Scenario 1

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Figure x. Scenario 1

There are two independent sensors which measure temperature and pressure every hour. So every hour, e.g., the first one (temperature sensor) sends over BLE the following packet: HD = 0b00000000, Message ID is unnecessary, Message Length is read from BLE's parameter Length (p. 2567 of BLE's standard) decremented by 1, DST is read from BLE's parameter Access Address (p. 2562, 0x8E89BED6, BC), SRC is read from BLE's parameter AdvA (Adv-ertiser Address) (packet type ADV\_NONCONN\_IND (Advertising Non-Connectable Non-Scannable Indication), p. 2570), CRC is not there, and PL is

"temp,day,hour=<temperature as float>,<day as string>,<hour as string>".

The whole message can be

"\0temp,day,hour=20.12,\'011119\',\'01\'".

The other one (pressure sensor) sends over 154 the following packet: HD = 0b00000000, Message ID is unnecessary, Message Length is read from 154's parameter Frame Length (part of the physical layer, p. 411 of 154's standard), DST is read from 154's parameter Destination Address (Destination Addressing Mode = 0b00, p. 154, there is none at all, BC), SRC is read from 154's parameter Source Address (p. 151), there is no CRC, and PL is

"pres,day,hour=<pressure as float>,<day as string>,<hour as string>".

The whole message can be

"\0pres,day,hour=1034.12,\'011119\',\'01\'".

We do not consider here the sensibleness of sending Data exactly formatted like this, it is all for illustration. Let us also assume default columns "d" and "t" are suppressed.

In a network they can reach a router is put which is configured to save all the DATA Messages it gets over the wireless link without registering before. It creates two tables, "t<16-character BLE's EUI>" like "tabababababababab" and "t<16-character 154's EUI>" like "tcdcdcdcdcdcdcdcd", with columns "temp", "day", "hour", i.e. "pres", "day", "hour". The User, if he wants to find out the Data, sends a query

"SELECT ALL a.temp AS t, b.pres AS p

‗FROM tabababababababab AS a

‗INNER JOIN tcdcdcdcdcdcdcdcd AS b

‗ON a.day = b.day AND a.hour = b.hour

‗WHERE a.day = \'011119\' ORDER BY a.hour ASC

‗OFFSET 10 ROWS FETCH NEXT 10 ROWS ONLY;" (220 bytes)

coded as

"\xDF\x85a.temp\x87t,b.pres\x87p

\xADt\xAB\xAB\xAB\xAB\xAB\xAB\xAB\xAB\x87a

\xB4\xB8t\xCD\xCD\xCD\xCD\xCD\xCD\xCD\xCD\x87b

\xCFa.day=b.day\x84a.hour=b.hour

\xFCa.day=\'011119\'\xD2\x8Fa.hour\x88

\xCE10\xDC\xA9\xC710\xDC\xD0" (104 bytes).

That would fetch readings from 10h to 20h on 2019-11-01. He can also control the tables manually. Things cannot control because they do not even know where their Data has ended up, for starters.

Currently, link-layer protocol modules are not testable, so they are emulated using TCP. That means BC cannot be used and imm\_DST must be provided. This imm\_DST cannot be read easily and DST is inferred from the router’s EUI. Also, LEN must be provided since TCP is a stream protocol. Naturally, SRC is inferred from the imm\_SRC.

Another thing currently not implemented is discerning Messages by protocol/interface, so all DATA Messages are saved by default.