Weightless
Ubiik Cloud
User Manual

Revision History

Revision Code	Date	Description	Comments
1.0.0	Aug 16 2017	Initial Draft	
1.0.5	Sept 5 2017	Firmware 1.0.5	
1.0.7	Nov 11 2017	Firmware 1.0.7	Added Demo Applications data format
1.0.8	Jan 8 2018	Firmware 1.0.8	
1.0.9	May 9 2018	Firmware 1.0.9	

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Account

Create account

Go to wpkit.ubiik.com/account/create/ and create an account using a valid email address.

Login

To login, go to https://wpkit.ubiik.com/ or https://wpkit.ubiik.com/account/login/
Enter your username and password and click *Login*.

Logout

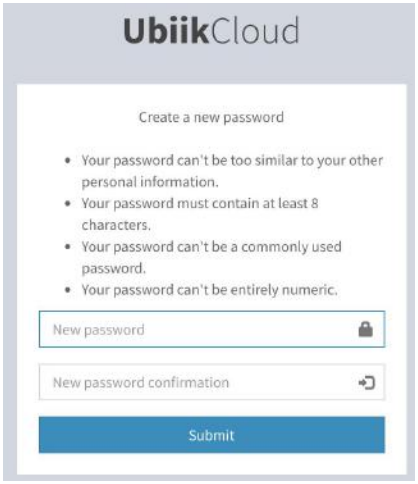
Once logged in, to logout click “Logout” on the menu.

Reset password

To reset your password, go to Ubiik Cloud login page (https://wpkit.ubiik.com/account/login/) and click on *I forgot my password*.

Then, type the email you used to create your account and click on *Submit.*

You will receive an email with a link to restore your password. Click on the link and type and re type your new password. Click on *Submit*.

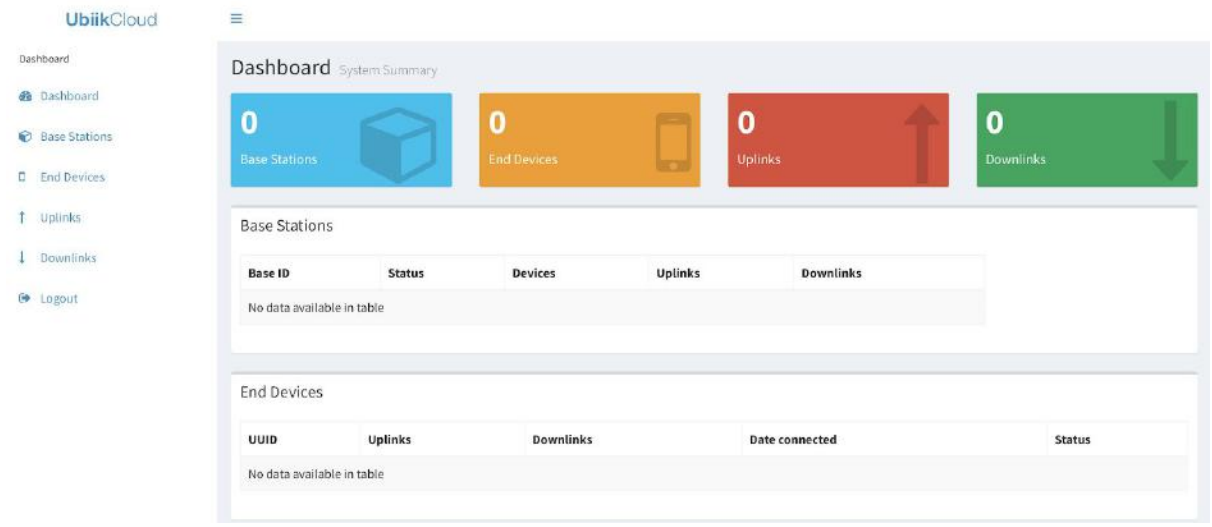


Go back to the Login page and login with your new credentials.

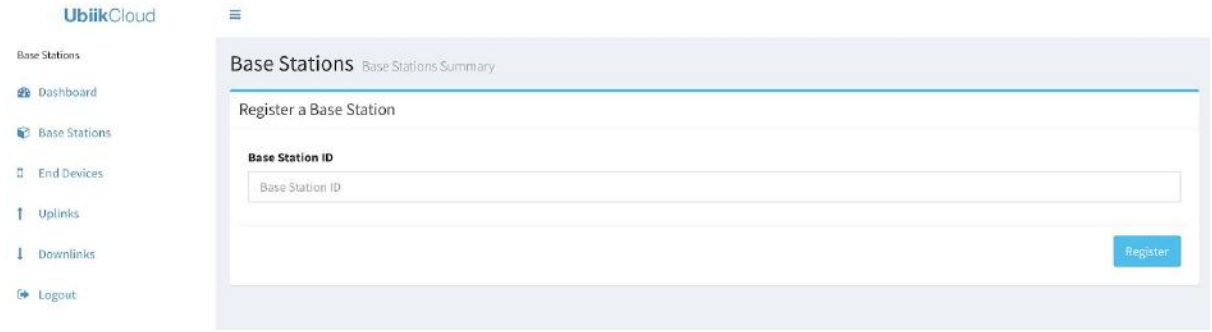
Register Base Station

After creating an account or logging in, you will be redirected to the Dashboard, which will have no data to display yet.

