Locator/ID Separation Protocol Delegated Database Tree (LISP-DDT)

draft-saucez-lisp-8111bis-00

(replaces: draft-saucez-8111bis-00)

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IETF 121 – Dublin

Since IETF 120: New Document

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Status | Email expansions | History

Versions:

00

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draft-saucez-lisp-8111bis-00.txt
(Small error in the naming hence replacement)
November 2024
New Document

Main Structure almost unchanged

Table of Contents

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- Deleted "DDT Map Request" because its purpose was to allocated the "DDT-Originated" flag, but that bit is now allocated in RFC 9301.

- Added "Deployment Experience" Section.
  - Actually still empty. Editors will need help from implementors.

IANA Section

12. IANA Considerations

IANA has made the following early assignment per this document:

o Message type 6, "LISP DDT Map-Referral", was added to the "LISP Packet Types" registry. See Section 6.4 ("Map-Referral Message Format").

As this document is an Experimental RFC, this is an early allocation as per [RFC7120].

11. IANA Considerations

IANA has made the an early temporary allocation for message type 6, "LISP DDT Map-Referral", in the "LISP Packet Types" registry group. IANA is requested to make the allocation permanent and modify the "LISP Packet Types" as shown in Table 3.

Code	Message	Reference
6	LISP DDT Map-Referral	[This document]

Table 3: LISP DDT Map-Referral Message Type Allocation

- IANA Section revised according to latest guidelines

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proxy Map-Server) that will provide an authoritative response to the original requester. A DDT Map-Resolver will typically maintain a cache (termed the "referral cache") of previously received Map-Referral message results containing RLOCs for DDT nodes responsible for XEID-prefixes of interest.

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- Define "DDT Referral Cache?

Inconsistent IID

```
*  Database-ID (DBID) (16 bits),

*  Instance Identifier (IID) (32 bits),

*  Address Family Identifier (AFI) (16 bits), and

*  EID-prefix (variable, according to the AFI value).

The resulting concatenation of these fields is termed an "Extended
EID-prefix", or XEID-prefix.
```

- RFC 8111 defines XEID as the concatenation of
  - 16 bits of the DBID
  - 32 bits of the IID
  - 16 bits of the AFI
  - And the prefix

- BUT
- RFC 9300, Section 8, defines the IID as a 24 bits field

```
An Instance ID can be carried in a LISP-encapsulated packet. An ITR
that prepends a LISP header will copy a 24-bit value used by the LISP
router to uniquely identify the address space. The value is copied to
the 'Instance ID' field of the LISP header, and the I-bit is set
to 1.
```

Extended EID-Prefix update

- Since XEIDs are just the primary key of the local DB and never send in messages (at least not as contiguous bits) the definition can be changed to:
  - 16 bits of the DBID
  - 24 bits of the IID
  - 16 bits of the AFI
  - And the prefix

- Old implementation using 32 bits IID in XEIDs are still conform it is just an implementation details that the data structure is actually:
  - 16 bits of the DBID
  - 8 bits padding (set a zeros)
  - 24 bits of the IID
  - 16 bits of the AFI
  - And the prefix

Where the un-mutable 8 bits padding has no consequences on the lookup operations

Or should we explicitly encode a 8 bits padding?

IANA Consideration & References Sections

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14.1. 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, <http://www.rfc-editor.org/info/rfc2119>.

[RFC6830] Farinacci, D., Fuller, V., Meyer, D., and D. Lewis, "The Locator/ID Separation Protocol (LISP)", RFC 6830, DOI 10.17487/RFC6830, January 2013, <http://www.rfc-editor.org/info/rfc6830>.

[RFC6833] Fuller, V. and D. Farinacci, "Locator/ID Separation Protocol (LISP) Map-Server Interface", RFC 6833, DOI 10.17487/RFC6833, January 2013, <http://www.rfc-editor.org/info/rfc6833>.

[RFC7120] Cotton, M., "Early IANA Allocation of Standards Track Code Points", BCP 100, RFC 7120, DOI 10.17487/RFC7120, January 2014, <http://www.rfc-editor.org/info/rfc7120>.

[RFC8017] Moriarty, K., Ed., Kaliski, B., Jonsson, J., and A. Rusch, "PKCS #1: RSA Cryptography Specifications Version 2.2", RFC 8017, DOI 10.17487/RFC8017, November 2016, <http://www.rfc-editor.org/info/rfc8017>.

[RFC8060] Farinacci, D., Meyer, D., and J. Snijders, "LISP Canonical Address Format (LCAF)", RFC 8060, DOI 10.17487/RFC8060, February 2017, <http://www.rfc-editor.org/info/rfc8060>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <http://www.rfc-editor.org/info/rfc8174>.

14.2. Informative References

[AFI] IANA, "Address Family Numbers", <http://www.iana.org/assignments/address-family-numbers/>.

[LISP-SEC] Maino, F., Ermagan, V., Cabellos, A., and D. Saucez, "LISP-Security (LISP-SEC)", Work in Progress, draft-ietf-lisp-sec-12, November 2016.

[LISP-TREE] Jakab, L., Cabellos-Aparicio, A., Coras, F., Saucez, D., and O. Bonaventure, "LISP-TREE: a DNS Hierarchy to Support the LISP Mapping System", IEEE Journal on Selected Areas in Communications, Volume 28, Issue 8, DOI 10.1109/JSAC.2010.101011, September 2010, <http://ieeexplore.ieee.org/xpls/

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[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/rfc/rfc2119>.

[RFC5011] StJohns, M., "Automated Updates of DNS Security (DNSSEC) Trust Anchors", STD 74, RFC 5011, DOI 10.17487/RFC5011, September 2007, <https://www.rfc-editor.org/rfc/rfc5011>.

[RFC8060] Farinacci, D., Meyer, D., and J. Snijders, "LISP Canonical Address Format (LCAF)", RFC 8060, DOI 10.17487/RFC8060, February 2017, <https://www.rfc-editor.org/rfc/rfc8060>.

[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/rfc/rfc8174>.

[RFC9300] Farinacci, D., Fuller, V., Meyer, D., Lewis, D., and A. Cabellos, Ed., "The Locator/ID Separation Protocol (LISP)", RFC 9300, DOI 10.17487/RFC9300, October 2022, <https://www.rfc-editor.org/rfc/rfc9300>.

[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/rfc/rfc9301>.

- IANA Section revised according to latest guidelines
- References updated with new STD main specifications:
  - RFC9300 Data Plane
  - RFC9301 Control Plane
  - RFC9302 Map-Versioning
  - RFC9303 LISP-SEC

Next Steps

- Revise document to make sure residual text about routing scalability is dropped
- Revise Pseudo Code & Examples (All necessary?)
- Revise XEID Format
- Define “DDT Referral Cache”?
- Revise text for improved clarity…
- Anything else?
- Should we go for WG Adoption?

THANKS!

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