



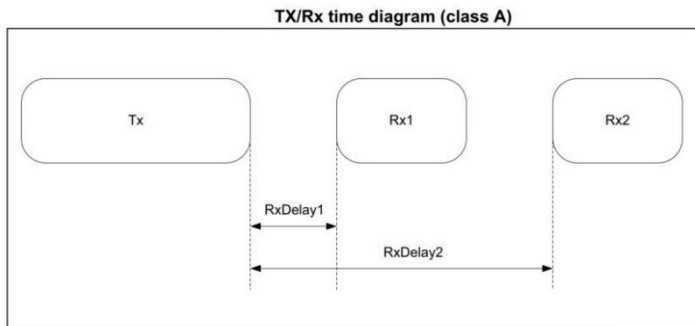
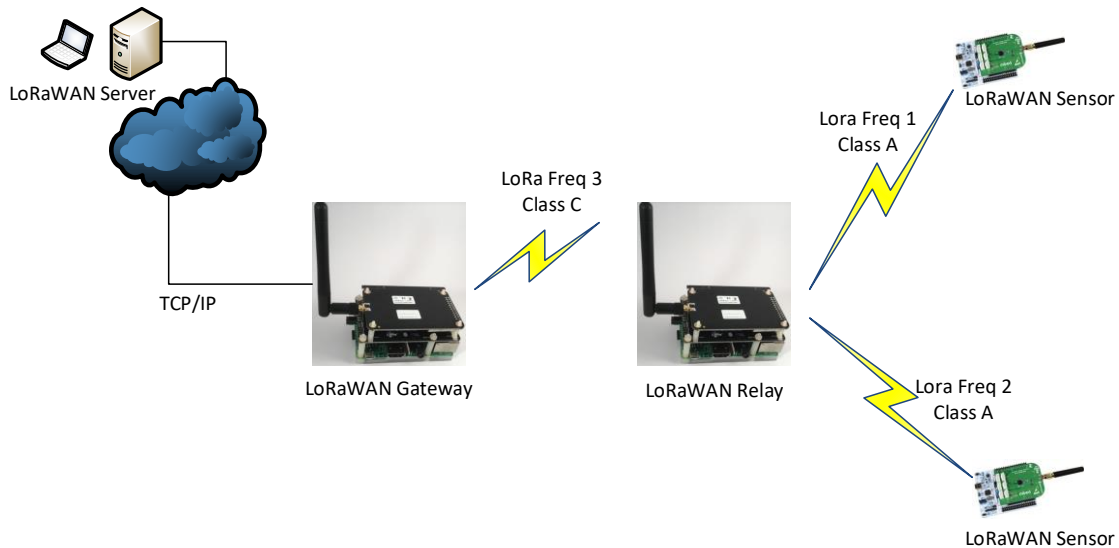
LoRaWAN Relay

Abstract:

Low-power WAN (LPWAN) is a wireless wide area network specification that interconnects low-bandwidth, battery-powered sensors with low bit rates over long ranges.

To meet the challenges of long range, low power consumption and secure data transmission, the sensors are based on LoRa Technology and on LoRaWAN media access control (MAC) layer protocol that manages communication between LPWAN sensors and the Gateway.

Not in all circumstances its possible for an end node sensor to communicate with the outside world. This requires use of mobile relay that will intermedate the LoRa connection between the sensor and the Gateway. The challenge in the LoRaWAN Relay is to be able to switch between LoRa frequencies of the sensor's domain working in Class A and the LoRa frequency towards the Gateway.





Goals:

1. Learn about LoRa and LoRaWAN.

Refer to:

<https://www.lora-alliance.org/>

<https://www.link-labs.com/blog/what-is-lorawan>

<https://books.google.co.il/books?id=iSE6DwAAQBAJ&pg=PT108&lpg=PT108&dq=LoRaWAN+system+s+can+receive+eight+messages+simultaneously&source=bl&ots=4uDTCW0rVm&sig=IlcolgkwCe0EiSRtFfgegns2cy0&hl=iw&sa=X&ved=0ahUKEwje2qS777nZAhVP26QKHU4pCbIQ6AEIJAA#v=onepage&q=LoRaWAN%20systems%20can%20receive%20eight%20messages%20simultaneously&f=false>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5038744/>

<https://medium.com/home-wireless/testing-lora-radios-with-the-limesdr-mini-part-2-37fa481217ff>

2. Bring-up the LoRaWAN development and working environments (sensor-gateway-server) based on Multi-channel Gateway Project . Refer to instructions in:
<https://gitlab.cs.technion.ac.il/lccn/w2018-multichannel-lorawan-gw>
3. Implement the LoRaWAN Relay logic and verify transparent connection between the end sensors and the LoRa server.

Requirements:

Introduction to Networking (236334 or 044334)

C Programming

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