



# Operational Support System (OSS)

First contact

1. Sigfox Cloud GUI
2. Organization & Hierarchy
3. Devices & Device type
4. Service prediction
5. APIs & Callbacks

# 1

## Cloud GUI

# Pre-requisites

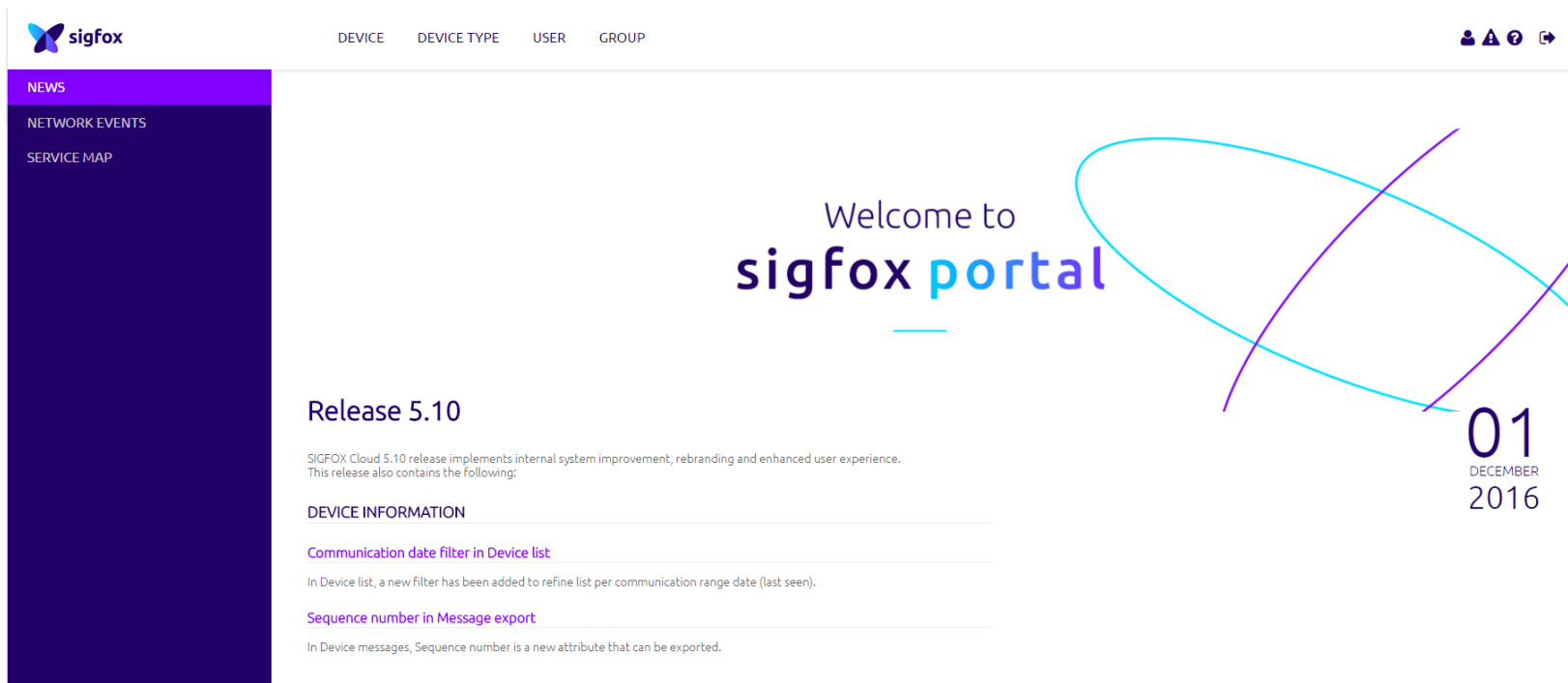
## User checklist:

- ✓ Internet access
- ✓ Computer with correct date/time
- ✓ Recent web browser (Chrome, Firefox & Safari preferred)
- ✓ Account creation email received

**Production cloud:**  
[backend.sigfox.com](https://backend.sigfox.com)

**Support contact:**  
[support.sigfox.com](https://support.sigfox.com)

# Cloud GUI



The screenshot displays the Sigfox Cloud GUI interface. At the top left is the Sigfox logo. A navigation bar contains links for DEVICE, DEVICE TYPE, USER, and GROUP. On the right of the navigation bar are icons for user profile, alerts, help, and share. A left sidebar menu lists NEWS, NETWORK EVENTS, and SERVICE MAP. The main content area features a large 'Welcome to sigfox portal' message with a decorative graphic of two intersecting loops. Below this is a 'Release 5.10' section with a brief description of the update. Further down are two sections: 'DEVICE INFORMATION' with a link to 'Communication date filter in Device list', and 'Sequence number in Message export' with a link to 'Sequence number in Message export'. A date stamp '01 DECEMBER 2016' is positioned on the right side of the main content area.

**sigfox**

DEVICE DEVICE TYPE USER GROUP

NEWS  
NETWORK EVENTS  
SERVICE MAP

Welcome to  
**sigfox portal**

**Release 5.10**

SIGFOX Cloud 5.10 release implements internal system improvement, rebranding and enhanced user experience.  
This release also contains the following:

**DEVICE INFORMATION**

[Communication date filter in Device list](#)

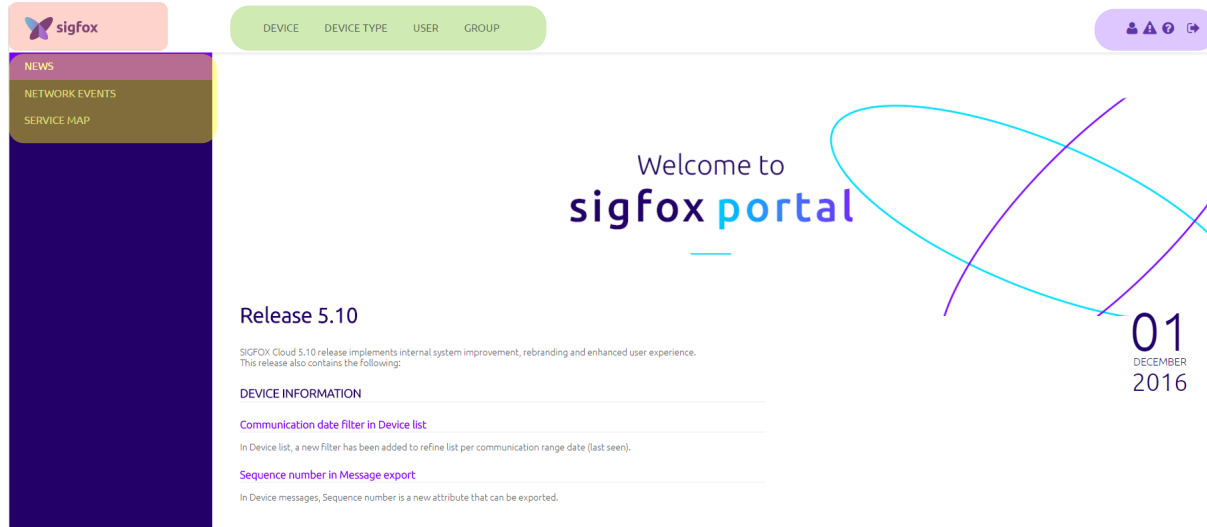
In Device list, a new filter has been added to refine list per communication range date (last seen).