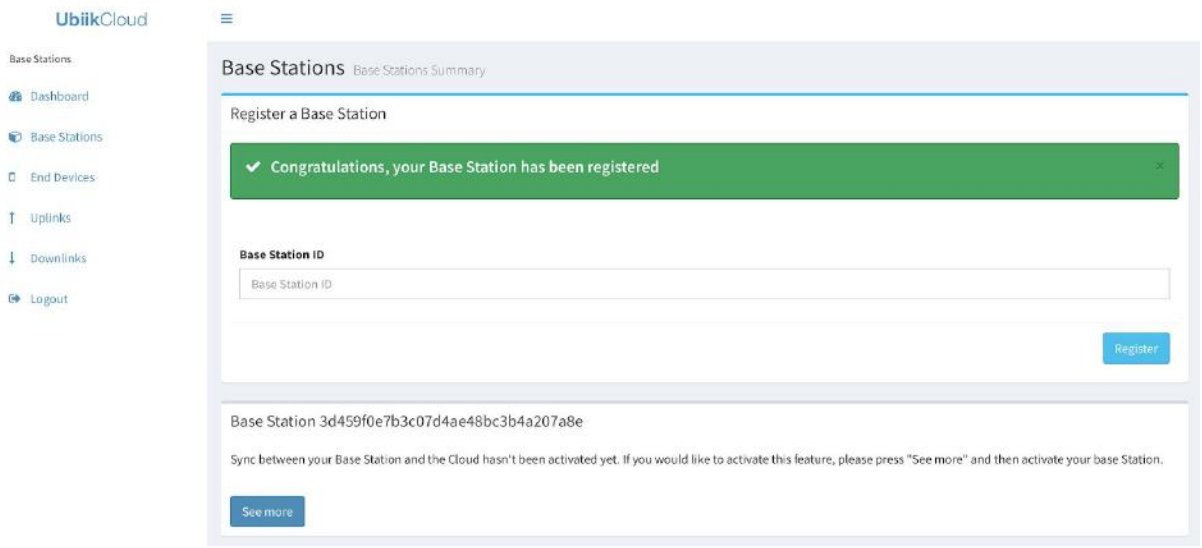
Each kit includes a free 60-day license for cloud usage which commences counting from the date of registration. After this time you can choose to extend this license or continue using the kit with our Offline Tool.



Click on **Base Stations** on the menu.



Type the 32 characters Base Station ID provided. You can find it on the bottom of your Base Station. Click on **Register**.



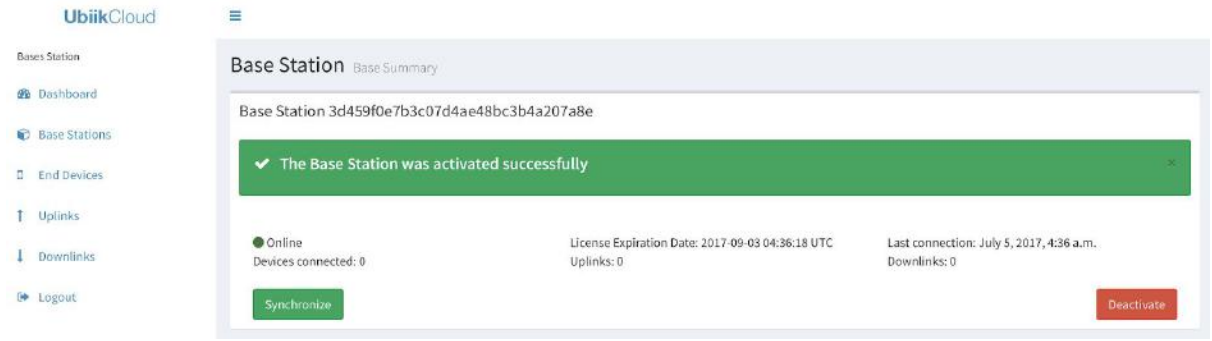
Your Base Station has been registered but it is not pushing or receiving any data to or from the cloud.
Turn on your Base Station and connect it to the internet. Wait for up to 2 minutes for the Base Station to boot and register to the cloud.

At this point you can start using the Offline Config Tool.

Activate Cloud Usage

If you want your Base Station to push/receive data to/from the cloud, and to see if it is online or offline, you need to activate the cloud usage.
In order to do this, click on the **See More** button corresponding to the Base Station to activate to go to the Base Station Detail page.

