LPWAN WG

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Interim, June 30th, 2020

Webex

Note Well

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

BCP 9 (Internet Standards Process)

BCP 25 (Working Group processes)

BCP 25 (Anti-Harassment Procedures)

BCP 54 (Code of Conduct)

BCP 78 (Copyright)

BCP 79 (Patents, Participation)

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

* Please contribute to the minutes at: https://etherpad.ietf.org:9009/p/notes-ietf-interim-2020-lpwan-11-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 [5min]
- Note-Well, Scribes, Agenda Bashing
- WG Status, IETF 108

[16:10] SCHC over LoRaWAN [40min]

[16:50] 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-14 **LPWAN Static Context Header Compression (SCHC) for CoAP**	2020-05-26 30 pages	IESG Evaluation::AD Followup **for 110 days** Submitted to IESG for Publication:Proposed Standard Reviews: genart, iotdir, opsdir, secdir, tsvart		Éric Vyncke Pascal Thubert
draft-ietf-lpwan-schc-over-lorawan-07 **Static Context Header Compression (SCHC) over LoRaWAN**	2020-04-17 25 pages	I-D Exists In WG Last Call	1	Éric Vyncke Dominique Barthel
draft-ietf-lpwan-schc-over-nbiot-02 **SCHC over NB-IoT**	2020-05-17 23 pages	I-D Exists WG Document		Éric Vyncke
draft-ietf-lpwan-schc-over-sigfox-02 **SCHC over Sigfox LPWAN**	2020-05-16 13 pages	I-D Exists WG Document		Éric Vyncke
draft-ietf-lpwan-schc-yang-data-model-02 **Data Model for Static Context Header Compression (SCHC)**	2020-02-28 34 pages	I-D Exists WG Document		Éric Vyncke

SCHC over PPP

Charter for Working Group

A new generation of wireless technologies has emerged under the generic name of Low-Power Wide-Area (LPWA), with a number of common characteristics, which make these technologies unique and disruptive for Internet of Things applications.

Those common traits include an optimized radio modulation, a star topology, frame sizes in the order of tens of bytes transmitted a few times per day at ultra-low speeds and sometimes variable MTUs, and, though downstream may be supported, a mostly upstream transmission pattern that allows the devices to spend most of their time in low- energy deep-sleep mode.

This enables a range of several kilometers and a long battery lifetime, possibly ten years operating on a single coin-cell. This also enables simple and scalable deployments with low-cost devices and thin infrastructures.

Those benefits come at a price: the layer 2 frame formats are optimized and specific to each individual technology. There is no network layer and the application is often hard wired to the layer 2 frame format, leading to siloed deployments that must be managed, secured and operated individually. Migrating from one LPWA technology to another implies rebuilding the whole chain.

There is a need to allow an integration of different LPWAN technologies in order to couple them with their related ecosystems. This will guarantee the inter-working by introducing a network layer, and enable common components for management and security, as well as shared application profiles. The IETF can contribute by providing IPv6 connectivity, and propose technologies to secure the operations and manage the devices and their gateways.

The Working Group will focus on enabling IPv6 connectivity over the following selection of Low-Power Wide-Area technologies: SIGFOX, LoRa, WI-SUN and NB-IOT. These technologies will be used as the baseline technologies for future work.

These technologies present similar characteristics of rare and widely unbalanced over-the-air transmissions, with little capability to alter the frame formats to accommodate this work, which makes it so that existing IETF work (6lo) cannot be trivially applied.

The Working Group will leverage cross-participation with the associated set of stakeholders, including users and SDOs working on the baseline technologies, to ensure that the work taking place corresponds to real demands and that the proposed solutions are indeed applicable.

The group has produced documents providing an overview of the baseline LPWA technologies (RFC8376) as well as a document specifying a Generic Framework for Static Context Header Compression and Fragmentation (SCHC), which provides both a header compression mechanism and an optional fragmentation mechanism (RFC8724).

The group will continue to produce new standards track work to optimize IPv6-based communications to the end devices.

The group will:

1. Perform SCHC Maintenance, including enabling SCHC mechanisms for Upper layer Protocols.
2. **Produce Standard Track documents to apply SCHC IPv6/UDP over the baseline technologies.**
3. Produce a Standards Track document to define the generic data models to formalize the compression and fragmentation contexts for LPWANs.
4. 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).

draft-ietf-lpwan-schc-over-lorawan

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Interim meeting, June 30nd, 2020

Upcoming changes in draft-008 (Presented 19/05/20)

- Add uplink All-1 example with last tile
- Fixed IID example
- Use RFC8376 terminology
- List all bitmap possibilities in SCHC ACK example
- Add payload to downlink All-1
- Fixed some nits

Upcoming changes in draft-008 (Presented 16/06/20)

- Changed “fragmentation session” to “fragmentation datagram”
- Uplink retransmission timer SHALL be set by the application
- Explicitly state:
  - Other frag. param. can be used in addition to defined param. in profile
  - Additional delay to comply with regulation is not mandatory
  - Why all-1 and SCHC Sender-Abort can be distinguished
  - Why All-0 and SCHC ACK REQ can be distinguished in uplink fragmentation

Retransmission timer

- Removed “heartbeat” word, but did not used “polling” as I think that there is no need to put a name to this mechanism anymore
- It is now RECOMMENDED to send an uplink every 24 hours. It can be disabled and timing is chosen by the application => this fix the issue when SCHC gateway needs to start a SCHC session
  - *RECOMMENDED uplink is a LoRaWAN message without FPort and FRM payload.*
- Class A retransmission timer is now specified, mechanism to create downlink opportunity for the NGW is defined.

Add randomness in timings ?

« If a device sends the ack as soon as possible without any forced gap, then the NGW is constrained to reply immediately or loose the slot. If the NGW has used its full duty cycle it loses that opportunity. When the load on the NGW grows, we end in retransmission timer for all devices and congestion collapse”

Q: Should we add randomness in heartbeat, SCHC ACK, SCHC ACK REQ (retransmission timer) timings ?

Thank you for your attention

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AOB ?