Pervasive Nation RuBAN v6.0.225 User Guide

Revision History

Version	Date	Author	Description
0.1	14/2/17	Brian Murphy	Initial Draft

Contents

Release Notes

For the current release of Ruban v6.0.225, we would recommend the use of the *Google Chrome* or *Firefox* web browsers as the user-testing has been extensive on these platforms.

Known Issues:

- Naming convention across the entire portal. **Mote**, **IoT Gateway** and **Sensor** used interchangeably when describing a **device**. Similarly, **Sensor** describes a **metric**.
- Mote Admin – Bug in Google Chrome where the **Edit** device button on the dropdown menu cannot be clicked.
- No ability to pass a string through a decoder to display on the dashboard.
- Tables created with the dashboard creator can intermittently fail to show data. For example, changing to a different dashboard, data will fail to show up in the table element again. This can be solved by refreshing the page.
- GPS location element will resize larger and larger each time a different device is chosen. Fixed by refreshing the page.
- Occasionally, resizing of windows will cause element information to cluster together.
- Changing the date period on a dashboard can cause certain elements' information to cluster together. For example, along the x and y axis of an element.
- Some elements resize differently from the created dashboard, such as adding the thermometer, gauge, etc. They will appear either extremely large or don't appear at all. Can be fixed by reconfiguring the pane layout of the dashboard.
- Admin panel icons can be displayed in a long list rather than across the screen as expected. Page must be refreshed to correct this.
- RuBan IoE Portal - when calling up a device data menu, the dropdowns don't line up with the labels and clicking the dropdown scrollbar drags the dialog instead of scrolling. The metrics info popup can be too large for certain screen resolutions.
- GPS Replay - Opening the **Location Editor** and **Search for a Gateway** input dialog will float over elements of the map navigation on that page and **List GPS history** page.
- Platform Settings – Some help icons will not redirect to the help page. Access **Help** from the main menu.

1 Login

Navigate to the *url* provided to you for your specific tenant. i.e. tcd.pervasivenation.com and enter your credentials.

Once logged in successfully, you should be brought to this landing page.
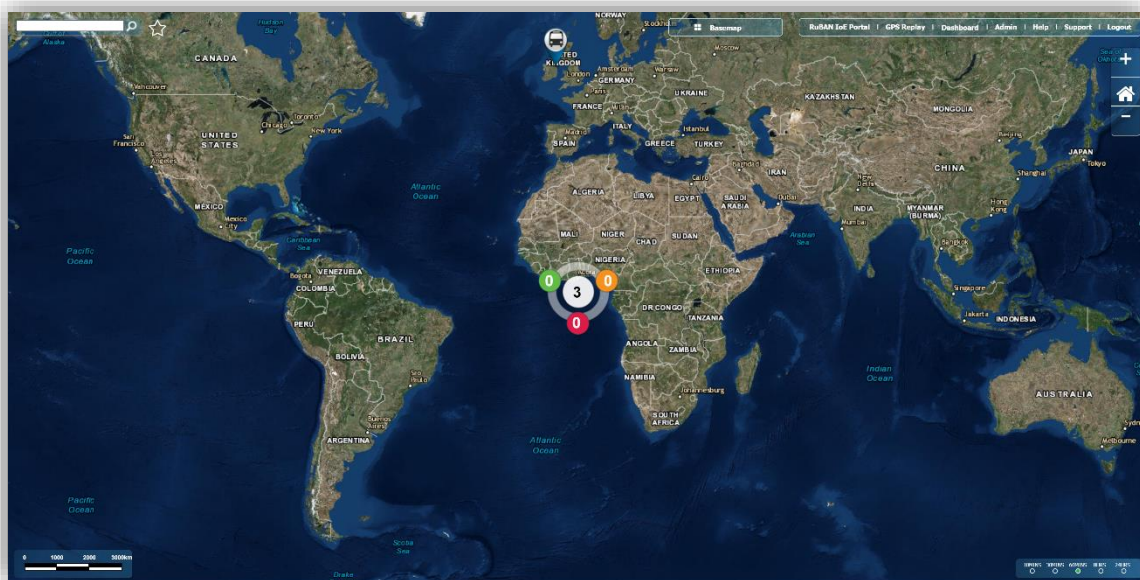
Should you have any issues with logging in, please contact us.

1 Login

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2 Administration

The administration page is the central area for managing all aspects of the Pervasive Nation Network.

Navigate to the **Admin** page from the menu on the upper right hand side of the page.

You should be presented with this information
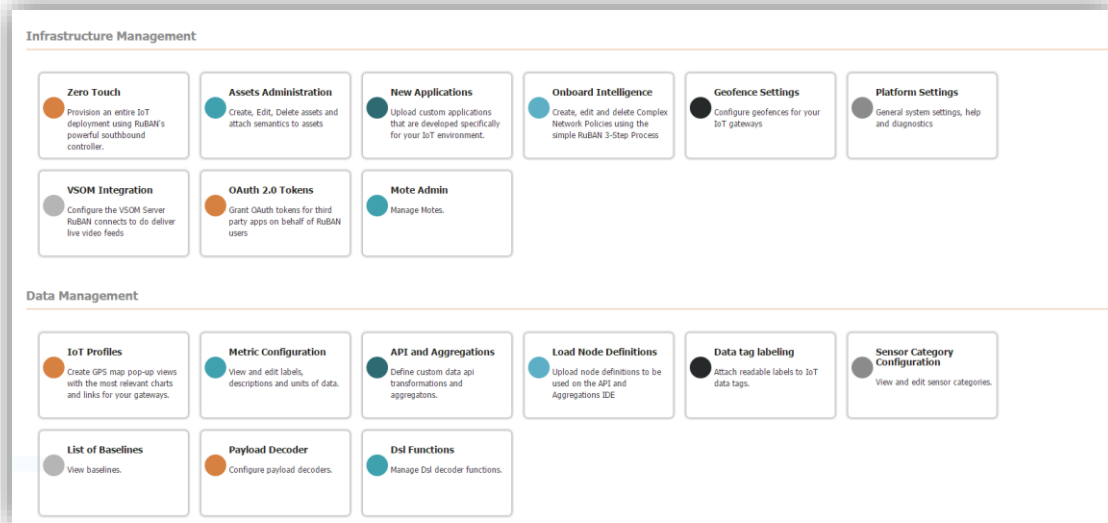
PN v6.0.255 includes some options in the administration page are not relevant to many users that will be deprecated in future revisions. Please view the screenshot below to see the most relevant areas for the current user.

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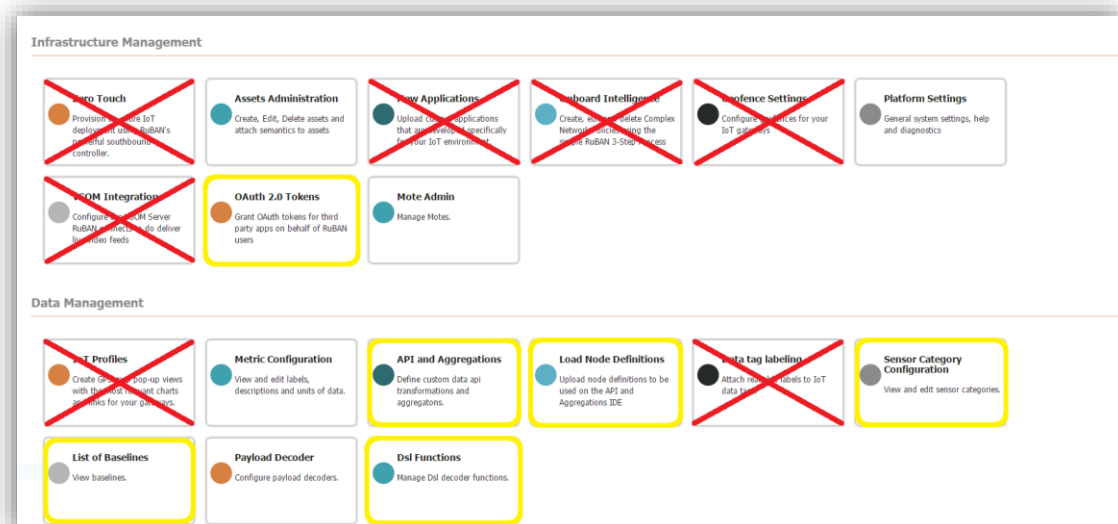
3 Platform Settings

