



Web Week 2018

Workshop Environmental Monitoring



Christian Zeh

Product Innovation Manager

Your Workshop Team



Bernd Hupfer
IT



Jakob Leurs
DEV



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DEV

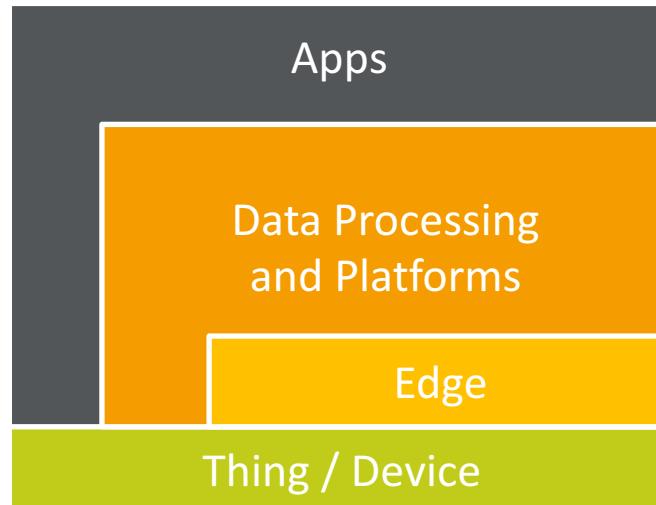


Vlad Lewin
DEV

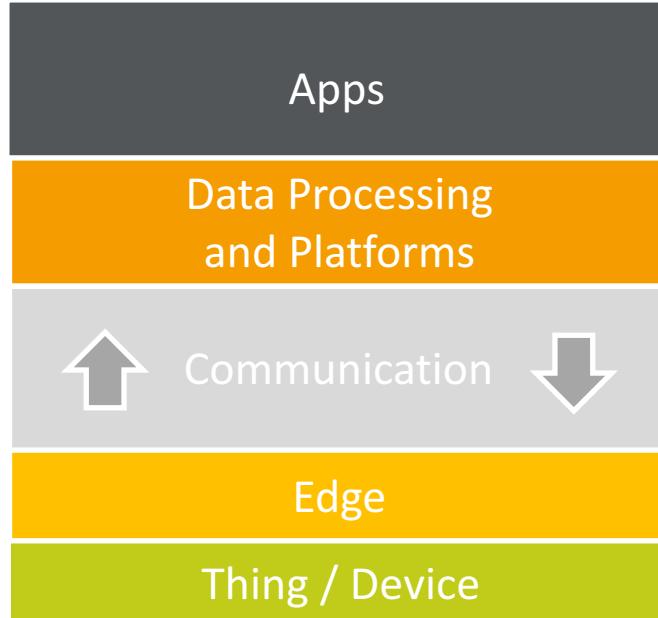


Björn Pohl
IT

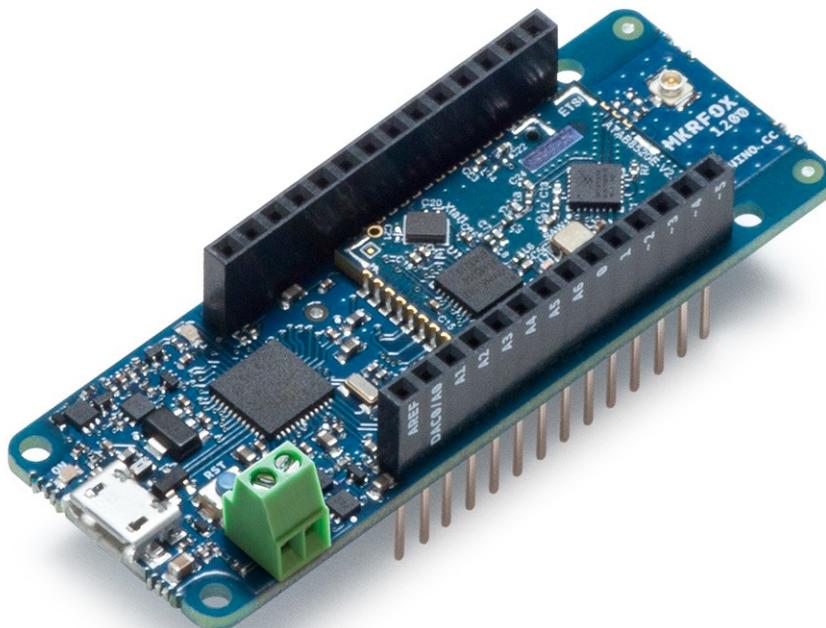
General IoT Architecture



Common Denominator



Arduino MKRFOX1200



MKRFox 1200

32 bit

ARM

< 20 mA

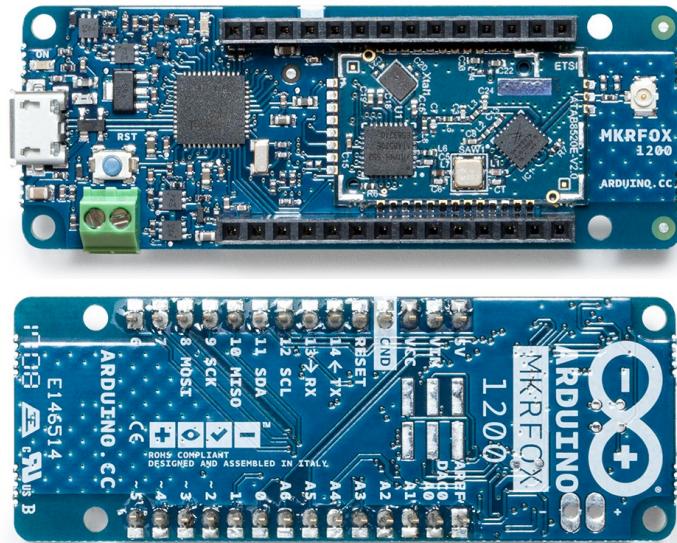
Sigfox

„It is the ideal solution for makers wanting to design IoT projects with minimal previous experience in networking having a low power device.“

You'll get a one year free subscription to Sigfox network with the board (for up to 140 messages per day) and it allows you to track the board without GPS or any extra hardware.

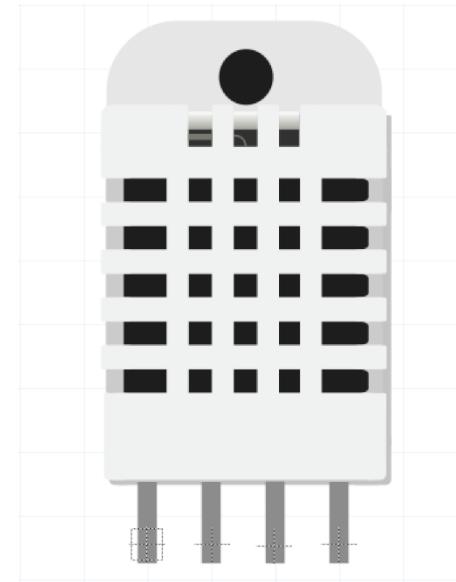
Tech Specs

Microcontroller	SAMD21 Cortex-M0+ 32bit low power ARM MCU
Board Power Supply (USB/VIN)	5V
Supported Batteries(*)	2x AA or AAA
Circuit Operating Voltage	3.3V
Digital I/O Pins	8
PWM Pins	12 (0, 1, 2, 3, 4, 5, 6, 7, 8, 10, A3 - or 18 -, A4 -or 19)
UART	1
SPI	1
I2C	1
Analog Input Pins	7 (ADC 8/10/12 bit)
Analog Output Pins	1 (DAC 10 bit)
External Interrupts	8 (0, 1, 4, 5, 6, 7, 8, A1 -or 16-, A2 - or 17)
DC Current per I/O Pin	7 mA
Flash Memory	256 KB
SRAM	32 KB
EEPROM	no
Clock Speed	32.768 kHz (RTC), 48 MHz
LED_BUILTIN	6
Full-Speed USB Device and embedded Host	
LED_BUILTIN	6
Antenna power	2dB
Carrier frequency	868 MHz
Working region	EU
Length	67.64 mm
Width	25 mm
Weight	32 gr.

