HamGroup

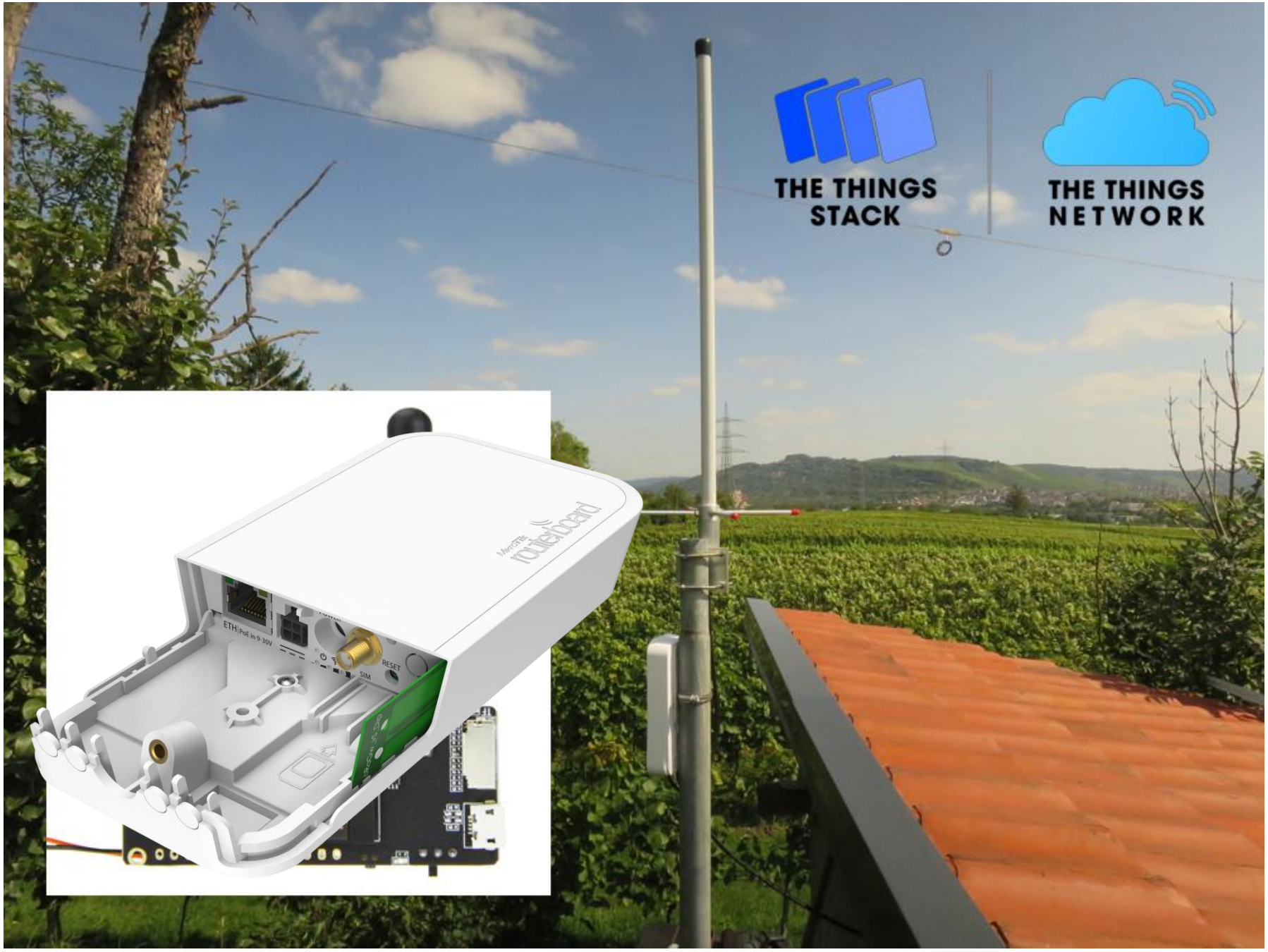
LoRa / LoRaWAN / IoT

Internet der Dinge

Online-Workshop

Mikrotik wAP LR8 kit

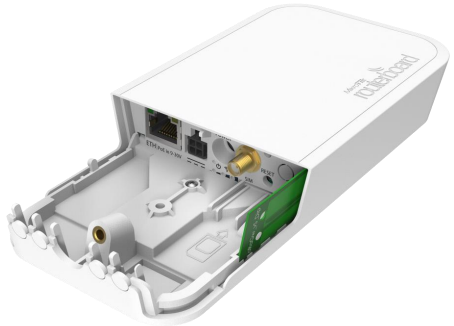
Einrichtung / Konfiguration



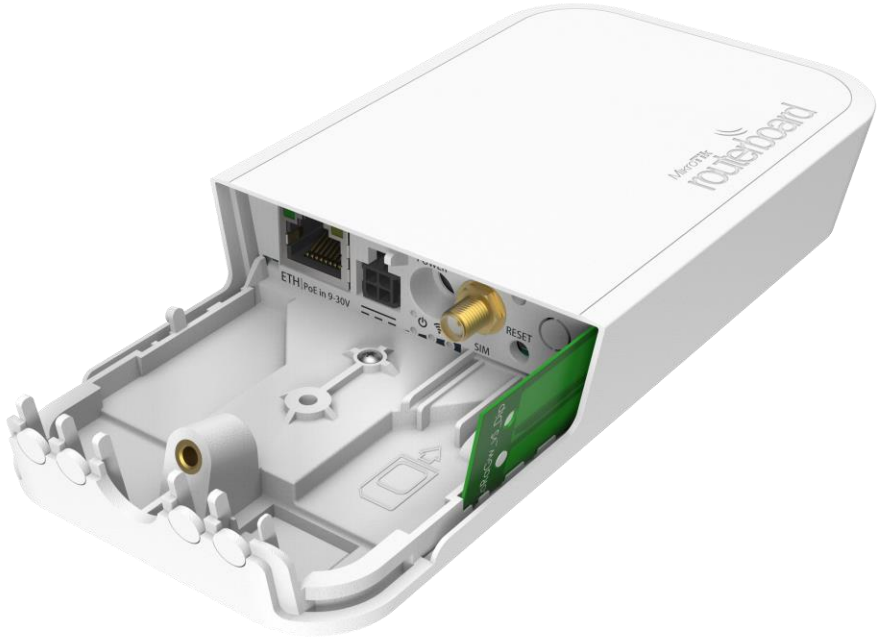
LORAWAN-WORKSHOP

» Ziel:

