

Network Working Group
Internet-Draft
Intended status: Experimental
Expires: December 30, 2012

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June 28, 2012

LISP MIB
draft-ietf-lisp-mib-05

Abstract

This document defines managed objects for the Locator/ID Separation Protocol (LISP). These objects provide information useful for monitoring LISP devices, including basic configuration information, LISP status, and operational statistics.

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Table of Contents

1.	Requirements Notation	3
2.	Introduction	3
3.	The Internet-Standard Management Framework	3
4.	Definition of Terms	4
5.	LISP MIB Objectives	6
6.	Structure of LISP MIB Module	6
 6.1.	Overview of Defined Notifications	6
 6.2.	Overview of Defined Tables	7
7.	LISP MIB Definitions	8
8.	Relationship to Other MIB Modules	57
 8.1.	MIB modules required for IMPORTS	57
9.	Security Considerations	57
10.	IANA Considerations	58
11.	References	58
 11.1.	Normative References	58
 11.2.	Informative References	59
<u>Appendix A</u>	Open Issues	59
<u>Appendix B</u>	Acknowledgments	60

Schudel, et al.

Expires December 30, 2012

[Page 2]

1. Requirements Notation

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](#)].

2. Introduction

This draft describes the Management Information Base (MIB) module for use with network management protocols in the Internet community. Specifically, the MIB for managing Locator/ID Separation Protocol (LISP) devices is described.

LISP [[LISP](#)] specifies a network-based architecture and mechanisms that implement a new semantic for IP addressing using two separate name spaces: Endpoint Identifiers (EIDs), used within sites, and Routing Locators (RLOCs), used on the transit networks that make up the Internet infrastructure. To achieve this separation, LISP defines protocol mechanisms for mapping from EIDs to RLOCs.

From a data plane perspective, LISP traffic is handled exclusively at the network layer by devices performing Ingress Tunnel Router (ITR) and Egress Tunnel Router (ETR) LISP functions. Data plane operations performed by these devices are described in [[LISP](#)]. Additionally, data plane interworking between legacy (Internet) and LISP sites is implemented by devices performing Proxy ITR (PITR) and Proxy ETR (PETR) functions. The data plane operations of these devices is described in [[INTERWORK](#)].

From a control plane perspective, LISP employs mechanisms related to creating, maintaining, and resolving mappings from EIDs to RLOCs. LISP ITRs, ETRs, PITRs, and PETRs perform specific control plane functions, and these control plane operations are described in [[LISP](#)]. Additionally, LISP infrastructure devices supporting LISP control plane functionality include Map-Servers and Map-Resolvers, and the control plane operations of these devices are described in [[LISP-MS](#)]. Finally, while not specifically required, this document assumes the existence of a database to store and propagate those mappings globally.

3. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally

Schudel, et al.

Expires December 30, 2012

[Page 3]

accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

4. Definition of Terms

Endpoint ID (EID): a 32-bit (for IPv4) or 128-bit (for IPv6) value used in the source and destination address fields of the first (inner-most) IP header of a LISP packet. A source EID is allocated to a host from an EID-prefix block associated with the site where the host is located. A host determines a destination address in the same way that it determines a destination address today, for example through a DNS lookup or SIP exchange.

Routing Locator (RLOC): a 32-bit (for IPv4) or 128-bit (for IPv6) value used in the source and destination address fields of the second (outer-most) IP header of a LISP packet. RLOC addresses are allocated to an egress tunnel router (ETR) and numbered from topologically-aggregatable blocks assigned to a site at each point to which it attaches to the global Internet.

EID-to-RLOC Map-Cache: a short-lived, on-demand table maintained locally in an ITR or PITR that stores, tracks, and is responsible for timing-out and otherwise validating EID-to-RLOC mappings. This table is distinct from the full "database" of EID-to-RLOC mappings in that it is dynamic and relatively small. At a given moment in time, it consists only of entries for those sites to which the ITR or PITR is currently communicating or has communicated with within the configured TTL period.

EID-to-RLOC Mapping-Database: a global distributed database that contains all known EID-to-RLOC mappings. Each potential ETR typically contains a small piece of the database consisting of only the EID-to-RLOC mappings for the EID prefix(es) for which the ETR is "authoritative" and the RLOC(s) by which those EID prefix(es) are reachable from the global Internet.

Ingress Tunnel Router (ITR): a router that accepts an IP packet with a single IP header (more precisely, an IP packet that does not contain a LISP header), treats this "inner" IP destination address as an EID and performs an EID-to-RLOC mapping lookup, and then prepends an "outer" IP header with one of its own globally-routable RLOCs in the source address field and the RLOC resulting from the mapping lookup in the destination address field. That is, in general an ITR receives an IP packet from site end-systems

Schudel, et al.

Expires December 30, 2012

[Page 4]

on one side and sends a LISP-encapsulated IP packet toward the Internet on the other side.

Egress Tunnel Router (ETR): a router that accepts an IP packet where the destination address in the "outer" IP header is one of its own RLOCs, strips the "outer" header, and forwards the packet based on the next IP header found. That is, in general an ETR receives LISP-encapsulated IP packets from the Internet on one side and sends decapsulated IP packets toward site end-systems on the other side.

xTR: a term of general reference to an ITR or ETR when direction of data flow is not part of the context description. xTR refers to the router that is the tunnel endpoint and performs both ITR and ETR functionality. For example, "An xTR can be located at the Customer Edge (CE) router," meaning both ITR and ETR functionality is activated at the CE router.

Proxy ITR (PITR): a router that acts like an ITR but does so on behalf of non-LISP sites which send packets to destinations at LISP sites. The PITR, also known as a PTR, is defined and described in [[INTERWORK](#)].

Proxy ETR (PETR): a router that acts like an ETR but does so on behalf of LISP sites which send packets to destinations at non-LISP sites. The PETR is defined and described in [[INTERWORK](#)].

LISP Site: a set of routers in an edge network that are under a single technical administration. LISP routers which reside in the edge network are the demarcation points to separate the edge network from the core network.

Map-Server: a LISP network infrastructure component which learns EID-to-RLOC mapping entries from an authoritative source such as an ETR through static configuration, or another out-of-band mechanism. A Map-Server advertises these mappings into the distributed mapping database.

Map-Resolver: a LISP network infrastructure component which accepts LISP Encapsulated Map-Requests, typically from an ITR, and quickly determines whether or not the destination IP address is part of the EID namespace. If it is, the Map-Resolver finds the appropriate EID-to-RLOC mapping by consulting the distributed mapping database. If it is not, a Negative Map-Reply is immediately returned.

Schudel, et al.

Expires December 30, 2012

[Page 5]

Map-Request: a LISP Map-Request message type sent by an ITR or PITR to a Map-Resolver when it needs a mapping for an EID, wants to test an RLOC for reachability, or wants to refresh a mapping before TTL expiration.

Map-Reply: a LISP Map-Reply message type returned in response to a Map-Request for a destination EID that exists in the mapping database and contains the locator-set and associated policy for the queried EID. Information returned in a Map-Reply is stored in the EID-to-RLOC Map-Cache.

Negative Map-Reply: a LISP Map-Reply message type that contains an empty locator-set. Returned in response to a Map-Request if the destination EID does not exist in the mapping database.

Typically, this means that the "EID" being requested is an IP address connected to a non-LISP site. Information returned in a Negative Map-Reply is stored in the EID-to-RLOC Map-Cache.

5. LISP MIB Objectives

The objectives for defining this LISP MIB module are as follows:

- o Provide a means for obtaining a list of enabled LISP features and the current status of configuration attributes related to those features. As an example, LISP capabilities which could be enabled include ITR, ETR, PITR, PETR, MS or MR support for IPv4 or IPv6 address families. Other examples include, indicating whether rloc-probing is enabled, and indicating the configured map-cache limit value.
- o Provide a means for obtaining the current attributes of various LISP tables, such as the EID-to-RLOC policy data contained in the Map-Cache, or the local EID-to-RLOC policy data contained in the Mapping-Database.
- o Provide a means for obtaining the current operational statistics of various LISP functions, such as the number of packets encapsulated and decapsulated by the device. Other counters of operational interest, depending on LISP function, include things like the current number of map-cache entries, and the total number and rate of map-requests received and sent.

6. Structure of LISP MIB Module

6.1. Overview of Defined Notifications

No LISP MIB notifications are defined.

Schudel, et al.

Expires December 30, 2012

[Page 6]

6.2. Overview of Defined Tables

The LISP MIB module is composed of the following tables of objects:

lispFeatures - This table provides information representing the various lisp features that can be enabled on LISP devices.

lispIidToVrf - This table provides information representing the mapping of LISP instance ID to a VRF.

lispGlobalStats - This table provides global statistics for a given Instance ID per address-family on a LISP device.

lispMappingDatabase - This table represents the EID-to-RLOC database that contains the EID-prefix to RLOC mappings configured on an ETR. In general, this table would be representative of all such mappings for a given site that this device belongs to.

lispMappingDatabaseLocator - This table represents the set of routing locators contained in the EID-to-RLOC database configured on an ETR.

lispMapCache - This table represents the short-lived, on-demand table on an ITR that stores, tracks, and is responsible for timing-out and otherwise validating EID-to-RLOC mappings.

lispMapCacheLocator - This table represents the set of locators per EID prefix contained in the map-cache table of an ITR.

lispConfiguredLocator - This table represents the set of routing locators configured on a LISP device.

lispEidRegistration - This table provides the properties of each EID prefix that is registered with this device when configured to be a Map-Server.

lispEidRegistrationEtr - This table provides the properties of the different ETRs that send registers, for a given EID prefix, to this device when configured to be a Map-Server.

lispEidRegistrationLocator - This table provides the properties of the different locators per EID prefix that is registered with this device when configured to be a Map-Server.

lispUseMapServer - This table provides the properties of all Map-Servers that this device is configured to use.

