IoT LoRa application service Tutorial

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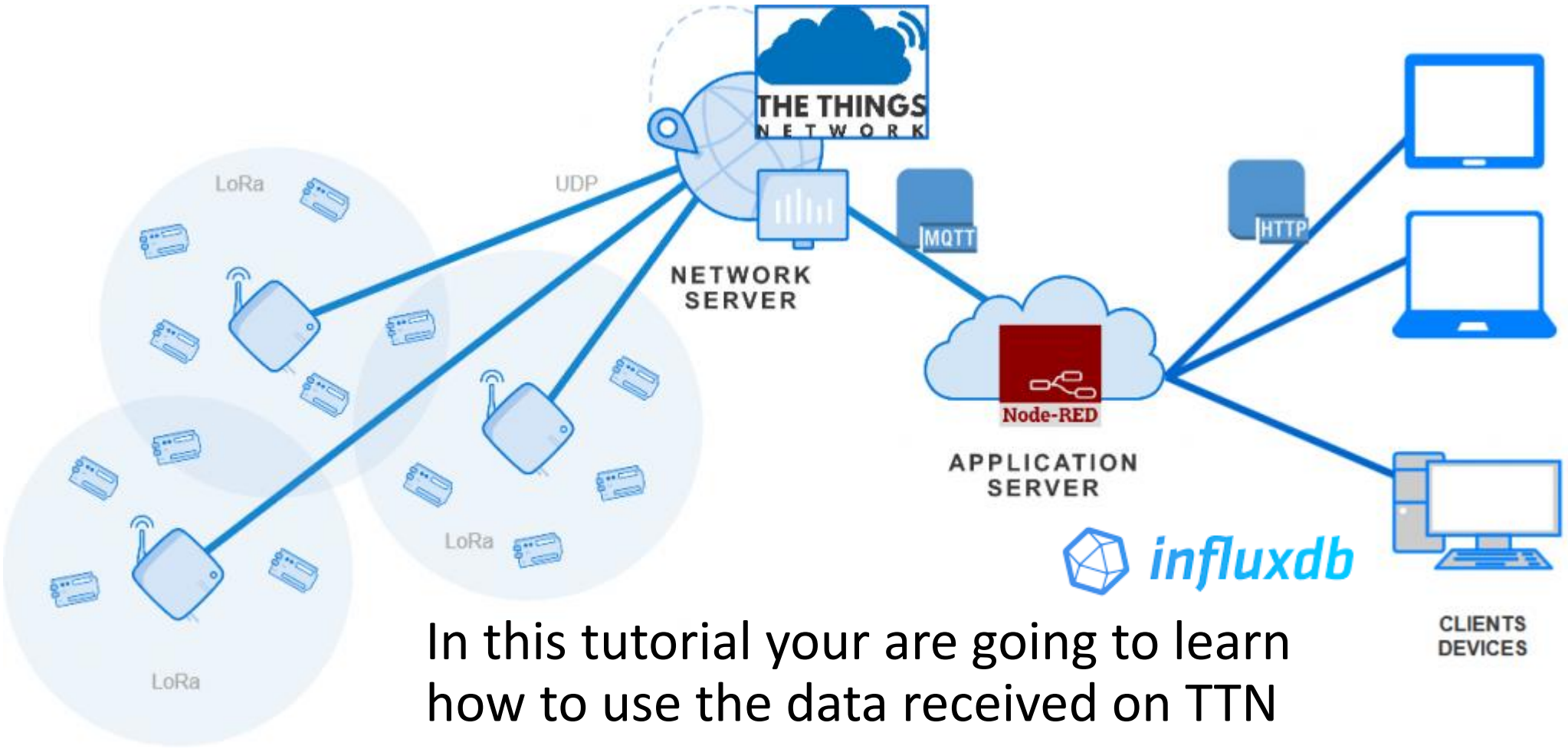
V.1.3

Node Red – InFluxDB - GRAFANA



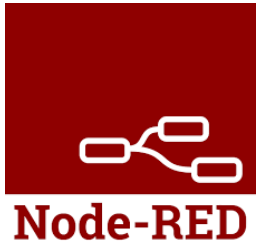
In this tutorial your are going to learn how to use the data received on TTN

Outline

1/ Definition

2/ Tutorial

Node Red



- Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.
- It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.
- Built on Node.js
  - The light-weight runtime is built on Node.js, taking full advantage of its event-driven, non-blocking model. This makes it ideal to run at the edge of the network on low-cost hardware such as the Raspberry Pi as well as in the cloud.

