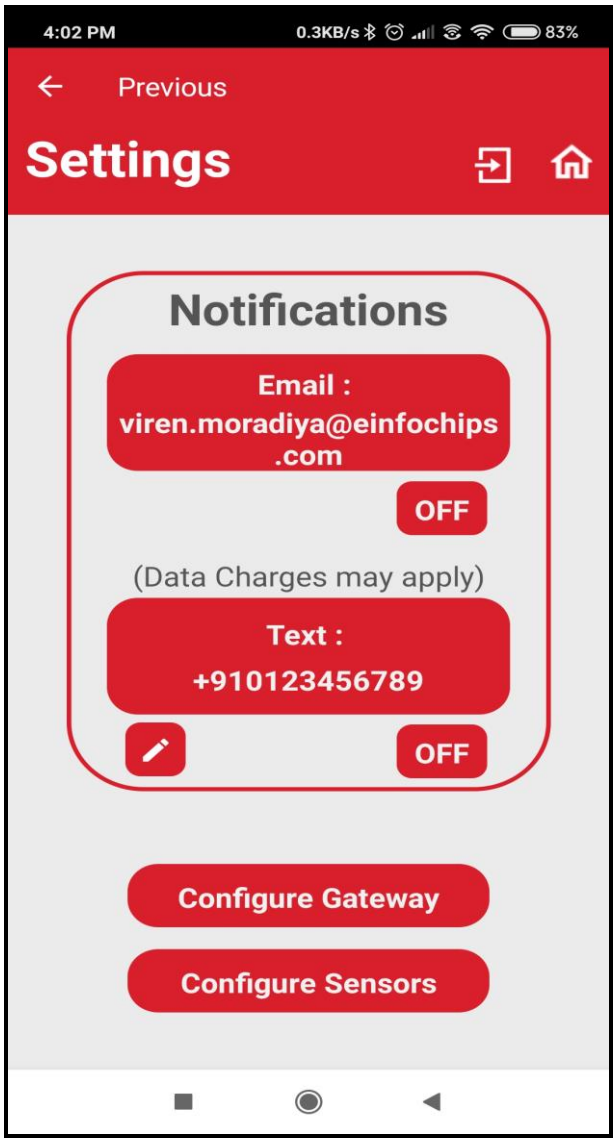


Figure 7: Settings page

4.4.4 Sign Out

- Tap on ‘Sign out’ button in beside Home button to sign out from the Application.
- After sign out user will be redirected to the main Sign In screen.

4.5 Gateway

4.5.1 Provisioning New Gateway

- Gateway has to be up and running and within the proximity (around 20ft) before initiating provisioning process. Refer to the appendix to review the hardware setup of the Gateway.
- New Gateway can be provisioned by clicking ‘ADD New’ button on Gateway page.
- After clicking ‘Add New’ button, the application will search Gateway(s) within the proximity. All the discovered Gateways will be listed.
- From the discovered list of Gateway(s), select the one which needs to be provisioned by clicking ‘REGISTER’ button next to the intended Gateway as shown in below figure.

