

## Configuration GW-01/GW-08 armbian gateway to communicate with LoRaWAN server.

### 1. Configuration of gateway.

Check for EUI of your gateway using following commands:

```
cd ~  
cat packet_forwarder/lora_pkt_fwd/global_conf.json
```

Look for gateway\_ID parameter. You need to enter gateway's ID later on thethingsnetwork:

```
{  
  "gateway_conf": {  
  
    "gateway_ID": "<Gateway EUI>"  
  
  }  
}
```

Check that same ID used in local\_conf.json file if exist:

```
cd ~  
cat packet_forwarder/lora_pkt_fwd/local_conf.json
```

Then configure your gateway to communicate with thethingsnetwork:

```
cd ~  
nano packet_forwarder/lora_pkt_fwd/global_conf.json
```

Enter following params. This will configure your GW-0x gateway to work in EU863-870 region:

```
{  
  
  [...]  
  
  "gateway_conf": {  
  
    "server_address": "router.eu.thethings.network",  
  
    "serv_port_up": 1700,  
  
    "serv_port_down": 1700,  
  
    [...]  
  
  }  
}
```

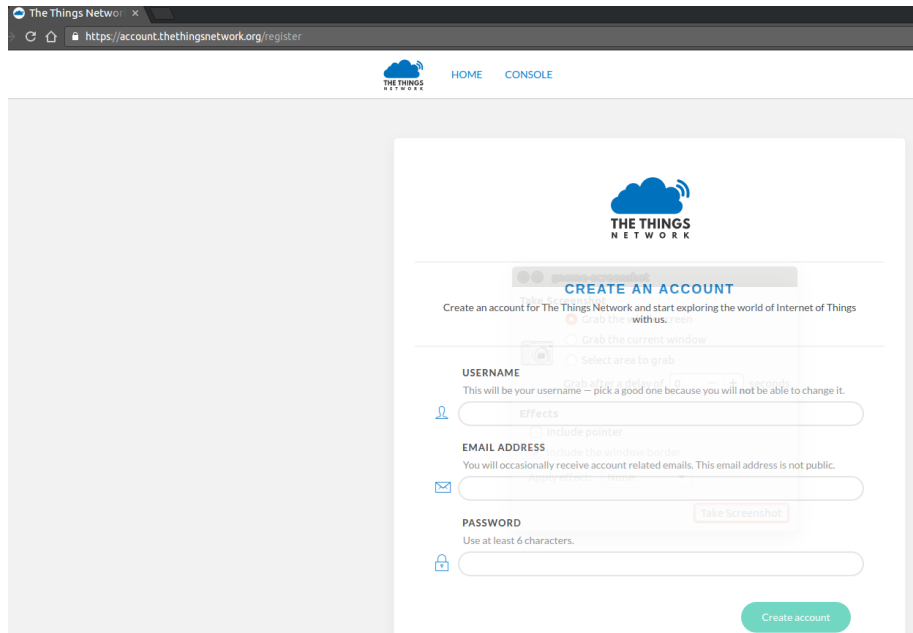
Expanation of this settings can be found here:

<https://www.thethingsnetwork.org/docs/gateways/packet-forwarder/semtech-udp.html>