Schudel, et al.

Expires December 30, 2012

[Page 7]

lispUseMapResolver - This table provides the properties of all Map-Resolvers that this device is configured to use.

lispUseProxyEtr - This table provides the properties of all Proxy ETRs that this device is configured to use.

[7. LISP MIB Definitions](#)

LISP-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
MODULE-IDENTITY, OBJECT-TYPE,
mib-2, Unsigned32, Counter64,
Integer32, TimeTicks          FROM SNMPv2-SMI      -- [RFC 2578]
TruthValue, TEXTUAL-CONVENTION FROM SNMPv2-TC      -- [RFC 2579]
MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF    -- [RFC 2580]
VPNIdOrZero                  FROM VPN-TC-STD-MIB   -- [RFC 4265]
AddressFamilyNumbers          FROM IANA-ADDRESS-FAMILY-NUMBERS-MIB; -- [IANA]
```

lispMIB MODULE-IDENTITY

LAST-UPDATED "201206280000Z" -- 28 June 2012

ORGANIZATION

"IETF Locator/ID Separation Protocol (LISP) Working Group"

CONTACT-INFO

"Email: lisp@ietf.org

WG charter:

<http://www.ietf.org/html.charters/lisp-charter.html>"

DESCRIPTION

"Locator/ID Separation Protocol (LISP) MIB Textual Conventions module. The LISP MIB is intended for management of LISP routers.

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REVISION "201206280000Z" -- 28 June 2012

DESCRIPTION "Initial version of the IETF LISP-MIB module"

::= { mib-2 xxx }

--

-- Textual Conventions

--

LispAddressType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"LISP architecture can be applied to a wide variety of address-families. This textual-convention is a

Schudel, et al.

Expires December 30, 2012

[Page 8]

generalization for representing addresses that belong to those address-families. For convenience, this document refers to any such address as a LISP address. LispAddressType textual-convention consists of the following four-tuple:

1. IANA Address Family Number: A field of length 2-octets, whose value is of the form following the assigned AddressFamilyNumbers textual-convention described in [[IANA](#)]. The enumerations are listed in [[IANA](#)]. Note that this list of address family numbers is maintained by IANA.
2. Length of LISP address: A field of length 1-octet, whose value indicates the octet-length of the next (third) field of this LispAddressType four-tuple.
3. LISP address: A field of variable length as indicated in the previous (second) field, whose value is an address of the IANA Address Family indicated in the first field of this LispAddressType four-tuple. Note that any of the IANA Address Families can be represented. Particularly when the address family is LISP Canonical Address Format (LCAF) [[LCAF](#)] with IANA assigned Address Family Number 16387, then the first octet of this field indicates the LCAF type, and the rest of this field is same as the encoding format of the LISP Canonical Address after the length field, as defined in [[LCAF](#)].
4. Mask-length of address: A variable-length field comprised of the remaining octets of this LispAddressType four-tuple, whose value is the mask-length to be applied to the LISP address specified in the previous (third) field.

To illustrate the use of this object, consider the LISP MIB Object below entitled lispMapCacheEntry. This object begins with the following entities:

```
lispMapCacheEntry ::= SEQUENCE {
    lispMapCacheEidLength          INTEGER,
    lispMapCacheEid                LispAddressType,
    ... [skip] ...
```

Example 1: Suppose that the IPv4 EID prefix stored is 10.10.10.0/24. In this case, the values within lispMapCacheEntry would be:

```
lispMapCacheEidLength = 8
lispMapCacheEid = 1, 4, 10.10.10.0, 24
... [skip] ...
```

Schudel, et al.

Expires December 30, 2012

[Page 9]

where 8 is the total length in octets of the next object (lispMapCacheEID of type LispAddressType). Then, the value 1 indicates the IPv4 AF (per [[IANA](#)]), the value 4 indicates that the AF is 4-octets in length, 10.10.10.0 is the IPv4 address, and the value 24 is the mask-length in bits. Note that the lispMapCacheEidLength value of 8 is used to compute the length of the fourth (last) field in lispMapCacheEid to be 1 octet - as computed by $8 - (2 + 1 + 4) = 1$.

Example 2: Suppose that the IPv6 EID prefix stored is 2001:db8:a::/48. In this case, the values within lispMapCacheEntry would be:

```
lispMapCacheEidLength = 20
lispMapCacheEid = 2, 16, 2001:db8:a::, 48
... [skip] ...
```

where 20 is the total length in octets of the next object (lispMapCacheEID of type LispAddressType). Then, the value 2 indicates the IPv4 AF (per [[IANA](#)]), the value 16 indicates that the AF is 16-octets in length, 2001:db8:a:: is the IPv6 address, and the value 48 is the mask-length in bits. Note that the lispMapCacheEidLength value of 20 is used to compute the length of the fourth (last) field in lispMapCacheEid to be 1 octet - as computed by $20 - (2 + 1 + 16) = 1$.

Example 3: As an example where LCAF is used, suppose that the IPv4 EID prefix stored is 10.10.10.0/24 and it is part of LISP Instance ID 101. In this case, the values within lispMapCacheEntry would be:

```
lispMapCacheEidLength = 11
lispMapCacheEid = 16387, 7, 2, 101, 1, 10.10.10.0, 24
... [skip] ...
```

where 11 is the total length in octets of the next object (lispMapCacheEID of type LispAddressType). Then, the value 16387 indicates the LCAF AF (see [[IANA](#)]), the value 7 indicates that the LCAF AF is 7-octets in length in this case, 2 indicates that LCAF Type 2 encoding is used (see [[LCAF](#)]), 101 gives the Instance ID, 1 gives the AFI (per [[IANA](#)]) for an IPv4 address, 10.10.10.0 is the IPv4 address, and 24 is the mask-length in bits. Note that the lispMapCacheEidLength value of 11 octets is used to compute the length of the last field in lispMapCacheEid to be 1 octet,

Schudel, et al.

Expires December 30, 2012

[Page 10]

```

as computed by 11 - (2 + 1 + 1 + 1 + 1 + 1 + 4) = 1."
```

REFERENCE "[[LISP](#)]"
SYNTAX OCTET STRING (SIZE (0..1024))

```

--  

-- Top level components of this MIB.  

--  

lispObjects      OBJECT IDENTIFIER ::= { lispMIB 1 }  

lispConformance  OBJECT IDENTIFIER ::= { lispMIB 2 }
```

lispFeaturesTable OBJECT-TYPE
SYNTAX SEQUENCE OF LispFeaturesEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table represents the various LISP features
that can be enabled on LISP devices."

REFERENCE "[[LISP](#)]"
::= { lispObjects 1 }

lispFeaturesEntry OBJECT-TYPE
SYNTAX LispFeaturesEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"An entry (conceptual row) in the lispFeaturesTable."
INDEX { lispFeaturesInstanceId,
 lispFeaturesAddressFamily }
::= { lispFeaturesTable 1 }

LispFeaturesEntry ::= SEQUENCE {
 lispFeaturesInstanceId Unsigned32,
 lispFeaturesAddressFamily AddressFamilyNumbers,
 lispFeaturesItrEnabled TruthValue,
 lispFeaturesEtrEnabled TruthValue,
 lispFeaturesProxyItrEnabled TruthValue,
 lispFeaturesProxyEtrEnabled TruthValue,
 lispFeaturesMapServerEnabled TruthValue,
 lispFeaturesMapResolverEnabled TruthValue,
 lispFeaturesMapCacheSize Unsigned32,
 lispFeaturesMapCacheLimit Unsigned32,
 lispFeaturesEtrMapCacheTtl Unsigned32,
 lispFeaturesRlocProbeEnabled TruthValue,

Schudel, et al.

Expires December 30, 2012

[Page 11]

```
lispFeaturesEtrAcceptMapDataEnabled      TruthValue,
lispFeaturesEtrAcceptMapDataVerifyEnabled TruthValue
}

lispFeaturesInstanceID OBJECT-TYPE
  SYNTAX      Unsigned32
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This represents the Instance ID of the LISP
     header. An Instance ID in the LISP address
     encoding helps uniquely identify the AFI-based
     address space to which a given EID belongs.
     It's default value is 0."
 ::= { lispFeaturesEntry 1 }

lispFeaturesAddressFamily OBJECT-TYPE
  SYNTAX      AddressFamilyNumbers
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "The address family number that the LISP device
     is enabled to LISP process a packet for as a
     destination address family."
 ::= { lispFeaturesEntry 2 }

lispFeaturesItrEnabled OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Indicates the status of ITR role on this device. If
     this object is TRUE, then ITR feature is enabled."
 ::= { lispFeaturesEntry 3 }

lispFeaturesEtrEnabled OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Indicates the status of ETR role on this device. If
     this object is TRUE, then ETR feature is enabled."
 ::= { lispFeaturesEntry 4 }

lispFeaturesProxyItrEnabled OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS read-only
```

Schudel, et al.

Expires December 30, 2012

[Page 12]

```
STATUS      current
DESCRIPTION
    "Indicates the status of Proxy-ITR role on this device.
     If this object is TRUE, then Proxy-ITR feature is enabled."
::= { lispFeaturesEntry 5 }

lispFeaturesProxyEtrEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of Proxy-ETR role on this device.
         If this object is TRUE, then Proxy-ETR feature is enabled."
::= { lispFeaturesEntry 6 }

lispFeaturesMapServerEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of Map Server role on this device.
         If this object is TRUE, then Map Server feature is enabled."
::= { lispFeaturesEntry 7 }

lispFeaturesMapResolverEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of Map Resolver role on this device.
         If this object is TRUE, then Map Resolver feature is enabled."
::= { lispFeaturesEntry 8 }

lispFeaturesMapCacheSize OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current

