

IoT Portal

SENSE | MONITOR | CONTROL

Versatile, Scalable Sensor-to-Cloud Connectivity

USER GUIDE

Portal Web Application

(Ver.2.0.0-3.0.7)

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1. About This Guide

This guide explains the usage of IoTPortal Web Application. **The screenshots used are for illustration purpose only.**

2. Intended Audience

The intended audience will be System Integrators, Technical / Administrative users who will assist in realizing the capabilities, functions, and the full benefits of the product.

3. Document References

Document Name	Document Type	Format
BRTSYS_AN_032_IoTPortal User Guide - Introduction	Application Note/ User Guide	PDF
BRTSYS_AN_034_IoTPortal User Guide – Android Mobile App		

4. Registration

The IoTPortal Web Application is a browser-based GUI application that serves as a one-stop management tool enabling administrators to configure the IoTPortal Server Software such as to manage dashboards, Gateways, Events, Notification and Subscriptions. Open any supported web browser (*Chrome / Mozilla Firefox*) and enter the URL, for example - <https://www.iotportal.com>.

4.1 IoTPortal Account Sign Up

1. Log in to the IoTPortal website – www.iotportal.com. Click **[Sign Up]** in the bottom of the page.

IoTPortal
SENSE | MONITOR | CONTROL
Versatile, Scalable Sensor-to-Cloud Connectivity

Introducing a solution to meet your IoT needs.

An IoT monitoring system free from the issues faced by wireless networks apt for applications such as urban farming, industrial monitoring and data centres etc.

- ★ Setup Gateways.
- ★ Configure Sensors and Actuators.
- ★ Configure Alerts and Events to receive Email/SMS/Push Notifications.
- ★ Setup your organisation for better user authorization.

About | Terms of Service | Privacy Policy
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Sign In

Email / Mobile Number
Please enter your email/mobile number

Password
Please enter your password

Forgot password?

LOGIN

By logging into an account, you are agreeing with our [Terms of Service](#) and [Privacy Policy](#) and you confirm that you are above 13 years of age.

Don't have an account? [Sign Up](#)

2. Enter the following information in the respective fields –
 - *First Name*
 - *Last Name*
 - *Email Address*
 - *Mobile Number*
 - *Password / Confirm Password*

Go through the *Terms of Service & Privacy Policy* by clicking on the respective links; accept it by ticking the checkbox.

Click **[SIGN UP]**.

Sign Up

First Name
Enter First Name

Last Name
Enter Last Name

Email Address
Enter Email Address

Mobile Number (Optional)
+65

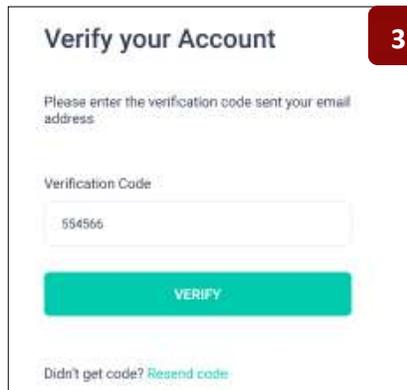
Password
Enter Password

Confirm Password
Re-enter Password

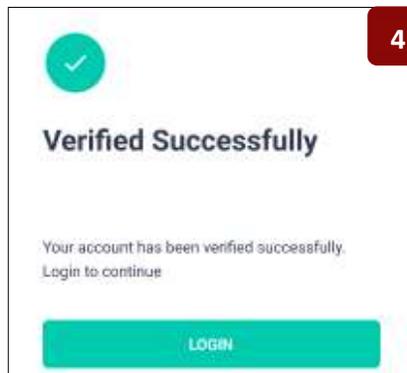
By creating an account, you are agreeing with our [Terms of Service](#) and [Privacy Policy](#) and you confirm that you are above 13 years of age.

SIGN UP

3. Enter the **Verification Code** sent to the registered email address and click **[VERIFY]**.

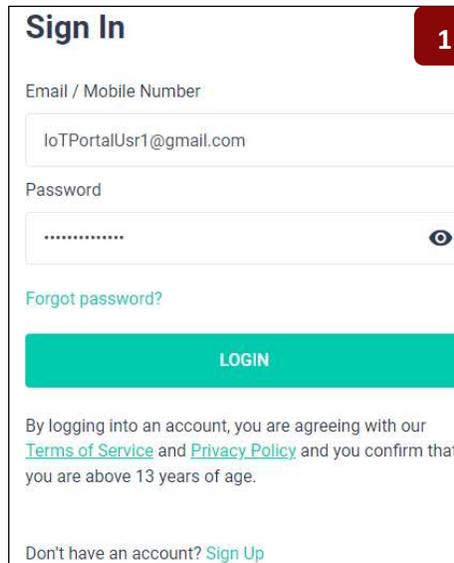


4. Upon successful verification, click **[LOGIN]**.



4.2 Sign In

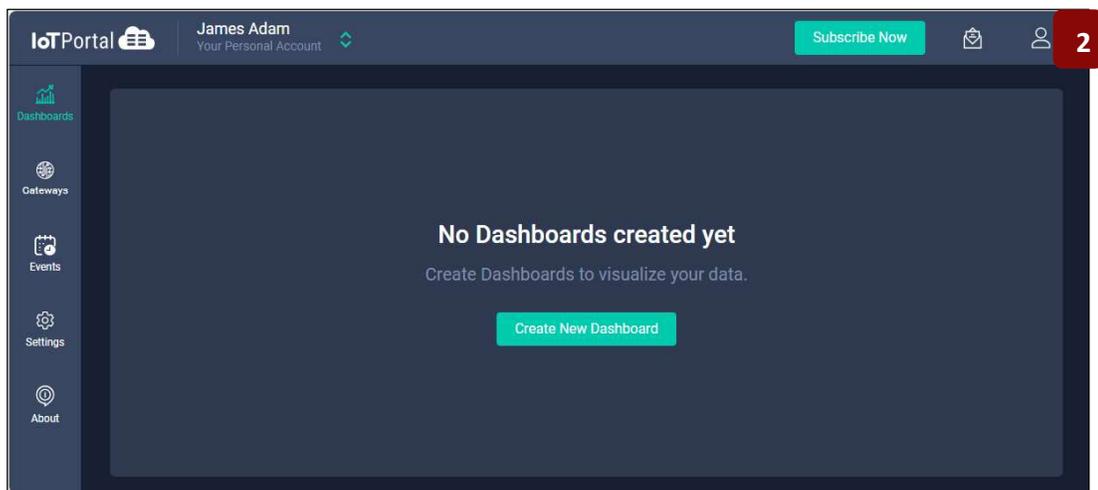
1. Enter the *Email Id/Mobile Number & Password*.



The image shows a 'Sign In' form with a red '1' in the top right corner. The form contains the following elements:

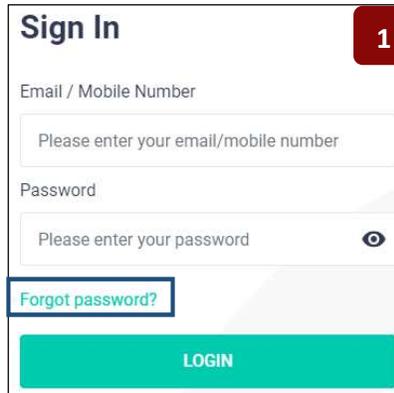
- Sign In** (Title)
- Email / Mobile Number** (Label)
- (Input field)
- Password** (Label)
- (Input field with an eye icon for visibility toggle)
- [Forgot password?](#) (Link)
- LOGIN** (Green button)
- By logging into an account, you are agreeing with our [Terms of Service](#) and [Privacy Policy](#) and you confirm that you are above 13 years of age. (Text)
- Don't have an account? [Sign Up](#) (Link)

2. Click **[LOGIN]**. Upon successfully logging in, Web Management Console user interface is displayed with an empty Dashboard.



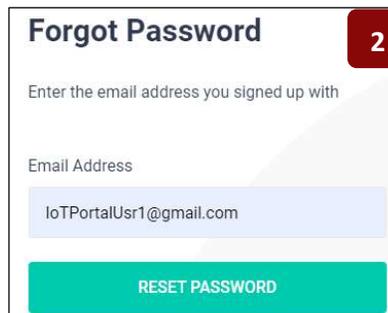
4.3 Forgot Password

1. Click **Forgot Password** link.



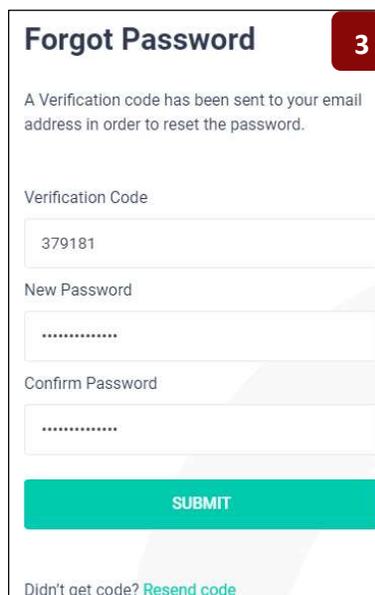
The screenshot shows the 'Sign In' page. It has a title 'Sign In' and a red circle with the number '1' in the top right corner. Below the title are two input fields: 'Email / Mobile Number' with the placeholder text 'Please enter your email/mobile number' and 'Password' with the placeholder text 'Please enter your password' and an eye icon. Below the password field is a link 'Forgot password?' which is highlighted with a blue box. At the bottom is a green button labeled 'LOGIN'.

2. Enter the registered *Email Address* & click **[RESET PASSWORD]**.



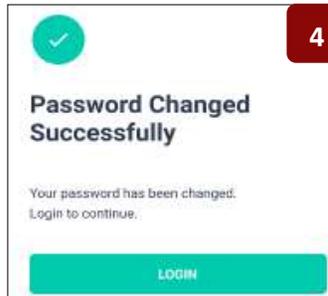
The screenshot shows the 'Forgot Password' page. It has a title 'Forgot Password' and a red circle with the number '2' in the top right corner. Below the title is the text 'Enter the email address you signed up with'. Below that is an input field labeled 'Email Address' containing the text 'IoTPortalUsr1@gmail.com'. At the bottom is a green button labeled 'RESET PASSWORD'.

3. Enter the *Verification Code* (sent to your registered email); *New Password* and *Confirm Password*. Click **[Submit]**.



The screenshot shows the 'Forgot Password' page. It has a title 'Forgot Password' and a red circle with the number '3' in the top right corner. Below the title is the text 'A Verification code has been sent to your email address in order to reset the password.' Below that are three input fields: 'Verification Code' containing '379181', 'New Password' containing '.....', and 'Confirm Password' containing '.....'. At the bottom is a green button labeled 'SUBMIT'. Below the button is the text 'Didn't get code? [Resend code](#)'.

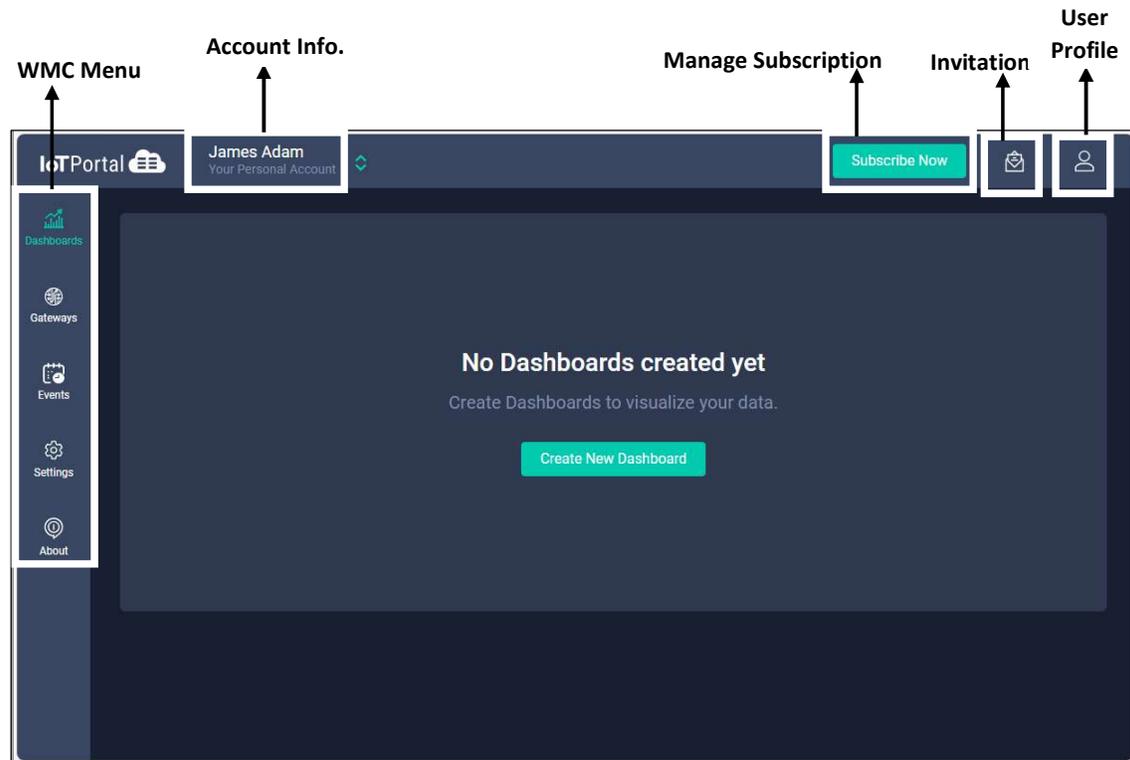
4. If successful, an appropriate message indicating the same is displayed.



NOTE:

“Attempt limit exceeded, please try after some time” – message is displayed if the user enters an invalid verification code more than 5 times. Please try again after 30 minutes.

5. GUI Overview



6. Menu Overview

The IoTPortal Web Management Console main menu is displayed on the left and can be extended by clicking on it to display the sub menus. The following table provides an overview of Menu/Submenu and its functions.

Menu	Submenu	Functionality
Dashboards	-	→ The dashboard function allows users to create dashboards for data visualization in real time. Users can create dashboards and add attributes for Gateways, Sensors (Temperature, Humidity, Ambient Light etc.), Actuators and Other Chart (Count of Events, Count of Email, SMS, Notification).
Gateways	All Gateways	→ View /Add/Edit/Delete/Search all Gateway Information
	Gateway Groups	→ View/Add/Edit/Delete/Search Gateway Groups
	Standalone Gateways	→ View/Add/Edit/Delete/Search Standalone Gateways
Events	-	→ View/Add/Edit/Delete/Search Events
Organisation*		→ View/Edit/Delete organisation
Settings		→ Manage API Access Keys
About	-	→ To view information pertaining to WMC version / Terms of Services / Privacy Statement / License

Table 1 – IoTPortal Web Application Menu

* This menu will be displayed only after adding an organisation.

Each menu/submenu/function will be discussed in detail in the following sections.

7. Gateway Management

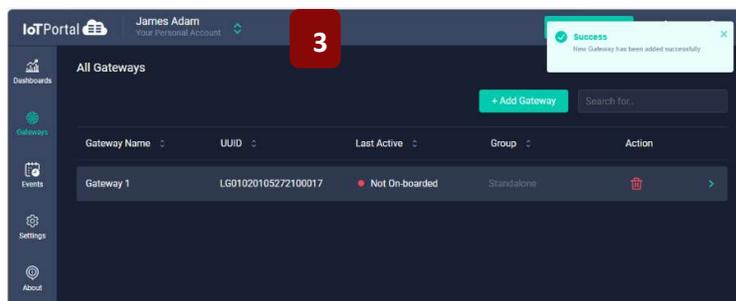
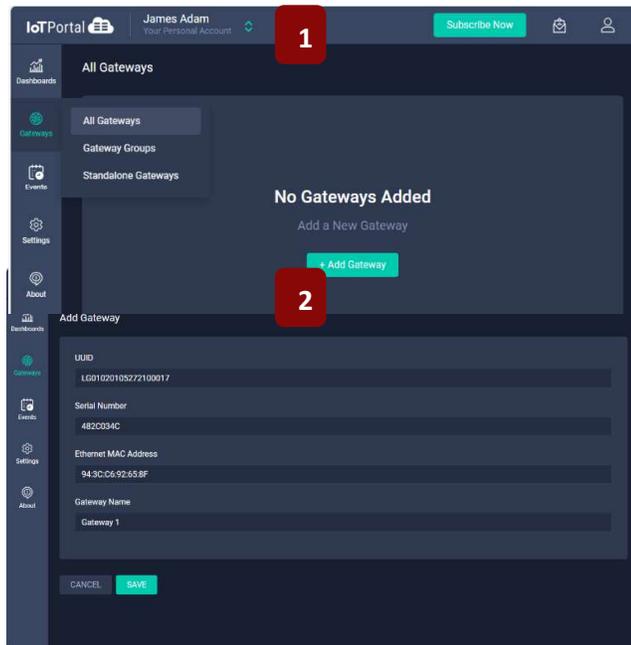
7.1 Register / Add Gateway

Registration is the process by which a gateway makes its presence known to the IoTPortal service without which it is incapable of providing service. Registration is completed when the user adds a gateway to his account. Gateway registration is a 2-step process that requires user and gateway to be involved.

For the first step, the user, must add a gateway to his or her account. This step legitimizes the gateway's existence to the IoTPortal and enables the portal to accept communications from the gateway. In the absence of this step, the IoTPortal does not accept connection and registration requests from the gateway. The second step involves the gateway self-registering with the IoT Portal which occurs during [on-boarding](#) to the local network. The second step fails if the first step is not successfully completed.

To register / add gateway,

1. Click **Gateways** from the menu. For first time users, there will not be any connected Gateways displayed. Click **[+Add Gateway]**.
2. Enter the *UUID*, *Serial Number (Product Key)*, *MAC Address (ETH ID)*. The Gateway details can be found on the label on the back of the device. *Enter the Gateway Name*; Click **[SAVE]**.
3. The newly added gateway is displayed as part of the table.



NOTE: At any point of time, if any error message is encountered, try adding the gateway again.

7.2 On-board Gateway

On-boarding is the process by which a gateway connects to the local network, and it is performed independently of the IoTPortal Cloud. Upon adding the gateway, user has to on-board the device before using it. The gateway that needs to be on-boarded is indicated with the Status – "Not On-boarded" (RED Colour).

All Gateways				
Gateway Name	UUID	Last Active	Group	Action
Gateway 1	LG01020105272100017	Not On-boarded	Standalone	 

To on-board gateway using Ethernet,

1. Connect to an Ethernet Network. Connection verification will be in progress.
2. Upon successfully establishing connection, the gateway is on-boarded successfully and gateway status changes to online.

Upon connecting to a Wi-Fi or Ethernet Network, the gateway is on-boarded successfully and the Last Active status changes to online (indicated with a GREEN colour).

All Gateways				
Gateway Name	UUID	Last Active	Group	Action
Gateway 1	LG01020105272100017	Online	Standalone	 

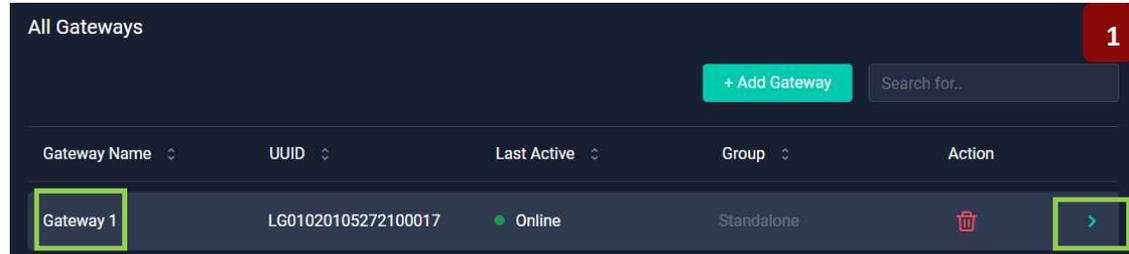


NOTE: The Web Management Console only supports "onboarding via ethernet" feature. Alternatively, users can onboard via Wi-Fi or Ethernet by using the IoTPortal Mobile App.

7.3 View Gateway Details

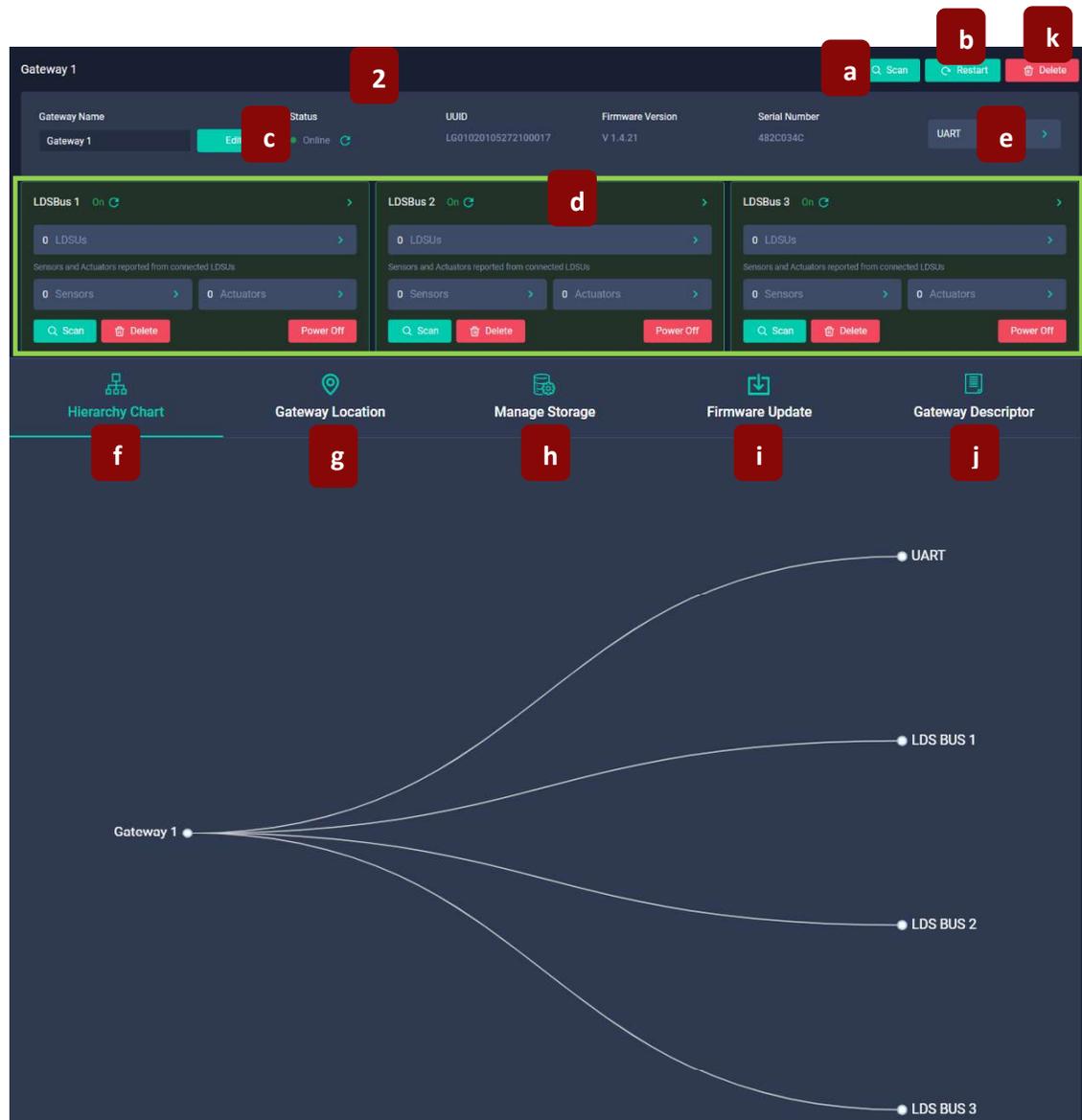
To view details of the gateway,

1. Click on the **Gateway name** or **>**.



Gateway Name	UUID	Last Active	Group	Action
Gateway 1	LG01020105272100017	Online	Standalone	[Delete] [>]

2. The gateway details (*Status; UUID; Firmware Version; Serial Number*) are displayed.



Gateway Name	Status	UUID	Firmware Version	Serial Number
Gateway 1	Online	LG01020105272100017	V 1.4.21	482C034C

[LDSBus 1](#) [LDSBus 2](#) [LDSBus 3](#)

[Hierarchy Chart](#) [Gateway Location](#) [Manage Storage](#) [Firmware Update](#) [Gateway Descriptor](#)

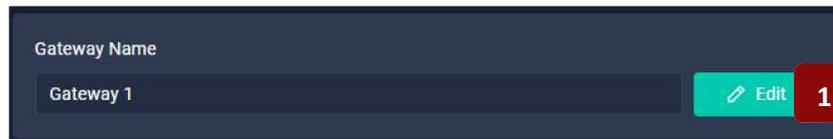
Gateway 1 is connected to: UART, LDS BUS 1, LDS BUS 2, LDS BUS 3

- Click [\[Edit\]](#) to update the gateway name.
- Click [\[Scan\]](#) to perform a gateway scan and discover the list LDSU devices connected to the gateway.
- Click [\[Restart\]](#) to restart the gateway.
- Click [\[LDS BUS 1/2/3\]](#) to manage LDSU devices connected to the respective ports.
- Click [\[UART\]](#) to configure UART communication parameters.
- Click [\[Hierarchy Chart\]](#) function link to view the visual representation of the relationship between Gateway and its LDSBus devices.
- Click [\[Gateway Location\]](#) function link to view/update the gateway location (based on your browser location).
- Click [\[Manage Storage\]](#) function link to view / manage the storage space.
- Click [\[Firmware Update\]](#) function link to update the firmware version for the selected gateway.
- Click [\[Gateway Descriptor\]](#) function link to view the gateway descriptors.
- Click [\[Delete\]](#) to delete/un-register gateway device.

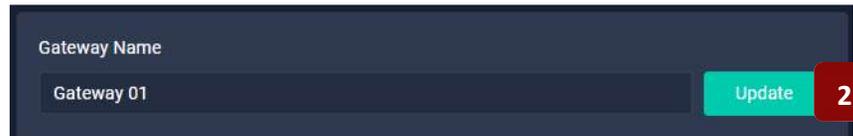
7.3.1 Edit Gateway Name

To edit gateway,

- Click [\[Edit\]](#).



- Edit the *Gateway Name* as required and click [\[Update\]](#). An appropriate message indicating the update is displayed.



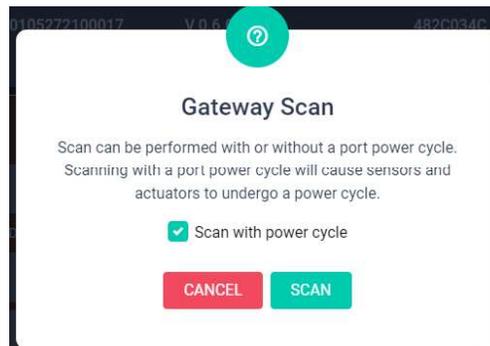
7.3.2 Gateway Scan

The Gateway Scan has two options, namely – 1. *Scan with Power Cycle* and 2. *Scan without Power Cycle*.

- Click [\[Scan\]](#) to start the Gateway Scan.



A scan request may cause events to be falsely triggered. This message may be ignored if you have already disabled all events on this gateway. Click [\[SCAN\]](#).



Scan with Power Cycle: Selecting this checkbox will restart and discover all the connected devices on all the 3 ports.



NOTE: The Scan with power cycle option, if triggered, will affect all the connected actuators and restart the actuators.



Scan without Power Cycle: De-selecting this checkbox will just discover all the connected devices on all the 3 ports.

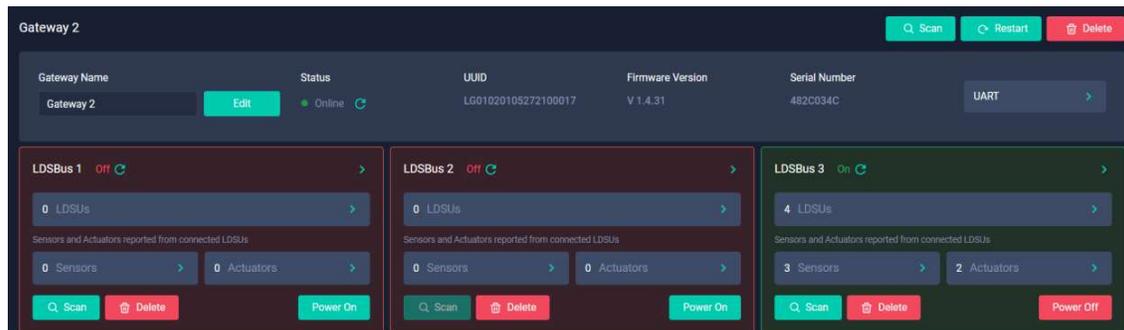
A gateway scan can be initiated by a user (via the mobile app or the Web Client). The IoTPortal shall not initiate a gateway scan unless the user requests it. LDSU scan results are reported to the IoTPortal and may contain information about newly discovered LDSUs or LDSUs that are no longer accessible (offline devices).



NOTE: The scan must be performed sequentially, meaning, scan and wait for LDSBus 1 Scan to complete, verify whether the devices are online/offline, and then perform LDSBus 2 Scan and LDSBus 3 Scan.

7.3.3 Manage LDSBus Ports

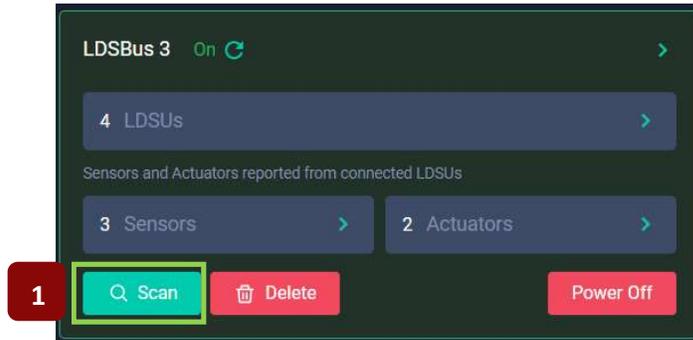
The gateway has 3 LDSBus ports. Each LDSBus port can connect to multiple LDSUs (up to 80 LDSUs) via LDSBus Quad-T Junctions.



For Illustration purposes, the procedure for managing the LDSBus 3 is explained here. The same procedure can be used for managing LDSBus 1 and LDSBus 2.

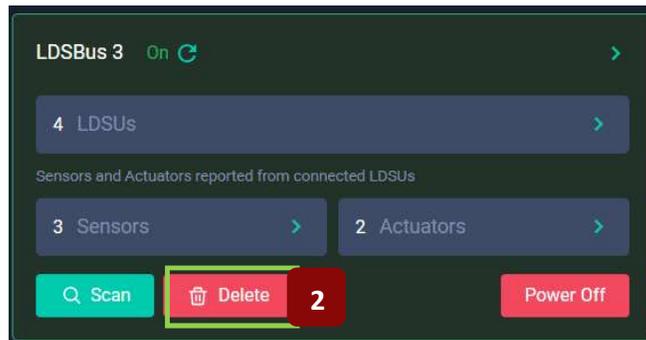
The LDSBus port has the following features – *Scan*, *Delete* and *Port Power Control*.

1. Click [**Scan**] to get the latest list of LDSUs¹.

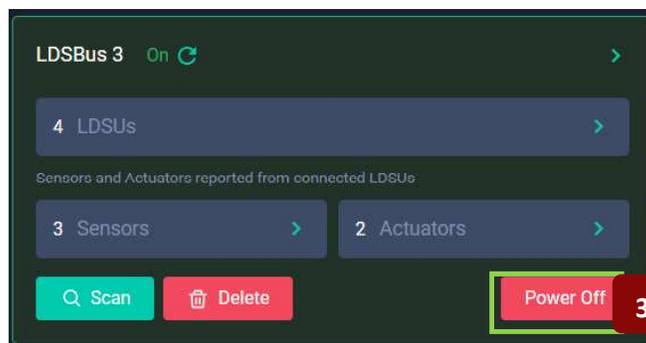


The system will turn on the LDSBus port power and discover the connected LDSUs; list the number of **LDSUs** connected to LDSBus Port 3 and categorize the associated sensor and actuators to the LDSUs.

2. Click [**Delete**] to remove all the connected LDSUs from the port. Download the LDSU data before performing a delete operation.



3. Click [**Power Off**] to control the port power (Power Off / Power ON). A confirmation message will be displayed. Click [**YES**] to continue or [**NO**] to discard this operation.

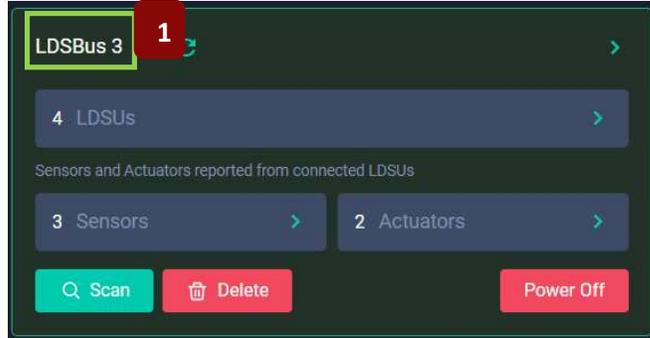


¹ Long Distance Sensor Units (LDSUs) can be LDSBus Sensors / Adapters (for example – 4in1 Sensor, pH Sensor Adapter, CO2 Sensor, EC Sensor Adapter etc.) and LDSBus Controllers (Relay Controller, IR Blaster, IO Controller, etc.)

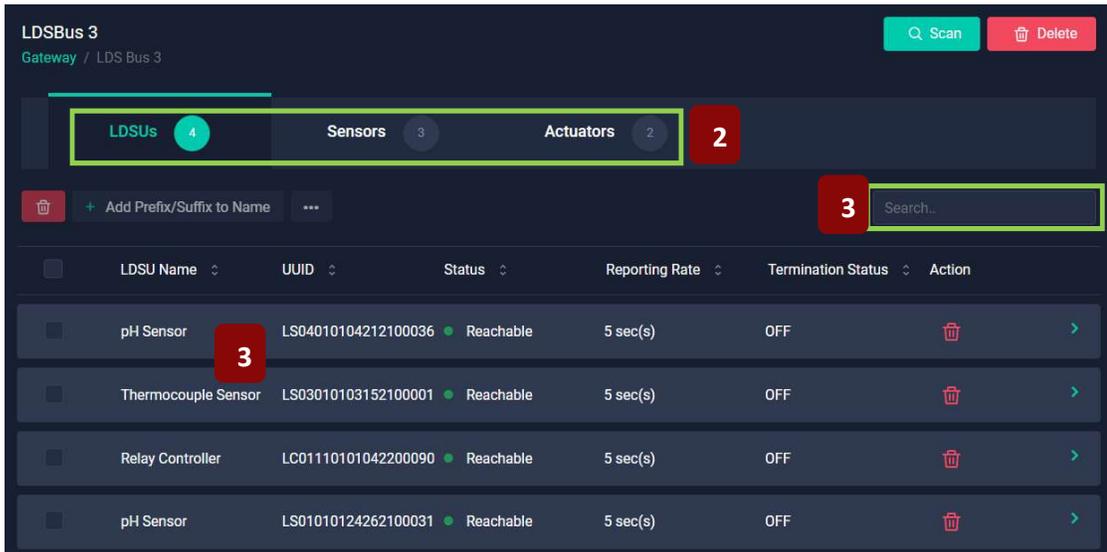
7.3.3.1 LDSU List and Categories

To access LDSU List and Categories interface,

1. Click on a specific LDSBus Management Widget, for example LDSBus 3.



2. The LDSU List interface displays the number of *Sensors* and *Actuators* reported under the detected LDSUs in the corresponding tabs.



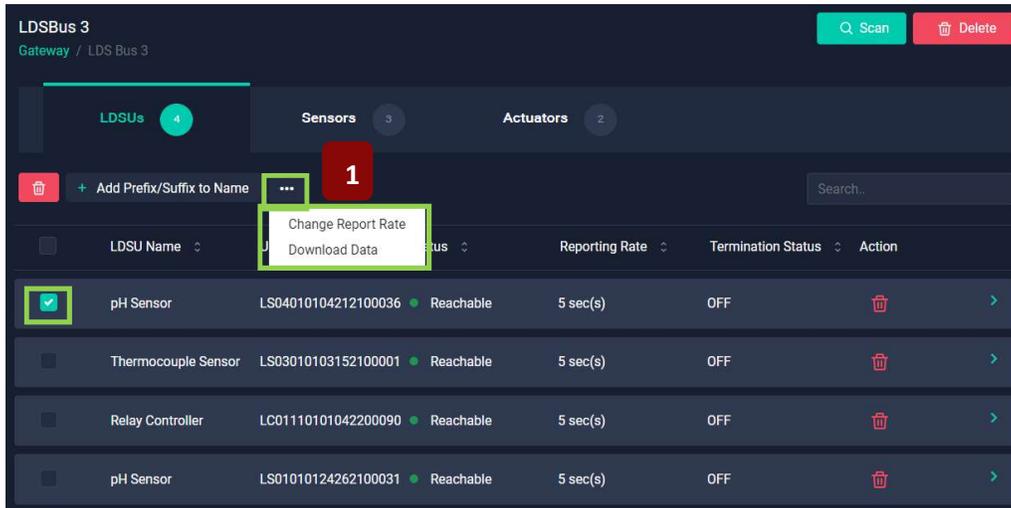
3. The table provides the *LDSU Name*, *UUID*, *Status* (*reachable* / *not reachable*), *Reporting Rate* and *Termination Status*. Users may search for a specific LDSU using the **Search** field.

7.3.3.1.1 Change Report Rate

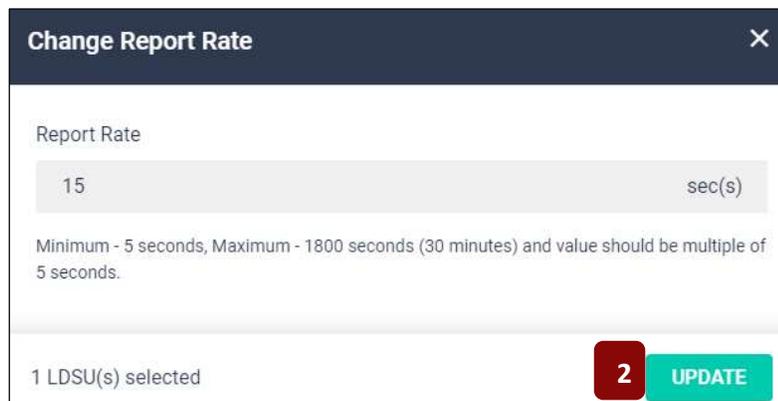
The sensor report rate is also known as the data reporting rate or sampling rate, refers to the frequency at which a sensor collects and reports data.

To change report rate –

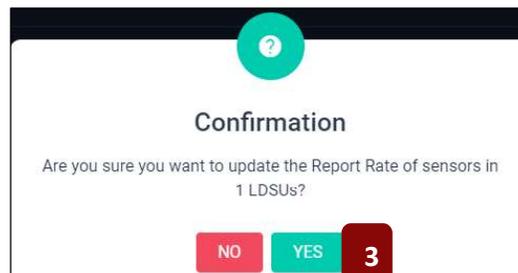
1. Select a LDSU device (by clicking on the checkbox) and click **⋮**. From the resulting menu, click **[Change Report Rate]**.



2. Modify the *report rate* and click **[UPDATE]**.



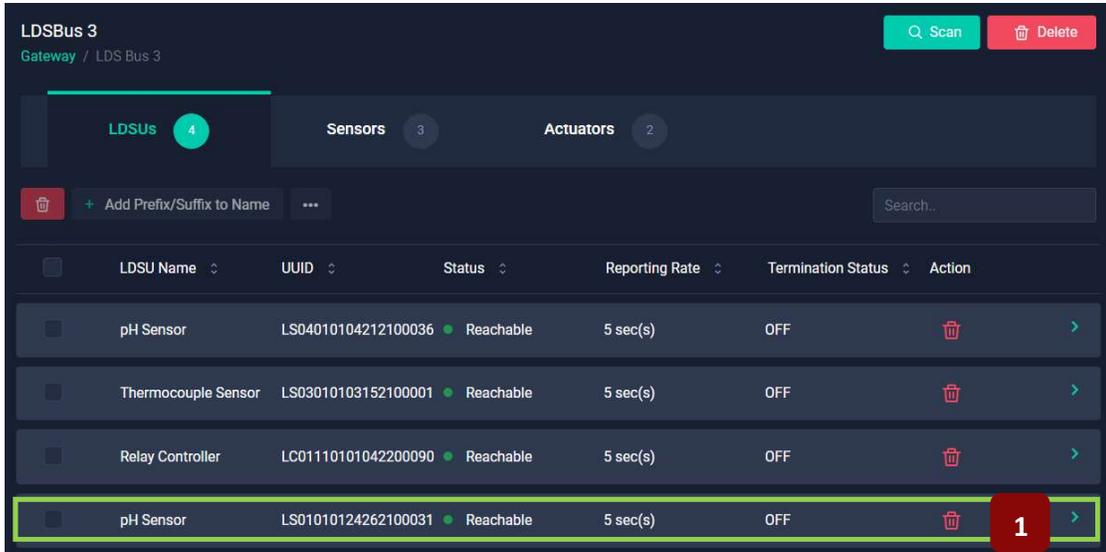
3. A confirmation message is displayed. Click **[YES]** to proceed with the changes.



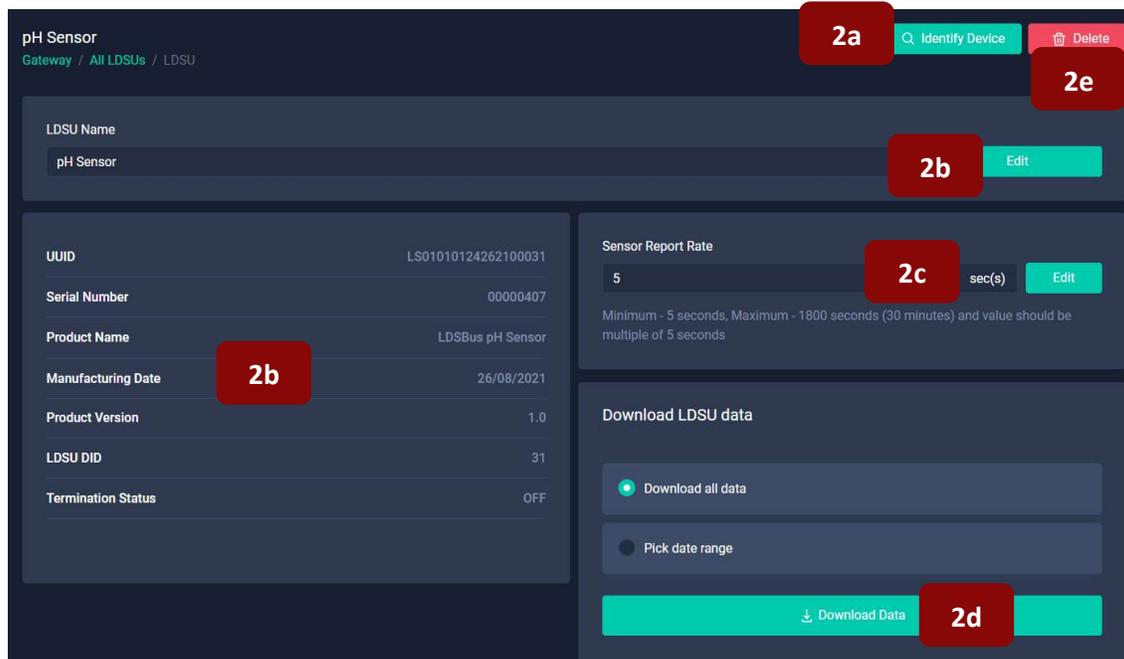
7.3.3.1.2 LDSU Details

To access LDSU details,

1. Click on the **LDSU Name** or **>**.



2. The LDSU details interface displays the LDSU Name and other attributes (UUID, Serial Number etc.).



- a. Click **[Identify Device]** to identify the LDSU that is connected to the LDSBus Port.
- b. Click **[Edit]** to edit the *LDSU Name*. Upon editing (if any), click **[Update]** to save the changes.
- c. Click **[Edit]** to edit the *Report Rate*. Upon editing (if any), click **[Update]** to save the changes.
- d. Click **[Download Data]** to download LDSU data (*all data* or *based on specific date range*) as required.

- e. Click **[Delete]** to delete LDSU device. Upon deleting, ensure that the LDSU is physically removed from the Bus, otherwise it will be reported as newly found LDSU device when the bus port is scanned.



NOTE: At any situation Hot plug In/Out is not recommended. In case, if there is a need to add or remove the devices in the network, then shut down the system and do the needful.

7.3.3.1.3 Sensor List

1. To view the list of Sensors, click **[Sensors]** tab. A list of sensors, if any, are displayed as part of the table. The table provides the Sensor *Name*, Sensor *Type*, *Reading*, *Min / Max* values, when the Sensor was *Last Active* and *Alert* (if any). Users may search for a specific Sensor using the **Search** box.