Platform settings will open the Ruban Enabling IoE page which will allow access to global settings as well as infrastructural settings. At the current release time, many of the features of this area will not be of relevance to most users at this current time. One feature that is of relevance is the ability for an administrator to add a user to the portal (i.e. researcher, student, etc..).
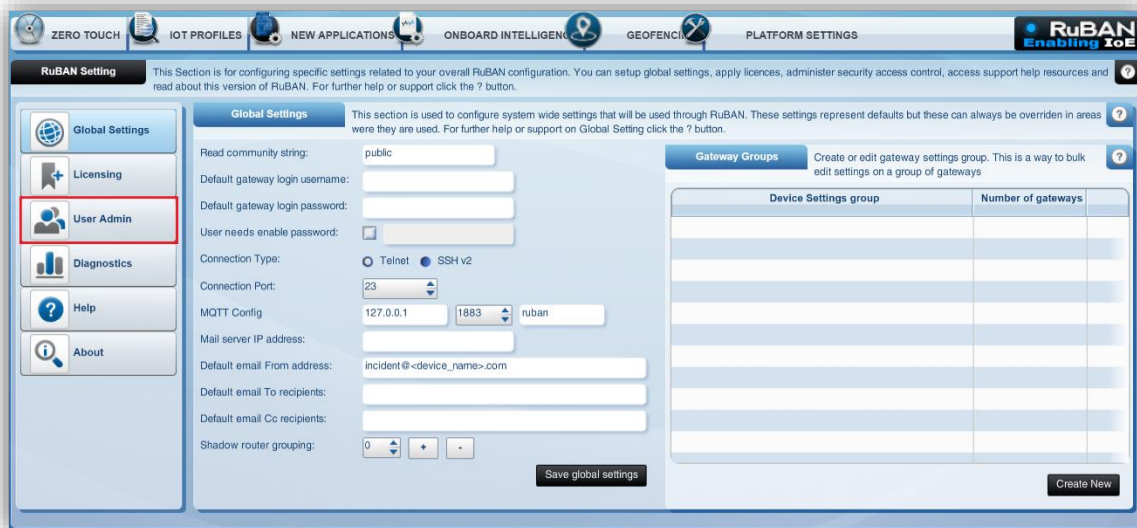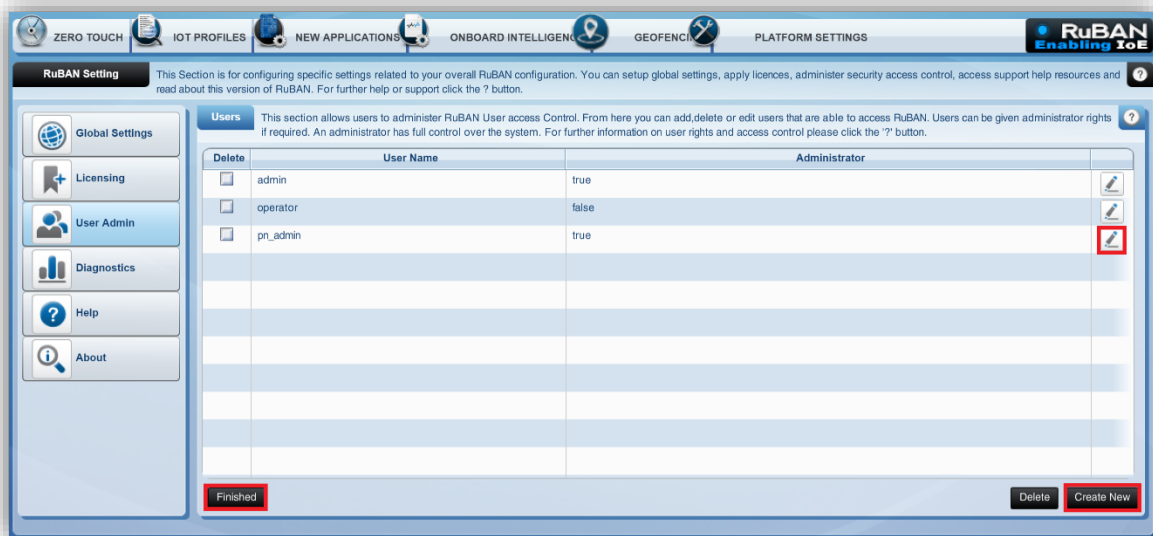

From this page click the **User Admin** tab.

Click on the **Configure local authentication** tab to proceed

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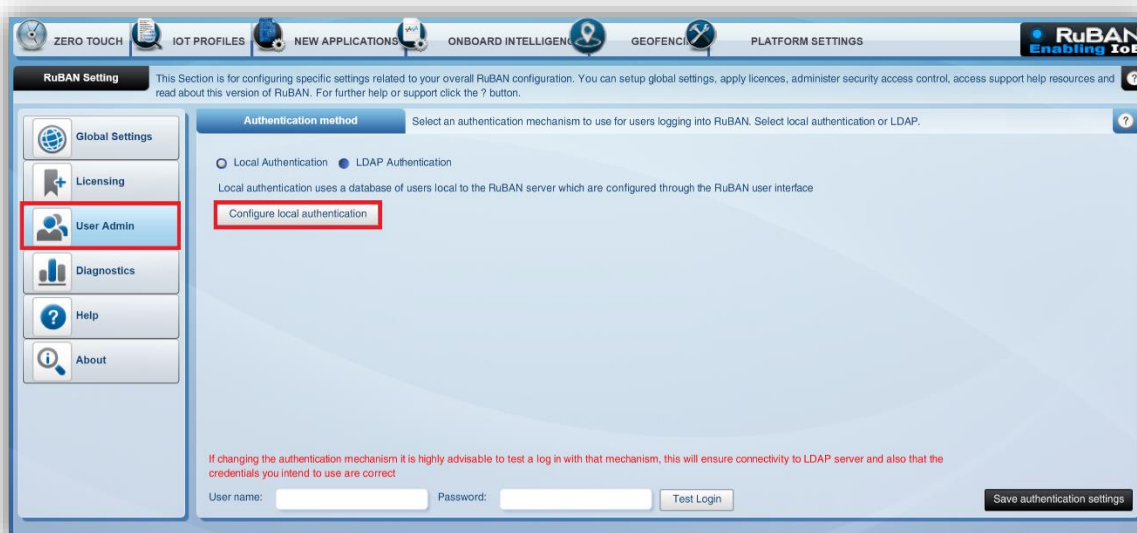
Click on **Create New** to create a new user.

Fill in the **Username** and **Password** for the new user. Check that **Administrator** checkbox is unticked unless you want that user to have full administration rights on the platform.

Once you have completed these steps be sure to click **Save** to complete the user registration. You should now see that user listed in the user's pane. Should you wish to edit their credentials at any point, click on the pen icon to the right-hand side of the user to edit.

To delete a user, simply click the checkbox beside their name and then click **Delete** on the lower right hand side to complete the process.

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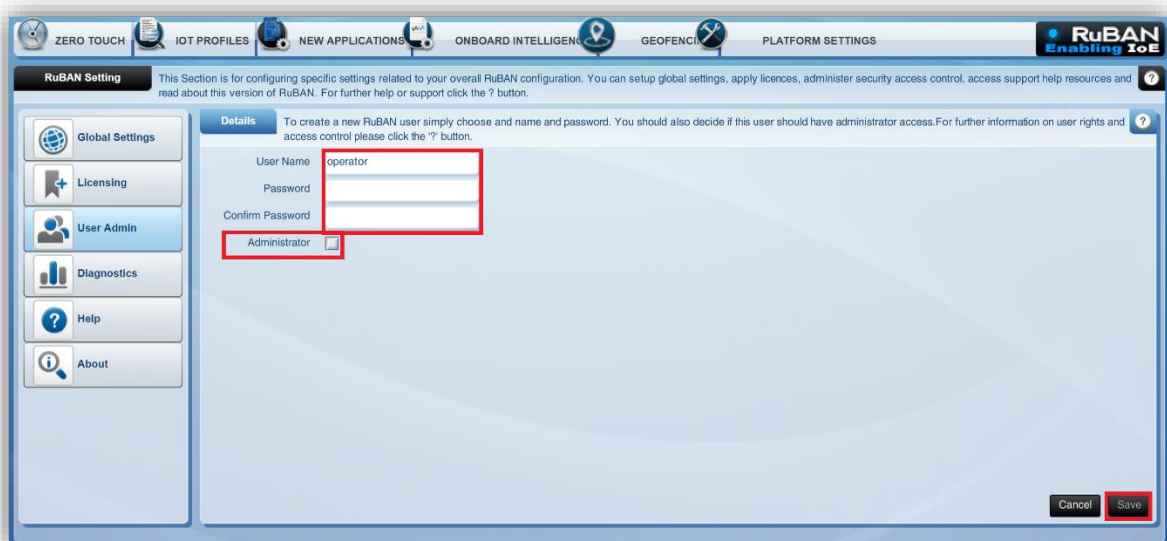
## 4 Payload decoder for devices

Proceed to the **Payload Decoder** section from the administration page.
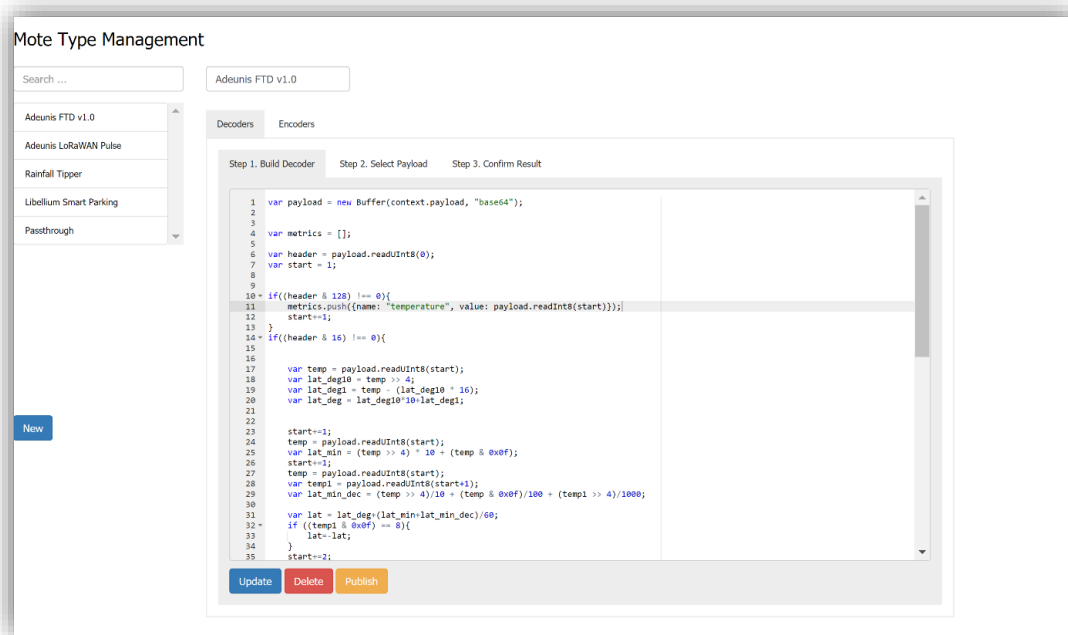
Here you can create your own decoder for any particular device that you wish to add to the network and returns its values.

Click on **New** to create a new decoder. This also provides the ability to Select the payload for your particular device in the **Mote Admin** page

There will be example decoders already present in the **Payload Decoder** page. These are built using JavaScript, not the JSON type that will populate a new decoder like the screenshot below. So when creating a new decoder, just discard the pre-populated code.