    DESCRIPTION
        "Size of EID-to-RLOC map cache on this device."
::= { lispFeaturesEntry 9 }

lispFeaturesMapCacheLimit OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Maximum permissible size of EID-to-RLOC map
```

Schudel, et al.

Expires December 30, 2012

[Page 13]

```
        cache on this device."
 ::= { lispFeaturesEntry 10 }

lispFeaturesEtrMapCacheTtl OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Time in minutes this device will store the
         EID-to-RLOC map record in the map cache."
 ::= { lispFeaturesEntry 11 }

lispFeaturesRlocProbeEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of rloc-probing feature
         on this device, If this object is TRUE, then
         this feature is enabled."
 ::= { lispFeaturesEntry 12 }

lispFeaturesEtrAcceptMapDataEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of accepting piggybacked
         mapping data received in a map-request on
         this device. If this object is TRUE, then this
         device accepts piggybacked mapping data."
 ::= { lispFeaturesEntry 13 }

lispFeaturesEtrAcceptMapDataVerifyEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the status of verifying accepted
         piggybacked mapping data received in a
         map-request on this device. If this object is
         TRUE, then this device verifies accepted
         piggybacked mapping data."
 ::= { lispFeaturesEntry 14 }
```

Schudel, et al.

Expires December 30, 2012

[Page 14]

```
lispIidToVrfTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF LispIidToVrfEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This table represents the mapping of LISP Instance ID
     to a VRF."
  REFERENCE "[LISP]"
  ::= { lispObjects 2 }

lispIidToVrfEntry OBJECT-TYPE
  SYNTAX      LispIidToVrfEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "An entry (conceptual row) in the lispIidToVrfTable."
  INDEX      { lispFeaturesInstanceID }
  ::= { lispIidToVrfTable 1 }

LispIidToVrfEntry ::= SEQUENCE {
  lispIidToVrfVpnId                               VPNIdOrZero
}

lispIidToVrfVpnId OBJECT-TYPE
  SYNTAX      VPNIdOrZero
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "The VPN ID, as specified in [RFC2685], that is mapped
     to the given LISP Instance ID. If a VPN ID has not been
     specified for this VRF, then this variable SHOULD be
     set to a zero-length OCTET STRING."
  ::= { lispIidToVrfEntry 1 }

lispGlobalStatsTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF LispGlobalStatsEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides global statistics for a given
     Instance ID per address-family on a LISP device."
  REFERENCE "[LISP]"
  ::= { lispObjects 3 }

lispGlobalStatsEntry OBJECT-TYPE
```

Schudel, et al.

Expires December 30, 2012

[Page 15]

```
SYNTAX      LispGlobalStatsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry (conceptual row) in the lispGlobalStatsTable."
INDEX      { lispFeaturesInstanceID,
              lispFeaturesAddressFamily }
::= { lispGlobalStatsTable 1 }

LispGlobalStatsEntry ::= SEQUENCE {
    lispGlobalStatsMapRequestsIn                  Counter64,
    lispGlobalStatsMapRequestsOut                 Counter64,
    lispGlobalStatsMapRepliesIn                  Counter64,
    lispGlobalStatsMapRepliesOut                 Counter64,
    lispGlobalStatsMapRegistersIn                Counter64,
    lispGlobalStatsMapRegistersOut               Counter64
}

lispGlobalStatsMapRequestsIn OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of map requests received by this
         device for any EID prefix of the given address
         family and Instance ID."
    ::= { lispGlobalStatsEntry 1 }

lispGlobalStatsMapRequestsOut OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of map requests sent by this
         device for any EID prefix of the given
         address family and Instance ID."
    ::= { lispGlobalStatsEntry 2 }

lispGlobalStatsMapRepliesIn OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of map replies received by this
         device for any EID prefix of the given
         address family and Instance ID."
    ::= { lispGlobalStatsEntry 3 }
```

Schudel, et al.

Expires December 30, 2012

[Page 16]

```
lispGlobalStatsMapRepliesOut OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Total number of map replies sent by this
         device for any EID prefix of the given
         address family and Instance ID."
    ::= { lispGlobalStatsEntry 4 }

lispGlobalStatsMapRegistersIn OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Total number of map registers received by this
         device for any EID prefix of the given address
         family and Instance ID."
    ::= { lispGlobalStatsEntry 5 }

lispGlobalStatsMapRegistersOut OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Total number of map registers sent by this
         device for any EID prefix of the given
         address family and Instance ID."
    ::= { lispGlobalStatsEntry 6 }

lispMappingDatabaseTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispMappingDatabaseEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the EID-to-RLOC mapping
         database that contains the EID-prefix to RLOC
         mappings configured on an ETR. In general,
         this table would be representative of all such
         mappings for the given LISP site to which this
         device belongs."
    REFERENCE "[LISP]"
    ::= { lispObjects 4 }

lispMappingDatabaseEntry OBJECT-TYPE
    SYNTAX      LispMappingDatabaseEntry
```

Schudel, et al.

Expires December 30, 2012

[Page 17]

```
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "An entry (conceptual row) in the
     lispMappingDatabaseTable."
INDEX   { lispMappingDatabaseEidLength,
           lispMappingDatabaseEid }
::= { lispMappingDatabaseTable 1 }

LispMappingDatabaseEntry ::= SEQUENCE {
    lispMappingDatabaseEidLength          Integer32,
    lispMappingDatabaseEid               LispAddressType,
    lispMappingDatabaseLsb              Unsigned32,
    lispMappingDatabaseEidPartitioned   TruthValue,
    lispMappingDatabaseDecapOctets      Counter64,
    lispMappingDatabaseDecapPackets     Counter64,
    lispMappingDatabaseEncapOctets      Counter64,
    lispMappingDatabaseEncapPackets     Counter64
}

lispMappingDatabaseEidLength OBJECT-TYPE
    SYNTAX      Integer32 (0..1024)
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object gives the octet-length of
         lispMappingDatabaseEid."
    ::= { lispMappingDatabaseEntry 1 }

lispMappingDatabaseEid OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The EID prefix of the mapping database."
    ::= { lispMappingDatabaseEntry 2 }

lispMappingDatabaseLsb OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The locator status bits for this EID prefix."
    ::= { lispMappingDatabaseEntry 3 }

lispMappingDatabaseEidPartitioned OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS read-only
```

Schudel, et al.

Expires December 30, 2012

[Page 18]

```
STATUS      current
DESCRIPTION
  "Indicates if this device is partitioned from
   the site that contains this EID prefix. If this
   object is TRUE, then it means this device is
   partitioned from the site."
 ::= { lispMappingDatabaseEntry 4 }

lispMappingDatabaseDecapOctets OBJECT-TYPE
  SYNTAX      Counter64
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of octets of LISP packets that
     were decapsulated by this device addressed
     to a host within this EID-prefix."
 ::= { lispMappingDatabaseEntry 5 }

lispMappingDatabaseDecapPackets OBJECT-TYPE
  SYNTAX      Counter64
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of LISP packets that were
     decapsulated by this device addressed to a
     host within this EID-prefix."
 ::= { lispMappingDatabaseEntry 6 }

lispMappingDatabaseEncapOctets OBJECT-TYPE
  SYNTAX      Counter64
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of octets of LISP packets, that
     were encapsulated by this device, whose inner
     header source address matched this EID prefix."
 ::= { lispMappingDatabaseEntry 7 }

lispMappingDatabaseEncapPackets OBJECT-TYPE
  SYNTAX      Counter64
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of LISP packets that were
     encapsulated by this device that whose inner
     header source address matched this EID prefix."
 ::= { lispMappingDatabaseEntry 8 }
```

Schudel, et al.

Expires December 30, 2012

[Page 19]

```

lispMappingDatabaseLocatorTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF LispMappingDatabaseLocatorEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This table represents the set of routing locators
     per EID prefix contained in the EID-to-RLOC
     database configured on this ETR."
  REFERENCE "[LISP]"
  ::= { lispObjects 5 }

```

```

lispMappingDatabaseLocatorEntry OBJECT-TYPE
  SYNTAX      LispMappingDatabaseLocatorEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "An entry (conceptual row) in the
     lispMappingDatabaseLocatorTable."
  INDEX  { lispMappingDatabaseEidLength,
            lispMappingDatabaseEid,
            lispMappingDatabaseLocatorRlocLength,
            lispMappingDatabaseLocatorRloc }
  ::= { lispMappingDatabaseLocatorTable 1 }

```

```

LispMappingDatabaseLocatorEntry ::= SEQUENCE {
  lispMappingDatabaseLocatorRlocLength          Integer32,
  lispMappingDatabaseLocatorRloc                LispAddressType,
  lispMappingDatabaseLocatorRlocPriority        Integer32,
  lispMappingDatabaseLocatorRlocWeight          Integer32,
  lispMappingDatabaseLocatorRlocMPriority       Integer32,
  lispMappingDatabaseLocatorRlocMWeight         Integer32,
  lispMappingDatabaseLocatorRlocState           INTEGER,
  lispMappingDatabaseLocatorRlocLocal           INTEGER,
  lispMappingDatabaseLocatorRlocDecapOctets     Counter64,
  lispMappingDatabaseLocatorRlocDecapPackets    Counter64,
  lispMappingDatabaseLocatorRlocEncapOctets     Counter64,
  lispMappingDatabaseLocatorRlocEncapPackets    Counter64
}

```

