Locator/ID Separation Protocol (LISP): Shared Extension Message and IANA
                  Registry for Packet Type Allocations

Abstract

   This document specifies a Locator/ID Separation Protocol (LISP)
   shared message type for defining future extensions and conducting
   experiments without consuming a LISP Packet Type codepoint for each
   extension.

   This document obsoletes RFC 8113.

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/rfc9304.

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1. Introduction

   The Locator/ID Separation Protocol (LISP) base specification,
   [RFC9301], defines a set of primitives that are identified with a
   packet type code. Several extensions have been proposed to add more
   LISP functionalities. It is expected that additional LISP extensions
   will be proposed in the future.

   The "LISP Packet Types" IANA registry (see Section 5) is used to ease
   the tracking of LISP message types.

   Because of the limited type space [RFC9301] and the need to conduct
   experiments to assess new LISP extensions, this document specifies a
   shared LISP extension message type and describes a procedure for
   registering LISP shared extension sub-types (see Section 3).
   Concretely, one single LISP message type code is dedicated to future
   LISP extensions; sub-types are used to uniquely identify a given LISP
   extension making use of the shared LISP extension message type.
   These identifiers are selected by the author(s) of the corresponding
   LISP specification that introduces a new LISP extension message type.

2. Requirements Language

   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.

3. LISP Shared Extension Message Type

   Figure 1 depicts the common format of the LISP shared extension
   message. The type field MUST be set to 15 (see Section 5).

```
     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
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |Type=15|       Sub-type        |      extension-specific       |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    //                     extension-specific                      //
    //                                                             //
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
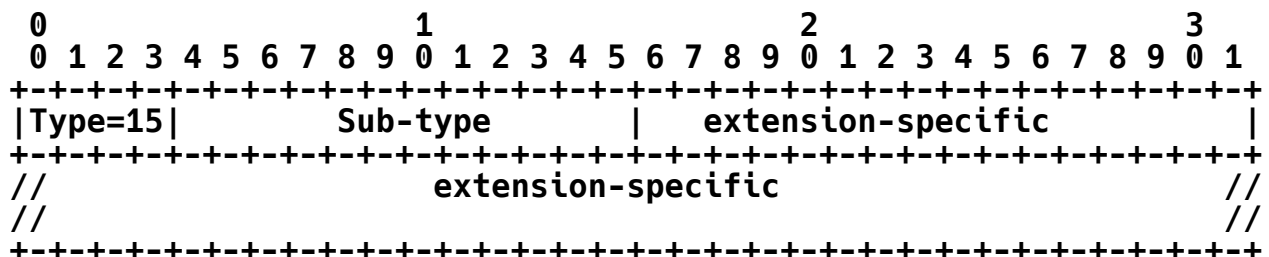
                Figure 1: LISP Shared Extension Message Type

   The 'Sub-type' field conveys a unique identifier that MUST be
   registered with IANA (see Section 5.2).

   The exact structure of the 'extension-specific' portion of the
   message is specified in the corresponding specification document.

4. Security Considerations

    This document does not introduce any additional security issues other
    than those discussed in [RFC9301].

5. IANA Considerations

5.1. LISP Packet Types

    IANA has created a registry titled "LISP Packet Types", numbered
    0-15.

    Values can be assigned via Standards Action [RFC8126]. Documents
    that request for a new LISP Packet Type may indicate a preferred
    value in the corresponding IANA sections.

    IANA has replaced the reference to RFC 8113 with the RFC number of
    this document.

    Also, IANA has updated the table as follows:

    OLD:

    +===============================+======+===========+
    | Message | Code | Reference |
    +===============================+======+===========+
    | LISP Shared Extension Message | 15 | [RFC8113] |
    +-------------------------------+------+-----------+

                            Table 1

    NEW:

    +===============================+======+===========+
    | Message | Code | Reference |
    +===============================+======+===========+
    | LISP Shared Extension Message | 15 | RFC 9304 |
    +-------------------------------+------+-----------+

                            Table 2

5.2. Sub-Types

    IANA has created the "LISP Shared Extension Message Type Sub-types"
    registry. IANA has updated that registry by replacing the reference
    to RFC 8113 with the RFC number of this document.

    The values in the range 0-1023 are assigned via Standards Action.
    This range is provisioned to anticipate, in particular, the
    exhaustion of the LISP Packet Types.

    The values in the range 1024-4095 are assigned on a First Come, First
    Served (FCFS) basis. The registration procedure is to provide IANA
    with the desired codepoint and a point of contact; providing a short
    description (together with an acronym, if relevant) of the foreseen

usage of the extension message is also encouraged.

6. Changes from RFC 8113

The following changes were made from RFC 8113:

* Changed the status from Experimental to Standards Track.

* Indicated explicitly that the shared extension is used for two
  purposes: extend the type space and conduct experiments to assess
  new LISP extensions.

* Deleted pointers to some examples illustrating how the shared
  extension message is used to extend the LISP protocol.

* IANA has updated the "IANA LISP Packet Types" and "LISP Shared
  Extension Message Type Sub-types" registries to point to this
  document instead of RFC 8113.

7. 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>.

[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>.

[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>.

[RFC9301] Farinacci, D., Maino, F., Fuller, V., and A. Cabellos,
           Ed., "Locator/ID Separation Protocol (LISP) Control
           Plane", RFC 9301, DOI 10.17487/RFC9301, October 2022,
           <https://www.rfc-editor.org/info/rfc9301>.

Acknowledgments

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