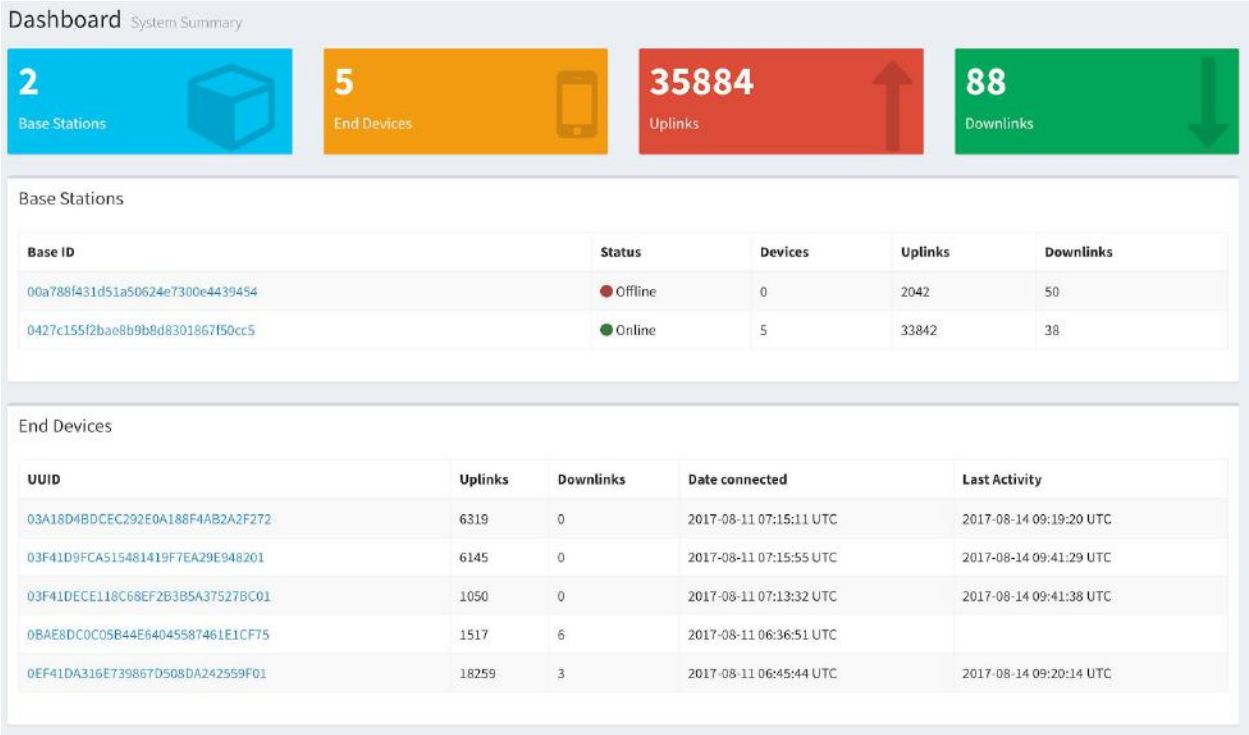
Click on **Activate Cloud Usage**.



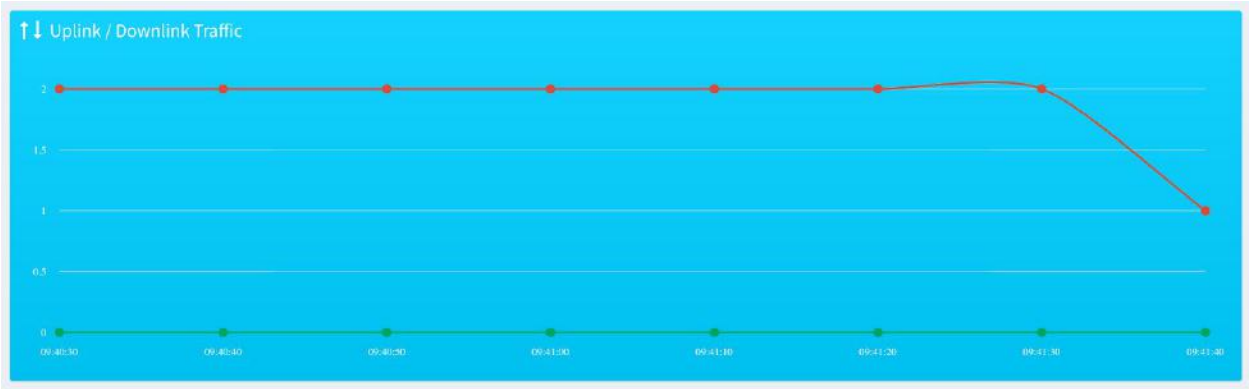
Cloud usage is active now and you are able to receive uplinks, send downlinks and configure your base station from the cloud.
To deactivate the cloud usage, click on **Deactivate**.

Dashboard

This view displays a summary of your account. You can see the list of Base Stations and End Devices and their current status.
In this page as in the rest of the website, all times are in UTC.

