wireless-road.com

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

1. Configuration of gateway.

Check for EUI of your gateway using following commands:

```
cat /etc/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:

```
cat /etc/local_conf.json
```

Then configure your gateway to communicate with thethingsnetwork:

```
vi /etc/global_conf.json
```

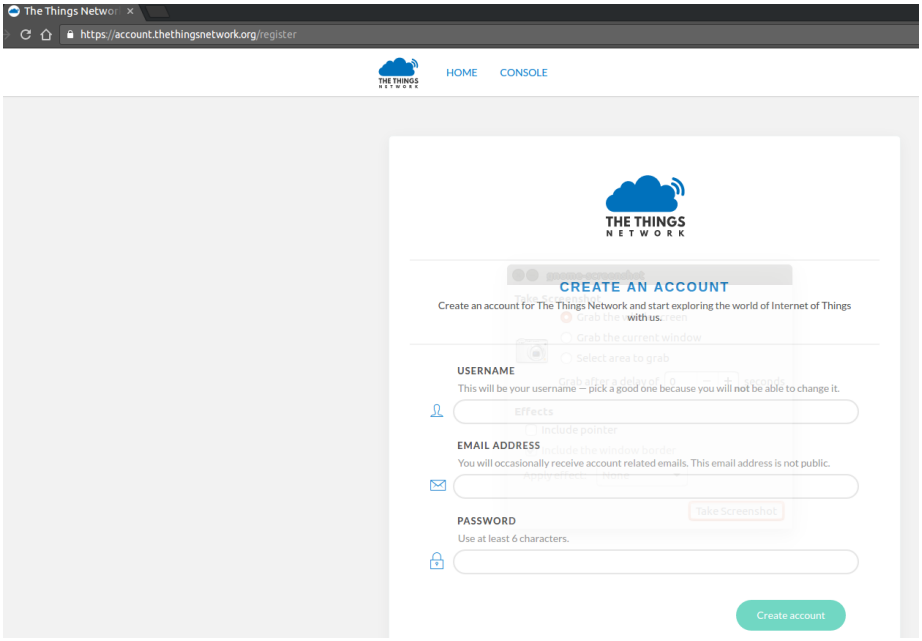
Enter following params. This will configure your GW-0x gateway to work in EU863-870 region:

```
 {

 [...]

        "gateway_conf": {

                "server_address": "router.eu.thethings.network",

                "serv_port_up": 1700,

                "serv_port_down": 1700,

    [...]