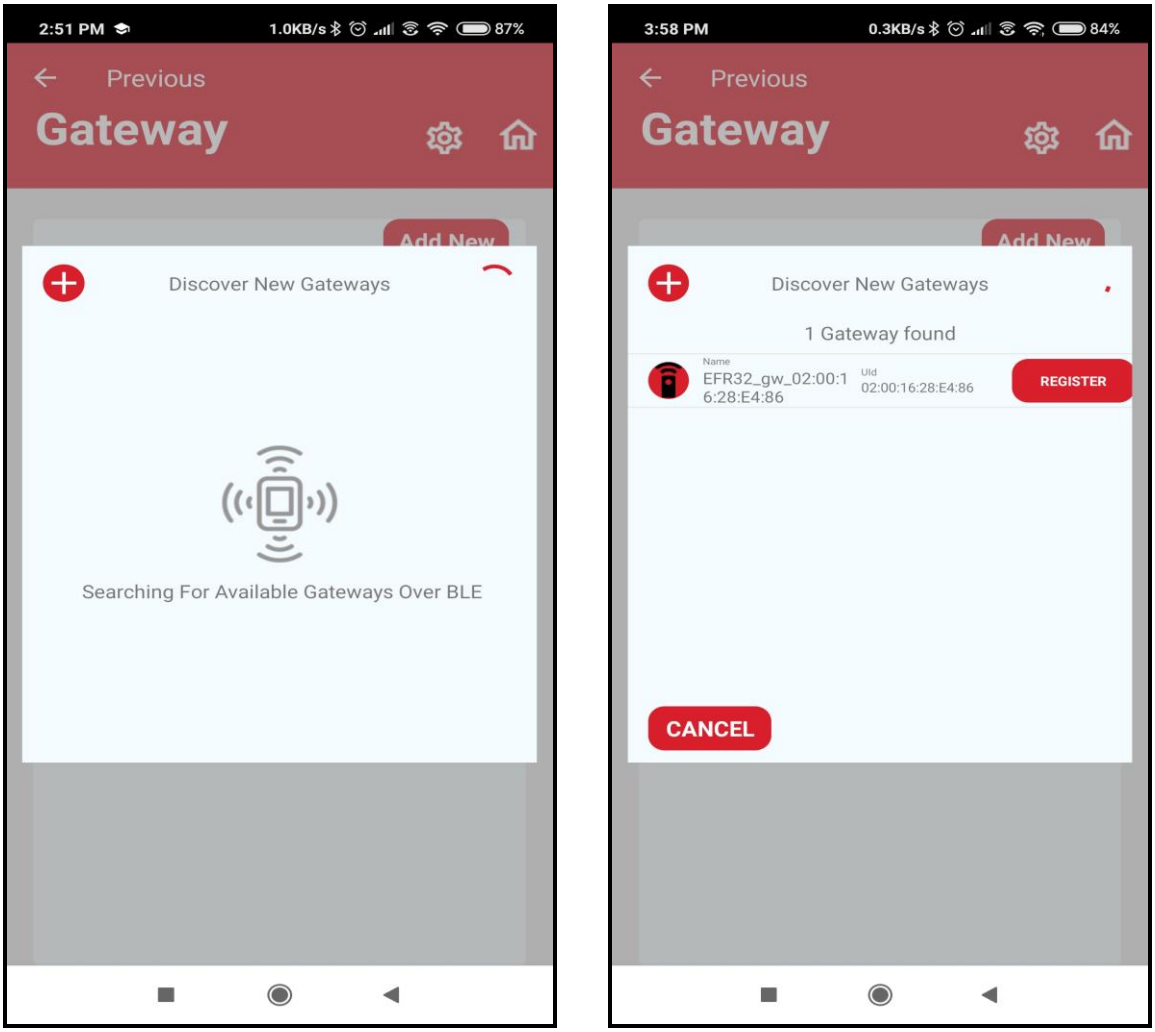


Figure 8: Gateway Page – Discover Gateway

- User would be prompted to provide Gateway details.
- Provide required details of the Gateway.
- Gateway Name: Provide desired name to Gateway.
- Description: Provide brief description of the Gateway as desired.
- After filling all required field, press ‘SUBMIT’ button.

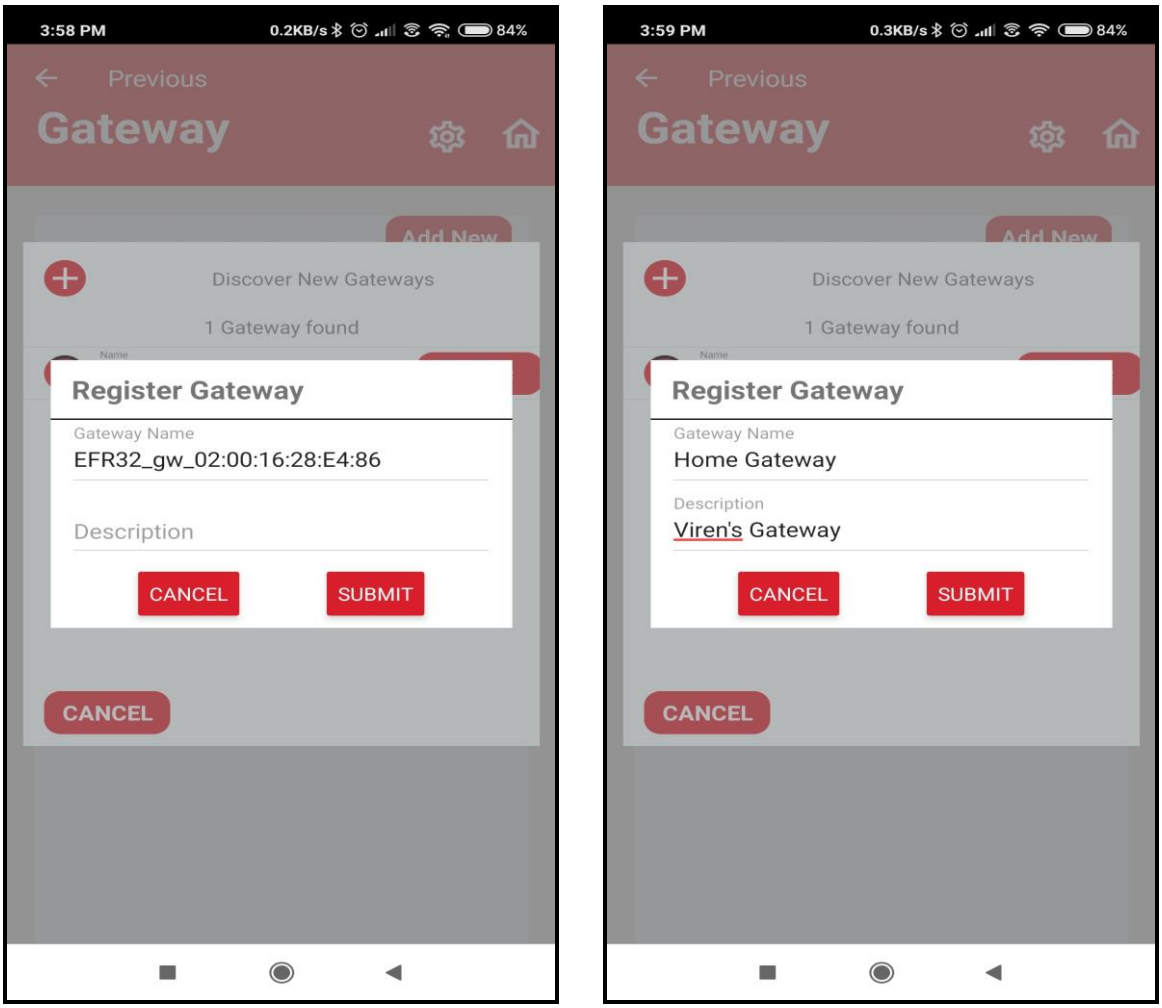


Figure 9: Gateway Provisioning – Gateway information

- On successful completion of provisioning of Gateway to EFR32 IoT Gateway portal, the provisioned Gateway would be listed in Grow Area list as shown in below figure.

