GrowHouse Cloud User Manual - Admin User
GrowHouse NextGen IOT Application

Version	0.11
Status	Draft
Date	21 May 2020

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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	03-March-2019	Sombabu Gunithi, Hasteen Patel	05-March-2019		
Draft 0.2	Anagha Mhetre	11-March-2019	Hasteen Patel	12-March-2019		
Draft 0.3	Anagha Mhetre	13-March-2019	Hasteen Patel			
Draft 0.4	Anagha Mhetre	28-March-2019	Hasteen Patel, David Demona	25-April-2019		
Draft 0.5	Anagha Mhetre	25-April-2019	Sombabu Gunithi, Hasteen Patel	29-April-2019		
Draft 0.6	Anagha Mhetre	14-May-2019				
Draft 0.7	Keval Sanghvi	12-July-2019	Hasteen Patel	17-July-2019		
Draft 0.8	Keval Sanghvi	30-July-2019	Hasteen Patel	05-Aug-2019		
Draft 0.9	Pritesh Shah	25-Oct-2019	Hasteen Patel	25-Oct-2019		
Draft 0.10	Pritesh Shah	30-Oct-2019	Hasteen Patel	30-Oct-2019		
Draft 0.11	Konexios	22-May-2020	Arrow	29-May-2020		

Version	Description of Change
Draft 0.1	Added description about facility, container, grow area, Grow section, profile. Added limitations and validations.
Draft 0.2	Updated typical setup requirement and Special configuration environment.
Draft 0.3	Added delete Container and delete Device features. Added Abbreviations and Description. Added Reference.
Draft 0.4	Added delete gateway feature. Updated Profile Alerts.
Draft 0.5	Added admin user registration, Updated images LED Node Profile. Addressed Arrow's comments/suggestions.
Draft 0.6	Updated images and description throughout the document based on version 4.0 of Growhouse web portal
Draft 0.7	Updated images and description throughout the document based on version 4.2 of Growhouse web portal.
Draft 0.8	Added LED Grouping, Group Profile, Preset, Group Profile schedule feature. Updated LED Node Profile feature for individual LED Node. Updated images and description throughout the document based on version 4.4 of Growhouse web portal.

Version	Description of Change
Draft 0.9	Updated description for data reporting interval of Soil Node and device status reporting interval.
Draft 0.10	Incorporated review comments from David.
Draft 0.11	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
IOT	Internet Of Things
Arrow Connect	Arrow's IOT platform
Admin user	Account admin
Growhouse Web Portal	Growhouse Cloud

Table 2: Definition, Acronyms and Abbreviations

1.3 References

No.	Document	Version	Remarks
1	*ei_Growhouse_Mobile_Application_User_Manual.pdf*		User Guide of GrowHouse Mobile Application.

Table 3: Reference

2 INTRODUCTION

2.1 About GrowHouse System

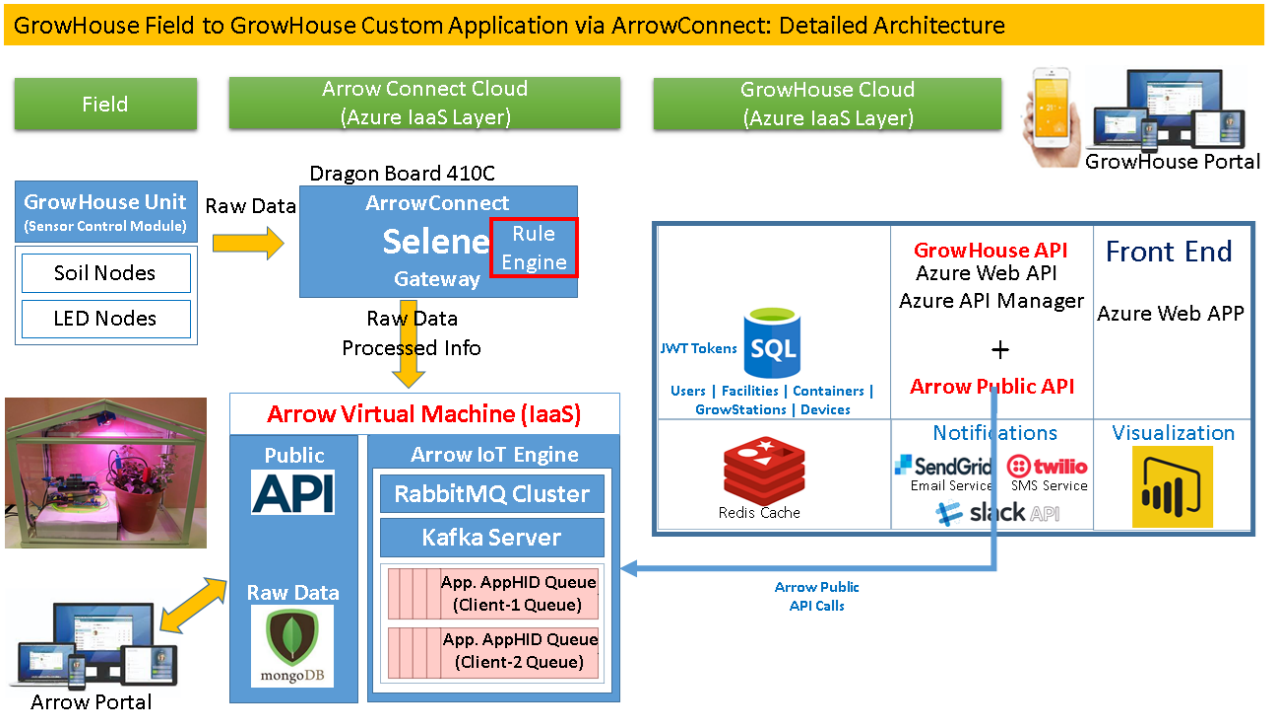


Figure 1: Top Level GrowHouse System Diagram – Field to GrowHouse Custom App via Arrow Connect

2.1.1 Key Features

- User Management
- Facility Management
- Container Management
- Grow Area Management
- Grow Section Management
- Device Management
- LED - Group Management
- Rule Management
- Device Telemetry Live and History Chart

2.2 GrowHouse Kit Contents

- Gateway
- LED Node
- Soil Node

3 SYSTEM REQUIREMENTS

3.1 Typical Setup Requirements

Tool/Tech Name	Description	Minimum Version
OS	Windows, Ubuntu	Windows 7, Ubuntu 16.04
Browser	Chrome, Firefox	Chrome Version 71.0.3578 Firefox Version 65.0.2
RAM	Minimum 2 GB	

Table 4: Setup Requirements

3.2 Special Configuration and environment

- Good internet connectivity

3.3 Support Documentation list

NA

4 GETTING STARTED

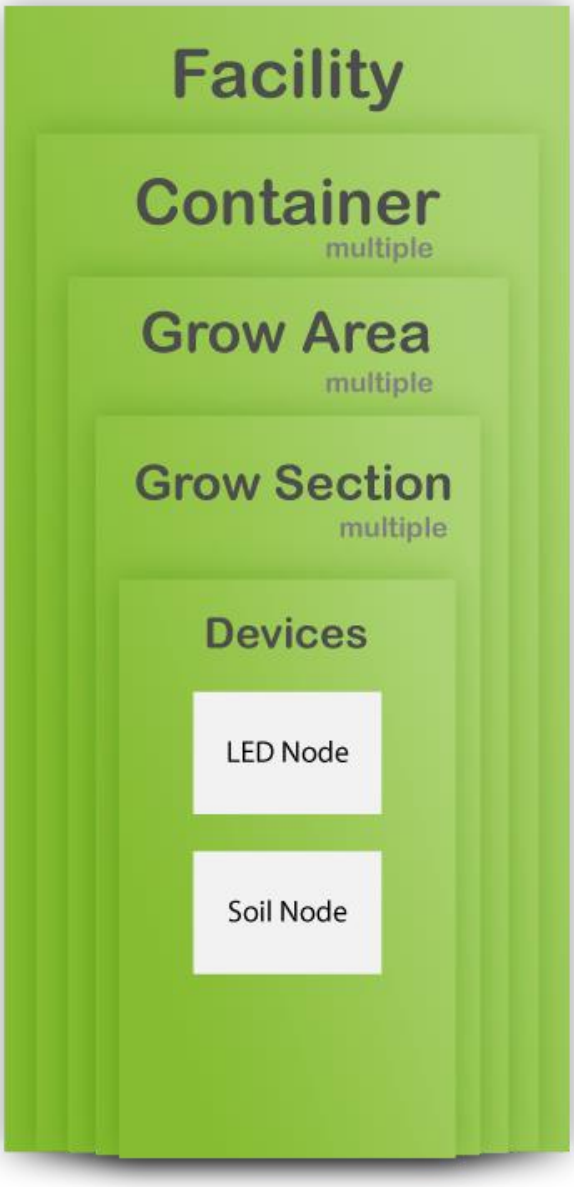


Figure 2: Field GrowHouse internal design diagram

- Actual Grow House may contain multiple Facilities (one to many)
- One Facility may contain multiple Containers (one to many)
- One Container may contain multiple Grow Sections (one to many)
- One Grow Section may contain multiple Devices (one to many)
- One LED Group can contain multiple LED Nodes and group profiles (one to many)
- One Rule can be set over multiple device parameter values (one to many)

4.1 Create Admin Account

Admin accounts can only be created by a super user on the Growhouse web portal. A super user needs to create a new account to register an admin user.

Following are the steps to create an Admin account on the Growhouse web portal:

- Open your browser and navigate to ***https://growhouse-arrow.arrowconnect.io***
- Enter credentials for super user.
- Click on “Sign in” button.

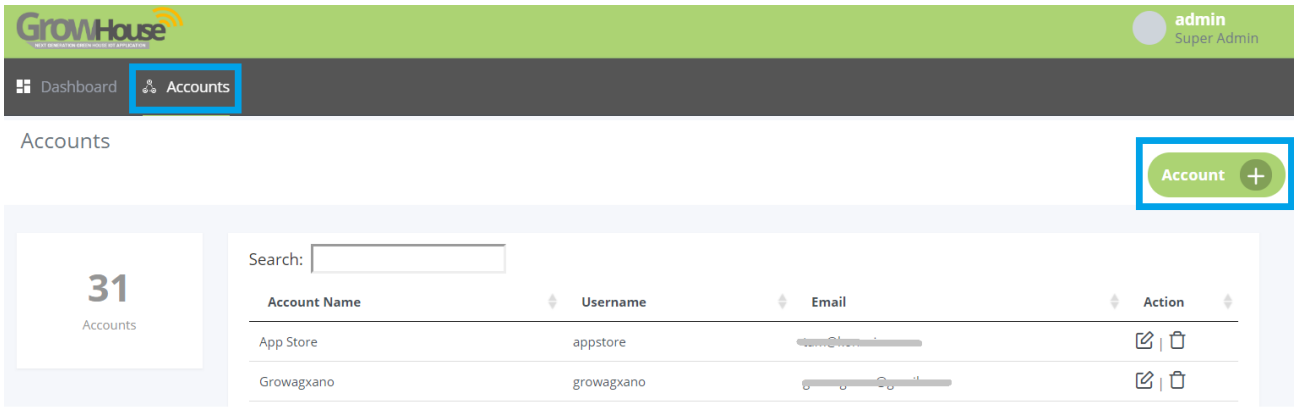


Figure 3: Add New Admin User

- The “Dashboard” page will open up.
- Click on Accounts at the top to get to the Accounts page
- Click on “Account +” button
- “Create New Account” page will open up.
- Enter the Account Name, User Name, Email, First Name and Last Name of the admin user.
- Click on “Done” button.
- “Account created successfully” message will be displayed on successful creation of admin account.

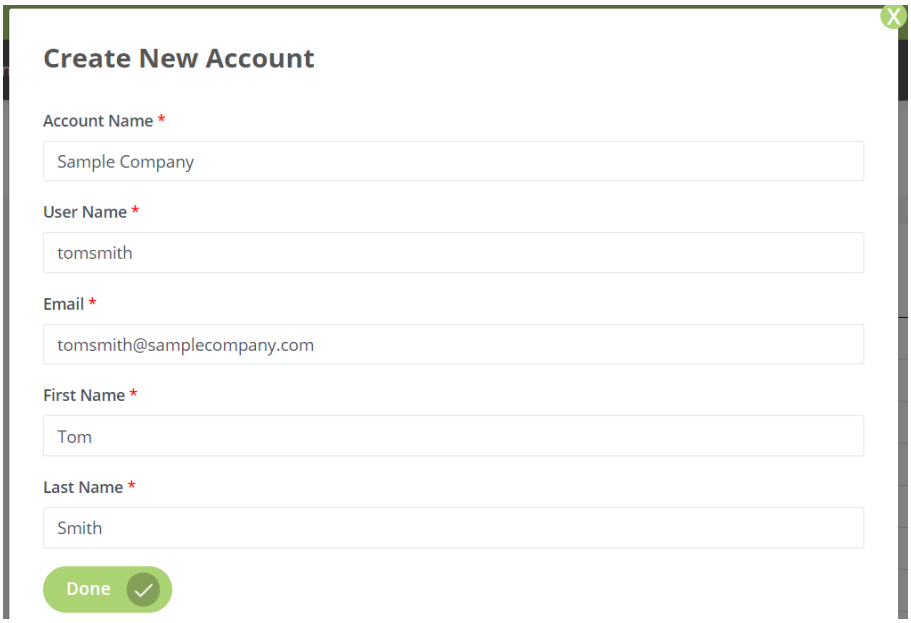


Figure 4: Add New Admin User – Admin User details

Validations:

- Only letters allowed in account name field
- Only letters allowed in user name field
- Only alphanumerical allowed in email field

Note: Super user credentials are not shared to all, it's confined to eInfochips & Arrow USA. Contact Arrow representative and eInfochips <*growhouse@einfochips.com*> to get your admin user created.

4.2 Logging In

- Open your browser and navigate to ***https://growhouse-arrow.arrowconnect.io***
- Enter login credentials which are registered on Growhouse web portal. (Section 4.1 describes how to create an Admin user on Growhouse web portal)
- Click on “Sign in” button.

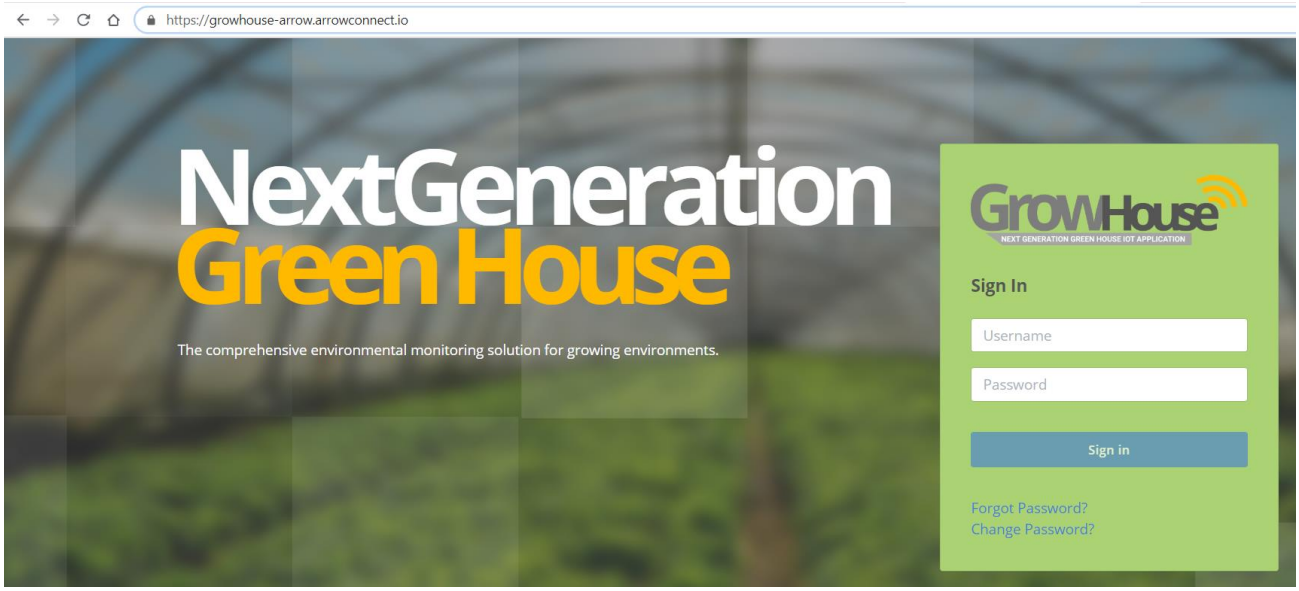


Figure 5: Growhouse Web portal Login Page

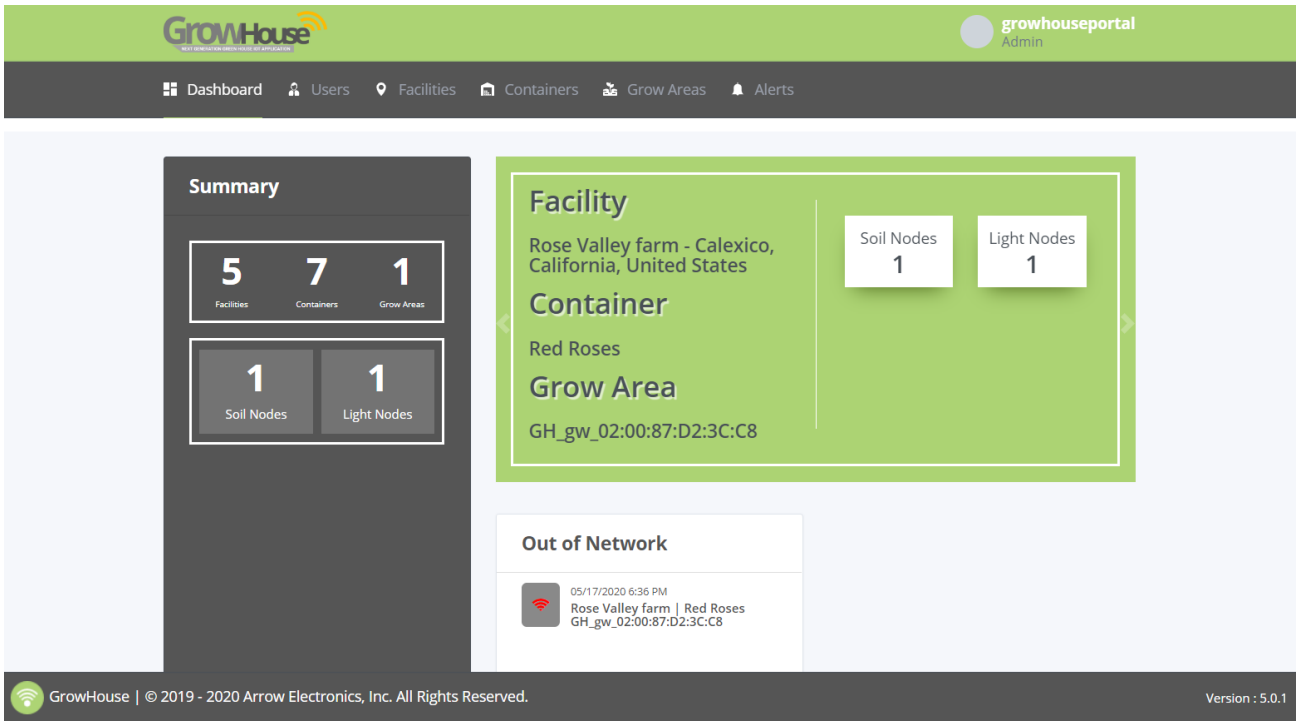
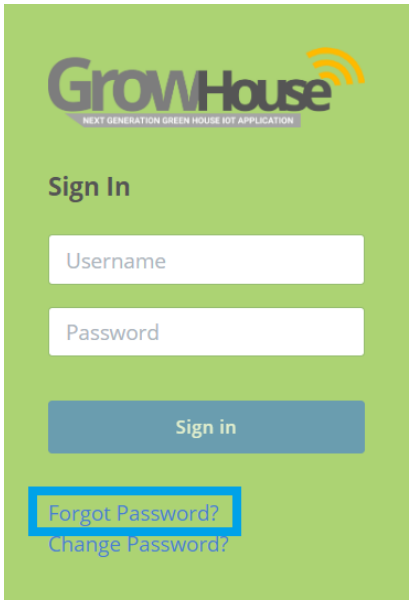


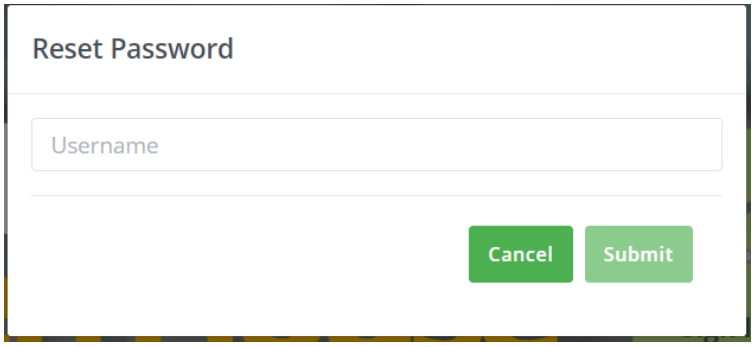
Figure 6: Dashboard Page

4.2.1 Forgot Password

If a user forgets their password, they can reset it from the login screen.

- Click on “Forgot Password?”
- Enter the Username and click on the “Submit” button.
- “Your password has been reset!” will be displayed on successful password reset.
- An email will be sent to the user with their Username and a temporary password.
- Once the user logs in for the first time, they will be required to set a new password.

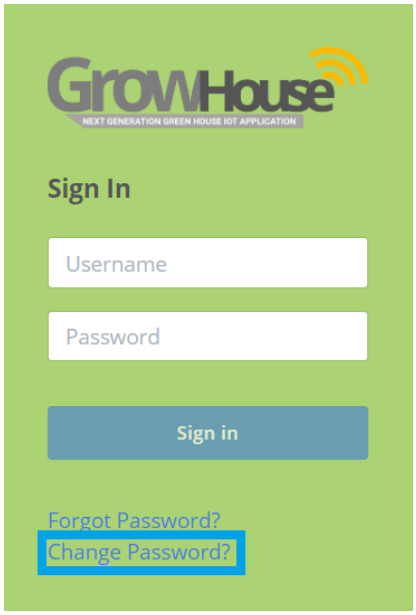


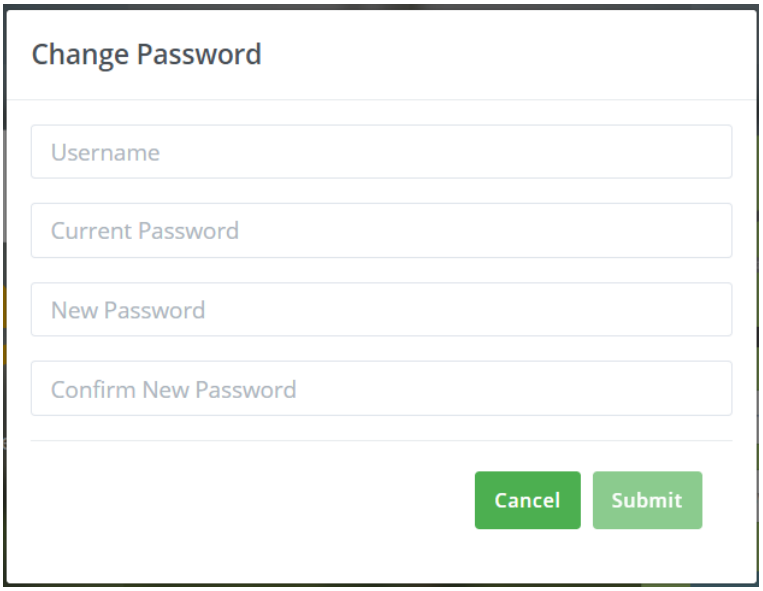


4.2.2 Change Password

Users can change their password from the login screen.

- Click on “Change Password?”
- Enter the Username, Current Password, New Password and Confirm New Password.
- Click on the “Submit” button.
- “Your password has been changed successfully!” will be displayed on successful password reset.
- The user can now login with their new password.





4.3 User Management

An Admin User can create Normal Users. User Management contains create user, update user and delete user features.

- Select “Users” tab.
- Users page will open up and a list of existing users added by logged in user will be shown.

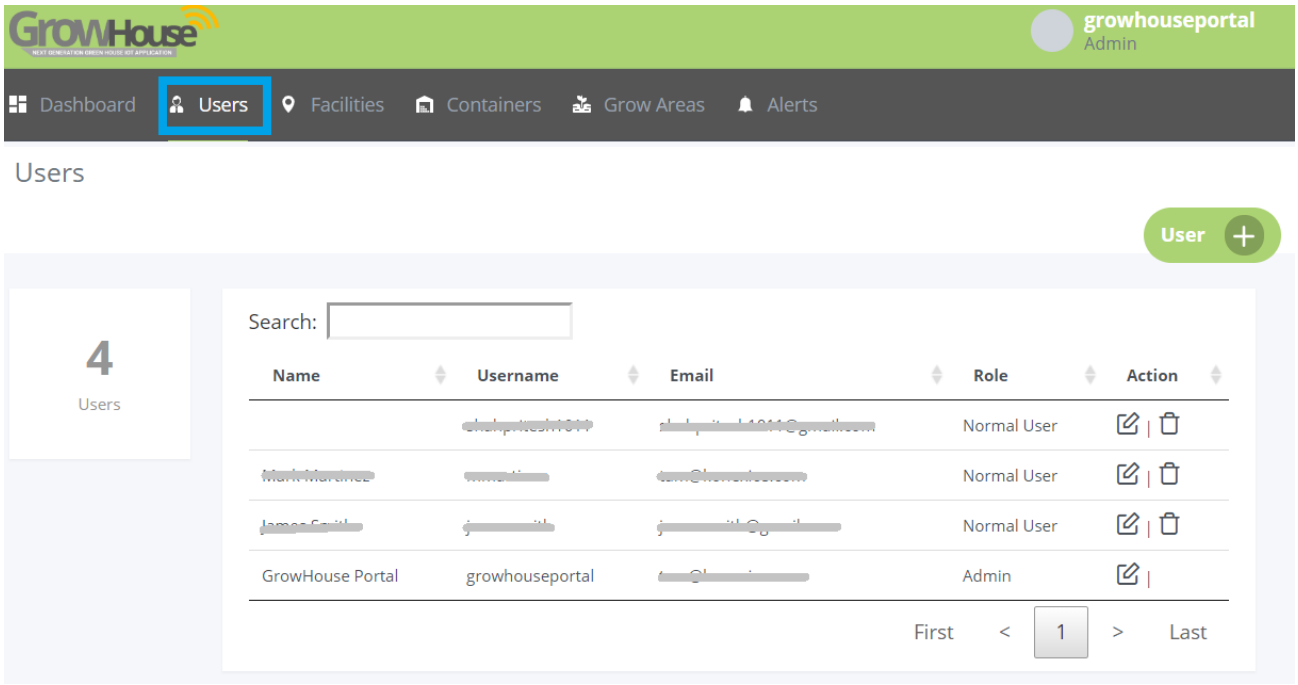


Figure 7: Users Page

- The table below describes the access levels.

Page	Admin User Access	Normal User Access
Dashboard	View	View
Users	View, create, edit and delete	Not Available
Facilities	View, create, edit and delete	Not Available
Containers	View, create, edit and delete	Not Available
Grow Areas	View and delete	View
Devices	View, access, control and delete	View, access and control
Groups	View, create, edit and delete	View, create, edit and delete
Group Profiles	View, create, edit, apply, schedule and delete	View, create, edit, apply, schedule and delete
Group Events	View and delete	View and delete
Grow Sections	View, create, edit and delete	View, create, edit and delete
Rules	View, create, edit and delete	View, create, edit and delete
Alerts	View	View

Table 5: Normal and Admin User Access Role

4.3.1 Create User

- Click on “User +” button.

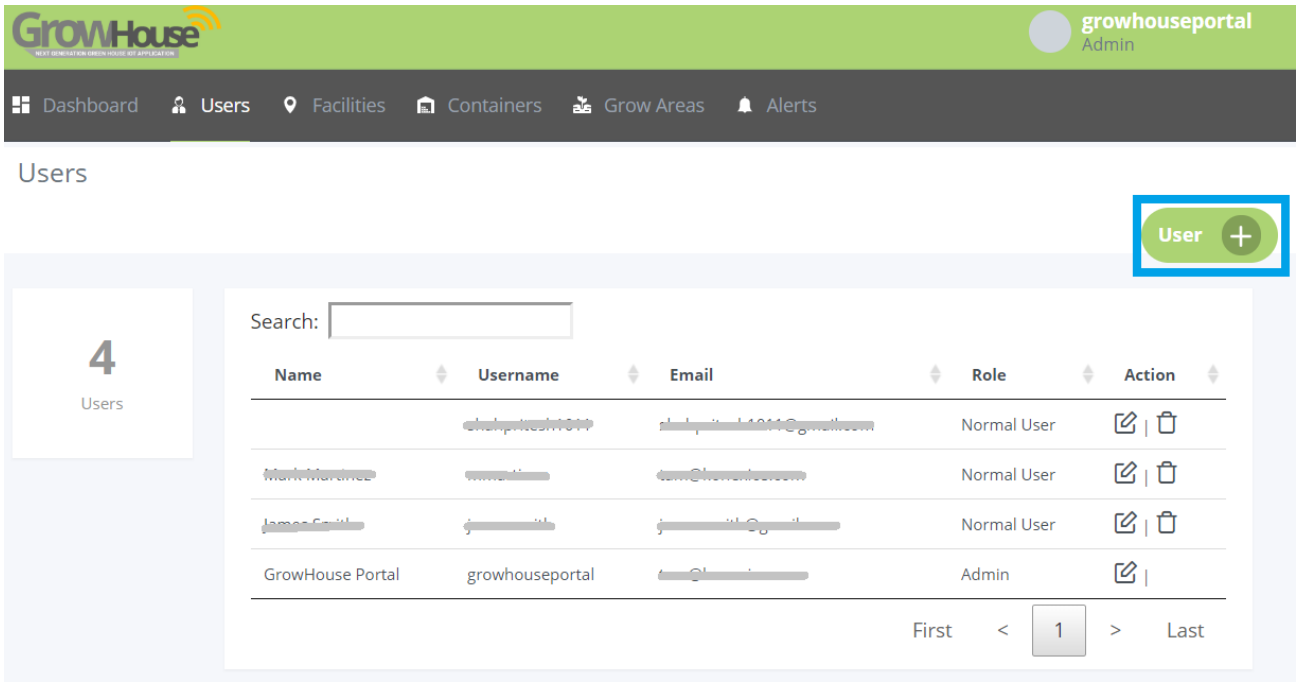


Figure 8: Create New User

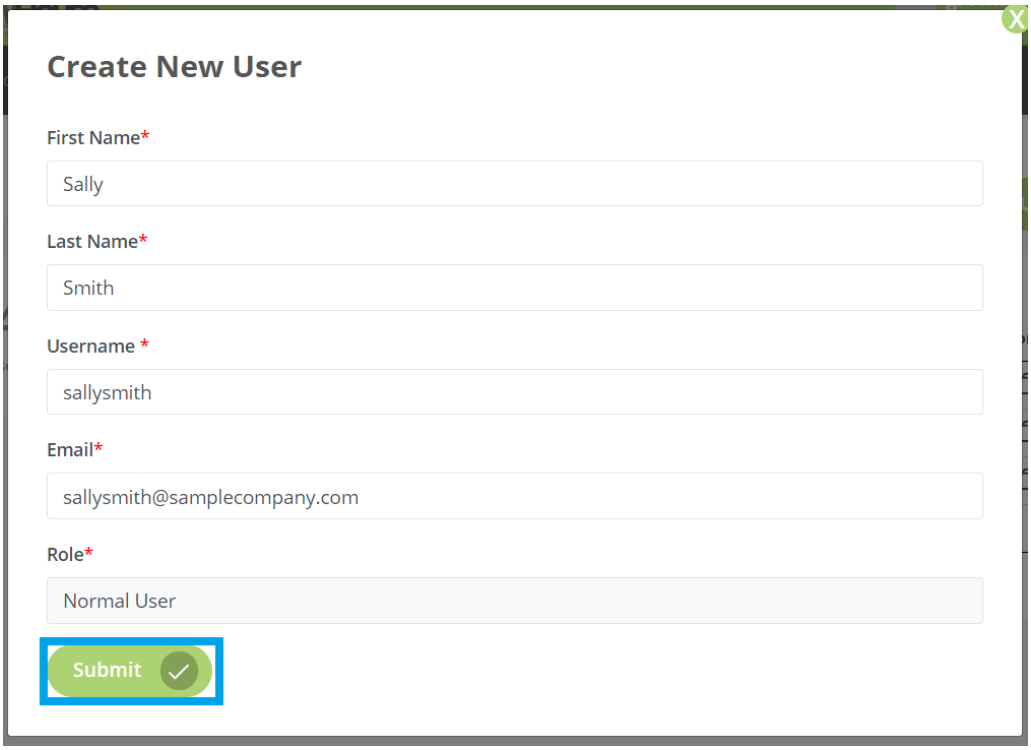


Figure 9: Create New User – User’s details

- Enter all the details and click on “Submit” button.
- “User Created Successfully” message will be displayed on successful creation of user.
- An email will be sent to the user with their Username and a temporary password.

- Once the user logs in for the first time, they will be required to set a new password.

Validations:

- Only letters allowed in username field
- Only alphanumerical allowed in email field

4.3.2 Edit User

- Click on edit icon .

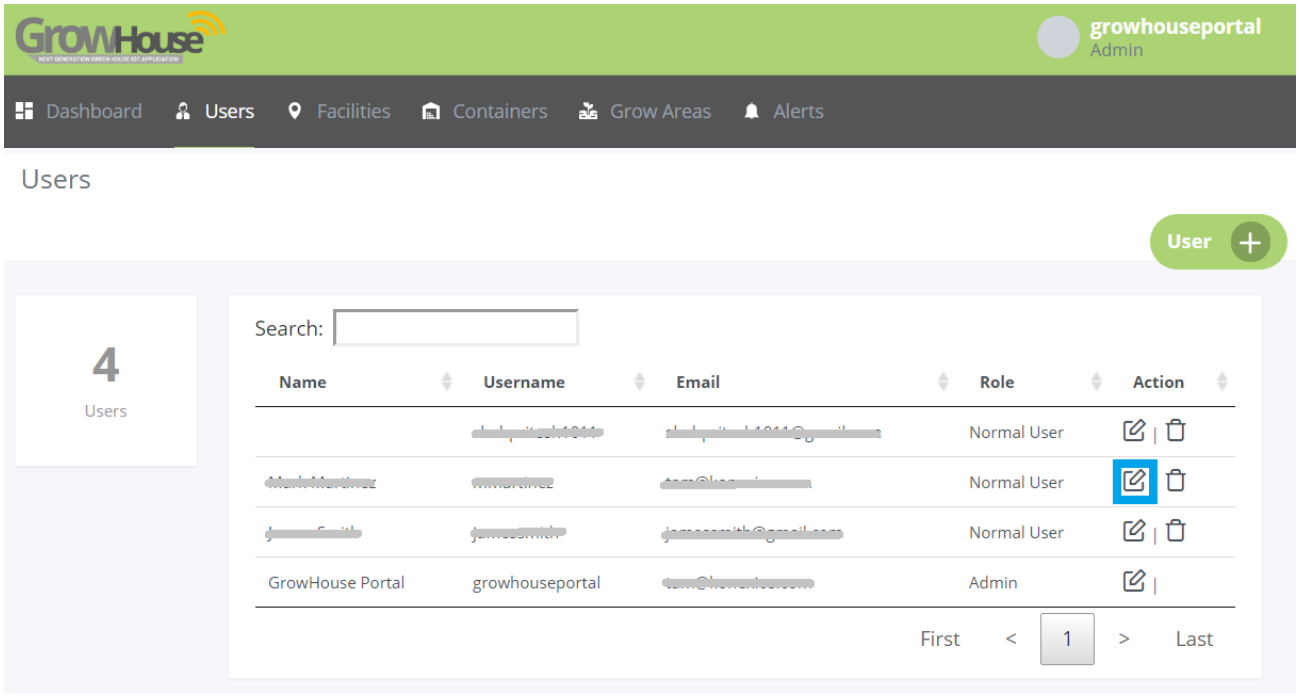


Figure 10: Edit User

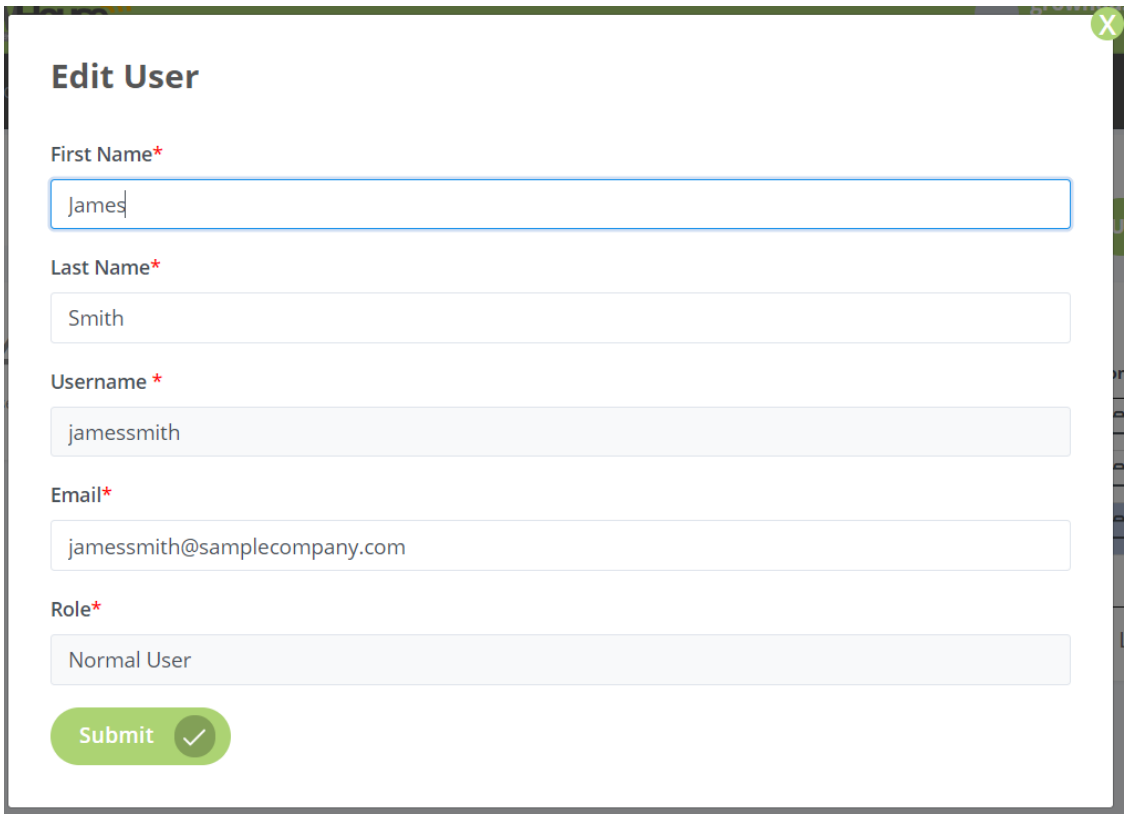


Figure 11: Edit User – User's details

- Change First Name, Last Name, Username and Email as desired.
- Click on "Submit" button.
- "User edited successfully" message will be displayed on successful update of user information.

Validations:

- Only alphanumerical allowed in email field

Note:

- Username field cannot be modified
- Role field cannot be modified

4.3.3 Delete User

- Click on delete icon .

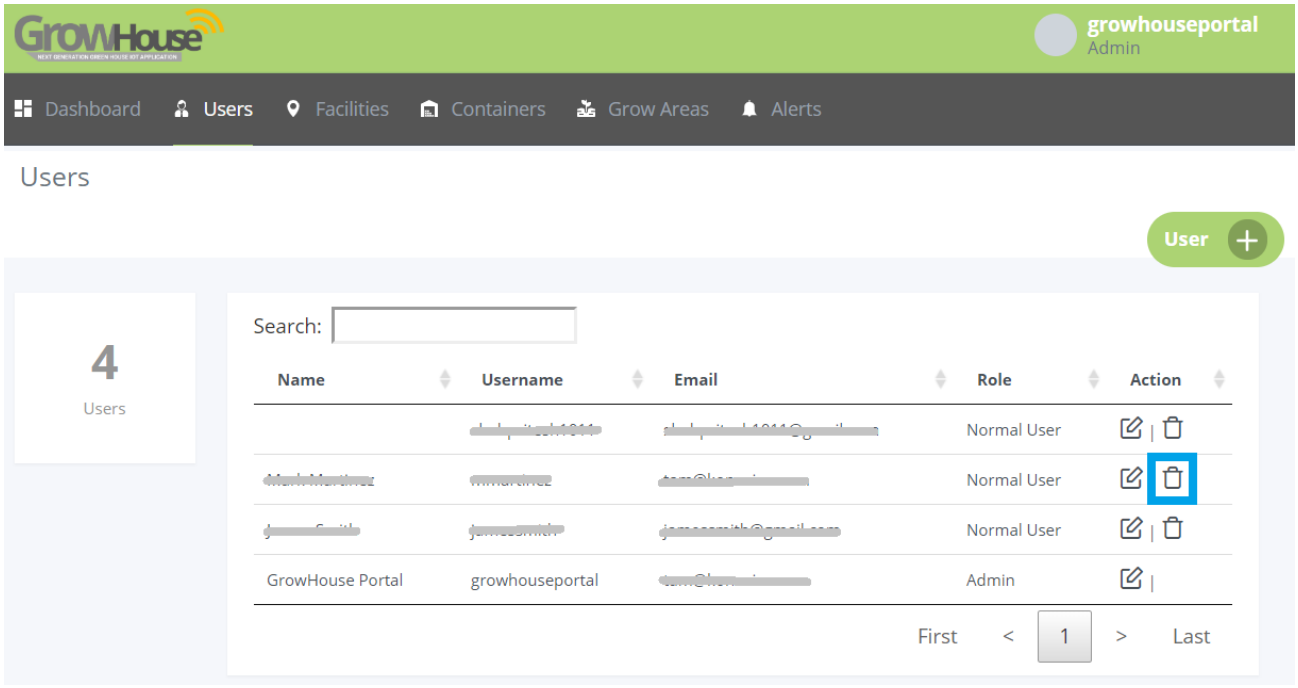


Figure 12: Delete User

- Click on “Delete” button.

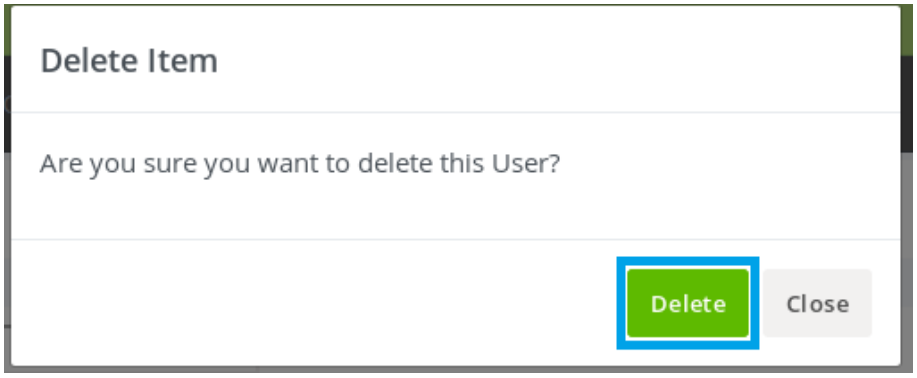


Figure 13: Delete User Confirmation

- “User deleted successfully” message will be displayed on successful deletion of user.

4.4 Facility Management

Facilities screen shows the total number of active facilities under the admin account and their details. It also allows user to add, view, edit and delete facilities. One facility can have multiple containers.