» Das LoRaWAN-Gateway **Mikrotik wAP LR8 kit** einrichten
und in TTN eintragen

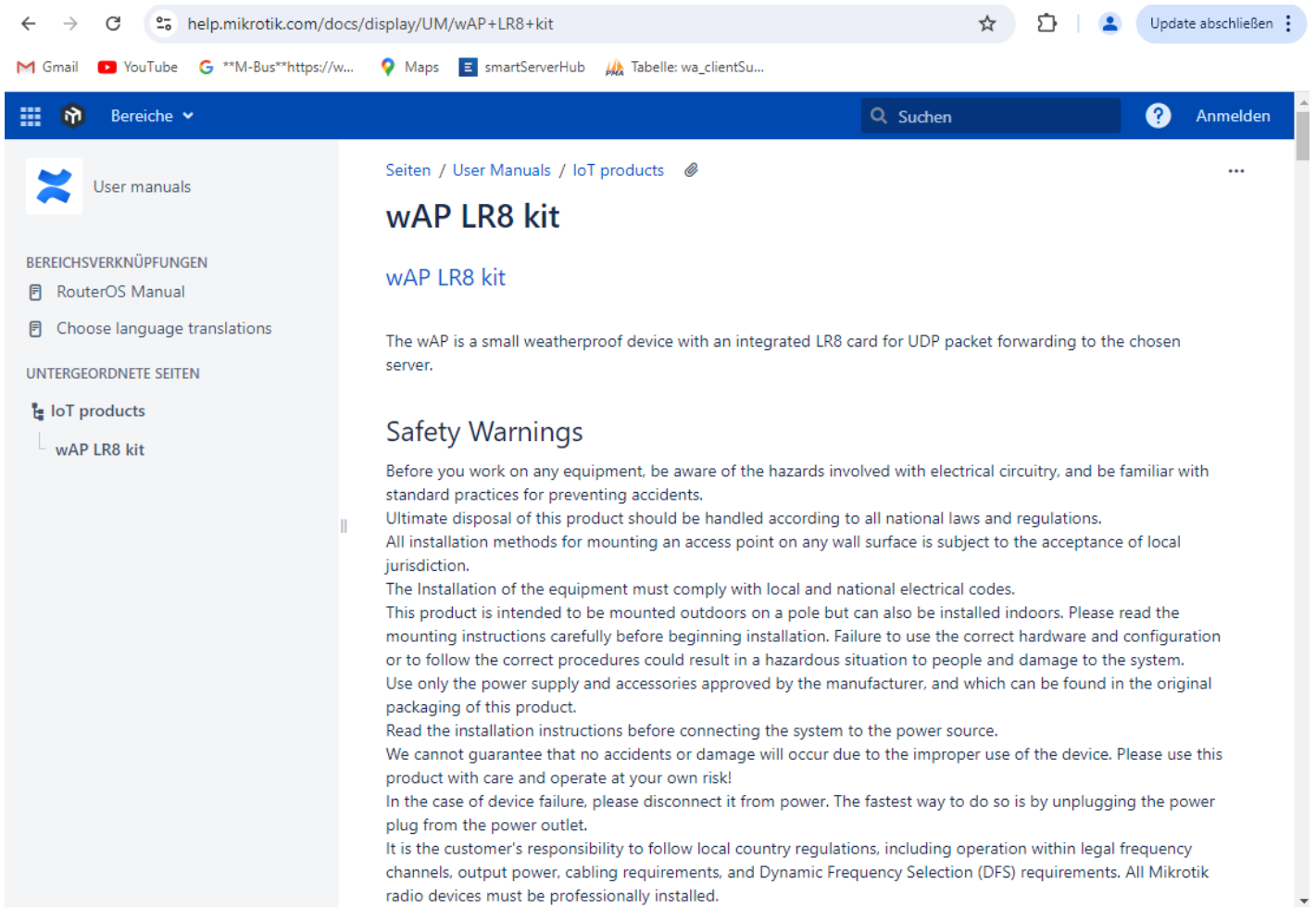


» **Mikrotik wAP LR8 kit**



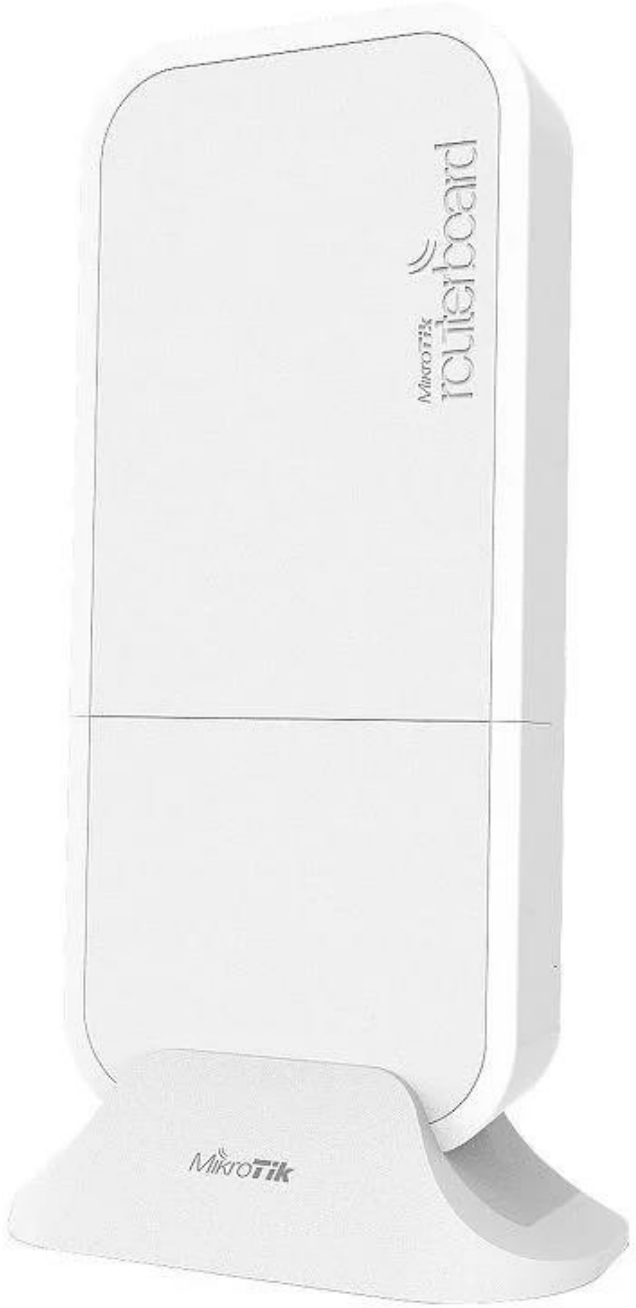
» **Mikrotik wAP LR8 kit**

» https://help.mikrotik.com/docs/display/UM/wAP+LR8+kit



» **Mikrotik wAP LR8 kit**

mit interner Antenne



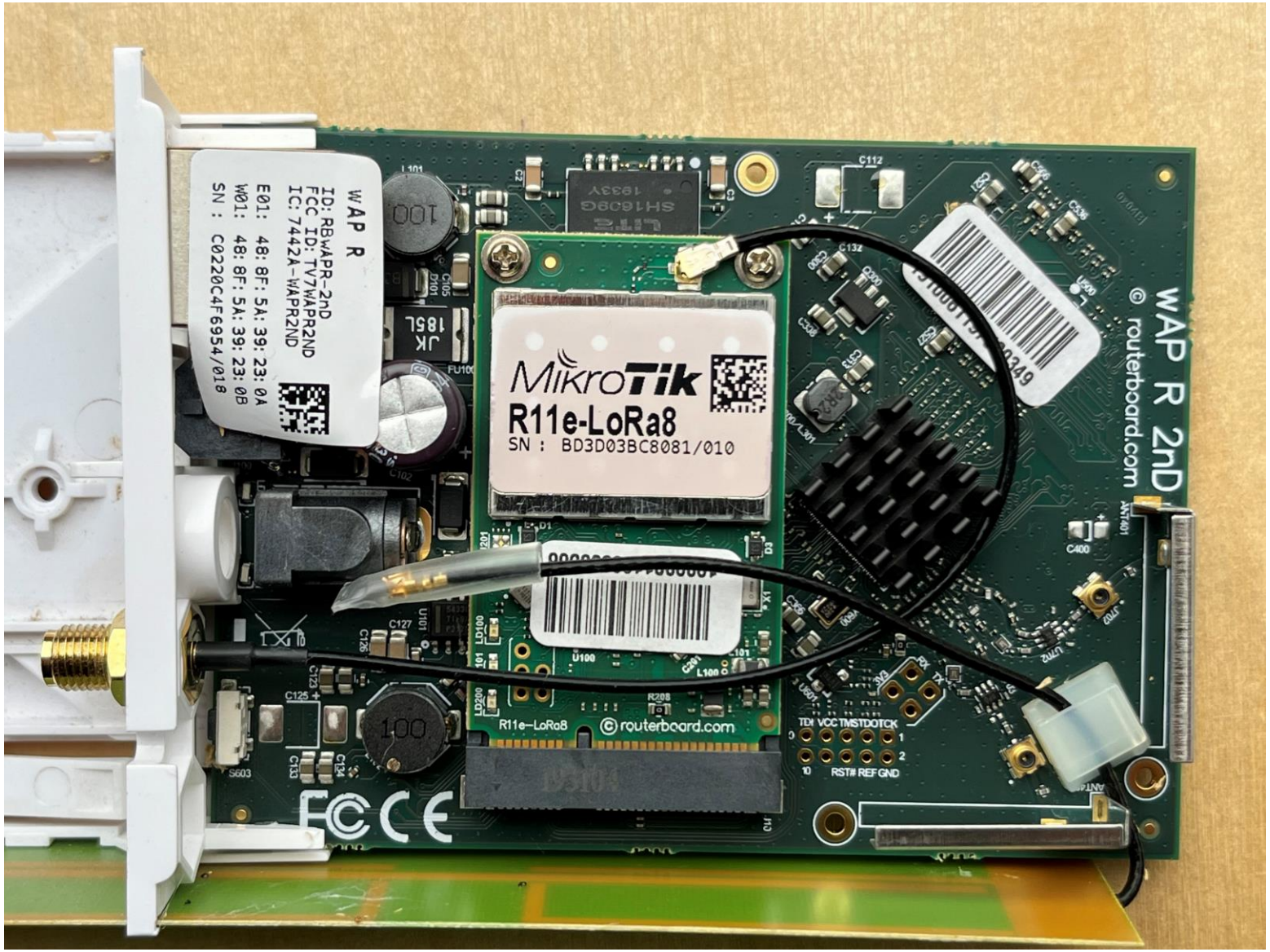
» **Mikrotik wAP LR8 kit**

mit externer Antenne

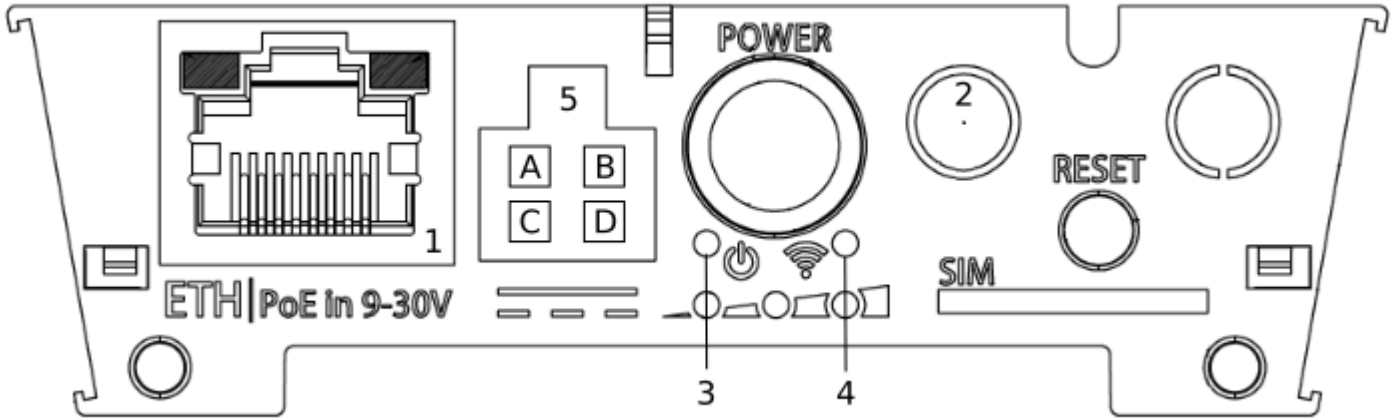
LORAWAN-WORKSHOP

- **Mikrotik wAP LR8 kit**
  - Antennenanschlüsse
  - Wahlweise:
    - Interne Antenne
    - Externe Antenne

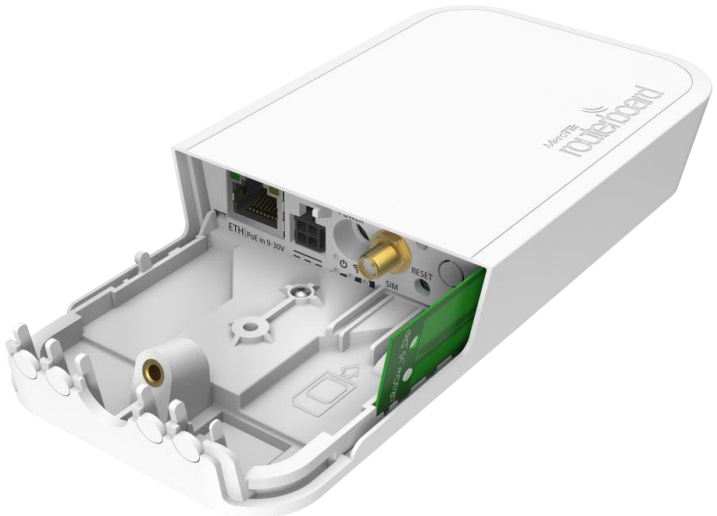
nie ohne angeschlossene Antenne betreiben!



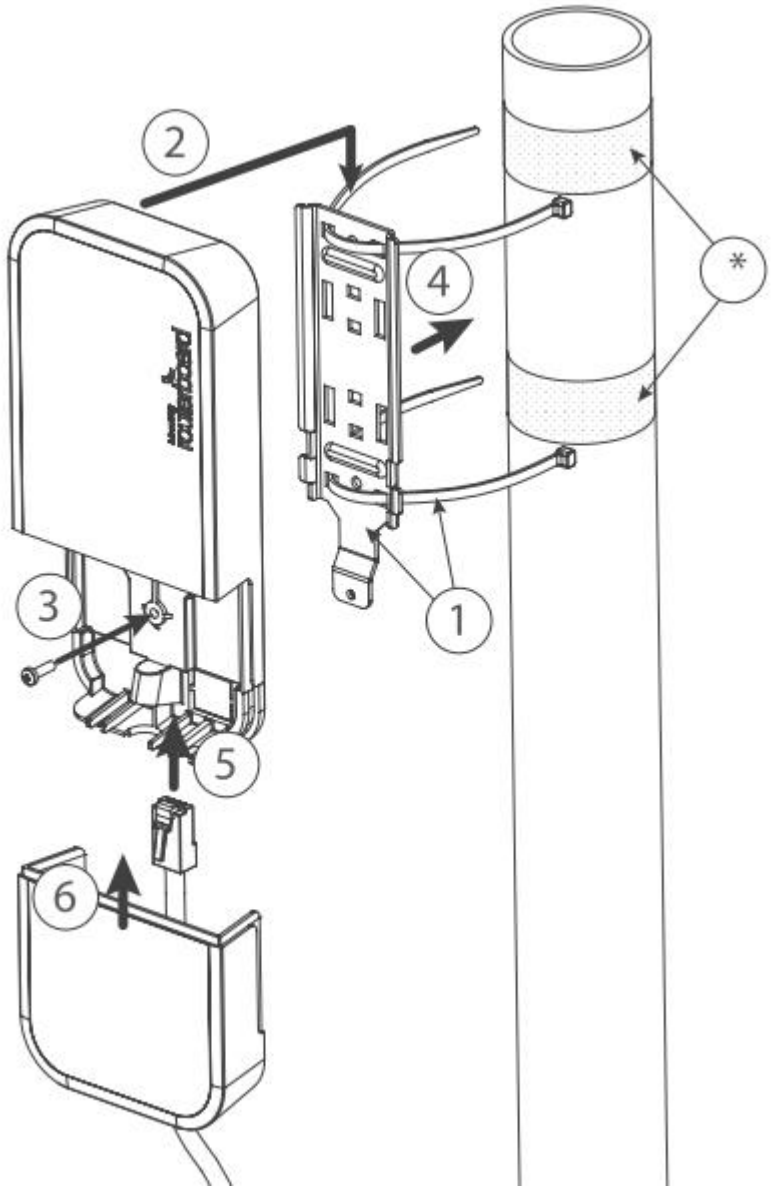
» **Mikrotik wAP LR8 kit**



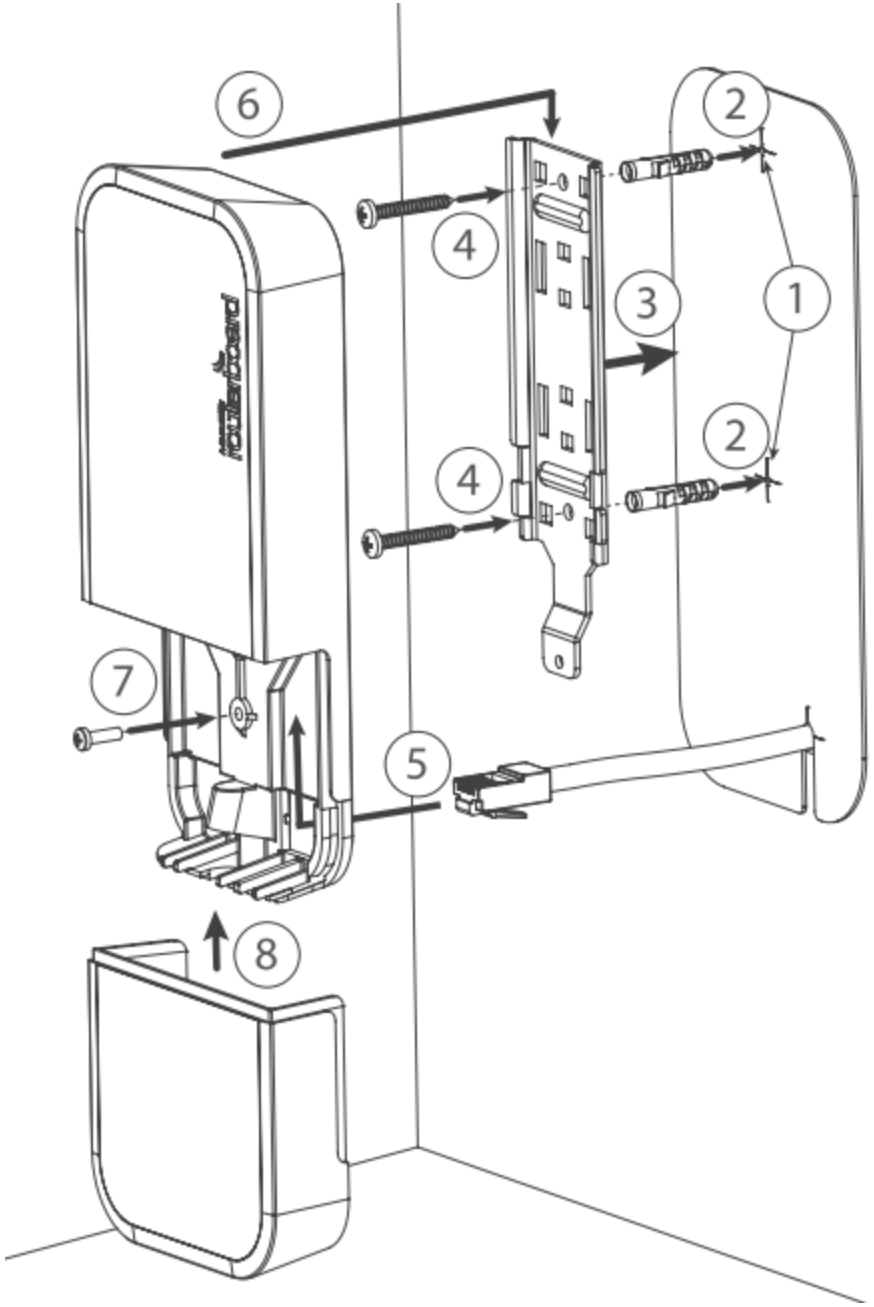
1. Ethernet-Anschluss (optional PoE)
2. Externer SMA-Antennenanschluss
3. LED, die den Stromzustand des Geräts anzeigt.
4. LED zeigt die Aktivität des drahtlosen Netzwerks an.
5. Kfz-Stecker (Stromversorgung
6. Hohlstecker (Stromversorgung)



