6LoWPAN Dispatch Type for Static Context Header Compression (SCHC)

draft-gomez-6lo-schc-dispatch-00

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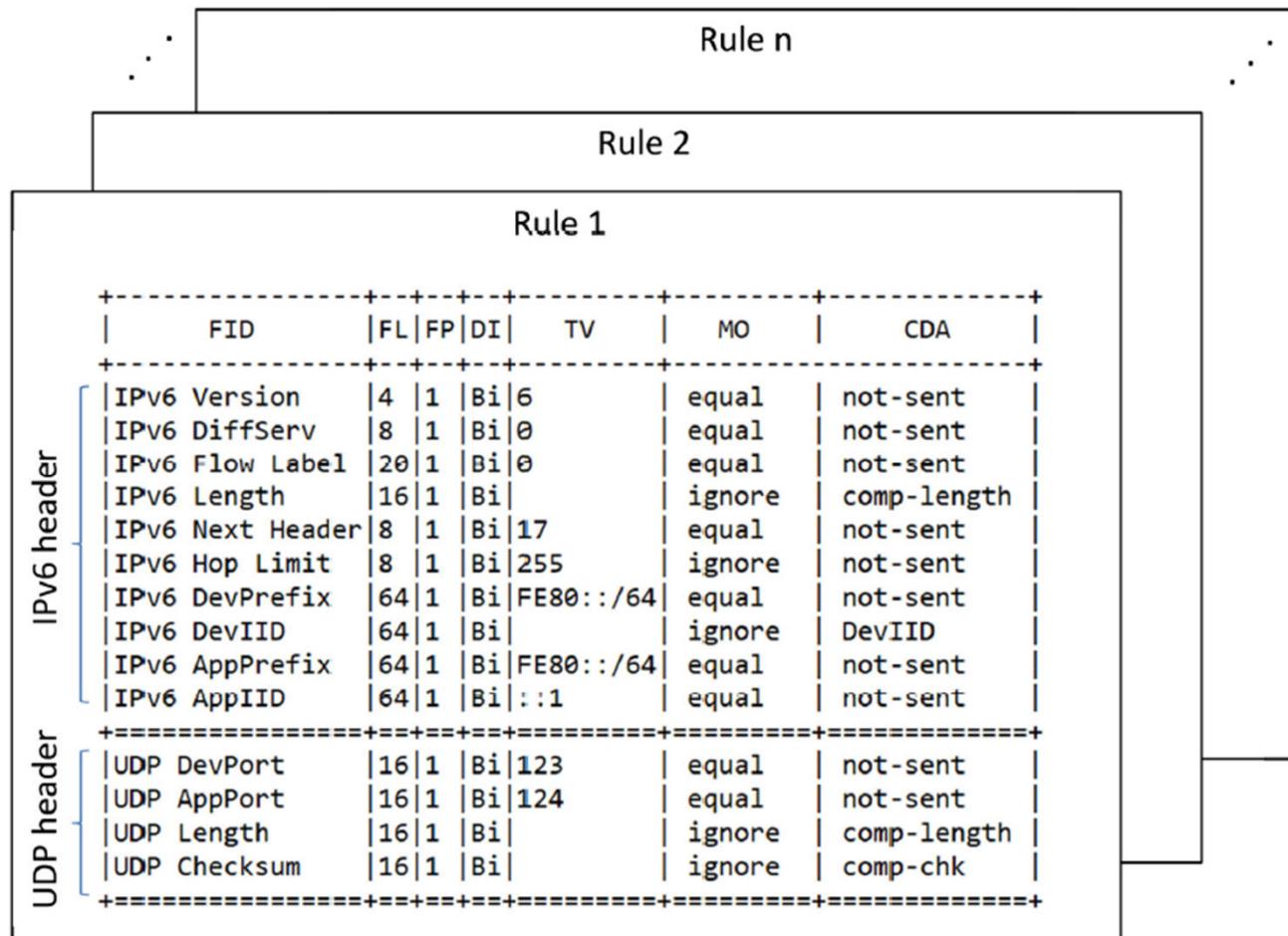
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Introduction