- Select “Facilities” tab

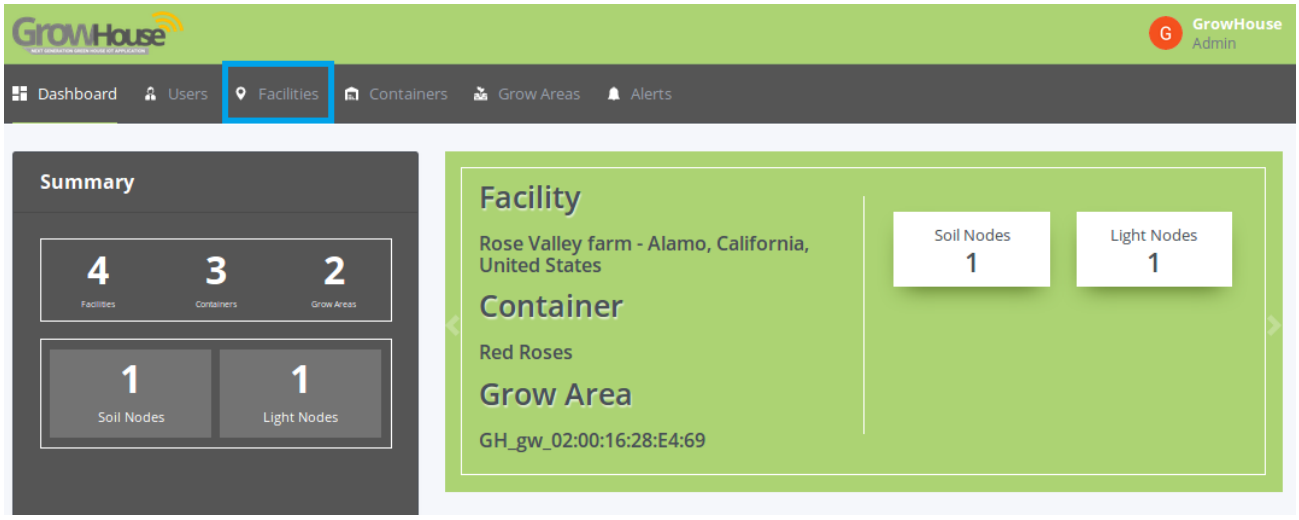


Figure 14: Facilities Page

- Facilities page will open up and a list of existing facilities added by logged in user will be shown.

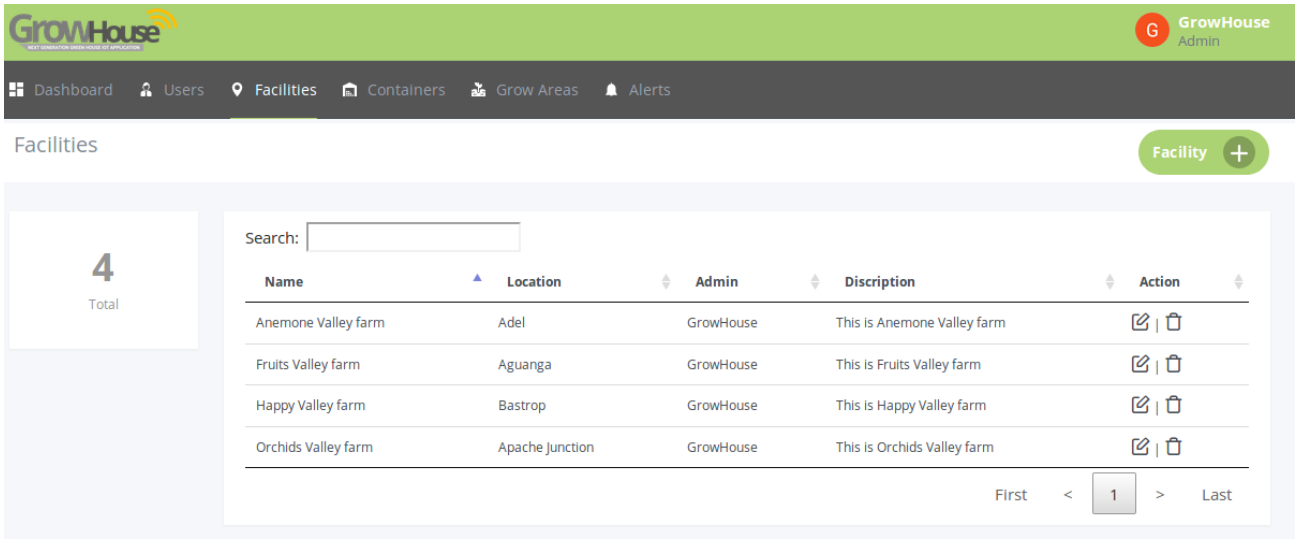


Figure 15: Facilities List

4.4.1 Create Facility

When creating a new facility the administrator also has the option of creating a container at the same time.

- Click on the “Facility +” button.

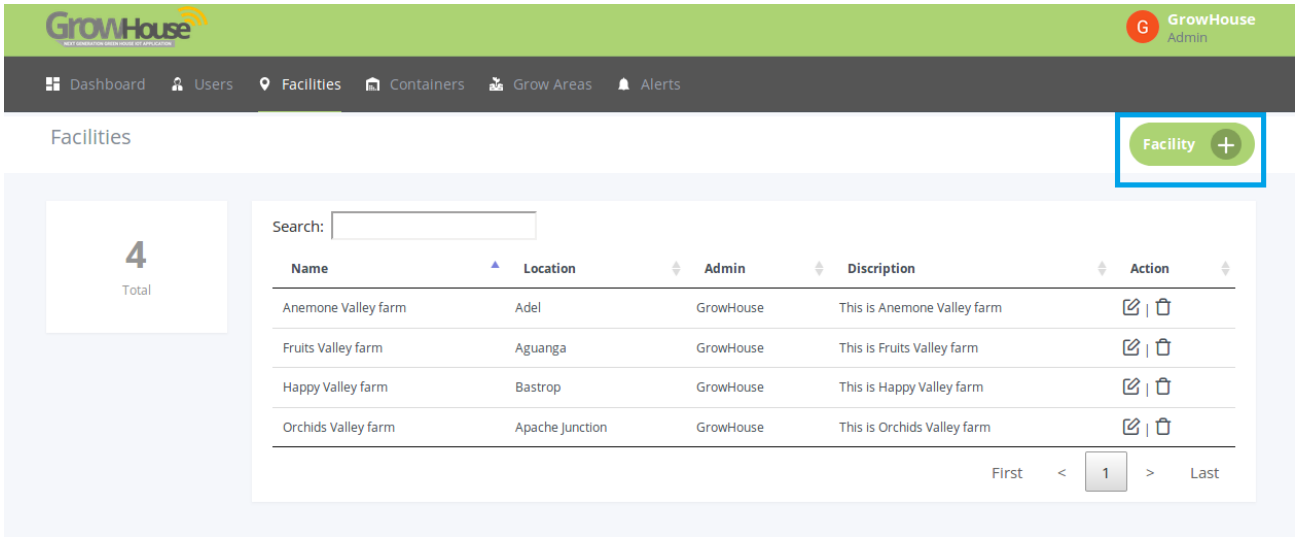


Figure 16: Create New Facility

- Enter facility name.
- Select facility admin.
- Select country, state, locality.
- If while creating facility you want to create container then click on “Add respective container now”.
    - Add container name
    - Select container type.
    - Click on “Done” button.
  - Else click on “Done” button.
  - “Facility created successfully” message will be displayed on successful creation of facility.

Validations:

- Only alphanumerical allowed in facility name field.
- Zip field validation depends on selected country.eg USA Zip codes are five digits.

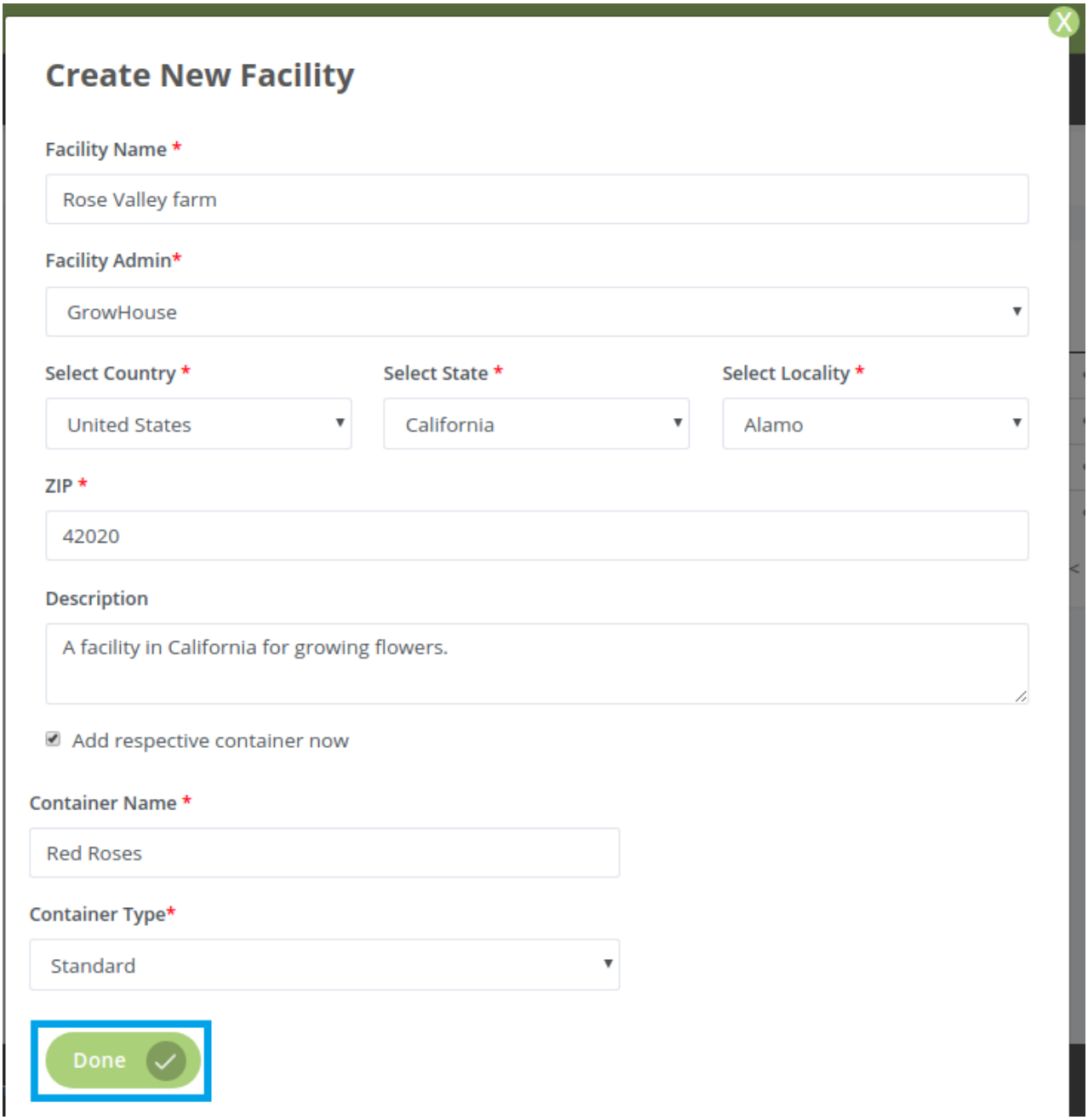


Figure 17: Create New Facility – Facility's details

4.4.2 Edit Facility

- Click on edit icon .

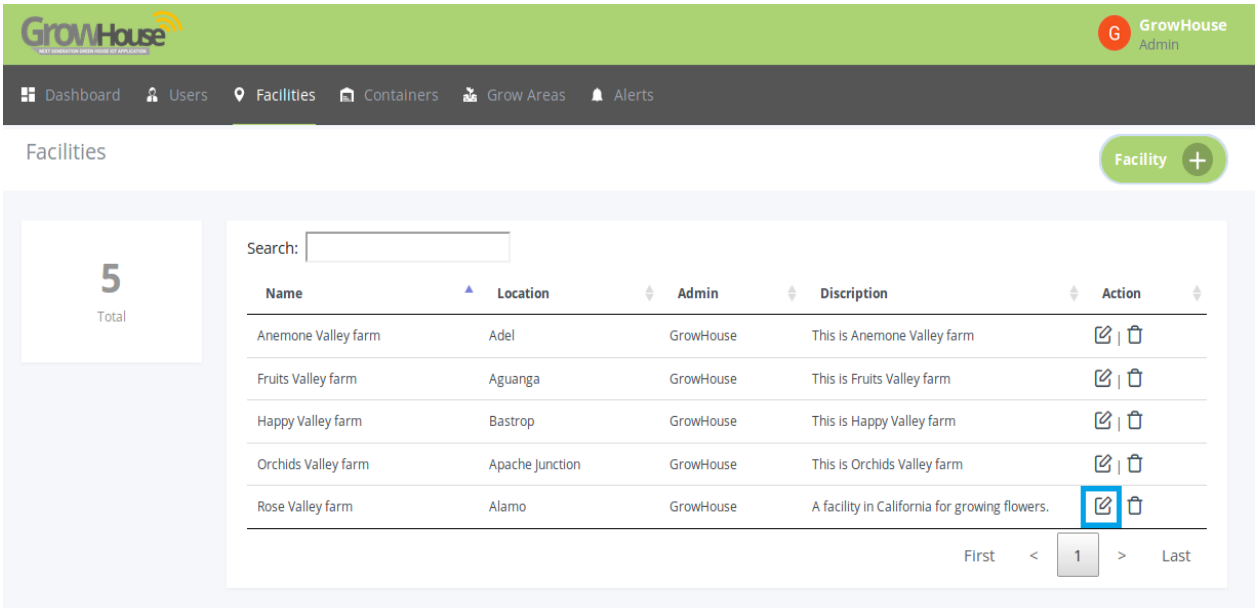


Figure 18: Edit Facility

- Edit required details.
- Click on “Done” button.
- “Facility updated successfully” message will be displayed on successful update of facility.

Validations:

- Only alphanumerical allowed in facility name field.
- Zip field validation depends on selected country.eg USA Zip codes are five digits.

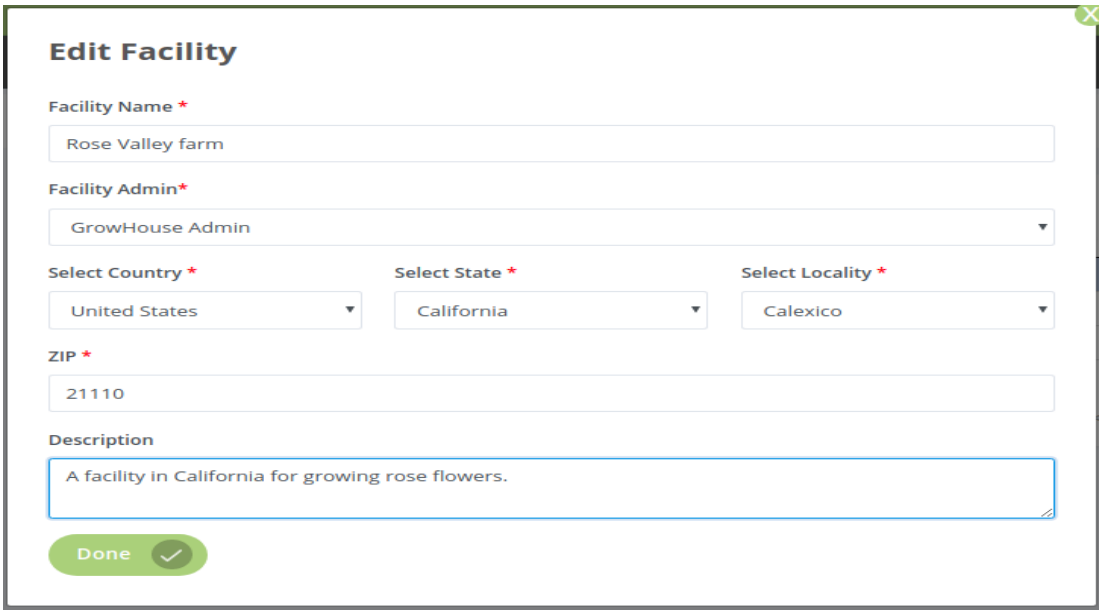


Figure 19: Edit Facility – Facility’s Details

4.4.3 Delete Facility

- Click on delete icon .

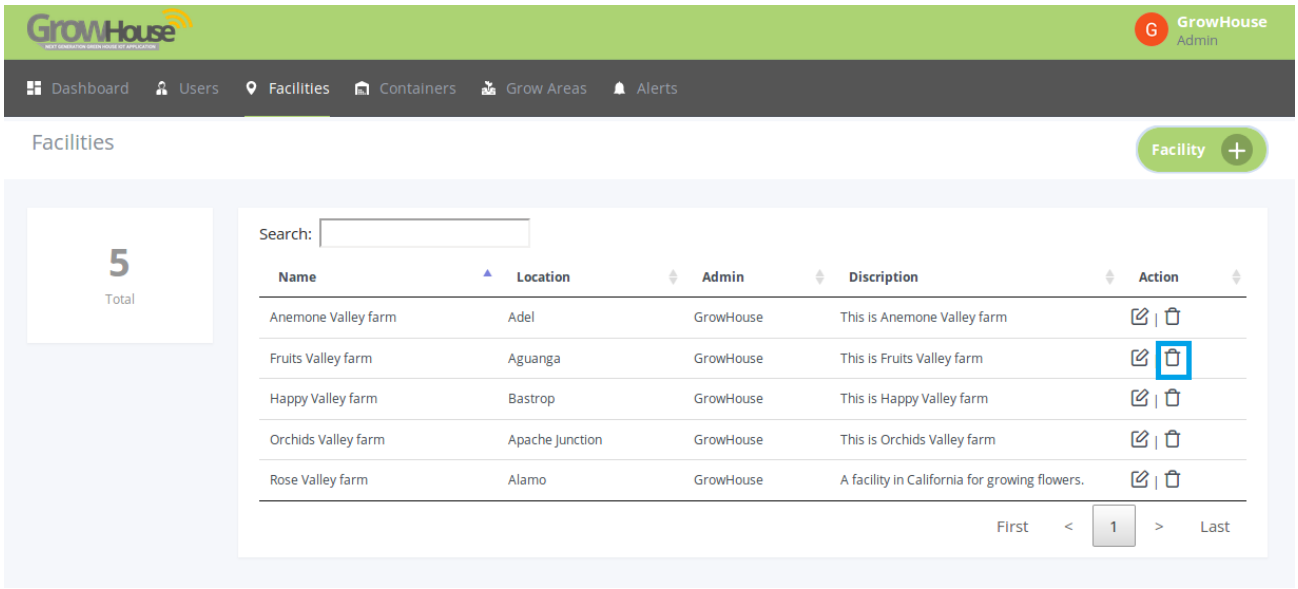


Figure 20: Delete Facility

- Click on “Delete” button.
- “Facility deleted successfully” message will be displayed on successful deletion of facility.

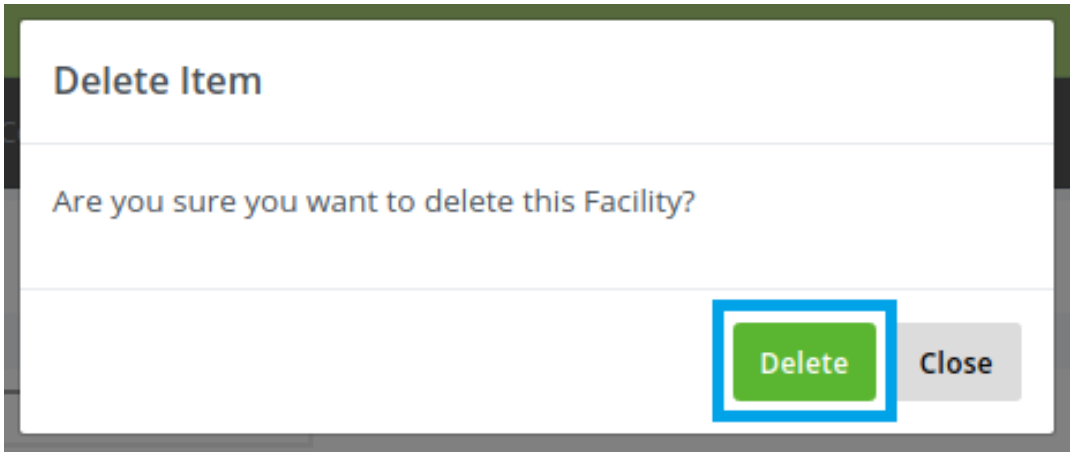


Figure 21: Delete Facility Confirmation

4.5 Container Management

Container screen shows the total number of active containers under the admin account and their details. It also allows user to add, view, edit and delete the containers.

- Select “Containers” tab.

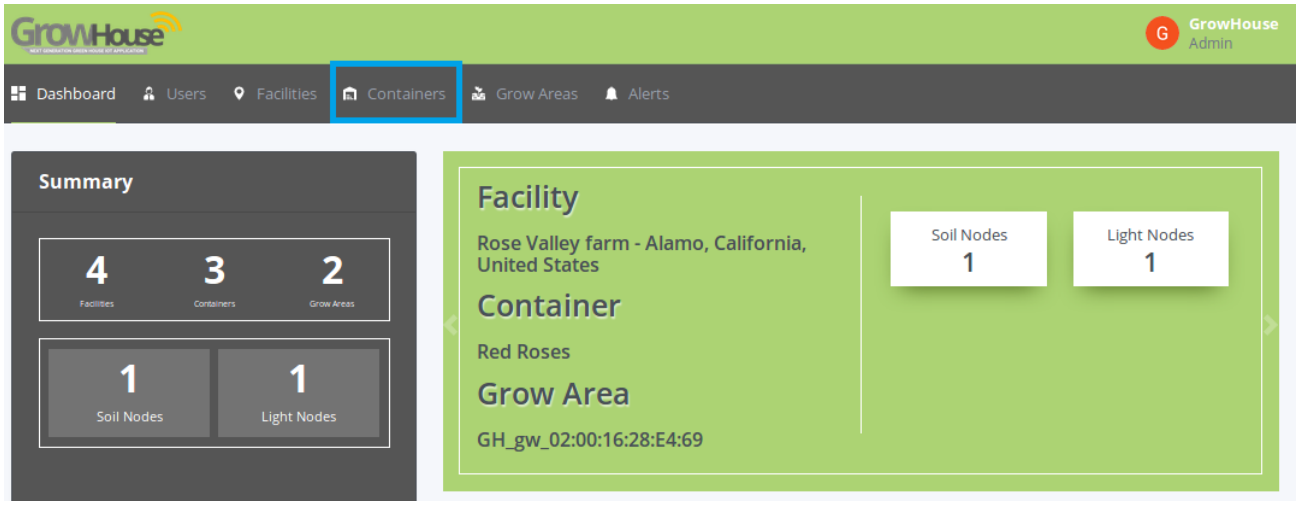


Figure 22: Containers Page

- Containers page will open up and a list of existing containers added by logged in user will be shown.

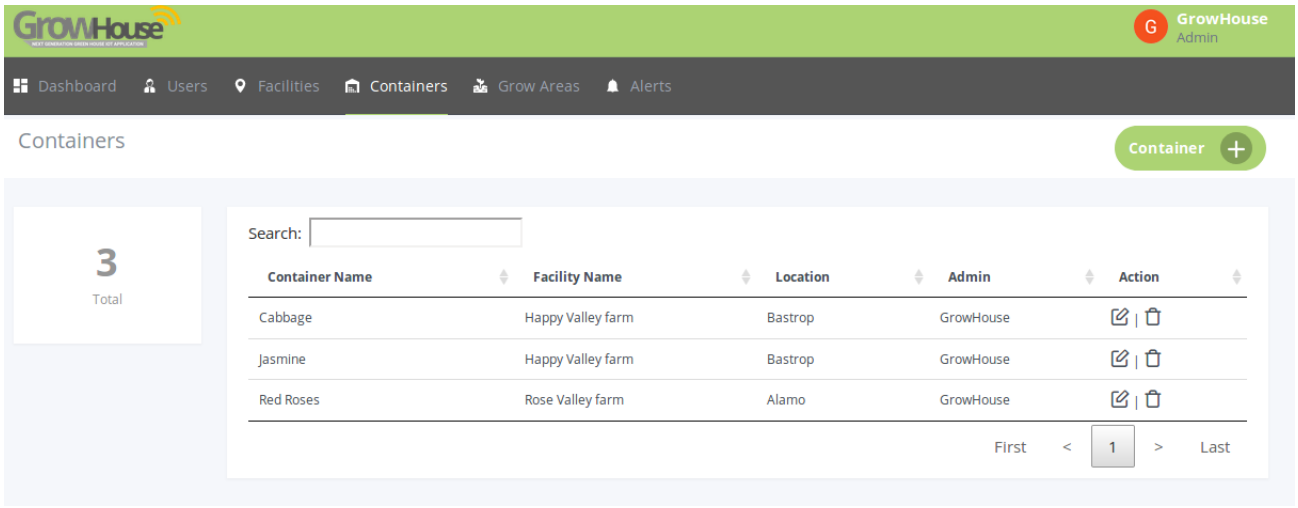


Figure 23: Containers List

4.5.1 Create Container

Admin user can create container two different ways. When a facility is created, the user can also choose to create a container at this time. Alternatively, the user can create a new container within an existing facility.

- Click on the “Container +” button.

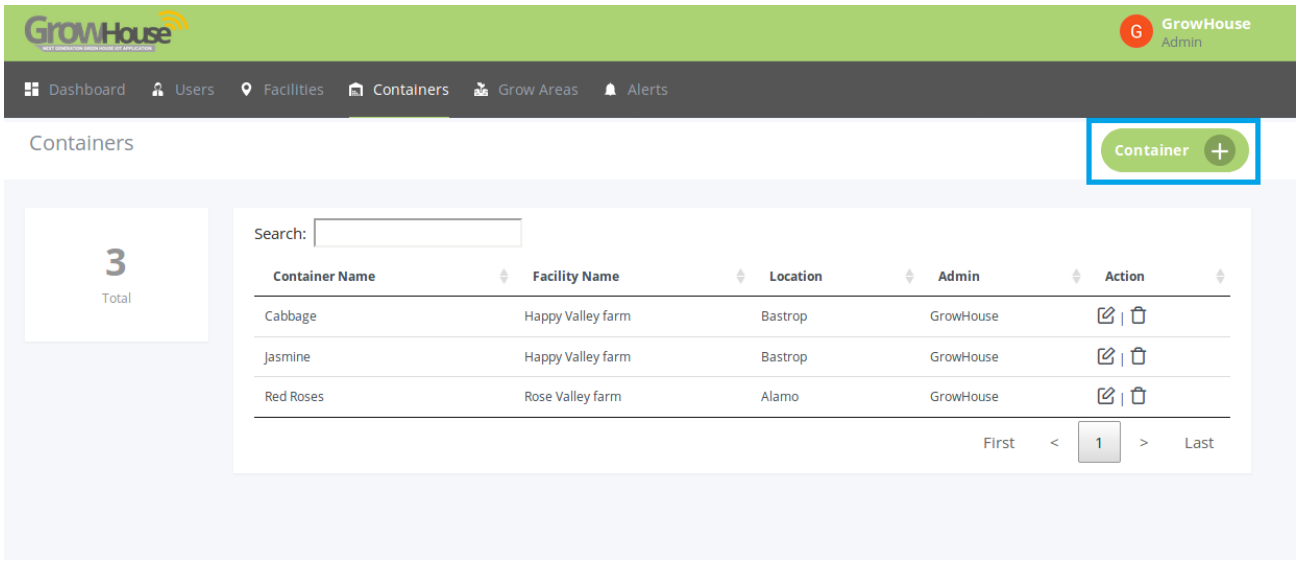


Figure 24: Create New Container

- Enter container name.
- Select facility.
- Enter description.
- Click on “Done” button.
- “Container created successfully” message will be displayed on successful creation of Container.

Validations:

- Only alphanumerical allowed in container name field.

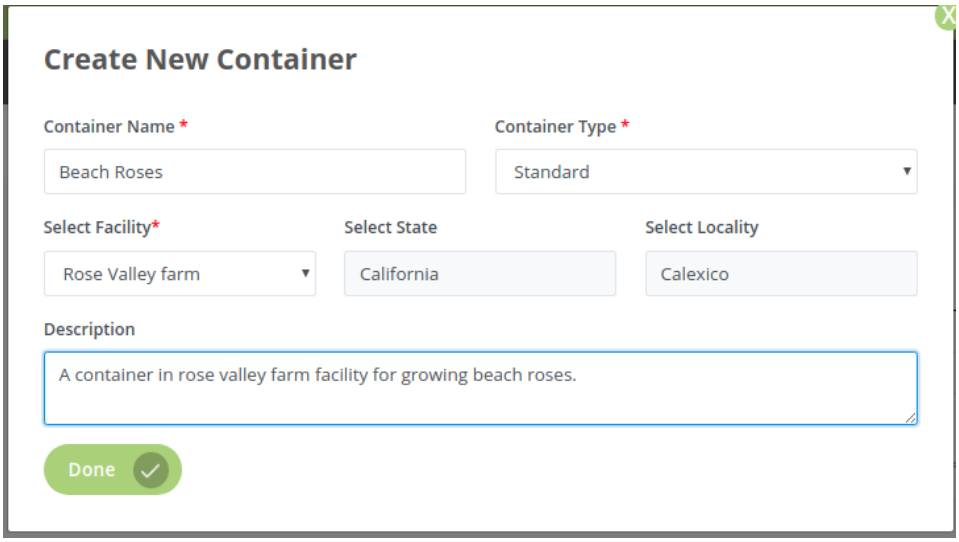


Figure 25: Create New Container – Container’s details

4.5.2 Edit Container

- Click on edit icon .

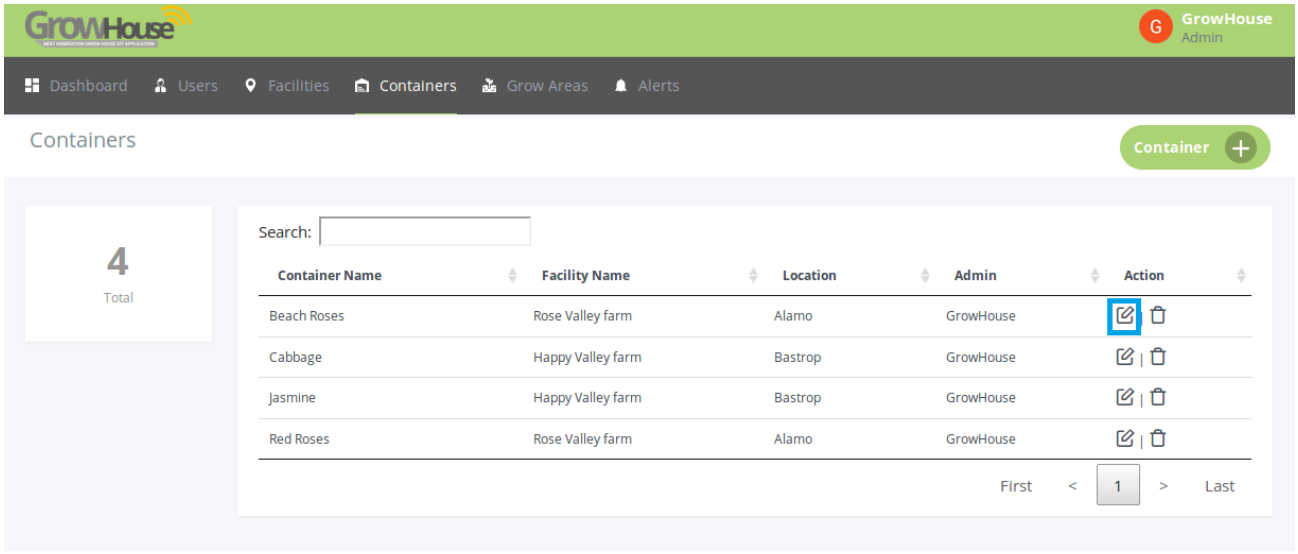


Figure 26: Edit Container

- Edit required details.
- Click on “Done” button.
- “Container updated successfully” message will be displayed on successful update of Container.

Note:

- Facility, State and Locality fields cannot be modified.

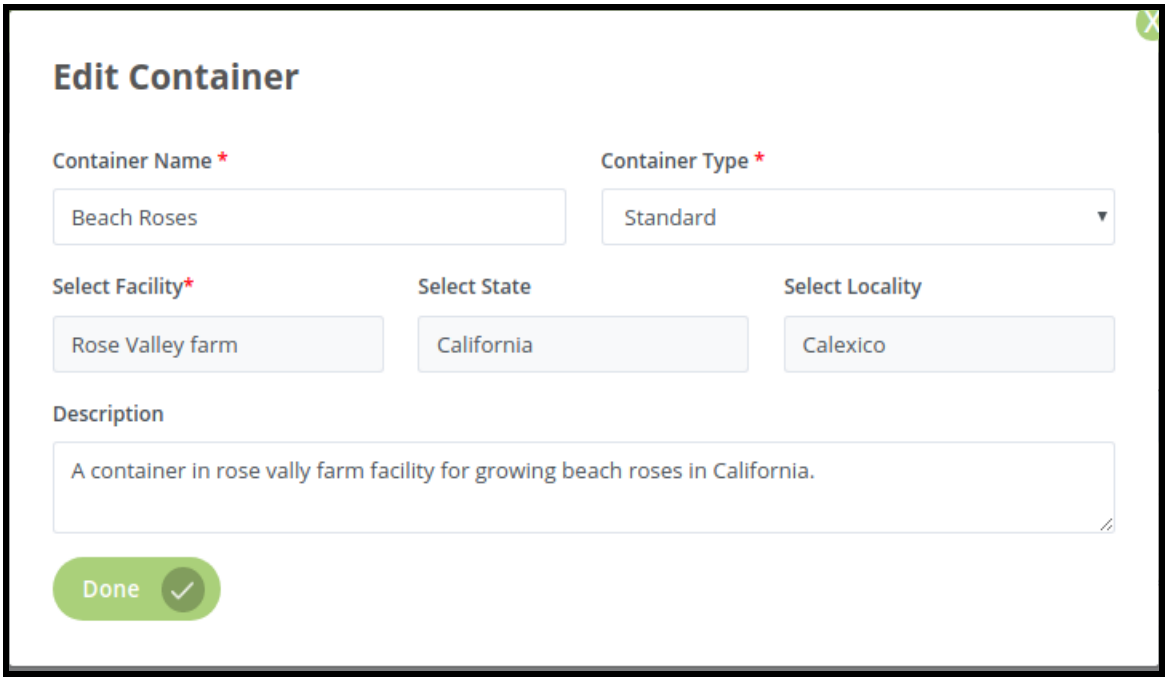


Figure 27: Edit Container – Container’s details

4.5.3 Delete Container

- Click on delete icon .

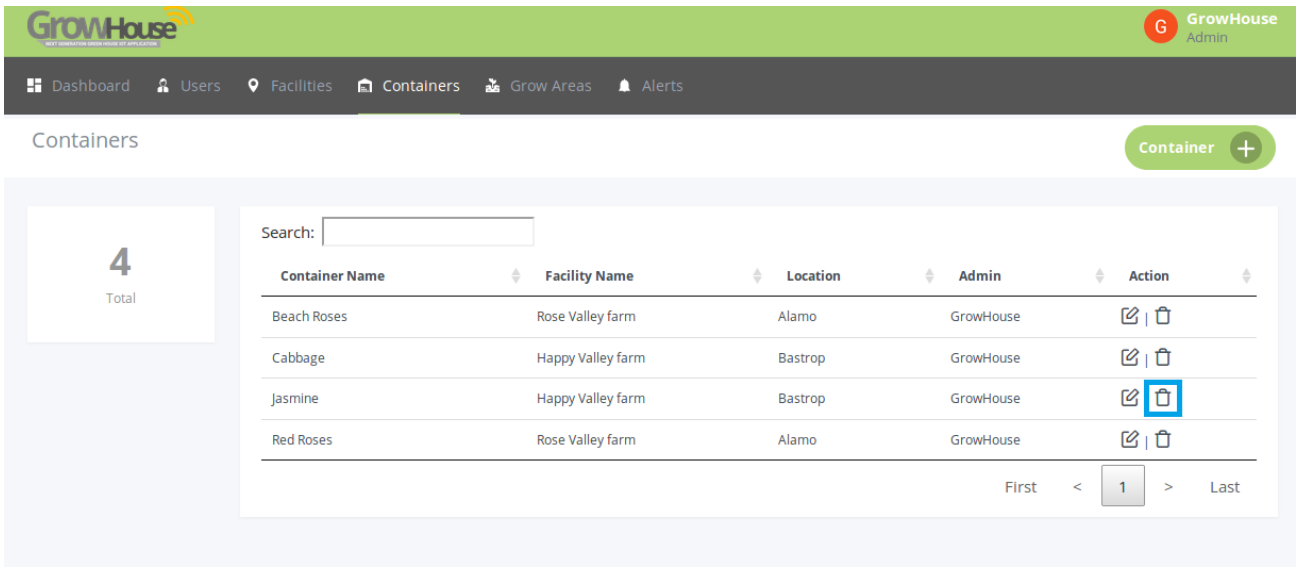


Figure 28: Delete Container

- Click on “Delete” button.
- “Container deleted successfully” message will be displayed after successful deletion of container.

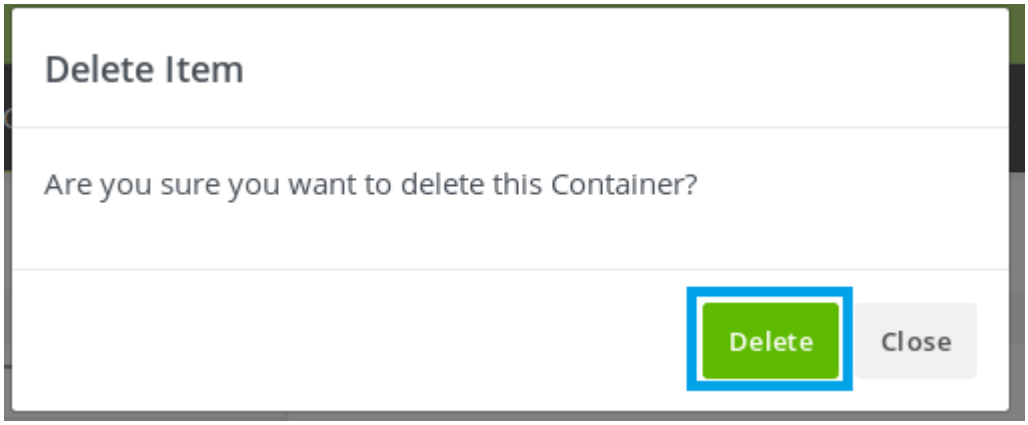


Figure 29: Delete Container Confirmation

4.6 Grow Area

Grow Area is the actual Gateway which is registered on Growhouse IOT platform. Grow Area and Gateway are referred to interchangeably in this document.
Gateways are added by admin user. This is done using Growhouse Mobile Application and Gateway(s) in the field. Refer *ei_Growhouse_Mobile_Application_User_Manual.pdf* on how to add Gateway/Grow Area.

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 web portal might take up to 15 to 30 minutes to show Gateway device as an out of network. Out of network Grow Area list is shown on Dashboard page as shown in below image and Grow Areas page.

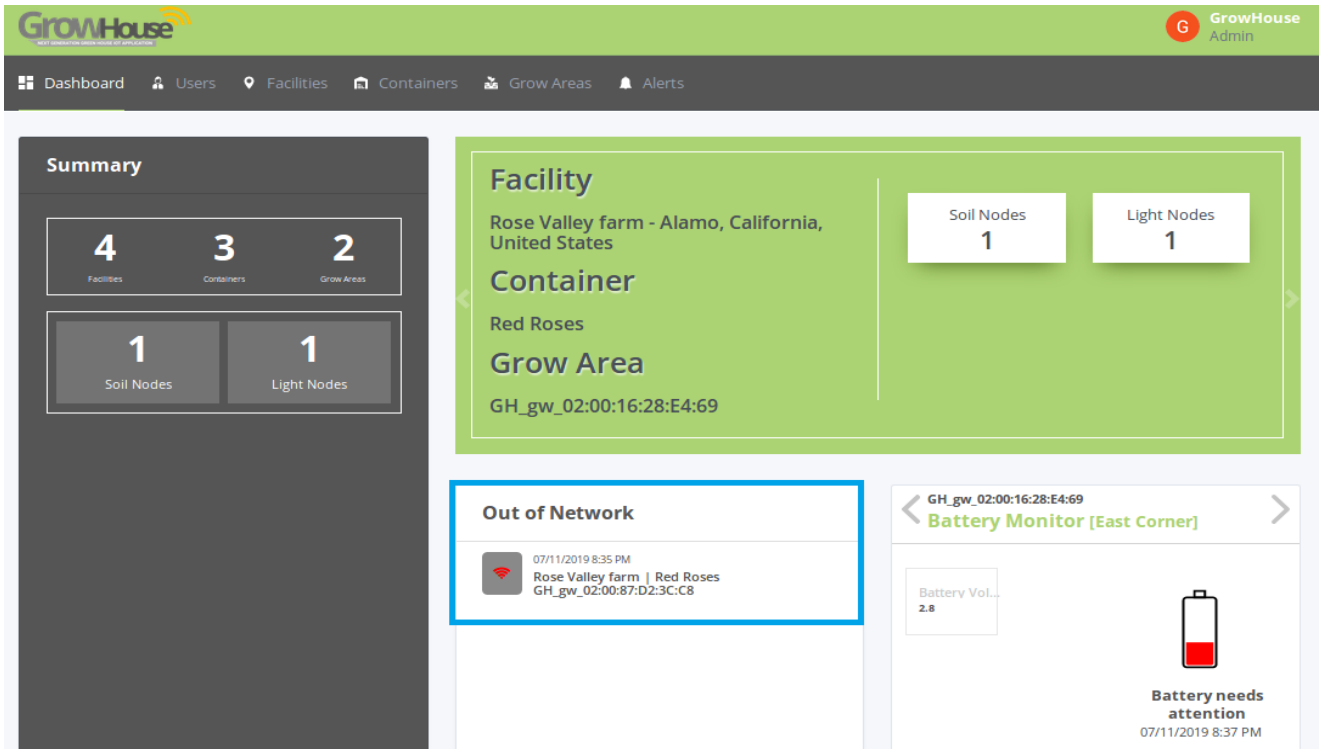


Figure 30: Out of Network Gateway

- Select “Grow Area” tab.

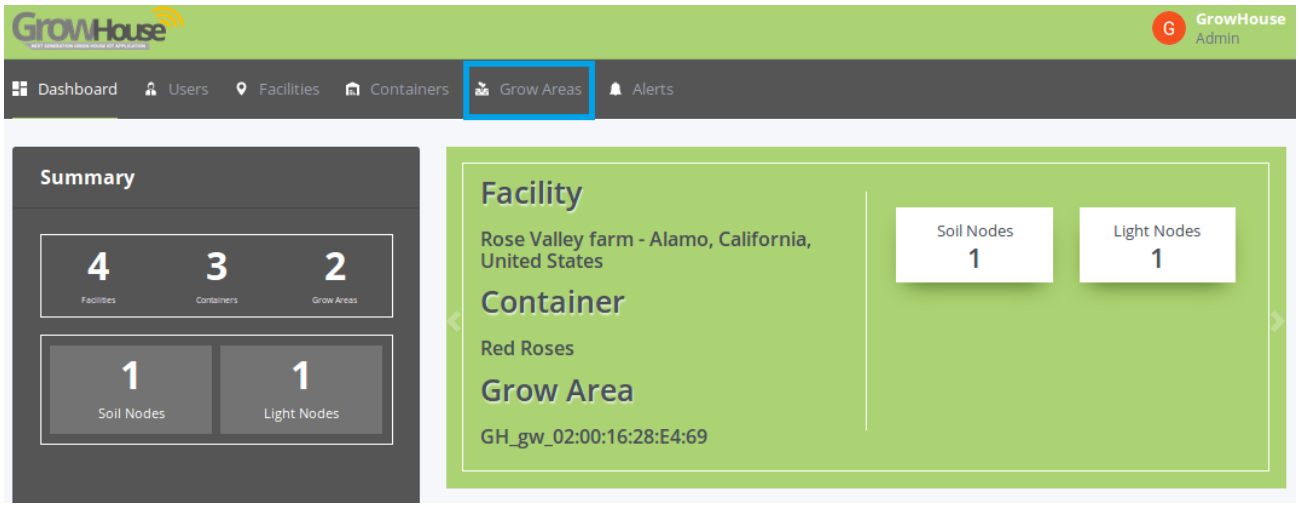


Figure 31: Grow Areas Page

- Grow Areas page will open up and a list of existing grow areas added by logged in user will be shown.
- Grow Areas page shows the total number of Grow Areas and the number of Grow Areas that are Out of network. Online Grow Areas are shown with icon. Out of network Grow Areas are shown with icon. Refreshing the page will show the latest status of Grow Areas.