Sensor Name	Type	Reading	Min	Max	Last Active	Alert
pH	pH sensor	7.05 pH	7.03	7.14	Today at 04:39 PM	<input type="checkbox"/>
Thermocouple	Temperature sensor	24 °C	21	26	Today at 04:39 PM	<input type="checkbox"/>
pH	pH sensor	14.00 pH	11.93	14.00	Today at 04:39 PM	<input type="checkbox"/>

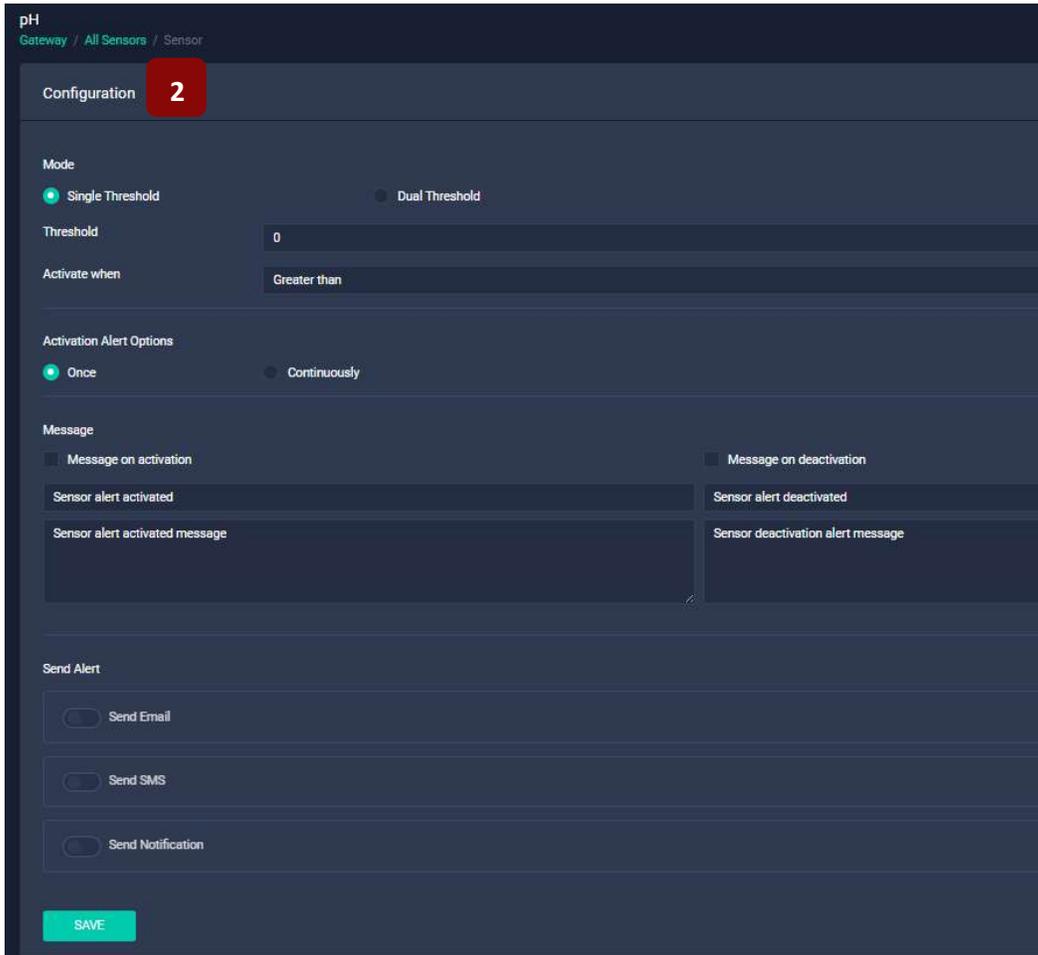
7.3.3.1.4 Configure Sensor / Alert

To configure sensor / alert -

1. Click on the **Sensor** or **>** to access the configuration interface. **For illustration purpose, a pH Sensor is used.**

Sensor Name	Type	Reading	Min	Max	Last Active	Alert
pH	pH sensor	7.05 pH	7.03	7.14	Today at 04:39 PM	<input type="checkbox"/>
Thermocouple	Temperature sensor	24 °C	21	26	Today at 04:39 PM	<input type="checkbox"/>
pH	pH sensor	14.00 pH	11.93	14.00	Today at 04:39 PM	<input type="checkbox"/>

2. The pH Sensor configuration interface is displayed.



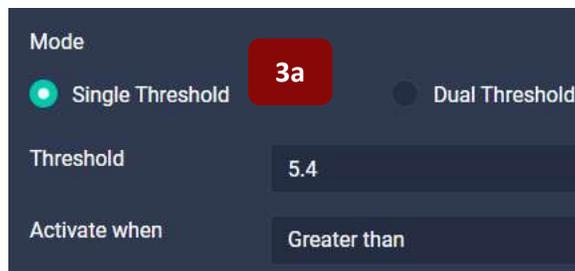
3. Configure the sensor as per the steps given below –

- a. There are two types of *mode*, namely *Single Threshold* or *Dual Threshold*.

Single Threshold: A single threshold is used when an action should be triggered if the current pH value is greater than or lesser than the specified threshold value.

Dual Threshold: A dual threshold is used when an action should be triggered if the current pH value is within specified threshold range or out of specified threshold range.

Select the *Mode*. If the selected *Mode* is "Single Threshold", then fill in the following fields – *Threshold* and *Activate when*.



(Or)

If the selected *Mode* is "Dual Threshold", then fill in the following fields – *Minimum Limit*, *Maximum Limit* and *Activate when* (*Within range* or *Out of range*).

- b. An *activation alert* refers to a notification that is triggered to indicate the user defined alert. There are two types of Activation Alert options, namely *Once* or *Continuously*.

Once: If this option is selected, when activated, the activation alert is sent only once

Continuously: If this option is selected, when activated, the activation alert is sent continuously until deactivated.

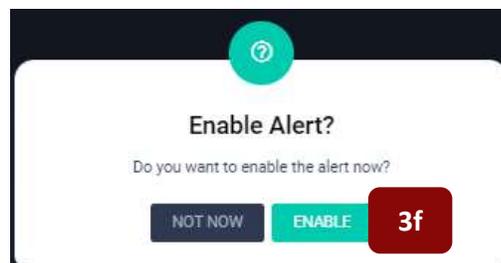
Select the *Activation Alert* option. If the selected *Mode* is "Continuously", then fill in the following fields – *Send Activation Alert Every X Second(s)*.

- c. Click on the *Message on activation* and *Message on deactivation* checkbox and enter an appropriate message *header* and a *message*.

- d. Select one or more *Send Alert* mode(s) – *Email*, *SMS*, *Push Notification*. These modes are enabled only upon selecting either *Message on activation* or *Message on deactivation* or *both*. Upon selecting the appropriate mode(s), fill in the respective fields. For example, if the selected mode is "Send Notification" then click [Add+] and select the "Push Notification Recipients".

- e. Upon providing all the configuration details, click **[SAVE]**.

- f. A confirmation window to enable or disable the alert is displayed. Click **[ENABLE]** to enable alert or **[NOT NOW]** to discard the operation.



- g. Once the alert is enabled, an appropriate message indicating the same is displayed. The **Alert** toggle button in the Sensor list table is enabled.

The screenshot shows the 'Sensors' tab in the LDSBus 3 interface. A table lists three sensors. The third row, for a 'pH' sensor, has its 'Alert' toggle switch turned on (highlighted with a green box). A red badge with '3g' is visible next to the toggle.

Sensor Name	Type	Reading	Min	Max	Last Active	Alert
pH	pH sensor	7.07 pH	7.03	7.14	Today at 06:49 PM	<input type="checkbox"/>
Thermocouple	Temperature sensor	24 °C	21	26	Today at 06:49 PM	<input type="checkbox"/>
pH	pH sensor	14.00 pH	11.93	14.00	Today at 06:49 PM	<input checked="" type="checkbox"/>

7.3.3.1.5 Edit Sensor / Associate Sensor / Download Sensor Data

The screenshot shows the configuration page for a 'pH sensor'. The current reading is 14.00 pH, with a minimum of 11.93 pH and a maximum of 14.00 pH. The last active time is 'Today at 04:36 PM'. The page includes fields for Sensor Name (pH), Type (pH sensor), LDSU Name (pH Sensor), LDSU ID (LS01010124262100031), LDSU Bus Port (3), and Gateway Name (Gateway 2). Under 'Sensor Association', the Sensor Type is 'Temperature', and the 'Value' is set to 'Fixed' with a 'Fixed value' of 5 °C. A 'SAVE' button is present. At the bottom, there is a 'Download sensor data' section with radio buttons for 'Download all data' (selected) and 'Pick date range', followed by a 'Download Data' button.

Edit Sensor Name

1. To edit sensor name, click **[Edit]** and modify the sensor name as required. The sensor information (like Type, LDSU Name etc.) cannot be edited.

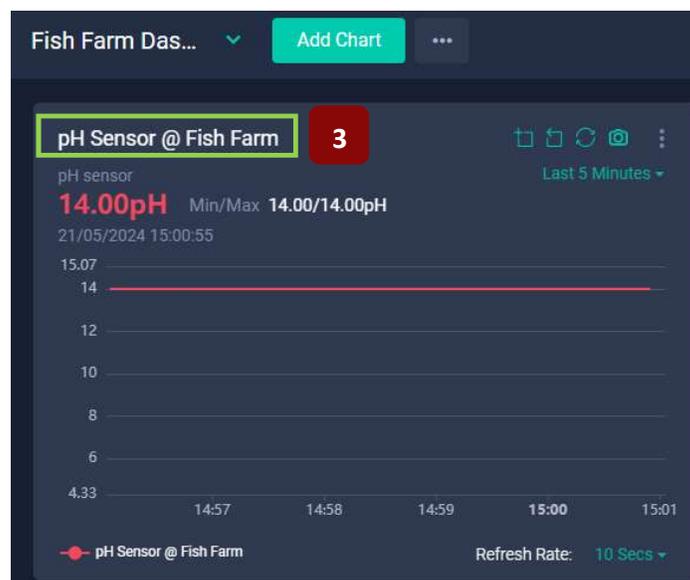
Sensor Name	
pH	Edit 1
Type	pH sensor
LDSU Name	pH Sensor
LDSU ID	LS01010124262100031
LDSU Bus Port	3
Gateway Name	Gateway 2

2. Upon editing the sensor name, click **[SAVE]**. An appropriate message indicating the change is displayed.

Sensor Name	
pH Sensor @ Fish Farm	Save 2

3. The updated sensor name is displayed as part of the sensor list table and dashboard chart (if available).

Sensor Name	Type	Reading	Min / Max	Last 24 hrs	Last Active	Alert
Thermocouple	Temperature sensor	23 °C	23 / 25 °C		Today at 02:52 PM	<input type="checkbox"/>
pH Sensor @ Fish Farm	pH sensor	14.00 pH	14.00 / 14.00 pH		Today at 02:52 PM	<input checked="" type="checkbox"/>



Sensor Association



NOTE: This function can be used only for EC, Salinity, and pH sensors

1. Associate a sensor – This option is used to associate additional parameter (like temperature) for compensation to improve sensor data accuracy. For example, in order to associate temperature with pH sensor,

Select the **Sensor Type** – Temperature; Select **Value** - Associate a sensor.

Sensor Association

Sensor Type: Temperature **1**

Value: Associate a sensor Fixed

Associate a sensor

SELECT A SENSOR **2**

Associate another sensor's value from the same Gateway

SAVE

2. Click [**SELECT A SENSOR**] and choose a sensor from a list of available temperature sensor. Click [**DONE**].

Select Sensor

Search

Thermocouple

Gateway 2 - LDS BUS 3

LDSU UUID: LS030101031E2100001

Temperature sensor

DONE **2**

3. Click [**SAVE**] to save the associated sensor information. An appropriate message indicating the sensor association is displayed.

Sensor Association

Sensor Type: Temperature

Value: Associate a sensor Fixed

Associate a sensor

Thermocouple

Gateway 2 - LDS BUS 3

LDSU UUID: LS030101031E2100001

Temperature sensor

Associate another sensor's value from the same Gateway

CHANGE SENSOR **3**

SAVE

(or)

[Product Page](#)
[Document Feedback](#)

Associate sensor with Fixed value – This option is used when a temperature sensor is not available. For example, in order to associate a fixed temperature value with pH sensor,

Select the **Sensor Type** – Temperature; Select **Value** – Fixed;

Sensor Association

Sensor Type: Temperature

Value: Associate a sensor Fixed

Fixed value: 25 °C

SAVE

Enter a **Fixed value**; Click **[SAVE]**. An appropriate message indicating the sensor association is successful will be displayed.

Download Sensor Data

This function allows users to download sensor data to perform any further research / analysis using third party tools and for archiving purpose. To download sensor data,

1. Select data to include – *Download all data* or *Pick date range*. Upon providing the required input, click **[Download Data]**.

Download sensor data

Download all data

Pick date range

Download Data 1

2. A confirmation message will be displayed. Click **[OK]**.

Confirmation

By confirming, an email will be sent to your email address with instructions on how to download. Do you want to continue?

Cancel OK 2

3. Upon confirmation, an email will be sent to the user's registered email address with [instructions](#) on how to download the sensor data.

IoTPortal - Your data to download is ready

support@brtsys.com

Dear Adam James,

You recently requested on 21 May 2024 (UTC) a copy of your IoTPortal data. Your data to download is now ready. Please click on the link below to download your data.

Download Data 3

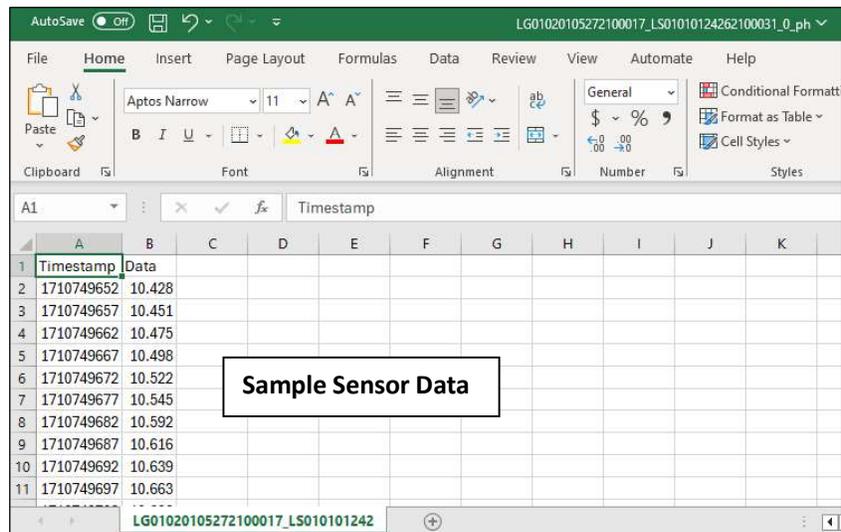
This link will expire on 28 May 2024 (UTC).

The password of your archive is: [REDACTED]

Thank you!

Instructions on how to download the sensor data

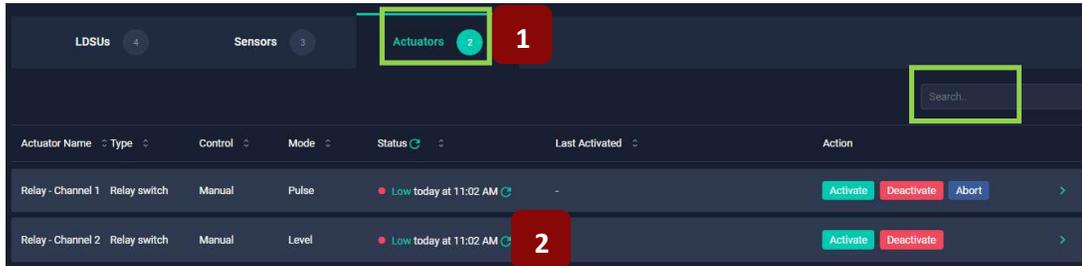
- Click [Download Data].
- The data is downloaded to your local folder (for example – Downloads)
- Extract the zip file and its content by providing the password sent to your registered email address.
- Open the spreadsheet file that contains the downloaded sensor data.



	Timestamp	Data
1	1710749652	10.428
2	1710749657	10.451
3	1710749662	10.475
4	1710749667	10.498
5	1710749672	10.522
6	1710749677	10.545
7	1710749682	10.592
8	1710749687	10.616
9	1710749692	10.639
10	1710749697	10.663

7.3.3.1.6 Actuators List

1. To view the list of Actuators, click **[Actuators]** tab.

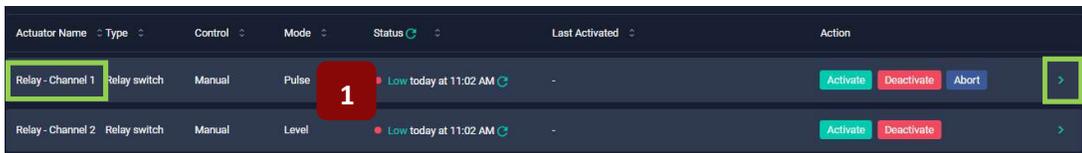


2. The table provides the Actuator *Name*, *Actuator Type*, *Control*, *Mode*, *Actuator Status*, when the Actuator was *Last Active* and *Actions (Activate / Deactivate)* that can be performed on the actuator. Users may search for a specific Actuator using the **Search** box.

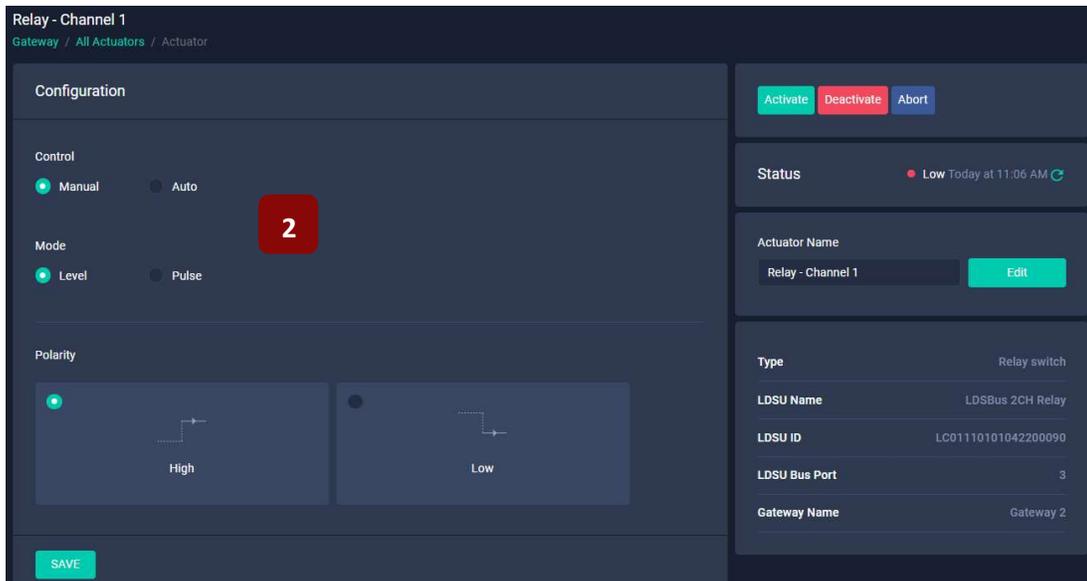
7.3.3.1.7 Configure Actuator / Alert

For illustration purposes, Relay – Channel 1 is used.

1. Click on **Actuator Name** or **>** to access the Relay- Channel 1 configuration interface.

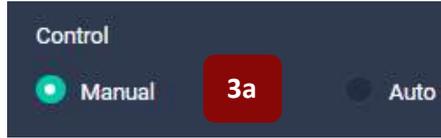


2. The Relay – Channel 1 Actuator detail interface is displayed.



3. Configure the actuator parameters as per the steps given below.

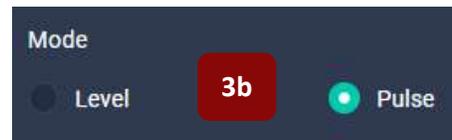
a. There are two types of **Control**, namely *Manual*, *Auto*. Select the *Control* as required.



Manual: This mode allows user to activate and deactivate relay channels manually.

Auto: This mode operates autonomously, with the system managing the activation and deactivation of the relay channel automatically. In this mode, predefined events or conditions determine when the relay channel is activated or deactivated. These events could include specific times of the day, environmental triggers, or inputs from other systems. The system executes these actions based on programmed instructions without requiring manual intervention, enabling automated operation, and reducing the need for constant oversight.

b. There are two types of mode, namely *Level Mode*, *Pulse Mode*. Select the *Mode* as required.



Level: In Level mode, the functionality operates similarly to a standard switch mode commonly found in various electronic devices. Once a channel is activated, meaning the relay is turned on, it remains in that state until the user manually intervenes to deactivate it. This mode provides a straightforward and intuitive way of controlling the relay, offering stability and consistency in maintaining the relay's state until a deliberate action is taken by the user to change it.

Pulse: In pulse mode, the functionality mirrors that of automatic doors.

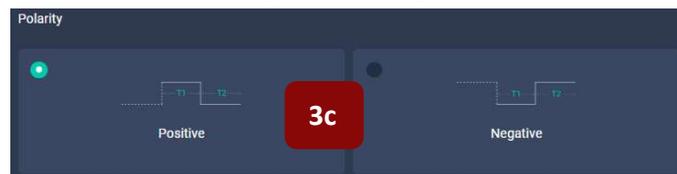
Upon activation, the channel remains active for a predefined period, denoted as T1. During this time, the relay maintains its active state, allowing the load to be powered or controlled as required. This duration typically corresponds to the time required to perform a specific task or operation associated with the load. Following the completion of the T1 period, the channel automatically deactivates. The duration of this inactive period is denoted as T2 and is adjustable based on the application requirements.

c. Select the *Polarity* – *Positive* or *Negative*.

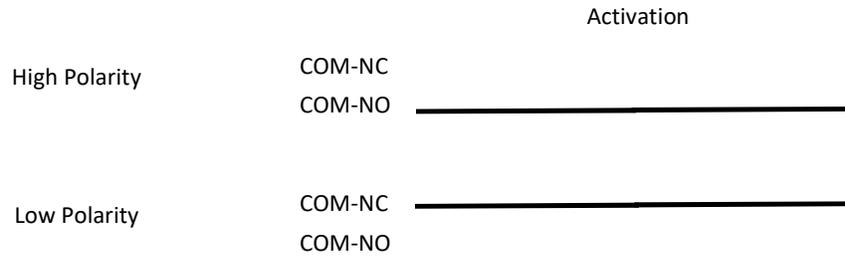


NOTE: Polarity feature is available for both Level mode and Pulse mode.

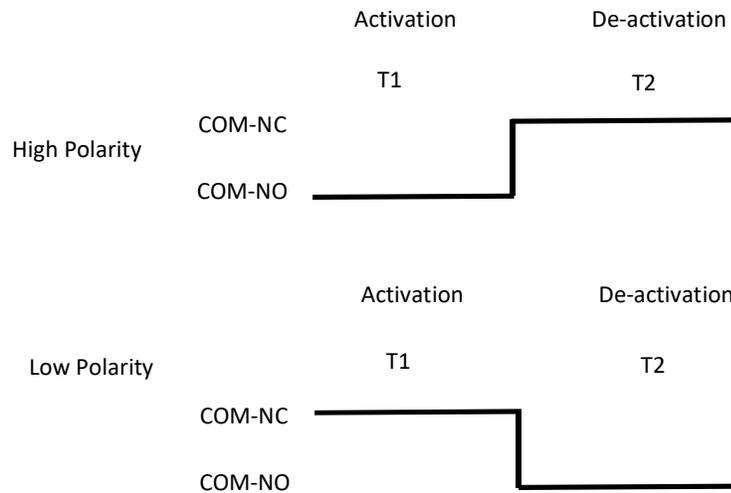
The LDSBus 2CH relay utilizes Single Pole Double Throw (SPDT) relay type, offering two distinct ways of load connection. Load connection can be achieved by connecting the load to Normally Open (NO) or Normally Closed (NC) terminals. To accommodate these connection options, the controller features two configurations: High and Low.



Level Mode



Pulse Mode



High: In the default High configuration, the relay operates with the channel contact closed between the Common (COM) and Normally Open (NO) terminals for activation. Upon de-activation, the channel contact switches to close between the Common (COM) and Normally Closed (NC) terminals.

Low: In the Low configuration, the relay operates in the opposite manner compared to the High configuration. Upon activation, the channel contact closes between the Common (COM) and Normally Closed (NC) terminals. Then, upon deactivation, the channel contact switches to close between the Common (COM) and Normally Open (NO) terminals.

These two configurations provide flexibility in adapting the relay to different load connection requirements, ensuring compatibility with a wide range of applications and allowing users to select the configuration that best suits their specific needs.

- d. If the selected mode is *Pulse* mode, then fill in the Pulse Phase in the *T1*, *T2* fields.

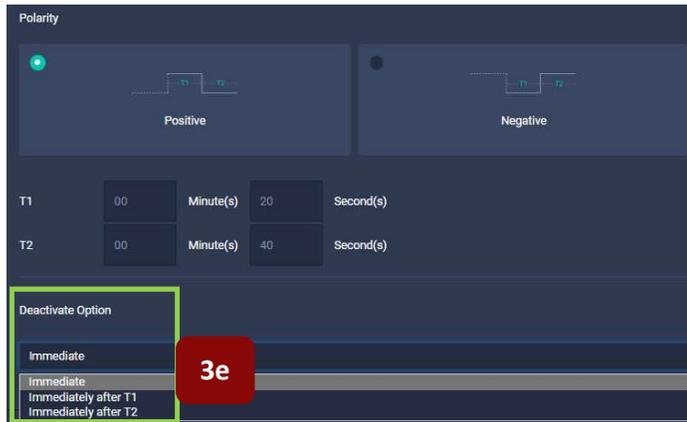
T1	00	Minute(s)	20	Second(s)
T2	00	Minute(s)	40	Second(s)

T1 and T2 indicate the first and second phase of the pulse, respectively. Input the duration of T1 and T2. Ensure that T1 and T2 duration are greater than 0 seconds and (T1 + T2) duration does not exceed 1 hour.

- e. If the selected mode is *Pulse* mode, then select one of the *Deactivate Option* from the drop down list box.

NOTE: Deactivation mode feature is only available for Pulse mode.

The following three distinct options are available for deactivation mode.

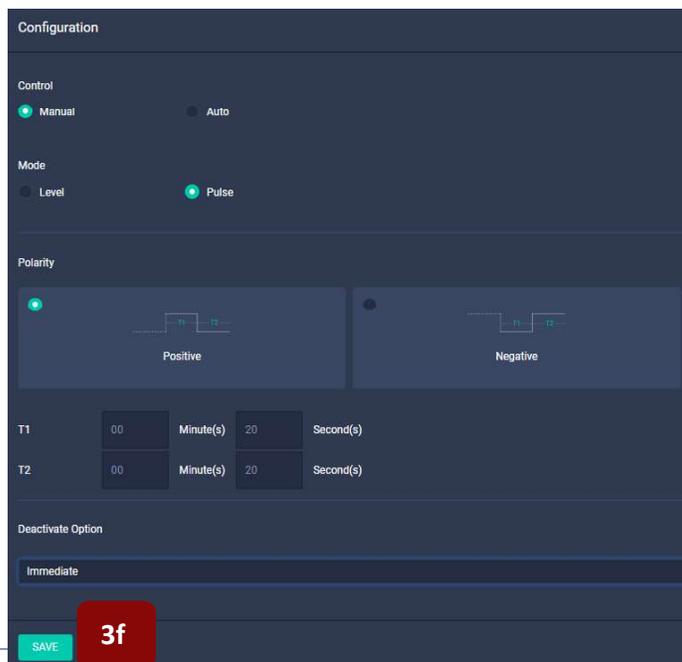


Immediate: With this option, the channel instantly returns to its deactivated state without any delay.

Immediate after T1: With this option, the channel returns to deactivated state after completing the T1 cycle.

Immediate after T2: With this option, the channel returns to deactivate state after completing the T1 and T2 cycle.

- f. Upon providing all the configuration details, click **[SAVE]**.



- g. An appropriate message indicating that the configuration details are saved is displayed. The actuators list table updated accordingly.

Actuator Name	Type	Control	Mode	Status	Last Activated	Action
Relay - Channel 1	Relay switch	Manual	Pulse	Low today at 11:09 AM	-	Activate Deactivate Abort
Relay - Channel 2	Relay switch	Manual	Level	Low today at 11:09 AM	-	Activate Deactivate

Edit Actuator Name

To edit actuator name, click **[Edit]** and modify the actuator name as required. The actuator information (like Type, LDSU Name etc.) cannot be edited.

Actuator Name: Relay - Channel 1 [Edit]

Type: Relay switch

LDSU Name: LDSBus 2CH Relay

LDSU ID: LC01110101042200090

LDSU Bus Port: 3

Gateway Name: Gateway 01

Upon editing the actuator name, click **[SAVE]**. An appropriate message indicating the change is displayed.

Actuator Name: Relay - Channel 1 @ Fish Farm [Save]

The updated actuator name is displayed as part of the actuator list table and dashboard chart (if available).

Actuator Name	Type	Control	Mode	Status	Last Activated	Action
Relay - Channel 1 @ Fish Farm	Relay switch	Manual	Pulse	Low today at 11:11 AM	-	Activate Deactivate Abort
Relay - Channel 2	Relay switch	Manual	Level	Low today at 11:11 AM	-	Activate Deactivate



Activate/Deactivate/Abort Actuator

Click **[Activate]** to trigger the actuator into active state. The status is updated to "High".

The screenshot shows a control panel for an actuator. At the top, there are three buttons: 'Activate' (green), 'Deactivate' (red), and 'Abort' (blue). To the right of these buttons, it says 'Last activated today at 11:16 AM'. Below this, the 'Status' is displayed as 'High Today at 11:16 AM' with a green dot and a refresh icon, highlighted by a green box. Underneath, the 'Actuator Name' is 'Relay - Channel 1 @ Fish Farm' with an 'Edit' button. Further down, the 'Type' is 'Relay switch', 'LDSU Name' is 'LDSBus 2CH Relay', 'LDSU ID' is 'LC01110101042200090', 'LDSU Bus Port' is '3', and 'Gateway Name' is 'Gateway 2'.

Actuator Name	Type	Control	Mode	Status	Last Activated	Action
Relay - Channel 1 @ Fish Farm	Relay switch	Manual	Pulse	High today at 11:18 AM	Today at 11:18 AM	Activate Deactivate Abort
Relay - Channel 2	Relay switch	Manual	Level	Low today at 11:18 AM	-	Activate Deactivate

Click **[Deactivate]** to trigger the actuator into inactive state; The status is updated to "Low".

Click **[Abort]** to cancel the current operation and return the actuator into inactive state immediately. The status is updated to "Low".

The screenshot shows the same control panel as above, but the status is now 'Low Today at 11:19 AM' with a red dot and a refresh icon, highlighted by a green box. The 'Actuator Name' and other details remain the same.

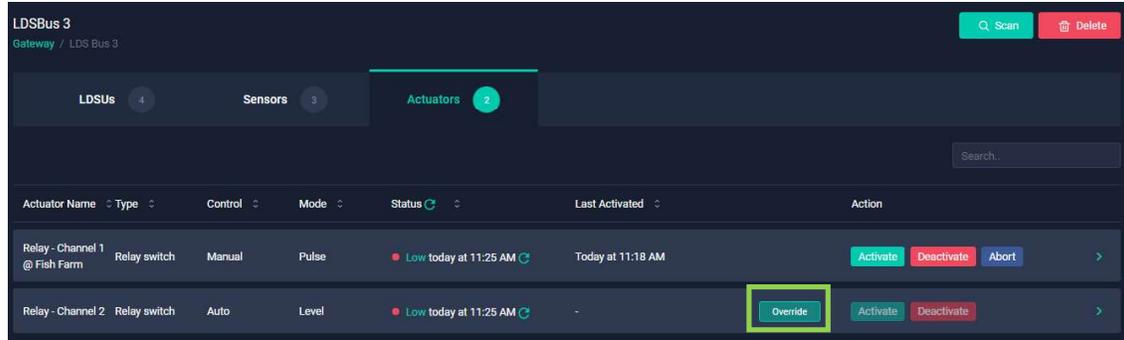
Actuator Name	Type	Control	Mode	Status	Last Activated	Action
Relay - Channel 1 @ Fish Farm	Relay switch	Manual	Pulse	Low today at 11:21 AM	Today at 11:18 AM	Activate Deactivate Abort
Relay - Channel 2	Relay switch	Manual	Level	Low today at 11:21 AM	-	Activate Deactivate



NOTE: The Abort feature is only available for Pulse mode.

Override Actuator

When actuator is in "Auto" mode, the Activate and Deactivate functions are disabled and the override function is displayed. Click **[Override]** to exit the "Auto" mode. Only those actuators that are linked to this event are disabled.



The screenshot shows the 'Actuators' management interface for 'LDSBus 3'. The interface includes a search bar and a table of actuators. The table has columns for Actuator Name, Type, Control, Mode, Status, Last Activated, and Action. Two actuators are listed: 'Relay - Channel 1 @ Fish Farm' and 'Relay - Channel 2'. The 'Relay - Channel 2' actuator is in 'Auto' mode and has a 'Low today at 11:25 AM' status. The 'Override' button for this actuator is highlighted with a green box.

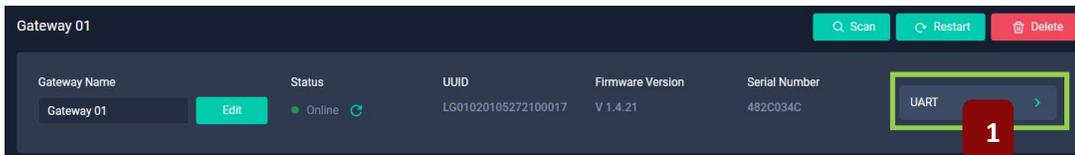
Actuator Name	Type	Control	Mode	Status	Last Activated	Action
Relay - Channel 1 @ Fish Farm	Relay switch	Manual	Pulse	Low today at 11:25 AM	Today at 11:18 AM	Activate Deactivate Abort
Relay - Channel 2	Relay switch	Auto	Level	Low today at 11:25 AM	-	Override Activate Deactivate

7.3.4 Configure UART

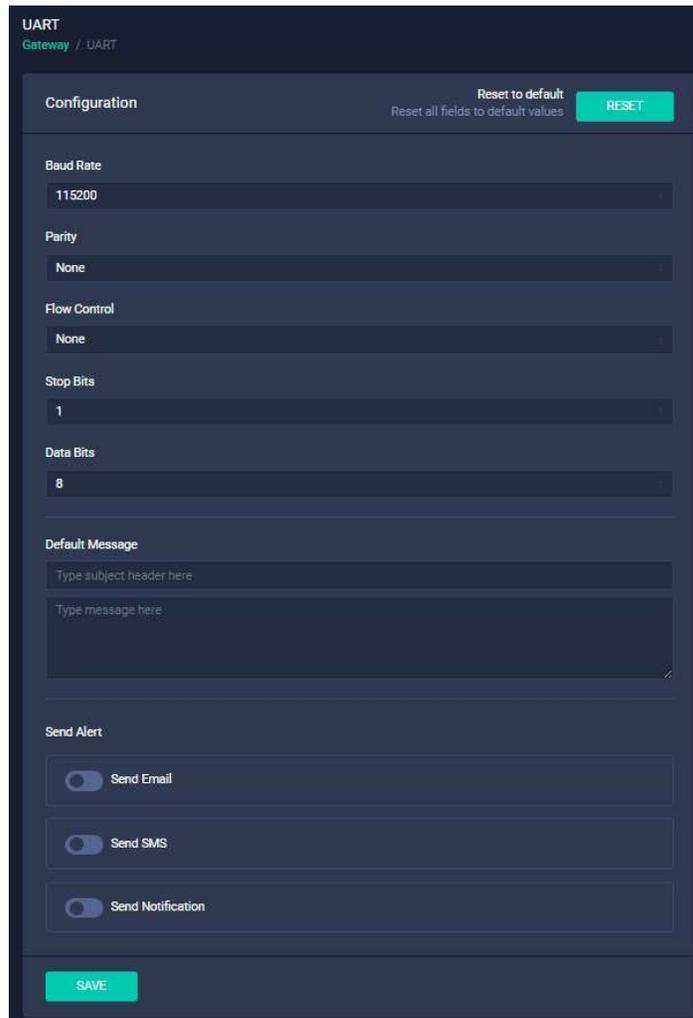
The UART connection is a RS232 serial cable connection between the gateway and user PC. This connection is known as Machine To Machine (M2M) connection. It enables the user to download system level diagnostic messages about the gateway. These messages can be useful for further troubleshooting in case of issues.

By default, the UART of the gateway is enabled with the default communication parameters. Using the Web Management Console or Mobile app, users can modify the communication parameters, if necessary. Ensure the token balance is sufficient to perform this operation.

1. Click **[UART]**.



2. The UART configuration interface is displayed.



Baud Rate - Refers to the communications speed measured in "bits transferred per second." Select the Baud Rate from the drop down control.

Parity - Parity is used for error-checking. Parity can be either Even, Odd, or None.

For example, for Even parity, if the data is 10010010, the serial port sets the parity bit as 1 to keep the number of logic-high bits Even. For Odd parity, the parity bit is 0 so that the number of logic-high bits is Odd. Select the Parity from the drop down control.

Flow Control - Flow control used to manage the rate of data transmission between sender and receiver to prevent a fast sender from overwhelming a slow receiver.

Stop Bits - Stop bits are used to signal the end of a communication packet. Stop bits can be either 1 or 2 bits.

Data Bits - Data bits are a measurement of the actual data bits transferred within a word. Data Bits can be either 7 or 8 bits.

Send Alert – Refers to the notification mechanism (*Email, SMS, Push Notification*).

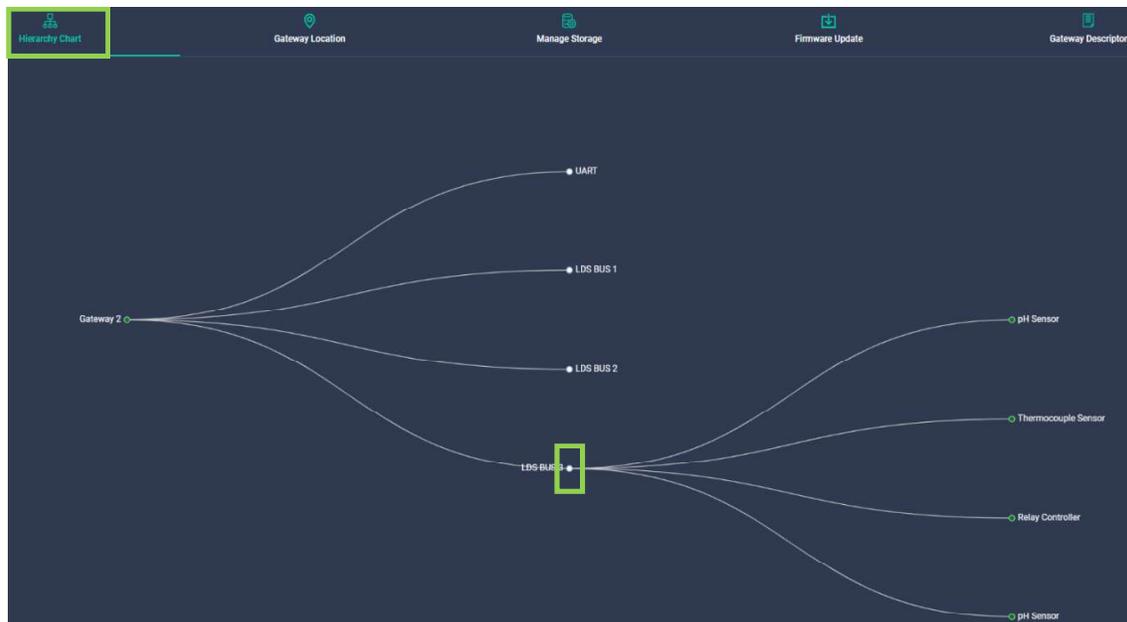
Select one or more **Send Alert** mode(s) – *Email, SMS, Push Notification*.

Click **[RESET]** to reset all fields to default values or configure the parameters manually and click **[SAVE]** to save the changes. An appropriate message indicating that the UART properties are set is displayed.

7.3.5 Hierarchy Chart

The **Hierarchy Chart** depicts the visual representation of the relationship between Gateway and its LDSBus devices.

To view the Hierarchy Chart, click **[Hierarchy Chart]**.



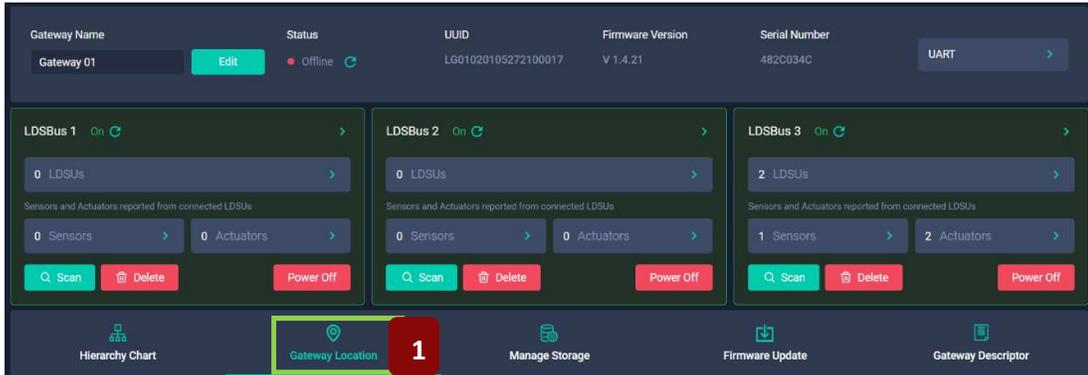
Click on each "node" to expand on the sub-groups.

7.3.6 Gateway Location

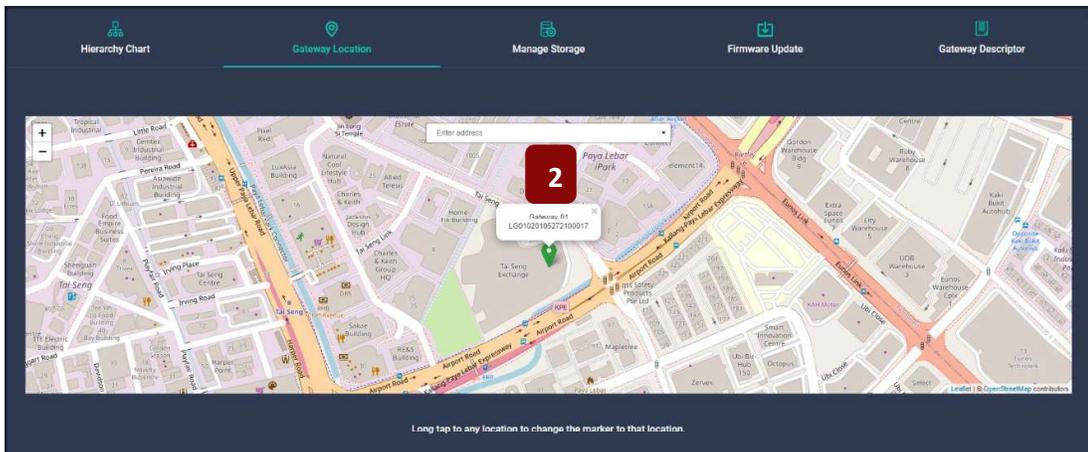
This function is used to view/update the selected Gateway Location.

To access the Gateway Location –

1. Click **[Gateway Location]**.



2. The current location of the gateway is displayed.



3. Long tap on the marker  to change the gateway location to the new coordinates. A confirmation window will be displayed. Upon changing the gateway location (if any), click **[SAVE]** to save the changes.

7.3.7 Manage Storage

In every subscription, owners receive 5GB of storage data for all their gateways. 5GB of data can buffer reports from 4,750 sensors reporting one report per minute for 365 days. Charges for data offload requests are applied after the data download is complete. The request is not charged if the download is not successful.

There is a storage system for all sensor data. Sensor data is no longer stored when storage is full. Upon exceeding the user-preset storage threshold, the user will receive a first notification. In this notification (email or push notification), the user or owner is notified of the following:

- The sensor storage capacity has exceeded the user-set usage threshold (%)
- Sensor storage will cease when capacity reaches 100%
- Delete or offload sensor data

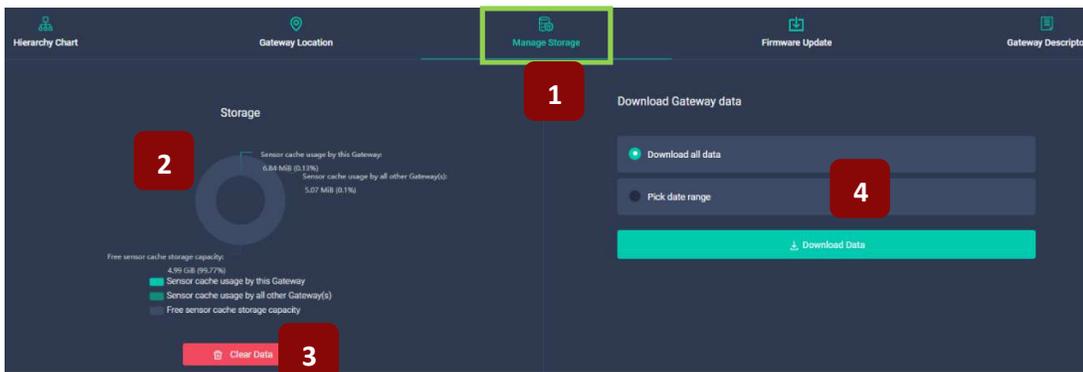
When storage reaches 100%, a second notification is sent. Upon reaching 100%, sensor data storage is stopped.

Email notifications will be sent to verified email addresses, and push notifications will be sent to verified mobile numbers. The default notification method shall be email if both are verified.

Ensure the token balance is sufficient to perform this operation.

To view / manage storage,

1. Click **[Manage Storage]**.

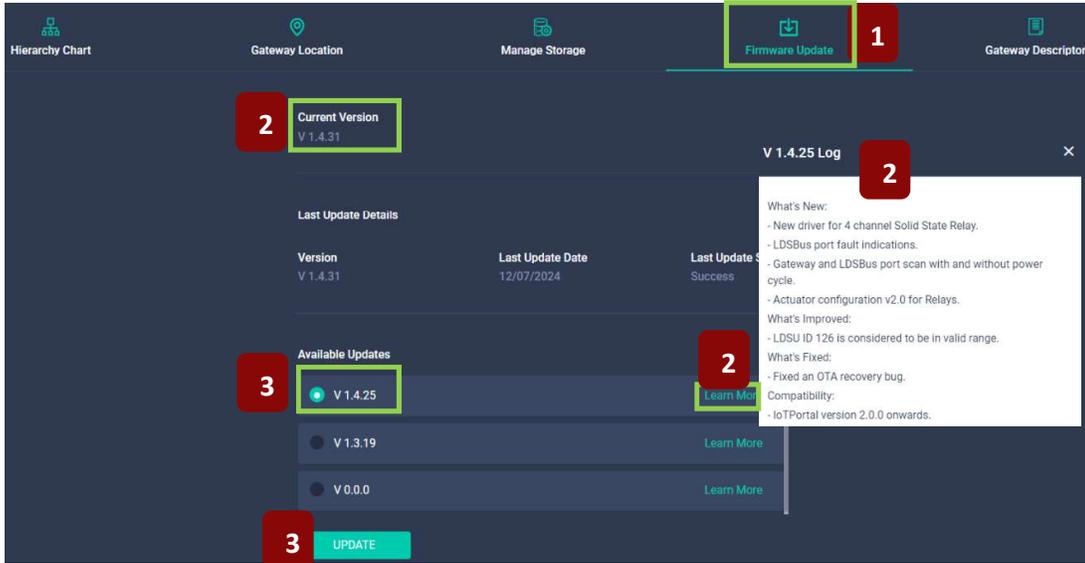


2. The information related to *Used Storage* (storage used by the current gateway and other gateways) and *Free Storage* are displayed.
3. Click **[Clear Data]** to clear all the data related to the selected gateway. A confirmation message is displayed. Click **[YES]** to clear the data or **[NO]** to discard the operation.
4. To download gateway data, select a time zone (*applicable only for Pick data range option*); Select data to include – *Download all data* or *Pick date range*. Upon providing the required input, click **[Download Data]**. A confirmation message is displayed. Click **[OK]**. Upon confirmation, an email will be sent to the user's registered email address with [instructions](#) on how to download the gateway data.