```

lispMappingDatabaseLocatorRlocLength OBJECT-TYPE
  SYNTAX      Integer32
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This object is used to get the octet-length of
     lispMappingDatabaseLocatorRloc, the next object."
  ::= { lispMappingDatabaseLocatorEntry 1 }

```

Schudel, et al.

Expires December 30, 2012

[Page 20]

```
lispMappingDatabaseLocatorRloc OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object is a locator for the given EID prefix
         in the mapping database."
    ::= { lispMappingDatabaseLocatorEntry 2 }

lispMappingDatabaseLocatorRlocPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast priority of the RLOC."
    ::= { lispMappingDatabaseLocatorEntry 3 }

lispMappingDatabaseLocatorRlocWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast weight of the RLOC."
    ::= { lispMappingDatabaseLocatorEntry 4 }

lispMappingDatabaseLocatorRlocMPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The multicast priority of the RLOC."
    ::= { lispMappingDatabaseLocatorEntry 5 }

lispMappingDatabaseLocatorRlocMWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The multicast weight of the RLOC."
    ::= { lispMappingDatabaseLocatorEntry 6 }

lispMappingDatabaseLocatorRlocState OBJECT-TYPE
    SYNTAX      INTEGER {
                  up (1),
                  down (2),
                  unreachable (3)
                }
    MAX-ACCESS read-only
```

Schudel, et al.

Expires December 30, 2012

[Page 21]

```
STATUS      current
DESCRIPTION
    "The state of this RLOC as per this device.
    (1 = RLOC is up; 2 = RLOC is down;
     3 = RLOC is unreachable)."
::= { lispMappingDatabaseLocatorEntry 7 }

lispMappingDatabaseLocatorRlocLocal OBJECT-TYPE
    SYNTAX      INTEGER {
                  siteself (1),
                  sitelocal (2)
                }
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Indicates whether the RLOC is local to this
         device (or remote, meaning local to another
         device in the same LISP site). (1 = RLOC is
         an address on this device; 2 = RLOC is an
         address on another device)."
::= { lispMappingDatabaseLocatorEntry 8 }

lispMappingDatabaseLocatorRlocDecapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that were
         addressed to this RLOC of the EID-prefix and
         were decapsulated."
::= { lispMappingDatabaseLocatorEntry 9 }

lispMappingDatabaseLocatorRlocDecapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that were addressed
         to this RLOC of the EID-prefix and were
         decapsulated."
::= { lispMappingDatabaseLocatorEntry 10 }

lispMappingDatabaseLocatorRlocEncapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that were
```

Schudel, et al.

Expires December 30, 2012

[Page 22]

```
    encapsulated by this device using this RLOC
    address as the source, and that were sourced
    by an address of this EID-prefix."
 ::= { lispMappingDatabaseLocatorEntry 11 }

lispMappingDatabaseLocatorRlocEncapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that were
        encapsulated by this device using this RLOC
        address as the source, and that were sourced
        by an address of this EID-prefix."
 ::= { lispMappingDatabaseLocatorEntry 12 }

lispMapCacheTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispMapCacheEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the short-lived, on-demand
        table on an ITR that stores, tracks, and is
        responsible for timing-out and otherwise
        validating EID-to-RLOC mappings."
    REFERENCE "[LISP]"
 ::= { lispObjects 6 }

lispMapCacheEntry OBJECT-TYPE
    SYNTAX      LispMapCacheEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the
        lispMapCacheTable."
    INDEX      { lispMapCacheEidLength,
                  lispMapCacheEid }
 ::= { lispMapCacheTable 1 }

LispMapCacheEntry ::= SEQUENCE {
    lispMapCacheEidLength          Integer32,
    lispMapCacheEid                LispAddressType,
    lispMapCacheEidUpTime          TimeTicks,
    lispMapCacheEidExpiryTime      TimeTicks,
    lispMapCacheEidState           TruthValue,
    lispMapCacheEidAuthoritative   TruthValue,
    lispMapCacheDecapOctets         Counter64,
```

Schudel, et al.

Expires December 30, 2012

[Page 23]

```
lispMapCacheDecapPackets      Counter64,
lispMapCacheEncapOctets       Counter64,
lispMapCacheEncapPackets      Counter64
}

lispMapCacheEidLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispMapCacheEid, the next object."
    ::= { lispMapCacheEntry 1 }

lispMapCacheEid OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The EID prefix in the mapping cache."
    ::= { lispMapCacheEntry 2 }

lispMapCacheEidUpTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The up time of the EID prefix."
    ::= { lispMapCacheEntry 3 }

lispMapCacheEidExpiryTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The time remaining before the ITR times-out
         this EID prefix."
    ::= { lispMapCacheEntry 4 }

lispMapCacheEidState OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "This object is used to indicate the activity
         of this EID prefix. If this object is TRUE, then
         it means this EID prefix is seeing activity."
    ::= { lispMapCacheEntry 5 }
```

Schudel, et al.

Expires December 30, 2012

[Page 24]

```
lispMapCacheEidAuthoritative OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "This object is used to indicate whether the EID
         prefix was installed by an authoritative map-reply.
         If this object is TRUE, then it means this EID
         prefix was installed by an authoritative map-reply."
    ::= { lispMapCacheEntry 6 }

lispMapCacheDecapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that were
         decapsulated by this device and were sourced
         from a remote host within this EID-prefix."
    ::= { lispMapCacheEntry 7 }

lispMapCacheDecapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that were
         decapsulated by this device and were sourced
         from a remote host within this EID-prefix."
    ::= { lispMapCacheEntry 8 }

lispMapCacheEncapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that were
         encapsulated by this device using the given
         EID-prefix in the map cache."
    ::= { lispMapCacheEntry 9 }

lispMapCacheEncapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that were encapsulated
         by this device using the given EID-prefix in the
```

Schudel, et al.

Expires December 30, 2012

[Page 25]

```

        map cache."
 ::= { lispMapCacheEntry 10 }

lispMapCacheLocatorTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispMapCacheLocatorEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the set of locators per EID
         prefix contained in the map-cache table of an ITR."
    REFERENCE "[LISP]"
 ::= { lispObjects 7 }

lispMapCacheLocatorEntry OBJECT-TYPE
    SYNTAX      LispMapCacheLocatorEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the
         lispMapCacheLocatorTable."
    INDEX      { lispMapCacheEidLength,
                  lispMapCacheEid,
                  lispMapCacheLocatorRlocLength,
                  lispMapCacheLocatorRloc }
 ::= { lispMapCacheLocatorTable 1 }

LispMapCacheLocatorEntry ::= SEQUENCE {
    lispMapCacheLocatorRlocLength          Integer32,
    lispMapCacheLocatorRloc                LispAddressType,
    lispMapCacheLocatorRlocPriority       Integer32,
    lispMapCacheLocatorRlocWeight         Integer32,
    lispMapCacheLocatorRlocMPriority     Integer32,
    lispMapCacheLocatorRlocMWeight       Integer32,
    lispMapCacheLocatorRlocState         INTEGER,
    lispMapCacheLocatorRlocUpTime        TimeTicks,
    lispMapCacheLocatorRlocLastPriorityChange TimeTicks,
    lispMapCacheLocatorRlocLastWeightChange TimeTicks,
    lispMapCacheLocatorRlocLastMPriorityChange TimeTicks,
    lispMapCacheLocatorRlocLastMWeightChange TimeTicks,
    lispMapCacheLocatorRlocLastStateChange TimeTicks,
    lispMapCacheLocatorRlocRtt           TimeTicks,
    lispMapCacheLocatorRlocDecapOctets   Counter64,
    lispMapCacheLocatorRlocDecapPackets  Counter64,
    lispMapCacheLocatorRlocEncapOctets   Counter64,
    lispMapCacheLocatorRlocEncapPackets  Counter64
}

```

Schudel, et al.

Expires December 30, 2012

[Page 26]

```
lispMapCacheLocatorRlocLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispMapCacheLocatorRloc, the next object."
    ::= { lispMapCacheLocatorEntry 1 }

lispMapCacheLocatorRloc OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The locator for the EID prefix in the mapping cache."
    ::= { lispMapCacheLocatorEntry 2 }

lispMapCacheLocatorRlocPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast priority of the RLOC for this EID prefix
         (0-255) lower more preferred. "
    ::= { lispMapCacheLocatorEntry 3 }

lispMapCacheLocatorRlocWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast weight of the RLOC for this EID prefix
         (0 - 100) percentage. "
    ::= { lispMapCacheLocatorEntry 4 }

lispMapCacheLocatorRlocMPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The multicast priority of the RLOC for this EID prefix."
    ::= { lispMapCacheLocatorEntry 5 }

lispMapCacheLocatorRlocMWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
```

Schudel, et al.

Expires December 30, 2012

[Page 27]

```
        "The multicast weight of the RLOC for this EID prefix."
 ::= { lispMapCacheLocatorEntry 6 }

lispMapCacheLocatorRlocState OBJECT-TYPE
    SYNTAX      INTEGER {
        up (1),
        down (2)
    }
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The state of this RLOC as per this device
         (1 = RLOC is up; 2 = RLOC is down)."
 ::= { lispMapCacheLocatorEntry 7 }

lispMapCacheLocatorRlocUpTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The up-time of this RLOC."
 ::= { lispMapCacheLocatorEntry 8 }

lispMapCacheLocatorRlocLastPriorityChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Time since the last change of the unicast priority
         of the RLOC for this EID prefix."
 ::= { lispMapCacheLocatorEntry 9 }

lispMapCacheLocatorRlocLastWeightChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Time since the last change of the unicast weight of
         the RLOC for this EID prefix."
 ::= { lispMapCacheLocatorEntry 10 }

lispMapCacheLocatorRlocLastMPriorityChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "Time since the last change of the multicast
         priority of the RLOC for this EID prefix."
```

Schudel, et al.

Expires December 30, 2012

[Page 28]