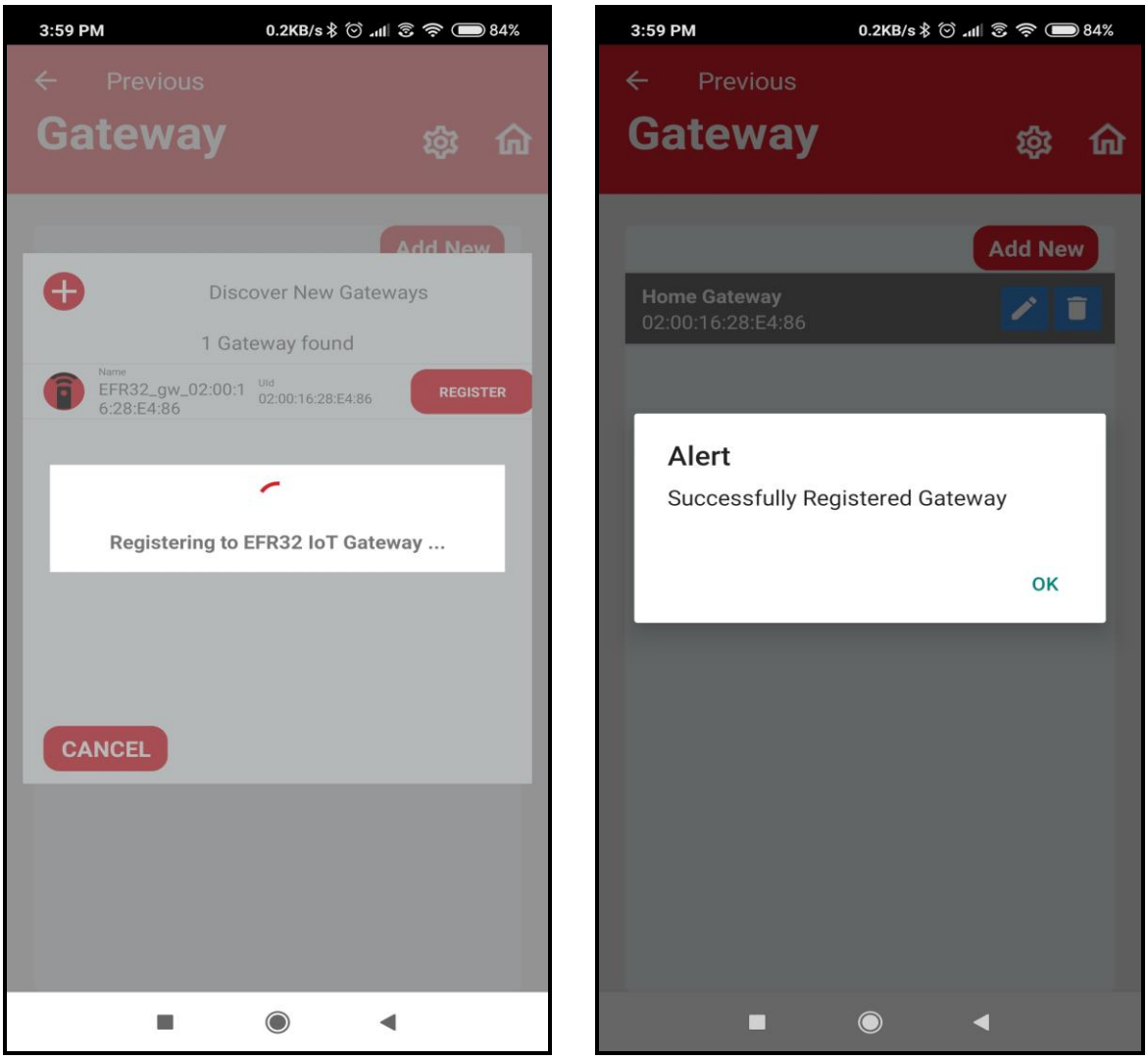


Figure 10: Gateway Provisioning – Gateway Provisioned

4.5.2 Delete Gateway

Note: When we delete Gateway, all the Sensor provisioned with this gateway also get deleted.

- Check the gateway is available over BLE. Mobile app will search gateway over BLE for 1 minute.
- If gateway is available over BLE, gateway will be deleted from AWS cloud and send request to BLE for gateway deletion.
- If gateway is not found over BLE, then popup will display for user “Gateway not available over BLE, Are you sure you want to force delete?
- If you select delete then gateway will be deleted successfully from AWS cloud and popup will display for user “Gateway deleted successfully. Please do Factory Reset of Gateway”

Perform below steps to delete the Gateway.

- Click on icon.
- Click on “DELETE” button.