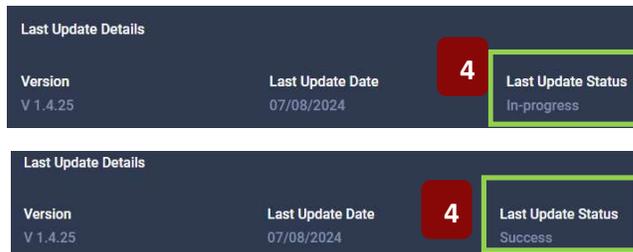
7.3.8 Firmware Update

This function is used to update gateway firmware. To update firmware,

1. Click **[Firmware Update]**.



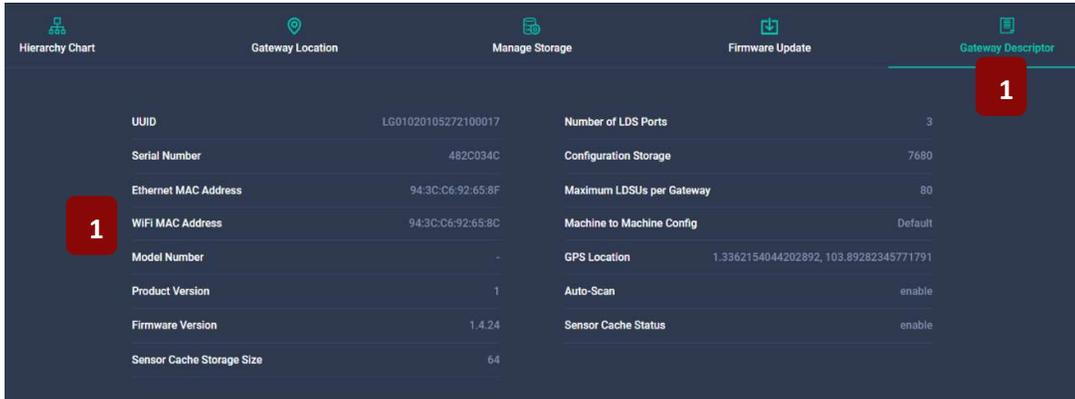
2. Currently installed firmware version details and a list of available versions if any are displayed. Click **[Learn More]** to view the *version log*.
3. Select the required version and click **[UPDATE]**. A confirmation will be displayed. Click **[UPDATE]** to proceed. A request for firmware update will be submitted.
4. Upon updating the firmware, the last updated status is updated from "In-progress" to "Success". Firmware is updated if the gateway is online. If the gateway is offline, the firmware update will start later.



7.3.9 Gateway Descriptor

Upon successfully connecting to the IoTPortal, the gateway registers its Gateway Object Descriptor. To view the gateway descriptors -

1. Click **[Gateway Descriptor]**. The Gateway Descriptors are displayed.



Hierarchy Chart		Gateway Location		Manage Storage		Firmware Update		Gateway Descriptor	
UUID	LG01020105272100017	Number of LDS Ports	3						
Serial Number	482C034C	Configuration Storage	7680						
Ethernet MAC Address	94:3C:C6:92:65:8F	Maximum LDSUs per Gateway	80						
WIFI MAC Address	94:3C:C6:92:65:8C	Machine to Machine Config	Default						
Model Number	-	GPS Location	1.3362154044202892, 103.89282345771791						
Product Version	1	Auto-Scan	enable						
Firmware Version	1.4.24	Sensor Cache Status	enable						
Sensor Cache Storage Size	64								

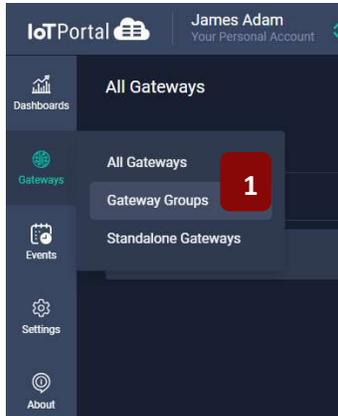
7.4 Manage Gateway Group

Gateways can be organized into groups to facilitate gateway administration. For example, firmware updates can be applied to all gateways in the group.

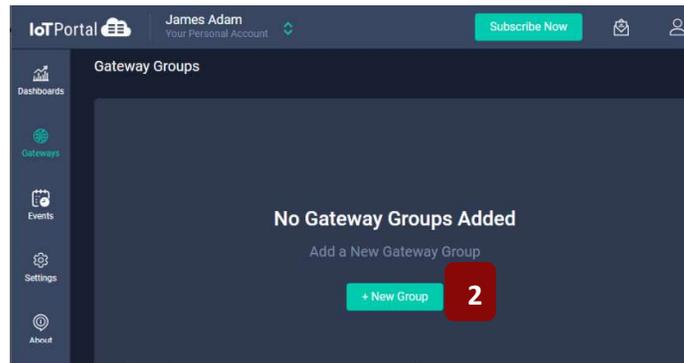
7.4.1 Create New Gateway Group

To create new gateway group –

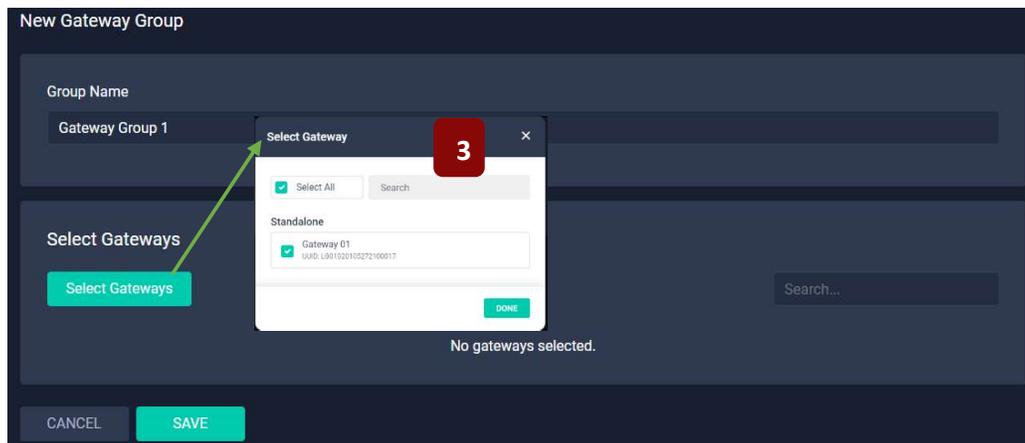
1. Click **Gateways > Gateway Groups** from the menu.



2. For first time users, there will not be any Gateway Groups displayed. Click **[+New Group]**.



3. Enter a *Group Name*; Select the *member gateways* of this Gateway Group by clicking **[Select Gateways]**; Click **[DONE]**.



4. The selected gateway(s) are displayed. Click **[SAVE]**.

New Gateway Group

Group Name

Gateway Group 1

Select Gateways

Select Gateways Search...

Gateway 01

CANCEL SAVE 4

5. New Gateway Group is created successfully.

IoTPortal James Adam Your Personal Account

Success Device group added successfully.

5

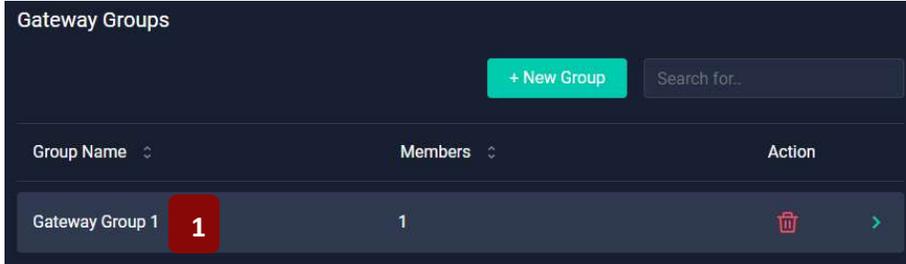
Gateway Groups + New Group Search for..

Group Name	Members	Action
Gateway Group 1	1	

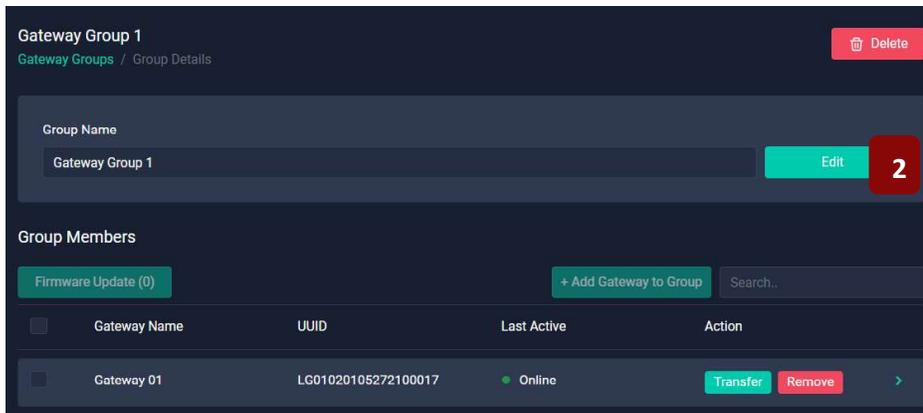
7.4.2 Edit Gateway Group Name

To edit gateway group name,

1. Click **Gateway Group Name** or **>**.



2. The Gateway Group Name and the Group Members are displayed. Click **[Edit]**.



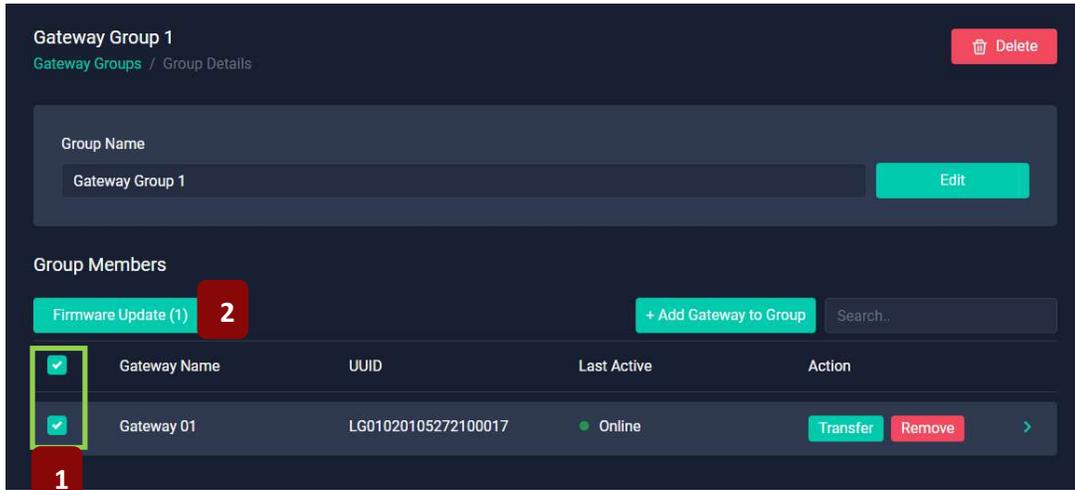
3. Edit the *Gateway Group Name* as required and click **[Update]**. An appropriate message indicating the update is displayed.



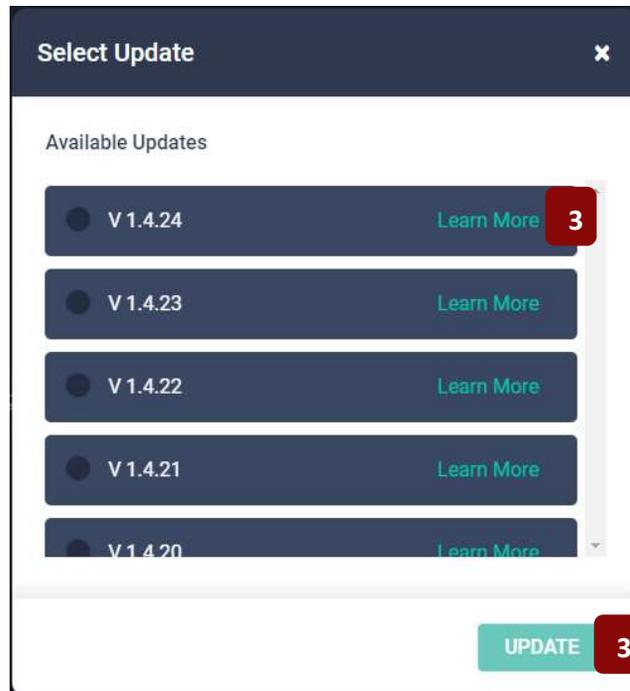
7.4.3 Firmware Update for Gateway Group Member

To perform firmware update for gateway group member –

1. Select one or more gateways from the Group Member table by selecting the **checkbox**. Alternately, to select all the group members, select the checkbox on the table header.



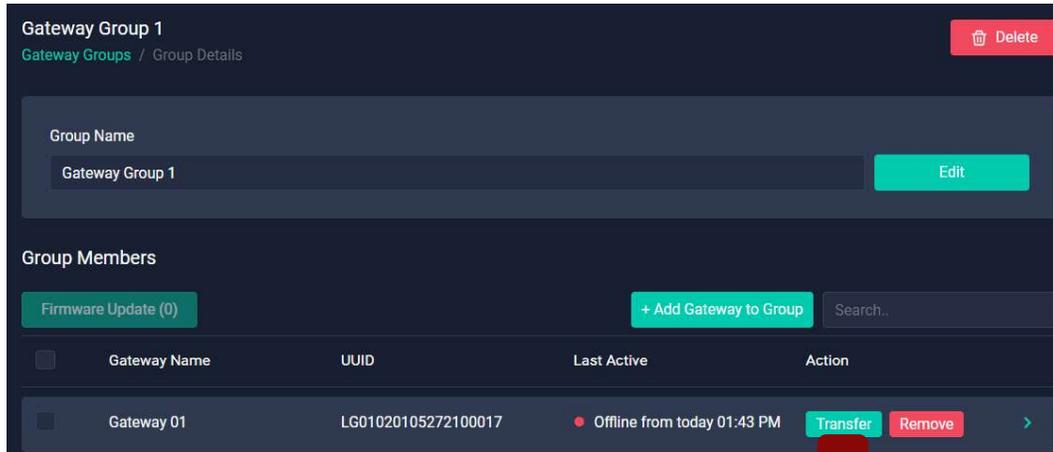
2. Click **[Firmware Update]**.
3. Select the required version; Click **[Learn More]** to view the *version log*. Click **[UPDATE]**. A confirmation window will be displayed. Click **[UPDATE]** to proceed. A request for firmware update will be submitted.



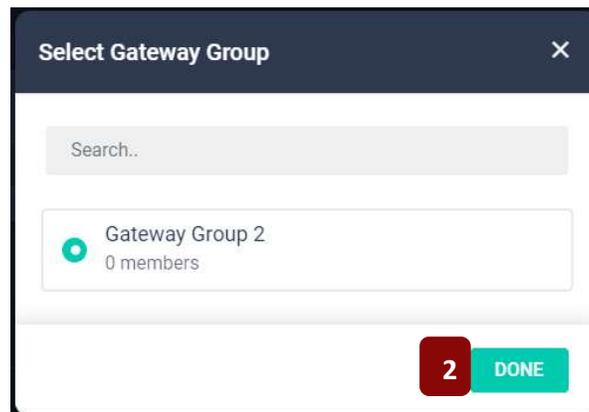
7.4.4 Transfer Gateway from one group to another group

This function allows users to transfer gateway from one group to another. To transfer gateway –

1. Click **[Transfer]** against the Gateway to be transferred. A confirmation window will be displayed. Click **[Yes]** to proceed. A request for transfer will be submitted.



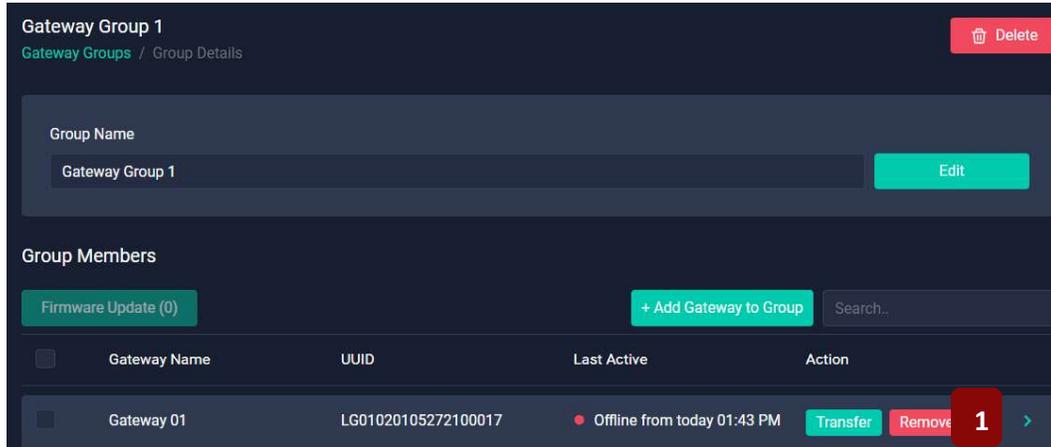
2. Select the destination group. Click **[DONE]**. Upon successful transfer an appropriate message indicating the same is displayed.



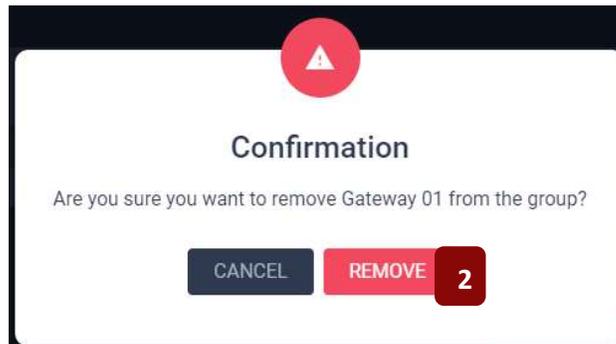
7.4.5 Remove Gateway from Gateway Group

This function allows users to remove member gateway from gateway group. To remove gateway from gateway group –

1. Click **[Remove]** against the Gateway to be removed.



2. A confirmation window will be displayed. Click **[REMOVE]** to proceed. Upon successful removal, an appropriate message indicating the same is displayed.

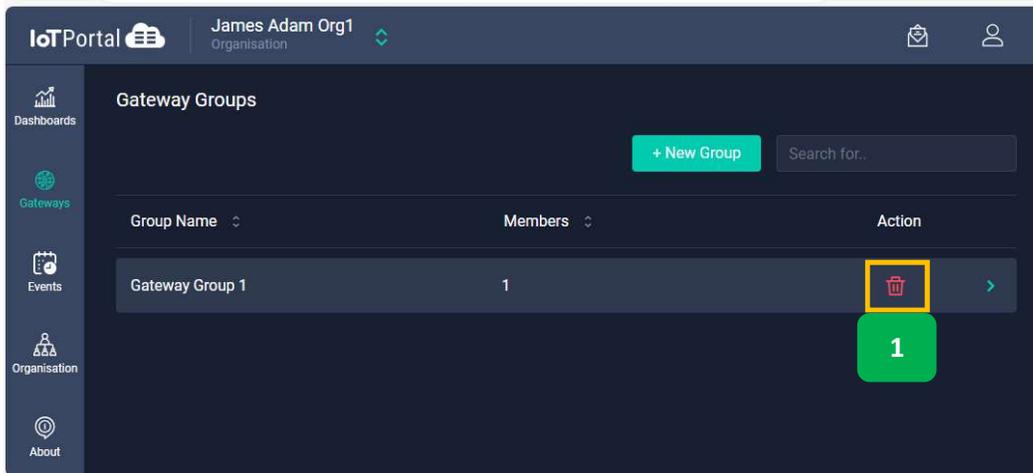


Upon successful removal, the gateway will become a standalone / single gateway.

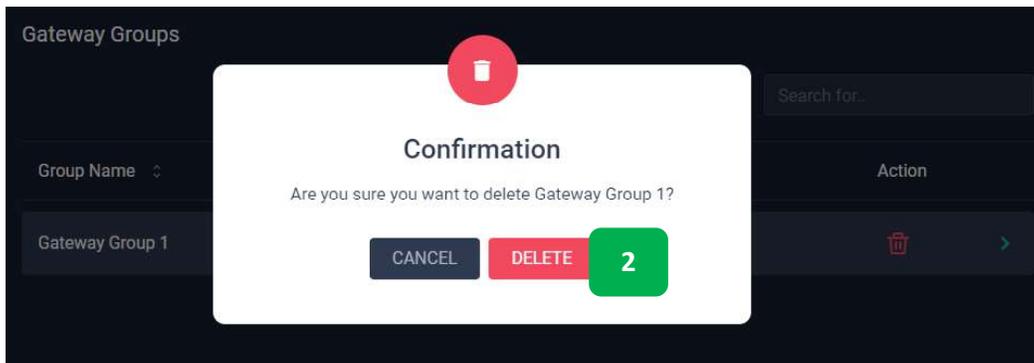
7.4.6 Remove Gateway Group

To remove gateway group –

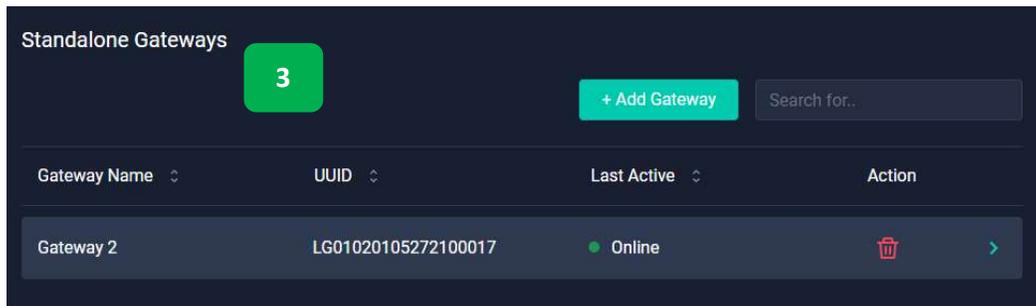
1. From the Gateway Groups interface, click .



2. A confirmation message is displayed. Click **[DELETE]** to proceed with the deletion.



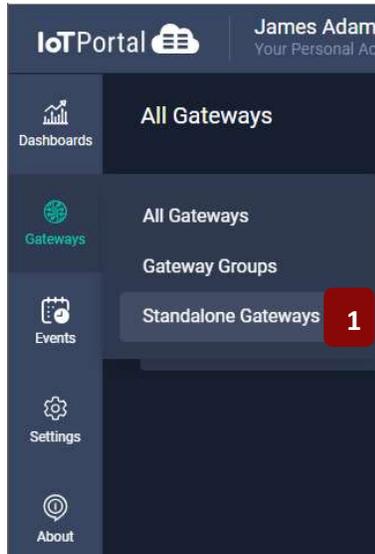
3. Upon successful deletion of gateway group, the gateway will become standalone.



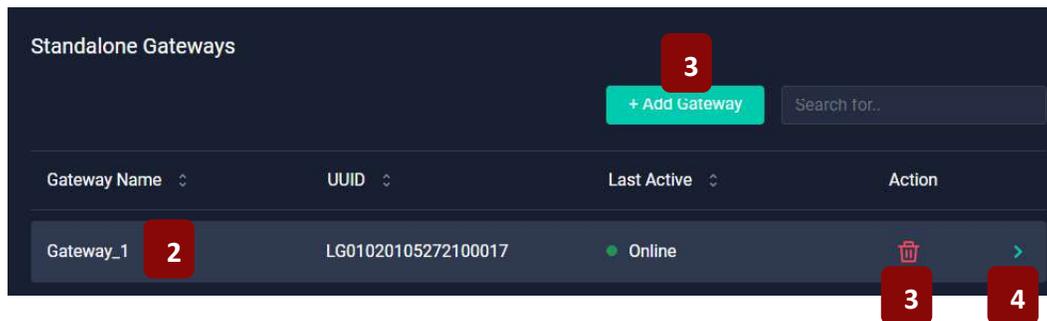
7.5 Standalone Gateway

To access Standalone Gateway interface -

1. Click **Gateways > Standalone Gateways** from the menu.



2. A list of Standalone Gateways (if any) is displayed.

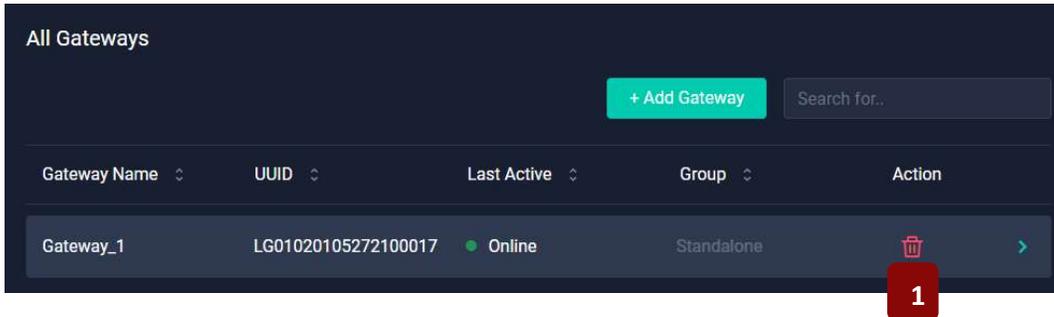


3. Perform the following functions as required –
 - [Add Gateway](#)
 - [Remove Gateway](#)
4. To access the Gateway details, click on the Gateway or >. Refer to [View Gateway Details](#) for more information.

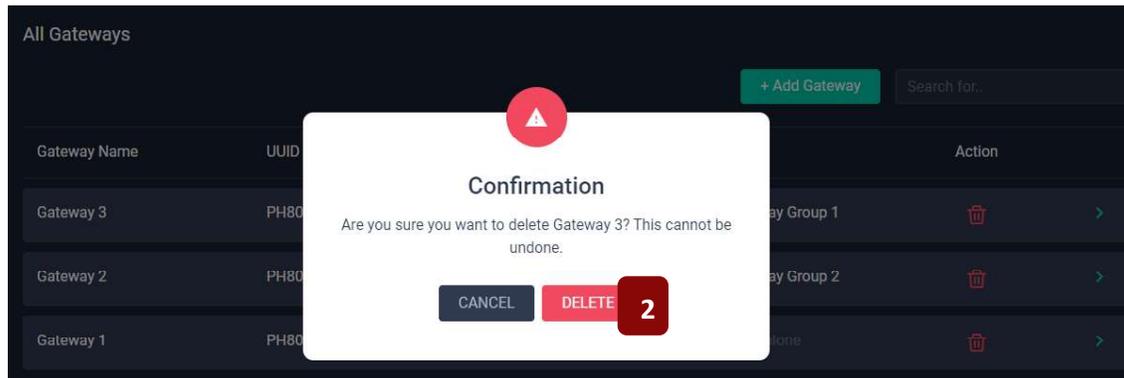
7.6 Delete Gateway

To delete gateway –

1. Click .



2. A confirmation window will be displayed. Click **[DELETE]** to proceed.



NOTE: Once a gateway is deleted, it can be re-onboarded only after 2 hours.

8. Subscription Management

A subscription is tied to a user account and not to a gateway. Currently users can subscribe on a *Monthly* basis. Subscriptions may come with prevailing discounts regardless of the type. *For example, 0% for monthly.*

The subscription plan is created at the time of subscription, sign-up and payments are collected monthly. For example, if a subscription is initiated on July 4th, a monthly deduction will occur every 4th of the month thereafter. Depending on the active discount rate setting for that plan, the discount may be applied once or multiple times.

Subscriptions can only be signed up through the web client (WMC). Owners of subscription can choose the payment schedule (*Monthly*) during subscription sign up.

Add-ons and Entitlements for Tokens

- Tokens are categorized into 3 types – *Allocated Tokens, Bonus Tokens* and *Purchased Tokens*. Priority is given to Allocated Tokens (Highest Priority), followed by Bonus Tokens and Purchased Tokens (lowest priority). Consumption order is determined by priority. Each token has the same value.
- Tokens are allocated at the beginning of every monthly billing cycle, and any unused tokens from the previous month are reset to zero.
- Bonus tokens are received through promo codes and have an expiration date. With any addition of bonus tokens, the expiration date of the old and new bonus tokens will be adjusted to the earlier expiration date.
- Purchased tokens are added to the subscription when the owner or authorized user purchases them. Tokens purchased do not expire and may be accumulated through additional purchases.
- User actions consume tokens within the system. Thus, such actions must be accounted for under each organization and user's account.
- To avoid service disruptions due to the full usage of tokens (zero token balance), the IoTPortal shall keep a tally of tokens. An alert shall be sent to the owner or owner's group when the remaining token balance reaches less than 72 hours of service. Once triggered, this alert will be sent every day until the token balance is restored to more than 72 hours.

	Resource	Tokens Consumed
1	Email	1000 / Email
2	SMS	3000 to 33000* Depends on destination and the SMS rate
3	Notification	0 per notification (100% discounted)
4	Ingress Report	0 per MiB (100% discounted)
5	Egress Commands	0 per MiB (100% discounted)
6	Dashboard Data Request	2000 per MiB
7	Data Download Request	1000 per 10MiB
8	Active Event	0 per Event per Day per enable (100% discounted)

Table 2 – Token Conversion Rate

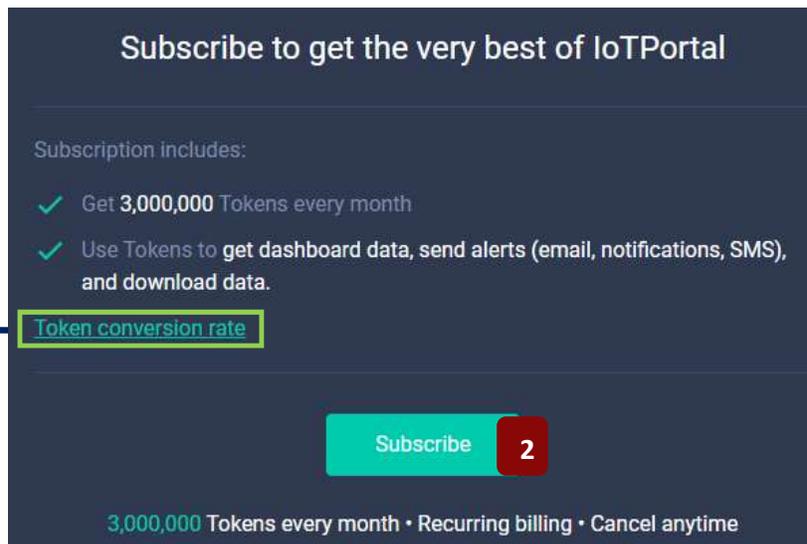
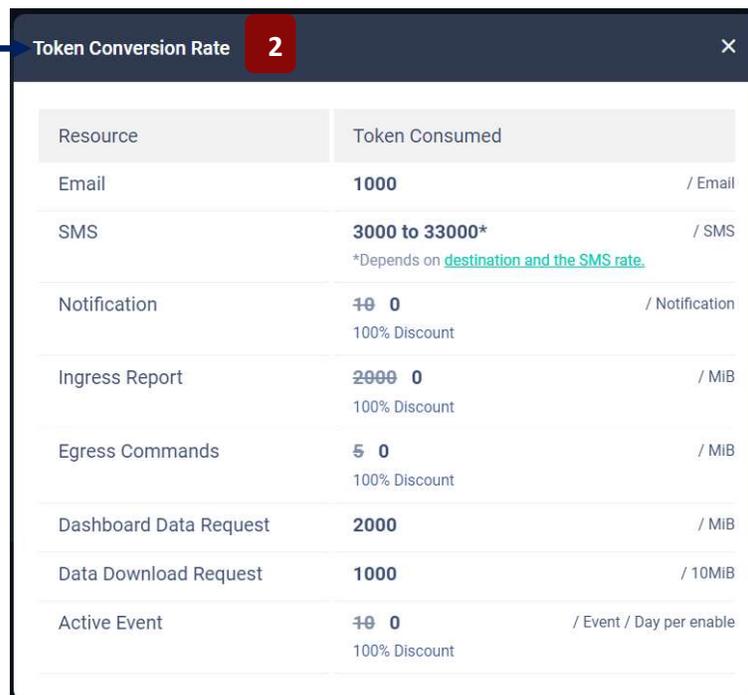
8.1 Subscription Sign Up

The subscription menu is enabled / displayed only for the Owner. To sign up for Subscription –

1. Click [**Subscribe Now**].



2. Click [**Subscribe**]. To view the *Token conversion rate*, click the link.

The screenshot shows a modal window titled 'Token Conversion Rate' with a close button (X) in the top right corner. It contains a table with two columns: 'Resource' and 'Token Consumed'. The table lists various resources and their corresponding token consumption limits, along with discounts.

Resource	Token Consumed
Email	1000 / Email
SMS	3000 to 33000* / SMS <small>*Depends on destination and the SMS rate.</small>
Notification	10 0 / Notification 100% Discount
Ingress Report	2000 0 / MIB 100% Discount
Egress Commands	5 0 / MIB 100% Discount
Dashboard Data Request	2000 / MIB
Data Download Request	1000 / 10MIB
Active Event	10 0 / Event / Day per enable 100% Discount

3. Subscriptions / Billing address interface is displayed.

Enter the following Customer information – *Customer ID* and *PRN* and click to **[VERIFY]** the same.

Upon verifying successfully, enter the following Billing Address information – *First Name*, *Last Name*, *Street*, *Building (optional)*, *Floor*, *Unit*, *City*, *Zip/Postal Code*, *Country*, *State/Province (optional)*

4. Click **[NEXT]**. Upon successfully adding the billing address, an appropriate message indicating the same is displayed.

5. Add the Payment Method (*Card Number*, *Expiration Date* and *CVV number*).

- Select or enter the promo code, if any and click **[Apply]**.

You are buying

Monthly Charge USD 30.00/mo
Billing Starts: 04 Mar 2024
Subscription Period: 04 Mar 2024 - 03 Mar 2025 (12 Months)

Promocode [Select or Enter code](#)

Sub Total USD 30.00
Discount - USD 0.00
9% GST USD 2.70

Billing starts from today 04 Mar 2024 and will renew automatically every month.
Payments won't be refunded for partial billing periods. Cancel anytime.

Total USD 32.70

I agree to the [Terms of Service](#)

PAY

Select Promocode

OFF_\$1 APPLY

Promocodes available to you

MONTHLY1 APPLY
OFF_\$1 APPLY
OFF_ONCE_\$2 APPLY

- Go through the *Terms of Service* (by clicking on the link) and accept it by clicking on the check box. Upon adding the required information, click **[PAY]**.
- Once the payment is successful an appropriate message indicating the same is displayed and the subscription details are displayed.

Subscription

Current Balance 3,000,000 Tokens

Monthly Allocated Tokens 3,000,000 (3,000,000)
04 Mar 2024 - 03 Apr 2024

Bonus Tokens 0

Purchased Tokens 0

Token commission rate

Purchase Additional Tokens

Bundle of 1,000,000 Purchased Tokens USD 10.00
No expiry

Qty (Max 100) 1 1,000,000 Tokens
USD 10.00 BUY

Subscription Information

FRN: 7689812949c-4174-b6d4-f6d9d73c747
Customer ID: 1331_CUSTOMER_123

Your next billing date is 04 Apr 2024
IoTPortal Monthly Subscription - USD 30.00/mo
Monthly Plan - Active
Manage Subscription

Token Spending Detailed Statistics

Monthly Spending 01 Mar 2024 - 01 Mar 2024

0 Tokens Spent

0% 0% 0% 0% 0%

■ Email ■ SMS ■ Notification ■ Dashboard Data ■ Data Download

Overview

Show Overview 2024 -

1 0.8 0.6 0.4 0.2 0

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

■ Email ■ SMS ■ Notification ■ Dashboard Data ■ Data Download

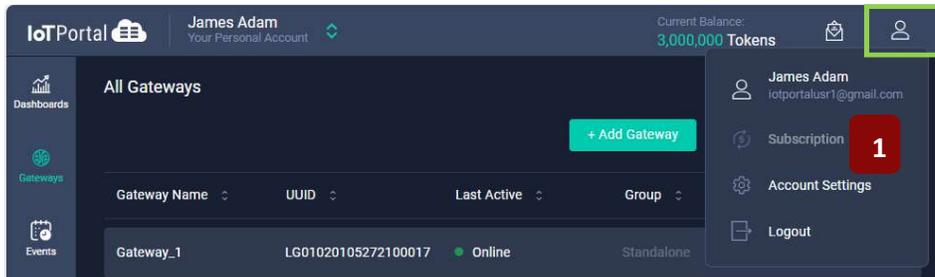
- To purchase additional tokens, enter the required token quantity, click **[BUY]** and **repeat the steps from 6-8**.

8.2 Billing History

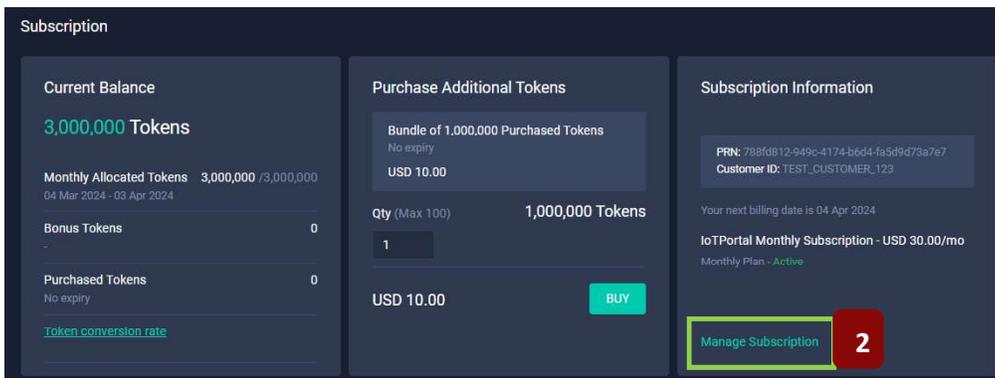
Token purchases can be viewed in the billing history interface, which shows a history of all transactions. Additionally, invoice receipts can be downloaded through this interface.

To view billing history,

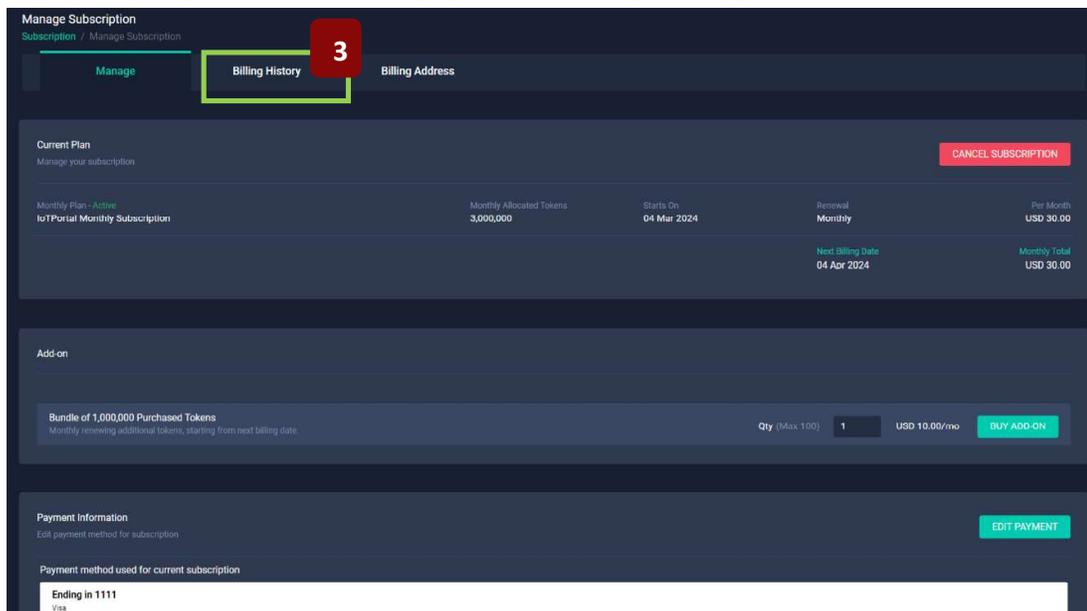
1. Click on the **avatar**  icon at the top right corner and selection **Subscription** from the resulting menu.



2. Subscription interface is displayed. Click **[Manage Subscription]**.



3. Manage Subscription interface is displayed. Click **Billing History**.



4. A list of transactions (if any) will be displayed.

Manage Subscription
Subscription / Manage Subscription

Manage Billing History Billing Address

04/03/2024 - 03/04/2024 Filter Search...

Receipt Type	Period	Transaction ID	Payment Date	Amount	Status	
Monthly Subscription	04/03/24 - 03/04/24	5e1410b2-e546-402b-a454-260fb...	04/03/2024	USD 32.70	Success	Download

5. Click **[Download]** to download the invoice receipt in pdf format. Please note that the invoice receipt can be downloaded only after the payment *status* shows *success*.

BRTSys
BRT SYSTEMS PTE LTD.
1 Tai Seng Avenue, Tower A, #03-01
Singapore 536464
Tel: +65 6547 4827, Fax: +65 6841 6071
Email: sales@brtsys.com

RECEIPT / INVOICE
Document No.: 983002858
Date of Issue: 04 Mar 2024
GST Registration No.: 202220043R

Account ID: iotportalusrf@gmail.com
Customer ID: TEST_CUSTOMER_123
PRN: 788fd812-949c-4174-b6d4-fa5d9d73a7e7
Currency: USD

DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
Monthly Plan (Tokens 3,000,000) Period: 04 Mar 2024 - 03 Apr 2024	1	\$30.00 USD	\$30.00 USD

Sales: \$30.00 USD
Discount: -\$0.00 USD
Taxes (GST 9.0%): \$2.70 USD
Total: \$32.70 USD

For GST reporting purposes only,
Sales (SGD): \$40.34 SGD
Discount: -\$0.00 SGD
Taxes (GST 9.0%): \$3.63 SGD
SGD Exchange Rate: 1 SGD = 0.7438 USD
Total in SGD: \$43.97 SGD

This is a computer generated invoice, no signature is required. Please request if a tax invoice is needed.
© BRT Systems Pte Ltd. www.brtsys.com

Sample Receipt / Invoice for Singapore Users

BRTSys
BRT SYSTEMS PTE LTD.
1 Tai Seng Avenue, Tower A, #03-01,
Singapore 536464
Tel: +65 6547 4827, Fax: +65 6841 6071
Email: sales@brtsys.com

RECEIPT / INVOICE
Document No.: 683000001
Date of Issue: 27 Feb 2023
Account ID: email@domain.com
Customer ID: SYS-000001
PRN: BRTSYS00001
Currency: USD

DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
Monthly Plan (Tokens 3,000,000) Period: 27 Feb 2023 - 26 Mar 2023	1	\$50.00 USD	\$50.00 USD
Add-On Bundle of 1,000,000 Purchased Tokens	1	\$10.00 USD	\$10.00 USD

Sales: \$60.00 USD
Discount: -\$0.00 USD
Total: \$60.00 USD

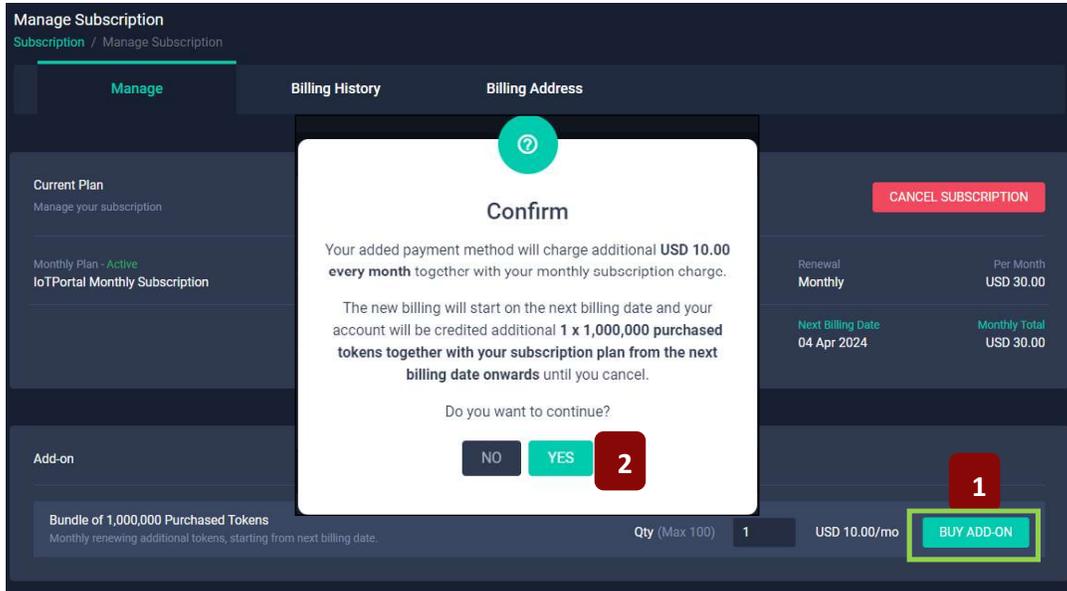
This is a computer generated invoice, no signature is required. Please request if a tax invoice is needed.
© BRT Systems Pte Ltd. www.brtsys.com

Sample Receipt / Invoice for Non-Singapore Users

8.2.1 Buy Add-On tokens

To buy add-on tokens,

1. In the Manage Subscription interface, under Add-on section, click **[BUY ADD-ON]**.



2. A confirmation message will be displayed. Go through the message and click **[YES]** to proceed.
3. Upon successful purchase, the details are displayed as part of the current plan.