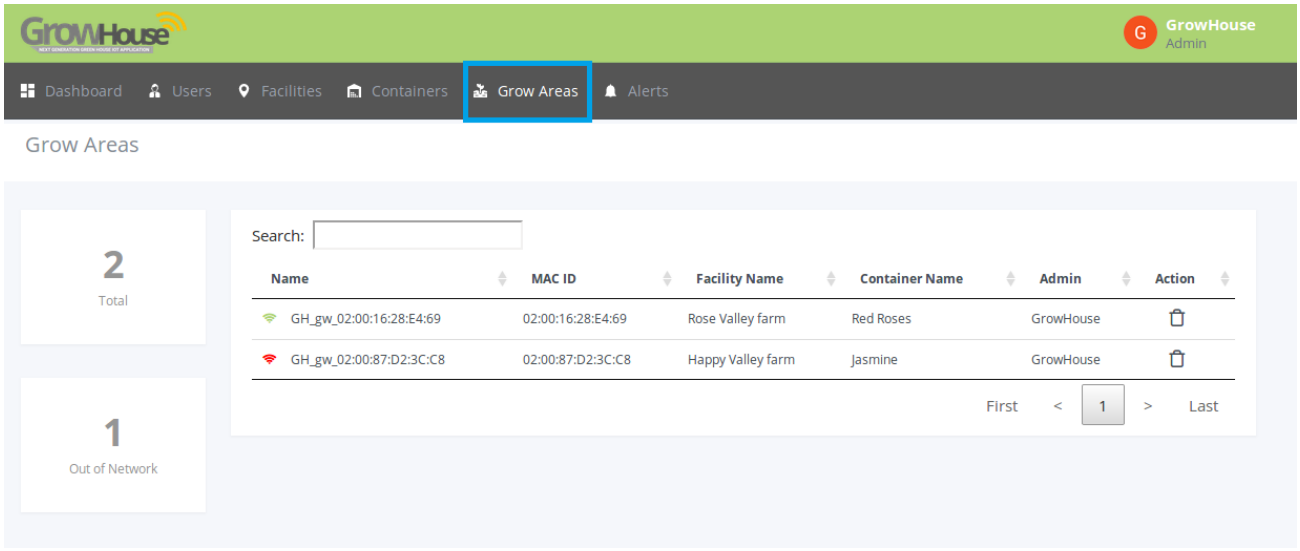


Figure 32: Grow Areas List

- To view a particular Grow Area, click anywhere on the respective row.

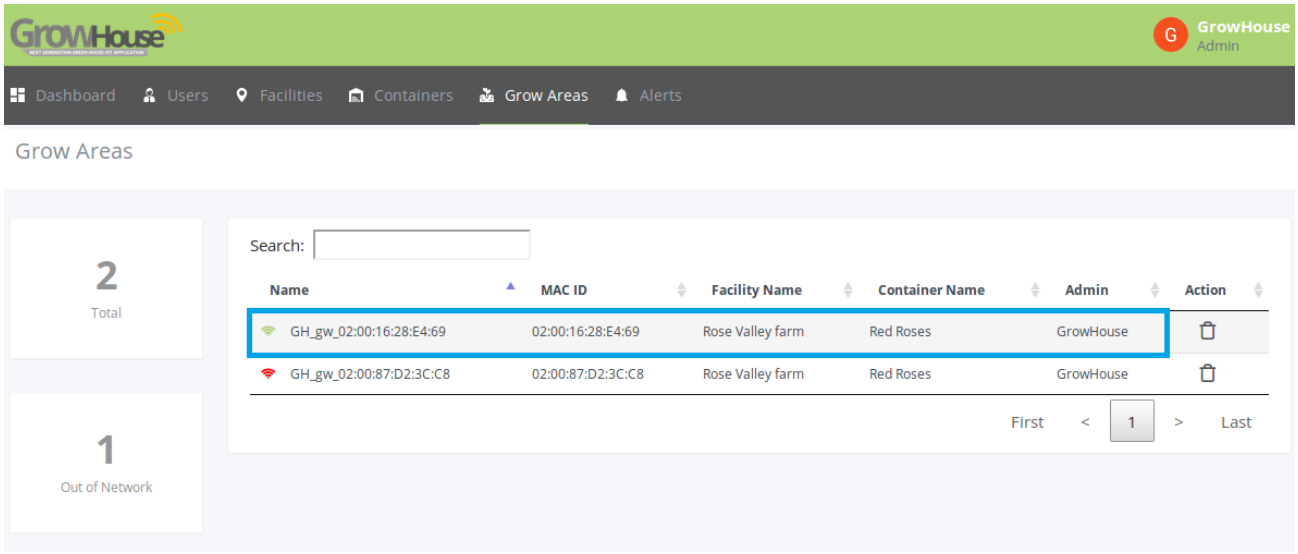


Figure 33: View Particular Grow Area

- Grow Area contains Sections, Devices, Rules and Groups features.

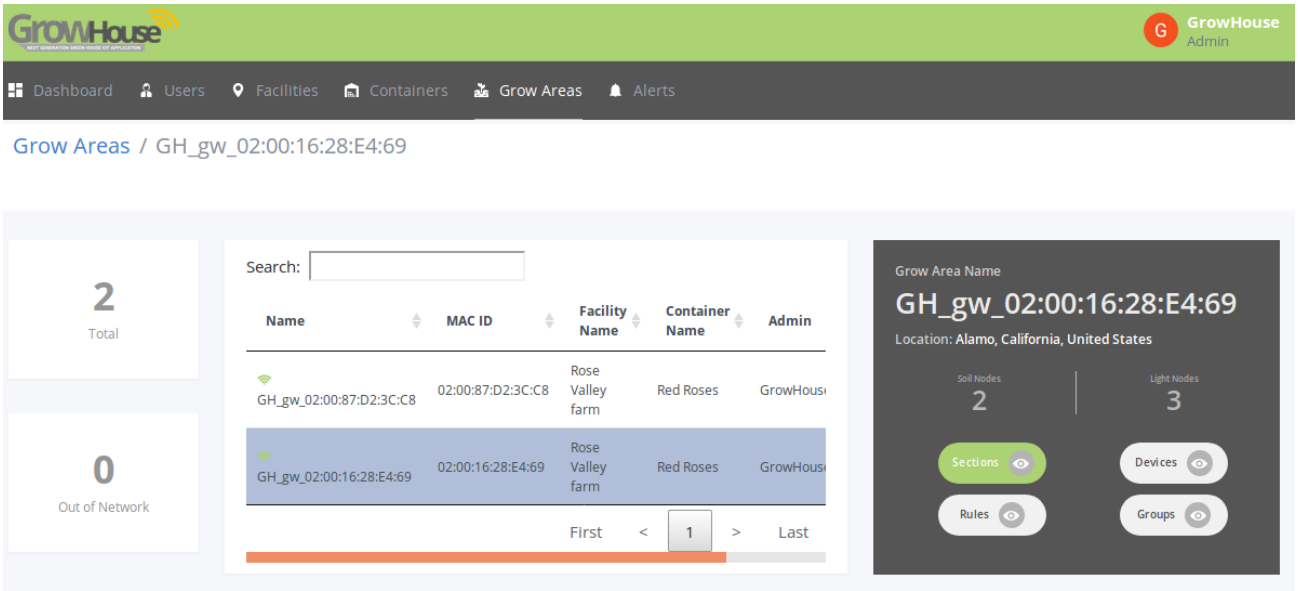


Figure 34: Grow Area's Section Devices Rules

4.6.1 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 from cloud.
- 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.

4.6.1.1 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.
- Upon Gateway deletion, online devices will be deleted from Growhouse web portal and will be un-provisioned, hence those device can be available for re-provisioning again within same Gateway or other.
- However, upon Gateway deletion, offline devices will be deleted from Growhouse web portal 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 9.2 and Section 9.3 on how to perform factory reset of LED node and Soil node respectively.

Perform below steps to see status of device and then steps to delete the Gateway.

- Select “Grow Areas” tab to see list of Grow Areas.

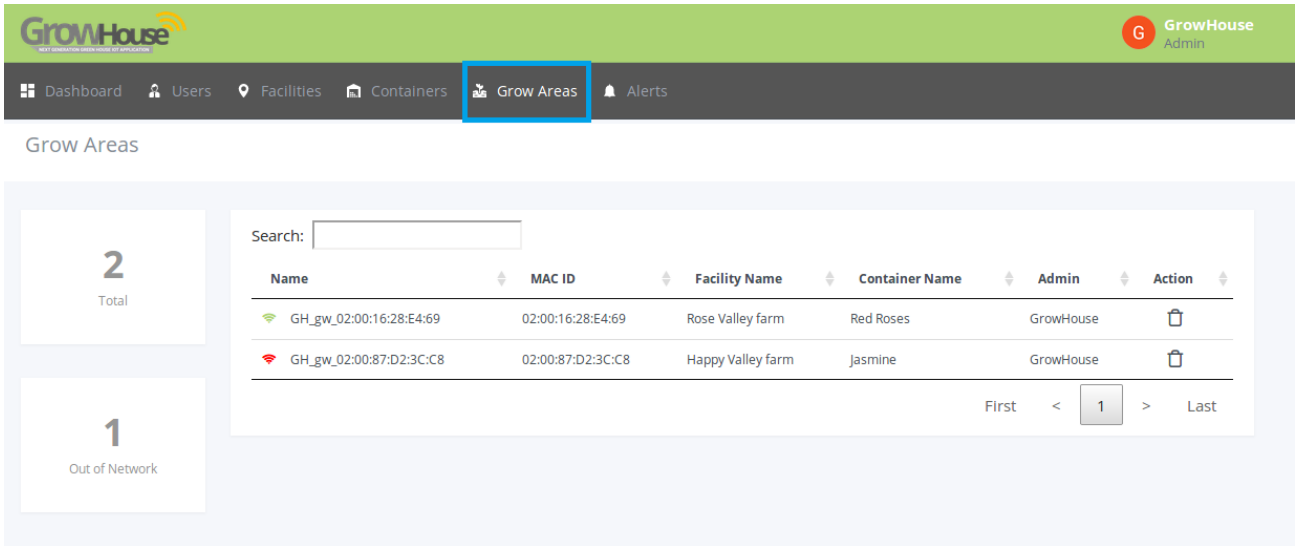


Figure 35: Grow Areas List

- Click on “Devices” button, to see status (online/offline) of Devices.

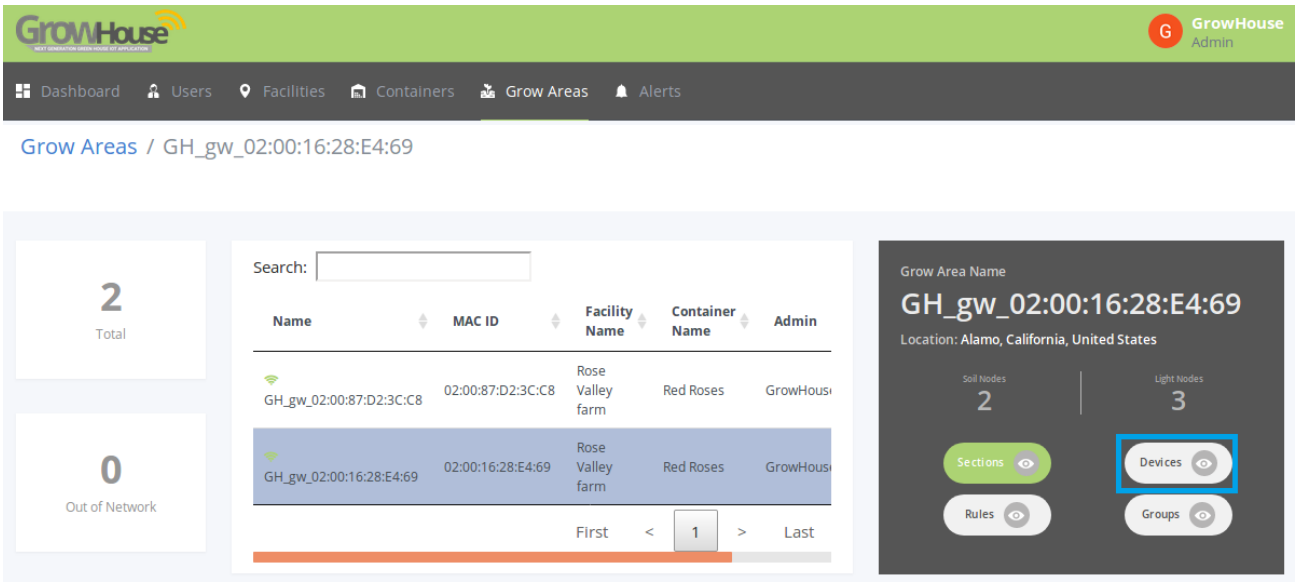


Figure 36: Devices of Gateway

- A list of existing devices provisioned under particular Gateway will be shown.

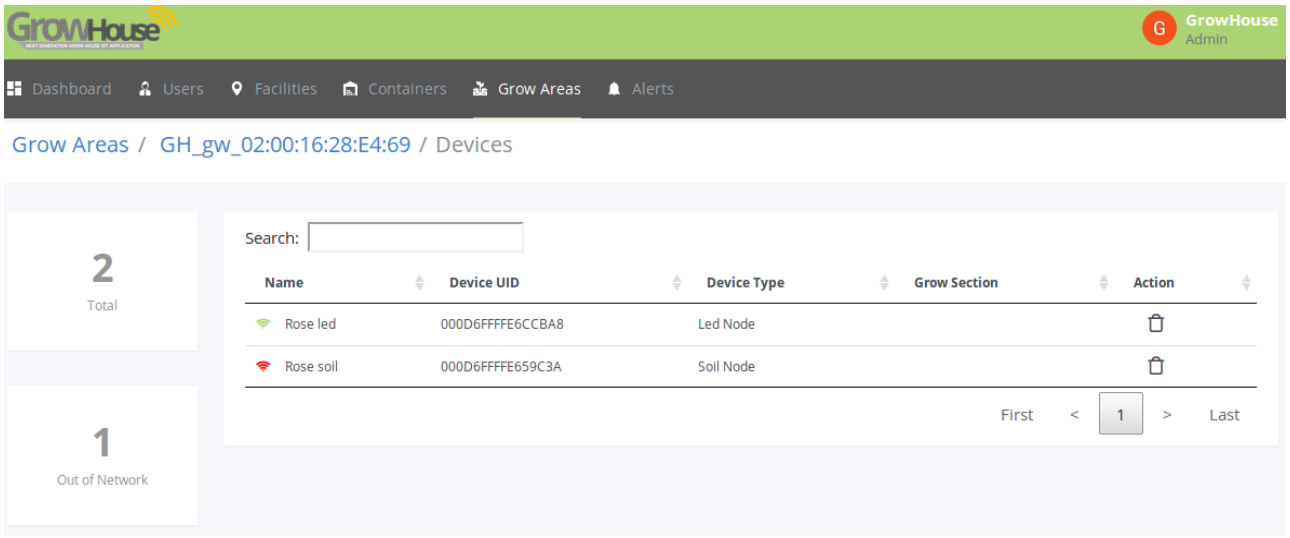


Figure 37: Devices List

For example, Rose led is shown as online. Therefore, after Gateway deletion process, Rose led will be deleted from Growhouse web portal and will be available for re-provisioning within same Gateway or other Gateway.

But, Rose soil is offline. Therefore, Rose soil will be deleted from Growhouse web portal but still it will be in provisioned state and will not be re-discoverable again.

To make Rose soil re-discoverable again, factory reset of Rose soil will be required.

- Follow below steps to delete an online Gateway.
- Select “Grow Areas” tab to see list of Grow Areas.

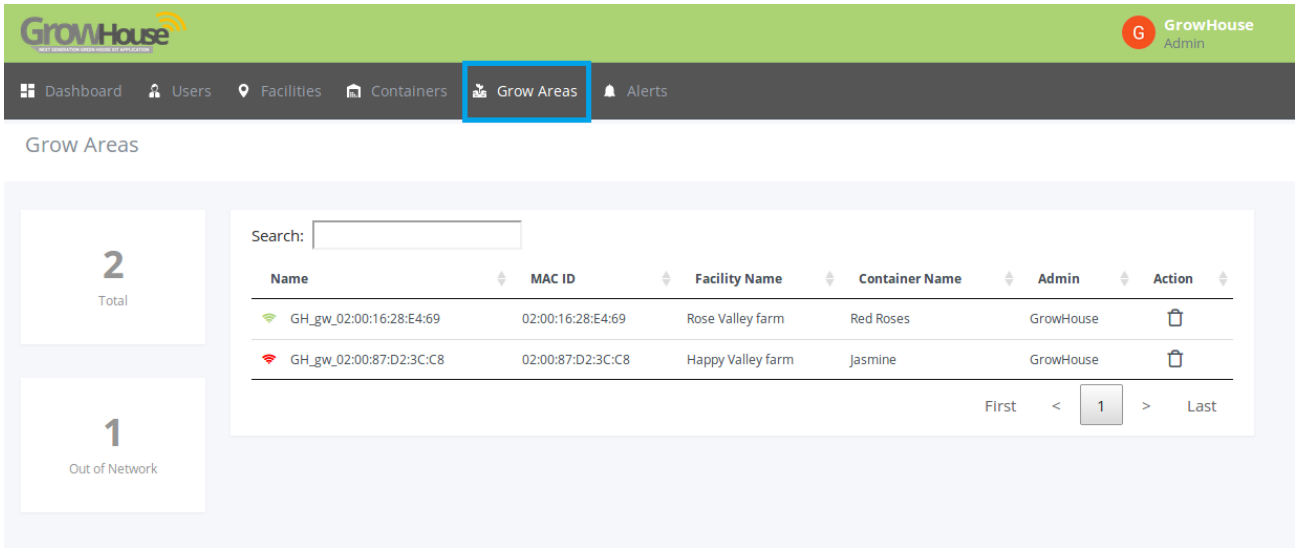


Figure 38: Grow Areas List

- Click on delete icon .

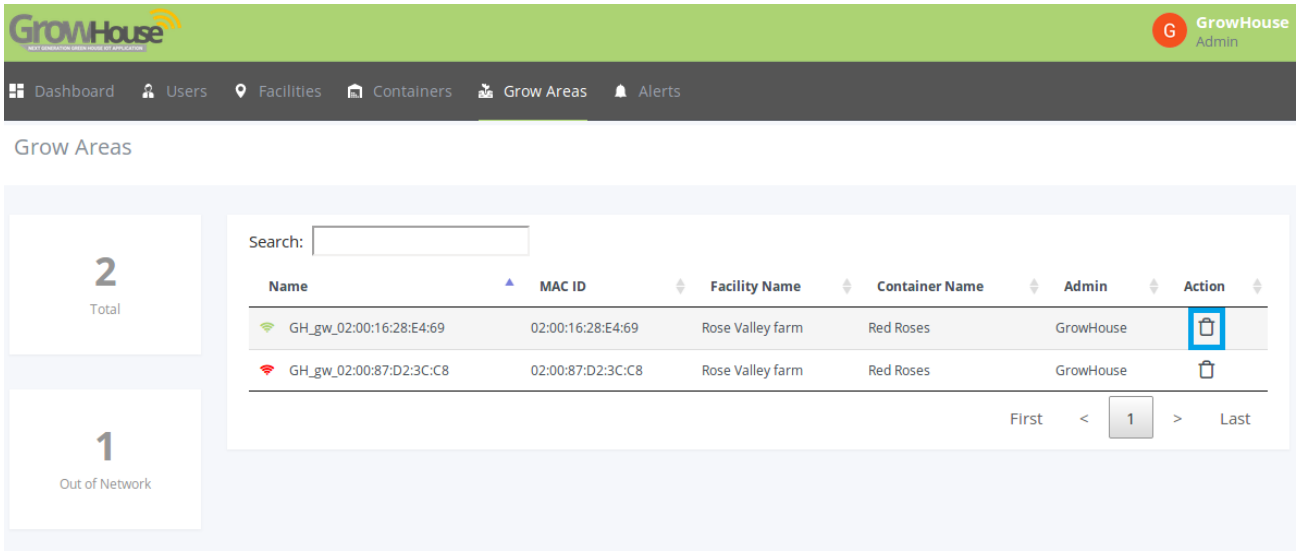


Figure 39: Deleting an Online Grow Area

- Click on “Delete” button.

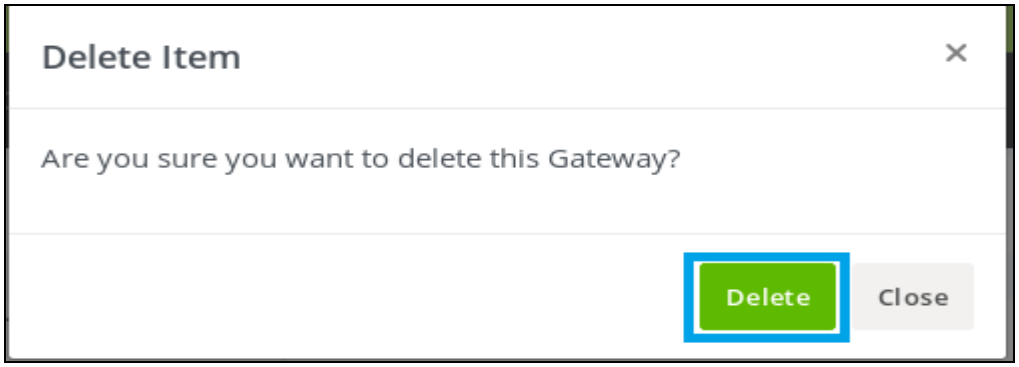


Figure 40: Delete an Online Grow Area Confirmation

- Grow Area deletion process will be initiated, and the progress will be displayed as shown in below image.

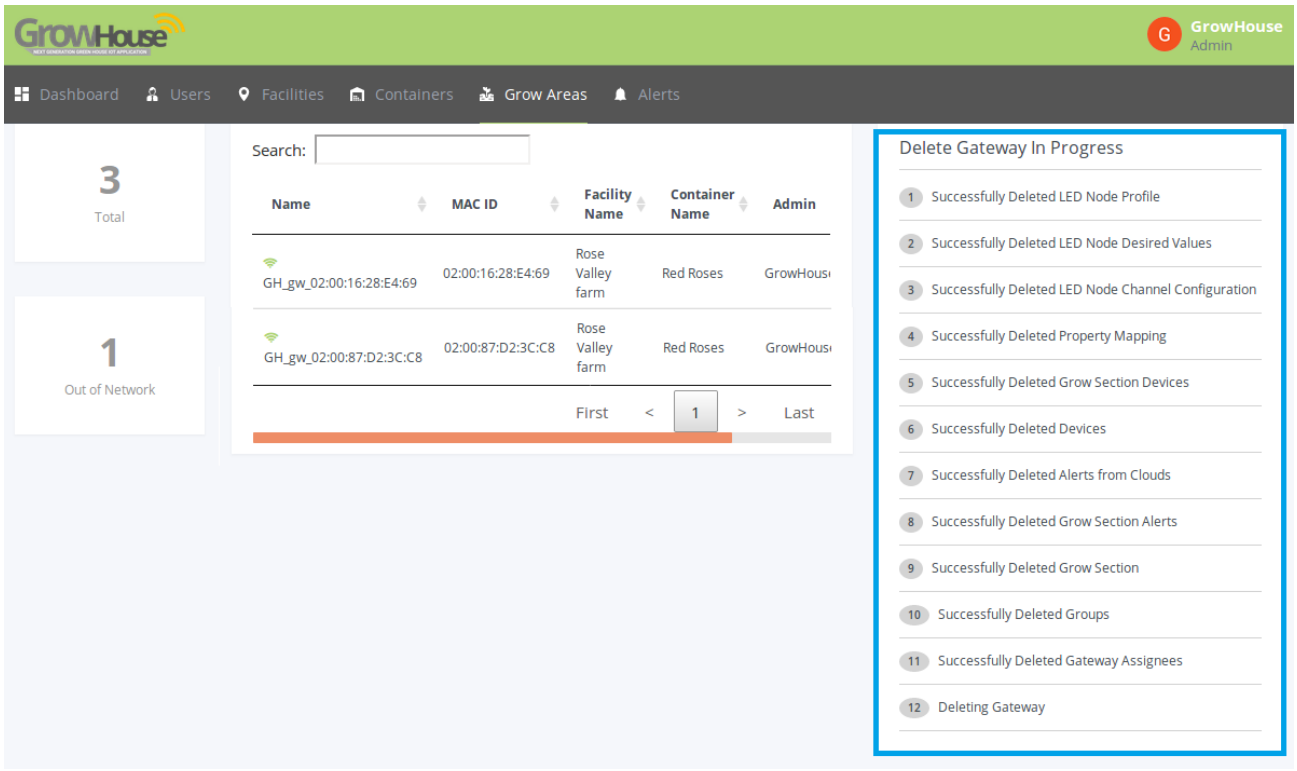


Figure 41: Delete Grow Area Process

- “Grow Area deleted successfully” message will be displayed after successful deletion of Grow Area.

4.6.1.2 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 9.2, Section 9.3 and Section 9.4 on how to perform factory reset of Gateway, LED node and Soil node respectively.
- Below are the steps to delete an offline Gateway.
- Click on delete icon

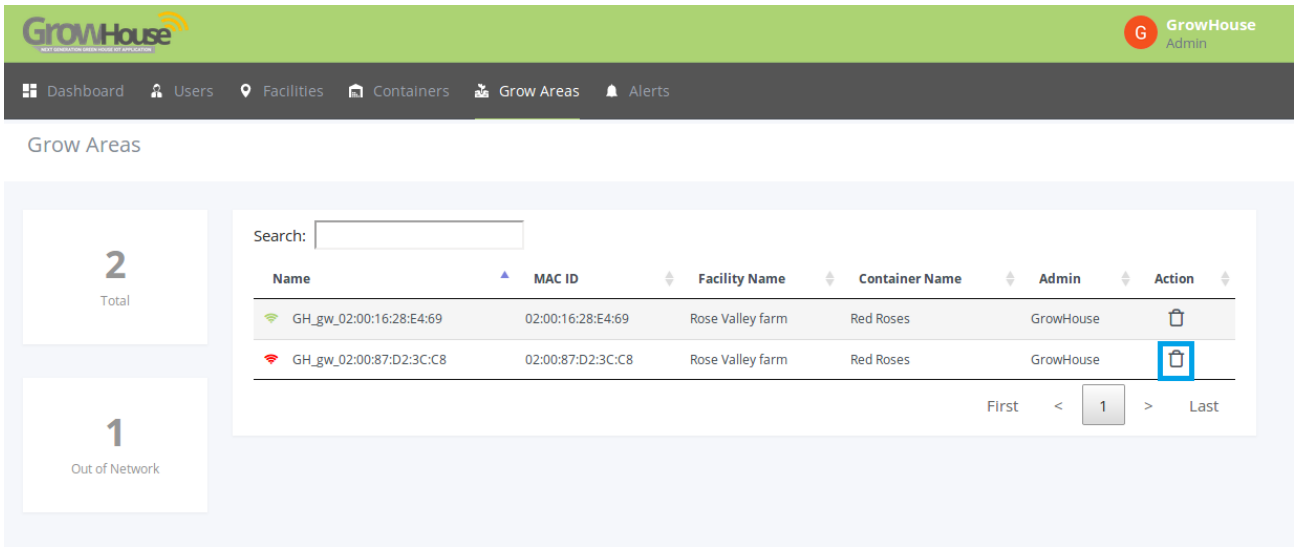


Figure 42: Deleting an Offline Grow Area

- Click on “Delete” button if you are sure to delete an offline Gateway.

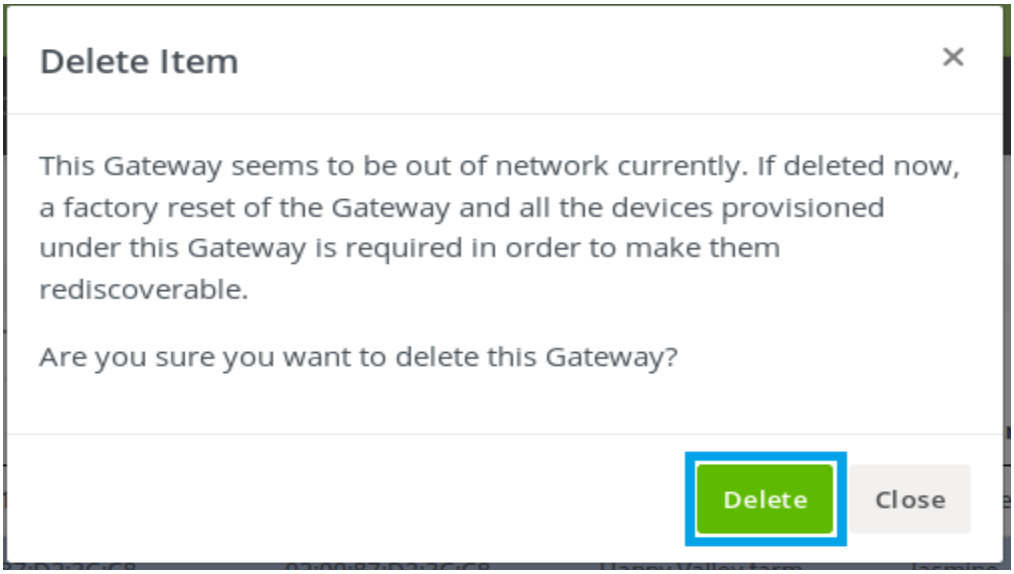


Figure 43: Delete an Online Grow Area Confirmation

- “Grow Area deleted successfully” message will be displayed after successful deletion of Grow Area.

4.7 Devices

Devices are added by admin user. This is done using Growhouse Mobile Application and Devices in the field. Refer *ei_Growhouse_Mobile_Application_User_Manual.pdf* on how to add devices.

- User can view and control devices through selecting “Devices” button of a particular Gateway.
- Click on “Devices” button.

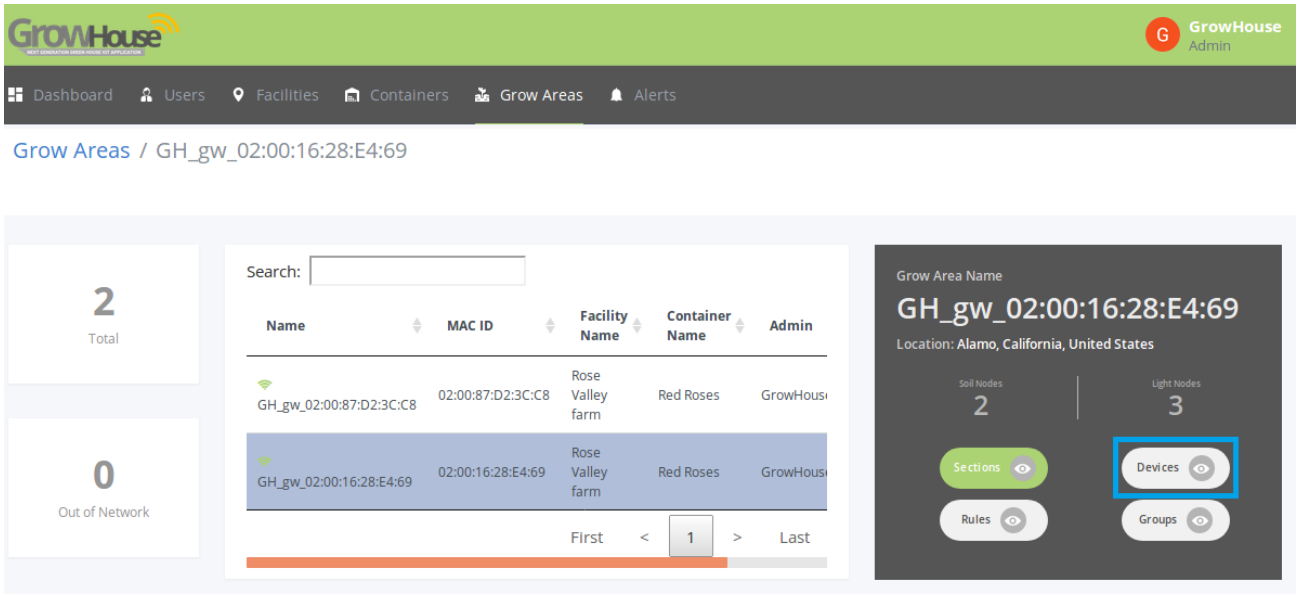


Figure 44: Devices of Gateway

- A list of existing devices provisioned under particular Gateway will be shown.
- Devices screen shows the total number of devices and number of devices that are out of network. Online devices are shown with icon. Out of network devices are shown with icon. Refreshing the page will show the latest status of the devices.

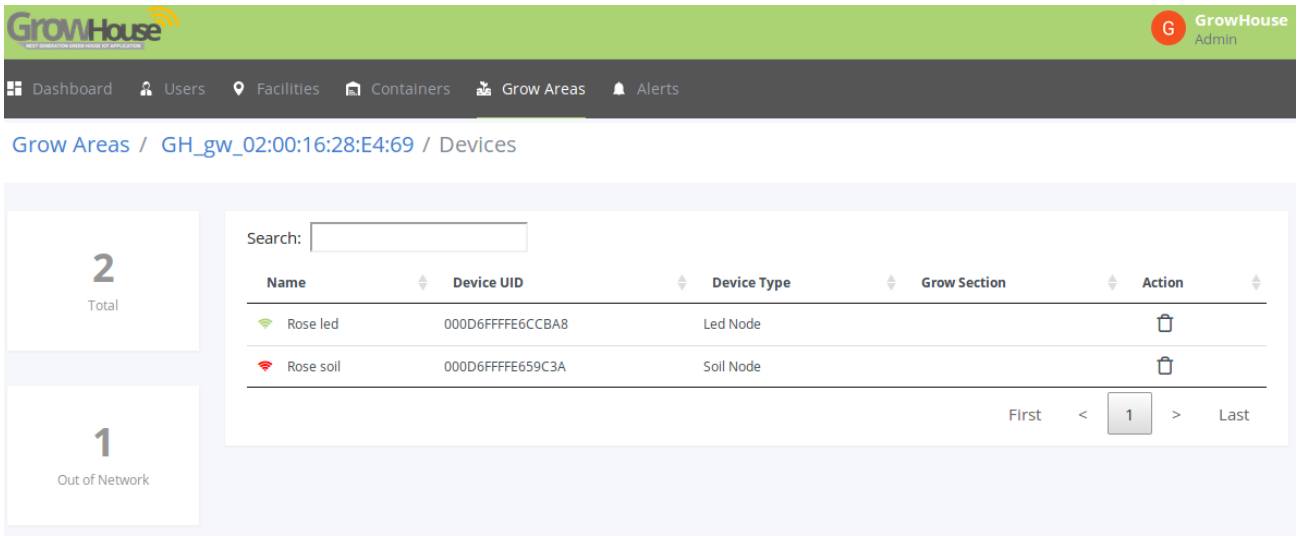


Figure 45: Devices List

Note: 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 View Device

- Click on respective device row to view and control devices.

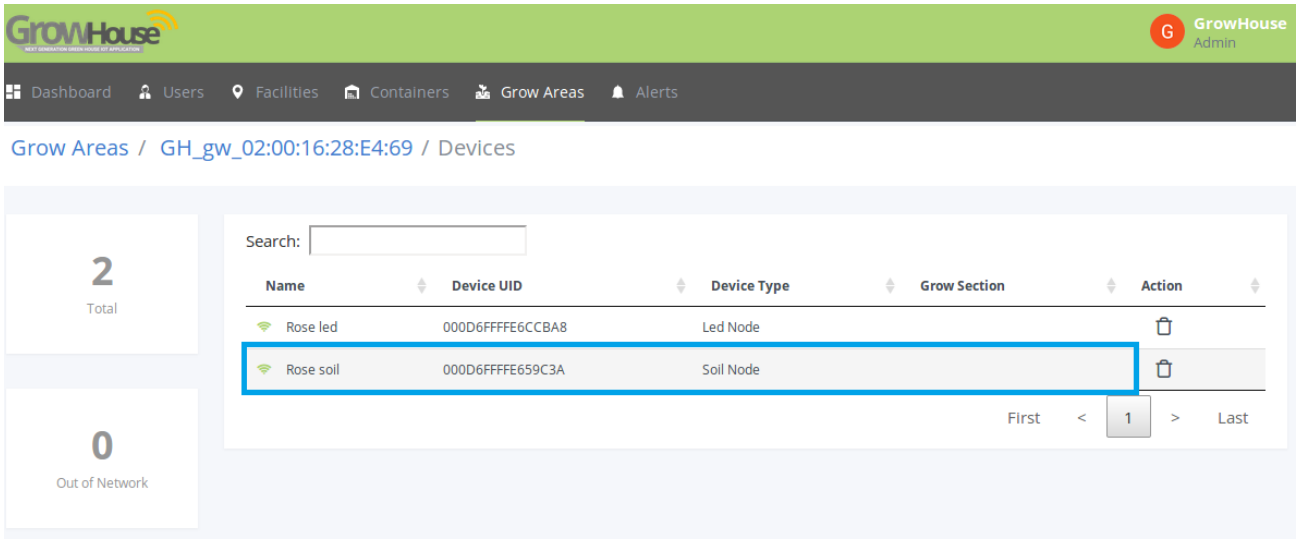


Figure 46: View Device

4.7.1.1 Soil Node

- To see live chart, click on “Live Chart” button.

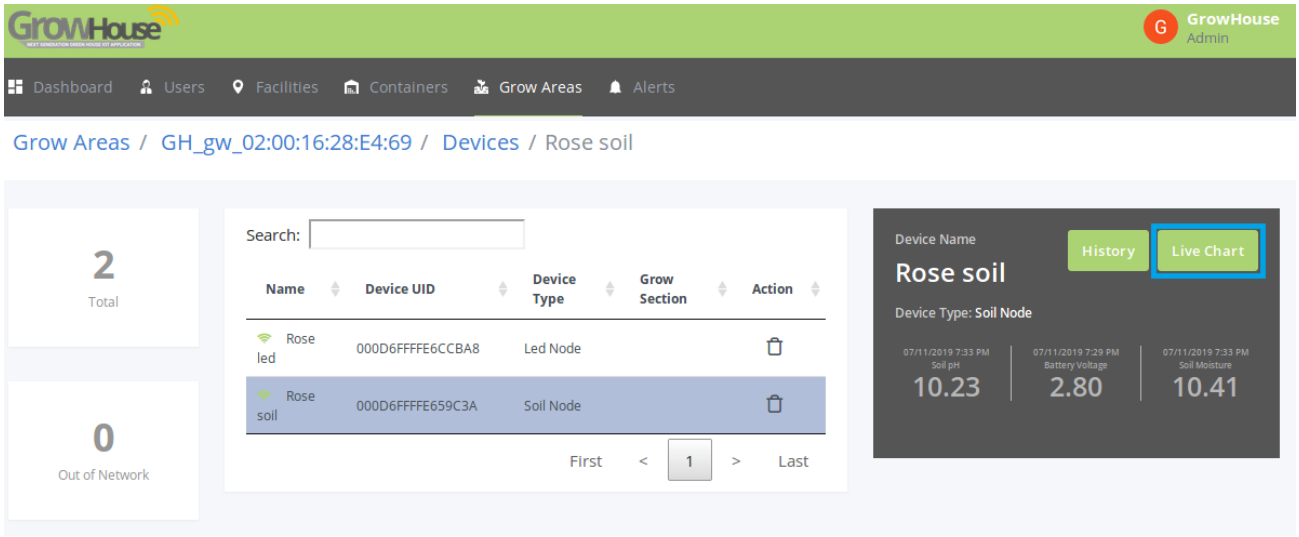


Figure 47: Soil Node Device

- Select desired device property from drop down. The data would be plotted on the graph on real time basis as and when received from respective Soil Node. Below image shows live chart of “Soil Moisture” property.

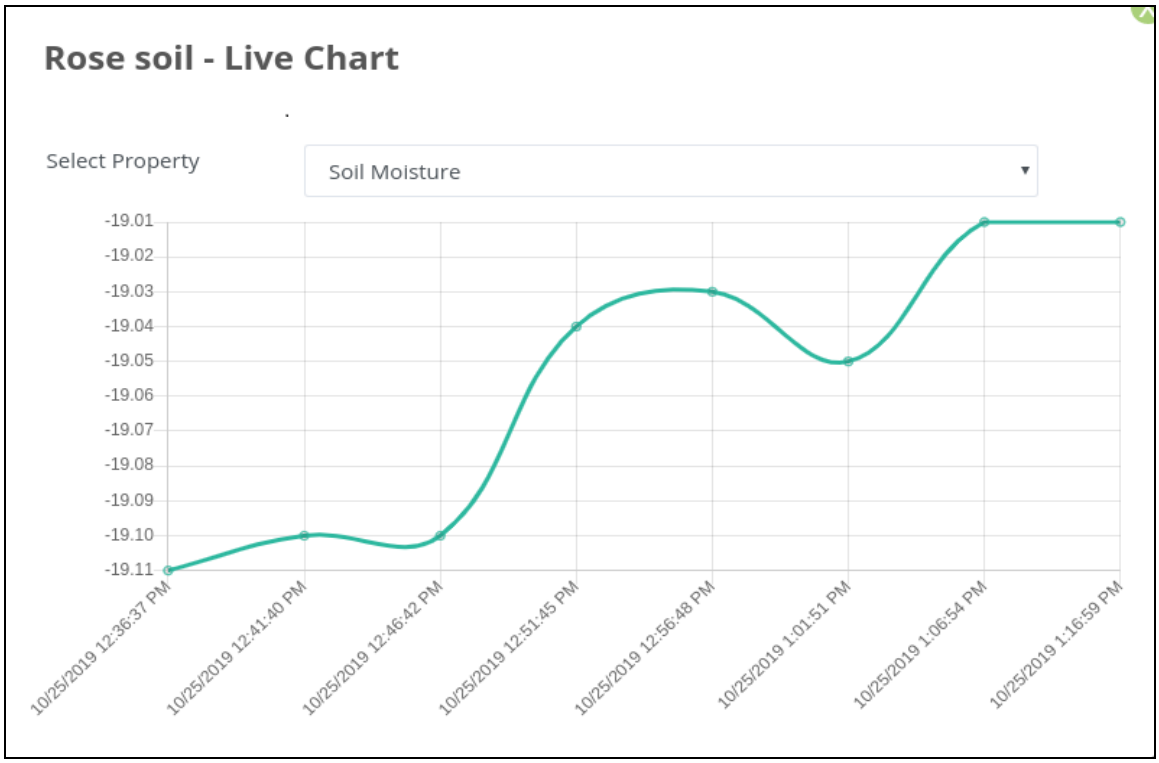


Figure 48: Soil Node Device Live Chart

Note: Data reporting interval for each property of Soil Node is of 5 min.

- To see device history chart, click on “History” button.

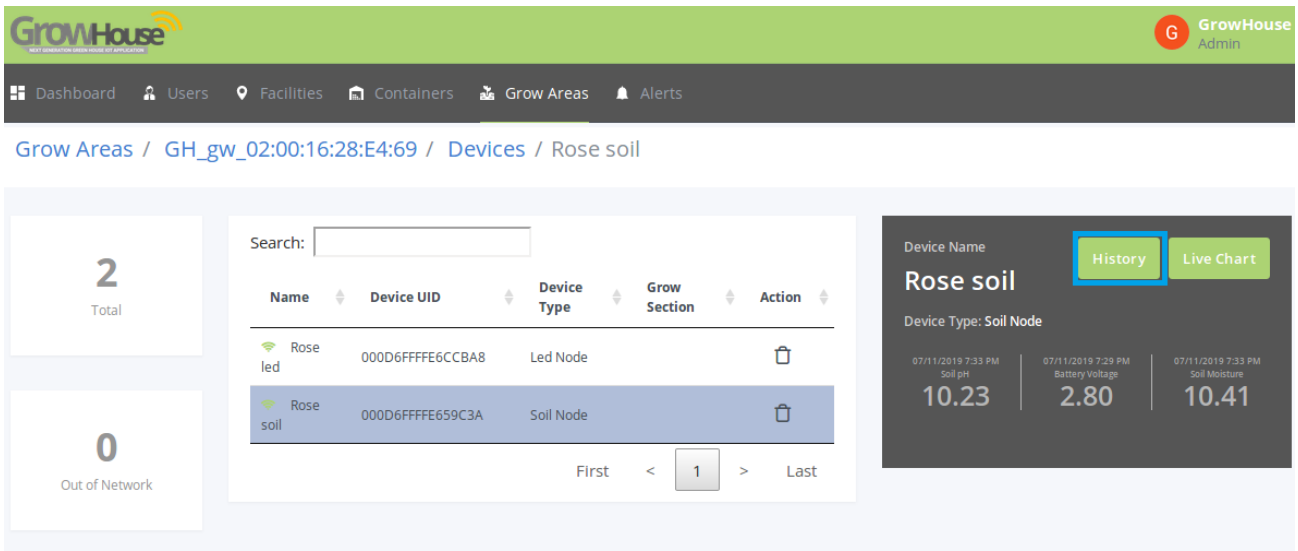


Figure 49: Soil Node Device History

- Select desired device property.
- Select date range.
- Below image shows history chart of “Soil Moisture” property.

