LPWAN WG

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Interim, February 2nd, 2021

Webex

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BCP 25 (Working Group processes)

BCP 25 (Anti-Harassment Procedures)

BCP 54 (Code of Conduct)

BCP 78 (Copyright)

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Minutes are taken *
This meeting might be recorded **
Presence is logged ***

* Please contribute to the minutes at: https://codimd.ietf.org/notes-ietf-interim-2021-lpwan-02-lpwan
** Recordings and Minutes are public and may be subject to discovery in the event of litigation.
*** From the Webex login

Agenda bashing

[16:05] Administrivia [10min]
- Note-Well, Scribes, Agenda Bashing
- WG Status

[16:10] SCHC over LoRaWAN [15min]
[16:25] SCHC Header Compression in 6LoWPAN Environments [20min]
[16:45] Open Bar / AOB [QS]

WG Status

Milestones

Date	Milestone
Jul 2021	Produce a Standards Track document to enable operations, administration and maintenance (OAM) to the LPWAN device, including support for delayed or proxied liveness verification (Ping)
Feb 2021	Produce a Standards Track document to define the generic data models to formalize the compression and fragmentation contexts for LPWANs
Dec 2020	Produce Standard Track documents to apply SCHC IPv6/UDP over the baseline technologies
May 2020	Perform SCHC Maintenance, including enabling SCHC mechanisms for Upper layer Protocols

Documents advancement

Document	Date	Status	IPR	AD / Shepherd
Active Internet-Drafts (5 hits)				
draft-ietf-lpwan-coap-static-context-hc-18 **LPWAN Static Context Header Compression (SCHC) for CoAP**	2021-01-21 34 pages New	IESG Evaluation::AD Followup for 201 days Submitted to IESG for Publication:Proposed Standard Reviews: genart, iotdir, opsdir, secdir, tsvart		Éric Vyncke Pascal Thubert
draft-ietf-lpwan-schc-over-lorawan-14 **Static Context Header Compression (SCHC) over LoRaWAN**	2021-01-25 28 pages New	RFC Ed Queue : EDIT for 8 days Submitted to IESG for Publication:Proposed Standard Reviews: genart, iotdir, opsdir, secdir, tsvart	1	Éric Vyncke Dominique Barthel
draft-ietf-lpwan-schc-over-nbiot-04 **SCHC over NB-IoT**	2021-01-19 22 pages	I-D Exists WG Document		Éric Vyncke
draft-ietf-lpwan-schc-over-sigfox-04 **SCHC over Sigfox LPWAN**	2020-11-02 14 pages	I-D Exists WG Document		Éric Vyncke
draft-ietf-lpwan-schc-yang-data-model-04 **Data Model for Static Context Header Compression (SCHC)**	2021-02-02 42 pages New	I-D Exists WG Document		Éric Vyncke
RFCs (2 hits)				
RFC 8376 *(was draft-ietf-lpwan-overview)* **Low-Power Wide Area Network (LPWAN) Overview**	2018-05 43 pages	Informational RFC		Suresh Krishnan Alexander Pelov
RFC 8724 *(was draft-ietf-lpwan-ipv6-static-context-hc)* **SCHC: Generic Framework for Static Context Header Compression and Fragmentation**	2020-04 71 pages	Proposed Standard RFC		Suresh Krishnan Pascal Thubert

Document	Date	Status	IPR	AD / Shepherd
Related Internet-Drafts (2 hits)				
draft-barthel-lpwan-oam-schc-02 **OAM for LPWAN using Static Context Header Compression (SCHC)**	2020-11-02 14 pages	I-D Exists		
draft-pelov-lpwan-architecture-00 **Static Context Header Compression (SCHC) Architecture**	2021-01-19 6 pages	I-D Exists		

draft-ietf-lpwan-schc-over-LoRaWAN

Olivier Gimenez

Ivaylo Petrov

Interim, February 02th 2021

Agenda

- Changes since 23/11/2020
- Next steps

Changes since last interim

- Published draft-14

- Draft sent to RFC editors !