8.2.2 Remove Add-On tokens

To remove add-on tokens,

1. Click **Remove Add-On**.

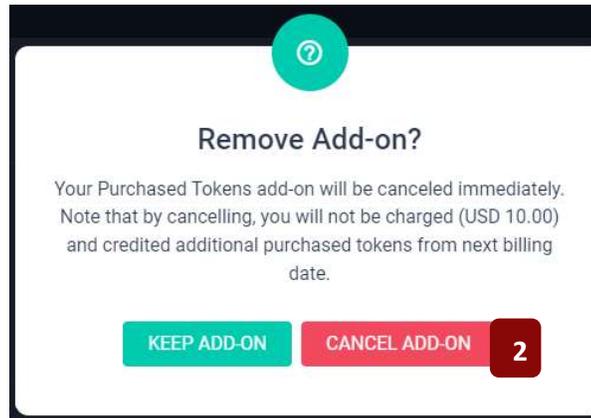


The screenshot shows the 'Current Plan' section with a 'CANCEL SUBSCRIPTION' button. Below it, there is a table of plans and add-ons. The 'Add-on - Active' section shows a 'Bundle of 1,000,000 Purchased Tokens' with a 'Remove Add-on' button highlighted in green and a red '1' next to it.

Monthly Plan - Active	Monthly Allocated Tokens	Started On	Renewal	Per Month
IoTPortal Monthly Subscription	3,000,000	04 Mar 2024	Monthly	USD 30.00
Add-on - Active	Monthly Purchased Tokens	Starts On	Renewal	Per Month
Bundle of 1,000,000 Purchased Tokens	1 x 1,000,000	04 Apr 2024	Monthly	USD 10.00

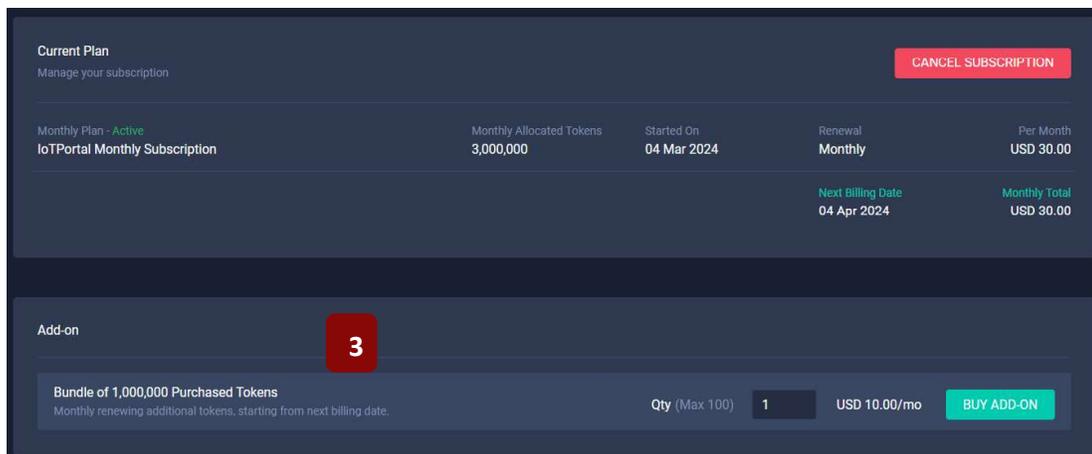
Next Billing Date: 04 Apr 2024
Monthly Total: USD 40.00

2. A confirmation message will be displayed. Go through the message and click **[CANCEL ADD-ON]** to proceed.



The dialog box has a question mark icon at the top. The text reads: 'Remove Add-on? Your Purchased Tokens add-on will be canceled immediately. Note that by cancelling, you will not be charged (USD 10.00) and credited additional purchased tokens from next billing date.' At the bottom, there are two buttons: 'KEEP ADD-ON' and 'CANCEL ADD-ON', with the latter highlighted in red and a red '2' next to it.

3. The Add-on tokens are removed successfully.



The screenshot shows the 'Current Plan' section with a 'CANCEL SUBSCRIPTION' button. Below it, there is a table of plans and add-ons. The 'Add-on' section shows a 'Bundle of 1,000,000 Purchased Tokens' with a 'BUY ADD-ON' button highlighted in green and a red '3' next to it.

Monthly Plan - Active	Monthly Allocated Tokens	Started On	Renewal	Per Month
IoTPortal Monthly Subscription	3,000,000	04 Mar 2024	Monthly	USD 30.00

Next Billing Date: 04 Apr 2024
Monthly Total: USD 30.00

Add-on

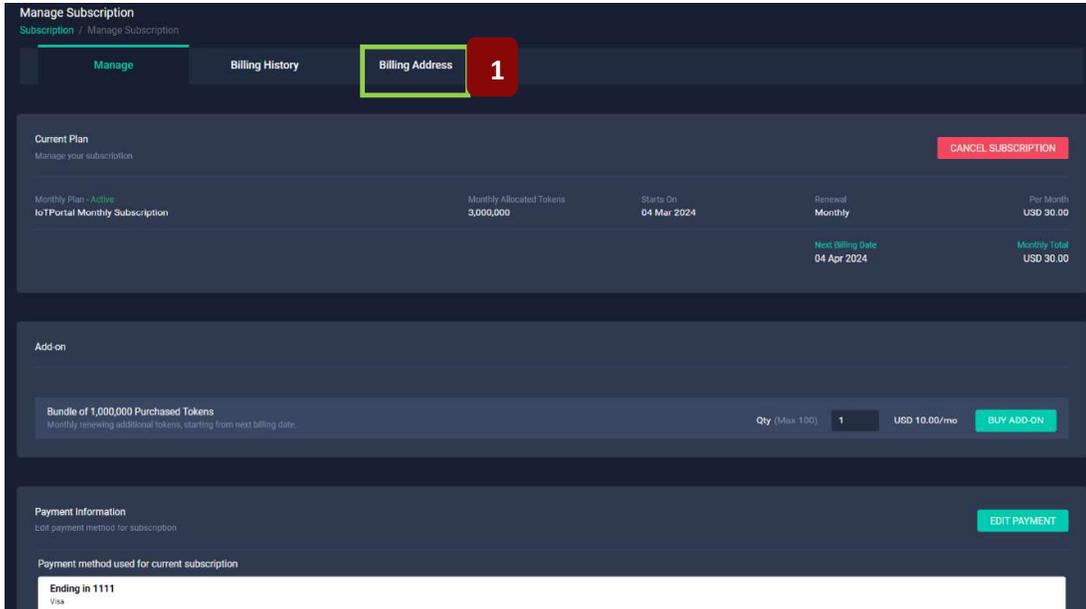
Bundle of 1,000,000 Purchased Tokens
Monthly renewing additional tokens, starting from next billing date.

Qty (Max 100) 1 USD 10.00/mo BUY ADD-ON

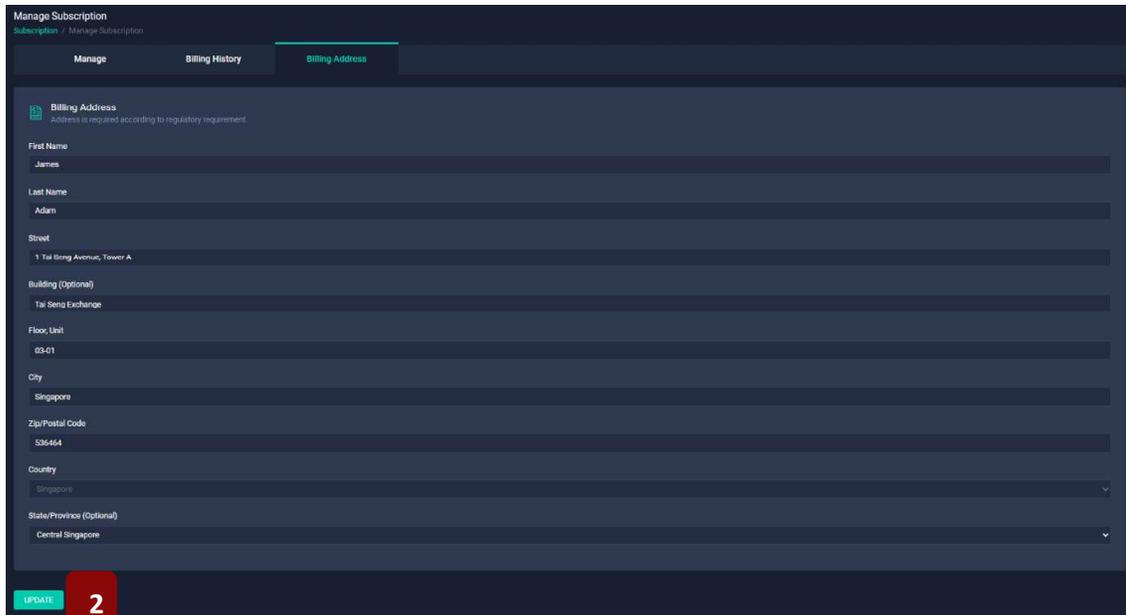
8.3 Updating Billing Address

To update billing address,

1. From the Manage Subscription interface, click **Billing Address**.



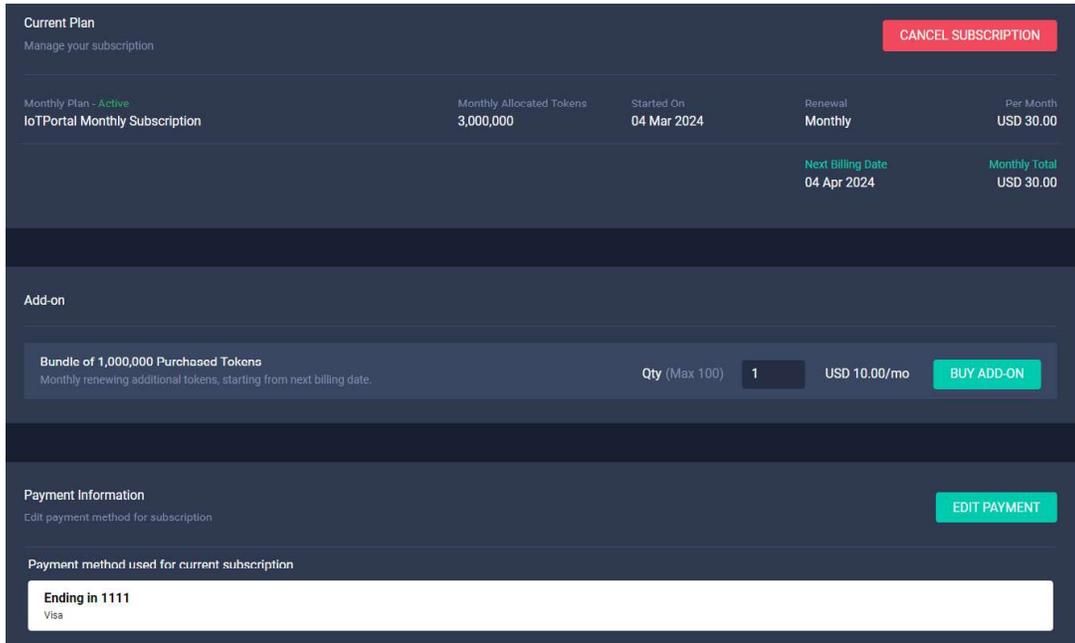
2. Billing Address interface is displayed. Update the billing address (as required) and click **[UPDATE]** to save the changes (if any).



8.3.1 Edit Payment Information

To edit payment information,

1. In the Manage Subscription interface, under Payment Information section, click **[EDIT PAYMENT]**.

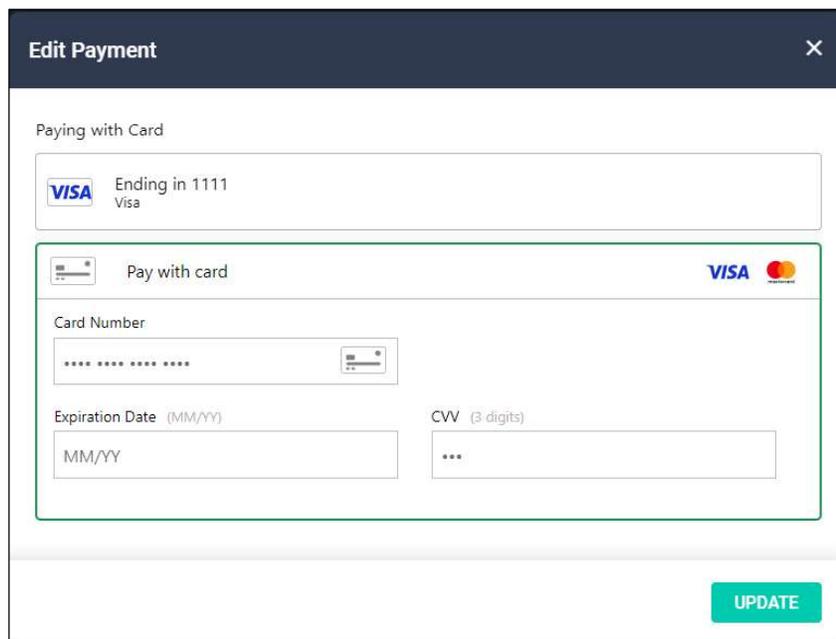


The screenshot shows the 'Current Plan' section with a 'CANCEL SUBSCRIPTION' button. Below it, a table displays subscription details:

Monthly Plan - Active	Monthly Allocated Tokens	Started On	Renewal	Per Month
IoTPortal Monthly Subscription	3,000,000	04 Mar 2024	Monthly	USD 30.00

Additional details include 'Next Billing Date: 04 Apr 2024' and 'Monthly Total: USD 30.00'. The 'Add-on' section shows a 'Bundle of 1,000,000 Purchased Tokens' with a quantity of 1 and a price of USD 10.00/mo. The 'Payment Information' section shows the current payment method as 'Ending in 1111 Visa' and an 'EDIT PAYMENT' button.

2. Edit the payment information as required and click **[UPDATE]** to save the changes, if any.

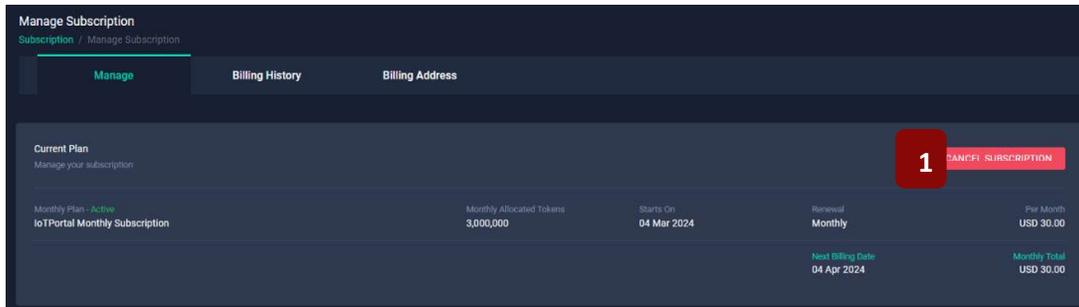


The 'Edit Payment' modal shows the 'Paying with Card' section. It displays the current card as 'Ending in 1111 Visa'. Below, there are input fields for 'Card Number', 'Expiration Date (MM/YY)', and 'CVV (3 digits)'. A 'Pay with card' button is visible, along with 'VISA' and 'MasterCard' logos. An 'UPDATE' button is located at the bottom right of the modal.

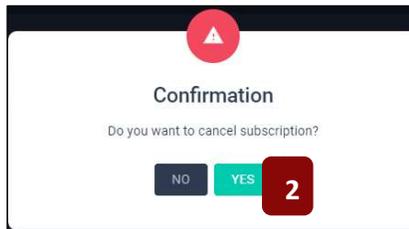
8.4 Cancel Subscription

To cancel subscription–

1. From the Manage Subscription interface, click **[CANCEL SUBSCRIPTION]**.



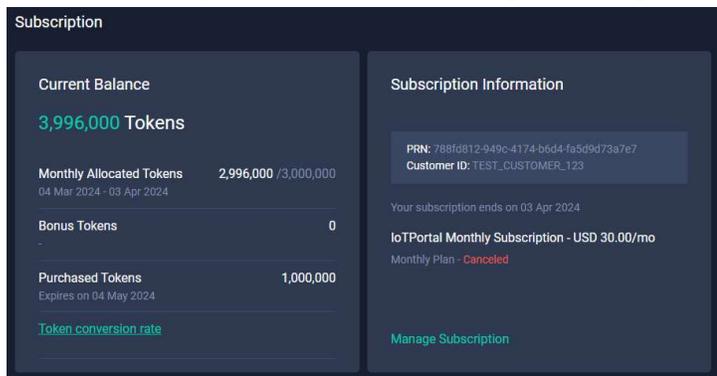
2. A confirmation message is displayed. Click **[YES]** to cancel the subscription or **[NO]** to cancel the subscription cancellation operation.



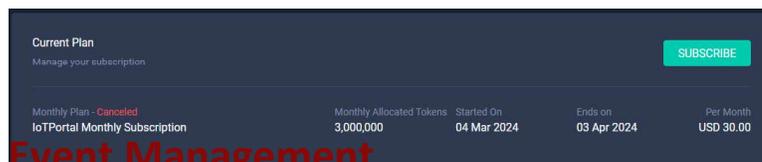
8.5 Re-Subscription

To re-subscribe–

1. From the Subscription interface, click **Manage Subscription**.



2. From the Subscription > Manage Subscription interface, click **[SUBSCRIBE]**.



9. Event Management

An event is a set of triggers evaluated against a set of conditions that cause an action or sequence of actions to happen. There are 5 types of events. The following table provides the list of events and action triggered.

	Event Type	Action Triggered
1	Sensor based events	The trigger signal is generated by one or more sensors
2	Time based events	The trigger signal is generated by a clock
3	Duration based events	The trigger signal is generated by a timer
4	Attribute based events	The trigger signal is generated by an attribute of an object that is not a sensor (for example, an attribute of a gateway)
5	Complex events	Combination of one or more above triggers

Table 3 – Event Types

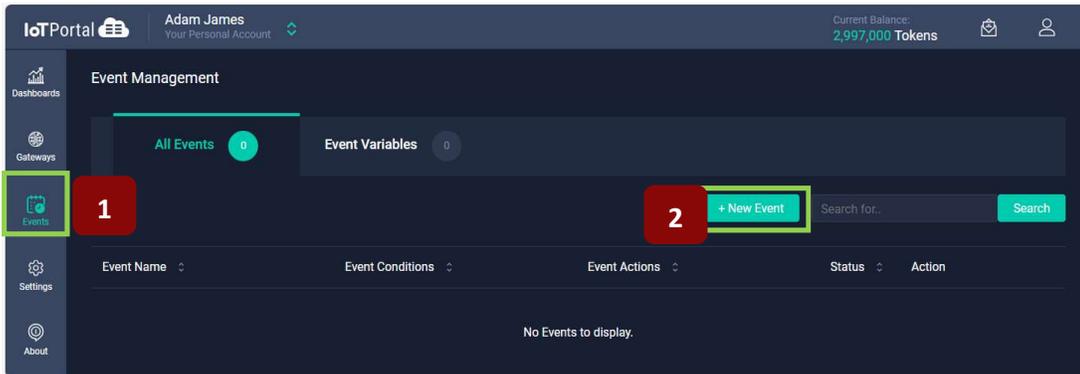
In every event, conditions are evaluated, and when the conditions are met, an action or sequence of actions is taken. Alerts and actuation sequences may be included in such actions. A triggered event cannot be re-armed until all its action components have been completed.

The events are created by the event owner, or any member of the organization authorised to perform the action, such as CREATE, READ, UPDATE and DELETE (CRUD). Events are given a name, and a log of event activations is kept and counts towards storage. Events can be enabled or disabled. The default state is disabled. A disabled (disarmed) event ignores its trigger signals and does not evaluate its conditions.

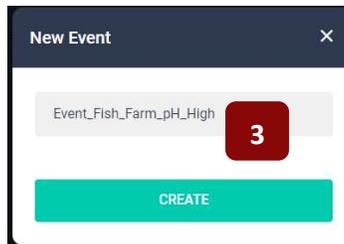
9.1 Create Event

To create a new event–

1. Click **Events** from the menu. If no events are available, then the interface will be empty. Else, a list of events is displayed.



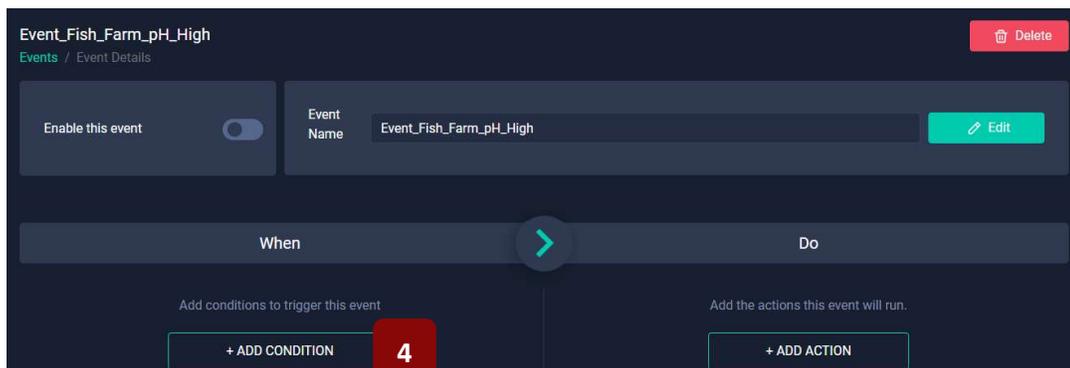
2. Click [**+ New Event**].
3. Enter a name for the Event. For example, *Event_Fish_Farm_pH_High*. Click [**CREATE**].



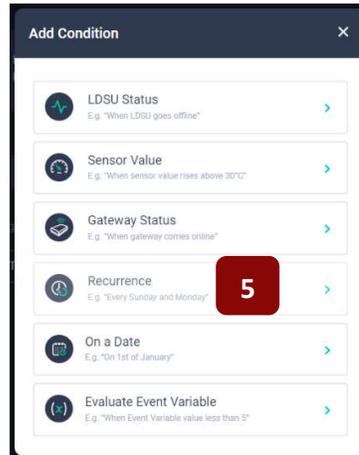
9.1.1 Add Condition(s) / Action(s)

9.1.1.1 When

4. Add conditions to trigger an event by clicking [**+ADD CONDITION**];



5. Select the condition, for example, *Recurrence*;



6. Configure the condition details as required and click **[ADD]**. **For illustration purpose, "Recurrence Type – Daily" is explained here.** The below picture shows a recurrence condition that repeats "Daily" "Every Day" "at" "12:00 PM" and "End by 24/08/2024".

Recurrence
Events / Event Details / Condition

Repeat

Daily Weekly Monthly Yearly

Repeat Every

1 Day(s)
Minimum 1 day and maximum 182 days.

Time Schedule

At

12:00 PM

12:00 PM

Range of Recurrence

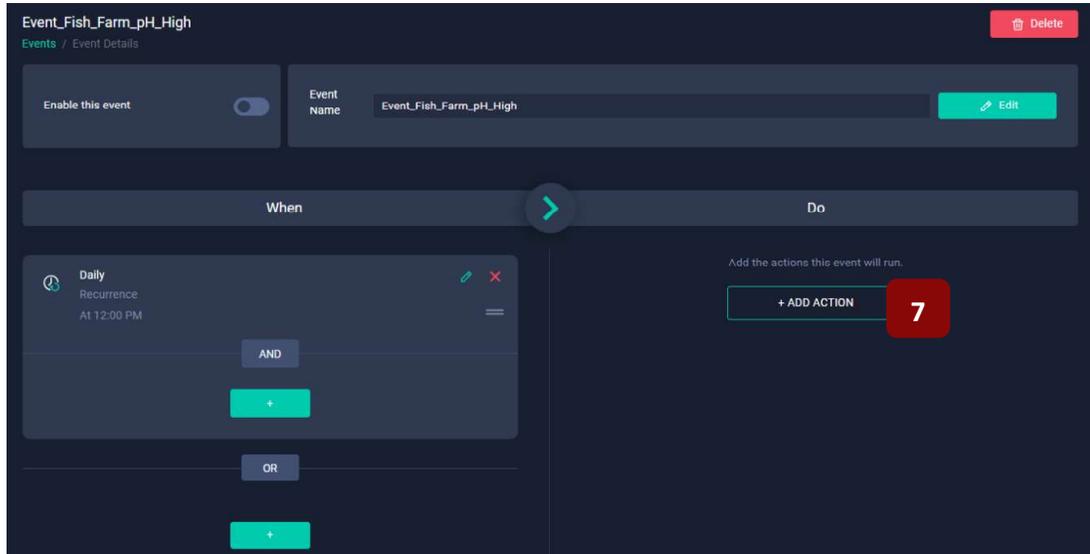
Start: 24/05/2024

End: No end date End by: 24/08/2024

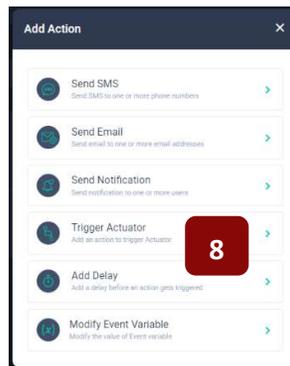
6

9.1.1.2 Do

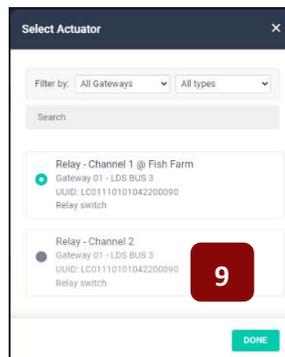
7. Now, add the actions the event will run when the conditions are met, by clicking **[+ADD ACTION]**. For illustration purpose, "Action – Trigger Recurrence Type – Daily" is explained here



8. Select the action to be taken from the Add Action window. For illustration purpose, "Add Action – Trigger Actuator" is explained here.

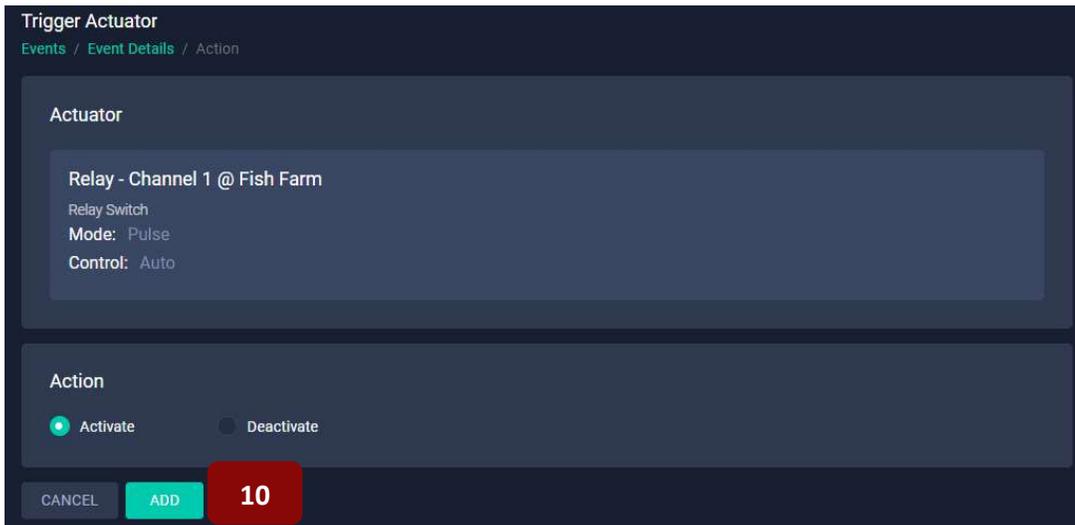


9. Select Actuator and click **[DONE]**.

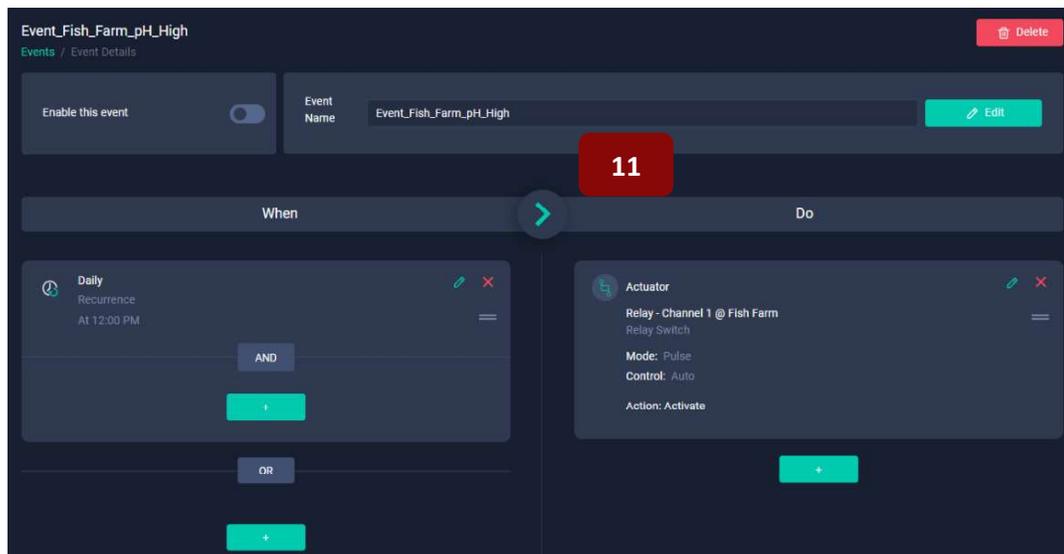


NOTE: If the actuator is in "Manual" mode, it will not be enabled to select actuator. In order to use the actuator in an event, it should be "Auto" mode.

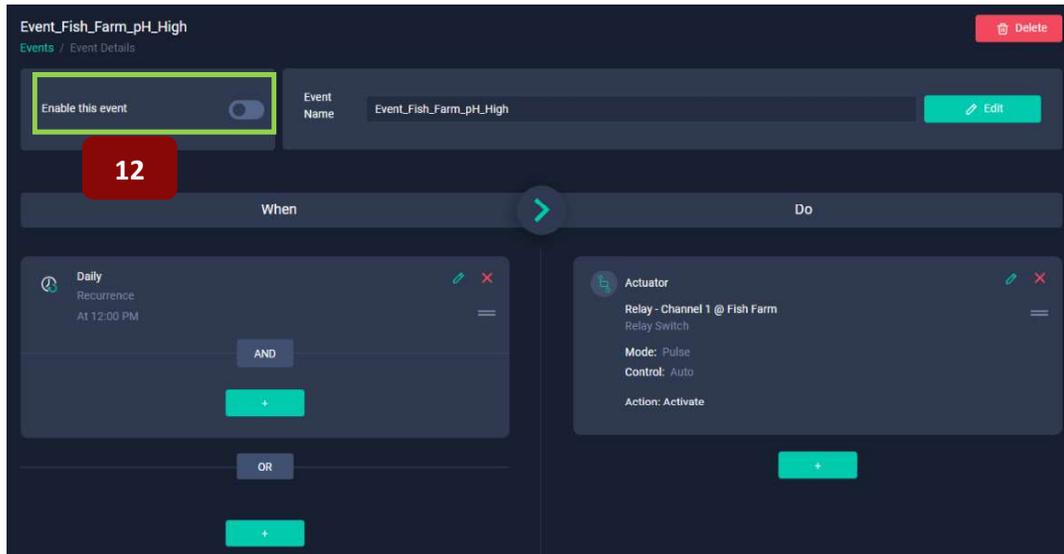
10. The Actuator details (like *Actuator Name*, *Mode* etc.) are displayed. Select the appropriate **Action** – *Activate* or *Deactivate*. Click **[ADD]**.



11. Upon successfully adding the action, an appropriate message indicating the same is displayed. The event details are displayed. The below picture shows an event with a recurrence condition (left side) that repeats "Daily" "Every Day" "at" "12:00 PM" and "End by 24/08/2024". Upon triggering this event, the *Actuator Relay – Channel 1 @ Fish Farm* will be activated.

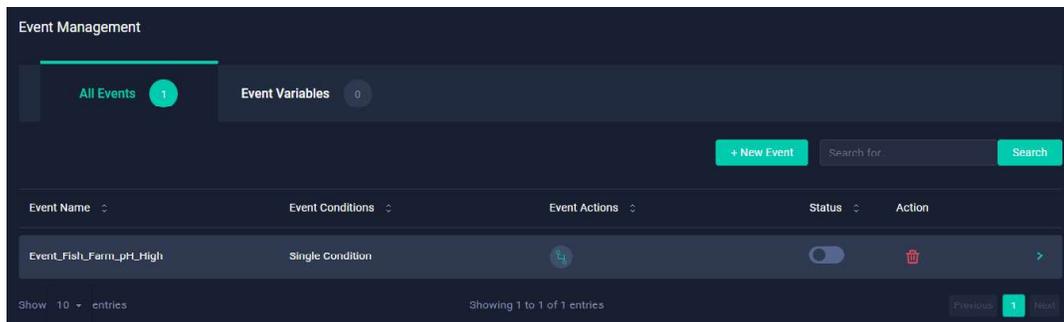


12. Enable or Disable event using the  toggle button². By default, the events are disabled.



Event Status	Toggle Button State
Enabled	
Disabled	

13. Upon creating the Event Conditions and Actions, the list of events is updated.

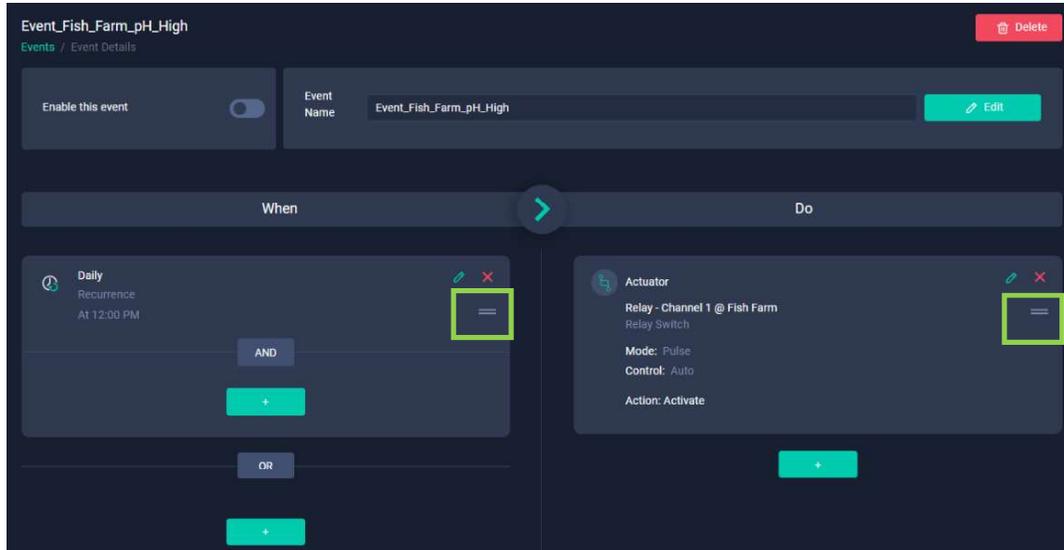


² A toggle button refers to a control used for switching (or toggling) between two or more states or options.

9.1.2 Change the order of the Condition(s) / Action(s)

To change the order of condition(s) / action(s) –

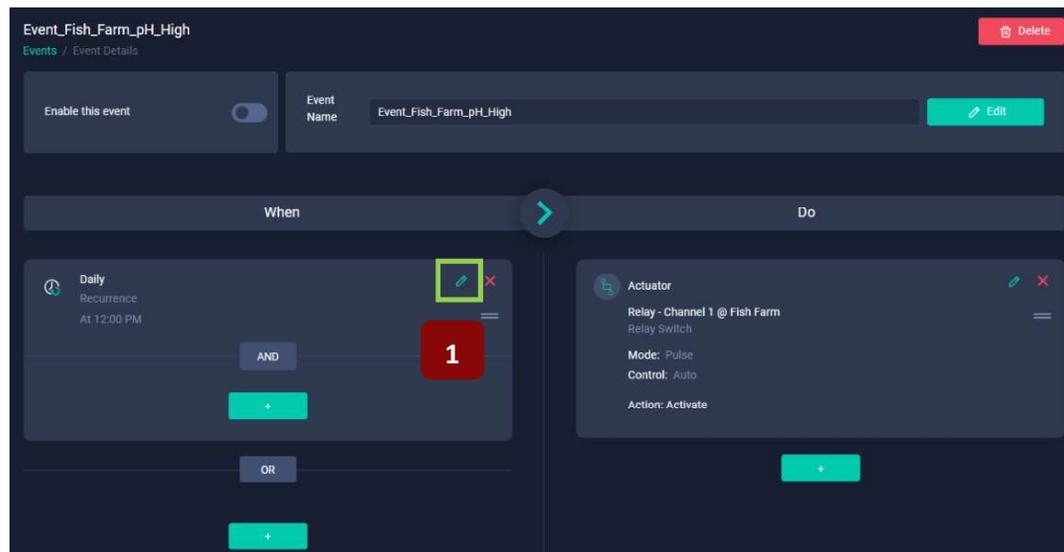
Click on the “=” icon to change the order of the condition / action by moving up or down.



9.1.3 Edit Condition(s)

To edit condition(s)

1. Click **Edit** icon.



2. Modify the condition as required. Click **[UPDATE]** to save the changes, if any.

9.1.4 Edit Action(s)

To edit action(s) –

1. Click **Edit** icon.

2. Modify the actions as required. Click **[UPDATE]** to save the changes, if any.

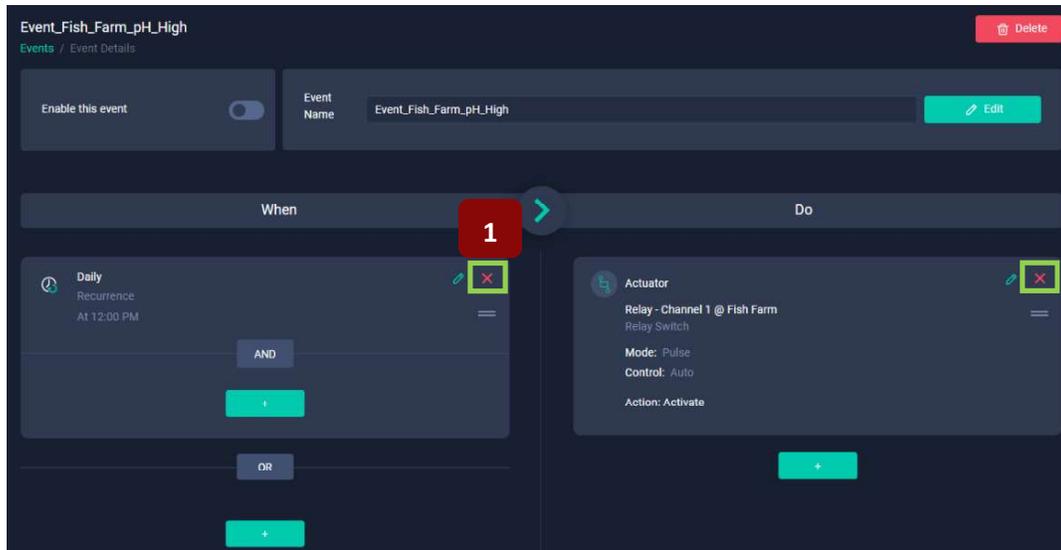


Note that only the "Action" can be edited. To edit actuator details, the existing action must be deleted and a new action must be added, since the edit action feature does not allow for editing actuator details.

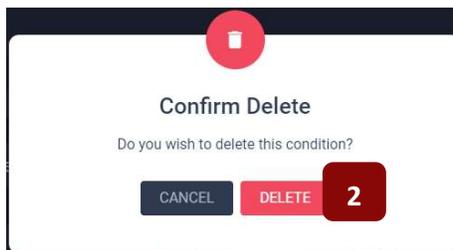
9.1.5 Delete Condition(s) / Action(s)

To delete condition(s) / action(s) –

1. Click **Delete X** icon.



2. A confirmation window is displayed. Click **[DELETE]** to remove the condition/action.



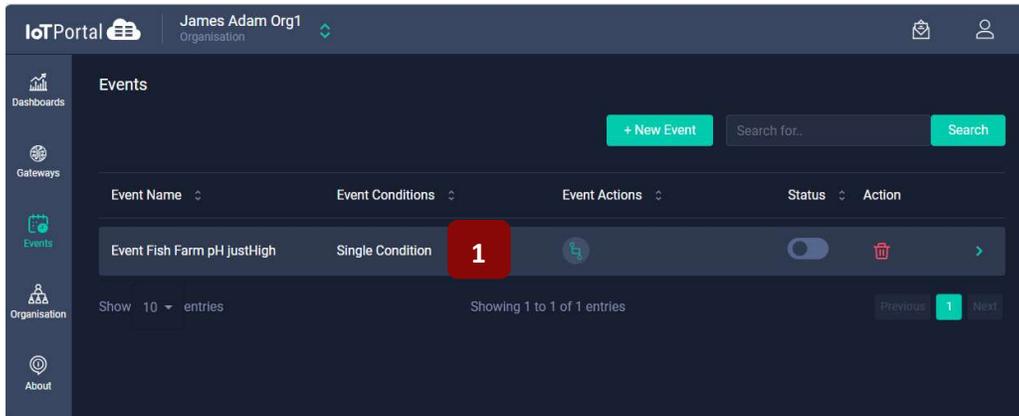
9.2 Edit Event Name



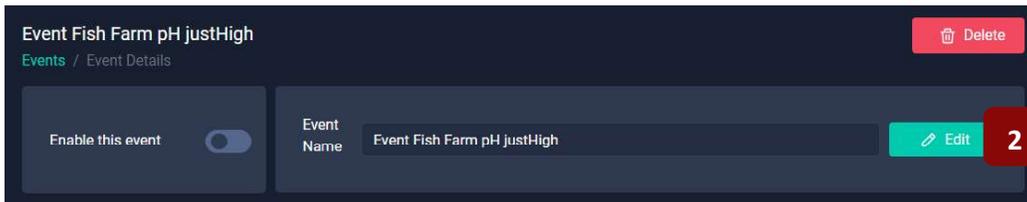
NOTE: Ensure that the event is disabled before editing the event name.

To edit event name –

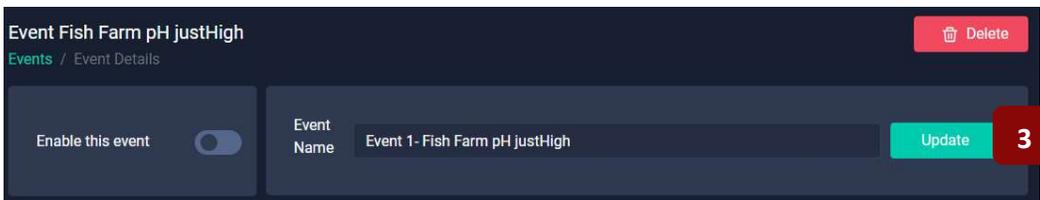
1. Click on the event.



2. Click **[Edit]**.



3. Modify the name as required. Click **[Update]** to save the changes, if any.



4. The updated event name is displayed.



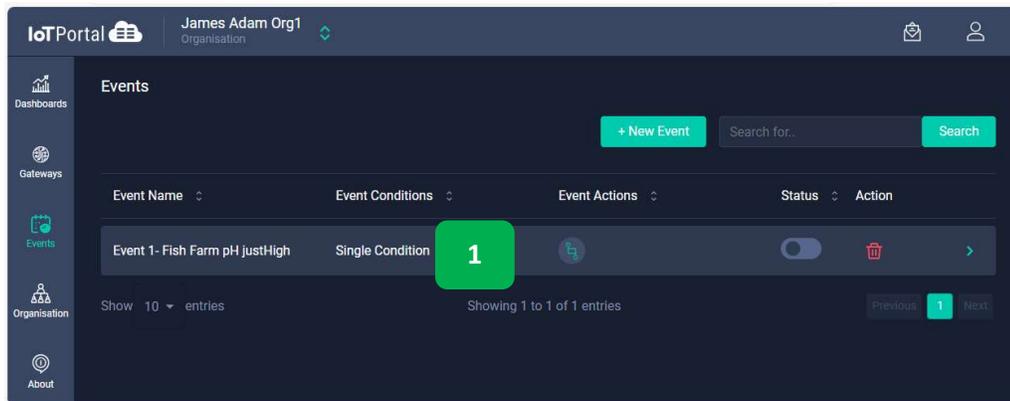
9.3 Delete Event



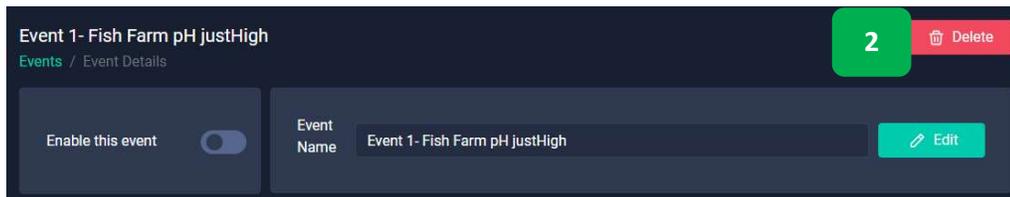
NOTE: Ensure that the event is disabled before deleting.

To delete event –

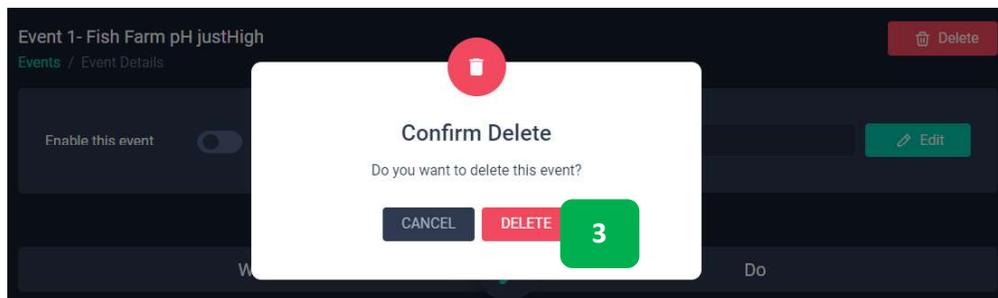
1. Click on the event.