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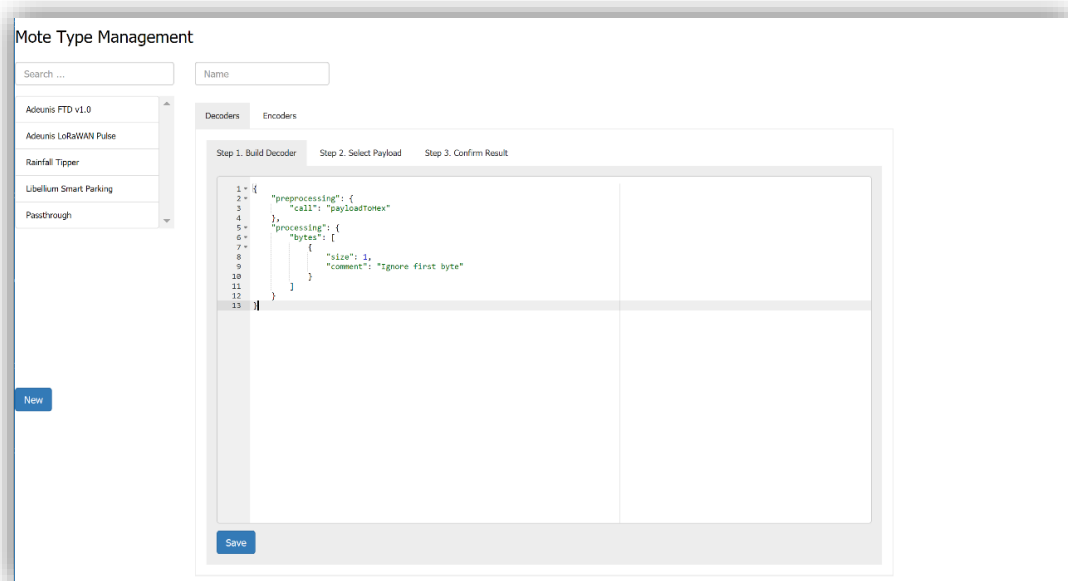
Here is an example decoder for a Rainfall Tipper.

```javascript
var payload = new Buffer(context.payload, "base64");
var code = payload.readUInt8(0);

var metrics = [];

// Decode Status Byte, present in all messages

var header = payload.readUInt8(0);
var battery = payload.readUInt16BE(1);
var tip_counter = payload.readUInt16BE(3);
var tip_occurances = payload.readUInt8(5);
var tipper_type = payload.readUInt8(6);
var rainfall;

if (tipper_type == 1) {
    rainfall = tip_occurances / 10;
} else if (tipper_type == 2) {
    rainfall = tip_occurances / 5;
} else if (tipper_type == 3) {
    rainfall = tip_occurances / 2;
}

metrics.push({ name: "battery", value: battery });
metrics.push({ name: "tip_counter", value: tip_counter });
metrics.push({ name: "tip_occurances", value: tip_occurances });
metrics.push({ name: "rainfall", value: rainfall });
metrics.push({ name: "tipper_type", value: tipper_type });

//0x01 0.1mm Low Cost light rainfall gauge 0x02 0.2mm Casella Moderate Rainfall
Gauge 0x03 0.5mm Heavy Rainfall Gauge

context.value = {
    metrics: metrics,
    gps: {
        latitude: null,
        longitude: null
    }
};
```
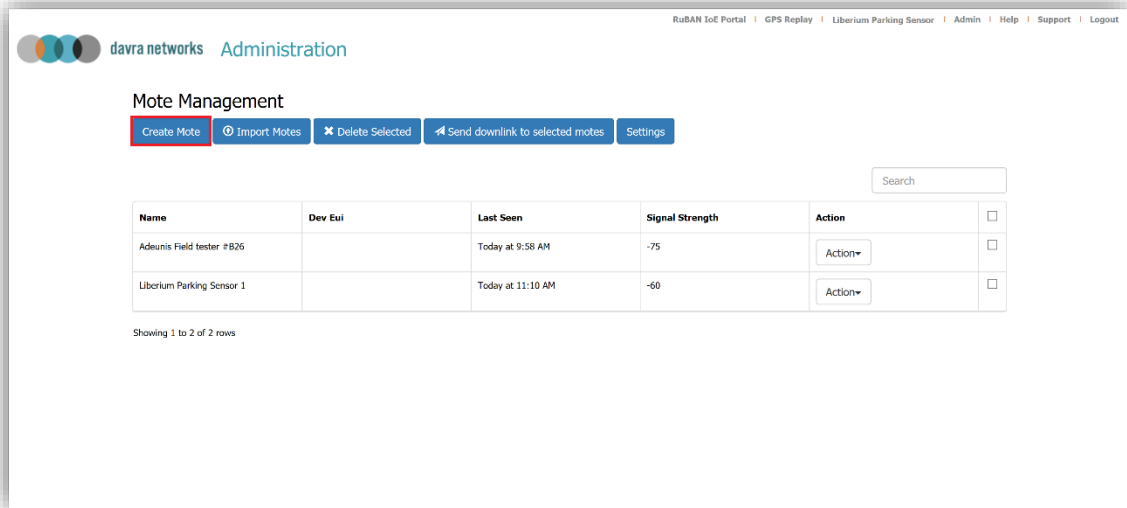
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5 Add a Device

From the **Administration** page proceed to **Mote Admin**

Click on **Create Mote**

You should be presented with the screen. Fill in the appropriate information for the that user. Here you must enter the **Mote Name**, **Dev EUI** and **MOTE Type**. MOTE type refers to the decoder used for that device. You can read more about MOTE Type in section 4 Payload decoder for devices. Then choose whether the device is using **Over-The-Air Activation** (**OTAA**) or **Activation by Personalization** (**ABP**).

For **OTAA** devices, choose the **OTAA** tab and provide the **App Key**.

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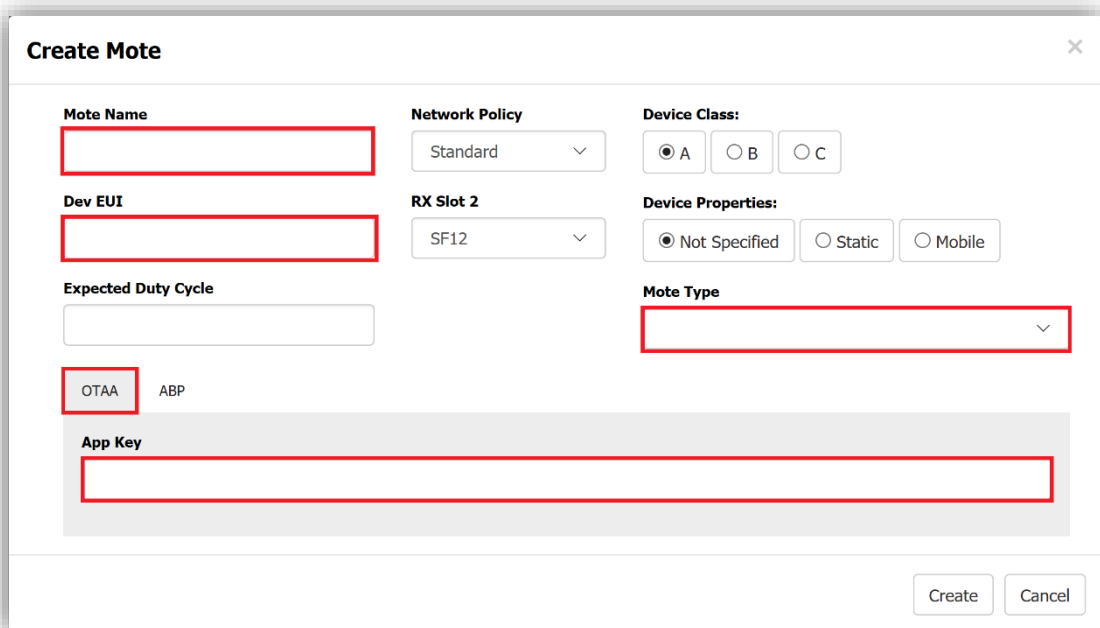
For **ABP** devices, choose the ABP tab and provide the **NetSKey**, **AppSKey** and the **Dev Addr**.

Once the all details have been entered, click **Create**

The created device should now be listed on the **Mote Management** page

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6 Metric Configuration

Metric configuration allows the user to configure the metrics that are available to the user from the decoded devices. Here you can alter the **Label**, **Name**, **Description** and **Units** the decoded payloads from the user created devices.

From the **Administrator** page, proceed to the **Metric Configuration** page. There should be a listing of your created device's output parameters.


To edit any of the information, simply click on any of the **Label**, **Name**, **Description** or **Units** fields until a text cursor appears and then type in the result. Once you click away from this space the entry will be saved automatically.

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7 Dashboards

The powerful dashboards that are available on the Ruban platform allow for the representation of data that is passed from any devices.

Click on **Dashboard** from the navigation menu. You can see examples of previously made dashboards listed in the screenshot below.
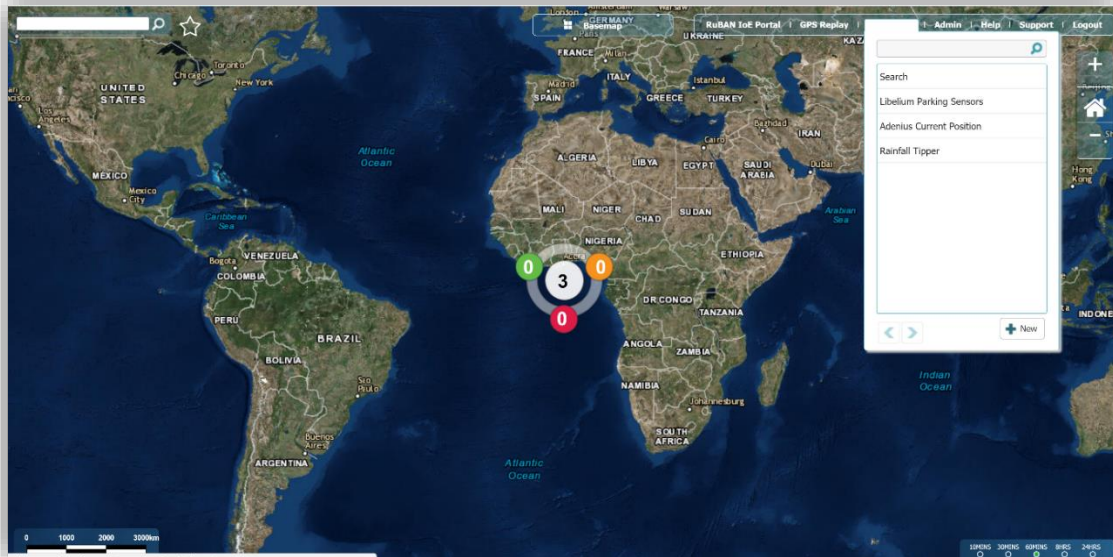
The options from the dropdown menu will allow you to

Search – Open Search for Dashboards

Search Dashboard – Search for all devices

**User Dashboards** – List of all user created dashboards

New – Create new dashboard

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7.1 Dashboard Search

To search for a created dashboard, enter a search query in the text input box at the top of the dropdown menu. The results will auto filter as you type.

