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IPv6 Destination Option for Conex
draft-krishnan-conex-destopt-00

Abstract

   Conex is a mechanism by which senders inform the network about the
   congestion encountered by packets earlier in the same flow. This
   document specifies an IPv6 destination option that is capable of
   carrying conex markings in IPv6 datagrams.

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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   Task Force (IETF). Note that other groups may also distribute
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   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 January 5, 2012.

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1. Introduction

   Conex is a mechanism by which senders inform the network about the
   congestion encountered by packets earlier in the same flow. This
   document specifies an IPv6 destination option that can be used for
   performing conex markings in IPv6 datagrams.

2. Conventions used in this document

   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. Background

   The Conex working group came up with a list of requirements that had
   to be met by any marking mechanism. It then considered several
   alternative mechanisms and evaluated their suitability for conex
   marking. There were no mechanisms found that were completely
   suitable, but the only mechanism that came close to meeting the
   requirements was IPv6 destination options. The analysis of the
   different alternatives can be found in [draft-krishnan-conex-ipv6].

4. **Conex Destination Option (CDO)**

   The Conex Destination Option (CDO) is a destination option that can
   be included in IPv6 datagrams that are sent by conex-aware senders in
   order to inform conex-aware nodes on the path about the CDO has an
   alignment requirement of (none).

```
 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
                                +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                                |  Option Type  | Option Length |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 |X|L|E|C|                     Reserved                         |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
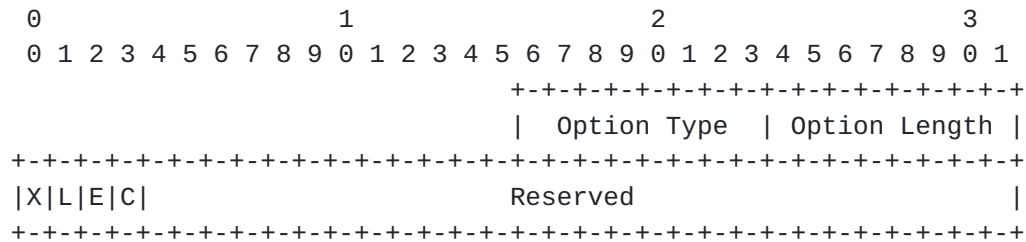
                 Figure 1: Conex Destination Option Layout

   Option Type

      8-bit identifier of the type of option. The option identifier
      for the conex destination option will be allocated by the IANA.

   Option Length

      8-bit unsigned integer. The length of the option (excluding
      the Option Type and Option Length fields). This field MUST be
      set to the value 4.

   X Bit
      When this bit is set, the transport sender is using ConEx with
      this packet. If it is reset, the sender is not using ConEx.

   L Bit

      When this bit is set, the transport sender has experienced a loss.
      If it is reset, the sender has not experienced a loss.

   E Bit

      When this bit is set, the transport sender has experienced
      ECN-signaled congestion. If it is reset, the sender has not
      experienced ECN-signaled congestion.

   C Bit

      When this bit is set, the transport sender is building up
      congestion credit. Otherwise it is not.

5. Acknowledgements

The authors would like to thank Marcelo Bagnulo, Bob Briscoe, Ingemar Johansson, Joel Halpern and John Leslie for the discussions that led to this document.

6. Security Considerations

This document does not bring up any new security issues.

7. IANA Considerations

This document defines a new IPv6 destination option for carrying conex markings. IANA is requested to assign a new destination option type in the Destination Options registry maintained at http://www.iana.org/assignments/ipv6-parameters <TBA1> Conex Destination Option [RFCXXXX] The act bits for this option need to be 10 and the chg bit needs to be 0.

8. Normative References

[CAM]   Briscoe, B., "Congestion Exposure (ConEx) Concepts and
            Abstract Mechanism", draft-ietf-conex-abstract-mech-01
            (work in progress), March 2011.

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

[RFC2460]   Deering, S. and R. Hinden, "Internet Protocol, Version 6
            (IPv6) Specification", RFC 2460, December 1998.

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