Abstract

This document complements RFC 8138 and dedicates a bit in the RPL configuration option to indicate whether RFC 8138 compression should be used within the RPL instance. When the bit is not set, source nodes that support RFC 8138 should refrain from using the compression unless the information is superseded by configuration.

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The transition to [RFC8138] in a network can only be done when all nodes support the specification. In a mixed case with both RFC8138-capable and non-capable nodes, the compression should be turned off.

This document complements RFC 8138 and dedicates a bit in the RPL configuration option to indicate whether RFC 8138 compression should be used within the RPL instance. When the bit is not set, source nodes that support RFC 8138 should refrain from using the compression unless the information is superseded by configuration.

2. BCP 14

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119][RFC8174] when, and only when, they appear in all capitals, as shown here.

3. Updating RFC 6550

RPL defines a configuration option that is registered to IANA in section 20.14. of [RFC6550]. This specification defines a new flag "Enable RFC8138 Compression" (T) that is encoded in one of the reserved control bits in the option. The new flag is set to turn on the use of the compression of RPL artifacts with RFC 8138.
4. Operation

A node that supports this specification SHOULD source packets in the compressed form using [RFC8138] if the new T flag is set in the RPL configuration option from its parents. Failure to do so will result in larger packets, yields higher risks of loss and may cause a fragmentation.

A node that supports this specification SHOULD refrain from sourcing packets in the compressed form using [RFC8138] if the T flag is reset. This behaviour can be overridden by a configuration of the node in order to cope with intermediate implementations of the root that support [RFC8138] but not this specification and cannot set the T flag.

Regardless of the setting of the bit, the node MUST forward a packet in the form it was received, compressed or uncompressed.

5. IANA Considerations

This specification updates the "Registry for the DODAG Configuration Option Flags" that was created for [RFC6550] as follows:

<table>
<thead>
<tr>
<th>Bit number</th>
<th>Suggested value</th>
<th>Defined in</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (suggested)</td>
<td>Turn on RFC8138 Compression (T)</td>
<td>This RFC</td>
</tr>
</tbody>
</table>

Table 1: New DODAG Configuration Option Flag

6. Security Considerations

No specific threat was identified with this specification.

7. Acknowledgments

8. References

8.1. Normative References

8.2. Informative References

[RFC8138] Thubert, P., Ed., Bormann, C., Toutain, L., and R. Cragie, 
"IPv6 over Low-Power Wireless Personal Area Network 
(6LoWPAN) Routing Header", RFC 8138, DOI 10.17487/RFC8138, 

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