Published drafts

- Draft-14
  - Included all IESG comments/suggestions
  - Made IID related changes defined with the working group:

In order to mitigate the risks described in [rfc8064] and [rfc8065], implementation MUST implement the following algorithm and SHOULD use it.

[…]

Note: Implementation also using another IID source MUST ensure that the same IID is shared between the device and the SCHC gateway in the compression and decompression of the IPv6 address of the device.

Next steps

- Correct the IID example in AUTH-48, thanks Felipe !

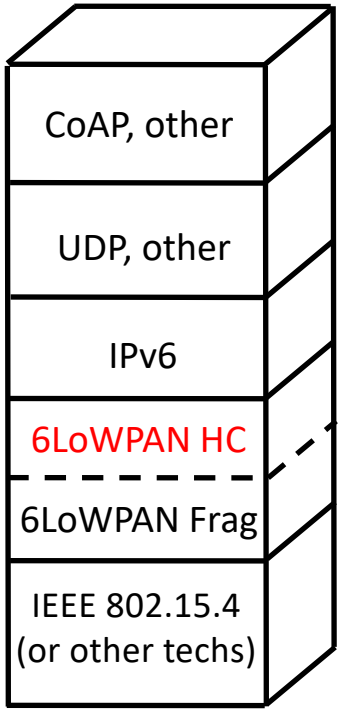
SCHC Header Compression in 6Lo(WPAN) Environments

Ana Minaburo, Laurent Toutain,
Carles Gomez

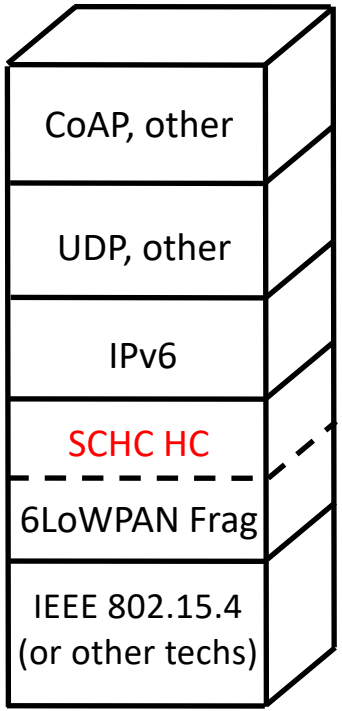
Introduction

- 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
  - Compressed IPv6/UDP header size of 7 bytes
    - Best case, with global addresses
- RFC 8724 (aka "SCHC"), a product of the LPWAN WG
  - Adaptation layer functionality:
    - **Header compression**
    - Fragmentation
- SCHC header compression
  - Designed for even more constrained (LPWAN) technologies
  - Compressed IPv6/UDP header size of e.g. 1 byte
    - Best case, with global addresses
  - Static Context: exploit a priori knowledge of header field values

Introduction



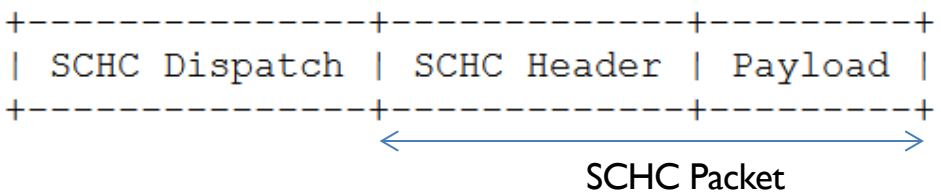
Current
6Lo(WPAN)



Proposed alternative
6Lo(WPAN)

SCHC HC for 6Lo(WPAN) ?