Outline

1/ Definition

2/ Tutorial

Node-Red

First install Node.JS : https://nodejs.org/en/download/

Then : Install Node-red :

https://nodered.org/docs/getting-started/windows

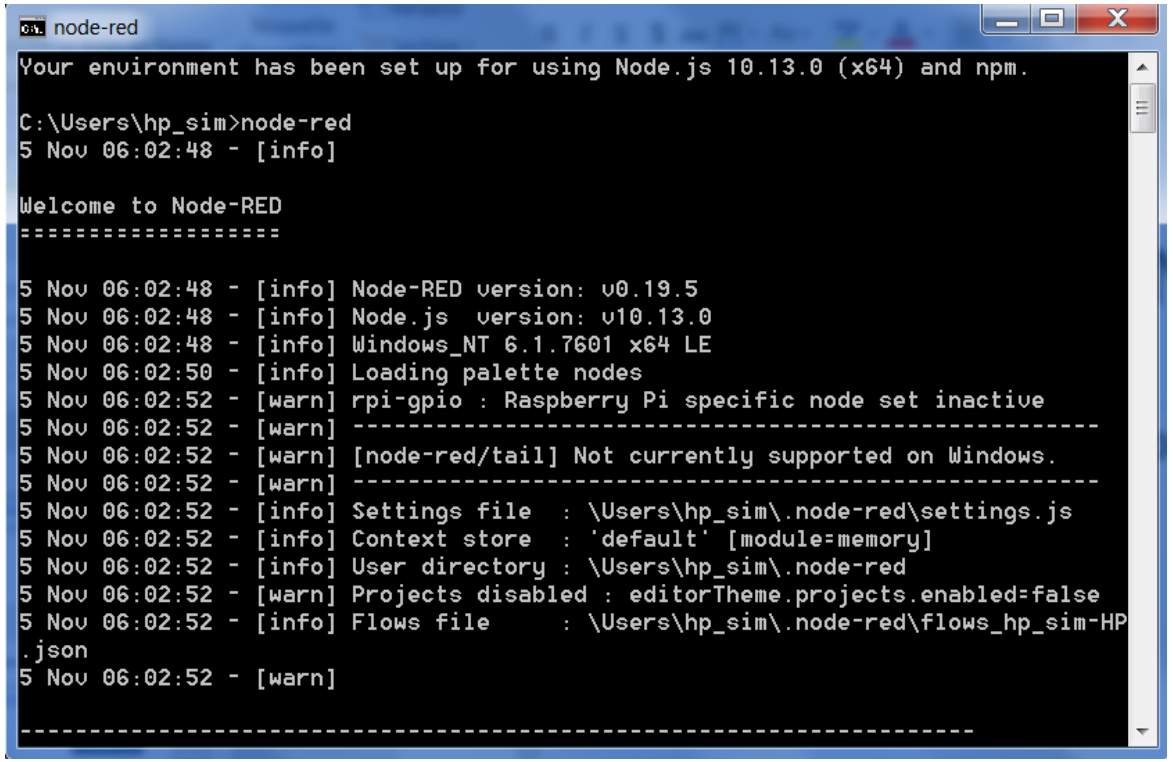
Install package in Node Red :

