

# draft-lagos-lpwan-icmpv6-static- context-hc-00

Tomás Lagos (Ed.)  
Diego Dujovne

# Status

- Goal: ICMPv6 compression using SCHC
- News:
  - **Reuse the Rule ID field** by redefining the bit usage without loss in compatibility.
  - **SCHC compression** for
    - Echo Request - Echo Reply
    - Router Solicitation - Router Advertisement
    - Neighbor Solicitation - Neighbor Advertisement
- Next: Redirect Compression, SCHC rule performance

# Rule ID

- To encompass a rule for the different ICMPv6 messages, the following distribution is given to the rule ID

<b>A</b> N_head er	<b>B</b> src_ad dr	<b>C</b> Reserv ed	<b>D</b> ICMPv 6 1	<b>E</b> ICMPv 6 2	<b>F</b> ICMPv 6 3	<b>G</b> ICMPv6 T	<b>H</b> Piggybac ked
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	-------------------------	-----------------------------

# Rule ID: [1:3]

Field	bits	Values
A	1	0: If the Next Header field is ICMPv6, 1: If Next Header field is UDP
B	1	0: If the source address is link-local, 1: If the source address is Global
C	1	Reserved

# Rule ID: [4:8]

<p><b>DEF:G</b></p>	<p><b>4</b></p>	<p><b>000:0: Echo Request</b></p> <p><b>001:0: Echo Reply</b></p> <p><b>010:0: Router Solicitation</b></p> <p><b>011:0: Router Advertisement</b></p> <p><b>100:B: Neighbor Solicitation;</b></p> <p style="padding-left: 40px;"><b>B = 0 Target Address is link-local</b></p> <p style="padding-left: 40px;"><b>B = 1 Target Address is Global</b></p> <p><b>101:B: Neighbor Advertisement;</b></p> <p style="padding-left: 40px;"><b>B = 0 Target Address is link-local,</b></p> <p style="padding-left: 40px;"><b>B = 1 Target Address is Global</b></p> <p><b>110:0 If it is Redirect</b></p>
<p><b>H</b></p>	<p><b>1</b></p>	<p><b>0: A single packet is sent,</b></p> <p><b>1: after the packet, the following packet is piggybacked to reduce transmission delay</b></p>

# SCHC Compression

- Echo Request - Echo Reply

Field	FP	DI	Match Op.	C / D.Action	[bits]
Type	I	Bi	Equal	Not sent	
Code	I	Bi	Equal	Not sent	
Checksum	I	Bi	Ignore	Compute-checksum	
Identifier	I	Bi	Equal	Sent	[16]
Sequence	I	Bi	Ignore	Sent	[16]

# SCHC Compression

- Router Solicitation

Field	FP	DI	Match Op.	C/D Action	[bits ]
Type	I	Bi	Equal	Not sent	
Code	I	Bi	Equal	Not sent	
Checksum	I	Bi	Ignore	Compute-checksum	
Reserved	I	Bi	Equal	Not sent	
Option - Type	I	Bi	Equal	Not sent	
Option - length	I	Bi	Ignore	Compute-length	
Option - link-layer	I	Bi	Ignore	Sent	[48] <sup>7</sup>

# SCHC Compression

- Router Advertisement

Field	FP	DI	Match Op.	C/D Action	[bits]
Current hop limit	I	Bi	Ignore	Not sent	
Autoconfig flags	I	Bi	Ignore	Not sent	
Router Lifetime	I	Bi	Ignore	Not sent	
Reachable time	I	Bi	Ignore	Not sent	
Retransmission timer	I	Bi	Ignore	Not sent	
Option - type	I	Bi	Equal	Not sent	
Option - length	I	Bi	Ignore	Compute-length	
Option - link-layer	I	Bi	Ignore	Sent	[48]



# SCHC Compression

- Neighbor Solicitation

Field	FP	DI	Match Op.	C/D Action	[bits]
Type	I	Bi	Equal	Not sent	
Code	I	Bi	Equal	Not sent	
Checksum	I	Bi	Ignore	Compute-checksum	
Target Address	I	Bi	Match-mapping	Sent	link-local [64] Global [128]
Option-type	I	Bi	Equal	Not sent	
Option-length	I	Bi	Ignore	Compute-length	
Option-link-layer	I	Bi	Ignore	Sent	[48]

# SCHC Compression

- Neighbor Advertisement

Field	FP	DI	Match Op.	C/D Action	[bits]
Flags	I	Bi	Equal	Not sent	
Target Address	I	Bi	Match-mapping	Sent	link-local [64] Global [128]
Option - type	I	Bi	Equal	Not sent	
Option - length	I	Bi	Ignore	Not sent	
Option - link-layer	I	Bi	Ignore	Not sent	

# Thank you

Authors:

Tomás Lagos / [tomas.lagos@mail.udp.cl](mailto:tomas.lagos@mail.udp.cl) [Ed.]

Diego Dujovne / [diego.dujovne@mail.udp.cl](mailto:diego.dujovne@mail.udp.cl)

Available implementation:

- [https://github.com/tlagos1/LoRA\\_IPv6\\_implementation/tree/develop](https://github.com/tlagos1/LoRA_IPv6_implementation/tree/develop)