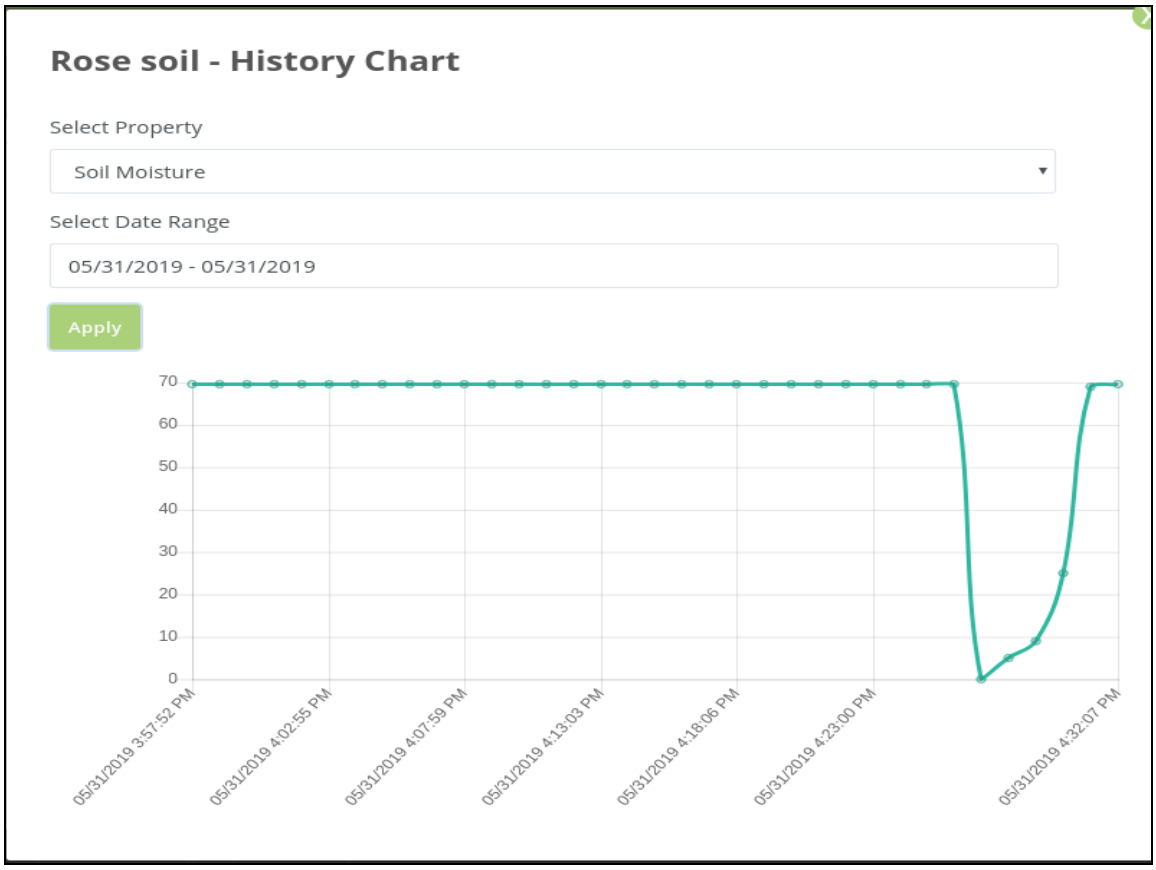


Figure 50: Soil Node Device History Chart

4.7.1.2 LED Node

- Click on particular LED Node device to set the channel intensity of LED Node.
- Select desired intensity level for each channel.

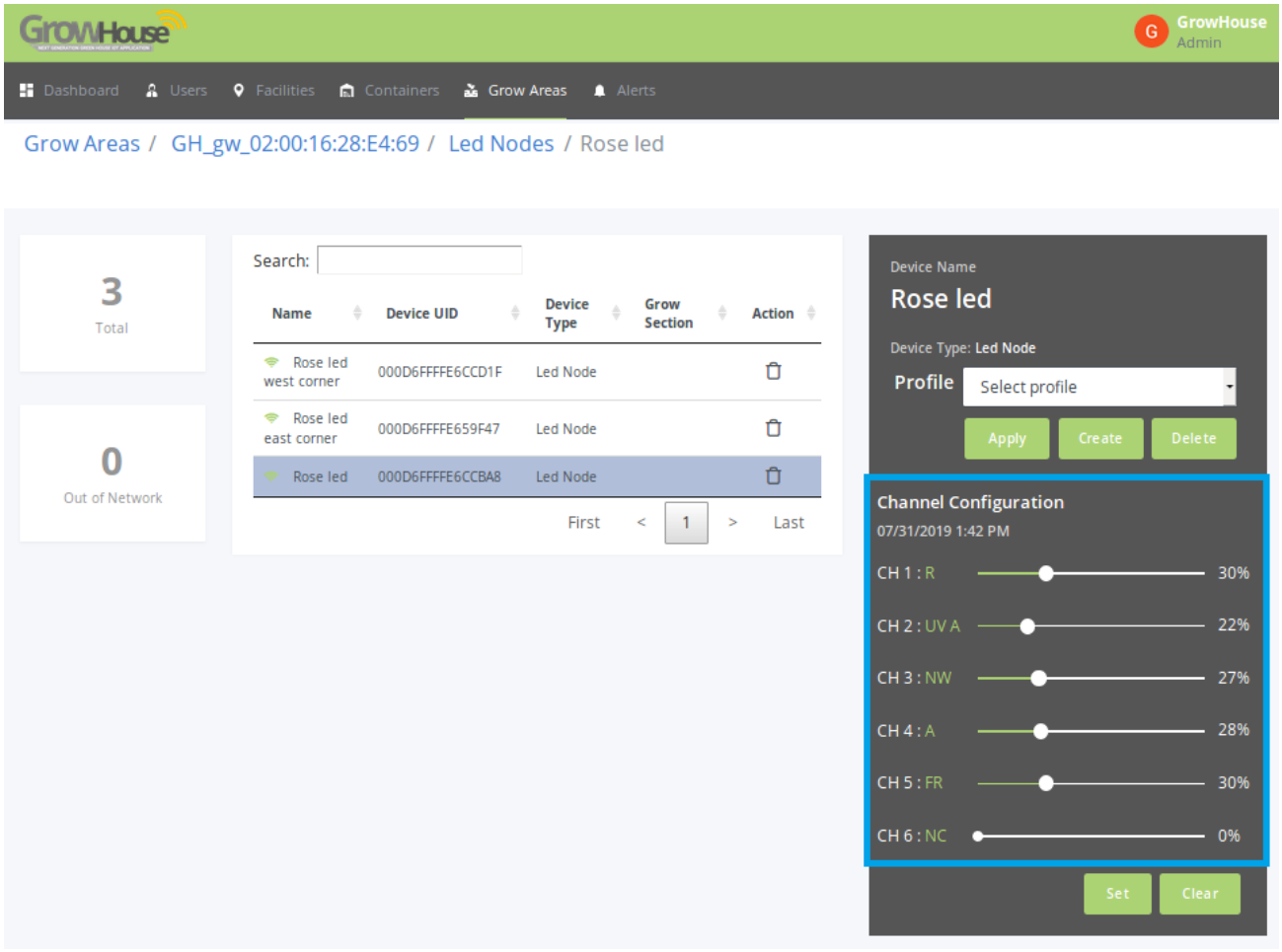


Figure 51: LED Node

- Click on “Set” button. This will actually set the channel intensity on LED Node.

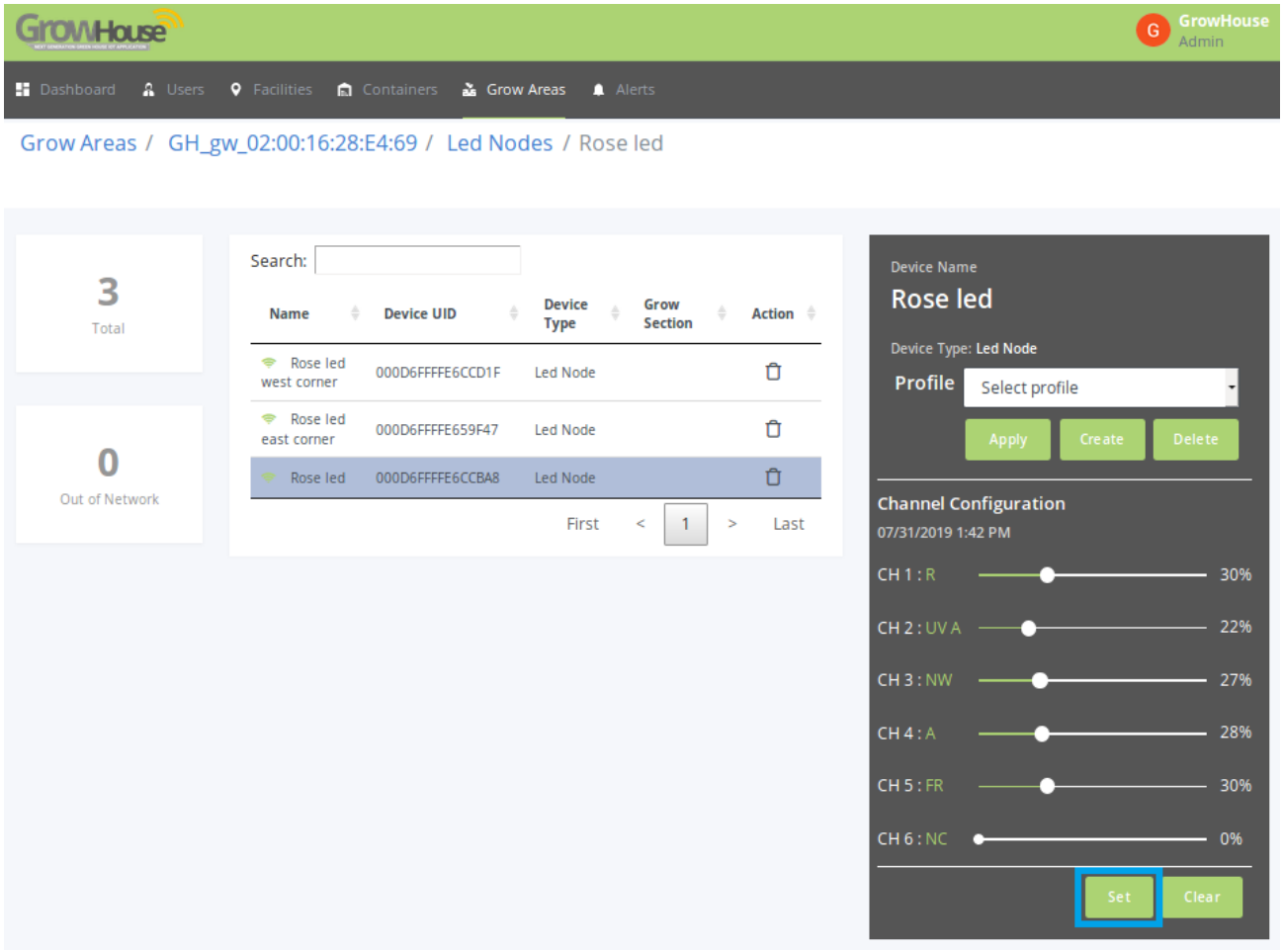


Figure 52: Set LED Node Channel Intensity

- “Set Channel configuration values successfully” message will be displayed after successful setting of LED channel intensity.

4.7.1.2.1 Create LED Node Profile

Below image shows how to create profile for LED Node.

- Click on “Create” button.

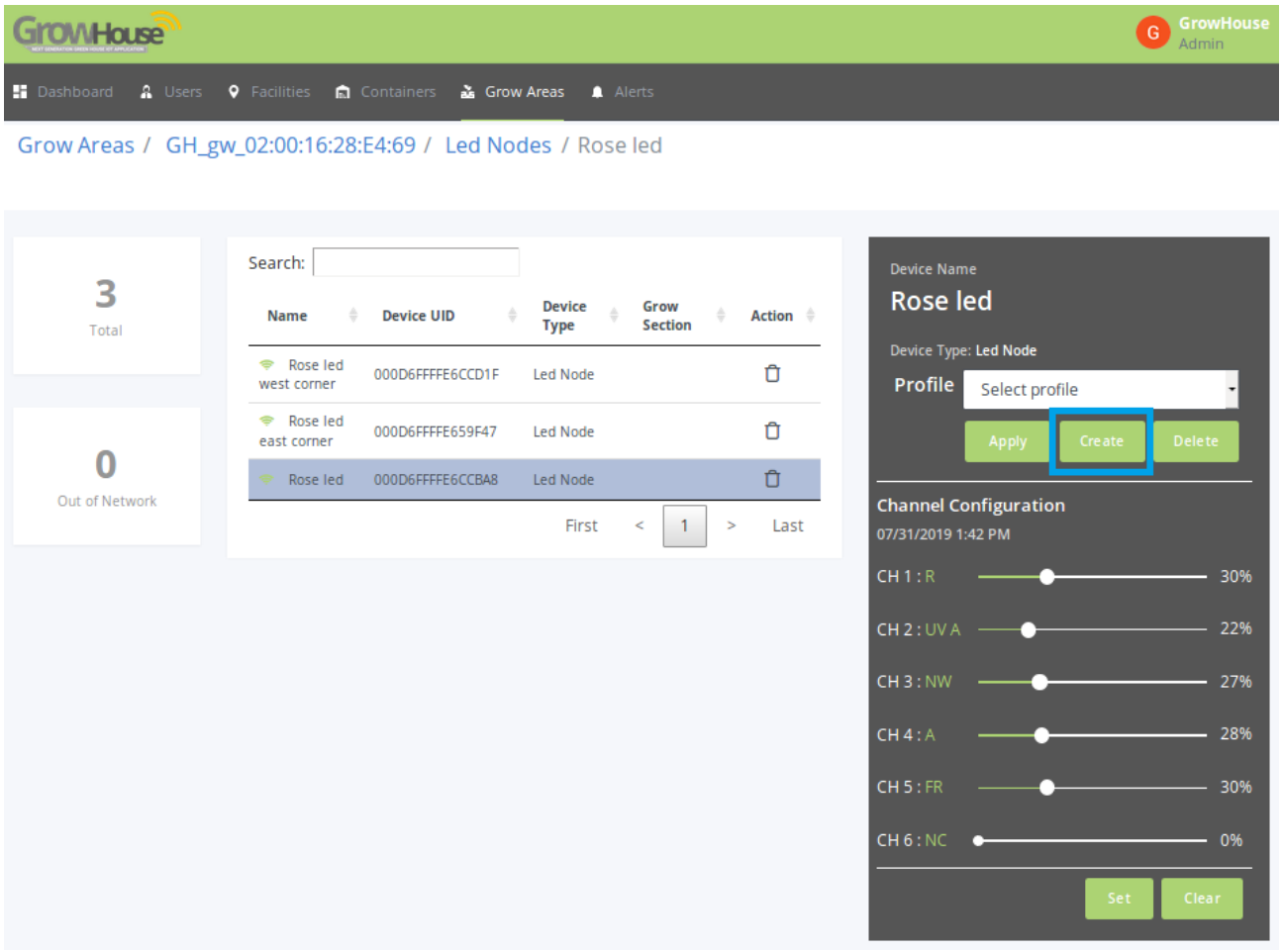


Figure 53: Create LED Node Profile

- Enter the desired Profile name.
- Set desired intensity level for each channel.
- Click on “Done” button.

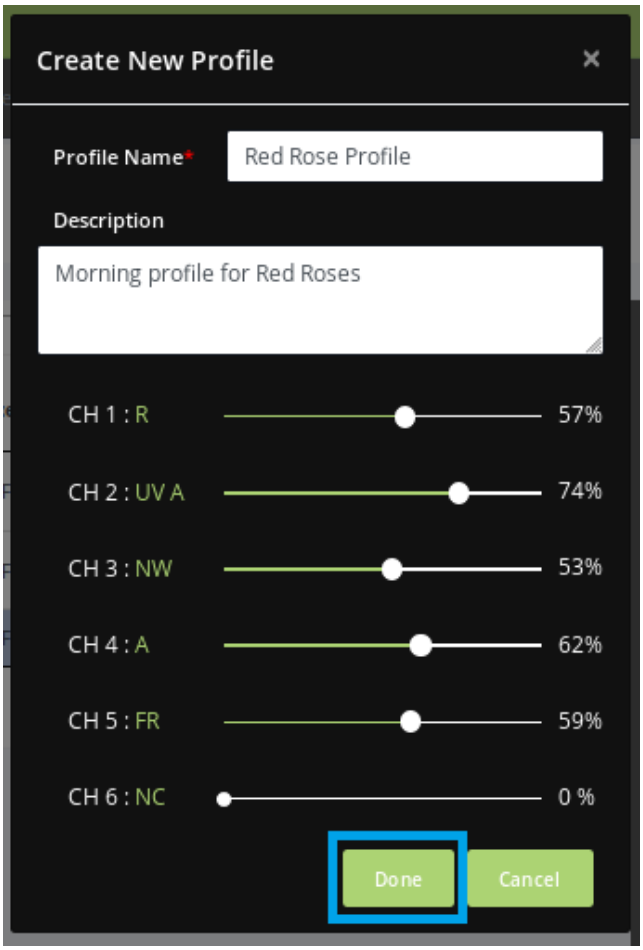


Figure 54: LED Node Profile – Profile details

- “Profile created successfully” message will be displayed on successful creation of Profile.

4.7.1.2.2 Set LED Node Profile

- Select desired profile to be applied on LED Node from drop down.
- Click on “Apply” button. User will be shown individual channel intensity that would be set on LED Node at preset of 100%.

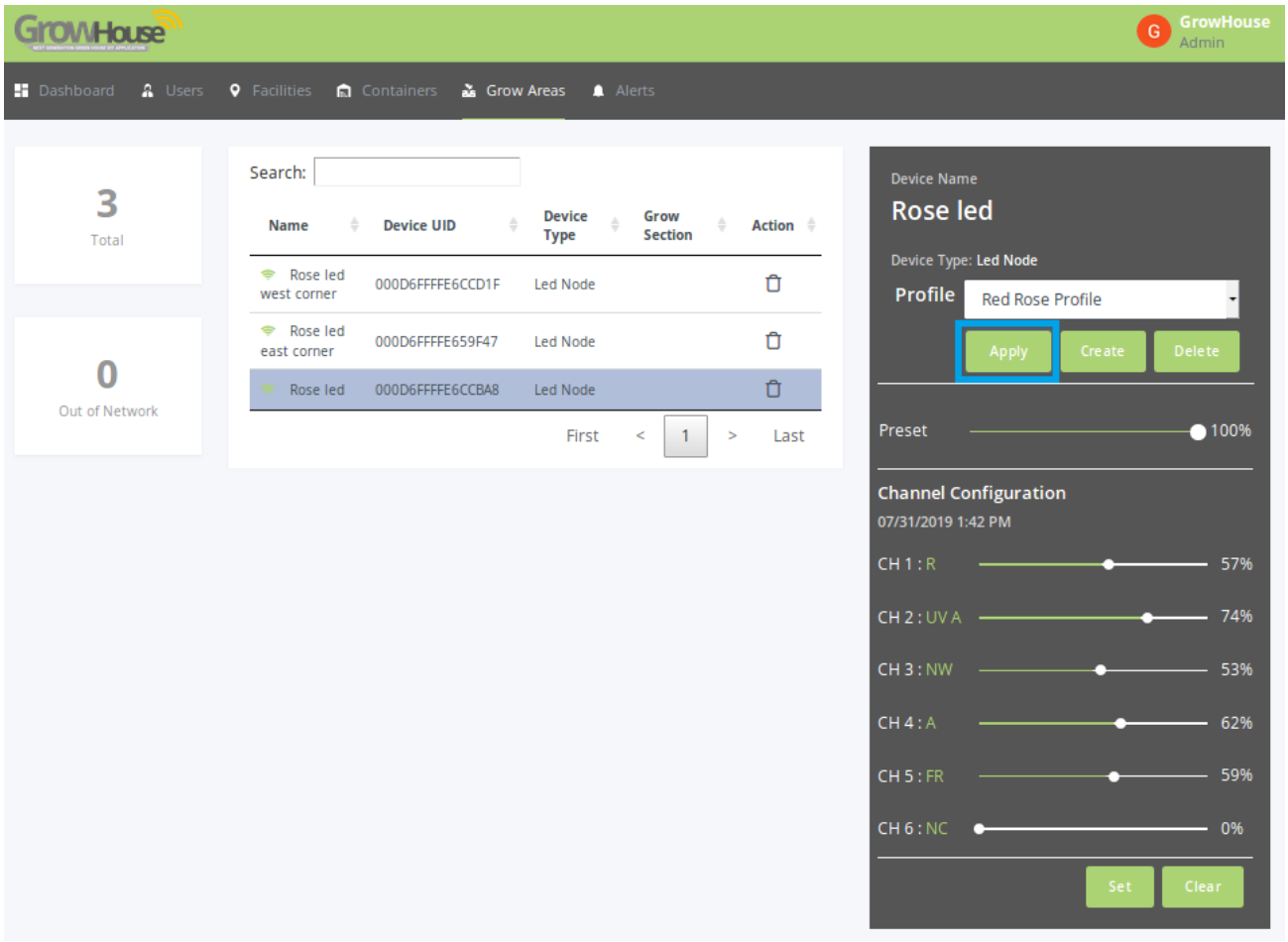


Figure 55: Apply LED Node Profile

- Select the desired Preset level through Preset bar.
- Click on “Set” button. This will actually set the channel intensity on LED Node.

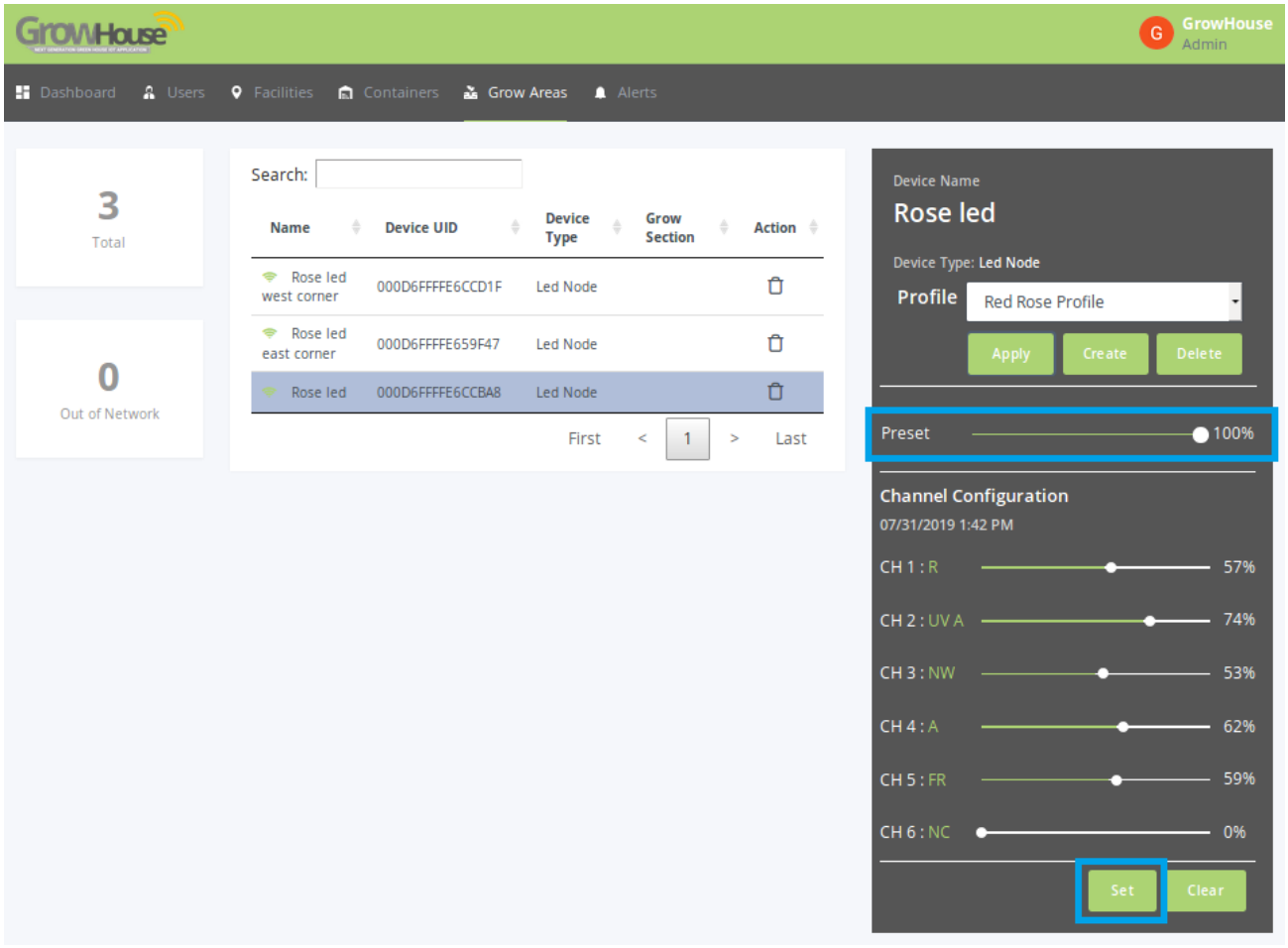


Figure 56: Set LED Node Channel Intensity as per Profile

- “Set Channel configuration values successfully” message will be displayed after successful setting of LED channel intensity.

4.7.1.2.3 Delete LED Node Profile

- Select desired profile to be deleted from drop down.
- Click on “Delete” button.

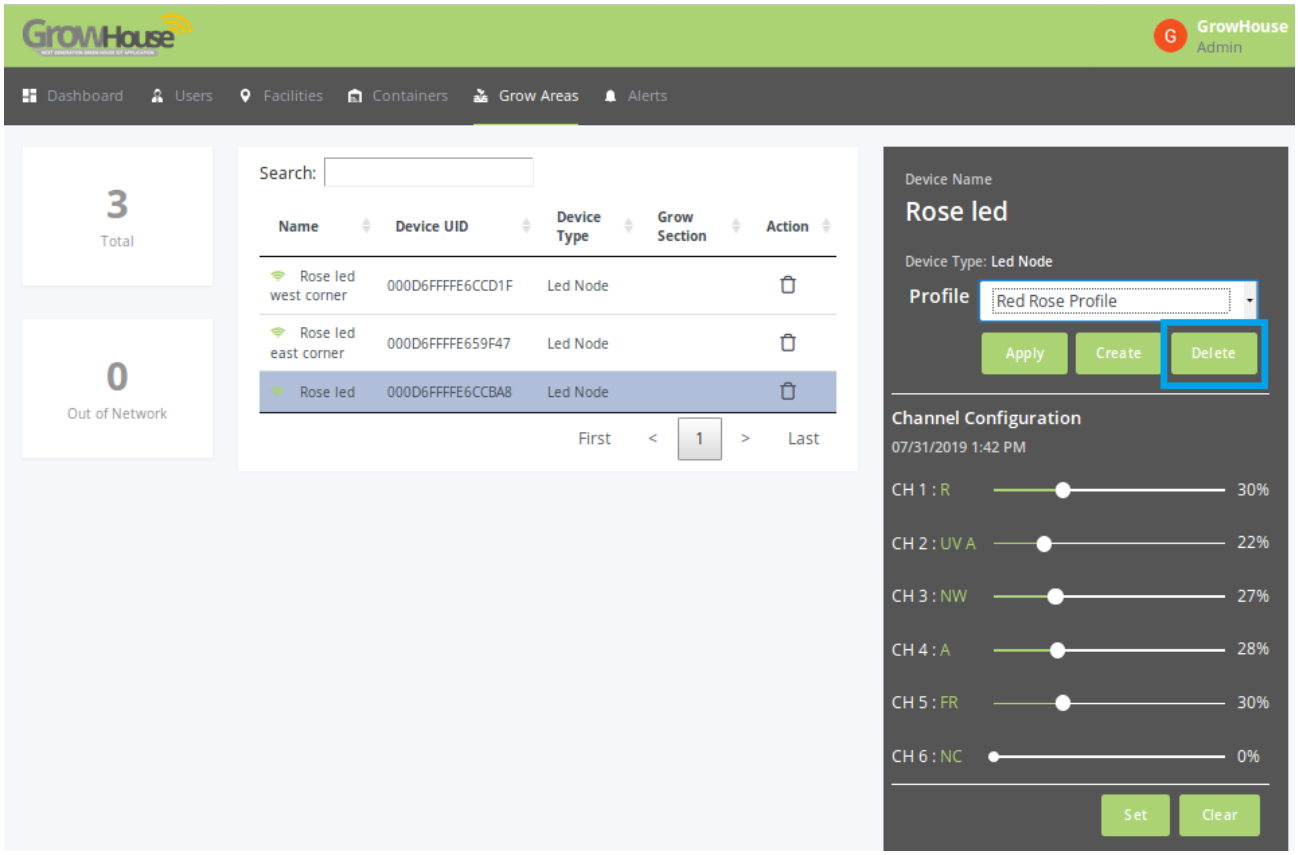


Figure 57: Delete LED Node Profile

- Click on “Delete” button.

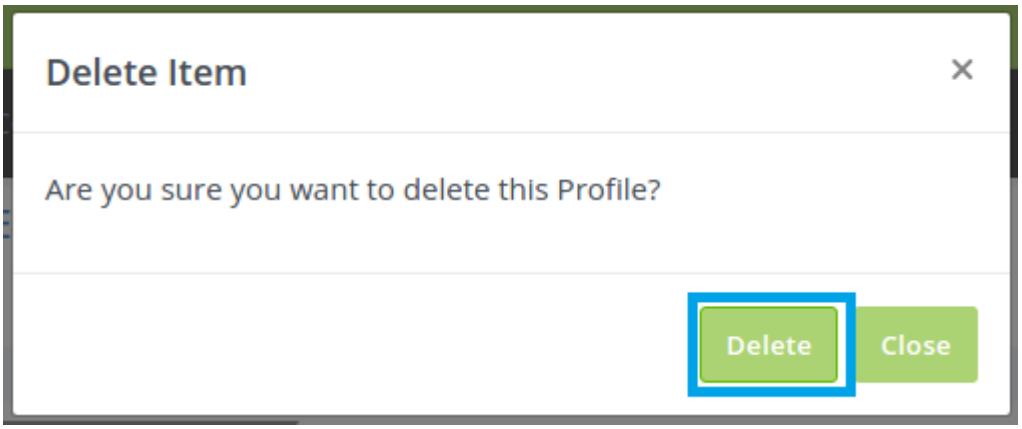


Figure 58: Delete LED Node Profile Confirmation.

- “Profile deleted successfully” message will be displayed after successful deletion of Group Profile.

4.7.2 Delete Device

Devices can be un-provisioned from the system by deleting them from Growhouse web portal.

4.7.2.1 Deleting an online Device

- If user deletes an online device then, device will be deleted from Growhouse web portal and will be un-provisioned from the system. Hence, device can be available for re-provisioning again within same Gateway or other.
- Click on delete icon .

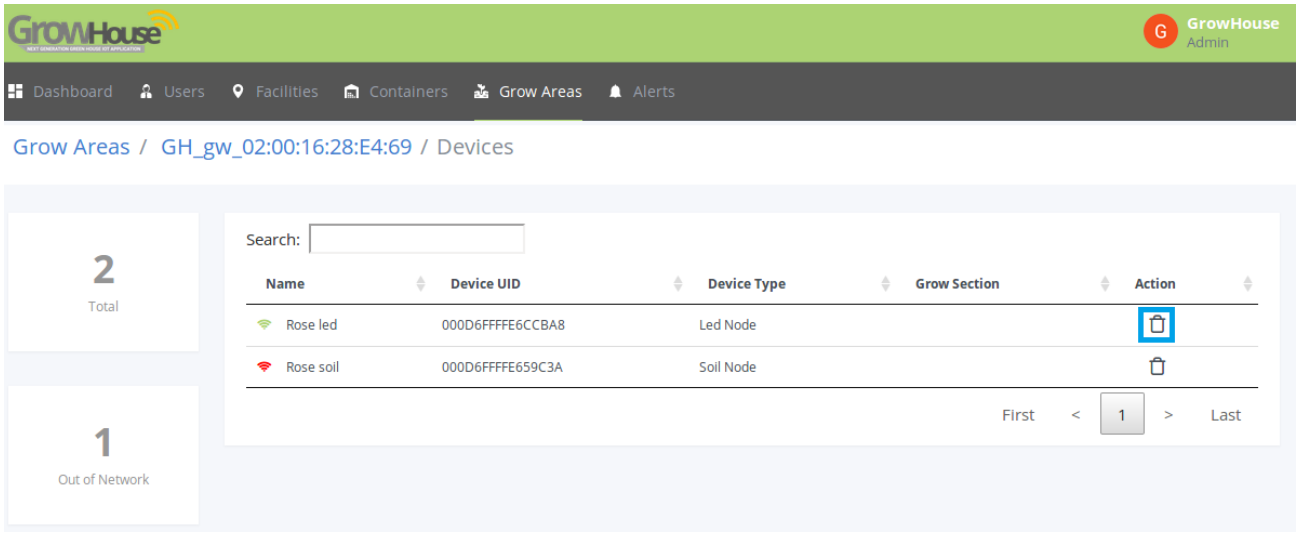


Figure 59: Deleting an Online Device

- Click on “Delete” button.

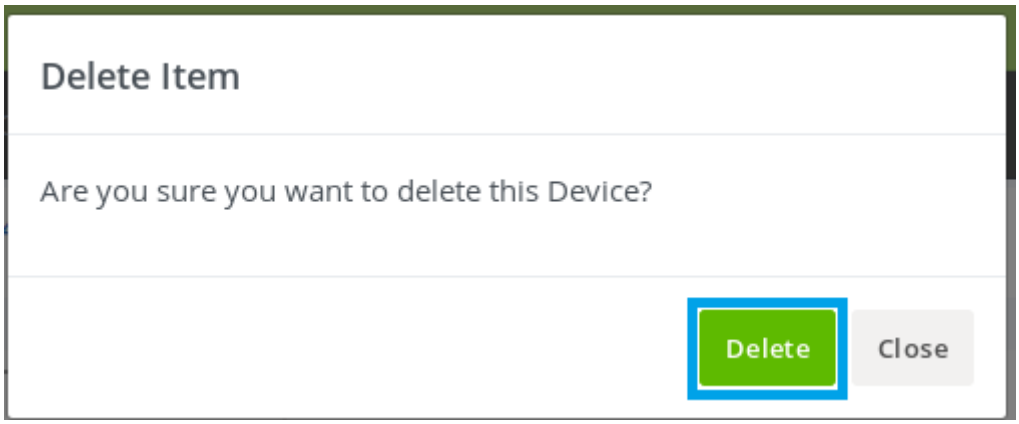


Figure 60: Deleting an Online Device Confirmation

- “Device deleted Successfully” message will be displayed on successful deletion of the device.

4.7.2.2 Deleting an offline Device

- If user deletes an offline device then, device will be deleted from Growhouse web portal 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 9.2 and Section 9.3 on how to perform factory reset Soil Node and LED Node respectively.
- Click on delete icon .

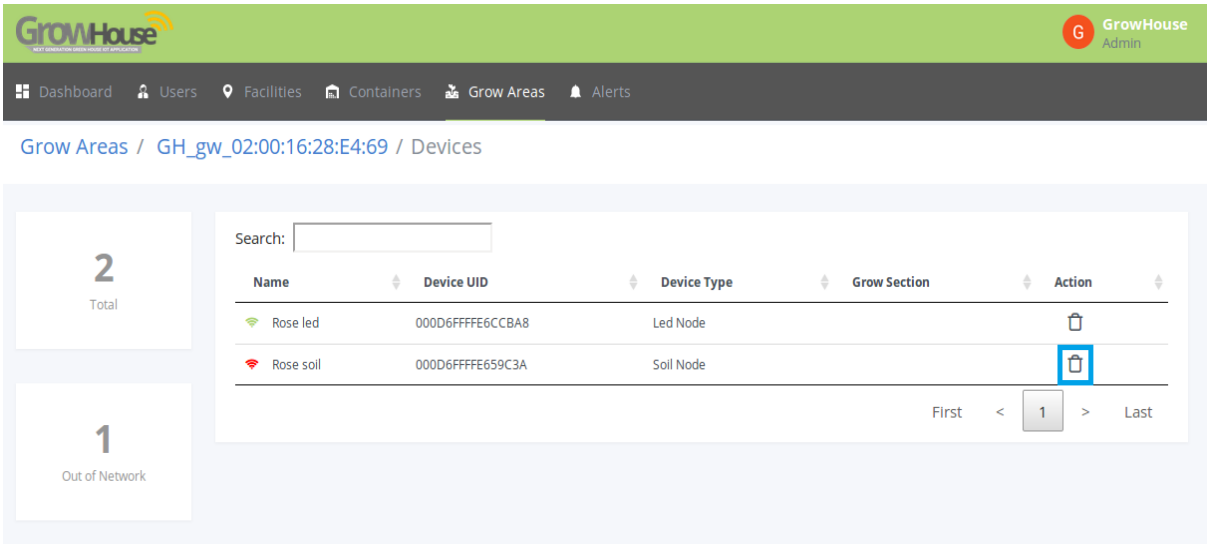


Figure 61; Deleting an Offline Device

- Read the message and Click on “Delete” button.

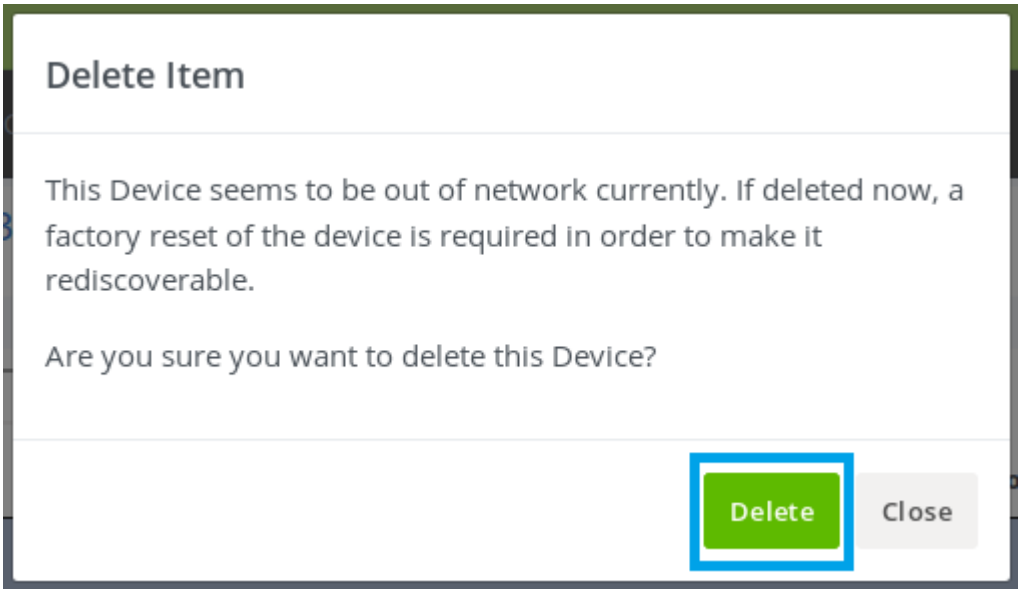


Figure 62: Deleting an Offline Device Confirmation

- “Device deleted Successfully” message will be displayed on successful deletion of the device.

Note: Deleting a device will not remove the Rules associated with the deleted device. User has to delete such Rules. Refer Section 4.9.3.4 on how to delete Rule.

4.8 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.

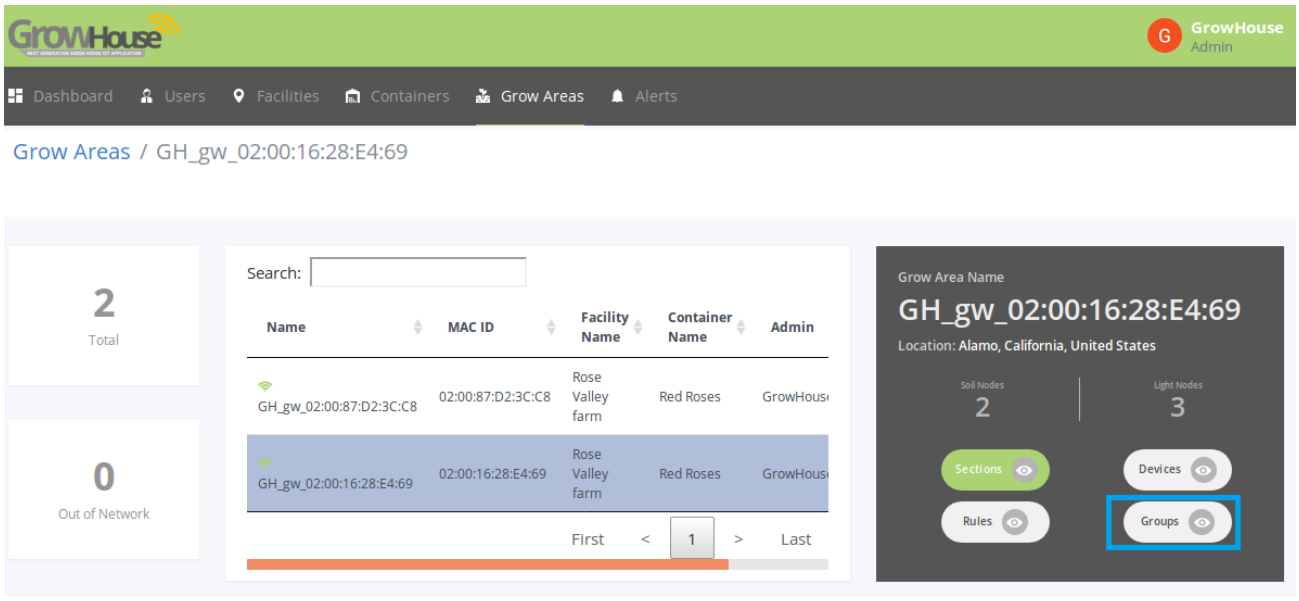


Figure 63: Groups of Gateway

- A list of existing Groups created under particular Gateway will be shown.

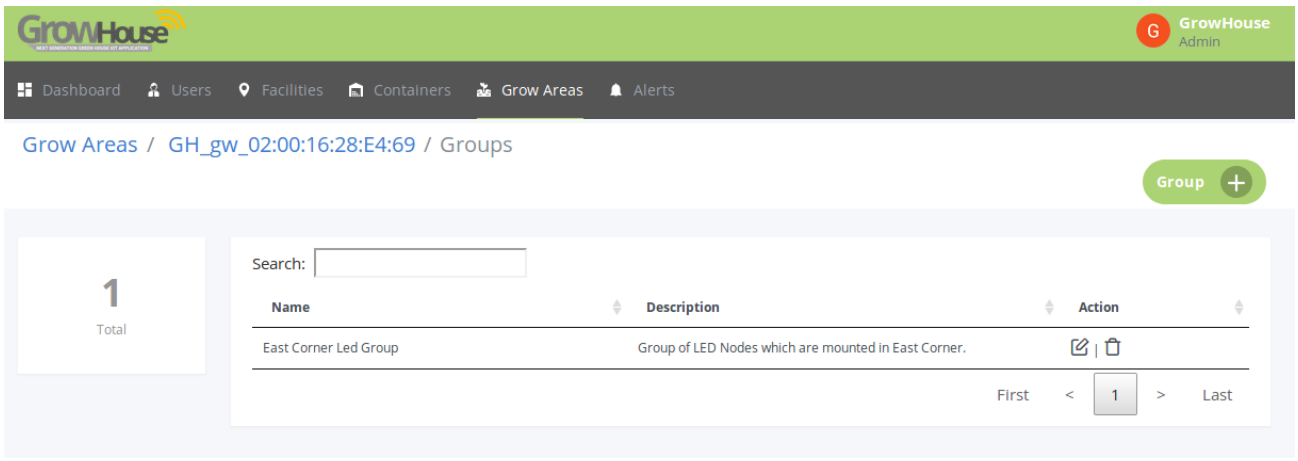


Figure 64: Groups List

4.8.1 Create Group

- Click on “Group +” button to create new group.