node-red-node-email

Install git : https://git-scm.com/downloads

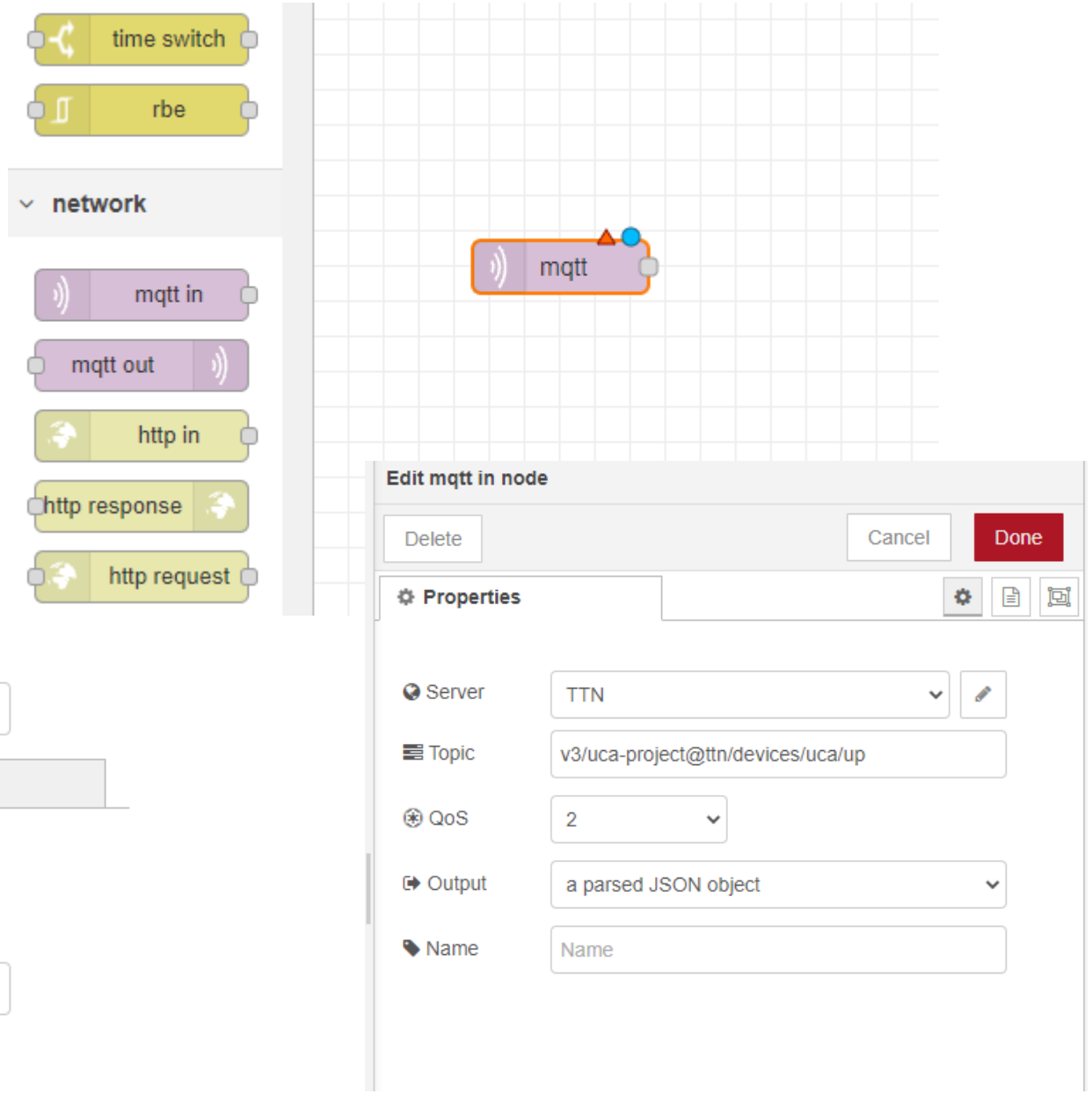
Connecting to TTN

- Start NODE.js command prompt
- Run : node-red
- Open your web browser and go to http://127.0.0.1:1880



Connecting to TTN

- You have the graphical Node-red editor
- Add mqtt in node
- Edit mqtt
- Choose « Add new mqtt-broker … » in App and click on edit
- Output is a parsed JSON object