  }

}
```

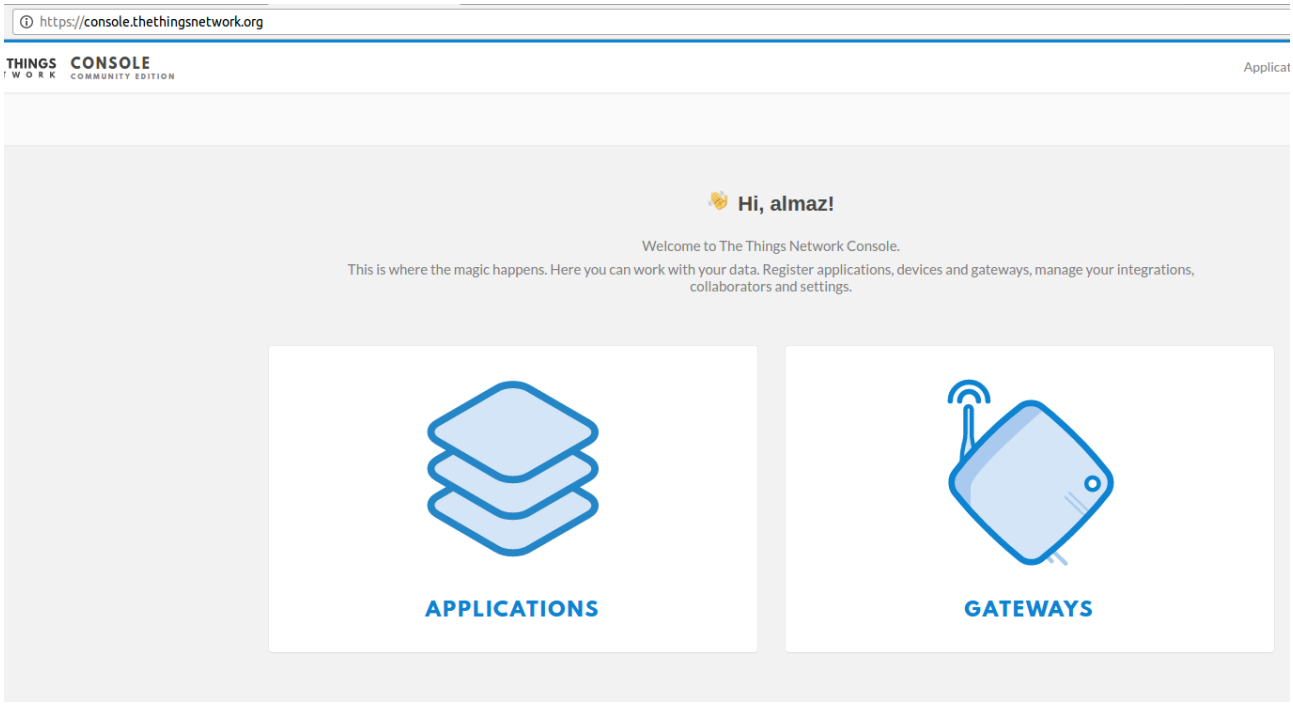
Expanation of this settings can be found here:
https://www.thethingsnetwork.org/docs/gateways/packet-forwarder/semtech-udp.html

2. Configuration of your thethingsnetwork's account:

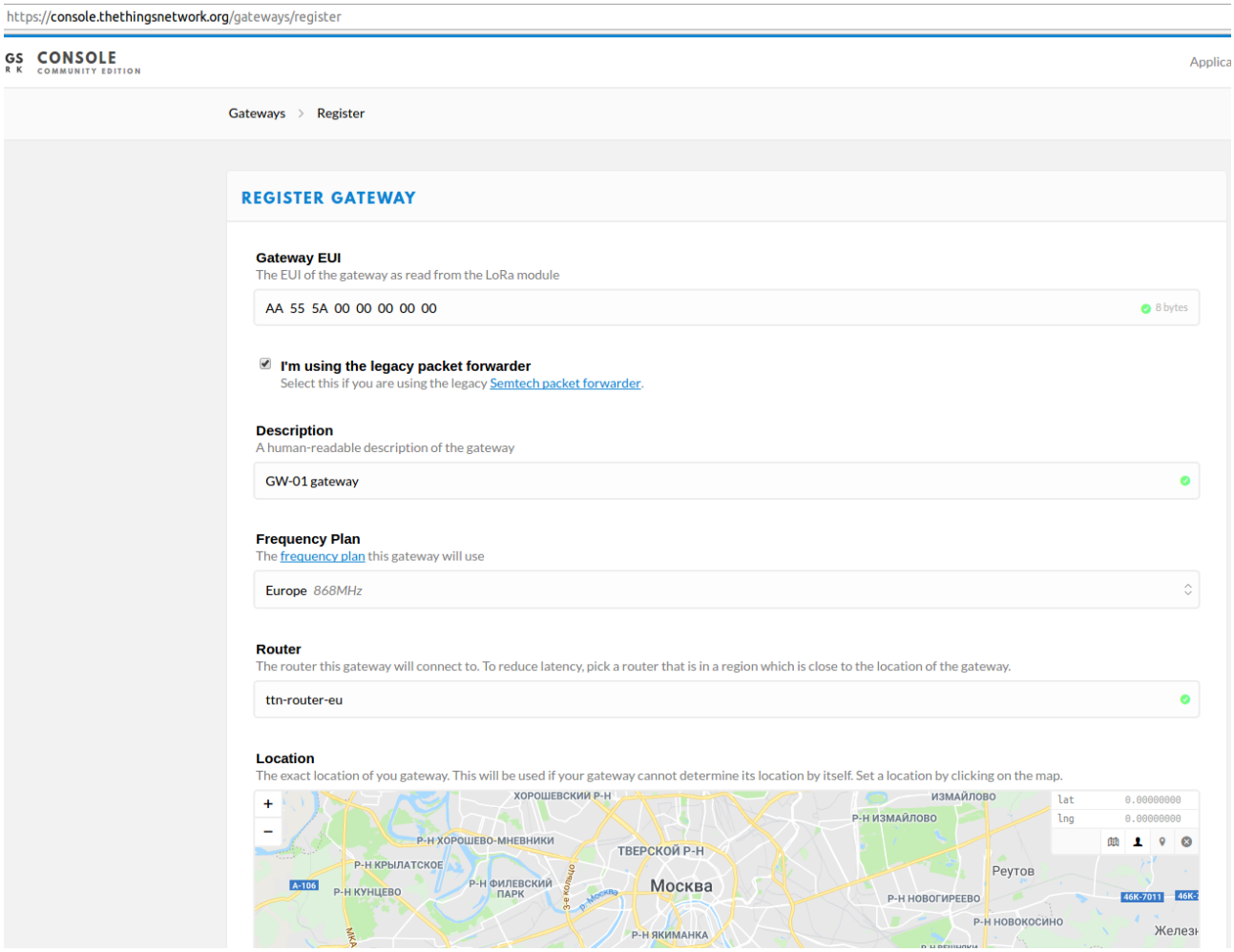
Register on thethingsnetwork.org. Go to
https://account.thethingsnetwork.org/register



Register you gateway on following page:
https://console.thethingsnetwork.org/
Press to "gateways" button:



Enter EUI of gateway and settings like on this screenshoot:



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:

