User Manual
GrowHouse Mobile Application

Version	0.13
Status	Draft
Date	26-May-2020

Confidentiality Notice

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FIGURES

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	Priyank Joshi	28-Feb-19	Hasteen Patel	13-March-19		
Draft 0.2	Priyank Joshi	13-March-19				
Draft 0.3	Priyank Joshi	15-March-19	Hasteen Patel / David Demona	15-March-19		
Draft 0.4	Priyank Joshi	28-March-19				
Draft 0.5	Priyank Joshi	25-April-19	Hasteen Patel	15-May-2019		
Draft 0.6	Priyank Joshi	17-May-19	Hasteen Patel	21-May-2019		
Draft 0.7	Priyank Joshi	03-June-19	Hasteen Patel	03-June-19		
Draft 0.8	Keval Sanghvi	22-July-2019	Hasteen Patel	30-July-19		
Draft 0.9	Pritesh Shah	6-Sept-2019	Hasteen Patel	6-Sept-2019		
Draft 0.10	Pritesh Shah	9-Sept-2019				
Draft 0.11	Pritesh Shah	25-Oct-2019	Hasteen Patel	25-Oct-2019		
Draft 0.12	Pritesh Shah	30-Oct-2019	Hasteen Patel	30-Oct-2019		
Draft 0.13	Konexios	26-May-2020	Arrow	29-May-2020		

Version	Description of Change
Draft 0.1	Created initial draft version
Draft 0.2	Reviewed changes have been done
Draft 0.3	Updated figures
Draft 0.4	Updated draft on basis of Growhouse Mobile Application version 1.0.06
Draft 0.5	Comments from Arrow addressed.
Draft 0.6	Updated draft on basis of Growhouse Mobile Application version 1.0.07
Draft 0.7	Updated figures on basis of Application version 1.0.07
Draft 0.8	Updated figures and description on basis of Application version 1.0.09
Draft 0.9	Updated figures and description on basis of Application version 1.0.14
Draft 0.10	Incorporated review comments of draft 0.9
Draft 0.11	Added description for data reporting interval for Soil Node and device status reporting interval.
Draft 0.12	Incorporated review comments from David. TBD: Section 4.13 after the apps are hosted on app stores.
Draft 0.13	Updated to reflect removal of Google login dependency and new authentication

Table 1: Document History

1.2 Definition, Acronyms and Abbreviations

Definition/Acronym/Abbreviation	Description
User	Admin user of Growhouse
IOT	Internet Of Things
Gateway	An IOT Gateway.
Grow Area	A Growhouse area which is handled by a Gateway.
BLE	Bluetooth Low Energy

Table 2: Definition, Acronyms and Abbreviations

1.3 References

No.	Document	Version	Remarks

Table 3: References

2 INTRODUCTION

2.1 About Growhouse System

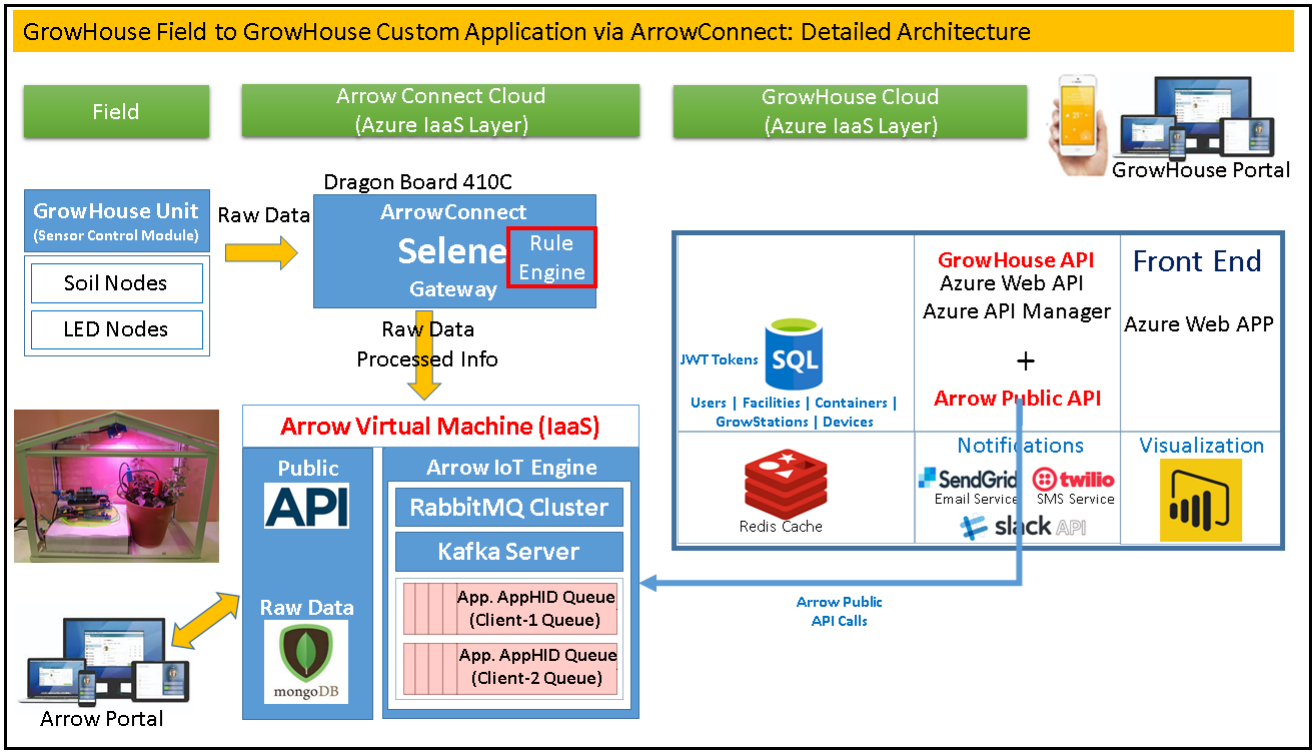


Figure 1: Top Level GrowHouse System Diagram – Field to GrowHouse Custom App via Arrow Connect

2.1.1 Key Features

- Growhouse Gateway Provisioning.
- Growhouse Devices Provisioning.
- Viewing Facility/Container/Grow Area/Grow Sections/Devices.
- Deleting Grow Area/Devices.
- Device Telemetry Live and History Chart.
- Controlling LED Node – Independent channel intensity control.
- Create and Delete profile for Individual LED Node.
- Create, View, Edit and Delete a LED Node Group.
- Create, View, Edit and Delete Group profile of LED Nodes.
- Create, View and Delete a Calendar based LED Node Group profile event.
- View Alerts.

2.2 Kit Contents

- Gateway
- LED Node
- Soil Node

3 SYSTEM REQUIREMENTS

- Android mobile device with minimum Android OS version 6 (Marshmallow).
- iPhone mobile device with minimum iOS version 12.1 or higher.
- Gateway(s), Soil Node(s) and LED Node(s) should be setup during provisioning. Refer to Appendix Section 10.1 on setting up of individual hardware.

3.1 Typical Setup Requirements

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

3.2 Special Configuration and Environment

- Prior to using the mobile application for the first time, the User must register as an Admin on the Growhouse portal ***https://growhouse-arrow.arrowconnect.io***
- Facility and Container of that particular Facility has to be created on Growhouse portal under which Grow Area/Gateway needs to be provisioned.
- 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 Logging In

- Launch the Growhouse Application from Mobile Device.
- On Growhouse Application start up, user will see the Growhouse Mobile application version at bottom of screen and version will change according to mobile application release. For ex, below image shows Version 2.0.0 of mobile application.
- Select the Environment Growhouse – Arrow
- Enter your login credentials which registered on the Growhouse web portal
- Click on “Sign in” button

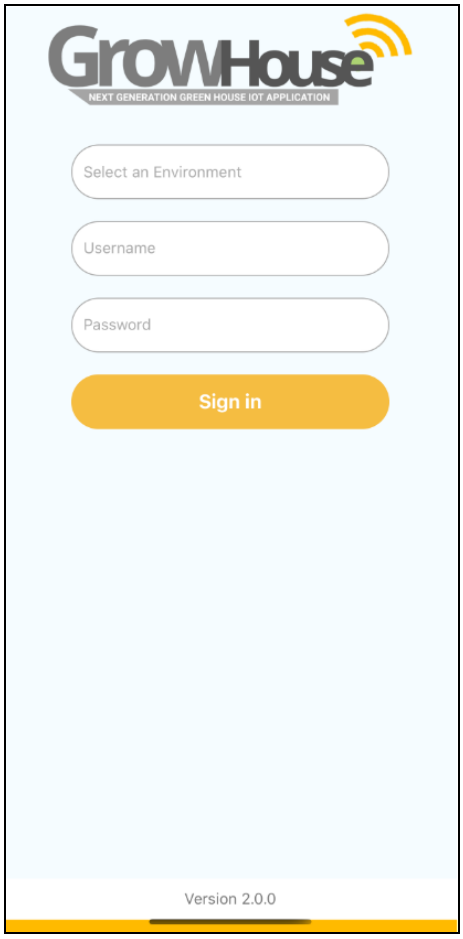


Figure 2: Login Screen

4.2 Home Page

- After successful login the user will see the My Facilities screen.
- Facilities must be created/added on the Growhouse portal for them to appear in the mobile app.

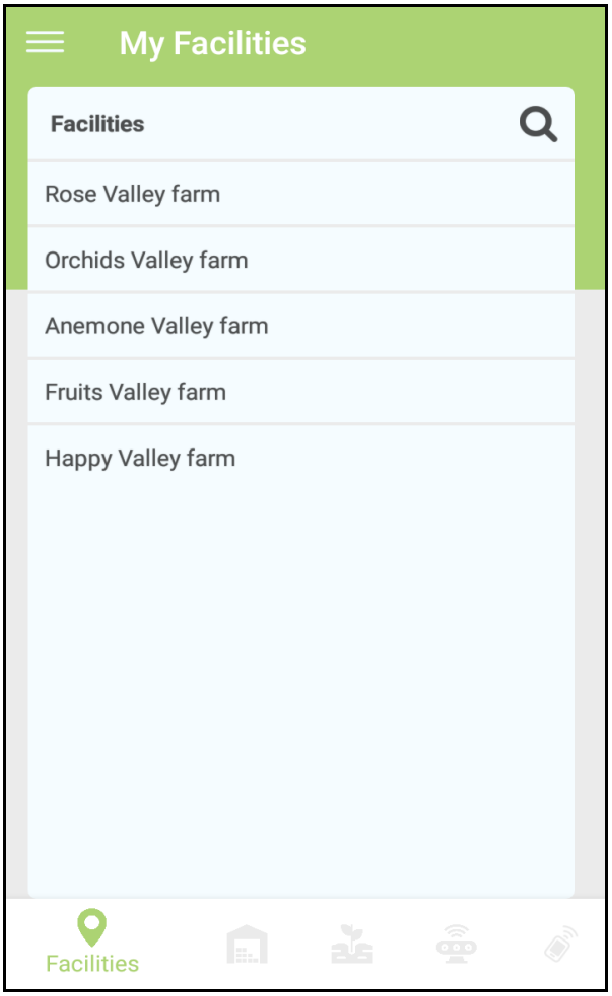


Figure 3: Facilities Screen

- User can swipe down to refresh the content of Facilities page.

4.3 Menu

- User can navigate to Dashboard page, Facility page, Container page, Grow Area page, Grow Section page and Devices page by clicking on ‘Menu’ icon in the Mobile Application.

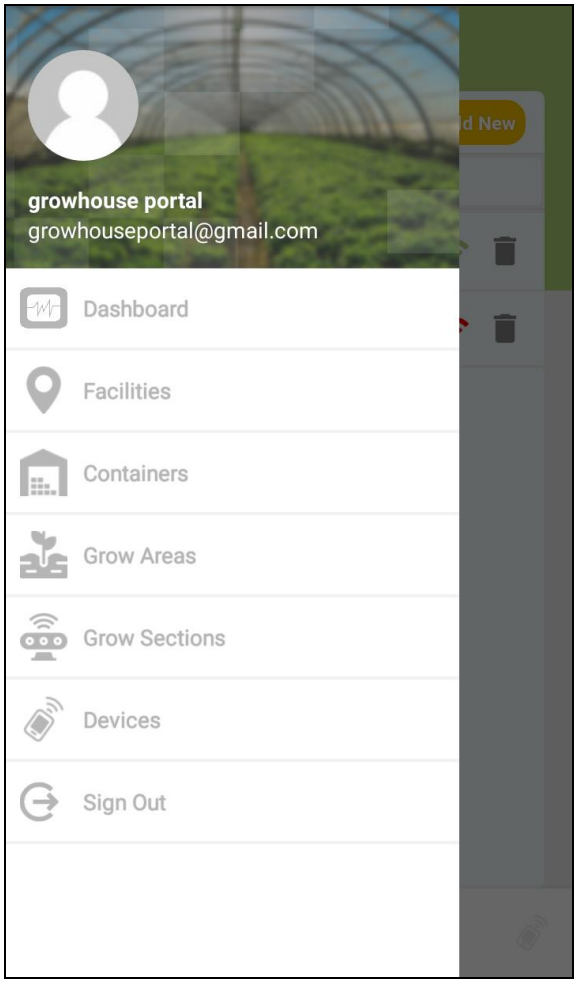


Figure 4: Menu Page

4.3.1 Dashboard page

- Tap ‘Dashboard’ option in drawer to navigate to Dashboard page.
- Dashboard page will show the Summary of total number of Facility, Container, Grow Area, LED Node and Soil Node of a particular User Account.
- It will also show the alerts generated under a particular User Account.

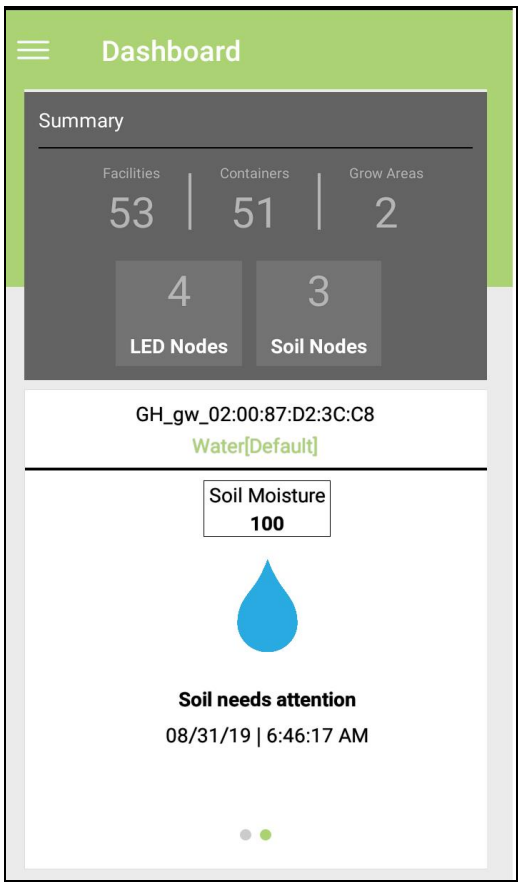


Figure 5: Dashboard page

4.3.2 Facilities page

- Tap ‘Facilities’ option in drawer to navigate to Facilities page.
- Facility screen shows the total number of active facilities under the User account as shown in Section 4.4

4.3.3 Containers page

- Tap ‘Containers option in drawer to navigate to Containers page.
- Container screen shows the total number of active containers under the User account as shown in Section 4.5

4.3.4 Grow Areas page

- Tap ‘Grow Areas’ option in drawer to navigate to Grow Areas page.
- Grow Area screen shows the total number of provisioned Gateway under the User account as shown in Section 4.7

4.3.5 Grow Sections page

- Tap ‘Grow Sections’ option in drawer to navigate to Grow Sections page.
- Grow Section screen shows the total number of active Grow Section under the User account as shown in Section 4.8

4.3.6 Devices page

- Tap ‘Devices’ option in drawer to navigate to Devices page.
- Devices screen shows the total number of provisioned LED Nodes and Soil Nodes under the User account as shown in Section 4.10

4.3.7 Sign Out

- Tap ‘Sign out’ option in drawer to sign out from the Application.
- After sign out user will be redirected to the main login screen.

4.4 Facilities Page

- After successful login, Facilities Screen would be shown as per Section 4.2. This screen can also be visited by tapping Facilities icon at the bottom of the Application screen at any time.
- By tapping a particular Facility, user will be redirected to Containers page. Here Containers of a particular Facility will be displayed.
- As shown in below image, tapping on **Fruits Valley farm** Facility, Containers of **Fruits Valley farm** Facility is shown.

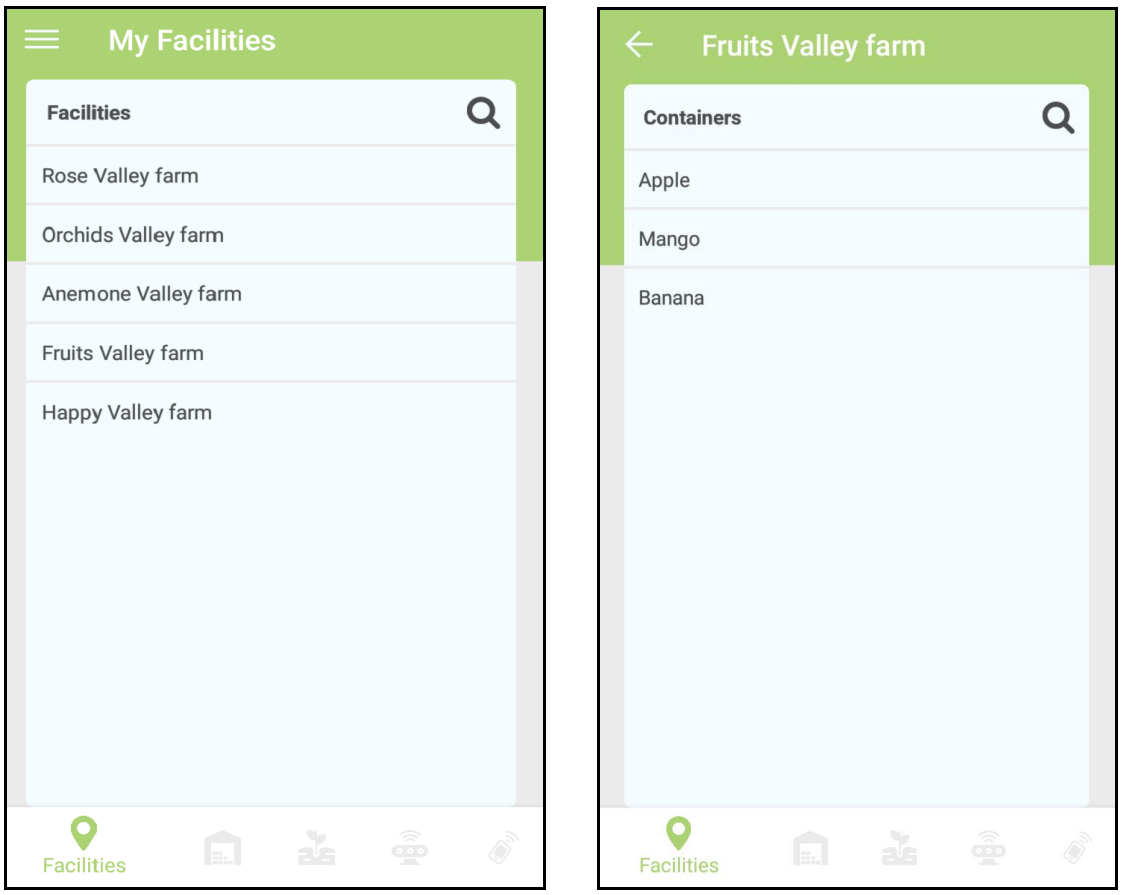


Figure 6: Facility ➔ Containers

4.5 Containers Page

- There are two methods to redirect to Containers page.
- First method is to choose one Facility from Facilities screen as described in Section 4.3. This shows the containers of particular facility.
- Second method is to press Containers icon at the bottom of the Application screen. User will be redirected to the Containers page where all the Containers which were created by the user will be shown.
- Figure below shows all the Containers created by the user.

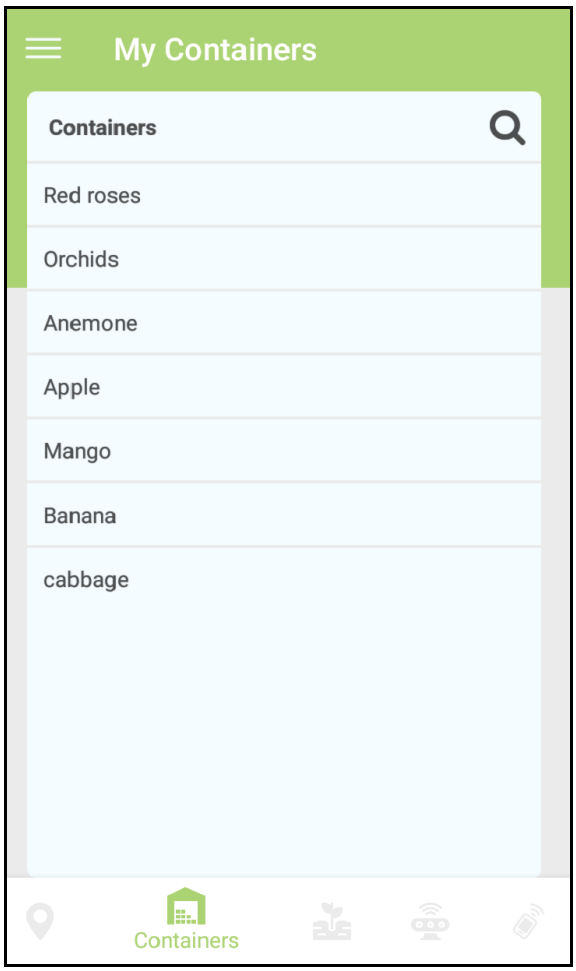


Figure 7: Containers Screen

- User can swipe down to refresh the content of Containers page.

After selecting a particular container, the user will be redirected to the Grow Areas page. Below image shows traversing from Facility to Containers to Grow Areas. In the image below, *GH_gw_02:00:09:D2:3C:C8* is a Grow Area under *Happy Valley farm* Facility and *cabbage* Container.

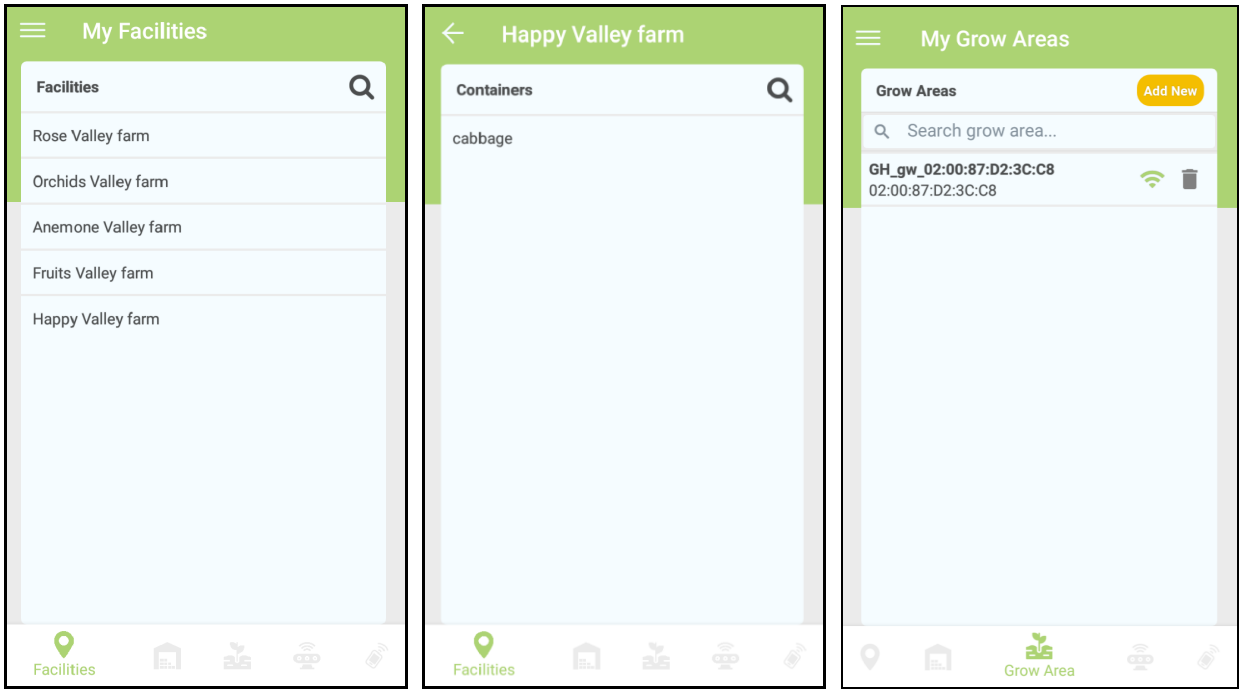


Figure 8: Facility ➔ Containers ➔ Grow Areas

4.6 Provisioning New Gateway

- A Container can have multiple Grow Areas and each Grow Area will have one Gateway.
- Gateway has to be provisioned onto Growhouse portal under a given Facility and Container.
- 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 (i.e. new Grow Area), can be provisioned by clicking ‘ADD New’ button on Grow Areas page. See figure below.