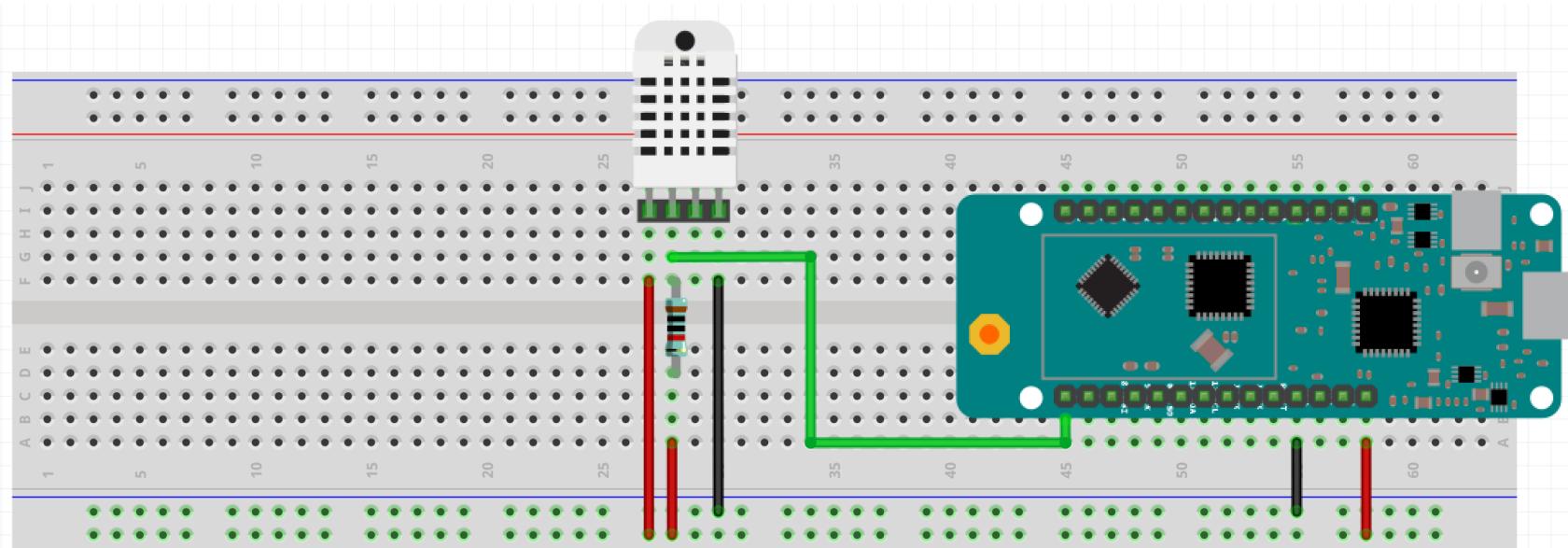


DHT22 Sensor

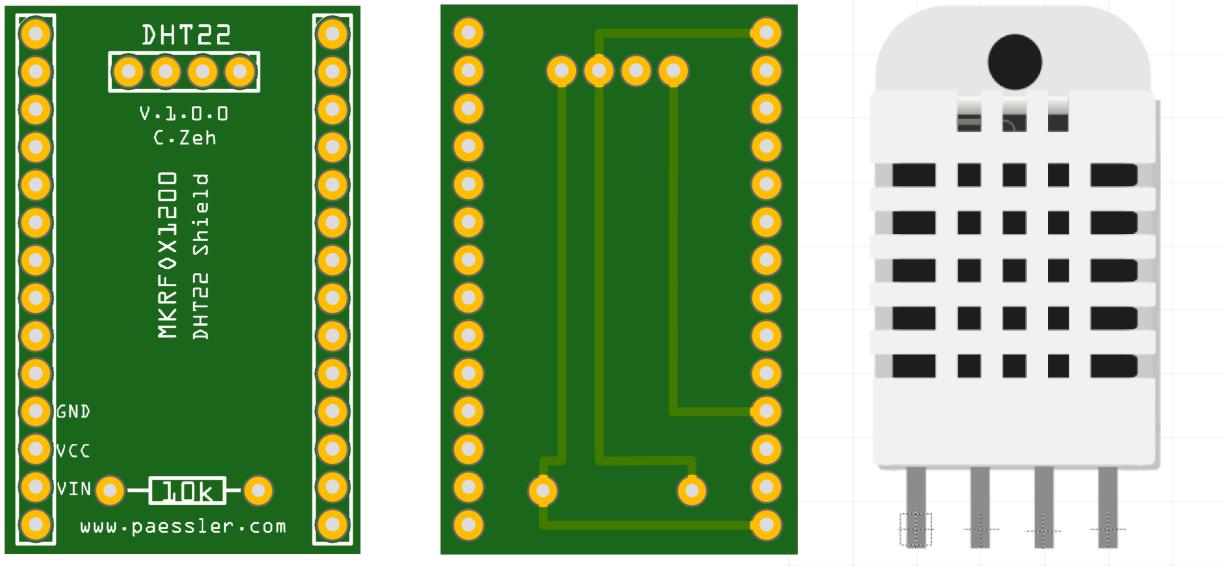
- 3 to 5V power and I/O
- 2.5mA max current use during conversion
- Good for 0-100% humidity readings with 2-5% accuracy
- Good for -40 to 80°C temperature readings $\pm 0.5^\circ\text{C}$ accuracy



The Circuit



The MKRFOX1200 DHT22 Shield



Meet Github

<https://github.com/PaesslerAG/webweek-2018>

[PaesslerAG / webweek-2018](#)

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Der Technologietrend IoT entwickelt sich rasant. Die #nueww 2018 bei Paessler steht mit einem Vortrag "Wie aus Wissen Daten entstehen" und Workshops "Environmental Monitoring" deshalb ganz im Fokus IoT

Manage topics

18 commits 1 branch 0 releases 1 contributor MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

Christian Zeh cleanup Latest commit f44fd8d 5 minutes ago

File	Commit Message	Time Ago
Libraries	cleanup	5 minutes ago
Sketch	cleanup	5 minutes ago
.DS_Store	cleanup	5 minutes ago
.gitignore	Initial commit	11 days ago
DHT22_Data_Uplink_Callback.md	new dht callback	3 hours ago
GEOLOCATION_Service_Geoloc.md	Geolocation Callback	2 hours ago
LICENSE	Initial commit	11 days ago
PRTG_Geo-Map_Settings.md	Geo Map Settings	an hour ago
README.md	readme update	26 minutes ago

README.md

webweek-2018

Der Technologietrend IoT entwickelt sich rasant. Die #nueww 2018 bei Paessler steht mit einem Vortrag "Wie aus Wissen Daten entstehen" und Workshops "Environmental Monitoring" deshalb ganz im Fokus IoT

Arduino IDE installation

Install on Mac OSX

- Download [Arduino IDE](#)
- Install [Arduino IDE](#)
- Copy required libraries

```
cp -rf ./libraries/* ~/Documents/Arduino/libraries
```

or manually copy content of libraries folder to Documents/Arduino/libraries

Install on Windows

- Download [Arduino IDE](#)
- Install [Arduino IDE](#)
- Execute `WINDOWS_copy_libraries.bat` from folder setup or manually copy content of libraries folder to Documents\Arduino\libraries

Install on Linux

- Download [Arduino IDE](#)
- Install [Arduino IDE](#)
- Copy required libraries

Optionally you can install libraries from zip folder following [this instruction](#).

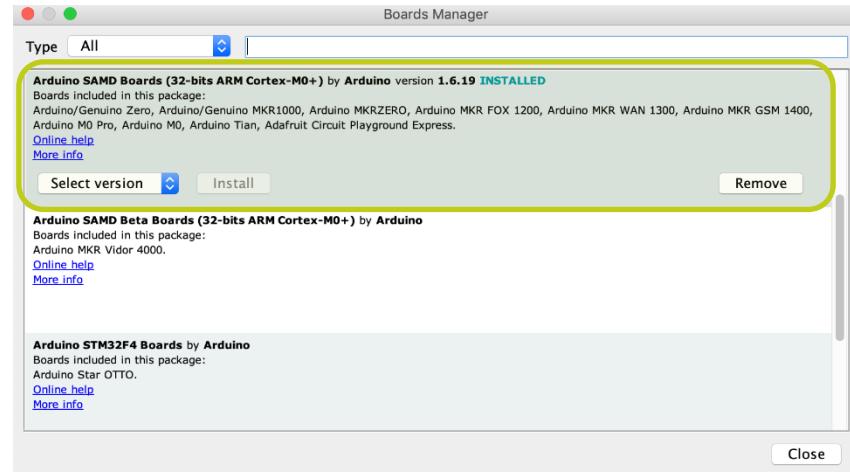
Arduino MK FOX 1200 board driver installation

NOTE: Board driver installation takes approximately 10-15 minutes

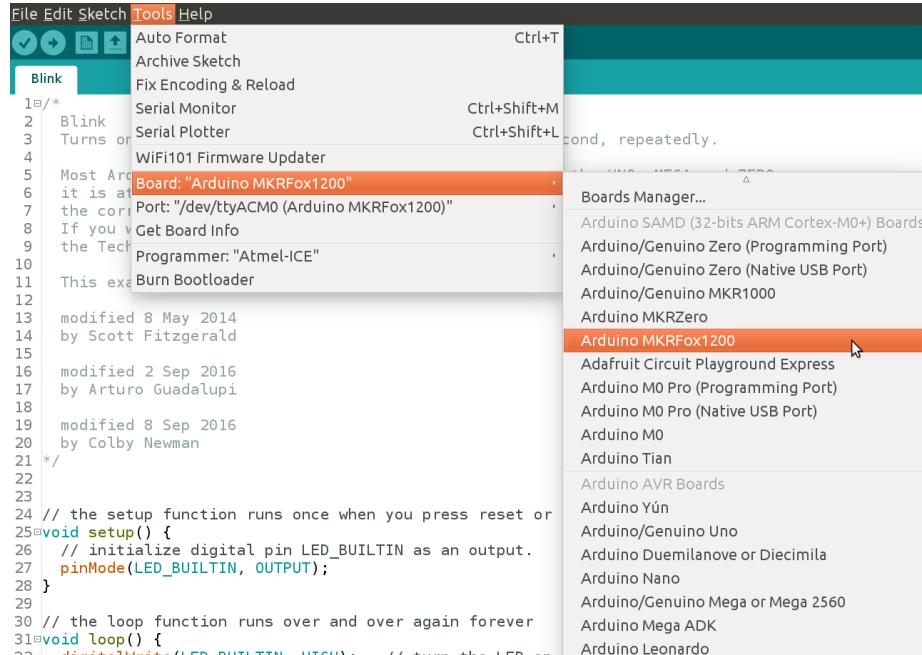
- Start Arduino IDE
- Go to Tools > Boards: <board> > Boards Manager...
- Enter MKR FOX in the search field
- Install Arduino SAMD Boards (32-bits ARM Cortex-M0+)

Boardsmanager

Add the Atmel SAMD Core.
This simple procedure is done
selecting Tools menu,
then Boards and last Boards
Manager, as documented in the
Arduino Boards Manager page.



