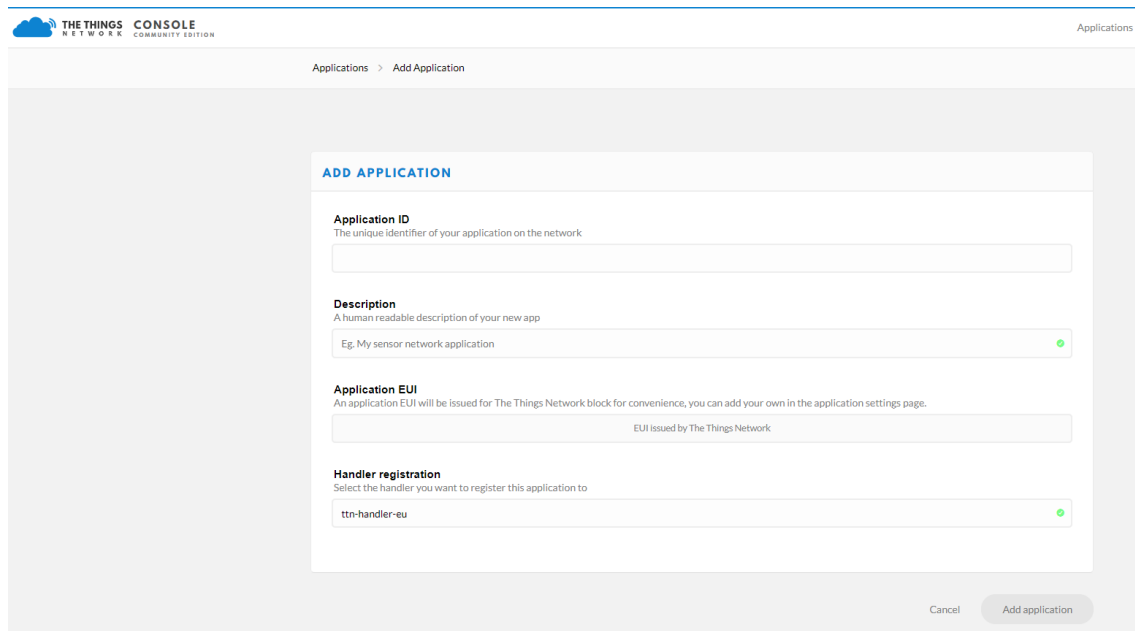


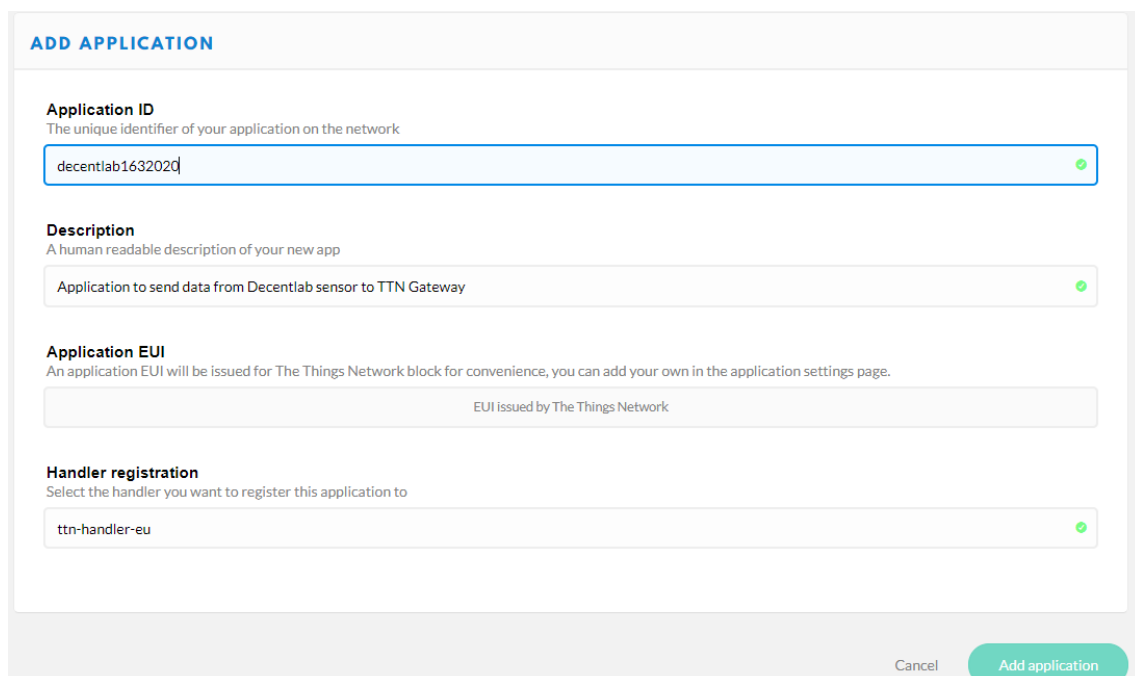
DECENTLAB and TTN

Let's connect to TTN

Create an application



The screenshot shows the 'Add Application' form in the TTN Console. The form is titled 'ADD APPLICATION' and is located under the 'Applications > Add Application' breadcrumb. It contains four sections: 'Application ID' with a text input field, 'Description' with a text input field containing 'Eg. My sensor network application', 'Application EUI' with a text input field containing 'EUI issued by The Things Network', and 'Handler registration' with a dropdown menu showing 'ttn-handler-eu'. At the bottom right, there are 'Cancel' and 'Add application' buttons.



This screenshot shows the 'Add Application' form with the following filled-in values: 'Application ID' is 'decentlab163202d', 'Description' is 'Application to send data from Decentlab sensor to TTN Gateway', 'Application EUI' is 'EUI issued by The Things Network', and 'Handler registration' is 'ttn-handler-eu'. Each input field has a green checkmark icon on the right, indicating that the values are valid. The 'Add application' button is now green.

