Static Context Header Compression (SCHC)

draft-toutain-6lpwa-ipv6-static-context-hc-01
draft-toutain-lpwan-yang-static-context-hc-00

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Advantages of RoHC and 6Lo(WPAN)

- RoHC: flexible, field description
- 6Lo(WPAN): IPv6 address compression

Context:
- Efficient compression
- Adapted to LP-WAN architecture:
  - Star topology
  - Nodes with predictable traffic
Static Context Header Compression

Uncompressed header

Card 1
Header description

Card 12 (+data)

Card 1
Header description

Rule id or shim id

Uncompressed header

context

rule
Fields: uncompressed packet, compressed packet, other
## Context

<table>
<thead>
<tr>
<th>Function</th>
<th>Compression</th>
<th>Decompression</th>
</tr>
</thead>
<tbody>
<tr>
<td>elided</td>
<td>not sent</td>
<td>use value stored in ctxt</td>
</tr>
<tr>
<td>send-value</td>
<td>send</td>
<td>build field from value</td>
</tr>
<tr>
<td>compute-IPv6-length</td>
<td>elided</td>
<td>compute IPv6 length</td>
</tr>
<tr>
<td>compute-UDP-length</td>
<td>elided</td>
<td>compute UDP length</td>
</tr>
<tr>
<td>compute-UDP-checksum</td>
<td>elided</td>
<td>compute UDP checksum</td>
</tr>
<tr>
<td>ESiid-DID</td>
<td>elided</td>
<td>build IID from L2 ES addr</td>
</tr>
<tr>
<td>LCIid-DID</td>
<td>elided</td>
<td>build IID from L2 LA addr</td>
</tr>
</tbody>
</table>
Static Context Header Compression

End System

LPWAN Radio

LPWAN Gateway

LPWAN Application

ctxt

LC

ctxt

LC

ctxt

LC
Static Context Header Compression

End System  LPWAN Radio  LPWAN Gateway  LPWAN Application

Be used for legacy applications
Optimization: Out of scope for IETF
-need to reconstruct IPv6 and ULP for forwarding and authentication
Static Context Header Compression

- Static: Values do not evolve during transmission:
  - IPv6/UDP have only static values
  - CoAP can also be compressed:
    - More complex: asymmetric compression
Yang model for SCHC

+-rw generic-rules
 |    +-rw context-name?             string
 |    +-rw context-rules* [rule-id]
 |         +-rw rule-name?          string
 |         +-rw rule-id             int8
 |    +-rw rule-fields* [field-pos]
 |         +-rw field-name?         string
 |         +-rw field-pos           int8
 |         +-rw field-value?        LPWA-types
 |         +-rw field-compression-match
 |             +-rw operator?      enumeration
 |             +-rw (operator-1sb)?
 |                 +-:(lsb-length)
 |             +-rw lsb-length?     LPWA-types
 |         +-rw field-decompression-match
 |             +-rw operator?       enumeration
 |             +-rw (operator-1sb)?
 |                 +-:(lsb-length)
 |             +-rw lsb-length?     LPWA-types
 |         +-rw action-function?    LPWA-action-functions
With CoMI/CoOL

iPATCH /c Content-Format(application/cool-value-pairs+cbor)
  [ [field-SID, rule-id, field-pos], value ]

ESPrefix ≈ SLAAC