

draft-ietf-lpwan-ipv6-static-context-hc-22

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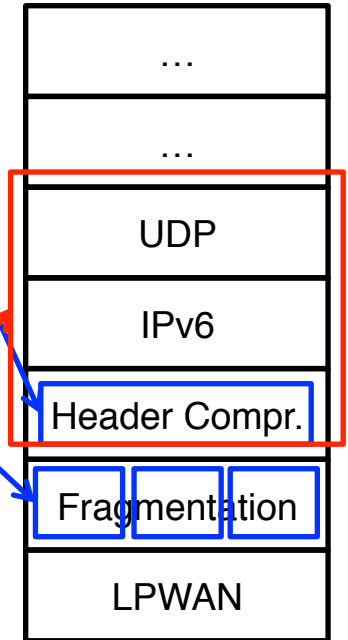
Presentation agenda

- What is this draft about?
- What has happened since IETF105?
- What is coming up next?
- Changes since -21

What is this draft about?

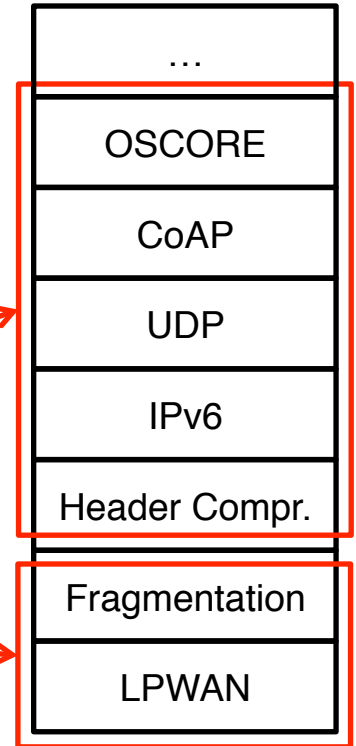
3 deliverables in one draft

- Spec. of a Header Compression engine (**Section 7**)
 - Generic engine, uses Static Context (→ SCHC)
- Specification of a fragmentation protocol (**Section 8**)
 - Has 3 different “modes” described in this draft
 - The different modes address different requirements
- Spec. of simple UDP/IPv6 compression (**Section 10**)
 - Using this SCHC engine



Other related drafts

- Canonical representation of context
- Apply SCHC compression to upper-layer protocols
 - For exemple, CoAP/UDP/IPv6
- Apply SCHC fragmentation to underlying networks
 - For exemple, Sigfox, LoRaWAN



What has happened since IETF105?

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- On *IESG telechat* agenda Aug 22nd
- Many IESG reviews received right before Aug 22nd
 - 3 DISCUSSEs, now all cleared
- Thanks to all the reviewers
 - Deborah Brungard, Brian Carpenter, Alissa Cooper,
 - Roman Danyliw, Benjamin Kaduk, Mirja Kühlewind,
 - Barry Leiba, Alexey Melnikov, Alvaro Retana,
 - Adam Roach, Joseph Salowey, Éric Vyncke
- Text rework Aug 20th – Nov 2nd
 - 36 commits, 354 lines added and 176 deleted (out of ~3000 lines)
 - Got approval of most reviewers, DISCUSSEs cleared

What is coming up next?

What is coming up next?

- Push into RFC Editor queue today
- Communicate/educate about SCHC
- Continue the OpenSCHC development
- Evaluate performance, applicability

Current uses of SCHC (1/2)



- IETF drafts
 - OSCORE/CoAP/UDP/IPv6 compression with SCHC,
 - SCHC-over-Sigfox, SCHC-over-LoRaWAN, SCHC-over-NB-IoT
- Demos
 - DLMS/UDP/IPv6 over LoRaWAN
 - CoAP/UDP/IPv6 compression over LoRaWAN
 - CoAP header compression over LTE-m
 - SSH over LoRaWAN
- Under evaluation
 - IPSec ESP header compression

Current uses of SCHC (2/2)

- Implementations
 - OpenSCHC (Python3), <https://github.com/openschc/openschc>
 - Acklio (3),
 - Universidad de Chile (pycom),
 - RIOT (tentative)
- Scientific papers
 - C. Gomez et al., *IPv6 over LPWANs: connecting Low Power Wide Area Networks to the Internet (of Things)*, IEEE Wireless Communications Magazine, 17 pages, 2019. ([accepted for publication](#))
 - S. Aguilar et al., *LoRaWAN SCHC Fragmentation Demystified*, ADHOC-NOW 2019, Oct 2019, [Lecture Notes in Computer Science, vol. 11803. Springer, Cham](#)
 - B. Moons et al., *Using SCHC for an optimized protocol stack in multimodal LPWAN solutions*, Apr. 2019, IEEE 5th World Forum on Internet of Things (WF-IoT), 10.1109/WF-IoT.2019.8767210. ([available here](#))
 - ...

Changes since -21

<https://github.com/lp-wan/ip-compression/compare/draft-21...draft-22>
<https://tools.ietf.org/rfcdiff?url2=draft-ietf-lpwan-ipv6-static-context-hc-22.txt>

Functional

- Fixed mistake in description of Ack-Always algorithm
 - Thanks Benjamin Kaduk for spotting this!
- Rewrote Appendix F to say that ACK-Always and ACK-on-Error require bidirectional links
 - Left it to schc-over-foo drafts to say how bidirectionality is achieved on quasi-bidirectional links

Security Considerations

- Major rewrite (again)
- Added more cases
 - Compressed packet size leaking secret information in packet
 - Decompressed packet different from original packet
 - Fragmentation as a way to bypass firewalls
 - Potential privacy issue with DTag
- Thanks to Roman Danyliw, Benjamin Kaduk, Joseph Salowey

Editorial (1/2)

- Ref to RFC 8376 made normative
- Fixed use of RFC 2119 language
 - mostly OPTIONAL
- Fixed reference to CRC32
- Referenced all Appendices from the text

Editorial (2/2)

- Improved definition of scope for RuleID
- Improved description of compression and decompression algorithms
- Mentioned match of multiple compression rules
- Improved bit ordering specification
- Removed recommendation that DTag be a counter
- Clarified what is optional per profile vs. at runtime
- Included case of under-resourced receiver
- Rewrote IPv6 Flow Label field compression recommendations

Thank you for your attention