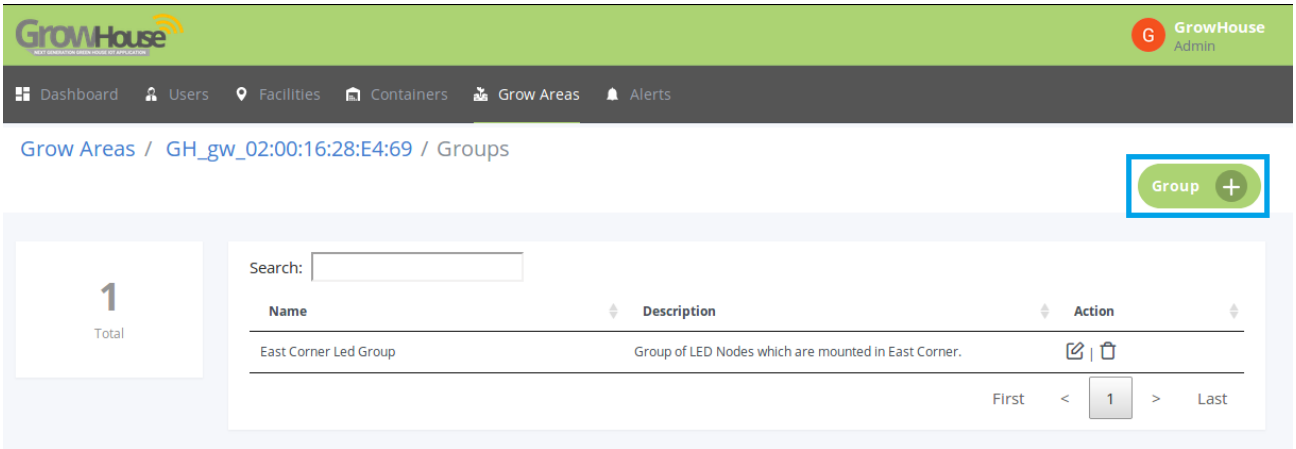


Figure 65: Create New Group

- Enter the desired Group name.
- Enter the desired Group description.
- Select appropriate channel color configuration for each channel of Group.
- 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.

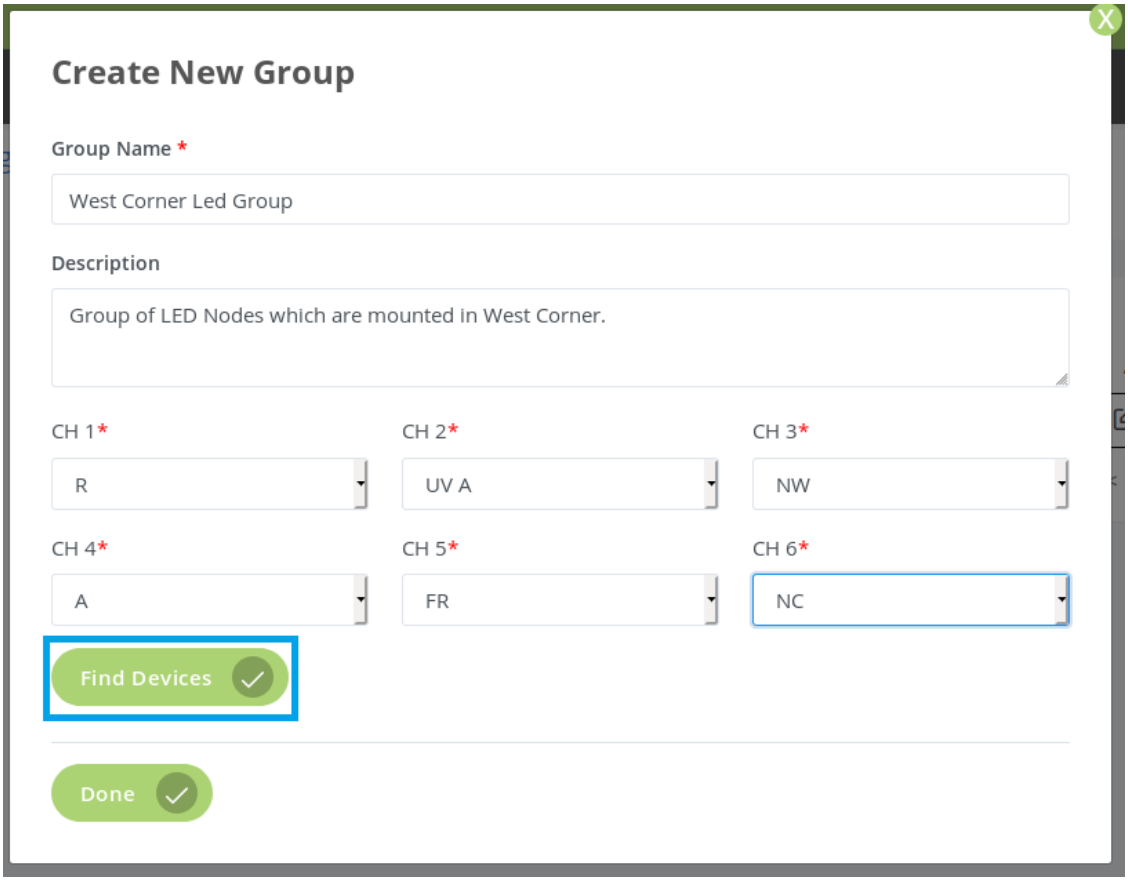


Figure 66: Create New Group - Group's details

- Under ‘LED Nodes’, a list of LED Nodes in the Grow Area having same channel configuration will be listed.
- Add LED Nodes to ‘Apply To’ list by checking the checkbox and clicking on ‘→’ button. User can select single or multiple LED Nodes. LED Nodes selected under ‘Apply To’ are the Group devices. All the profile created for the Group will be applied to devices under ‘Apply To’.
- Click on “Done” button.

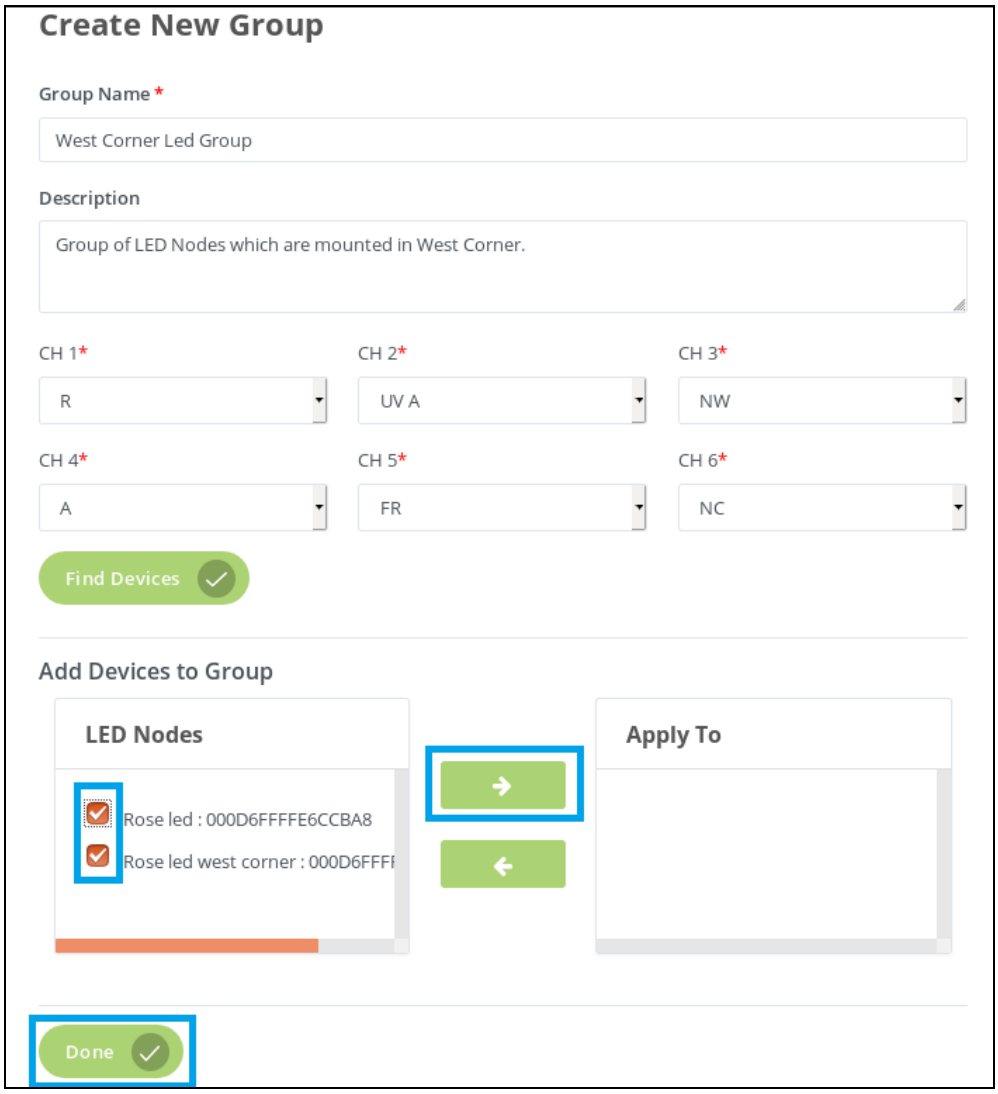


Figure 67: Create New Group - Group's details

- “Group created successfully” message will be displayed on successful creation of Group.

4.8.2 View Group

- Click on respective group row to view Group details.

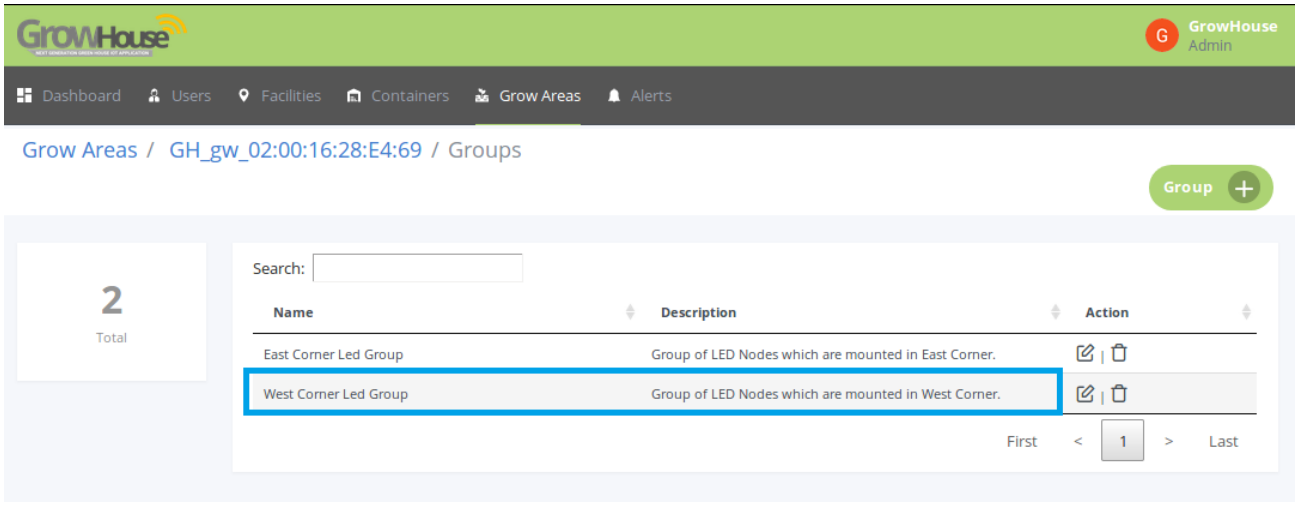


Figure 68: Groups List

- Individual channel configuration of the selected Group will be shown.

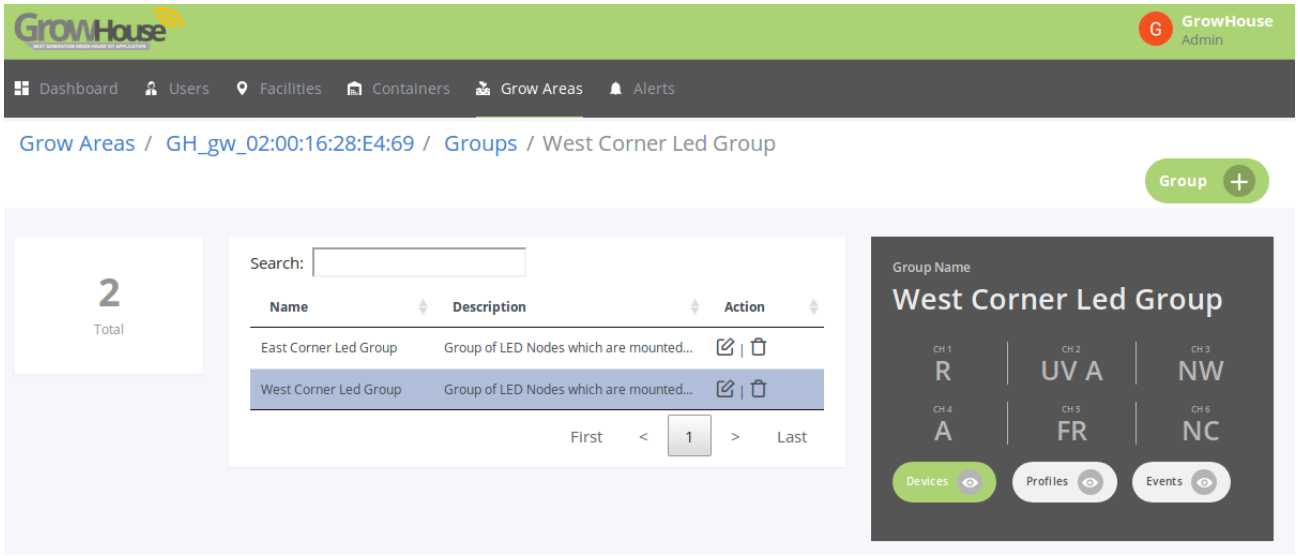


Figure 69: Group Details

4.8.2.1 Group Devices

- Click on “Devices” button.

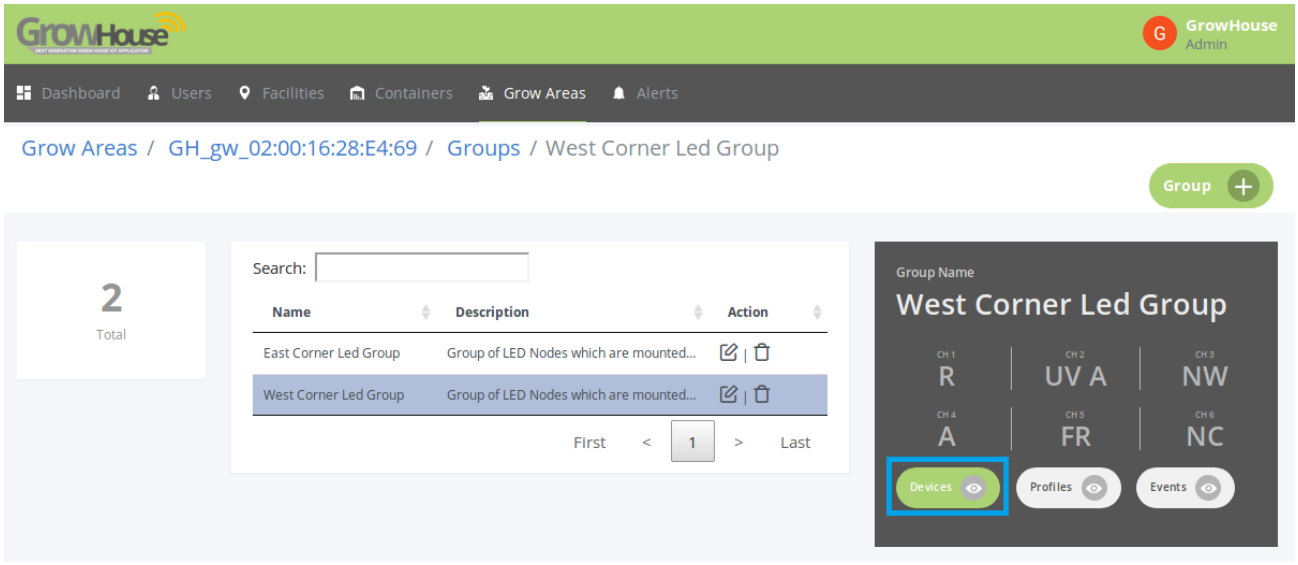


Figure 70: Devices of a Group

- A list of all device which are added in selected Group will be displayed.

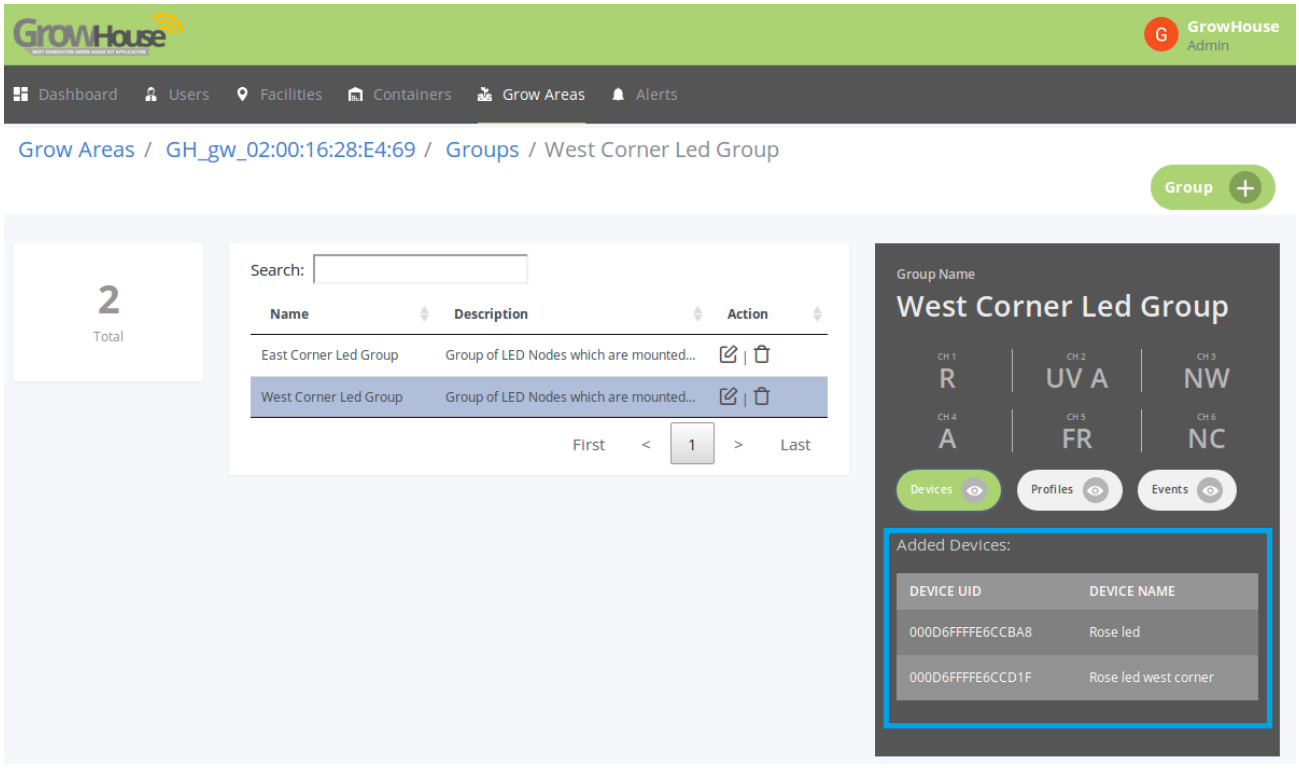


Figure 71: List of the device of a Group

4.8.2.2 Group Profiles

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

- Click on “Profiles” button.

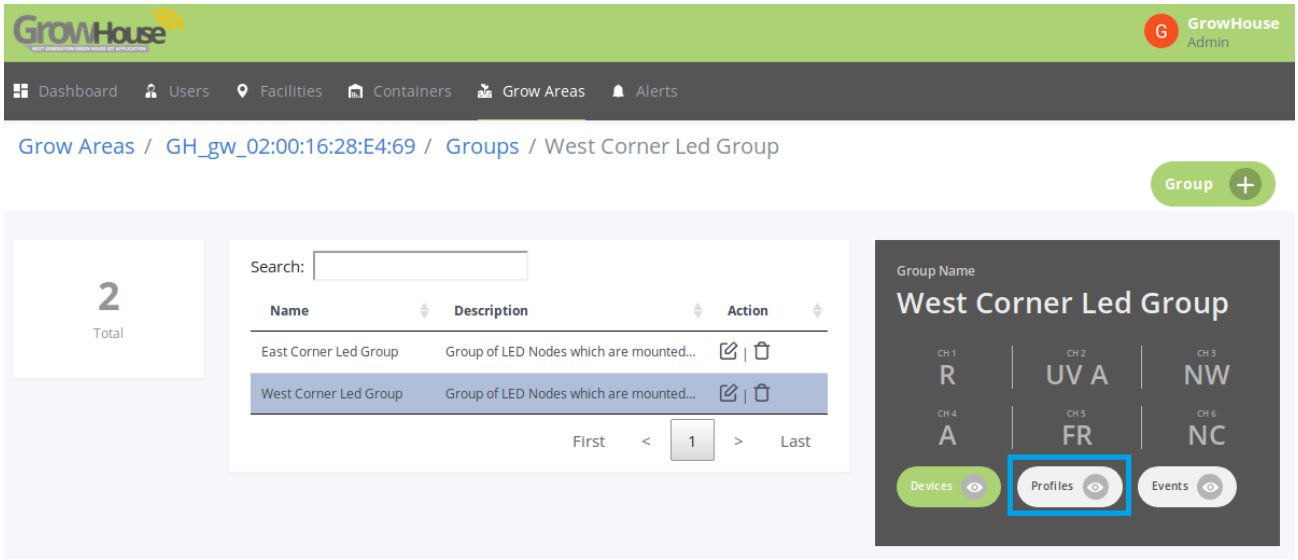


Figure 72: Profiles of a Group

- A list of Profiles created in selected Group will be shown.

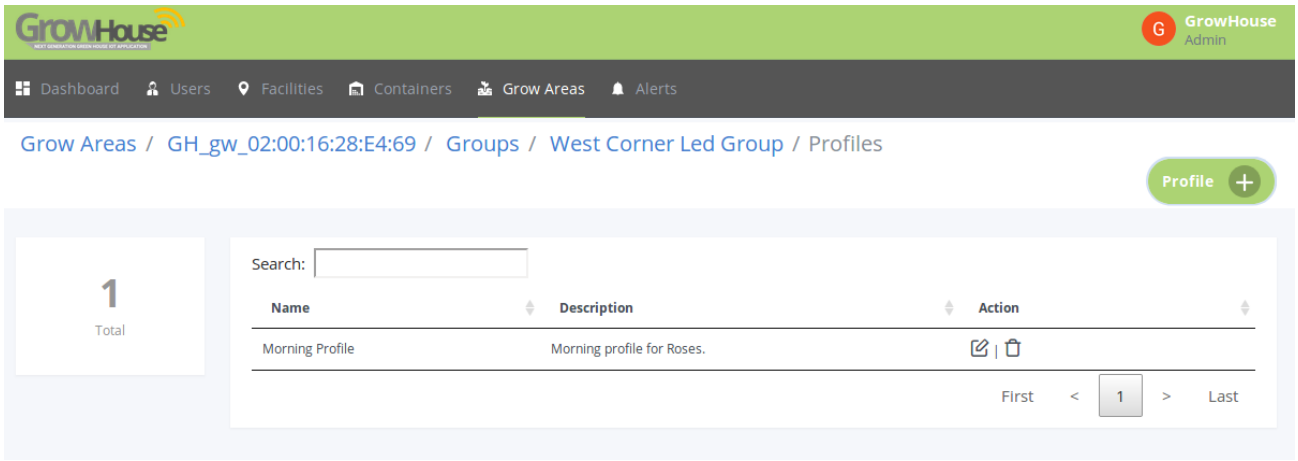


Figure 73: List of the Profiles of a Group

4.8.2.2.1 Create Group Profile

- Click on “Profile +” button to create a new Group Profile.

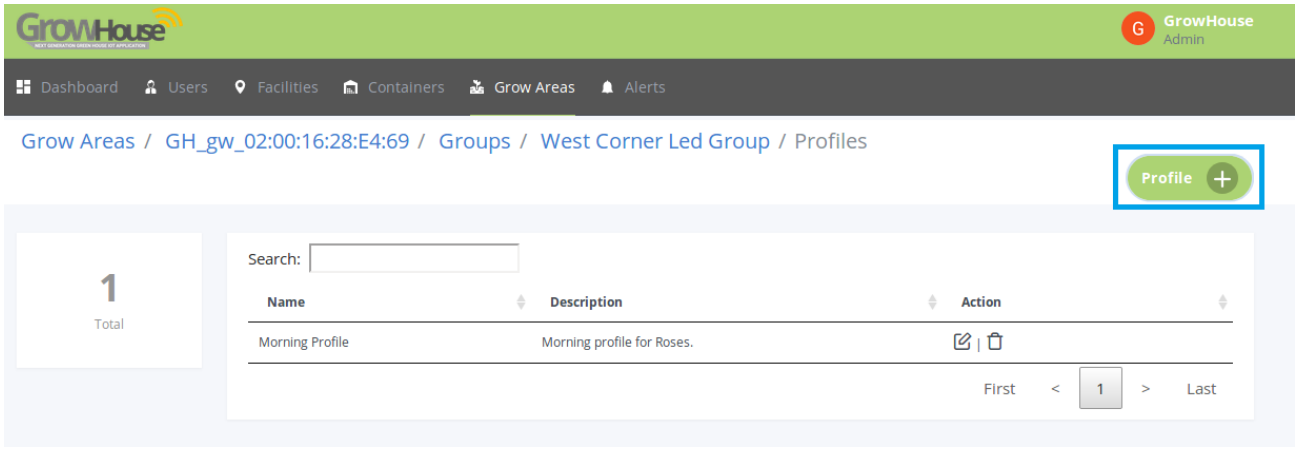


Figure 74: Create New Group Profile

- 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.

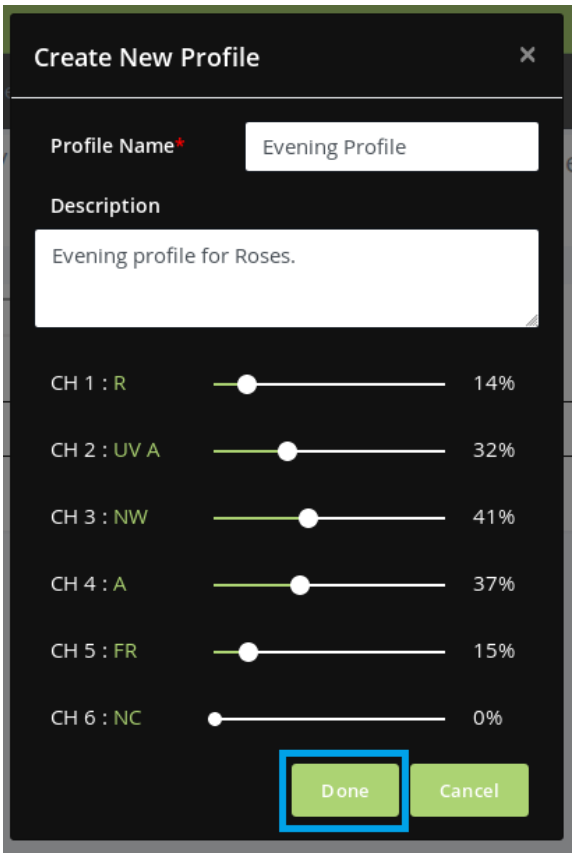


Figure 75: New Group Profile - Profile's Details

- “Profile created successfully” message will be displayed on successful creation of Profile.

4.8.2.2.2 Apply Group Profile

- Click on a particular Group Profile row.

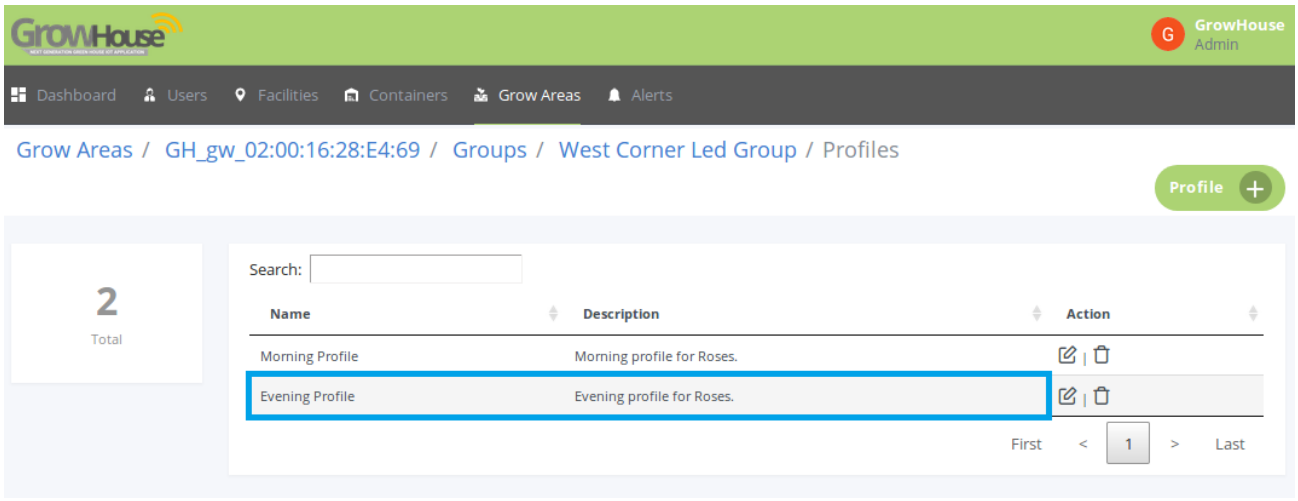


Figure 76: List of the Profiles of a Group

- User will be shown individual channel intensity that would be set on LED Nodes of the Group at preset of 100%.

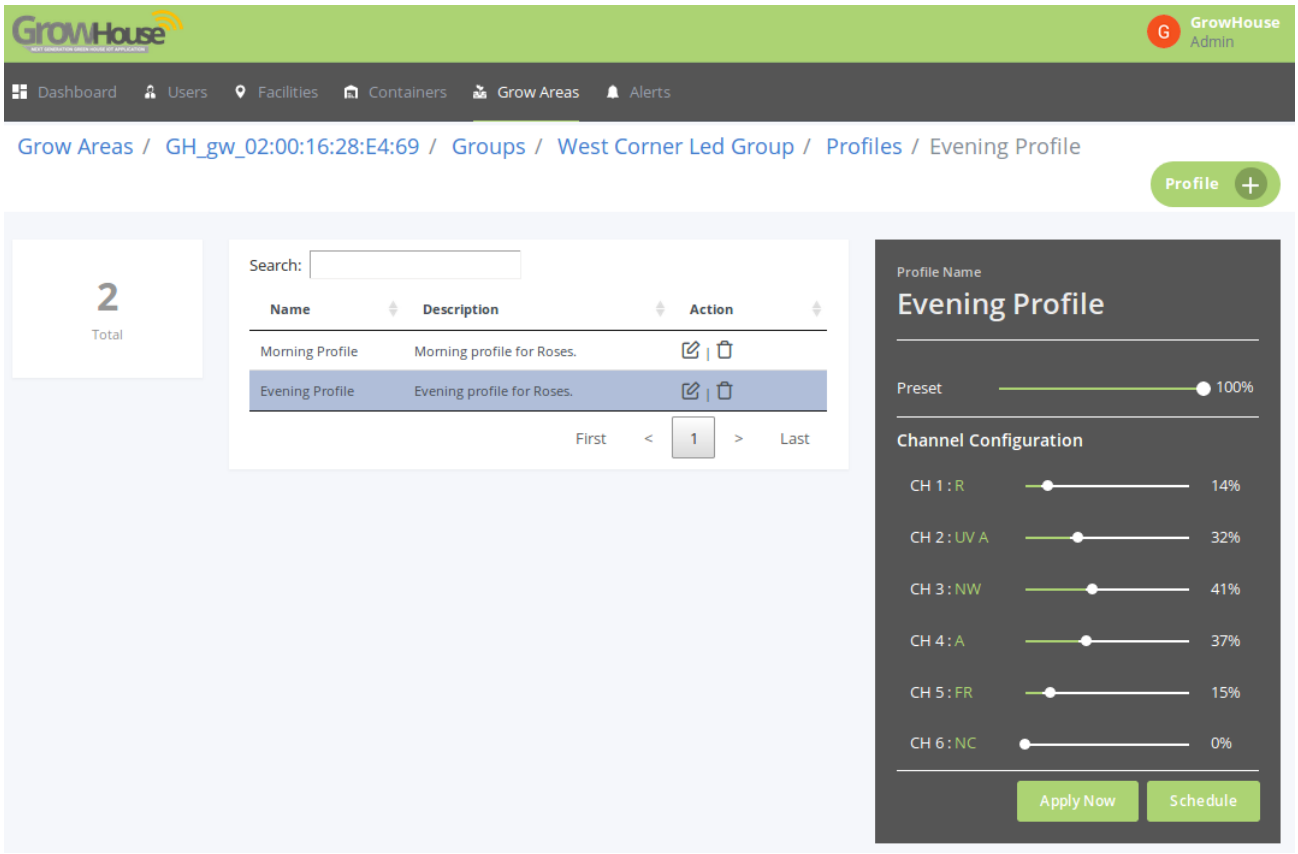


Figure 77: Profile Selection

- Change the desired preset value through varying preset slider bar if required.
- Click on “Apply Now” button.

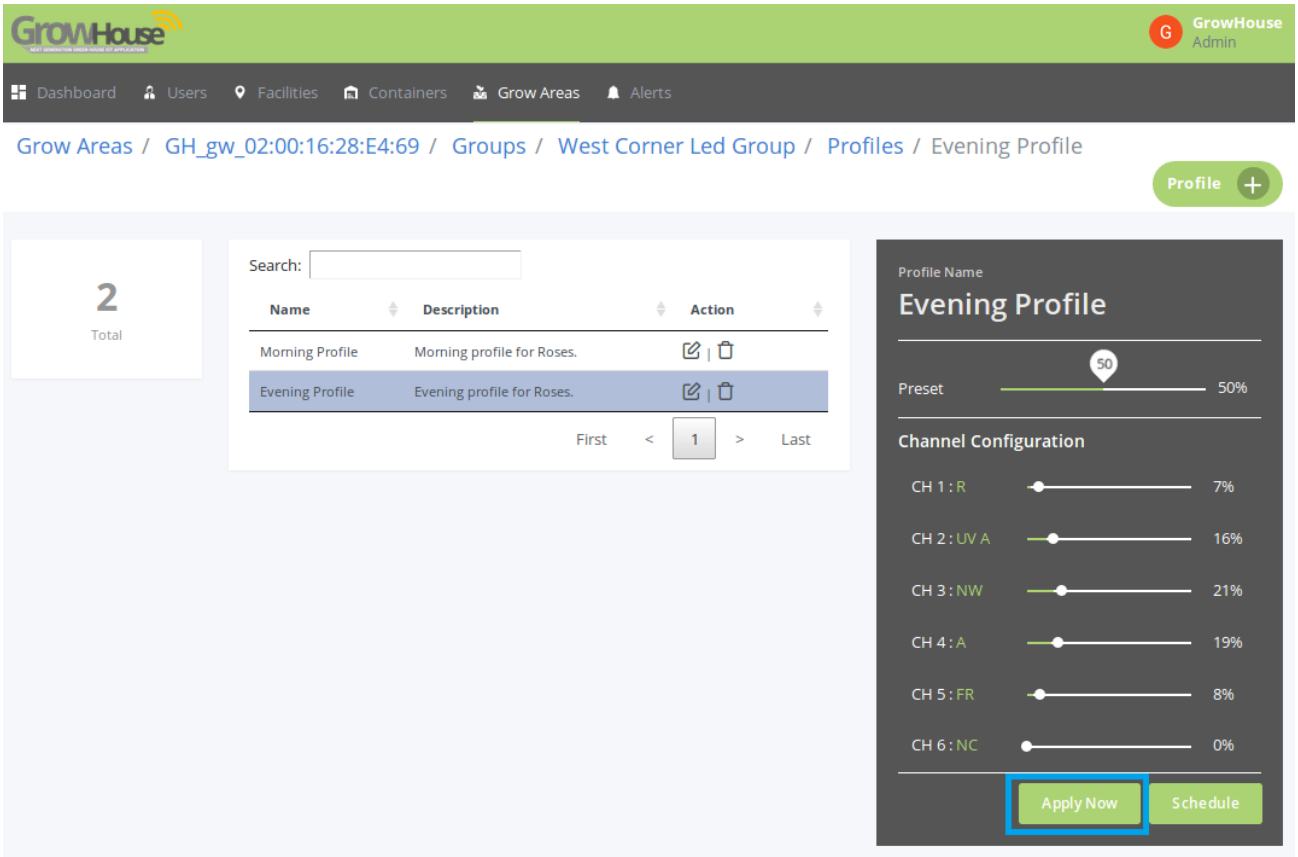


Figure 78: Apply Selected Profile

- “Profile applied successfully” message will be displayed after successful setting of LED channel intensity.

4.8.2.2.3 Schedule Group Profile

User can schedule the Group Profile to be applied at desired time in future.

- Click on a particular Group Profile row.

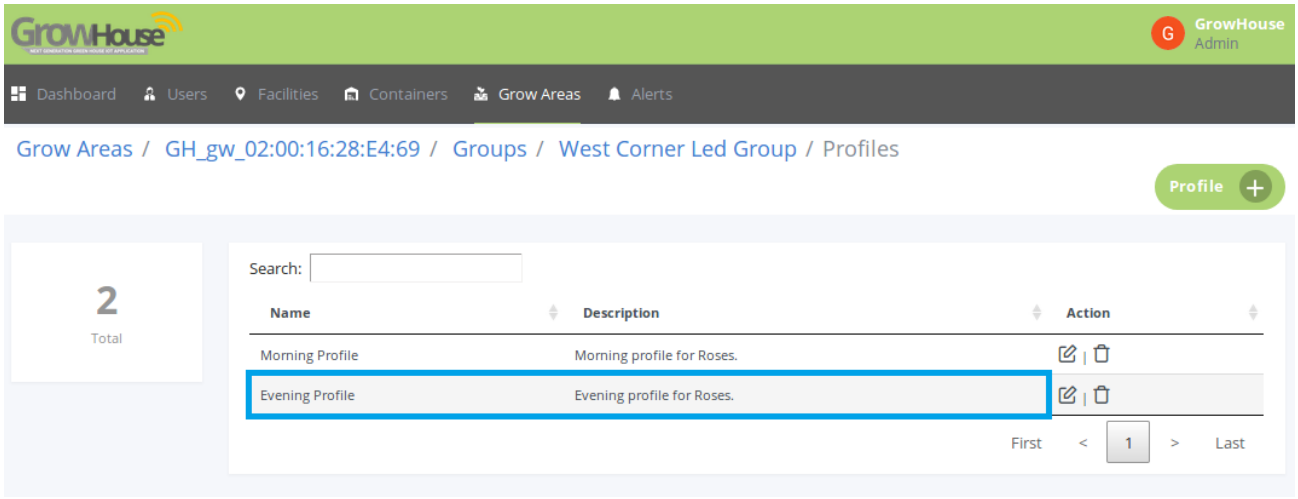


Figure 79: List of the Profiles of a Group

- User will be shown individual channel intensity that would be set on LED Nodes of the Group at preset of 100%.

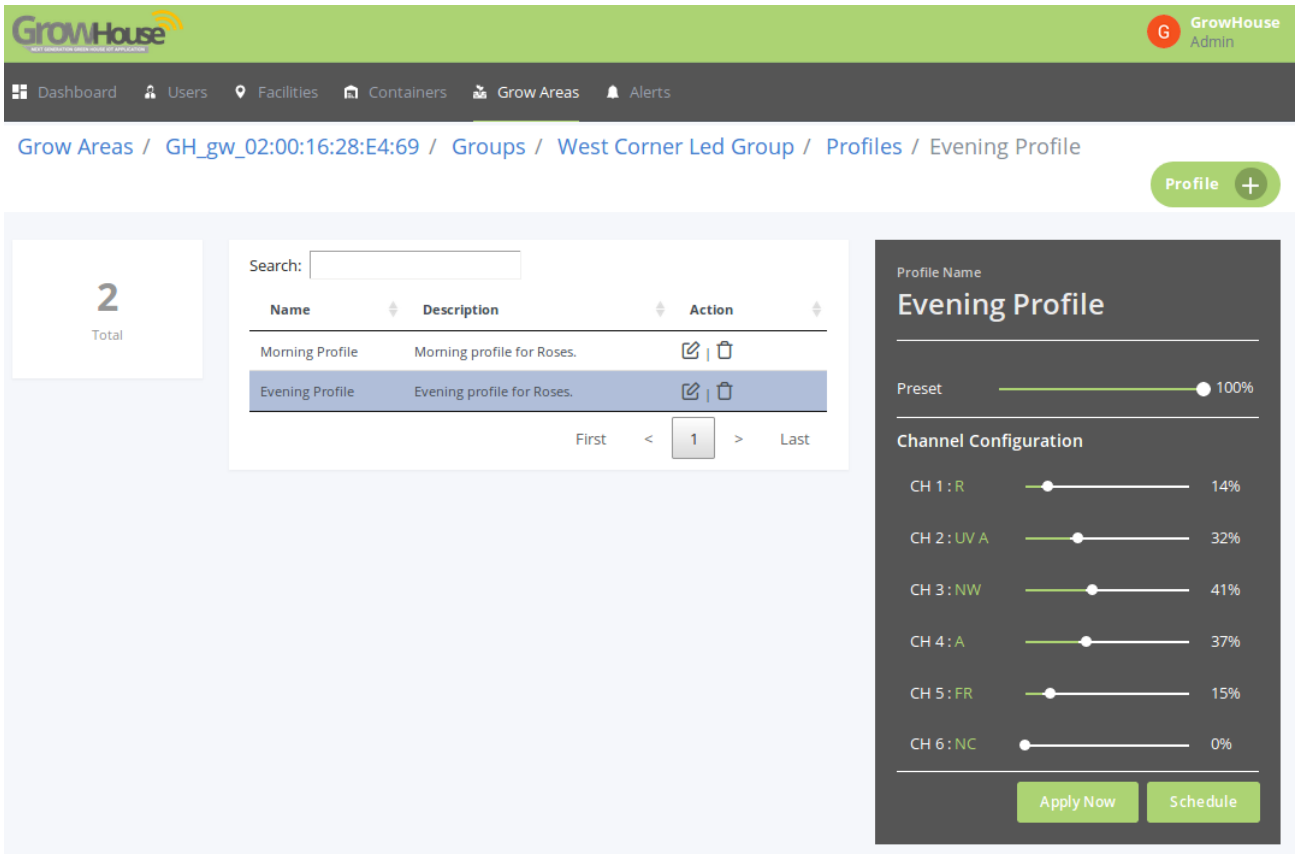


Figure 80: Profile Selection

- Select the desired preset level.
- Click on “Schedule” button.

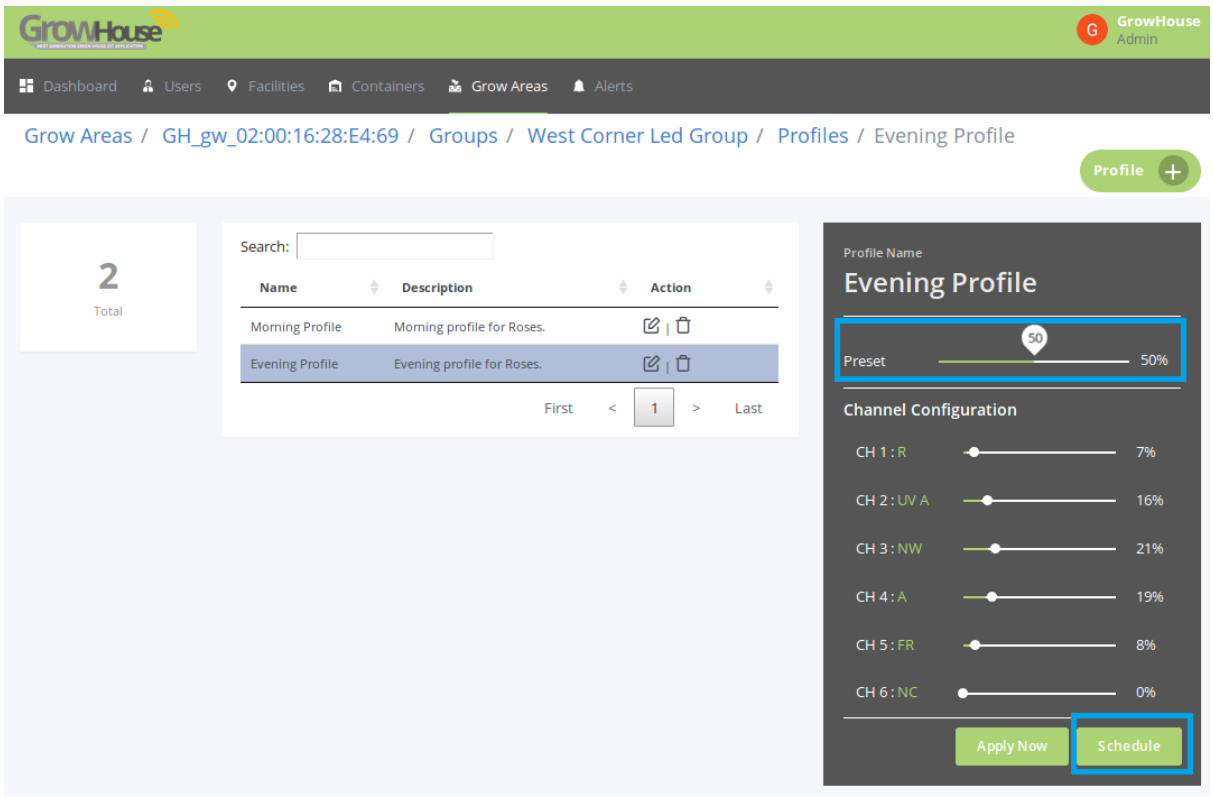


Figure 81: Schedule a Group Profile

- 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.