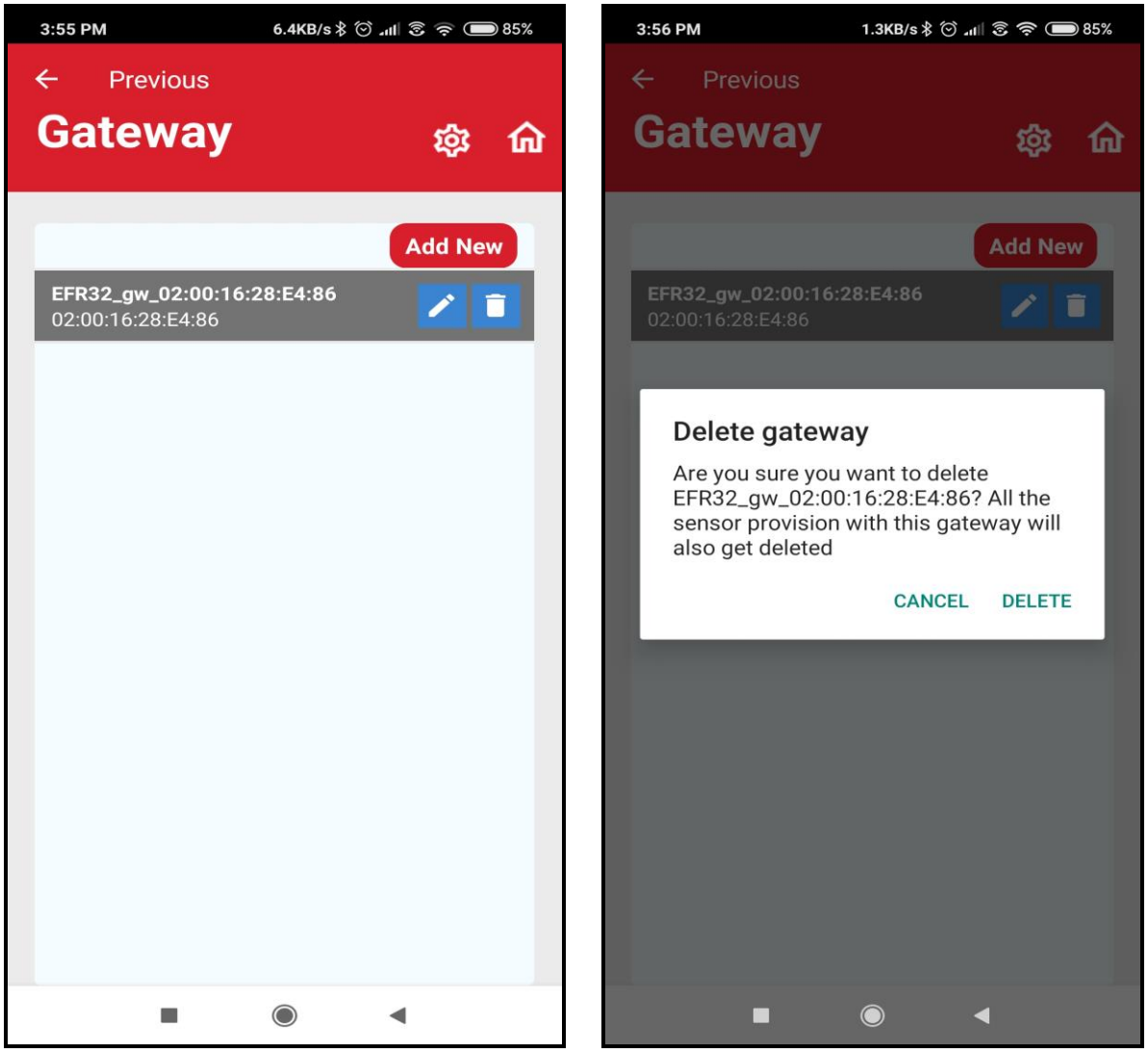


Figure 11: Deleting Gateway

4.6 Sensor

4.6.1 Provisioning New Sensor

- Sensor have to be provisioned under a Gateway.
- Sensor have to be up and running and within the proximity (around 40ft) to Gateway before initiating provisioning process.
- New Sensors can be provisioned in to a particular Gateway, by clicking ‘Add New’ button within the intended Gateway -> Sensors page as shown in below figure.
- On clicking ‘Add New’, application will wait for available sensor.
- User has to press button on Sentimate sensor board to get it discovered.

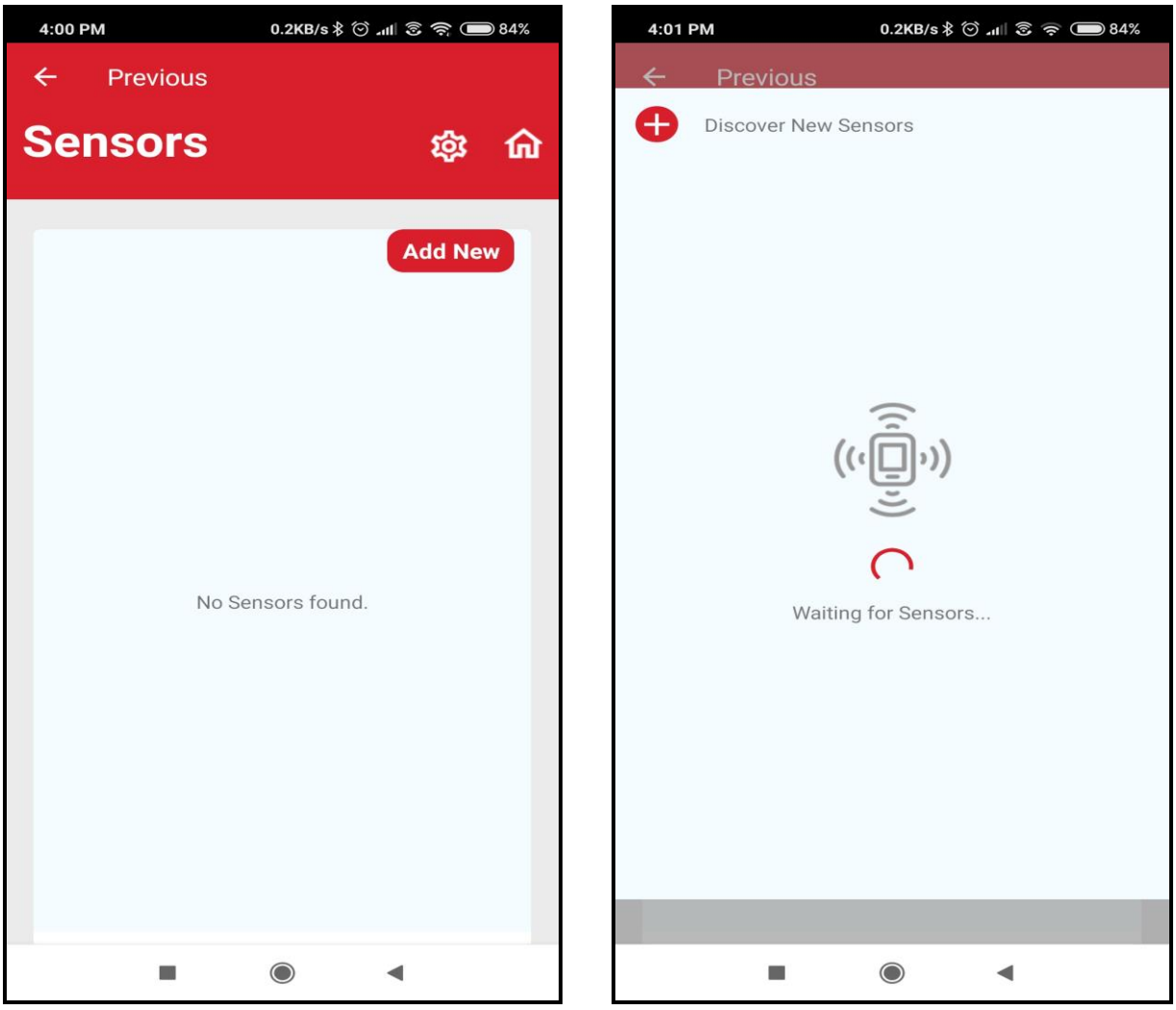


Figure 12: Devices Provisioning – Discover Devices.