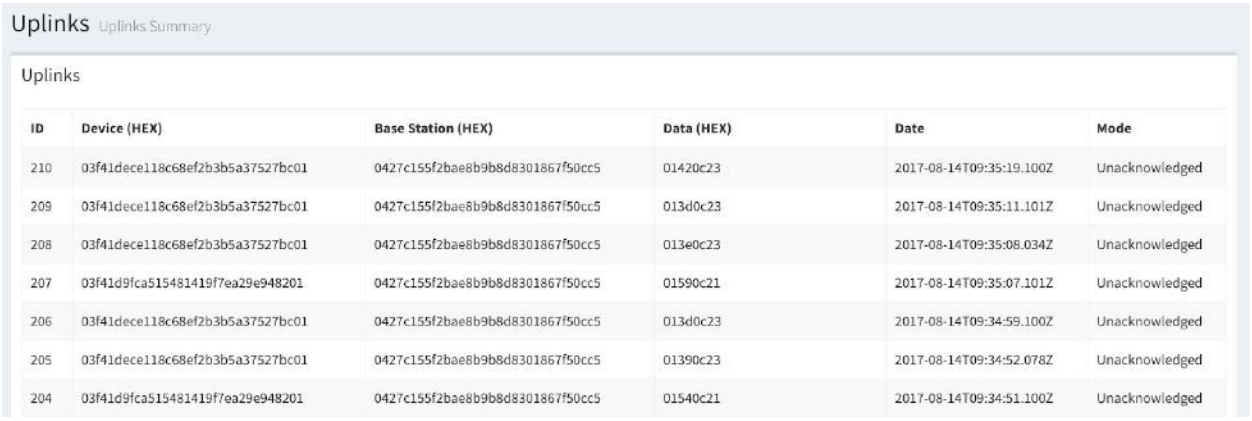


You can also see Uplink and Downlink traffic, which is sampled every 10 seconds.



Uplinks

To access this view click on **Uplinks** on the menu. You will see a list containing the Device ID, Base Station, Data, and time at which the event happened.
The Device ID, Base Station and Data are encoded in base 16.
If you are writing your own application, this view is useful to validate that the data is being sent correctly.
The list is limited to the latest 100 uplinks and can be sorted by each column.

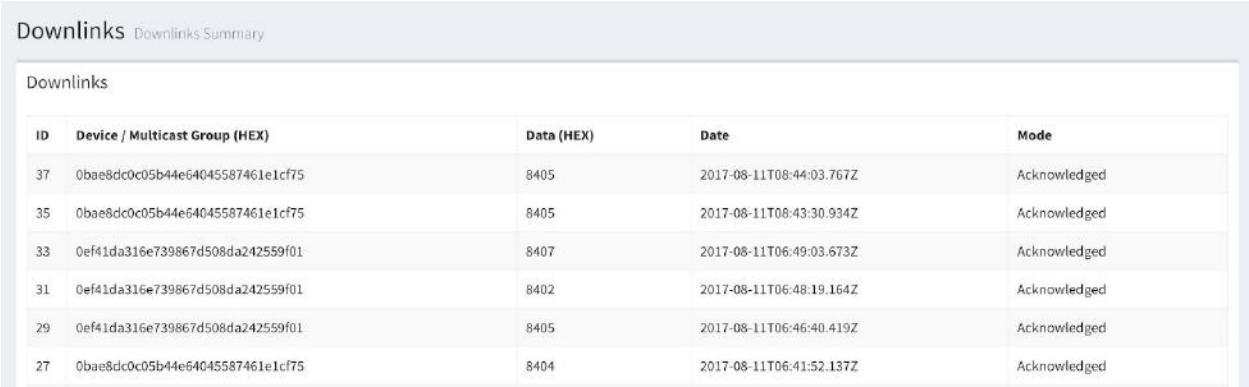


ID	Device (HEX)	Base Station (HEX)	Data (HEX)	Date	Mode
210	03f41dece118c68ef2b3b5a37527bc01	0427c155f2bae8b9b8d8301867f50cc5	01420c23	2017-08-14T09:35:19.100Z	Unacknowledged
209	03f41dece118c68ef2b3b5a37527bc01	0427c155f2bae8b9b8d8301867f50cc5	013d0c23	2017-08-14T09:35:11.101Z	Unacknowledged
208	03f41dece118c68ef2b3b5a37527bc01	0427c155f2bae8b9b8d8301867f50cc5	013e0c23	2017-08-14T09:35:08.034Z	Unacknowledged
207	03f41d9fca515481419f7ea29e948201	0427c155f2bae8b9b8d8301867f50cc5	01590c21	2017-08-14T09:35:07.101Z	Unacknowledged
206	03f41dece118c68ef2b3b5a37527bc01	0427c155f2bae8b9b8d8301867f50cc5	013d0c23	2017-08-14T09:34:59.100Z	Unacknowledged
205	03f41dece118c68ef2b3b5a37527bc01	0427c155f2bae8b9b8d8301867f50cc5	01390c23	2017-08-14T09:34:52.078Z	Unacknowledged
204	03f41d9fca515481419f7ea29e948201	0427c155f2bae8b9b8d8301867f50cc5	01540c21	2017-08-14T09:34:51.100Z	Unacknowledged

Downlinks

Downlinks List

To access this view click on **Downlinks** on the menu. You will see a list containing the Device or Multicast Group ID, Data, and time at which the downlink was sent.
The Device ID, Base Station and Data are encoded in base 16.
The list is limited to the latest 100 downlinks and can be sorted by each column



