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RPL Mesh Header
draft-bormann-6lo-rpl-mesh-00

Abstract

This short draft provides a straw man for the RPL Mesh Header.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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Table of Contents

1. Introduction

[I-D.thubert-6man-flow-label-for-rpl] defines a way to carry RPL information in a flow label. The present draft shows how to carry the same information in a RPL Mesh Header, in a slightly more efficient way.

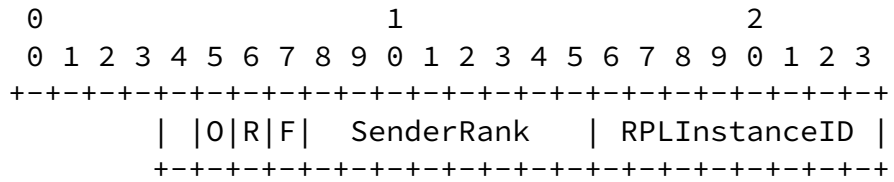
1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

2. Idea

(Insert definitions from [I-D.thubert-6man-flow-label-for-rpl] here.)

Where [I-D.thubert-6man-flow-label-for-rpl] would carry the [RFC6553] information in a flow label:



the RPL Mesh header carries it in a Mesh header, depending on whether Rank and Inst both fit into 4 bits (S=0) or not (S=1):

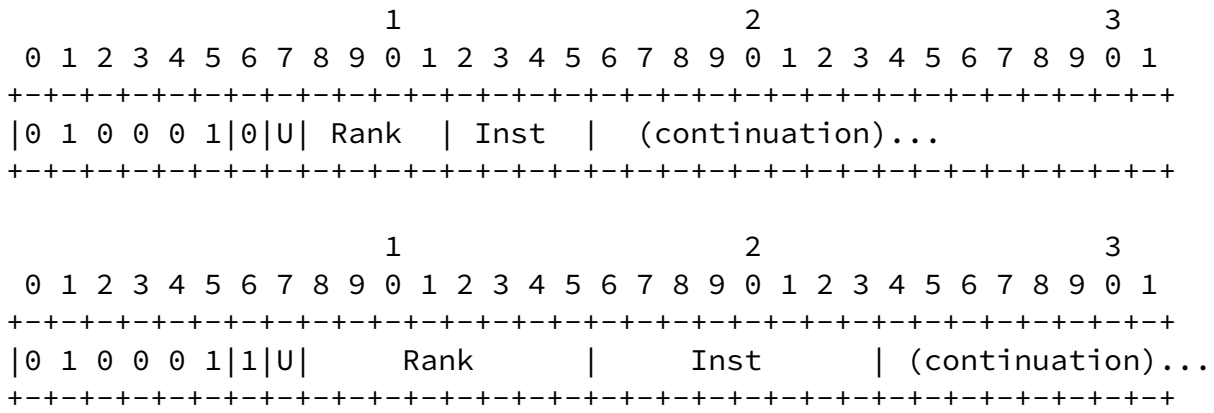


Figure 1: RPL Mesh Header: Short and Long Version

The U bit controls whether an [RFC6282] IPHC dispatch follows (U=0, Figure 2) or an [RFC4944] FRAG1 fragment header (U=1, Figure 3). In both cases, the first three bits of the dispatch are replaced by the O, R, and F bits from [I-D.thubert-6man-flow-label-for-rpl].

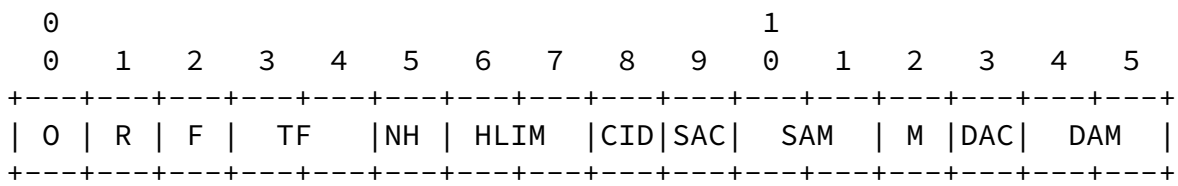


Figure 2: continuation for U=0

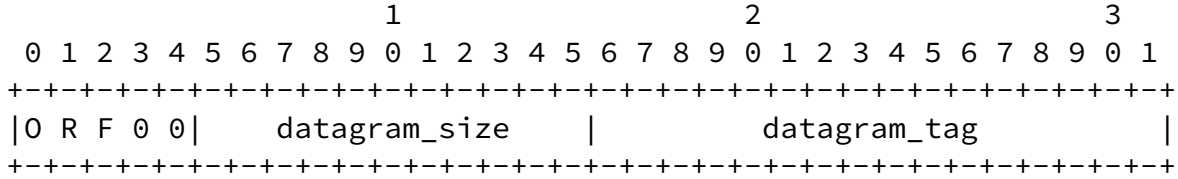


Figure 3: continuation for U=1

3. IANA considerations

This draft requests IANA to assign the following four dispatch types in the "IPv6 Low Power Personal Area Network Parameters" registry:

01 0001SU

4. Security considerations

The security considerations of [RFC4944], [RFC6282], and [RFC6553] apply.

5. References

5.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC4944] Montenegro, G., Kushalnagar, N., Hui, J., and D. Culler, "Transmission of IPv6 Packets over IEEE 802.15.4 Networks", RFC 4944, September 2007.

[RFC6282] Hui, J. and P. Thubert, "Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks", RFC 6282, September 2011.

[RFC6553] Hui, J. and JP. Vasseur, "The Routing Protocol for Low-Power and Lossy Networks (RPL) Option for Carrying RPL Information in Data-Plane Datagrams", RFC 6553, March 2012.

5.2. Informative References

[I-D.thubert-6man-flow-label-for-rpl] Thubert, P., "The IPv6 Flow Label within a RPL domain", draft-thubert-6man-flow-label-for-rpl-03 (work in progress), May 2014.

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