```
/etc/init.d/lora_pkt_fwd start
```

Check for output information using:

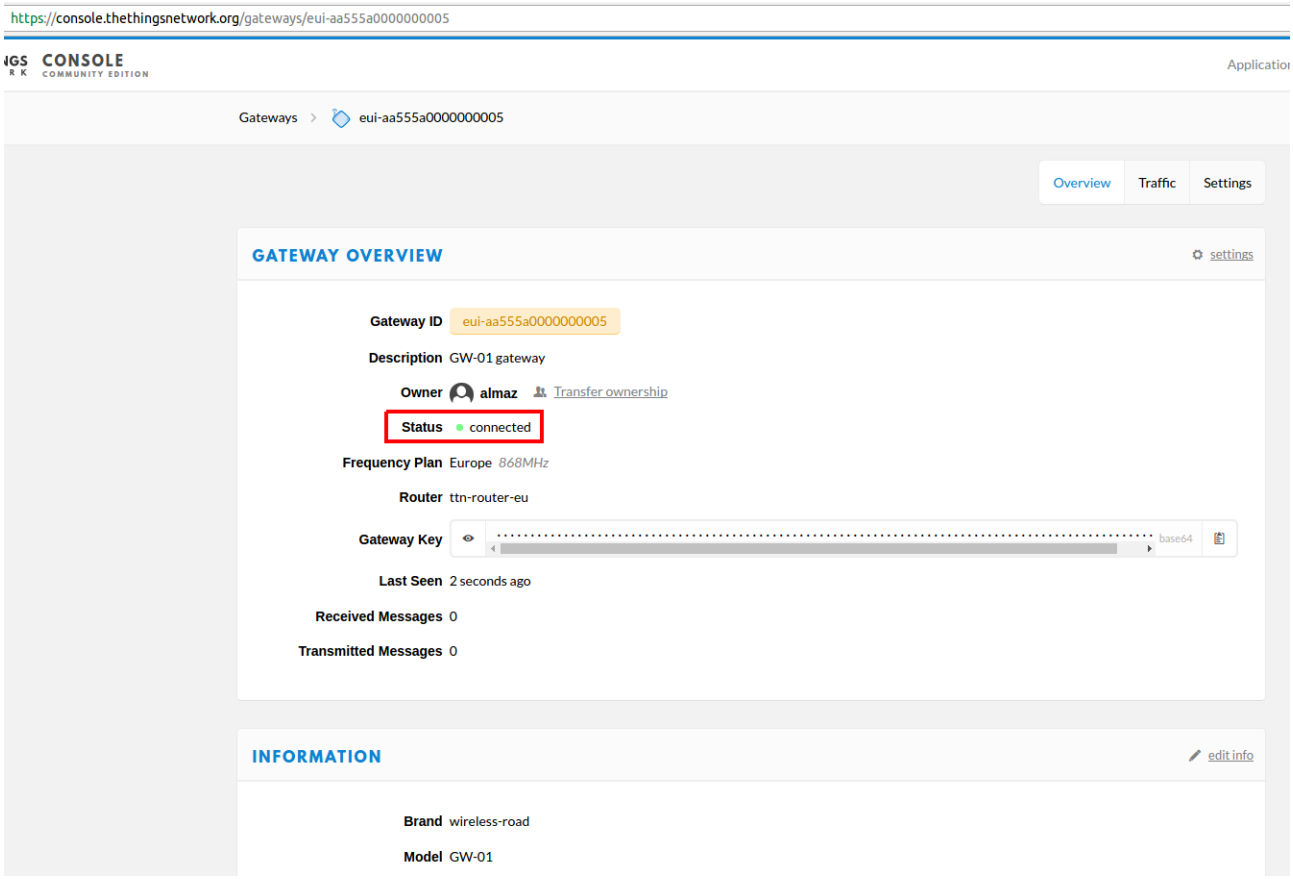
```
logread
```

```
*** 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_rxrf_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_rxrf_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 AA555A0000000005 because AA555A0000000000 is already used by another user:



Troubleshooting:

If

```
logread
```

shows you following:

ERROR: [up] getaddrinfo on address router.eu.thethings.network (PORT 1700) returned Try again

probably gateway can't resolve DNS name. Try to ping google.com:

```
ping google.com
```

if you can't ping you need to edit **/etc/config/dhcp** file:

```
vi /etc/config/dhcp
```

and add **noresolv** option to **dnsmasq** config:

```
config dnsmasq

    [...]

    option noresolv 1
```

To exit from vi use “:wq”.
Then restart dnsmasq:

```
/etc/init.d/dnsmasq restart
```

Try to ping something again and start lora_pkt_fwd service again.