- Once Gateway discovers the sensors in the proximity, the list of sensors would be provided to Mobile application and the same would be displayed on screen as shown in first image below. User can select and configure desired sensor(s) to be provisioned.
- Selecting the sensor: This can be done by checking the check box against the intended sensor(s).
- Sensors that are not selected (check box not ticked) would not be provisioned.
- Press 'REGISTER' button to provision Sensors once the selection and configuration of intended sensor is done.

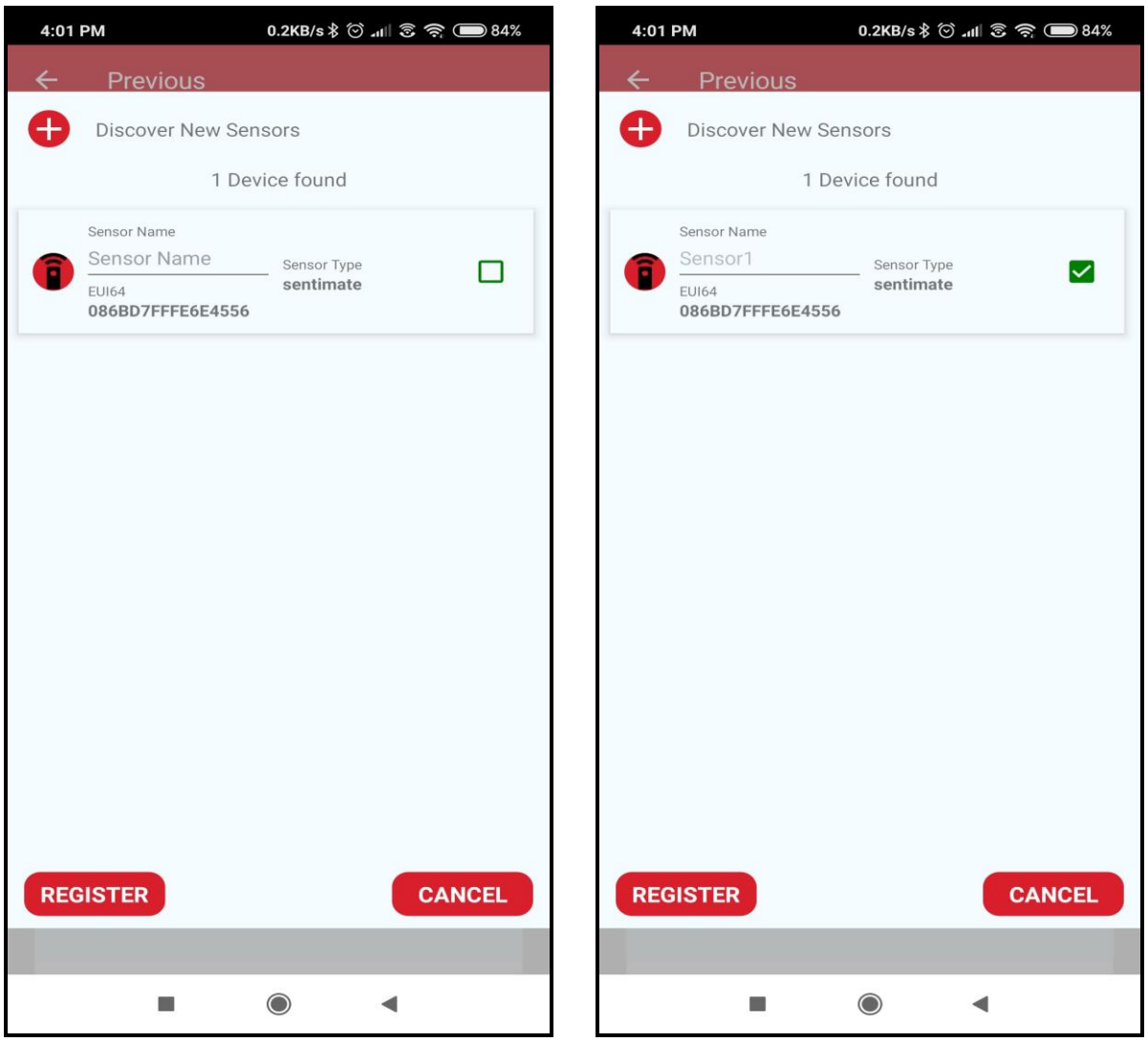


Figure 13: Devices Provisioning – Device information

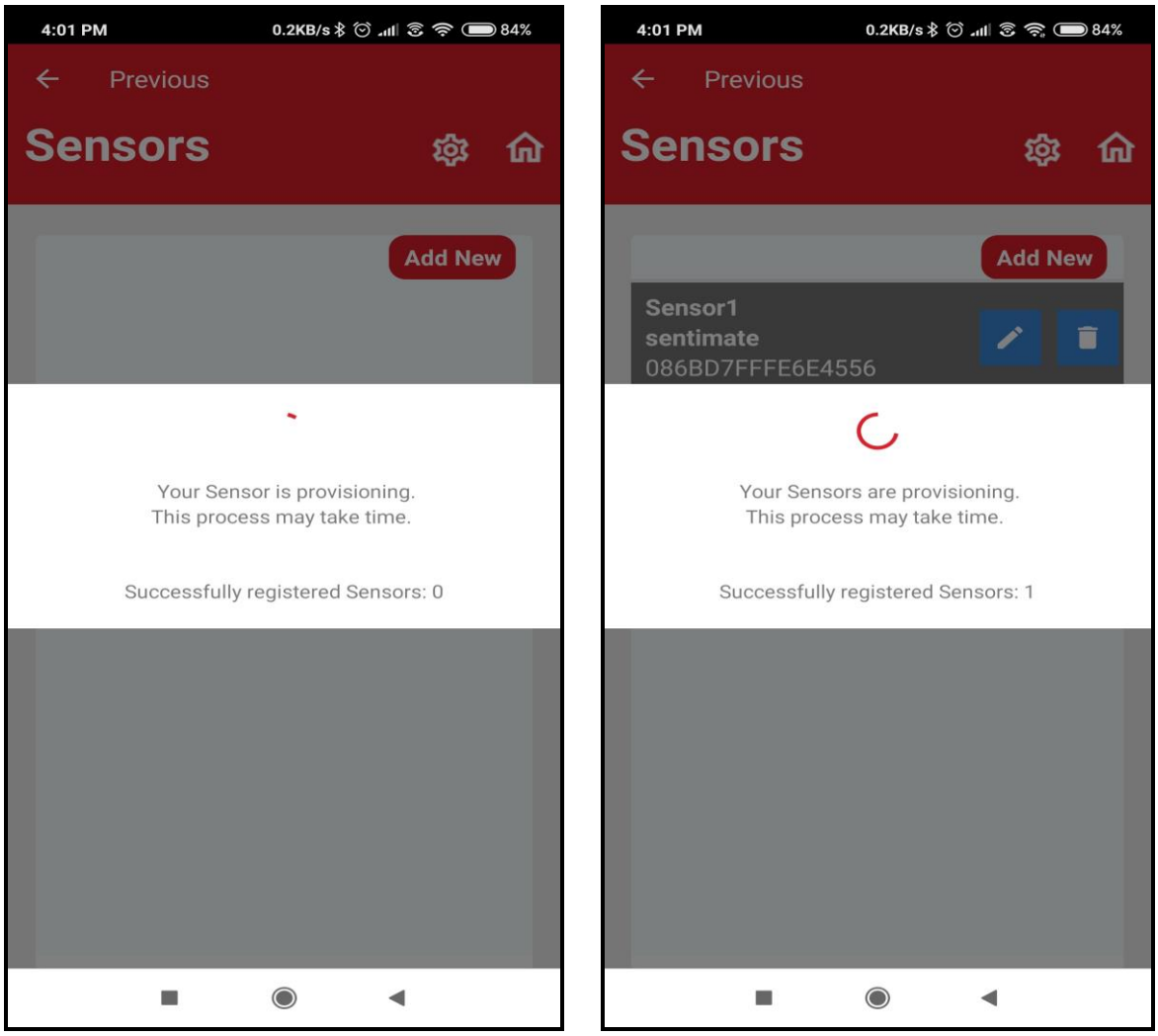


Figure 14: Devices Provisioning – Device provisioned

- Once the provisioning of sensors are done successfully, the sensors would be listed under Sensors page as shown in below figure.