7.2 Device Search

By clicking on **Search** from the dashboard dropdown menu, you will be presented with a page that allows you to search for devices across the whole tenant.
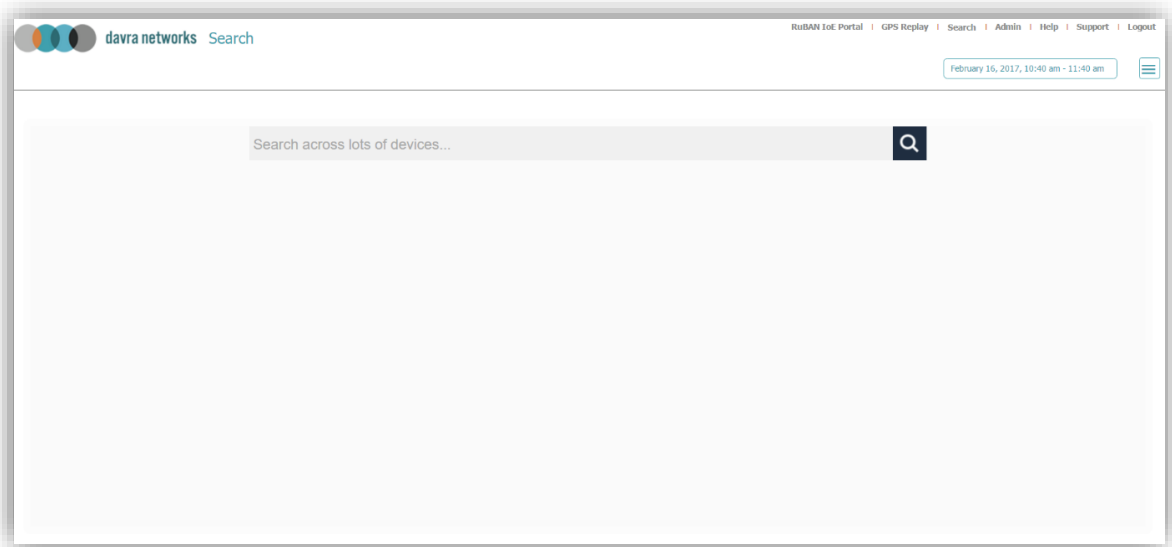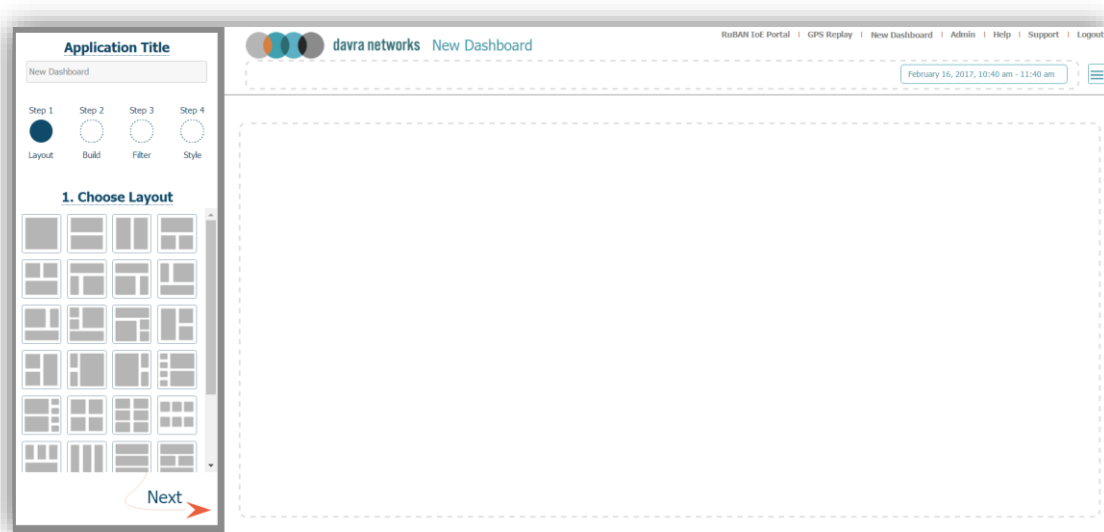

Start by typing in the search text input box and the results will auto filter as you type. This will then display any devices matching the text query you have entered.

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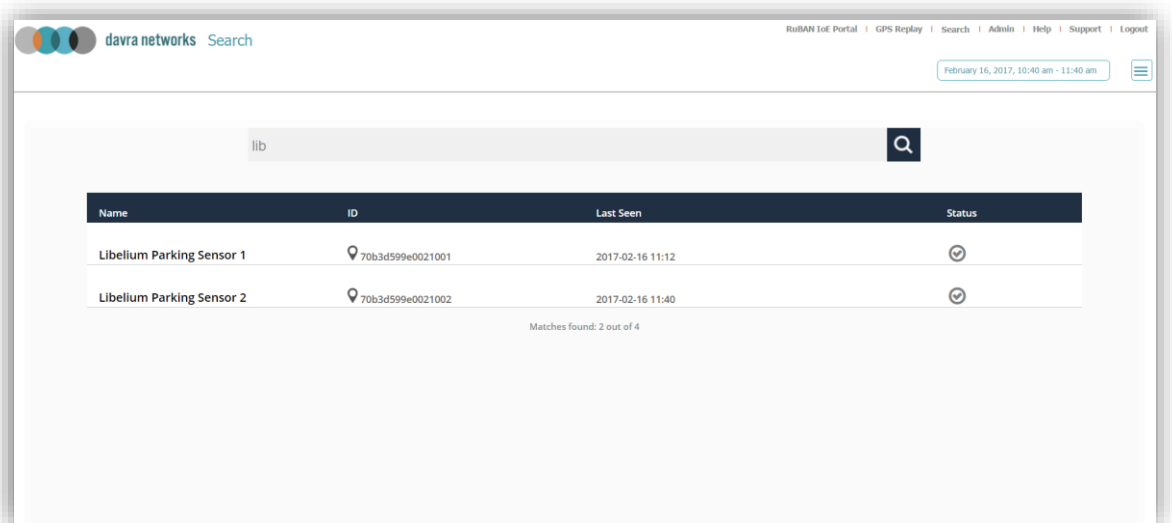
7.3 New Dashboard

To create a new dashboard, just select **New** from the dashboard dropdown menu. You should be brought to this page.


To populate a dashboard, first we will enter the name of the dashboard in the **Application Title** text input box. Choose a layout for our dashboard from the **Choose Layout** pane on the left. The layout in screenshot below shows a layout that will generate panes of differing sizes that we can populate with elements. Once the layout and name have been chosen, click **Next** to proceed to the next section.

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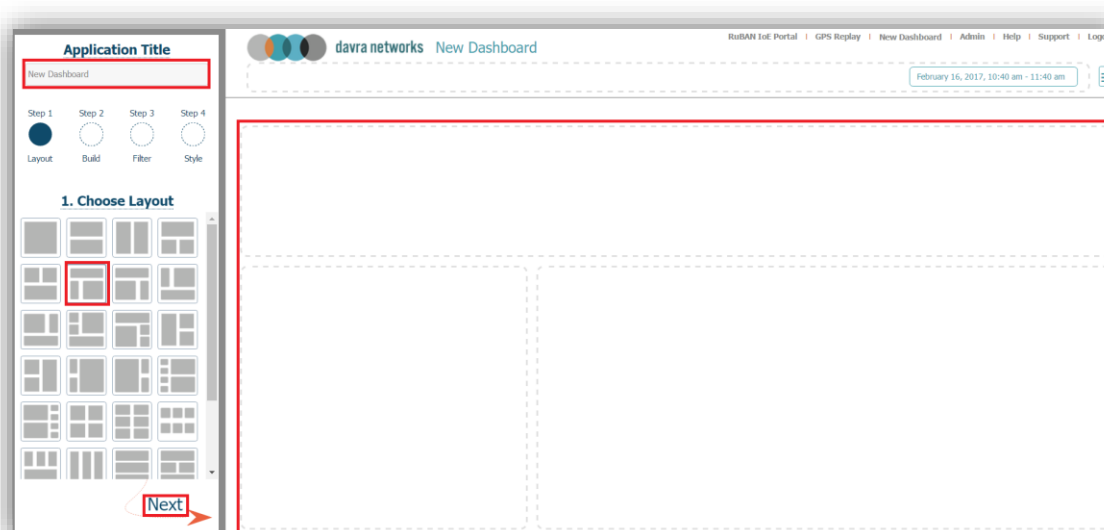
The next section will be where we build the elements that will represent the data we wish to show on our dashboard. On this screen, we will choose various elements from the **Build Components** menu on the left-hand side that will display device data.
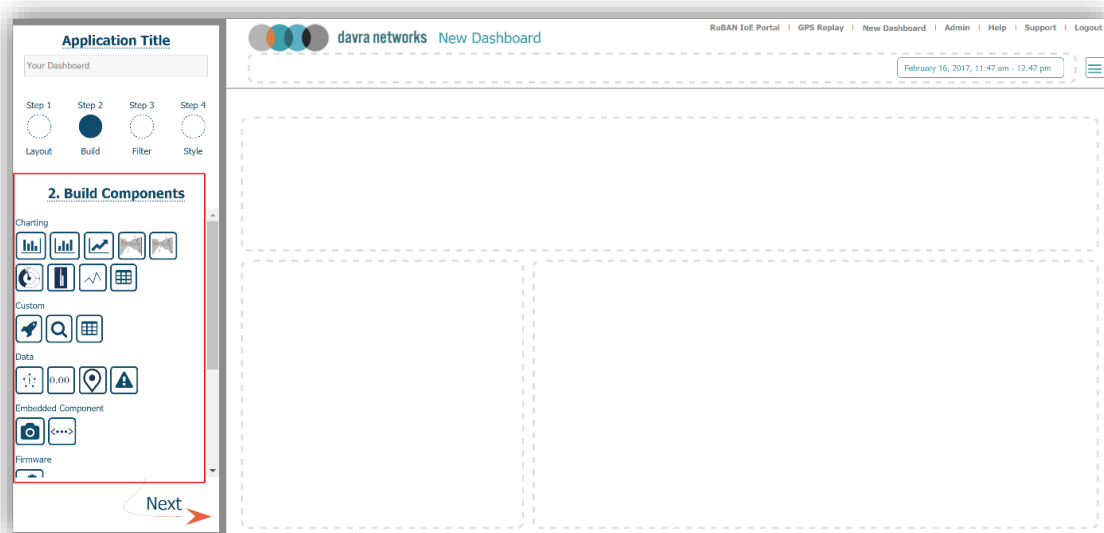
Here the example shows 3 elements chosen from the charting category on the left-hand menu to display on the screen. You can hover your mouse pointer over an element and it will reveal details about each one. To add to a layout pane, simply click, drag and drop into the desired pane.