```
::= { lispMapCacheLocatorEntry 11 }

lispMapCacheLocatorRlocLastMWeightChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Time since the last change of the multicast weight
         of the RLOC for this EID prefix."
    ::= { lispMapCacheLocatorEntry 12 }

lispMapCacheLocatorRlocLastStateChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Time since the last change of the up/down state of
         the RLOC for this EID prefix."
    ::= { lispMapCacheLocatorEntry 13 }

lispMapCacheLocatorRlocRtt OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Round trip time of RLOC probe and map-reply for
         this RLOC address for this prefix."
    ::= { lispMapCacheLocatorEntry 14 }

lispMapCacheLocatorRlocDecapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that were
         decapsulated by this device and were sourced
         from a remote host within this EID-prefix and
         were encapsulated for this RLOC."
    ::= { lispMapCacheLocatorEntry 15 }

lispMapCacheLocatorRlocDecapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that were decapsulated
         by this device and were sourced from a remote host
         within this EID-prefix and were encapsulated for
```

Schudel, et al.

Expires December 30, 2012

[Page 29]

```
        this RLOC."
 ::= { lispMapCacheLocatorEntry 16 }

lispMapCacheLocatorRlocEncapOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of octets of LISP packets that matched
         this EID-prefix and were encapsulated using this
         RLOC address."
 ::= { lispMapCacheLocatorEntry 17 }

lispMapCacheLocatorRlocEncapPackets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The number of LISP packets that matched this EID
         prefix and were encapsulated using this RLOC address."
 ::= { lispMapCacheLocatorEntry 18 }

lispConfiguredLocatorTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispConfiguredLocatorEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the set of routing locators
         configured on this device. Note that the Proxy-ITR
         configured addresses are treated as routing locators
         and therefore can be part of this table."
    REFERENCE "[LISP]"
 ::= { lispObjects 8 }

lispConfiguredLocatorEntry OBJECT-TYPE
    SYNTAX      LispConfiguredLocatorEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the
         lispConfiguredLocatorTable."
    INDEX  { lispConfiguredLocatorRlocLength,
             lispConfiguredLocatorRloc }
 ::= { lispConfiguredLocatorTable 1 }

LispConfiguredLocatorEntry ::= SEQUENCE {
```

Schudel, et al.

Expires December 30, 2012

[Page 30]

```
lispConfiguredLocatorRlocLength          Integer32,
lispConfiguredLocatorRloc                LispAddressType,
lispConfiguredLocatorRlocState           INTEGER,
lispConfiguredLocatorRlocLocal          INTEGER,
lispConfiguredLocatorRlocDecapOctets    Counter64,
lispConfiguredLocatorRlocDecapPackets   Counter64,
lispConfiguredLocatorRlocEncapOctets    Counter64,
lispConfiguredLocatorRlocEncapPackets   Counter64
}

lispConfiguredLocatorRlocLength OBJECT-TYPE
  SYNTAX      Integer32
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This object is used to get the octet-length of
     lispConfiguredLocatorRloc, the next object."
 ::= { lispConfiguredLocatorEntry 1 }

lispConfiguredLocatorRloc OBJECT-TYPE
  SYNTAX      LispAddressType
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This object is a RLOC address configured on this
     device. It can be an RLOC that is local to this
     device or can be an RLOC which belongs to another
     ETR within the same site. Proxy-ITR address is
     treated as an RLOC."
 ::= { lispConfiguredLocatorEntry 2 }

lispConfiguredLocatorRlocState OBJECT-TYPE
  SYNTAX      INTEGER {
                  up (1),
                  down (2),
                  unreachable (3)
              }
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "The state of this RLOC as per this device.
     (1 = RLOC is up; 2 = RLOC is down;
      3 = RLOC is unreachable)."
 ::= { lispConfiguredLocatorEntry 3 }

lispConfiguredLocatorRlocLocal OBJECT-TYPE
  SYNTAX      INTEGER {
                  siteself (1),

```

Schudel, et al.

Expires December 30, 2012

[Page 31]

```
    sitelocal (2)

}

MAX-ACCESS read-only
STATUS current
DESCRIPTION
  "Indicates whether the RLOC is local to this
  device (or remote, meaning local to another
  device in the same LISP site). (1 = RLOC is
  an address on this device; 2 = RLOC is an
  address on another device)."
::= { lispConfiguredLocatorEntry 4 }

lispConfiguredLocatorRlocDecapOctets OBJECT-TYPE
  SYNTAX Counter64
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "The number of octets of LISP packets that were
    addressed to this RLOC and were decapsulated."
::= { lispConfiguredLocatorEntry 5 }

lispConfiguredLocatorRlocDecapPackets OBJECT-TYPE
  SYNTAX Counter64
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "The number of LISP packets that were addressed
    to this RLOC and were decapsulated."
::= { lispConfiguredLocatorEntry 6 }

lispConfiguredLocatorRlocEncapOctets OBJECT-TYPE
  SYNTAX Counter64
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "The number of octets of LISP packets that were
    encapsulated by this device using this RLOC
    address as the source."
::= { lispConfiguredLocatorEntry 7 }

lispConfiguredLocatorRlocEncapPackets OBJECT-TYPE
  SYNTAX Counter64
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "The number of LISP packets that were
    encapsulated by this device using this RLOC
```

Schudel, et al.

Expires December 30, 2012

[Page 32]

```

        address as the source."
 ::= { lispConfiguredLocatorEntry 8 }

lispEidRegistrationTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispEidRegistrationEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This table provides the properties of each LISP EID
         prefix that is registered with this device when
         configured to be a Map-Server."
    REFERENCE "[LISP]"
 ::= { lispObjects 9 }

lispEidRegistrationEntry OBJECT-TYPE
    SYNTAX      LispEidRegistrationEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the lispEidRegistrationTable."
    INDEX      { lispEidRegistrationEidLength,
                  lispEidRegistrationEid }
 ::= { lispEidRegistrationTable 1 }

LispEidRegistrationEntry ::= SEQUENCE {
    lispEidRegistrationEidLength          Integer32,
    lispEidRegistrationEid               LispAddressType,
    lispEidRegistrationSiteName          OCTET STRING,
    lispEidRegistrationSiteDescription   OCTET STRING,
    lispEidRegistrationIsRegistered     TruthValue,
    lispEidRegistrationFirstRegisterTime TimeTicks,
    lispEidRegistrationLastRegisterTime TimeTicks,
    lispEidRegistrationLastRegisterSenderLength Integer32,
    lispEidRegistrationLastRegisterSender LispAddressType,
    lispEidRegistrationRouteTag         Unsigned32,
    lispEidRegistrationAuthenticationErrors Counter64,
    lispEidRegistrationRlocsMismatch    Counter64
}

lispEidRegistrationEidLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispEidRegistrationEid, the next object."
 ::= { lispEidRegistrationEntry 1 }

```

Schudel, et al.

Expires December 30, 2012

[Page 33]

```
lispEidRegistrationEid OBJECT-TYPE
  SYNTAX      LispAddressType
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "The EID prefix that is being registered."
  ::= { lispEidRegistrationEntry 2 }

lispEidRegistrationSiteName OBJECT-TYPE
  SYNTAX      OCTET STRING (SIZE(0..63))
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Site name used by a Map-Server to distinguish
     different LISP sites that are registering with it."
  ::= { lispEidRegistrationEntry 3 }

lispEidRegistrationSiteDescription OBJECT-TYPE
  SYNTAX      OCTET STRING (SIZE(0..255))
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Description for a site name used by a Map-Server.
     The EID prefix that is being registered belongs to
     this site."
  ::= { lispEidRegistrationEntry 4 }

lispEidRegistrationIsRegistered OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Indicates the registration status of the given
     EID prefix. If this object is TRUE, then it
     means the EID prefix is registered."
  ::= { lispEidRegistrationEntry 5 }

lispEidRegistrationFirstRegisterTime OBJECT-TYPE
  SYNTAX      TimeTicks
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Time since a first valid register message for
     the given EID prefix was received by this device."
  ::= { lispEidRegistrationEntry 6 }

lispEidRegistrationLastRegisterTime OBJECT-TYPE
```

Schudel, et al.

Expires December 30, 2012

[Page 34]

```
SYNTAX      TimeTicks
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Time since the last valid register message for
     the given EID prefix was received by this device."
 ::= { lispEidRegistrationEntry 7 }

lispEidRegistrationLastRegisterSenderLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispEidRegistrationLastRegisterSender, the next object."
 ::= { lispEidRegistrationEntry 8 }

lispEidRegistrationLastRegisterSender OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Source address of the last valid register message
         for the given EID prefix that was received by
         this device."
 ::= { lispEidRegistrationEntry 9 }

lispEidRegistrationRouteTag OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Value of the routing table tag assigned to the
         given EID prefix."
 ::= { lispEidRegistrationEntry 10 }

lispEidRegistrationAuthenticationErrors OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Count of total authentication errors of
         map-registers received for the given EID
         prefix."
 ::= { lispEidRegistrationEntry 11 }

lispEidRegistrationRlocsMismatch OBJECT-TYPE
```

Schudel, et al.

Expires December 30, 2012

[Page 35]

```

SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "Count of total map-registers received that had at
  least one RLOC that was not in the allowed list of
  RLOCs for the given EID prefix."
 ::= { lispEidRegistrationEntry 12 }

```

```

lispEidRegistrationEtrTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF LispEidRegistrationEtrEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides the properties of ETRs that register
    the given EID prefix with this device when configured to
    be a Map-Server."
  REFERENCE "[LISP]"
  ::= { lispObjects 10 }

```