[Sequence number in Message export](#)

In Device messages, Sequence number is a new attribute that can be exported.

01  
DECEMBER  
2016

# Cloud GUI



- Main page shortcut (News, network event, service map)
- Category selection (Device, Device type, User, Group)
- Category items
- Global entries (profile, network event, online help, logout)

# Cloud GUI

The screenshot displays the Sigfox Cloud GUI's 'Device - List' page. The interface includes a top navigation bar with tabs for 'DEVICE', 'DEVICE TYPE', 'USER', and 'GROUP'. On the right, there are icons for user profile, alerts, help, view, and share. Below the navigation bar, the 'Device - List' title is followed by action buttons: 'New', 'New series', 'Edit series', and 'Replace series'. A large yellow rectangular area highlights the filter conditions, containing an 'Id' input field, a 'State' dropdown menu set to 'All', and an 'Average SNR (all)' slider ranging from 5 dB to 50 dB. To the right of the filter area is a blue button for 'Export list to CSV'. Below the filter area, a red pill-shaped button shows 'Count: 1 / 1'. A teal bar contains icons for folder, save, delete, and buttons for 'RESET' and 'FILTER'. A pink 'page 1' button is centered below the filter area. At the bottom, a table lists device details with columns: 'Average Rssi', 'Average SNR', 'Communication status', 'Device type', 'Id', 'Last seen', 'Name', and 'Token state'. The first row shows data for 'My\_device\_BSS B160' with a last seen time of '2016-12-20 16:22:03' and a checked 'Token state'. A grey gear icon for column customization is on the far right. A large dark blue rectangle is overlaid on the left side of the image.

| Average Rssi | Average SNR | Communication status | Device type   | Id   | Last seen           | Name     | Token state |
|--------------|-------------|----------------------|---------------|------|---------------------|----------|-------------|
| 45.67        | 80.18       |                      | My_device_BSS | B160 | 2016-12-20 16:22:03 | test_BSS | ✓           |

- Selected category
- Action buttons
- Filter conditions
- Displayed items/total

- Filter operations
- Export list to CSV
- Page switch
- Column display customization

# Cloud GUI

The screenshot displays the Sigfox Cloud GUI's 'Device - List' interface. At the top, navigation tabs include 'DEVICE' (highlighted), 'DEVICE TYPE', 'USER', and 'GROUP'. The main content area features a search bar with 'Id' and 'State' (set to 'All') filters, and a date range filter for 'Last seen from date' to 'Last seen to date'. A yellow bar highlights these filter sections. Below the filters, a table lists device information. The table has columns: Average Rssi, Average SNR, Communication status, Device type, Id, Last seen, Name, and Token state. The first row shows data for 'my\_device\_B55' with an SNR of 80.18 and a last seen time of 2016-12-20 16:22:03. A teal 'Field selection' menu is open on the right, listing various fields like 'Activation date', 'Average Rssi', 'Average SNR', 'Com status', 'Device type', 'Id', 'Last purge', 'Last seen', 'Name', 'PAC', 'Product certificate', 'Protocol', and 'Token state'. An 'Apply' button is at the bottom of this menu. A dark purple sidebar is visible on the left.

| Average Rssi | Average SNR | Communication status | Device type   | Id   | Last seen           | Name     | Token state |
|--------------|-------------|----------------------|---------------|------|---------------------|----------|-------------|
| 65.67        | 80.18       | ●                    | my_device_B55 | B160 | 2016-12-20 16:22:03 | test_B55 | ✓           |

- Additional Filter conditions
- Column edition menu (max. 8 columns)
- Column edition validation