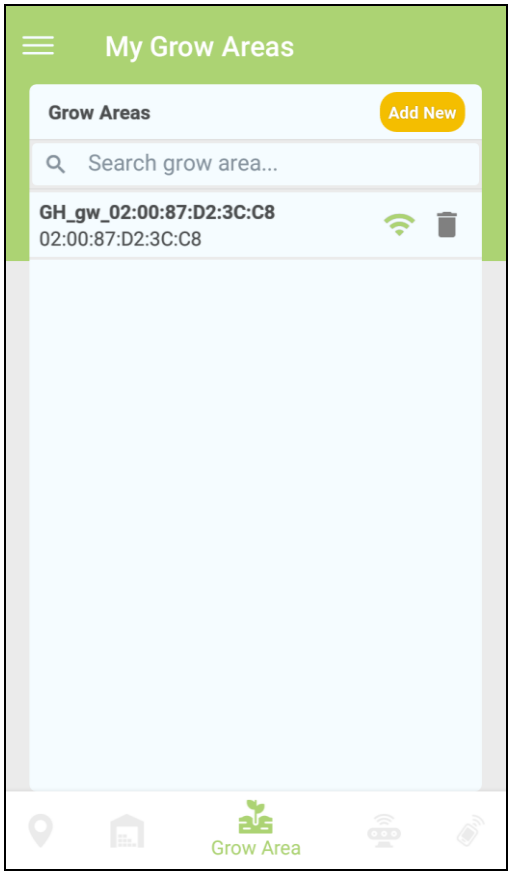


Figure 9: Grow Area Page – Provisioning Gateway.

- 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.

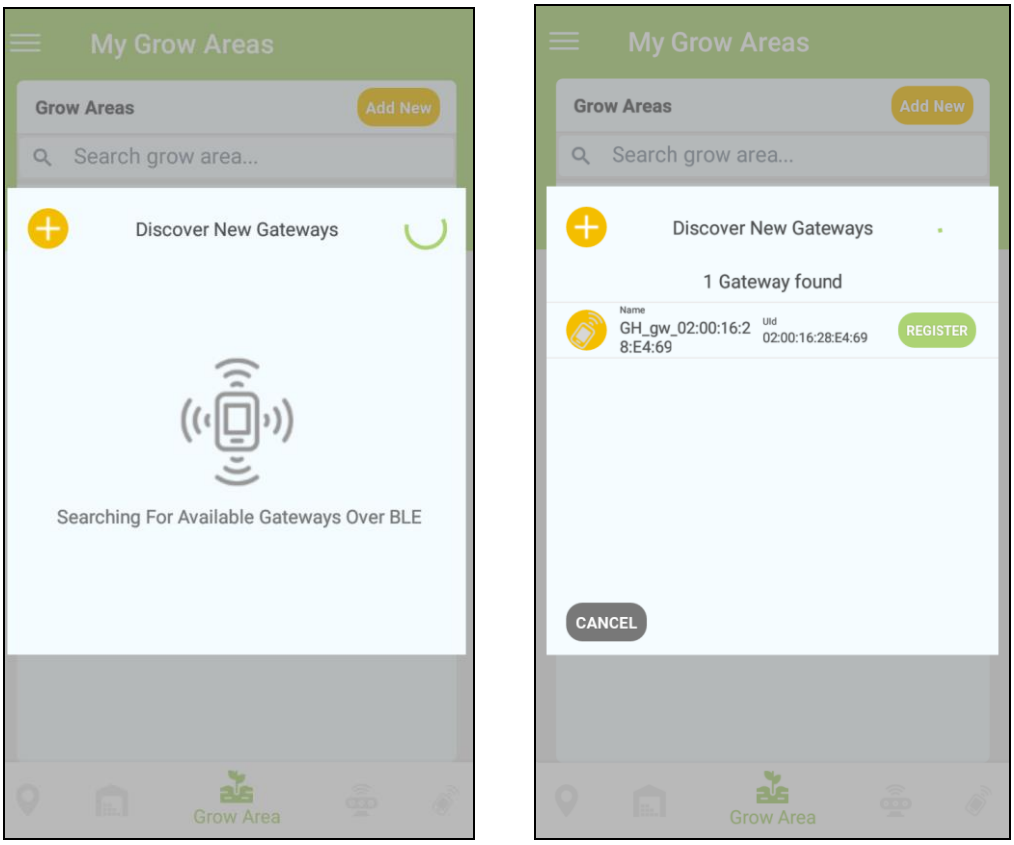


Figure 10: Gateway Provisioning – Discover Gateway

- User would be prompted to provide Gateway details.
- Provide required details of the Gateway.
  - Pick Users – This is a multi-select drop down, where all the normal users which are registered under signed in admin user would be listed on clicking this option. Selected normal users will be able to view the Gateway when logged into Growhouse portal.
  - Gateway Name: Provide desired name to Gateway.
  - Description: Provide brief description of the Gateway as desired.
  - Grow Area Type: Select Standard.
  - Facility: This is a drop down, where all the Facilities will be listed. Select Facility to which this Gateway has to be provisioned to.
  - Container: This is a drop down, where all the Containers of selected Facility will be listed. Select Container to which this Gateway has to be provisioned to.
- After filling all required field, press 'SUBMIT' button.

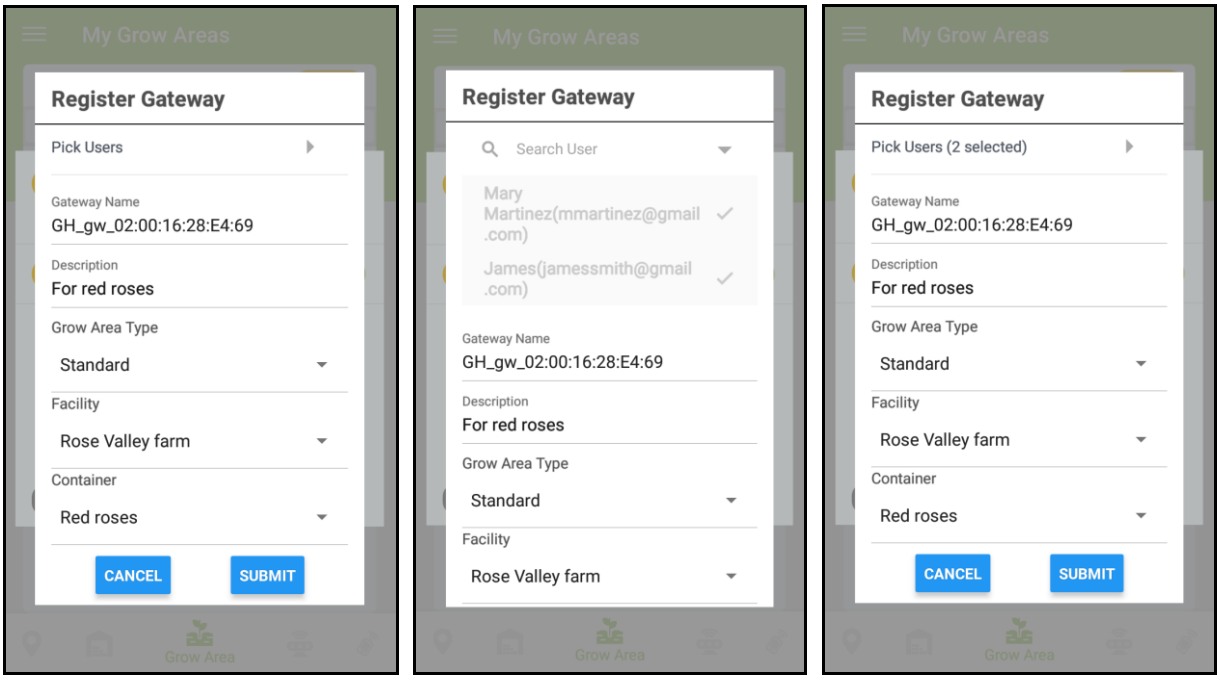


Figure 11: Gateway Provisioning –Gateway information

- On successful completion of provisioning of Gateway to Growhouse portal, Gateway would be added to desire Facility -> Container. The provisioned Gateway would be listed in Grow Area list as shown in below figure.

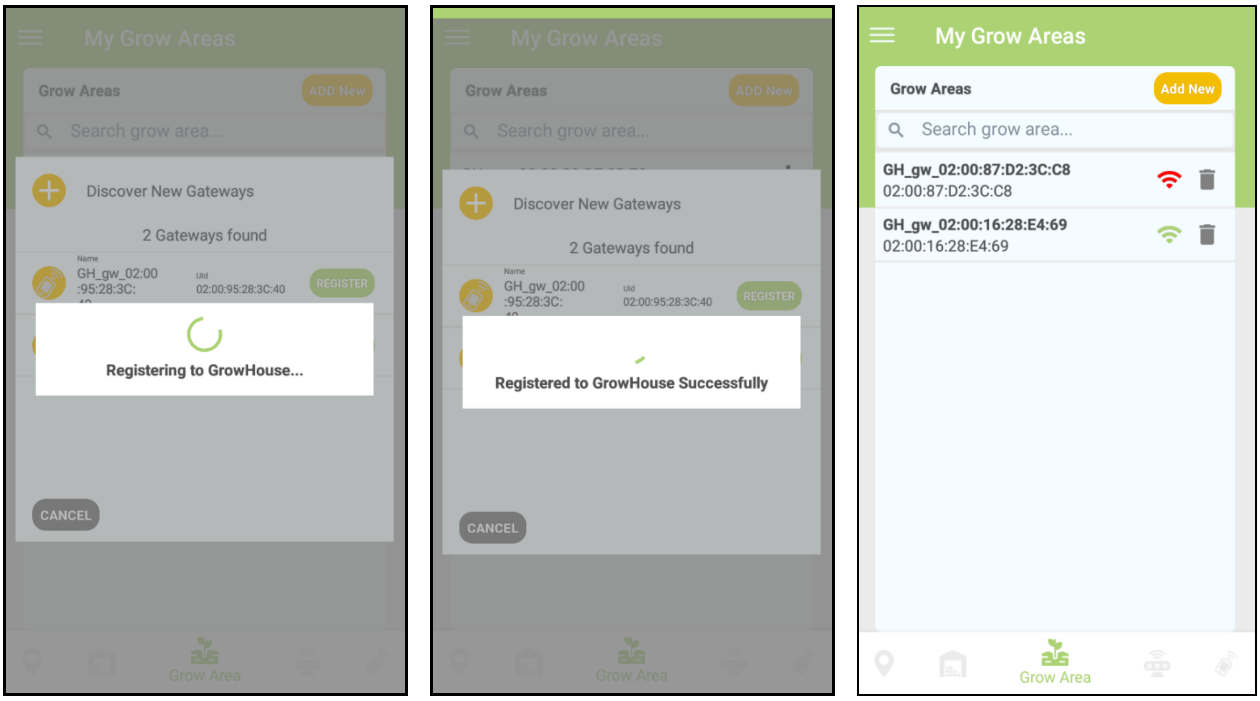


Figure 12: Gateway Provisioning –Gateway Provisioned

4.7 Grow Areas Page

- There are two methods to redirect to Grow Areas page.
- First method is to choose particular Facility -> Container -> Grow Area as described in Section 4.4 above. This method will show list of Gateways that are registered into particular container and facility.
- Second method is to tap Grow Area icon at the bottom of the screen. Here all the Grow Areas which were added by user will be shown.
- Gateway sends heartbeat to Arrow Connect. If gateway does not send a heartbeat for 15 minutes or more, then that Gateway will be considered as out of network. Growhouse Mobile App might take up to 15 to 30 minutes to show Gateway device as an out of network. Online Grow Areas are shown with icon. Out of network Grow Areas are shown with icon.

Figure 13: Grow Area screen with specific Grow Areas option

- User can swipe down to refresh the content of Grow Areas page.

- Click on Grow Area to see particular Grow Area's screen.

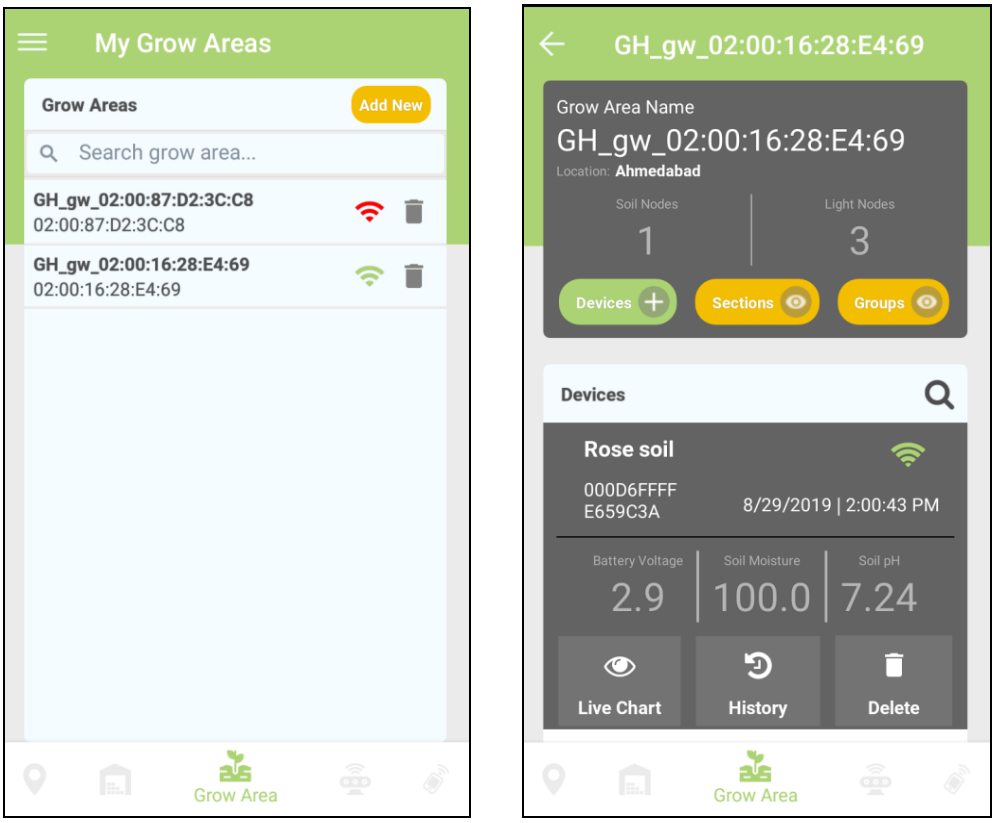


Figure 14: Grow Areas ➔ Grow Areas screen.

- Devices provisioned under the selected Grow Area will be displayed along with their status (Online/Offline). Online devices are shown with icon. Out of network devices are shown with icon. If device does not send a heartbeat for 15 minutes or more, then that device will be considered as out of network.

4.7.1 Delete Grow Area

- Gateway can be deleted by admin user. During Gateway deletion, following operations will be performed in background:

  - Delete LED Node profiles.
  - Delete LED Node desired values.
  - Delete LED Node channel configurations.
  - Delete Device property mappings.
  - Delete Grow Section devices.
  - Delete Devices.
  - Delete Alerts.
  - Delete Grow Section Rules.
  - Delete Grow Sections.
  - Delete Groups.
  - Delete Grow Area assignee.
  - Delete Gateway.

- Perform below steps to delete Gateway based on online or offline status of Gateway.

4.7.1.1 Deleting an online Gateway

- Before deleting online Gateway, it is required to check online or offline status of devices, which are provisioned under that gateway. Status of the devices can be checked by clicking particular Gateway from Grow Area page, refer section 4.7.
- Upon Gateway deletion, online devices will be deleted from Growhouse system and will be un-provisioned, hence those devices can be available for re-provisioning again within same Gateway or other.
- However, upon Gateway deletion, offline devices will be deleted from Growhouse system, but offline devices will still be in provisioned state and will not be re-discoverable.
- To make such devices re-discoverable again, perform Factory reset of offline devices. Refer Section 10.2 and Section 10.3 on how to perform factory reset of Soil node and LED node respectively.

Perform below steps to delete the Gateway.

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

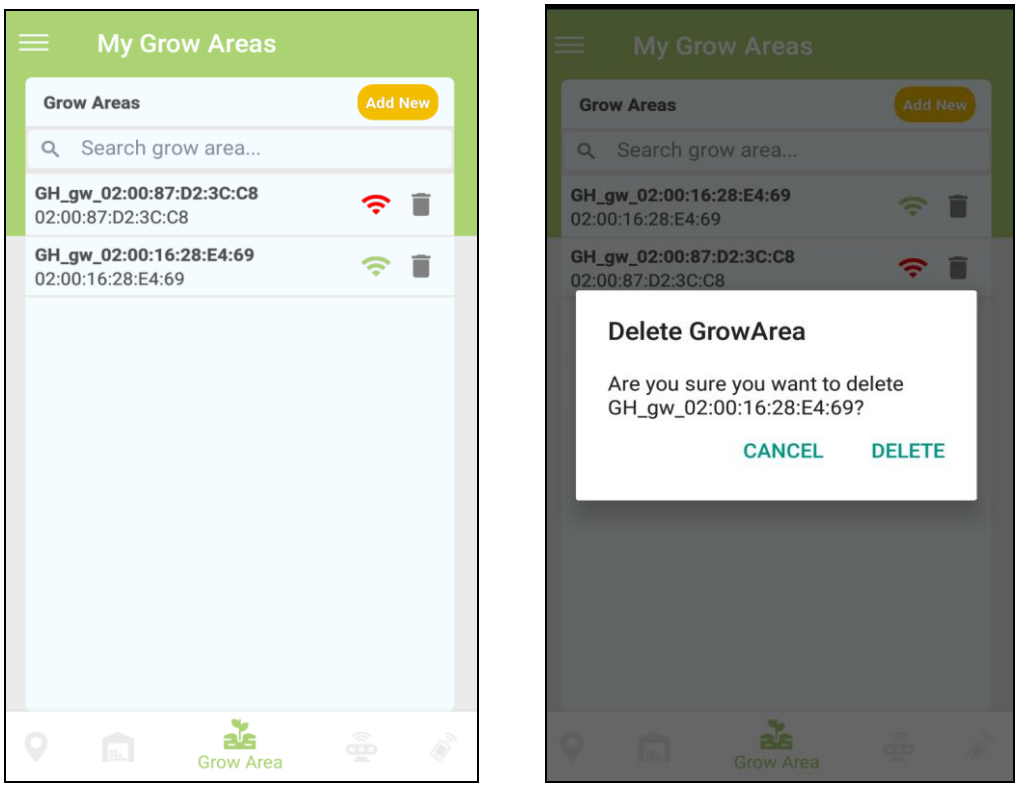


Figure 15: Deleting an Online Grow Area

4.7.1.2 Deleting an offline Gateway

- If user deletes an offline Gateway, then Gateway and all provisioned devices under such Gateway will be deleted from Growhouse web portal but the Gateway and devices will still be in provisioned state and will not be re-discoverable.
- Factory reset of deleted Gateway and all provisioned devices under deleted Gateway would be required to make such Gateway and Devices to be re-discoverable. Refer Section 10.2 , Section 10.3 and Section 10.4 on how to perform factory reset of Soil node, LED Nodes and Gateway respectively.

Perform below steps to delete the Gateway.

- Click on icon.
- Read the message and Click on “DELETE” button.

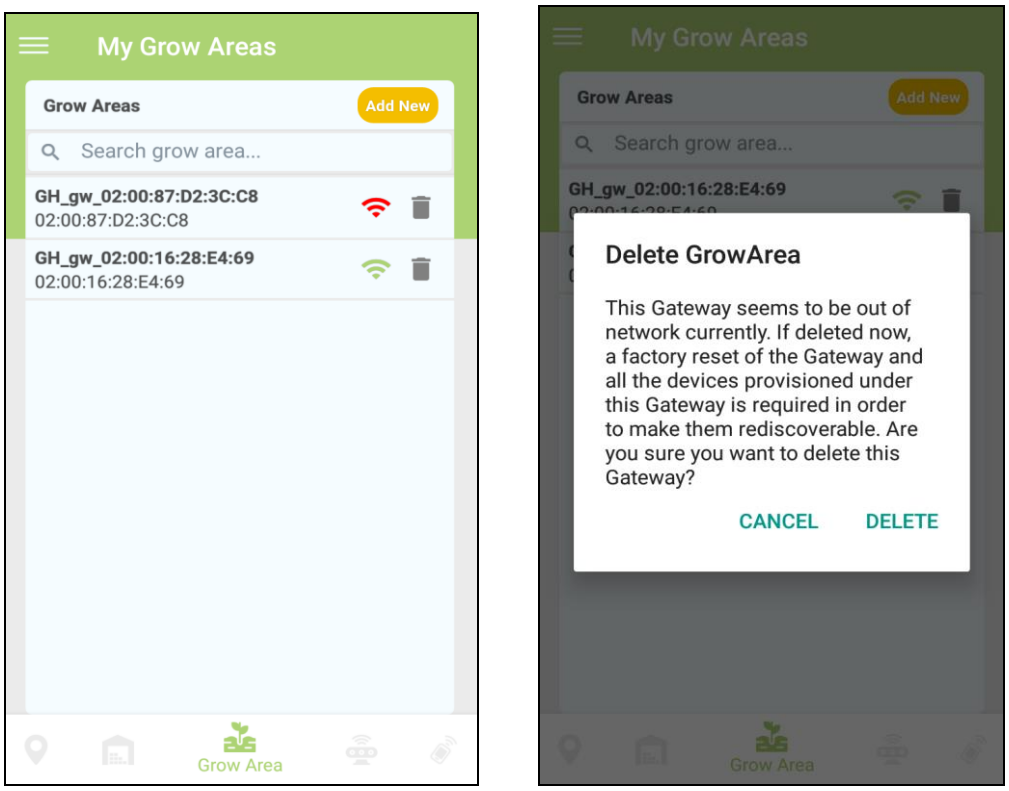


Figure 16: Deleting an Offline Grow Area

4.8 Grow Sections Page

- There are two methods to redirect to Grow Sections page.
- First method is to press Grow Section icon at the bottom of the screen. User will redirect to Grow Sections page where it will show all Grow Sections which were created by user. Respective screen is shown below in Figure 16.
- Second method is to redirect to Grow Section's page by pressing 'View Sections' button in particular Grow Area's screen.
- By tapping particular Grow Section user will be redirected to the Devices page. Here devices associated with the Grow Section will be shown.

