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draft-ietf-schc-icmpv6-compression-00

Authors: Dominique Barthel, Laurent Toutain

Presenter: Laurent Toutain

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WG adoption

- Changed the title from *OAM* to *ICMPv6 compression*
 - *Oops: YANG DM is still named OAM.*
- *Must be aligned on the architecture document*
- *Divided in two parts*
 - *ICMPv6 compression*
 - *Optimization for constrained devices*

ICMPv6 compression

- Targets RFC 4443 (eg. No Neighbor Discovery)
- Defines fields ID:
 - *fid-icmpv6-base-type*
 - *fid-icmpv6-type*
 - *fid-icmpv6-code*
 - *fid-icmpv6-checksum*
 - *fid-icmpv6-identifier*
 - *fid-icmpv6-sequence*
 - *fid-icmpv6-pointer*
 - *fid-icmpv6-mtu*
 - **fid-icmpv6-payload**
- **No unused field**

Rule example: Destination Unreachable

Field	FL	FP	DI	Value	Matching Operator	CDA	Sent bits
<i>IPv6 Headers description</i>							
ICMPv6 Type	8	1	Dw	1	equal	not-sent	
ICMPv6 Code	8	1	Dw	[0,1,2,3,4,5,6]	match-mapping	mapping-sent	3
ICMPv6 Checksum	1	1	Dw		ignore	compute-*	
ICMPv6 Payload	var	1	Dw	0	ignore	value-sent	(data length*8) + 4 or +12

Table 1: Example of Destination Unreachable compression rule.

Rule example: packet too big

Field	FL	FP	DI	Value	Matching Operator	CDA	Sent bits
<i>IPv6 Headers description</i>							
ICMPv6 Type	8	1	Dw	2	equal	not-sent	
ICMPv6 Code	8	1	Dw	0	equal	not-sent	3
ICMPv6 Checksum	1	1	Dw		ignore	compute-*	
ICMPv6 MTU	32	1	Dw		MSB(21)	LSB	
ICMPv6 Payload	var	1	Dw	0	ignore	value-sent	(data length*8) + 4 or +12

Table 2: Example of Packet Too Big compression rule

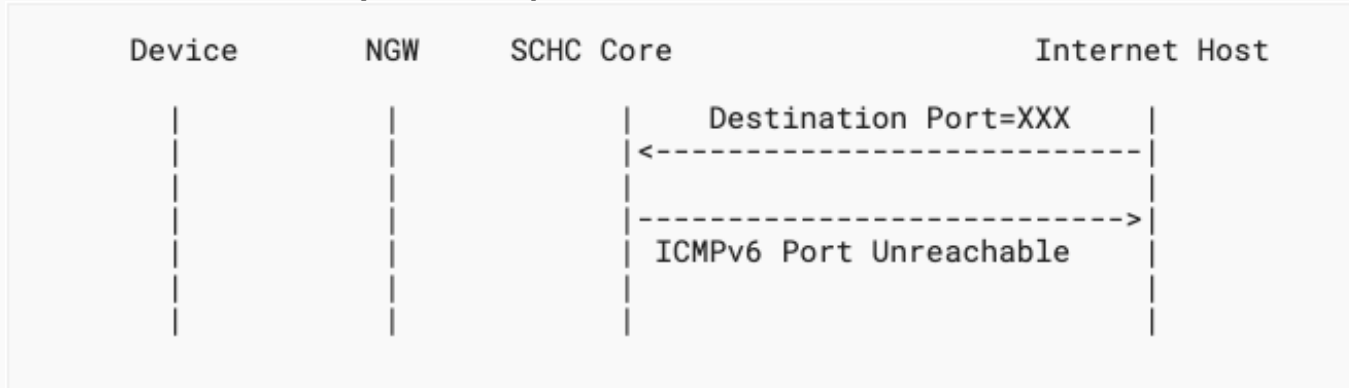
Rule example: Ping compression

Field	FL	FP	DI	Value	Matching Operator	CDA	Sent bits
<i>IPv6 Headers description</i>							
ICMPv6 Type	8	1	Up	128	equal	not-sent	
ICMPv6 Type	8	1	Dw	129	equal	not-sent	
ICMPv6 Code	8	1	Bi	0	equal	not-sent	
ICMPv6 Identifier	16	1	Bi	0	ignore	not-sent	
ICMPv6 Sequence	16	1	Bi	0	MSB(13)	LSB	3
ICMPv6 Checksum	1	1	Dw		ignore	compute-*	
ICMPv6 Payload	var	1	Bi	0	ignore	value-sent	(data*8) + 4 or +12

Table 3: Example of compression rule for a ping from the device

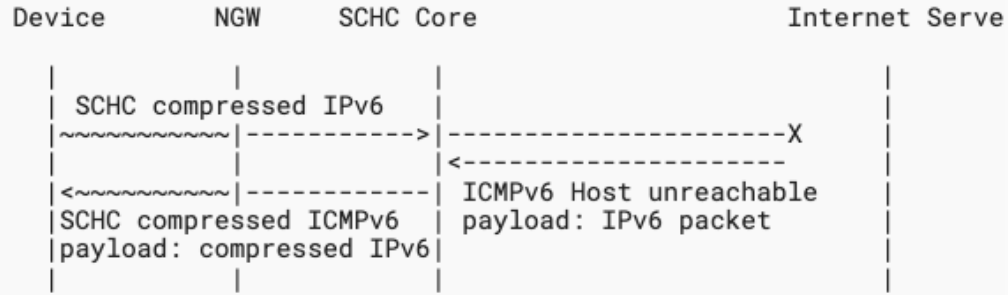
Constrained devices

- SCHC Gateway anticipates device ICMP errors



- packet contains some extension headers, a parameter problem may be generated (type 4),
- no rule contains the IPv6 device address found in the incoming packet, a no route to destination ICMPv6 message (type 0, code 3) may be generated,
- a device IPv6 address is found, but no port matches, a port unreachable ICMPv6 message (type 0, code 4) may be generated,
- if the incoming packet is too large for any of the fragmentation rules, an ICMPv6 Message Too big MAY be generated with the largest size allowed by the fragmentation rules.

Compress error message



● New MO:

- mo-rev-rule-match
- mo-rule-match

● New CDA:

- cda-compress-sent
- cda-rev-compress-sent

Example

Field	FL	FP	DI	Value	Matching Operator	CDA	Sent bits
<i>IPv6 Headers description</i>							
ICMPv6 Type	8	1	Dw	3	equal	not-sent	
ICMPv6 Code	8	1	Dw	[0,1]	match-mapping	mapping-sent	1
ICMPv6 Checksum	1	1	Dw		ignore	compute-*	
ICMPv6 Payload	var	1	Dw	0	rev-rule-match	rev-compress-sent	(compressed IPv6 header*8) + 4 or +12

Table 6: Example of compression rule for a ICMP error to a device

Action in architecture document ?

Action: Ping-proxy

- Action was removed from a past draft
 - Lack of consensus
- An action is activated when a rule is selected to execute a procedure:
 - I.e. Matches with the packet and chosen
- For ICMPv6:
 - Answer to a ping request on behalf of the device if the device is active

What's next in architecture document?

- Do we document this ?
- Clarify the term proxy which can be ambiguous.