The Application EUI will be assigned by TTN

Applications > decentlab1632020

Overview Devices Payload Formats Integrations Data Settings

APPLICATION OVERVIEW

[documentation](#)

Application ID decentlab1632020

Description Application to send data from Decentlab sensor to TTN Gateway

Created 18 seconds ago

Handler ttn-handler-eu (current handler)

APPLICATION EUIS

[manage euis](#)

<> 70 B3 D5 7E D0 02 C7 A1

DEVICES

[register device](#) [manage devices](#)



0 registered devices

Application EUIS in yellow

But this does not match with the data given by CATSENSORS

AppEUI
70B3D57ED00006B2

So we click on manage EUIS

APPLICATION OVERVIEW

[documentation](#)

Application ID decentlab1632020

Description Application to send data from Decentlab sensor to TTN Gateway

Created 4 minutes ago

Handler ttn-handler-eu (current handler)

APPLICATION EUIS

[manage euis](#)

<> 70 B3 D5 7E D0 02 C7 A1

DEVICES

[register device](#) [manage devices](#)



0 registered devices

Applications > decentlab1632020 > Settings

Overview Devices Payload Formats Integrations Data Settings

APP SETTINGS

- General
- EUIs**
- Collaborators
- Access Keys

EUIs [+ add EUI](#)

70 B3 D5 7E D0 02 C7 A1 [📄](#) [remove](#)

Applications > decentlab1632020 > Settings

Overview Devices Payload Formats Integrations Data Settings

APP SETTINGS

- General
- EUIs**
- Collaborators
- Access Keys

EUIs

Add EUI

[📄](#) EUI will be generated

Cancel [Add EUI](#)

THE THINGS NETWORK CONSOLE COMMUNITY EDITION Applications

Applications > decentlab1632020 > Settings

Overview Devices Payload Formats Integrations Data Settings

APP SETTINGS

- General
- EUIs**
- Collaborators
- Access Keys

EUIs

Add EUI

70 B3 D5 7E D0 00 06 B2 0 bytes [📄](#)

Cancel [Add EUI](#)

THE THINGS NETWORK CONSOLE COMMUNITY EDITION Applications

Applications > decentlab1632020 > Settings

Overview Devices Payload Formats Integrations Data Settings

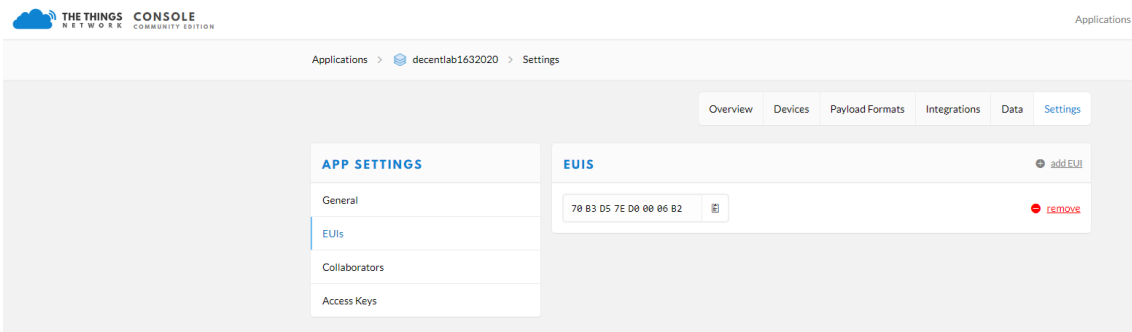
APP SETTINGS

- General
- EUIs**
- Collaborators
- Access Keys

EUIs [+ add EUI](#)

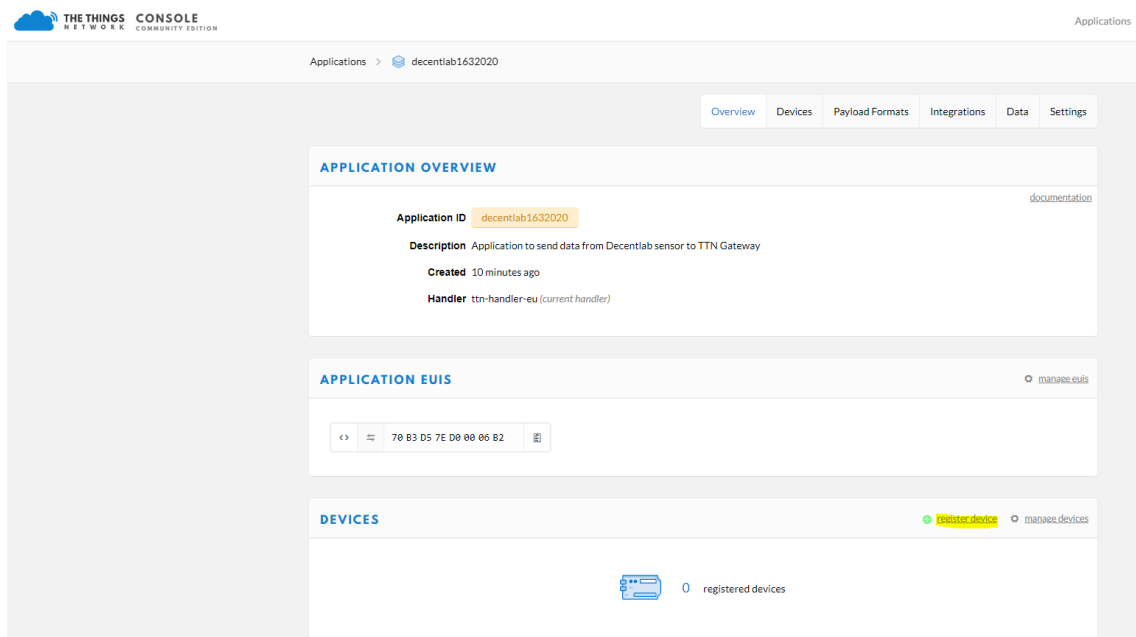
70 B3 D5 7E D0 02 C7 A1 [📄](#) [remove](#)

70 B3 D5 7E D0 00 06 B2 [📄](#) [remove](#)



We go to overview

And register a device



Applications > decentlab1632020 > Devices

Overview **Devices** Payload Formats Integrations Data Settings

REGISTER DEVICE [bulk import devices](#)

Device ID
This is the unique identifier for the device in this app. The device ID will be immutable.

Device EUI
The device EUI is the unique identifier for this device on the network. You can change the EUI later.

0 bytes

App Key
The App Key will be used to secure the communication between you device and the network.

App EUI

Cancel Register

We enter the data provided by CATSENSORS

REGISTER DEVICE [bulk import devices](#)

Device ID
This is the unique identifier for the device in this app. The device ID will be immutable.

✓

Device EUI
The device EUI is the unique identifier for this device on the network. You can change the EUI later.

8 bytes ✓

App Key
The App Key will be used to secure the communication between you device and the network.

App EUI

Cancel Register

We click on the edit button on App Key field

REGISTER DEVICE

[bulk import devices](#)

Device ID
This is the unique identifier for the device in this app. The device ID will be immutable.

3054

Device EUI
The device EUI is the unique identifier for this device on the network. You can change the EUI later.

<> 70 B3 D5 7B A0 00 0B EE

App Key
The App Key will be used to secure the communication between you device and the network.

