

Configuración del RAK831+RPi3+GPS

1) Habilitar el SPI de la Raspberry

2) Clonar ic880a-gateway de Github

```
git clone -b spi https://github.com/ttn-zh/ic880a-gateway.git
sudo ./install.sh spi
```

3) Cuando se instala indicar que no se quiere generar el archivo de configuración remota (*remote configuration*).

4) Generar un EUI, y registrar el gateway en TTN. El EUI es aleatorio y si ya existe se puede generar uno nuevo con las siguientes funciones (o inventar uno):

```
git clone https://github.com/things-nyc/random-eui64.git
cd random-eui64/
make random-eui64
./random-eui64
```

5) Al concentrador hay que resetearlo.

5.1) crear en /opt/ttn-gateway/lora_gateway un archivo .c (RAK831_reset.c) con el siguiente código:

```
#include <unistd.h>
#include <wiringPi.h>
#define GPIO_RESET_PIN 0 // see wiringPi mapping !
int main() {
    wiringPiSetup();
    pinMode(GPIO_RESET_PIN, OUTPUT);
    digitalWrite(GPIO_RESET_PIN, HIGH);
    sleep(5);
    digitalWrite(GPIO_RESET_PIN, LOW);
}
```

5.2) Instalar WiringPi si no se hizo aún.

```
git clone git://git.drogon.net/wiringPi
cd ~/wiringPi
./build
```

5.3) Compilar y ejecutar el archivo .c

```
gcc -Wall -o RAK831_reset RAK831_reset.c -lwiringPi
./RAK831_reset
```

6.1) **basic_pkt_fwd** El gateway a utilizar se instaló en /opt/ttn-gateway/packet_forwarder/basic_pkt_fwd

6.1.1) Hay que modificar el local_conf.json y global_config.json; con los adecuados planes de frecuencia, el EUI del gateway, IP del server, entre otro.

6.1.2) Ejecutar el archivo paket_forwarder.

```
cd /opt/ttn-gateway/packet_forwarder/basic_pkt_fwd/  
./basic_pkt_fwd
```

6.2) **gps_pkt_fwd** El gateway a utilizar se instaló en /opt/ttn-gateway/packet_forwarder/gps_pkt_fwd

6.2.1) Hay que modificar el local_conf.json y global_config.json; con los adecuados planes de frecuencia, el EUI del gateway, IP del server, entre otro. En este caso en el global hay que insertar el puerto serie correspondiente al GPS.

```
"fake_gps": false,  
"gps": true,  
"gps_tty_path": "/dev/ttyS0",
```

6.2.2) Activar el puerto serie de la Raspberry para el GPS.

```
sudo raspi-config
```

* Interfacing Options

* Serial

* Would you like a login shell to be accessible over serial? No

* Would you like the serial port hardware to be enabled? Yes

6.2.3) Ejecutar el archivo gps_paket_fordwarder.

```
cd /opt/ttn-gateway/packet_forwarder/gps_pkt_fwd/  
./gps_pkt_fwd
```

7) Enjoy some gateway.

Install paket_fordwarder V.4.0.1 (last versión and support Class B)

https://github.com/Lora-net/lora_gateway

https://github.com/Lora-net/packet_forwarder

1) git clone https://github.com/Lora-net/packet_forwarder.git

```
rm -rf /opt/semtech  
mkdir -p /opt/semtech  
cd /opt/semtech  
sudo git clone -v https://github.com/Lora-net/lora_gateway.git  
sudo git clone -v https://github.com/Lora-net/packet\_forwarder.git
```

en /opt/semtech/lora_gateway/libloragw/src abrir el archivo loragw_spi.native.c y cambiar la velocidad del SPI de 8000000 a 1000000. (sino da un error de inicialización)

en /opt/semtech/lora_gateway/libloragw/src abrir el archivo lora_pkt_fwd.c: RFU1 = 3 y RFU2 = 1. Así el size del beacon es 19.

```
cd /opt/semtech/packet_forwarder
sudo ./compile.sh
```

Configurar global y local conf.json. En /opt/semtech/packet_forwarder/lora_pkt_fwd/cfg están los modelos del global, el beacon es el que se debe usar para soportar clase B. Ver bien la configuración del beacon, porque el documento de parámetros regionales el datarate es 8 (SF 12 / 500khz) y en el global se puso como datarate 12.

```
Reiniciar el RAK831 y luego ejecutar el pkt_fwd
/opt/semtech/packet_forwarder/lora_pkt_fwd $ sudo ./lora_pkt_fwd
```

Si por consola llega el ERROR que dice que tal potencia no es soportada, se debe elegir algún canal del lux y ponerle rf_power = "la potencia no soportada".