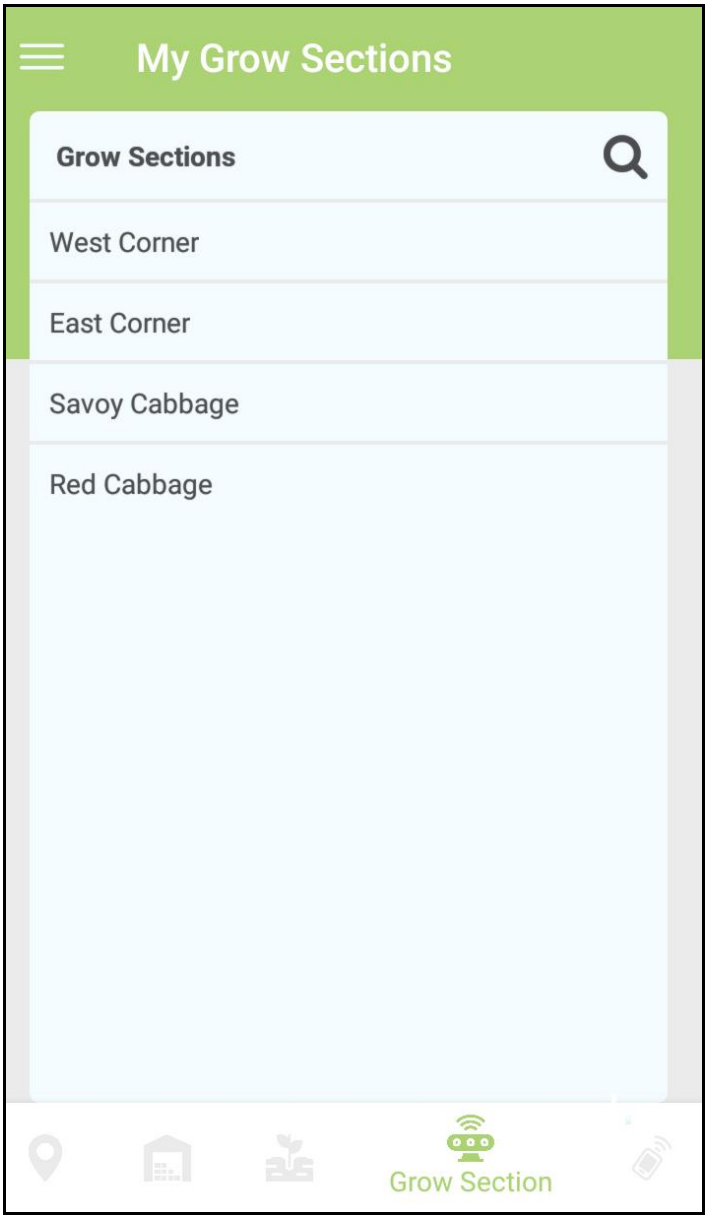


Figure 17: Grow Section screen

- User can swipe down to refresh the content of Grow Sections page.

4.9 Provisioning New Devices

- Growhouse Device consists of LED node and Soil Node.
- Devices have to be provisioned onto Growhouse Portal under a given Facility -> Container -> Grow Area (Gateway).
- Devices have to be up and running and within the proximity (around 40ft) to Gateway before initiating provisioning process. Refer Appendix on how to make hardware setup of devices.
- New devices (LED Node/Soil Node) can be provisioned into a particular Grow Area, by clicking 'Add Device' button within the intended Grow Area -> Devices page as shown in below figure.
- Here, devices are intended to be provisioned under **GH_gw_02:00:16:28:E4:69** Grow Area/Gateway.
- On clicking 'Add Device', all the devices in the proximity of the intended Gateway would be discovered.

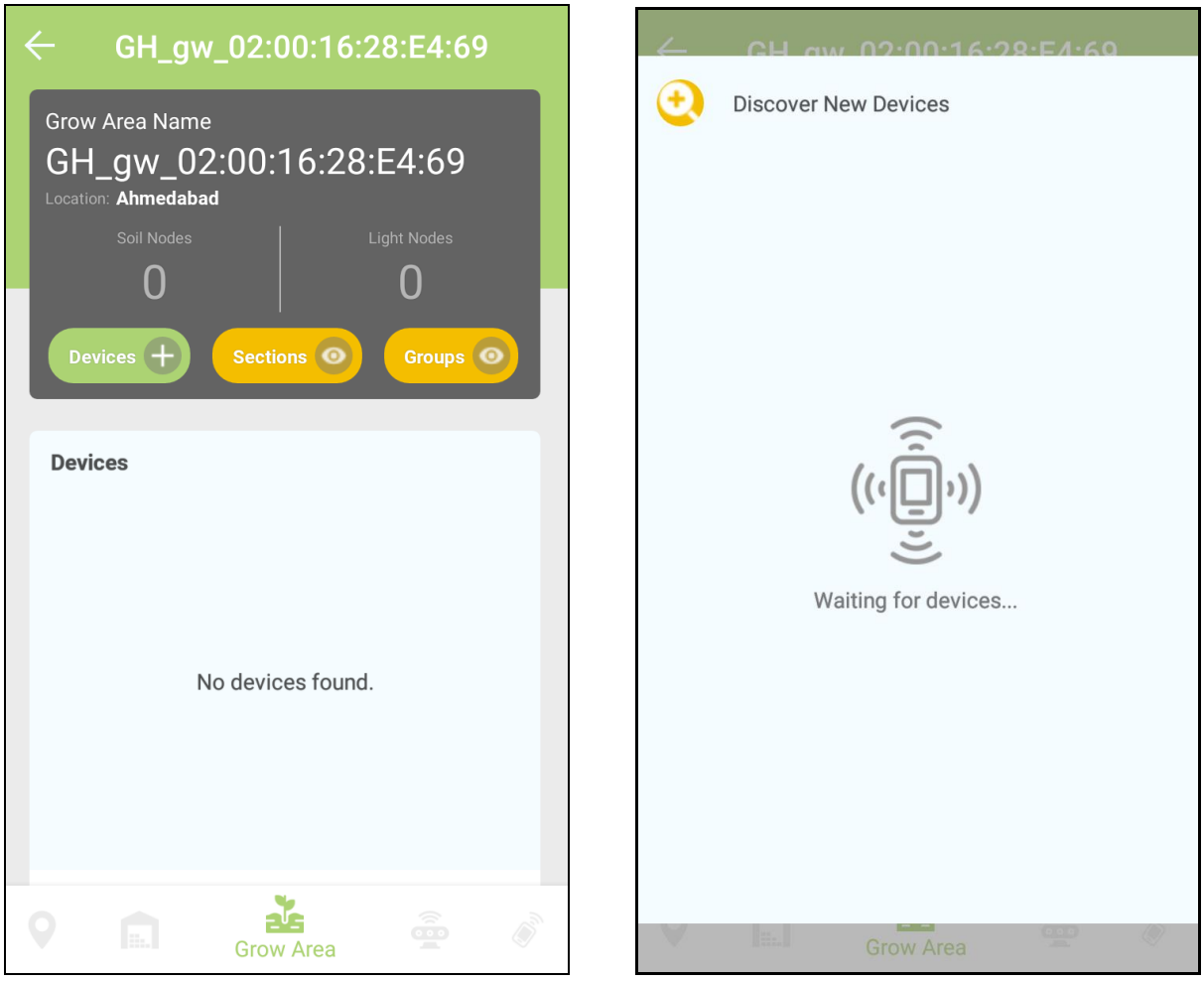


Figure 18: Devices Provisioning – Discover Devices.

- Once Gateway discovers the devices in the proximity, the list of devices 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 device(s) to be provisioned.
- Selecting the Device: This can be done by checking the check box against the intended device(s).
- Configuring Soil Node:
  - Provide desired Device Name for the Soil Node.
  - If a particular Soil Node is not shown in the discovered devices list, the device is either already provisioned or is not correctly un-provisioned while deleting from Growhouse Portal.
  - If Soil Node is not un-provisioned correctly, user can factory reset the Soil Node to make it discoverable again. Refer Section 10.2.
- Configuring LED Node:
  - Provide desired Device Name for the LED Node.
  - LED Node has 6 Channels, select appropriate color option from drop down for each channel. Table 4 below describes the supported colors for channel configuration.
  - If a particular LED Node is already provisioned under BLE Mesh Application, user will not be allowed to modify channel configuration during provisioning process. The channel configuration will be greyed out as shown in *Figure 21*Figure 21.
  - If user wants to modify the channel configuration of such a LED Node, it has to be removed from BLE Mesh Application.
  - If the channel configuration is still greyed out after removing the LED Node from BLE Mesh Application, user can factory reset the BLE interface of LED Node. Refer Section 10.3.2.
- Devices that are not selected (check box not ticked) would not be provisioned.
- Press 'REGISTER' button to provision devices once the selection and configuration of intended devices is done.

Note: Once the check box is selected against the particular device then user cannot edit the device name. To edit the device name user has to uncheck the check box.

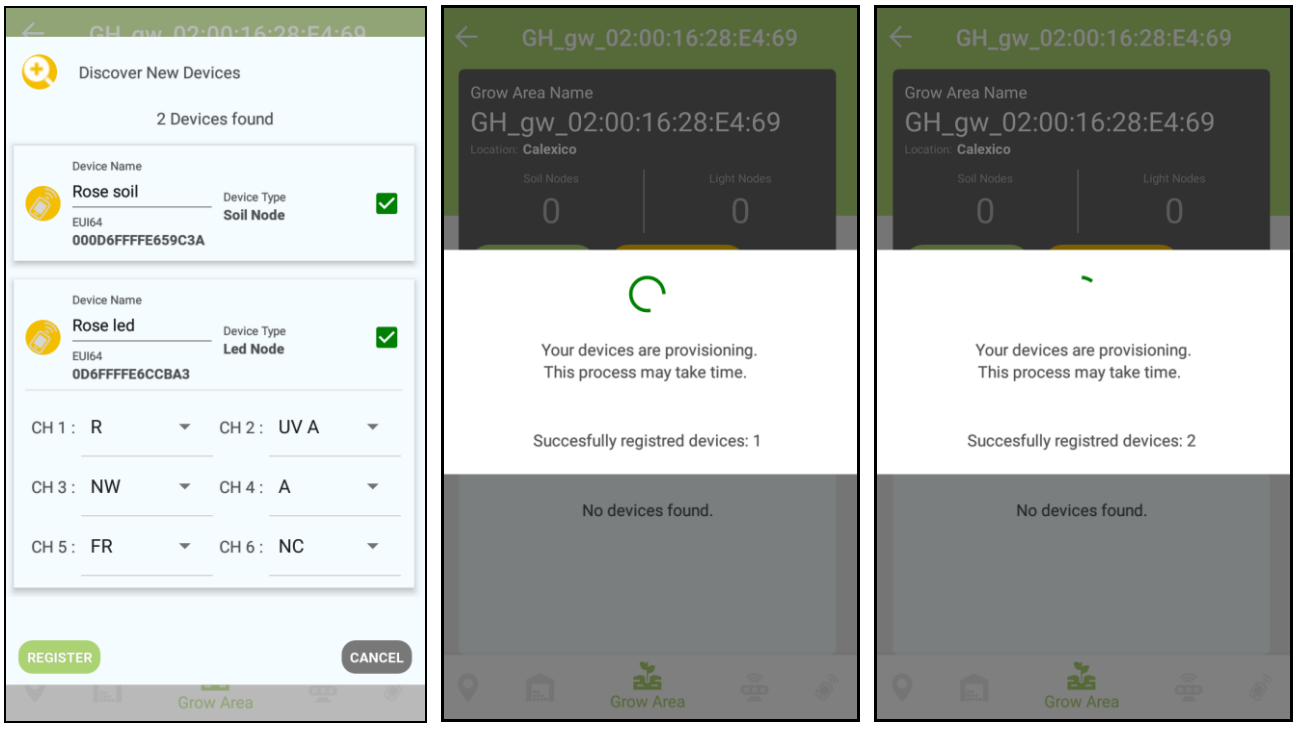


Figure 19: Provisioning new devices

- Once the provisioning of devices are done successfully on Growhouse Portal, the devices would be listed under Devices page as shown in below figure.

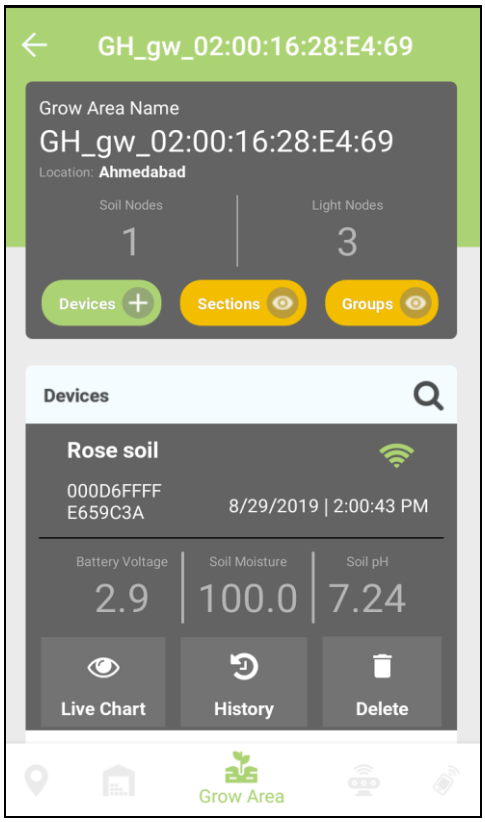


Figure 20: Provisioned devices list

No.	LED channel configuration	Color
1.	CW	Cool White
2.	NW	Neutral White
3.	WW	Warm White
4.	UV A	UV A
5.	UV B	UV B
6.	UV C	UV C
7.	RB	Royal Blue
8.	B	Blue
9.	G	Green
10.	Y	Yellow
11.	A	Amber
12.	O	Orange
13.	R	Red
14.	DR	Deep Red
15.	FR	Far Red
16.	IR	IR
17.	NC	Not Connected

Table 4: LED Channel Configuration

- Below is a sample image which shows the LED channel configuration grayed out while provisioning.

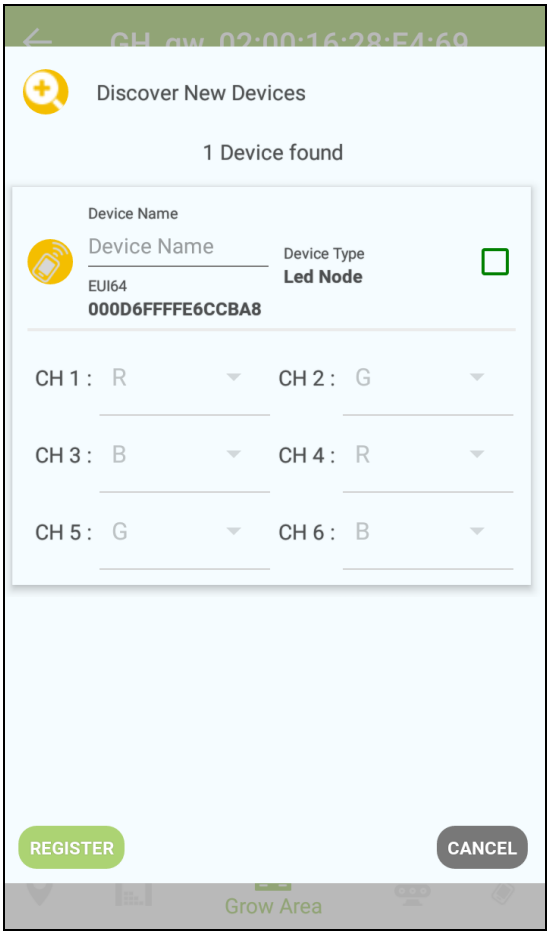


Figure 21: LED is already provisioned under Growhouse BLE Mesh Application.

4.10 Devices Page

- There are two methods to see the Devices page.
- First method is by clicking on a particular Grow Area from Grow Areas page, Grow Area screen will pop up and all the devices provisioned under particular Grow Area (Gateway) by the user will be seen.
- Another method is to press Devices icon at the bottom of the screen. Here all the devices which were provisioned by user will be seen.
- As shown in below image, ‘History icon’, ‘Eye icon’ and ‘Delete icon’ are provided for Soil Nodes and ‘Gear icon’ and ‘Delete icon’ for LED Nodes.
  - : Tapping this icon against respective LED node allows user to control LED intensity.
  - : Tapping this icon against respective Soil Node allows user to see historical data of Soil Node.
  - : Tapping this icon against respective Soil Node allows user to see live data of Soil Node.
  - : Tapping this icon against respective end-device allows user to delete device from Growhouse system.

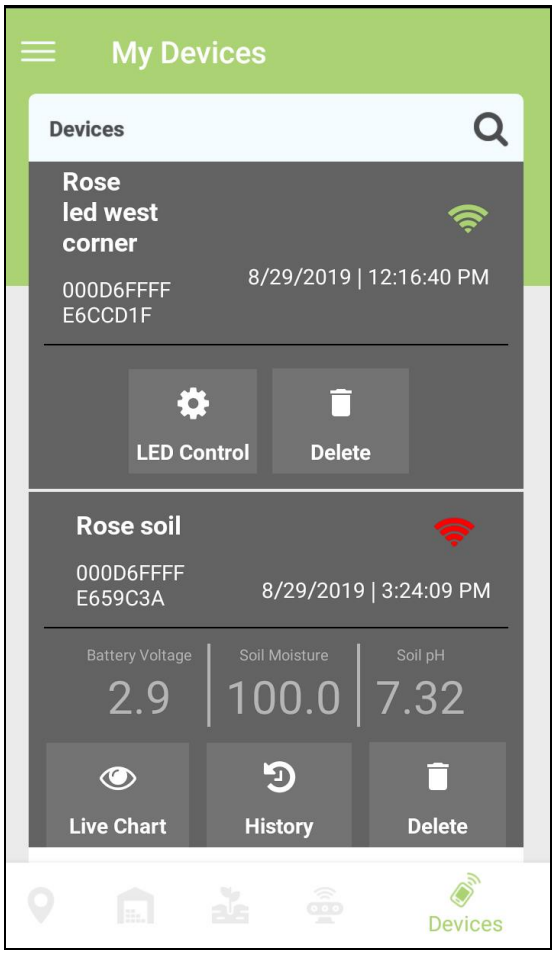


Figure 22: Devices Screen.

- User can swipe down to refresh the content of Devices page.

4.10.1 LED Node Control

- On pressing ⚙ 'Gear icon' user would be presented below screen to control respective LED Node.
- Set intensity of individual channel by moving respective sliders. Once done with setting up the intensity, press 'Set' button. New channel intensity settings would be set to respective LED node on field.

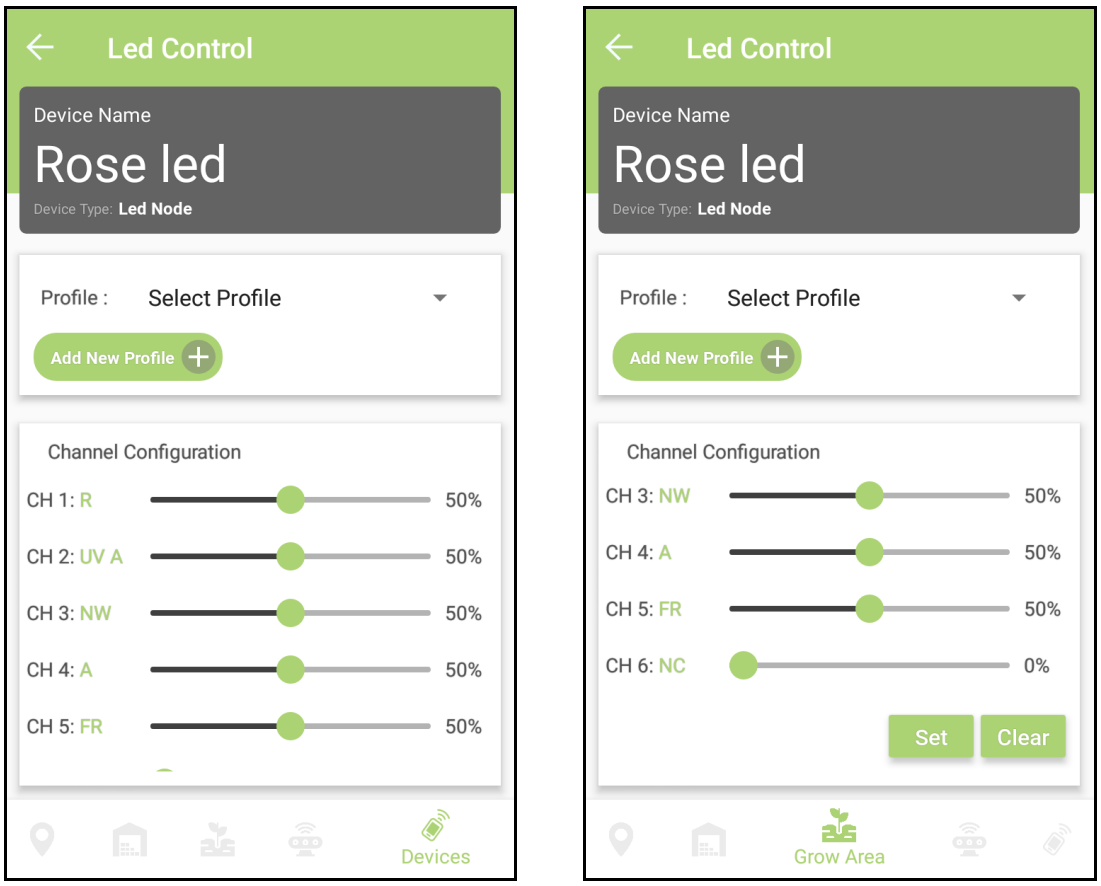


Figure 23: LED Node – Controlling individual Channels.

4.10.2 LED Node Profiles

- Profile feature is made available for easy recall and setting of LED intensity.

4.10.2.1 Create LED Node Profiles

- To create a new Profile, press “Add New Profile” button.
- Provide desired Name and appropriate Description for the profile.
- Set desired intensity for each channel.
- Press ‘Done to save the profile.

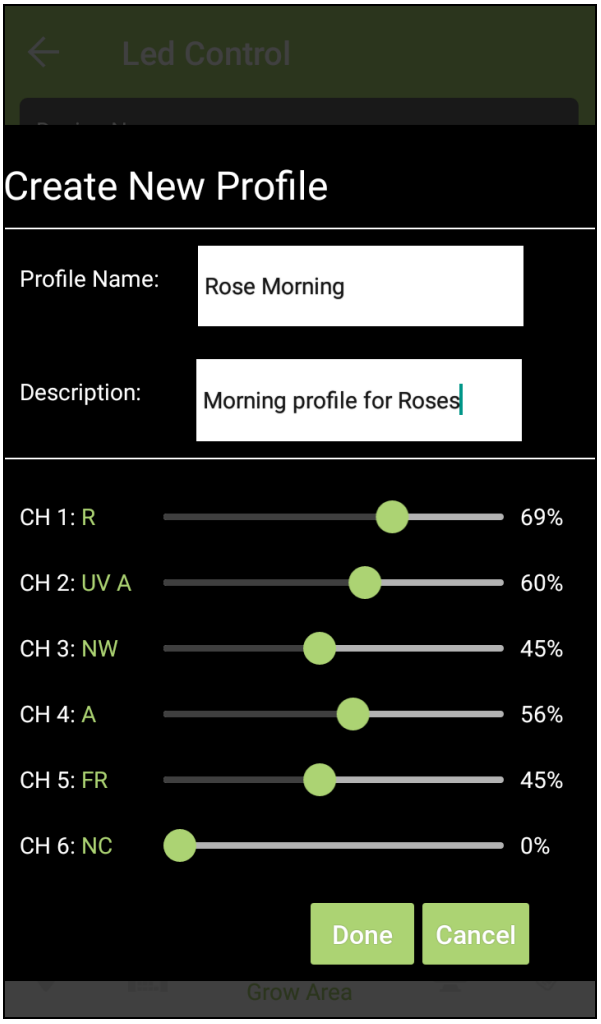


Figure 24: LED Node – Create Profile.

- On successful profile creation, newly created profile would be available under ‘Select Profile’ dropdown menu.

4.10.2.2 Apply LED Node Profiles

- Select desired profile to be applied on LED Node from drop down.
- User will be shown individual channel intensity that would be set on LED Node at preset of 100%.
- Select the desired Preset level through Preset bar.
- Press ‘Set’ button. This will set the channel intensity on LED Node.