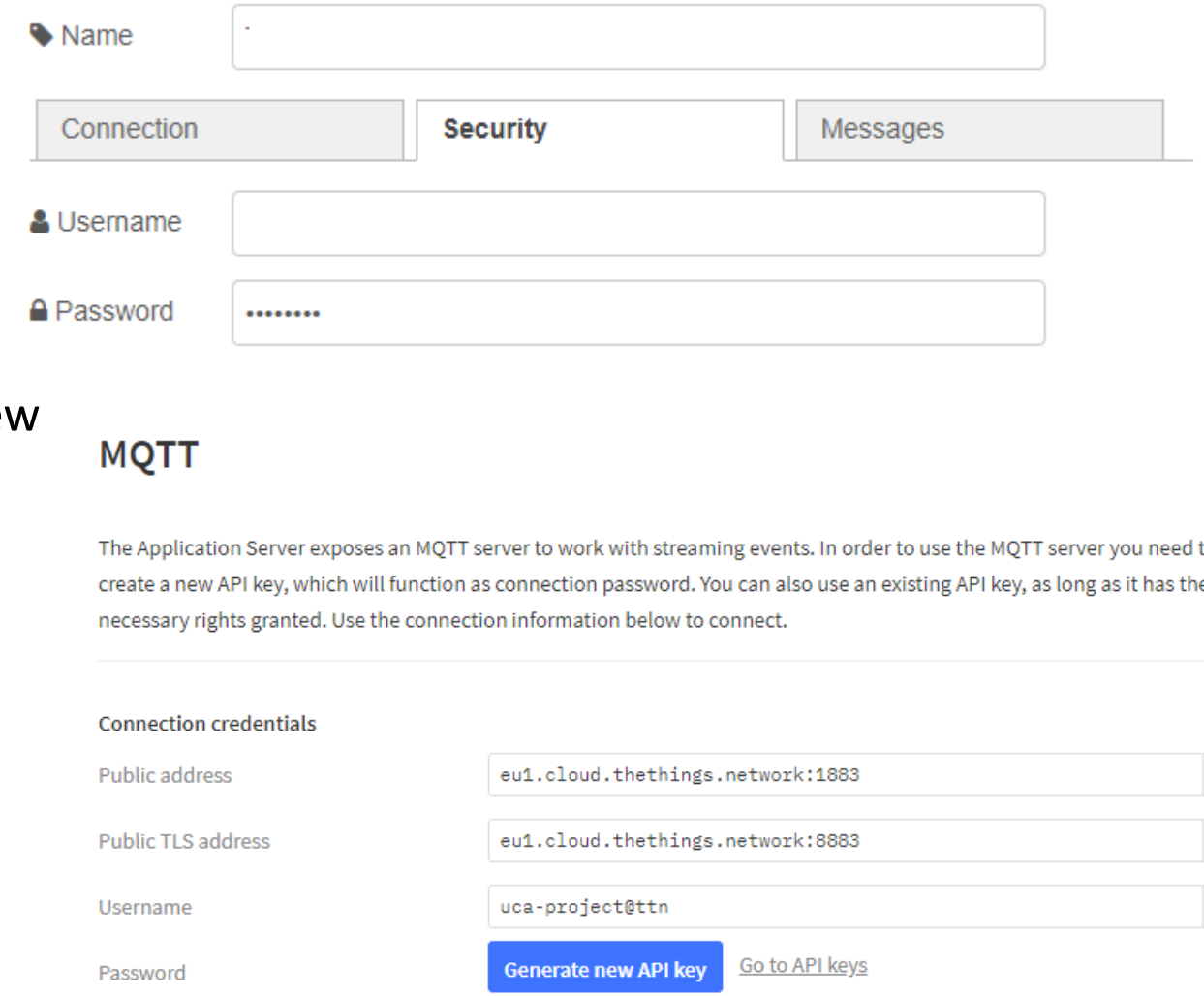


Connecting to TTN

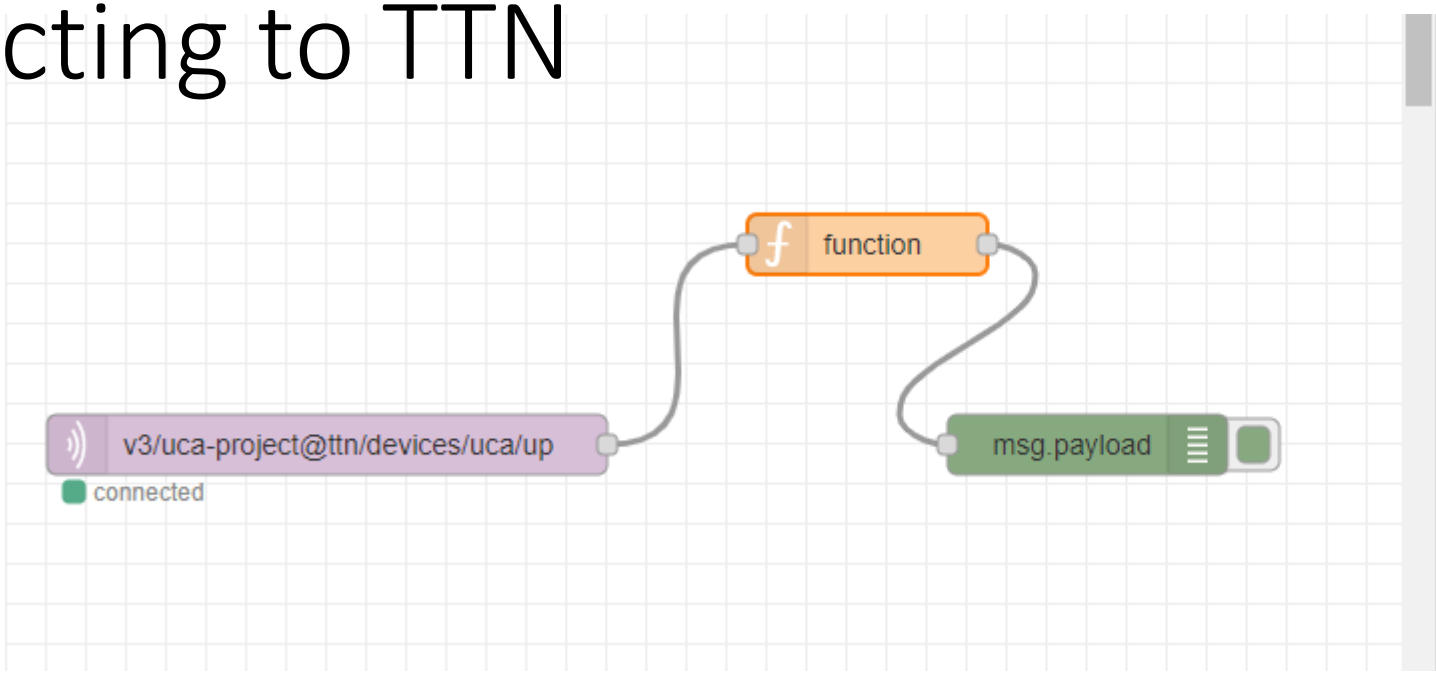
- Update security and topic:

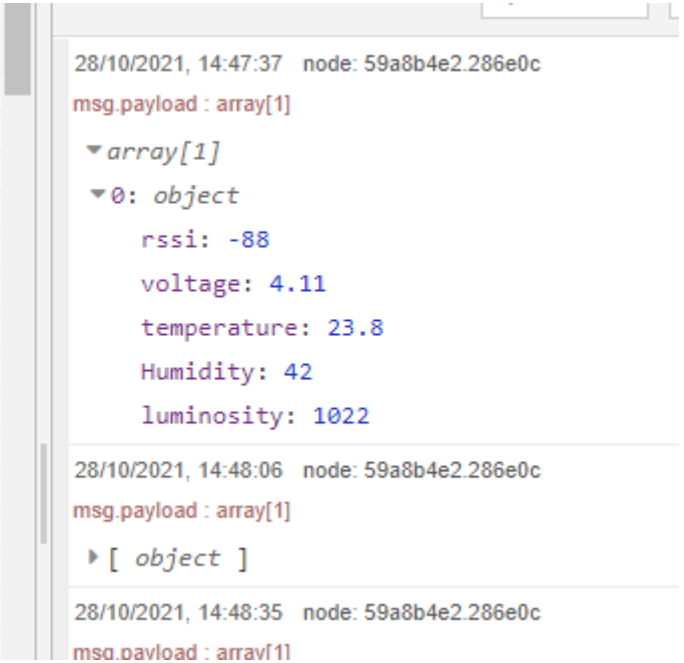
- Go to you application in TTN
- Copy past the User name and keys (generate new API Keys)
- Add topic :

  v3/uca-project@ttn/devices/**device_name**/up



Connecting to TTN

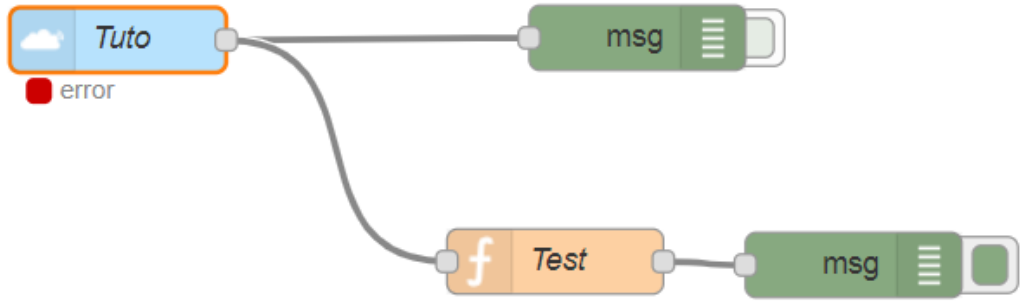




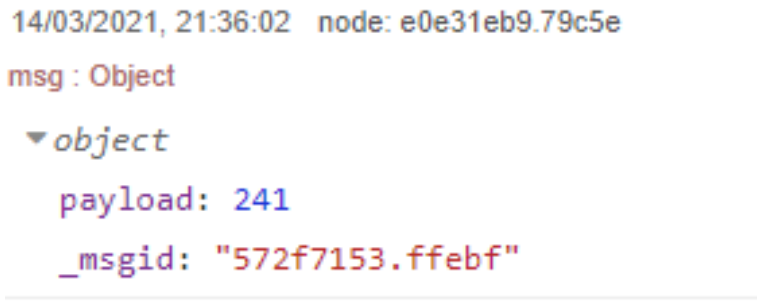

```
var logMsgs = [];
logMsgs[0]=({payload: {
rssi: msg.payload.uplink_message.rx_metadata[0].rssi,
voltage: msg.payload.uplink_message.decoded_payload.analog_in_3,
temperature:msg.payload.uplink_message.decoded_payload.temperature_1,
Humidity: msg.payload.uplink_message.decoded_payload.relative_humidity_2,
luminosity: msg.payload.uplink_message.decoded_payload.luminosity_4
}
});
return logMsgs;
```

Connecting to TTN

- If you want to extract only 1 data,
- As an exemple the RSSI (received signal Strength indicator
- Use a function to extract the desired data




```
var tmp = {};
tmp.payload = msg.payload.luminosity_4;
return tmp;
```



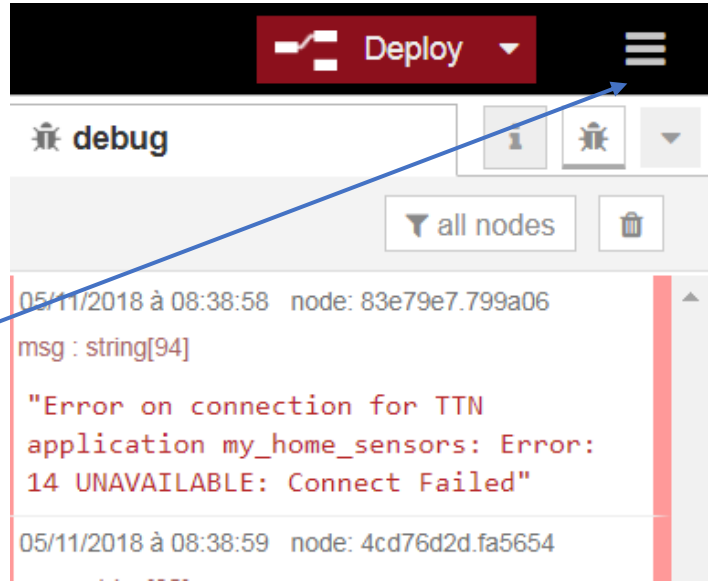
Connecting to TTN

- On the editor, click here

And go to palette editor

Install :