<> A1 39 E3 86 40 87 02 BC 4B E7 5E 4D BF 93 47 33

App EUI

70 B3 D5 7E D0 00 06 B2

Cancel

Register

Applications > decentlab1632020 > Devices > 3054

Overview

Data

Settings

DEVICE OVERVIEW

Application ID

decentlab1632020

Device ID

3054

Activation Method

OTAA

Device EUI

<> 70 B3 D5 7B A0 00 0B EE

Application EUI

<> 70 B3 D5 7E D0 00 06 B2

App Key

<>

Status

never seen

Frames up

0 [reset frame counters](#)

Frames down

0

DOWNLINK

Scheduling

replace first last

FPort

1

Confirmed

We try to force an uplink with payload “A”

SIMULATE UPLINK

FPort

1

Payload

AA|

1 byte

Send

The device has been seen by TTN! One minute ago

DEVICE OVERVIEW

Application ID

decentlab1632020

Device ID

3054

Activation Method

OTAA

Device EUI

<> 70 B3 D5 7B A0 00 0B EE

Application EUI

<> 70 B3 D5 7E D0 00 06 B2

App Key

<>

Status

1 minute ago

Frames up

0

[reset frame counters](#)

Frames down

0

But the color is Orange on Status!

Here we have our uplink

Gateways > eui-58a0cbffe80175a > Traffic beta

GATEWAY TRAFFIC beta

uplink

download

join

0 bytes

pause

clear

time	frequency	mod.	CR	data rate	airtime (ms)	cnt
19:54:56	868.3	lor	4/5	SF 11 BW 125	1069.1	0 dev addr: 26 01 24 70 payload size: 40 bytes
19:54:52	869.525		4/5	SF 12 BW 125	1810.4	
19:54:47	868.5		4/5	SF 11 BW 125	823.3	app eui: 70 B3 D5 7E D0 00 06 B2 dev eui: 70 B3 D5 7B A0 00 0B

GATEWAY TRAFFIC

beta

uplink

downlink

join

0 bytes

X

|| pause

🗑 clear

time	frequency	mod.	CR	data rate	airtime (ms)	cnt	
▲ 19:55:25	868.1	lor	4/5	SF 7 BW 125	51.5	60	dev addr: 26 01 15 D0 payload size: 16 bytes
▲ 19:54:56	868.3	lor	4/5	SF 11 BW 125	1069.1	0	dev addr: 26 01 24 70 payload size: 40 bytes
⚡ 19:54:52	869.525		4/5	SF 12 BW 125	1810.4		
68.5	4/5	SF 11 BW 125	823.3		app eui: 70 B3D5 7E D000 06 B2	dev eui: 70 B3D5 7B A000 0B EE	payload size: 23 bytes
◀							▶
▲ 19:54:23	868.1	lor	4/5	SF 7 BW 125	51.5	59	dev addr: 26 01 15 D0 payload size: 16 bytes
▲ 19:53:21	868.1	lor	4/5	SF 7 BW 125	51.5	58	dev addr: 26 01 15 D0 payload size: 16 bytes
▲ 19:52:19	868.1	lor	4/5	SF 7 BW 125	51.5	57	dev addr: 26 01 15 D0 payload size: 16 bytes
▲ 19:51:16	868.1	lor	4/5	SF 7 BW 125	51.5	56	dev addr: 26 01 15 D0 payload size: 16 bytes

GATEWAY TRAFFIC

beta

uplink

downlink

join

0 bytes

X

|| pause

🗑 clear

time	frequency	mod.	CR	data rate	airtime (ms)	cnt	
▲ 19:54:56	868.3	lor	4/5	SF 11 BW 125	1069.1	0	dev addr: 26 01 24 70 payload size: 40 bytes
⚡ 19:54:52	869.525		4/5	SF 12 BW 125	1810.4		

Join Accept

Physical Payload

20 EA 41 28 53 5C 2A 93 D5 B7 42 62 8D BA EF 1C D2 2F 90 2F 20 53 87 05 F2 3F A0 55 3F 80 5D 12 A6

Event Data

```
1 {
2   "gw_id": "eui-58a0cbfffe80175a",
3   "payload": "I0pBKFNcKpPVt0IjbrvHNIvkC8gU4cF8j+gVT+AXRkm",
4   "lor": {
5     "spreading_factor": 12,
6     "bandwidth": 125,
7     "air_time": 1810432000
8   },
9   "coding_rate": "4/5",
10  "timestamp": "2020-03-16T18:54:52.535Z",
11  "frequency": 869525000
12 }
```

⚡ 19:54:47	868.5		4/5	SF 11 BW 125	823.3		app eui: 70 B3D5 7E D000 06 B2 dev eui: 70 B3D5 7B A000 0B
◀							▶

19:54:47 868.5 4/5 SF 11 BW 125 823.3 app_eui: 70 B3D5 7E D000 06 B2 dev_eui: 70 B3D5 7B A000 0B

Join Request

Dev EUI

70 B3 D5 7B A0 00 0B EE

App EUI

70 B3 D5 7E D0 00 06 B2

Physical Payload

00 B2 06 00 D0 7E D5 B3 70 EE 0B 00 A0 7B D5 B3 70 AA 75 60 8E A7 CE

Event Data

```

1 {
2   "gw_id": "eui-58a0cbffe80175a",
3   "payload": "ALIGNB+1bNw7gsAoHvVs3CqdWCOp84=",
4   "dev_eui": "70B3D57BA0000BEE",
5   "lora": {
6     "spreading_factor": 11,
7     "bandwidth": 125,
8     "air_time": 823296000
9   },
10  "coding_rate": "4/5",
11  "timestamp": "2020-03-16T18:54:47.529Z",
12  "rssi": -43,
13  "snr": 8

```

GATEWAY TRAFFIC beta

uplink downlink join 0 bytes X

19:54:47 868.5 4/5 SF 11 BW 125 823.3 app_eui: 70 B3D5 7E D000 06 B2 dev_eui: 70 B3D5 7B A000 0B

Join Request

Dev EUI

70 B3 D5 7B A0 00 0B EE

App EUI

70 B3 D5 7E D0 00 06 B2

Physical Payload

00 B2 06 00 D0 7E D5 B3 70 EE 0B 00 A0 7B D5 B3 70 AA 75 60 8E A7 CE

Event Data

```

4   "dev_eui": "70B3D57BA0000BEE",
5   "lora": {
6     "spreading_factor": 11,
7     "bandwidth": 125,
8     "air_time": 823296000
9   },
10  "coding_rate": "4/5",
11  "timestamp": "2020-03-16T18:54:47.529Z",
12  "rssi": -43,
13  "snr": 8,
14  "app_eui": "70B3D57ED00006B2",
15  "frequency": 868500000
16 }

```

Here we have the data

APPLICATION DATA						pause	🗑 clear
Filters							
	uplink	downlink	activation	ack	error		
time	counter	port					
▲ 19:54:56	0	1	retry	payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31			
▲ 19:54:22	0	1	payload: AA				
▲ 19:50:36	0	1	payload: AA				
▲ 19:49:46	0	1	payload: AA				