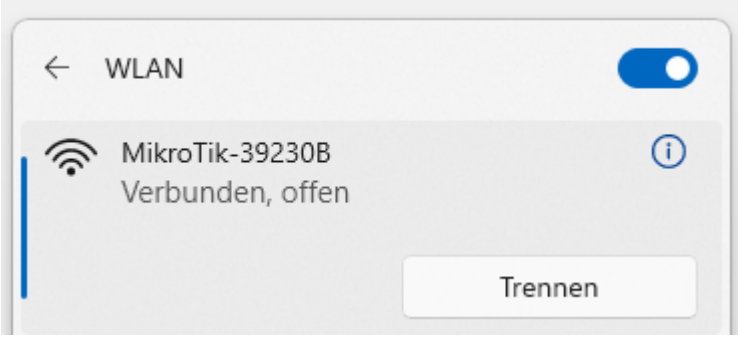
» **Mast-Montage**

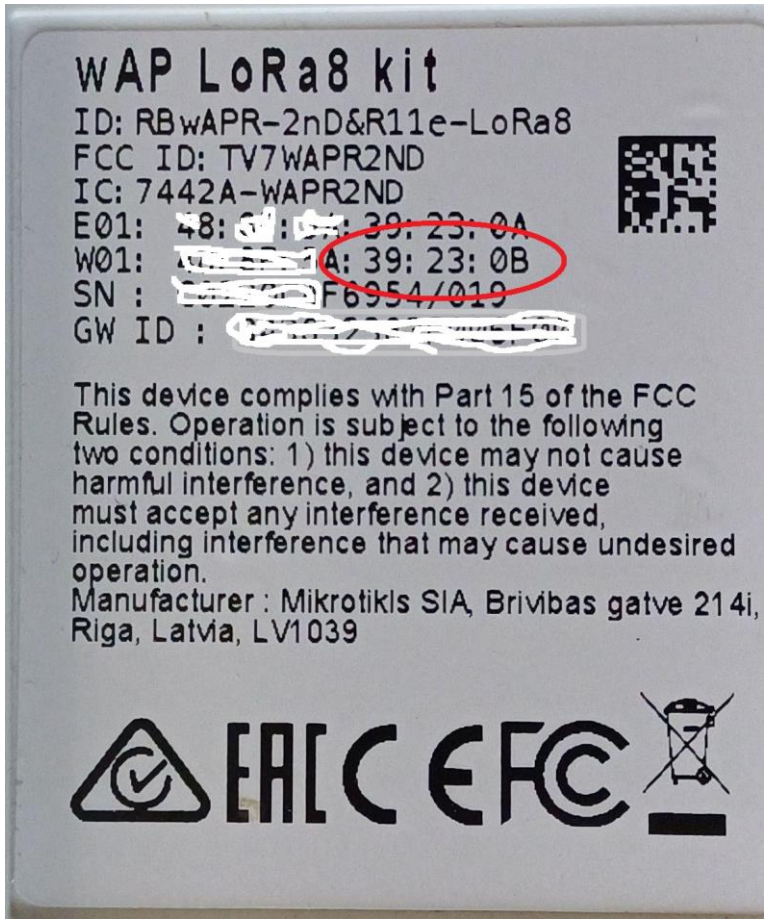


» **Wand-Montage**



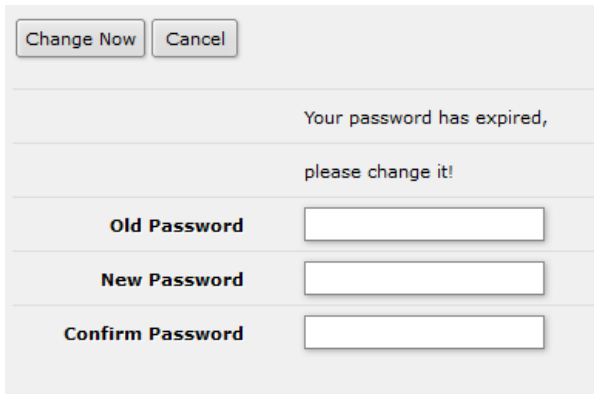
- Konfiguration
  - über WLAN verbinden
    - SSID: MikroTik-xxxxxxx

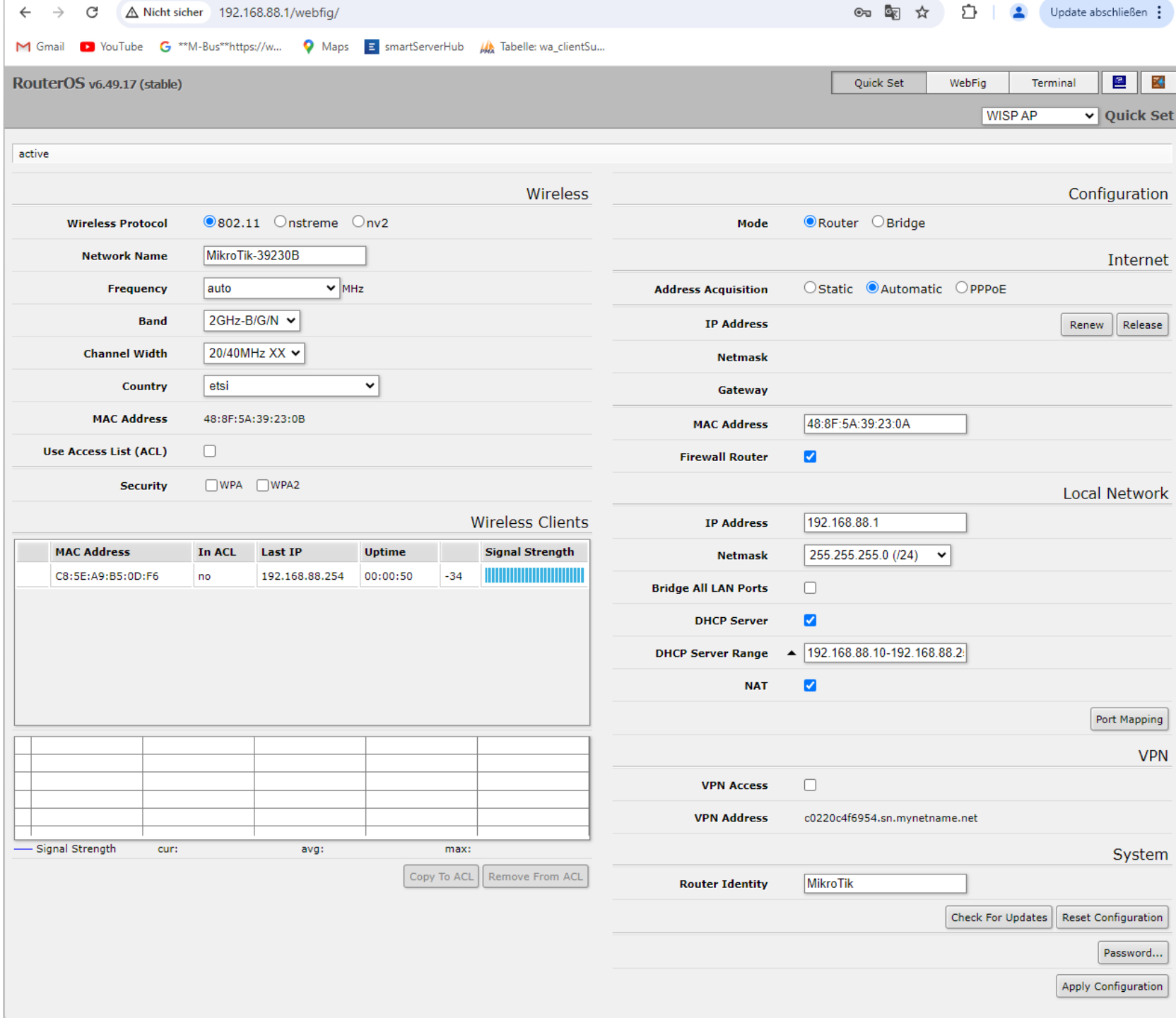




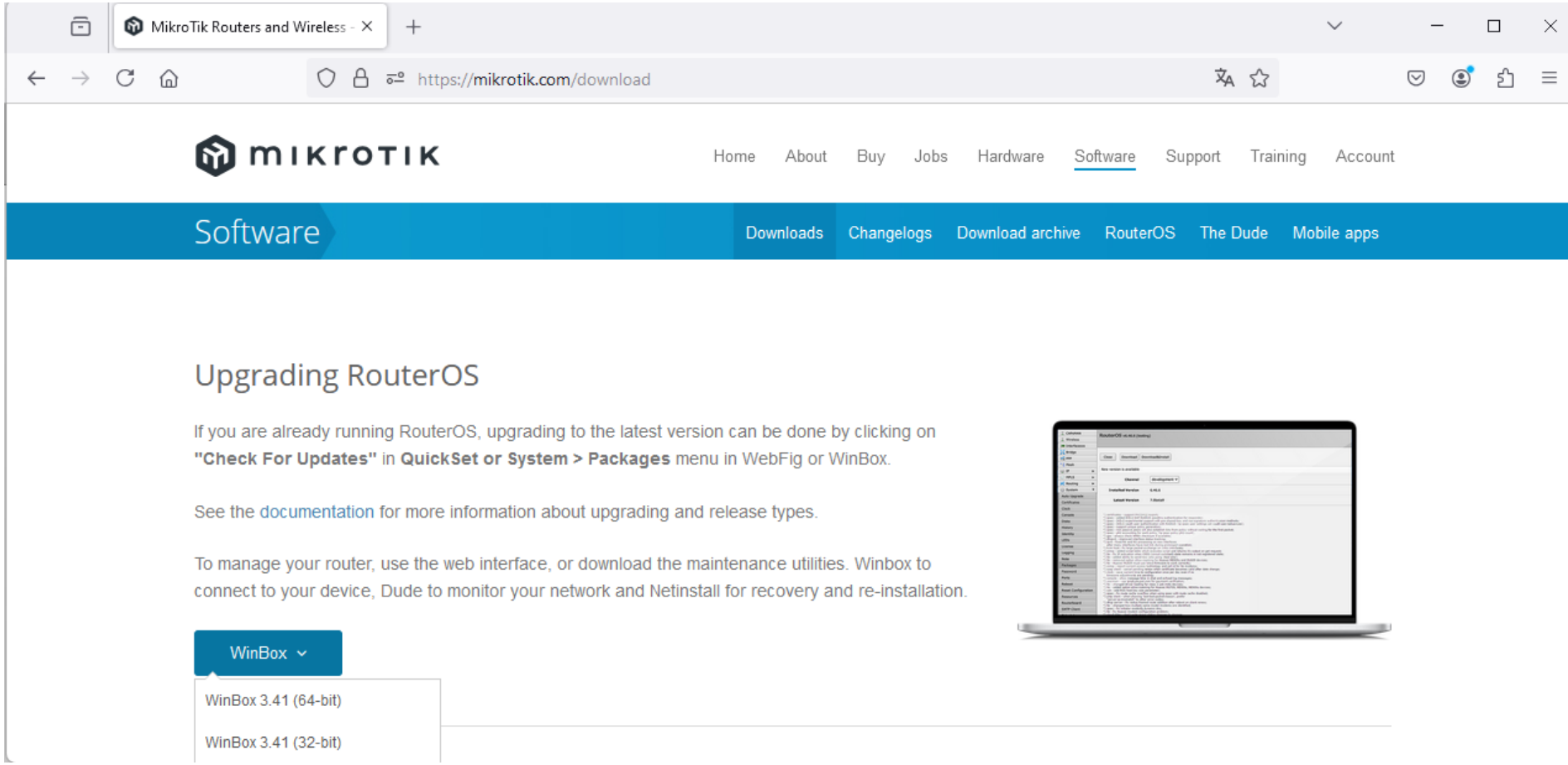
LORAWAN-WORKSHOP

- **Konfiguration „Quick Set“**
  - über WLAN:
    - 192.168.88.1
  - Login: admin
  - kein Passwort
  - beim 1. Login
    - neues Passwort setzen!