- node-red-dashboard

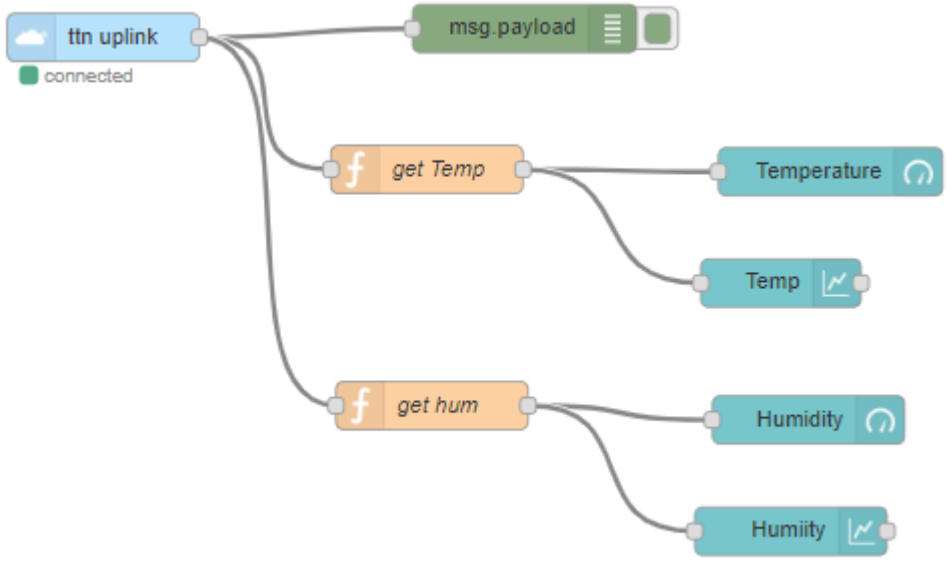


var tmp = {}; tmp.payload = msg.payload.uplink_message.decoded_payload.luminosity_4; return tmp;

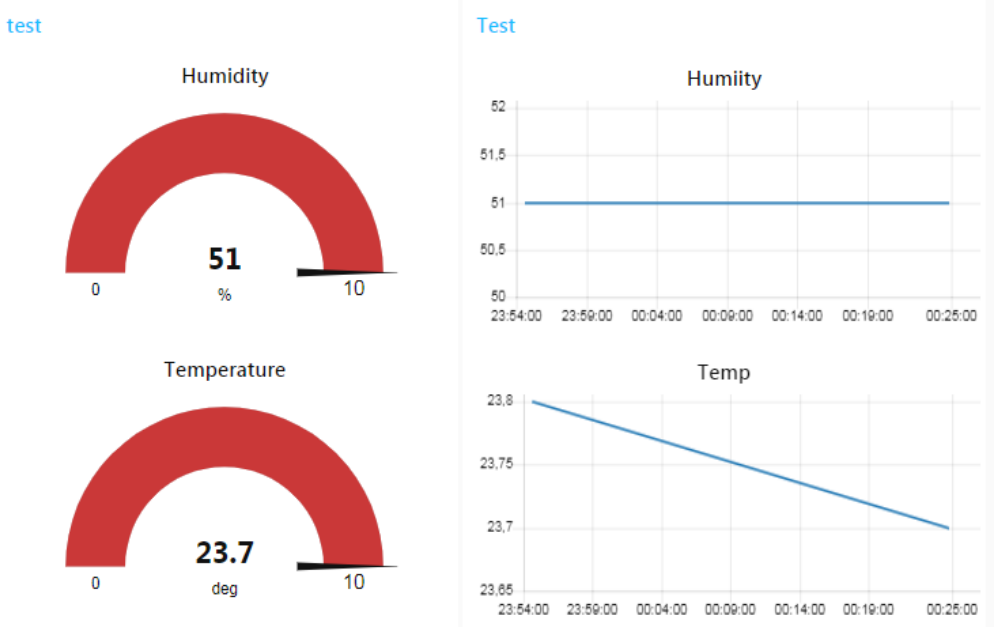
Add a Dashboard

- Go to Manage Palette, select Install
- Install : node-red-dashboard
- Add a function to extract sensor values (Temp, Hum, luminosity…)
- Add Gauge and Graph for Dashboard section
- Add a new UI group in the Gauge and Graph
- Go to : http://127.0.0.1:1880/ui/

```
var tmp = {};
tmp.payload = msg.payload.luminosity_4;
return tmp;
```

