Dev and App roles for SCHC header compression over IEEE 802.15.4 networks

Related draft:
draft-gomez-6lo-schc-15dot4-02

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Dev and App

- RFC 8376 defines “Dev” and “App”
  - Dev: “sensor, actuator, device, object”
  - App: “application” or “application server”
- RFC 8724 uses “Dev” and “App”
  - App: “runs an application sending/receiving packets to/from the Dev.”
  - App: “is the endpoint of the application- level protocol on the Internet side”

Source: RFC 8724
Uplink and Downlink

- RFC 8724 defines “Uplink” and “Downlink” based on “Dev” and “App”
  - Uplink: from Dev to App
  - Downlink: from App to Dev
Dev and App in LPWAN

- The Dev and App roles fit well the LPWAN scenario:
  - A SCHC entity knows whether it corresponds to Dev or App
  - RFC 8724: compression Rules for some IPv6 and UDP header fields (Prefix, IID, Port) are expressed in terms of Dev and App
    - NOT by the position of these fields in the headers
  - Advantage: the same Rule can be used for C/D for both directions:
    - When a Dev has to compress, a source address/port corresponds to the Dev address/port in a Rule
    - When a Dev has to decompress, a source address/port corresponds to an App address/port in a Rule
Dev/App in 802.15.4 networks?

- Star topology networks, with the constrained devices talking to some “network side” App
  - The current Dev/App model fits well here as well…

- However, in peer-to-peer topologies:
  - There may be scenarios where two constrained devices talk to each other
    - Which is the role that corresponds to each?
    - Both are candidates to be “Dev”…
    - How do we use SCHC C/D then?
Dev/App in 802.15.4 networks?

• Examples

A

Light sensor

B

Lightbulb
Dev/App in 802.15.4 networks?

• Examples

A

Dev

App

B

Light sensor

Lightbulb

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• Examples

A (Dev) -> B (App) -> C (Threshold setting)

Light sensor

?
Dev/App in 802.15.4 networks?

• Examples

- Light sensor
- Lightbulb
- Threshold control

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- Examples

Can we ensure that a device will only be Dev or App for all its interactions?
Dev and App in 802.15.4 networks?

- Two options for the peer-to-peer scenario:
  - **Option 1.** If we stick to RFC 8724, each device might need to know whether it is “Dev” or “App” when talking to another device
    - A SCHC entity may need to know its role even for each possible communication endpoint
    - Uplink and Downlink would be specific to each pair of endpoints
  - **Option 2.** Use “Source” and “Destination” in the Rules, instead of “Dev” or “App”
    - It requires one Rule for each direction
    - New terms needed instead of “Uplink” and “Downlink”