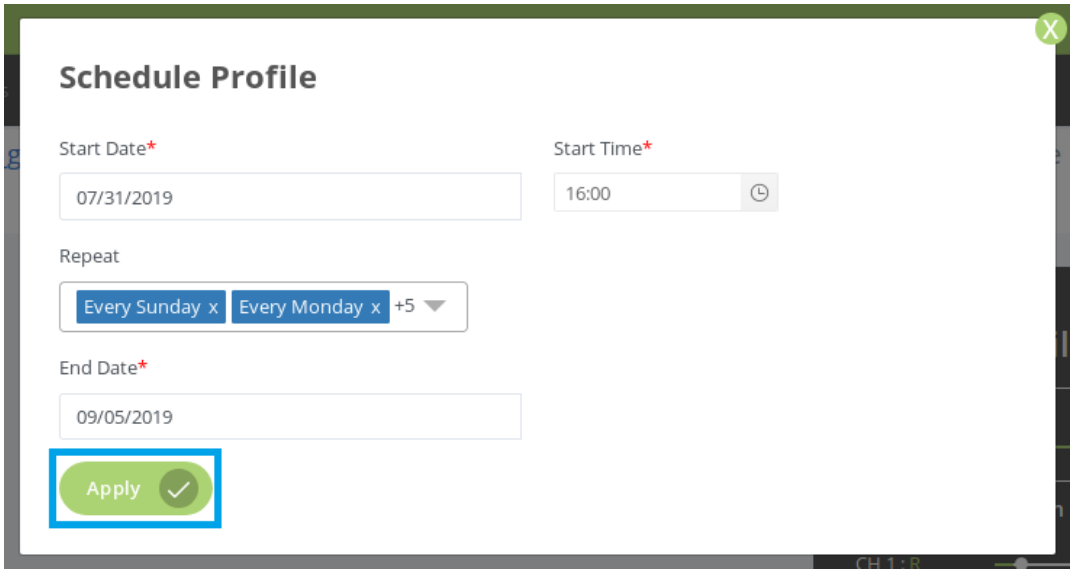


Figure 82: Schedule Group Profile - Schedule Detail

- "Profile scheduled successfully" message will be displayed on successful schedule of 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.

4.8.2.2.4 Edit Group Profile

- Click on edit icon .

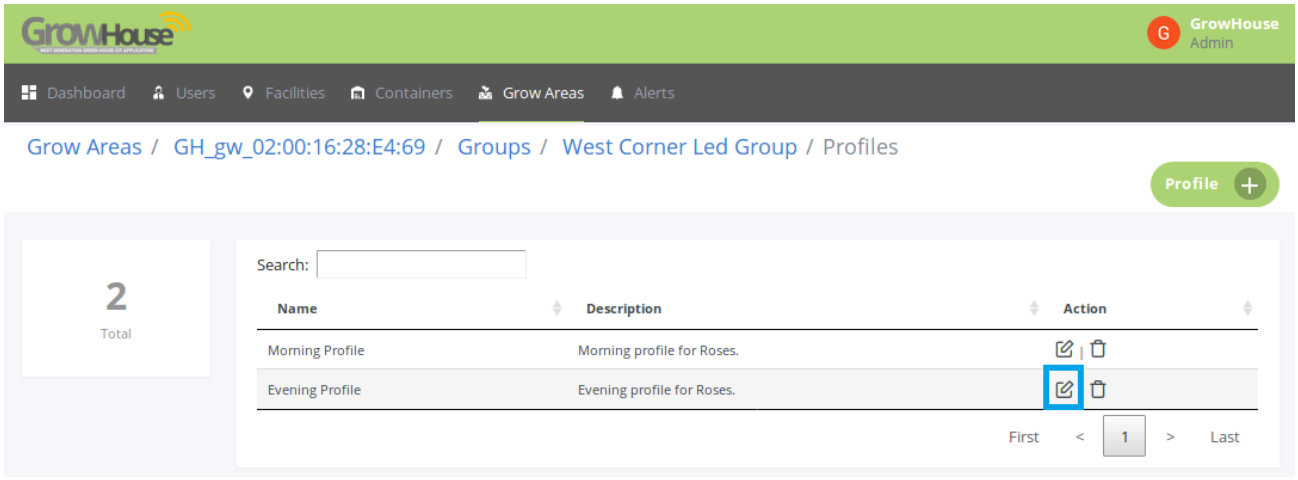


Figure 83: Edit a Group Profile

- Edit the desired Profile name and description.
- Change the desired intensity level for individual channel.
- Click on “Done” button.

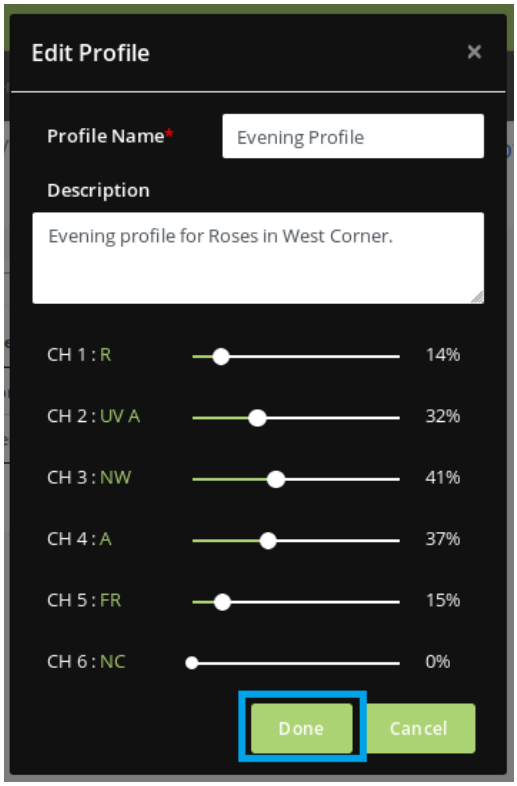


Figure 84: Edit Group Profile - Profile's Details

- “Profile edited successfully” message will be displayed on successful update of Group Profile.
- Previously scheduled events for this Group Profile will be applied on devices according to edited changes in the Group Profile.

4.8.2.2.5 Delete Group Profile

- Click on delete icon .

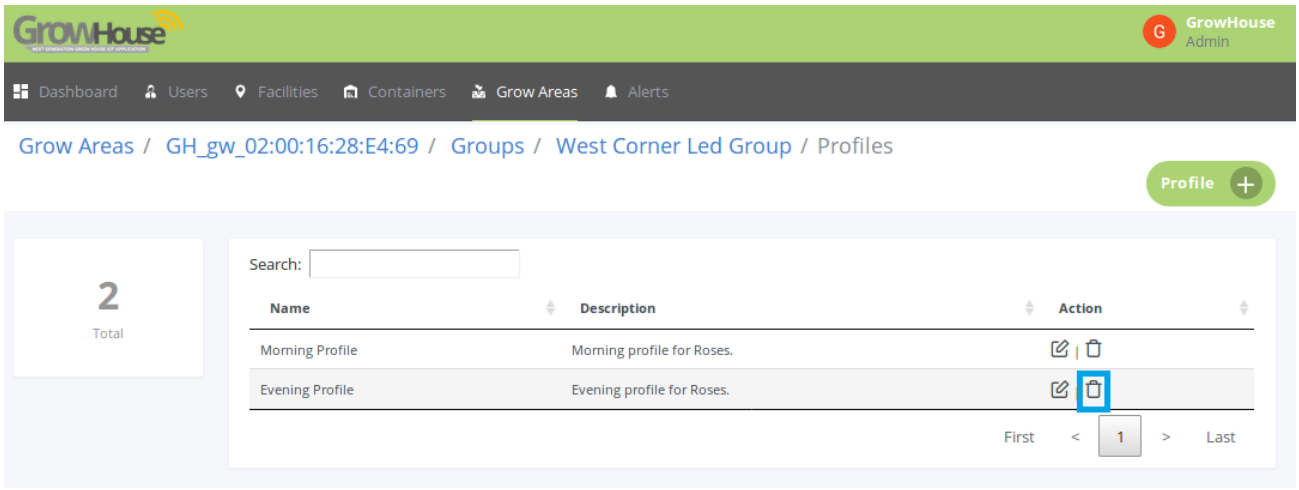


Figure 85: Delete a Group Profile

- Click on “Delete” button.

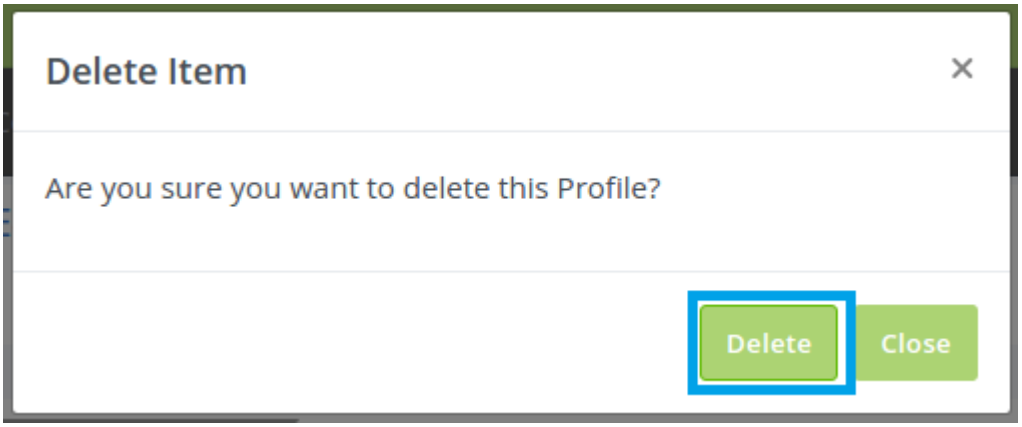


Figure 86: Delete a Group Profile Confirmation

- “Profile deleted successfully” message will be displayed after successful deletion of Group Profile.
- Delete operation will also delete all the events scheduled for this Group Profile.

4.8.2.3 Group Events

- Click on “Events” button.

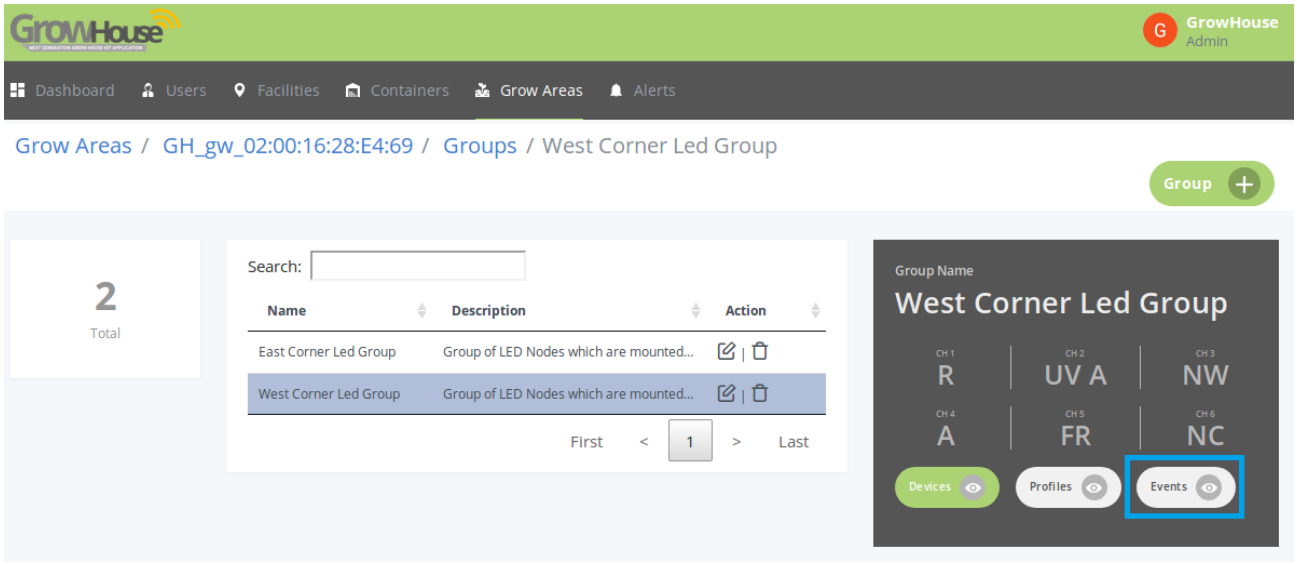


Figure 87: Events of a Group

- A list of all Events which are scheduled in selected Group will be displayed.

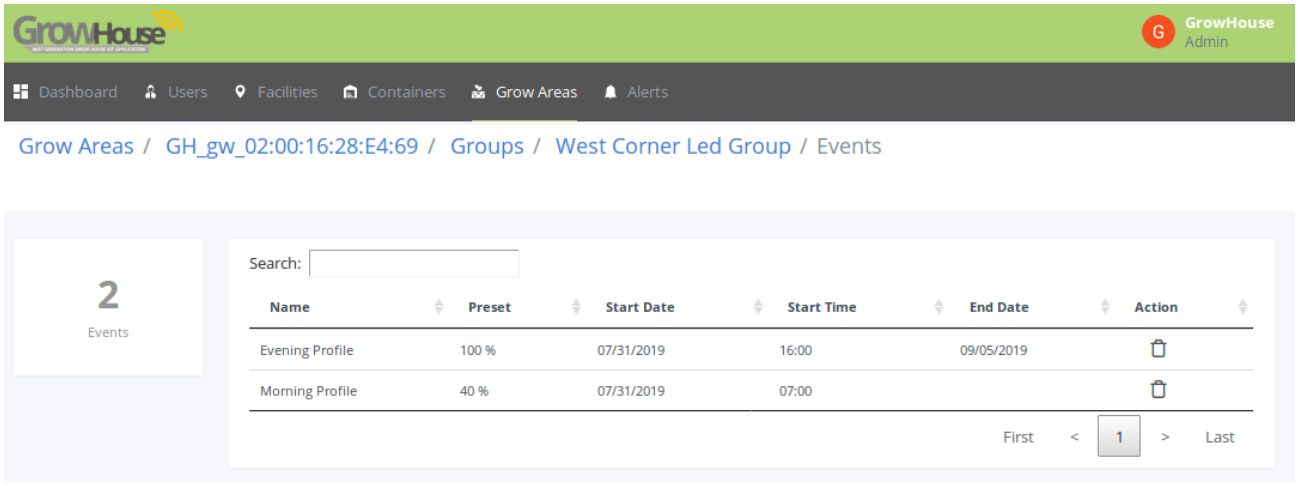


Figure 88: List of Events

4.8.2.3.1 Delete Group Events

- Click on delete icon .

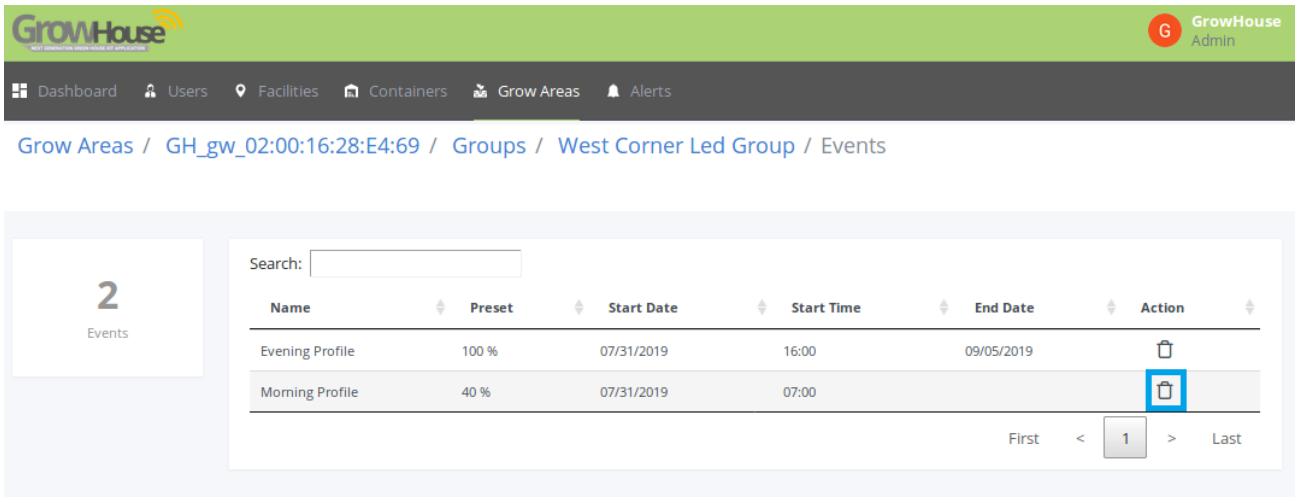


Figure 89: Delete an Event of a Group

- Click on “Delete” button.

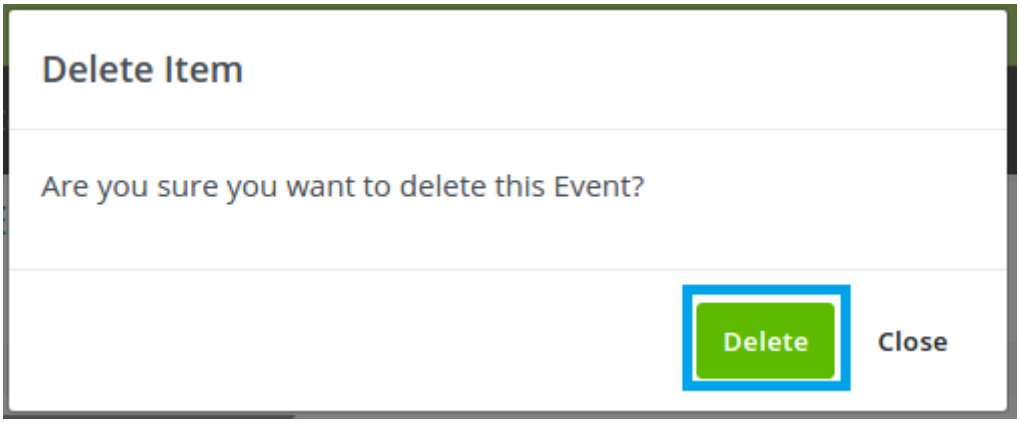


Figure 90: Delete Event Confirmation

- “Event deleted successfully” message will be displayed after successful deletion of Group Event.
- Once the event is deleted it will be cancelled and will not be triggered.

4.8.3 Edit Group

- Click on edit icon .

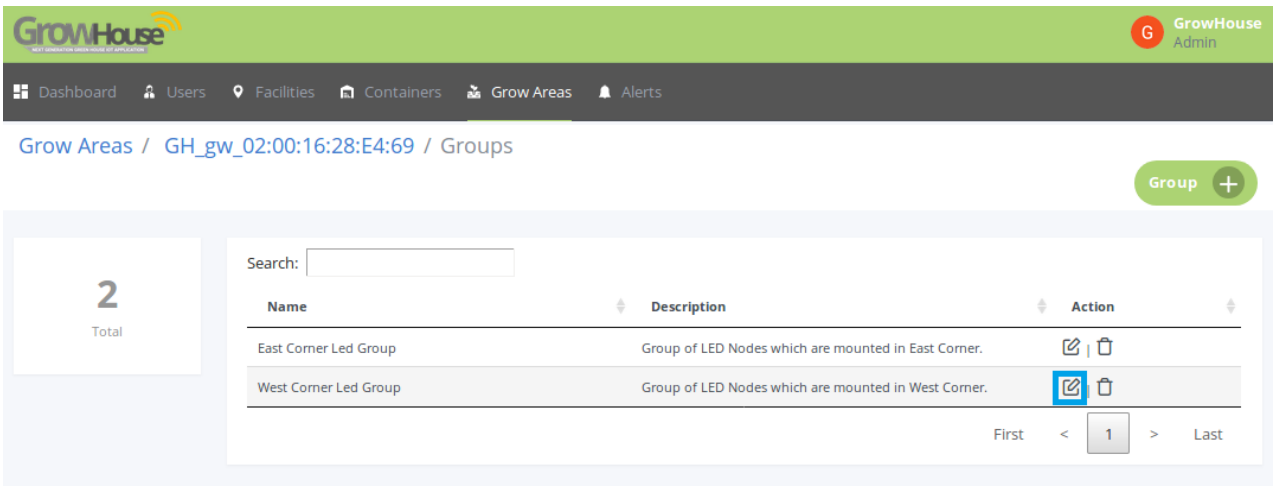


Figure 91: Edit Group

- Edit the required details.
- Click on “Done” button.

Note:
Channel color configuration fields cannot be modified.

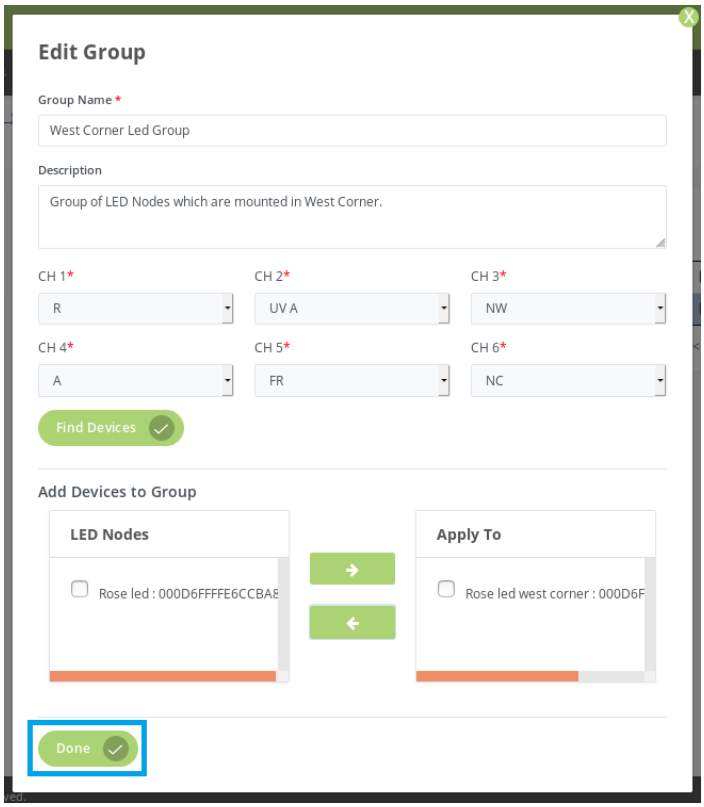


Figure 92: Edit Group - Group's Details

- “Group edited successfully” message will be displayed on successful update of Group.

- If the ‘Apply To’ list is edited, events scheduled on the Group will be applied to updated list of devices.

4.8.4 Delete Group

- Click on delete icon .

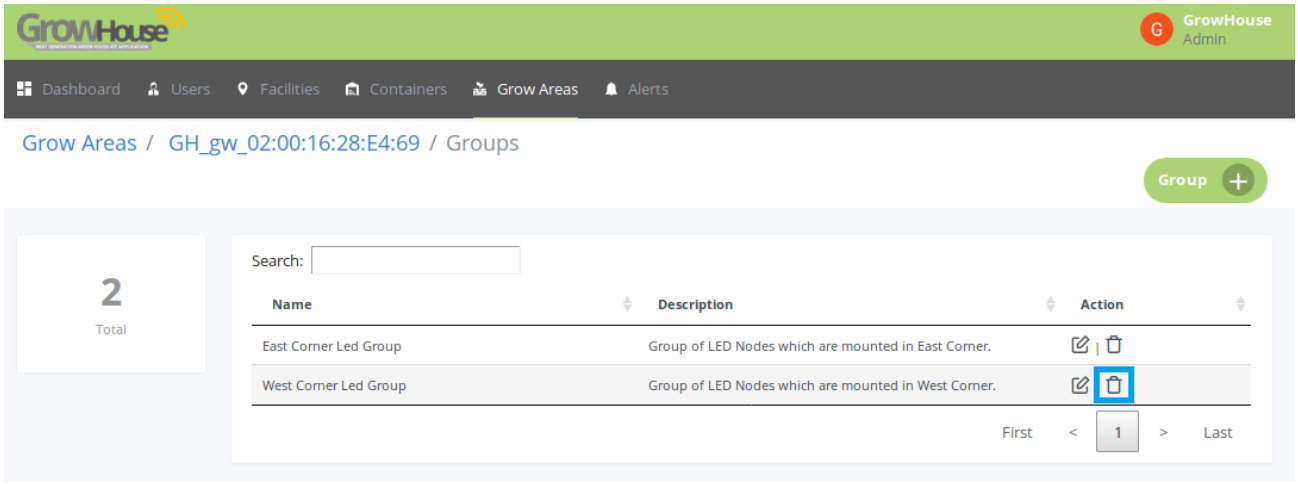


Figure 93: Delete a Group

- Click on “Delete” button.

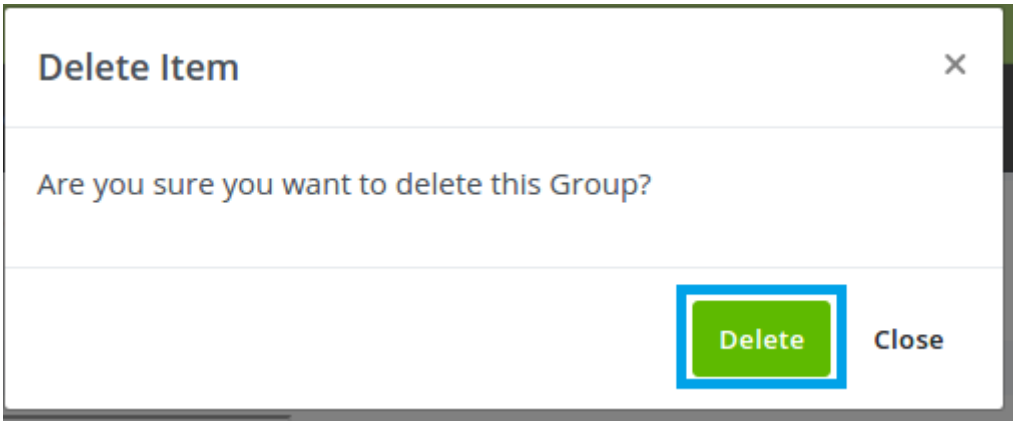


Figure 94: Delete Group Confirmation

- “Group deleted successfully” message will be displayed after successful deletion of Group.
- Delete operation will also delete all the Group Profiles created for the Group and the events scheduled for Group Profiles.

4.9 Grow Sections

A Grow Area can be subdivided into smaller 'grow sections'. Section is a logical division of the Grow Area. Devices are assigned within a grow section. An admin user can create Rules using those devices. A “Default” grow section is created for a Grow Area by default. User can use this grow section to create rules. User can also create multiple (up to 12) grow section within Grow Area.

- Select particular Grow Area and click on “Sections” button to view Grow sections.

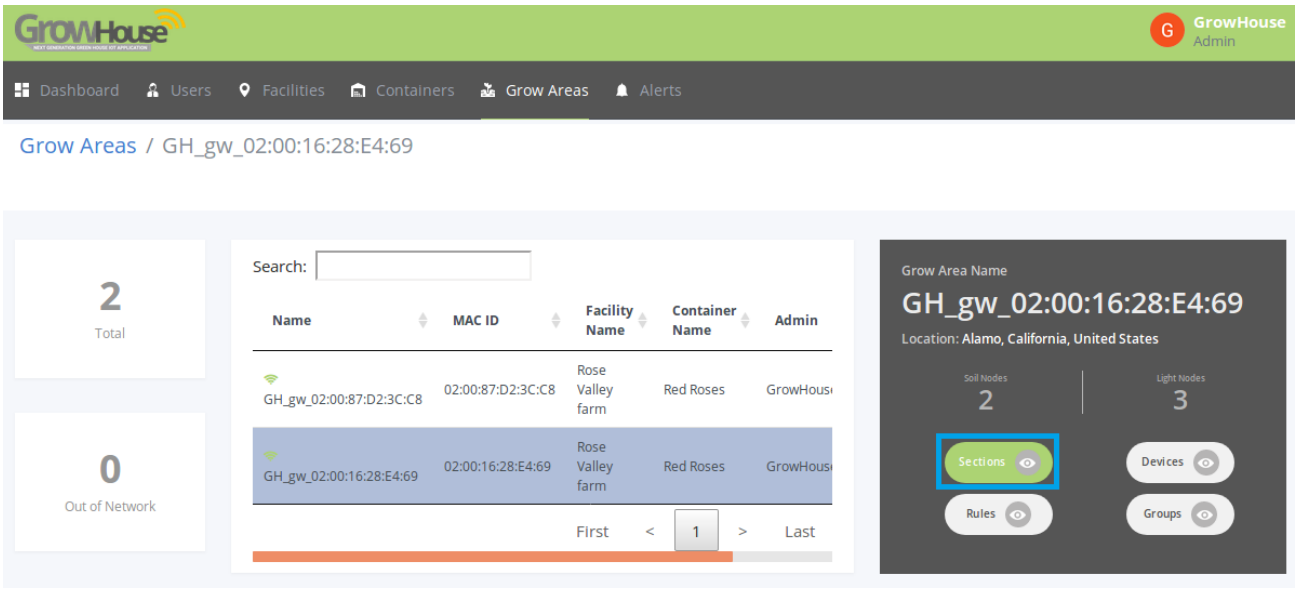


Figure 95: Grow Section

- A layout of existing grow sections created under particular Gateway will be shown.

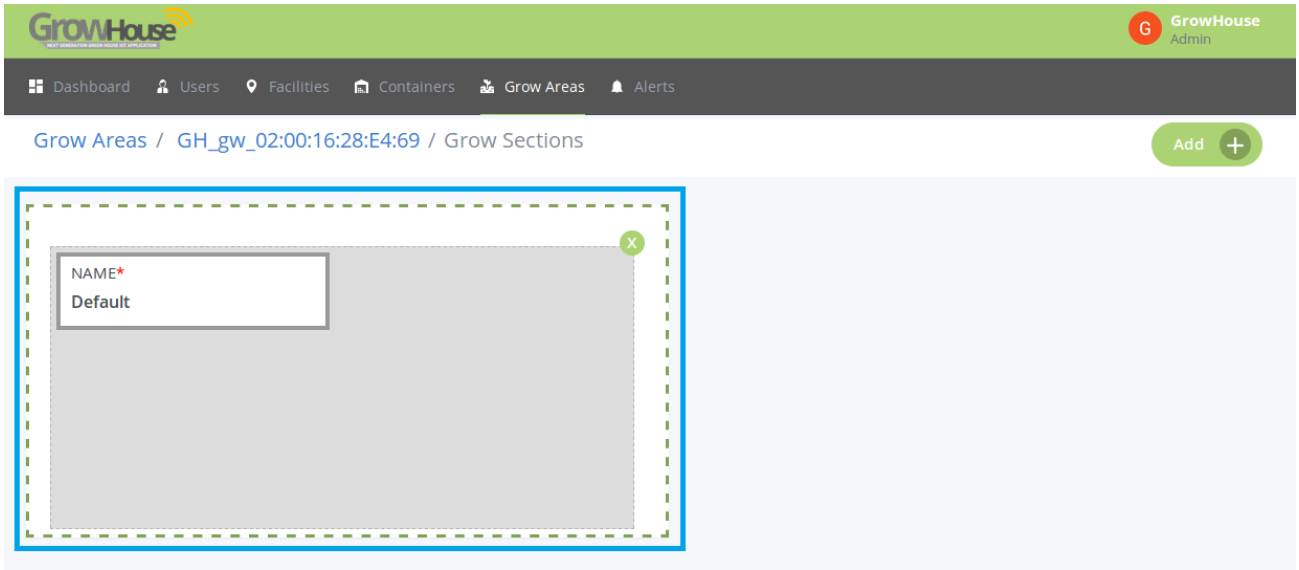


Figure 96: Grow Sections Layout

4.9.1 Create Grow Sections

- Click on “Add +” button to Create new section.

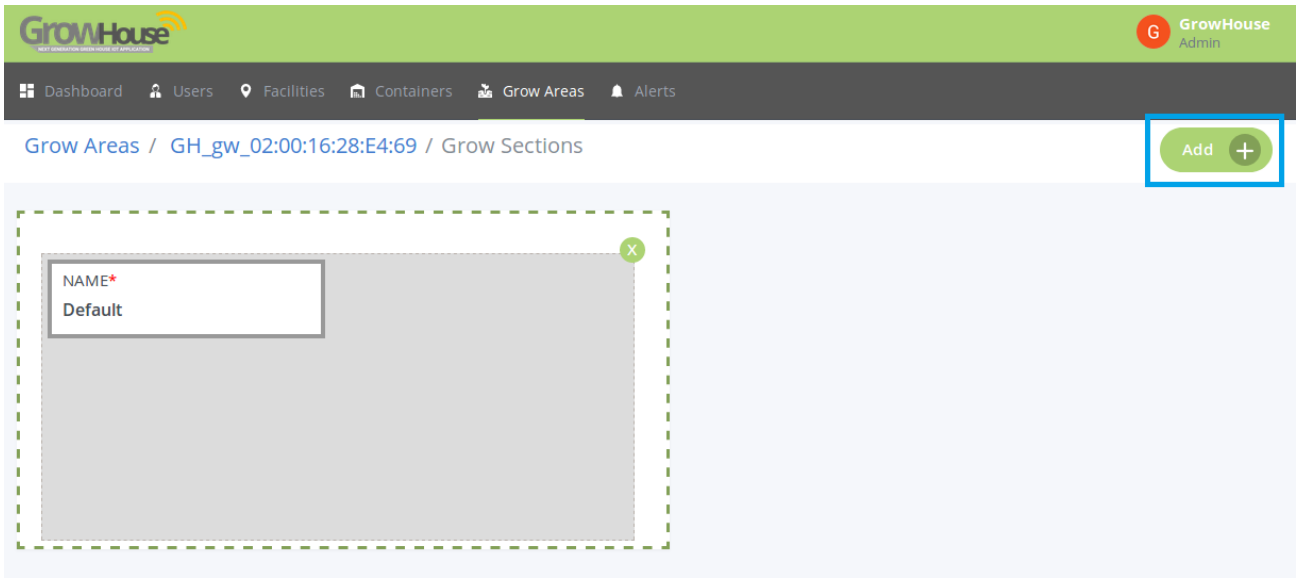


Figure 97: Create New Grow Section

- Select layout.
- Enter desired grow section name.
- Click on “Save” button.

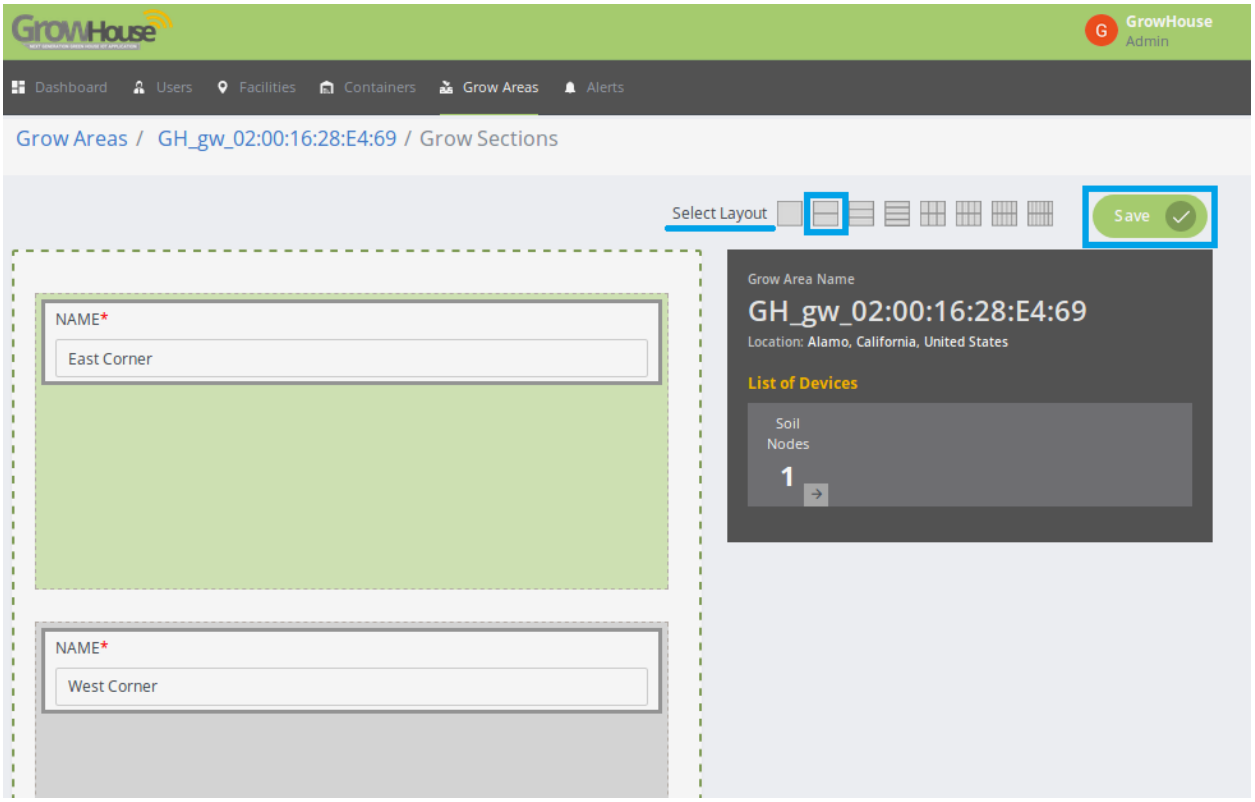


Figure 98: Create New Grow Section – Section details

- “Grow Sections updated successfully” message will be displayed on successful creation of grow section.

4.9.2 Attach devices with Grow Sections

- Click on “Add +” button.

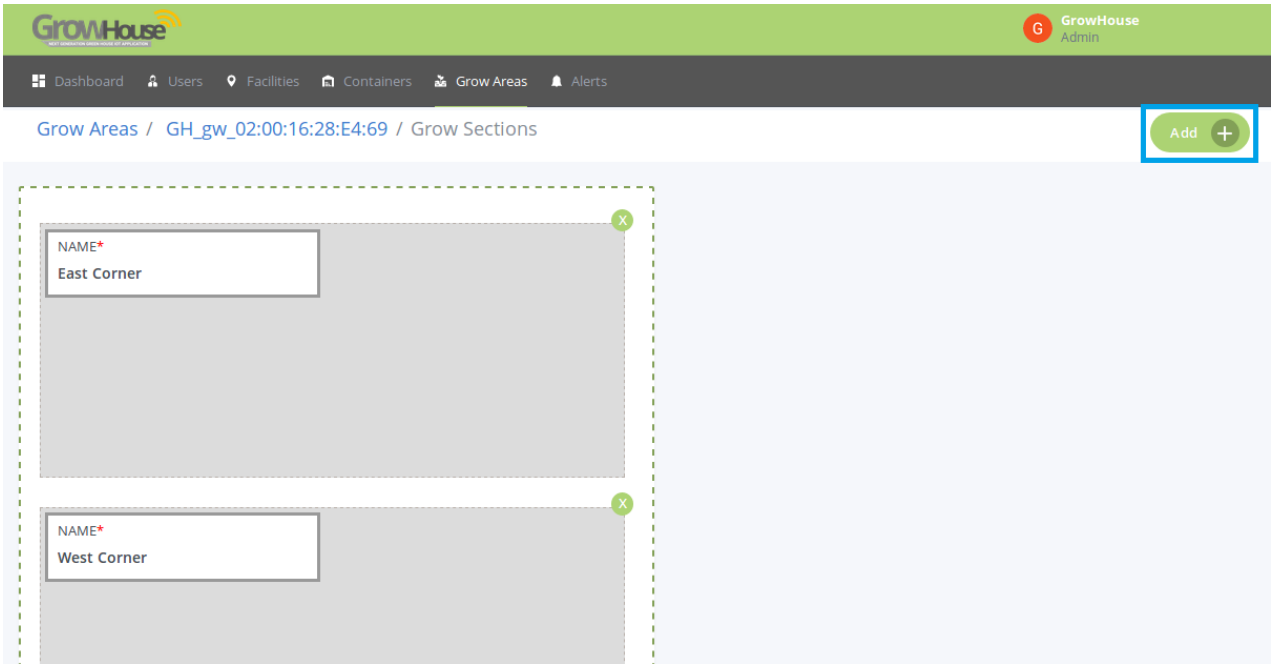


Figure 99: Add Devices into Grow Section

- Select grow section to which a device needs to be attached.
- Click on arrow (->) against desired device type. This will show all the devices.
- Click on arrow (<-) against the desire device. This will add particular device in the selected section.
- Click on “Save” button.
- “Grow Section updated successfully” message will be displayed after successfully attaching device with grow section.
- “This device is already attached with selected Grow Section. Try to attach with another Grow Section.” message will be displayed if the device is already attached with selected grow section.

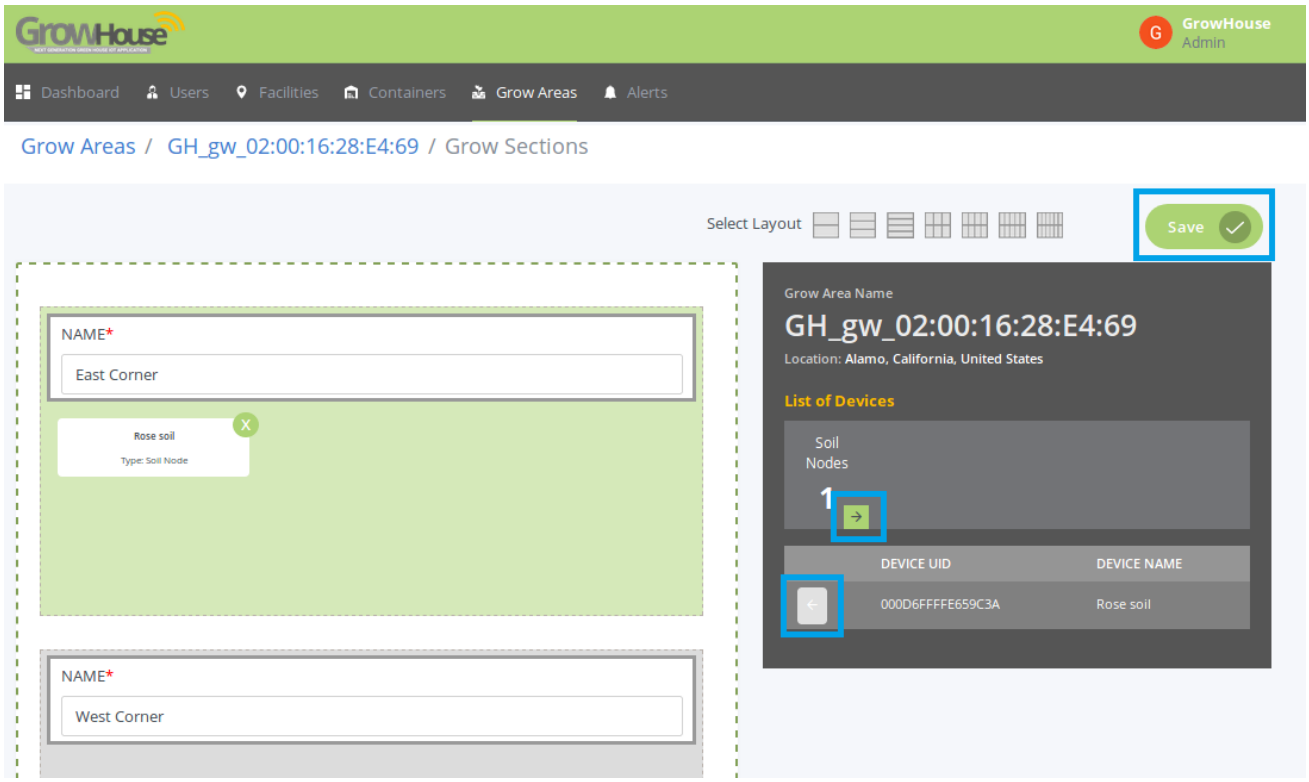


Figure 100: Add Devices into Grow Section – Device details

4.9.3 Grow Section Rules

Rules can be created using single or multiple devices within a grow section. The admin user must set conditions when a Rule is created. If those conditions are satisfied, then an alert will be generated.