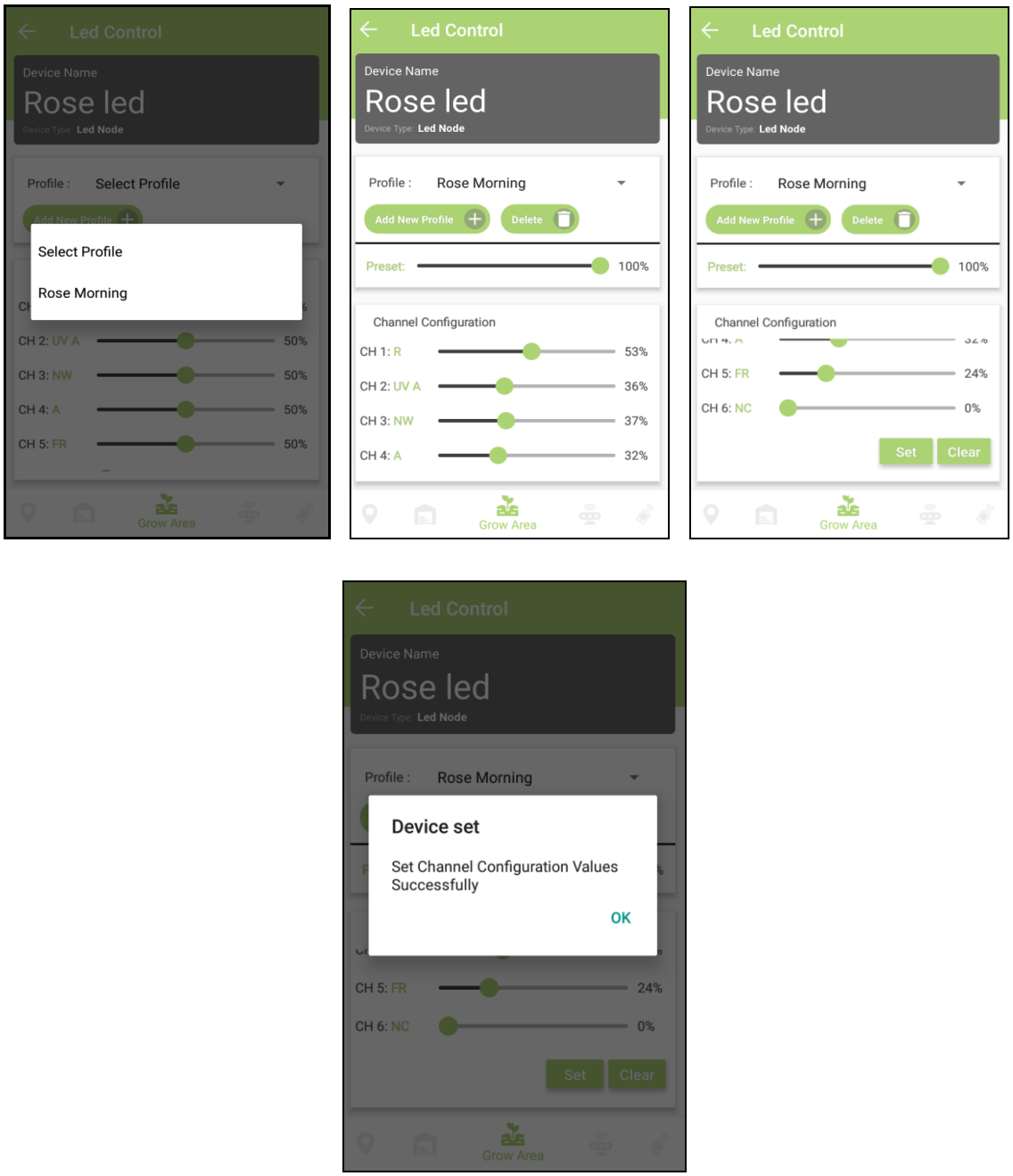


Figure 25: Applying Profile on LED Node.

4.10.2.3 Delete LED Node Profiles

- Select desired profile to delete from drop down.
- Press ‘Delete button. This will remove the profile.

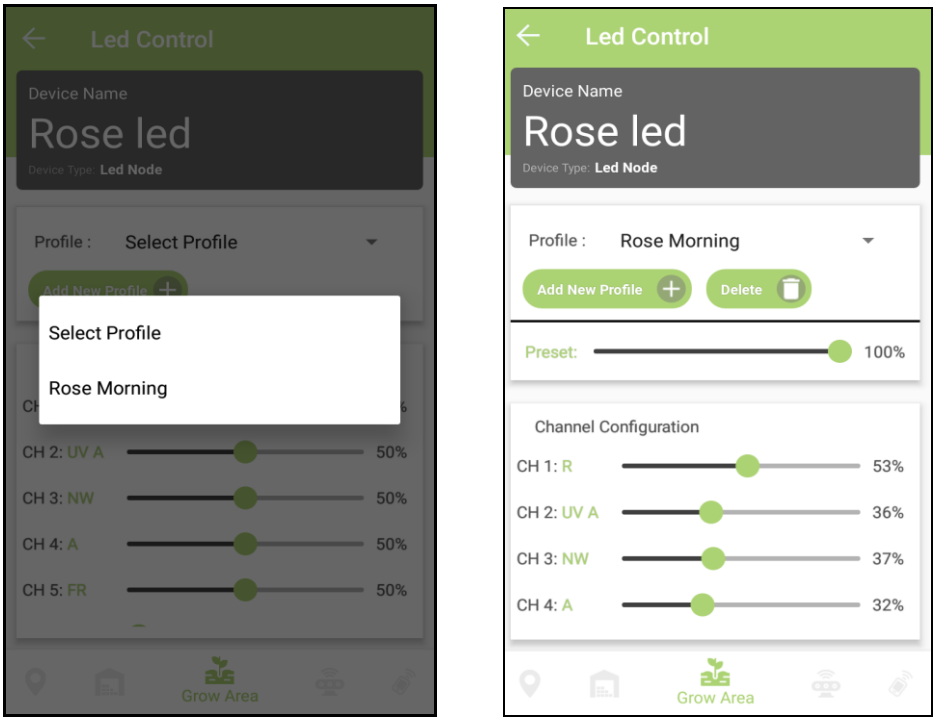


Figure 26: Delete Profile on LED Node.

4.10.3 Soil Node - Historical Data

- On pressing ‘History icon’, user will be presented below screen.
- Select desired Property (Soil Moisture or Soil pH or Battery Voltage).
- Select desired date range of the data to be seen.
- After the selection, data of particular property and for selected duration will be shown in the form of graph. Below image shows a sample graph of Battery Voltage of today.

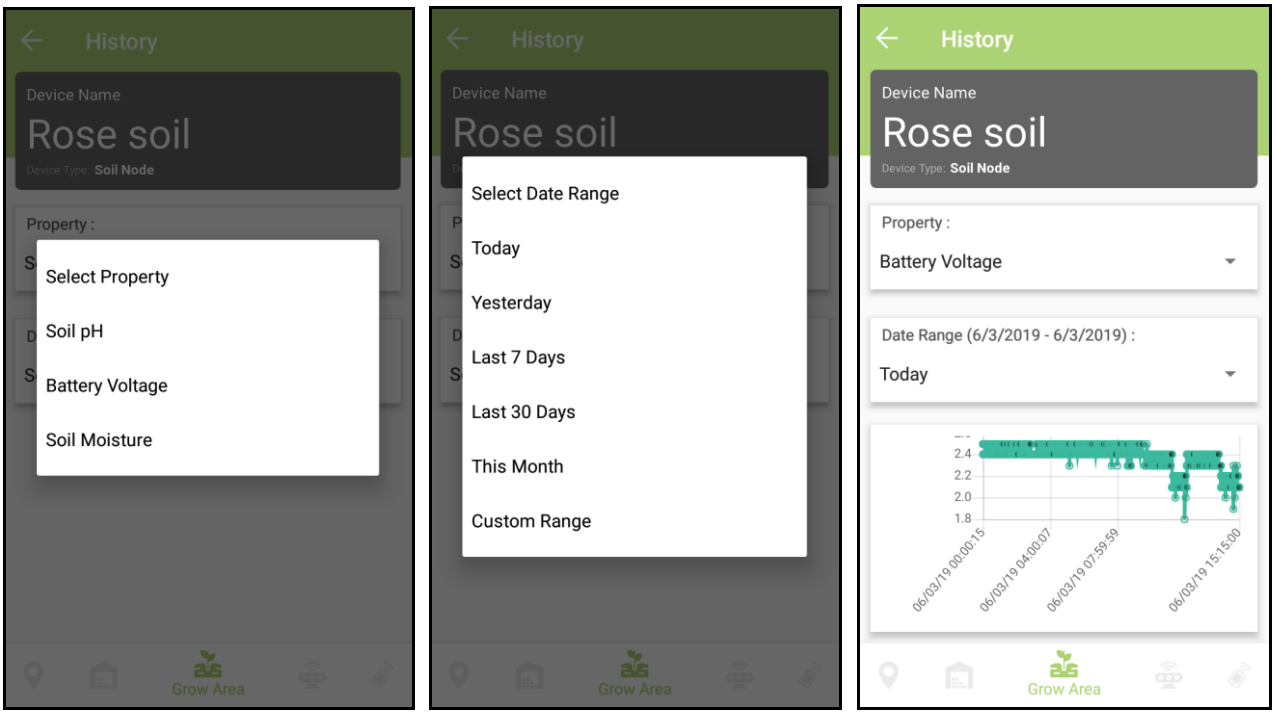


Figure 27: Historical Data Chart screen.

4.10.4 Soil Node - Live Data-chart

- On pressing 'Eye icon', user will be presented below screen.
- Select desired Property (Soil Moisture or Soil pH or Battery Voltage).
- Live data of desired property of respective Soil Node will be captured and plotted in graph as shown below. Below image shows a sample Live Chart of Battery Voltage.
- Data reporting interval for each property of Soil Node is of 5 min.

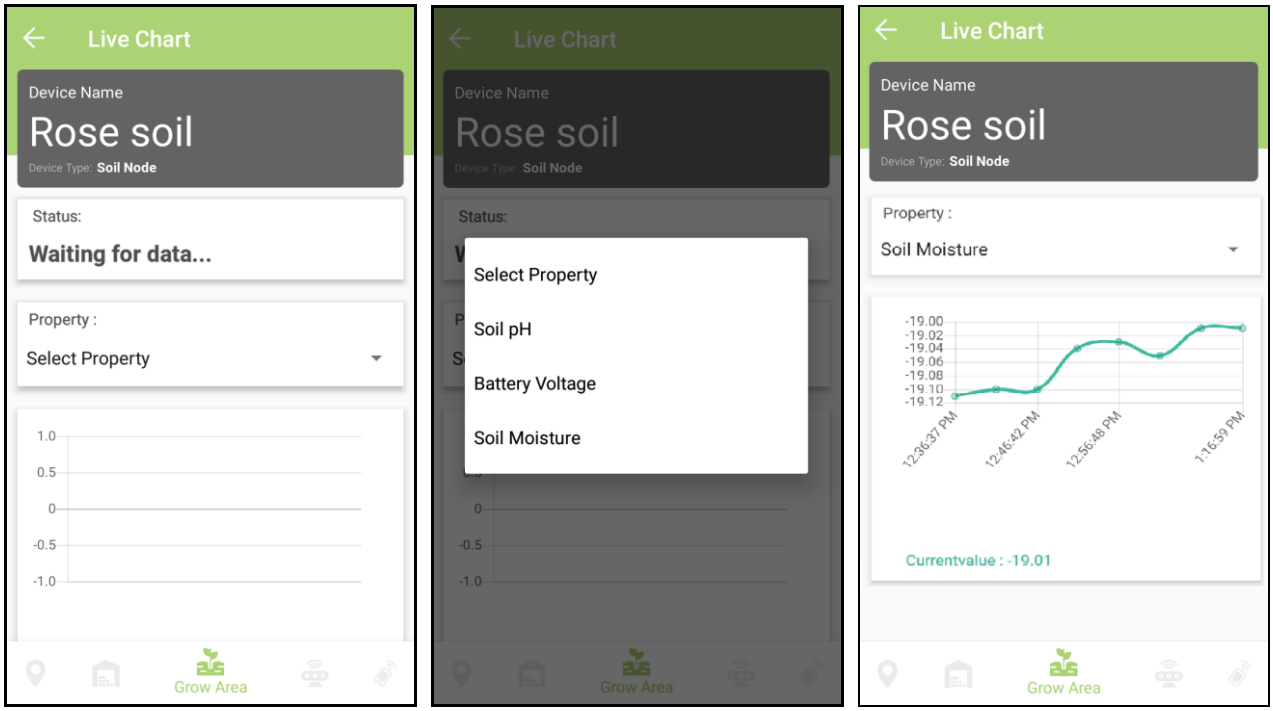


Figure 28: Live Data Chart screen.

4.10.5 Delete Device

- Devices can be un-provisioned from the system by deleting them from Growhouse Mobile App.

4.10.5.1 Deleting an online Device

- If user deletes an online device then, device will be deleted from Growhouse Mobile App and will be un-provisioned from the system. Hence, those devices can be available for re-provisioning again within same Gateway or other.

Perform below steps to delete the Device.

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

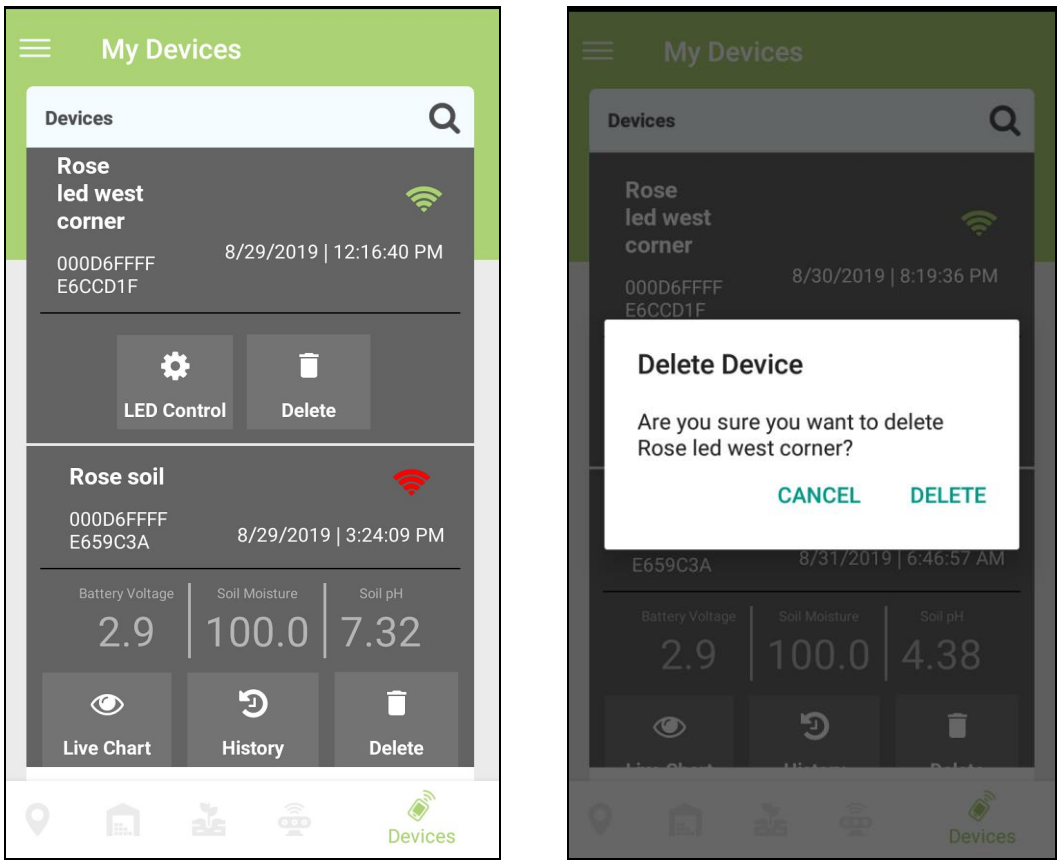


Figure 29: Deleting an Online Device

4.10.5.2 Deleting an offline Device

- If user deletes an offline device then, device will be deleted from Growhouse Mobile Application, but device will still be in provisioned state and will not be re-discoverable.
- To make such device re-discoverable again, perform factory reset of that Device. Refer Section 10.2 and Section 10.3 on how to perform factory reset Soil Node and LED Node respectively.

Perform below steps to delete the Device.

- Click on icon.
- Read the message and Click on “DELETE” button.

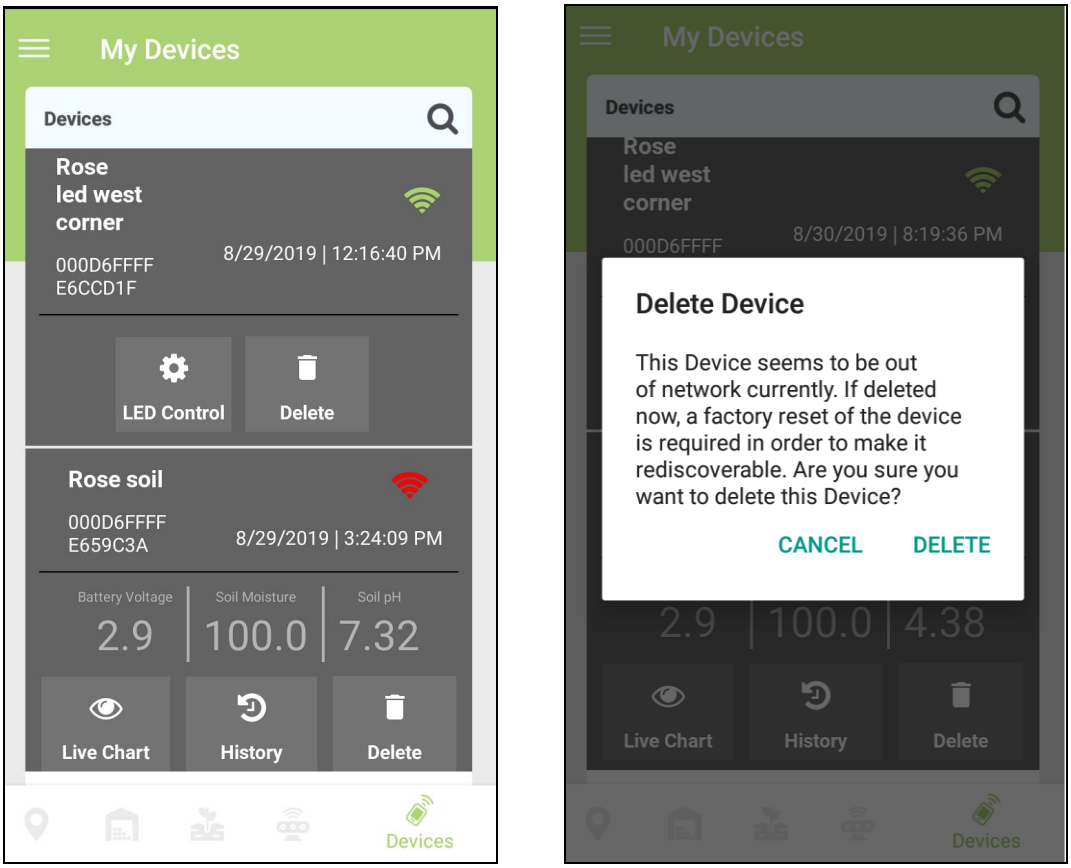


Figure 30: Deleting an Offline Device

4.11 Groups

- Each Gateway can have one or multiple Groups of LED Nodes. User can add one or multiple LED nodes into a Group which are provisioned under same Gateway. LED Nodes provisioned under two different Gateway cannot be included in same Group. User can Create, View, Edit and Delete a Group. Each Group will have its own channel color configuration. User can also create one or multiple Profile in a group.

- User can view Groups through selecting “Groups” button of a particular Gateway. A list of existing Groups created under particular Gateway will be shown.

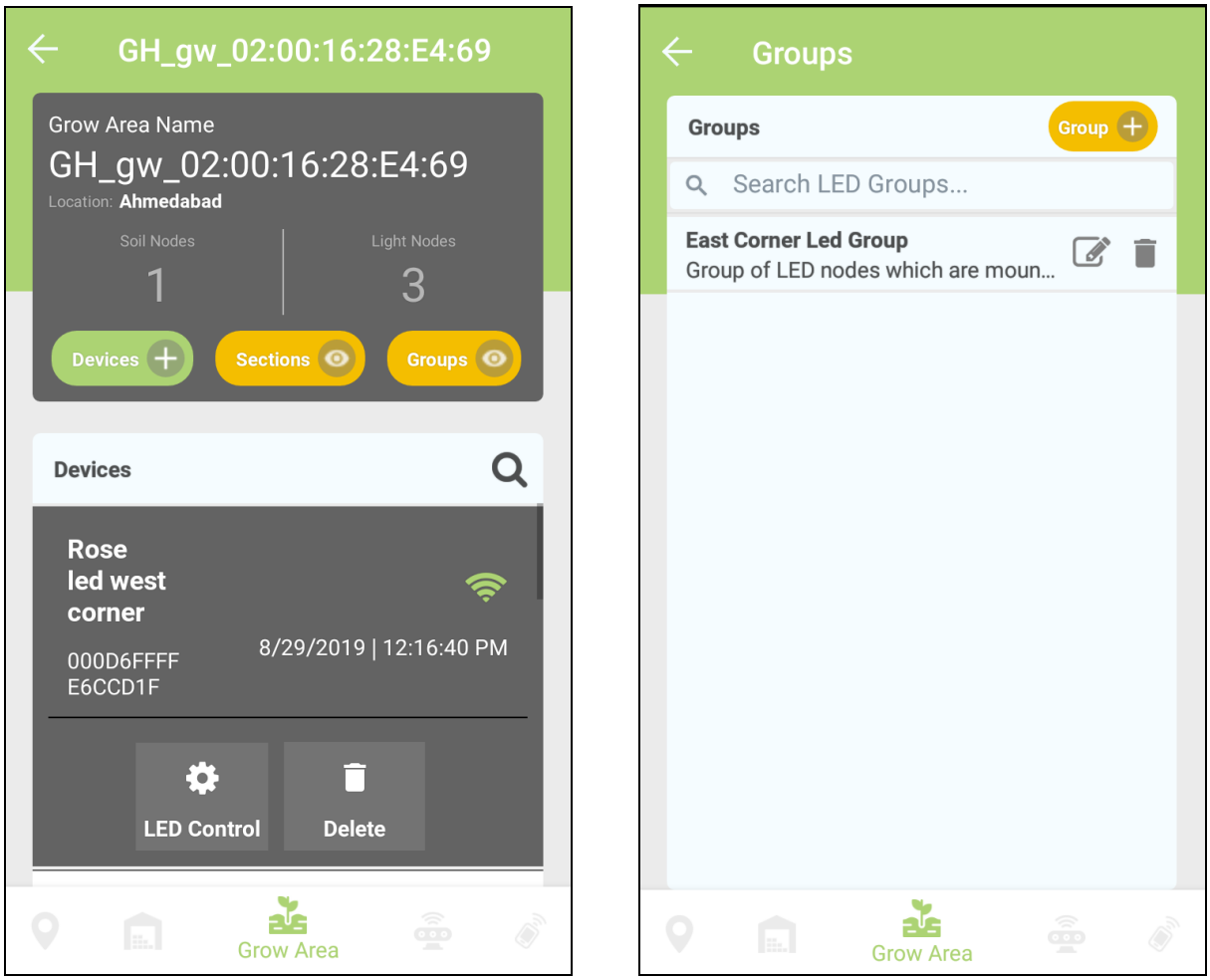
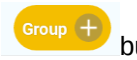


Figure 31: Groups of Gateway

4.11.1 Create Group

- Click on 

button to Create new group.
- Enter the desired Group name.
- Enter the desired Group description.
- Select appropriate channel color configuration for each channel of Group.