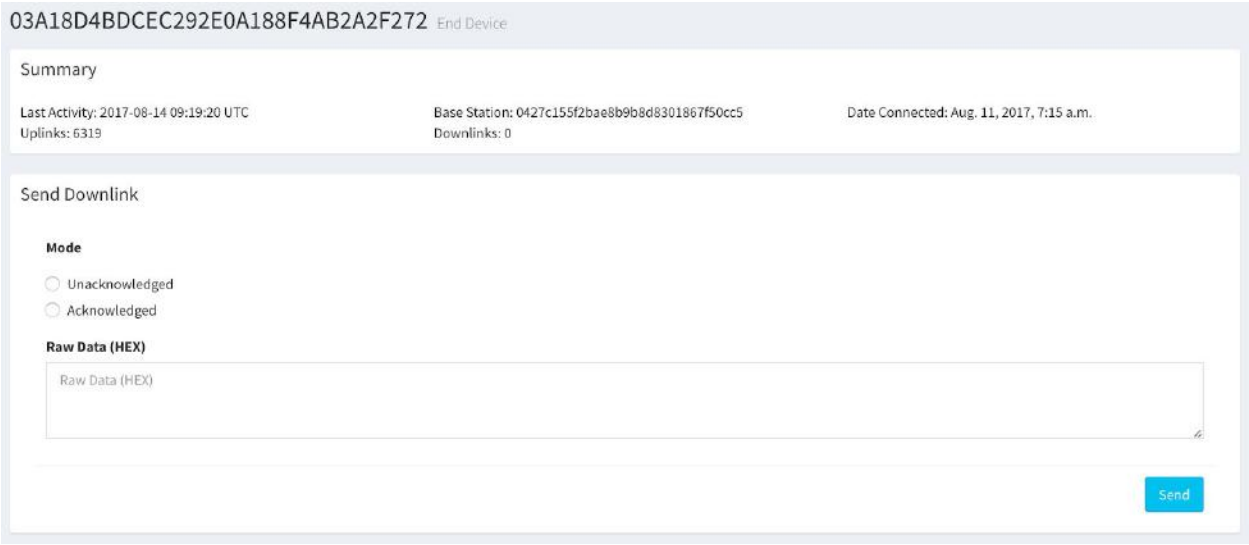
ID	Device / Multicast Group (HEX)	Data (HEX)	Date	Mode
37	0bae8dc0c05b44e64045587461e1cf75	8405	2017-08-11T08:44:03.767Z	Acknowledged
35	0bae8dc0c05b44e64045587461e1cf75	8405	2017-08-11T08:43:30.934Z	Acknowledged
33	0ef41da316e739867d508da242559f01	8407	2017-08-11T06:49:03.673Z	Acknowledged
31	0ef41da316e739867d508da242559f01	8402	2017-08-11T06:48:19.164Z	Acknowledged
29	0ef41da316e739867d508da242559f01	8405	2017-08-11T06:46:40.419Z	Acknowledged
27	0bae8dc0c05b44e64045587461e1cf75	8404	2017-08-11T06:41:52.137Z	Acknowledged

Send Downlink to an End Device

After a device has connected to the Base Station, it will be listed in the Dashboard and the Base Station Detail page.

UUID	Uplinks	Downlinks	Date connected	Last Activity
03A18D4BDCEC292E0A188F4AB2A2F272	6319	0	2017-08-11 07:15:11 UTC	2017-08-14 09:19:20 UTC
03F41D9FCA515481419F7EA29E948201	6127	0	2017-08-11 07:15:55 UTC	2017-08-14 09:36:35 UTC
03F41DECE118C68EF2B3B5A37527BC01	1009	0	2017-08-11 07:13:32 UTC	2017-08-14 09:36:30 UTC
0BAE8DC0C05B44E64045587461E1CF75	1517	6	2017-08-11 06:36:51 UTC	
0EF41DA316E739867D508DA242559F01	18259	3	2017-08-11 06:45:44 UTC	2017-08-14 09:20:14 UTC

In order to send a downlink to an End Device, click on the device's UUID.



In the Device's detail page select if the downlink should be sent in acknowledged or unacknowledged mode and type your data in hexadecimal format. Click **Send** to send the Downlink.

Send Firmware to an End Device

You can also send a Firmware file (under 256KB) from this screen. In order to do this, scroll to *Send Firmware (via Downlink)*, click on *Choose File*, select a valid firmware file, and click on *Send*.

Send Downlink to a Multicast Group

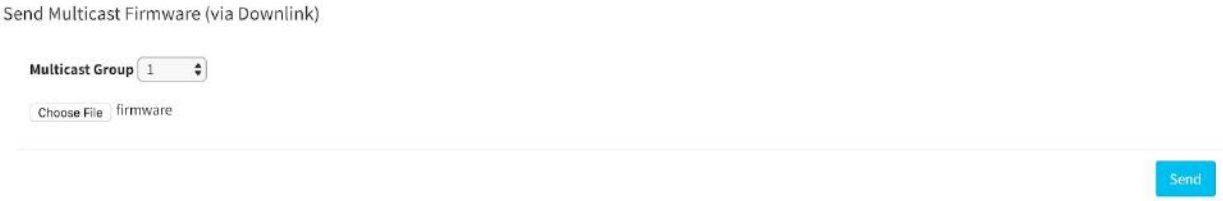
Go to the Base Station detail Page and scroll down to the *Multicast Groups* section. In order to send downlinks to a Multicast Group, first you need to create one.

Send Multicast Downlink

Scroll down to *Send Multicast Downlink*, select a Multicast Group previously created, select *Unacknowledged* or *Acknowledged* mode, type the data to send in Hexadecimal and click on *Send.*

Send Multicast Firmware (via Downlink)

Scroll down to *Send Multicast Firmware (via Downlink)*, select a Multicast Group previously created, click on *Choose File*, select a valid firmware file, and click on *Send*.