## 2. Configuration of your thethingsnetwork's account:

Register on thethingsnetwork.org. Go to

<https://account.thethingsnetwork.org/register>

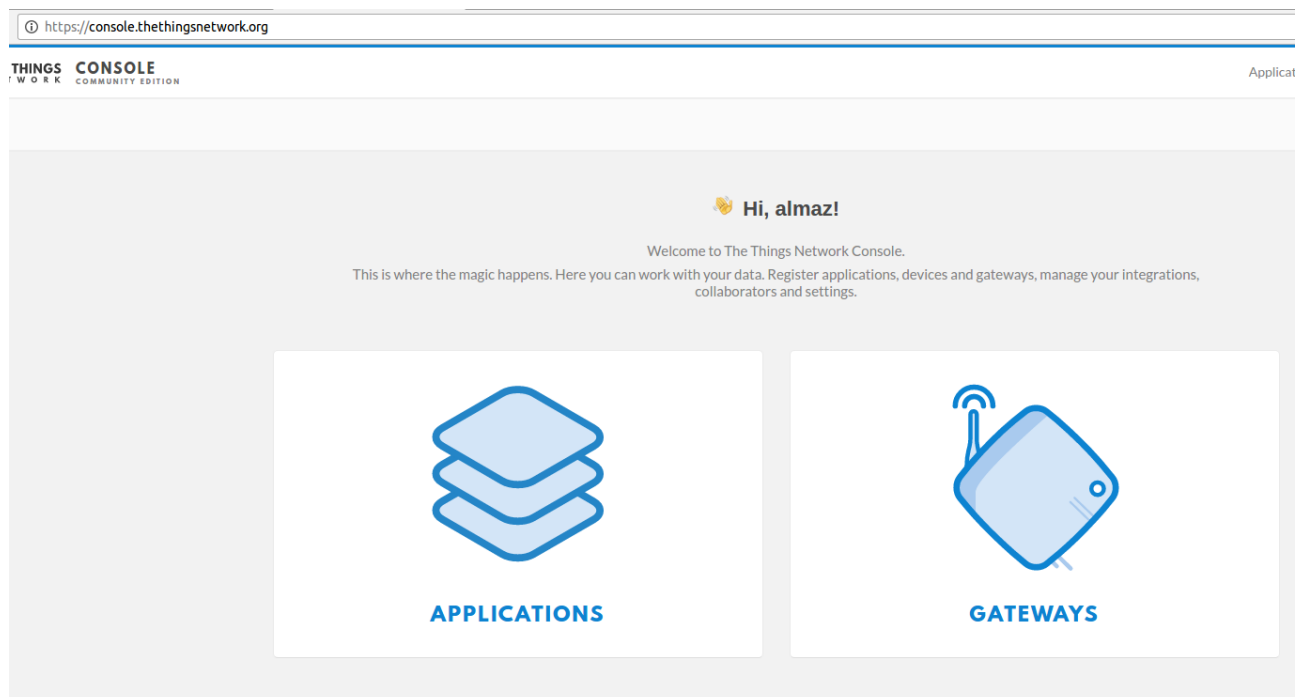


The screenshot shows a web browser window with the URL <https://account.thethingsnetwork.org/register>. The page features the The Things Network logo at the top. Below the logo, there is a "CREATE AN ACCOUNT" section. It includes a sub-header "Create an account for The Things Network and start exploring the world of Internet of Things" and two radio button options: "Grab the current window" (selected) and "Grab the current window with screen". Below these options are three input fields: "USERNAME" (with a hint "This will be your username -- pick a good one because you will not be able to change it."), "EMAIL ADDRESS" (with a hint "You will occasionally receive account related emails. This email address is not public."), and "PASSWORD" (with a hint "Use at least 6 characters."). Each field has a "Take Screenshot" button next to it. At the bottom right of the form is a green "Create account" button.

Register you gateway on following page:

<https://console.thethingsnetwork.org/>

Press to "gateways" button:



Enter EUI of gateway and settings like on this screenshoot:

Gateways &gt; Register

**REGISTER GATEWAY****Gateway EUI**

The EUI of the gateway as read from the LoRa module

AA 55 5A 00 00 00 00

8 bytes

**I'm using the legacy packet forwarder**Select this if you are using the legacy [Semtech packet forwarder](#).**Description**