Select your board type and board

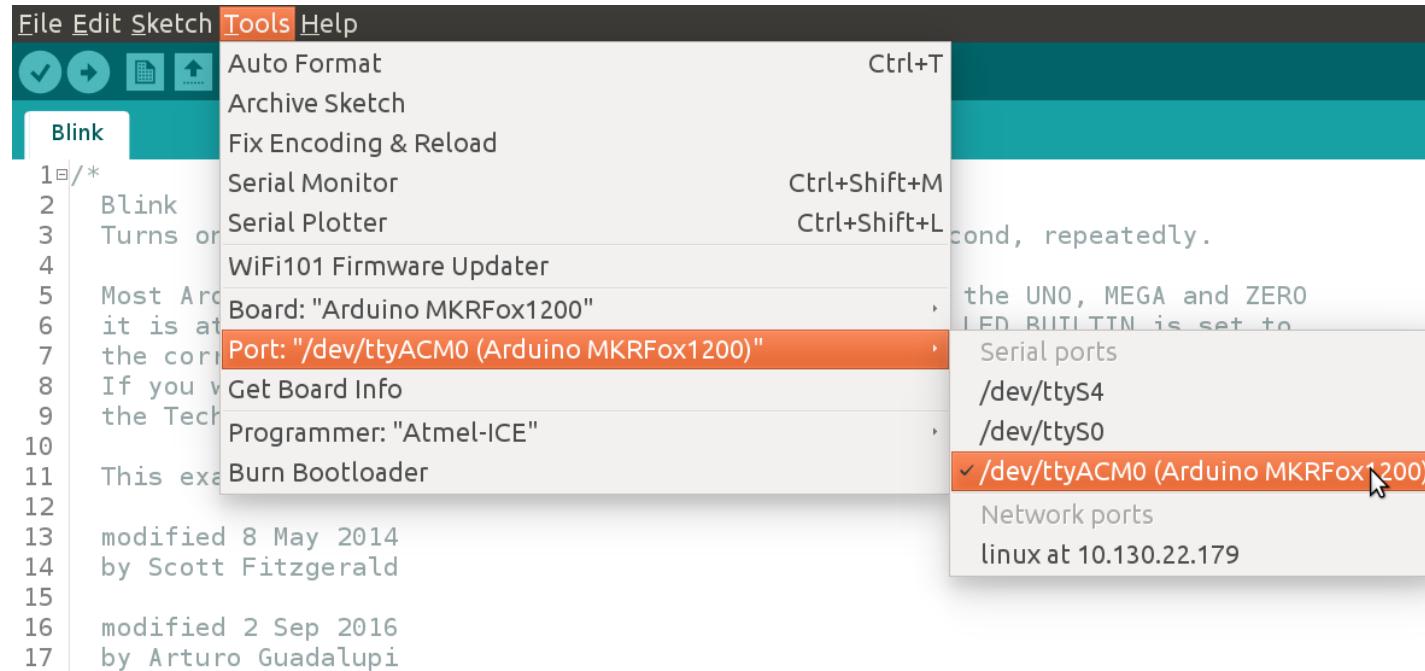


The screenshot shows the Arduino IDE interface. The top menu bar has 'Tools' highlighted in red. A dropdown menu is open under 'Tools', showing various board options. The option 'Arduino MKRFOX1200' is selected and highlighted in orange. The main workspace shows a portion of an Arduino sketch named 'Blink'. The code includes setup and loop functions for an LED.

```
1 // This example code is in the public domain.
2 // http://www.arduino.cc/en/Tutorial/Blink
3
4 void setup() {
5     // initialize digital pin LED_BUILTIN as an output.
6     pinMode(LED_BUILTIN, OUTPUT);
7 }
8
9 void loop() {
10    digitalWrite(LED_BUILTIN, HIGH); // turn the LED on
11    delay(1000); // wait one second
12    digitalWrite(LED_BUILTIN, LOW); // turn the LED off
13    delay(1000); // wait one second
14 }
```

From Tools select the Board
Arduino MKRFOX1200.

Select the port





< / >

Arduino Language

Arduino isn't exactly the same as general C++ programming

- The **Arduino** compiler/IDE accepts C and C++ as-is.
- In fact many of the libraries are written in C++.
- Much of the underlying system is not object oriented, but it could be.
- Thus, "The **arduino** language" is C++ or C.

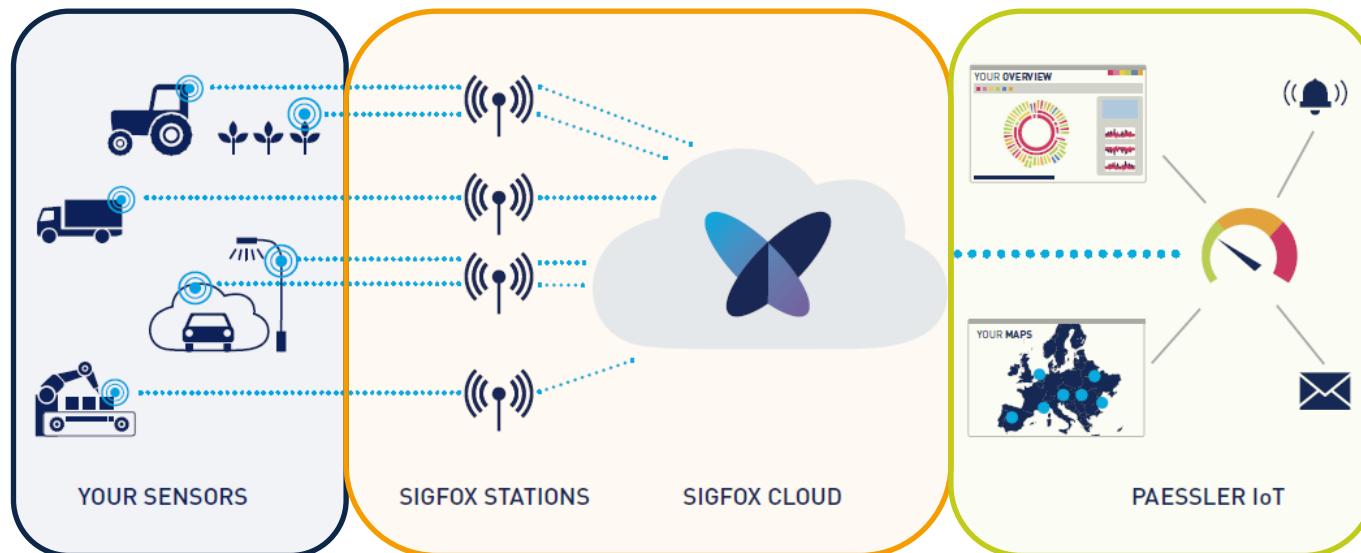
```
1 #include "SigFox.h"
2 #include "ArduinoLowPower.h"
3 #include "DHT.h"
4
5 #define DHTPIN      6           // What digital pin we're connected to
6 #define DHTTYPE     DHT22
7 #define DEBUG       true        // Set DEBUG to false to disable serial prints
8 #define SLEEPTIME   15 * 60 * 1000 // Set the delay to 15 minutes (15 min x 60 seconds x 1000 milliseconds)
9
10 #define UINT16_t_MAX 65536
11 #define INT16_t_MAX  UINT16_t_MAX/2
12
13 int alarm_source = 0;
14
15 typedef struct __attribute__ ((packed)) sigfox_message {
16     int16_t moduleTemperature;
17     int16_t dhtTemperature;
18     uint16_t dhtHumidity;
19     uint8_t lastMessageStatus;
20 }
21
22 SigfoxMessage;
23
24 // Stub for message which will be sent
25 SigfoxMessage msg;
26
```

```
29  void setup() {
30    LowPower.attachInterruptWakeup(RTC_ALARM_WAKEUP, alarmEvent0, CHANGE);
31
32    if (DEBUG) {
33      // Better you are using Serial1 instead than Serial because we are going in standby
34      // and the USB port could get confused during wakeup. To read the DEBUG prints,
35      // connect pins 13-14 (TX-RX) to a 3.3V USB-to-serial converter
36      Serial.begin(115200);
37      while (!Serial) {}
38    }
39
40    if (!SigFox.begin()) {
41      // Something is really wrong, try rebooting
42      // Reboot is useful if we are powering the board using an unreliable power source
43      // (eg. solar panels or other energy harvesting methods)
44      reboot();
45    }
46
47    // Send module to standby until we need to send a message
48    SigFox.end();
49
50    if (DEBUG) {
51      // Enable DEBUG prints and LED indication if we are testing
52      SigFox.debug();
53      Serial.println("### Debug Mode Enabled ###");
54      Serial.println();
55    }
56
57    dht.begin();
58  }
```

```
60 void loop() {
61     // Reading temperature or humidity takes about 250 milliseconds!
62     // Sensor readings may also be up to 2 seconds 'old' (its a very slow sensor)
63     float h = dht.readHumidity();
64     // Read temperature as Celsius (the default)
65     float t = dht.readTemperature();
66     // Check if any reads failed and exit early (to try again).
67     if (isnan(h) || isnan(t)) {
68         Serial.println("Failed to read from DHT sensor!");
69         //reboot();
70         return;
71     }
72
73     msg.dhtTemperature = convertToFloatToInt16(t, 80, -40);
74     msg.dhtHumidity = convertToFloatToInt16(h, 100);
75
76     if (DEBUG) {
77         Serial.print("Humidity: ");
78         Serial.print(h);
79         Serial.println();
80         Serial.print("Temperature: ");
81         Serial.print(t);
82         Serial.print(" °C ");
83         Serial.println();
84     }
85     // Start the module
86     SigFox.begin();
87     // Wait at least 30ms after first configuration (100ms before)
88     delay(100);
89
90     // We can only read the module temperature before SigFox.end()
91     t = SigFox.internalTemperature();
92     msg.moduleTemperature = convertToFloatToInt16(t, 60, -60);
93 }
```

```
94 // Clears all pending interrupts
95 SigFox.status();
96 delay(1);
97
98 SigFox.beginPacket();
99 SigFox.write((uint8_t*)&msg, 12);
100
101 msg.lastMessageStatus = SigFox.endPacket();
102
103 SigFox.end();
104 //Sleep for 15 minutes
105 LowPower.sleep(SLEEPSIZE);
106 }
107
108 void alarmEvent0() {
109     alarm_source = 0;
110 }
111
112 void reboot() {
113     NVIC_SystemReset();
114     while (1) ;
115 }
116
117 int16_t convertToFloatToInt16(float value, long max, long min) {
118     float conversionFactor = (float) (INT16_t_MAX) / (float)(max - min);
119     return (int16_t)(value * conversionFactor);
120 }
121
122 uint16_t convertToFloatToUInt16(float value, long max) {
123     float conversionFactor = (float) (UINT16_t_MAX) / (float)(max);
124     return (uint16_t)(value * conversionFactor);
125 }
```

The Monitoring Mission



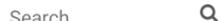
✓ 6 Search...  

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

Devices

Group Root

Overview 2 days 30 days 365 days Alarms Log Management Settings Notification Triggers Comments History

✓ 6 (of 6) S M L XL  

 Root  

 Hosted Probe  

 Probe Device  

Core Health 100% Probe Health 100% System Health 100% Common SaaS... 100% 

 Web Week 2018  

 Environmental Data  

Temperature | ... 

 Geolocation  

Geolocation | S... 

Website Slow To Load?
Monitor global loading times.
[Learn More >>](#) 

Status: OK 
Default Interval: every 60 seconds 
ID: #0 

 Add Sensor 

18.4.46.1278 [bugfix/PRTG-5994_push_iot_advanced_not_working_PODDEPLOY] web-week-2@my-prtg.com 1:43 Refresh in 12 sec  ? Help

New Log Entries 1 ✓ 6 Search...  

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

Devices Hosted Probe Web Week 2018 Environmental Data Temperature | Humidity

✓ Sensor Temperature | Humidity  OK    

Overview Live Data 2 days 30 days 365 days Historic Data Log Settings Notification Triggers Comments History

Temperature



Humidity 45.60 %



moduleStatus 0 #



moduleTemperature 16 °C



24.00 °C 0 26.30 °C  

Last Scan: 9 s 

Last Up: 136 s

Last Down:

Uptime: 100.0000%

Downtime: 0.0000%

Coverage: 2%

Sensor Type: HTTP IoT Push Data Advanced BETA

Dependency: Parent

Interval: every 15 m

ID: #2010

New Log Entries 2 ✓ 6 Search...  