Base Station

To access this view, click on *Base Stations* in the menu and then click on *See More* under the Base Station you would like to work with.
This view allows you to see the status of the Base Station and to Configure it.
Once a command is sent, you won't see the result immediately. Since commands and responses are asynchronous and that the page auto refreshes every 10 seconds, it can take up to a minute to see the results appear on the page.

Settings

Status

Here you can see the status of the Protocol Stack

Read

To read the status, click on *Read* and wait a few seconds to get the result.

Restart

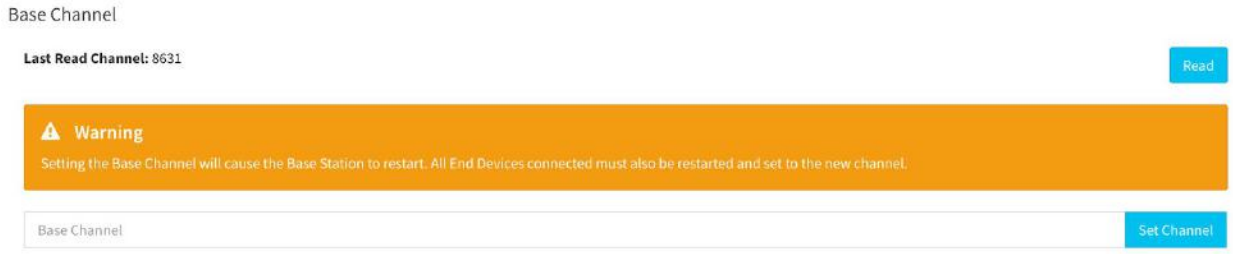
To restart the Protocol Stack, click on *Restart*.

Stop

To stop the Protocol Stack, click on *Stop*.

Base Channel

The Base Channel is the channel (WARFCN) used by the Base Station to transmit and receive.



Read

Every time you read or set the Base Channel and the application receives a response, the *Last Read Channel* will be updated.
To read the current base channel, press *Read.*

Set

Setting the Base Channel will cause the Base Station to restart. All End Devices connected must also be restarted and set to the new channel.
To set the base channel, type a value between *1382* and *9297* and press *Set Channel*.

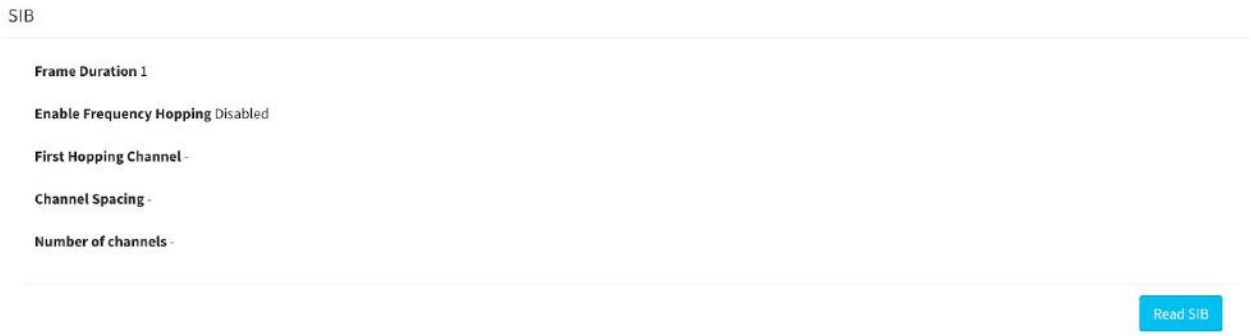
Parameters

For each parameter in the *Other Parameters* section, you can read the current value by clicking on *Read.* After reading, the label *Current Value* will be updated with the received value.
You can set a new value by typing it in the corresponding input and pressing the corresponding *Send* button. If the command is successful, the label *Current Value* will be updated with the selected value.
Under each parameter's name, you will find a list containing the allowed values and their meaning.

NBFLAG
SIB_MCS
UL_MCS
UL_MCS_NB
ED_MCS_CTRL
ED_TX_PWR_CTRL

SIB

In this view you can see and change part of the System Information Block.
To see the current SIB status, click on *Read SIB* and wait for the values to be refreshed.
If *Frequency Hopping* is not enabled, the fields *First Hopping Channel, Channel Spacing,* and *Number of Channels* will be empty.



To change the SIB configuration, type in the values of each field and press *Write.* If you don't want to change the hopping configuration, leave the checkbox *Enable Frequency Hopping* unchecked.

First Hopping Channel: First hopping Channel Number (WARFCN)

Blacklisted Channels

To blacklist a channel, type channel number (WARFCN) *Blacklist Channel*. This will add additional blacklisted channels to the existing channels.

