Secure Mobile Networking Lab – Data Collection with TSCH (DY2)

Project definition:

Data collection protocol in OpenWSN: OpenWSN have integrated 802.15.4e (TSCH – Time Slotted Channel Hopping) which allows potential solution for typical data collection protocol problems. By using TSCH we can make data collection low latency, highly reliable and more energy efficient.
Collection protocol in OpenWSN already have a tree based protocol. When particular node is removed, part of the network is also removed. Protocol should be able to react to that. Other than that node disconnection can also also happen when the nodes are out of the range.

Goals & Milestones:

1. Creation and maintenance of tree structure for collection protocol. It should be adaptive to topology changes.
  1.1. Go through existing implementation in OpenWSN and check how the current version of collection protocol is implemented.
  1.2. Tree structured collection protocol might be maintained in the following way:
    1.2.1. All nodes send periodic message to the tree (apart from the root itself)
    1.2.2. Root can be collection point of the tree.
2. Scheduling of data transmissions (sending)
  2.1. Ignore channel hopping at the beginning. It is pseudo random.
3. Assignment of more free slots to the nodes for transmission.
  3.1. Assignment of slots can be contention based or reserve based.

[*Note:* Goal #3 is a bonus goal and it could be done only if here are any time left after completion of first 2 goals.]

Project schedule:

Date	Specific task	Goal
28.04.2016	Creation of plan, literature research	Moodle submission by 23.00Hrs
12.05.2016	Existing code review, Raspberry Pi as platform? Writing simple code to run with TSCH. Software Design documentation submission	Moodle submission by 23.00Hrs
26.05.2016	Implementation of Goal #1	
09.06.2015	Implementation of Goal #1	Moodle submission by 23.00Hrs
23.06.2016	Completion of Goal #1	
07.07.2016	Implementation of Goal #2	
21.07.2016	Implementation of Goal #2	Moodle submission by 23.00Hrs
04.08.2016	Completion of Goal #2	
18.08.2016	Completion of final version of coding	Waiting for final feedback of supervisor
25.08.2016	Inline documentation & Coding finalization	Moodle submission by 23.00Hrs
01.09.2016	Final slides, report submission in Moodle	Moodle submission by 23.00Hrs

Task Distribution:
- Single member lab. Not applicable.

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