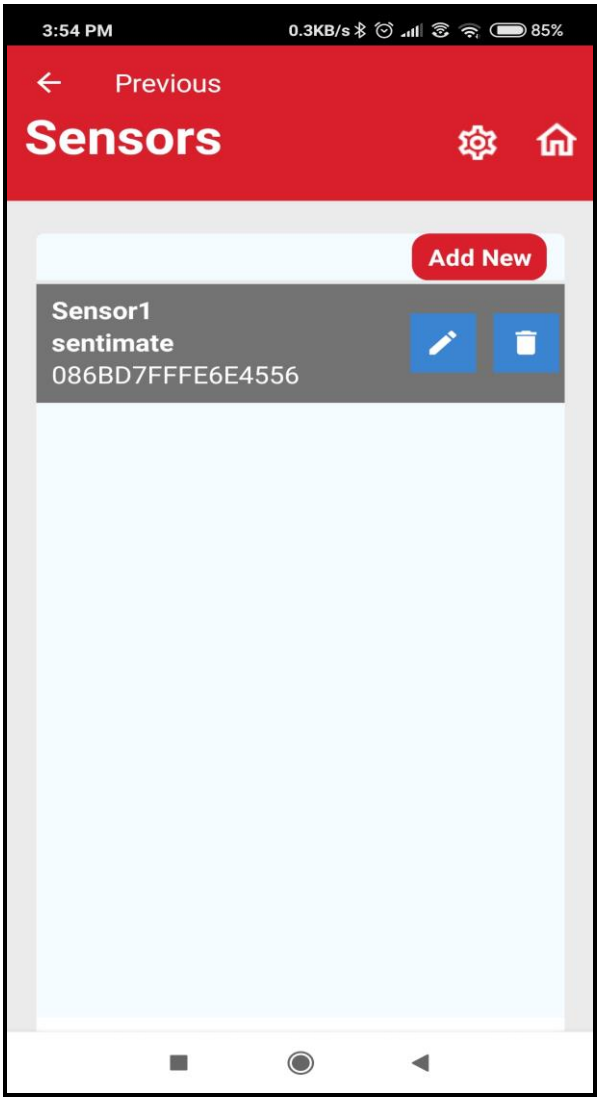


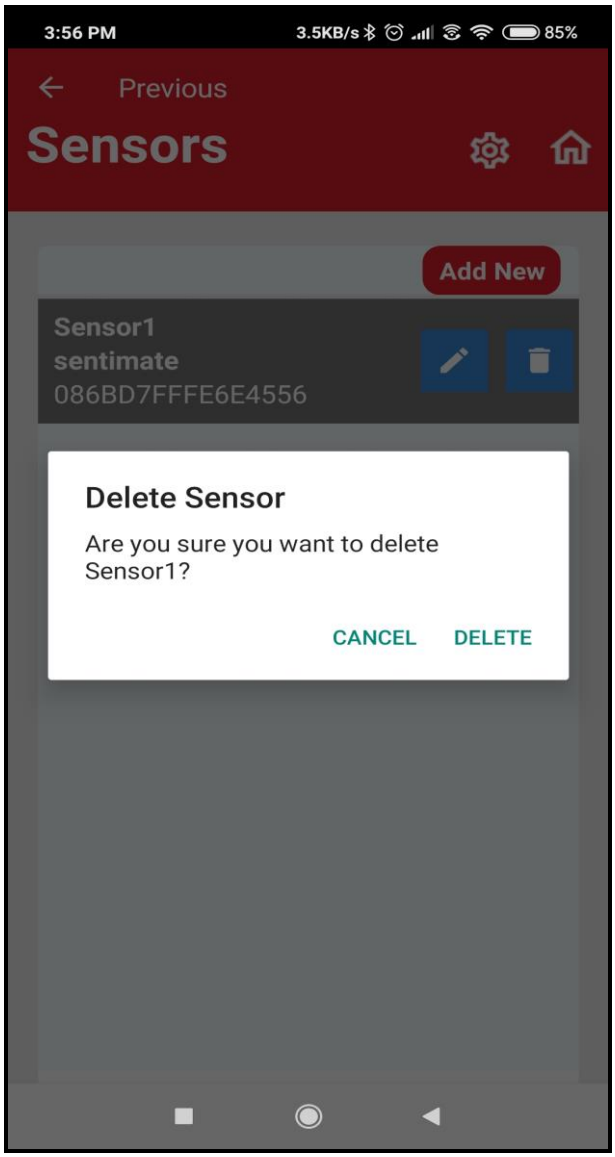
Figure 15: Provisioned devices list

4.6.2 Delete Sensor

- Check the gateway is available over BLE. Mobile app will search gateway over BLE for 20 seconds.
- If gateway is available over BLE, Sensor will be deleted from AWS cloud and send request to BLE for gateway deletion.
- If gateway is not found over BLE, then popup will display for user “Gateway not available over BLE, Are you sure you want to force delete?
- If you select delete then gateway will be deleted successfully from AWS cloud and popup will display for user “Sensor deleted successfully. Please do Factory Reset of Sensor.”