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

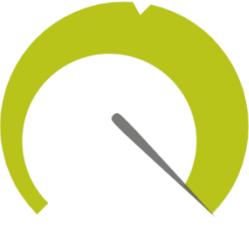
Devices Hosted Probe Web Week 2018 Geolocation Geolocation | Signal

✓ Sensor Geolocation | Signal  ★★★★☆ OK

II ✎ ✉ 🔍

Overview Live Data 2 days 30 days 365 days Historic Data Log Settings Notification Triggers Comments History

seqNumber



Accuracy

Latitude: 49.49000 °

Longitude: 11.10411 °

RSSI: -143 dBm

SNR: 6.51 dB

Last Scan: 47 s

Last Up: 5 m 35 s

Last Down: 25 h 54 m

Uptime: 99.9966%

Downtime: 0.0034%

Coverage: 2%

Sensor Type: HTTP IoT Push Data Advanced BETA

Dependency: Parent

Interval: every 15 m

ID: #2011

New Log Entries 5

✓ 6

Search...



Home

Devices

Libraries

Sensors

Alarms

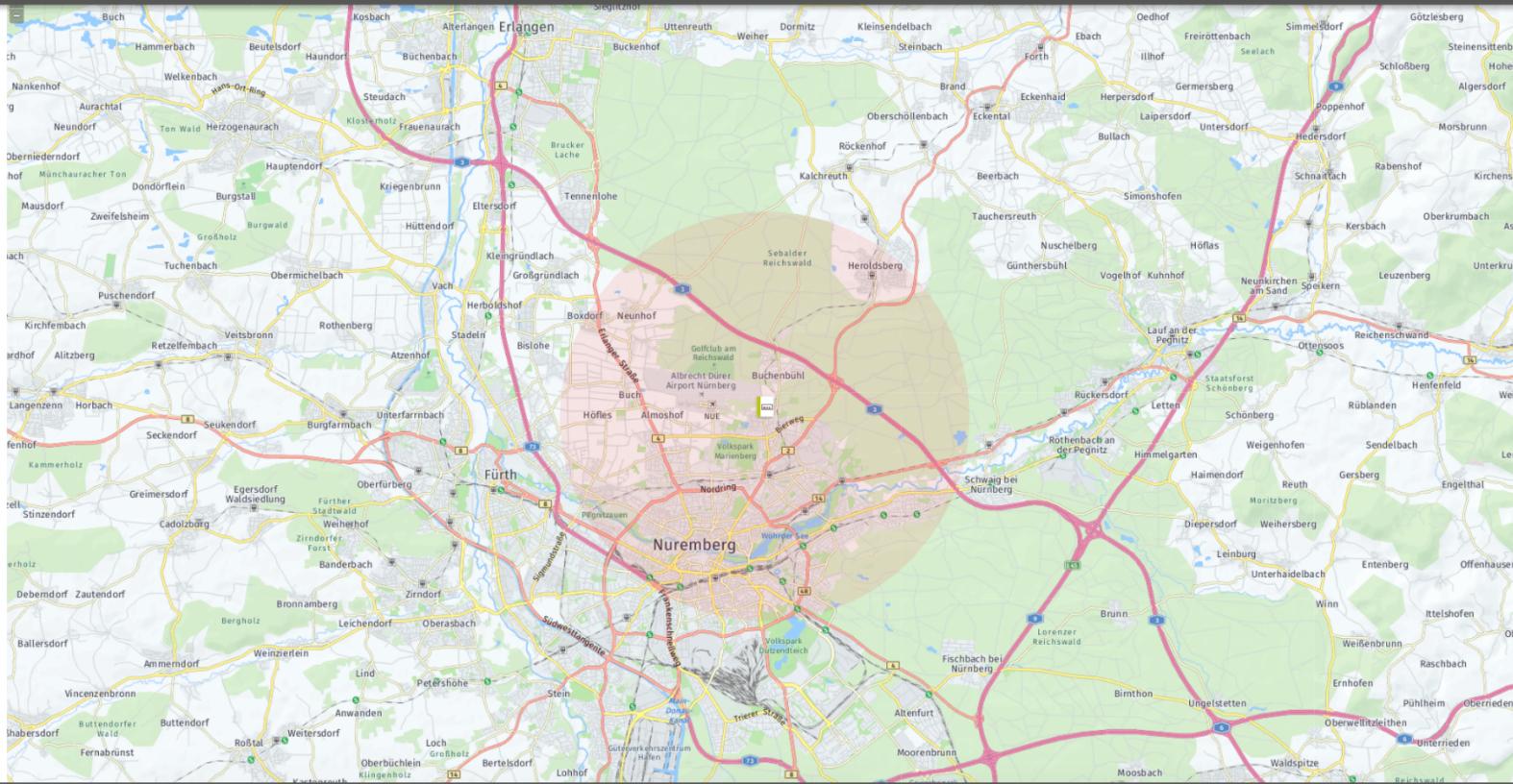
Maps

Reports

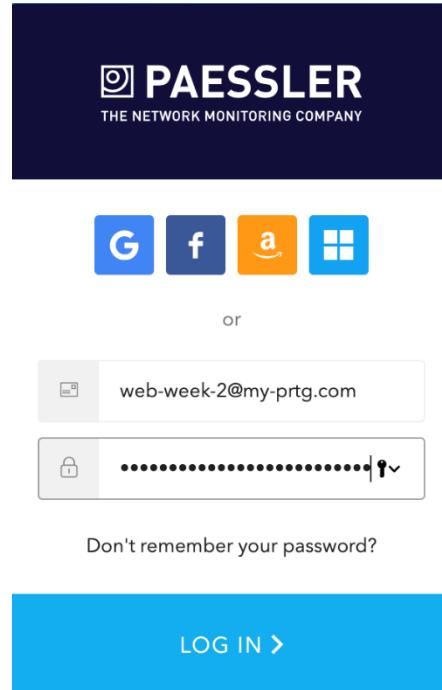
Logs

Tickets

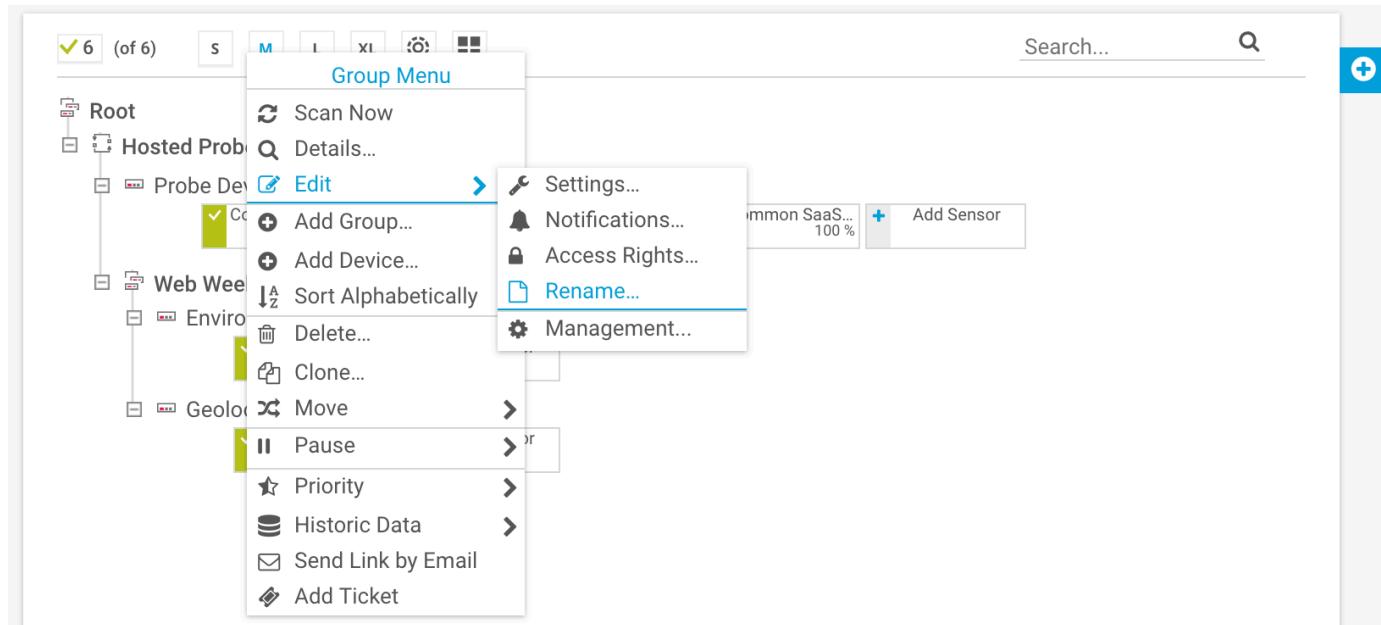
Setup



Log Into Your Account



Rename 1st Group



Add Device

Add Device to Group Web Week 2018

X

Add a New Device

Define a device name and address, options for auto-discovery, and credential settings for Windows, Linux, VMware/XEN, and SNMP, if necessary.

[Help: Add a Device](#)

Device Name and Address

Device Name 

Environmental Data

IP Version 

- Connect using IPv4
- Connect using IPv6

IPv4 Address/DNS Name 

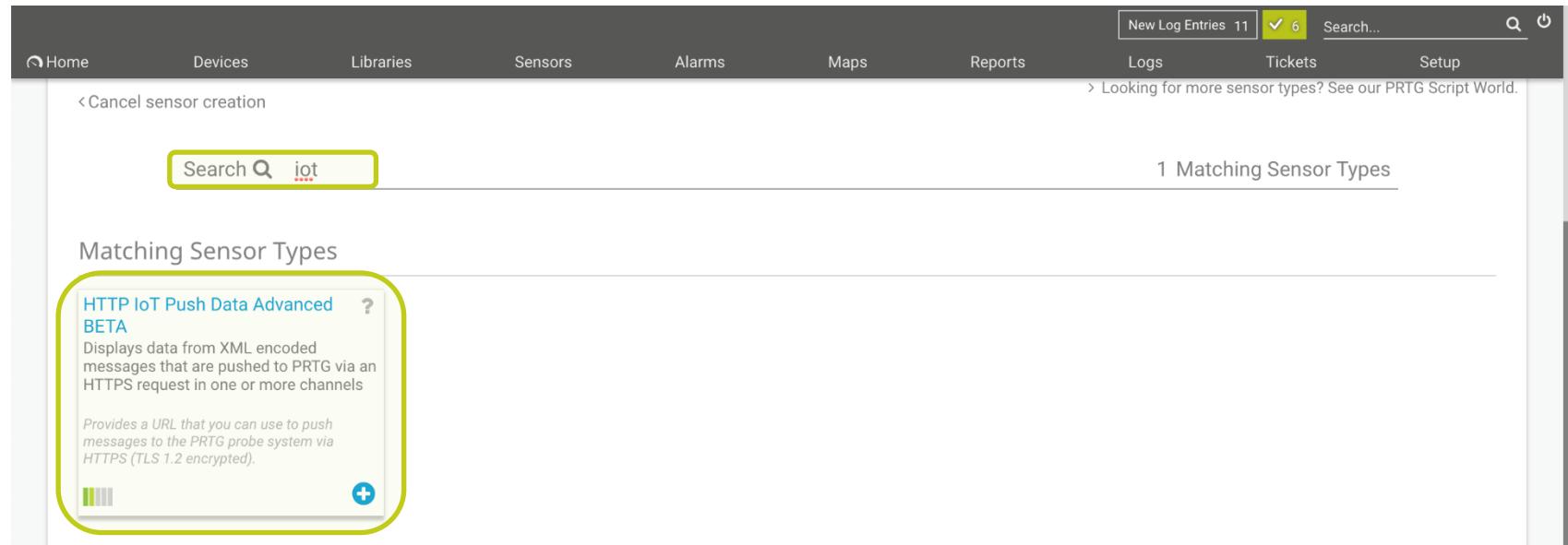
127.0.0.1|

Tags 

[Cancel](#)

[OK](#)

Add Sensor



The screenshot shows the PRTG Network Monitor interface with the title "Add Sensor". The top navigation bar includes links for Home, Devices, Libraries, Sensors (which is the active tab), Alarms, Maps, Reports, Logs, Tickets, and Setup. A search bar at the top right contains the text "Search...". Below the navigation, a message says "Looking for more sensor types? See our PRTG Script World." A "Cancel sensor creation" link is also present.

