

Network Working Group
Internet-Draft
Updates: [6830](#) (if approved)
Intended status: Experimental
Expires: April 11, 2018

M. Boucadair
C. Jacquenet
Orange
October 8, 2017

Retrieving Multiple LISP Records
draft-boucadair-lisp-multiple-records-00

Abstract

This document extends Locator/ID Separation Protocol (LISP) with a capability to retrieve multiple records using the same LISP request.

This document updates [RFC6830](#).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months 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 April 11, 2018.

Copyright Notice

Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
2.	Requirements Language	2
3.	Map-Request with Multiple Records	2
4.	Security Considerations	6
5.	IANA Considerations	6
6.	Acknowledgments	6
7.	References	6
7.1.	Normative references	6
7.2.	Informative references	7
	Authors' Addresses	7

[1.](#) Introduction

Locator/ID Separation Protocol (LISP, [[RFC6830](#)]) operation relies upon a mapping mechanism that is used by ingress/egress Tunnel Routers (xTR) to forward traffic over the LISP network. This document extends LISP with a capability for bulk mappings retrieval. It does so by defining new LISP messages that are meant to facilitate state recovery of mapping tables and improve Ingress Tunnel Routers (ITR) recovery times, in particular.

The base LISP specification does not define how a requestor may ask for multiple EIDs. Indeed, the current LISP specification [[RFC6830](#)] states the following:

Support for requesting multiple EIDs in a single Map-Request message will be specified in a future version of the protocol.

The document defines a backward compatible extension of the LISP Map-Request message to request multiple records ([Section 3](#)).

A more reliable method for bulk retrieval is defined in [[I-D.boucadair-lisp-bulk](#)]. It does so by using TCP ([[RFC0793](#)]) as a transport protocol for exchanges the bulk retrieval messages.

[2.](#) 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](#)].

[3.](#) Map-Request with Multiple Records

As mentioned in [Section 1](#), [[RFC6830](#)] does not specify how an ITR can request for multiple EIDs using the same Map-Request message. This document fills that void.

Figure 1 shows the difference between the Map-Request message format as defined in [RFC6830] and the new format that includes the proposed extension. This extension is meant to allow an ITR to request multiple EID records by using the same Map-Request.

The proposed design is backward compatible since it aligns the additional requested EID records at the end of the Map-Request message.

As specified in [RFC6830], a mapping system must be prepared to receive a request for multiple EID records in a Map-Request message. A receiver relies upon the content of the "Record Count" field of the Map-Request message to detect whether one or multiple records are carried in the request.

OLD:

```

      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=1 |A|M|P|S|p|s|   Reserved   |   IRC   | Record Count |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                               Nonce . . .
|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                               . . . Nonce
|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           Source-EID-AFI           | Source EID Address ... |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           ITR-RLOC-AFI 1           | ITR-RLOC Address 1 ... |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                               ...
|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           ITR-RLOC-AFI n           | ITR-RLOC Address n ... |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
/ |   Reserved   | EID mask-len |   EID-Prefix-AFI   |
Rec +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
\ |
  |                               EID-Prefix ...
  +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
  |
  |                               Map-Reply Record ...
  +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

NEW:

```

      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=1 |A|M|P|S|p|s|   Reserved   |   IRC   | Record Count |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                               Nonce . . .
|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