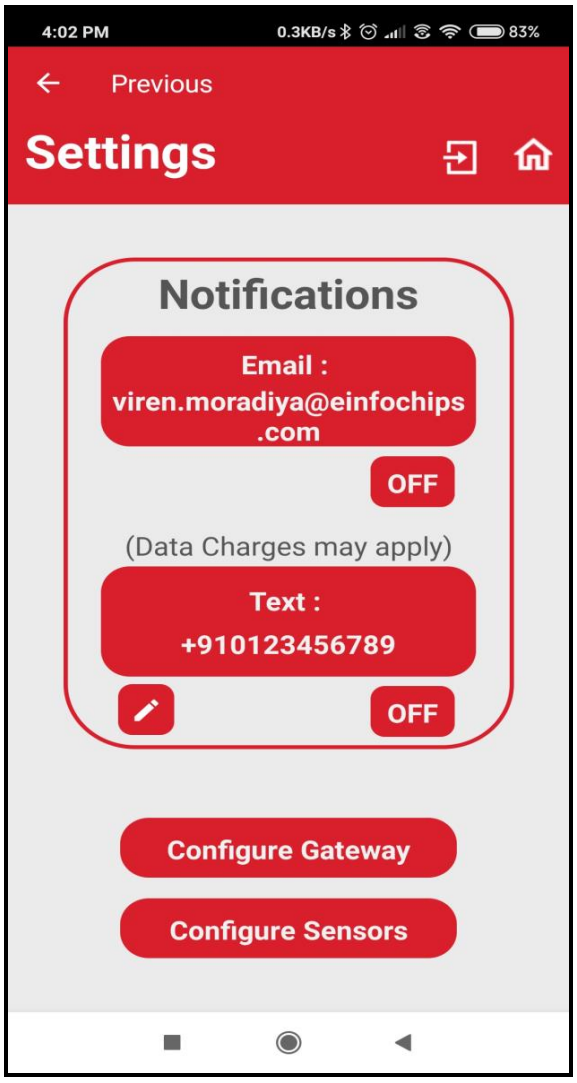
Perform below steps to delete the Gateway.

- Click on icon.
- Click on “DELETE” button.



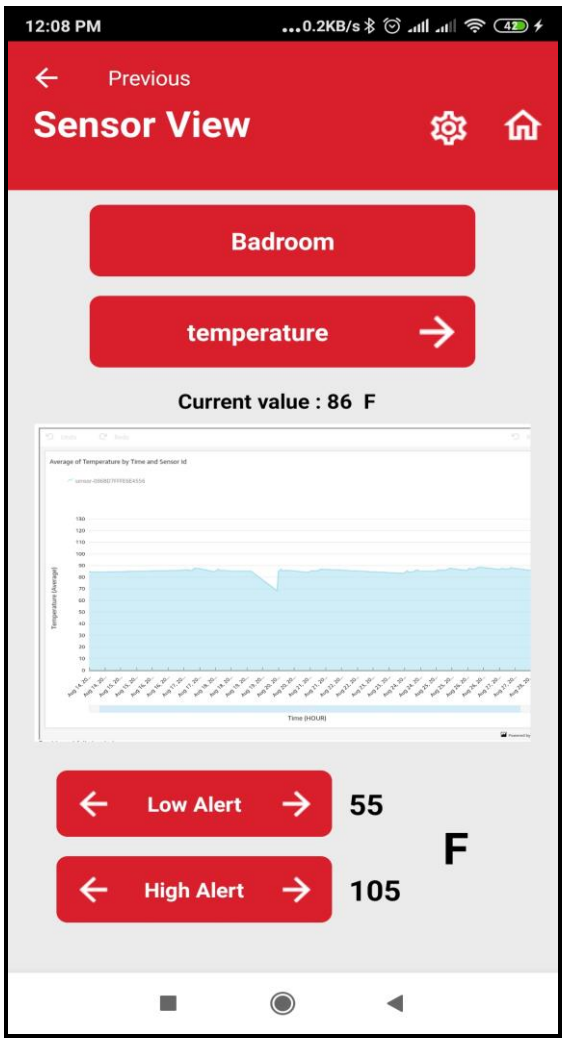
4.7 User Settings

- User will receive notification for email & SMS based on threshold value reach for actual data.
- User can turn ON/OFF this notification from settings screen.
- User can update mobile number from settings screen.
- User can't update email address as this is unique detail.
- User can logout from application from settings screen.