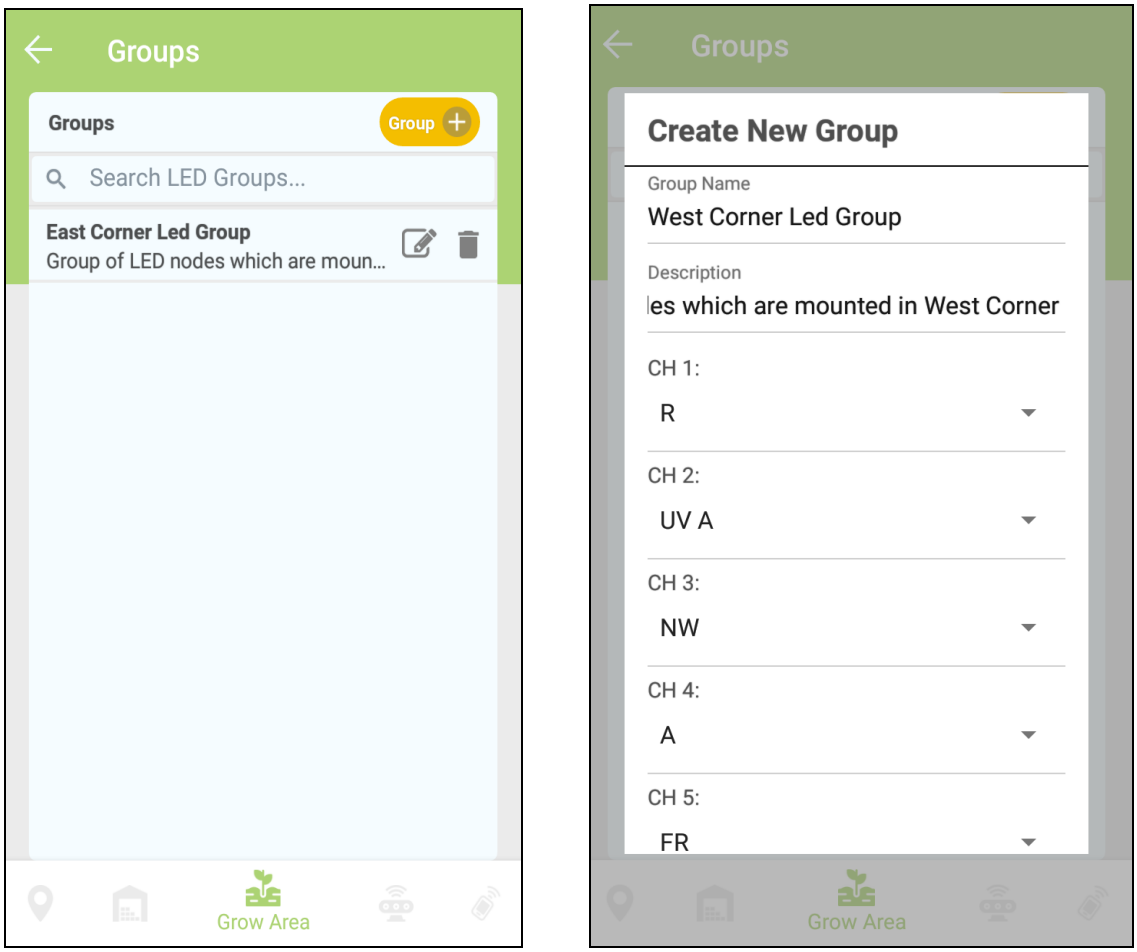


Figure 32: Create New Group - Group's details

- Click on “Find Devices” button to get the list of LED Nodes in selected Grow Area, which have same channel color configuration as selected for the Group. A list of LED Nodes in the Grow Area having same channel configuration will be listed.
- Select the LED Nodes from the list by checking the checkbox. User can select single or multiple LED Nodes. LED Nodes selected are the Group devices. All the profile created for the Group will be applied to all the selected devices.
- Click on “Done” button.

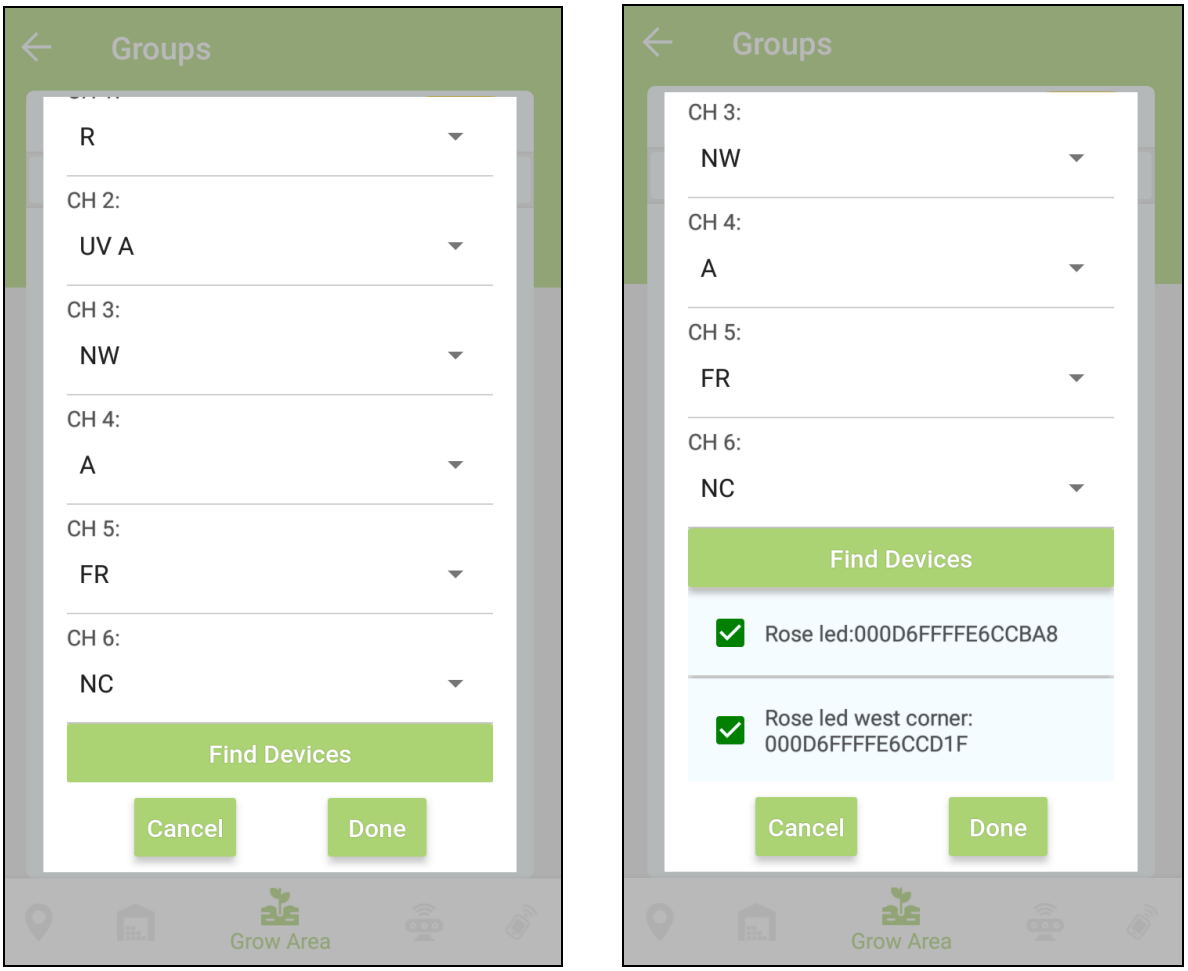


Figure 33: Create New Group - Group's details

4.11.2 View Group

- Click on respective group row to view Group details.
- Individual channel configuration of the selected Group will be shown. A list of all devices which are added in selected Group will be displayed.

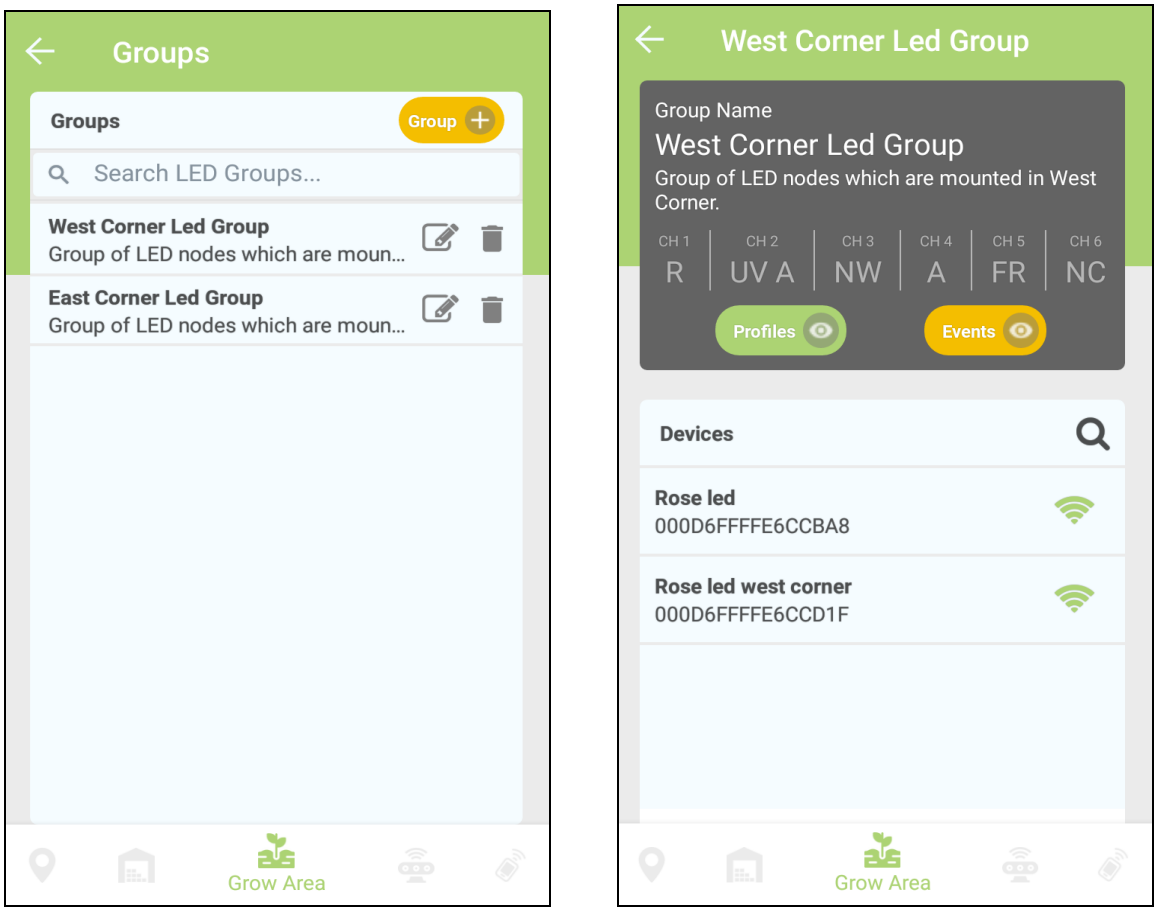


Figure 34: Group Details

4.11.2.1 Group Profiles

Group Profiles screen shows the total number of Group Profiles which are created for a particular Group. It also allows user to add, view, edit, delete and set Group Profiles.

- Click on “Profiles” button from a particular Group page.
- A list of Profiles created in selected Group will be shown.

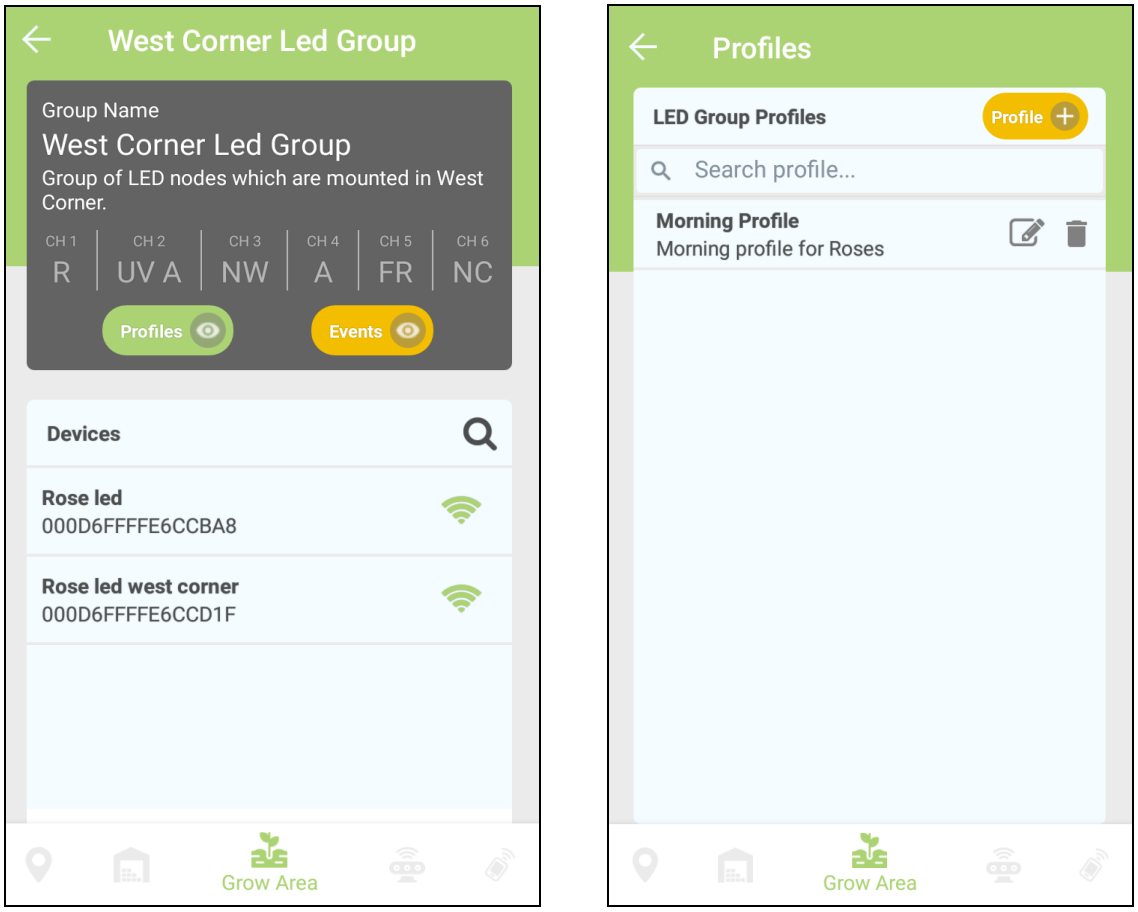


Figure 35: Profiles of Group

4.11.2.1.1 Create Group Profile

- Click on 

button to create a new Group Profile.
- Enter the desired name of Group Profile.
- Enter the desired description of profile.
- Select the desired channel intensity for each channel.
- Click on “Done” button.

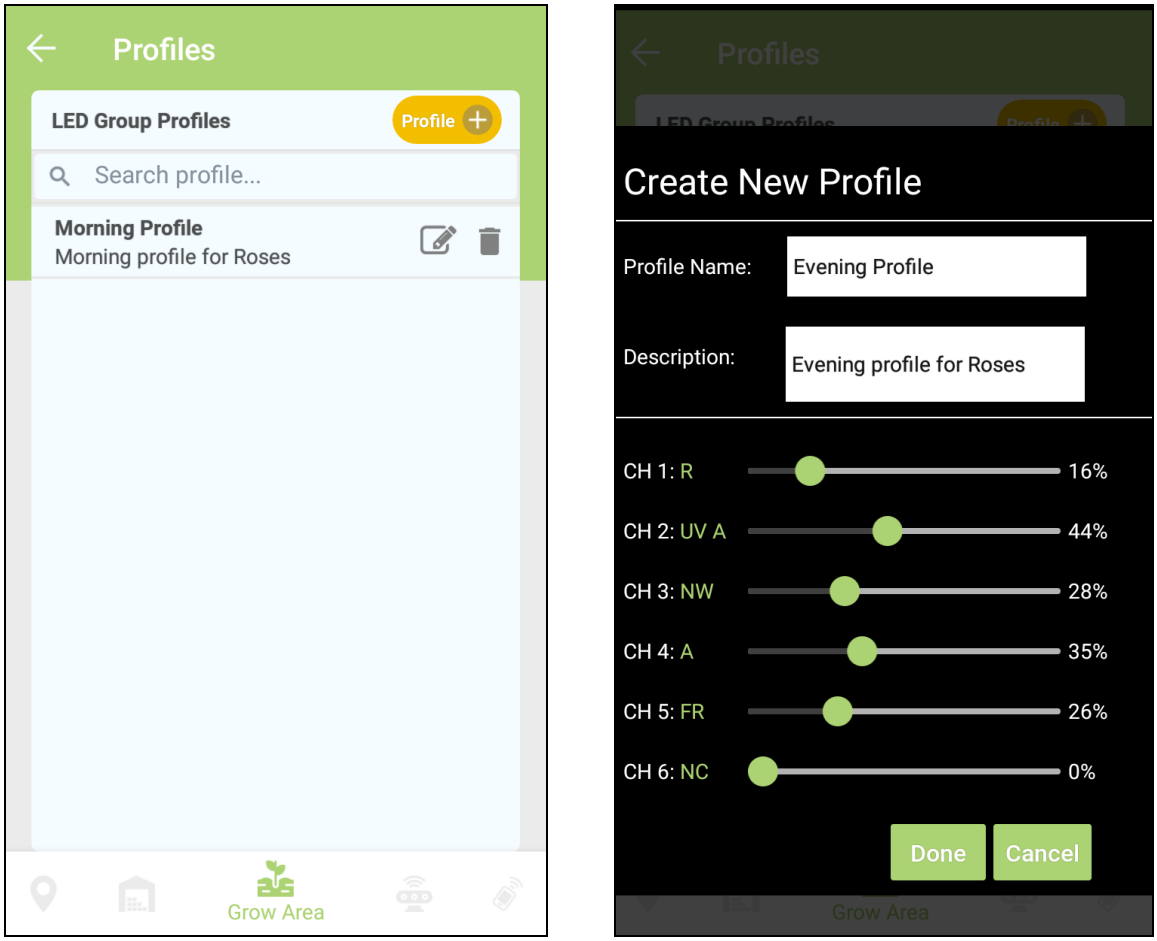


Figure 36: Create Group Profile

4.11.2.1.2 Apply Group Profile

- Click on a particular Group Profile row.
- User will be shown individual channel intensity that would be set on LED Nodes of the Group at preset of 100%.
- Change the desired preset value through varying preset slider bar if required.
- Click on “Apply Now” button.
- “Profile applied successfully” message will be displayed after successful setting of LED channel intensity.

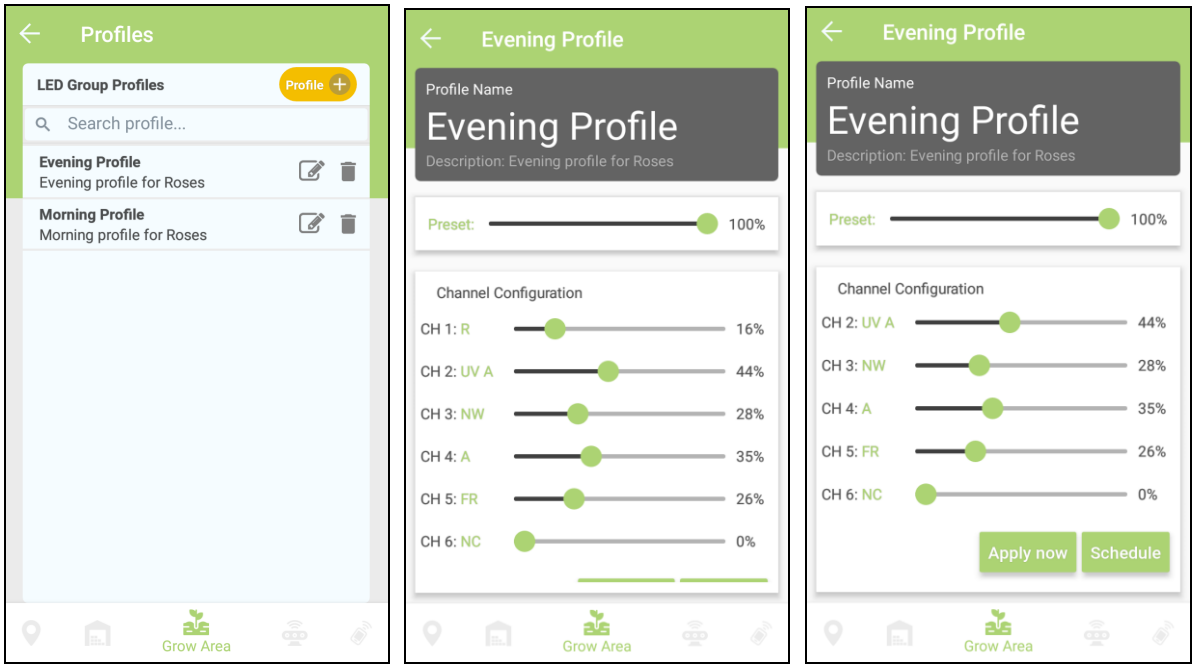
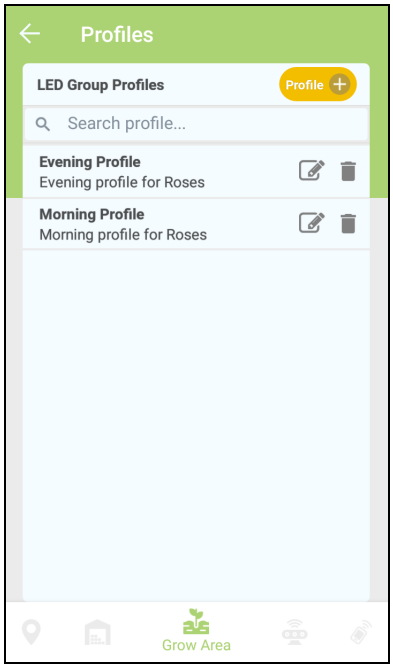
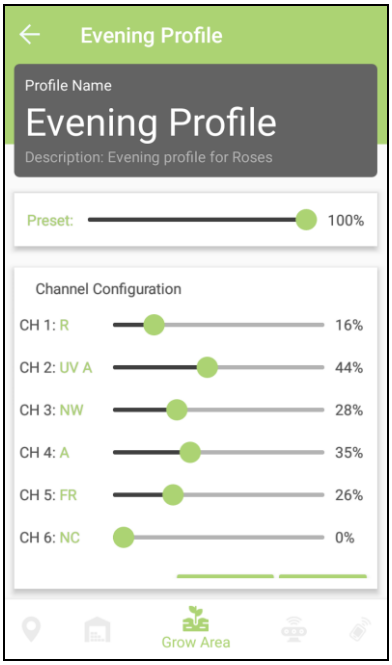


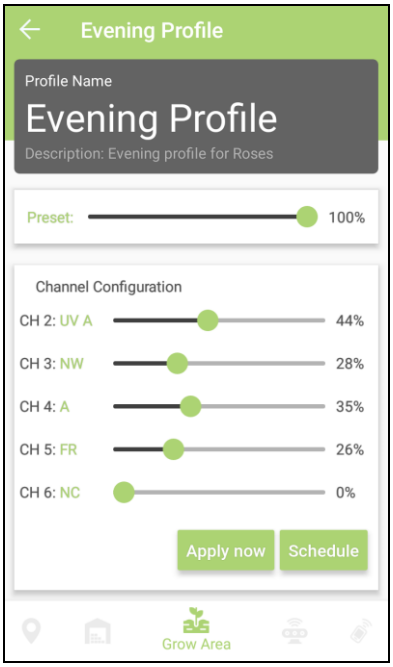
Figure 37: Apply Selected Profile

4.11.2.1.3 Schedule Group Profile

- User can schedule the Group Profile to be applied at desired time in future.
- Click on a particular Group Profile row.
- User will be shown individual channel intensity that would be set on LED Nodes of the Group at preset of 100%.
- Select the desired preset level.
- Click on “Schedule” button.
- Select the desired Start Date and Start Time.
- Select the desired repetition option from dropdown if required.
- Select the desired End Date If repetition option is selected.
- Click on “Apply” button.
- “Profile scheduled successfully” message will be displayed on successful schedule of Group Profile.