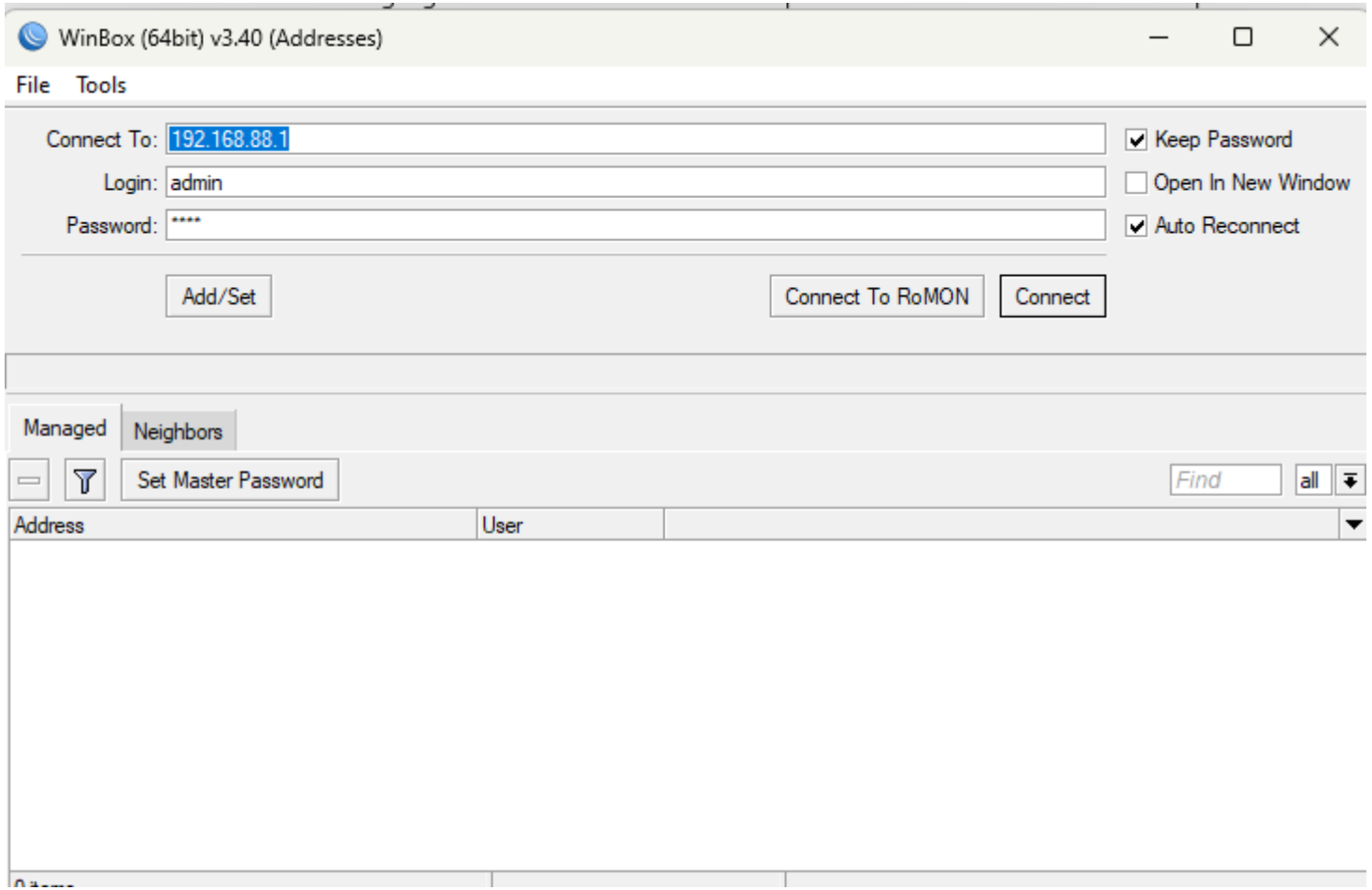




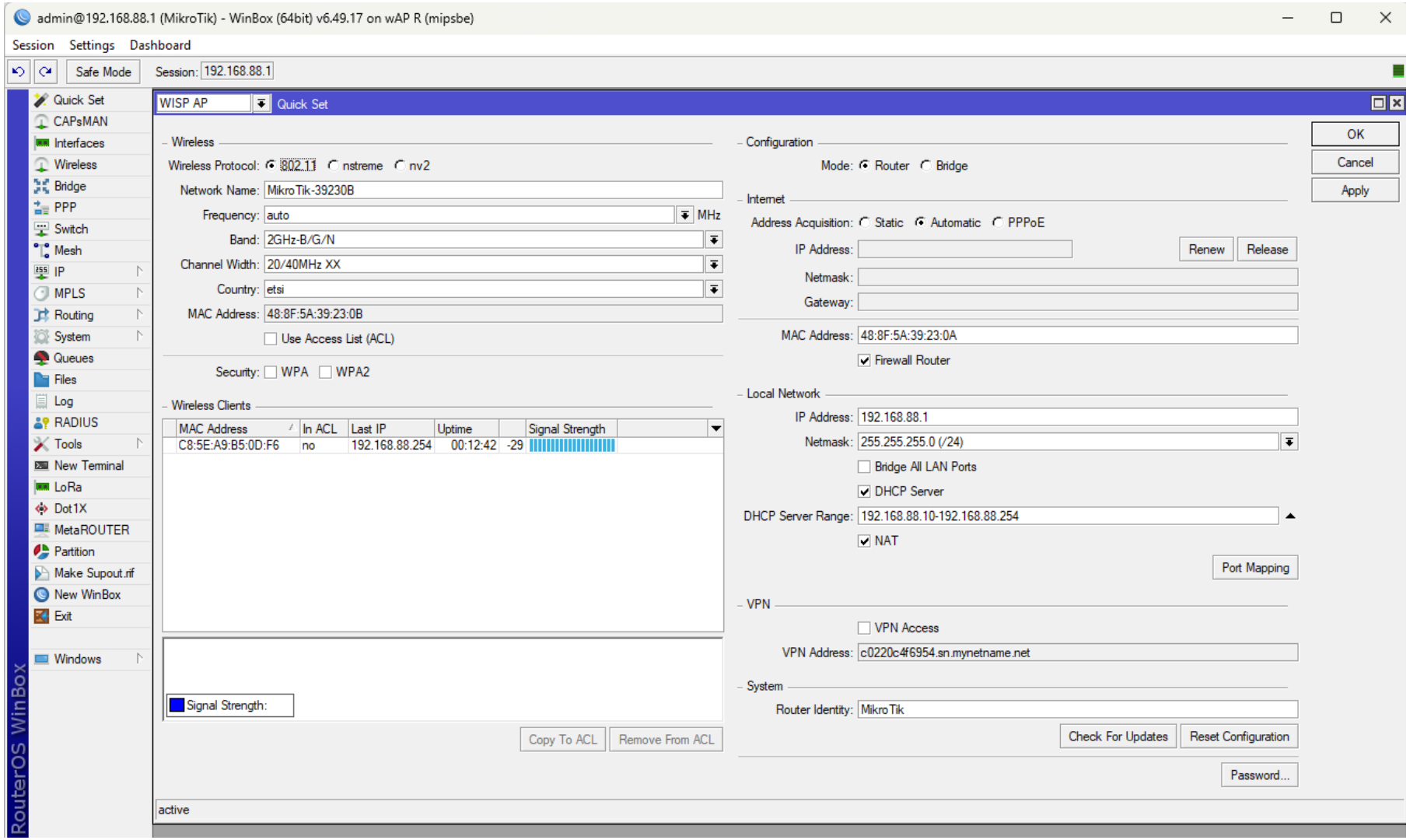
- **WinBox**
  - Windows-Software
  - https://mikrotik.com/download



- **WinBox**
- Login mit
  - Loginname
  - Passwort

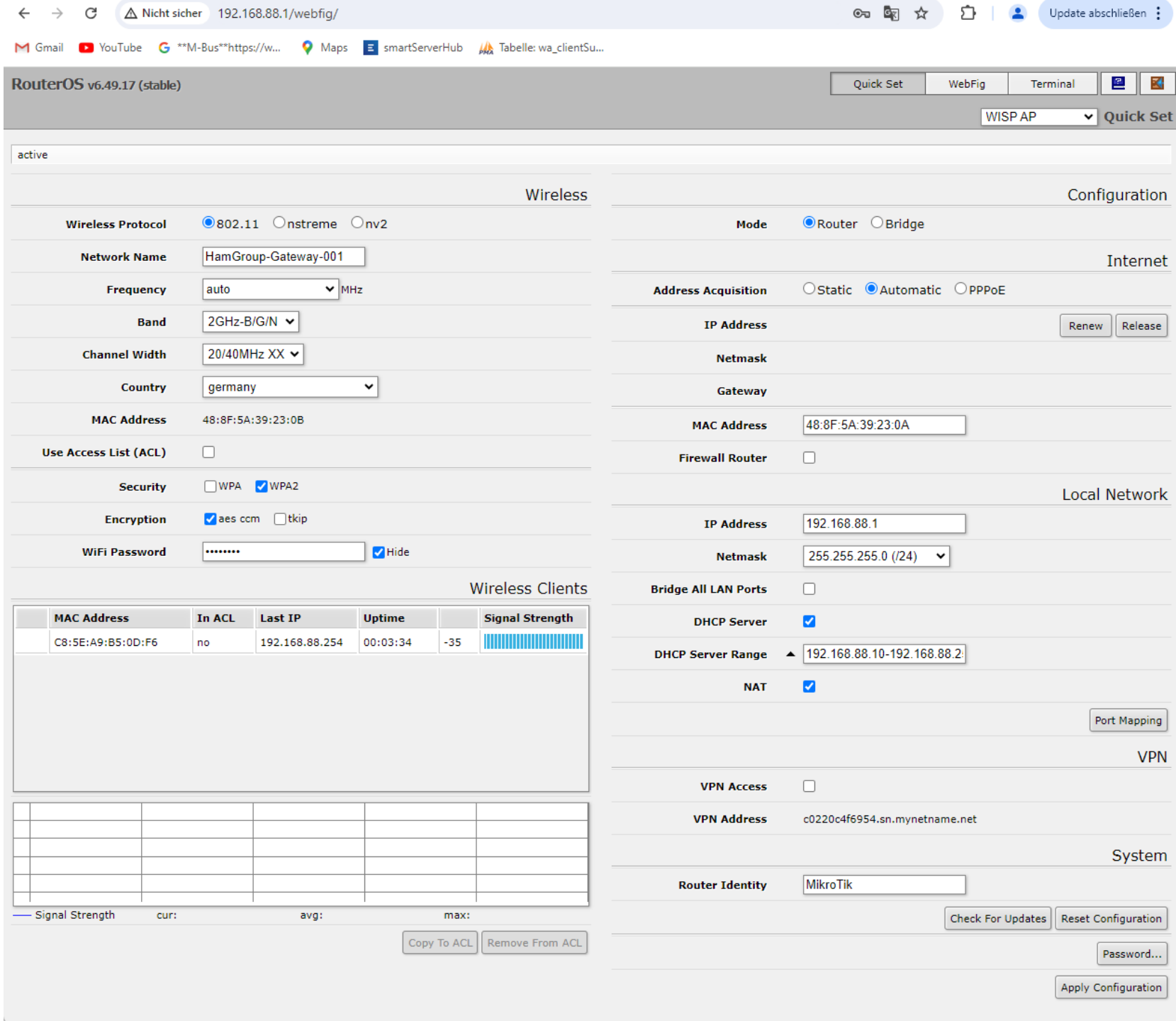


» **WinBox**


admin@192.168.88.1 (MikroTik) - WinBox (64bit) v6.49.17 on wAP R (mipsbe)
Session Settings Dashboard
Safe Mode
Session: 192.168.88.1
Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
RADIUS
Tools
New Terminal
LoRa
Dot1X
MetaROUTER
Partition
Make Supout.rif
New WinBox
Exit
Windows
RouterOS WinBox
WISP AP
Quick Set
Wireless
Wireless Protocol: 802.11 nstreme nv2
Network Name: MikroTik-39230B
Frequency: auto MHz
Band: 2GHz-B/G/N
Channel Width: 20/40MHz XX
Country: etsi
MAC Address: 48:8F:5A:39:23:0B
Use Access List (ACL)
Security: WPA WPA2
Wireless Clients
MAC Address In ACL Last IP Uptime Signal Strength
C8:5E:A9:B5:0D:F6 no 192.168.88.254 00:12:42 -29
Signal Strength:
Copy To ACL
Remove From ACL
Configuration
Mode: Router Bridge
Internet
Address Acquisition: Static Automatic PPPoE
IP Address:
Renew
Release
Netmask:
Gateway:
MAC Address: 48:8F:5A:39:23:0A
Firewall Router
Local Network
IP Address: 192.168.88.1
Netmask: 255.255.255.0 (/24)
Bridge All LAN Ports
DHCP Server
DHCP Server Range: 192.168.88.10-192.168.88.254
NAT
Port Mapping
VPN
VPN Access
VPN Address: c0220c4f6954.sn.mynetname.net
System
Router Identity: MikroTik
Check For Updates
Reset Configuration
Password...
OK
Cancel
Apply
active