APPLICATION DATA						pause	🗑 clear
Filters							
	uplink	downlink	activation	ack	error		
time	counter	port					
▲ 19:54:56	0	1	retry	payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31			

Uplink

Payload

02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31

Fields

no fields

Metadata

```
{
  "time": "2020-03-16T18:54:56.56061853Z",
  "frequency": 868.3,
  "modulation": "LORA",
  "data_rate": "SF110W125",
  "coding_rate": "4/5",
  "gateways": [
    {
      "gtw_id": "eui-58a0cbfffe80175a",
      "timestamp": 2002546260,
      "time": "2020-03-16T18:54:56.381642103Z",
      "channel": 0,
      "rssi": -51,
      "snr": 10.25
    }
  ]
}
```

We get the data with node-red

Demo Modbus TC
Demo PLC-LoRa
CVM1500 Circula
Flow 12
IEE-754

ttn uplink
msg.payload

Edit ttn uplink node > Add new ttn app config node
Cancel Add

Properties

App ID
Access Key
Discovery address: discovery.thethingsnetwork.org:1900

Edit ttn uplink node > Add new ttn app config node

Cancel

Add

⚙ Properties

⚙

🖨 App ID

decentlab1632020

🔑 Access Key

.....

🌐 Discovery address

discovery.thethingsnetwork.org:1900

Edit ttn uplink node

Delete

Cancel

Done

⚙ Properties

⚙

🏷 Name

Name

🖨 App

decentlab1632020

▼

📶 Device ID

🏷 Field

Edit ttn uplink node

DeleteCancelDone

Properties

Name

App

decentlab1632020

▼

Device ID

Field



Now the status led is green

DEVICE OVERVIEW

Application ID

decentlab1632020

Device ID

3054

Activation Method

OTAA

Device EUI

<> 70 B3 D5 7B A0 00 0B EE

Application EUI

<> 70 B3 D5 7E D0 00 06 B2

App Key

<>

Device Address

<> 26 01 24 70

Network Session Key

<>

App Session Key

<>

Status

2 minutes ago

Frames up

1 [reset frame counters](#)

Frames down

0

This is running each 10 minutes

APPLICATION DATA					pause clear	
Filters						
<div> <div>uplink</div> <div>downlink</div> <div>activation</div> <div>ack</div> <div>error</div> </div>						
time	counter	port				
20:04:40	1	1		payload: 02 0B EE 00 7F 09 46 64 19 7E 2A C5 30 00 5B 00 10 82 F7 00 00 8F 4B 00 00 01 33		
19:54:56	0	1	retry	payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31		
19:54:22	0	1		payload: AA		
19:50:36	0	1		payload: AA		
19:49:46	0	1		payload: AA		

We wait until the next message is received

Or meanwhile we simulate an uplink

SIMULATE UPLINK

FPort

Payload

1

BB

1 byte

Send

THE THINGS NETWORK CONSOLE COMMUNITY EDITION

Applications

Applications > decentlab1632020 > Devices > 3054 > Data

OverviewDataSettings

APPLICATION DATA

|| pause clear

Filters

uplinkdownlinkactivationackerror

time	counter	port	
20:09:45	0	1	payload: BB
20:04:40	1	1	payload: 02 0B EE 00 7F 09 46 64 19 7E 2A C5 30 00 5B 00 10 82 F7 00 00 8F 4B 00 00 01 33
19:54:56	0	1	retry payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31



And finally, we receive the sensor data

THE THINGS NETWORK CONSOLE COMMUNITY EDITION

Applications

Applications > decentiab1632020 > Devices > 3054 > Data

Overview Data Settings

APPLICATION DATA

Filters: uplink downlink activation ack error

time	counter	port	
20:14:42	2	1	payload: 02 0B EE 00 7F 09 47 64 22 7E 24 C5 38 00 59 00 10 83 01 00 00 8F 27 00 04 01 33
20:09:45	0	1	payload: BB
20:04:40	1	1	payload: 02 0B EE 00 7F 09 46 64 19 7E 2A C5 30 00 5B 00 10 82 F7 00 00 8F 4B 00 00 01 33
19:54:56	0	1	retry payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31

Here it is,

Node-RED

filter nodes

SALICRU I Demo Modbus TC Demo PLC-LoRa CVM1500 Cir

debug

16/3/2020 20:09:47 node: b213299a.fbd968
msg.payload : buffer[1]
buffer[1] raw
0: 0xbb