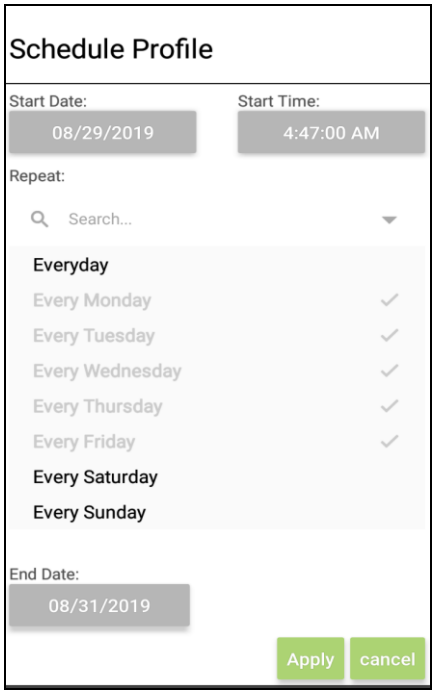


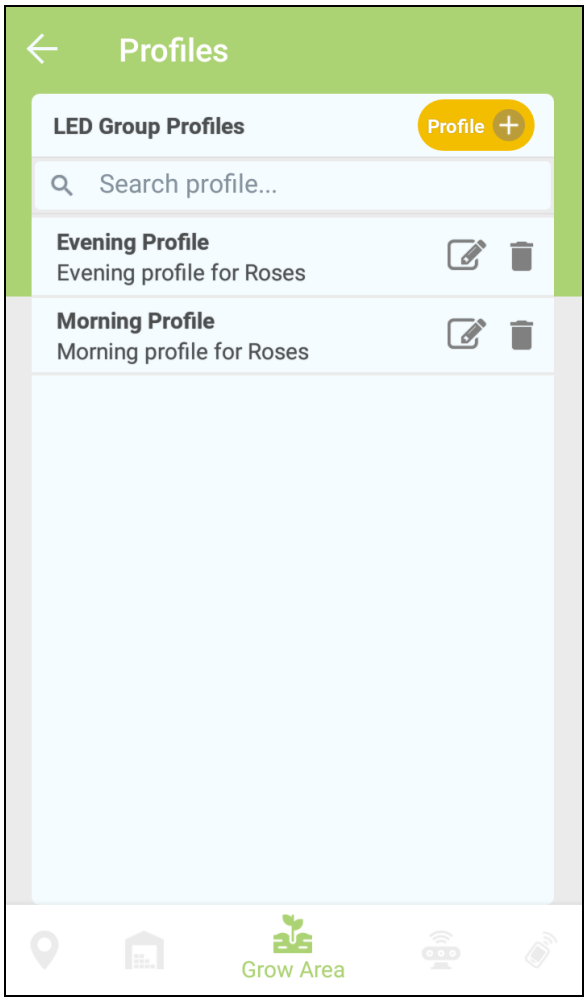
Figure 38: Schedule a Group Profile

- If there are two or more events scheduled for a Group to be triggered at exactly same time, the last event that is scheduled by the user will take priority and will be triggered at scheduled time.
  For example: If there are two events scheduled with following options where *Event2* is created after *Event1*.
  Event1: Start Date – 30-Oct-2019 and Start Time – 10:00 AM, Repeat every day and End Date as 30-Dec-2019.
  Event2: Start Date – 30-Oct-2019 and Start Time – 10:00 AM, Repeat every Friday and End Date as 30-Nov-2019.
  In this case, *Event2* will take priority and will trigger at schedule time and frequency.

- If there are two or more events scheduled for a Group and has overlapping of time, all the events will be triggered at respective start time.
  For example: If there are two events scheduled with following options irrespective of when these events were created.
  Event1: Start Date – 30-Oct-2019 and Start Time – 10:00 AM, Repeat every day and End Date as 30-Dec-2019.
  Event2: Start Date – 30-Oct-2019 and Start Time – 11:00 AM, Repeat every day and End Date as 31-Dec-2019.
  In this case, *Event1* will be triggered at 10:00 AM every day from 30-Oct-2019 till 30-Dec-2019. *Event2* will be triggered at 11:00 AM every day from 30-Oct-2019 till 31-Dec-2019.

4.11.2.1.4 Edit Group Profile

- Click on  icon.
- Edit the desired Profile name and description.
- Change the desired intensity level for individual channel.
- Click on “Done” button.
- Previously scheduled events for this Group Profile will be applied on devices according to edited changes in the Group Profile.



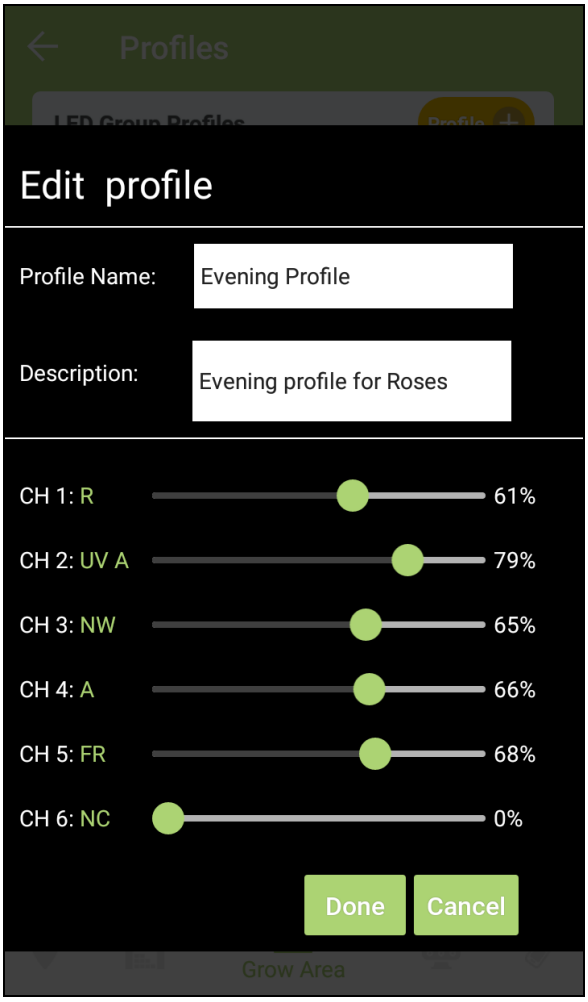


Figure 39: Edit Group Profile

4.11.2.1.5 Delete Group Profile

- Click on icon.
- Click on “DELETE” button.
- Delete operation will also delete all the events scheduled for this Group Profile.

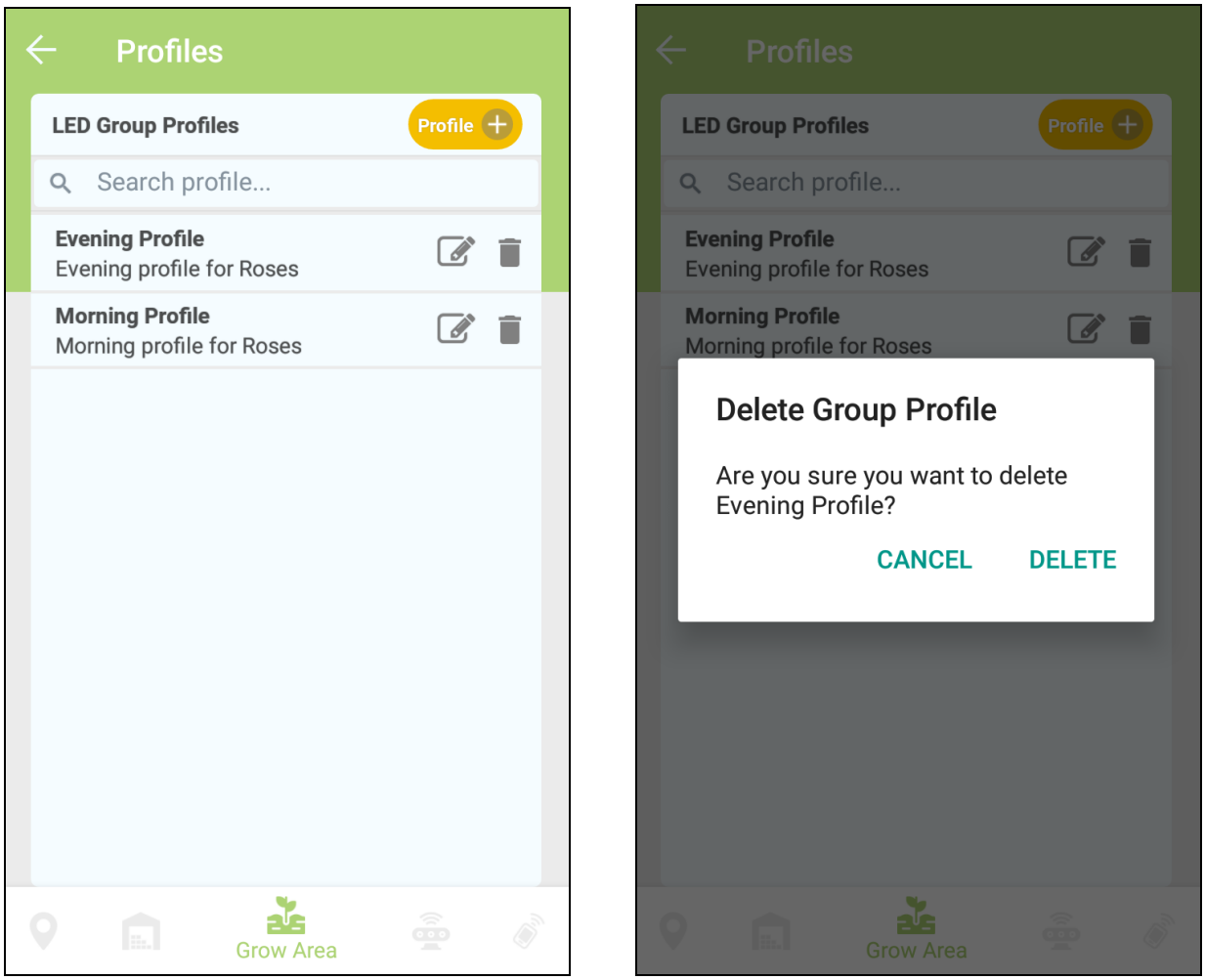


Figure 40: Delete Group Profile

4.11.2.2 Group Events

- Click on “Events” button.
- A list of all Events which are scheduled in selected Group will be displayed.

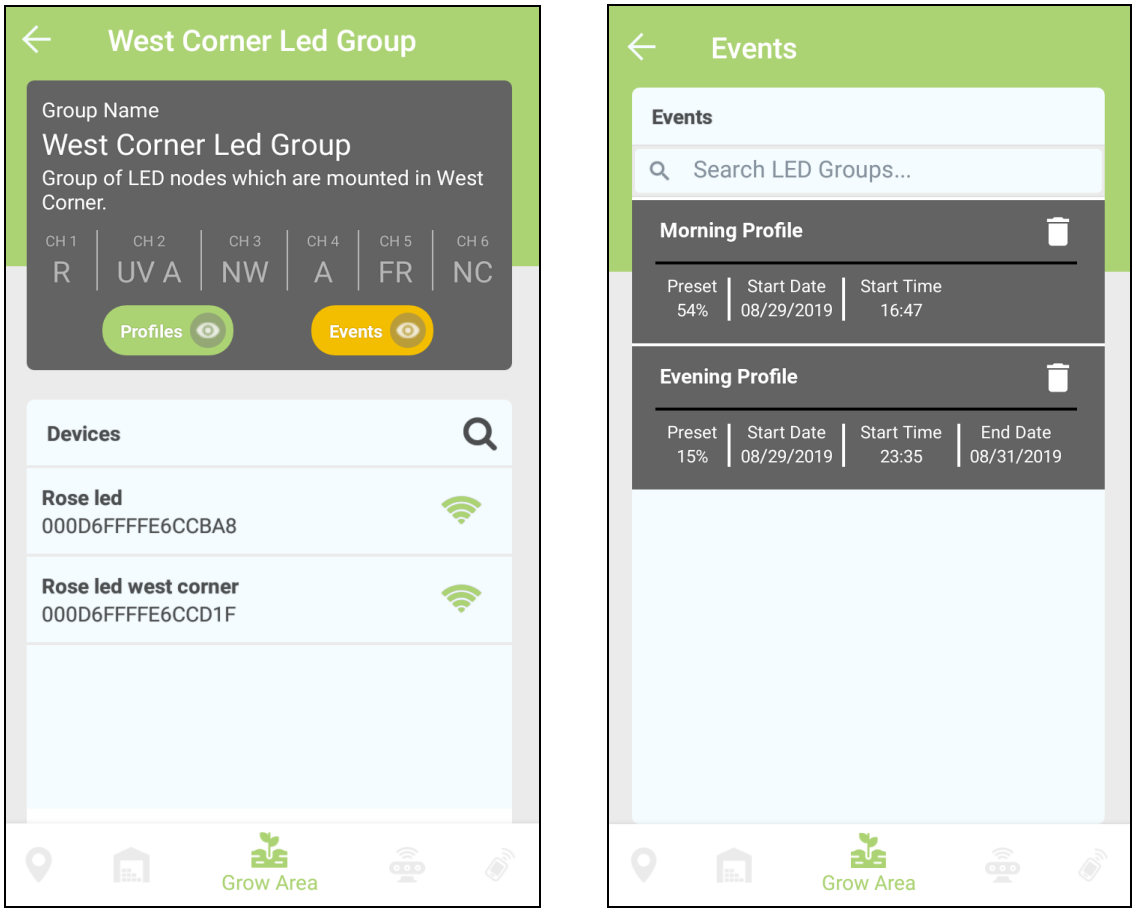


Figure 41: Events of Group

4.11.2.2.1 Delete Group Events

- Click on icon.
- Click on “Delete” button.
- Once the event is deleted, it will be cancelled and will not be triggered.

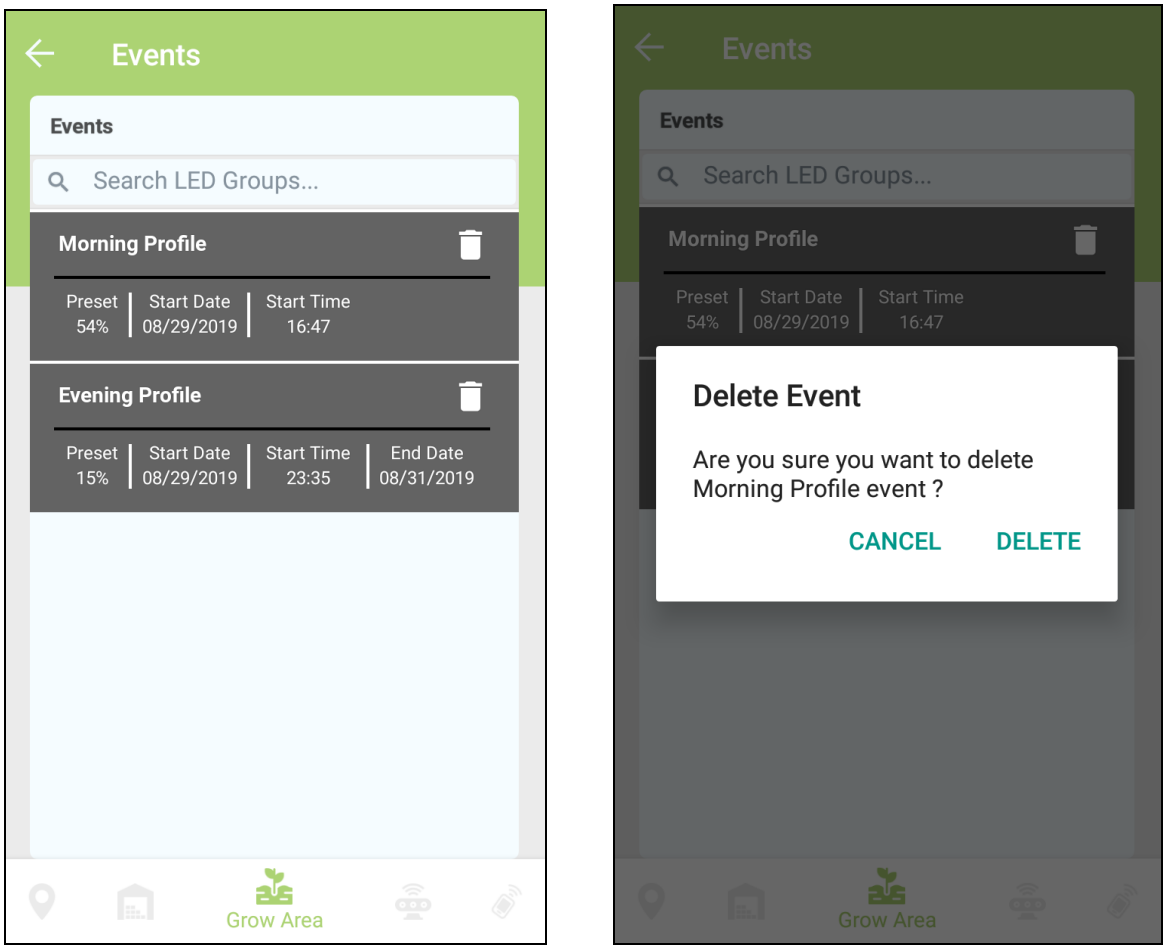


Figure 42: Delete an Event of a Group

4.11.3 Edit Group

- Click on  icon.
- Edit the required details.
- Click on “Done” button.
- Events scheduled on the Group will be applied to updated list of the selected devices.

Note: Channel color configuration fields cannot be modified.

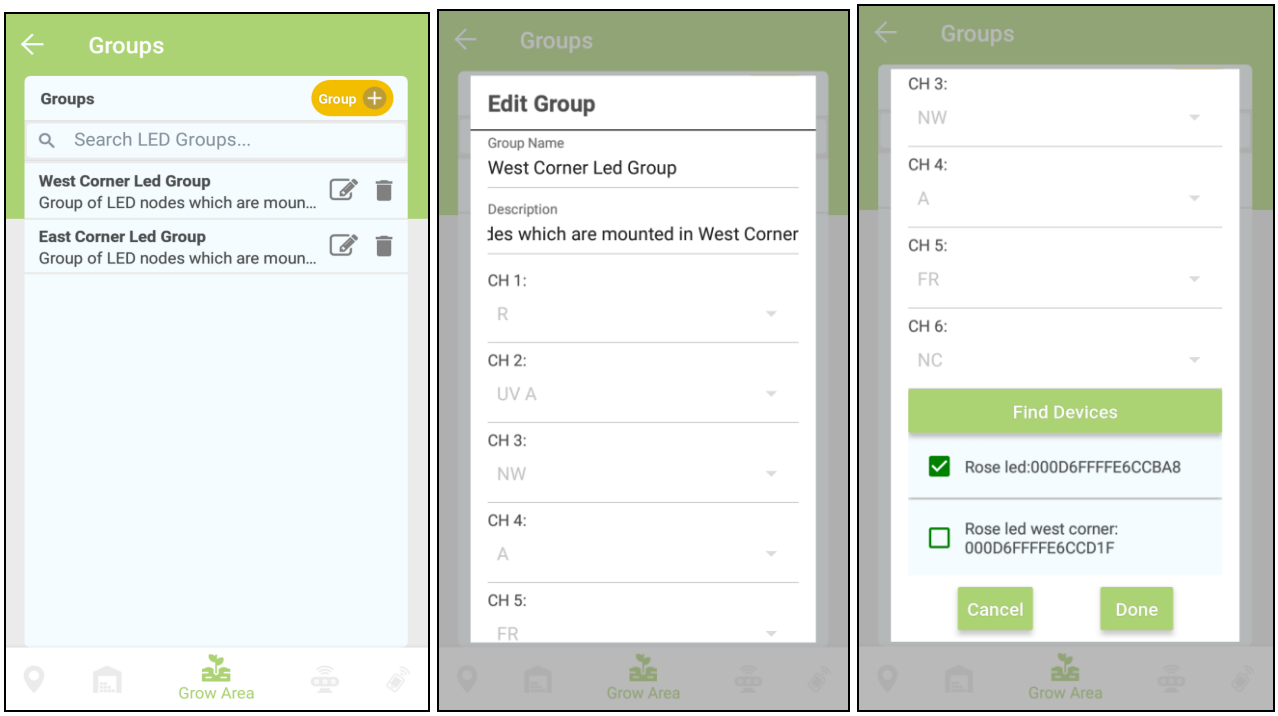


Figure 43: Edit Group

4.11.4 Delete Group

- Click on icon.
- Click on “Delete” button.
- Delete operation will also delete all the Group Profiles created for the Group and the events scheduled for Group Profiles.

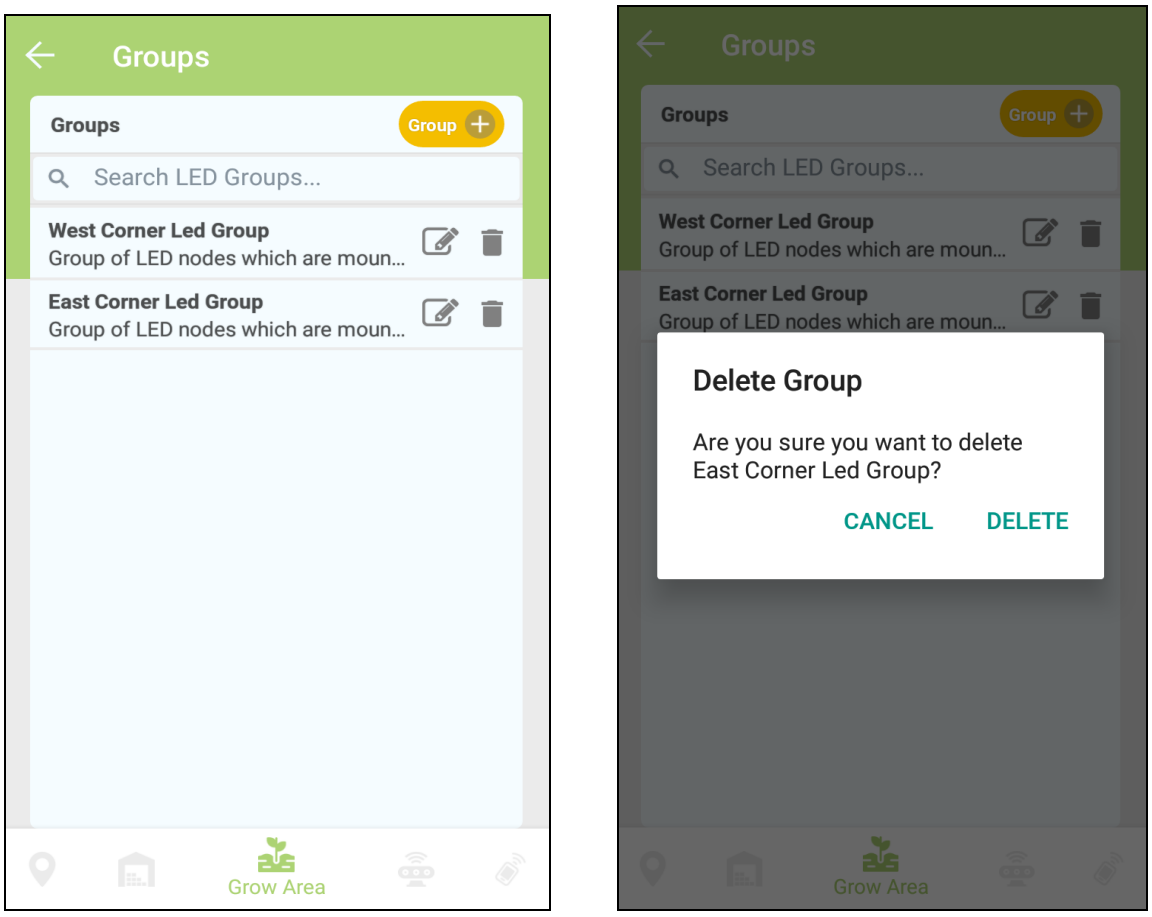


Figure 44: Delete a Group

4.12 Alerts

- Alerts will be displayed on Dashboard page generated under a particular User Account.

  User can navigate to dashboard page to see the alerts by performing the following steps.
  - Tap ‘Menu’ icon. A drawer will open up.
  - Tap 'Dashboard' option in drawer to navigate back to main Dashboard page.

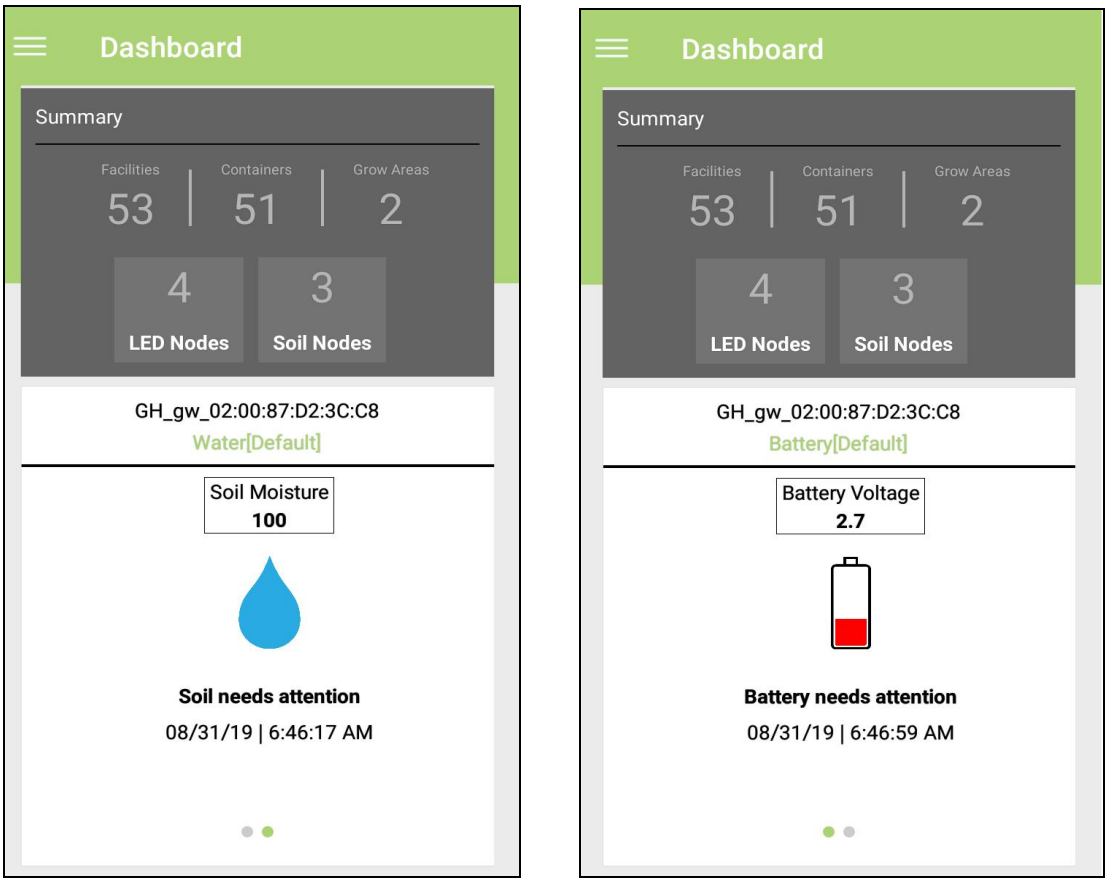


Figure 45: Generated Alerts

4.13 Instructions/Conventions/Errors

Growhouse Mobile application for iOS is provided via Test Flight. TestFlight application needs to be installed on iOS device. This section describes how to install Growhouse Mobile application on iOS device from TestFlight.

