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

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

Carles Gomez
Universitat Politècnica de Catalunya

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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

<table>
<thead>
<tr>
<th>Rule 1</th>
<th>Rule 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPv6 header</td>
<td>UDP header</td>
</tr>
<tr>
<td>FID</td>
<td>FL</td>
</tr>
<tr>
<td>IPv6 Version</td>
<td>4</td>
</tr>
<tr>
<td>IPv6 DiffServ</td>
<td>8</td>
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<tr>
<td>IPv6 Flow Label</td>
<td>20</td>
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<tr>
<td>IPv6 Length</td>
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<tr>
<td>IPv6 Next Header</td>
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<tr>
<td>IPv6 Hop Limit</td>
<td>8</td>
</tr>
<tr>
<td>IPv6 DevPrefix</td>
<td>64</td>
</tr>
<tr>
<td>IPv6 DevIID</td>
<td>64</td>
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<tr>
<td>IPv6 AppPrefix</td>
<td>64</td>
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<tr>
<td>IPv6 AppIID</td>
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<tr>
<td>UDP DevPort</td>
<td>16</td>
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<tr>
<td>UDP AppPort</td>
<td>16</td>
</tr>
<tr>
<td>UDP Length</td>
<td>16</td>
</tr>
<tr>
<td>UDP Checksum</td>
<td>16</td>
</tr>
</tbody>
</table>
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:
6LoWPAN Dispatch Type for SCHC? (II/II)

- 3 approaches for discussion (with pros & cons)
- Approach 1
  - SCHC Dispatch pattern: 001XXXXX
    - NALP Dispatch Type space (RFC 4944)
    - 32 possible Rule IDs (is 32 sufficient?)
    - Potential backwards interoperability issues
- Approach 2
  - 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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Universitat Politècnica de Catalunya

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