In the main content area, a search bar has "Search" and "iot" entered. To the right, it says "1 Matching Sensor Types". A section titled "Matching Sensor Types" lists one result:

HTTP IoT Push Data Advanced BETA

Displays data from XML encoded messages that are pushed to PRTG via an HTTPS request in one or more channels

Provides a URL that you can use to push messages to the PRTG probe system via HTTPS (TLS 1.2 encrypted).

At the bottom of this card are two icons: a bar chart and a blue plus sign.

Sensor Settings

Basic Sensor Settings

Sensor Name ⓘ Temperature | Humidity

Parent Tags ⓘ

Tags ⓘ PushSensor ✖ PushData ✖ HttpPushSensor ✖ IoT ✖ Sigfox ✖ ⚙

Priority ⓘ ★★★☆☆

SSL Settings

SSL Version ⓘ HTTPS (TLS 1.2 only)

SSL Port ⓘ 5051

HTTP Push Authentication

Identification Token ⓘ 1D1BE3-DHT22

Your ID from
the backside of
your
MKRFOX1200

Sensor Settings (2/2)

HTTP Push Authentication

Identification Token  1D1BE3-DHT22

HTTP Push Data

- No Incoming Data  Ignore and keep last status (default)
 Switch to "Unknown" status
 Switch to "Error" after x minutes

Scanning Interval



inherit from  Environmental Data (Scanning Interval: 5 minutes, Set sensor to [...])

Create 

Scanning Interval  15 minutes

If a Sensor Query Fails  Set sensor to warning for 1 interval, then set to down (recommended)

New Log Entries 14

✓ 6

? 1

Search...



Home

Devices

Libraries

Sensors

Alarms

Maps

Reports

Logs

Tickets

Setup

Devices Hosted Probe Web Week 2018 Environmental Data

Device Environmental Data



Overview

2 days

30 days

365 days

Alarms

Log

Settings

Notification Triggers

Comments

History

To see sensor gauges here, please change the priority of one or more sensors to ★★★★☆ /★★★★★.



Pos	Sensor	Status	Message	Graph	Priority	Edit
1.	Temperature Humi...	Unkn...	No data yet		★★★☆☆	Edit

« « 1 to 1 of 1 » »

Status:	OK
Sensors:	? 1 (of 1)
DNS/IP:	127.0.0.1
Dependency:	Parent
Default Interval:	every 300
Last Auto-Discovery:	(never)
Last Recommendation:	29 days ago
ID:	#2014

Add Sensor



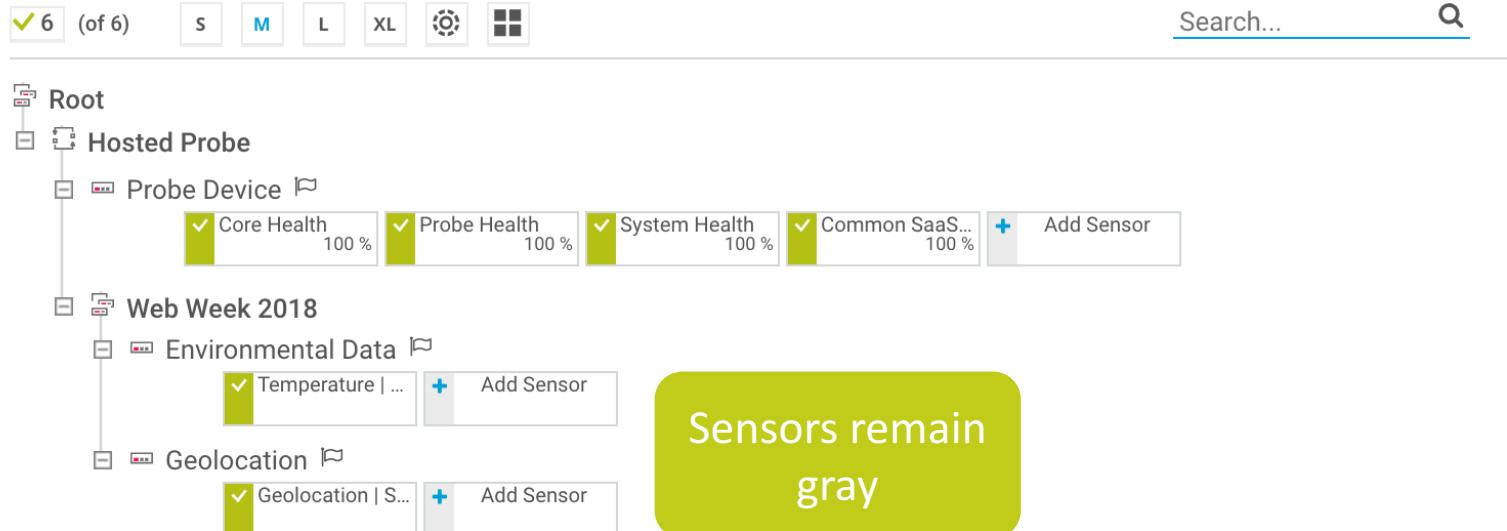
Create a new Device

- Add another Group: “Geolocation” under “Web Week 2018”
- Sensor Type: IoT Push Data Advanced Beta Sensor
- Sensor Name: Geolocation | Signal
- Identification Token: <Your-ID>-geoloc
- Scanning Interval: 15 minutes

Check Results

✓ 6 (of 6) S M L XL ⚙️ grid

Search... 🔍



Root

Hosted Probe

Probe Device

- Core Health 100 %
- Probe Health 100 %
- System Health 100 %
- Common SaaS... 100 %

Add Sensor

Web Week 2018

Environmental Data

- Temperature | ...

Add Sensor

Geolocation

- Geolocation | S...

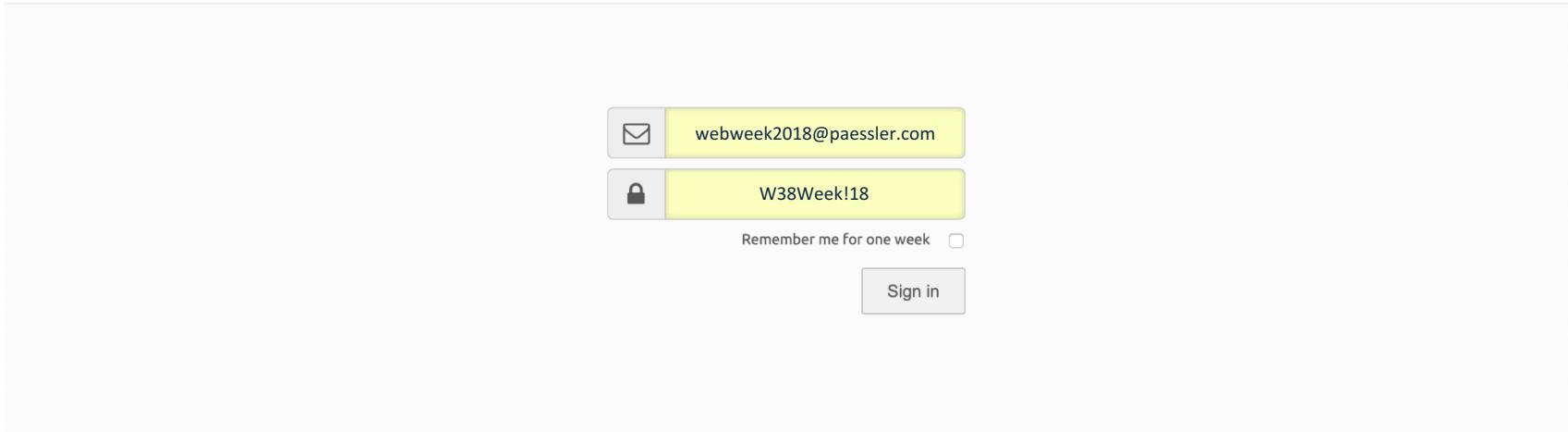
Add Sensor

Sensors remain gray

Sigfox Backend



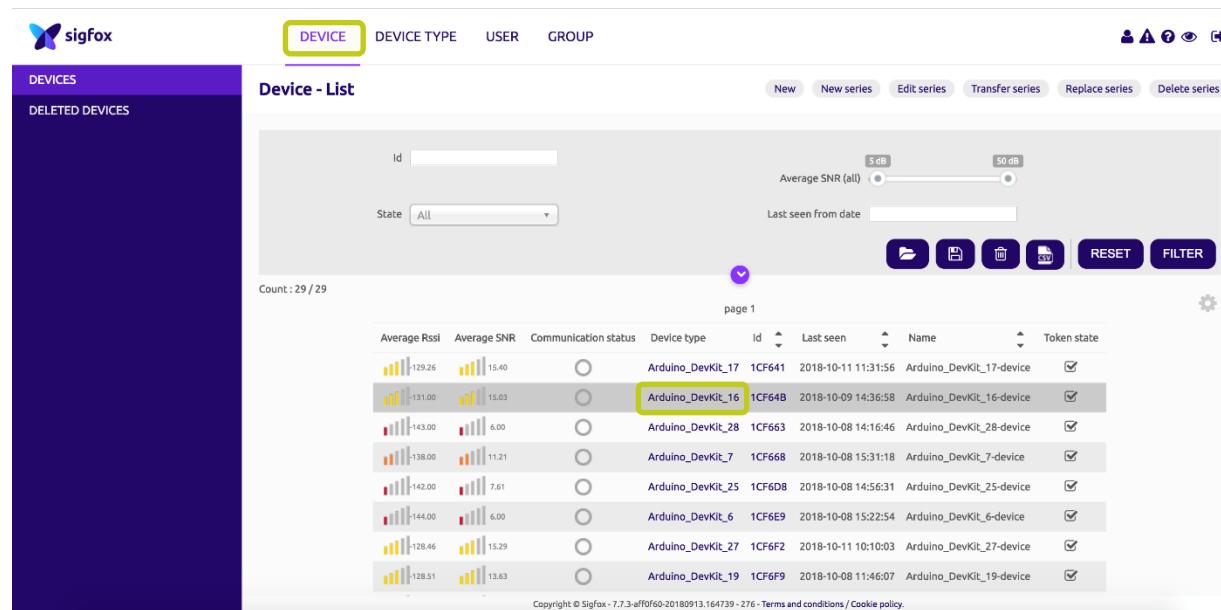
Lost password



The image shows a screenshot of a web browser displaying a login page for the Sigfox Backend. The page has a light gray background. At the top left is the sigFox logo. On the right side, there is a "Lost password" link. The main area contains two input fields: one for email with the placeholder "webweek2018@paessler.com" and another for password with the placeholder "W38Week!18". Below these fields is a "Remember me for one week" checkbox. At the bottom is a large "Sign in" button.

