

# The Thing Network

Kurz: Open Source IoT Netzwerk auf **868Mhz / 433Mhz**

Kickstarter: <https://www.kickstarter.com/projects/419277966/the-things-network/description>

Webseite: <http://thethingsnetwork.org/>

Forum: <http://forum.thethingsnetwork.org>

## Wie baut man einen Node?

Auf Basis eines

- Arduino Nano
- RFM95 / RFM95W
- Sensor

Anleitungen:

- Verkabeln: <https://things4u.github.io/HardwareGuide/Arduino/Mini-Sensor-HTU21/mini-lowpower.html>
- Code: <https://github.com/things4u/LoRa-Thing>
- Code / Anleitung für TTN Setup: [https://github.com/lukastheiler/ttn\\_moteino](https://github.com/lukastheiler/ttn_moteino)
- <http://staging.thethingsnetwork.org/wiki/Backend/ttnctl/QuickStart>

## Wie baut man einen Single Channel Gateway?

**Ein Single Channel Gateway kann nur 1 Channel von 8 Channel benutzen.**

**Ein Single Channel Gateway kann keine Daten an die Nodes schicken.**

Auf Basis von:

- Pi B / Pi Zero
- Alternativ: Esp8266 (NodeMCU / Wemos)
- RFM95 / RFM95W
- Lan / Wlan

Anleitung:

- Pi: <http://things4u.github.io/HardwareGuide/Single-Channel-Gway/index.html>
- Pi: Code und Verkabelung: [https://github.com/tftelkamp/single\\_chan\\_pkt\\_fwd](https://github.com/tftelkamp/single_chan_pkt_fwd)
- Pi Zero PCB: [https://oshpark.com/shared\\_projects/36EsiJqR](https://oshpark.com/shared_projects/36EsiJqR)
- Esp Anleitung: <http://things4u.github.io/HardwareGuide/Single-Channel-Gway/ESP-Gateway.html>
- TTN Forum: <http://forum.thethingsnetwork.org/t/single-channel-gateway/798>

## TheThingsNetwork Node/Sensor Workshop

### Materialliste

Artikel	Menge	Preis	Link
Arduino Nano	10x	~1,88/St.	<a href="http://www.aliexpress.com/item/Nano-CH340-ATmega328P-MicroUSB-Compatible-for-Arduino-Nano-V3/32572612009.html">http://www.aliexpress.com/item/Nano-CH340-ATmega328P-MicroUSB-Compatible-for-Arduino-Nano-V3/32572612009.html</a>
RFM95/RFM95W	10x	~16,00/2St.	<a href="http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html">http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html</a>
Sensor	10x	~11,95/37St.	<a href="http://www.aliexpress.com/item/37-IN-1-SENSOR-KITS-FOR-ARDUINO-HIGH-QUALITY-FREE-SHIPPING-Works-with-Official-for-Arduino/32542655411.html">http://www.aliexpress.com/item/37-IN-1-SENSOR-KITS-FOR-ARDUINO-HIGH-QUALITY-FREE-SHIPPING-Works-with-Official-for-Arduino/32542655411.html</a>
Kabel	100x	~2,60/120St.	<a href="http://de.aliexpress.com/item/DuPont-line-120pcs-20cm-male-to-male-to-female-and-female-to-female-jumper-wire/32551814663.html">http://de.aliexpress.com/item/DuPont-line-120pcs-20cm-male-to-male-to-female-and-female-to-female-jumper-wire/32551814663.html</a>
Adapter PCB	10x	~2,58/10St.	<a href="http://nl.aliexpress.com/store/product/10pcs-lot-ESP8266-serial-WIFI-module-connecting-plate-applicable-to-ESP-07-the-ESP-08-ESP/403088_32262406988.html?storeId=403088">http://nl.aliexpress.com/store/product/10pcs-lot-ESP8266-serial-WIFI-module-connecting-plate-applicable-to-ESP-07-the-ESP-08-ESP/403088_32262406988.html?storeId=403088</a>

### ToDo

- Materialliste prüfen!