```

lispEidRegistrationEtrEntry OBJECT-TYPE
  SYNTAX      LispEidRegistrationEtrEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry (conceptual row) in the lispEidRegistrationEtrTable."
  INDEX      { lispEidRegistrationEidLength,
                lispEidRegistrationEid,
                lispEidRegistrationEtrSenderLength,
                lispEidRegistrationEtrSender }
  ::= { lispEidRegistrationEtrTable 1 }

```

```

LispEidRegistrationEtrEntry ::= SEQUENCE {
  lispEidRegistrationEtrSenderLength          Integer32,
  lispEidRegistrationEtrSender               LispAddressType,
  lispEidRegistrationEtrLastRegisterTime     TimeTicks,
  lispEidRegistrationEtrTtl                 TimeTicks,
  lispEidRegistrationEtrProxyReply          TruthValue,
  lispEidRegistrationEtrWantsMapNotify       TruthValue
}

```

```

lispEidRegistrationEtrSenderLength OBJECT-TYPE
  SYNTAX      Integer32
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION

```

Schudel, et al.

Expires December 30, 2012

[Page 36]

```
"This object is used to get the octet-length of
lispEidRegistrationEtrSender, the next object."
 ::= { lispEidRegistrationEtrEntry 1 }

lispEidRegistrationEtrSender OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS       current
    DESCRIPTION
        "Source address of the ETR that is sending valid register
         messages for this EID prefix to this device."
    ::= { lispEidRegistrationEtrEntry 2 }

lispEidRegistrationEtrLastRegisterTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS       current
    DESCRIPTION
        "Time since the last valid register message from this ETR
         for the given EID prefix was received by this device."
    ::= { lispEidRegistrationEtrEntry 3 }

lispEidRegistrationEtrTtl OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS read-only
    STATUS       current
    DESCRIPTION
        "Time in minutes of the Record TTL of the
         registering ETR device for this EID prefix."
    ::= { lispEidRegistrationEtrEntry 4 }

lispEidRegistrationEtrProxyReply OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS read-only
    STATUS       current
    DESCRIPTION
        "Indicates proxy-relying status of the registering
         ETR for this EID prefix. If this object is TRUE, then
         it means the Map-Server can proxy-reply."
    ::= { lispEidRegistrationEtrEntry 5 }

lispEidRegistrationEtrWantsMapNotify OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS read-only
    STATUS       current
    DESCRIPTION
        "Indicates whether the EID prefix wants
```

Schudel, et al.

Expires December 30, 2012

[Page 37]

```
Map-Notifications. If this object is TRUE, then
it means the EID prefix wants Map-Notifications."
 ::= { lispEidRegistrationEtrEntry 6 }
```

lispEidRegistrationLocatorTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF LispEidRegistrationLocatorEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "This table provides the properties of all locators
     per LISP site that are served by this device when
     configured to be a Map-Server."
REFERENCE "[LISP]"
 ::= { lispObjects 11 }
```

lispEidRegistrationLocatorEntry OBJECT-TYPE

```
SYNTAX      LispEidRegistrationLocatorEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "An entry (conceptual row) in the
     lispEidRegistrationLocatorTable."
INDEX      { lispEidRegistrationEidLength,
              lispEidRegistrationEid,
              lispEidRegistrationEtrSenderLength,
              lispEidRegistrationEtrSender,
              lispEidRegistrationLocatorRlocLength,
              lispEidRegistrationLocatorRloc }
 ::= { lispEidRegistrationLocatorTable 1 }
```

```
LispEidRegistrationLocatorEntry ::= SEQUENCE {
    lispEidRegistrationLocatorRlocLength          Integer32,
    lispEidRegistrationLocatorRloc                LispAddressType,
    lispEidRegistrationLocatorRlocState           INTEGER,
    lispEidRegistrationLocatorIsLocal             TruthValue,
    lispEidRegistrationLocatorPriority           Integer32,
    lispEidRegistrationLocatorWeight              Integer32,
    lispEidRegistrationLocatorMPriority          Integer32,
    lispEidRegistrationLocatorMWeight            Integer32
}
```

lispEidRegistrationLocatorRlocLength OBJECT-TYPE

```
SYNTAX      Integer32
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
```

Schudel, et al.

Expires December 30, 2012

[Page 38]

```
    "This object is used to get the octet-length of
     lispEidRegistrationLocatorRloc, the next object."
 ::= { lispEidRegistrationLocatorEntry 1 }

lispEidRegistrationLocatorRloc OBJECT-TYPE
  SYNTAX      LispAddressType
  MAX-ACCESS not-accessible

  STATUS      current
  DESCRIPTION
    "The locator of the given EID prefix being registered
     by the given ETR with this device."
 ::= { lispEidRegistrationLocatorEntry 2 }

lispEidRegistrationLocatorRlocState OBJECT-TYPE
  SYNTAX      INTEGER {
                up (1),
                down (2)
              }
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "The cached state of this RLOC received in
     map-register from the ETR by the device, in the
     capacity of a Map-Server. Value 1 refers to up,
     value 2 refers to down."
 ::= { lispEidRegistrationLocatorEntry 3 }

lispEidRegistrationLocatorIsLocal OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "Indicates if the given locator is local to the
     registering ETR. If this object is TRUE, then it
     means the locator is local."
 ::= { lispEidRegistrationLocatorEntry 4 }

lispEidRegistrationLocatorPriority OBJECT-TYPE
  SYNTAX      Integer32
  MAX-ACCESS read-only
  STATUS      current
  DESCRIPTION
    "The unicast priority of the RLOC for this EID prefix
     in the register message sent by the given ETR."
 ::= { lispEidRegistrationLocatorEntry 5 }

lispEidRegistrationLocatorWeight OBJECT-TYPE
```

Schudel, et al.

Expires December 30, 2012

[Page 39]

```
SYNTAX      Integer32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The unicast weight of the RLOC for this EID prefix
     in the register message sent by the given ETR."
 ::= { lispEidRegistrationLocatorEntry 6 }

lispEidRegistrationLocatorMPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The multicast priority of the RLOC for this EID prefix
         in the register message sent by the given ETR."
 ::= { lispEidRegistrationLocatorEntry 7 }

lispEidRegistrationLocatorMWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The multicast weight of the RLOC for this EID prefix
         in the register message sent by the given ETR."
 ::= { lispEidRegistrationLocatorEntry 8 }

lispUseMapServerTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispUseMapServerEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table provides the properties of the
         map-server(s) with which this device is
         configured to register."
    REFERENCE "[LISP]"
 ::= { lispObjects 12 }

lispUseMapServerEntry OBJECT-TYPE
    SYNTAX      LispUseMapServerEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the lispUseMapServerTable."
    INDEX      { lispUseMapServerAddressLength,
                  lispUseMapServerAddress }
 ::= { lispUseMapServerTable 1 }
```

Schudel, et al.

Expires December 30, 2012

[Page 40]

```
LispUseMapServerEntry ::= SEQUENCE {
    lispUseMapServerAddressLength Integer32,
    lispUseMapServerAddress      LispAddressType,
    lispUseMapServerState        INTEGER
}

lispUseMapServerAddressLength OBJECT-TYPE

    SYNTAX      Integer32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispUseMapServerAddress, the next object."
    ::= { lispUseMapServerEntry 1 }

lispUseMapServerAddress OBJECT-TYPE

    SYNTAX      LispAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Address of Map-Server configured on this device."
    ::= { lispUseMapServerEntry 2 }

lispUseMapServerState OBJECT-TYPE

    SYNTAX      INTEGER {
        up (1),
        down (2)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "State of this Map-Server configured on this
         device (1 = Map-Server is up; 2 = Map-Server
         is down)."
    ::= { lispUseMapServerEntry 3 }

lispUseMapResolverTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispUseMapResolverEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table provides the properties of the
         map-resolver(s) this device is configured to use."
    REFERENCE "[LISP]"
    ::= { lispObjects 13 }
```

Schudel, et al.

Expires December 30, 2012

[Page 41]

```
lispUseMapResolverEntry OBJECT-TYPE
    SYNTAX      LispUseMapResolverEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the
         lispUseMapResolverTable."
    INDEX      { lispUseMapResolverAddressLength,
                 lispUseMapResolverAddress }
    ::= { lispUseMapResolverTable 1 }

LispUseMapResolverEntry ::= SEQUENCE {
    lispUseMapResolverAddressLength    Integer32,
    lispUseMapResolverAddress          LispAddressType,
    lispUseMapResolverState           INTEGER
}

lispUseMapResolverAddressLength OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
         lispUseMapResolverAddress, the next object."
    ::= { lispUseMapResolverEntry 1 }

lispUseMapResolverAddress OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "Address of map-resolver configured on this device."
    ::= { lispUseMapResolverEntry 2 }

lispUseMapResolverState OBJECT-TYPE
    SYNTAX      INTEGER {
        up (1),
        down (2)
    }
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "State of this Map-Resolver configured on this device
         (1 = Map-Resolver is up; 2 = Map-Resolver is down)."
    ::= { lispUseMapResolverEntry 3 }
```

Schudel, et al.

