



Efento

NB-IoT sensors

Quick start

V 2.2

06.05.2021

Setup

Follow these few simple steps to quickly get started with Efento NB-IoT / LTE-M sensors and Efento Cloud platform.

Step 1: download Efento mobile app and set up an account

Download [Efento mobile application for Android](#) and register a new account (you can also set up an account on cloud.efento.io). If you already have an account, skip this step.

Step 2: Insert SIM card and power on the device

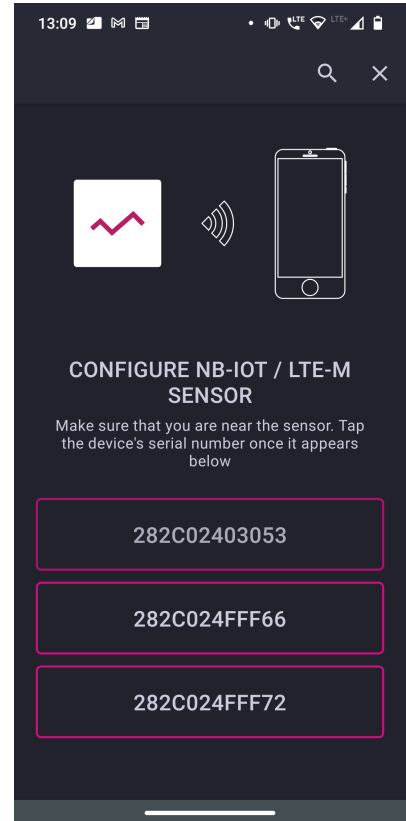
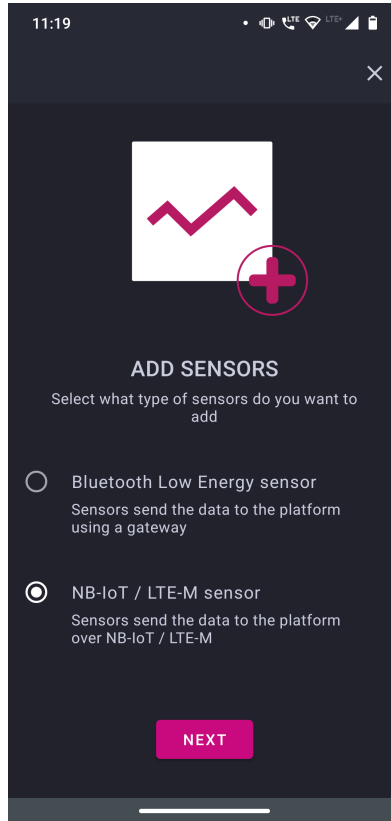
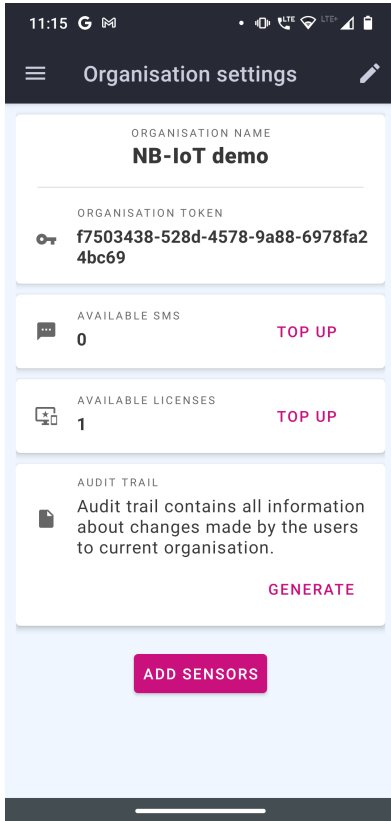
Insert a SIM card (Important! SIM card must support NB-IoT) into the SIM card holder and power on the device by setting the switch in "ON" position. Red and green LEDs should blink five times, after that green LED should quickly blink for 3 seconds - this means that the sensor is working and from now on will take the measurements. Open the Efento mobile application on your smartphone and move on to the next step.