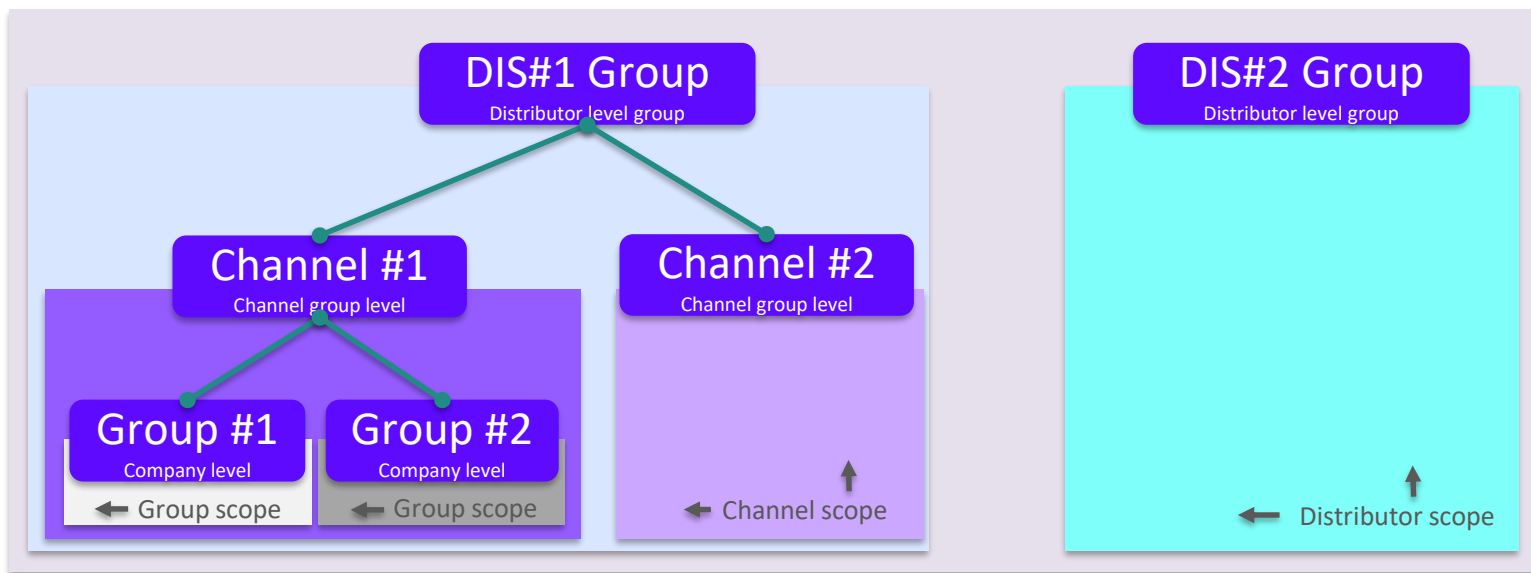


# 2

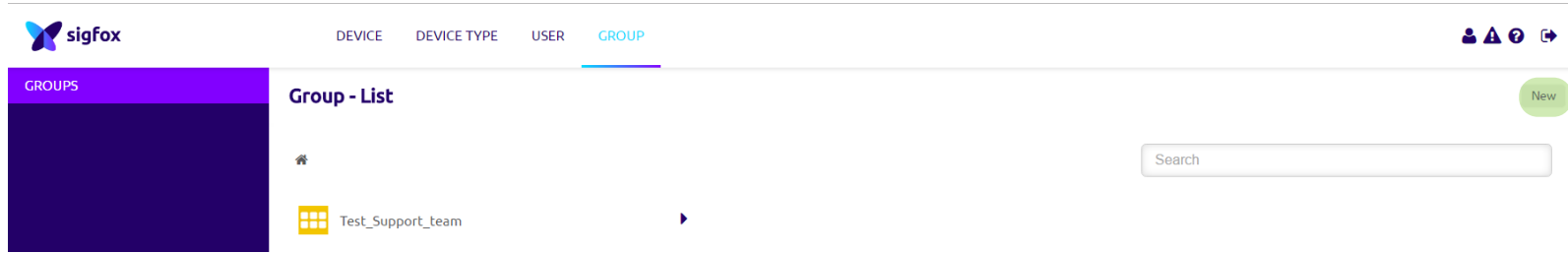
## Organization & hierarchy

# Group & Subgroups

Cloud organization is hierarchically structured

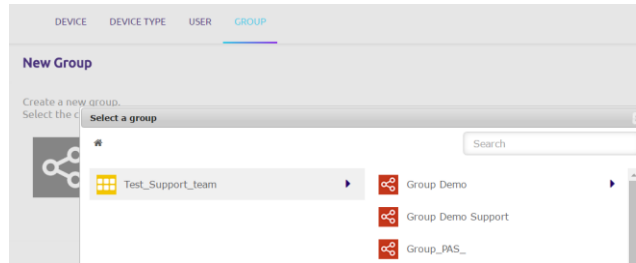


# Group creation in details



Step 1 : Click on New button in Group tab

Step 2 : Select the Parent Group



# Group creation in details

Step 3 : Enter Group information

## Group - New

Group information

Name

Description

Parent group

Group Demo

Timezone

UTC ▼

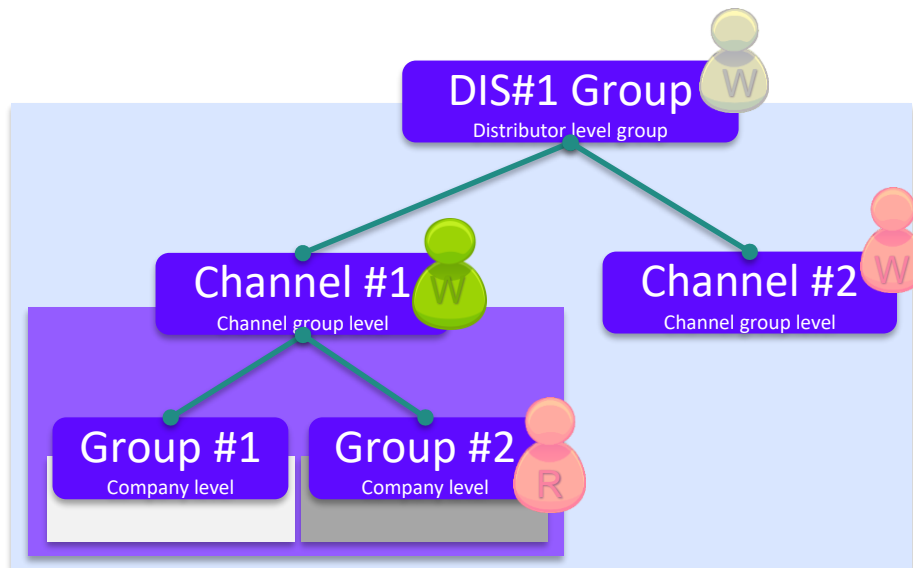
Ok

Cancel

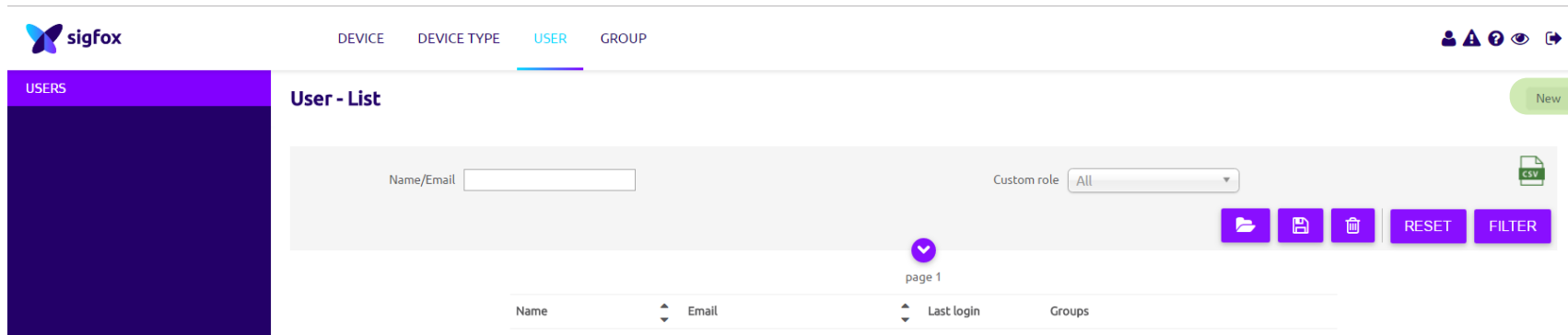
# User roles

User creation is linked to **rights allocation on groups**. A specific attention shall be given to the user role allocation:

- SIGFOX Corp predefines user roles
- DIS/Customers are granted with the rights that correspond to their needs
- User rights can be fine tuned (R/W)



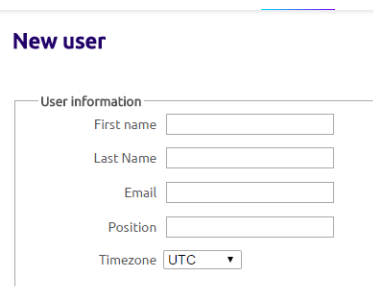
# User creation in details



The screenshot shows the Sigfox web interface for managing users. At the top, there's a navigation bar with the Sigfox logo and tabs for DEVICE, DEVICE TYPE, USER (which is highlighted), and GROUP. On the right of the navigation bar are icons for user management, alerts, help, and a share icon. A left sidebar contains a 'USERS' tab. The main content area is titled 'User - List' and features a 'New' button in the top right corner. Below this, there's a search bar labeled 'Name/Email' and a 'Custom role' dropdown menu set to 'All'. To the right of these is a 'CSV' icon. Below the search and role filters are five action buttons: a document icon, a save icon, a trash icon, a 'RESET' button, and a 'FILTER' button. A 'page 1' indicator with a dropdown arrow is positioned above a table. The table has columns for 'Name', 'Email', 'Last login', and 'Groups'.

Step 1: Click on New button in User tab

Step 2 : Enter user information



The 'New user' form is displayed, showing a section titled 'User information'. It contains five input fields: 'First name', 'Last Name', 'Email', and 'Position'. Below these is a 'Timezone' dropdown menu currently set to 'UTC'.

