

Manet
Internet-Draft
Intended status: Standards Track
Expires: 10 February 2022

H.R. Rogge
Fraunhofer FKIE
9 August 2021

DLEP Radio Quality Extension
draft-rogge-manet-dlep-radio-quality-01

Abstract

This document defines an extension to the Dynamic Link Exchange Protocol (DLEP) to provide the quality of incoming radio signals.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 10 February 2022.

Copyright Notice

Copyright (c) 2021 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the [Trust Legal Provisions](#) and are provided without warranty as described in the Simplified BSD License.

Internet-Draft

DLEP PHY quality

August 2021

Table of Contents

1.	Introduction	2
1.1.	Requirements Language	2
2.	Extension Usage and Identification	2
3.	Radio Quality Data Items	2
3.1.	Radio SNR Data Item	3
3.2.	Radio Signal Strength Data Item (also called RSSI)	3
3.3.	Radio Biterror Rate Data Item	4
3.4.	Radio Noise Data Item	4
4.	Security Considerations	5
5.	IANA Considerations	5
5.1.	Extension Type Value	5
5.2.	Data Item Value	6
6.	Normative References	6
7.	Informative References	6
	Author's Address	6

[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.

[1.1.](#) Requirements Language

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 [[RFC2119](#)].

[2.](#) Extension Usage and Identification

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

The Radio Quality Extension Type Value is TBD; see Section TBD.

[3.](#) Radio Quality Data Items

This section describes the quality related Data Items of this extension.

[3.1.](#) Radio SNR Data Item

Radio SNR Data Item contains information which signal to noise ratio the radio measured. This Data Item can be both interface and neighbor specific.

The format of the Radio SNR Data Item is:

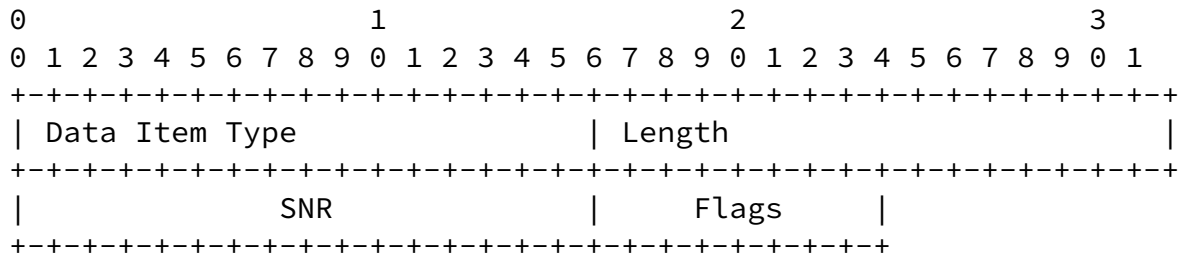


Figure 1

Data Item Type: TBD

Length: 3

SNR: SNR measured in dB multiplied by 10 as a signed integer.

Flags: Flags field as defined below.

The Flags field is defined as:

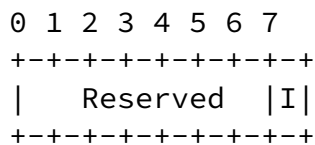


Figure 2

I: Interference Flag, indicating the the data includes interference

into the noise value (SINR).

Reserved: MUST be zero. Left for future assignment.

3.2. Radio Signal Strength Data Item (also called RSSI)

Radio Signal Strength Data Item contains information which absolute signal strength the radio measured. This Data Item can be both interface and neighbor specific.