- **Prerequisites:**
  - Test Flight should be installed on iPhone, refer Section 4.11.1 if you haven't already.
  - Valid email ID is required, so Apple can send invitation to test an application via Test Flight.

4.13.1 Installing Test Flight

- The Test Flight app is available on the AppStore. Open the AppStore and search for **Test Flight**

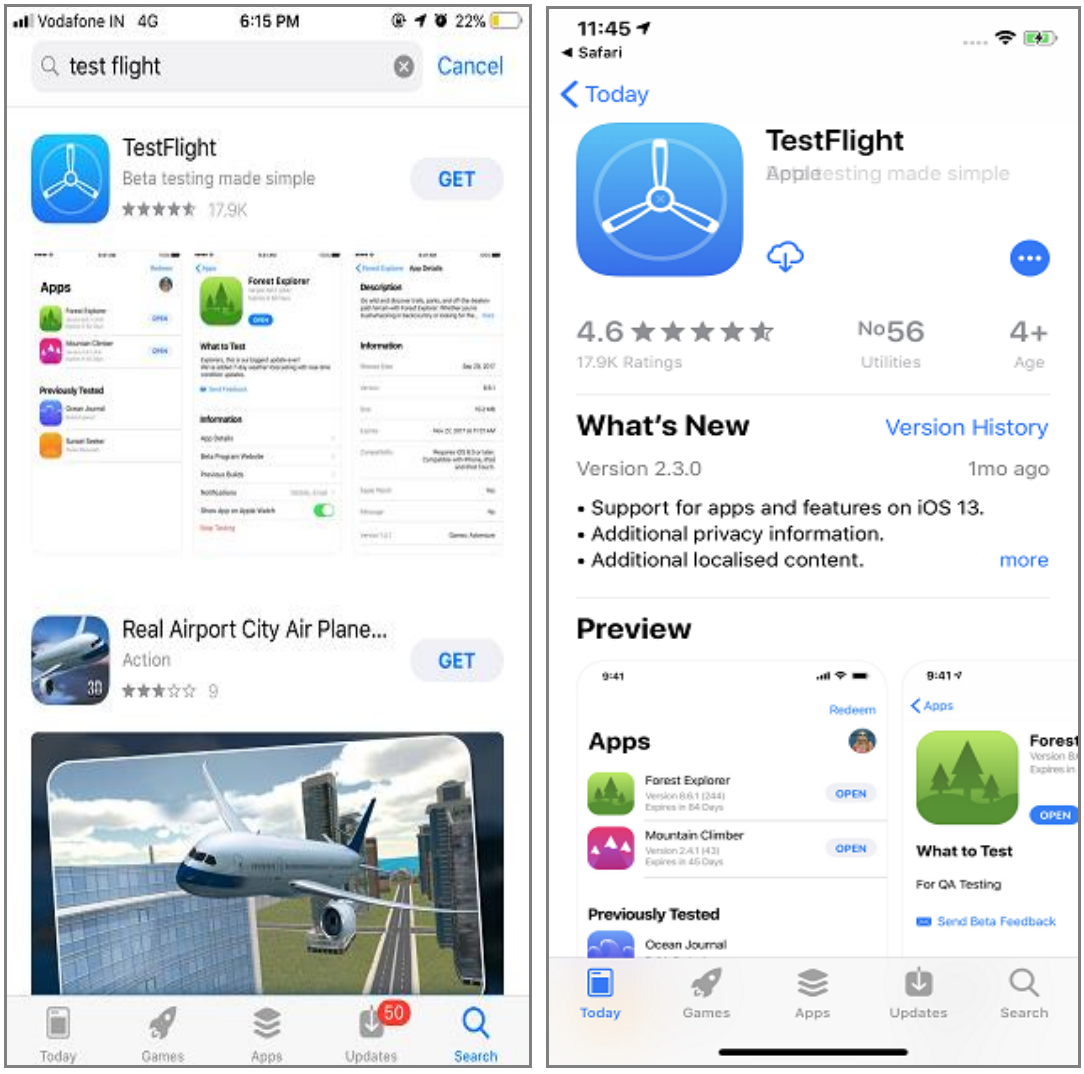


Figure 46: Installing Test Flight from AppStore

- Download the Test Flight app and launch it. When asked to login, sign in with valid Apple ID. This could be the personal Apple ID on your test device and doesn't have to match the email address you added into iTunes Connect.

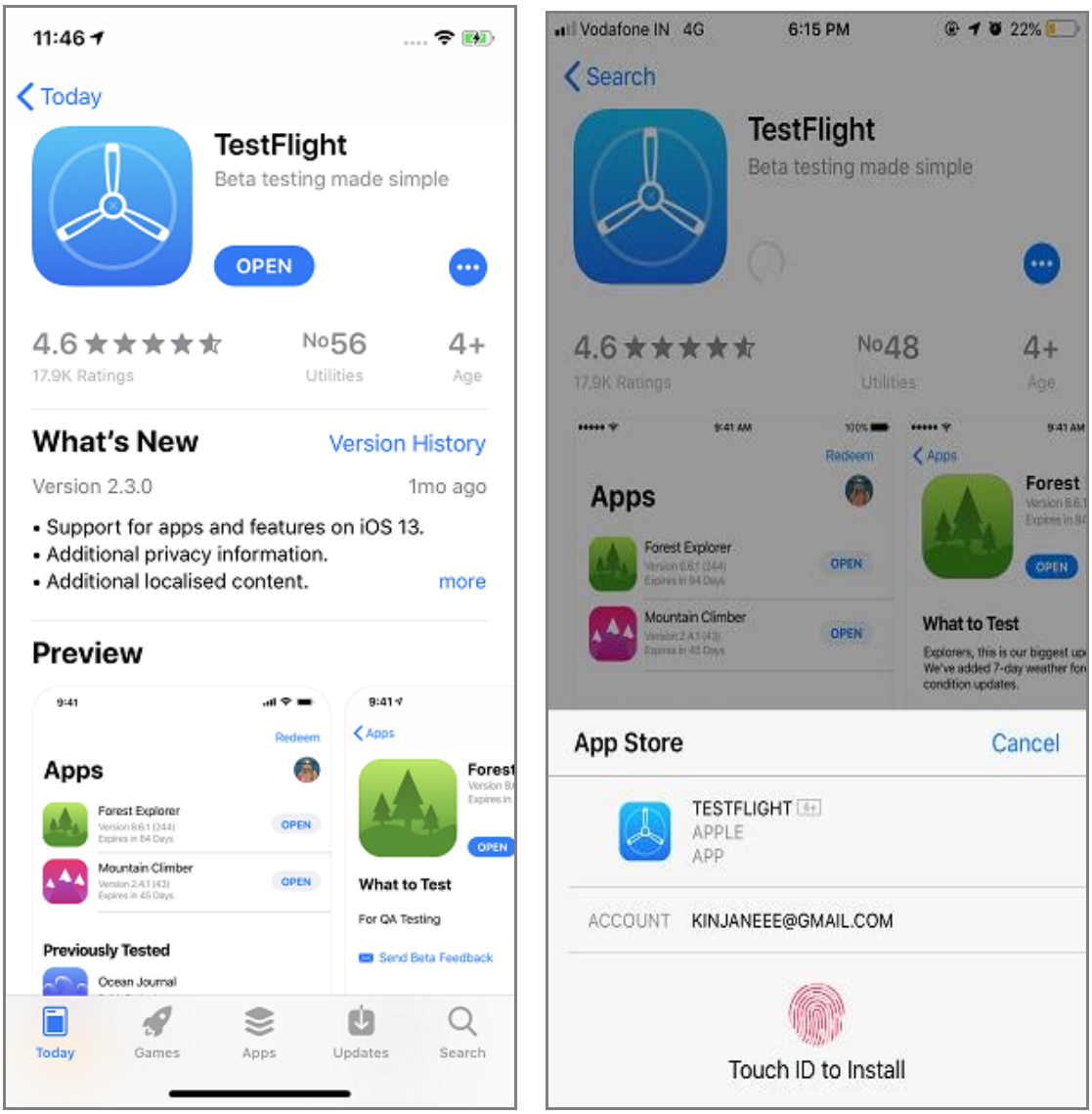


Figure 47: Sign in with any Apple ID

- Tap '*Continue'* for further process, and *'Accept'* Terms and Conditions.

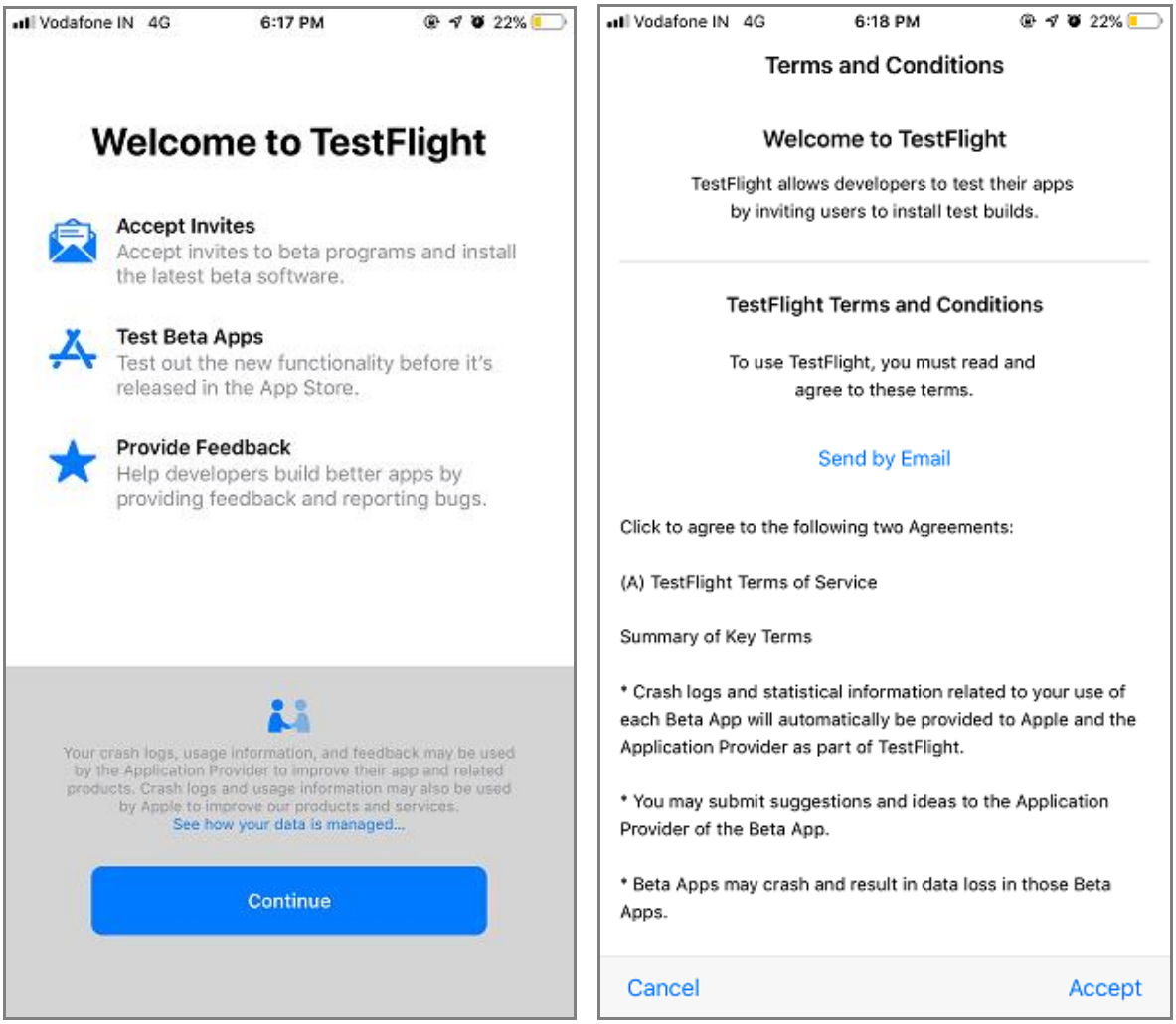


Figure 48: Accept Terms and condition

- Confirmation pop up would appear asking to allow notifications, Press ‘Allow’ if you want notification when updates to application (Growhouse Mobile app) are available, otherwise Press ‘Don’t Allow’. It is recommended to opt for ‘Allow’ option.

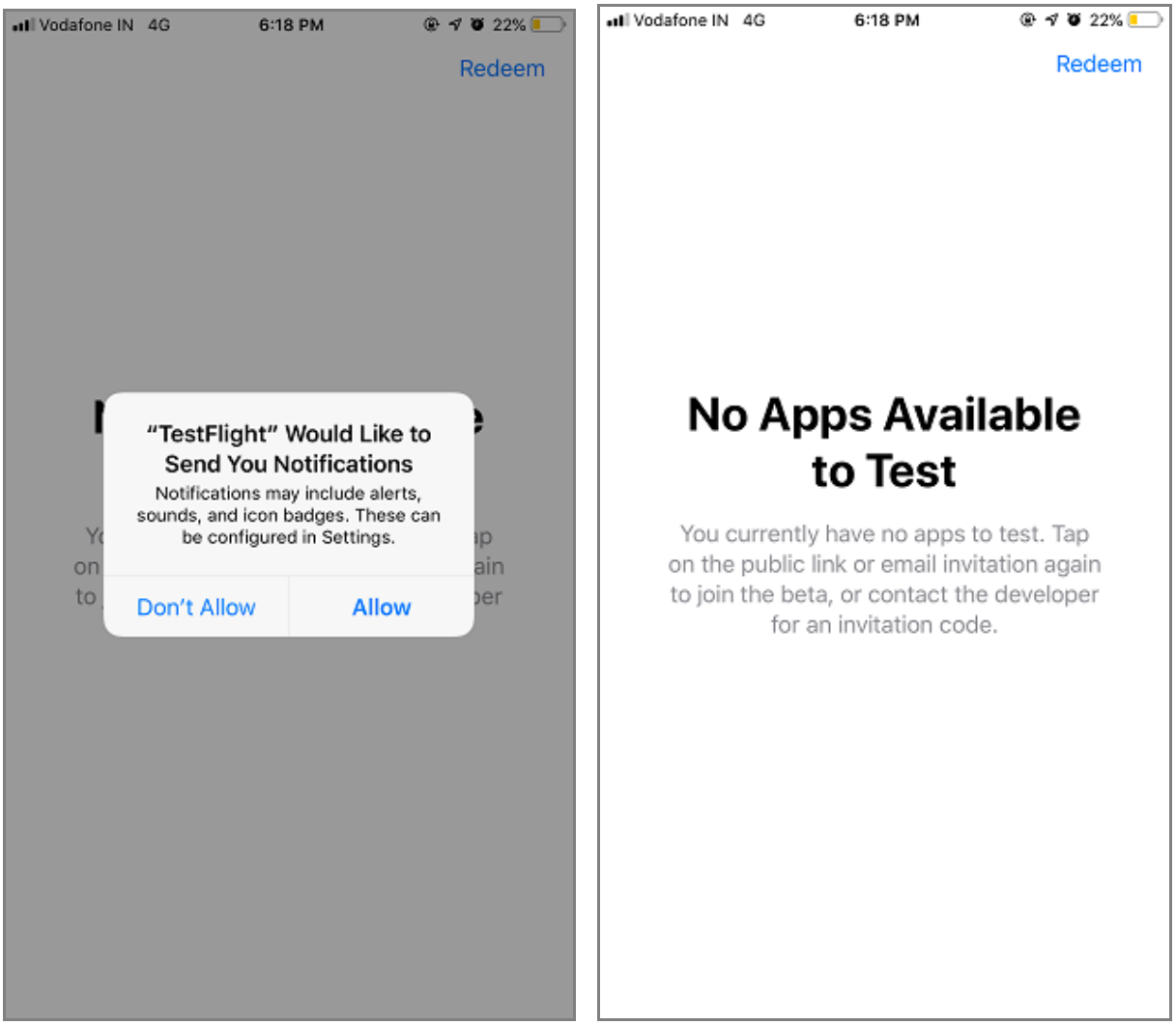


Figure 49: Allow Notifications

4.13.2 Installing Growhouse Mobile Application via Test Flight

- Uninstall the older version of Growhouse Mobile application.
- New User has to request the invitation to access the application at growhouse@einfochips.com
- User would be sent the invite to use the application.
- When user is added as an external tester, the user will receive an invitation email to access the application via Test Flight.

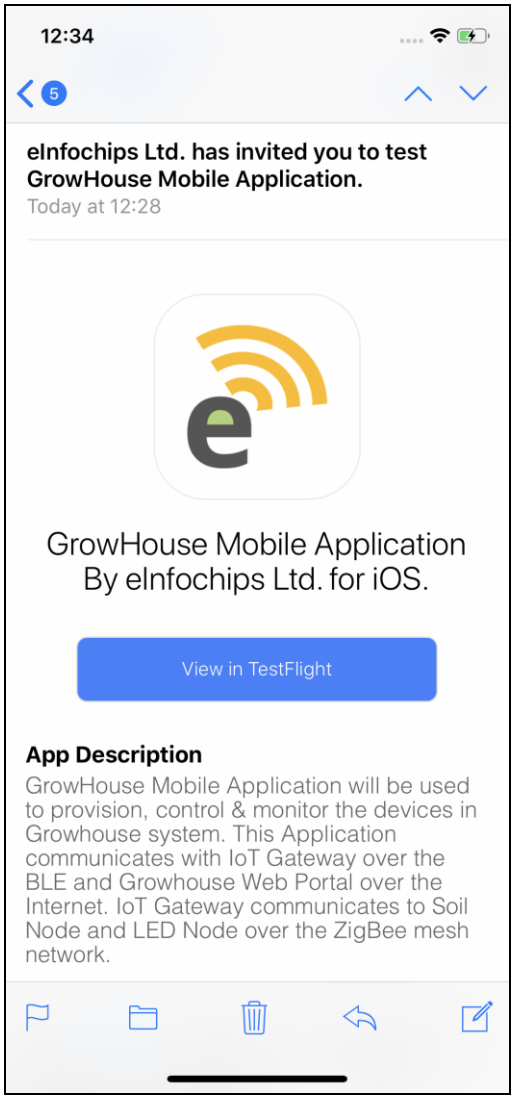


Figure 50: Accept invitation to install App on your phone

- Open this email on iOS device, and click '**View in Test Flight'**. This will launch Test Flight and redeem the invitation using the Apple ID currently in use in the Test Flight app. User will see the following app preview page for app.

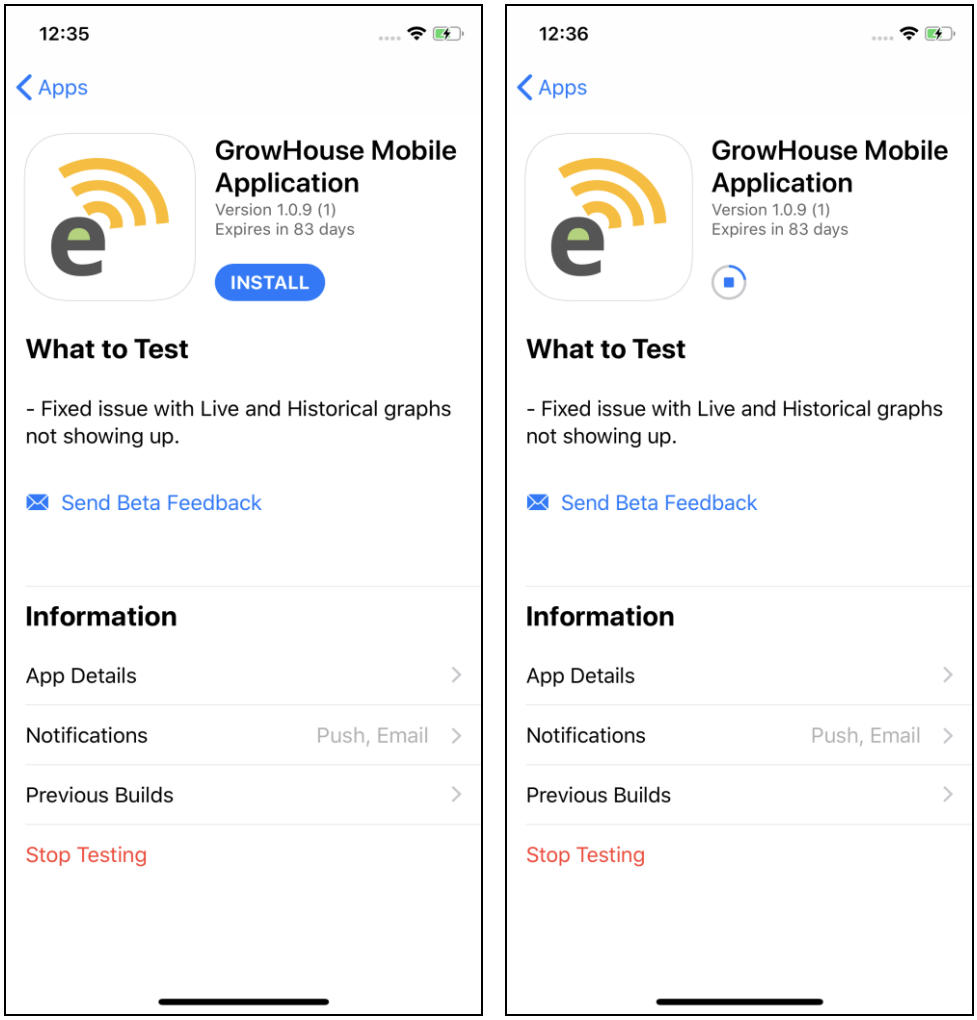


Figure 51: Install GrowHouse Mobile Application

- Tap '*INSTALL'* to accept the invitation, and the app will download and appear on your home screen. Now you can treat it just like any other app. It will have an orange dot near the name in Springboard to indicate it is a Test Flight install.

