IPv6 Pseudowire Label Switched Path (LSP) Ping
draft-chen-pwe3-ipv6-lsp-ping-vccv-01.txt

Abstract

   The existing Pseudowire LSP Ping can only work in IPv4 scenario, this
   document extends Pseudowire LSP Ping to IPv6 scenario where IPv6
   target LDP session is used to signal Pseudowire and the Sender and
   Receiver's IP addresses are IPv6 addresses.

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 RFC 2119 [RFC2119].

Status of this Memo

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   provisions of BCP 78 and BCP 79.

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Table of Contents

1. Introduction

   Multi-Protocol Label Switching (MPLS) Label Switched Path (LSP) Ping
   is defined in [RFC4379]. It can be used to detect data path failures
   in all MPLS LSPs and Pseudowires (PWs). Currently, three PW related
   Target Forwarding Equivalence Class (FEC) sub-TLVs (FEC 128
   Pseudowire-Deprecated, FEC 128 Pseudowire-Current and FEC 129
   Pseudowire) are defined. These sub-TLVs contain the source and
   destination addresses of the target LDP session, and currently only
   IPv4 target LDP session is covered. When IPv6 target LDP session is
   used, these existing sub-TLVs can not be used.

   This document defines two new Target FEC sub-TLVs (IPv6 FEC 128
   Pseudowire sub-TLV and IPv6 FEC 129 Pseudowire sub-TLV) to extend the
   application of PW LSP Ping to IPv6 scenario. IPv6 FEC 128 Pseudowire
   (Deprecated) will not be considered in this document.

2. IPv6 FEC 128 Pseudowire

   IPv6 FEC 128 Pseudowire sub-TLV has the consistent structure with FEC
   128 Pseudowire sub-TLV as described in Section 3.2.9 of [RFC4379].
   The encoding of IPv6 FEC 128 Pseudowire sub-TLV is as follows:

```
     0                   1                   2                   3
     0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |        IPv6 FEC 128 PW         |             Length            |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    ~                   Sender's PE IPv6 Address                    ~
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    ~                   Remote PE IPv6 Address                      ~
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |                           PW ID                               |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |           PW Type             |         Must Be Zero          |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                   Figure 1. IPv6 FEC 128 Pseudowire
```
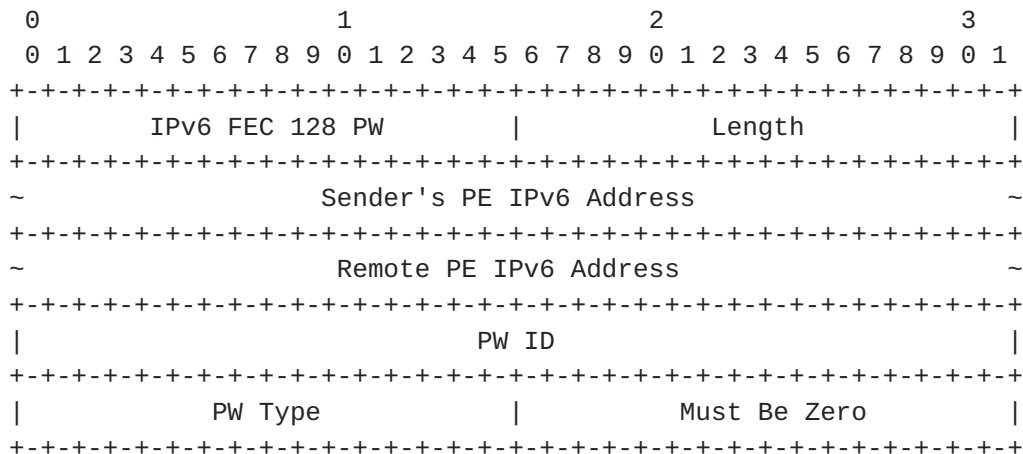
   IPv6 FEC 128 PW: TBD.

   Length: it defines the length in octets of the value field of the
   sub-TLV and its value is 40.

   Sender's PE IPv6 Address: The source IP address of the target IPv6
   LDP session.

   Remote PE IPv6 Address: The destination IP address of the target IPv6

LDP session.

PW ID: Same as FEC 128 Pseudowire [RFC4379].

PW Type: Same as FEC 128 Pseudowire [RFC4379].