A human-readable description of the gateway

GW-01 gateway

**Frequency Plan**The [frequency plan](#) this gateway will use

Europe 868MHz

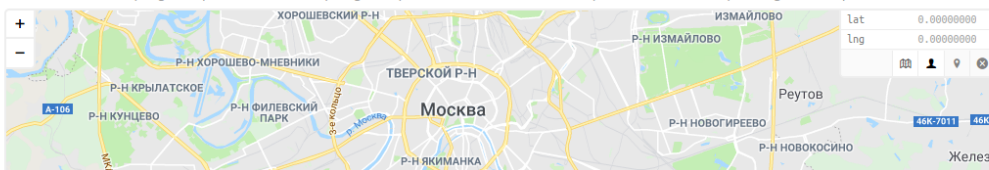
**Router**

The router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the location of the gateway.

ttn-router-eu

**Location**

The exact location of your gateway. This will be used if your gateway cannot determine its location by itself. Set a location by clicking on the map.



It can happen that the gateway's ID you try to register is already used. In this case, you will need to set another ID for your gateway in `global_conf.json` file of your gateway. Don't forget to set same ID in `local_conf.json` file.

### 3. Running the gateway.

After configuring your `global_conf.json` file to communicate with thethingsnetwork server and registering your gateway on that website you can run the gateway:

```
cd ~
sudo ./ic880-SPI_reset.sh
sudo chmod 777 /dev/spidev1.1
cd packet_forwarder/lora_pkt_fwd/
./lora_pkt_fwd
```