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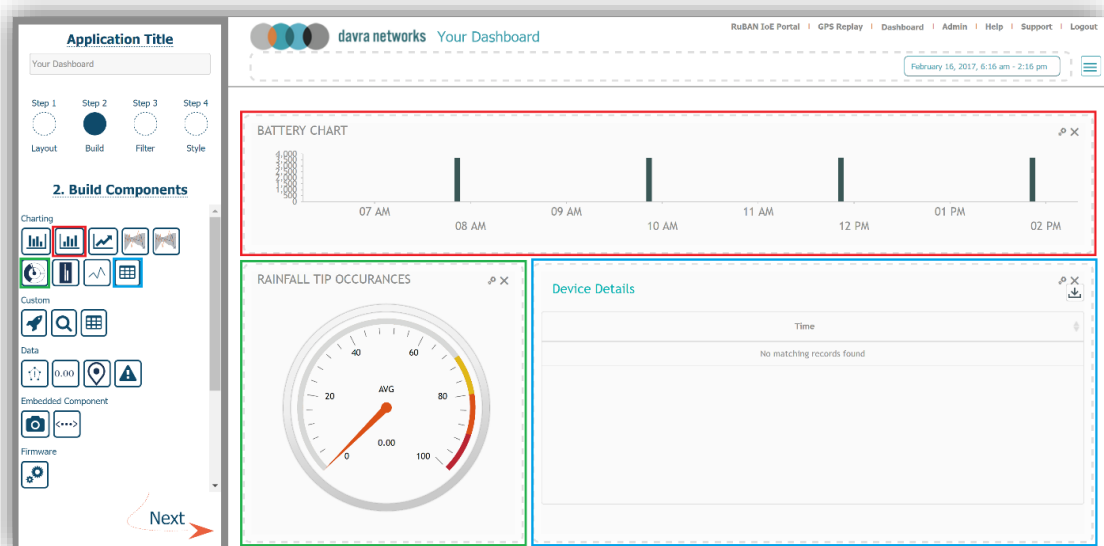
To display the data, we wish to have in the certain element, we need to click on the settings icon on the right-hand side of each element. We can see a gears icon which will open the element settings and then an **X** icon which will delete that element from the pane.
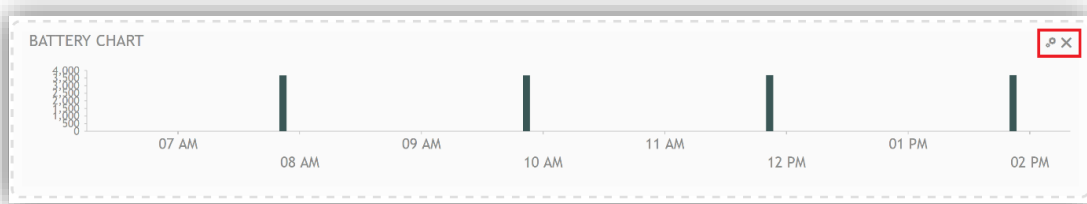
In the elements settings modal, each element will be slightly different depending on their functionality.

1 - Chart.

Title: Specify a **Title** for the chart.

Category: The category of metrics you wish to use (Network Stats, All, etc.)
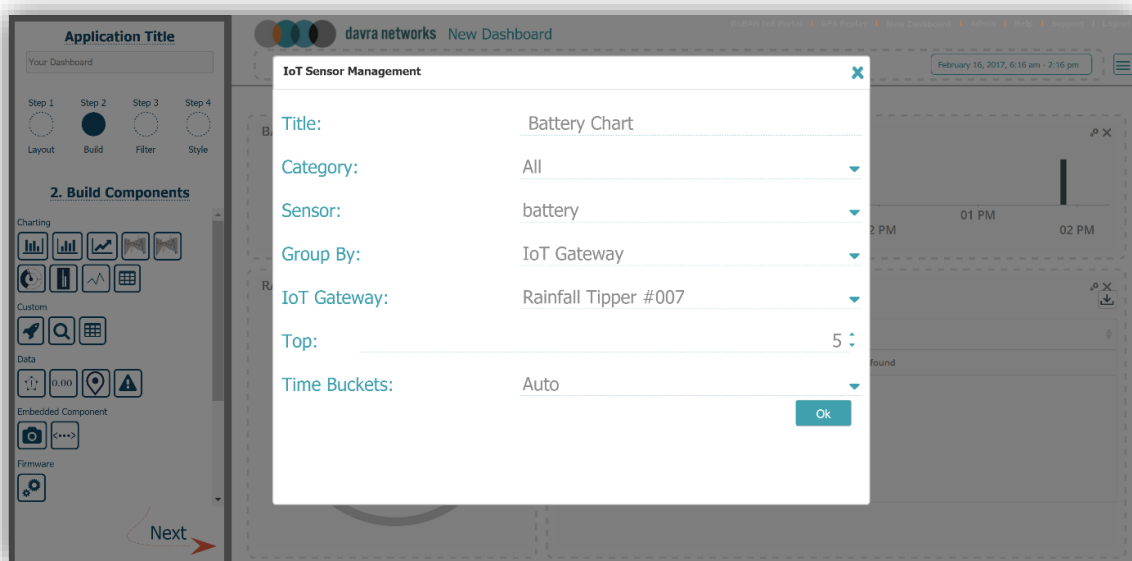
Sensor: Select the metric you wish to use (battery, rssi, etc.)

Group by: Group the results by Device(IoT gateway), Gateway or both

IoT Gateway (Device): Choose which device on the network to display

Top: Default to 5

Time Buckets: Choose the granularity of the display (Seconds to Years). Auto will suffice in most cases.

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2 - Gauge

This element has very similar options as the previous element bar the output view of the gauge itself.

Options include setting the gauge range, colour boundary ranges and the resulting output metric as current or average over time.
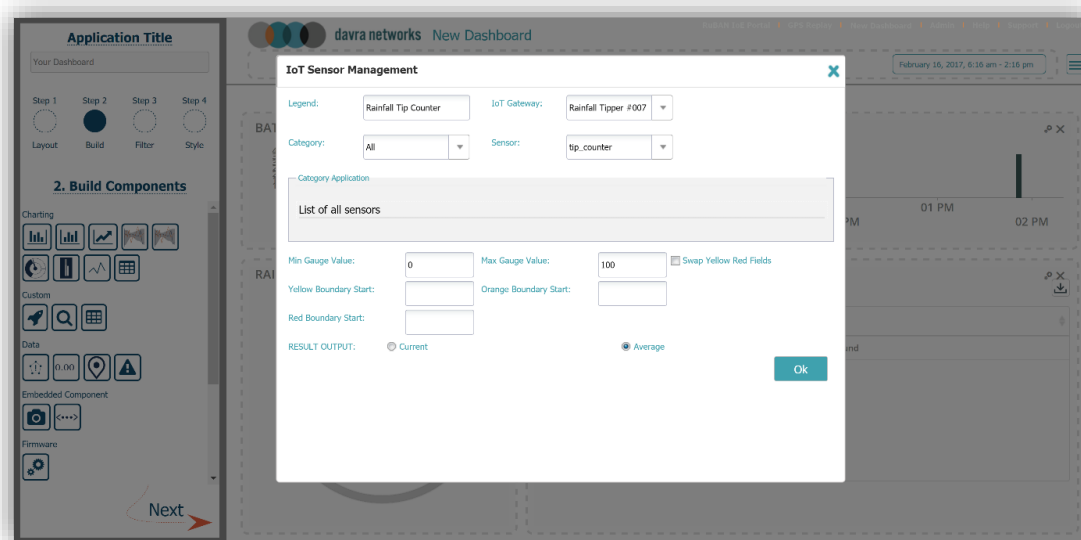

3 - Table

As in the previous example, many of the same options apply to using this element with the exception of:

Column Selection: Allows the display of all or only selected columns of metrics.

Sensors (Metrics): Choose as many metrics to display in the table as desired by clicking and highlighting each metric

Viewing Option: Allows for the hiding of columns with no data present
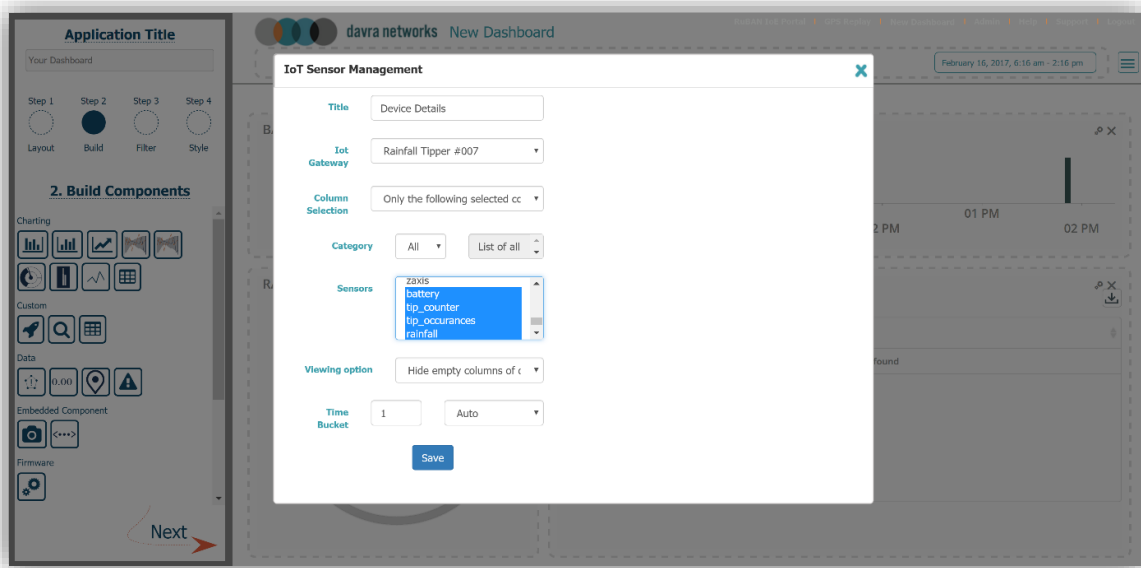
These three element examples highlight the core similarities in configuring an element for your dashboard.