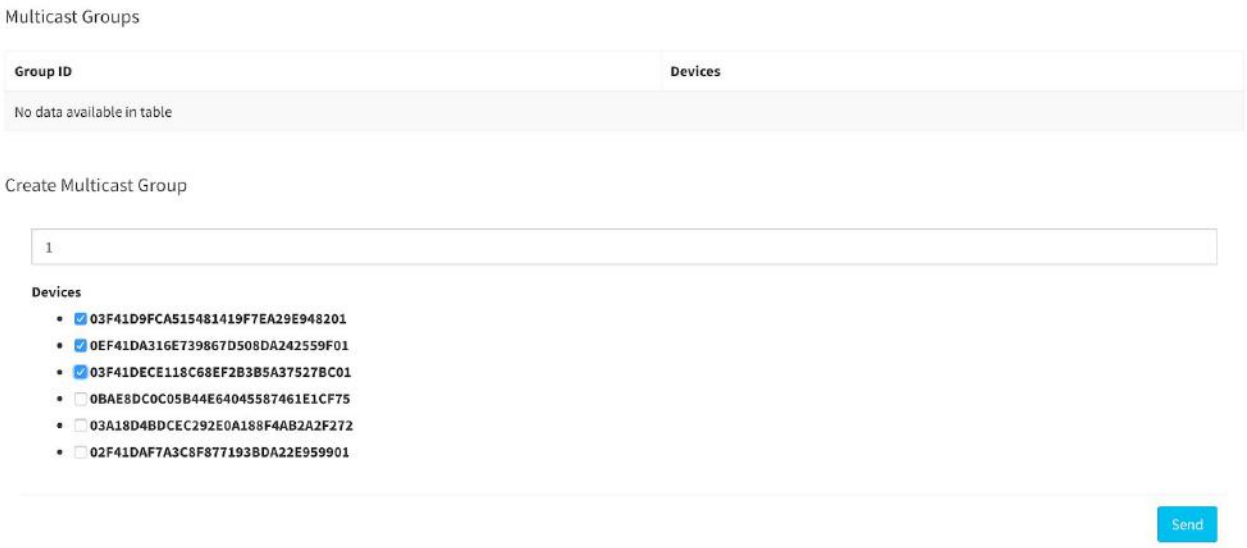
To remove a channel from the Blacklist, type the channel number (WARFCN) in the second input and press *Allow Channel*.

Multicast Groups

Multicast Groups allow you to send Downlinks to multiple devices at a time.

Create Multicast Group

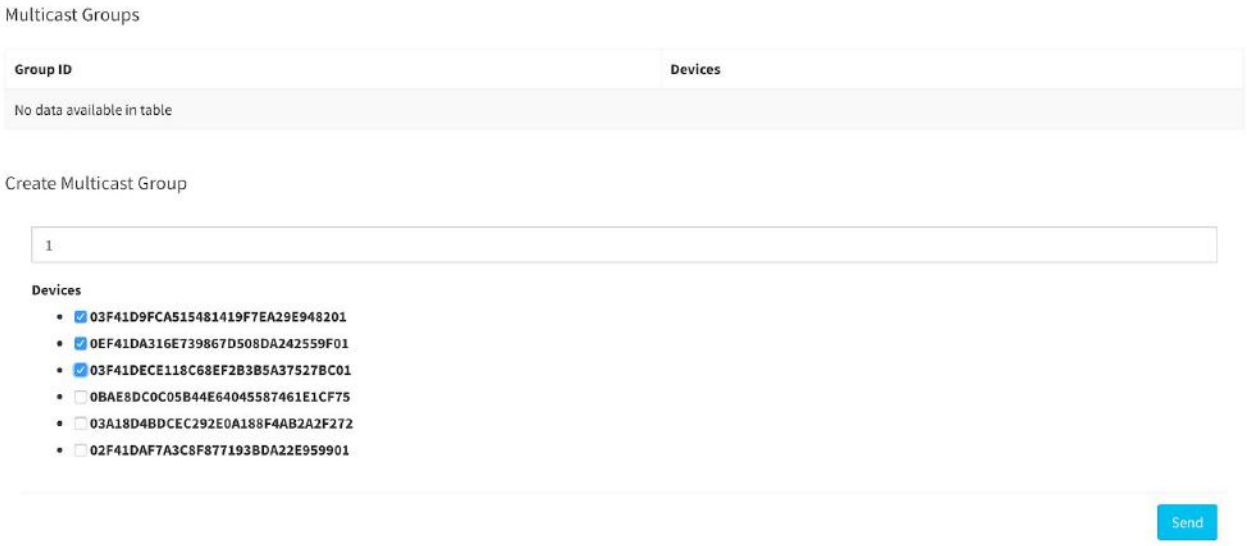
From the Base Station detail page, scroll to *Multicast Groups*. Type a Multicast Group Number and select at least one device from your list of End Devices. Finally click on *Send*.



Once the confirmation has been received from the Base Station, the Multicast Groups table will be updated

Update a Multicast Group

To update a Multicast Group, click on the Group ID on the Multicast Groups table.



Check/uncheck the devices you want to add/remove and click on *Send.*

Synchronize

This command will send the Blacklisted Channels, Multicast Groups, SIB configuration and Base Channel as seen in the Cloud. This action will override the settings all the settings and since the Base Channel will be set, the Base Station will be restarted.

End Devices

In the Base Station detail page, you can also see the list of End Devices that are sending Uplinks and receiving Downlinks through this Base Station.
Date Connected shows the first moment when the End Device connected to a Base Station and *Last Activity* will be updated every time an End Device connects, disconnects or sends an uplink.