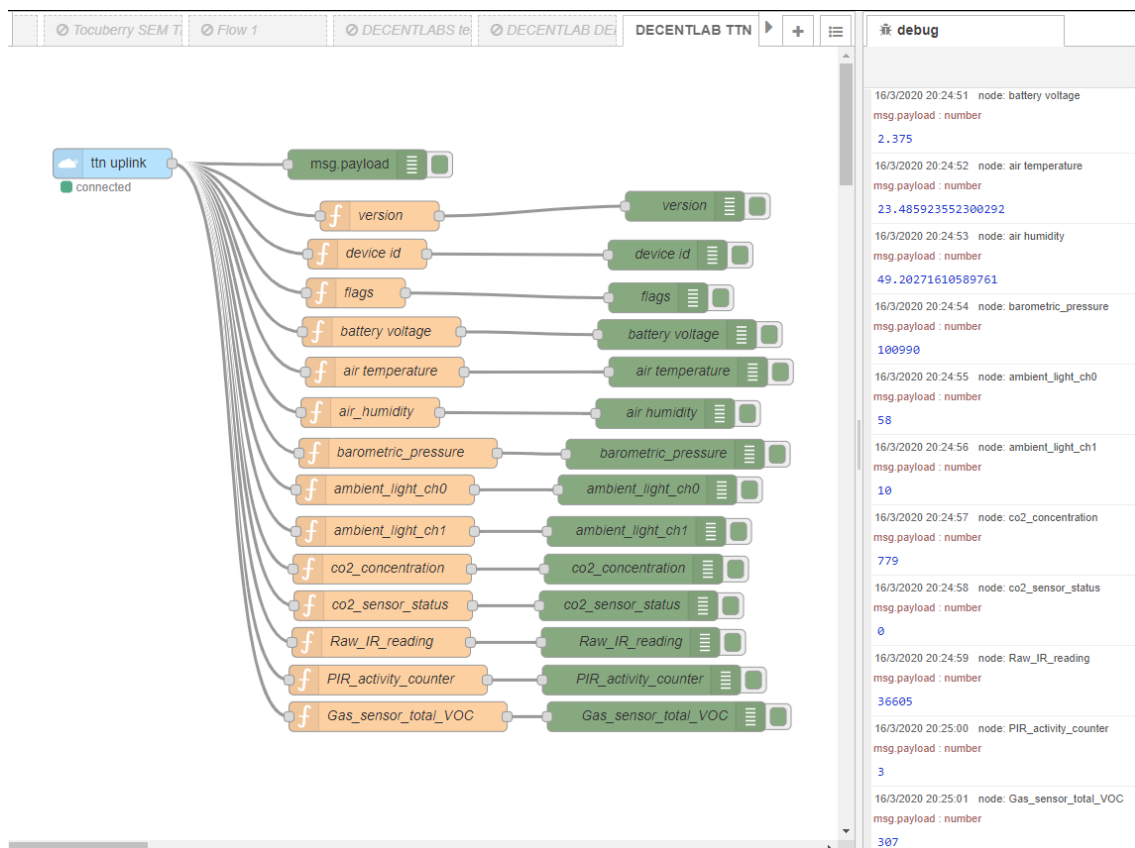
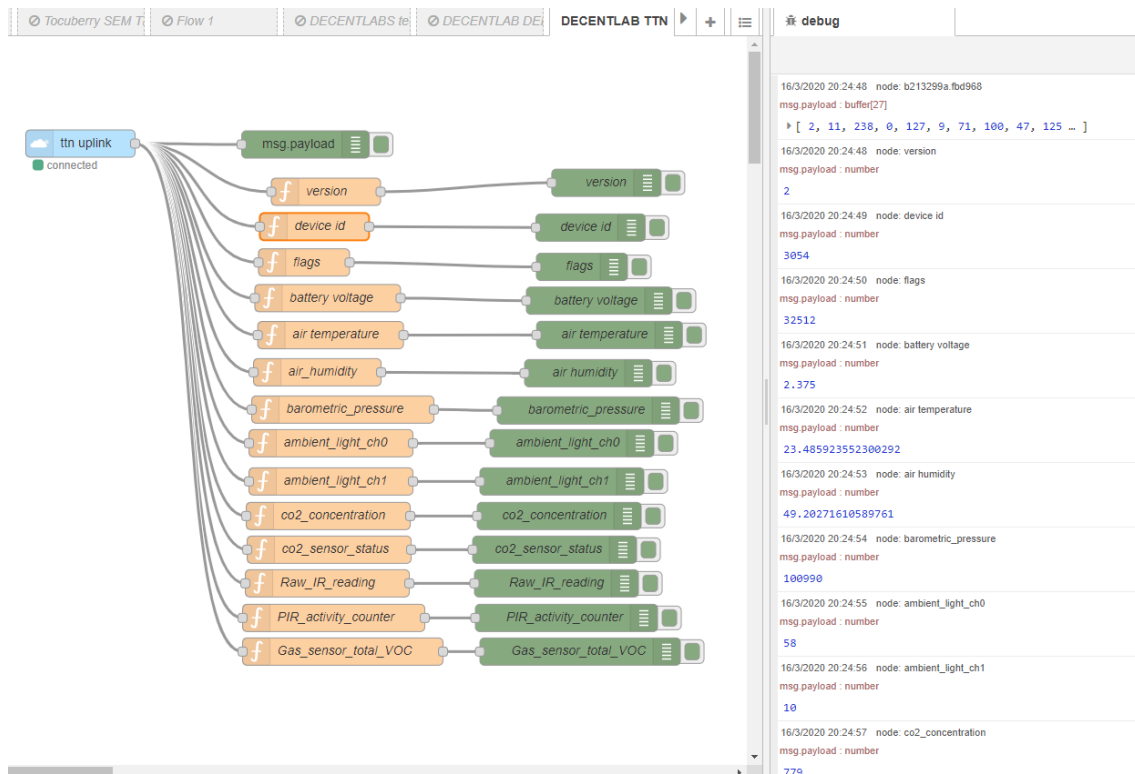
16/3/2020 20:14:44 node: b213299a.fbd968
msg.payload : buffer[27]
buffer[27] raw
[0 ... 9]
0: 0x2
1: 0xb
2: 0xee
3: 0x0
4: 0x7f
5: 0x9
6: 0x47
7: 0x64
8: 0x22
9: 0x7e
[10 ... 19]
[20 ... 26]

And we already know how to decode

APPLICATION DATA

Filters: uplink downlink activation ack error

time	counter	port	
20:24:45	3	1	payload: 02 0B EE 00 7F 09 47 64 2F 7D F5 C5 3F 00 3A 00 0A 83 0B 00 00 8E FD 00 03 01 33
20:14:42	2	1	payload: 02 0B EE 00 7F 09 47 64 22 7E 24 C5 38 00 59 00 10 83 01 00 00 8F 27 00 04 01 33
20:09:45	0	1	payload: BB
20:04:40	1	1	payload: 02 0B EE 00 7F 09 46 64 19 7E 2A C5 30 00 5B 00 10 82 F7 00 00 8F 4B 00 00 01 33
19:54:56	0	1	retry payload: 02 0B EE 00 7F 09 46 64 11 7E 36 C5 2A 00 5B 00 10 82 ED 00 00 8F 73 00 00 01 31
19:54:22	0	1	payload: AA



And the decoding nodes

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖨️

🔑 Name

version

📄

▼

🔧 Function

↗️

1

var a={payload: msg.payload[0]};

2

return a;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖨️

🔑 Name

device id

📄

▼

🔧 Function

↗️

1

msg.payload = msg.payload.readUInt16BE(1)

2

return msg;

3

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖨️

🔑 Name

flags

📄

▼

🔧 Function

↗️

1

msg.payload = msg.payload.readUInt16LE(3)

2

return msg;

3

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🔗

🔑 Name

battery voltage

📄

▼

🔧 Function

↗

1

msg.payload = msg.payload.readUInt16BE(5)/1000

2

return msg;

3

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🔗

🔑 Name

air temperature

📄

▼

🔧 Function

↗

1

msg.payload = ((msg.payload.readUInt16BE(7))/65535)*17

2

return msg;

3

Edit function node

Delete

Cancel

Done

⚙ Properties

⚙

📄

🔗

🔑 Name

air_humidity

📄

▼

🔧 Function

↗

1

2

msg.payload = ((msg.payload.readUInt16BE(9))/65535)*100;

3

return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

barometric_pressure

📄

▼

🔧 Function

↗️

1

2 msg.payload = (msg.payload.readUInt16BE(11))*2;

3 return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

ambient_light_ch0

📄

▼

🔧 Function

↗️

1

2 msg.payload = (msg.payload.readUInt16BE(13));

3 return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

ambient_light_ch1

📄

▼

🔧 Function

↗️

1

2 msg.payload = (msg.payload.readUInt16BE(15));

3 return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

co2_concentration

📄

▼

🔑 Function

↗️

1

msg.payload = (msg.payload.readUInt16BE(17))-32768;

2

return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

co2_sensor_status

📄

▼

🔑 Function

↗️

1

msg.payload = msg.payload.readUInt16BE(19);

2

return msg;