- Some 6Lo(WPAN) environments may benefit from SCHC header compression
  - Background:
    - draft-toutain-6lo-6lo-and-schc-00
    - draft-gomez-6lo-schc-dispatch-01
    - Positive feedback from the 6Lo WG (IETF 106, IETF 108)
  - If yes, need to signal when SCHC HC is used
- Frame format (i.e. L2 frame payload)
  - Encapsulated, SCHC compressed, IPv6 packet:

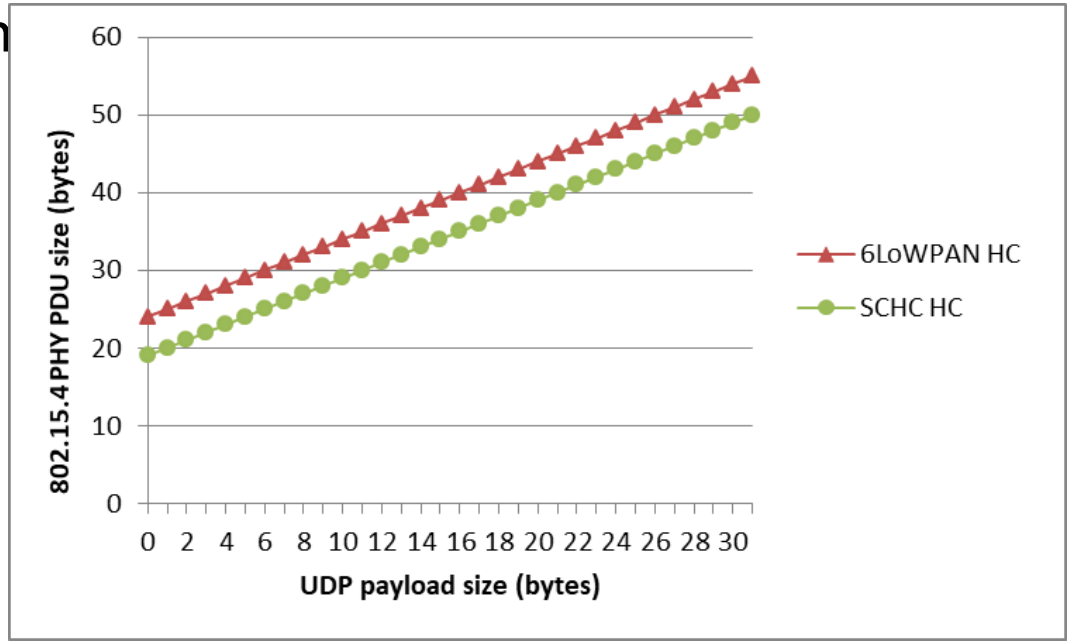


6LoWPAN Dispatch Type for SCHC

- Proposal in draft-gomez-6lo-schc-dispatch-01:
  - SCHC Dispatch pattern: 1111ZZZZ
    - RFC 8025 concept of "page", ZZZZ to be determined
    - A whole page for SCHC, to keep low overhead
- Potential performance improvement:
  - Compressed IPv6/UDP header (RFC 6282): 7 bytes
  - SCHC Dispatch + SCHC compressed header: 2 bytes
    - Assuming SCHC compressed header of e.g. 1 byte
  - Battery lifetime increase by up to 26% over IEEE 802.15.4
    - Up to 29% in star topology
    - NOTE: actual improvement will be lower, depending on various parameters: payload size, MAC layer settings, device hardware features and operation, application settings, etc.

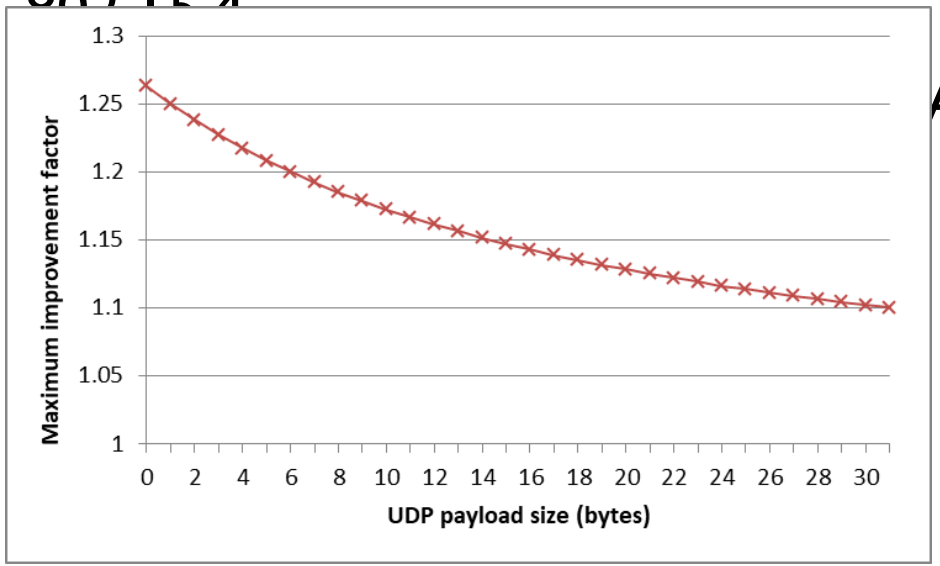
Comparison (I/III)