3. IPv6 FEC 129 Pseudowire Sub-TLV

IPv6 FEC 129 Pseudowire sub-TLV has the consistent structure with FEC
129 Pseudowire sub-TLV as described in Section 3.2.10 of [RFC4379].
The encoding of IPv6 FEC 129 Pseudowire is as follows:

```
    0                   1                   2                   3
    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |       IPv6 FEC 129 PW         |             Length            |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ~                 Sender's PE IPv6 Address                      ~
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ~                 Remote PE IPv6 Address                        ~
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |           PW Type             |  AGI Type   |   AGI Length    |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ~                          AGI Value                            ~
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |  AII Type   |  SAII Length  |        SAII Value               |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ~                    SAII Value (continued)                     ~
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |  AII Type   |  TAII Length  |        TAII Value               |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ~                    TAII Value (continued)                     ~
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   | TAII (cont.) |  0-3 octets of zero padding                   |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                 Figure 2. IPv6 FEC 129 Pseudowire
```
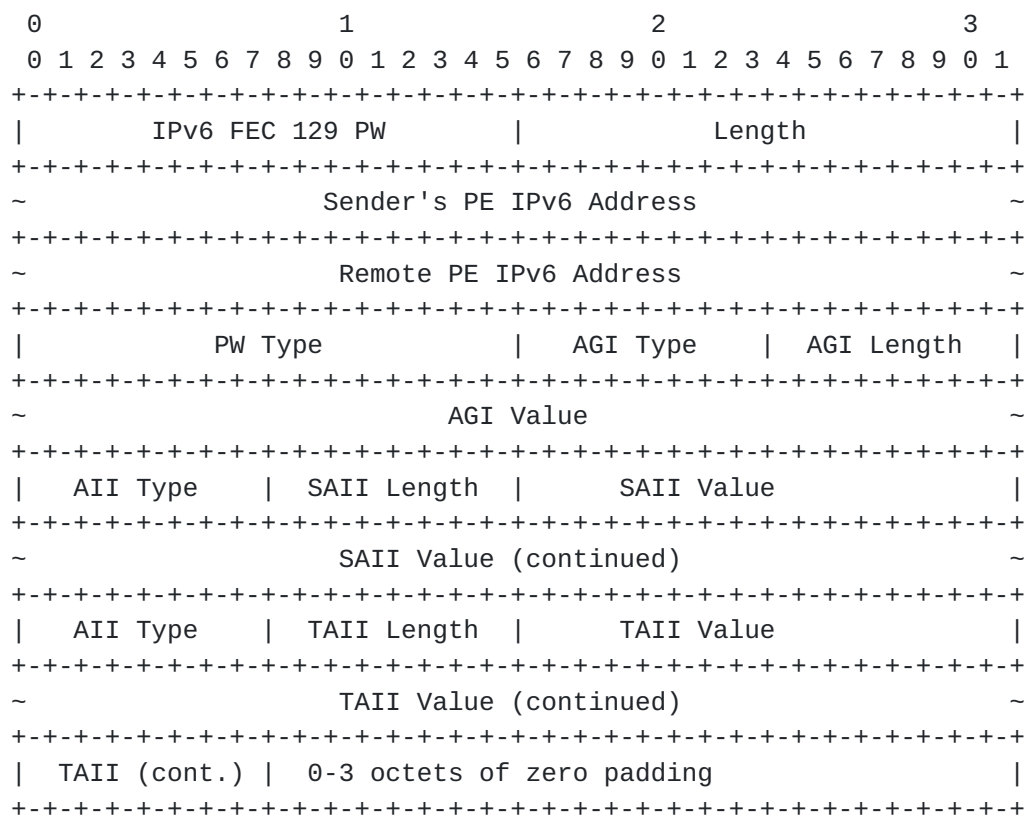
IPv6 FEC 129 PW: TBD.

Length: it defines the length in octets of the value field of the
sub-TLV.

Sender's PE IPv6 Address: The source IP address of the target IPv6
LDP session.

Remote PE IPv6 Address: The destination IP address of the target IPv6
LDP session.

The other fields are same as FEC 129 Pseudowire [RFC4379].

4. Operation

This document does not define any new procedures, the process is the
same as described in [RFC4379].

5. IANA Considerations

IANA is requested to create two new registry for the Sub-Type field
of Target FEC TLV

IPv6 FEC 128 Pseudowire: TBD

IPv6 FEC 129 Pseudowire: TBD

6. Security Considerations

This draft does not introduce any new security issues, the security
mechanisms defined in [RFC4379] apply here.

7. Acknowledgements

8. Normative References

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

[RFC4379] Kompella, K. and G. Swallow, "Detecting Multi-Protocol
           Label Switched (MPLS) Data Plane Failures", RFC 4379,
           February 2006.

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