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🔗

🔑 Name

Raw_IR_reading

📄

▼

🔑 Function

↗️

1

msg.payload = msg.payload.readUInt16BE(21);

2

return msg;

Edit function node

Delete
Cancel
Done

⚙️ Properties

🔑 Name
PIR_activity_counter

🔧 Function

```

1 msg.payload = msg.payload.readUInt16BE(23);
2 return msg;

```

Edit function node

Delete
Cancel
Done

⚙️ Properties

🔑 Name
Gas_sensor_total_VOC

🔧 Function

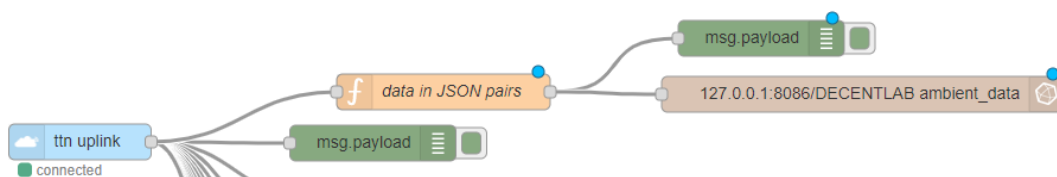
```

1 msg.payload = msg.payload.readUInt16BE(25);
2 return msg;

```

Next step is to register the data on a database

We already know how to do it



Edit function node

Delete Cancel Done

Properties

Name data in JSON pairs

Function

```
1 var version = msg.payload[0];
2 var device_id = msg.payload.readUInt16BE(1);
3 var flags = msg.payload.readUInt16LE(3);
4 var battery_voltage = msg.payload.readUInt16BE(5)/1000;
5 var air_temperature = parseFloat((((msg.payload.readUInt16BE(7))/65535)*175-45).toFixed(2));
6 var air_humidity = parseFloat((((msg.payload.readUInt16BE(9))/65535)*100).toFixed(2));
7 var barometric_pressure = (msg.payload.readUInt16BE(11))*2;
8 var ambient_light_CH0 = msg.payload.readUInt16BE(13);
9 var ambient_light_CH1 = msg.payload.readUInt16BE(15);
10 var co2_concentration = (msg.payload.readUInt16BE(17))-32768;
11 var co2_sensor_status = msg.payload.readUInt16BE(19);
12 var Raw_IR_reading = msg.payload.readUInt16BE(21);
13 var PIR_activity_counter = msg.payload.readUInt16BE(23);
14 var Gas_sensor_total_VOC = msg.payload.readUInt16BE(25);
15
16 //etc...
17 return {payload:{version:version,
18 device_id:device_id,
19 flags:flags,
20 battery_voltage:battery_voltage,
21 air_temperature:air_temperature,
22 air_humidity:air_humidity,
23 barometric_pressure:barometric_pressure,
24 ambient_light_CH0:ambient_light_CH0,
25 ambient_light_CH1:ambient_light_CH1,
26 co2_concentration:co2_concentration,
27 co2_sensor_status:co2_sensor_status,
28 Raw_IR_reading:Raw_IR_reading,
29 PIR_activity_counter:PIR_activity_counter,
30 Gas_sensor_total_VOC:Gas_sensor_total_VOC
31 }}
```

Outputs 1

Enabled

Edit influxdb out node

Delete Cancel Done

Properties

Server 127.0.0.1:8086/DECENTLAB

Measurement ambient_data

☐ Advanced Query Options

Name Name

And lets add data to te database

After each inject every 10 minutes

Here we have the first message after setting up the database



But where is my data?

192.168.1.68 (touchberry_noria): VNC Viewer

pi@touchberry_noria: ~

```

pi@touchberry_noria:~$ influx -precision rfc3339
Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> use DECENTLAB
Using database DECENTLAB
> SELECT air_temperature, air_humidity, barometric_pressure FROM ambient_data limit 10
name: ambient_data
time                air_temperature air_humidity barometric_pressure
-----
2020-03-14T19:12:52.367635256Z 23.17          45.63          100480
2020-03-14T19:13:42.191112399Z 24.38          46.82          100934
2020-03-14T19:23:49.074313446Z 24.42          46.79          100936
2020-03-14T19:33:47.114195847Z 24.40          46.82          100932
2020-03-14T19:43:43.40009995Z 24.58          46.83          100928
2020-03-14T19:53:43.55313591Z 24.65          46.27          100936
2020-03-14T20:03:46.039166818Z 24.71          44.79          100942
2020-03-14T20:13:48.994759501Z 24.58          45.3           100946
2020-03-14T20:23:47.143947414Z 24.43          45.17          100948
2020-03-14T20:33:43.194471928Z 24.35          45.5           100950

```

No panic, with limit 10 only the first 10 values are shown (old values)

Let's see last value

```
192.168.1.68 (touchberry_noria): VNC Viewer
pi@touchberry_noria: ~
Archivo Editar Pestañas Ayuda
2020-03-15T08:33:47.850248079Z 23.08 45.9 100868
2020-03-15T08:43:49.072140385Z 22.97 44.82 100866
2020-03-15T08:53:45.910996813Z 22.85 44.72 100872
2020-03-15T09:03:47.454538106Z 22.96 44.92 100870
2020-03-15T09:13:44.693998021Z 22.93 44.5 100870
2020-03-15T09:23:42.790578955Z 22.97 44.55 100866
2020-03-15T09:33:45.371198326Z 22.99 44.52 100866
2020-03-15T09:43:48.442136127Z 22.99 44.47 100866
2020-03-15T09:49:24.330662988Z 23.17 45.63 100480
2020-03-15T09:49:28.935531Z 23.17 45.63 100480
2020-03-15T09:49:41.472684466Z 23.17 45.63 100480
2020-03-15T09:53:46.631238815Z 23.19 45.26 100862
2020-03-15T10:08:18.289763852Z 23.17 45.63 100480
2020-03-15T10:13:45.477835602Z 23.6 44.67 100854
2020-03-15T10:23:48.621198385Z 23.57 44.53 100850
2020-03-15T10:33:43.161165952Z 23.54 44.26 100844
2020-03-15T10:43:41.880016114Z 23.73 45.15 100832
2020-03-15T10:53:47.486264558Z 23.81 45.11 100818
2020-03-15T11:23:44.393987513Z 23.26 47.76 100790
2020-03-15T11:33:42.477543325Z 23.08 47.66 100784
2020-03-15T11:43:42.605034305Z 23.1 48.47 100774
2020-03-15T11:45:18.091337773Z 23.17 45.63 100480
2020-03-16T19:44:47.401622361Z 23.47 49 101026
>
```