LORAWAN-WORKSHOP

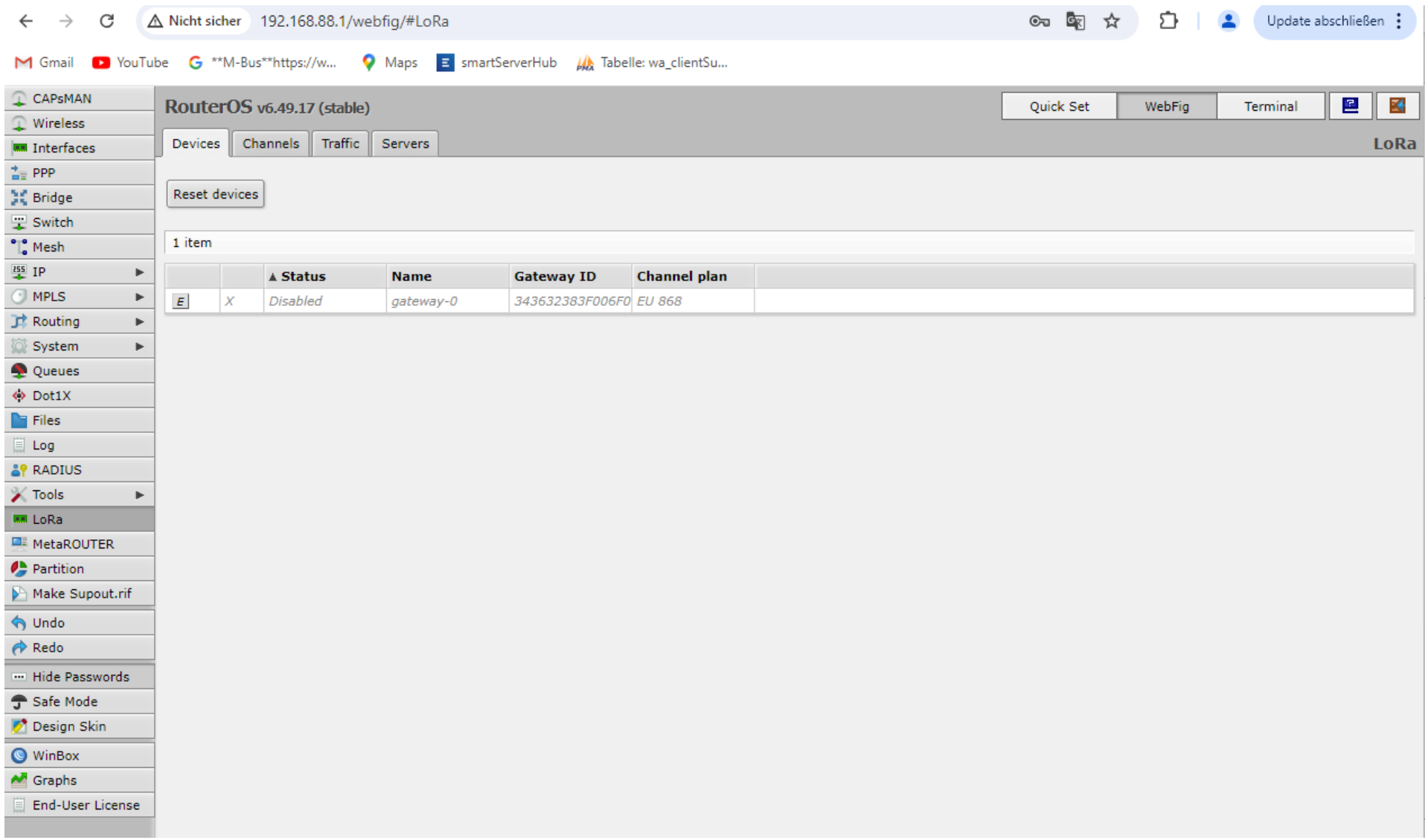
- **Konfiguration „Quick Set“**
  - Network Name
    - SSID des WLANs
  - Country
    - auf „germany“ setzen!
  - WiFi Password
    - WPA2-Passwort setzen
  - Firewall Router
    - ausschalten!



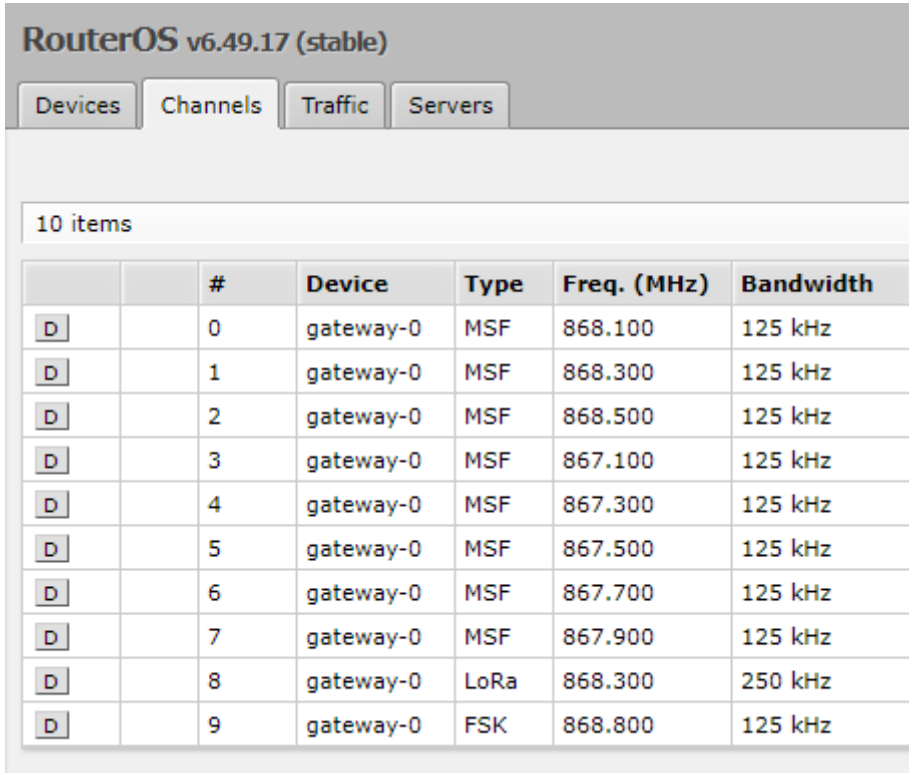
LORAWAN-WORKSHOP

- **Konfiguration „WebFig“**
  - LoRa

spätestens jetzt Antenne anschliessen!

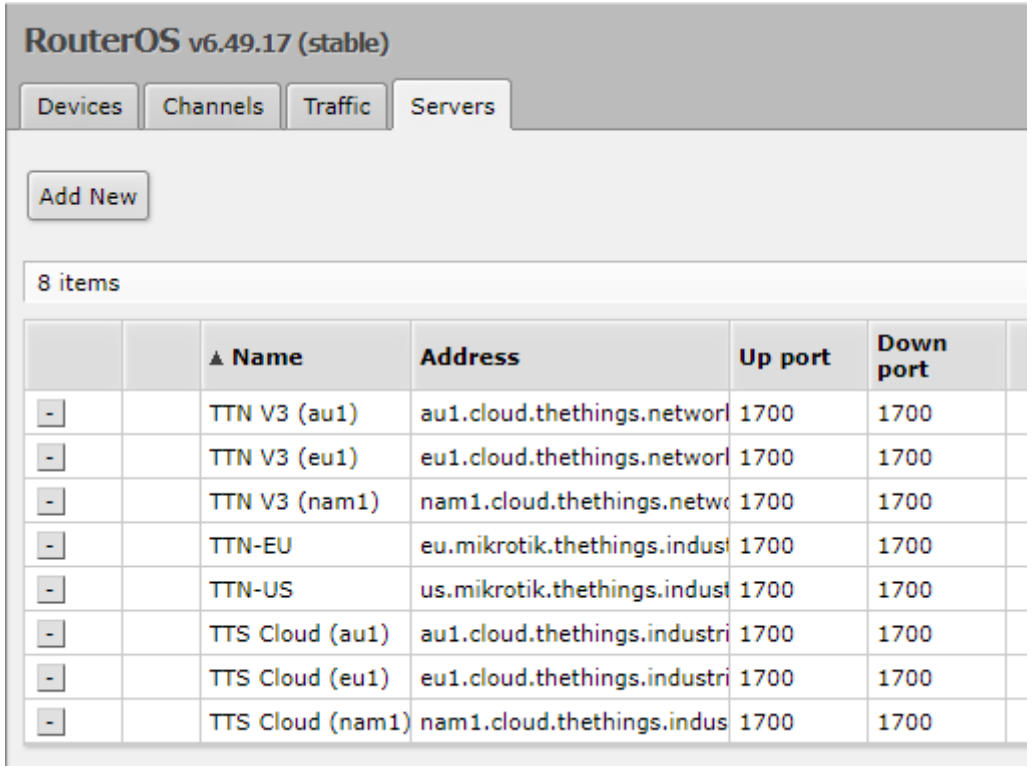


- **Konfiguration „WebFig“**
  - Channels

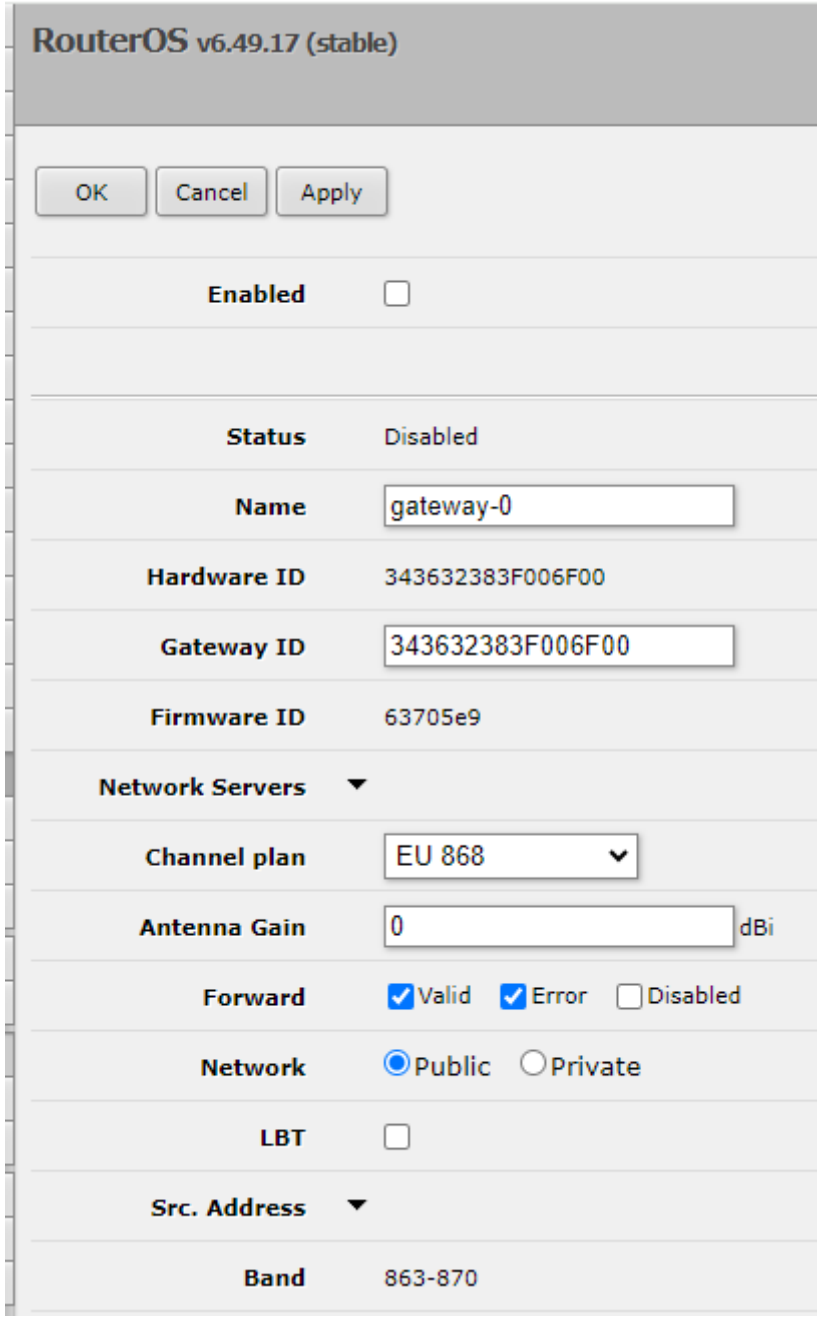


		#	Device	Type	Freq. (MHz)	Bandwidth
D		0	gateway-0	MSF	868.100	125 kHz
D		1	gateway-0	MSF	868.300	125 kHz
D		2	gateway-0	MSF	868.500	125 kHz
D		3	gateway-0	MSF	867.100	125 kHz
D		4	gateway-0	MSF	867.300	125 kHz
D		5	gateway-0	MSF	867.500	125 kHz
D		6	gateway-0	MSF	867.700	125 kHz
D		7	gateway-0	MSF	867.900	125 kHz
D		8	gateway-0	LoRa	868.300	250 kHz
D		9	gateway-0	FSK	868.800	125 kHz

