

LoRaWAN introduction

A brief overview



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What is LoRaWAN

Technology for transmitting data over larger distances

- Low power
- Low data-rate
- ISM band
- High range
- Optimized for long battery lifetime
- Cheap equipment available

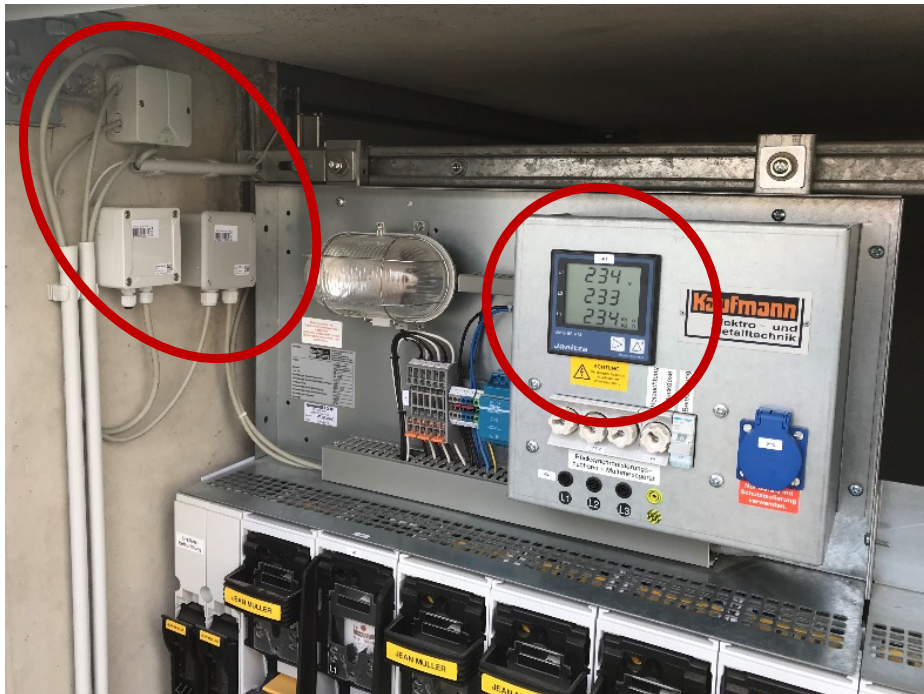
How does it work

- 868MHz (433MHz possible but not widely used)
- LoRa® modulation₁
- Double encryption: network-key + application-key
- Centralized server-cluster per network
- Gateways connect to (usually) 1 server

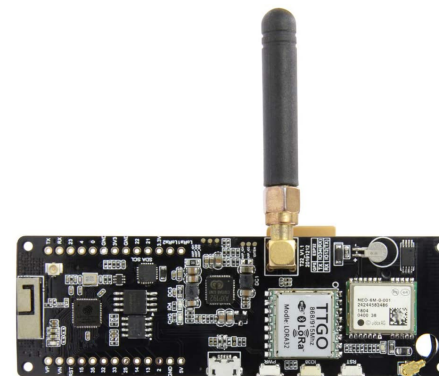
1: https://de.wikipedia.org/wiki/Long_Range_Wide_Area_Network

Typical use-cases

- Battery powered sensors
- Remote control

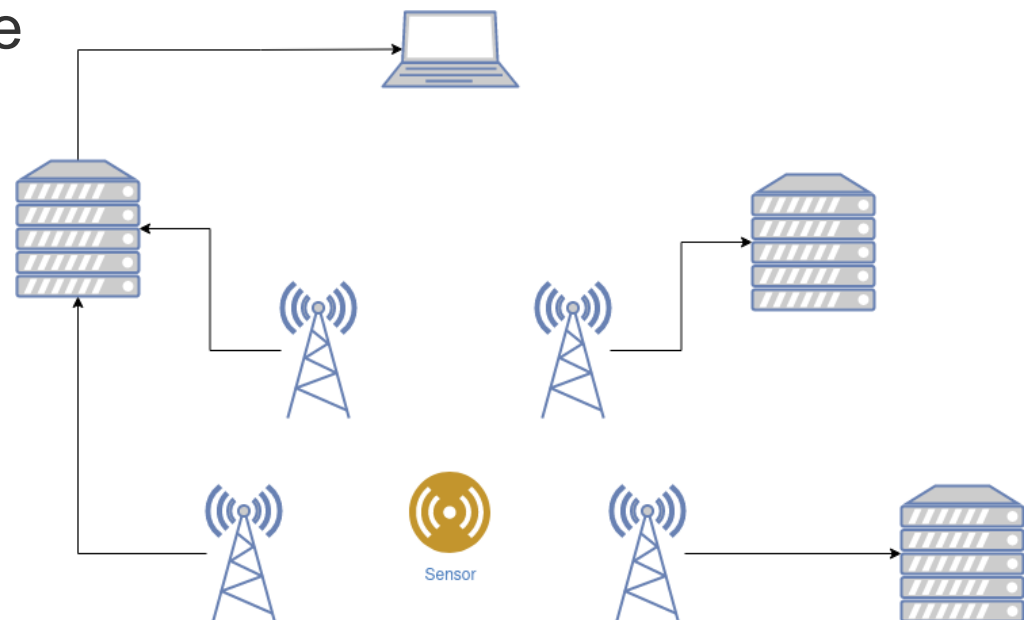


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Packet flow

- All gateways forward packets
- Server tries decryption
 - Drops the packet if not possible
 - Continues if possible
- Forwards data to the application
- Can generate an answer



When (not) to use

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- Rare transmissions (10+min)
- Small data packets
- Battery powered sensors
- No other connectivity

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- Fast changing data
- Smart metering (electricity)

LoRaWAN networks



many more

+ your own?

Image sources

- <https://www.bosch-connectivity.com/de/produkte/connected-mobility/parking-lot-sensor/>
- <https://www.elsys.se/en/ers-eye/>
- <https://www.amazon.de/TTGO-T-Beam-915Mhz-Wireless-Bluetooth/dp/B07SFVQ3Z8>

Thank you