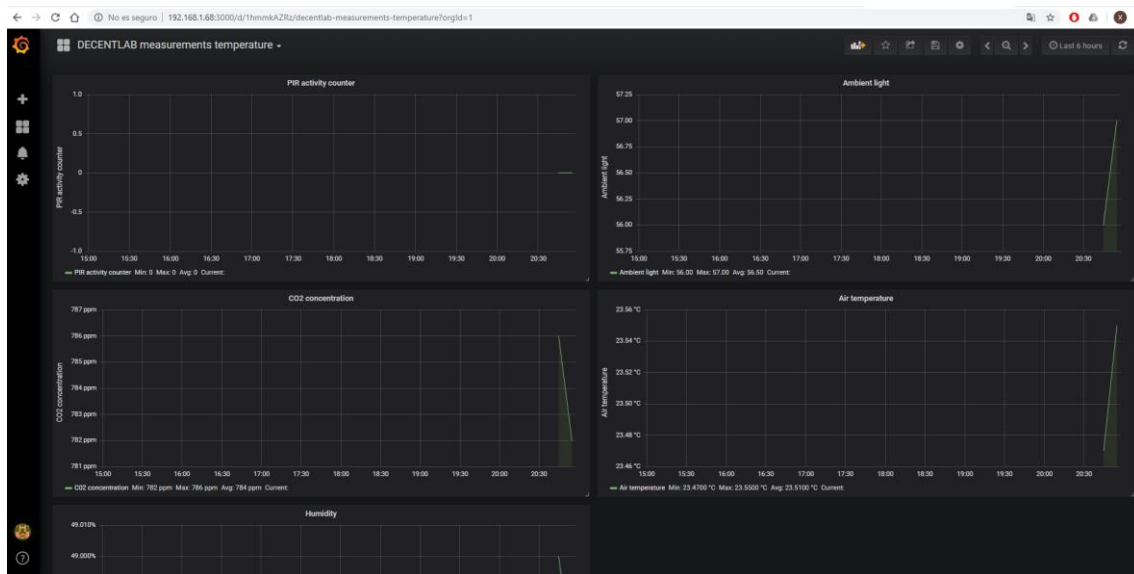
Yes there is may data

Yes data is arriving

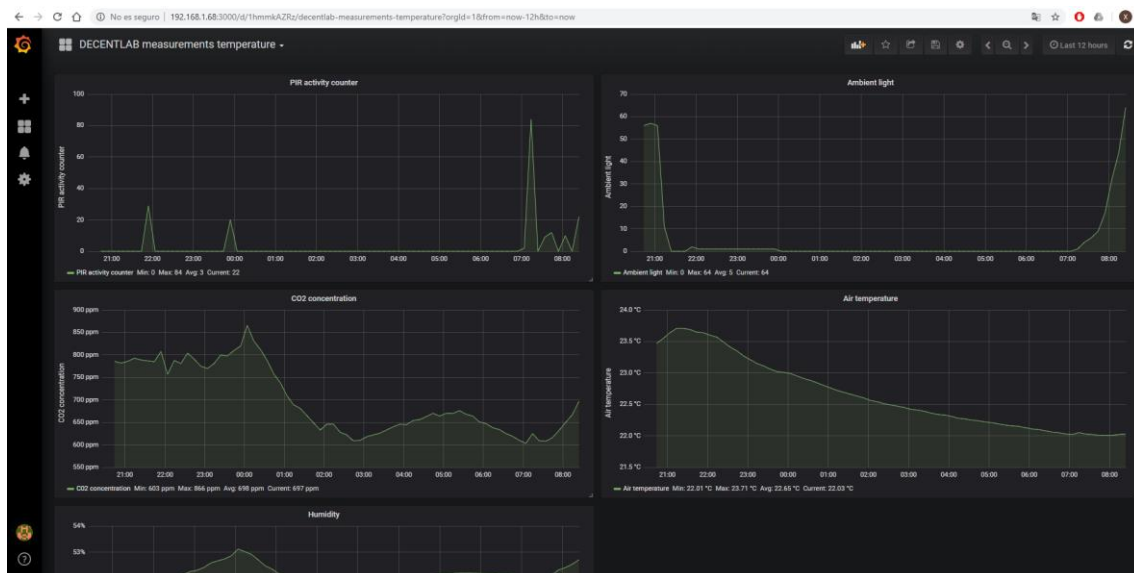
```
192.168.1.68 (touchberry_noria): VNC Viewer
pi@touchberry_noria: ~
Archivo Editar Pestañas Ayuda
2020-03-15T08:43:49.072140385Z 22.97 44.82 100866
2020-03-15T08:53:45.910996813Z 22.85 44.72 100872
2020-03-15T09:03:47.454538106Z 22.96 44.92 100870
2020-03-15T09:13:44.693998021Z 22.93 44.5 100870
2020-03-15T09:23:42.790578955Z 22.97 44.55 100866
2020-03-15T09:33:45.371198326Z 22.99 44.52 100866
2020-03-15T09:43:48.442136127Z 22.99 44.47 100866
2020-03-15T09:49:24.330662988Z 23.17 45.63 100480
2020-03-15T09:49:28.935531Z 23.17 45.63 100480
2020-03-15T09:49:41.472684466Z 23.17 45.63 100480
2020-03-15T09:53:46.631238815Z 23.19 45.26 100862
2020-03-15T10:08:18.289763852Z 23.17 45.63 100480
2020-03-15T10:13:45.477835602Z 23.6 44.67 100854
2020-03-15T10:23:48.621198385Z 23.57 44.53 100850
2020-03-15T10:33:43.161165952Z 23.54 44.26 100844
2020-03-15T10:43:41.880016114Z 23.73 45.15 100832
2020-03-15T10:53:47.486264558Z 23.81 45.11 100818
2020-03-15T11:23:44.393987513Z 23.26 47.76 100790
2020-03-15T11:33:42.477543325Z 23.08 47.66 100784
2020-03-15T11:43:42.605034305Z 23.1 48.47 100774
2020-03-15T11:45:18.091337773Z 23.17 45.63 100480
2020-03-16T19:44:47.401622361Z 23.47 49 101026
2020-03-16T19:54:43.961947272Z 23.55 48.97 101032
>
```

Now let's move to Grafana and wait the whole night

This is our first value from today at 20:44



And the day after



Applications > decentlab1632020 > Devices > 3054 > Data

OverviewDataSettings

APPLICATION DATA

pauseclear

Filters

uplinkdownlinkactivationackerror

timecounterport

09:04:38791payload: 02 0B EE 00 7F 09 4B 62 71 8C C7 C6 64 01 50 00 4D 83 4D 00 00 8E A6 01 A9 00 FF

08:54:43781payload: 02 0B EE 00 7F 09 4A 62 43 8D 5C C6 5D 00 96 00 2F 83 8D 00 00 8DD 701 75 00 FA

