

Transmission of SCHC-compressed packets over IEEE 802.15.4 networks

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Introduction (I/II)

- RFC 6282:
 - The basis for header compression in 6Lo(WPAN)
 - Designed for IEEE 802.15.4 as the target technology
 - Adapted/Reused for *relatively* similar IoT technologies
- RFC 8724 (aka “SCHC”):
 - A product of the LPWAN WG
 - Adaptation layer functionality
 - Includes header compression
 - Designed for even more constrained (LPWAN) technologies

Introduction (II/II)

- Compressed IPv6/UDP/CoAP header size
 - 6Lo(WPAN) compression: **11 bytes**
 - SCHC compression: **e.g. 2 bytes**
- Best case, global addresses
 - No CoAP header options
- Theoretical battery lifetime improvement over IEEE 802.15.4 by up to ~40%
 - Including a 1-byte SCHC Dispatch (see later)
 - **Actual improvement will be lower**, depending on various parameters and features: device hardware, MAC settings, application settings, payload size, etc.

Status

- draft-gomez-6lo-schc-15dot4
 - Related document: draft-gomez-6lo-schc-dispatch-01
 - Greater scope
 - Transmission of SCHC-compressed packets over IEEE 802.15.4 networks
- Revision -01
 - New content, improved structure
 - Aims to incorporate the feedback from IETF 111

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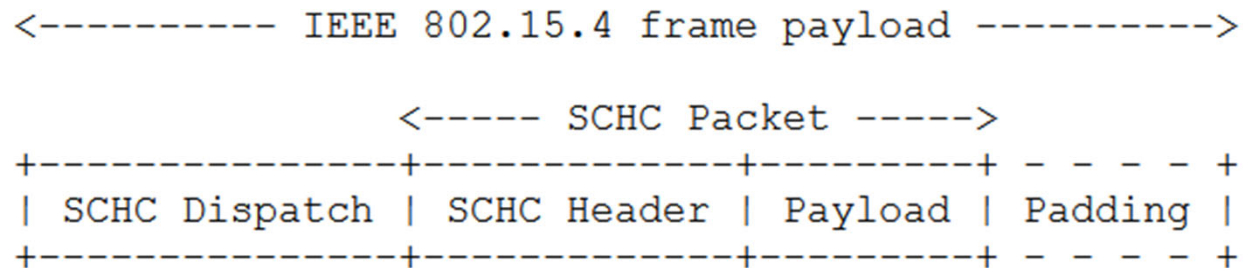
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4. Frame format

- Frame format (i.e. L2 frame payload)
 - Encapsulated SCHC compressed packet:



- SCHC Dispatch:
 - 01000100 (Page 0) -- To be confirmed by IANA
- RuleID size: 8 bits

5.1. IPv6/UDP header compression

- As per Section 10 of RFC 8724
- Exception: IPv6 addresses and UDP ports
 - Dev and App terms (RFC 8724) to allow a single Rule to be usable in both directions
 - However, Dev and App do not always apply in 802.15.4 networks (e.g. two endpoints within a mesh network)
 - If an IID is based on L2 header fields, Compute-IID is used instead of CDAs DevIID and AppIID
 - Another consequence:
 - Uplink and Downlink terms (RFC 8724) do not always apply
 - New terms: Transmit (Tx) and Receive (Rx)

8. Security considerations

- No header compression functionality beyond the one in RFC 8724
 - Security considerations of Sec. 12.1 (RFC 8724) apply
- Safety measure
 - A SCHC decompressor **MUST NOT** reconstruct a packet larger than 1500 bytes

Thanks!

Thoughts? Questions? Comments?

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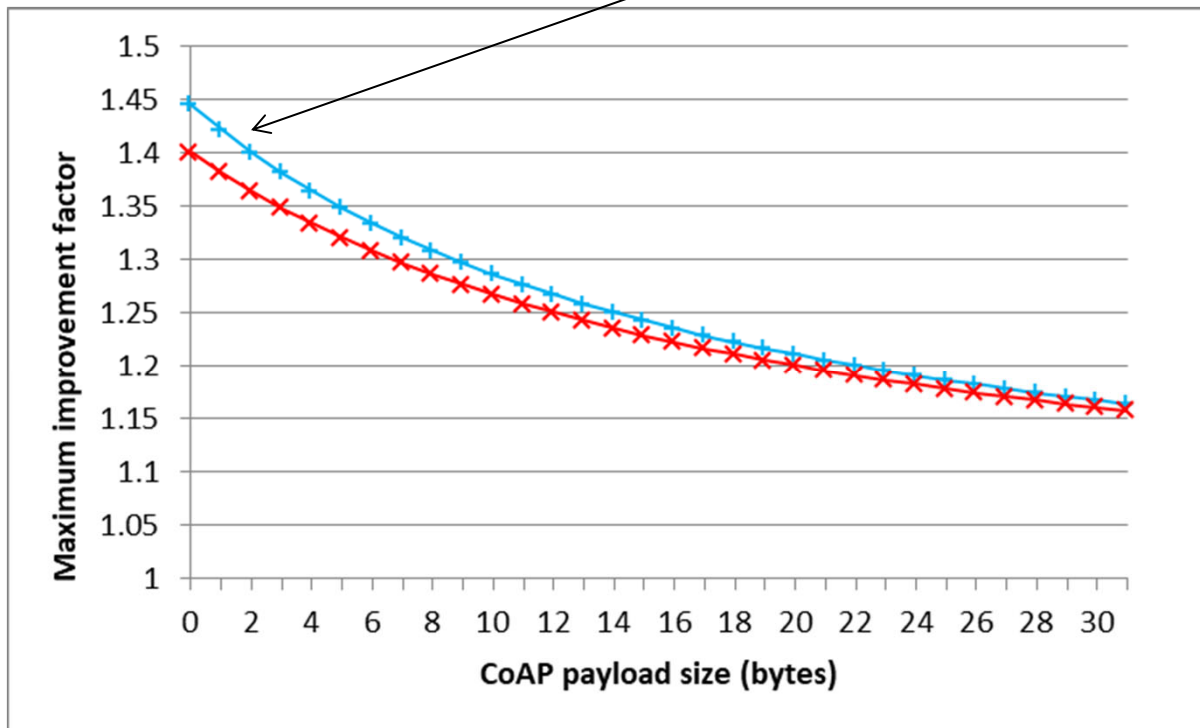
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Annex

- Maximum lifetime improvement factor
 - Short MAC addresses, intra-PAN
 - E.g. a battery-operated sensor that periodically sends a message over IEEE 802.15.4
- Star topology**



NOTE: actual improvement will be lower