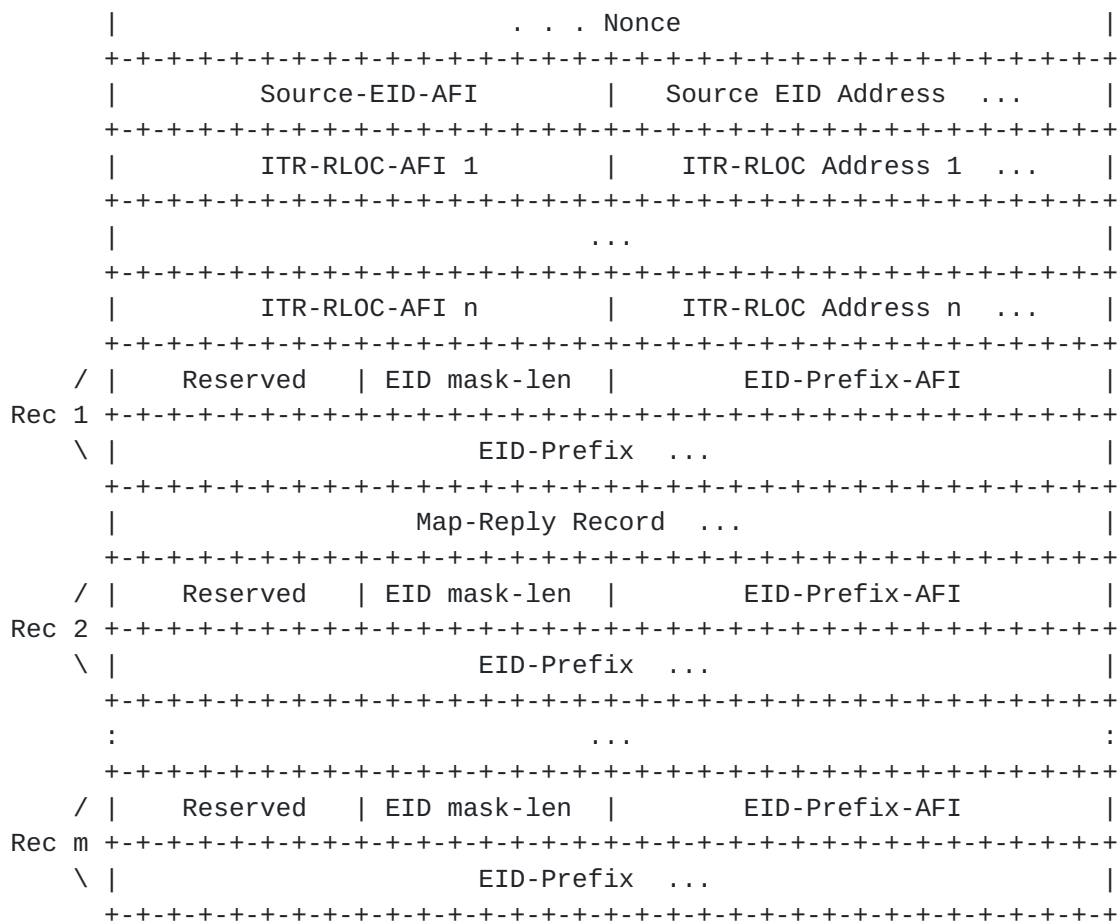



Figure 1

The description of the fields of the updated Map-Request message is exactly the same as in [\[RFC6830\]](#), except the additional records that are prepended after the "Map-Reply Record". The structure of a record is exactly the same as in [\[RFC6830\]](#).

When extracting the records included in a Map-Request message, a Map-Resolver replies with the list of mappings that match these records. One or multiple Map-Reply messages may be required to carry the mapping records that match the requested EIDs included in a Map-Request.

An ITR MUST be prepared to receive multiple Map-Reply messages from a Map-Resolver as a response to a bulk Map-Request message that it originally sent to that Map-Resolver.

In order to inform an ITR that subsequent Map-Reply messages will follow (or not), a dedicated flag bit is defined for this purpose: it is called the M-bit (more-map-reply bit).

When set, the M-bit (more-map-reply bit) flag indicates this is not the last Map-Reply message to be received by the requesting ITR; additional Map-Reply messages follow. An implementation uses this bit to decide when to terminate a request/response transaction.

If multiple Map-Reply messages are required to respond to a Map-Request message, a Map-Resolver MUST set the M-bit flag for all Map-Reply messages except for the last Map-Reply message.

OLD:

```

      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=2 |P|E|S|           Reserved           | Record Count  |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                                           Nonce . . . |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                                           . . . Nonce |
+--> +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| |                                           Record TTL |
| +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
R | Locator Count | EID mask-len | ACT |A|           Reserved |
e +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
c | Rsvd  | Map-Version Number |           EID-Prefix-AFI |
o +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
r |                                           EID-Prefix |
d +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| /| Priority | Weight | M Priority | M Weight |
| L +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| o |           Unused Flags |L|p|R|           Loc-AFI |
| c +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| \|                                           Locator |
+--> +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

NEW:

```

      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=2 |P|E|S|M|           Reserved           | Record Count  |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                                           Nonce . . . |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                                           . . . Nonce |
+--> +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| |                                           Record TTL |
| +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
R | Locator Count | EID mask-len | ACT |A|           Reserved |
e +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```



```

c  | Rsvd  | Map-Version Number  |          EID-Prefix-AFI          |
o  +-----+-----+-----+-----+-----+-----+-----+-----+
r  |                                     EID-Prefix                                     |
d  +-----+-----+-----+-----+-----+-----+-----+-----+
|  /|      Priority    |      Weight      | M Priority  | M Weight  |
|  L +-----+-----+-----+-----+-----+-----+-----+-----+
|  o |          Unused Flags      |L|p|R|          Loc-AFI          |
|  c +-----+-----+-----+-----+-----+-----+-----+-----+
|  \|                                     Locator                                     |
+-> +-----+-----+-----+-----+-----+-----+-----+-----+

```

4. Security Considerations

This document adheres to the security considerations discussed in [RFC6830] and [RFC6833].

5. IANA Considerations

This document does not require any IANA action.

6. Acknowledgments

This work is partly funded by ANR LISP-Lab project #ANR-13-INFR-009-X.

Many thanks to S. Secci and Chi Dung Phung for the comments.

7. References

7.1. 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, <<https://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, <<https://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, <<https://www.rfc-editor.org/info/rfc6833>>.

7.2. Informative references

[I-D.boucadair-lisp-bulk]

Boucadair, M. and C. Jacquenet, "LISP Mapping Bulk Retrieval", [draft-boucadair-lisp-bulk-05](#) (work in progress), April 2017.

[I-D.ietf-tcpm-tcp-security]

Gont, F., "Survey of Security Hardening Methods for Transmission Control Protocol (TCP) Implementations", [draft-ietf-tcpm-tcp-security-03](#) (work in progress), March 2012.

[RFC0793] Postel, J., "Transmission Control Protocol", STD 7, [RFC 793](#), DOI 10.17487/RFC0793, September 1981, <<https://www.rfc-editor.org/info/rfc793>>.

Authors' Addresses

Mohamed Boucadair
Orange
Rennes 35000
France

EMail: mohamed.boucadair@orange.com

Christian Jacquenet
Orange
Rennes 35000
France

EMail: christian.jacquenet@orange.com