- **Konfiguration „WebFig“**
  - Servers

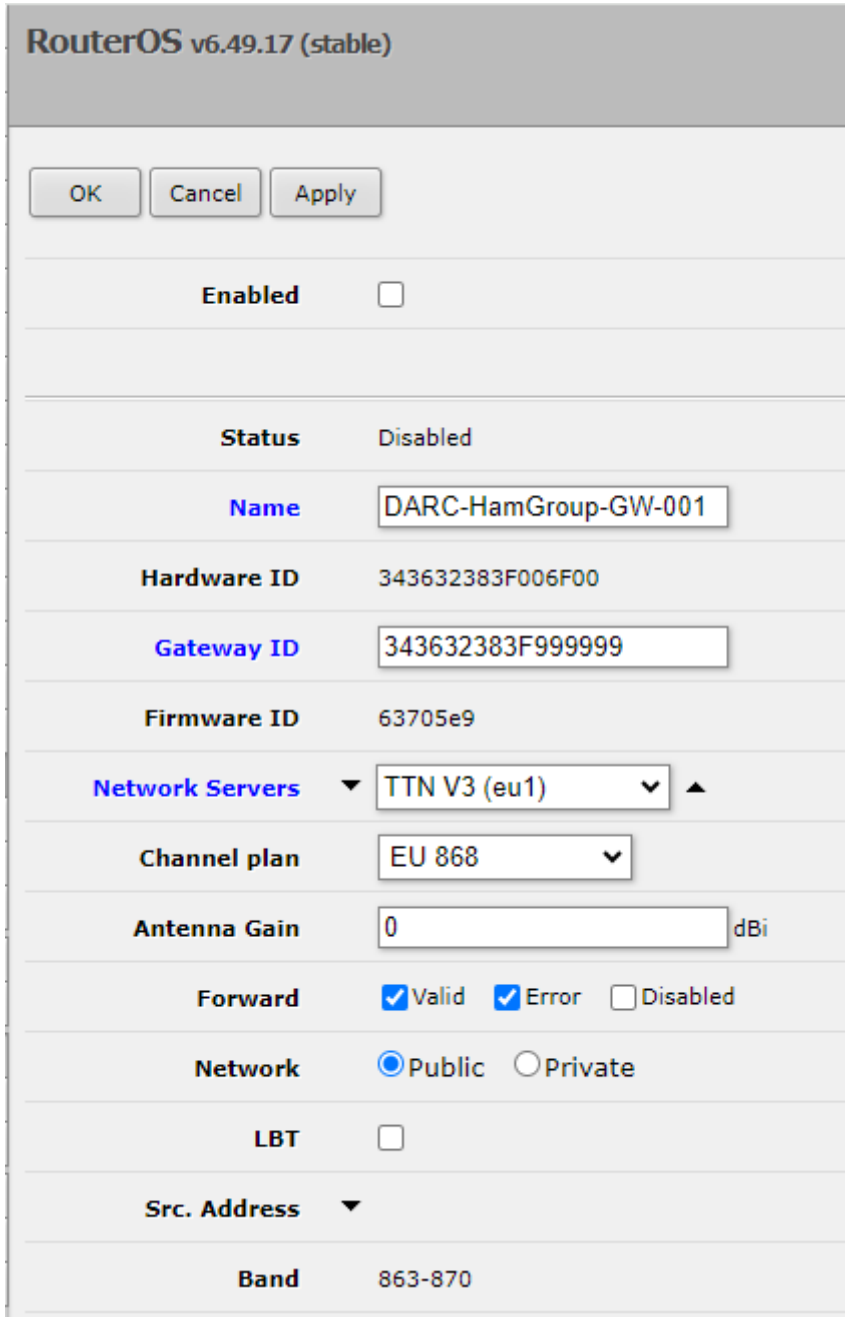


- **Konfiguration „WebFig“**
  - Devices



- **Konfiguration „WebFig“**
  - Name
    - sprechender Name
  - Gateway ID
    - Ist vorgegeben
  - Network Servers
    - TTN V3 (eu1)

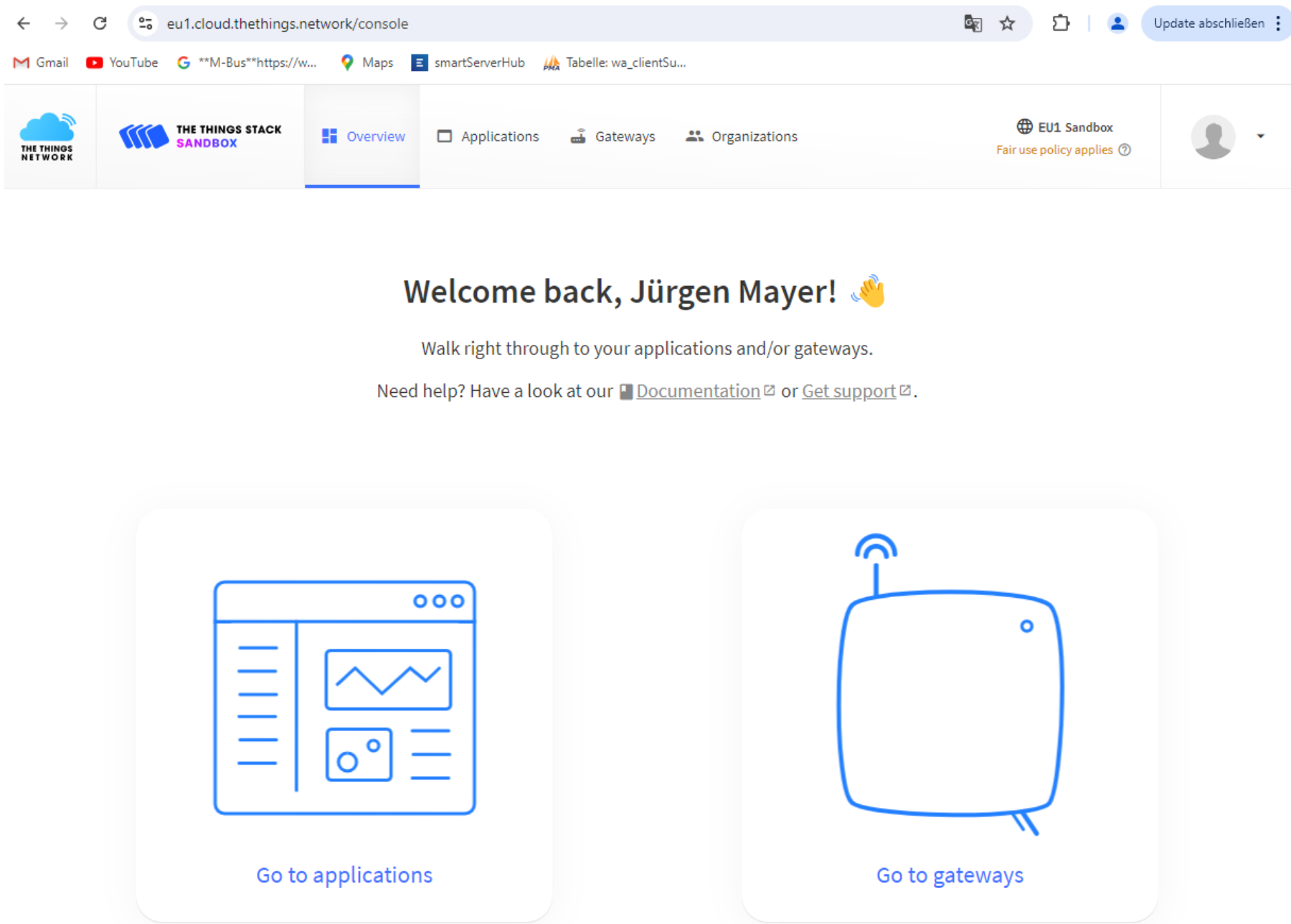
⇒ Apply



LORAWAN-WORKSHOP

» **The Thing Network**

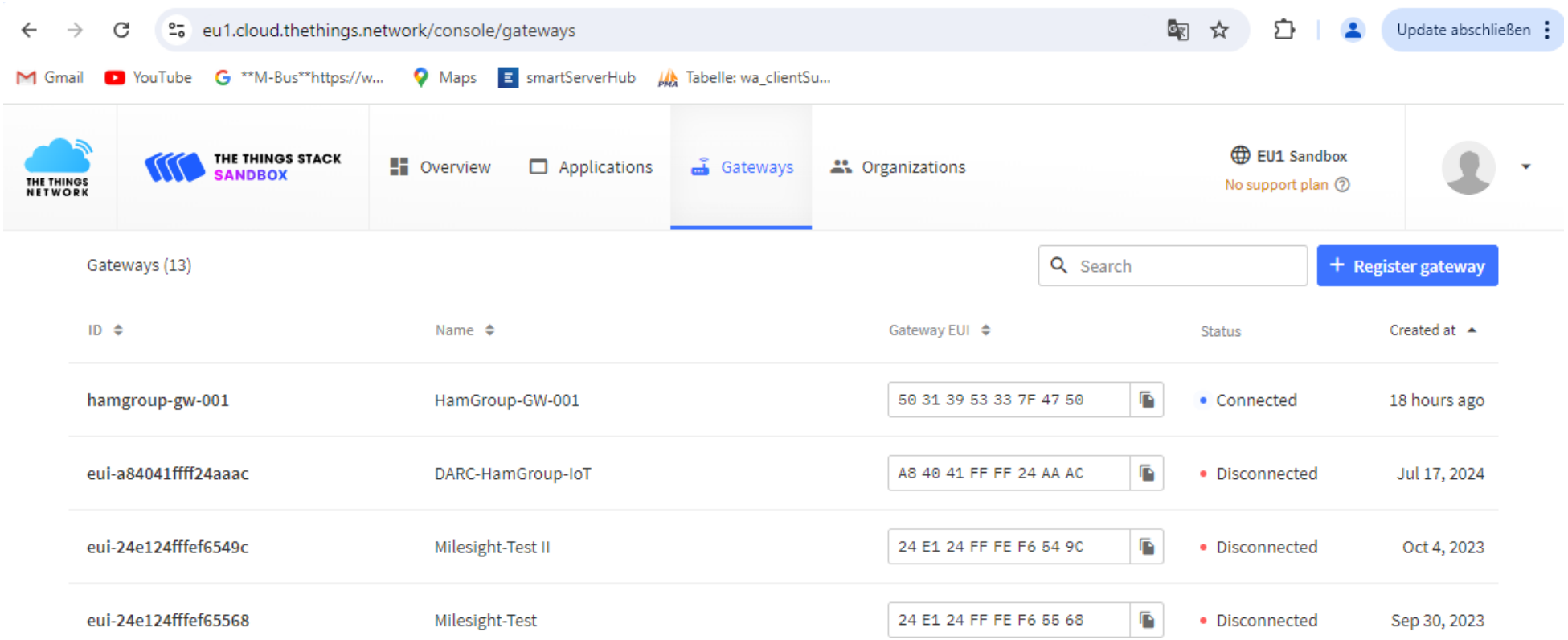
» https://eu1.cloud.thethings.network/console



