



Gumstix® Strata Quickstart Guide

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1 Introduction

This brief document will provide users of the Gumstix® Strata LoRa™ node on TheThingsNetwork.org and MyDevices Cayenne using the Arduino IDE. It provides details on the following setup procedures:

1. Arduino IDE installation and configuration
2. Firmware customization and installation
3. Device registration on TheThingsNetwork.org (<https://www.thethingsnetwork.org>)
4. Project integration on MyDevices Cayenne (<https://cayenne.mydevices.com>)

2 Arduino IDE Configuration

To start programming the Strata node with the Arduino IDE, first download the software from <https://www.arduino.cc/en/Main/Software>, install it as per the website's instructions and run the application.

Add the Strata BSP to the Boards Manager:

- Click on File>Preferences to open the user preferences dialog.
- Enter the following URL into the 'Additional Boards Manager URLs...' text box:
https://geppetto-data.s3.amazonaws.com/designs/bsp/bdca3e2668e0650e11f1e0daf5055f5f19e5e028/package_strata-lora-915-mhz_0_index.json
- Click OK.

Install the package:

- Click on Tools>Board...>Boards Manager
- From the 'Type' drop-down box, select '**Contributed**'.
- Click on '**Strata-lora-915-mhz by Gumstix, Inc.**' and on the **Install** button that appears.
- Once the installation of the package is complete select '**strata-lora-915-mhz**' from Tools>Board...



Windows Users:

Windows may not recognize the Strata when connected to USB which can prevent Arduino from uploading sketches to your device. In order to install the Arduino USB driver such that the Strata is correctly identified, follow these steps:

1. Download the zip file from <http://bit.ly/2GMrXK9>.
2. Extract `arduino.inf` from the file into `C:\<path-to>\arduino-1.8.5\drivers\`, overwriting the existing one.
3. follow the directions at <https://www.arduino.cc/en/Guide/DriverInstallation> to install the Arduino driver for the Strata,

3 Strata Example Sketch: Firmware Installation

An example sketch is available on github at <https://github.com/gumstix/arduino-examples/strata-ttn-cayenne>. This sketch is sufficient to send sensor data from the barometer, and the relative humidity and temperature sensors to a LoRa gateway and forwarded to thethingsnetwork.org.

- Start by cloning the repository to your host system:

```
$ git clone https://github.com/gumstix/arduino-examples.git
$ cd arduino-examples/strata-ttn-cayenne
```

- Open the sketch in the Arduino IDE.
- Connect the Strata board to a USB port on the host computer via the USB Micro-B port labelled 'Device'
- configure the IDE to communicate with it
click on 'Tools>Port:>ttyACM*(Arduino/Genuino Leonardo).'
- Upload the sketch by clicking the right-arrow on the toolbar or clicking on 'Sketch>Upload' and press the 'reset' button on the board.

4 Registering the Device on TheThingsNetwork.org

In order to register your Strata node on TTN, you will need its DevEUI. This can be obtained by accessing the Strata's debug console.

- Click on 'Tools>Serial Monitor' and You will see the following text in the console's output:

```
EUI: 0004A30B001C2740
Battery: 3273
AppEUI:
DevEUI: 0004A30B001C2740
Data Rate: 3
RX Delay 1: 1000
RX Delay 2: 2000
```

Take note of the value in the 'DevEUI' field and continue to the next step.



- Log in to console.thethingsnetwork.org and access or create an application
- On the **'Payload Formats'** tab, change the format to **'Cayenne LPP'**.
- On the **'Integrations'** tab click **'Add Integration'**, and then **'Cayenne'**. Give your integration process an ID and click the 'Add' button.
- Switch to the **'Devices'** tab and register a new device. Give it an ID, enter the device EUI obtained earlier and click 'Add.'
- On the page that follows, you will be given an **ApplicationEUI** and an **Application Key**. Enter these strings into the `settings.h` file in the sketch and upload it to the Strata.

After approximately five seconds, if a gateway is accessible, the device's status icon on the TTN dashboard will turn green and the age of the most recent packet delivered will begin counting up. The sketch is set to transmit 4 data packets over 4 minutes and then sleep for 5 minutes.

5 Add Strata to Your Cayenne Project

The Strata node is now streaming data to the network and is ready to be added to your project.

- Login at cayenne.mydevices.com
- and click Add New...>Device/Widget.
- in the **'Devices & Widgets'** column, select **LoRa (beta)** and scroll down to and select **Gumstix Strata** in the center column.
- On the far right, enter the **'DeviceEUI'** from the previous steps, change the name of the device (optional) and set the activation mode to *'already registered'*. The Cayenne dashboard will begin displaying data from the device as it is received from TTN.
- Drag and drop data points from the device on the right hand side of the dashboard onto your project.

External Links

cayenne.mydevices.com, 2
console.thethingsnetwork.org, 2
<https://cayenne.mydevices.com>, 1
<https://github.com/gumstix/arduino-examples/strata-ttn-cayenne>, 1
<https://www.arduino.cc/en/Main/Software>, 1
<https://www.thethingsnetwork.org>, 1
thethingsnetwork.org, 1