To access the End Device detail page, click on the End Device UUID.

End Device

You can see a list of all your End Devices from the Dashboard or a list of End Devices per Base Station from the Base Station detail page. In both cases, to access the End Device detail page, click on the End Device UUID.

In the End Device detail page, you can see a summary of the status of the End Device.

Last Activity will be updated every time an End Device connects, disconnects or sends an uplink.
Date Connected shows the first moment when the End Device connected to a Base Station.
Base Station shows the last Base Station to which the End Device was connected to.
Uplinks shows the total number Uplinks sent from this End Device and *Downlinks* shows the total number of Downlinks sent directly to it.

From this page, you can also send downlinks to the End Device. Please refer to the *Downlinks* section

Demo

This page displays *RSSI* and *Temperature and Humidity* samples from the applications preloaded in the End Device Modules. In order to get this applications running, please see *Weightless SDK: Getting Started.*
This is a *live* view meaning that data will be displayed as it is received.

GPS

Same as for the previous demos, if you have a Ubiik GPS end device, once it has successfully acquired a GPS fix, this page will display a marker for each fix received.
This is a *live* view meaning that only fixes that are sent after the page is open will be displayed. Also, markers will be displayed after at least one *Full Fix* has been received. For more information regarding GPS, please see the *GPS User Manual*.

API

The API allows you to GET uplinks and POST downlinks. It uses Token Authentication.
Times are in ISO format: YYYY-MM-DDTHH:MM:SSZ and must be URL encoded
Base Station ID must be sent in base64 URL Safe Alphabet[1]

Token Authentication

You can get your token, go to the *API* section of Ubiik Cloud.
When sending a request, set the **Authorization** header to “Token YOUR_TOKEN“

GET Uplinks

URL: wpkit.ubiik.com/api/uplink

Parameters

All parameters are optional

- base_station: Base Station ID in (Base64 URL Safe)
- from_time: lower bound for event time (time in which the message was generated in the Base Station).
- to_time: upper bound for event time (time in which the message was generated in the Base Station).
- from_server_time: lower bound for server time (time in which the message arrived to the web server).
- to_server_time: upper bound for server time (time in which the message arrived to the web server).

Response

The response contains a json array *data* with up to 100 uplinks:

```
{
        "server_time": Server time. String with format “%Y-%m-%dT%H:%M:%S.%fZ”
        "created": Event time. String with format “%Y-%m-%dT%H:%M:%S.%fZ”
        "ack": Acknowledge (true) or Unacknowledged (false) mode. Boolean,
        "edevice_id": End Device ID. String, Base64,
        "Basestation_id": Base Station ID. String, Base64
        "data": Uplink Data. String, Base64
        "id": Uplink Sequence number. Integer
}
```

[1] https://tools.ietf.org/html/rfc3548

For example:


```
{
   "data": [
      {
         "server_time": "2017-07-05T03:11:59.055Z",
         "created": "2017-07-05T03:11:59.032Z",
         "ack": false,
         "edevice_id": "MDctMDVUMDM6MTE6NTkuMA==",
         "basestation_id": "ERERERERERERERERERERFw==",
         "data": "MzJa",
         "id": 12338
      },
…
]
```


POST Downlinks

URL: wpkit.ubiik.com/api/uplink

Request Body

```
{
   "target_id": End Device or Multicast Group ID. String Base64, Mandatory,
   "Data": Downlink Data. String Base64, Mandatory,
   "ack" : Acknowledge (true) or Unacknowledged (false) mode. Boolean, Optional (Default:
false),
   "multicast" : Multicast (true) or End Device (false). Boolean, Optional (Default: false),
}
```

Response Body

```
{
   "ack": true or false
    "data": Downlink Data. String Base64
    "multicast": true or false
    "target_id": End Device or Multicast Group ID. String Base64.
    "id": internal sequence id
}
```

If the target is wrong, you will receive status code 400 and

```
[
   "Target not found"
]
```

Example

Request Body

{
  "target_id": "AQA=",
  "data":
"GwAAEQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA",
  "ack" : true,
  "multicast" : true
}

Response Body

{
  "downlink": {
    "ack": true,
    "data":
"GwAAEQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA",
    "multicast": true,
    "target_id": "AQA=",
    "id": 40
  }
}

Demo Applications

The End Devices come with two applications that can send samples via uplinks to the cloud.
These two applications are *Temperature and Humidity* and *RSSI.*
The following is the data format used in the uplinks.

Byte 0: Message Type

Byte 1 - N: Data

Temperature and Humidity sample

Byte 0: 0x01

Byte 1-2: Temperature (2 bytes, UInt16_t). In 100s of Celcius

(0x7FFF Invalid/Ignore value)

Byte 3: Relative Humidity (1 byte, byte). In percentage
(0xFF Invalid/Ignore value)

RSSI sample

Byte 0: 0x20
Byte 1-2: (2 bytes, Int16_t) Number of packets received in the period
Byte 3-4: (2 bytes, Int16_t) RSSI: Received Signal Strength Indication in dBm
Byte 5-8: (4 bytes, Int32_t) Internal use
Byte 9-12: (4 bytes, Int32_t) Internal use

Contact

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END