LORAWAN-WORKSHOP

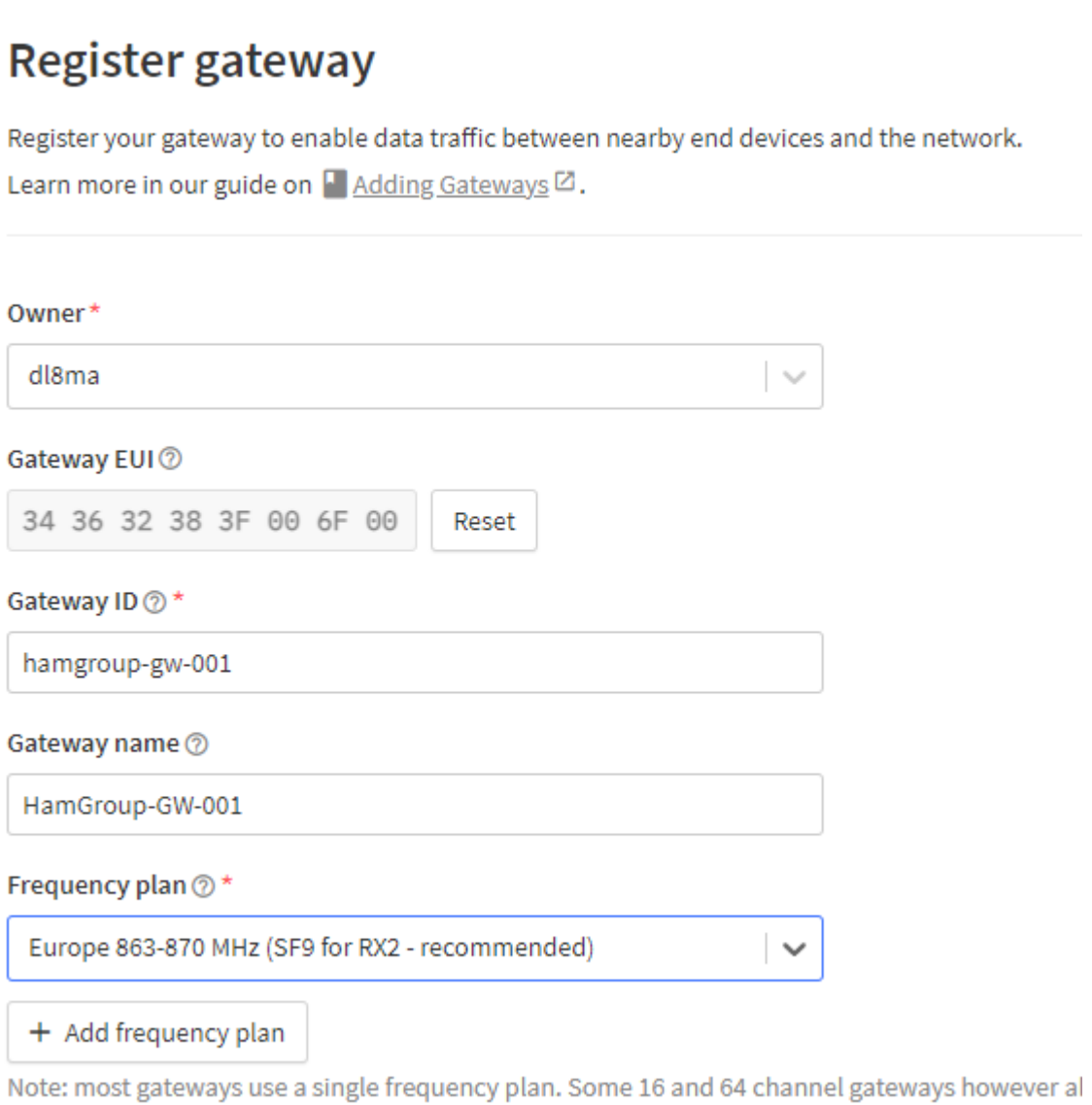
» **The Thing Network**

» => Gateways



LORAWAN-WORKSHOP

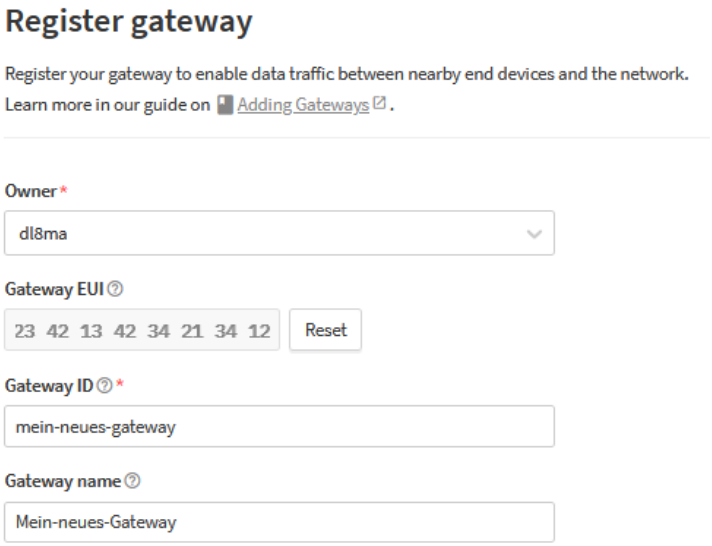
- **The Thing Network**
- Register gateway
  - Gateway EUI
  - Gateway ID
  - Gateway name
  - Frequency plan



» **Fallstrick !!! - Verwechslungsgefahr !!!**

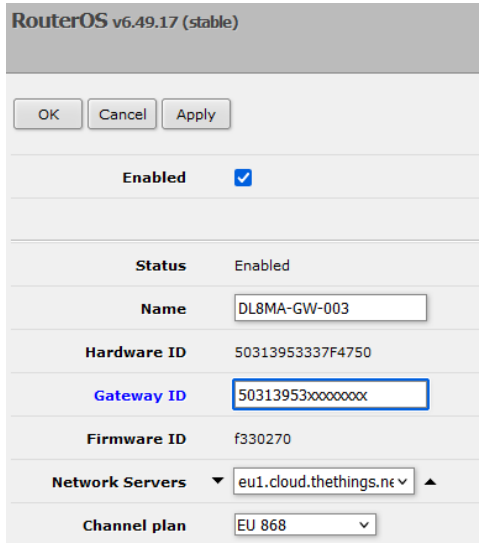
The Thing Network

Gateway EUI



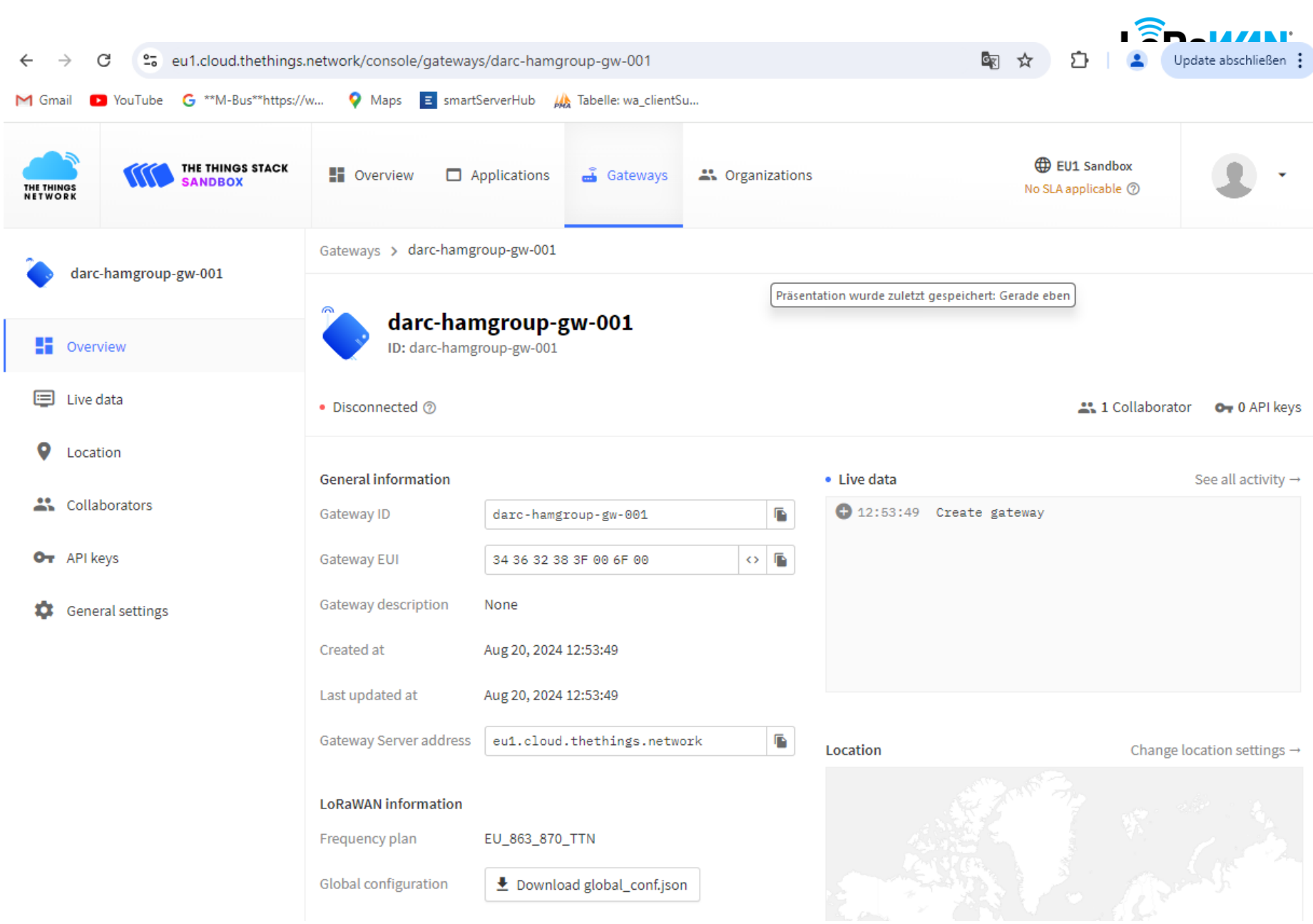
MikroTik

Gateway ID

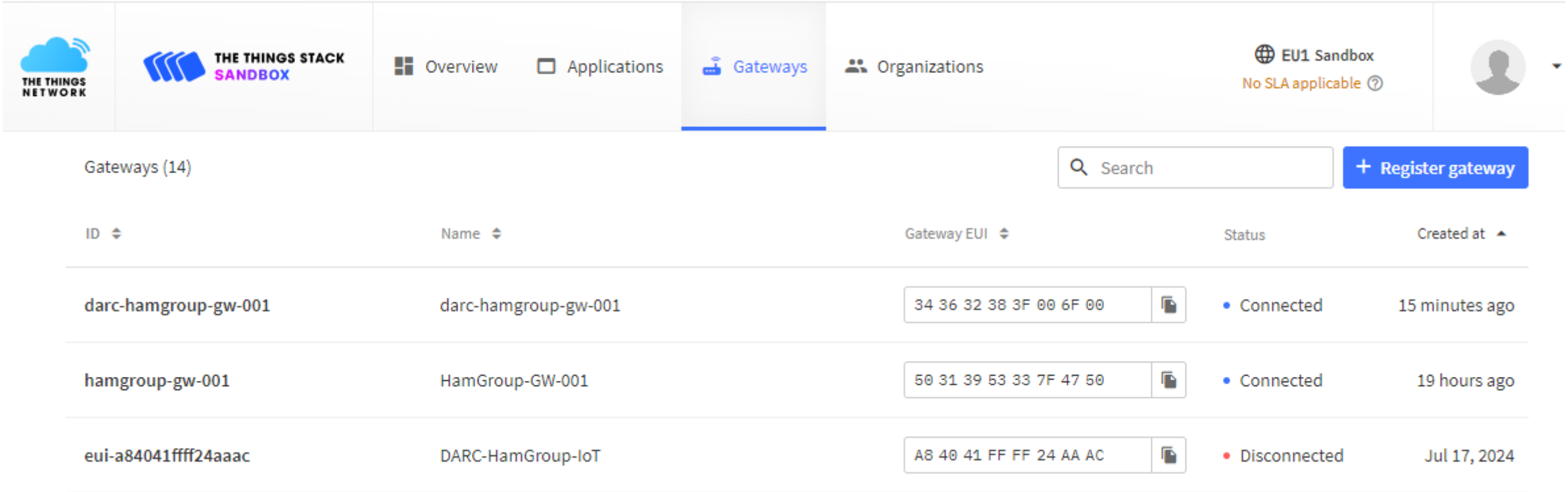


LORAWAN-WORKSHOP

- **The Thing Network**
- Register gateway

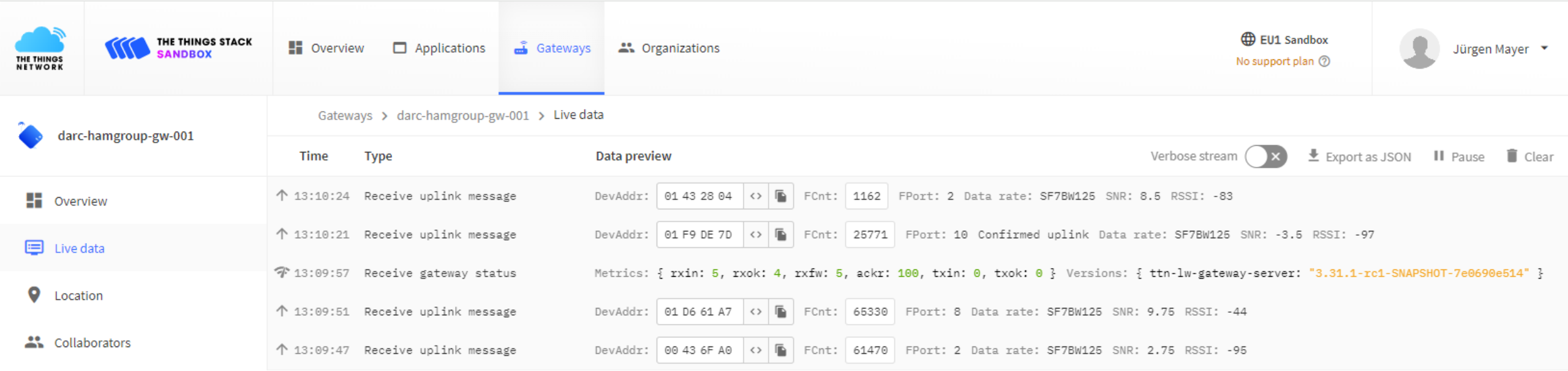


- **The Thing Network**
- Register gateway



LORAWAN-WORKSHOP

- **The Thing Network**
- Register gateway



» **Konfiguration „WebFig“**

RouterOS v6.49.17 (stable)