# User creation in details

Step 3 : Click select group button and choose a group

Roles

Group  Select a group

Roles Select the user roles below

OK Cancel

Select a group

Search

Test\_Support\_team

Step 4 : Choose role

Roles

Group  Test\_Support\_team Select a group

Roles Select the user roles below

| Info | Name                     | Select                   |
|------|--------------------------|--------------------------|
| ?    | BSS_CHA_ADMIN            | <input type="checkbox"/> |
| ?    | BSS_CHA_PROSPECT         | <input type="checkbox"/> |
| ?    | BSS_CHA_QUOTE            | <input type="checkbox"/> |
| ?    | BSS_CHA_SALES            | <input type="checkbox"/> |
| ?    | DEVICE_MANAGER [R]       | <input type="checkbox"/> |
| ?    | DEVICE_MANAGER [W]       | <input type="checkbox"/> |
| ?    | DEVICES_MESSAGES[R]      | <input type="checkbox"/> |
| ?    | ONLINE_HELP              | <input type="checkbox"/> |
| ?    | OPT_DEVICETYPE_ORDER [W] | <input type="checkbox"/> |
| ?    | OPT_SERVICE_MAP          | <input type="checkbox"/> |
| ?    | PUBLIC_SERVICE_MAP       | <input type="checkbox"/> |

CONNECT roles

Device management

Device type creation

Message read only

Map access only

# 3

## Devices & Device types



# Device & Device type

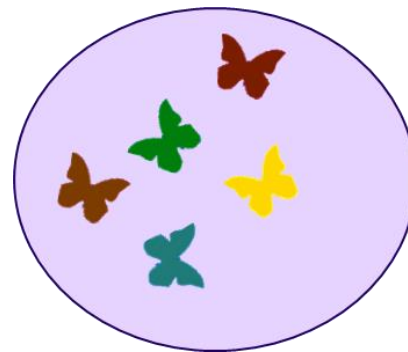
## Device notions:

- Unique ID per device
- One property title for each own: PAC



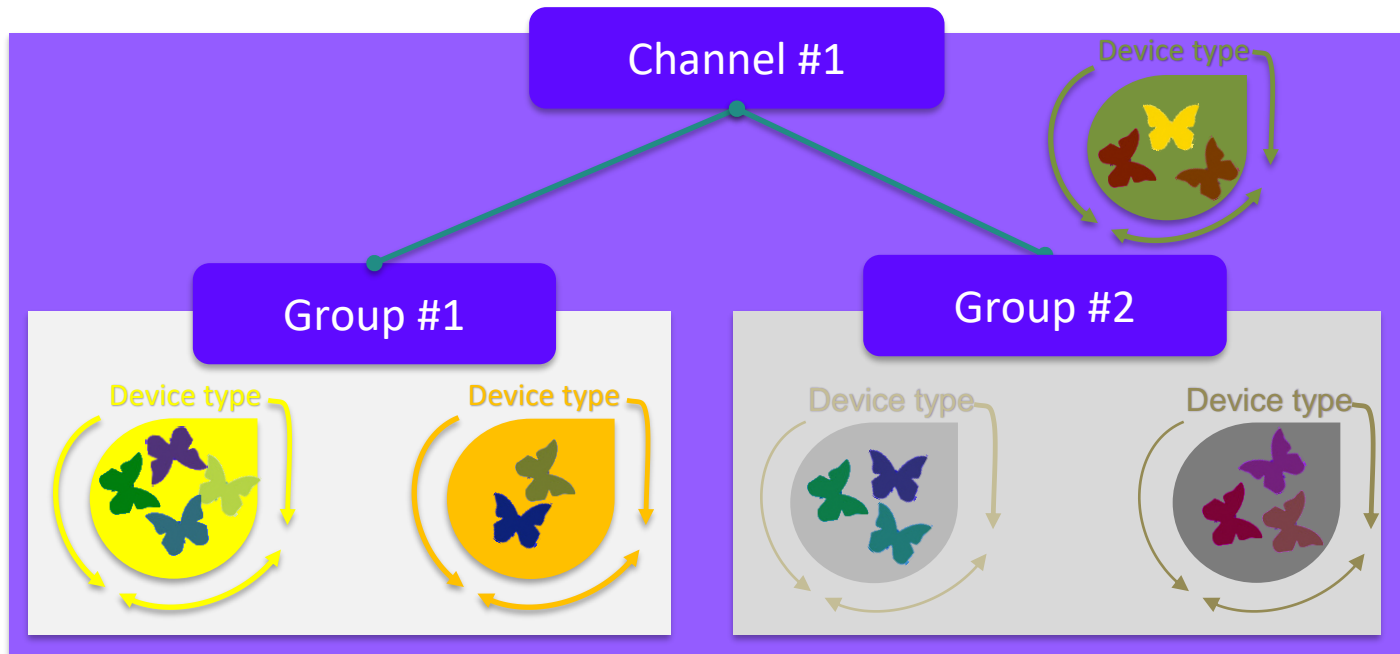
## Device type notion:

- Group of devices with the same behavior
- Linked to a single order (same subscription levels and duration)
- Belongs to a unique group
- Callback availability to retrieve messages