Expires December 30, 2012

[Page 42]

```
lispUseProxyEtrTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF LispUseProxyEtrEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides the properties of all
     Proxy ETRs that this device is configured
     to use."
  REFERENCE "[LISP]"
  ::= { lispObjects 14 }

lispUseProxyEtrEntry OBJECT-TYPE
  SYNTAX      LispUseProxyEtrEntry
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "An entry (conceptual row) in the lispUseProxyEtrTable."
  INDEX      { lispUseProxyEtrAddressLength,
                lispUseProxyEtrAddress }
  ::= { lispUseProxyEtrTable 1 }

LispUseProxyEtrEntry ::= SEQUENCE {
  lispUseProxyEtrAddressLength      Integer32,
  lispUseProxyEtrAddress          LispAddressType,
  lispUseProxyEtrPriority         Integer32,
  lispUseProxyEtrWeight           Integer32,
  lispUseProxyEtrMPriority        Integer32,
  lispUseProxyEtrMWeight          Integer32,
  lispUseProxyEtrState            INTEGER
}

lispUseProxyEtrAddressLength OBJECT-TYPE
  SYNTAX      Integer32
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "This object is used to get the octet-length of
     lispUseProxyEtrAddress, the next object."
  ::= { lispUseProxyEtrEntry 1 }

lispUseProxyEtrAddress OBJECT-TYPE
  SYNTAX      LispAddressType
  MAX-ACCESS not-accessible
  STATUS      current
  DESCRIPTION
    "Address of Proxy ETR configured on this device."
  ::= { lispUseProxyEtrEntry 2 }
```

Schudel, et al.

Expires December 30, 2012

[Page 43]

```
lispUseProxyEtrPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast priority of the PETR locator."
    ::= { lispUseProxyEtrEntry 3 }

lispUseProxyEtrWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The unicast weight of the PETR locator."
    ::= { lispUseProxyEtrEntry 4 }

lispUseProxyEtrMPriority OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The multicast priority of the PETR locator."
    ::= { lispUseProxyEtrEntry 5 }

lispUseProxyEtrMWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The multicast weight of the PETR locator."
    ::= { lispUseProxyEtrEntry 6 }

lispUseProxyEtrState OBJECT-TYPE
    SYNTAX      INTEGER {
        down (0),
        up (1)
    }
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "State of this Proxy ETR configured on this device
         (0 = Proxy ETR is down; 1 = Proxy ETR is up)."
    ::= { lispUseProxyEtrEntry 7 }
```

Schudel, et al.

Expires December 30, 2012

[Page 44]

```
--  
-- Conformance Information  
--  
  
lispCompliances OBJECT IDENTIFIER ::= { lispConformance 1 }  
lispGroups      OBJECT IDENTIFIER ::= { lispConformance 2 }  
  
--  
-- Compliance Statements  
--  
  
lispMIBComplianceEtr MODULE-COMPLIANCE  
    STATUS current  
    DESCRIPTION  
        "The compliance statement for LISP ETRs."  
    MODULE -- this module  
    MANDATORY-GROUPS { lispMIBEtrGroup }  
  
    GROUP   lispMIBItrGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBPetrGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBPitrGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBMapServerGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBMapResolverGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBEtrExtendedGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBItrExtendedGroup  
    DESCRIPTION  
        "This group is optional."  
  
    GROUP   lispMIBMapServerExtendedGroup
```

Schudel, et al.

Expires December 30, 2012

[Page 45]

```
DESCRIPTION
    "This group is optional."

GROUP    lispMIBTuningParametersGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBEncapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
    "This group is optional."

 ::= { lispCompliances 1 }

lispMIBComplianceItr MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for LISP ITRs."
    MODULE -- this module
    MANDATORY-GROUPS { lispMIBItrGroup }

    GROUP    lispMIBEtrGroup
    DESCRIPTION
        "This group is optional."

    GROUP    lispMIBPetrGroup
    DESCRIPTION
        "This group is optional."

    GROUP    lispMIBPitrGroup
    DESCRIPTION
        "This group is optional."

    GROUP    lispMIBMapServerGroup
    DESCRIPTION
        "This group is optional."
```

Schudel, et al.

Expires December 30, 2012

[Page 46]

```
GROUP    lispMIBMapResolverGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBEtrExtendedGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBItrExtendedGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBMapServerExtendedGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBTuningParametersGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBEncapStatisticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
        "This group is optional."

 ::= { lispCompliances 2 }

lispMIBCompliancePetr MODULE-COMPLIANCE
STATUS    current
DESCRIPTION
        "The compliance statement for LISP Proxy-ETRs."
MODULE   -- this module
MANDATORY-GROUPS { lispMIBPetrGroup }

GROUP    lispMIBEtrGroup
DESCRIPTION
        "This group is optional."
```



```
GROUP    lispMIBItrGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBPitrGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBMapServerGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBMapResolverGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBEtrExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBItrExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBMapServerExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBTuningParametersGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBEncapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
    "This group is optional."
```

Schudel, et al.

Expires December 30, 2012

[Page 48]

```
::= { lispCompliances 3 }

lispMIBCompliancePitr MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION
    "The compliance statement for LISP Proxy-ITRs."
  MODULE -- this module
  MANDATORY-GROUPS { lispMIBPitrGroup }

    GROUP lispMIBEtrGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBItrGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBPetrGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBMapServerGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBMapResolverGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBEtrExtendedGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBItrExtendedGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBMapServerExtendedGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBTuningParametersGroup
    DESCRIPTION
      "This group is optional."

    GROUP lispMIBEncapStatisticsGroup
    DESCRIPTION
      "This group is optional."
```

Schudel, et al.

Expires December 30, 2012

[Page 49]

```
GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
    "This group is optional."

 ::= { lispCompliances 4 }

lispMIBComplianceMapServer MODULE-COMPLIANCE
    STATUS    current
    DESCRIPTION
        "The compliance statement for LISP Map Servers."
    MODULE    -- this module
    MANDATORY-GROUPS { lispMIBMapServerGroup }

        GROUP    lispMIBEtrGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBItrGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBPetrGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBPitrGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBMapResolverGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBEtrExtendedGroup
        DESCRIPTION
            "This group is optional."

        GROUP    lispMIBItrExtendedGroup
        DESCRIPTION
            "This group is optional."
```

Schudel, et al.

Expires December 30, 2012

[Page 50]

```
GROUP    lispMIBMapServerExtendedGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBTuningParametersGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBEncapStatisticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
        "This group is optional."

 ::= { lispCompliances 5 }

lispMIBComplianceMapResolver MODULE-COMPLIANCE
STATUS    current
DESCRIPTION
        "The compliance statement for LISP Map Resolvers."
MODULE   -- this module
MANDATORY-GROUPS { lispMIBMapResolverGroup }

GROUP    lispMIBEtrGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBItrGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBPetrGroup
DESCRIPTION
        "This group is optional."

GROUP    lispMIBPitrGroup
DESCRIPTION
        "This group is optional."
```

Schudel, et al.

Expires December 30, 2012

[Page 51]

```
GROUP    lispMIBMapServerGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBEtrExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBItrExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBMapServerExtendedGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBTuningParametersGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBEncapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDecapStatisticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBDiagnosticsGroup
DESCRIPTION
    "This group is optional."

GROUP    lispMIBVrfGroup
DESCRIPTION
    "This group is optional."

 ::= { lispCompliances 6 }

-- 
-- Units of Conformance
--

lispMIBEtrGroup OBJECT-GROUP
OBJECTS { lispFeaturesEtrEnabled,
          lispMappingDatabaseLsb,
          lispMappingDatabaseLocatorRlocPriority,
          lispMappingDatabaseLocatorRlocWeight,
```

Schudel, et al.

Expires December 30, 2012

[Page 52]

```
lispMappingDatabaseLocatorRlocMPriority,
lispMappingDatabaseLocatorRlocMWeight,
lispMappingDatabaseLocatorRlocState,
lispMappingDatabaseLocatorRlocLocal,
lispConfiguredLocatorRlocState,
lispConfiguredLocatorRlocLocal,
lispUseMapServerState
}
STATUS current
DESCRIPTION
    "A collection of objects to support basic
     management of LISP ETRs."
 ::= { lispGroups 1 }

lispMIBItrGroup OBJECT-GROUP
OBJECTS { lispFeaturesItrEnabled,
          lispFeaturesMapCacheSize,
          lispMappingDatabaseLsb,
          lispMapCacheLocatorRlocPriority,
          lispMapCacheLocatorRlocWeight,
          lispMapCacheLocatorRlocMPriority,
          lispMapCacheLocatorRlocMWeight,
          lispMapCacheLocatorRlocState,
          lispMapCacheEidUpTime,
          lispMapCacheEidExpiryTime,
          lispUseMapResolverState,
          lispUseProxyEtrPriority,
          lispUseProxyEtrWeight,
          lispUseProxyEtrMPriority,
          lispUseProxyEtrMWeight,
          lispUseProxyEtrState
        }
STATUS current
DESCRIPTION
    "A collection of objects to support basic
     management of LISP ITRs."
 ::= { lispGroups 2 }

lispMIBPetrGroup OBJECT-GROUP
OBJECTS { lispFeaturesProxyEtrEnabled
          }
STATUS current
DESCRIPTION
    "A collection of objects to support basic
     management of LISP Proxy-ETRs."
 ::= { lispGroups 3 }

lispMIBPitrGroup OBJECT-GROUP
```

Schudel, et al.