2. Click **[Delete]**.



3. A confirmation message is displayed. Click **[DELETE]** to proceed with deletion.



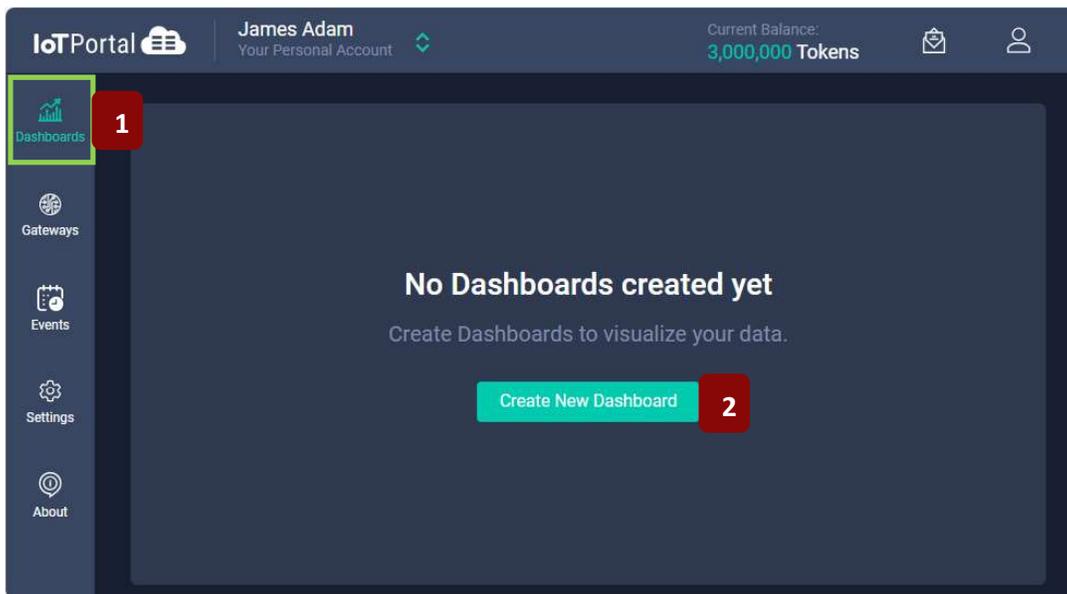
10. Dashboard Management

The dashboard function allows users to create dashboards for data visualization in real time. Users can create dashboards and charts to display gateway attributes, sensor data, actuator data, event usages, etc.

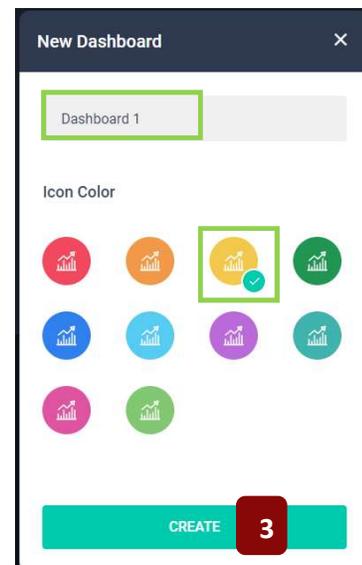
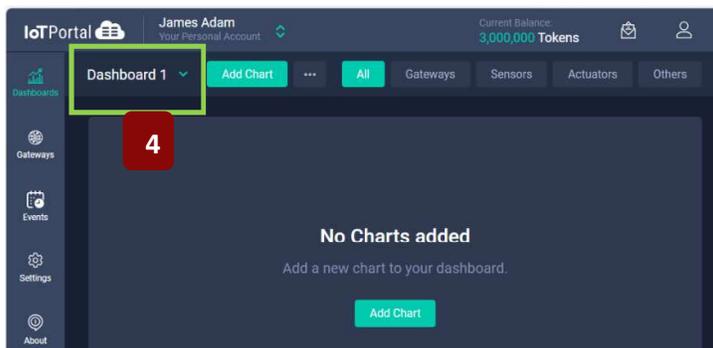
10.1 Create Dashboard

To create a dashboard –

1. Click **Dashboards** from the menu. If no dashboards are available, then the interface will be empty.

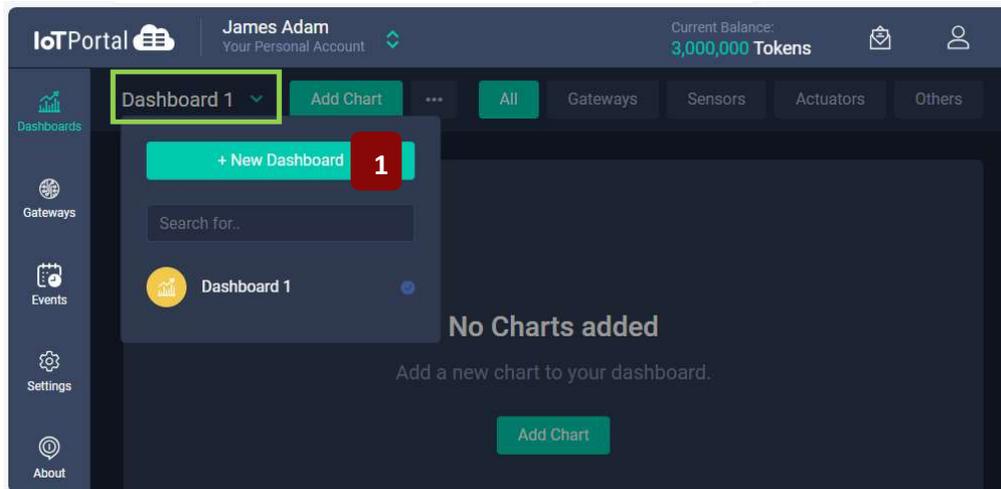


2. Click **[Create New Dashboard]**.
3. Enter the *Dashboard Name*; Select an *icon color* for the dashboard. Click **[CREATE]**.
4. A new dashboard is created successfully.

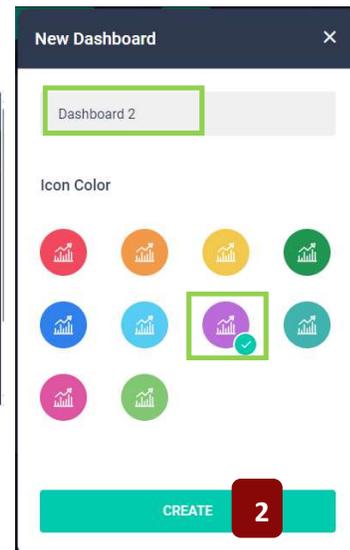
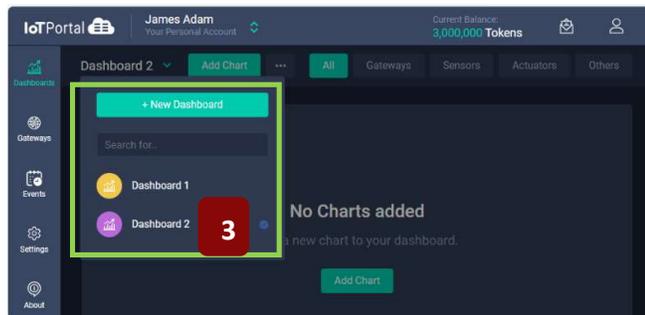


To create additional dashboards,

1. Click on the Dashboard *drop-down control* and click **[+ New Dashboard]**.



2. Enter the *Dashboard Name*; Select an *icon color* for the dashboard. Click **[CREATE]**.
3. The newly added dashboard is displayed.



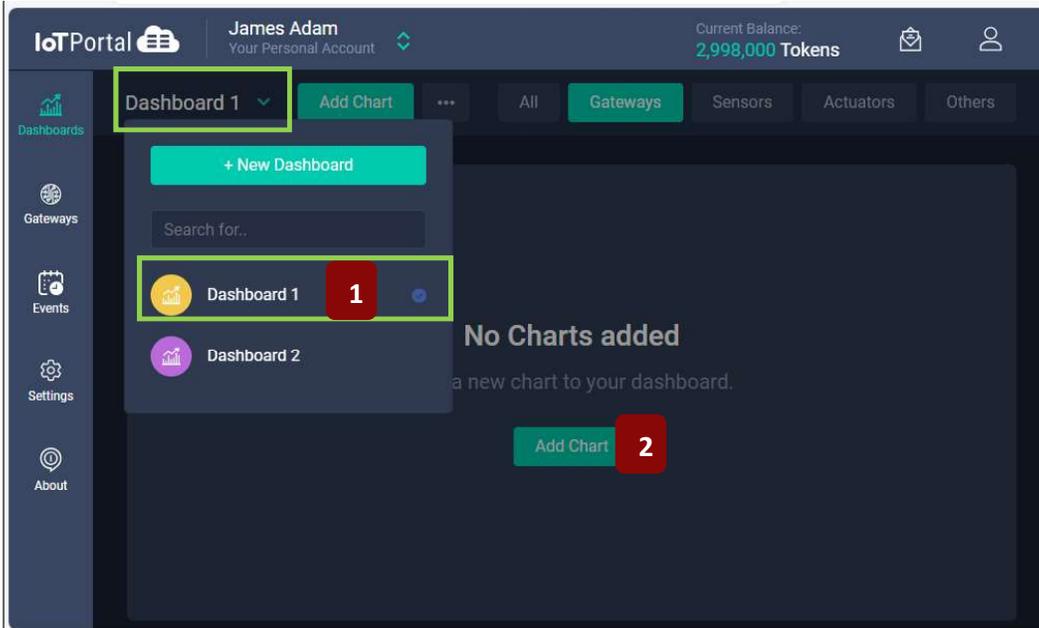
10.2 Dashboard Charts – Gateway/Sensor/Actuator/Others

This section describes how to add/edit/delete different charts (*Gateway, Sensor, Actuator and Others*).

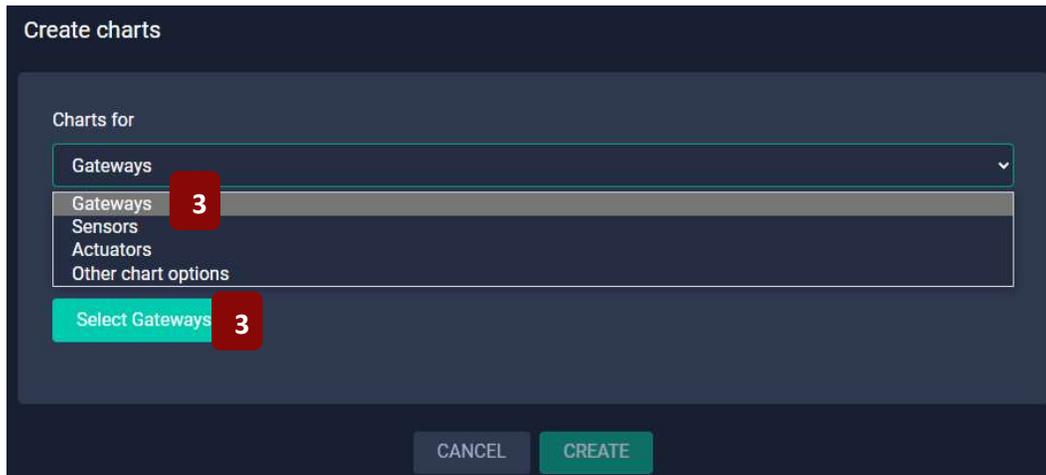
10.2.1 Add Gateway Chart

To add gateway chart,

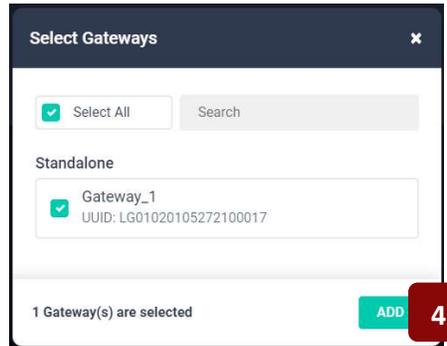
1. Choose the **Dashboard** (from the drop-down control) for which the gateway chart is to be added. There must be at least one available dashboard for adding gateway charts.



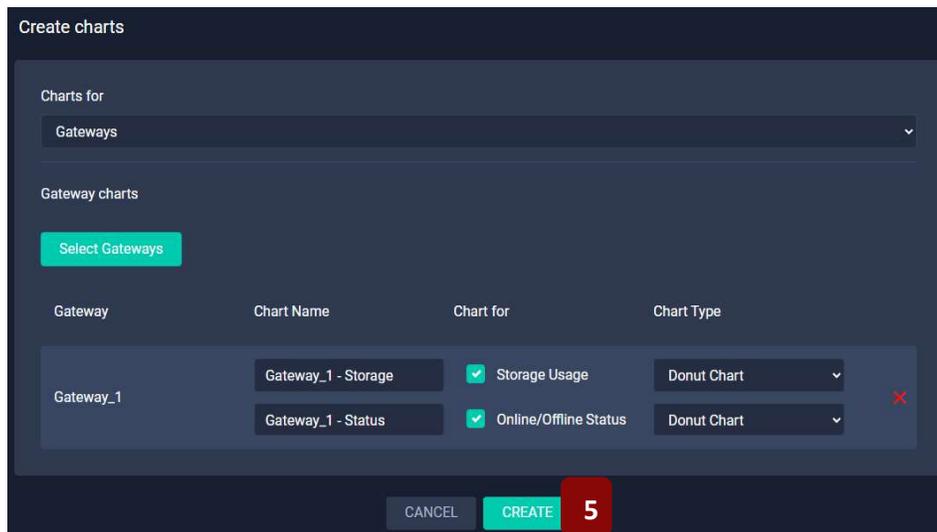
2. Click **[Add Chart]**.
3. The Create charts interface is displayed. Select **Gateways** from Charts for drop-down control. Click **[Select Gateways]**.



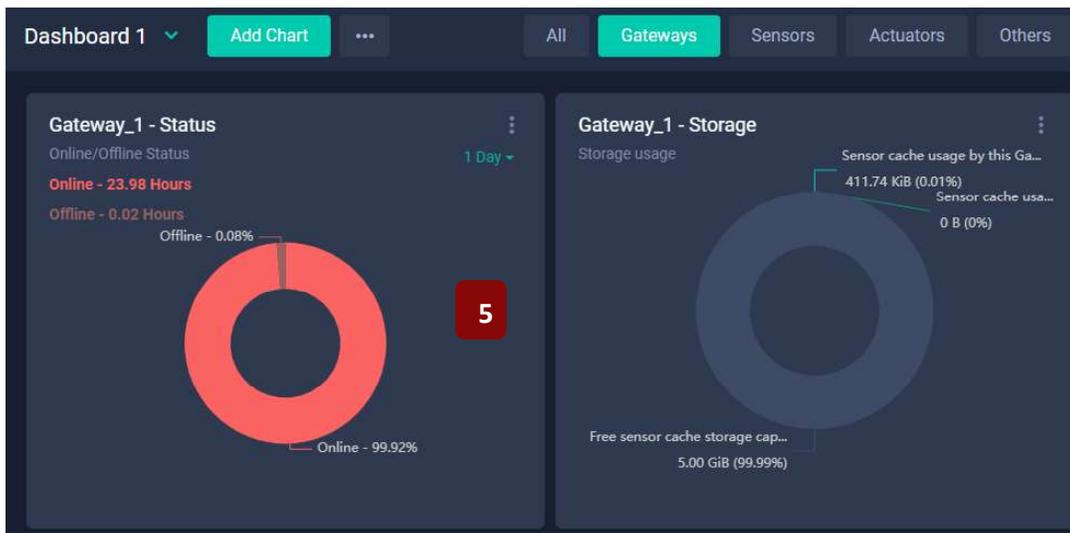
4. From the resulting window, select the gateway(s) and click **[ADD]**.



5. Update the chart attributes (*Chart Name / Chart for / Chart Type*), as required. Click **[CREATE]**.



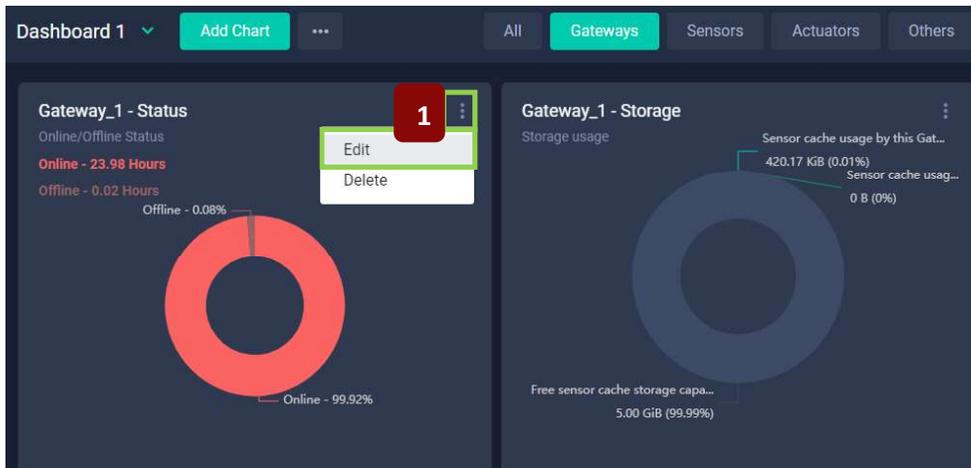
6. Upon successfully creating the chart, an appropriate message indicating the same is displayed; The newly created gateway chart(s) are displayed.



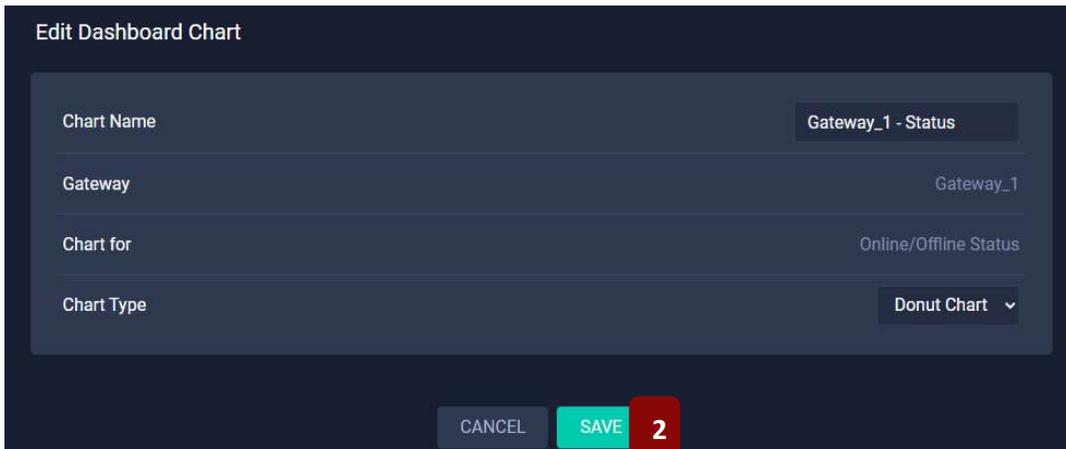
10.2.2 Edit Gateway Chart

To edit gateway chart,

1. From the Gateways chart interface, click  and select **Edit**.



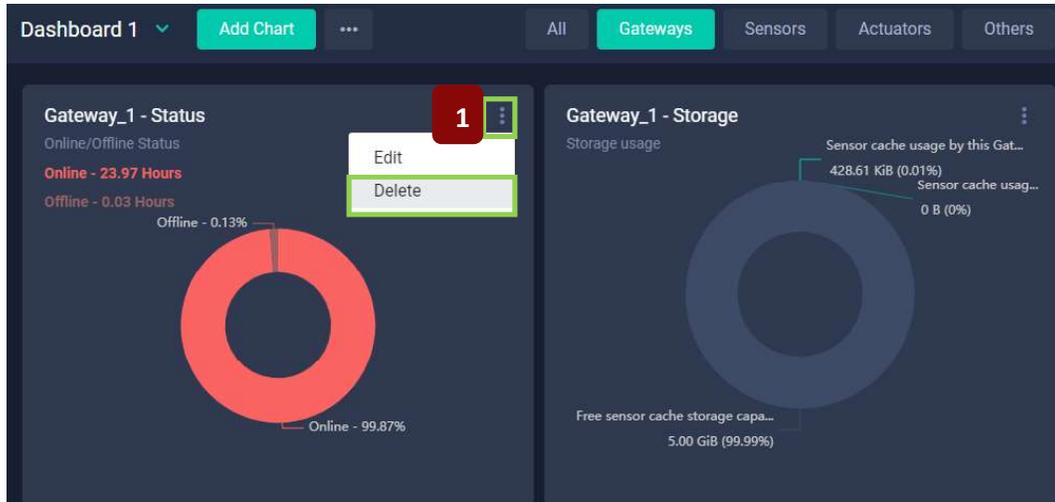
2. The Edit Dashboard Chart interface is displayed. The *Chart Name* and *Chart Type* can be edited. Click **[SAVE]** to save the changes made, if any.



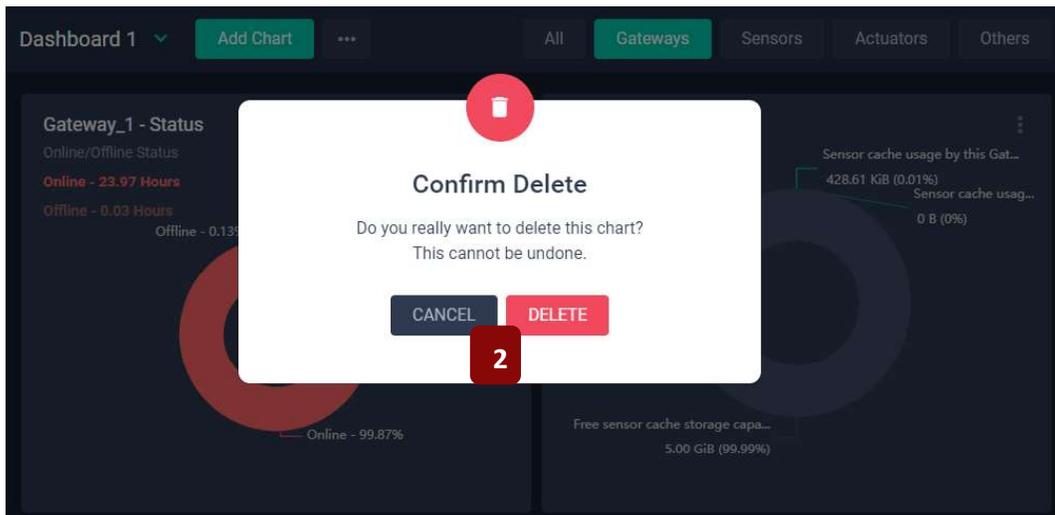
10.2.3 Delete Gateway chart

To delete gateway chart,

1. From the Gateways chart interface, click  and select **Delete**.



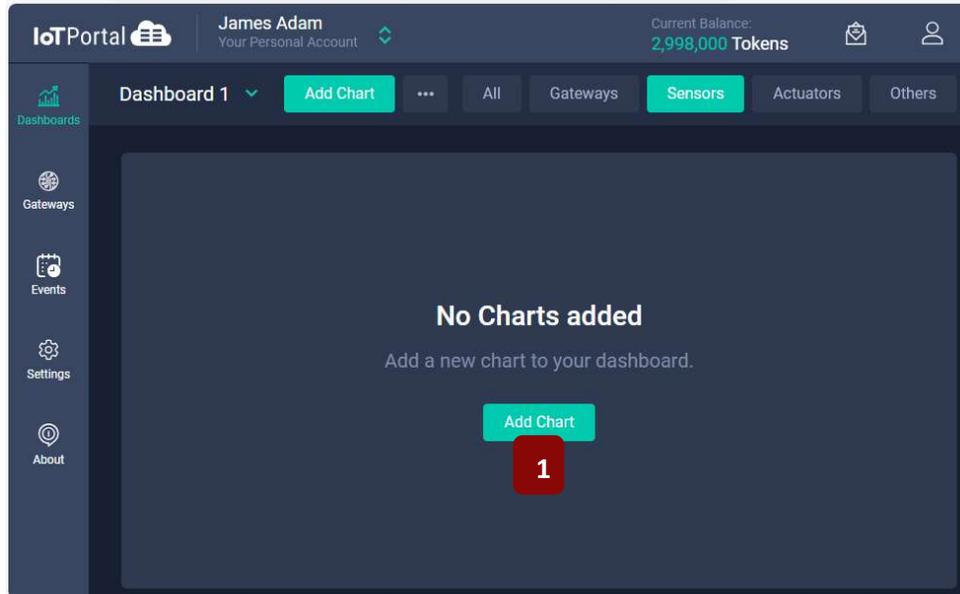
2. A confirmation window is displayed. Click **[DELETE]** to delete the chart or **[CANCEL]** to discard the delete operation.



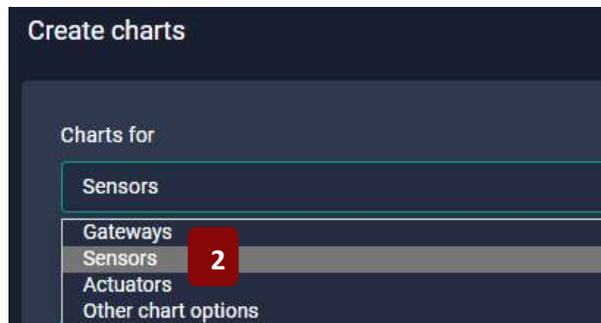
10.2.4 Add Sensor Chart

To add sensor chart,

1. Click **[Add Chart]**.

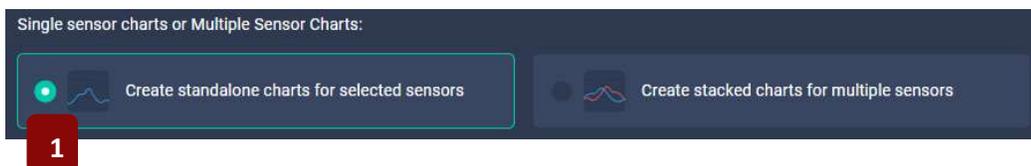


2. The Create charts interface is displayed. Select **Sensors** from Charts for drop-down control box.

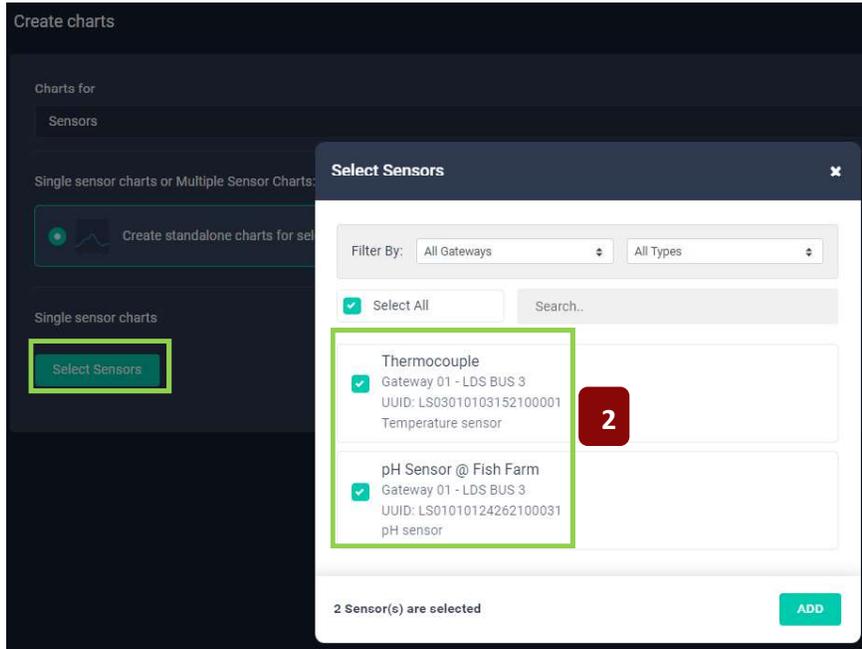


10.2.4.1 Create standalone charts for selected sensors

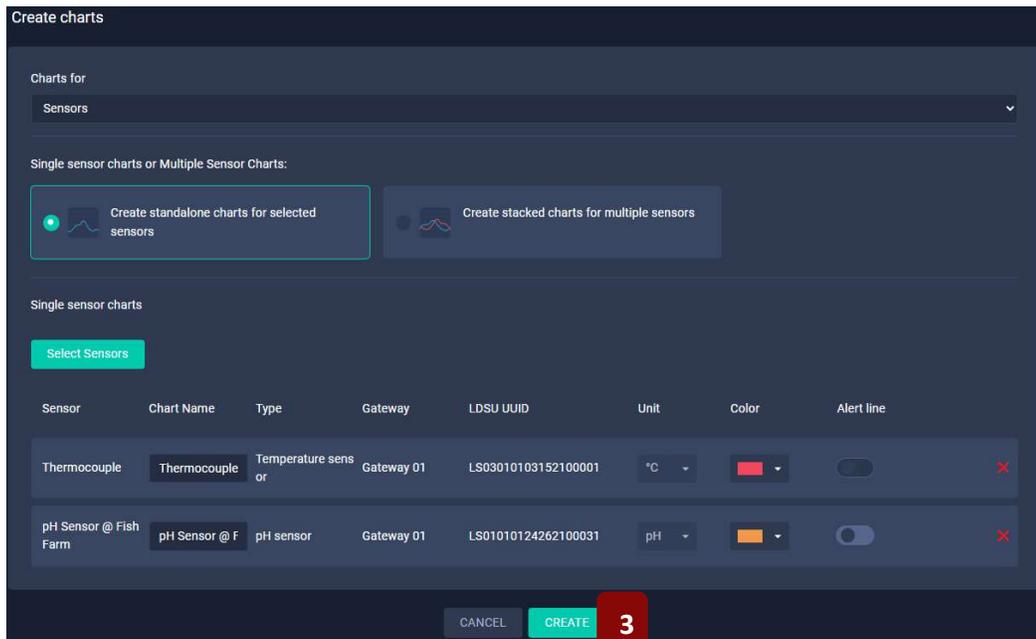
1. Select the chart option – Create standalone charts for selected sensors. Selecting this option creates one chart for one sensor parameter.



2. Click **[Select Sensors]**; From the resulting window, select the sensors and click **[ADD]**.

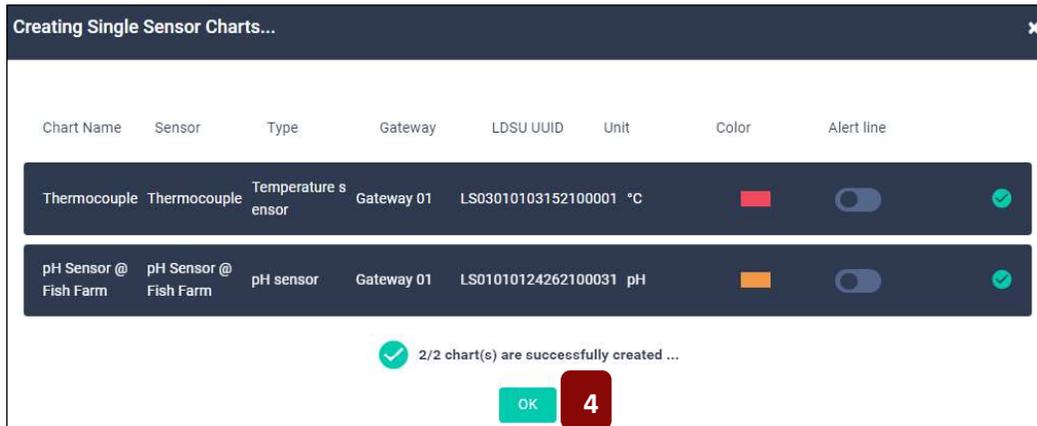


3. Update the chart attributes (*Chart Name / Chart Color, Alert line³*), as required. Click **[CREATE]**.

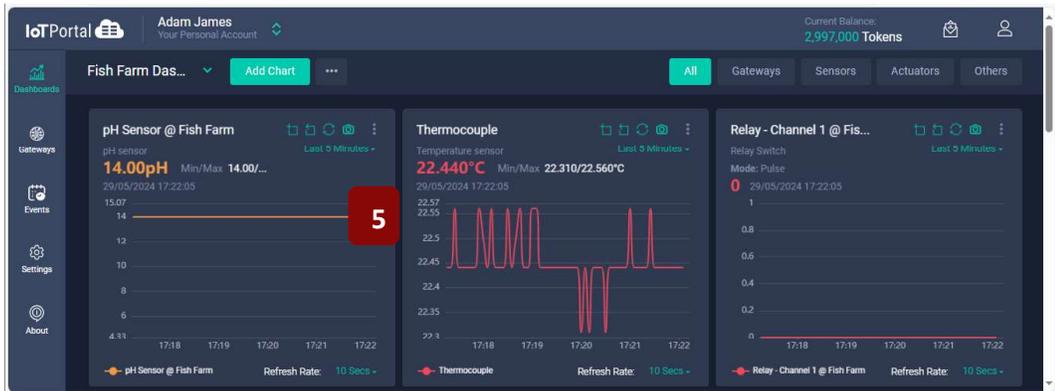


³ Alert line toggle is used to show the Threshold range on the chart if user enables the Sensor alert. For example, If user sets "activate less than 26.5°C" and enables the sensor alert, then user adds the sensor chart that the Alert line option is enabled, user can see the threshold on the chart.

- Upon successfully creating the sensor chart, an appropriate message indicating the same is displayed; Click **[OK]**.

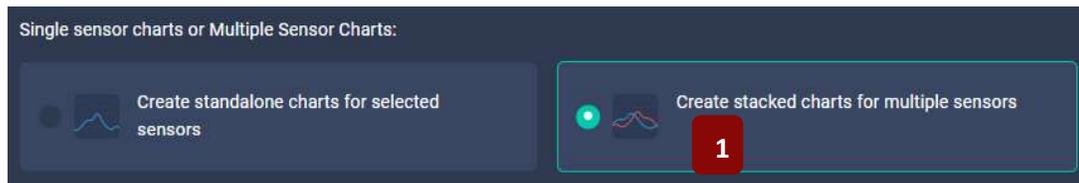


- The newly created standalone sensor chart for the selected sensors, is displayed.

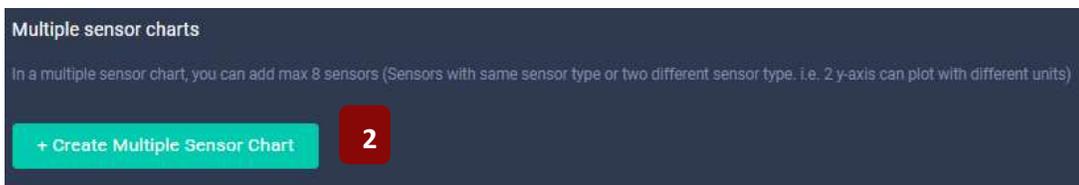


10.2.4.2 Create stacked charts for multiple sensors

- Select the chart option – *Create stacked charts for multiple sensors*. Selecting this option creates one chart for multiple sensor parameters.



- Click **[+ Create Multiple Sensor Chart]**.



3. Enter a **Chart Name**; Select the **sensor type** – *Same type* or *Two different types*.

Sensor Type – Same Type

- a. Select *sensor type option – Same type*.

Multiple sensor charts
In a multiple sensor chart, you can add max 8 sensors (Sensors with same sensor type or two different sensor type. I.e. 2 y-axis can plot with different units)

Chart Name
Multiple sensor chart - Same Type (pH Sensor)

Select sensor type
 Same type **3a** Two different types

- b. Select sensor type – *pH sensor* from the drop down list box and click **[Select Sensors]**.

Select sensor type

Temperature sensor

Temperature sensor
pH sensor **3b**

Select Sensors

- c. From the Select Sensors interface, select *pH sensors* and click **[ADD]**.

Select Sensors

Filter By: All Gateways pH sensor

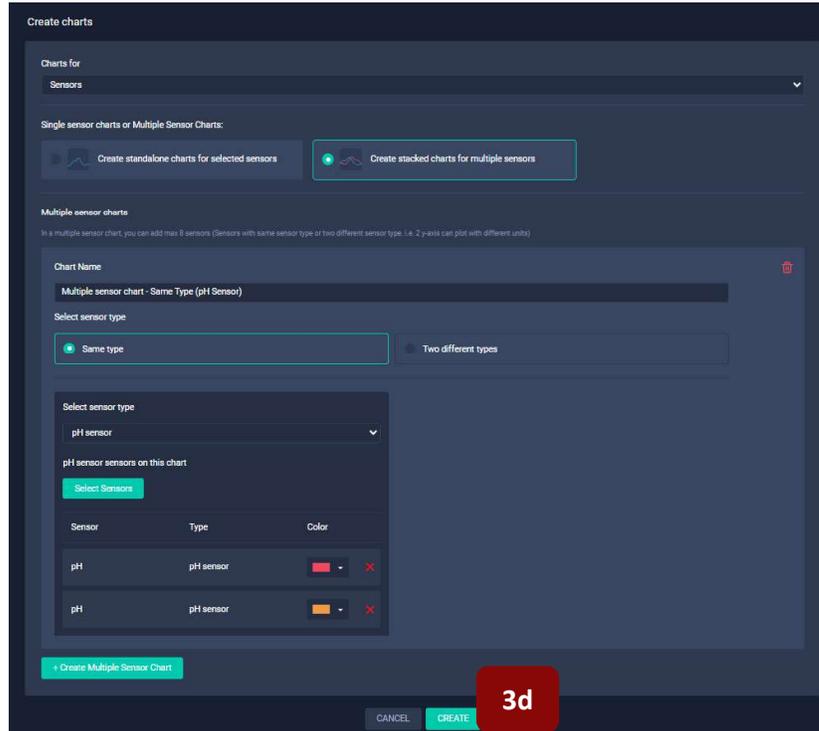
Select All Search..

pH
Gateway 2 - LDS BUS 3
UUID: LS04010104212100036
pH sensor

pH **3c**
Gateway 2 - LDS BUS 3
UUID: LS01010124262100031
pH sensor

2/8 Sensor(s) are selected **ADD**

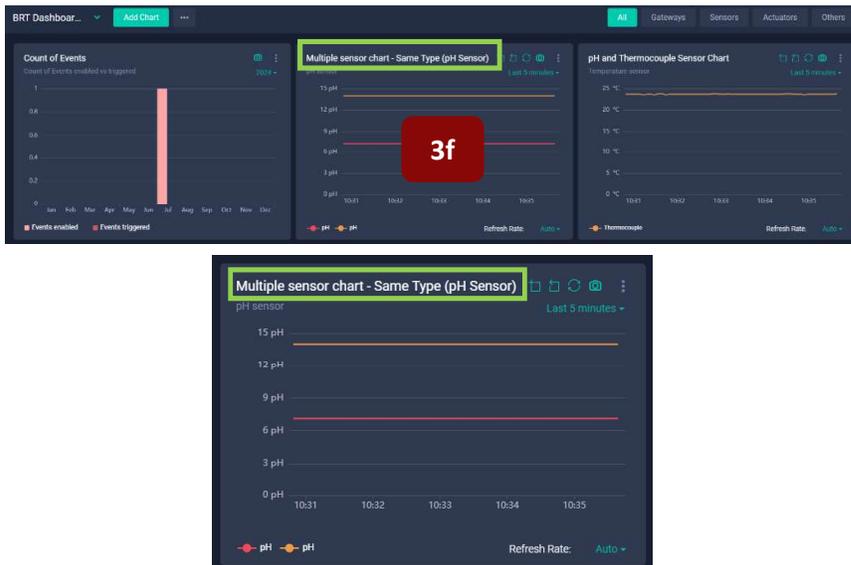
- d. Update the chart color attribute, if required. Upon selecting all the chart attributes, click [Create].



- e. An appropriate message indicating that the chart has been successfully created is displayed, Click [OK].



- f. The chart is displayed.



Sensor Type – Two different types

- a. Select *sensor type option – Two different types*.

Multiple sensor charts
In a multiple sensor chart, you can add max 8 sensors (Sensors with same sensor type or two different sensor type, i.e. 2 y-axis can plot with different units)

Chart Name
Multiple sensor chart - Two different types (pH and Thermocouple)

Select sensor type

Same type Two different types **3a**

- b. Select the **sensor type 1** and **sensor type 2** from the drop down list box.

Select sensor type 1
Temperature sensor

Select sensor type 2
pH sensor

Temperature sensor sensors on this chart
Select Sensors

pH sensor sensors on this chart
Select Sensors

3b

- c. Click [**Select Sensors**]. From the resulting window, select the sensors and click [**ADD**].

Select Sensors

Filter By: All Gateways Temperature sensor

Select All Search...

Thermocouple
Gateway 2 - LDS BUS 3
UUID: LS03010103152100001
Temperature sensor

1/8 Sensor(s) are selected **ADD**

Select Sensors

Filter By: All Gateways pH sensor

Select All Search...

pH
Gateway 2 - LDS BUS 3
UUID: LS04010104012100036
pH sensor

pH
Gateway 2 - LDS BUS 3
UUID: LS021010124032100031
pH sensor

1/7 Sensor(s) are selected **ADD**

3c

- d. Update the chart attribute (*Color*), as required. Upon selecting all the chart attributes, click [**CREATE**].

Create charts

Charts for
Sensors

Single sensor charts or Multiple Sensor Charts:

Create standalone charts for selected sensors Create stacked charts for multiple sensors

Multiple sensor charts
In a multiple sensor chart, you can add max 8 sensors (Sensors with same sensor type or two different sensor type, i.e. 2 y-axis can plot with different units)

Chart Name
Multiple sensor chart - Two different types (pH and Thermocouple)

Select sensor type

Same type Two different types

Select sensor type 1
Temperature sensor

Temperature sensor sensors on this chart
Select Sensors

Sensor	Type	Color
Thermocouple	Temperature sensor	Red

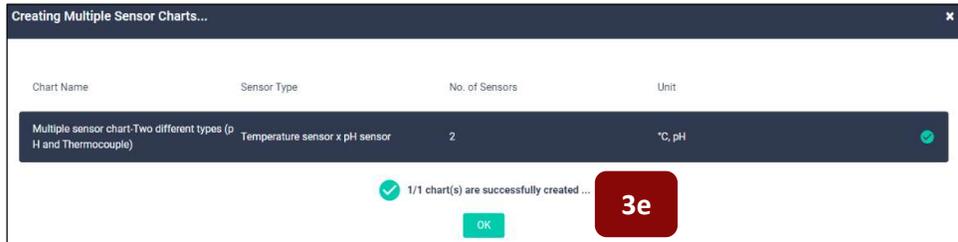
Select sensor type 2
pH sensor

pH sensor sensors on this chart
Select Sensors

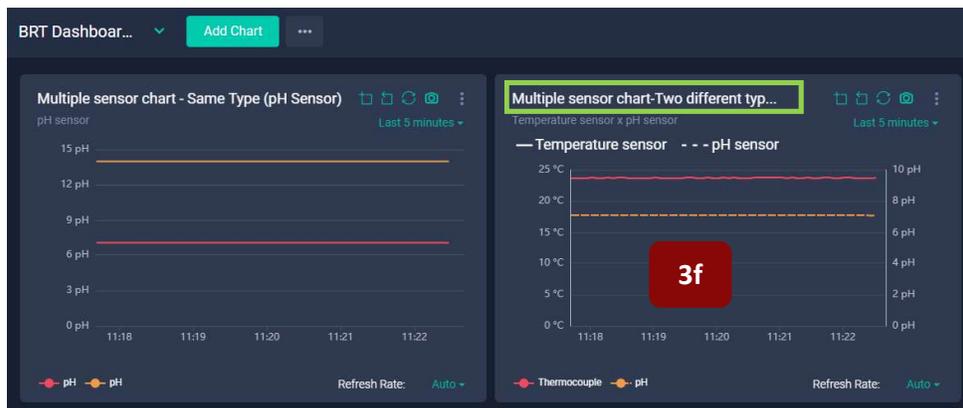
Sensor	Type	Color
pH	pH sensor	Orange

CREATE **3d**

- e. Upon successfully creating the chart, an appropriate message indicating the same is displayed; Click **[OK]**.



- f. The chart is displayed.



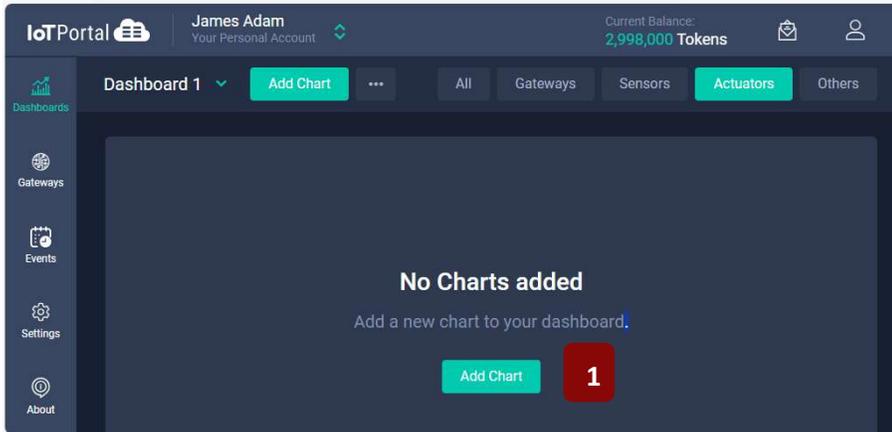
10.2.5 Edit / Delete Sensor Chart

The procedure for editing / deleting sensor chart is similar to [Edit Gateway Chart](#) / [Delete Gateway Chart](#).