⇒ To ease device management

# Device & Device type

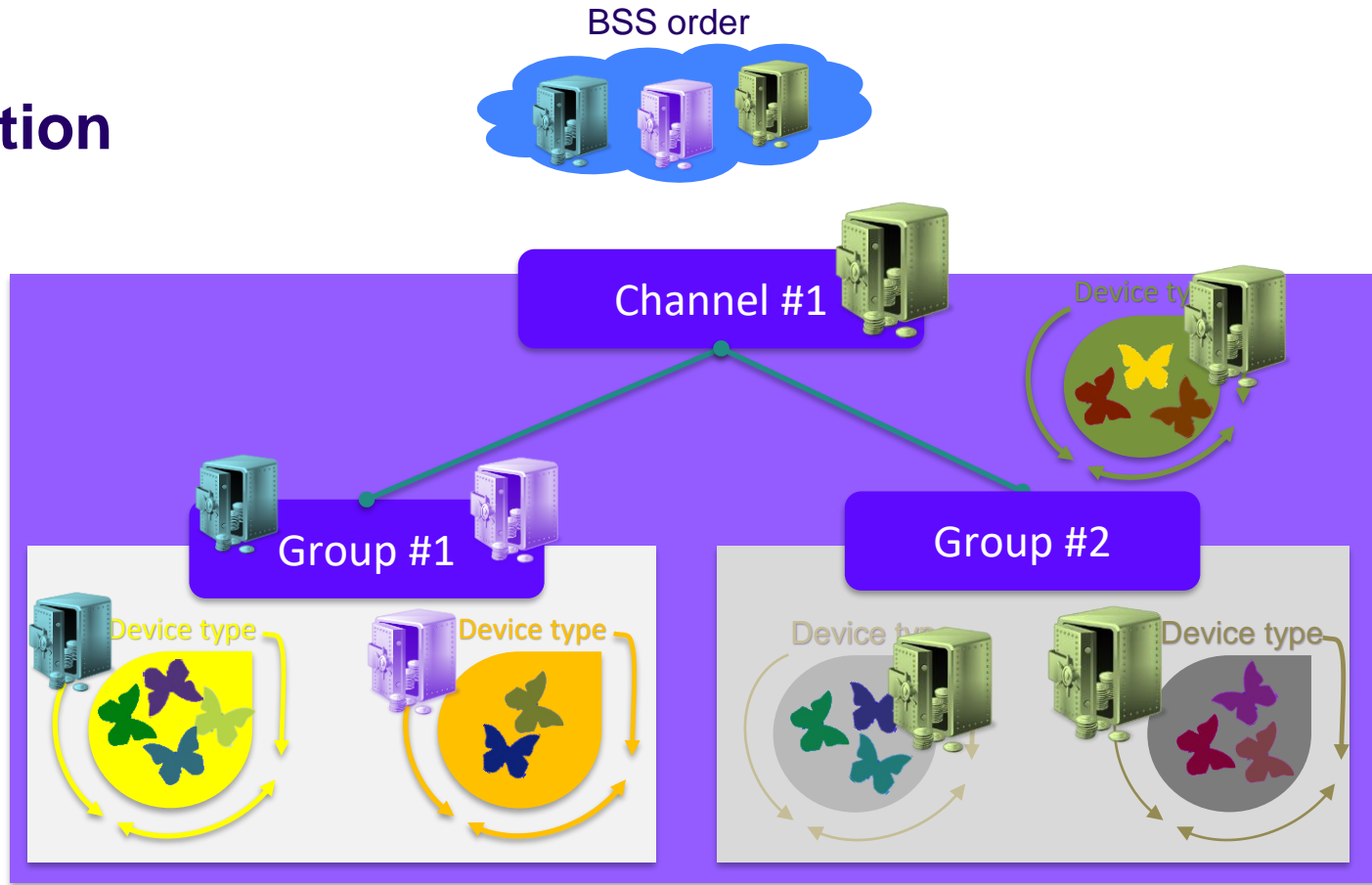


# Order allocation

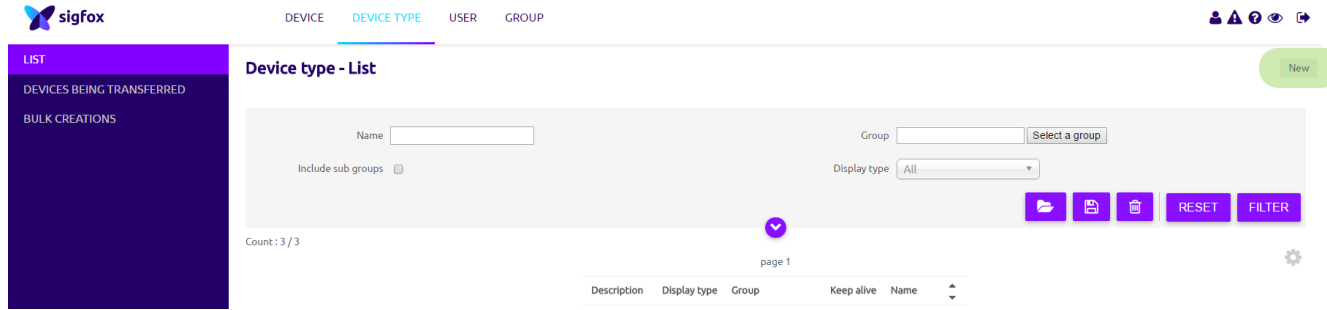
## Channels validate order:

Channels allocate contracts to Groups and possibly to device type.

Groups allocate contracts to device type in their group or in sub-groups below

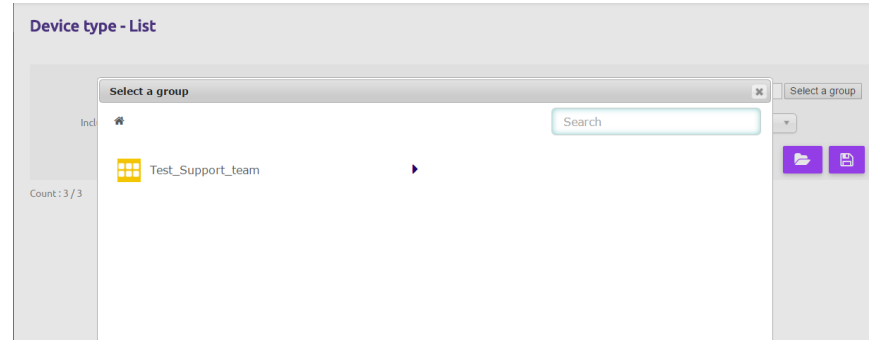


# Device type creation in details



Step 1 : Click on New button in Device type tab

Step 2 : Select a group



# Device type creation in details

## Step 3 : Enter device type information

**Device type - New**

Device type information

Name

Description

Keep-alive (in minutes)

Contract  Select a contract

If we fail to call one of your callbacks, we email

Alert email

Device type name

Keepalive configuration

Email address configured for callback failure

Direct => Downlink data sent by the backend  
Callback => Downlink data sent through callback

Downlink data

Downlink mode

Expression must either include hexadecimal encode

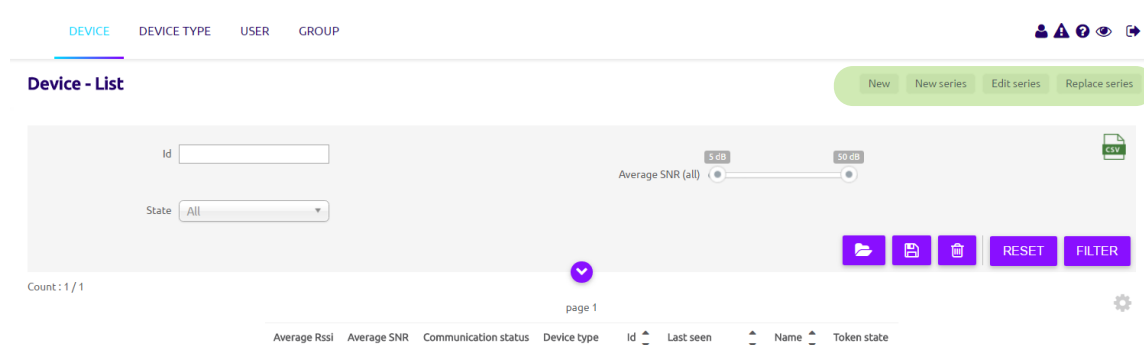
Downlink data in hexa  Downlink data sent in DIRECT mode

Display type

Type  Display customization (Data decoding)



# Device creation in details



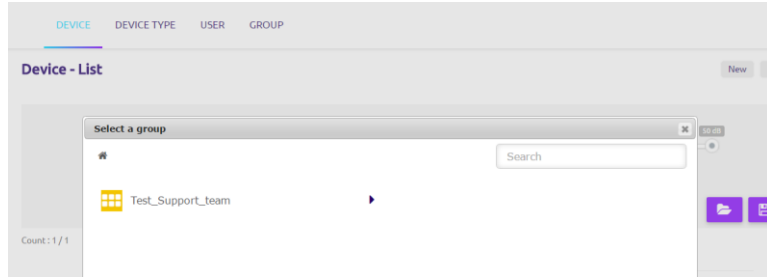
The screenshot shows the 'Device - List' interface. At the top, there are tabs for 'DEVICE' (selected), 'DEVICE TYPE', 'USER', and 'GROUP'. To the right of these tabs are icons for user, alert, help, eye, and share. Below the tabs, there's a 'Device - List' header and a green bar with buttons: 'New', 'New series', 'Edit series', and 'Replace series'. The main area contains a search bar with 'Id' and a dropdown for 'State' (set to 'All'). There's also a slider for 'Average SNR (all)' ranging from -5 dB to 50 dB. Below these are icons for download, print, delete, and buttons for 'RESET' and 'FILTER'. At the bottom, it shows 'Count: 1 / 1', 'page 1', and a table header with columns: 'Average Rssi', 'Average SNR', 'Communication status', 'Device type', 'Id', 'Last seen', 'Name', and 'Token state'.