Uplink

Payload

02 0B EE 00 7F 09 4A 62 43 8D 5C C6 5D 00 96 00 2F 83 8D 00 00 8D D7 01 75 00 FA

Fields

no fields

Metadata

```
{  "time": "2020-03-17T07:54:43.529780828Z",  "frequency": 867.7,  "modulation": "LORA",  "data_rate": "SF7BW125",  "coding_rate": "4/5",  "gateways": [    {      "gtw_id": "eui-58a0cbfffe80175a",      "timestamp": 369572956,      "time": "2020-03-17T07:54:43.418366909Z",      "channel": 0,      "rssi": -34,      "snr": 10    }  ]}
```

THE THINGS NETWORK CONSOLE COMMUNITY EDITION

Applications

Gateways > eui-58a0cbfffe80175a > Traffic beta

OverviewTrafficSettings

GATEWAY TRAFFIC beta

uplinkdownlinkjoin0 bytesX

pauseclear

time	frequency	mod.	CR	data rate	airtime(ms)	cnt
09:11:10	868.1	lora	4/5	SF 7 BW 125	51.5	17 dev addr: 26 01 15 D0 payload size: 16 bytes
09:10:08	868.1	lora	4/5	SF 7 BW 125	51.5	16 dev addr: 26 01 15 D0 payload size: 16 bytes
09:09:06	868.1	lora	4/5	SF 7 BW 125	51.5	15 dev addr: 26 01 15 D0 payload size: 16 bytes
09:08:04	868.1	lora	4/5	SF 7 BW 125	51.5	14 dev addr: 26 01 15 D0 payload size: 16 bytes
09:07:02	868.1	lora	4/5	SF 7 BW 125	51.5	13 dev addr: 26 01 15 D0 payload size: 16 bytes
09:06:00	868.1	lora	4/5	SF 7 BW 125	51.5	12 dev addr: 26 01 15 D0 payload size: 16 bytes
09:04:57	868.1	lora	4/5	SF 7 BW 125	51.5	11 dev addr: 26 01 15 D0 payload size: 16 bytes
09:04:38	868.1	lora	4/5	SF 7 BW 125	82.2	79 dev addr: 26 01 24 70 payload size: 40 bytes
09:03:55	868.1	lora	4/5	SF 7 BW 125	51.5	10 dev addr: 26 01 15 D0 payload size: 16 bytes
09:02:53	868.1	lora	4/5	SF 7 BW 125	51.5	9 dev addr: 26 01 15 D0 payload size: 16 bytes
09:01:51	868.1	lora	4/5	SF 7 BW 125	51.5	8 dev addr: 26 01 15 D0 payload size: 16 bytes
09:00:49	868.1	lora	4/5	SF 7 BW 125	51.5	7 dev addr: 26 01 15 D0 payload size: 16 bytes
08:59:47	868.1	lora	4/5	SF 7 BW 125	51.5	6 dev addr: 26 01 15 D0 payload size: 16 bytes

THE THINGS NETWORK CONSOLE COMMUNITY EDITION

Applications > decentlab1632020 > Devices > 3054 > Data

Overview Data Settings

APPLICATION DATA

Filters: uplink downlink activation ack error

time	counter	port	payload
09:24:39	81	1	payload: 02 0B EE 00 7F 09 4B 62 C4 8A BB C6 6D 01 AD 00 67 83 6F 00 00 8E 12 01 43 00 FC
09:14:44	80	1	payload: 02 0B EE 00 7F 09 4B 62 C3 8B FA C6 67 01 41 00 4D 83 BE 00 00 8D 12 01 80 01 02
09:04:38	79	1	payload: 02 0B EE 00 7F 09 4B 62 71 8C C7 C6 64 01 50 00 4D 83 4D 00 00 8E A6 01 A9 00 FF
08:54:43	78	1	payload: 02 0B EE 00 7F 09 4A 62 43 8D 5C C6 5D 00 96 00 2F 83 8D 00 00 8D D7 01 75 00 FA

Uplink

Payload

02 0B EE 00 7F 09 4A 62 43 8D 5C C6 5D 00 96 00 2F 83 8D 00 00 8D D7 01 75 00 FA

Fields

no fields

Metadata

```
{
  "time": "2020-03-17T07:54:43.529788828Z",
  "frequency": 867.7,
  "modulation": "LoRa",
  "data_rate": "SF7BW125",
  "coding_rate": "4/5",
  "gateways": [
    {
      "gtw_id": "eui-58a0cbfffe80175a",
      "timestamp": 369572956,
      "time": "2020-03-17T07:54:43.418366000Z"
    }
  ]
}
```

We see that the device Address is wrong!

Since this uplink message corresponds to the DECENTLAB sensor

THE THINGS NETWORK CONSOLE COMMUNITY EDITION

Applications Gateways Support

Gateways > eui-58a0cbfffe80175a > Traffic

Overview Traffic Settings

GATEWAY TRAFFIC

uplink downlink join 0 bytes X

time frequency mod. CR data rate airtime (ms) cnt

09:24:39	867.3	lor	4/5	SF 7 BW 125	82.2	81	dev addr: 26 01 24 70	payload size: 40 bytes
----------	-------	-----	-----	-------------	------	----	-----------------------	------------------------

Uplink

Dev Address

26 01 24 70

Network: The Things Network
Net ID: 0x13
Region: World

Physical Payload

40 70 24 01 26 00 51 00 01 58 50 56 70 90 03 12 C9 C4 80 81 63 05 87 21 20 38 40 70 42 7C 24 E8 80 87 40 3C 68 E0 92 89

Event Data

```
1 {
2   "gw_id": "eui-58a0cbfffe80175a",
3   "payload": "QHkA5aUQ4BfBieS0EsnEg1Fj1bchIDtLFU3810uNH6A8a0CSuq=",
4   "f_cnt": 81,
5   "lor": {
6     "spreading_factor": 7,
7     "bandwidth": 125,
8     "air_time": 82176000
9   },
10  "coding_rate": "4/5",
11  "timestamp": "2020-03-17T08:24:39.827Z",
12  "rx_l": -39,
13  "rx_r": -39.4
14 }
```

And this uplink message corresponds to a Heltec LoRa node

0 bytes

time	frequency	mod.	CR	data rate	airtime (ms)	cnt
------	-----------	------	----	-----------	--------------	-----

Uplink

26 01 15 D0

Net ID: 0x13

Physical Payload

40 D0 15 01 26 80 08 00 01 9C 67 6C 63 76 E7 62

```
1 {
2   "gw_id": "eui-58a0cbfffe80175a",
3   "payload": "QNAVASaCAAA8GdsY3bnYg==",
4   "f_cnt": 8,
5   "lora": {
6     "spreading_factor": 7,
7     "bandwidth": 125,
8     "air_time": 51456000
9   },
10  "coding_rate": "4/5",
11  "timestamp": "2020-03-17T08:01:51.345Z",
12  "rssi": -71,
13  "snr": 9
14 }
```