As soon as the element configuration is finished, click **Next** to proceed.

To add a filter to the dashboard, choose either **IoT Gateway (Device)** or **Gateway** from the left-hand menu and drag it to the top pane of the dashboard.

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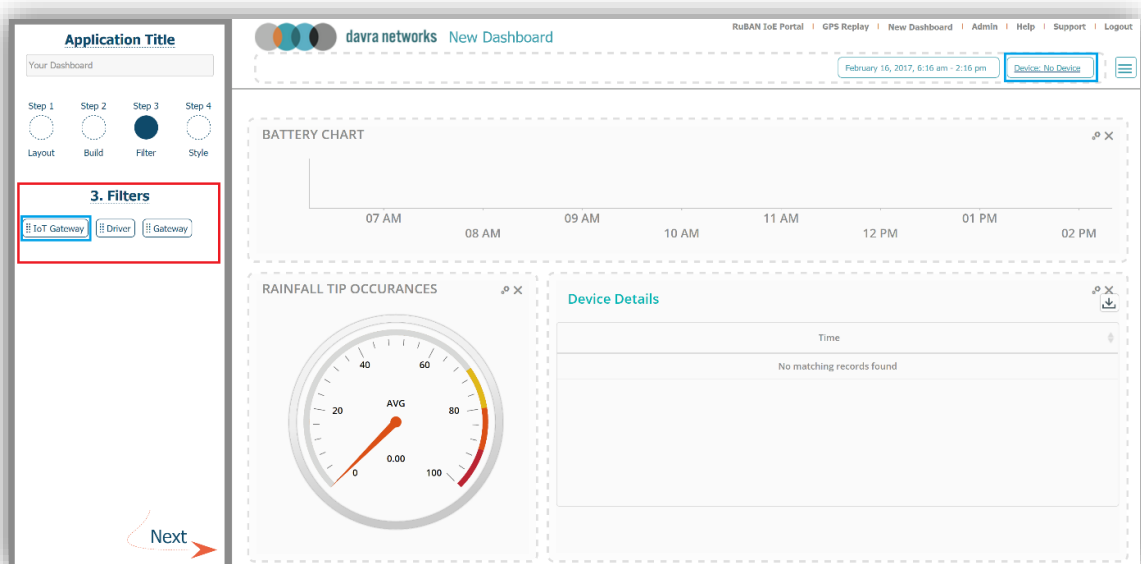
Here you can see an **IoT Gateway (Device)** filter used on the dashboard. Click to dropdown the menu and select which device you wish to view.

The use of filters is not necessary, so if they are not needed on your dashboard, simply click **Next** to proceed.
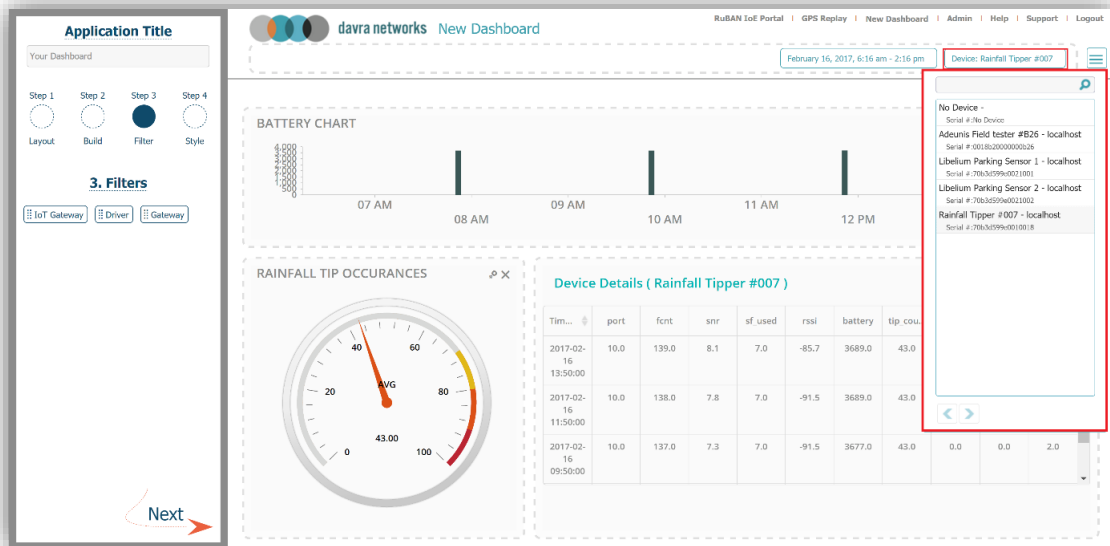
The final phase of the dashboard is regarding styling. The user can change the colours of the background, buttons and text as well as the font type. For this example, all settings are left to default.

Once finished with this section, click **Done** to complete the dashboard.

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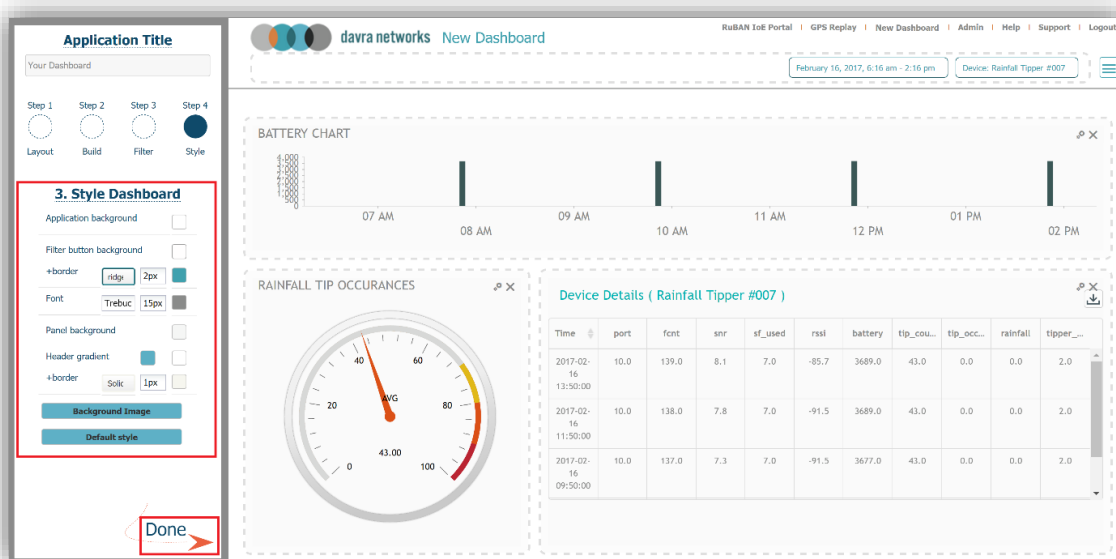
After you see the dashboard you have created, toggle the dropdown menu on the upper right hand side of the dashboard.

Make sure you hit **Save** to save the dashboard configuration.

In this same dropdown menu, we can also set the permissions for this dashboard by clicking on the **Share** option.
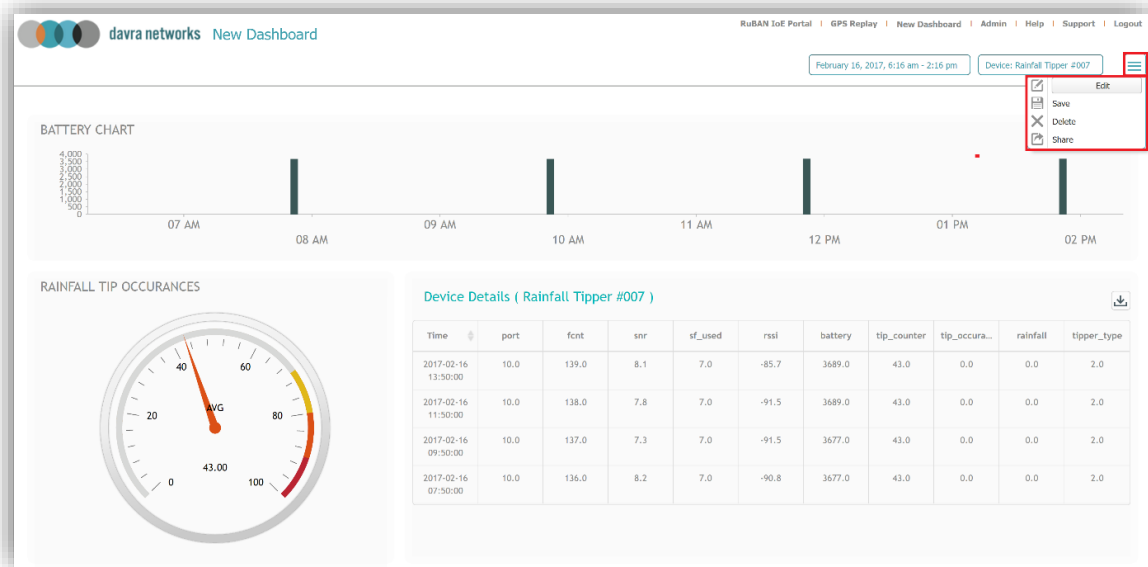
This gives the administrator the ability to allow other users to **View, Edit** or **Delete** the dashboard. In the above example, we have set the user **operator** who has no administration rights to **View** this dashboard. When they login to the platform, they can view this dashboard. They can also create their own dashboards for their own accounts.