## Step 1 : Select a way to register devices

- New : register devices one by one / move device from device types (different contract)
- New series : register batch of devices / move device from device types (different contract)
- Edit series : edit device information / move devices from device types (same contract)
- Replace series : replace a broken device by a new

# Device creation in details

Step 2a : If New has been chosen, select a group to register the device



Step 3a : Enter device information

## Device - New

Device information

Identifier (hexl)  **Device ID**

**PAC \*** Name

PAC  **Product certificate \* if available (otherwise device has to be defined as Prototype)**

Prototype ? ☐

Product certificate

Type  **Select a Device Type**

Lat (-90° to +90°)

Lng (-180° to +180°)  **Device location for static devices**

Map

Prevent token renewal? ☐ **Prevent subscription renewal**

# Device creation in details

Step 2b : If New series has been chosen

## Device - Bulk creation

Use this feature to create several devices simultaneously

Device name = prefix + increment

Device type

csv or txt file with ID/PAC

Product certificate (or prototype)

### Device information

Batch name

Batch description

Devices names prefix

Type

Keyapp\_PA\_BSS

Identifiers

Prototype ?

Product certificate

cel

Step 2c : If Edit series has been chosen

## Device - Bulk edition

Use this feature to edit several devices simultaneously

### Device information

Devices

Choisissez un fichier

Aucun fichier choisi

Ok

Cancel

csv or txt file with devices information

Step 2d : If replace series has been chosen

## Device - Bulk replacement

Use this feature to transfer information from several devices to others simultaneously

### Device information

Devices

Choisissez un fichier

Aucun fichier choisi

Ok

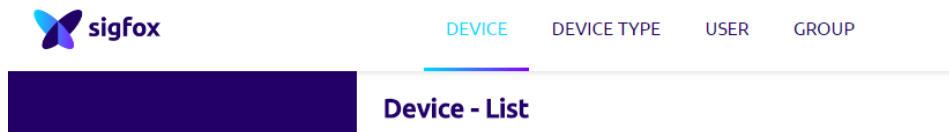
Cancel

csv or txt file with broken device and new device



# Check device messages

1. Go to Device tab



2. Select a device by clicking on the ID

| Average Rssi | Average SNR | Communication status | Device type   | Id   | Last seen           | Name     | Token state                         |
|--------------|-------------|----------------------|---------------|------|---------------------|----------|-------------------------------------|
| -65.67       | 80.18       |                      | My_device_BSS | B160 | 2016-12-20 16:22:03 | test_BSS | <input checked="" type="checkbox"/> |

3. Go to the message tab



4. Send a message and check that the message has been received by the backend

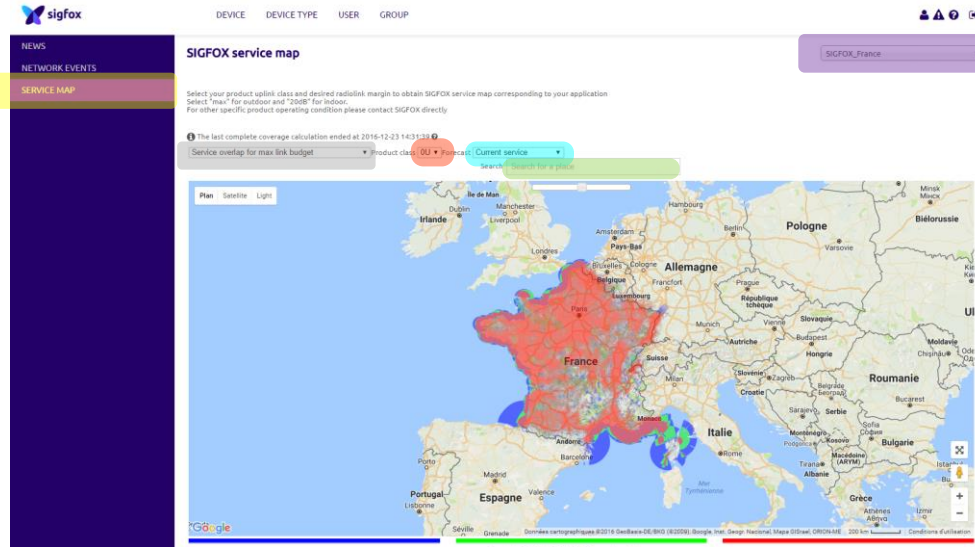
page 1

| Time                | Data / Decoding  | Location | Link quality | Callbacks |
|---------------------|--|----------|--------------|-----------|
| 2016-12-20 16:22:03 | 0000000400000000000140c86<br>Lat: 0.0000 - Lng: 0.0000 |          |              |           |

# 4

## Service map

# Service map



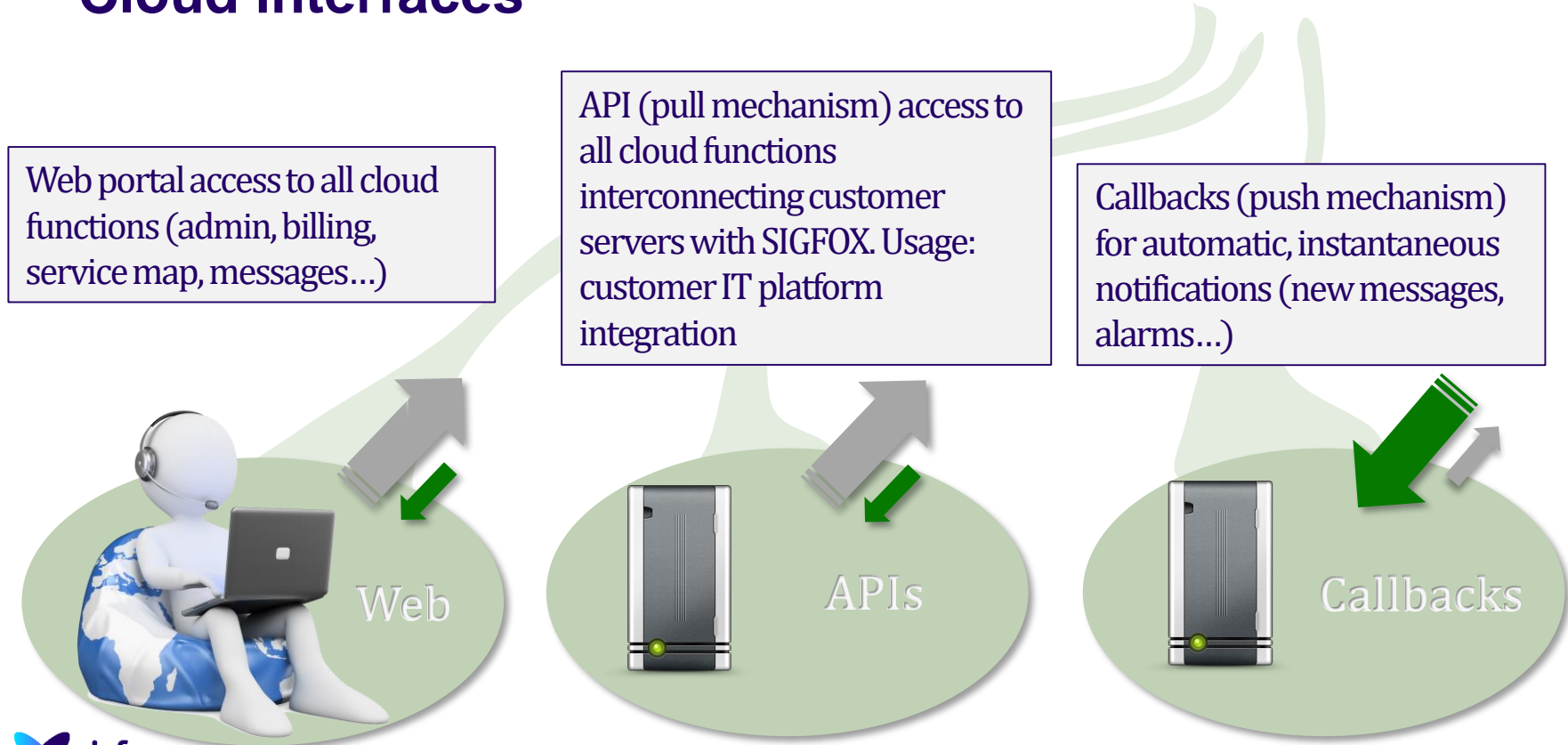
- Service map
- Territory selection
- Installation type