Quick Set | WebFig | Terminal

Devices | Channels | Traffic | Servers

LoRa

Clear | Traffic Options

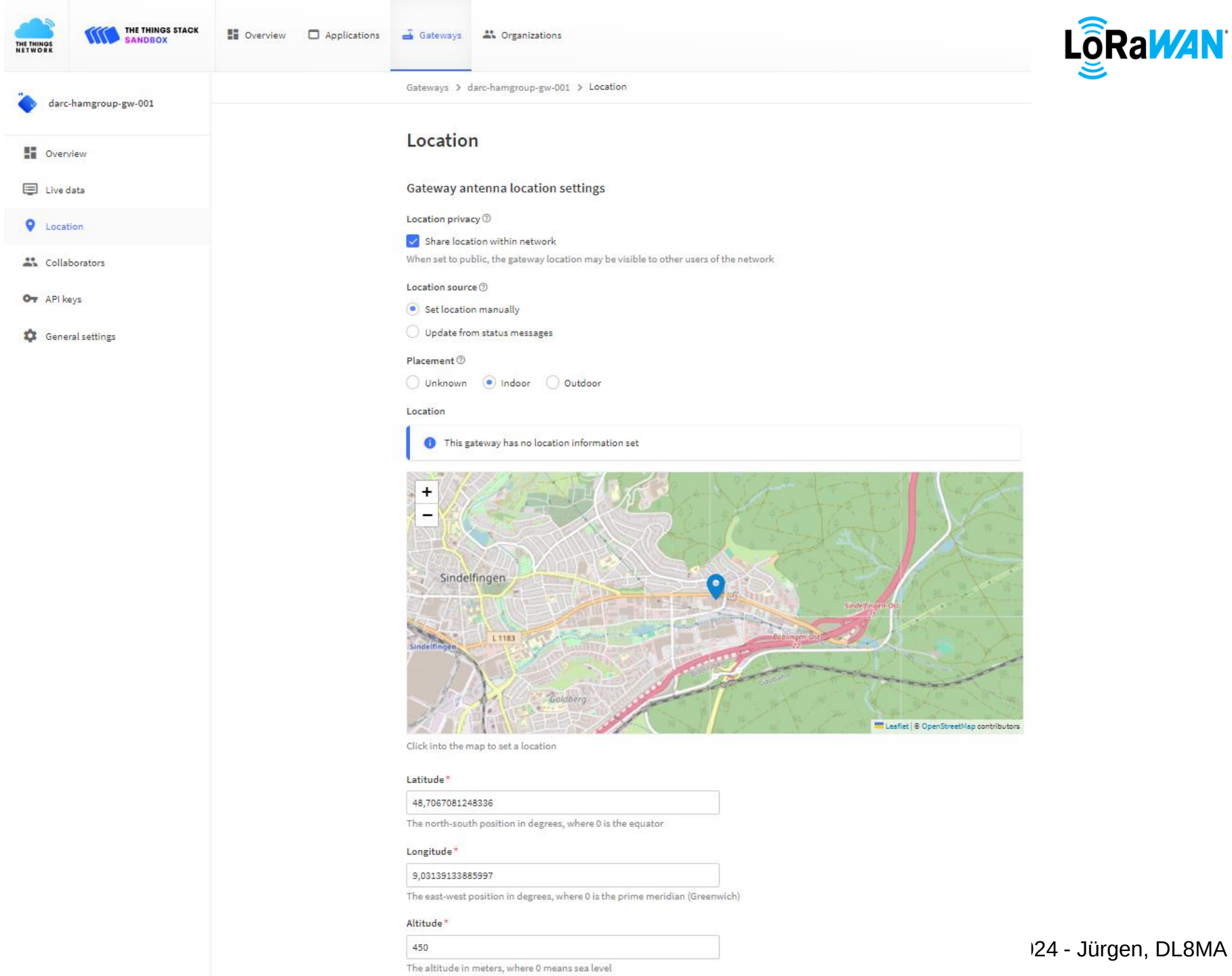
all

100 items

		Type	Time	Gateway ID	Message Type	Dev Addr	Freq (MHz)	Modulation	Bandwidth	Datarate	Coderate	CRC Status	RSSI (dB)	SNR (dB)
		Rx	Aug/20/2024 13:11:5	343632383F006F00	Unconfirmed Data Up	01 43 6F EC	867.500	LoRa	125 kHz	SF 7	4/5	Ok	-98.00	0.00
		Rx	Aug/20/2024 13:11:5	343632383F006F00	Unconfirmed Data Up	01 D6 61 A7	868.100	LoRa	125 kHz	SF 7	4/5	Ok	-43.00	9.50
		Rx	Aug/20/2024 13:11:1	343632383F006F00	Unconfirmed Data Up	01 D6 61 A7	867.900	LoRa	125 kHz	SF 7	4/5	Ok	-44.00	10.00
		Rx	Aug/20/2024 13:10:5	343632383F006F00	Unconfirmed Data Up	00 11 A3 B2	868.100	LoRa	125 kHz	SF 7	4/5	Ok	-79.00	8.75
		Rx	Aug/20/2024 13:10:5	343632383F006F00	Unconfirmed Data Up	01 76 BE 41	867.500	LoRa	125 kHz	SF 7	4/5	Ok	-84.00	6.50
		Rx	Aug/20/2024 13:10:3	343632383F006F00	Join-request		868.100	LoRa	125 kHz	SF 12	4/5	Ok	-98.00	-2.00
		Rx	Aug/20/2024 13:10:3	343632383F006F00	Unconfirmed Data Up	01 A6 DC BD	867.700	LoRa	125 kHz	SF 7	4/5	Ok	-67.00	10.00
		Rx	Aug/20/2024 13:10:3	343632383F006F00	Unconfirmed Data Up	01 D6 61 A7	868.500	LoRa	125 kHz	SF 7	4/5	Ok	-42.00	7.50

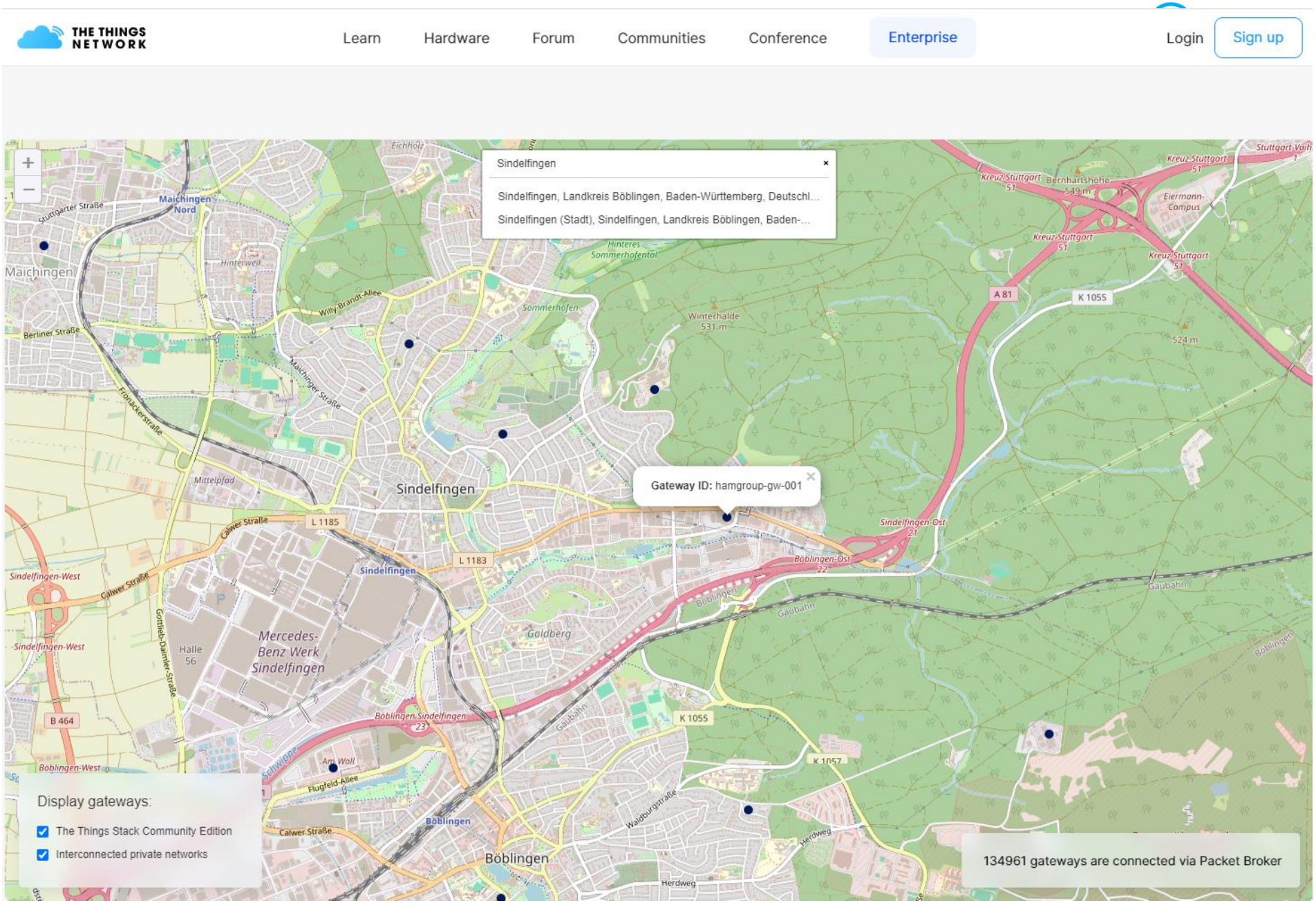
LORAWAN-WORKSHOP

- **The Thing Network**
- Register gateway
  - Location
    - Outdoor oder Indoor
    - bitte eintragen!

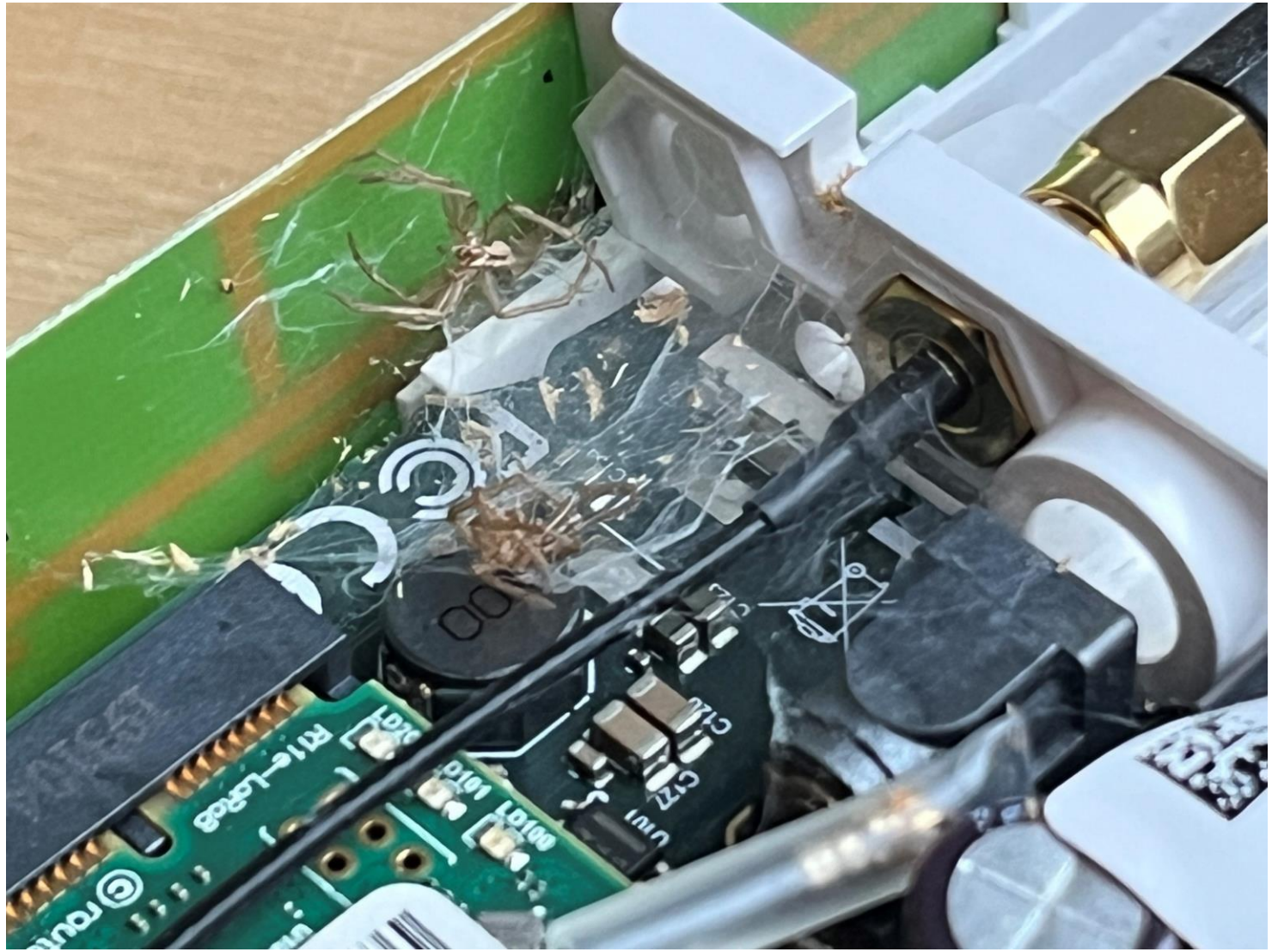


LORAWAN-WORKSHOP

- **The Thing Network**
- Register gateway
  - Location
    - Outdoor oder Indoor
    - bitte eintragen!



» LoRaWAN-Maschinisten



LORAWAN-WORKSHOP

- Bonusmaterial
  - LPS8 Indoor LoRaWAN Gateway

  - The Things Indoor LoRaWAN Gateway

    - voraussichtlich am 28.08.2024

Vielen Dank für Eure Aufmerksamkeit!

73 de Jürgen, DL8MA

Für Fragen stehe ich gerne zur Verfügung.

dl8ma@amateurfunk.de