Expires December 30, 2012

[Page 53]

```
OBJECTS { lispFeaturesProxyItrEnabled,
          lispConfiguredLocatorRlocState,
          lispConfiguredLocatorRlocLocal
        }

STATUS current
DESCRIPTION
  "A collection of objects to support basic
   management of LISP Proxy-ITRs."
::= { lispGroups 4 }

lispMIBMapServerGroup OBJECT-GROUP
OBJECTS { lispFeaturesMapServerEnabled,
          lispEidRegistrationIsRegistered,
          lispEidRegistrationLocatorRlocState
        }
STATUS current
DESCRIPTION
  "A collection of objects to support basic
   management of LISP Map Servers."
::= { lispGroups 5 }

lispMIBMapResolverGroup OBJECT-GROUP
OBJECTS { lispFeaturesMapResolverEnabled
        }
STATUS current
DESCRIPTION
  "A collection of objects to support basic
   management of LISP Map Resolvers."
::= { lispGroups 6 }

lispMIBEtrExtendedGroup OBJECT-GROUP
OBJECTS { lispFeaturesRlocProbeEnabled,
          lispFeaturesEtrAcceptMapDataEnabled,
          lispFeaturesEtrAcceptMapDataVerifyEnabled,
          lispMappingDatabaseEidPartitioned
        }
STATUS current
DESCRIPTION
  "A collection of objects to support management
   of LISP features and properties on ETRs."
::= { lispGroups 7 }

lispMIBItrExtendedGroup OBJECT-GROUP
OBJECTS { lispFeaturesRlocProbeEnabled,
          lispMapCacheEidState,
          lispMapCacheEidAuthoritative,
          lispMapCacheLocatorRlocUpTime,
```

Schudel, et al.

Expires December 30, 2012

[Page 54]

```
lispMapCacheLocatorRlocLastPriorityChange,
lispMapCacheLocatorRlocLastWeightChange,
lispMapCacheLocatorRlocLastMPriorityChange,
lispMapCacheLocatorRlocLastMWeightChange,
lispMapCacheLocatorRlocLastStateChange,
lispMapCacheLocatorRlocRtt
}
STATUS current
DESCRIPTION
"A collection of objects to support management
of LISP features and properties on ITRs."
::= { lispGroups 8 }

lispMIBMapServerExtendedGroup OBJECT-GROUP
OBJECTS { lispEidRegistrationSiteName,
lispEidRegistrationSiteDescription,
lispEidRegistrationIsRegistered,
lispEidRegistrationFirstRegisterTime,
lispEidRegistrationLastRegisterTime,
lispEidRegistrationLastRegisterSenderLength,
lispEidRegistrationLastRegisterSender,
lispEidRegistrationRouteTag,
lispEidRegistrationEtrLastRegisterTime,
lispEidRegistrationEtrTtl,
lispEidRegistrationEtrProxyReply,
lispEidRegistrationEtrWantsMapNotify,
lispEidRegistrationLocatorIsLocal,
lispEidRegistrationLocatorPriority,
lispEidRegistrationLocatorWeight,
lispEidRegistrationLocatorMPriority,
lispEidRegistrationLocatorMWeight
}
STATUS current
DESCRIPTION
"A collection of objects to support management
of LISP features and properties on Map Servers."
::= { lispGroups 9 }

lispMIBTuningParametersGroup OBJECT-GROUP
OBJECTS { lispFeaturesMapCacheLimit,
lispFeaturesEtrMapCacheTtl
}
STATUS current
DESCRIPTION
"A collection of writeable objects used to
configure LISP behavior and to tune performance."
::= { lispGroups 10 }
```

Schudel, et al.

Expires December 30, 2012

[Page 55]

```
lispMIBEncapStatisticsGroup OBJECT-GROUP
    OBJECTS { lispMappingDatabaseEncapOctets,
               lispMappingDatabaseEncapPackets,
               lispMappingDatabaseLocatorRlocEncapOctets,
               lispMappingDatabaseLocatorRlocEncapPackets,
               lispMapCacheEncapOctets,
               lispMapCacheEncapPackets,
               lispMapCacheLocatorRlocEncapOctets,
               lispMapCacheLocatorRlocEncapPackets,
               lispConfiguredLocatorRlocEncapOctets,
               lispConfiguredLocatorRlocEncapPackets
             }
    STATUS current
    DESCRIPTION
        "A collection of LISP encapsulation statistics
         by the device."
 ::= { lispGroups 11 }

lispMIBDecapStatisticsGroup OBJECT-GROUP
    OBJECTS { lispMappingDatabaseDecapOctets,
               lispMappingDatabaseDecapPackets,
               lispMappingDatabaseLocatorRlocDecapOctets,
               lispMappingDatabaseLocatorRlocDecapPackets,
               lispMapCacheDecapOctets,
               lispMapCacheDecapPackets,
               lispMapCacheLocatorRlocDecapOctets,
               lispMapCacheLocatorRlocDecapPackets,
               lispConfiguredLocatorRlocDecapOctets,
               lispConfiguredLocatorRlocDecapPackets
             }
    STATUS current
    DESCRIPTION
        "A collection of LISP decapsulation statistics
         by the device."
 ::= { lispGroups 12 }

lispMIBDiagnosticsGroup OBJECT-GROUP
    OBJECTS { lispGlobalStatsMapRequestsIn,
               lispGlobalStatsMapRequestsOut,
               lispGlobalStatsMapRepliesIn,
               lispGlobalStatsMapRepliesOut,
               lispGlobalStatsMapRegistersIn,
               lispGlobalStatsMapRegistersOut,
               lispEidRegistrationAuthenticationErrors,
               lispEidRegistrationRlocsMismatch
             }
    STATUS current
    DESCRIPTION
```

Schudel, et al.

Expires December 30, 2012

[Page 56]

```
        "Objects providing additional diagnostics related
        to a LISP router."
 ::= { lispGroups 13 }

lispMIBVrfGroup OBJECT-GROUP
    OBJECTS { lispIidToVrfVpnId
    }
    STATUS current
    DESCRIPTION
        "Objects providing information related to VRF
        configurations on a LISP router."
 ::= { lispGroups 14 }

END
```

8. Relationship to Other MIB Modules

8.1. MIB modules required for IMPORTS

The LISP MIB imports the textual-convention AddressFamilyNumbers from the IANA-ADDRESS-FAMILY-NUMBERS-MIB [[IANA](#)].

9. Security Considerations

There are no management objects defined in this MIB module that have a MAX-ACCESS clause of read-write and/or read-create. As long as these MIB modules are implemented correctly, there are no risks that any management objects of this MIB module can modify device settings via direct SNMP SET operations.

There are no readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) that are considered sensitive.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [[RFC3410](#), [section 8](#)]), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to

Schudel, et al.

Expires December 30, 2012

[Page 57]

enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of these MIB modules is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

10. IANA Considerations

LISP is an experimental protocol and the LISP MIB is an experimental MIB. No IANA actions are required by this document.

11. References

11.1. Normative References

- [IANA] "IANA-ADDRESS-FAMILY-NUMBERS-MIB DEFINITIONS", <<http://www.iana.org/assignments/ianaaddressfamilynumbers-mib>>.
- [INTERWORK] Lewis, D., Meyer, D., Farinacci, D., and V. Fuller, "Interworking LISP with IPv4 and IPv6", <draft-ietf-lisp-interworking-06.txt> (work in progress), March 2012.
- [LISP] Farinacci, D., Fuller, V., Meyer, D., and D. Lewis, "Locator/ID Separation Protocol (LISP)", <draft-ietf-lisp-23.txt> (work in progress), May 2012.
- [LISP-MS] Farinacci, D. and V. Fuller, "LISP Map Server", <draft-ietf-lisp-ms-16.txt> (work in progress), March 2012.
- [RFC1035] Mockapetris, P., "Domain names - implementation and specification", STD 13, [RFC 1035](RFC_1035), November 1987.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](BCP_14), [RFC 2119](RFC_2119), March 1997.
- [RFC2404] Madson, C. and R. Glenn, "The Use of HMAC-SHA-1-96 within ESP and AH", [RFC 2404](RFC_2404), November 1998.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIV2)", STD 58, [RFC 2578](RFC_2578), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIV2", STD 58, [RFC 2579](RFC_2579), April 1999.

Schudel, et al.

Expires December 30, 2012

[Page 58]

- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC4634] Eastlake, D. and T. Hansen, "US Secure Hash Algorithms (SHA and HMAC-SHA)", [RFC 4634](#), July 2006.

11.2. Informative References

- [LCAF] Farinacci, D., Meyer, D., and J. Snijders, "LISP Canonical Address Format", [draft-farinacci-lisp-lcaf-07.txt](#) (work in progress), March 2012.
- [LISP-MCAST] Farinacci, D., Meyer, D., Zwiebel, J., and S. Venaas, "LISP for Multicast Environments", [draft-ietf-lisp-multicast-14.txt](#) (work in progress), February 2012.
- [LISP-MN] Farinacci, D., Fuller, V., Meyer, D., and D. Lewis, "LISP Mobile Node Architecture", [draft-meyer-lisp-mn-07.txt](#) (work in progress), April 2012.
- [RFC2784] Farinacci, D., Li, T., Hanks, S., Meyer, D., and P. Traina, "Generic Routing Encapsulation (GRE)", [RFC 2784](#), March 2000.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.
- [RFC4271] Rekhter, Y., Li, T., and S. Hares, "A Border Gateway Protocol 4 (BGP-4)", [RFC 4271](#), January 2006.
- [RFC4760] Bates, T., Chandra, R., Katz, D., and Y. Rekhter, "Multiprotocol Extensions for BGP-4", [RFC 4760](#), January 2007.

Appendix A. Open Issues

Open issues for the LISP MIB include the following:

1. This LISP MIB draft does not include LISP Multicast considerations. Multicast considerations will be added in a separate LISP Multicast MIB draft.

Schudel, et al.

Expires December 30, 2012

[Page 59]

Appendix B. Acknowledgments

A thank you is owed to Dino Farinacci for his inputs and review comments on the initial versions of this draft. In addition, the authors would like to gratefully acknowledge several others who have reviewed and commented on this draft. They include: Darrel Lewis, Isidor Kouvelas, Jesper Skriver, Selina Heimlich, and Parna Agrawal.

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