Alerts will be displayed on following pages:

- Dashboard page: Random five alerts generated under particular Account.
- Facility page: Random five alerts generated under particular Facility.
- Container page: Random five alerts generated under particular Container.
- Grow Area page: Random five alerts generated under particular Grow Area.
- Alerts page: Generated alerts for all rules created for all Grow Area.

4.9.3.1 Create Rule

Admin user can create a Rule by following below steps.

- ➢ It is required to have at least one Grow Section to create a Rule.
- ➢ Select “Sections” button for particular Grow Area.

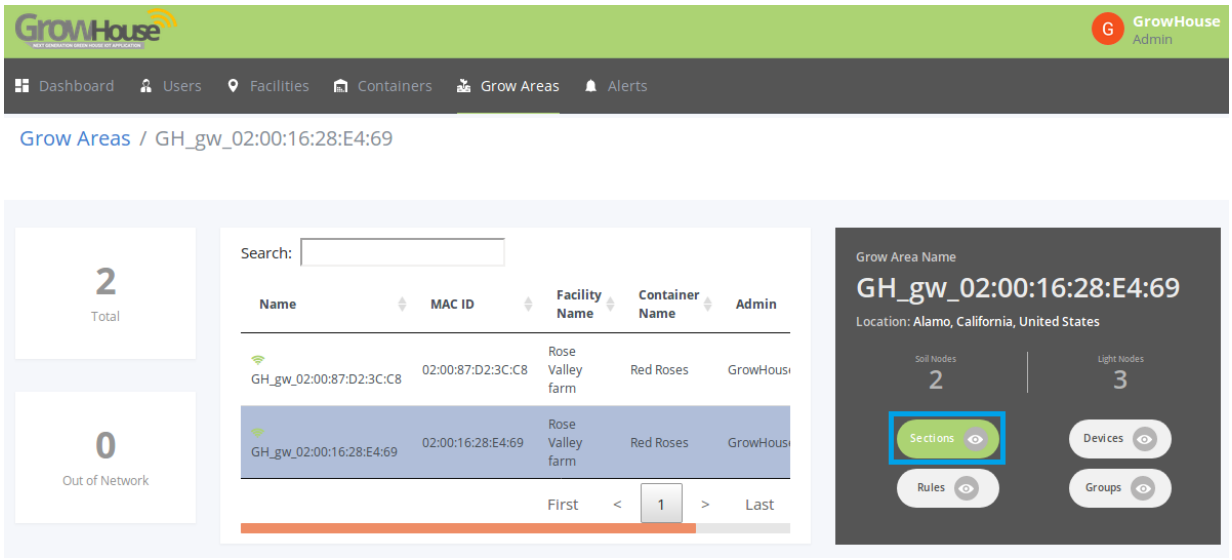


Figure 101: View Grow Section

- ➢ Select grow section for which a Rule has to be created and click on

button.

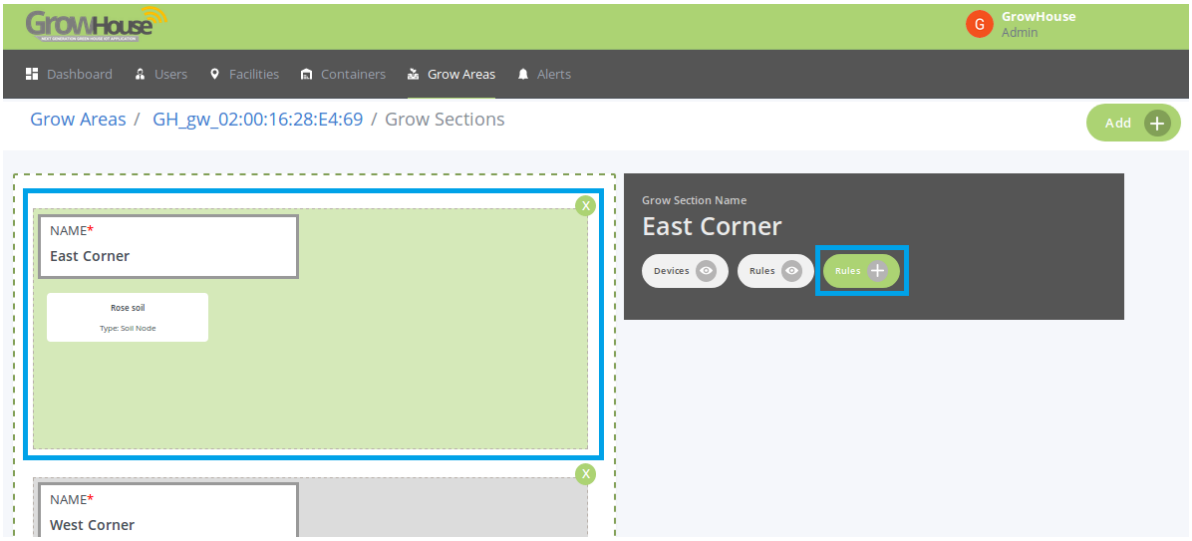


Figure 102: Create New Rule for a Grow Section

- Enter desired name of Rule.
- Select desired device from drop down.
- Select desired device property from drop down.
- Select desired condition from drop down.
- Enter appropriate value.
  For example, if the condition for Battery Voltage property is set as < 2.5, an alert will be generated if battery voltage of the selected Soil Node goes below 2.5.
- Click on “Submit” button.

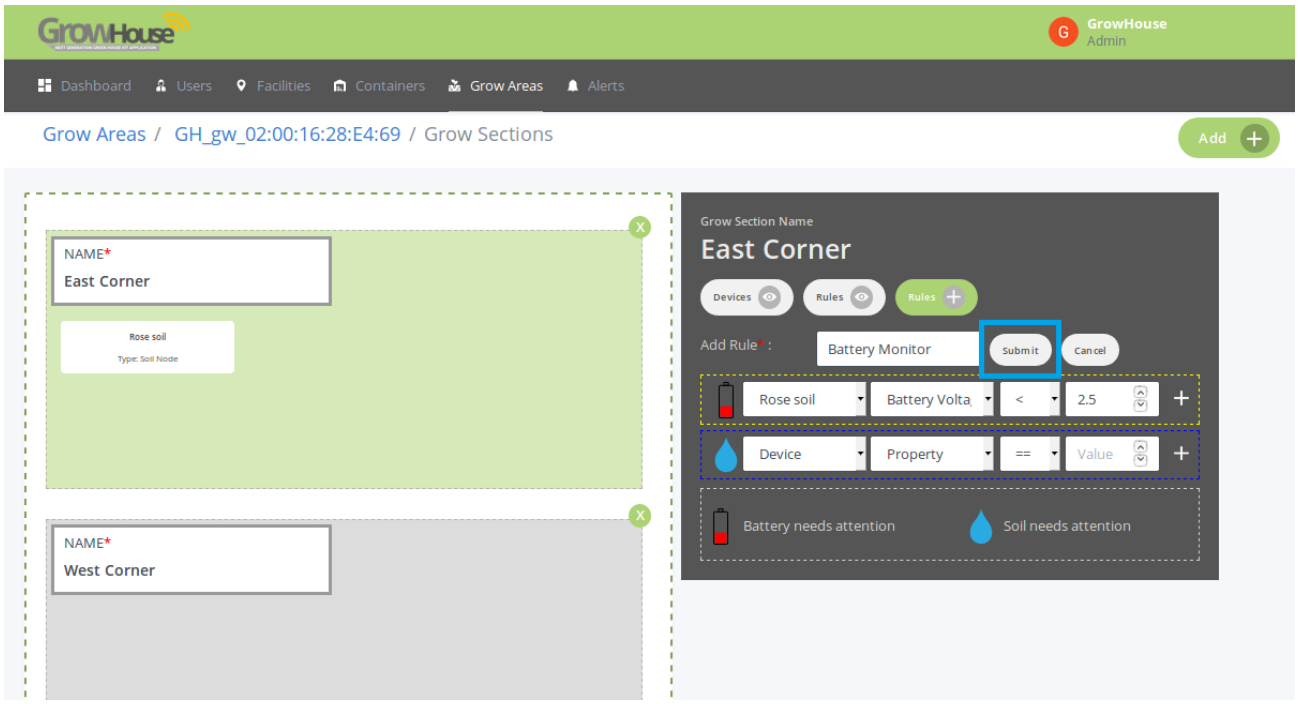


Figure 103: Create New Rule Field for Grow Section

- “Rule creation request sent successfully” message will be displayed on successful creation of Rule.

- To see created Rules for particular grow section, select particular grow section and click on “Rules” button.

- A list of Rules created for particular grow section will be shown.

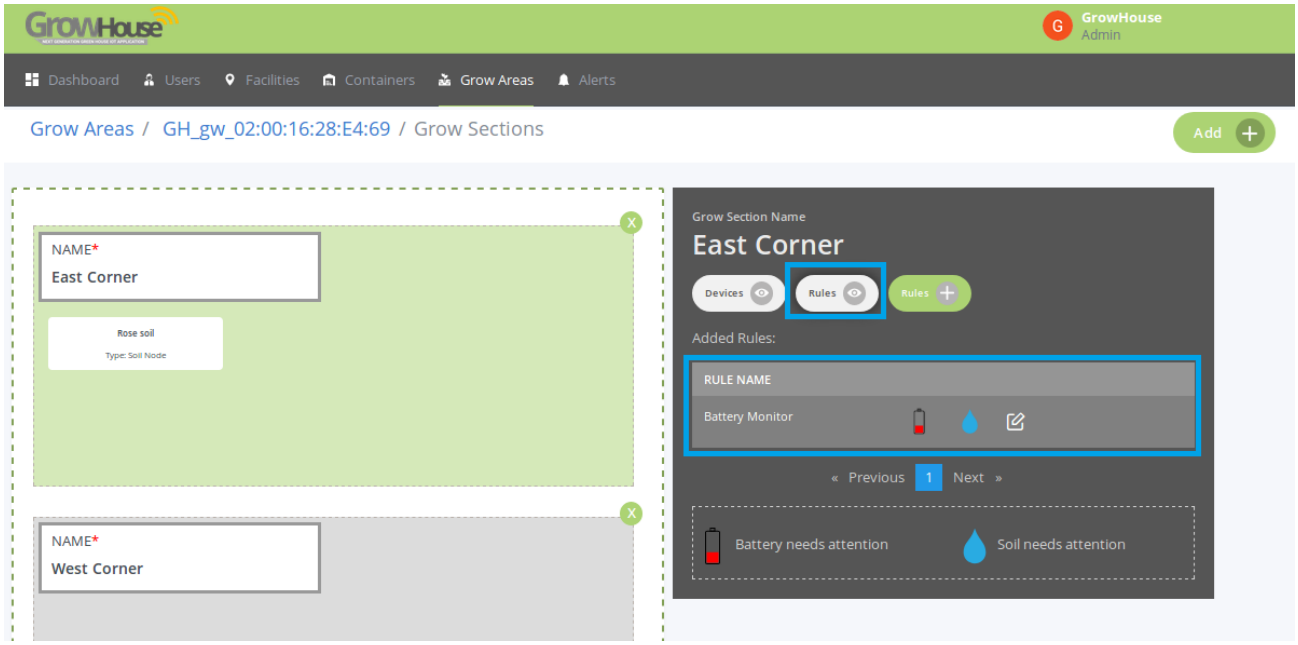


Figure 104: List of Rules per Grow Section

4.9.3.2 View Rule and its Alerts History

Admin user can view rule and rule history created under a particular Gateway by following below steps.

- Click on “Grow Areas” tab.

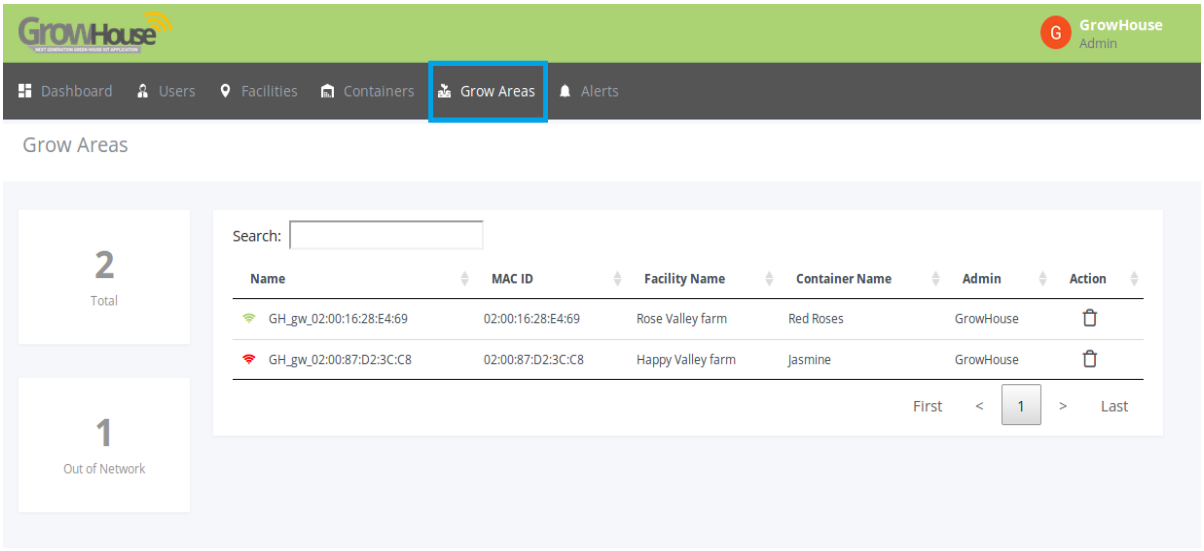


Figure 105: Grow Areas List

- Select a particular Gateway.

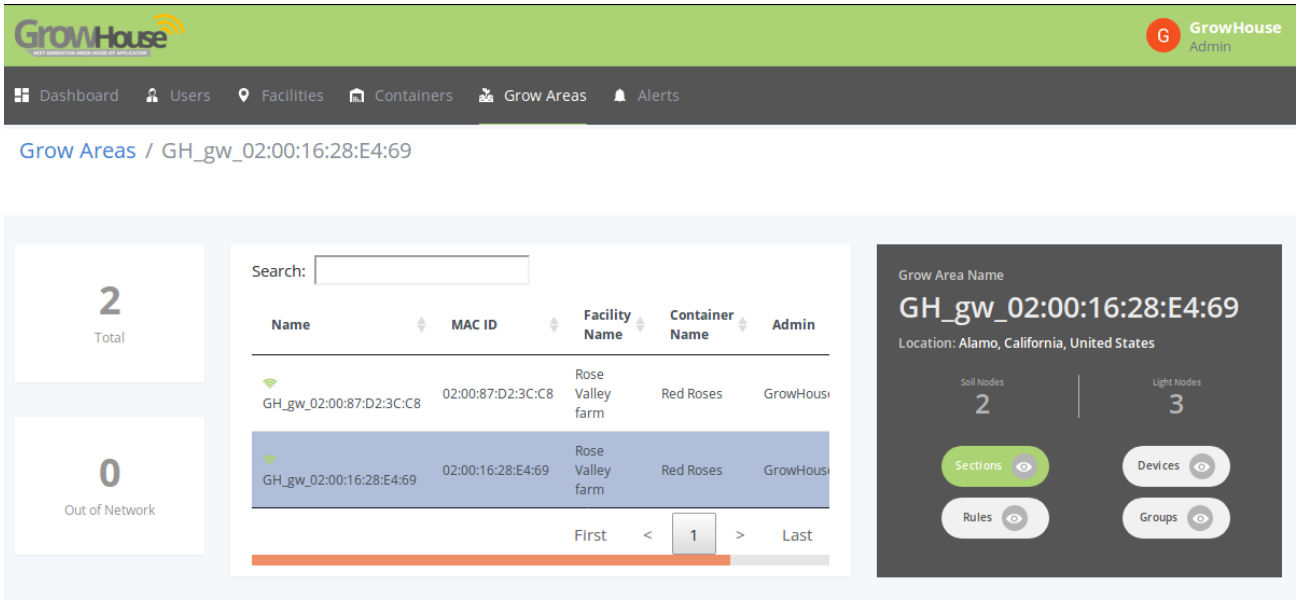


Figure 106: Particular Grow Area Selection

- Click on “Rules” button.

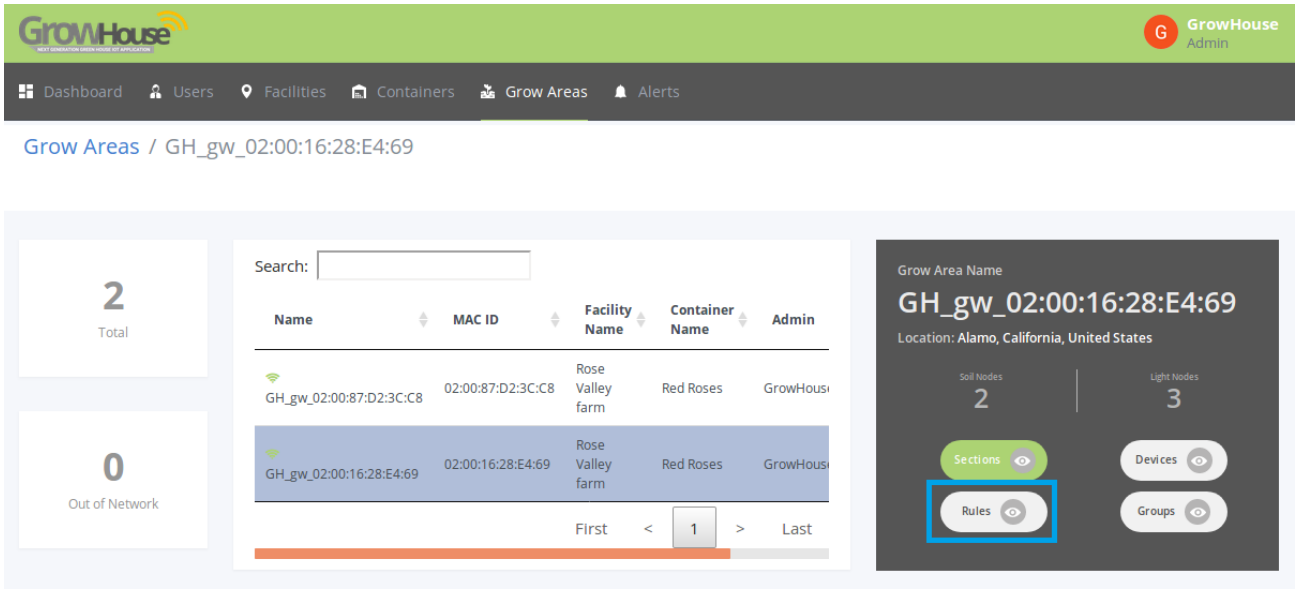


Figure 107: Rules of Particular Grow Area

- A list of all Rules created under a particular Gateway will be shown.

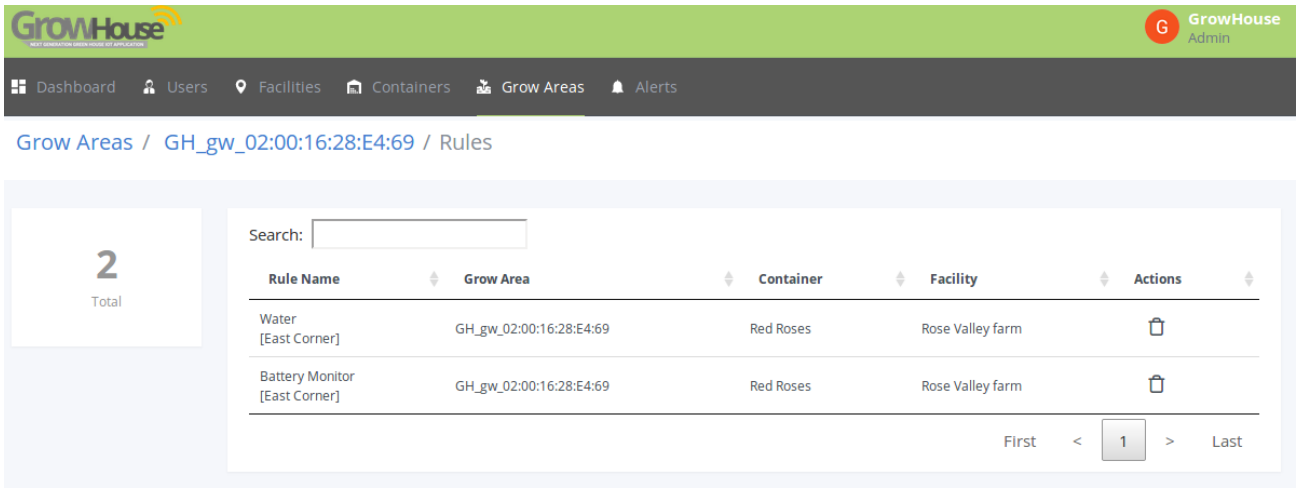


Figure 108: List of Rules per Grow Area

- Follow below process to view Alert history of a particular rule.
- Click on rule area.

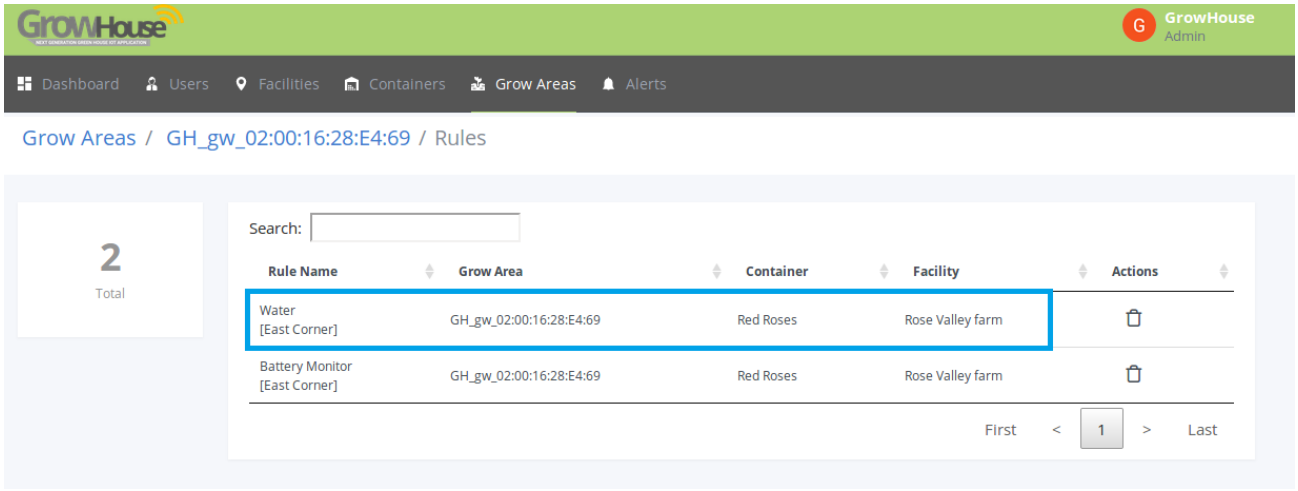


Figure 109: Particular Rule section

- Click on “History” button to see the Alerts history for a particular Rule.

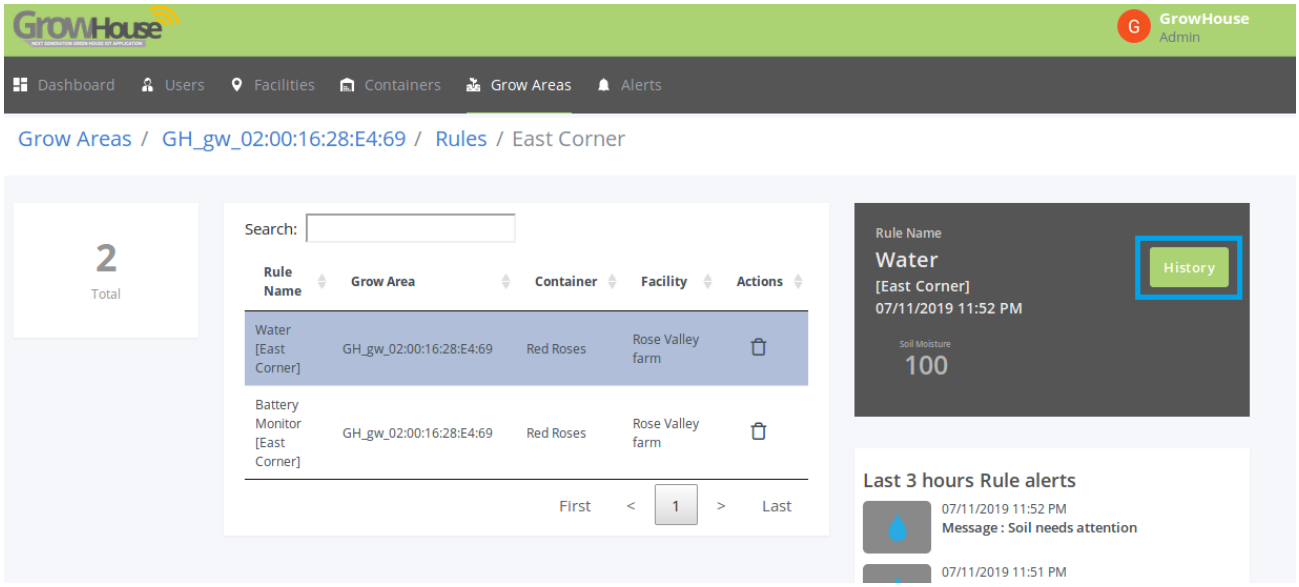


Figure 110: Rule History

- Select date range from drop down. Below image shows Alerts history for selected Rule.

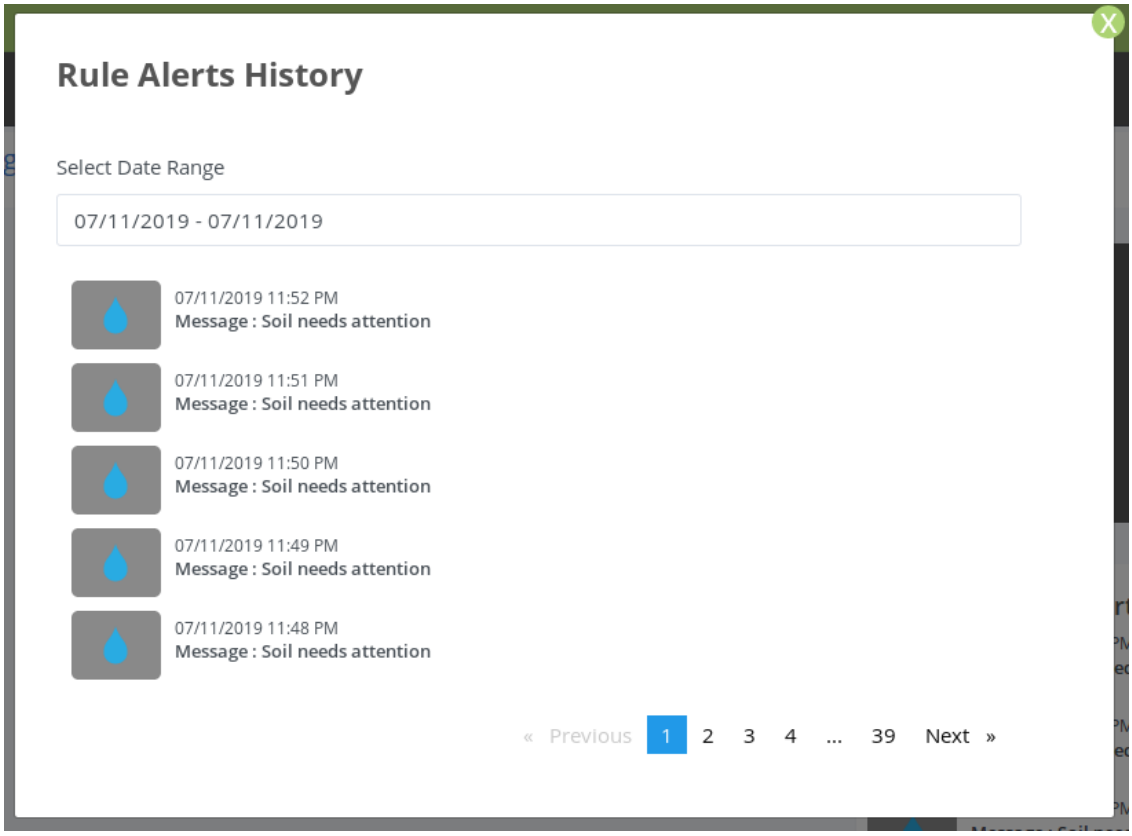


Figure 111: Rule Alerts History List

4.9.3.3 Edit Rule

- Click on “Grow Areas” tab.

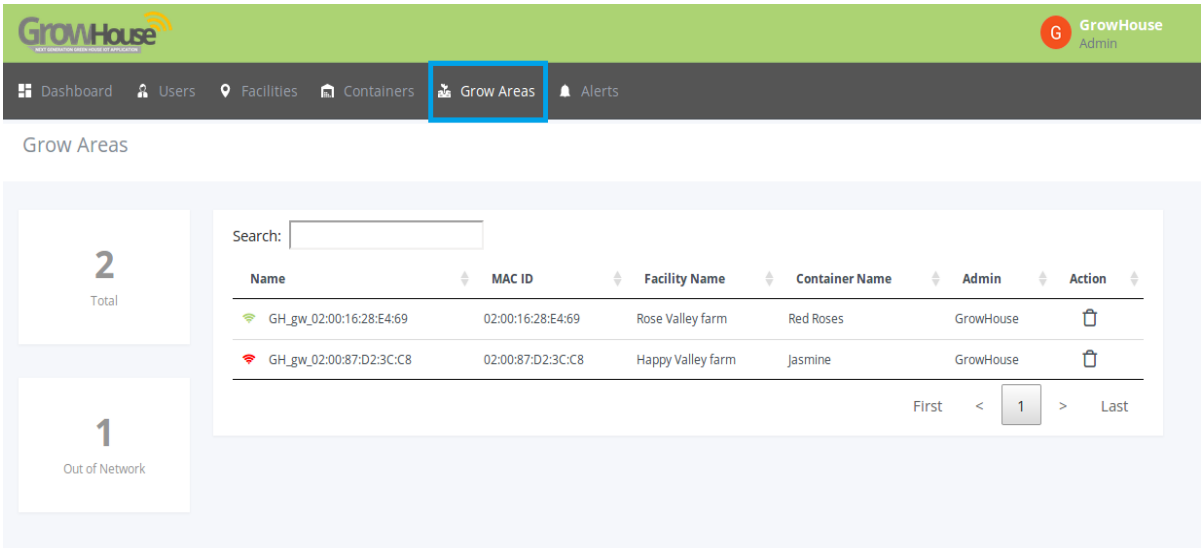


Figure 112: Grow Areas Page

- Select particular Gateway.

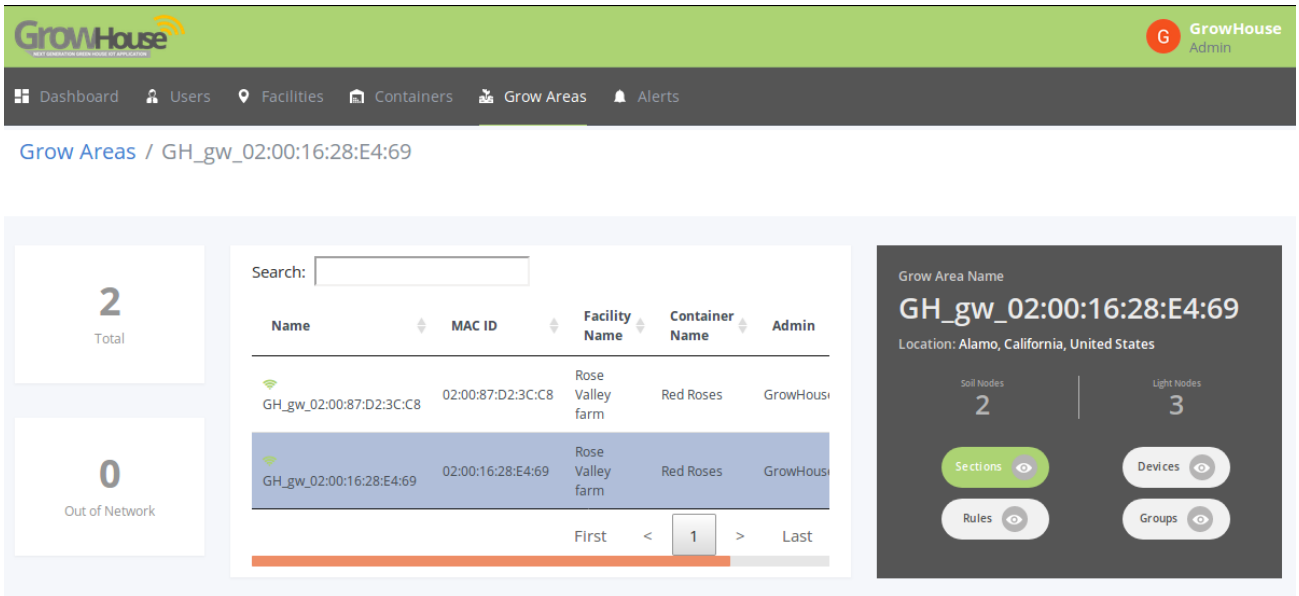


Figure 113: Grow Area Selection

- Select “Sections” button.

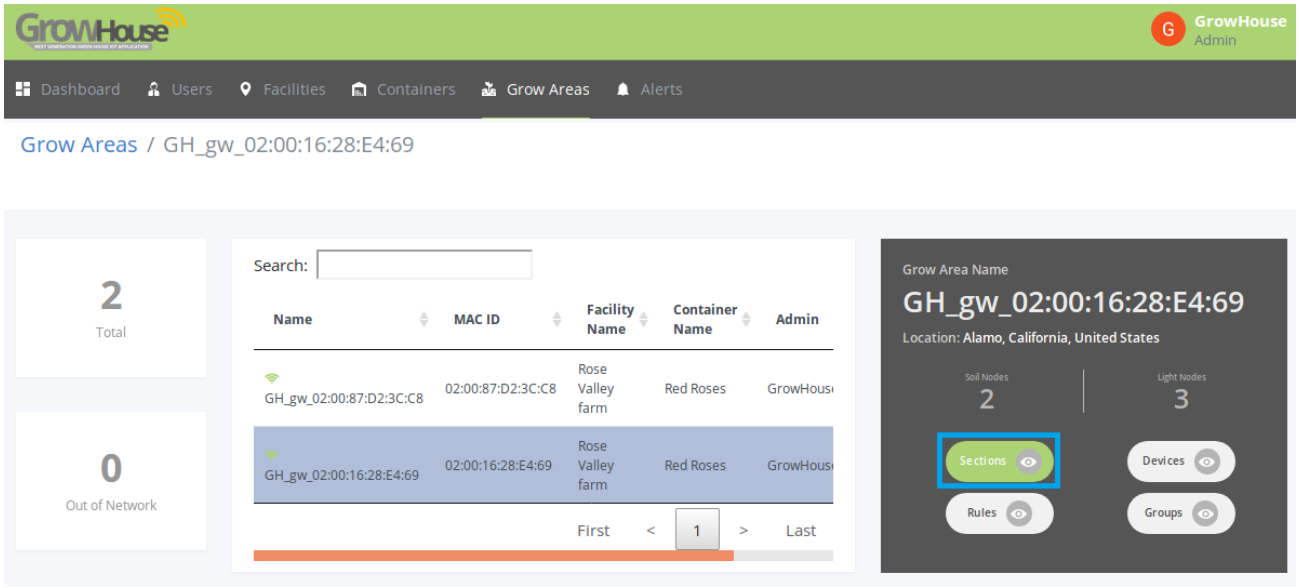


Figure 114: Grow Area Section Selection

- Select the section and Click on “Rules” button.

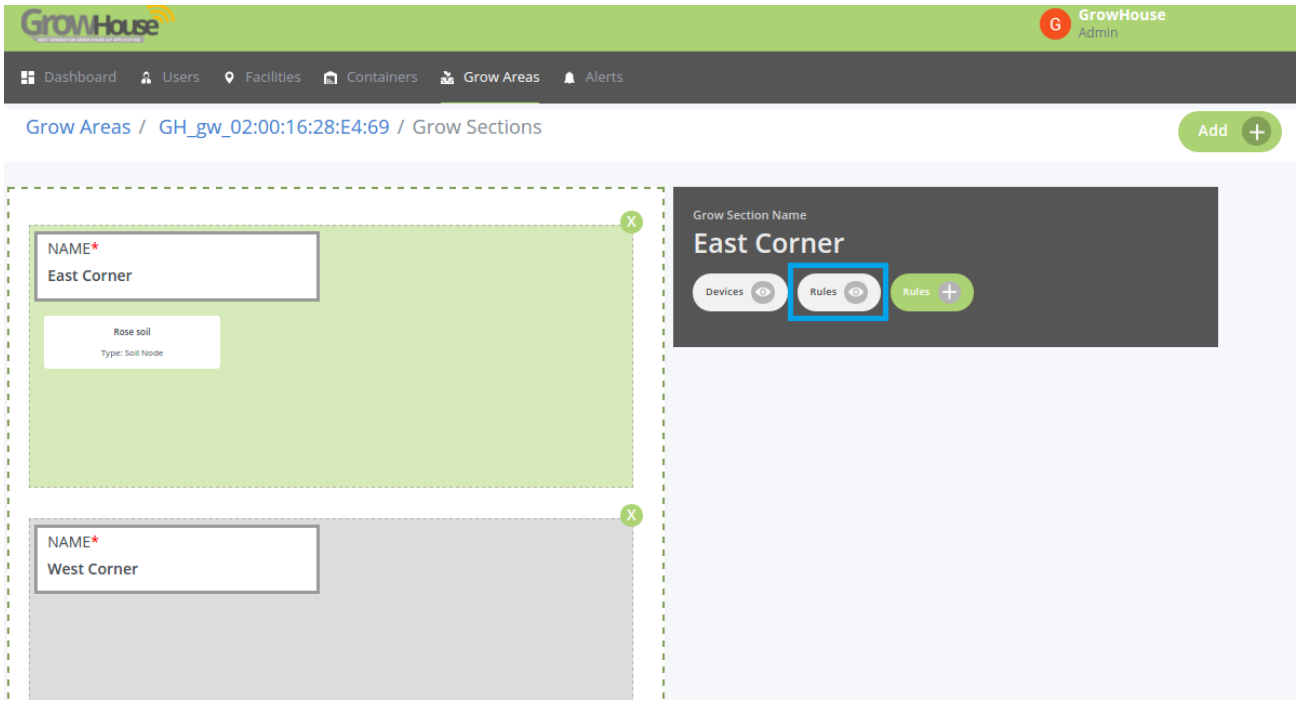


Figure 115: Grow Section Rules

- Select the section and click on edit icon .

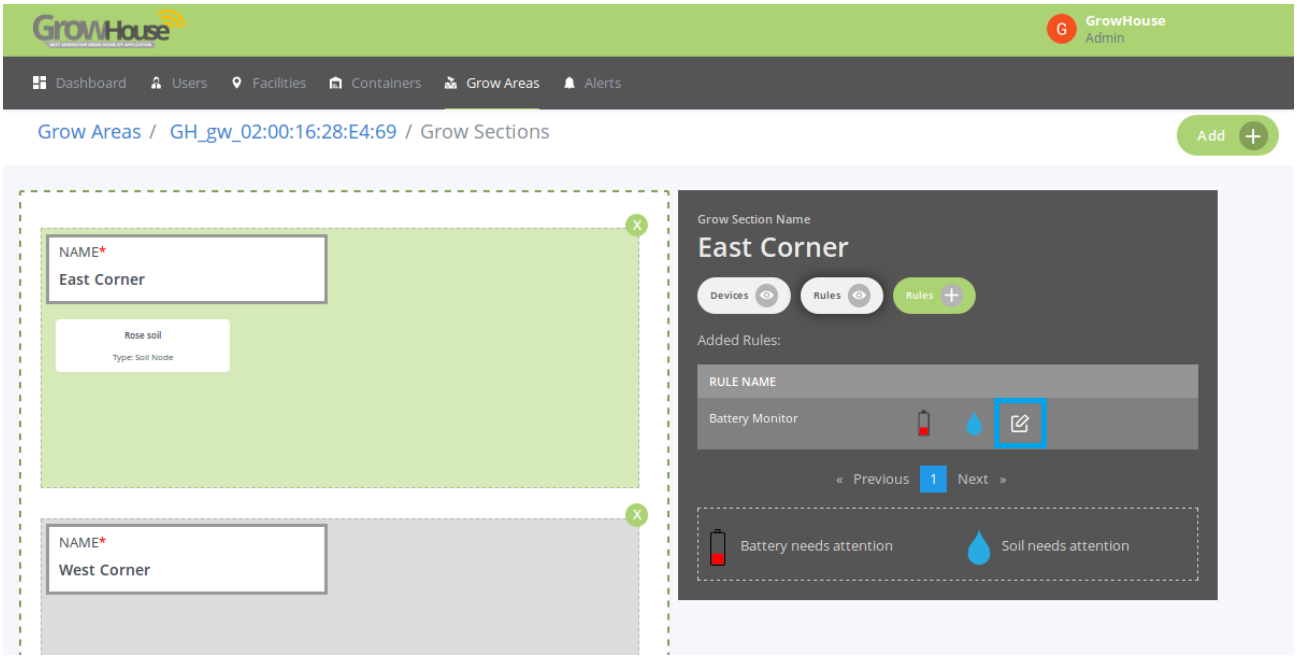


Figure 116: Edit Rules

- Edit required details.
- Click on “Submit” button.

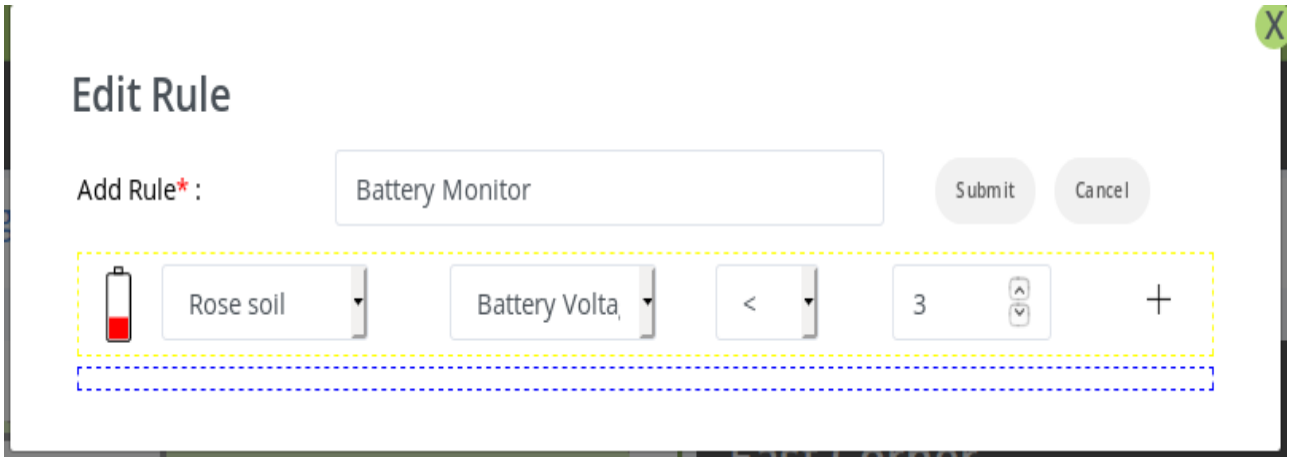


Figure 117: Edit Rules - Rule’s details

- “Rule update request sent successfully” message will be displayed on successful update of rule.

4.9.3.4 Delete Rule

Admin users can delete a Rule by following below steps.