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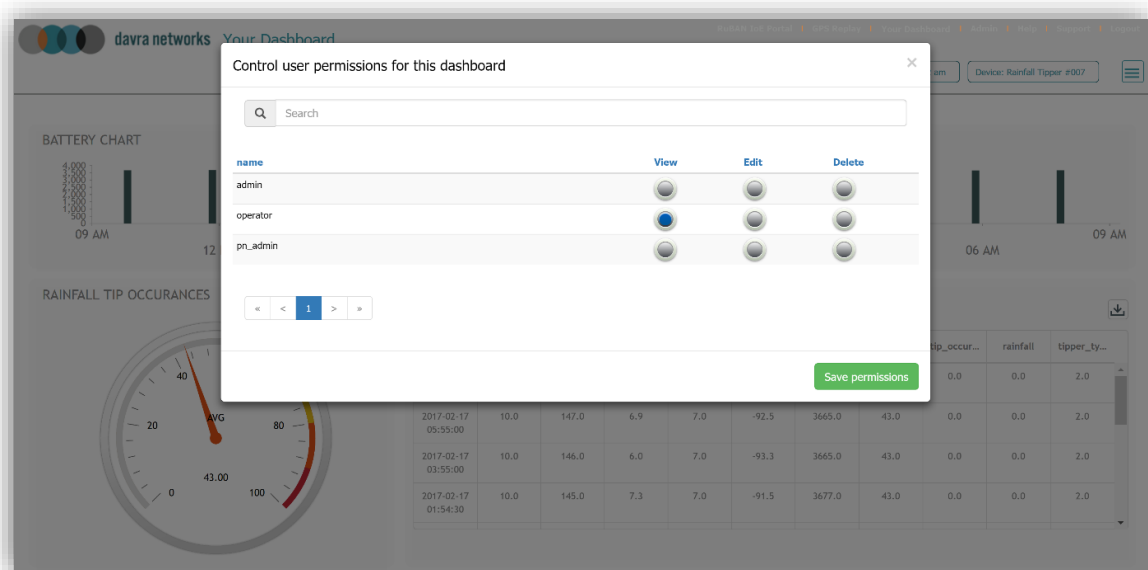
Your new dashboard is now available from the dashboard dropdown menu. As was shown earlier, on this dashboard we can filter data from a device. But on all dashboards, we have the option to also filter by time-period. This is achieved from clicking on the date panel on the dashboard menu where time options can be configured to view the data.
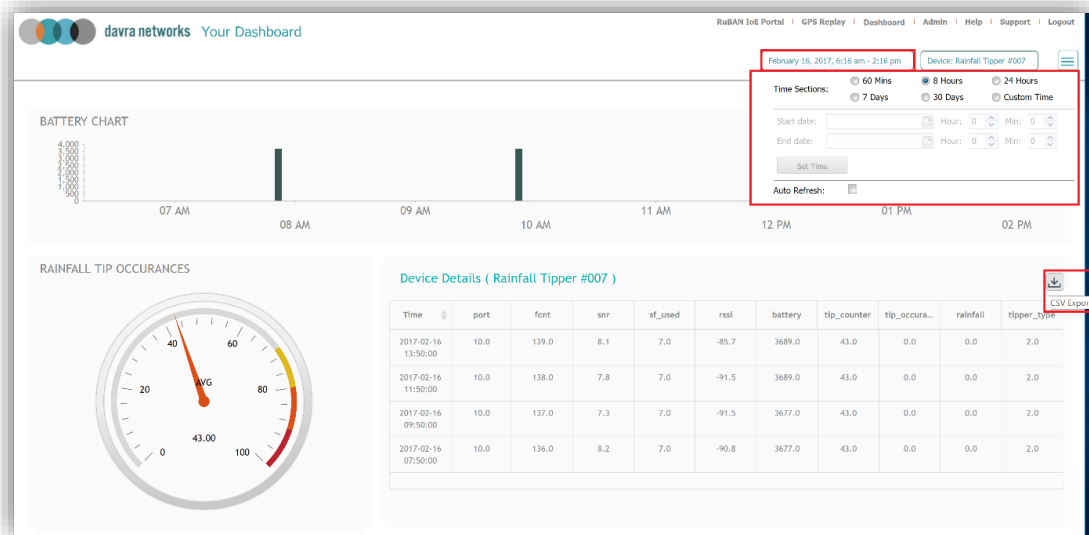
Also, note that on the table chart, we have a download icon. By clicking on this we can export that data into a .csv file which can be opened in Microsoft Excel.

This brief overview of dashboards is not every element of the possibilities on display but a basic start to representing your data in a variety of ways.

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8 Ruban IoE Portal

The Ruban IoE Portal can be accessed from the main menu on the top right hand side of the page.

It is a map display and has similar functions as the likes of Google maps. On the right, we can see a zoom in/out and home buttons.

The circled item in the centre of the map shows the number of devices you have added to the network, more on this later.

The other options to note are the **Search** input box to search for devices on the upper left hand corner and time selection diagonally across from this which will allow you to filter data for the devices on this screen.
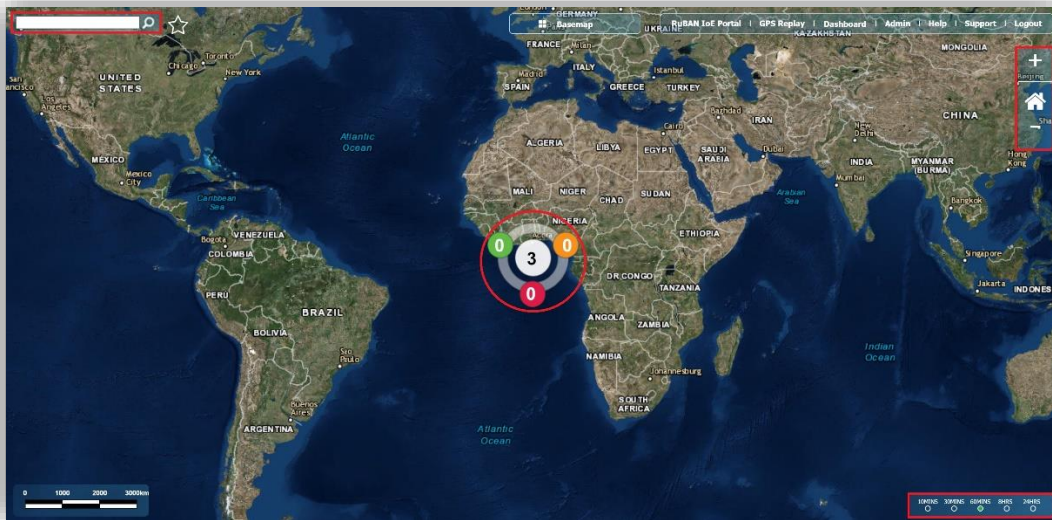
Standard map functions apply to the portal such as changing the map view. This is set from the **Basemap** menu from the top centre of the page. Choose from **Imagery**, **Streets** or **Topographic** views of the map.

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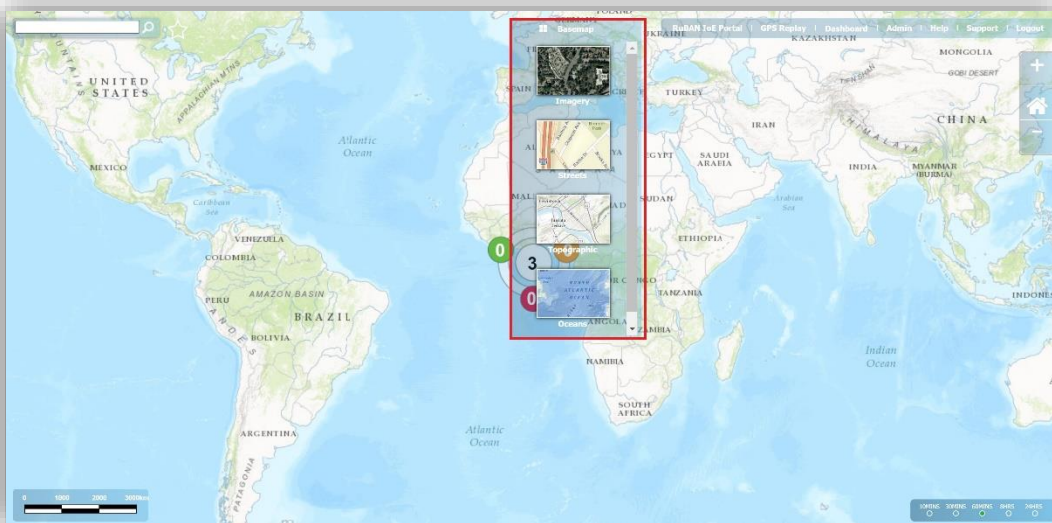
To view devices on the map, click on the circle which shows the number of devices connected to your tenant. In this example, 3 devices.
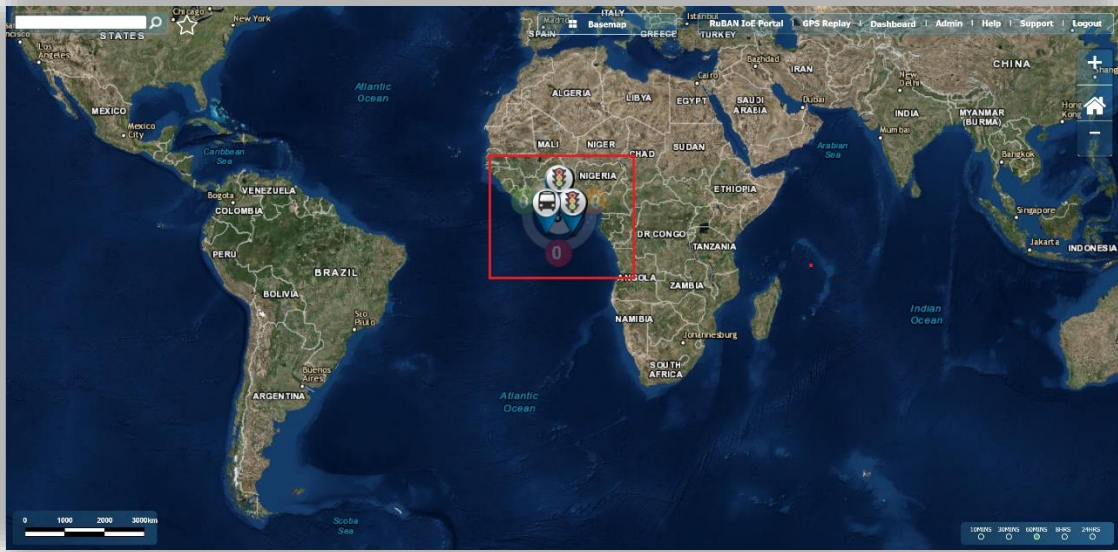
When you click on the device, it should bring up this circle of three options. As these devices are not GPS enabled, you can ignore the location map option on the bottom left. For these devices, we can look at the **i** and the metrics display on the top and bottom right, respectively.