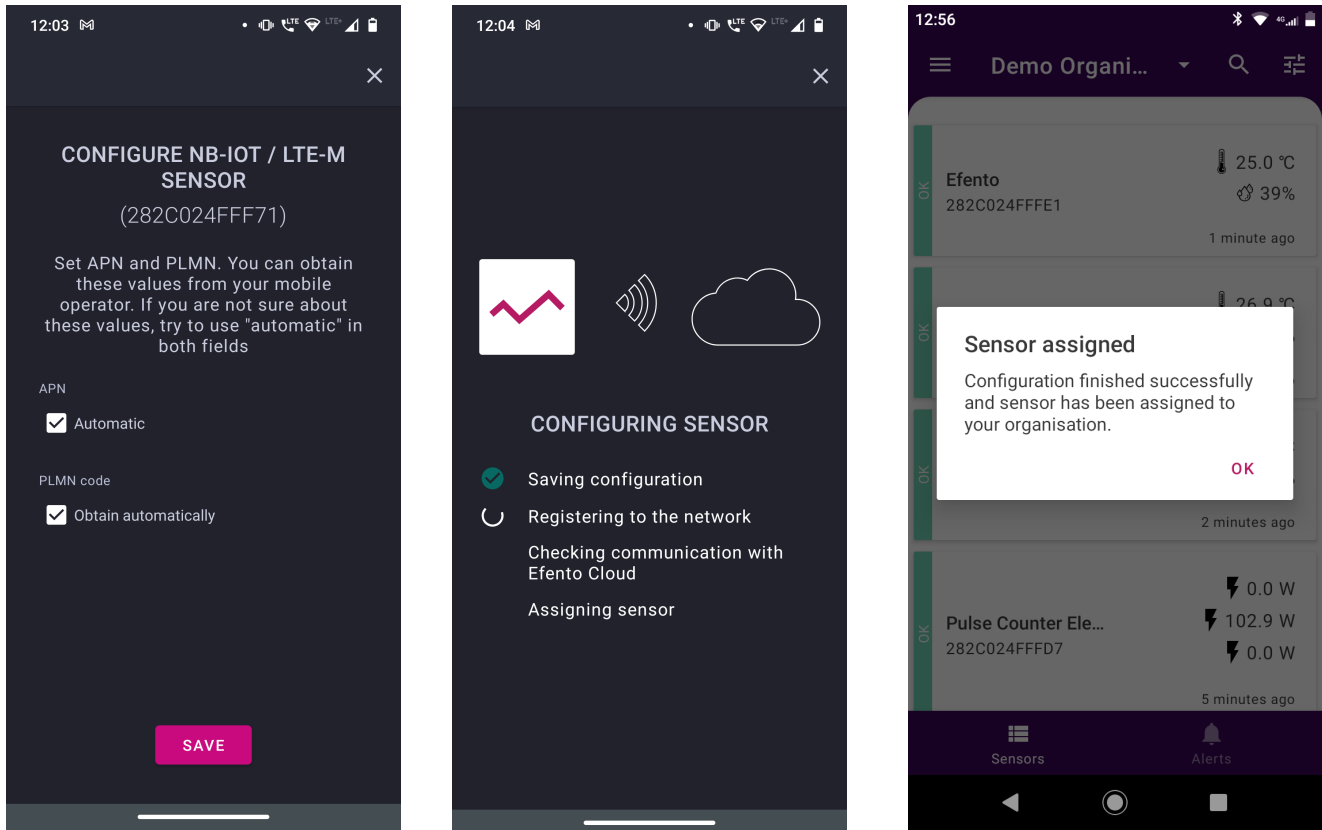
Step 3: Configure the sensor to send the data over NB-IoT network

Login to your Efento Cloud account and create a new organisation. To assign a sensor to your organisation, tap on the screen and select "Add sensors" - > "NB-IoT / LTE-M sensors". Place the NB-IoT / LTE-M sensor near the smartphone with the application, and then from the list of available devices select the one you want to configure. Configure APN and PLMN settings - you can get this information from the mobile operator that you use. If you have not received such information, check the "Automatic" / "Obtain automatically" boxes. After configuring APN and PLMN, the logger will try to connect to the network and send data to the Efento Cloud platform. In addition, during the connection attempt the logger will check the signal strength and in case of poor connection quality inform you about it. The process of registering to the network and first communication with the platform may take a few minutes. The application will keep you updated on progress.

Step 4: Add sensor to your Efento Cloud organisation

After successful communication with the platform, name the logger and assign it to the selected location. The application will also ask you to configure alarm rules and automatic reports for the newly added sensor. You can do it now, or skip this step.





Step 4 - manage your Efento Cloud account

Efento Cloud is a platform that receives and stores all the data collected by sensors. On Efento Cloud you can preview all the measurements, export them in PDF or CSV and set up notifications. All the features described below can be accessed using the mobile application or through a web browser at cloud.efento.io.