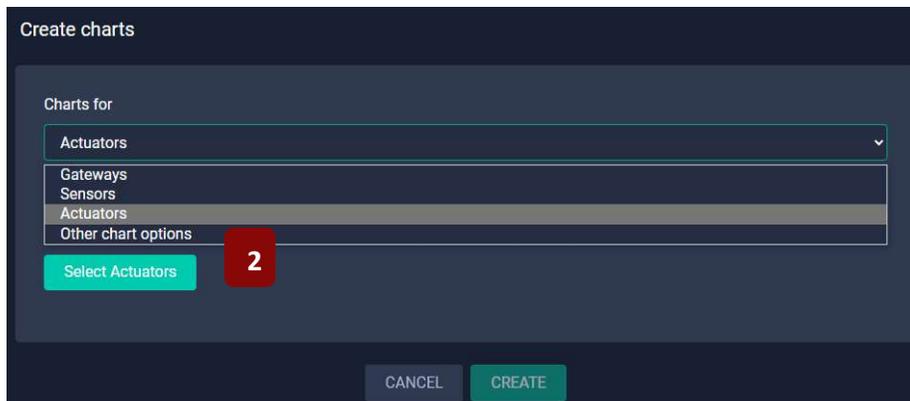
10.2.6 Add Actuator Chart

To add actuator chart,

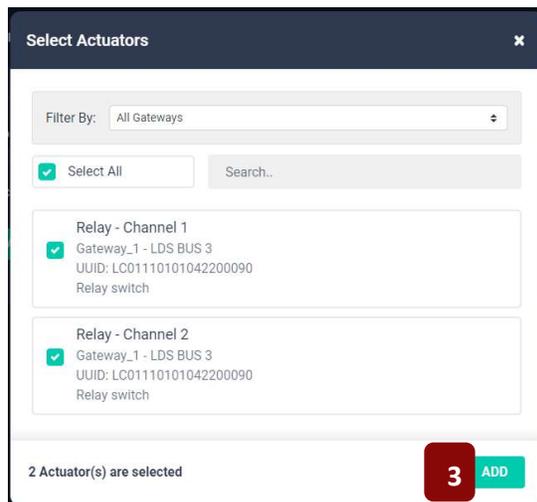
1. Click **[Add Chart]**.



2. The Create charts interface is displayed. Select **Actuators** from Charts for drop-down control box and click **[Select Actuators]**.



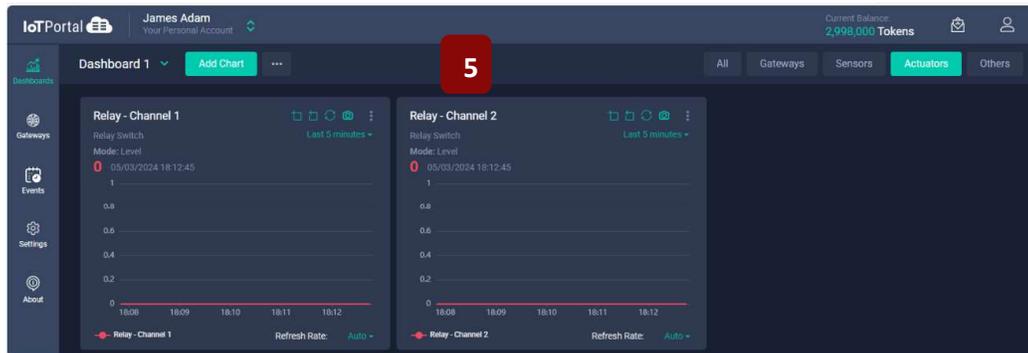
3. From the resulting window, select the actuator(s) and click **[ADD]**.



4. Update the chart attributes (*Chart Name / Chart Color*), as required. Click **[CREATE]**.

Actuator	Chart Name	Type	Gateway	LDSU UUID	Color
Relay - Channel 1	Relay - Channel 1	Relay switch	Gateway_1	LC01110101042200090	Red
Relay - Channel 2	Relay - Channel 2	Relay switch	Gateway_1	LC01110101042200090	Red

5. Upon successfully creating the actuator chart, an appropriate message indicating the same is displayed; The newly created actuator charts are displayed.



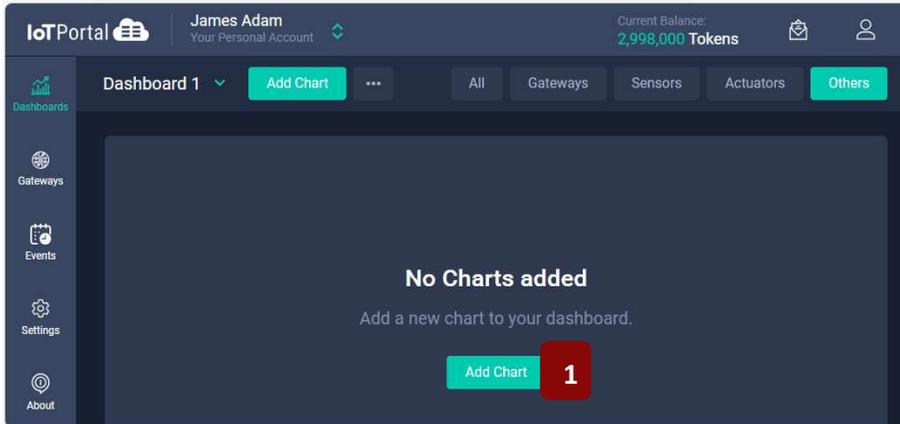
10.2.7 Edit / Delete Actuator Chart

The procedure for editing / deleting actuator chart is similar to [Edit Gateway Chart](#) / [Delete Gateway Chart](#).

10.2.8 Add Other Chart

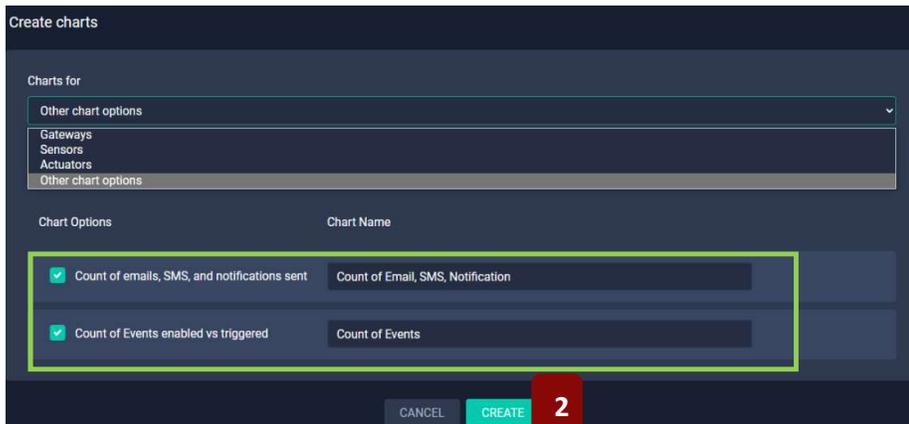
To add other charts,

1. Click **[Add Chart]**.

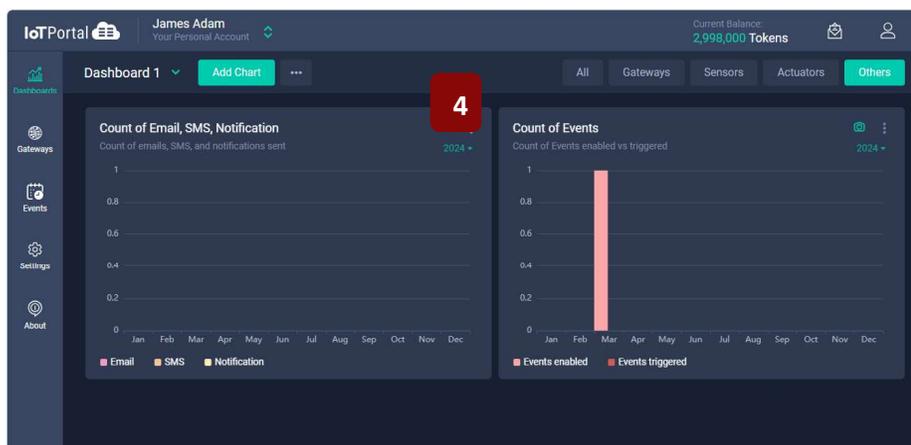


2. The Create charts interface is displayed. Select **Other chart options** from Charts for drop-down control and select one or more of the following chart options and click **[CREATE]**.

- Count of emails, SMS, and notifications sent
- Count of Events enabled vs triggered



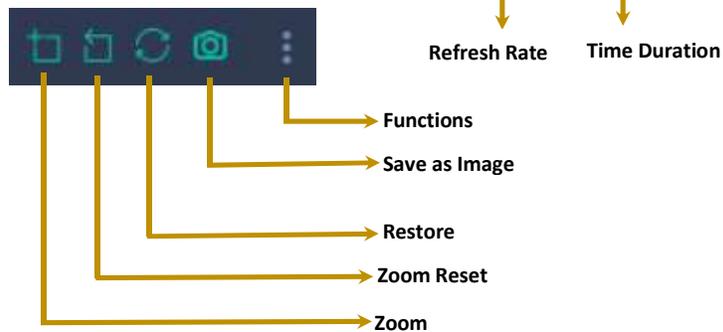
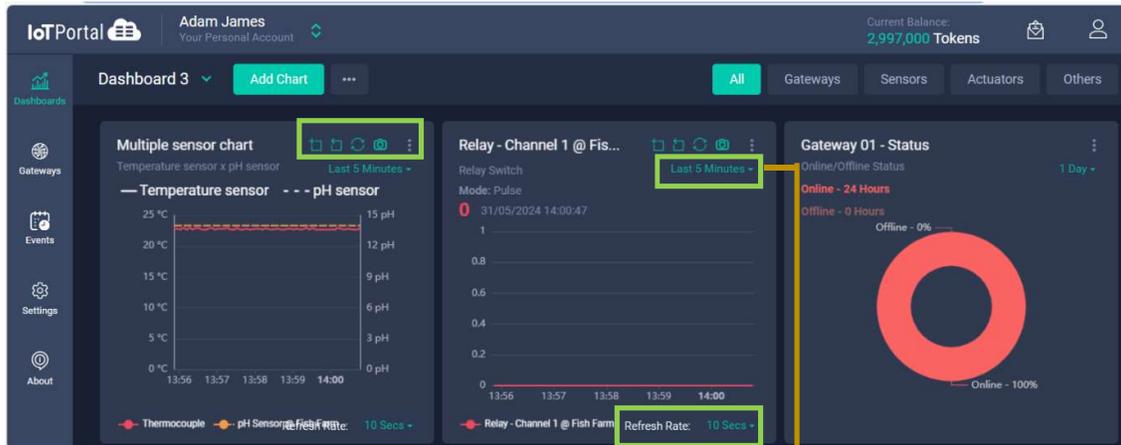
3. Upon successfully creating the other chart options, an appropriate message indicating the same is displayed; The newly created other chart options are displayed.



10.2.9 Edit / Delete Other Charts

The procedure for editing / deleting other chart options is similar to [Edit Gateway Chart](#) / [Delete Gateway Chart](#).

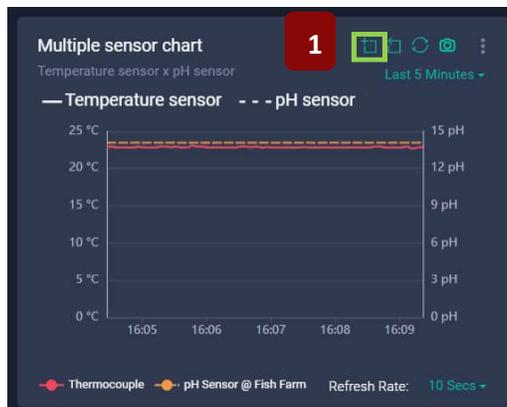
10.2.10 Dashboard Features



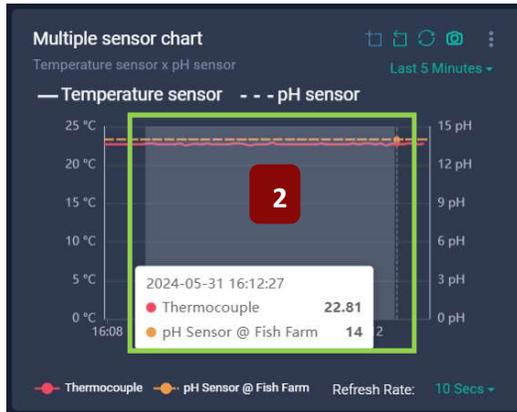
10.2.10.1 Zoom

To zoom a chart –

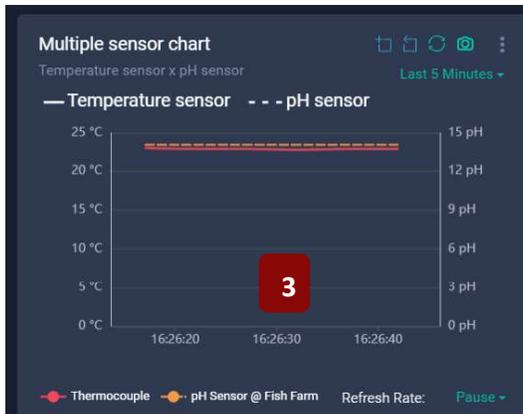
1. Click on the Zoom  icon.



2. Position the cursor on the chart area that needs to be zoomed.



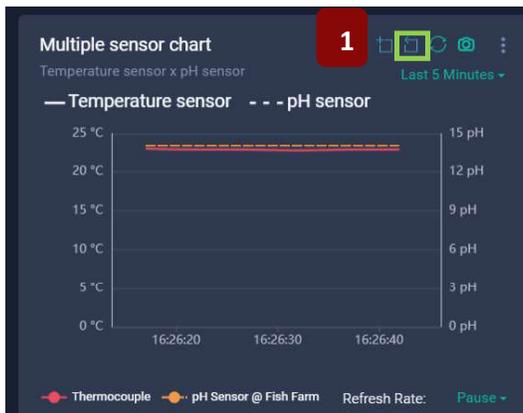
3. The zoomed portion of the chart is displayed.



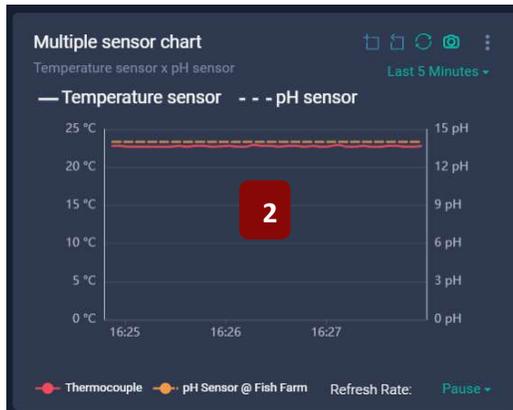
10.2.10.2 Zoom Reset

To reset zoom,

1. Click on the Zoom Reset  icon.



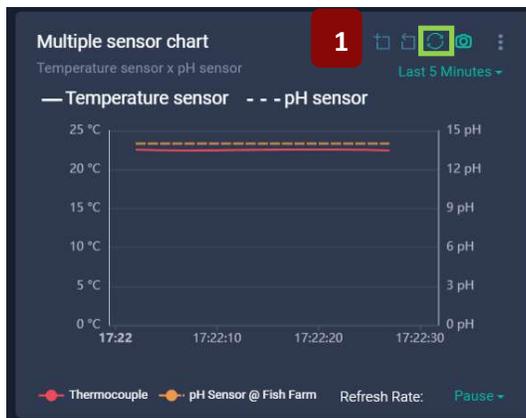
- The chart will reset to the previous zoom level.



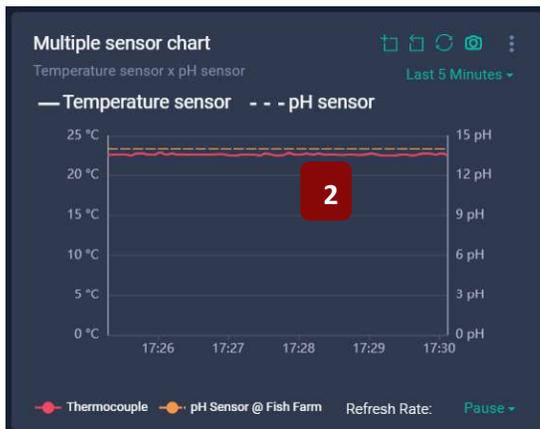
10.2.10.3 Restore

To restore to the default chart size,

- Click on the Restore  icon.



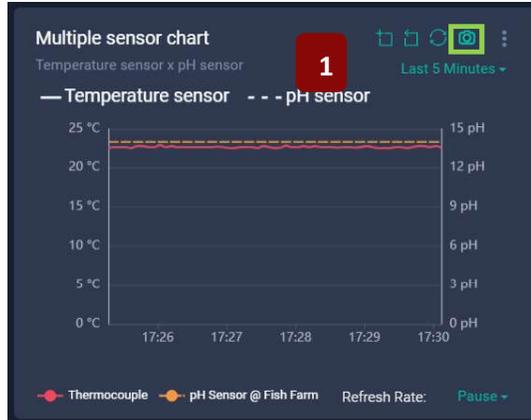
- The chart will be restored to the default chart size.



10.2.10.4 Save as Image

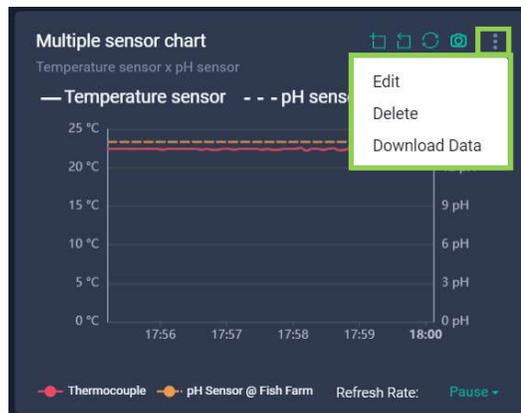
To save the chart as an image,

1. Click on the Save as Image  icon. The chart is saved as an image.



10.2.10.5 Functions

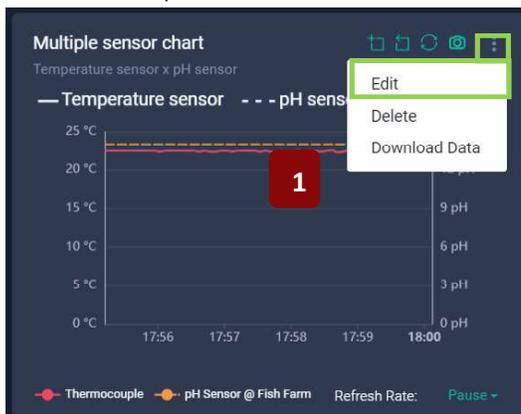
To access the chart function, click on the ellipsis  icon.



10.2.10.5.1 Edit Dashboard Chart

To edit chart,

1. Click on the ellipsis  icon and select **Edit**.



2. Edit the dashboard chart as required and click **[SAVE]** to save the changes.

Chart Name
Multiple sensor chart

Select sensor type
 Same type Two different types

Select sensor type 1
Temperature sensor
Temperature sensor sensors on this chart
[Select Sensors](#)

Select sensor type 2
pH sensor
pH sensor sensors on this chart
[Select Sensors](#)

Sensor	Type	Color
pH Sensor @ Fish Farm	pH sensor	Red

CANCEL [SAVE](#) 2

10.2.10.5.2 Delete Dashboard Chart

1. Click on the ellipsis icon and select **Delete**.



2. A confirmation window is displayed. Click **[DELETE]** to remove the chart.

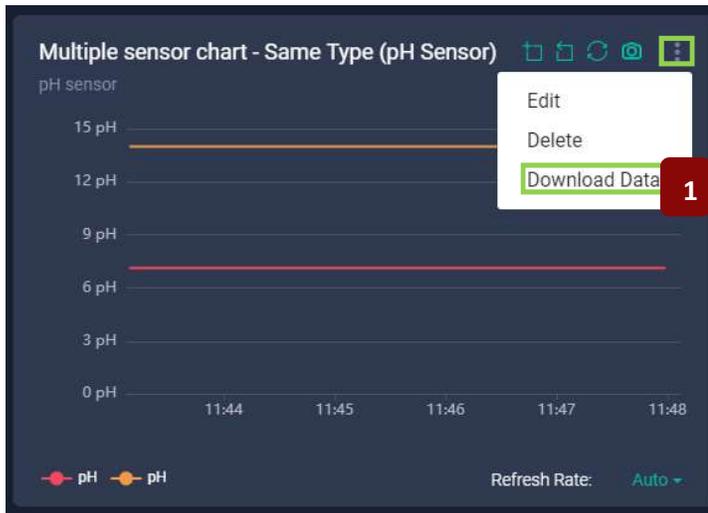
Confirm Delete

Do you really want to delete this chart?
This cannot be undone.

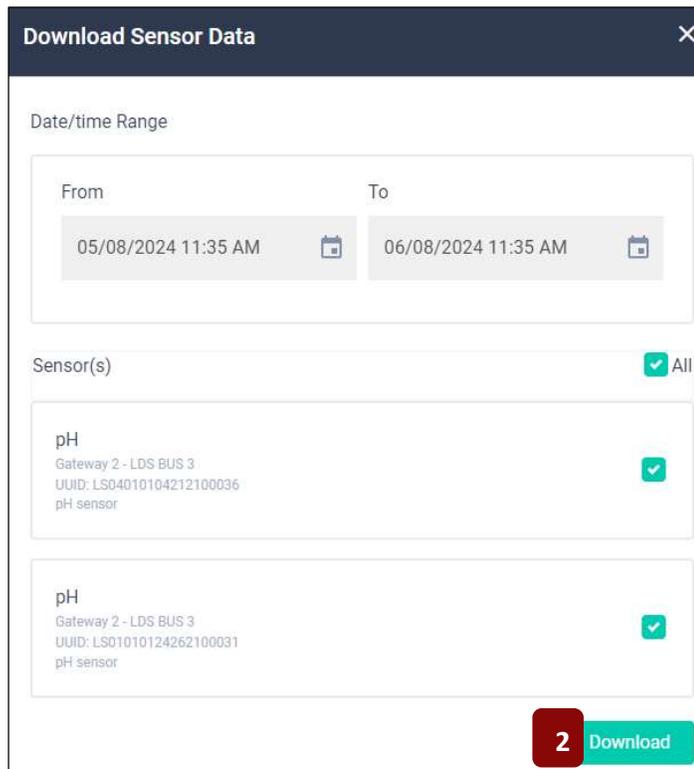
CANCEL [DELETE](#) 2

10.2.10.5.3 Download Chart Data

1. Click on the ellipsis  icon and select **Download Data**.



2. To download sensor data, input the *Date/Time Range*; Select the *sensors* by clicking on the respective check box or click *All* to select all the sensors. Note that, *Single Sensor chart does not have the sensor selection option*. Upon providing the required input, click **[Download]**. A confirmation message is displayed. Click **[OK]**. Upon confirmation, an email will be sent to the user's registered email address with [instructions](#) on how to download the sensor data.



The screenshot shows a "Download Sensor Data" dialog box. It has a close button (X) in the top right. The "Date/time Range" section contains "From" and "To" date/time pickers. The "From" picker shows "05/08/2024 11:35 AM" and the "To" picker shows "06/08/2024 11:35 AM". Below this is the "Sensor(s)" section, which has a checked "All" checkbox. There are two sensor entries, each with a checked checkbox:

- pH Gateway 2 - LDS BUS 3, UUID: LS04010104212100036, pH sensor
- pH Gateway 2 - LDS BUS 3, UUID: LS01010124262100031, pH sensor

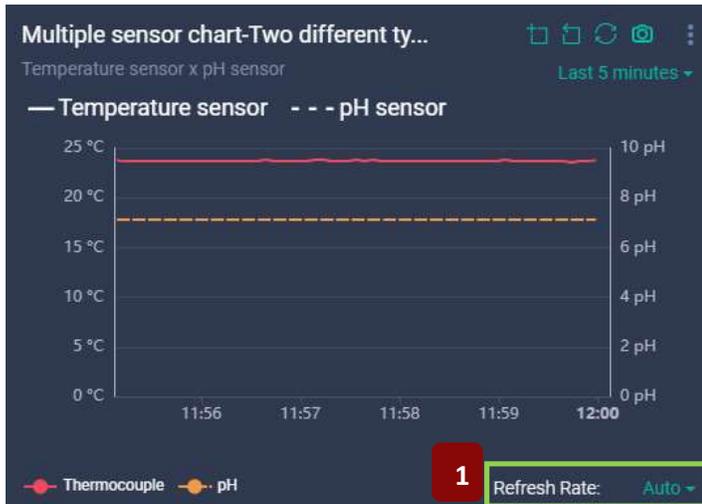
 At the bottom right, there is a "Download" button with a red circle containing the number "2" next to it.

10.2.10.6 Refresh Rate

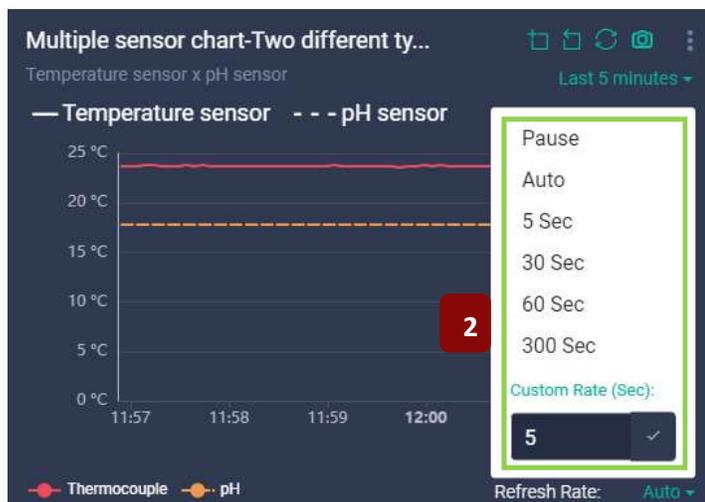
Refresh rate refers to the frequency at which dashboard charts should be refreshed.

To set the refresh rate –

1. Click on the **Refresh Rate** drop down control.



2. From the list box, select the **Refresh Rate frequency** (5 Secs/10 Secs/30 Secs/60 Secs/300 Secs) as required.



Setting the refresh rate to *Pause*, will temporarily stop refreshing the chart; Setting the refresh to *Auto* will auto-refresh every 5 Seconds; To set a *Custom Refresh Rate*, enter the refresh rate (in seconds) in the box and click ✓. For example, if 60 Sec is selected, then the dashboard chart will refresh every 60 Seconds.



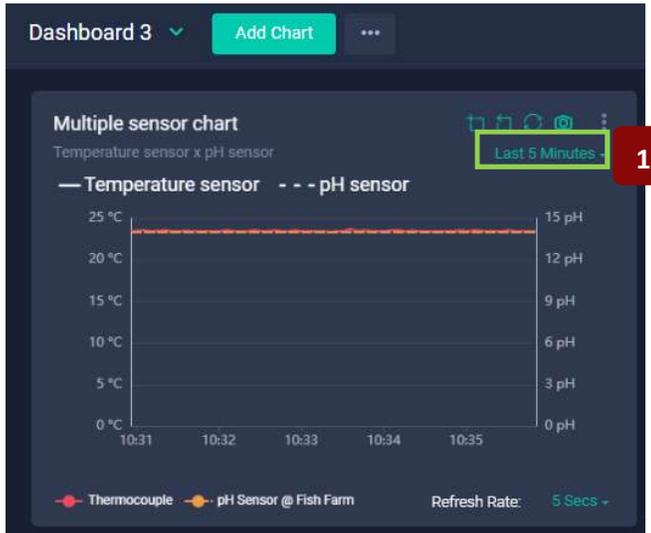
NOTE: Less tokens are consumed when the refresh rate is longer.

10.2.10.7 Time Interval Filter

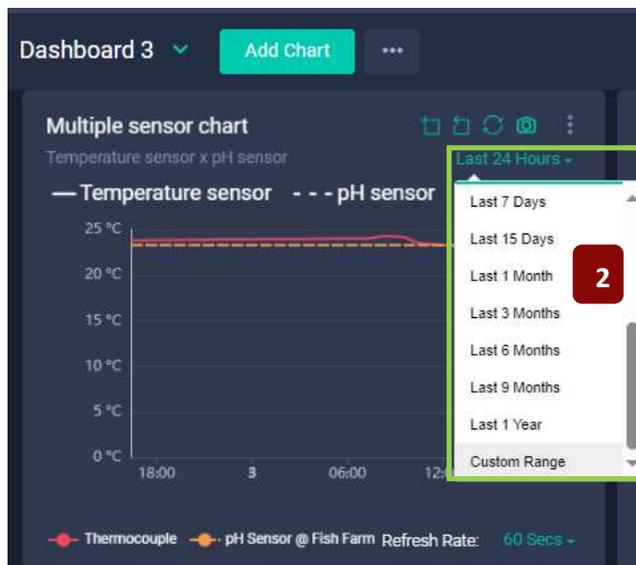
This filter allows users to select a specific period or duration of time to analyse data within a dashboard.

To set time interval –

1. Click on the **Time interval** filter.



2. From the filter, select the **Time interval** (*Last 5 minutes...Last 24 Hrs./Last 7 days...15 days/Last 1 month...Last 1 year/ Custom Range*) required.



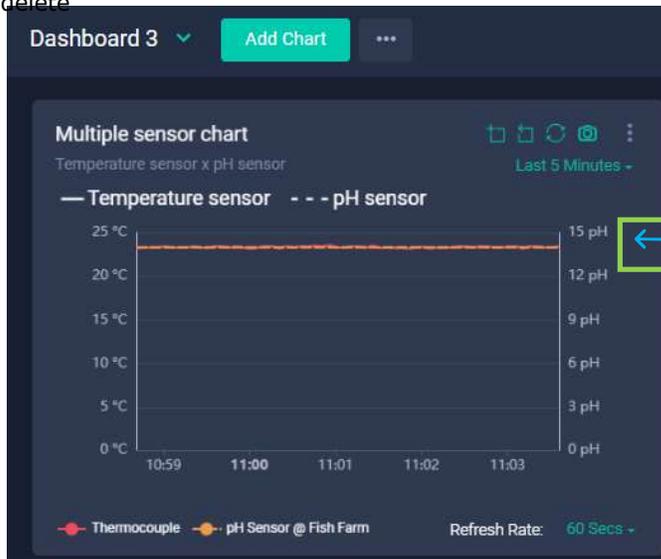
For example, if 7 days is selected, then the dashboard chart will display the last 7 day's data.

10.2.10.8 Expand Chart Size

To expand chart size,

Point the cursor at the left or right edge of the chart, and it will change to a two-sided arrow. Then click and drag to increase or decrease the chart size.

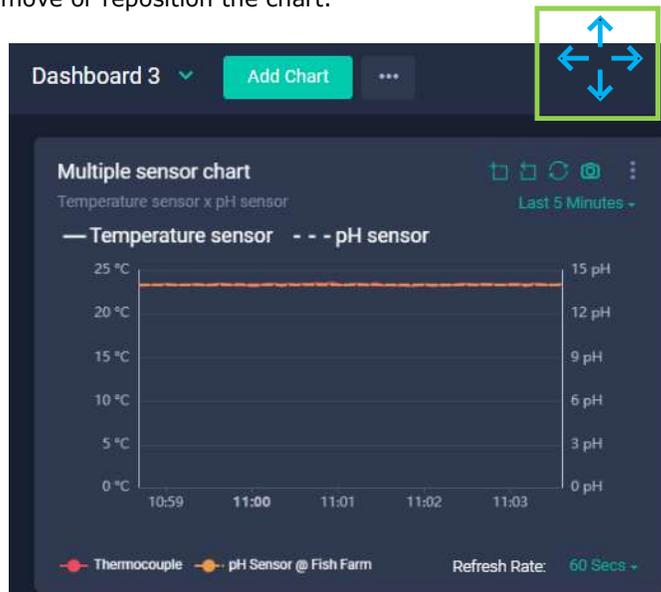
delete



10.2.10.9 Drag / Change Chart Order or Position

To drag or change the chart order or position,

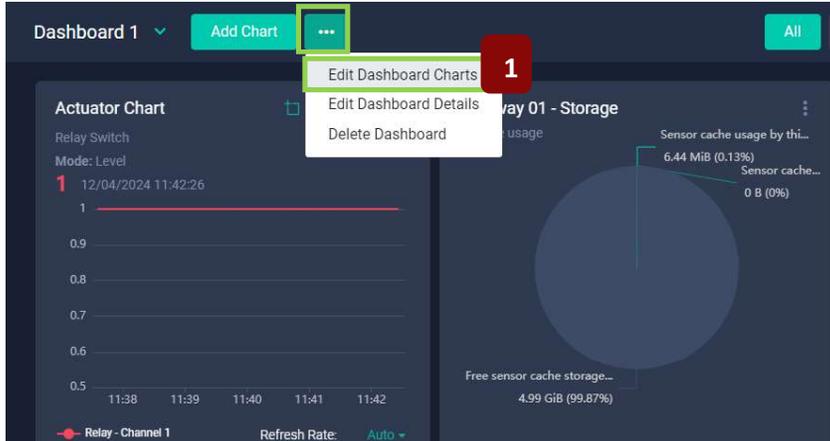
Point the cursor at the top of the chart, and it will change to a quad arrow. Then click and drag to move or reposition the chart.



10.3 Edit Dashboard Charts

To edit dashboard charts,

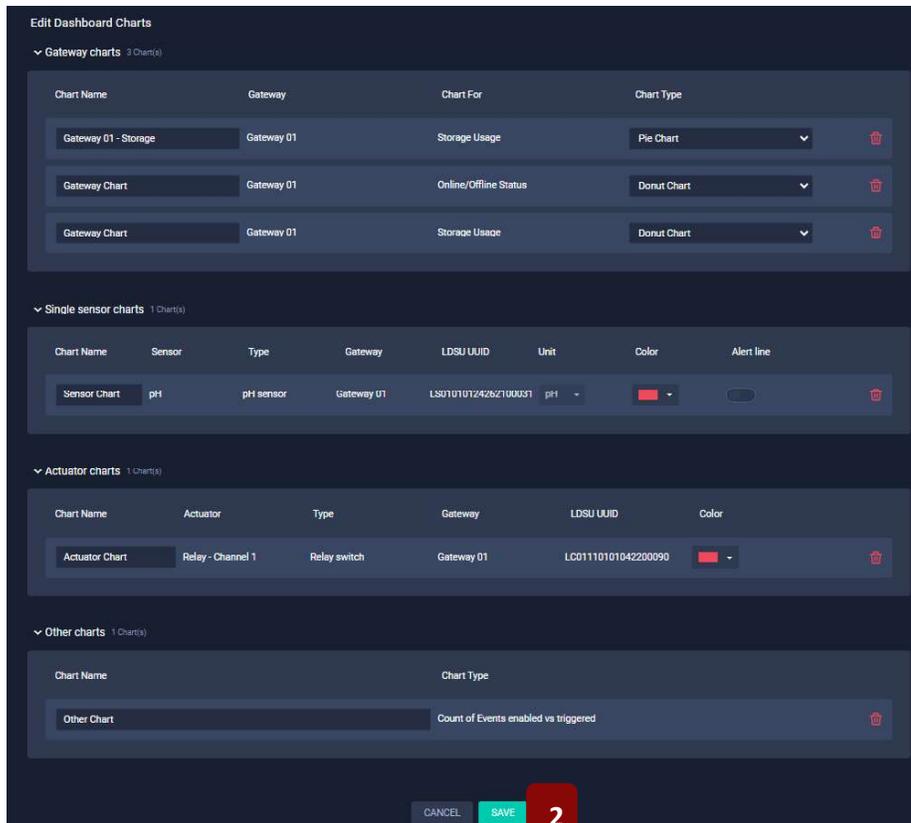
1. Click on the **Ellipsis** **...** button and select **Edit Dashboard Charts**.



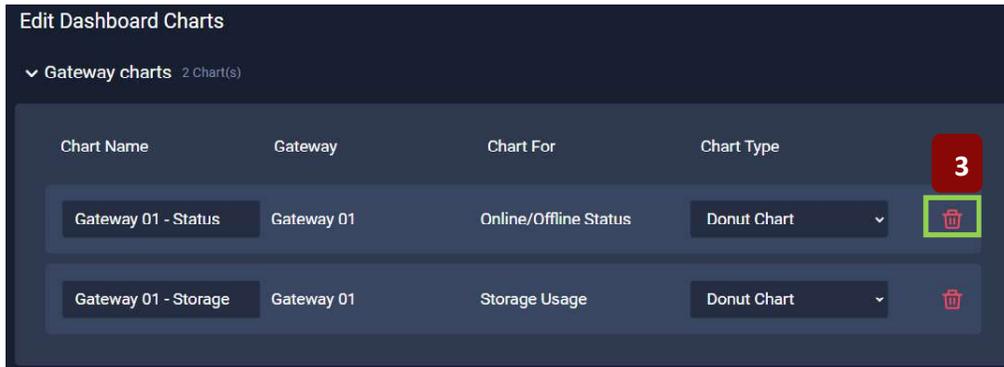
2. Edit the following as required –

Gateway charts	<i>Chart Name and Chart Type</i>
Single sensor charts	<i>Chart Name and Chart Color</i>
Actuator charts	<i>Chart Name and Chart Color</i>
Other charts	<i>Chart Name</i>

Upon making changes, if any, click **[SAVE]** to update the changes, if any.



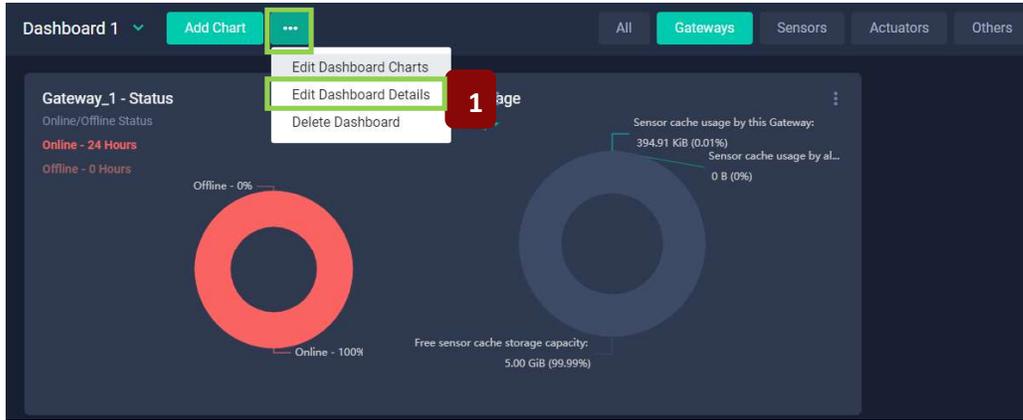
3. To delete any of the dashboard chart, click on **Delete**  icon.



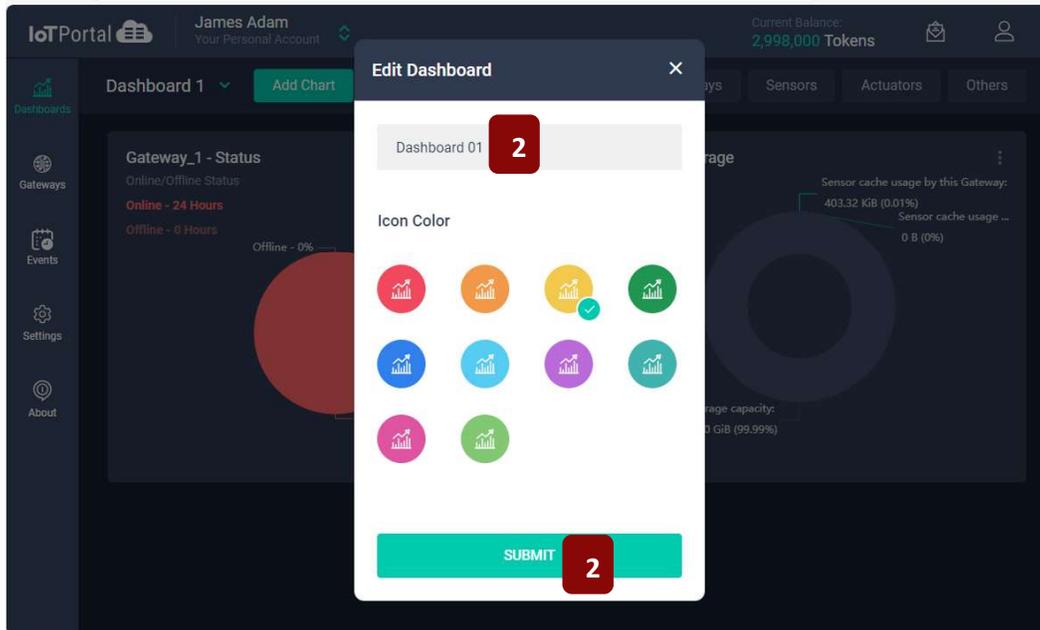
10.4 Edit Dashboard

To edit dashboard details,

1. Click on the **Ellipsis** ******* button and select **Edit Dashboard Details**.



2. Edit the *Dashboard Name* and *Icon Color* as required. Click **[SUBMIT]** to update the changes, if any. The updated dashboard details (if any) are displayed.

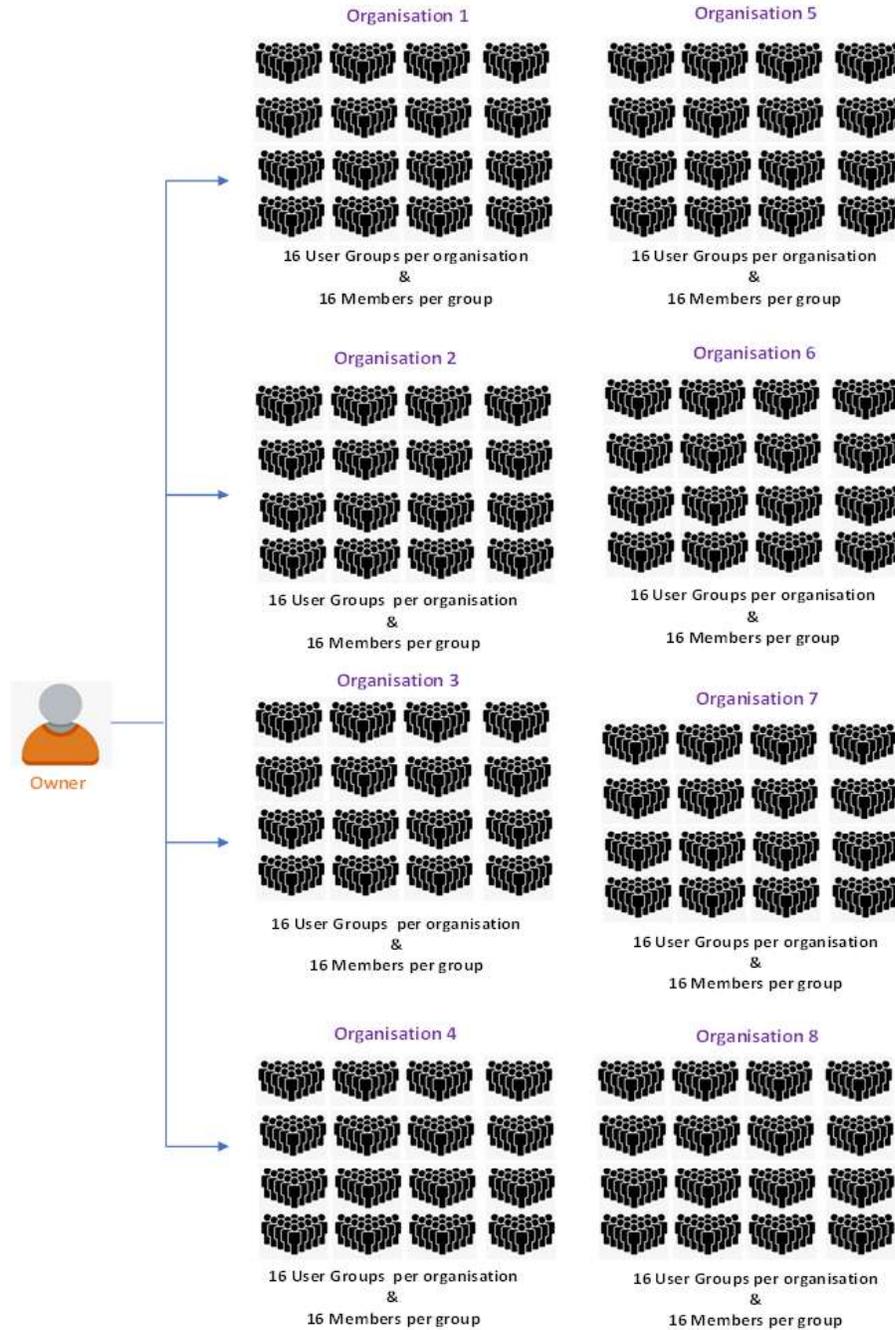


10.5 Delete Dashboard

Click on the **Ellipsis** ******* button and select **Delete Dashboard**. The procedure for deleting dashboard is similar to [Delete Gateway Chart](#).

11. Organisation Management

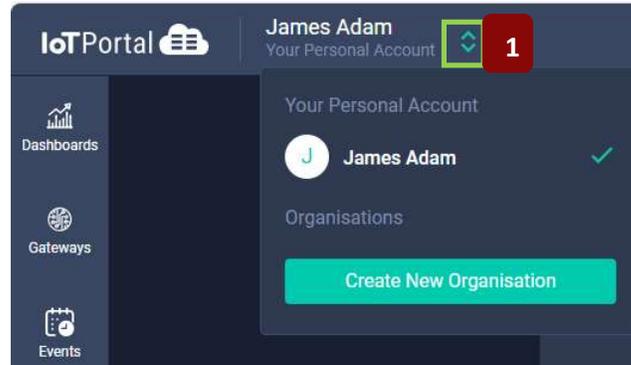
Organisations are collections of user [groups](#) assigned with predefined permissions to achieve usage and access policies. The user may create one or more organisations and be invited to join and become a [member](#). A user who creates an organisation becomes its owner. Any user who is invited to join the organisation becomes a member. Owners can create up to 8 organisations. Organisations cannot be created on IoTPortal without a verified email address of the owner.



