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RFC 8757
Dynamic Link Exchange Protocol (DLEP) Latency Range Extension

Abstract

This document defines an extension to the Dynamic Link Exchange Protocol (DLEP) to provide the range of latency that can be experienced on a link.

Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 7841.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at https://www.rfc-editor.org/info/rfc8757.

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1. Introduction

The Dynamic Link Exchange Protocol (DLEP) is defined in [RFC8175]. It provides the exchange of link-related control information between DLEP peers. DLEP peers are comprised of a modem and a router. DLEP defines a base set of mechanisms as well as support for possible extensions. This document defines one such extension.

The base DLEP specification includes the Latency Data Item, which provides a single, implementation-dependent latency value on a link. This document adds the ability to relay the minimum and maximum latency range seen on a link. The extension defined in this document is referred to as "Latency Range".

This document defines a new DLEP Extension Type Value that is used to indicate the use of the extension; see Section 2. A new DLEP Data Item is defined in Section 3.

1.1. Key Words

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.

2. Extension Usage and Identification

The use of the Latency Range Extension **SHOULD** be configurable. To indicate that the Latency Range Extension is to be used, an implementation **MUST** include the Latency Range Extension Type Value in the Extensions Supported Data Item. The Extensions Supported Data Item is sent and processed according to [RFC8175].

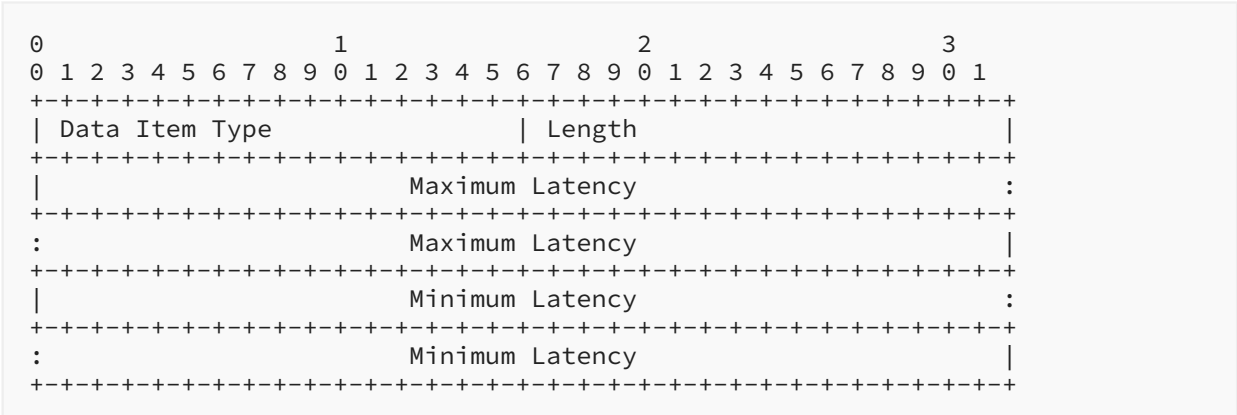
Note: The usage of the extension defined in this document does not impact processing associated with the Latency Data Item defined in [RFC8175].

The Latency Range Extension Type Value is 4; see Section 5.

3. Latency Range Data Item

The Latency Range Data Item serves much the same purpose as the Latency Data Item defined in [RFC8175] with the addition of being able to communicate the latency range that can be experienced by traffic on a link. The Latency Range Data Item **MUST** be included in the Session Initialization Response Message, with default values to be used on a session-wide basis. The Latency Range Data Item also **MAY** be carried in any message where the Latency Data Item [RFC8175] is allowed and is carried as an additional data item. When present, the Latency Range Data Item **MUST** be processed according to the same rules as the Latency Data Item defined in [RFC8175].

The format of the Latency Range Data Item is:



Data Item Type:

28

Length:
16

Maximum Latency:
A 64-bit unsigned integer, representing the longest transmission delay, in microseconds, that a packet encounters as it is transmitted over the link.

Minimum Latency:
A 64-bit unsigned integer, representing the shortest transmission delay, in microseconds, that a packet can encounter as it is transmitted over the link.

4. Security Considerations

The extension introduces a new Data Item for DLEP. The extension does not inherently introduce any additional vulnerabilities above those documented in [RFC8175]. The approach taken to security in that document applies equally when running the extension defined in this document.

5. IANA Considerations

As described below, IANA has assigned two values per this document. Both assignments are to registries defined by [RFC8175].

5.1. Extension Type Value

IANA has assigned the following value in the "Extension Type Values" registry within the "Dynamic Link Exchange Protocol (DLEP) Parameters" registry. The new value is in the range with the "Specification Required" [RFC8126] policy:

Code	Description
4	Latency Range

Table 1: New Extension Type Value

5.2. Data Item Value

IANA has assigned the following value in the "Data Item Type Values" registry within the "Dynamic Link Exchange Protocol (DLEP) Parameters" registry. The new value is in the range with the "Specification Required" [RFC8126] policy:

Type Code	Description
28	Latency Range

Table 2: New Data Item Value

6. References

6.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/info/rfc2119>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

[RFC8175] Ratliff, S., Jury, S., Satterwhite, D., Taylor, R., and B. Berry, "Dynamic Link Exchange Protocol (DLEP)", RFC 8175, DOI 10.17487/RFC8175, June 2017, <https://www.rfc-editor.org/info/rfc8175>.

6.2. Informative References

[RFC8126] Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 8126, DOI 10.17487/RFC8126, June 2017, <https://www.rfc-editor.org/info/rfc8126>.

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