- ## RFC 6282 has been the basis for header compression in 6LoWPAN/6Lo
  - Designed for IEEE 802.15.4 as the target technology
  - Adapted/Reused for *relatively* similar IoT technologies
  - Compressed IPv6/UDP header size of 6-7 bytes (best case)
- ## RFC 8724, a product of the LPWAN WG
  - Static Context Header Compression and Fragmentation (SCHC)
  - Pronounced "sheek"
  - 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
  - Static Context: exploit a priori knowledge of header field values
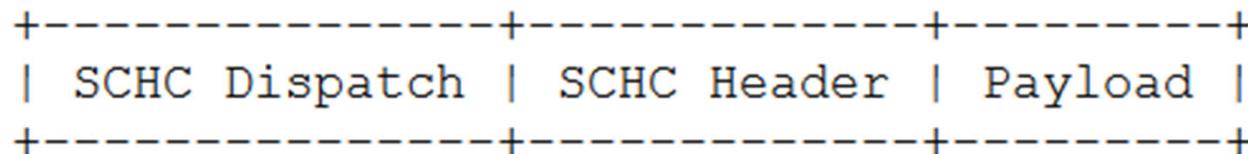
Background on SCHC HC

- SCHC header compression
  - Based on Rules, identified by Rule IDs

Rule n

Rule 2

Rule 1

	FID	FL	FP	DI	TV	MO	CDA
IPv6 header	IPv6 Version	4	1	Bi	6	equal	not-sent
	IPv6 DiffServ	8	1	Bi	0	equal	not-sent
	IPv6 Flow Label	20	1	Bi	0	equal	not-sent
	IPv6 Length	16	1	Bi		ignore	comp-length
	IPv6 Next Header	8	1	Bi	17	equal	not-sent
	IPv6 Hop Limit	8	1	Bi	255	ignore	not-sent
	IPv6 DevPrefix	64	1	Bi	FE80::/64	equal	not-sent
	IPv6 DevIID	64	1	Bi		ignore	DevIID
	IPv6 AppPrefix	64	1	Bi	FE80::/64	equal	not-sent
	IPv6 AppIID	64	1	Bi	::1	equal	not-sent
UDP header	UDP DevPort	16	1	Bi	123	equal	not-sent
	UDP AppPort	16	1	Bi	124	equal	not-sent
	UDP Length	16	1	Bi		ignore	comp-length
	UDP Checksum	16	1	Bi		ignore	comp-chk

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6LoWPAN Dispatch Type for SCHC ? (I/II)

- ## Might some 6Lo environments benefit from SCHC header compression?
  - Background: draft-toutain-6lo-6lo-and-schc-00
    - Positive feedback in IETF 106
  - If yes, need to signal when SCHC is used
- ## Frame format
  - Encapsulated, SCHC compressed, IPv6 packet:

```
+----------------+----------------+-----------+
| SCHC Dispatch  |  SCHC Header   |  Payload  |
+----------------+----------------+-----------+
```

6LoWPAN Dispatch Type for SCHC ? (II/II)

- 3 approaches for discussion (with pros & cons)
- Approach 1

  Rule ID

  - SCHC Dispatch pattern: 001XXXXX
    - NALP Dispatch Type space (RFC 4944)
    - 32 possible Rule IDs (is 32 sufficient?)
    - Potential backwards interoperability issues
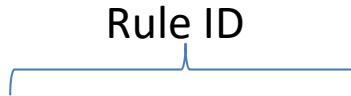
- Approach 2

  Rule ID

  - SCHC Dispatch pattern: 001YYYYY YYYYYYYY
    - NALP Dispatch Type space (RFC 4944)
    - 8192 possible Rule IDs (at the expense of an additional byte)
    - Potential backwards interoperability issues

- Approach 3
  - SCHC Dispatch pattern: 1111ZZZZ
    - Followed by a 1-byte Rule ID
    - RFC 8025 concept of "page". A whole page for SCHC, to keep overhead low
    - 256 possible Rule IDs

Thanks!
Questions? Comments?

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