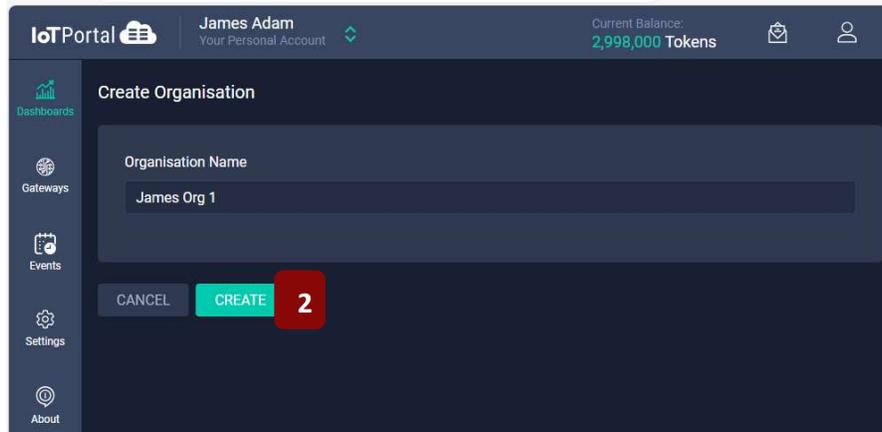
11.1 Create Organisation

To create organisation –

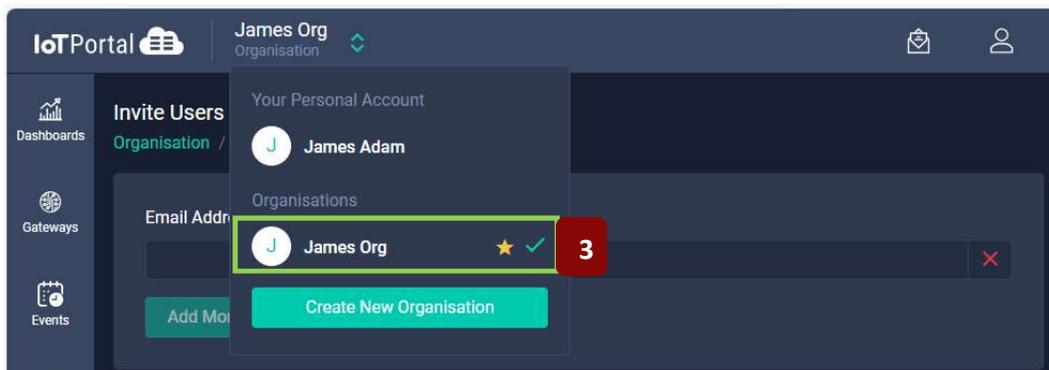
1. Click the *Drop-Down control* and **[Create New Organisation]**.



2. Enter the *Organisation Name*. Click **[CREATE]**. Upon successful creation of organisation, an appropriate message indicating the same is displayed.



3. The newly created organisation will be added to the list of organisations. Owner may proceed to [invite members](#).

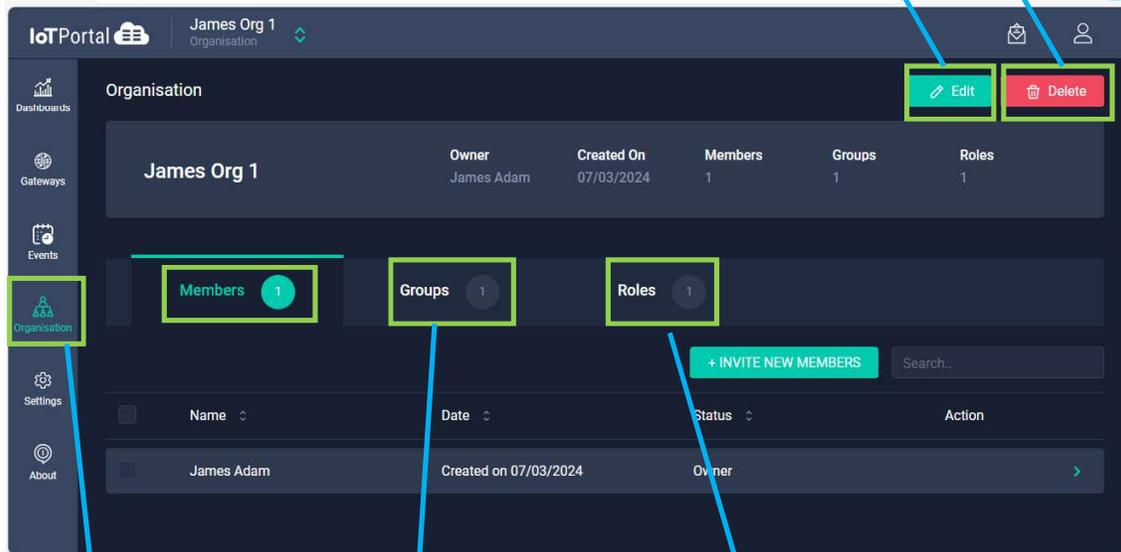


Organisation GUI for Owner - Overview

To invite new members and view the existing members of the Organisation (Default Tab)

To modify organisation name

To remove organisation



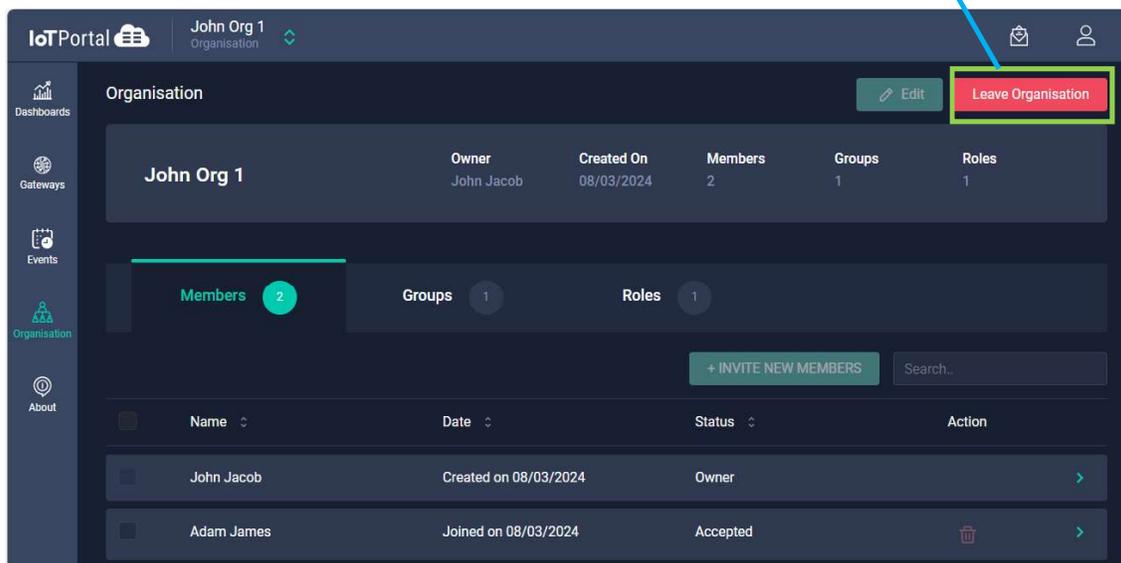
To access Organisation Interface

To create new groups and view the existing groups of the Organisation

To create new roles and view the existing roles of the group of the Organisation

Organisation GUI for Member - Overview

To leave organisation



11.1.1 Members

The number of members in each group may be up to 16. Invitations are used to invite members into organisations. The invited user receives an email or push notification inviting them to download and register for an IoTPortal account and accept or decline the invitation. A member who is not assigned to a group does not inherit any default policies, except policy-leave-organisation.

A group owner or member with a group-manager policy can add, remove, or transfer users into, out of, and between groups. Members are re-invited back to an organisation when they are removed from it. Pending invitation can be cancelled by the owner.

Members who have been moved to a different group or removed from an organisation may have active ongoing sessions in progress at the time of change. As a result, the member's next actions will fail (e.g., invalidate access and refresh tokens). To allow the new group policy and permissions to take effect, the member must log into the IoTPortal again and select the organisation. If a member is removed from the organisation, the organisation will not appear on the list of organisations. Members and owners who have been re-assigned or removed will be notified via email (verified email) or push notification (verified mobile).

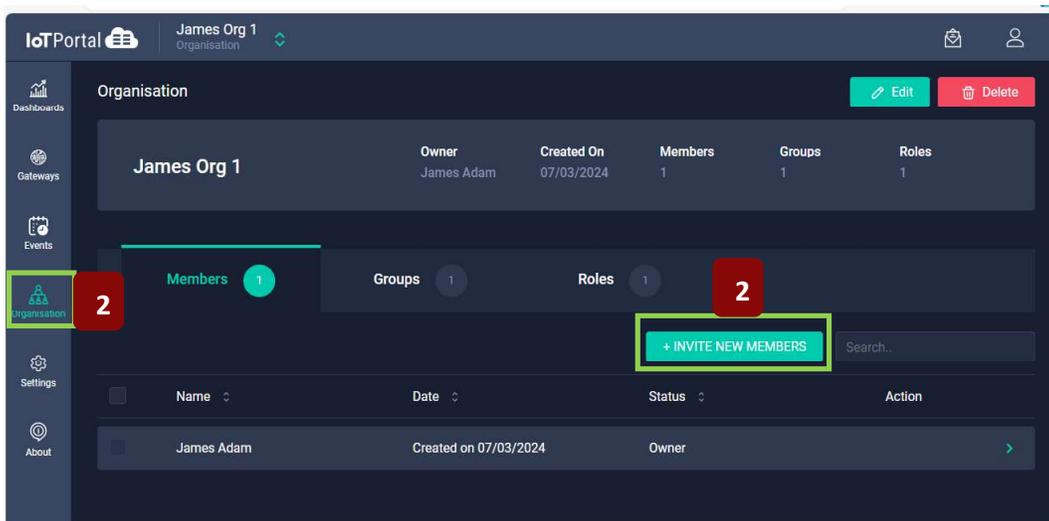
11.1.1.1 Invite Members

To invite new members –

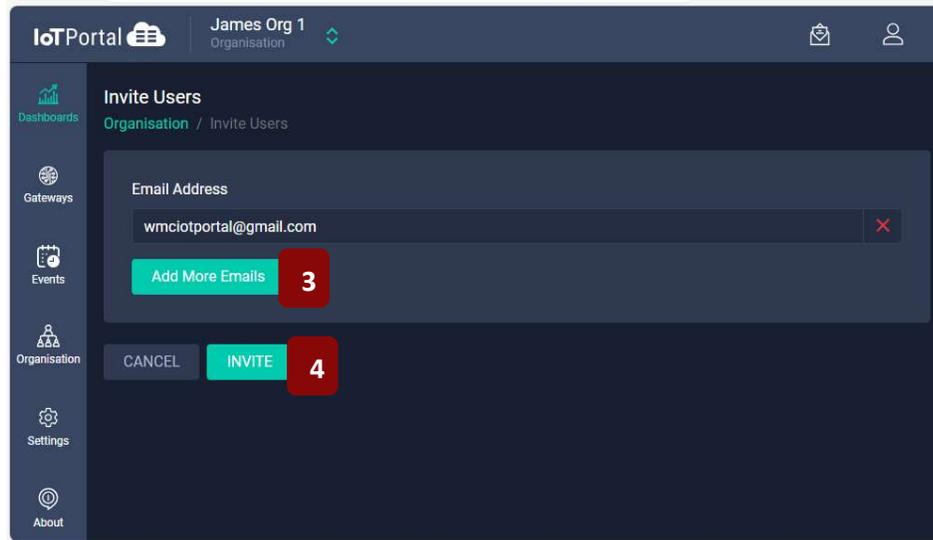
1. Select the **organisation** (from the organisation list) under which you wish to invite users.



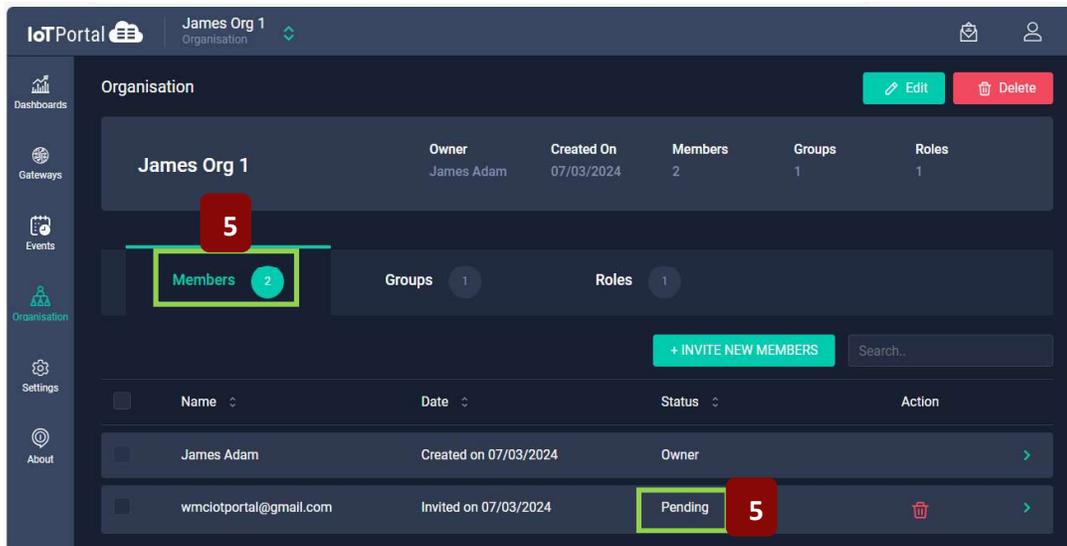
2. Click **[Organisation]** from the menu; From the Organisation interface, click **[+ INVITE NEW MEMBERS]**.



- Enter the *Email address* of the user; To add more users, click **[Add More Emails]** and input the email address.



- Upon providing the email address of the users, click **[INVITE]**. An appropriate message indicating that the invitation has been sent is displayed. An email will be sent to the invited user. The user can join the IoTPortal / organisation using the instruction provided in the email.
- The *Members* tab displays the list of members (including the owner) who are part of the organisation. The status column shows "Pending" (when an invitation is yet to be accepted) / "Declined" (when an invitation is declined) / "Accepted" (when an invitation is accepted). Once accepted, the status is updated to "Accepted."

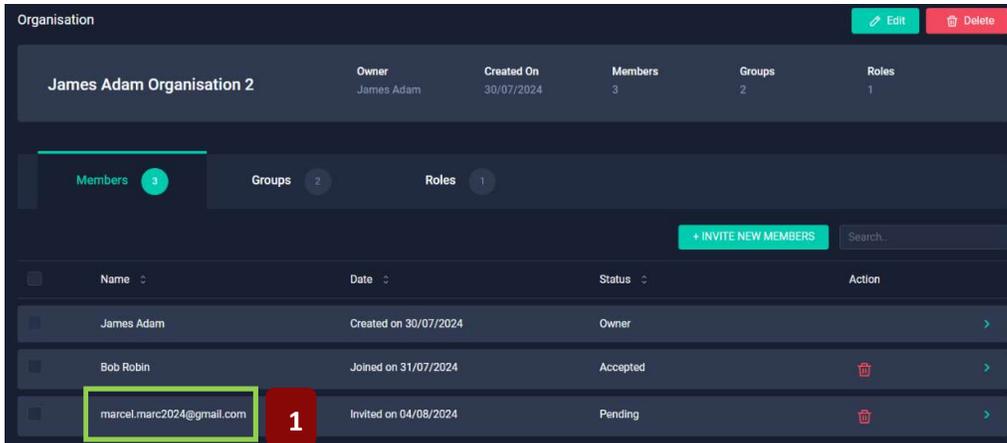


- To create or view the user [groups](#), click *Groups* tab.

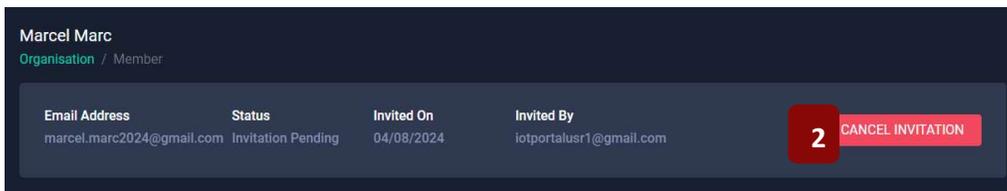
11.1.1.2 Cancel Invitation

To cancel user invitation –

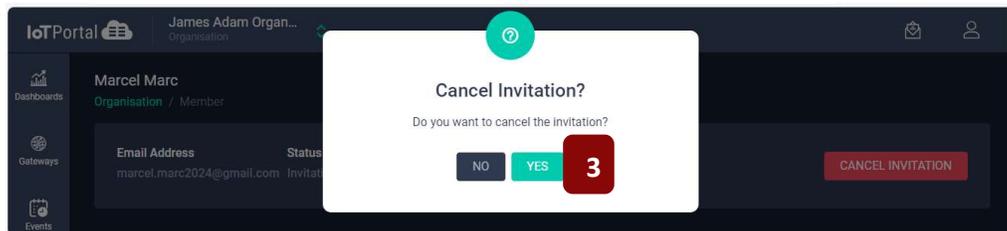
1. Select the user.



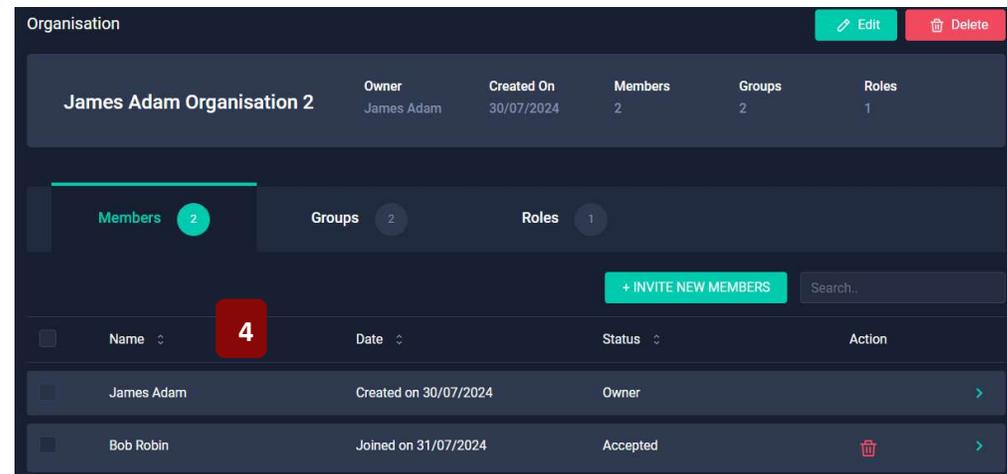
2. Click **[CANCEL INVITATION]**.



3. A confirmation message will be displayed. Click **[YES]** to proceed.



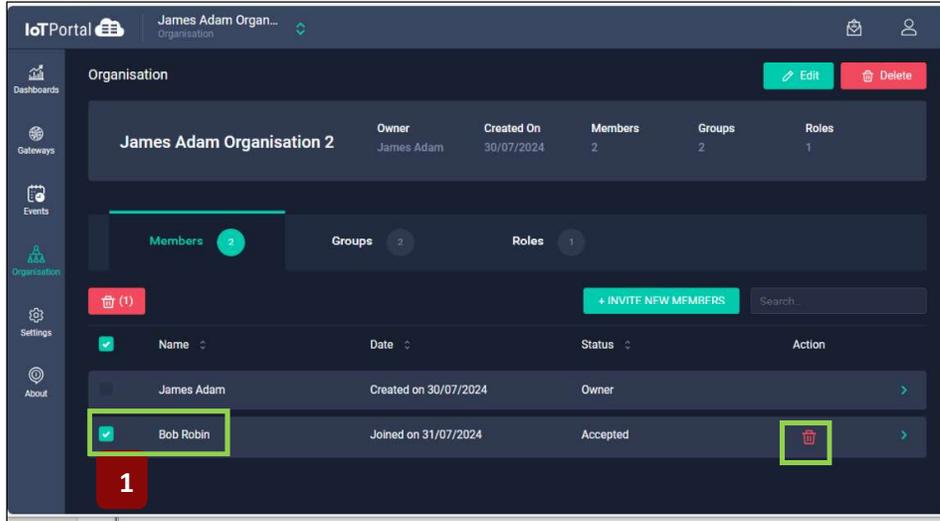
4. The invitation is successfully cancelled.



11.1.1.3 Remove Member / User from Organisation

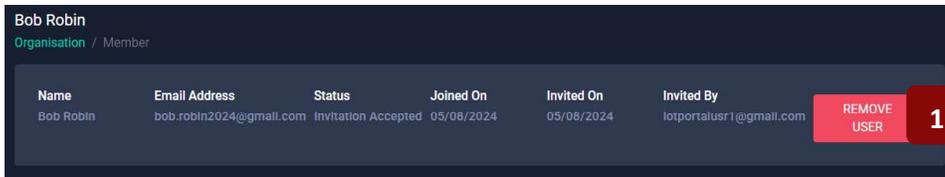
To remove member/user from organisation –

1. Select the member you wish to remove and click

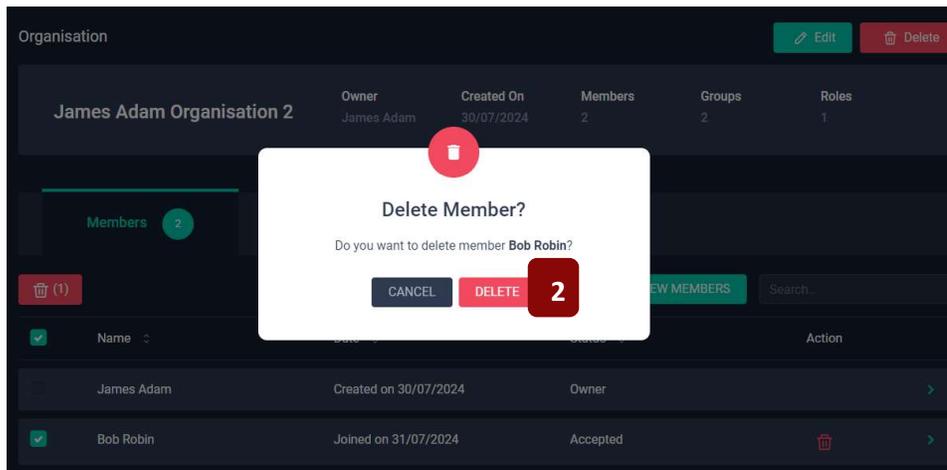


(Or)

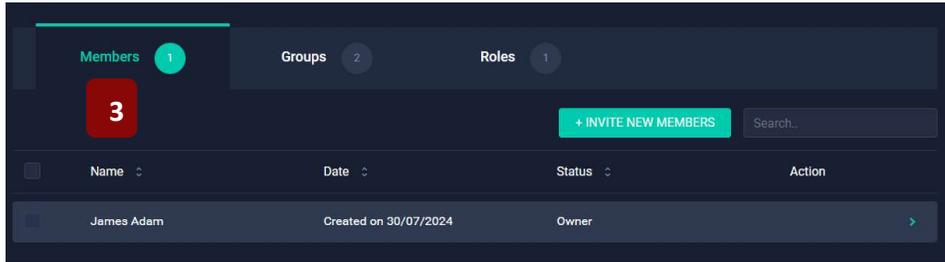
Click on the member / user's name and from the resulting member list interface, click **[REMOVE USER]**.



2. To confirm the deletion, click **[DELETE]**.



- An appropriate message indicating the successful removal is displayed and the member is removed from the members list.



11.1.2 Groups

The owner of an organisation can create up to 16 groups. Groups can be divided into two types:

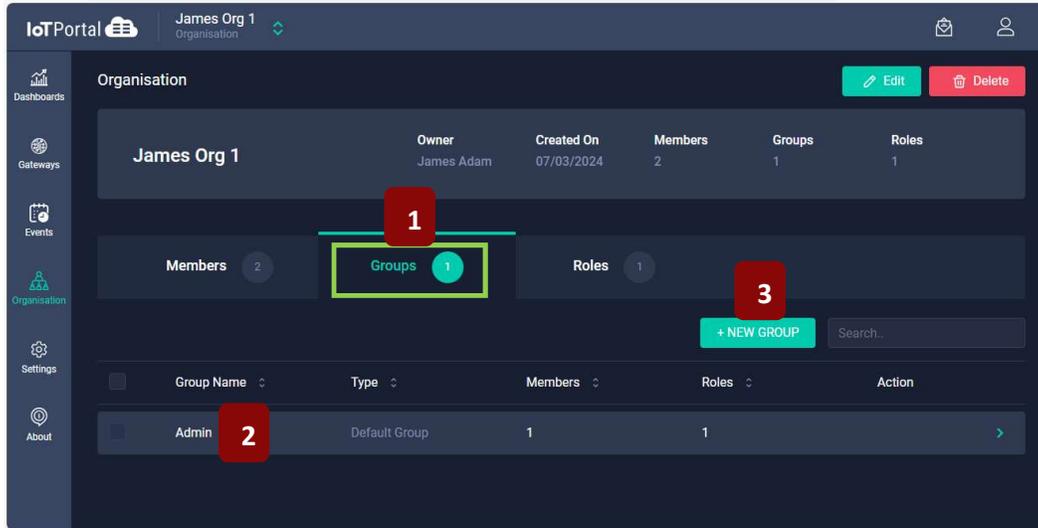
- Fixed Owner Group (Default Group):** This group is pre-created. Only one owner group can exist, and it cannot be deleted, but members can be added and removed except the organisation owner. The members of this fixed group have unrestricted access to the organisation's configuration.
- Regular Group (Custom Group):** The second type of group is a regular group/custom group that can be assigned policies. The policies define a set of privileges for a particular action or set of actions within the IoTPortal or for access to protected resources. Owners may perform *Create/Read/Update/Delete (CRUD)* operations on their groups. Organisations can have up to 15 regular groups besides the owner group.

Each member is added to a group, and group membership is not exclusive; each member can belong to more than one group.

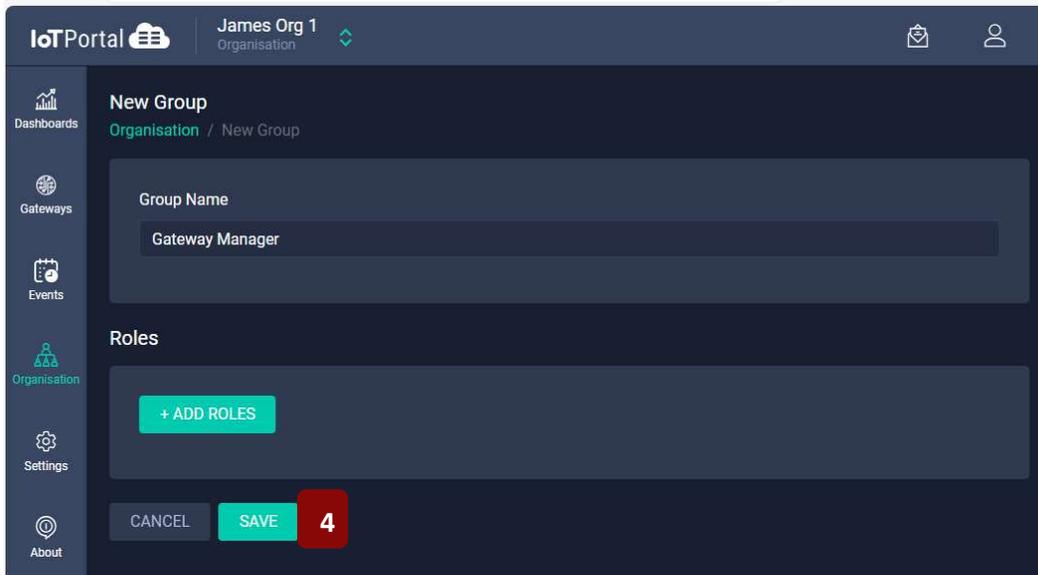
11.1.2.1 Create Custom Groups

To view or create user groups –

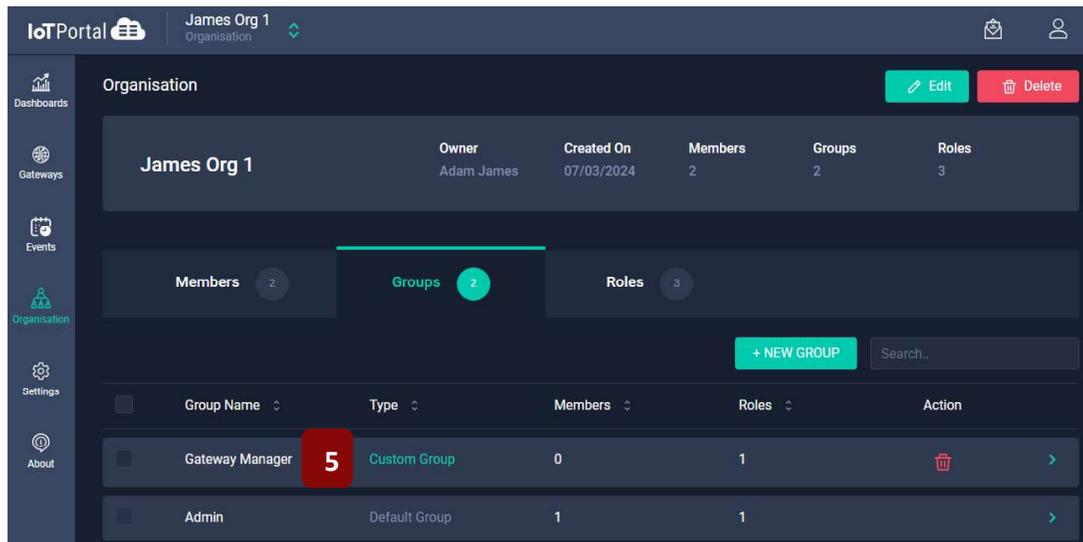
1. Click *Groups* tab.



2. A list of *default groups* and its *member's count* (if any) are displayed.
3. To create a new user group, click [**+ New Group**].
4. Enter the *Group Name*; *Add Roles* to the group and Click [**SAVE**].



- An appropriate message indicating the successful creation of group is displayed. The newly added group is displayed as part of the table.



The screenshot shows the IoT Portal interface for 'James Org 1'. The main content area displays the organisation's details in a table:

Organisation	Owner	Created On	Members	Groups	Roles
James Org 1	Adam James	07/03/2024	2	2	3

Below this, there are three tabs: 'Members' (2), 'Groups' (2), and 'Roles' (3). The 'Groups' tab is active. A '+ NEW GROUP' button is visible. Below the tabs is a table of groups:

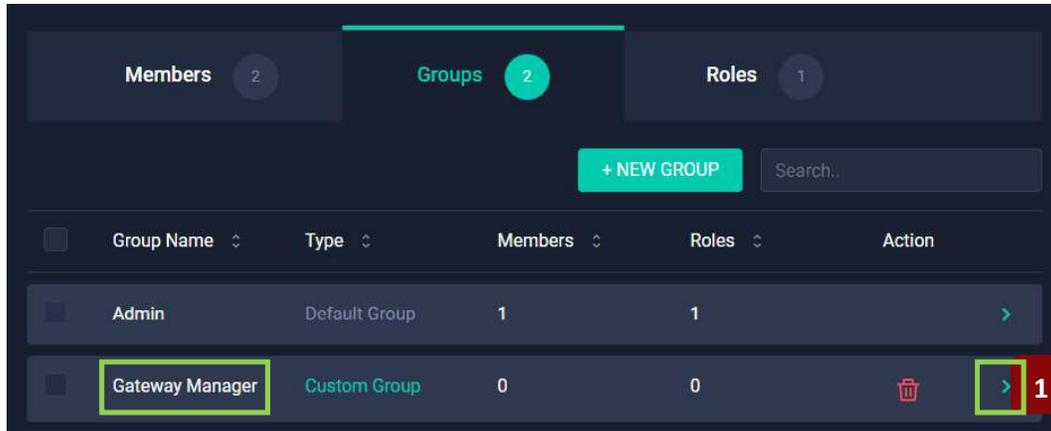
Group Name	Type	Members	Roles	Action
Gateway Manager	Custom Group	0	1	 
Admin	Default Group	1	1	

A red circle highlights the number '5' in the 'Groups' column of the table, indicating the successful creation of a new group.

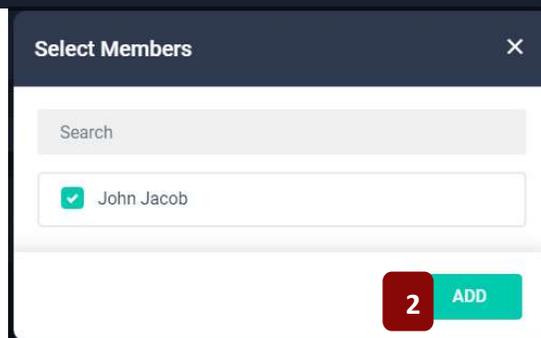
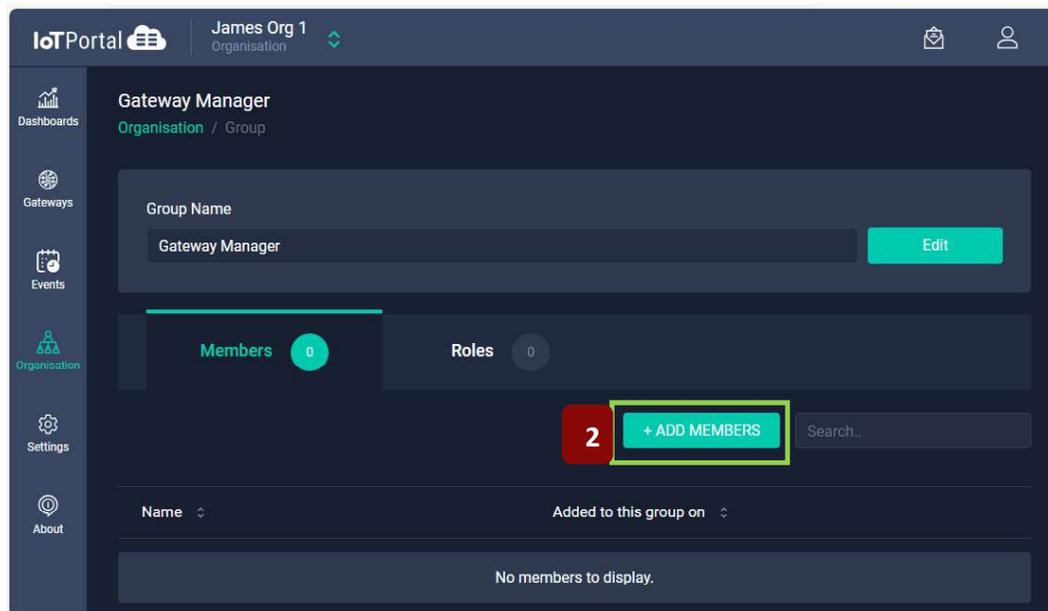
11.1.2.2 Add Members to Custom Group

To add members to the custom group –

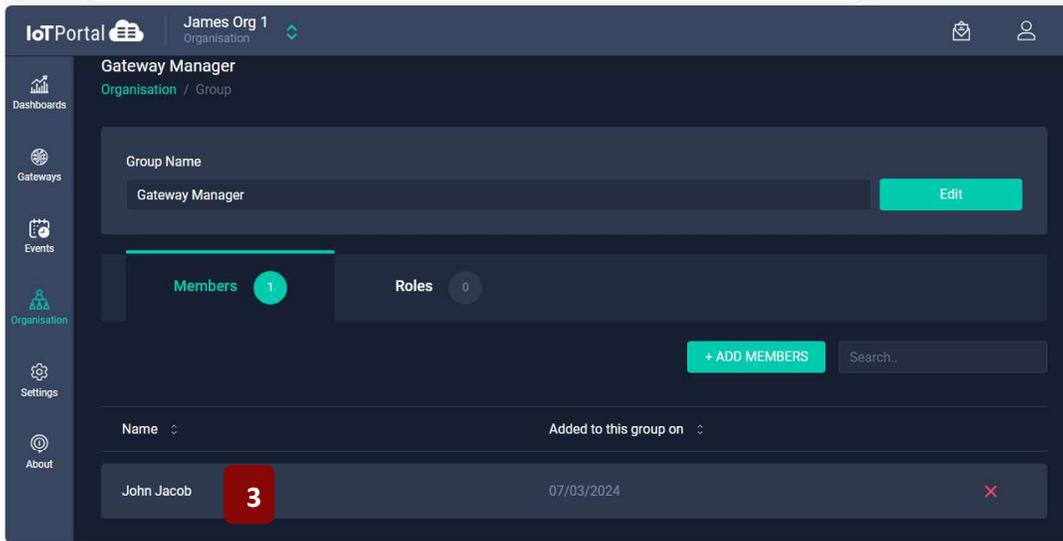
1. Click on the **Group Name** (for example – Gateway Manager) or **>**.



2. Click **[+Add MEMBERS]**. From the resulting window, select *member(s)* and click **[ADD]**.



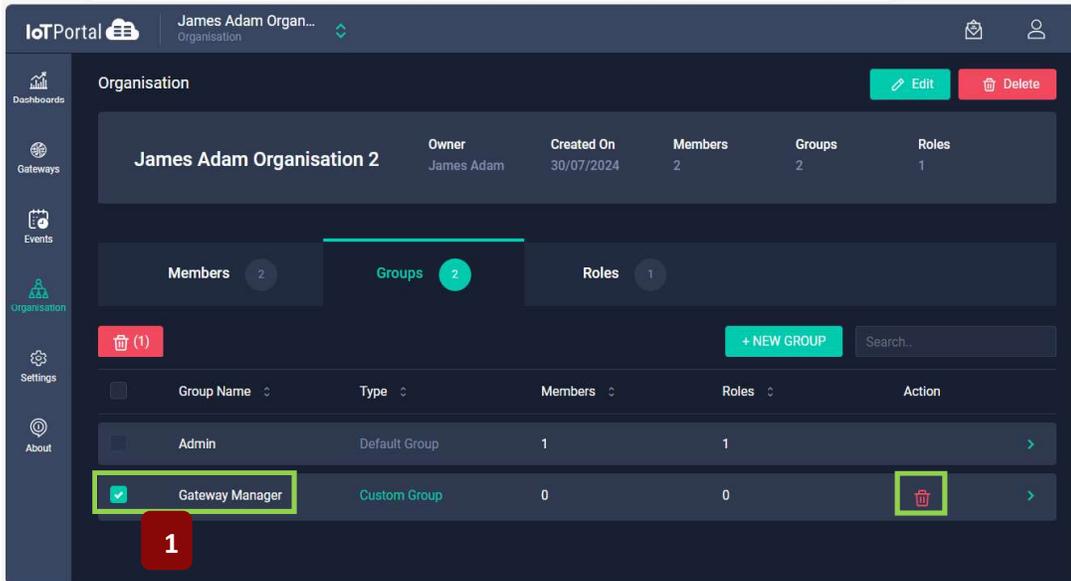
3. The newly added member is displayed as part of the Members table.



11.1.2.3 Remove Member from Custom Group

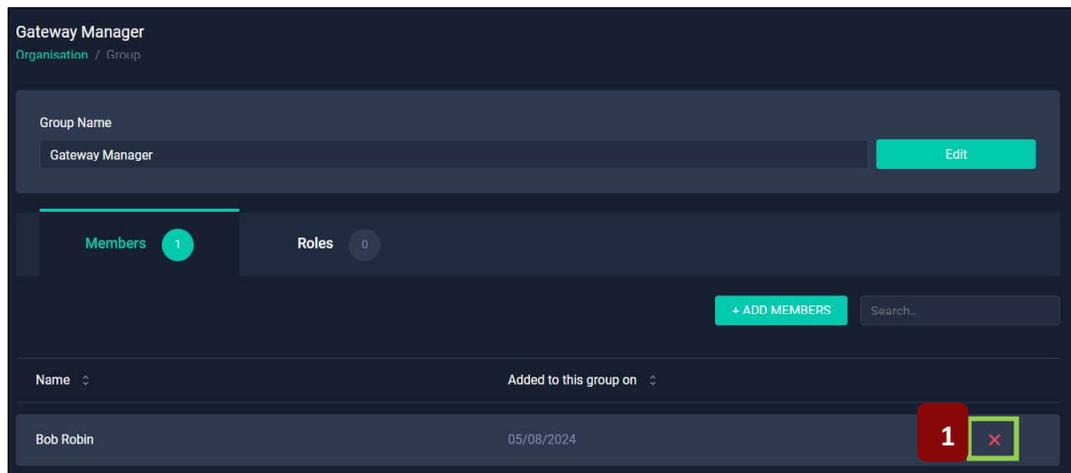
To remove member from custom group –

1. Select the member you wish to remove and click .

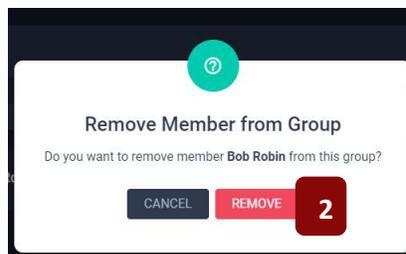


(Or)

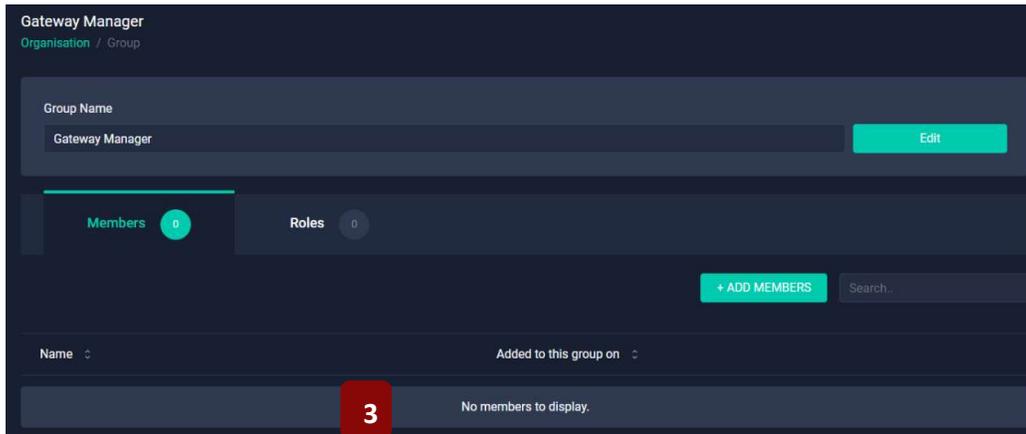
Click on the group name and from the resulting Group interface, click .



2. To confirm the deletion, click **[DELETE]**.



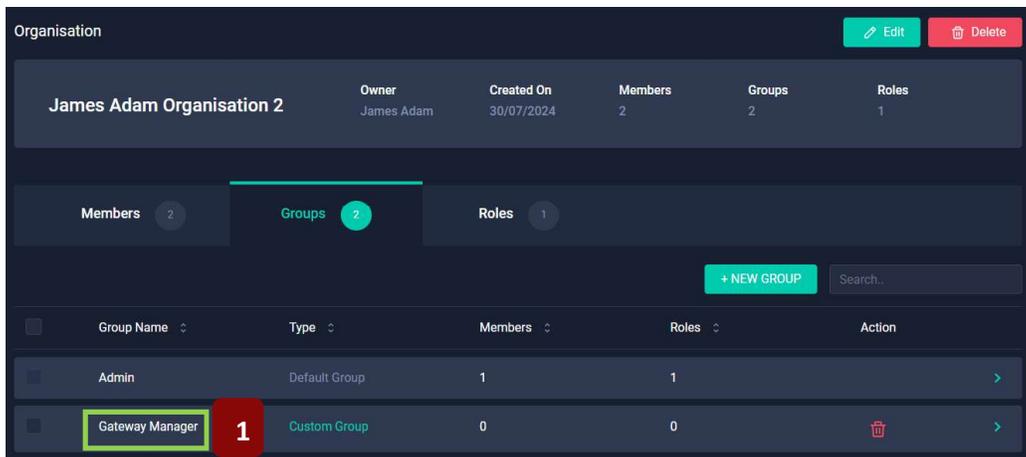
- An appropriate message indicating the successful removal is displayed and the member is removed from the group.



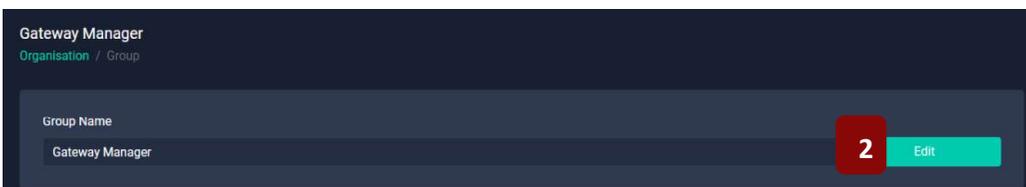
11.1.2.4 Edit Custom Group Name

To edit the custom group name –

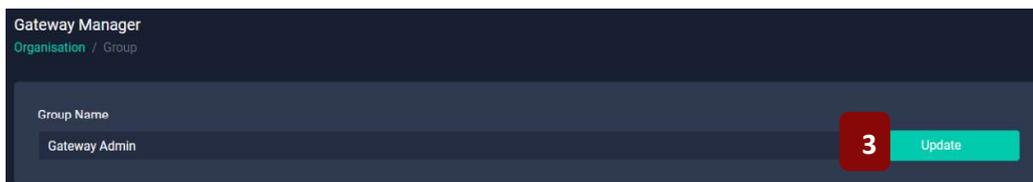
- Click on the custom group from the Groups tab .



- Click **[Edit]**.



- Modify the Group Name as required and click **[Update]**.



4. An appropriate message indicating the successful update of group name is displayed. The updated group name is displayed.

Gateway Admin
Organisation / Group

Group Name
Gateway Admin **4** Edit

Members 2 Groups 2 Roles 1

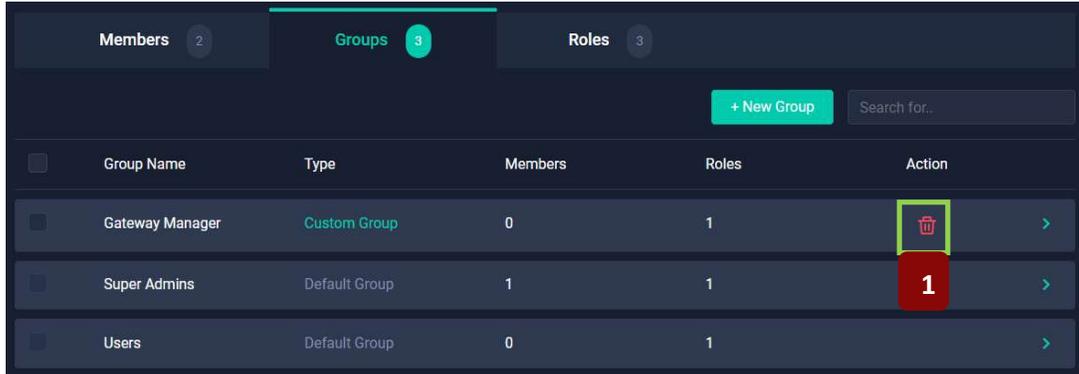
+ NEW GROUP Search...