The format of the Radio Signal Strength Data Item is:

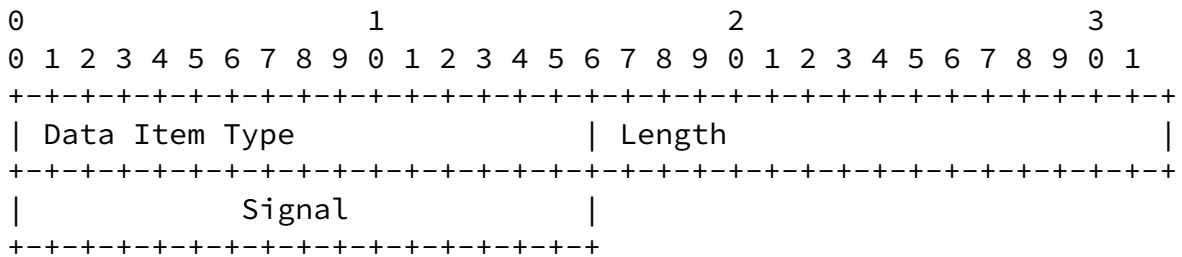


Figure 3

Data Item Type: TBD

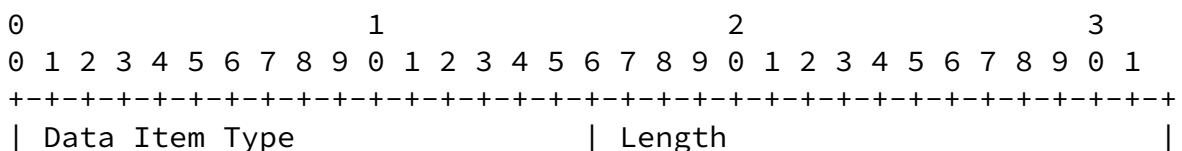
Length: 2

Signal: Signal Strength measured in dBm multiplied by 10 as a signed integer.

3.3. Radio Biterror Rate Data Item

Radio Biterror Rate Data Item contains information which absolute noise value the radio measured. This Data Item can be both interface and neighbor specific.

The format of the Radio Biterror Rate Data Item is:



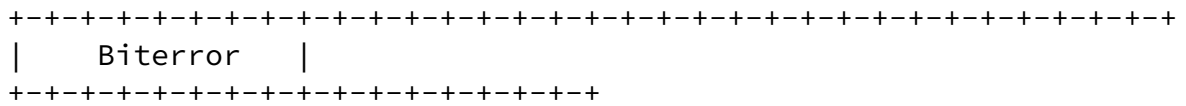


Figure 4

Data Item Type: TBD

Length: 1

Biterror: Biterror rate measured as a negative exponent to base 10, e.g. "4" for an error rate of 1 to 10⁻⁴. An error rate of 0 is encoded with a 255.

3.4. Radio Noise Data Item

Radio Noise Data Item contains information which absolute noise value the radio measured. This Data Item SHOULD be interface.

The format of the Radio Noise Data Item is:

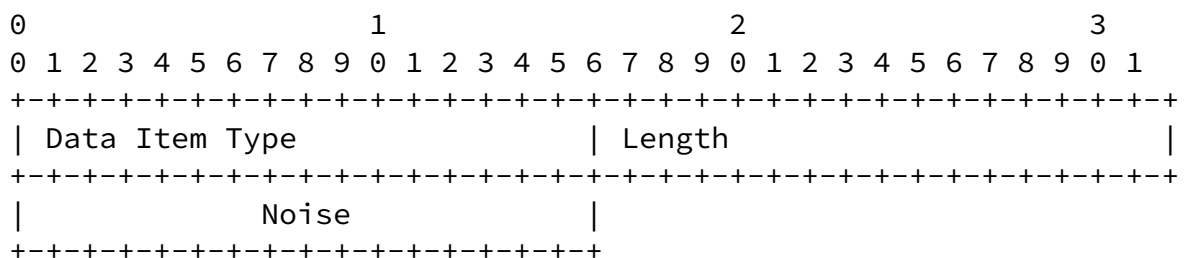


Figure 5

Data Item Type: TBD

Length: 2

Noise: Noise measured in dBm multiplied by 10 as a signed integer.

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
TBD	Radio Quality

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
TBD	Radio SNR
TBD	Radio Signal
TBD	Radio Biterror Rate

TBD	Radio Noise
-----	-------------

Table 2: New Data Item Value

6. 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>>.
- [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>>.

7. 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>>.

Author's Address

Henning Rogge
 Fraunhofer FKIE
 Fraunhofer Strasse 20
 53343 Wachtberg
 Germany