4.8 Sensor Data

- By clicking on Sensor view button from home screen user can see data of provision sensors.
- User can see History data of specific sensor with chart view.
- User can also see live data which sensor is providing to gateway.
- User can change threshold value range for specific sensor to get notification for outside range sensor value.



4.9 Instructions/Conventions/Errors

5 KNOWN ISSUES

6 LIMITATIONS AND CONSTRAINTS

6.1 Only Sentimate sensor over Zigbee is supported with EFR32 Gateway mobile application

7 WARRANTY AND SUPPORT

NA.

8 UPGRADE AND ADD ON MODULES

NA.

9 TECHNICAL SUPPORT

Please contact eInfochips EFR32 IoT Gateway team for support

10 APPENDIX

10.1 Hardware Setup

10.1.1 Sentimate Sensor

1. Power on the board using an external connector from +5V to +40V, or through a +3V battery (classic AA battery).
2. By default, **Red** LED will be blinking on sentimate sensor board.
3. After sensor get provisioned successfully LED will be blinking as **Green.**
4. On sensor deletion from mobile application, gateway will remove specific sensor from ZigBee network and then after LED will be blinking as **RED** again.

- Remove device force fully from ZigBee network
  - Press and hold the button for at least 10 seconds. Once button will be release LED will be started blinking as **RED**. That means device has been removed from ZigBee network and available for provision again.

10.1.2 IOT Gateway

1. A typical IOT Gateway is as shown in below image.
   In below image, it can be seen that there are two boards in the IOT Gateway.
   1. Dragon Board 410C
   2. Mezzanine board

   Both the boards are stack with each other using board to board connectors.

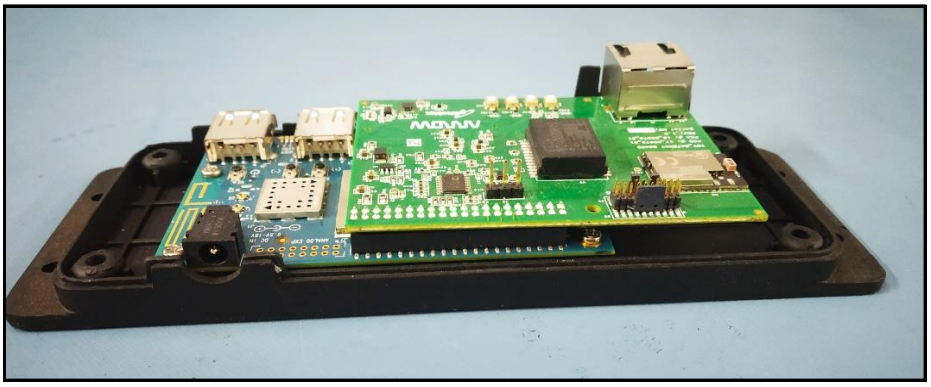


Figure 4: IOT Gateway

Figure 5: IOT Gateway – With Enclosure

2. IOT Gateway has Ethernet connectivity, which is used to connect it to the Growhouse portal. Connect Ethernet cable at J4 connector of IOT Gateway before powering it up.

Figure 6: IOT Gateway – Ethernet connectivity

3. Connect 12V external power adapter to dragon board 410C power connector. External power adapter rating must be: 12V @ 2A.

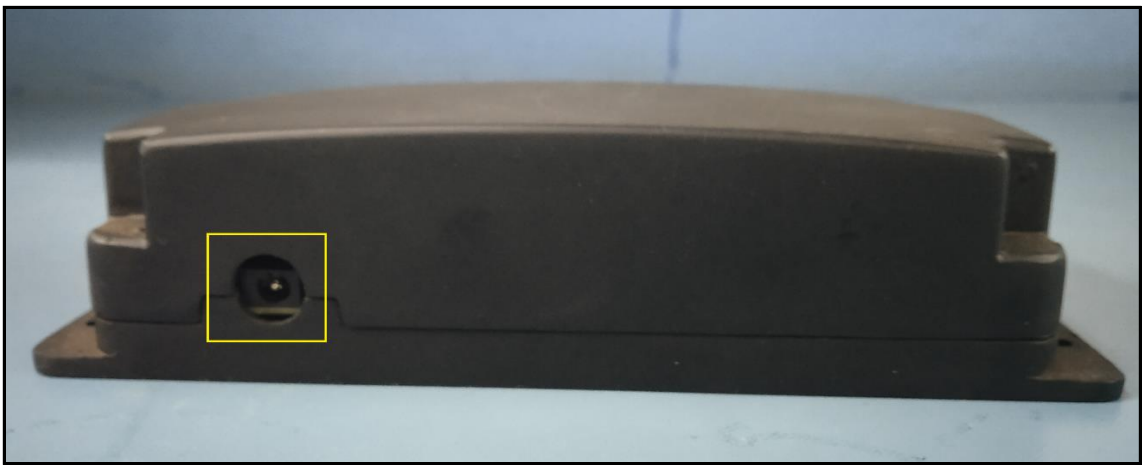


Figure 7: IOT Gateway – Power connection

4. Now switch on the power adapter to power the IOT Gateway. After IOT Gateway boots up, it is ready to be provisioned.

10.1.3 Gateway access:

1. Console access
   - On gateway side connect FTDI cable to 3 pin GPIO port with USB port on your host machine. Baud rate: 115200
   - Username: root

2. SSH access
   - Connect ethernet cable into gateway IP and check gateway ip by running “ifconfig”.
   - Do SSH to gateway using ip found on eth0 interface on gateway console.

3. In Gateway there is nothing like sudo command.
4. For SSH/console connection we have only "root" user, no password.