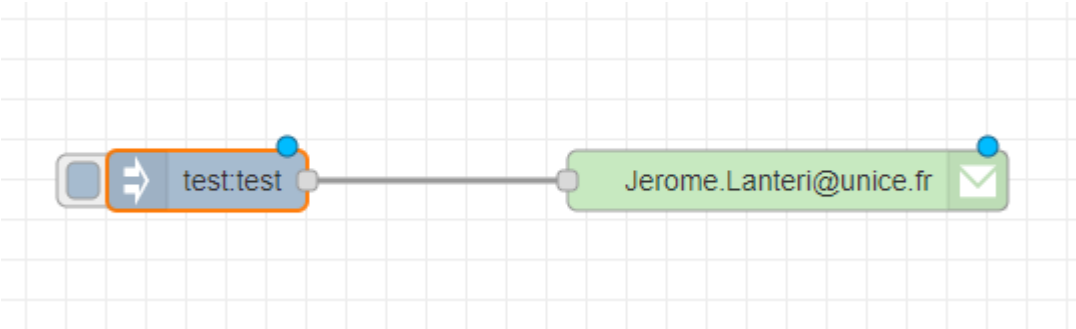


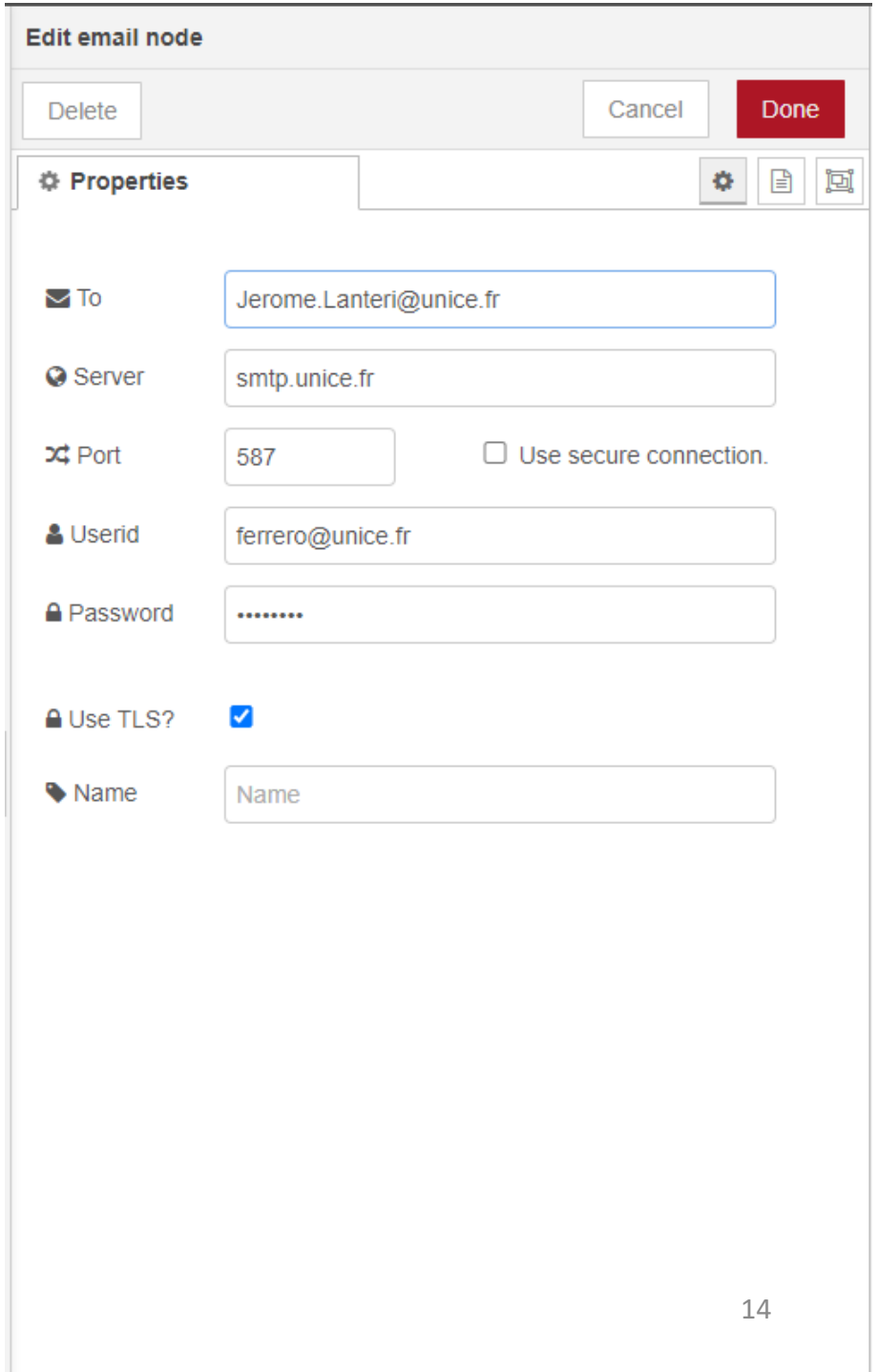

```
1  var tmp = {};
2  tmp.payload = msg.payload.luminosity_4;
3  return tmp;
4
```