<https://backend.sigfox.com/auth/login>

Select Board and click Device Type



The screenshot shows the Sigfox Device - List interface. The top navigation bar has tabs for DEVICE (which is highlighted with a yellow box), DEVICE TYPE, USER, and GROUP. Below the tabs are buttons for New, New series, Edit series, Transfer series, Replace series, and Delete series. The main area is titled "Device - List" and displays a table of 29 devices. The columns include Average RSSI, Average SNR, Communication status, Device type, Id, Last seen, Name, and Token state. The "Device type" column shows values like "Arduino_DevKit_17", "Arduino_DevKit_16", "Arduino_DevKit_28", etc. The "Name" column shows device names like "Arduino_DevKit_17-device", "Arduino_DevKit_16-device", etc. The "Token state" column contains checked checkboxes. The table is paginated at page 1 of 29. At the bottom of the table, there is a copyright notice: "Copyright © Sigfox - 7.7.3-af0f60-20180913.164739 - 276 - Terms and conditions / Cookie policy."

Average RSSI	Average SNR	Communication status	Device type	Id	Last seen	Name	Token state
129.26	15.40	○	Arduino_DevKit_17	1CF6A1	2018-10-11 11:31:56	Arduino_DevKit_17-device	<input checked="" type="checkbox"/>
131.00	15.03	○	Arduino_DevKit_16	1CF64B	2018-10-09 14:36:58	Arduino_DevKit_16-device	<input checked="" type="checkbox"/>
143.00	6.00	○	Arduino_DevKit_28	1CF663	2018-10-08 14:16:46	Arduino_DevKit_28-device	<input checked="" type="checkbox"/>
138.00	11.21	○	Arduino_DevKit_7	1CF668	2018-10-08 15:31:18	Arduino_DevKit_7-device	<input checked="" type="checkbox"/>
142.00	7.61	○	Arduino_DevKit_25	1CF6D8	2018-10-08 14:56:31	Arduino_DevKit_25-device	<input checked="" type="checkbox"/>
144.00	6.00	○	Arduino_DevKit_6	1CF6E9	2018-10-08 15:22:54	Arduino_DevKit_6-device	<input checked="" type="checkbox"/>
128.46	15.29	○	Arduino_DevKit_27	1CF6F2	2018-10-11 10:10:03	Arduino_DevKit_27-device	<input checked="" type="checkbox"/>
128.51	13.63	○	Arduino_DevKit_19	1CF6F9	2018-10-08 11:46:07	Arduino_DevKit_19-device	<input checked="" type="checkbox"/>

Select Callbacks



sigfox

DEVICE DEVICE TYPE USER GROUP

INFORMATION

LOCATION

ASSOCIATED DEVICES

DEVICES BEING REGISTERED

STATISTICS

EVENT CONFIGURATION

CALLBACKS

BULK OPERATIONS

Device type 'Arduino_DevKit_16' - Information

Disengage sequence number Restart Edit Delete

Information

Callbacks

Arduino_DevKit_16

Description: DevKit 16 (Arduino)

Keep alive: N/A

Subscription automatic renewal: ⓘ

Group: Paessler-Webweek-18

Payload display: None

Contract: paessler_4435_68de

Alert Email:

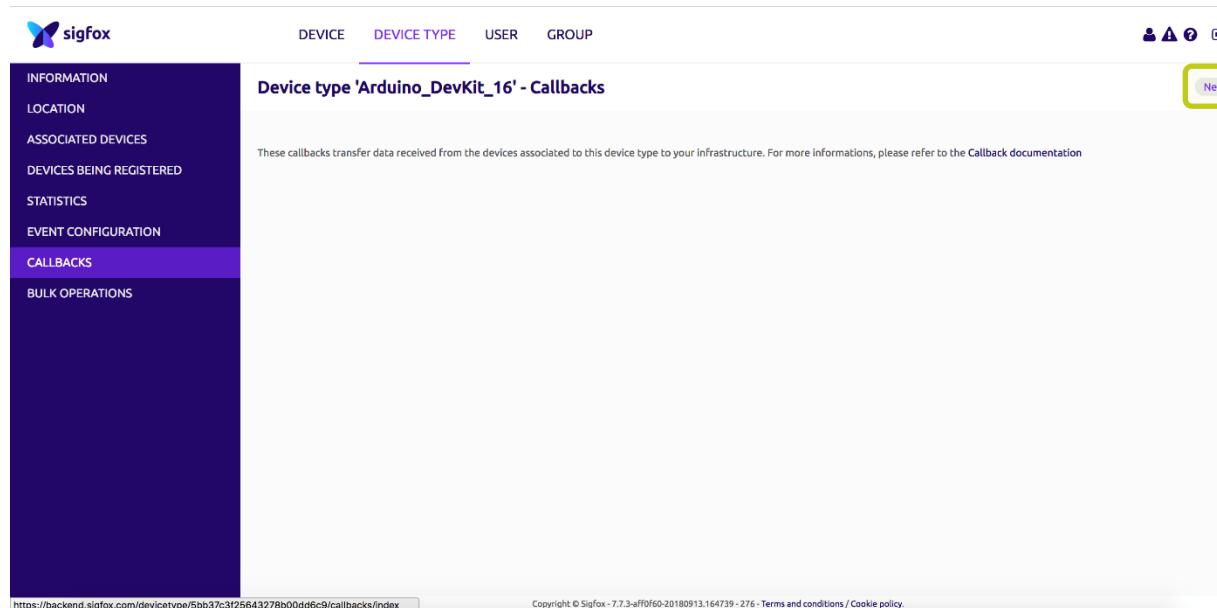
Last edition date: 2018-10-02 16:10:07

Last edited by: buy.sigfox.com

<https://backend.sigfox.com/devicetype/5bb37c3f25643278b00dd6c9/info>

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Create new Callback



The screenshot shows the Sigfox interface for managing device types. On the left, a sidebar lists various sections: INFORMATION, LOCATION, ASSOCIATED DEVICES, DEVICES BEING REGISTERED, STATISTICS, EVENT CONFIGURATION, CALLBACKS (which is selected and highlighted in purple), and BULK OPERATIONS. The main content area is titled "Device type 'Arduino_DevKit_16' - Callbacks". It contains a sub-instruction: "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 small button labeled "New" with a yellow border.

Create a Custom Callback

Sigfox

DEVICE DEVICE TYPE USER GROUP

INFORMATION LOCATION ASSOCIATED DEVICES DEVICES BEING REGISTERED STATISTICS EVENT CONFIGURATION CALLBACKS BULK OPERATIONS

Device type 'Arduino_DevKit_16' - New Callback

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.

 **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.

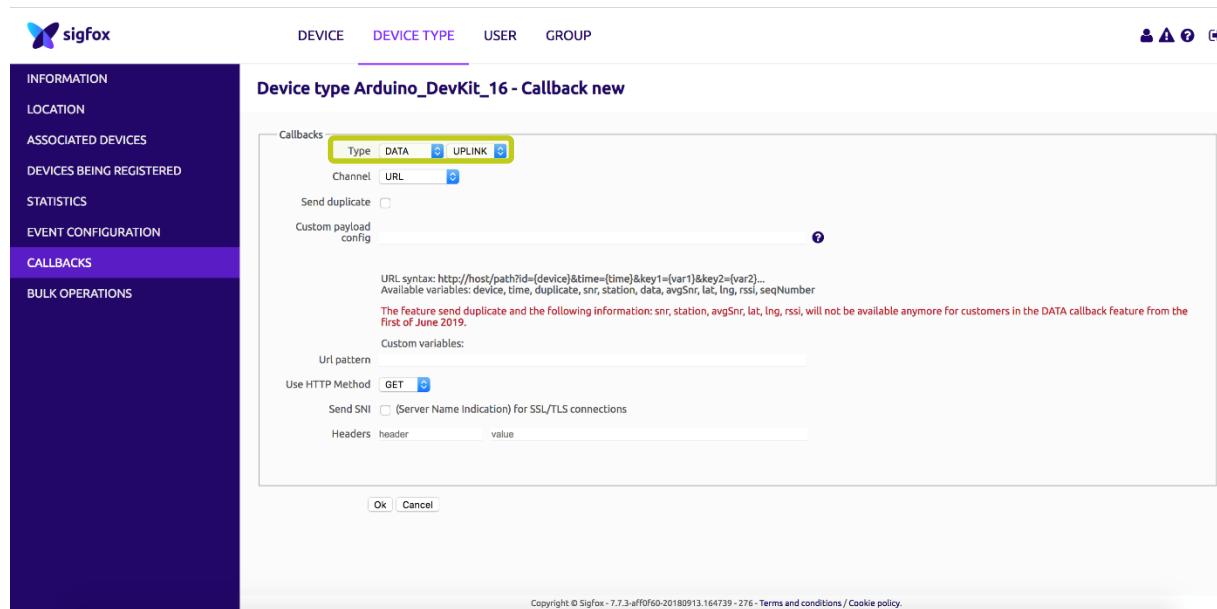
 **AWS Kinesis**
Amazon Kinesis is a platform for streaming data on AWS, offering powerful services to make it easy to load and analyze streaming data, and also providing the ability for you to build custom streaming data applications for specialized needs.