## TheThingsNetwork Gateway Workshop

### Materialliste

Artikel	Menge	Preis	Link
Pi	10x	~20,00/St.	bring ur own
RFM95/RFM95W	10x	~16,00/2St.	<a href="http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html">http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html</a>
PCB	10x	~23,80/10St.	<a href="https://oshpark.com/shared_projects/36EsiJqR">https://oshpark.com/shared_projects/36EsiJqR</a>

oder

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Pi	10x	~20,00/St.	bring ur own
RFM95/RFM95W	10x	~16,00/2St.	<a href="http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html">http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html</a>
ugly PCB	10x	~2,58/10St	<a href="http://nl.aliexpress.com/store/product/10pcs-lot-ESP8266-serial-WIFI-module-connecting-plate-applicable-to-ESP-07-the-ESP-08-ESP/403088_32262406988.html?storeId=403088">http://nl.aliexpress.com/store/product/10pcs-lot-ESP8266-serial-WIFI-module-connecting-plate-applicable-to-ESP-07-the-ESP-08-ESP/403088_32262406988.html?storeId=403088</a>
Kabel	100x	~2,60/120St	<a href="http://de.aliexpress.com/item/Dupont-line-120pcs-20cm-male-to-male-male-to-female-and-female-to-female-jumper-wire/32551814663.html">http://de.aliexpress.com/item/Dupont-line-120pcs-20cm-male-to-male-male-to-female-and-female-to-female-jumper-wire/32551814663.html</a>

oder

Artikel	Menge	Preis	Link
Wemos	10x	~2,60/St.	<a href="http://de.aliexpress.com/item/Smart-Electronics-D1-mini-Mini-NodeMcu-4M-bytes-Lua-WIFI-Internet-of-Things-development-board-based/32630067955.html">http://de.aliexpress.com/item/Smart-Electronics-D1-mini-Mini-NodeMcu-4M-bytes-Lua-WIFI-Internet-of-Things-development-board-based/32630067955.html</a>
RFM95/RFM95W	10x	~16,00/2St.	<a href="http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html">http://www.aliexpress.com/item/RFM95W-RFM98W-100mW-433-868-915Mhz-High-sensitivity-sx1278-sx1276-Lora-module-ultra-long-range-RF/32626274785.html</a>
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Kabel	100x	~2,60/120St	<a href="http://de.aliexpress.com/item/Dupont-line-120pcs-20cm-male-to-male-male-to-female-and-female-to-female-jumper-wire/32551814663.html">http://de.aliexpress.com/item/Dupont-line-120pcs-20cm-male-to-male-male-to-female-and-female-to-female-jumper-wire/32551814663.html</a>

Optional:

Artikel	Menge	Preis	Link
Antenne	10x	~1,70/St.	
SMA	10x	~1,95/10St.	<a href="http://de.aliexpress.com/item/10pcs-SMA-Female-Jack-Solder-Edge-PCB-Mount-Straight-RF-Connector/32429747943.html">http://de.aliexpress.com/item/10pcs-SMA-Female-Jack-Solder-Edge-PCB-Mount-Straight-RF-Connector/32429747943.html</a>

**ToDo**

- Materialliste prüfen!
- Oder wäre eine Dual Channel Gateway Workshop besser?
  - [https://store.uptronics.com/index.php?route=product/product&product\\_id=68](https://store.uptronics.com/index.php?route=product/product&product_id=68)
  - [https://github.com/bokse001/dual\\_chan\\_pkt\\_fwd](https://github.com/bokse001/dual_chan_pkt_fwd)
- Sind 20cm Kabel zu lang?

**Dauerhafter Link zu diesem Dokument:**

<https://wiki.technikkultur-erfurt.de/projekte:thethingnetwork?rev=1466693704>

Dokument zuletzt bearbeitet am: **23.06.2016 14:55**

**Verein zur Förderung von Technikkultur in Erfurt e.V**

<https://wiki.technikkultur-erfurt.de/>