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The information button will display information for that device, as can be seen below.
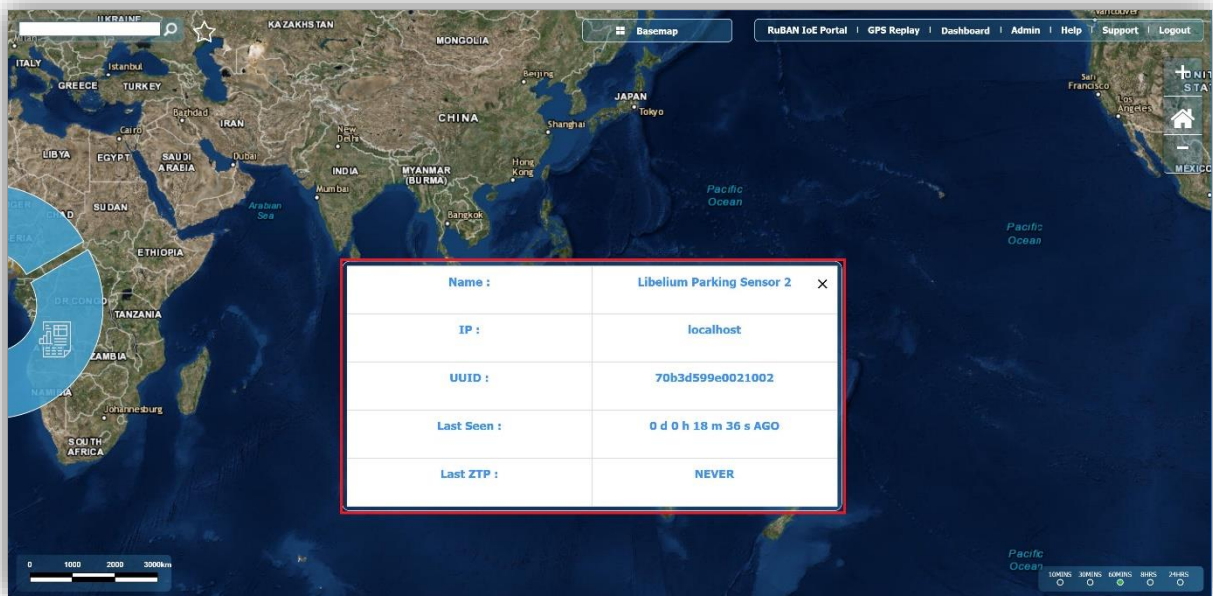

The metric view allows you to view data for that device in a floating window. Choose the metric you wish to view from the dropdown menu in the upper right of the floating window.

Take note that you can change the time frame of the given data from the time range selector at the bottom right corner of the screen.
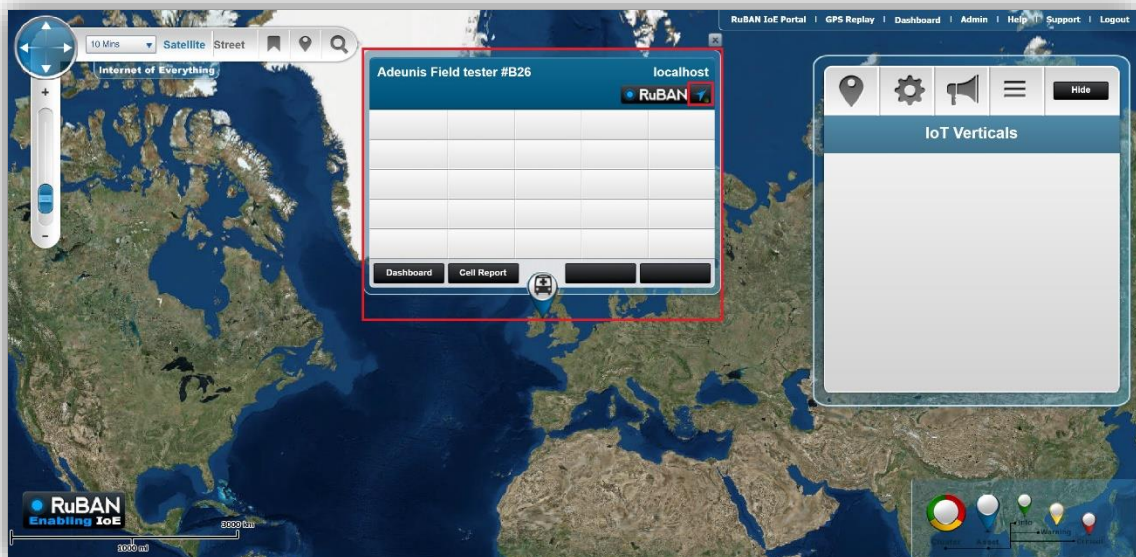
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9 GPS Replay

GPS Replay, which is available for devices that have GPS enabled such as the Adeunis Field Test Device.
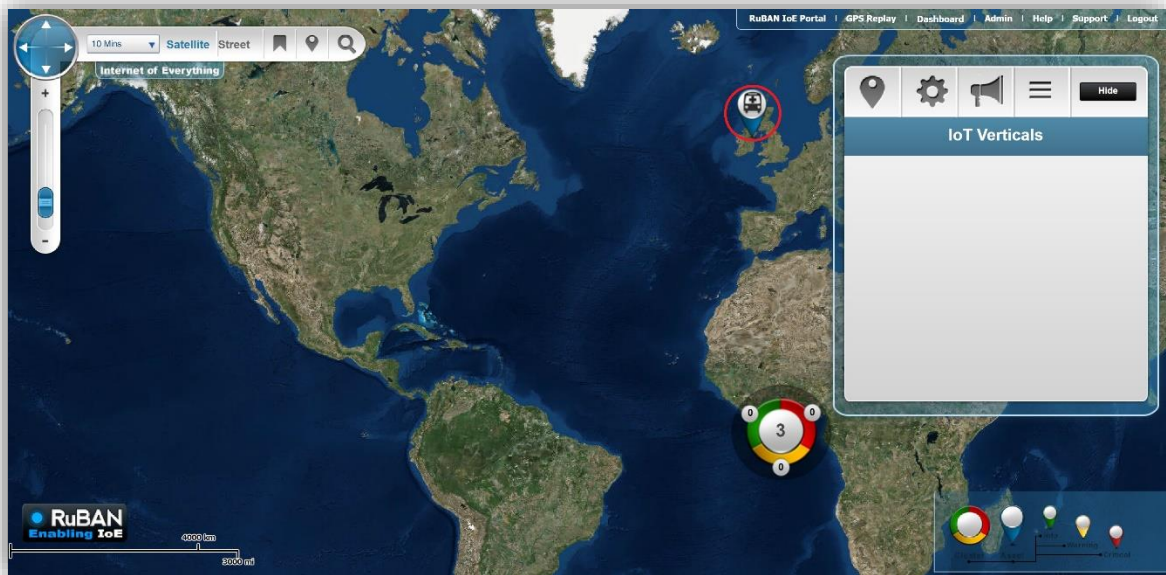

Click on the device and it will display this window above it. On this display, click on the **Blue Arrow** next to the RuBan logo.

This will bring to a page showing the GPS replay of all data received.

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This will show a trace of the GPS replay overlaid on the map with the positions sent back to the network. On the left you can choose a date to view logged information for that time.
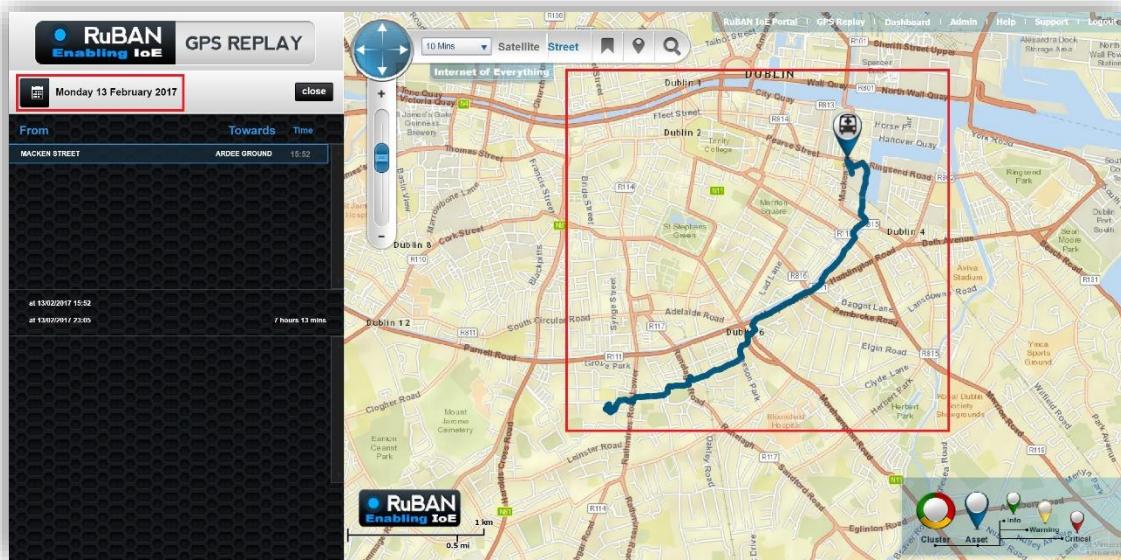
10 Help

As well as the Pervasive Nation Resource pages for any help and support that you need during the use of the portal, please note that there is a comprehensive **Help** section available in the main menu

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