- SIGFOX Ready Device class
- Forecast
- Specific place selection

# 5

## APIs & callbacks

# Cloud interfaces



# API creation

Step 1 : Click on New in API access tab (in Group tab)



Step 2 : Grant API the appropriate rights

## Api access - Creation

Api access information

Name

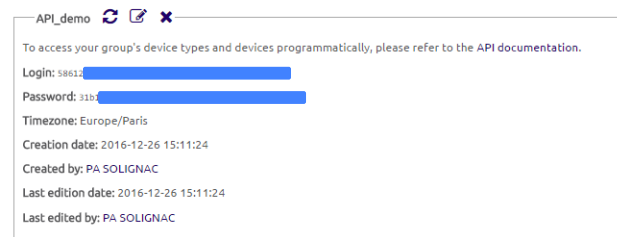
Timezone **Europe** | **Paris**

Custom roles

|                     |   |                    |
|---------------------|---|--------------------|
| BSS_CHA_QUOTE       | ↔ | DEVICE MANAGER [W] |
| BSS_CHA_SALES       |   |                    |
| DEVICE MANAGER [R]  |   |                    |
| DEVICES_MESSAGES[R] |   |                    |

Step 3 : Retrieve credentials to use API

## Api access 'Test\_Support\_team' - List



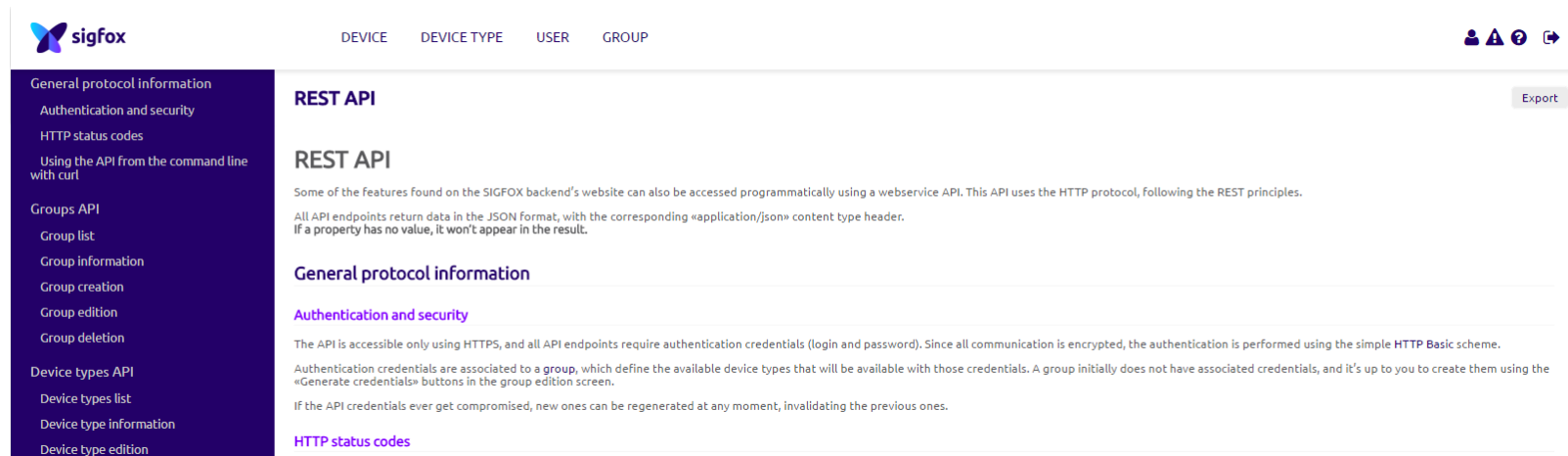
# API creation

## Step 4 : API documentation is generated according to API access rights

### Api access 'Test\_Support\_team' - List

API\_demo   

To access your group's device types and devices programmatically, please refer to the [API documentation](#).



The screenshot shows the Sigfox API documentation interface. At the top, there is a navigation bar with the Sigfox logo on the left and a user profile icon on the right. Below the navigation bar, there are tabs for 'DEVICE', 'DEVICE TYPE', 'USER', and 'GROUP'. The 'GROUP' tab is currently selected. On the left side, there is a sidebar menu with the following items: 'General protocol information', 'Authentication and security', 'HTTP status codes', 'Using the API from the command line with curl', 'Groups API', 'Group list', 'Group information', 'Group creation', 'Group edition', 'Group deletion', 'Device types API', 'Device types list', 'Device type information', and 'Device type edition'. The main content area is titled 'REST API' and contains the following text: 'Some of the features found on the SIGFOX backend's website can also be accessed programmatically using a webservice API. This API uses the HTTP protocol, following the REST principles. All API endpoints return data in the JSON format, with the corresponding «application/json» content type header. If a property has no value, it won't appear in the result.' Below this text, there are sections for 'General protocol information', 'Authentication and security', and 'HTTP status codes'. The 'Authentication and security' section contains the text: 'The API is accessible only using HTTPS, and all API endpoints require authentication credentials (login and password). Since all communication is encrypted, the authentication is performed using the simple HTTP Basic scheme. Authentication credentials are associated to a group, which define the available device types that will be available with those credentials. A group initially does not have associated credentials, and it's up to you to create them using the «Generate credentials» buttons in the group edition screen. If the API credentials ever get compromised, new ones can be regenerated at any moment, invalidating the previous ones.'