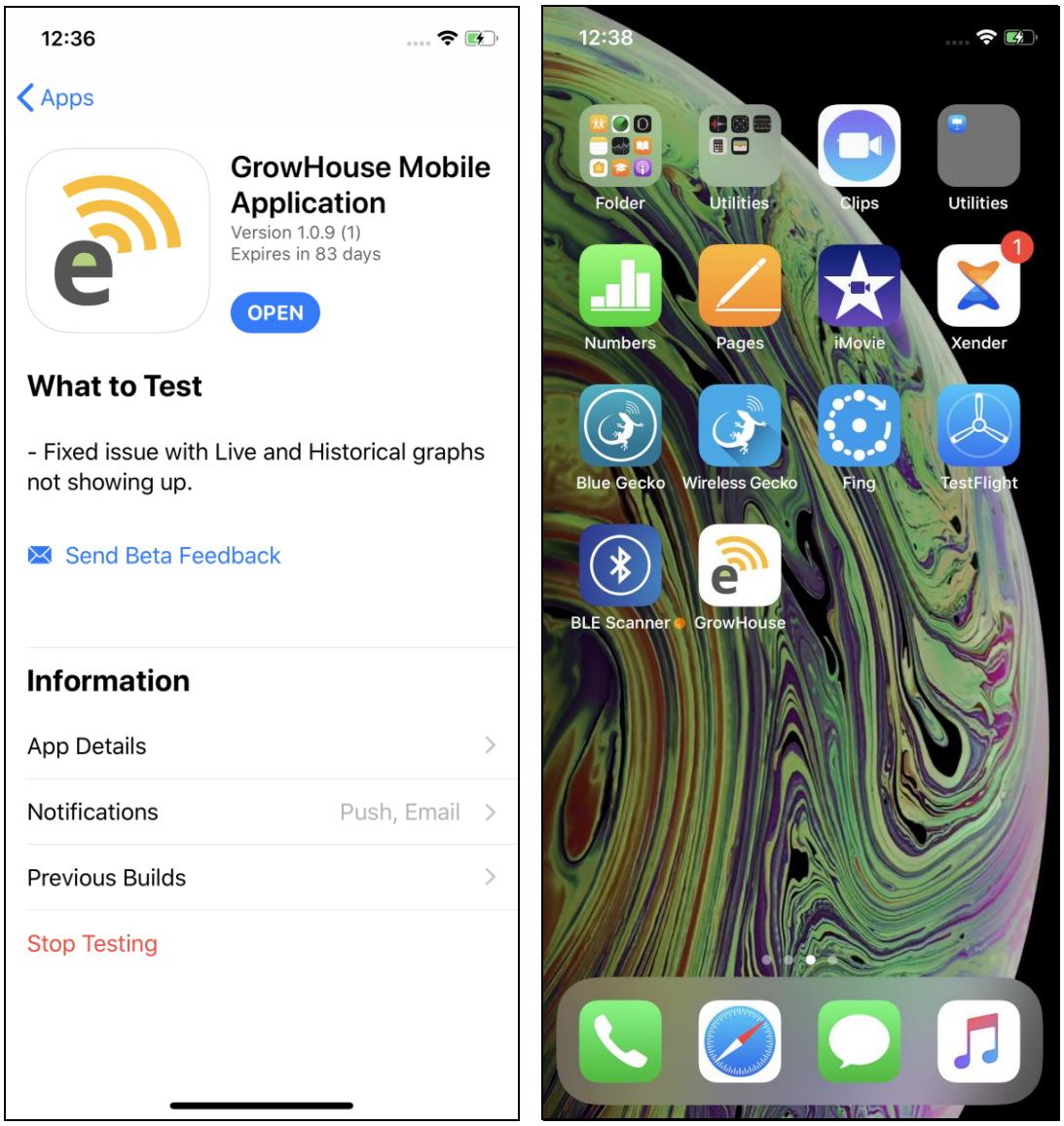


Figure 52: GrowHouse Mobile app available for Testing

- From now on, whenever a new version of this app is available, you'll see a notification from Test Flight. If the notifications are disabled for Test Flight, User needs to open up Test Flight application to check for latest update for Growhouse Mobile app. All you need to do is update your app to latest version.

https://koenig-media.raywenderlich.com/uploads/2018/04/testflight_email.pnghttps://koenig-media.raywenderlich.com/uploads/2018/04/IMG_CD6C9790EC21-1.jpeg

4.14 Malfunctions

NA.

5 KNOWN ISSUES

- Sometimes Mobile application is not able search the Gateway while provisioning of Gateway/Devices.

  - While Provisioning a new device into a particular Gateway, Mobile application shows “Searching GH_gw_XX:XX:XX:XX:XX:XX” screen and is not able search Gateway.

  - Resolution of this issue:
    - Check if the Gateway and Devices are powered ON.
    - If the Devices/Gateway is powered ON, but still not discoverable for 3 minutes, close the Growhouse mobile application from background and restart the application. Application will ask user to Sign in again. On successful sign in, user will be able to access all functionality of Mobile application.

- If multiple users performing the provisioning of Gateway/Devices on the same Gateway Board then Users may face the problem of the connection between Gateway and Mobile Application.

  - Resolution of this issue:
    - If one user is performing the provisioning of Gateway, then after provisioning user has to click on provisioned Gateway and then again go back to “Grow Area” page to make the Gateway discoverable for other user for the provisioning.

    - If one user is performing the provisioning of Devices under the specific Gateway, then after provisioning of Devices, user has to go back to “Grow Area” page to make the Gateway discoverable for other user for the provisioning.

    - If still Gateway is not discoverable then User has to close the Growhouse mobile application from background and restart the application again.

.

6 LIMITATIONS AND CONSTRAINTS

- User must have Admin role registered in Growhouse Portal.

7 WARRANTY AND SUPPORT

NA.

8 UPGRADE AND ADD ON MODULES

NA.

9 TECHNICAL SUPPORT

Email ID: *growhouse@einfochips.com*

10 APPENDIX

10.1 Hardware Setup

This section describes the hardware setup for the Growhouse system.

10.1.1 Soil Node

1. A typical Soil Node is as shown in below image.

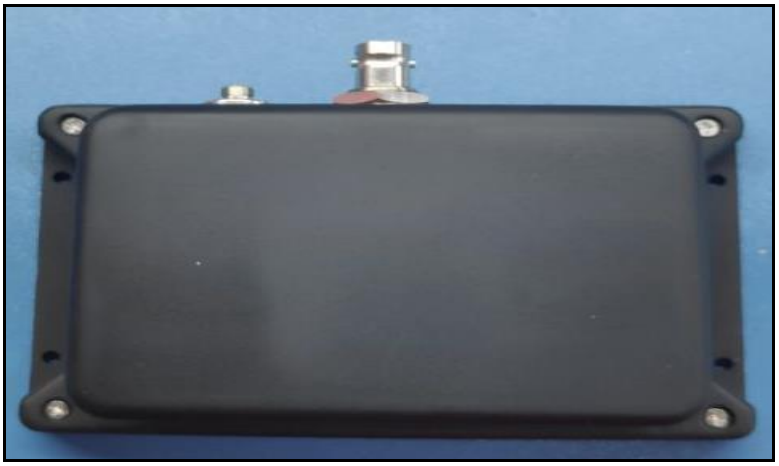


Figure 53: Soil Node

2. 2x AA batteries are required. Remove the top cover of Soil Node enclosure to install the batteries. After connecting the batteries connect battery cable at Battery Conn J5 as shown below.

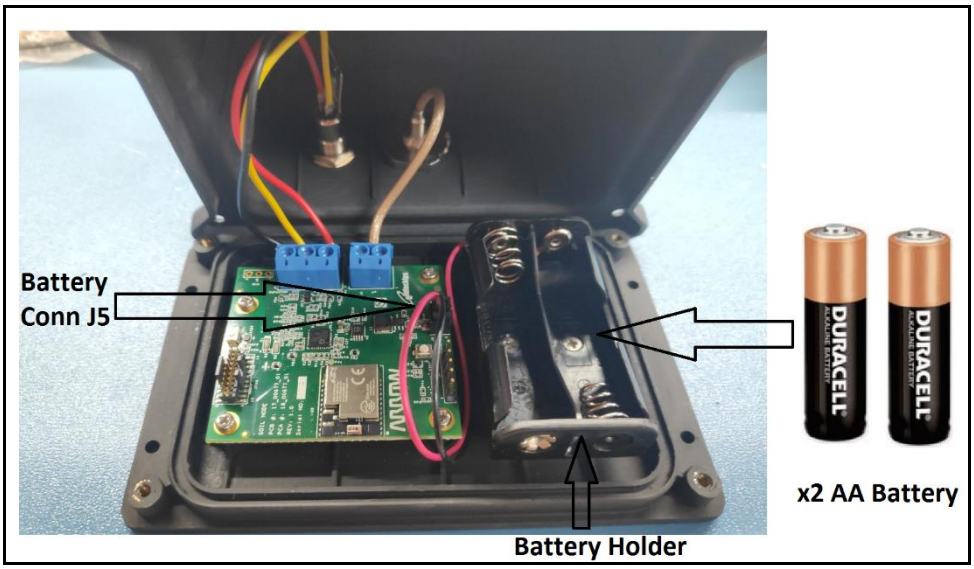


Figure 54: Soil Node- Battery Connections

3. Replace cover, then install the moisture sensor using the audio jack, and the pH sensor using the BNC jack per image below.

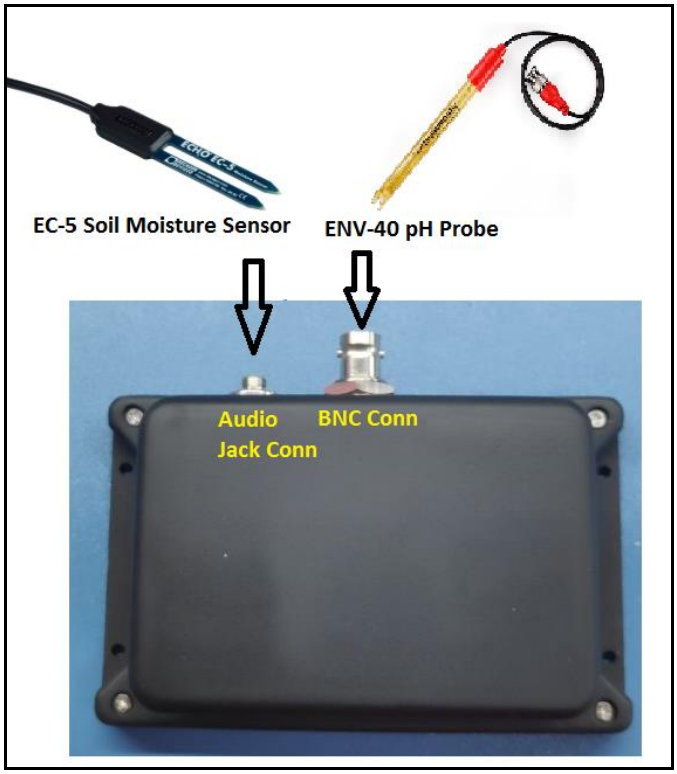


Figure 55: Soil Node – Sensor Connection

4. Soil Node is now ready to be Provisioned/talk to Gateway.

10.1.2 LED Node

1. A typical LED Node is as shown in below image

Figure 56: LED Node

2. Connect 2x external antennas. 6x independent 0-10V dimming output channels are provided for connecting to LED power supplies. Utilize as many channels as required. Once all required dimming channels are connected, connect the external power supply (12VDC, 1A) to the power input connection (J9).

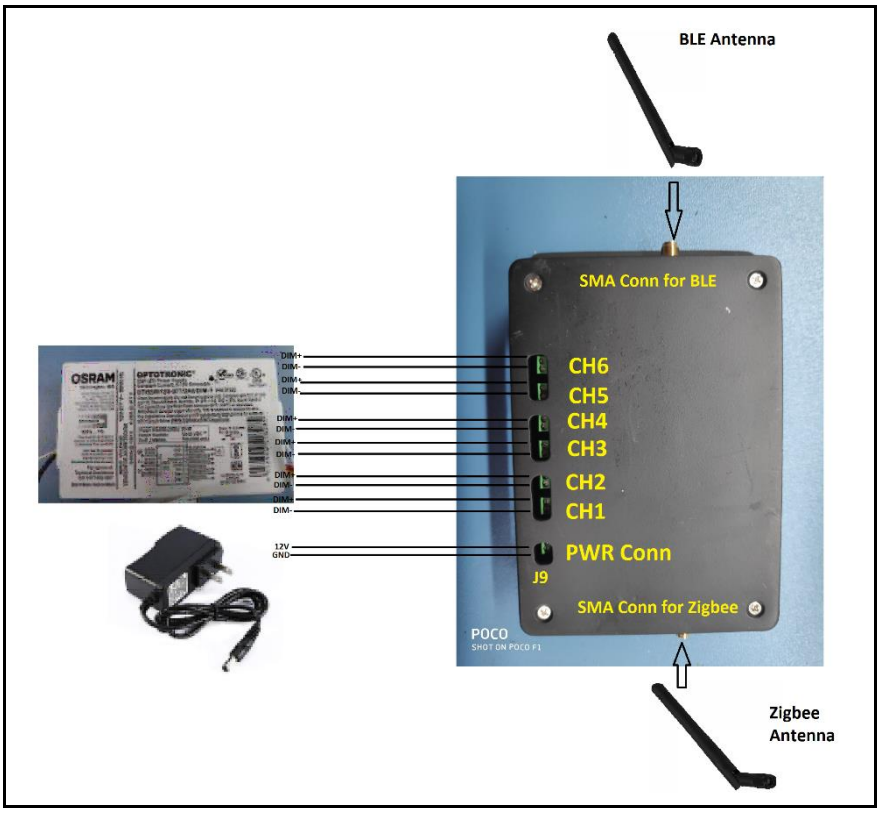


Figure 57: LED Node – Power, Channels & Antenna Connections

3. Now turn on the switch of external power supply to power up the LED Node. LED Node is now ready to be provisioned/talk to Gateway.

10.1.3 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.

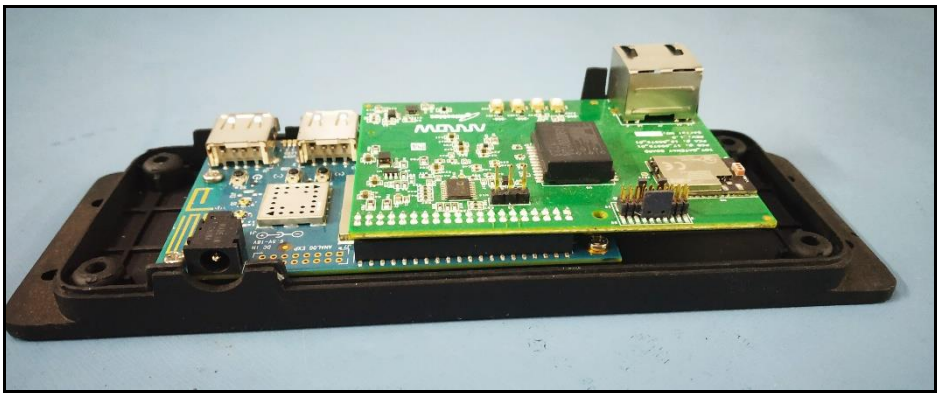


Figure 58: IOT Gateway

Figure 59: 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 60: 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 61: 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.

10.2 Factory Reset Soil Node

1. Make sure that Soil Node is setup and in power on state. Refer Section 10.1.1 on how to setup the Soil Node.
2. Press and hold **SW2** switch of Soil Node for 5 seconds and then release. Refer below image to locate **SW2** on Soil Node.

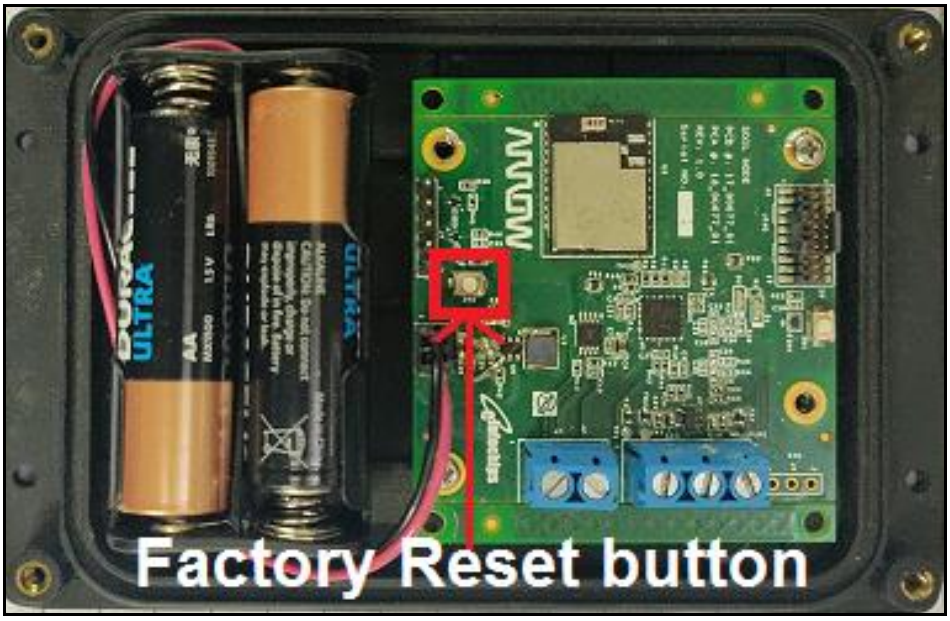


Figure 62: Soil Node – SW2 location

Note: If Soil node is not deleted from Growhouse portal and user performs factory reset of Soil node then it is recommended to delete such Soil node from Growhouse portal.

10.3 Factory Reset LED Node

10.3.1 ZigBee

1. Make sure that LED Node is setup and in Power on state. Refer Section 10.1.2 on how to setup the LED Node.
2. Press and hold **SW4** switch of LED Node for 5 seconds and then release. Refer below image to locate **SW4** on LED Node.

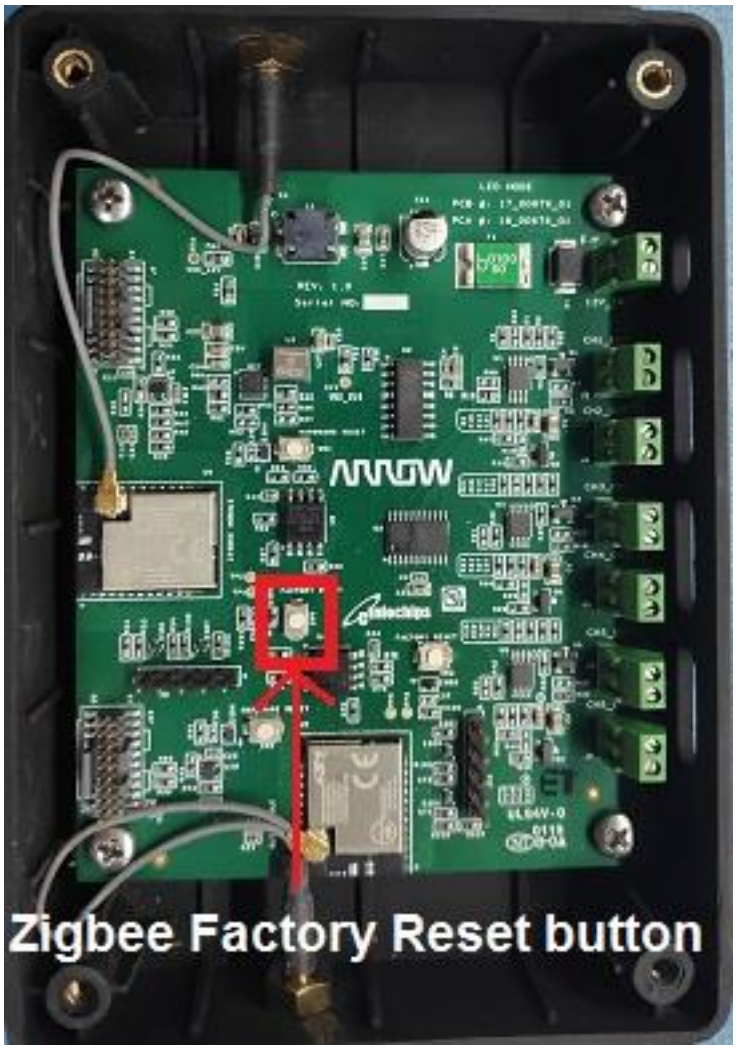


Figure 63: LED Node – SW4 location

Note: If LED node is not deleted from Growhouse portal and user performs factory reset of LED node then it is recommended to delete such LED node from Growhouse portal.

10.3.2 BLE

1. Make sure that LED Node is setup and in Power on state. Refer Section 10.1.2 on how to setup the LED Node.
2. Press and hold **SW3** switch of LED Node for 5 seconds and then release. Refer below image to locate **SW3** on LED Node.

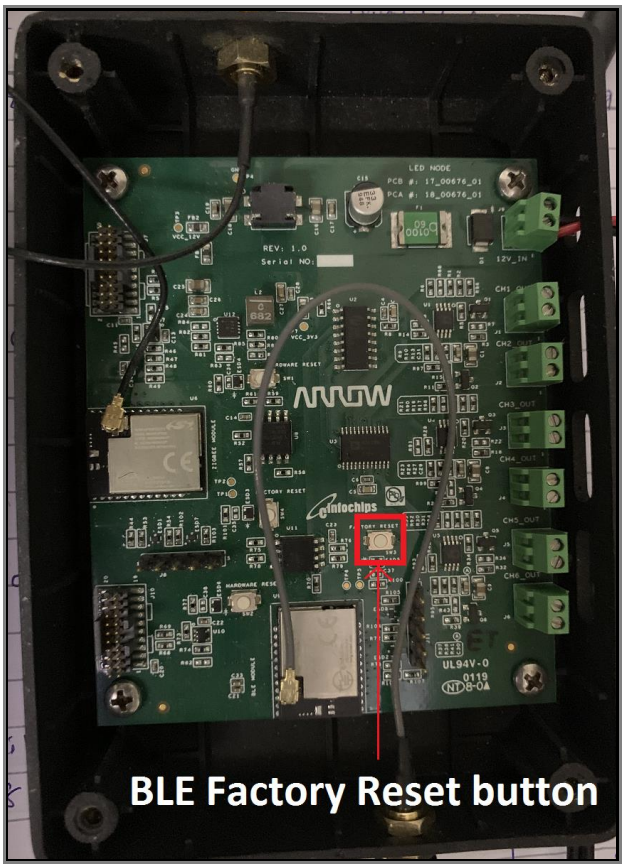


Figure 64: LED Node – SW3 location

10.4 Factory Reset IOT Gateway

1. Make sure that IOT Gateway is setup and in power on state. Refer Section 10.1.3 on how to setup the IOT Gateway.
2. Press and hold **SW4** switch of IOT Gateway for 5 seconds and then release. Refer below image to locate **SW4** on IOT Gateway.

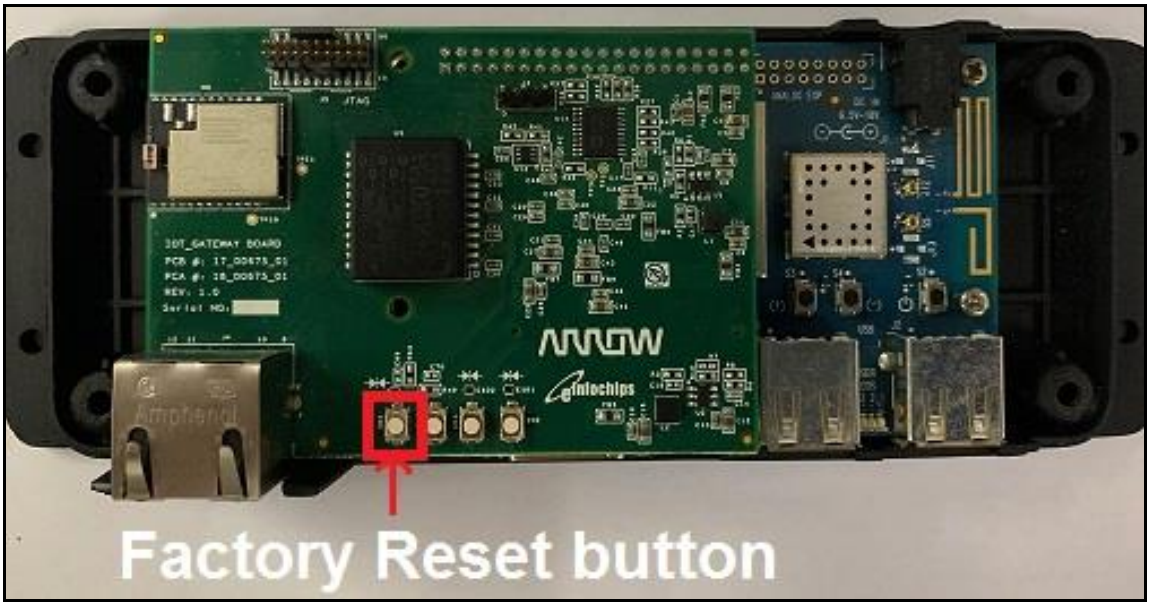


Figure 65: IOT Gateway – SW4 location

Note: If Gateway is not deleted from Growhouse portal and user perform factory reset of Gateway then it is must to delete such Gateway from Growhouse portal also otherwise such Gateway will not be discovered in Growhouse Mobile application.