Send an email

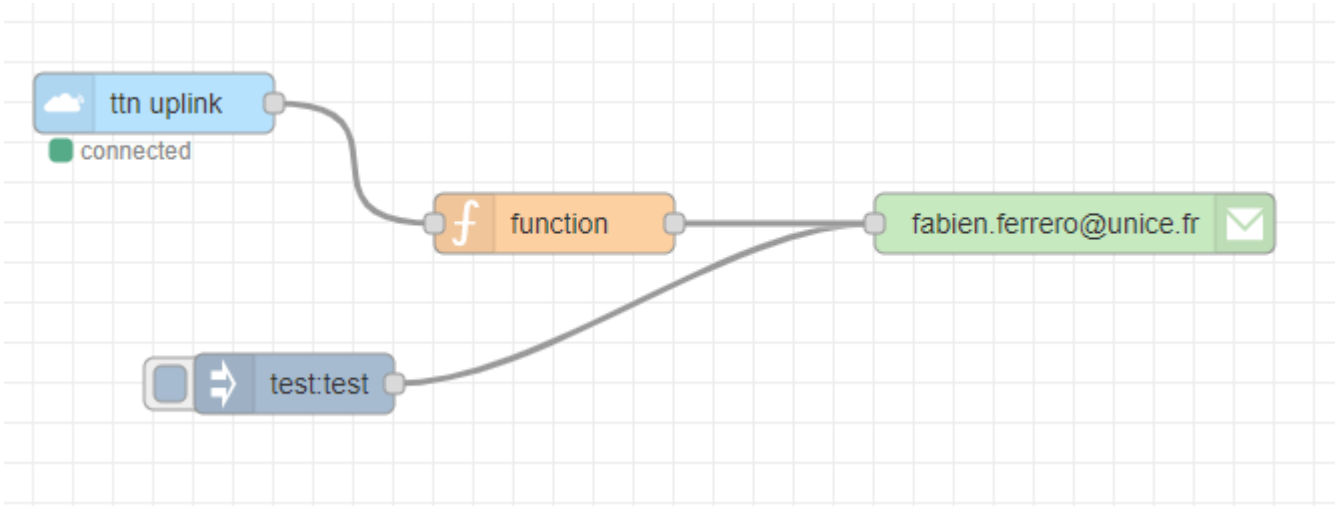
- Go to Manage Palette, select Install
- Install : node-red-node-email
- Configure your email with unice credential (use your ENT account)
- Use a timestamp to test (click to trigger it)
- Email object is defined in msg.topic
- Email content is defined in msg.payload





Send an email triggered on luminosity level

- Add a function to detect is the luminosity overpass a threshold
- Send an email with a sentence




```
var tmp = {};
var lum = msg.payload.uplink_message.decoded_payload.luminosity_4;
tmp.topic = "information capteur";
if (lum>200)
tmp.payload = "il y a de la lumiere";
else
tmp.payload = "il n'y a pas de lumiere";
return tmp;
```

```
var tmp = {};
var lum
=msg.payload.uplink_message.decoded_payload.luminosity_4;
tmp.topic = "information capteur";
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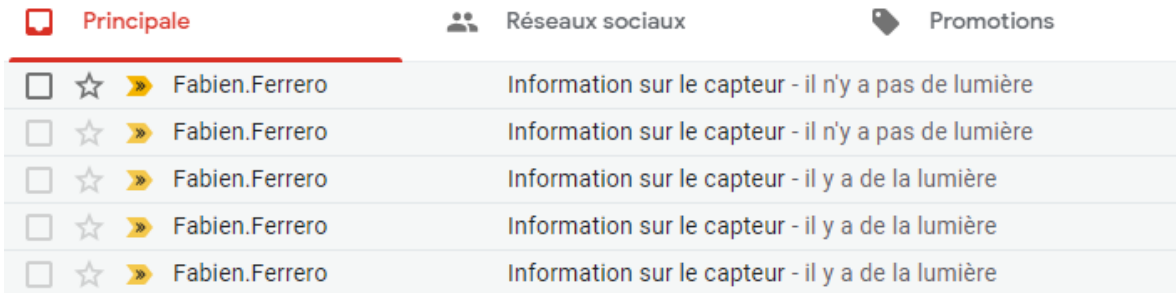

Good luck for your projects !