- **Displaying the data** – measurements from sensors can be visualized in the form of a chart or table, just click on one of the devices in “Dashboard”. The chart range can be modified by dragging the cursor vertically and horizontally.
- **Generating reports** – To generate a report you can either click on one of the sensors, then “Reports”, select the time interval and entry, then choose to export it as a PDF or CSV, or go to section “Reports” section and do the same thing. In this section, you can also configure automatic reports, which will be sent to specified email addresses at the scheduled time (e.g. every month, every day).
- **Rules / notifications** – Efento Cloud can send SMS / email notification if measured values are out of the safe range. Rules can be created in the “Rules” section. To create a rule, you need to

choose one of the physical values, add recipients by typing their emails or phone numbers, and select for which sensors this rule will be active. There is also a possibility to delay the alarm

- **Alarms** – if any of the rules are violated, the alarm will be triggered and saved on the platform. All the historical alarms are visible in the “Alarms” section.
- **User management** – In the “Users” section you can invite users to your organization, remove them or change their roles and permissions.

This is only a short list of key functions of the Efento Cloud platform. For more information about the platform and full configuration manual feel free to refer to Efento Cloud Web [User Manual](#).

Troubleshooting

Sensor doesn't send the data

If the sensor is taking measurements, and they are visible in the Efento mobile application, but it doesn't send the data to Efento Cloud please check:

- SIM card – make sure that SIM card is active and dedicated for NB-IoT devices
- Range – make sure that there is NB-IoT coverage in the place where you want to use the sensor
- APN settings – some networks require manual APN set up. Please contact your operator and obtain APN configuration. Set APN with Efento mobile app as described in Step 3.
- If the device is able to fetch time from the network - Efento sensors need to fetch the time from the NB-IoT network in order to synchronize internal time with the network time. If this feature is not available, you can set the time manually with Efento mobile application by using the “Change device time” option.
- Temperature in which the sensor operates – If the temperature is below the range declared in the datasheet, the sensor will not be able to send the data over NB-IoT. This is due to the voltage required by the NB-IoT module. If you need to measure low temperatures, please use the sensor with an external temperature probe

Cellular status

Current device's cellular status can be checked in the “Cellular status” tab (in the Nearby mode, connect to the sensor -> three dots in the upper right corner -> “Cellular status”). To speed up the troubleshooting, please provide Efento's team with this information. In the tab, you can see the following information:

- **Supported technologies** - what cellular technologies are supported by the device. There are two options: NB-IoT or NB-IoT & LTE-M
- **Current technology** - what technology is currently in use. For NB-IoT only sensors it will always be NB-IoT, For NB-IoT & LTE-M sensor, current technology depends on the technology which is currently in use. Devices automatically switch between technologies, depending on the inserted SIM card
- **Registration status** - indicates current network communication status:

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- REGISTERED - registered to the network - this is typical status of the device;
 - NOT REGISTERED, SEARCHING - not registered to the network, searching for it - this status may be seen during device power up, when it did not manage to attach to the network yet;
 - NOR REGISTERED_NOT_SEARCHING - not registered to the network, not searching for it - this status is seen mainly, if there is no network coverage;
 - REGISTRATION DENIED - network did not allow device to register
 - REGISTERED ROAMING - if the device is registered in roaming
 - REGISTERED EMERGENCY ONLY
 - UNKNOWN - all the other states
- **Registration reject cause** - if the device is not able to register to the network, the cause is displayed in this field. Reject causes are described in 3GPP TS 24.301 Annex A
 - **Signal strength** - strength of the signal
 - **Communication status** - describing current status of communication with the server. Possible statuses: OK, server error, encoding error, socket error, timeout, mismatch, unauthorized, unexpected error, not registered, not supported
 - **IMEI** - IMEI number of the cellular module
 - **ICCID** - ICCID of the SIM card in the device
 - **IP address** - current IP address of the device
 - **ECL** - ECL level. This parameter is a good indicator of the signal quality. The lower, the better. ECL 1 or 2 may significantly reduce the battery life
 - **Cell ID** - ID of the cell in to which the device is connected
 - **Last communication timestamp** - timestamp of the last successful communication. All the information on this card is refreshed during the communication / self check.
 - **Last status check timestamp** - timestamp of the last self check. Self checks are performed on the startup or may be performed on server's demand. All the information on this card is refreshed during the communication / self check.