- Click on “Grow Areas” tab

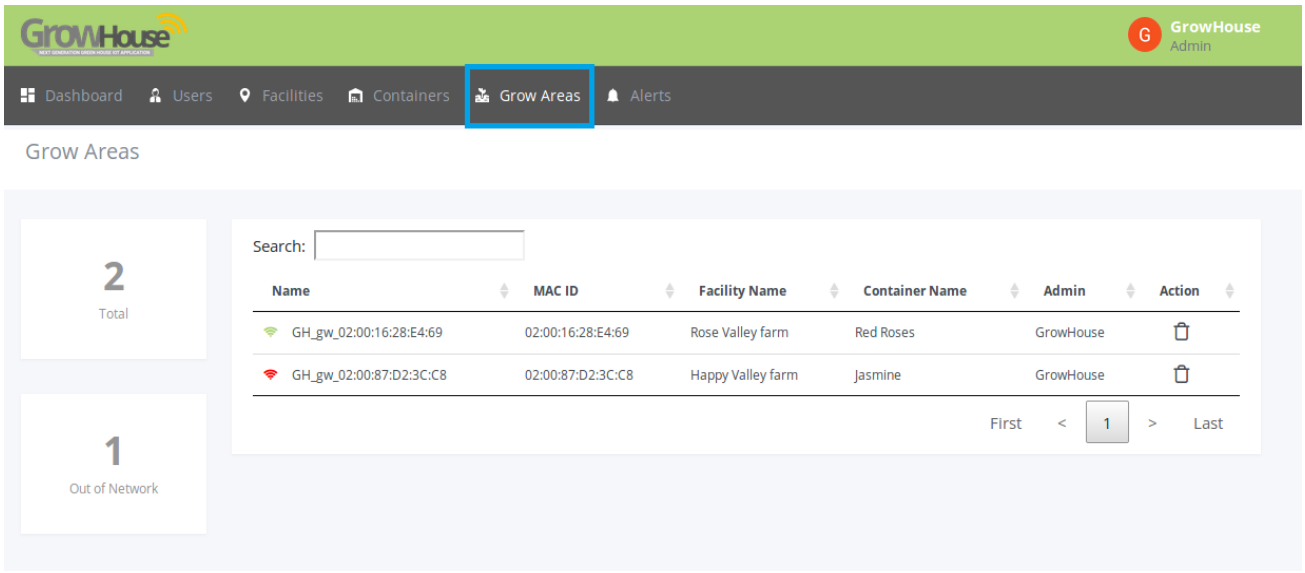


Figure 118: Grow Areas Page

- Select particular Gateway.

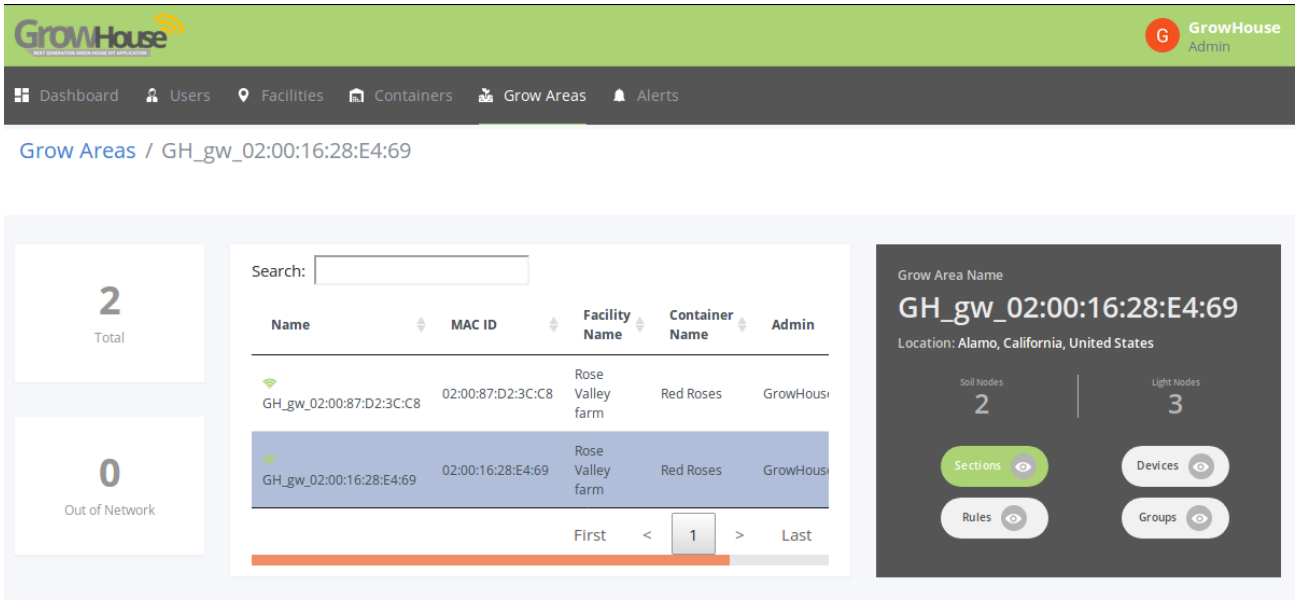


Figure 119: Grow Area Selection

- Click on “Rules” button.

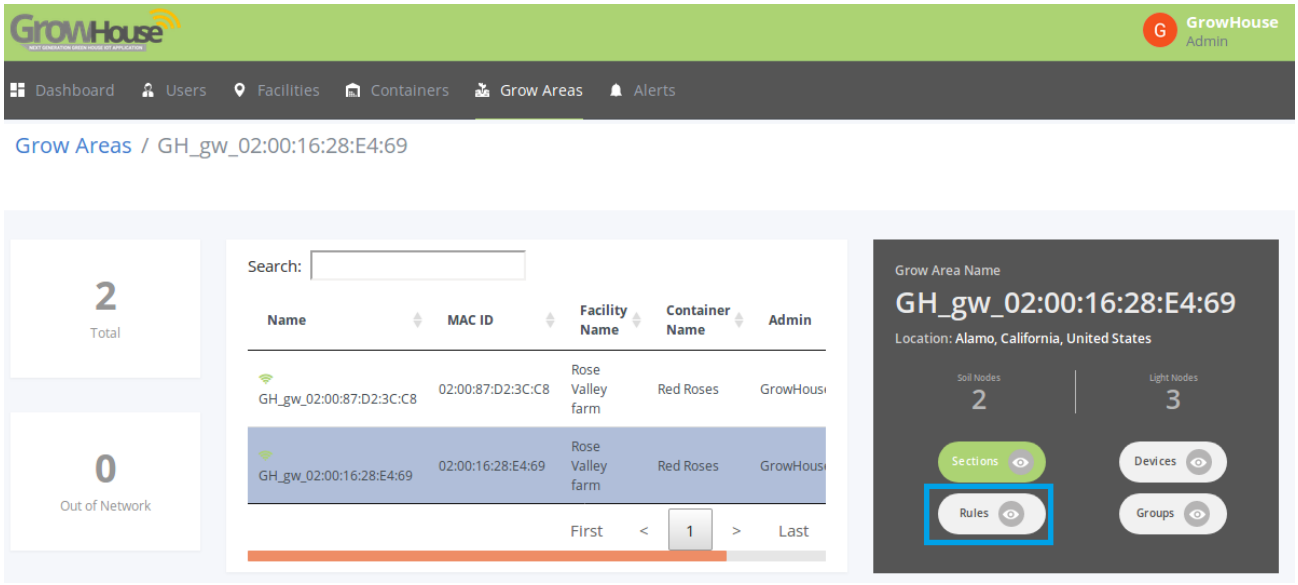


Figure 120: Grow Area Rules

- Click on delete icon against the rule to be deleted.

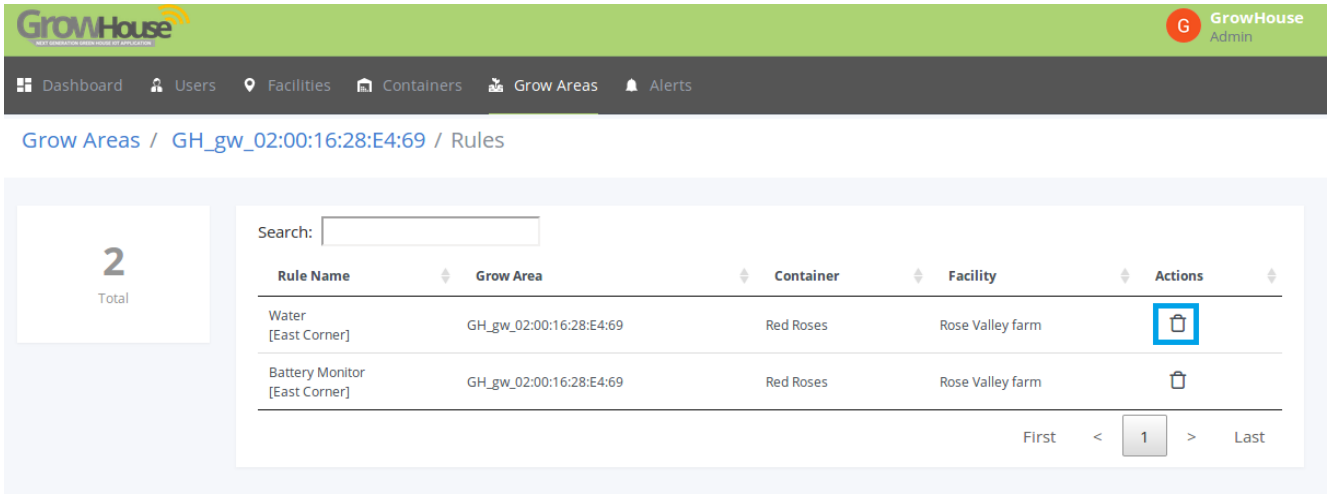


Figure 121: Delete Rules

- Click on “Delete” button.

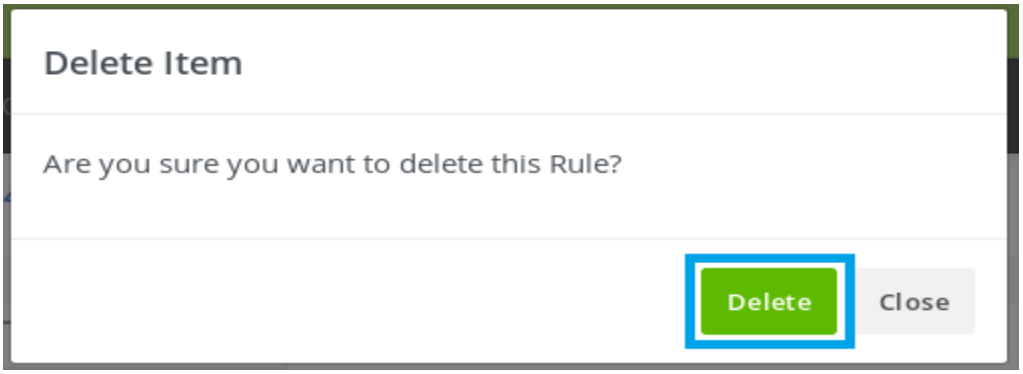


Figure 122: Delete Rules Confirmation

- “Rule deleted successfully” message will be displayed on successful deletion of Rule.

4.10 Alerts

Alerts page will show all the Alerts generated based on conditions of the Rules.

- Select “Alerts” tab.

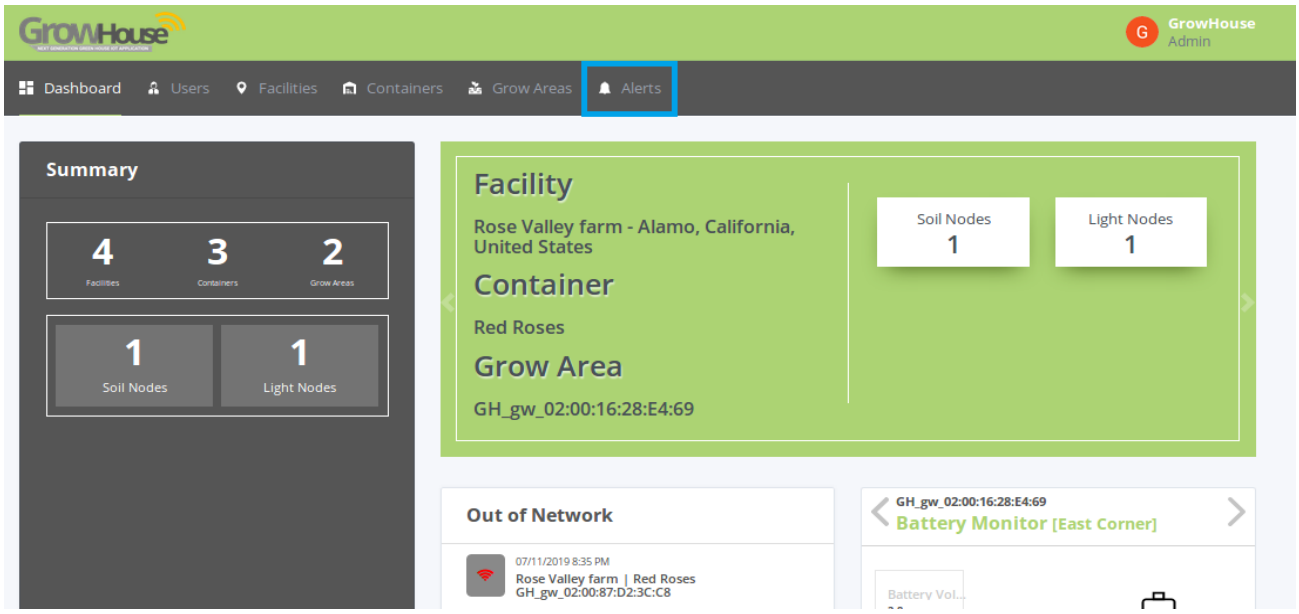


Figure 123: Alerts Page

- Below figure shows all Alerts for all Rules.

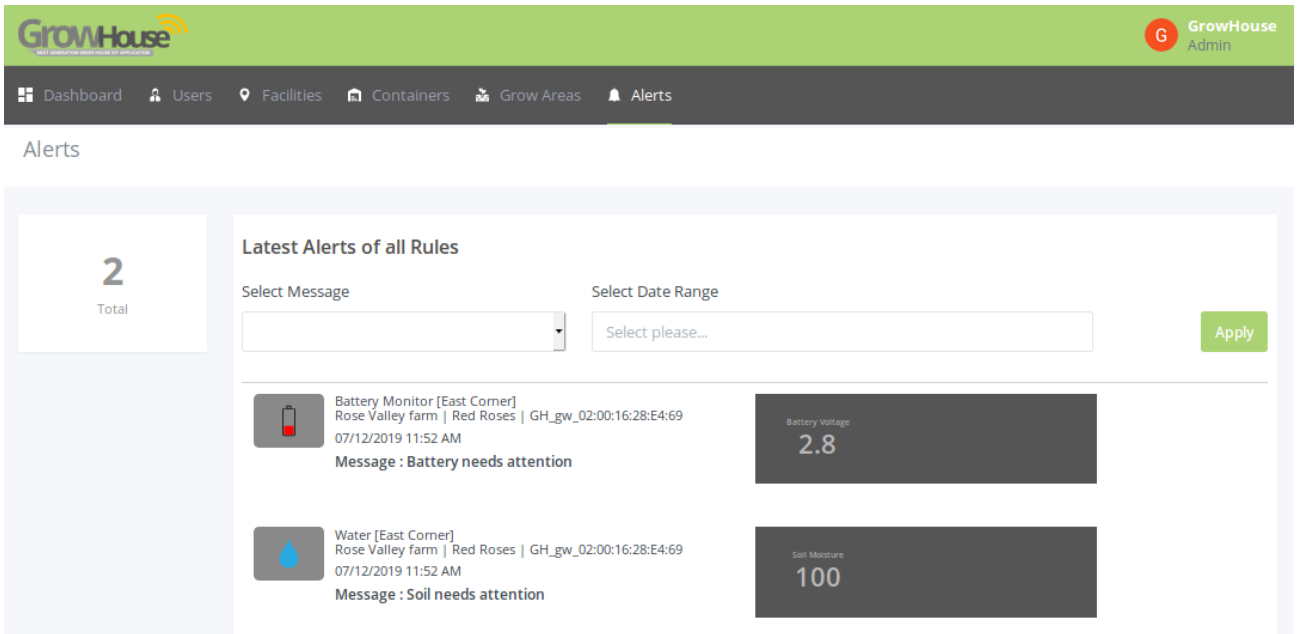


Figure 124: List of Alerts

- Following is the representation of alerts for various plant / atmospheric conditions:

Alert symbol	Condition of alert generation.
Battery needs attention	"Battery needs attention" alert will be generated when condition set for Battery Voltage in a rule is satisfied. For example, if the condition for Battery Voltage is set as < 2.5 then "Battery needs attention" will be generated when Battery Voltage goes below 2.5.
Soil needs attention	"Soil need attention" alert will be generated when condition set for Soil pH or Soil Moisture value in a rule is satisfied For example, if the condition for Soil pH is set as < 5 OR Soil Moisture as > 50 then "Soil need attention" alert will be generated when Soil pH value goes below 5 OR Soil Moisture value goes above 50.
OK	"OK" alert will be generated when any condition set for Soil pH, Soil Moisture or Soil battery voltage is ok. For example, if the condition for Soil pH is set as < 5 then "OK" alert will be generated when Soil pH value is more than 5.
Latest device information is not available	"Latest device information is not available" alert will be generated when any device using which a Rule is created goes offline
Device is not available	"Device is not available" alert will be generated when device is deleted from Grow house web portal but the Rule(s) created using a device is not deleted from Growhouse web portal

Table 6: Alerts Description

Sample Alerts:

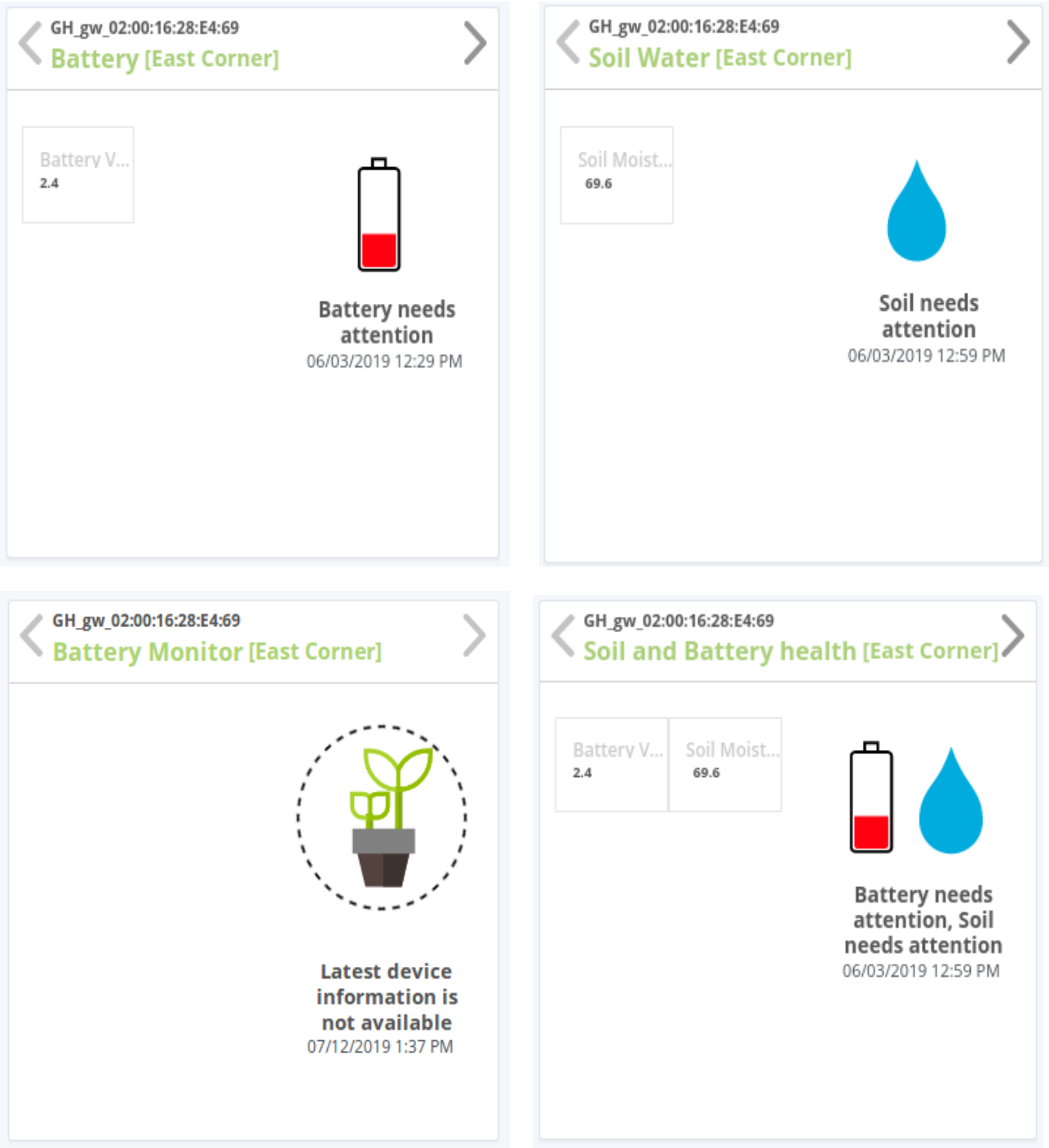
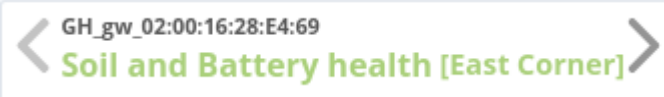


Figure 125: Sample Alerts



Here, GH_gw_02:00:16:28:E4:69 is the Grow Area name, Soil and Battery health is the Rule name and “East Corner” is the Grow Section name.

4.10.1 Alert filtration

User can filter out alerts based on specific message or date range.

- Select Message from drop down menu to filter Alerts based on a message.
- Click on “Apply” button.
- Below image shows filtered out Alerts based on selected message.

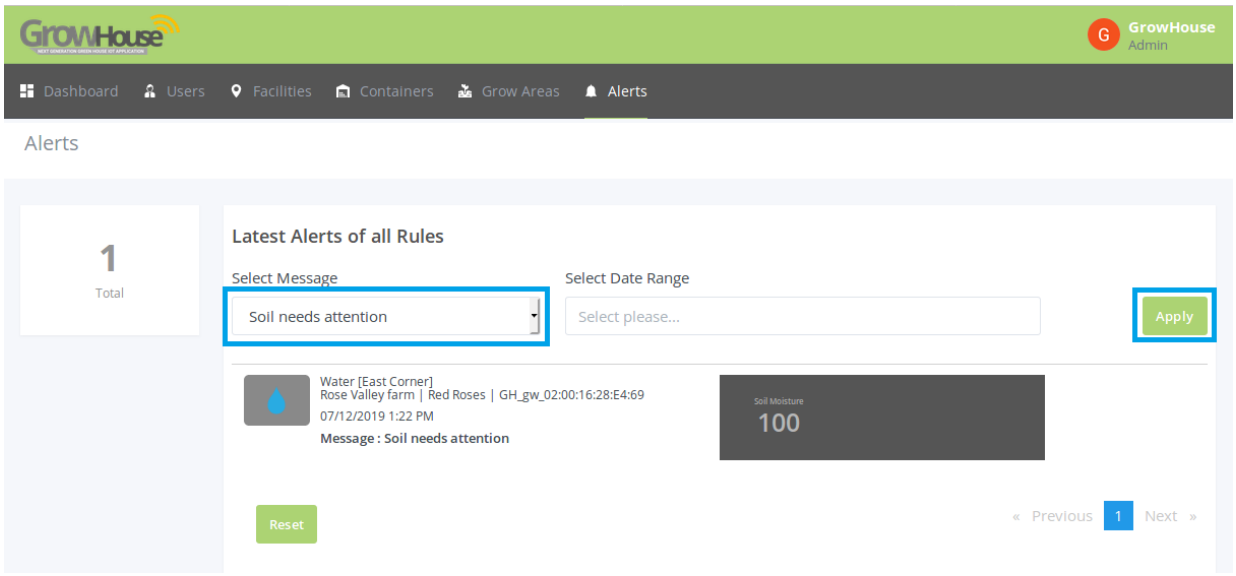


Figure 126: Alert Filter based on Message

- Select Date Range from drop down Menu to filter Alerts based on a date range.
- Click on “Apply” button.
- Below image shows filtered out Alerts based on selected date range.

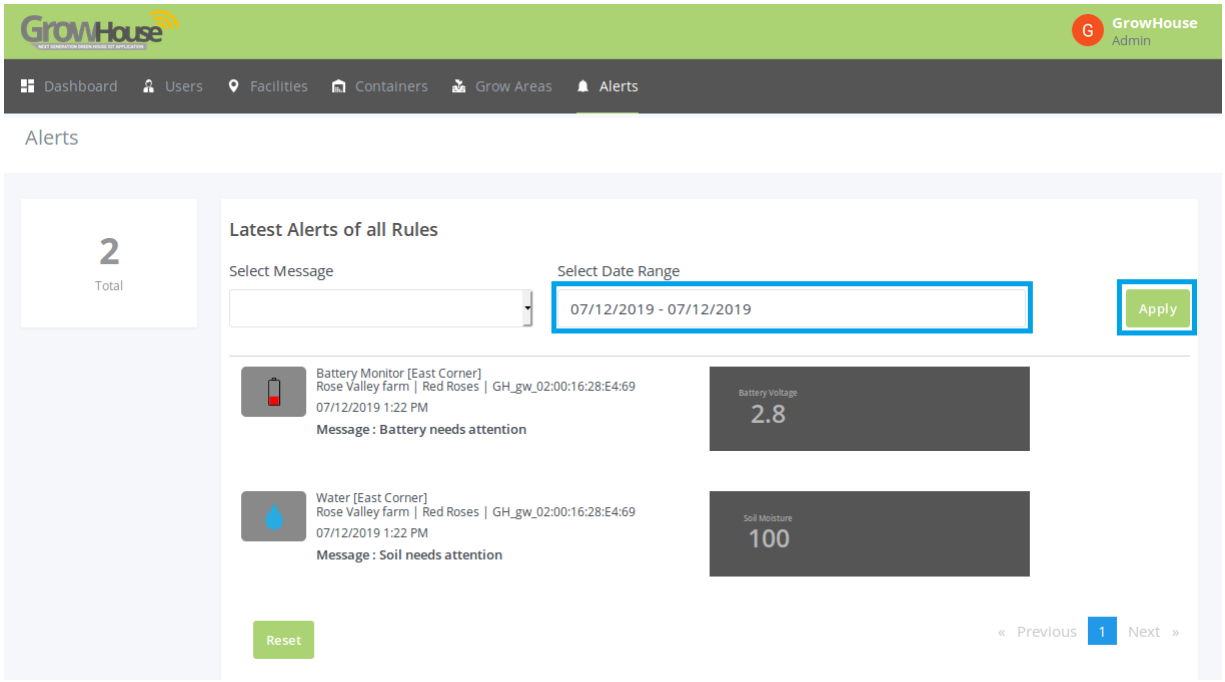


Figure 127: Alert Filter based on Date Range

4.11 Step by Step Instructions

Refer sections 4.1 to 4.9.

4.12 Instructions/Conventions/Errors

NA

4.13 Malfunctions

NA

4.14 Emergencies/Messages

NA

4.15 Specific Functionality Trouble Shooting

5 LIMITATIONS AND CONSTRAINTS

NA

6 WARRANTY AND SUPPORT

NA

7 UPGRADE AND ADD ON MODULES

NA

8 TECHNICAL SUPPORT

Email ID: *growhouse@einfochips.com*

9 APPENDIX

9.1 Hardware Setup

This section describes the hardware setup for the Growhouse system.

9.1.1 Soil Node

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

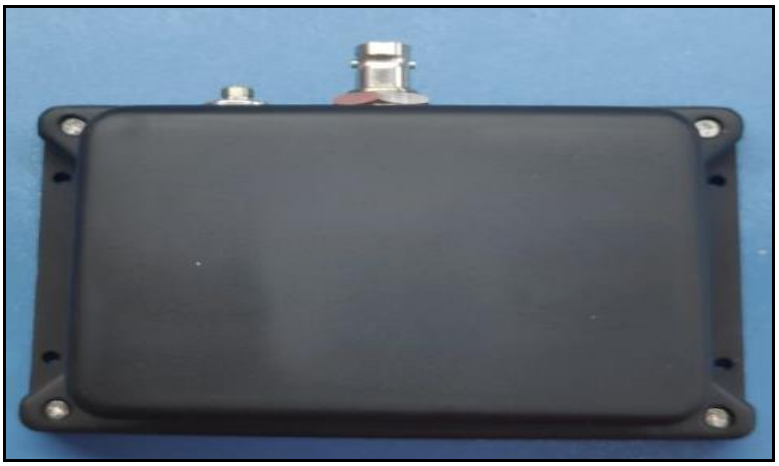


Figure 128: Soil Node

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.

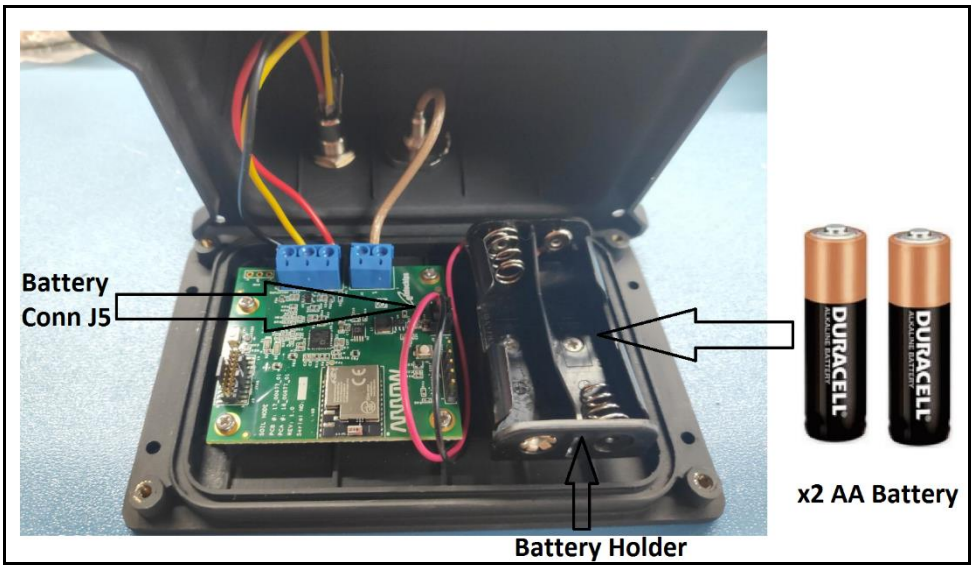


Figure 129: Soil Node- Battery Connections

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

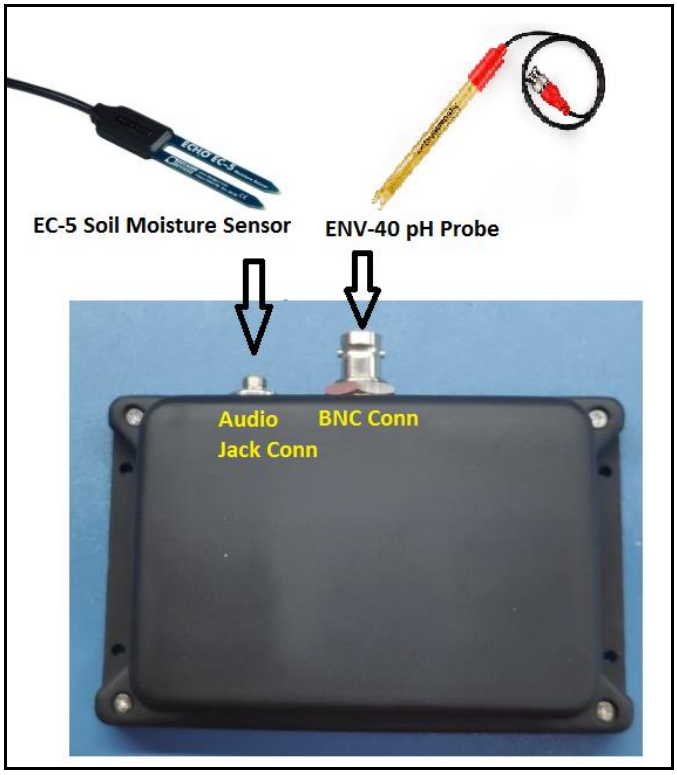


Figure 130: Soil Node – Sensor Connection

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

9.1.2 LED Node

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

Figure 131: 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).

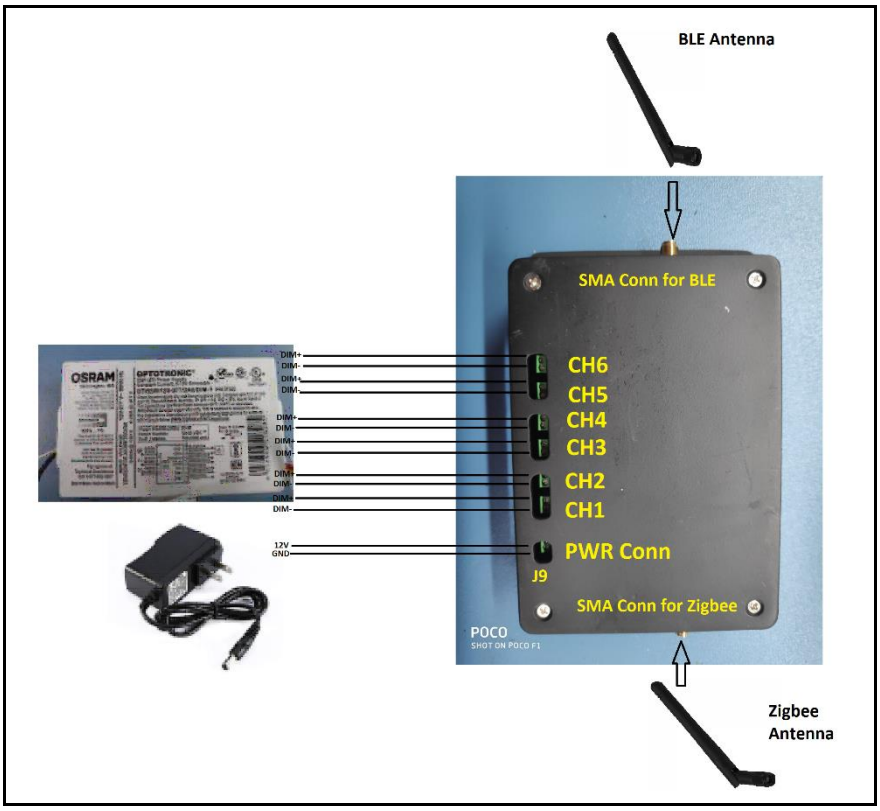


Figure 132: LED Node – Power, Channels & Antenna Connections

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.

9.1.3 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.
   - Dragon Board 410C
   - Mezzanine board

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

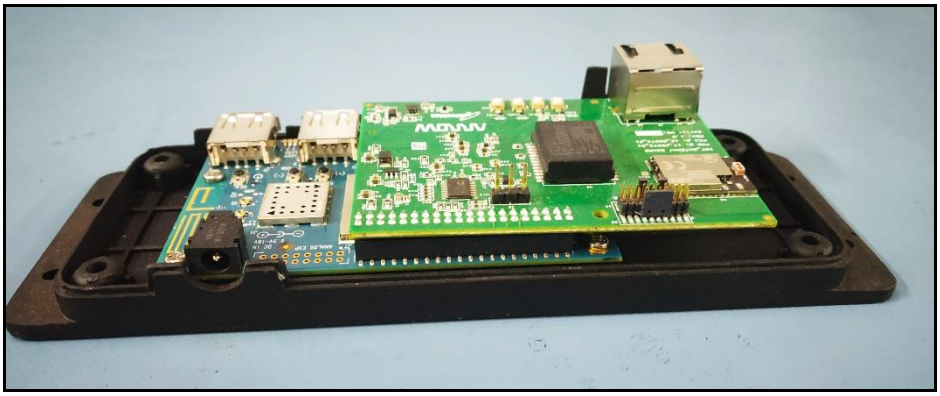


Figure 133: IOT Gateway

Figure 134: IOT Gateway – With Enclosure

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

Figure 135: 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 136: 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.

9.2 Factory Reset Soil Node

1. Make sure that Soil Node is setup and in power on state. Refer Section 9.1.1 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.

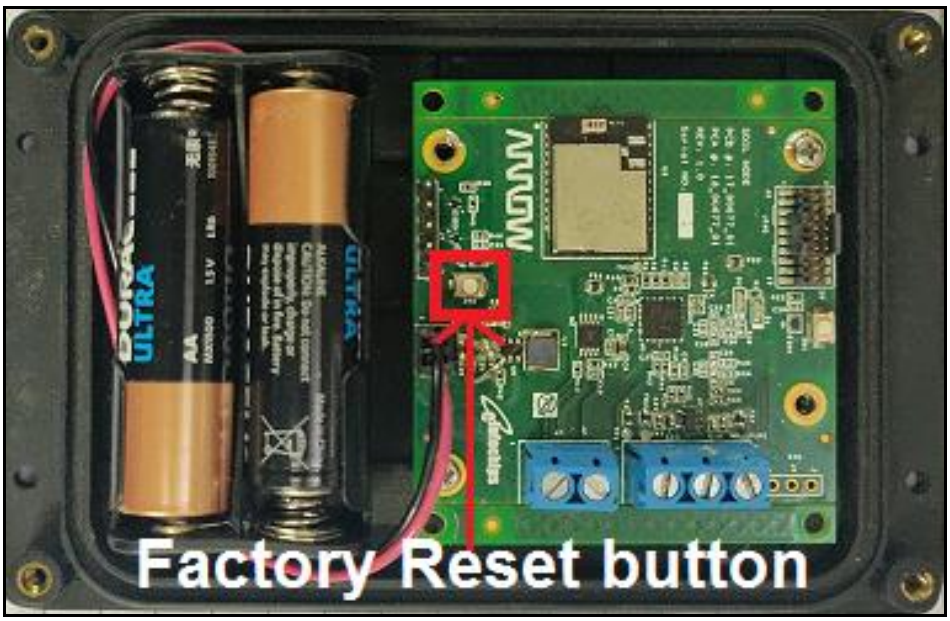


Figure 137: Soil Node – SW2 location

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

9.3 Factory Reset LED Node

9.3.1 Zigbee

1. Make sure that LED Node is setup and in Power on state. Refer Section 9.1.2 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.

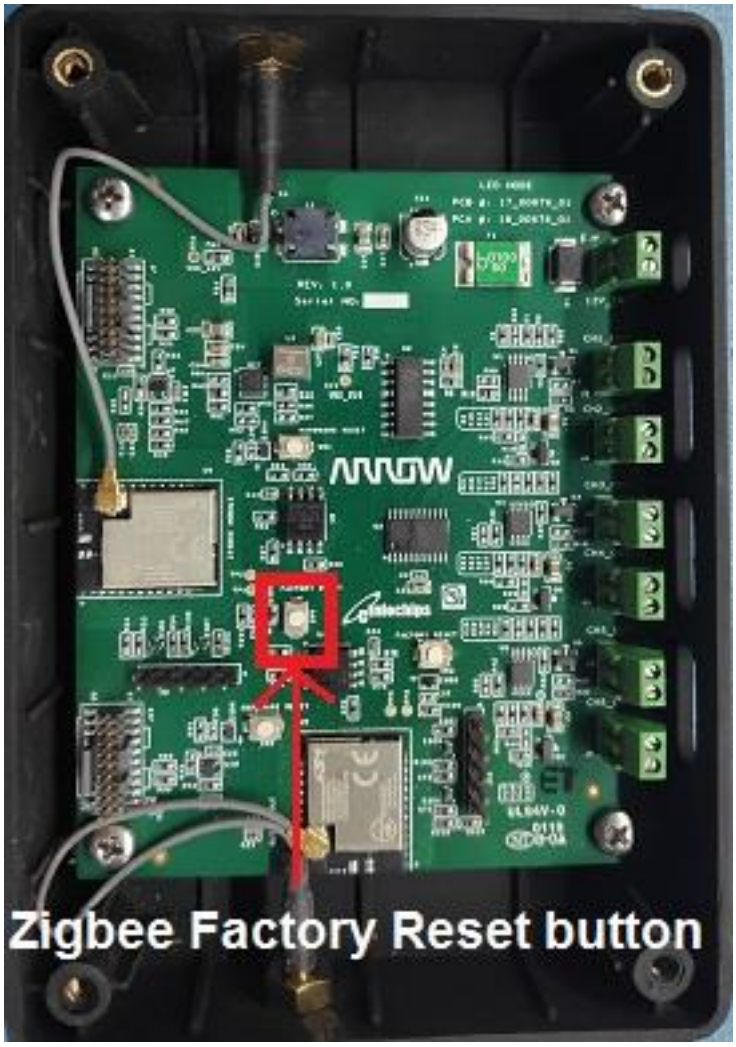


Figure 138: LED Node – SW4 location

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

9.3.2 BLE

1. Make sure that LED Node is setup and in Power on state. Refer Section 9.1.2 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.

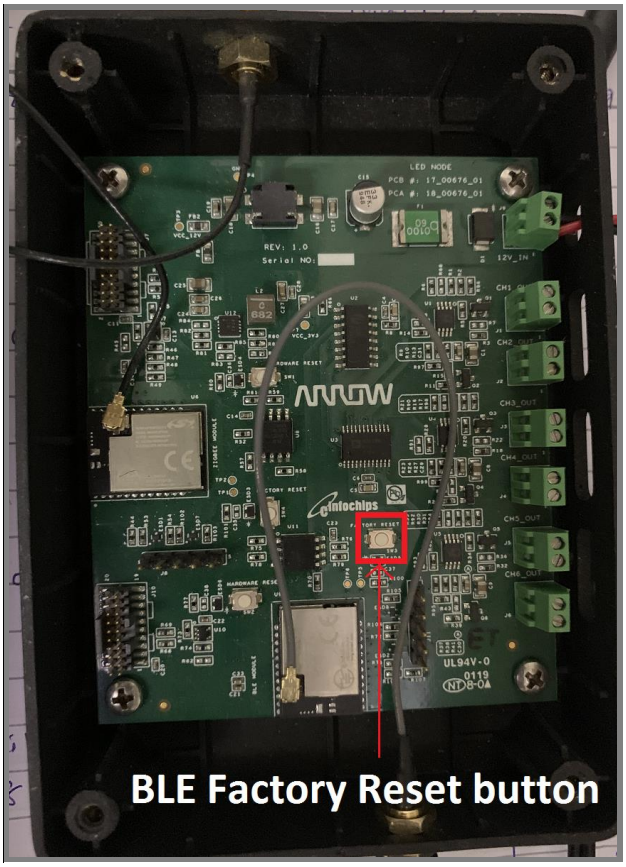


Figure 139: LED Node – SW3 location

9.4 Factory Reset IOT Gateway

1. Make sure that IOT Gateway is setup and in power on state. Refer Section 9.1.3 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.

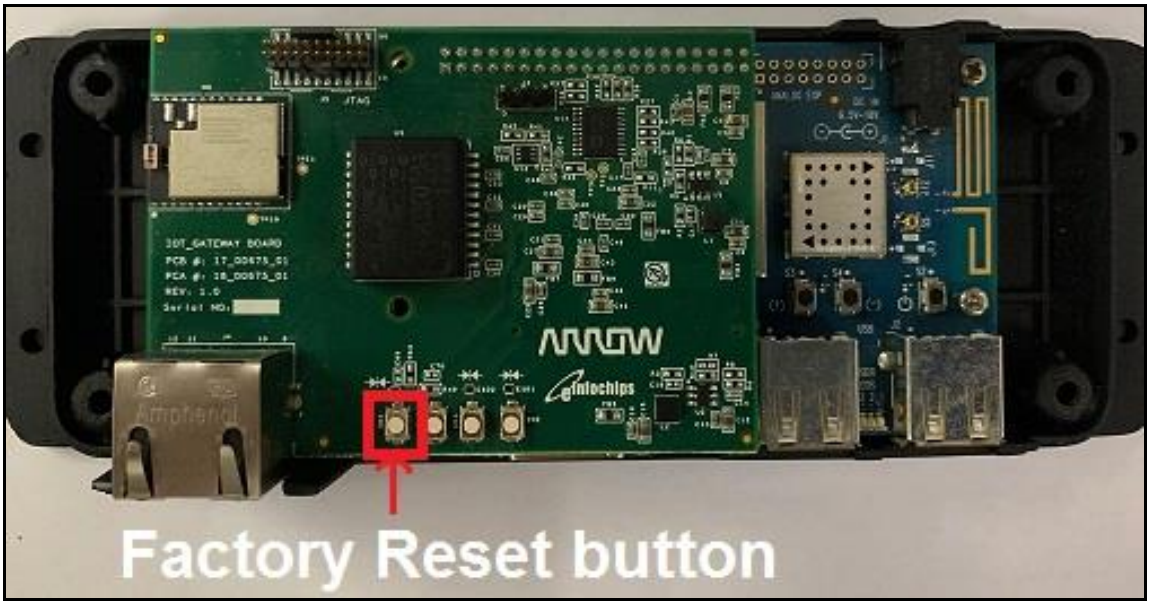


Figure 140: IOT Gateway – SW4 location

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