 **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 throughput. This service is available in several regions, including Europe, North America, and Asia Pacific, making it easy to process data from around the world.

<https://backend.sigfox.com/devicetype/5bb37c3f25643278b00dd6c9/callbacks/new>

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Type: DATA UPLINK



sigfox

DEVICE DEVICE TYPE USER GROUP

INFORMATION LOCATION ASSOCIATED DEVICES DEVICES BEING REGISTERED STATISTICS EVENT CONFIGURATION CALLBACKS BULK OPERATIONS

Device type Arduino_DevKit_16 - 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

The feature send duplicate and the following information: snr, station, avgSnr, lat, lng, rssi, will not be available anymore for customers in the DATA callback feature from the first of June 2019.

Custom variables:

Url pattern:

Use HTTP Method: GET

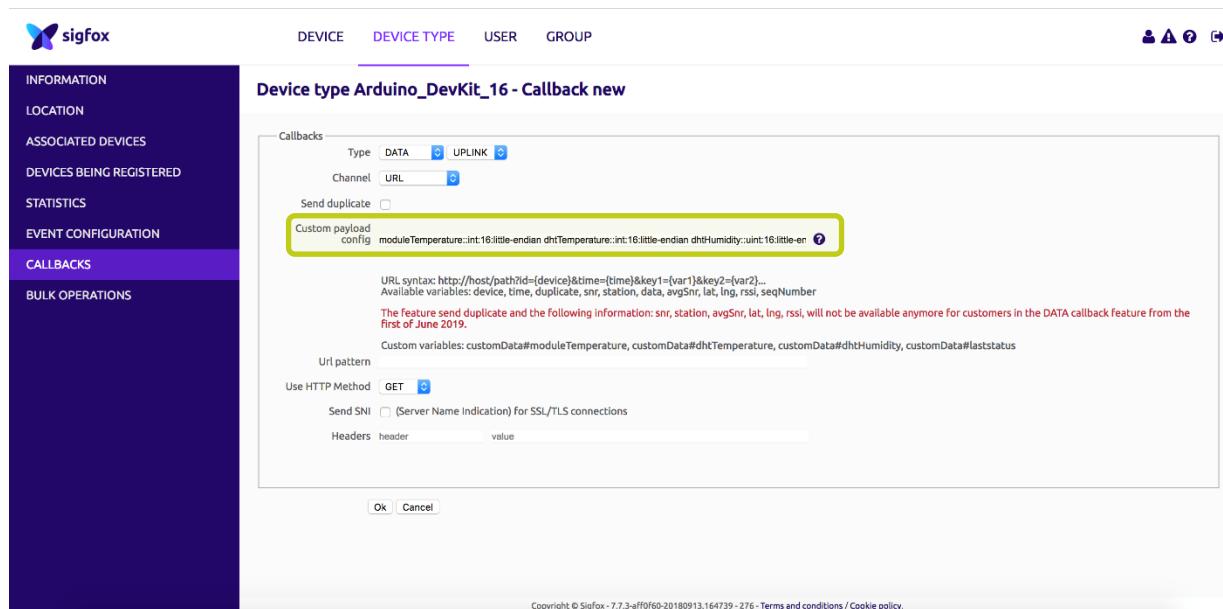
Send SNI: (Server Name Indication) for SSL/TLS connections

Headers: header value

Ok Cancel

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Paste the custom payload config



sigfox

DEVICE DEVICE TYPE USER GROUP

INFORMATION LOCATION ASSOCIATED DEVICES DEVICES BEING REGISTERED STATISTICS EVENT CONFIGURATION CALLBACKS BULK OPERATIONS

Device type Arduino_DevKit_16 - Callback new

Callbacks

Type: DATA UPLINK

Channel: URL

Send duplicate

Custom payload config: moduleTemperature:int16-little-endian dhtTemperature:int16-little-endian dhtHumidity:uint16-little-endian

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

The feature send duplicate and the following information: snr, station, avgSnr, lat, lng, rssi, seqNumber will not be available anymore for customers in the DATA callback feature from the first of June 2019.

Custom variables: customData#moduleTemperature, customData#dhtTemperature, customData#dhtHumidity, customData#lastStatus

Url pattern: GET

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

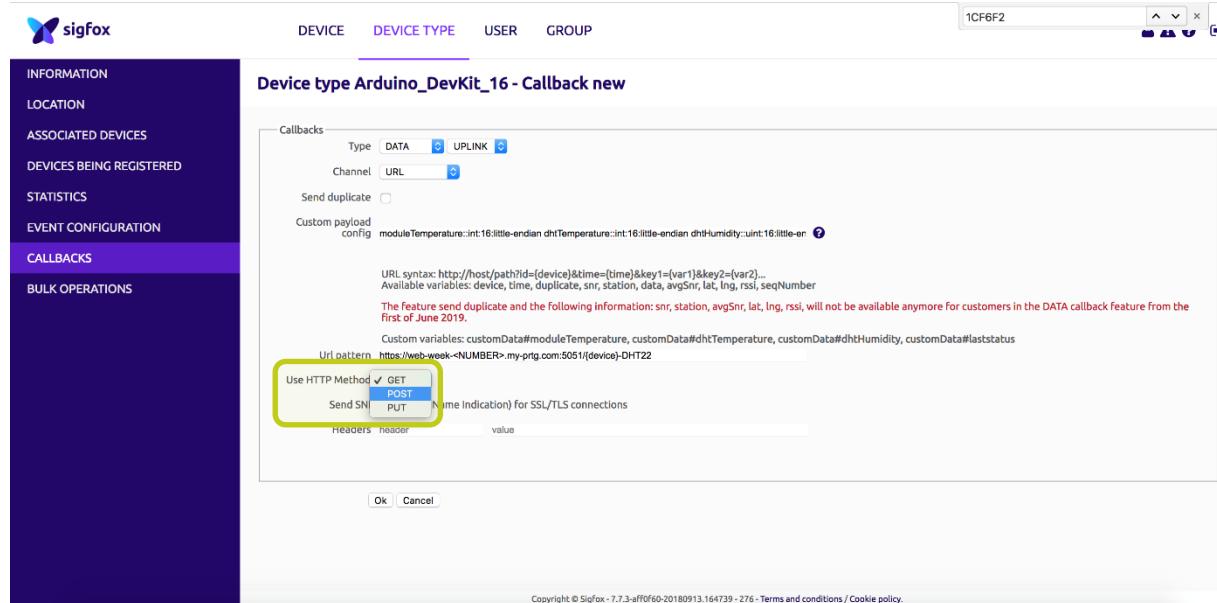
Headers: header value

Ok Cancel

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DHT22_DATA_UPLINK_Callback.md

Use HTTP Method: POST



sigfox

DEVICE DEVICE TYPE USER GROUP

1CF6F2

INFORMATION
LOCATION
ASSOCIATED DEVICES
DEVICES BEING REGISTERED
STATISTICS
EVENT CONFIGURATION
CALLBACKS
BULK OPERATIONS

Device type Arduino_DevKit_16 - Callback new

Callbacks

Type: DATA UPLINK
Channel: URL

Send duplicate

Custom payload config: moduleTemperature:int:16:little-endian dhtTemperature:int:16:little-endian dhtHumidity:uint:16:little-endian

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

The feature send duplicate and the following information: snr, station, avgSnr, lat, lng, rssi, will not be available anymore for customers in the DATA callback feature from the first of June 2019.

Custom variables: customData#moduleTemperature, customData#dhtTemperature, customData#dhtHumidity, customData#laststatus

Url pattern: https://web-week-<NUMBER>.my-prtg.com:5051/{device}-DHT22

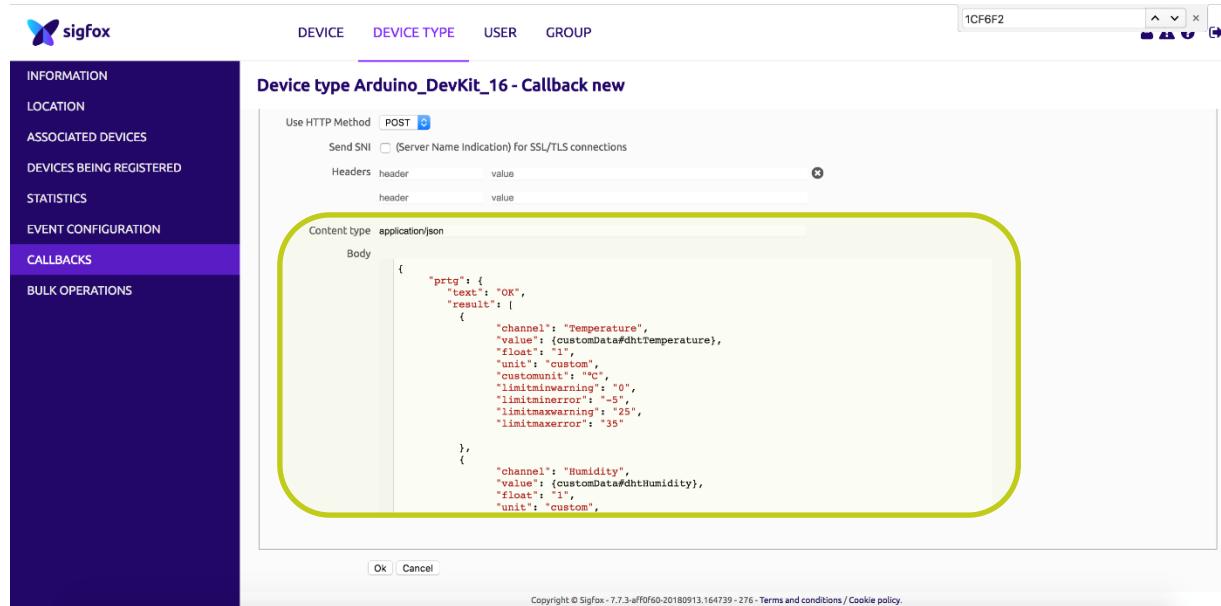
Use HTTP Method: GET POST PUT
Send SN: Name Indication for SSL/TLS connections

Headers: header value

OK Cancel

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Change Content Type & paste Body



The screenshot shows the Sigfox Device type configuration interface. On the left, a sidebar lists options like INFORMATION, LOCATION, ASSOCIATED DEVICES, DEVICES BEING REGISTERED, STATISTICS, EVENT CONFIGURATION, CALLBACKS (which is selected and highlighted in purple), and BULK OPERATIONS. The main area is titled "Device type Arduino_DevKit_16 - Callback new". It shows a "Content type" set to "application/json" and a "Body" section containing the following JSON code:

```
{  
  "ptrg": {  
    "text": "OK",  
    "result": [  
      {  
        "channel": "Temperature",  
        "value": {customData#dhtTemperature},  
        "float": "1",  
        "unit": "custom",  
        "customunit": "°C",  
        "limitminwarning": "0",  
        "limitminerror": "-5",  
        "limitmaxwarning": "25",  
        "limitmaxerror": "35"  
      },  
      {  
        "channel": "Humidity",  
        "value": {customData#dhtHumidity},  
        "float": "1",  
        "unit": "custom",  
        "customunit": "%"  
      }  
    ]  
  }  
}
```

At the bottom of the configuration window, there are "Ok" and "Cancel" buttons.