# Callback creation

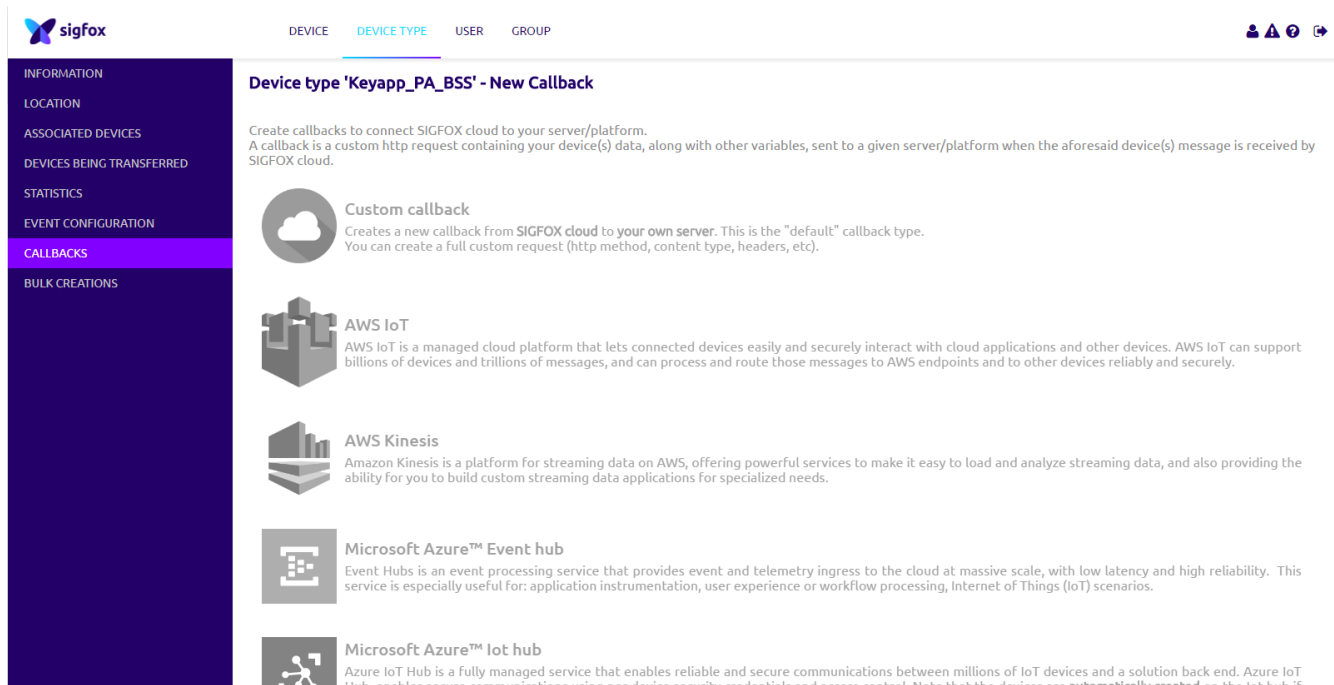
Step 1 : Click on New in Callback tab (for a given device type)

The screenshot shows the Sigfox web interface. On the left is a dark sidebar with a menu. The top navigation bar has tabs for 'DEVICE', 'DEVICE TYPE' (which is selected and underlined), 'USER', and 'GROUP'. The main content area is titled 'Device type 'Keyapp\_PA\_BSS' - Callbacks'. Below the title is a paragraph: 'These callbacks transfer data received from the devices associated to this device type to your infrastructure. For more informations, please refer to the [Callback documentation](#)'. In the top right corner of the main content area, there is a green button labeled 'New'.



# Callback creation

## Step 2 : Choose a callback type (e.g. Custom callback)



The screenshot shows the Sigfox web interface for configuring a device type. The left sidebar contains a navigation menu with the following items: INFORMATION, LOCATION, ASSOCIATED DEVICES, DEVICES BEING TRANSFERRED, STATISTICS, EVENT CONFIGURATION, CALLBACKS (highlighted in blue), and BULK CREATIONS. The main content area is titled "Device type 'Keyapp\_PA\_BSS' - New Callback". It includes a description: "Create callbacks to connect SIGFOX cloud to your server/platform. A callback is a custom http request containing your device(s) data, along with other variables, sent to a given server/platform when the aforesaid device(s) message is received by SIGFOX cloud." Below this, there are five options for callback types, each with an icon and a description:

- Custom callback**: Creates a new callback from SIGFOX cloud to your own server. This is the "default" callback type. You can create a full custom request (http method, content type, headers, etc).
- AWS IoT**: AWS IoT is a managed cloud platform that lets connected devices easily and securely interact with cloud applications and other devices. AWS IoT can support billions of devices and trillions of messages, and can process and route those messages to AWS endpoints and to other devices reliably and securely.
- AWS Kinesis**: Amazon Kinesis is a platform for streaming data on AWS, offering powerful services to make it easy to load and analyze streaming data, and also providing the ability for you to build custom streaming data applications for specialized needs.
- Microsoft Azure™ Event hub**: Event Hubs is an event processing service that provides event and telemetry ingress to the cloud at massive scale, with low latency and high reliability. This service is especially useful for: application instrumentation, user experience or workflow processing, Internet of Things (IoT) scenarios.
- Microsoft Azure™ IoT hub**: Azure IoT Hub is a fully managed service that enables reliable and secure communications between millions of IoT devices and a solution back end. Azure IoT Hub enables secure communications using one device, securely, readable and secure control. Note that the devices are substantially created on the IoT hub if

# Callback creation

## Step 3a : Enter callback information

Device type Keyapp\_PA\_BSS - Callback new

Callbacks

Type DATA UPLINK

Channel URL

Send duplicate ☐

Callback type (DATA, SERVICE, ERROR)

Communication channel (URL, Batch\_URL, email)

- **DATA – Uplink** : send uplink messages to customer platform – **BIDIR** : send downlink messages to customer platform and wait for an DOWNLINK messages from the same platform;
- **ERROR** : in case of communication failure, it allows to know if it is a device (based on keepalive value defined in the device edition page) or a network issue
- **SERVICE** : provide additional services based on service messages or network information
  - **STATUS**: device battery and temperature information provided by service messages (e.g. keepalive messages)
  - **GEOLOC**: available only if Spot'it enabled
  - **ACK**: status about the downlink emission. This does not ensure that the device received the message

Using batch\_URL is strongly recommended to limit the number of request when retrieving messages. Batch\_URL gathers messages within 1 seconds prior to sending the HTTP request.

# Callback creation

## Step 3b : Enter callback information

Device type Keyapp\_PA\_BSS - Callback new

Callbacks

Type: DATA UPLINK

Channel: URL

Send duplicate: ☐

Custom payload config

URL syntax: `http://host/path?id={device}&time={time}&key1={var1}&key2={var2}...`  
Available variables: device, time, duplicate, snr, station, data, avgSnr, lat, lng, rssi, seqNumber  
Custom variables:

Url pattern

Use HTTP Method: POST

Send SNI: ☐ (Server Name Indication) for SSL/TLS connections

Headers: 

| header | value |
|--------|-------|
|--------|-------|

Content type: application/x-www-form-urlencoded

Body

Ok Cancel

Callback mode (Uplink or BIDIR)

Callback is triggered for each duplicate (same message received by a different BS)

Customized payload decoding

HTTP method (GET, POST, PUT)

Variables to be used in callback

HTTP body (if applicable)

# Callback creation




Step 4 : Check that Callback is ENABLED and downlink (if BIDIR callback configured)

## Device type 'Keyapp\_PA\_BSS' - Callbacks

[New](#)

These callbacks transfer data received from the devices associated to this device type to your infrastructure. For more informations, please refer to the [Callback documentation](#)

DATA callbacks

| Downlink                            | Enable                              | Channel   | Subtype | Duplicate                | Batch                    | Information                              | Edit  | Errors | Delete  |
|-------------------------------------|-------------------------------------|---|---------|--------------------------|--------------------------|--|---|--------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  | UPLINK  | <input type="checkbox"/> | <input type="checkbox"/> | Test (john.doe@sigfox.com) Test {device} |  |        |  |

Thank you!