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IANA Registry for 6lowpan Additional Dispatch Bytes
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Abstract

RFC4944 defines ESC dispatch type for additional dispatch bytes in the 6lowpan header. The value of ESC byte has been updated by RFC6282. However, the usage of ESC extension bytes has not been defined in RFC6282 and RFC4944. The purpose of this document is to define the usage of ESC extension bytes. It also records the initial values for extended dispatch values and requests corresponding IANA actions.

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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This Internet-Draft will expire on January 7, 2016.

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1. Introduction

[RFC4944] section 5.1 defines the dispatch header and types. The ESC type is defined for using additional dispatch bytes in the 6lowpan header. RFC 6282 modifies the value of the ESC dispatch type and it is recorded in IANA registry [6LOWPAN-IANA]. However, the bytes and usage following the ESC byte are not defined in either [RFC4944] and [RFC6282]. However, in recent years with 6lowpan deployments, the implementations and Standards organizations have started using the ESC bytes and a co-ordination between the respective organizations and IETF/IANA are needed.

The following sections describe the ITU-T specification for ESC dispatch byte code points for the record and propose the use of ESC extension bytes in the future. The document also requests IANA actions for the first extension byte following the ESC byte.

2. 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 [RFC2119].

3. Usage of ESC dispatch bytes

The ESC byte [01 000000] is modified in RFC 6282[RFC6282] and [RFC4944] first introduces this dispatch header type for extension of dispatch bytes for different usage of 6lowpan applications.

For example, a dispatch header type (ex: LOWPAN_HC1, MESH etc.) might need some special handling of each packet for classification.

This document specifies that the first octet following the ESC byte is used for extension type(extended dispatch values). Subsequent octets are left unstructured for the specific use of the extension type:

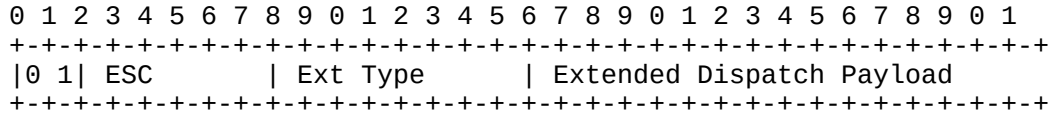

Figure 1: Frame Format with ESC Byte

ESC: The left most byte is the ESC dispatch type containing '0100000'

Extension Type(ET): It is the first byte following the ESC byte. Extension type defines the payload for the additional dispatch bytes. The values are from 0 to 255. Value 0 and 255 are reserved for future use. These values are assigned by IANA. The extension types appear in the sequence [ESC][extension type], as opposed to the dispatch values which appear by themselves as [dispatch value] with no preceding ESC. Thus, extension types and dispatch values are orthogonal code spaces.

Extended Dispatch Payload(EDP): This part of frame format must be defined by the corresponding extension type. A specification is required to define each usage of extension type and its corresponding Extension Payload.

Note that section 5.1 in RFC4944 indicates that the Extension Type field may contain additional dispatch values (larger than 63). Note that the new dispatch type MUST NOT modify the behavior of existing dispatch types for the sake of interoperability.

3.1. Open Issues

Legacy node behavior: When a legacy 6lowpan node receives packets with ESC bytes or nodes receiving ESC bytes it does not understand, what should be its behavior? Two alternatives: 1) discard the 6lowpan packet 2) ignore the ESC bytes.

Sequence Of dispatch bytes and ESC bytes: TBD

3.2. Example: ITU-T G.9903 ESC type usage

[G3-PLC] provides native mesh under functionalities. The ESC dispatch type is used with the command frames specified in figure 9-12 and Table 9-35 in [G3-PLC] . The command ID values are 0x01 to 0x1F.

The frame format is defined as follows:

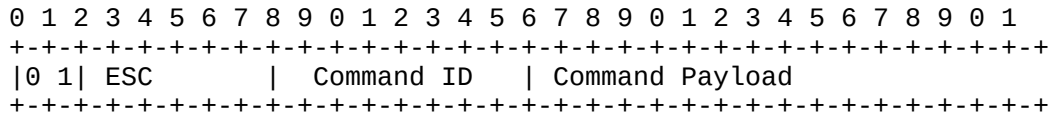

Figure 2: G.9903 Frame Format with ESC Byte

4. IANA Considerations

This document requests IANA to register the 'Extension Type' values as per the policy 'Specification Required'[RFC5226] as specified in this document which follows the same policy as in the IANA section of [RFC4944]. For each Extension Type(except the Reserved values)the specification MUST define corresponding Extended Dispatch Payload frame bytes for the receiver implementation to read the ESC bytes with interoperability.

The initial values for the ESC dispatch 'Extension Type' fields are:

Value	Description	Reference
0	Reserved for future use	This document
1-31	Used by ITU-T G.9903 command ID	ITU-T G.9903 [G3-PLC]
32-254	Unassigned	This document
255	Reserved for future use	This document

Figure 3: Initial Values for IANA Registry

5. Security Considerations

There is no additional security threats due to the assignments of ESC byte usage described in this document. However, this document forbids defining any extended dispatch values or extension types that modifies the behavior of existing Dispatch types.

6. Acknowledgements

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7. References

7.1. 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.

7.2. Informative References

[6LOWPAN-IANA] "https://www.iana.org/assignments/_6lowpan-parameters/_6lowpan-parameters.xhtml".

[G3-PLC] "http://www.itu.int/rec/T-REC-G.9903-201402-I".

[RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 5226, May 2008.

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