Check for output information:

```
*** Beacon Packet Forwarder for Lora Gateway ***
Version: 4.0.1
*** Lora concentrator HAL library version info ***
Version: 5.0.1;
***
INFO: Little endian host
```

```

INFO: found global configuration file global_conf.json, parsing it
INFO: global_conf.json does contain a JSON object named SX1301_conf, parsing SX1301 parameters
INFO: lorawan_public 1, clksrc 1
lgw_board_setconf:427: Note: board configuration; lorawan_public:1, clksrc:1
INFO: LBT is disabled
INFO: antenna_gain 0 dBi
INFO: Configuring TX LUT with 16 indexes
INFO: radio 0 enabled (type SX1257), center frequency 867500000, RSSI offset -166.000000, tx enabled
1, tx_notch_freq 129000
lgw_rxf_setconf:488: Note: rf_chain 0 configuration; en:1 freq:867500000 rssi_offset:-166.000000
radio_type:2 tx_enable:1 tx_notch_freq:129000
INFO: radio 1 enabled (type SX1257), center frequency 868500000, RSSI offset -166.000000, tx enabled
0, tx_notch_freq 0
lgw_rxf_setconf:488: Note: rf_chain 1 configuration; en:1 freq:868500000 rssi_offset:-166.000000
radio_type:2 tx_enable:0 tx_notch_freq:0
INFO: Lora multi-SF channel 0> radio 1, IF -400000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 0 configuration; en:1 freq:-400000 SF_mask:0x7e
INFO: Lora multi-SF channel 1> radio 1, IF -200000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 1 configuration; en:1 freq:-200000 SF_mask:0x7e
INFO: Lora multi-SF channel 2> radio 1, IF 0 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 2 configuration; en:1 freq:0 SF_mask:0x7e
INFO: Lora multi-SF channel 3> radio 0, IF -400000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 3 configuration; en:1 freq:-400000 SF_mask:0x7e
INFO: Lora multi-SF channel 4> radio 0, IF -200000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 4 configuration; en:1 freq:-200000 SF_mask:0x7e
INFO: Lora multi-SF channel 5> radio 0, IF 0 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 5 configuration; en:1 freq:0 SF_mask:0x7e
INFO: Lora multi-SF channel 6> radio 0, IF 200000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 6 configuration; en:1 freq:200000 SF_mask:0x7e
INFO: Lora multi-SF channel 7> radio 0, IF 400000 Hz, 125 kHz bw, SF 7 to 12
lgw_rxif_setconf:607: Note: LoRa 'multi' if_chain 7 configuration; en:1 freq:400000 SF_mask:0x7e
INFO: Lora std channel> radio 1, IF -200000 Hz, 250000 Hz bw, SF 7
lgw_rxif_setconf:581: Note: LoRa 'std' if_chain 8 configuration; en:1 freq:-200000 bw:2 dr:2
INFO: FSK channel> radio 1, IF 300000 Hz, 125000 Hz bw, 50000 bps datarate
lgw_rxif_setconf:637: Note: FSK if_chain 9 configuration; en:1 freq:300000 bw:3 dr:50000 (50000 real
dr) sync:0xC194C1
INFO: global_conf.json does contain a JSON object named gateway_conf, parsing gateway parameters
INFO: gateway MAC address is configured to AA555A0000000005
INFO: server hostname or IP address is configured to "router.eu.thethings.network"
INFO: upstream port is configured to "1700"
INFO: downstream port is configured to "1700"
INFO: downstream keep-alive interval is configured to 10 seconds
INFO: statistics display interval is configured to 30 seconds
INFO: upstream PUSH_DATA time-out is configured to 100 ms
INFO: packets received with a valid CRC will be forwarded
INFO: packets received with a CRC error will NOT be forwarded
INFO: packets received with no CRC will NOT be forwarded
INFO: found local configuration file local_conf.json, parsing it
INFO: redefined parameters will overwrite global parameters
INFO: local_conf.json does not contain a JSON object named SX1301_conf
INFO: local_conf.json does contain a JSON object named gateway_conf, parsing gateway parameters
INFO: gateway MAC address is configured to AA555A0000000005
INFO: packets received with a valid CRC will be forwarded
INFO: packets received with a CRC error will NOT be forwarded
INFO: packets received with no CRC will NOT be forwarded
lgw_connect:532: INFO: no FPGA detected or version not supported (v0)
Note: success connecting the concentrator
lgw_setup_sx125x:407: Note: SX125x #0 version register returned 0x21
lgw_setup_sx125x:415: Note: SX125x #0 clock output disabled
lgw_setup_sx125x:469: Note: SX125x #0 PLL start (attempt 1)
lgw_setup_sx125x:407: Note: SX125x #1 version register returned 0x21
lgw_setup_sx125x:412: Note: SX125x #1 clock output enabled
lgw_setup_sx125x:469: Note: SX125x #1 PLL start (attempt 1)
lgw_start:823: Note: calibration started (time: 2300 ms)
lgw_start:844: Note: calibration finished (status = 183)
WARNING: problem in calibration of radio A for image rejection
Info: Initialising AGC firmware...
Info: putting back original RADIO_SELECT value
INFO: [main] concentrator started, packet can now be received

INFO: Disabling GPS mode for concentrator's counter...
INFO: host/sx1301 time offset=(1528059750s:429610µs) - drift=580826026µs
INFO: Enabling GPS mode for concentrator's counter.

INFO: [down] PULL_ACK received in 61 ms
INFO: [down] PULL_ACK received in 60 ms
INFO: [down] PULL_ACK received in 60 ms


```

If all is ok next check for status of gateway on thethingsnetwork:

Here is Gateway ID is AA555A00000000005 because AA555A00000000000 is already used by another user:

<https://console.thethingsnetwork.org/gateways/eui-aa555a0000000005>

THINGS R K CONSOLE COMMUNITY EDITION Application


Gateways >  eui-aa555a0000000005

[Overview](#) [Traffic](#) [Settings](#)

### GATEWAY OVERVIEW ⚙️ [settings](#)

**Gateway ID** eui-aa555a0000000005



**Description** GW-01 gateway

**Owner**  **almaz** [Transfer ownership](#)

**Status** ● connected

**Frequency Plan** Europe 868MHz

**Router** ttn-router-eu

**Gateway Key**  .....base64 

**Last Seen** 2 seconds ago

**Received Messages** 0

**Transmitted Messages** 0

### INFORMATION ✎ [edit info](#)

**Brand** wireless-road

**Model** GW-01