Bibliografía y extra:

<https://github.com/RAKWireless/lora-gateway-os> Gateway del ServerLora.io

Foro RAK oficial: http://support.rakwireless.com/topic/257/rak831-868mhz-global_conf-json-with-gps-enabled

https://github.com/Lora-net/packet_forwarder/wiki/Use-with-Raspberry-Pi Otro gateway, con dos archivos funciona.

<https://github.com/RAKWireless/RAK831-LoRaGateway-RPi> Instalar gateway Rak oficial

<https://www.thethingsnetwork.org/forum/t/the-hard-rak831-cafe-part-1/8464/6> Foro Rack 1 2 3

<https://www.thethingsnetwork.org/labs/story/rak831-lora-gateway-from-package-to-online> Install gateway lc880a

https://github.com/bokse001/dual_chan_pkt_fwd Apagar el dual channel gateway

<https://blog.exploratory.engineering/post/lora-gw/> [Tutorial, funcionó OK]

[<https://github.com/ch2i/LoraGW-Setup/issues/2>]

hanks for the awesome setup procedure. I've successfully used it with a RAK831 board and RAK's official shield (converter board) for the Raspberry Pi 3. However the GPS module soldered onto the shield was not configured.

With manual work, I was able to get the GPS module running. The relevant steps are:

Serial port

On the Raspberry Pi 3, the serial port `/dev/ttyAMA0` is used for the bluetooth module. The GPS module is found on `/dev/ttyS0`. The path `/dev/serial0` is linked to that device as well. The Raspbian distribution configures it as a login shell, which is in conflict with the use for the GPS module. So it must be changed, either by removing ``console=serial0,115200`` from ``/boot/cmdline.txt`` or by using ``raspi-config``:

Comando para entrar a la configuración `[sudo raspi-config]`

* Interfacing Options

* Serial

* Would you like a login shell to be accessible over serial? No

* Would you like the serial port hardware to be enabled? Yes

Permissions for serial port

In order to access the serial port (without being ``root``), the user must belong to the group ``dialout``. The user ``pi`` belongs to it, the user ``loragw`` doesn't. So:

...

```
sudo usermod -a -G dialout loragw
```

...

Discovery

Even after these changes, the setup script did not properly discover the GPS module. It said:

```
/* GPS configuration */
```

```
    "gps_tty_path": "/dev/ttyAMA0"
```

...

```
Has hardware GPS:    False
```

```
Hardware GPS port:   /dev/ttyAMA0
```

```
Using fake GPS
```

...

I have no idea how the discovery works. Is the GPS port a default value? Anyhow, I've modified the `global_conf.json` manually:

...

```
"fake_gps": false,  
"gps": true,  
  "gps_tty_path": "/dev/ttyS0"
```

...

After a reboot, the GPS module is now working. It would be cool if no manual work was needed and the setup scripts would automatically detect and configure the GPS module.

.....

[snorkman](#) 152/214

[Jun '18](#)

Dear TTN Community,

after struggling o more than 3 days to setup my gateway (RAK831 915MHz + RPi 3) I ran out of ideas what my problem could be.

I surfed every post related to this device and no one helped to solve my problem, that is the reason why I am creating this post.

To summarize, all the steps I did were:

- 1 - Install Raspbian
- 2 - Update + Upgrade
- 3 - Cloning ic880 repo
- 4 - Install using sudo ./install.sh spi
- 5 - Modify global_conf.json according to [US_global_conf.json 9](#)
- 6 - Modified the rest pin from 25 to 17
- 7- Rebooting

My local_conf.json looks like this:

```
{  
  "gateway_conf": {_  
  "gateway_ID": "B827EBFFFE3EF015",_  
}
```

```

_ "servers": [ { "server_address": "brazil.thethings.network", "serv_port_up": 1700,
"serv_port_down": 1700, "serv_enabled": true } ],_
_ "ref_latitude": -27.36472222222223,_
_ "ref_longitude": -55.89333333333333,_
_ "ref_altitude": 0,_
_ "contact_email": "mymail@gmail.com",_
_ "description": "First TTN Gateway of Posadas city " _
_ } _
}

```

And my global_conf.json looks like this:

After rebooting I check the logs of the and everything seems to be running the way it should, see the screenshots:

sudo service ttn-gateway status returns

```

• ttn-gateway.service - The Things Network Gateway
  Loaded: loaded (/lib/systemd/system/ttn-gateway.service; enabled; vendor preset: enabled)
  Active: active (running) since Mon 2018-06-04 17:04:04 -03; 39min ago
  Main PID: 352 (start.sh)
  CGroup: /system.slice/ttn-gateway.service
          └─352 /bin/bash /opt/ttn-gateway/bin/start.sh
            └─898 ./poly_pkt_fwd

Jun 04 17:39:45      ttn-gateway[352]: # PUSH_DATA datagrams sent: 1 (253 bytes)
Jun 04 17:39:45      ttn-gateway[352]: # PUSH_DATA acknowledged: 0.00%
Jun 04 17:39:45      ttn-gateway[352]: ### [DOWNSTREAM] ###
Jun 04 17:39:45      ttn-gateway[352]: # PULL_DATA sent: 6 (0.00% acknowledged)
Jun 04 17:39:45      ttn-gateway[352]: # PULL_RESP(onse) datagrams received: 0 (0 bytes)
Jun 04 17:39:45      ttn-gateway[352]: # RF packets sent to concentrator: 0 (0 bytes)
Jun 04 17:39:45      ttn-gateway[352]: # TX errors: 0
Jun 04 17:39:45      ttn-gateway[352]: ### [GPS] ###
Jun 04 17:39:45      ttn-gateway[352]: # GPS sync is disabled
Jun 04 17:39:45      ttn-gateway[352]: ##### END #####

```

As you can see there is no confirmation from the backen to my GW

and if I execute

cat /var/log/syslog | grep INFO

```

Jun  4 17:05:45      ttn-gateway[352]: INFO: Found 1 servers in array.
Jun  4 17:05:45      ttn-gateway[352]: INFO: Server 0 configured to "router.us.thethings.network", with port up "1700" and port down "1700"
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with a valid CRC will be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with a CRC error will NOT be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with no CRC will NOT be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: GPS is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: antenna_gain 0 dBi
Jun  4 17:05:45      ttn-gateway[352]: INFO: Upstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Downstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Ghoststream data is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Radiostream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Statusstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Beacon is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Monitor is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: found local configuration file local_conf.json, parsing it
Jun  4 17:05:45      ttn-gateway[352]: INFO: redefined parameters will overwrite global parameters
Jun  4 17:05:45      ttn-gateway[352]: INFO: local_conf.json does not contain a JSON object named SX1301_conf
Jun  4 17:05:45      ttn-gateway[352]: INFO: local_conf.json does contain a JSON object named gateway_conf, parsing gateway parameters
Jun  4 17:05:45      ttn-gateway[352]: INFO: gateway MAC address is configured to B827EBFFFE3EF015
Jun  4 17:05:45      ttn-gateway[352]: INFO: Found 1 servers in array.
Jun  4 17:05:45      ttn-gateway[352]: INFO: Server 0 configured to "us-west.thethings.network", with port up "1700" and port down "1700"
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with a valid CRC will be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with a CRC error will NOT be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: packets received with no CRC will NOT be forwarded
Jun  4 17:05:45      ttn-gateway[352]: INFO: Reference latitude is configured to -27.364722 deg
Jun  4 17:05:45      ttn-gateway[352]: INFO: Reference longitude is configured to -55.893333 deg
Jun  4 17:05:45      ttn-gateway[352]: INFO: Reference altitude is configured to 0 meters
Jun  4 17:05:45      ttn-gateway[352]: INFO: GPS is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: antenna_gain 0 dBi
Jun  4 17:05:45      ttn-gateway[352]: INFO: Upstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Downstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Ghoststream data is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Radiostream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Statusstream data is enabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Beacon is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Monitor is disabled
Jun  4 17:05:45      ttn-gateway[352]: INFO: Contact email configured to
Jun  4 17:05:45      ttn-gateway[352]: INFO: Description configured to "First TTN of Posadas city
Jun  4 17:05:45      ttn-gateway[352]: INFO: Successfully contacted server us-west.thethings.network
Jun  4 17:05:45      ttn-gateway[352]: INFO: [main] Starting the concentrator
Jun  4 17:05:45      ttn-gateway[352]: INFO: [main] concentrator started, radio packets can now be received.
Jun  4 17:05:45      ttn-gateway[352]: INFO: [up] Thread activated for all servers.
Jun  4 17:05:45      ttn-gateway[352]: INFO: [down] Thread activated for all server us-west.thethings.network

```

I am pretty sure that I did the right steps to make it run, and I still see “not connected” in TTN’s console.

Did any of you experienced the same thing when setting up your GW?

I commit myself to create a well documented tutorial for this device and all the community once this is running.

Thanks in advance for any help that you can provide.

////////////////////

Como desinstalar service de Raspbian:

Ver donde están los services.

`/lib/systemd/system/` o `/etc/systemd/system/`

Usar los siguientes comandos, cambiando la dirección en donde se encuentran

```

systemctl stop [servicename]
systemctl disable [servicename]
rm /etc/systemd/system/[servicename.service]
systemctl daemon-reload
sudo systemctl reset-failed

```