IETF Hackathon: rpl-over-ble

- IETF 104
- 23-24 March, 2019
- Prague

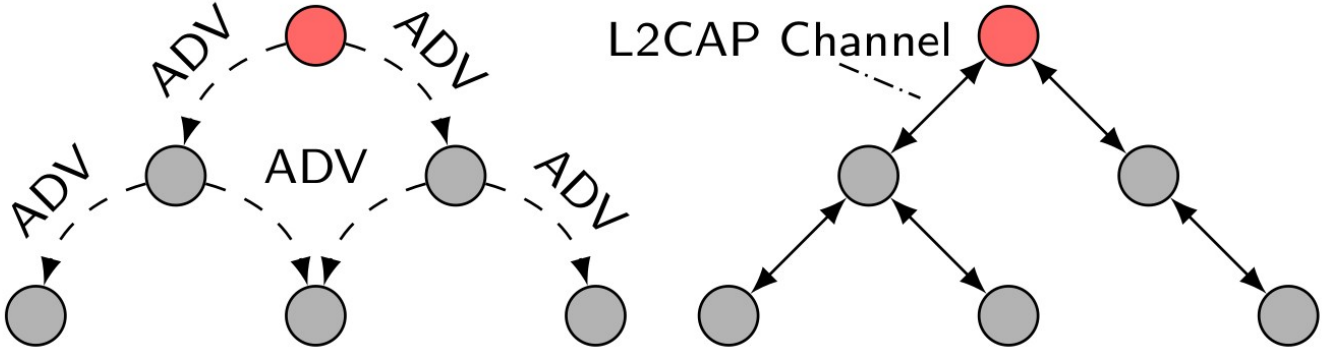
Hackathon Plan

Bluetooth **IPSP** and **RFC7668** do not specify anything regarding **connection handling in BLE**

- Existing approaches:
  - IPv6 Mesh over BLUETOOTH(R) Low Energy using IPSP (draft-ietf-6lo-blemesh-05)
  - Lee et al.: „A Synergistic Architecture for RPL over BLE“
- Plan: bake a subset of these approaches into a prototype using **RIOT** and **NimBLE**

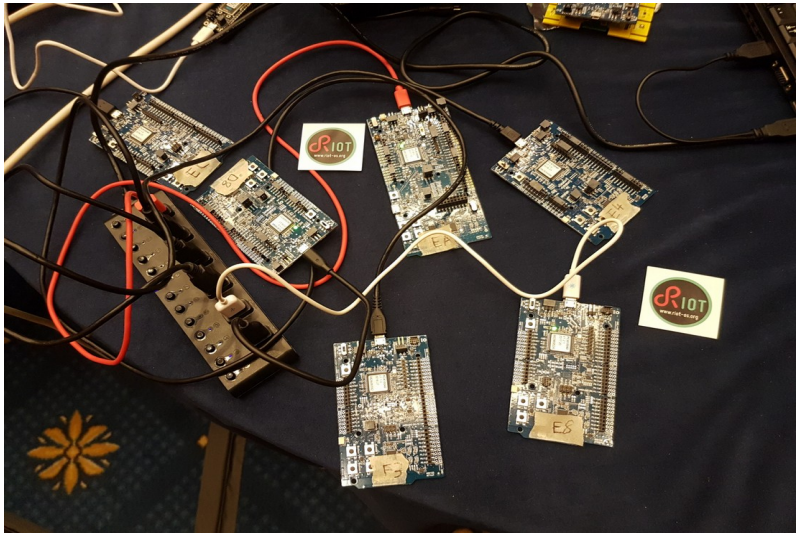
Concept

- Put RPL metadata (e.g. dodag id, rank, ...) into advertising packets
- Children scan for potential parents and connect to the most ‚promising‘ one



Results

- Working RPL-BLE multi-hop network with 6 nodes
  - stable for at least ~10s :-)
- Multiple PRs to RIOT and NimBLE



What we learned

- The general concept is nice and simple
- But for the detail-devil:
  - multi-layered state handling (GAP vs. L2CAP vs. RPL) is a pain
  - BUT: without an open source BLE stack we would not be able to debug this in the first place!
  - sniffing advertisements impossible in this room :-)

Wrap Up

Team members:

Cenk Gündoğan

Hauke Petersen

First timers @ IETF/Hackathon:

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Refs:

RFC7668

BT IPSP

draft-ietf-6lo-blemesh-05

Lee at al.: „A Synergistic Architecture for RPL over BLE“