Create a new Callback

- Type: SERVICE GEOLOC
- URL Pattern:
`https://web-week-<NUMBER>.my-prtg.com:5051/{device}-geoloc`
- HTTP Method: POST
- Content Type: application/json
- Copy Body from Github:
`https://github.com/PaesslerAG/webweek-2018/blob/master/GEOLOCATION_Service_Geoloc.md`

Check Results



DEVICE DEVICE TYPE USER GROUP

INFORMATION

LOCATION

ASSOCIATED DEVICES

DEVICES BEING REGISTERED

STATISTICS

EVENT CONFIGURATION

CALLBACKS

BULK OPERATIONS

Device type 'Arduino_DevKit_2' - 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 (no downlink callback available)

Downlink	Enable	Channel	Subtype	Duplicate	Batch	Information	Edit	Errors	Delete
<input checked="" type="checkbox"/>		UPLINK	<input type="checkbox"/>	<input type="checkbox"/>	[POST] https://web-week-2.my-prtg.com:5051/{device}-DHT22				

SERVICE callbacks

Enable	Channel	Subtype	Duplicate	Batch	Information	Edit	Errors	Delete
<input checked="" type="checkbox"/>		GEOLOC	<input type="checkbox"/>	<input type="checkbox"/>	[POST] https://web-week-2.my-prtg.com:5051/{device}-geoloc			

Sigfox Monitoring



✓ 6 Search...  

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

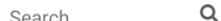
Devices

Group Root

Overview 2 days 30 days 365 days Alarms Log Management Settings Notification Triggers Comments History

✓ 6 (of 6) S M L XL  

 Root  

 Hosted Probe  

 Probe Device  

Core Health 100% Probe Health 100% System Health 100% Common SaaS... 100% 

 Web Week 2018  

 Environmental Data  

Temperature | ... 

 Geolocation  

Geolocation | S... 

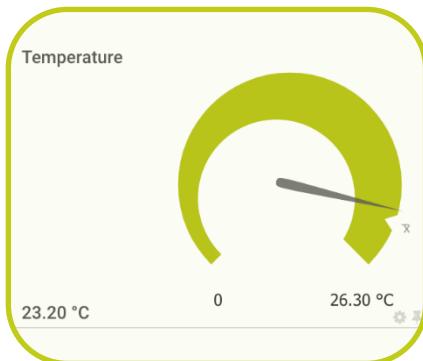
Website Slow To Load?
Monitor global loading times.
[Learn More >>](#) 

Status: OK 
Default Interval: every 60 seconds 
ID: #0 

 Add Sensor 

18.4.46.1278 [bugfix/PRTG-5994_push_iot_advanced_not_working_PODDEPLOY] web-week-2@my-prtg.com 1:43 Refresh in 12 sec  ? Help

Temperature Scaling



```

10  #define UINT16_t_MAX 65536
11  #define INT16_t_MAX   UINT16_t_MAX/2
12
13  int alarm_source = 0;
14
15  typedef struct __attribute__ ((packed)) sigfox_message {
16      int16_t moduleTemperature;
17      int16_t dhtTemperature;
18      uint16_t dhtHumidity;
19      uint8_t lastMessageStatus;
    
```

Edit Channel

Temperature (ID 2)

Edit Channel "Temperature"

Name: Temperature

Unit: °C

Scaling Multiplication: 120

Scaling Division: 32768

ID: 2

Value Lookups and Limits: Enable alerting based on value lookups

Apply Ok Cancel

```

73  msg.dhtTemperature = convertToFloatToInt16(t, 80, -40);
74  msg.dhtHumidity = convertToFloatToInt16(h, 100);
    
```

Prepare all Channels

- Humidity:
 - Scaling Division: 65536
 - Scaling Multiplication: 100
- moduleTemperature:
 - Scaling Division: 32768
 - Scaling Multiplication: 120
- moduleStatus:
 - Leave as is

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

Devices

Group Root

Overview 2 days 30 days 365 days Alarms Log Management Settings Notification Triggers Comments History

6 (of 6) S M L XL 🔍 Search... 

 Root
 Hosted Probe
 Probe Device 
 Web Week 2018
 Environmental Data 
 Geolocation 


Website Slow To Load?
Monitor global loading times.
[Learn More >>](#)



Status: OK
Default Interval: every 60 seconds
ID: #0

Add Sensor



PAESSLER

18.4.46.1278 [bugfix/PRTG-5994_push_iot_advanced_not_working_PODDEPLOY] web-week-2@my-prtg.com 1:43 Refresh in 12 sec

Contact Support Help

Get Sensor ID

✓ Sensor Geolocation | Signal  ★★★☆☆

OK

Overview Live Data 2 days 30 days 365 days Historic Data Log Settings Notification Triggers Comments History

seqNumber



Accuracy

Latitude: 49.47371 °

Longitude: 11.12252 °

RSSI: -141 dBm

SNR: 7.40 dB

0 109 #

109 #

Last Scan: 29 s

Last Up: 8 m 41 s

Last Down: 27 h 13 m

Uptime: 99.9993%

Downtime: 0.0007%

Coverage: 4%

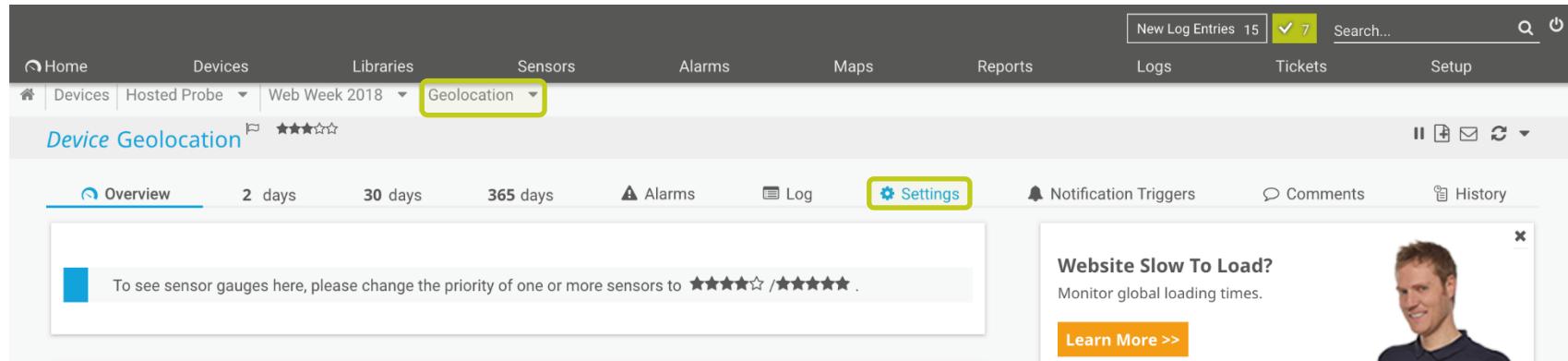
Sensor Type: HTTP IoT Push Data Advanced BETA

Dependency: Parent

Interval: every 15 m

ID: #2011

Change Device “Geolocation” Settings



The screenshot shows the PRTG Network Monitor web interface. At the top, there's a navigation bar with links for Home, Devices, Libraries, Sensors, Alarms, Maps, Reports, Logs, Tickets, and Setup. A dropdown menu labeled "Geolocation" is open, with its current selection "Geolocation" highlighted by a yellow box. In the main content area, there's a section titled "Device Geolocation" with a "★★★★★" rating icon. Below this, there are several tabs: Overview (which is selected and highlighted with a blue underline), 2 days, 30 days, 365 days, Alarms, Log, Settings (which is also highlighted with a yellow box), Notification Triggers, Comments, and History. A message box on the left says: "To see sensor gauges here, please change the priority of one or more sensors to ★★★★☆ /★★★★★ ." On the right, there's a promotional box for "Website Slow To Load?" which says "Monitor global loading times." and has a "Learn More >>" button. There's also a small portrait photo of a man.

Change Location

https://github.com/PaesslerAG/webweek-2018/blob/master/PRTG_Geo-Map_Settings.md

Device Type

- Sensor Management 
- Manual (no auto-discovery)
 - Automatic device identification (standard, recommended)
 - Automatic device identification (detailed, may create many sensors)
 - Automatic sensor creation using specific device template(s)

<Your-Device-ID>

```
{"id":<Sensor-ID>,
"count":1,"waypointstyle":"mywaypoint","waypointmarker":2,"style":
{"strokeColor":"#0404B4","strokeOpacity":0.0,"strokeWidth":4
,"fillColor":"#ff2600","fillOpacity":0.1}}
```

Location

 inherit from  Web Week 2018 (Location (for Geo Maps): <empty>)

Location (for Geo Maps)

```
1D1BE3
{"id":2011,"count":1,"waypointstyle":"mywaypoint","waypointmarker":2,"style":
{"strokeColor":"#0404B4","strokeOpacity":0.0,"strokeWidth":4,"fillColor":"#ff2600","fillOpacity":0.1}}
```



Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup

New Log Entries 16 ✓ 6 Search... 

Group Root

Overview 2 days 30 days 365 days Alarms Log Management Settings Notification Triggers Comments History

✓ 6 (of 6) S M L XL  

Root
Hosted Probe
Probe Device
Core Health 100% Probe Health 100% System Health 100% Common SaaS... 100% Add Sensor
Web Week 2018
Environmental Data
Temperature | ... Add Sensor
Geolocation
Geolocation | S... Add Sensor

Search... 

Questions?
In our Knowledge Base you will find questions and answers all about PRTG.
[Join The Community >>](#)

Status: OK Default Interval: every 60 seconds
ID: #0

 Add Sensor



PAESSLER 18.4.46.1278 [bugfix/PRTG-5994_push_iot_advanced_not_working_PODDEPLOY] web-week-2@my-prtg.com ① 3:39 || Refresh in 16 sec Contact Support Help



Launching demo...

THANK YOU

VIELEN DANK

MERCI GRACIAS TAK

고맙습니다

GRAZIE OBRIGADO

非常感谢

