

Network Working Group G.
Schudel
Internet-Draft A.
Jain
Intended status: Experimental V.
Moreno
Expires: December 30, 2012 cisco
Systems
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.

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 <http://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 December 30, 2012.

Copyright Notice

Copyright (c) 2012 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 (<http://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.	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		
Appendix A.	Open Issues	
59		
Appendix B.	Acknowledgments	
60		

Schudel, et al.
2]

Expires December 30, 2012

[Page

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

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.
4]

Expires December 30, 2012

[Page

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.

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.

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.

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]
VPNIidOrZero                  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.

    Copyright (C) The IETF Trust (2012)."
```

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
```


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] ...
```


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,

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,


```
    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
```



```
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
```



```
    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 }
```



```
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          VPNIidOrZero
}
```

```
lispIidToVrfVpnId OBJECT-TYPE
    SYNTAX      VPNIidOrZero
    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
```



```
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 }
```



```
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
```



```
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
```



```
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 }
```



```
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 }
```



```
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
```



```
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
```


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,


```
        lispMapCacheDecapPackets      Counter64,
        lispMapCacheEncapOoctets      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 }
```



```
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
```



```
    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  
}
```



```
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
```


"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."


```
::= { 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
```


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 {


```
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),
```


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
```


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 }


```
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
```



```
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
```



```
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
```


"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-replying 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

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

"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


```
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 }
```



```
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 }
```



```
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 }
```



```
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 }
```



```
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 }
```



```
--
-- 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
```


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."


```
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."
```



```
::= { 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."
```



```
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."
```


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."


```
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,
```



```
        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
```



```
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,
```



```
        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 }
```



```
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
```



```
        "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

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](#), November 1987.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2404] Madson, C. and R. Glenn, "The Use of HMAC-SHA-1-96 within ESP and AH", [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](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.

- [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.

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.

Authors' Addresses

Gregg Schudel
cisco Systems
Tasman Drive
San Jose, CA 95134
USA

EMail: gschudel@cisco.com

Amit Jain
cisco Systems
Tasman Drive
San Jose, CA 95134
USA

EMail: amijain@cisco.com

Victor Moreno
cisco Systems
Tasman Drive
San Jose, CA 95134
USA

EMail: vimoreno@cisco.com