- IEEE 802.15.4 PHY PDU size vs UDP payload size
  - Sh



Comparison (II/III)

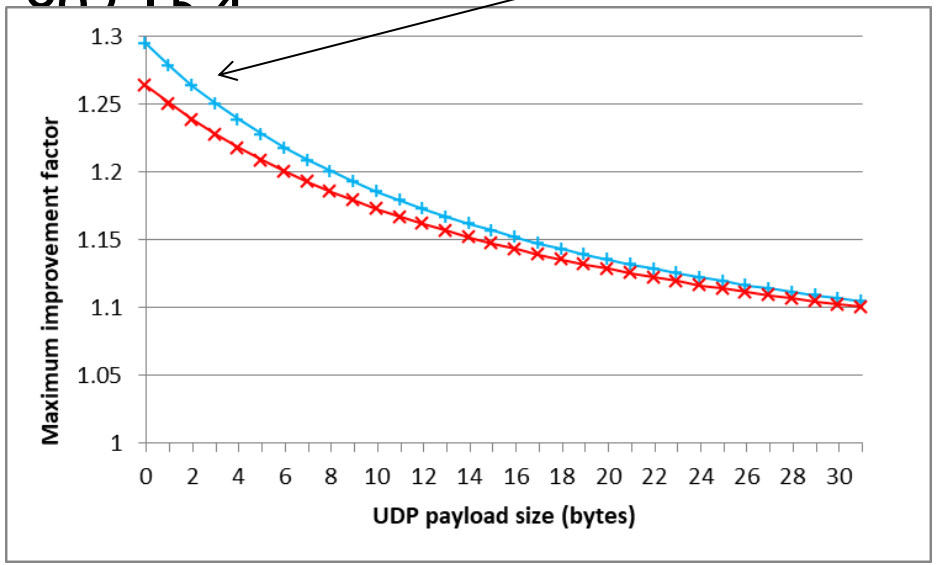
- Maximum lifetime improvement factor
  - E.g. a battery-operated sensor that periodically sends a message over IEEE 802.15.4
  - AN



NOTE: actual improvement will be lower

Comparison (III/III)

- Maximum lifetime improvement factor
  - E.g. a battery-operated sensor that periodically sends a message over IEEE 802.15.4



NOTE: actual improvement will be lower

Components needed?

- 6LoWPAN Dispatch Type for SCHC
  - Not specific to any particular underlying L2 technology
- Handling padding
  - A SCHC compressed header might have a size not being a multiple of an L2 word
  - Might be specified in generic terms (not for a specific tech.)?
- SCHC context provisioning?
  - Preprovisioning, out-of-band, use of 6LoWPAN ND, etc.?
  - Consider also the LPWAN architecture draft

SCHC HC for upper layers

- Compatible with keeping 6Lo(WPAN) HC (RFC 6282, RFC 8138)

- E.g. defining a SCHC LOWPAN_NHC format
  - To signal that the next header is SCHC-compressed
  - Could be useful for UDP, CoAP, etc.

- Reminder: two LOWPAN_NHC formats defined in RFC 6282
  - IPv6 Extension header compression
  - UDP header compression

Process

- Target/Home WG
  - Probably, the 6Lo WG

- Work closely with the LPWAN WG?

Thanks!
Thoughts? Questions? Comments?

Ana Minaburo, Laurent Toutain, Carles Gomez

AOB ?