<input type="checkbox"/>	Group Name	Type	Members	Roles	Action
<input type="checkbox"/>	Admin	Default Group	1	1	>
<input type="checkbox"/>	Gateway Admin	Custom Group	0	0	🗑️ >

11.1.2.5 Delete Group

Only the custom group can be deleted. To delete group –

1. Select the group you wish to delete by clicking on the check box. Click  icon located under the Action column.



<input type="checkbox"/>	Group Name	Type	Members	Roles	Action
<input checked="" type="checkbox"/>	Gateway Manager	Custom Group	0	1	 
<input type="checkbox"/>	Super Admins	Default Group	1	1	
<input type="checkbox"/>	Users	Default Group	0	1	

A confirmation window is displayed. Click **[DELETE]** to proceed or **[CANCEL]** to discard the deleted operation.

11.1.3 User Roles

The IoTPortal users can have one or more roles. Roles have associated Access Rights CREATE, READ, UPDATE and DELETE (CRUD) and Resources (device/sensor page, dashboard page etc.). Roles can be defined in number of ways. Roles can be restrictive or loose, generic, or specific. Some examples of roles are *Finance role*, *Operator role*, *Customer role*, *Guest role* etc. Alternatively, it can be generic such as *Full Control*, *Restrictive*, *View Only* etc. Owners and members are given permission to perform actions in the system or access resources when they have permissions. Refer to the table given below for the list of Policies and Permissions.

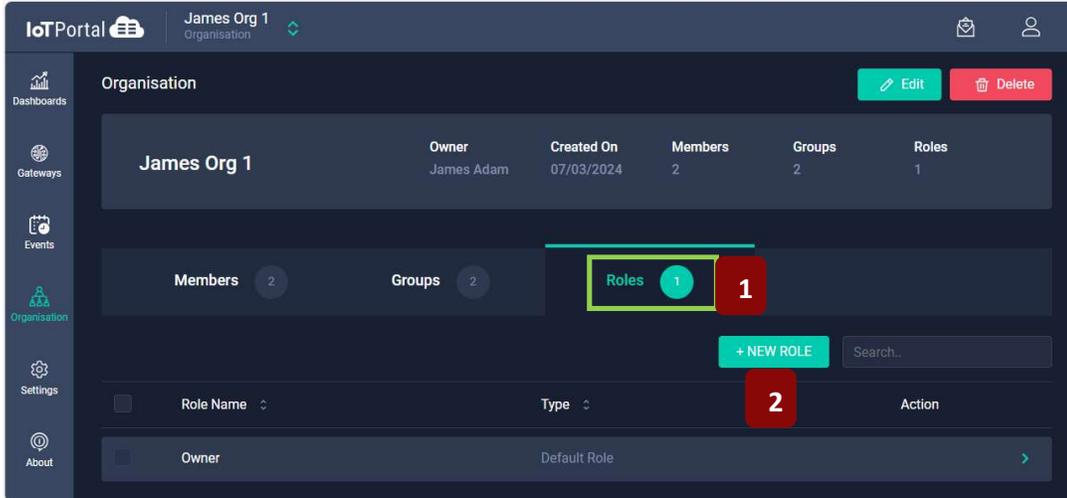
Policies	Permissions		
Gateway Management (All Gateways and Gateway Groups)			
Gateway Settings, Sensors, Actuators etc.	Can Manage	View Only	No Access
Dashboard Management (All Dashboards)			
Dashboards and Charts	Can Manage	View Only	No Access
Organisation Management (Manage Organisations)			
Groups, Roles, and Members	Can Manage	View Only	
Event Management (All events)			
Create, Edit, View and Delete Events	Can Manage	View Only	No Access

Table 4 – Permissions

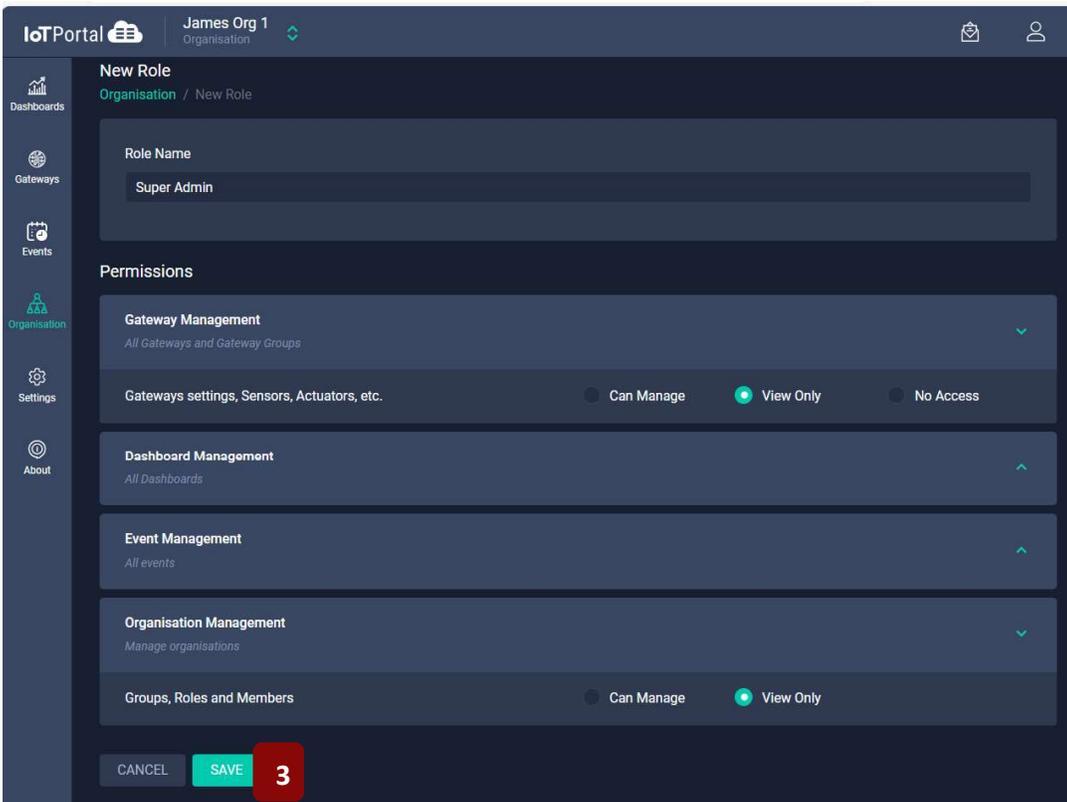
11.1.3.1 Create Custom Roles

To view or create user roles –

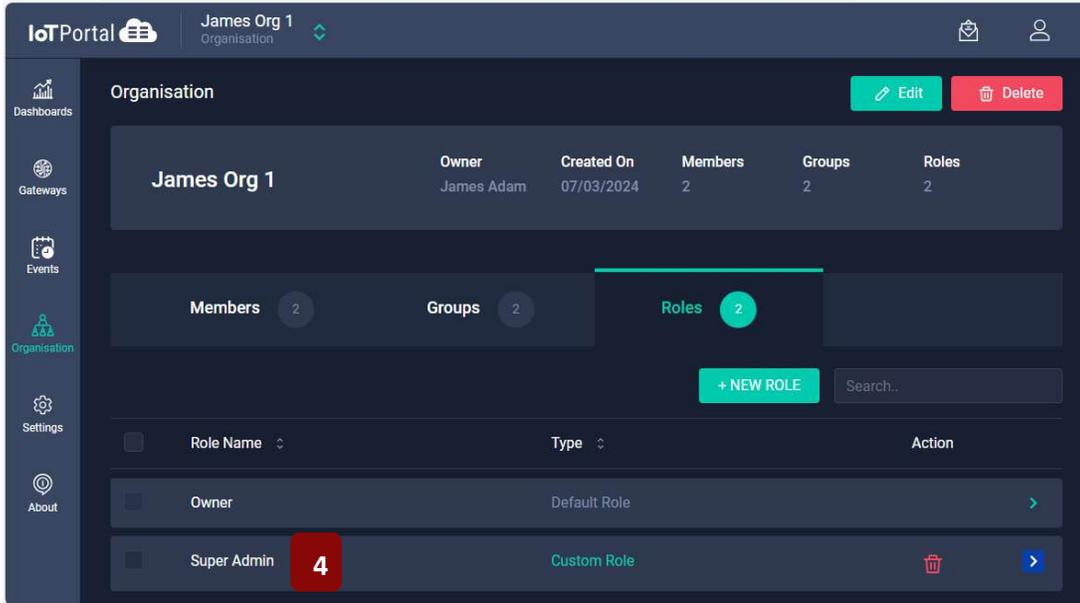
1. Click *Roles* tab.



2. The owner of the organisation has the default role. To create new role, click [**+ New Role**].
3. Enter the *Role Name*; *Assign Permissions* to the role and Click [**SAVE**]. Refer to Table 4 for the list of Permissions.



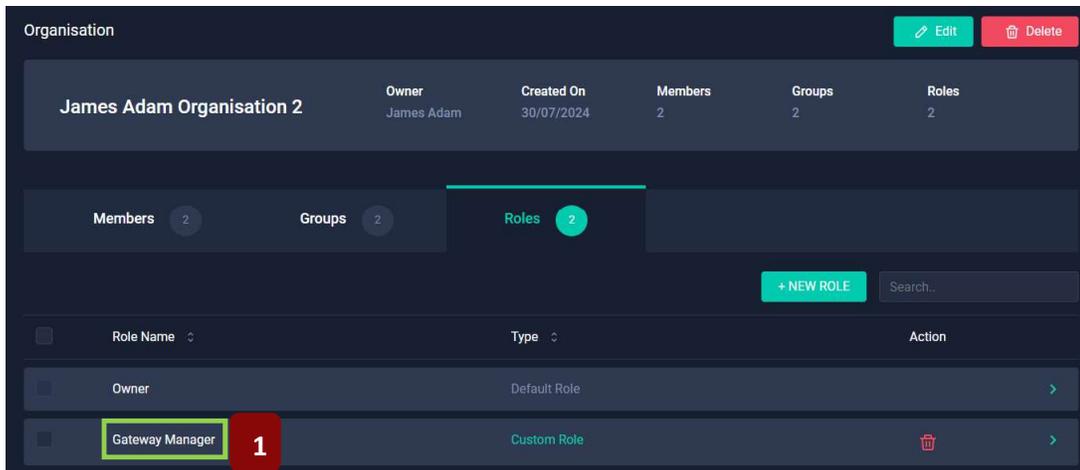
- An appropriate message indicating the successful creation of role is displayed. The newly added role is displayed as part of the Roles table.



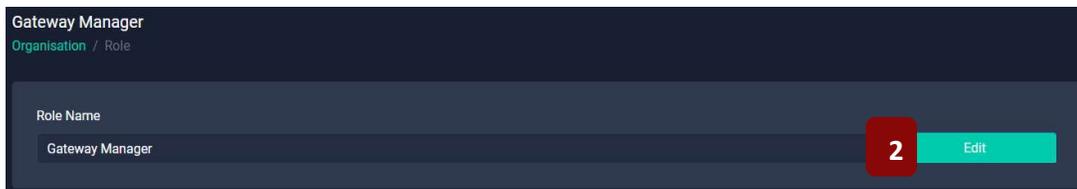
11.1.3.2 Edit Custom Role

To edit custom role –

- Click on the custom role from the Roles tab .



- Click **[Edit]**.



3. Modify the custom role name as required and click **[Update]**.

Gateway Manager
Organisation / Role

Role Name
Gateway Administrator

3 Update

4. An appropriate message indicating the successful update of role name is displayed. The updated custom role name is displayed.

Gateway Administrator
Organisation / Role

Role Name
Gateway Administrator

4 Edit

Members 2 Groups 2 Roles 2

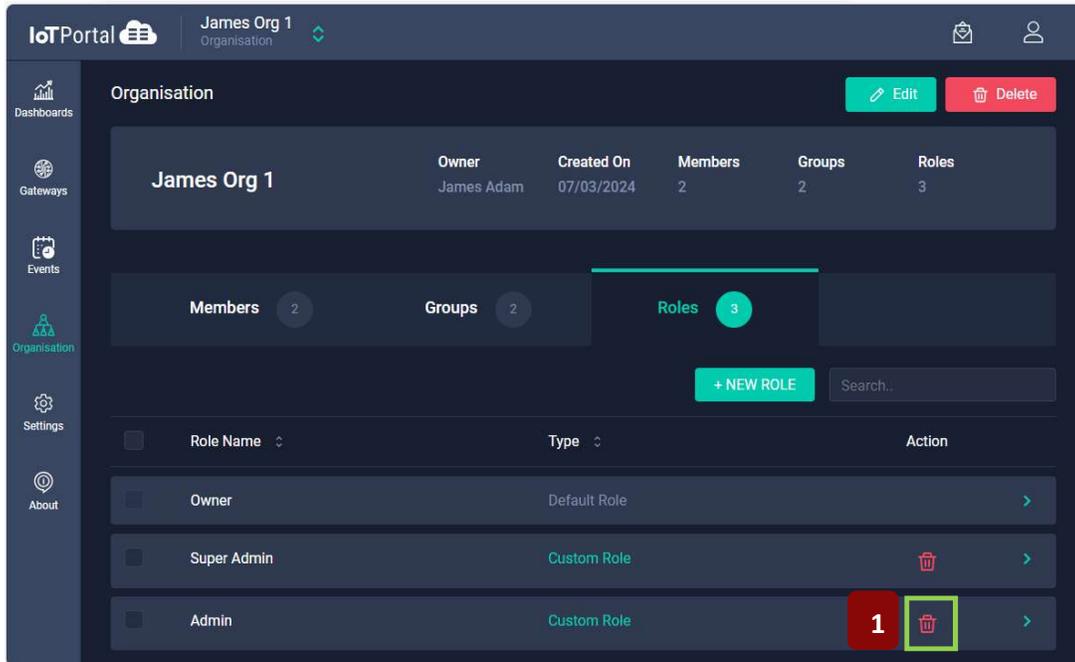
+ NEW ROLE Search..

Role Name	Type	Action
Owner	Default Role	>
Gateway Administrator	Custom Role	>

11.1.3.3 Delete Role

Only a custom role can be deleted. To delete a role –

1. Select the role you wish to delete by clicking on the check box. Click  icon located under the Action column.



The screenshot shows the 'Organisation' interface for 'James Org 1'. It displays a table of roles with columns for Role Name, Type, and Action. The 'Admin' role is selected, and the trash icon in the Action column is highlighted with a red box and the number 1.

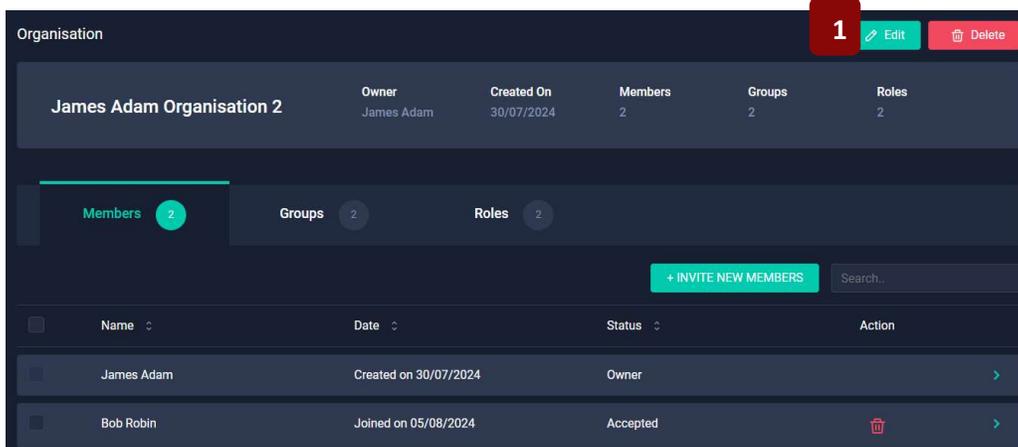
Role Name	Type	Action
Owner	Default Role	>
Super Admin	Custom Role	 >
Admin	Custom Role	 >

A confirmation window is displayed. Click **[DELETE]** to proceed or **[CANCEL]** to discard the deleted operation.

11.2 Edit Organisation Name

To edit organisation name –

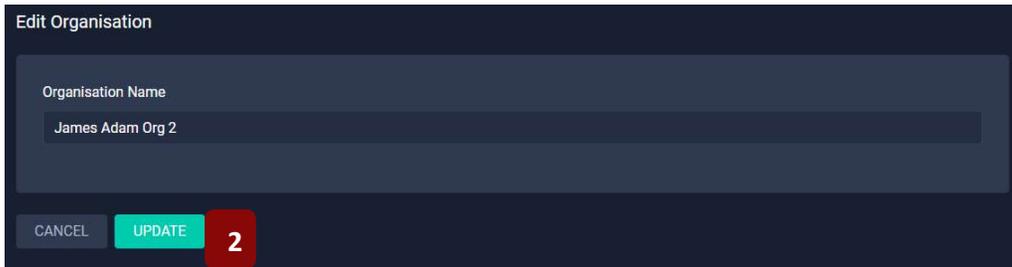
1. From the organisation interface, click **[Edit]**.



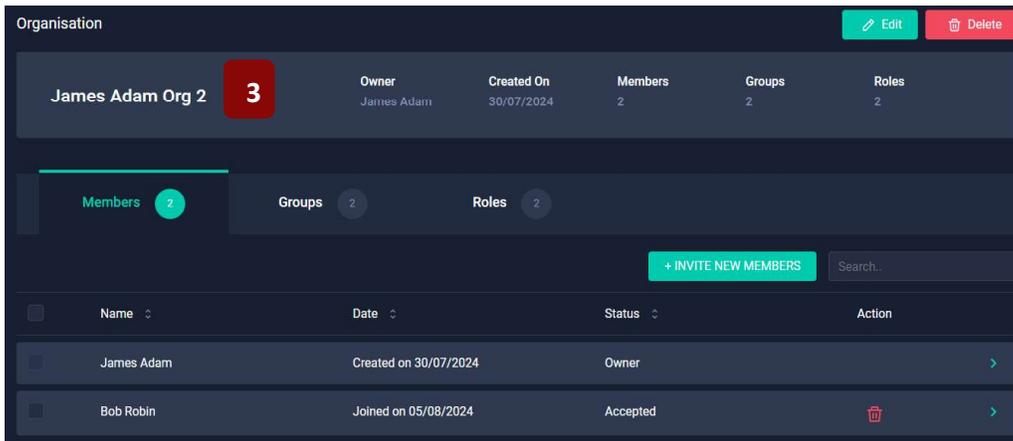
The screenshot shows the 'Organisation' interface for 'James Adam Organisation 2'. It displays a table of members with columns for Name, Date, Status, and Action. The 'Edit' button in the top right corner is highlighted with a red box and the number 1.

Name	Date	Status	Action
James Adam	Created on 30/07/2024	Owner	>
Bob Robin	Joined on 05/08/2024	Accepted	 >

2. Edit the *Organisation Name* as required and click **[UPDATE]** to save the changes, if any.



3. An appropriate message indicating the successful update will be displayed. The updated organisation name is displayed.

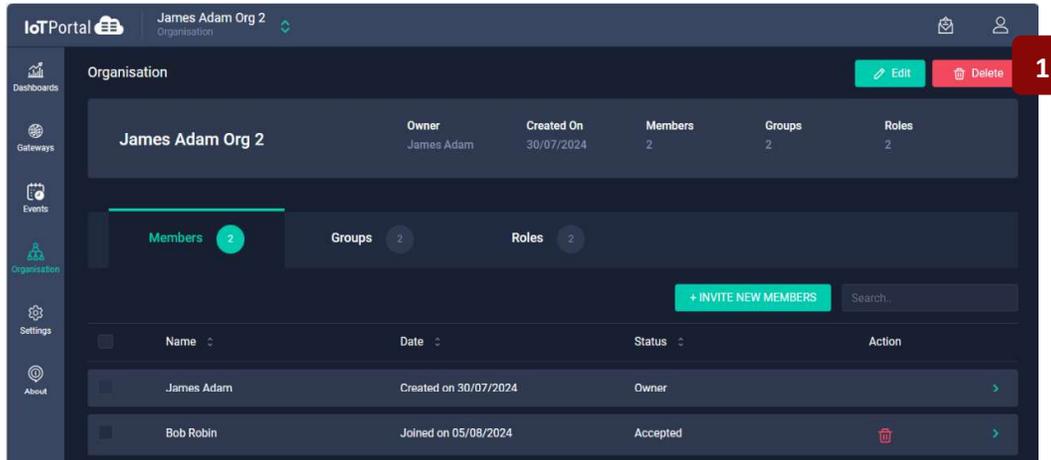


Name	Date	Status	Action
James Adam	Created on 30/07/2024	Owner	>
Bob Robin	Joined on 05/08/2024	Accepted	> 

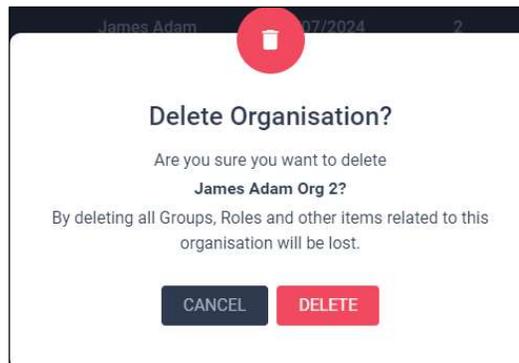
11.3 Delete Organisation

To delete organisation –

1. From the organisation interface, click **[Delete]**.



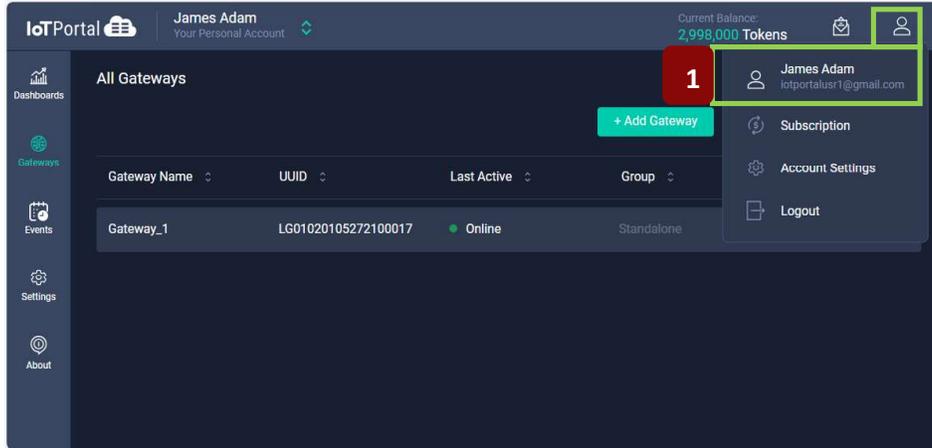
2. A confirmation message is displayed. Go through the message and click **[DELETE]** to proceed.



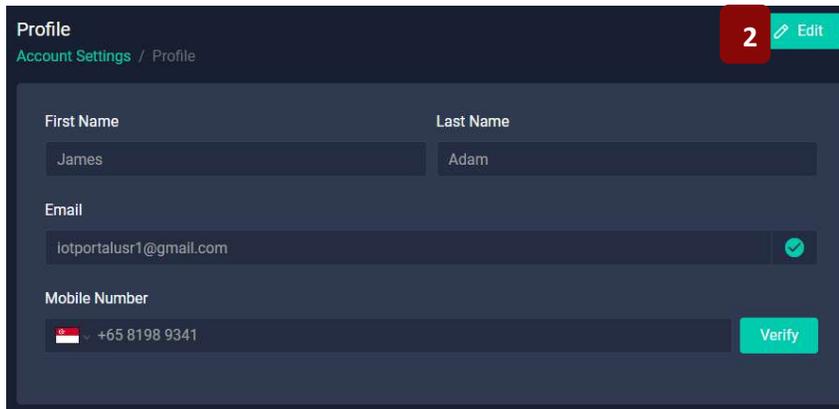
12. Profile Management

The profile management allows users to manage the personal settings. To view/edit user profile –

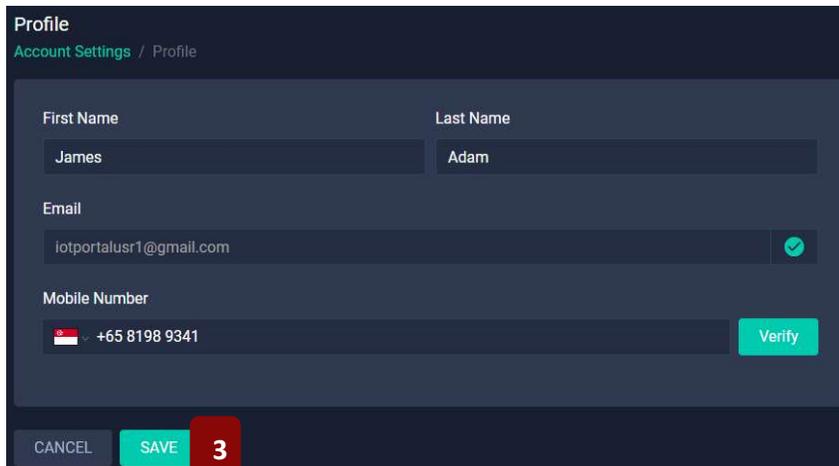
1. Click on the **Avatar** icon; Select *View/Edit profile details*. Alternatively, the profile interface can be accessed by clicking [*Account Settings > Profile Details*].



2. The user profile interface is displayed. To modify the user profile, click **[Edit]**.



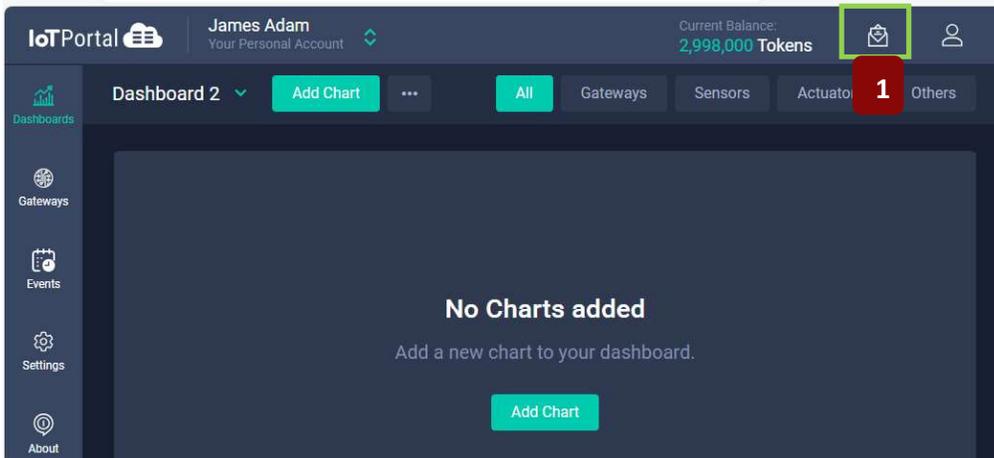
3. Except for Email Address field, all the other fields are editable. Upon editing, click **[SAVE]** to save the changes (if any).



13. Invitation from other Organisation

To view the invitations received from other organisations (if any) –

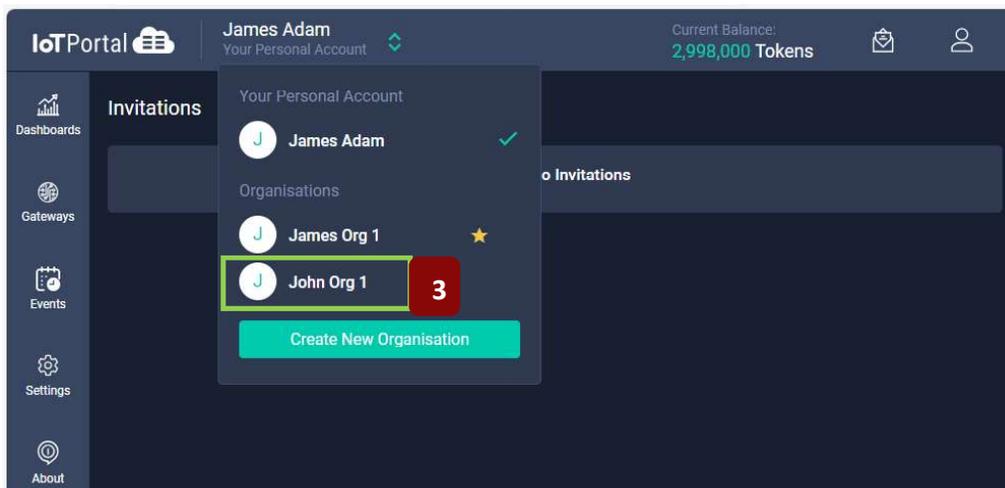
1. Click on the *Invitation*  icon.



2. Invitation(s) from other organisation(s) if any is displayed. Click **[ACCEPT]** to join the organization or **[DECLINE]** to discard the invitation.



3. Upon accepting the invitation, the newly joined organisation is shown as part of the organisation list.

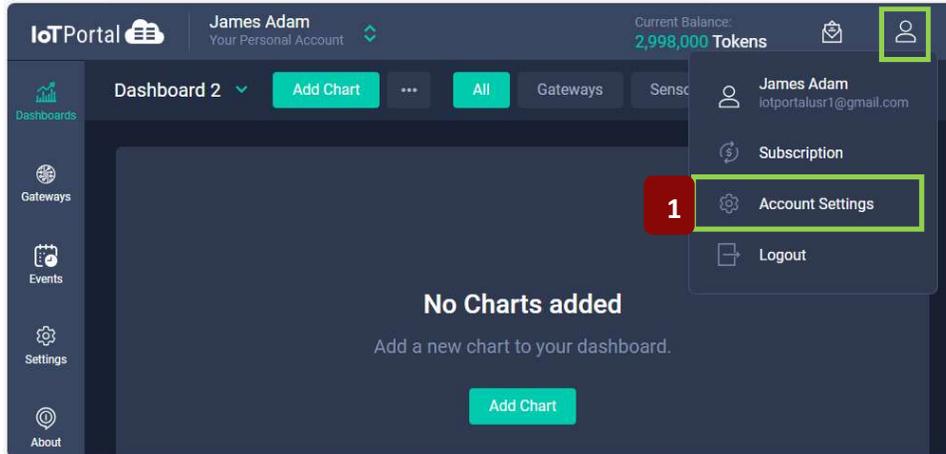


14. Account Settings

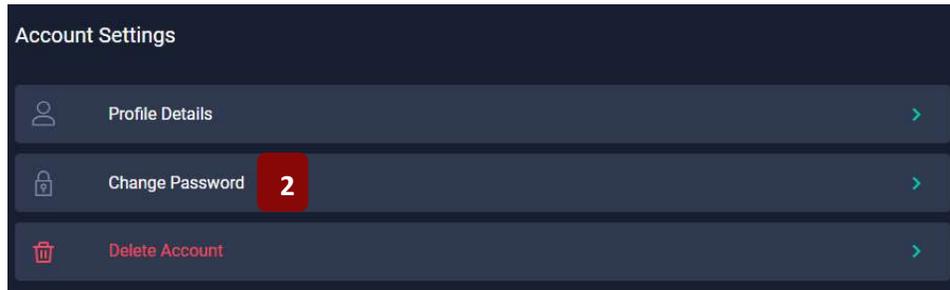
14.1 Change Password

To change password –

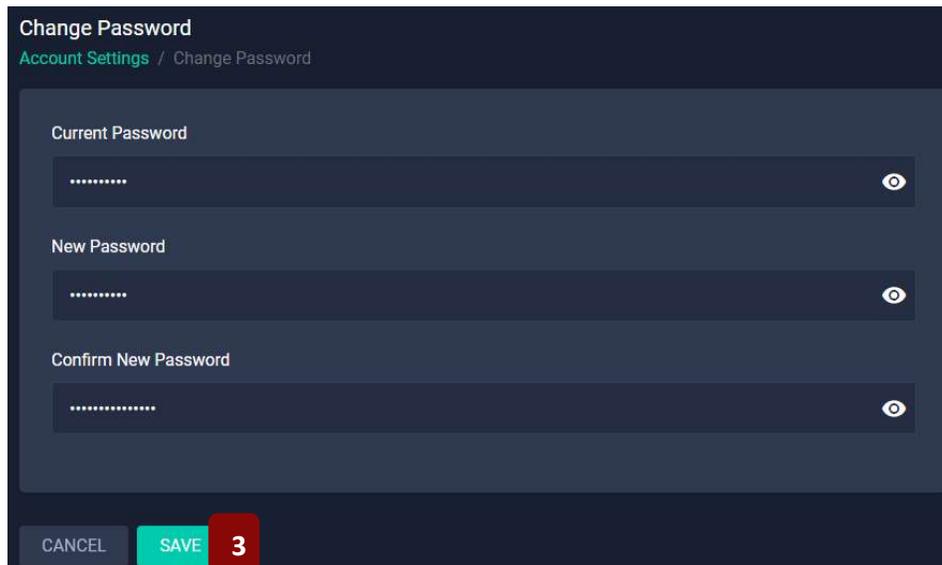
1. Click on the **Avatar**  icon; Select *Account Settings*.



2. The Account Settings interface is displayed. Select **Change Password**.



3. Change the password as required and click **[SAVE]** to store the changes.



15. Manage API Access Keys

The API Access Keys can be used to retrieve and analyse sensor data from gateways, as well as send commands to actuators in application or script. These Access Keys can only be used for personal account. To create Access Keys for your organisations, please switch to an organisation and create Access Keys under that organisation.

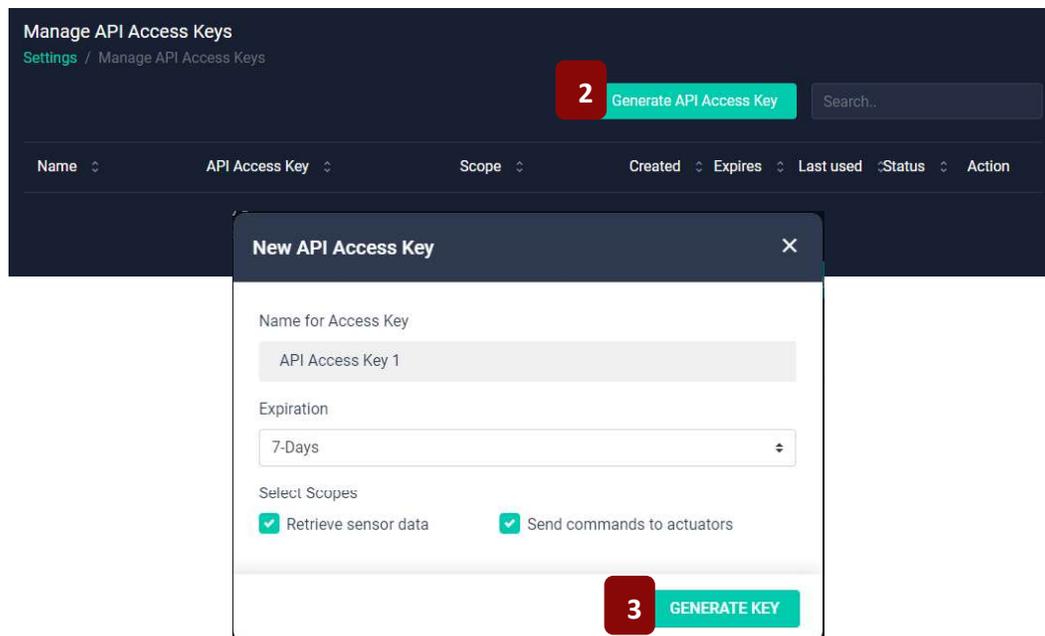
15.1 Generate API Access Key

To generate API Access Key –

1. Click **Settings** from the menu. Click **Manage API Access Keys** or **>**.

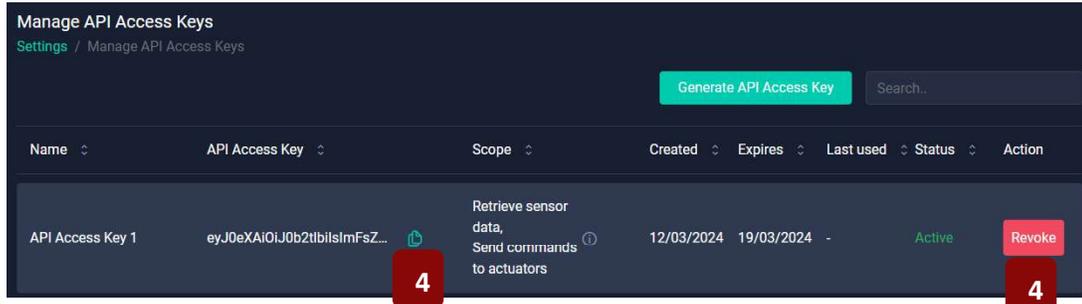


2. Manage API Access Keys interface is displayed. Click **[Generate API Access Key]** to generate a new key.



3. Input the *Name for Access Key*, *Expiration Date*; *Select Scopes* and click **[GENERATE KEY]**.

4. The newly created API Access Key is displayed as part of the table. To copy the key, click  To revoke API Access Key, click **[Revoke]**.



Manage API Access Keys
Settings / Manage API Access Keys

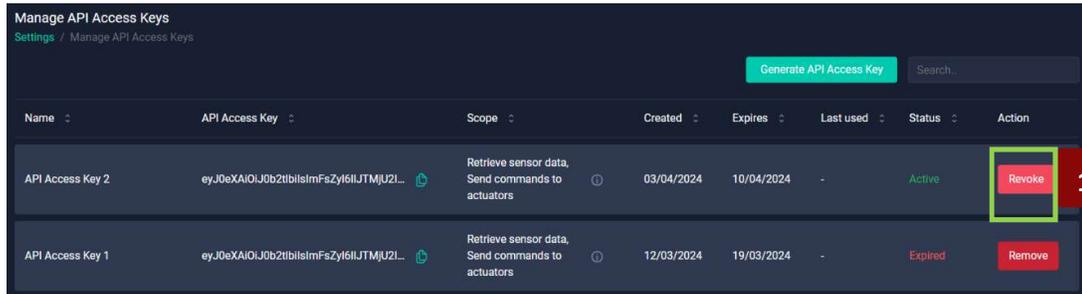
Generate API Access Key Search..

Name	API Access Key	Scope	Created	Expires	Last used	Status	Action
API Access Key 1	eyJ0eXAiOiJ0b2t1bilsImFsZy...	Retrieve sensor data, Send commands to actuators	12/03/2024	19/03/2024	-	Active	Revoke

15.2 Revoke API Access Key

To revoke API Access Key –

1. Click **[Revoke]**.

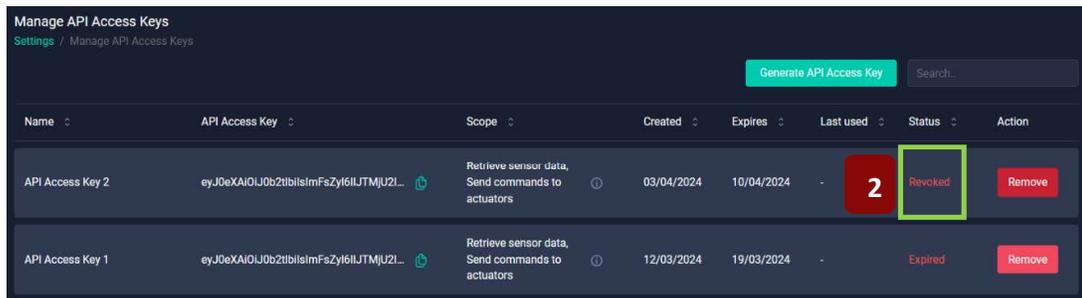


Manage API Access Keys
Settings / Manage API Access Keys

Generate API Access Key Search..

Name	API Access Key	Scope	Created	Expires	Last used	Status	Action
API Access Key 2	eyJ0eXAiOiJ0b2t1bilsImFsZy6lJTMjU2I...	Retrieve sensor data, Send commands to actuators	03/04/2024	10/04/2024	-	Active	Revoke
API Access Key 1	eyJ0eXAiOiJ0b2t1bilsImFsZy6lJTMjU2I...	Retrieve sensor data, Send commands to actuators	12/03/2024	19/03/2024	-	Expired	Remove

2. A confirmation window is displayed. Click **[YES]** to proceed. The status is updated to Revoked.



Manage API Access Keys
Settings / Manage API Access Keys

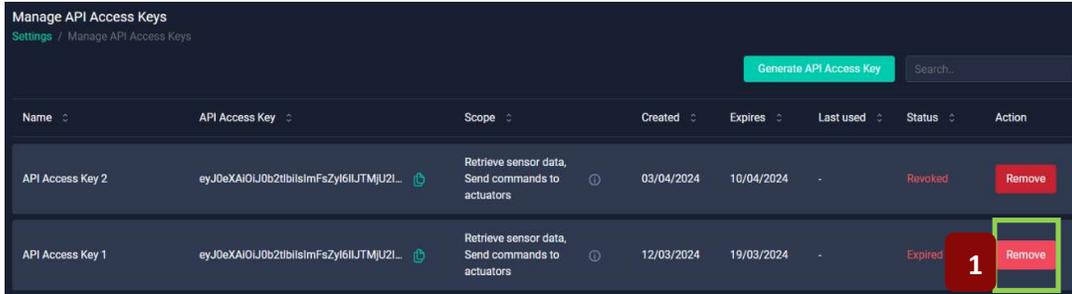
Generate API Access Key Search..

Name	API Access Key	Scope	Created	Expires	Last used	Status	Action
API Access Key 2	eyJ0eXAiOiJ0b2t1bilsImFsZy6lJTMjU2I...	Retrieve sensor data, Send commands to actuators	03/04/2024	10/04/2024	-	Revoked	Remove
API Access Key 1	eyJ0eXAiOiJ0b2t1bilsImFsZy6lJTMjU2I...	Retrieve sensor data, Send commands to actuators	12/03/2024	19/03/2024	-	Expired	Remove

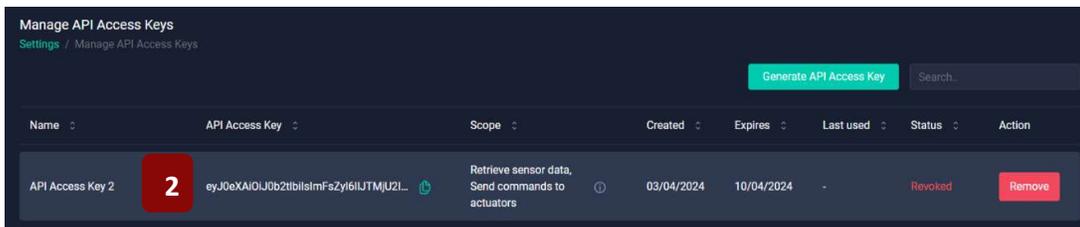
15.3 Remove API Access Key

To remove API Access Key –

1. Click **[Remove]**.



2. A confirmation window is displayed. Click **[YES]** to proceed. The key is removed.

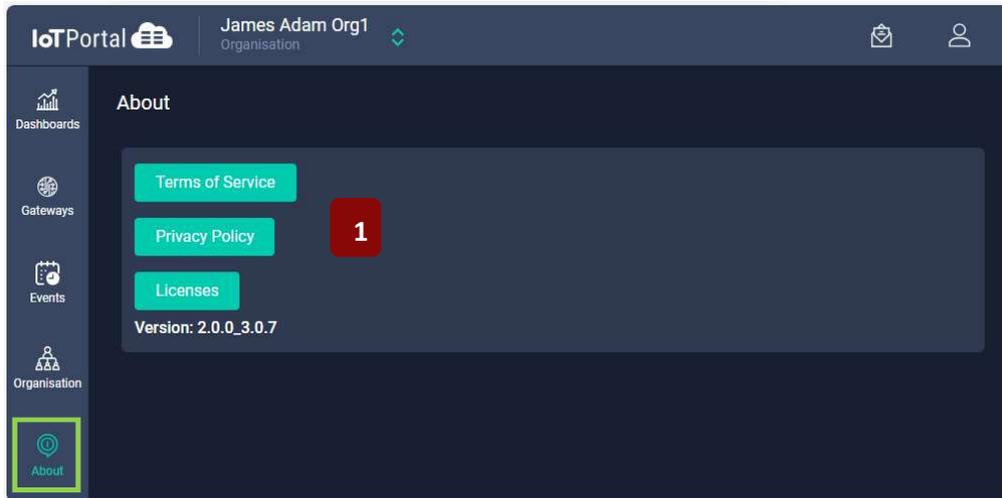


16. About

The About interface displays information related to IoTPortal Web Management Console's version information.

To view version information –

1. Click **About** from the menu. The About interface is displayed with the version information. Click on *Terms of Service* / *Privacy Policy* / *Licenses* links to view the respective details.



17. Contact Information

Refer to <https://brtsys.com/contact-us/> for contact information.

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Appendix

Glossary of Terms, Acronyms & Abbreviations

Term or Acronym	Definition or Meaning
CRUD	In computer programming, Create, Read, Update and Delete are the four basic operations of persistent storage.
GUI	A Graphical User Interface is a digital interface in which a user interacts with graphical components such as icons, buttons, and menus.
IoT	The Internet of Things is a network of interrelated devices that connect and exchange data with other IoT devices and the cloud.
MFA	Multi-factor Authentication is an authentication method that requires the user to provide two or more verification factors to gain access to a resource such as an application, online account, or a VPN.
OTP	A one-time password is an identity verification tool for authenticating users logging into an account, network, or system.
QR Code	A quick-response code is a type of two-dimensional matrix barcode, invented in 1994, by Japanese company Denso Wave for labelling automobile parts.
UUID	Universal Unique Identifier is a 128-bit value used to uniquely identify an object or entity on the internet.
UART	A Universal Asynchronous Receiver-Transmitter is a peripheral device for asynchronous serial communication in which the data format and transmission speeds are configurable.

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Revision History

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1.0	Initial release for V1.0.0	26-01-2023
2.0	Updated release for V2.0.0_3.0.7	12-08-2024