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Locator/ID Separation Protocol (LISP) MIB

Abstract

This document defines the MIB module that contains managed objects to support the monitoring devices of the Locator/ID Separation Protocol (LISP). These objects provide information useful for monitoring LISP devices, including determining basic LISP configuration information, LISP functional status, and operational counters and other statistics.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for examination, experimental implementation, and evaluation.

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1. Introduction

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

LISP [RFC6830] 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 [RFC6830]. 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 [RFC6832].

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 [RFC6830]. 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 [RFC6833].

2. Requirements Notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

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

This document does not define any new terms. All terms used in this document are listed here for completeness; the authoritative definition of each term can be found in the definition section of the respective specified reference.

Endpoint ID (EID): [RFC6830]

Routing Locator (RLOC): [RFC6830]

EID-to-RLOC Cache: [RFC6830]

EID-to-RLOC Database: [RFC6830]

Ingress Tunnel Router (ITR): [RFC6830]

Egress Tunnel Router (ETR): [RFC6830]

xTR: [RFC6830]

Proxy ITR (PITR): [RFC6832]

Proxy ETR (PETR): [RFC6832]

LISP Site: [RFC6830]

Map-Server: [RFC6833]

Map-Resolver: [RFC6833]

Map-Request: [RFC6833]

Map-Reply: [RFC6833]

Negative Map-Reply: [RFC6833]

5. LISP MIB Objectives

The objectives for this LISP MIB module are to provide a read-only mechanism to support the following functions:

- o Provide a means for obtaining (read-only) a current status of LISP features enabled on a device, and (read-only) a current status of configuration attributes related to those features. As one example, this MIB could determine the ON/OFF status of LISP features such as ITR, ETR, PITR, PETR, MS, or MR support, specifically as related to IPv4 or IPv6 address families as well as the LISP Canonical Address Format (LCAF) [LCAF] with IANA assigned Address Family Number 16387. Other examples could include obtaining the (read-only) status of whether RLOC-Probing is enabled, obtaining the status of whether the use of a PETR is configured, and obtaining the (read-only) values of other related attributes such as the map-cache limit value, or a mapping time-to-live (TTL) value.
- o Provide a means for obtaining (read-only) 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 (read-only) 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 by the device.

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 a LISP Instance ID to a VRF (Virtual Routing and Forwarding).

- `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 to which this device belongs.
- `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 maintained on an ITR that stores, tracks, and times-out 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,
TimeStamp                     FROM SNMPv2-TC          -- RFC 2579
MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF      -- RFC 2580
MplsL3VpnName
    FROM MPLS-L3VPN-STD-MIB          -- RFC 4382
AddressFamilyNumbers
    FROM IANA-ADDRESS-FAMILY-NUMBERS-MIB;
-- http://www.iana.org/assignments/ianaaddressfamilynumbers-mib

```

```
lispMIB MODULE-IDENTITY
```

```
LAST-UPDATED "201310210000Z" -- 21 October 2013
```

```
ORGANIZATION
```

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

```
CONTACT-INFO
```

```
"Email: lisp@ietf.org
```

```
WG charter:
```

```
http://datatracker.ietf.org/wg/lisp/charter/"
```

```
DESCRIPTION
```

```
"This MIB module contains managed objects to support
monitoring devices that support the Locator/ID Separation
Protocol (LISP).
```

```
Copyright (c) 2013 IETF Trust and the persons identified
as authors of the code. All rights reserved.
```

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Legal Provisions Relating to IETF Documents
(http://trustee.ietf.org/license-info)."
```

```
REVISION "201310210000Z" -- 21 October 2013
```

```
DESCRIPTION "Initial version of the IETF LISP-MIB module.
Published as RFC 7052."
```

```
::= { mib-2 220 }
```

```
--
-- Textual Conventions
--
```

```
LispAddressType ::= TEXTUAL-CONVENTION
  DISPLAY-HINT "39a"
  STATUS current
  DESCRIPTION
```

"LISP architecture can be applied to a wide variety of address-families. This textual-convention is a generalization for representing addresses belonging 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-ADDRESS-FAMILY-NUMBERS-MIB DEFINITIONS, available from <http://www.iana.org/assignments/ianaaddressfamilynumbers-mib>. The enumerations are also 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) 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 document.
4. Mask-length of address: A field of length 1 octet, 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 titled 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 192.0.2.0/24. In this case, the values within `lispMapCacheEntry` would be:

```
lispMapCacheEidLength = 8
lispMapCacheEid = 1, 4, 192.0.2.0, 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 the IANA-ADDRESS-FAMILY-NUMBERS-MIB), the value 4 indicates that the AF is 4 octets in length, 192.0.2.0 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 IPv6 AF (per the IANA-ADDRESS-FAMILY-NUMBERS-MIB), 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 192.0.2.0/24 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, 192.0.2.0, 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 the IANA-ADDRESS-FAMILY-NUMBERS-MIB), 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 the LCAF document), 101 gives the Instance ID, 1 gives the AFI (per the IANA-ADDRESS-FAMILY-NUMBERS-MIB) for an IPv4 address, 192.0.2.0 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 $11 - (2 + 1 + 1 + 1 + 1 + 4) = 1$.

Note: all LISP header formats and locations of specific flags, bits, and fields are as given in the base LISP references of RFC 6830, RFC 6832, and RFC 6833."

REFERENCE

"RFC 6830, Section 14.2 and
LISP Canonical Address Format (LCAF), Work in Progress,
March 2013."

SYNTAX OCTET STRING (SIZE (5..39))

--

-- 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 ON/OFF status of the
various LISP features that can be enabled on LISP devices."

REFERENCE

"RFC 6830, Section 4, Section 5.5., Section 6.3."

::= { 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,
    lispFeaturesRouterTimeStamp  TimeStamp
}

lispFeaturesInstanceID OBJECT-TYPE
    SYNTAX      Unsigned32 (0..16777215)
    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.  Its default value is 0."
    DEFVAL { 0 }
    ::= { lispFeaturesEntry 1 }

lispFeaturesAddressFamily OBJECT-TYPE
    SYNTAX      AddressFamilyNumbers
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The IANA Address Family Number of destination address
        of packets that this LISP device is enabled to process."
    ::= { 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 the 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 the 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 the 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 the 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 the 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 entries in EID-to-RLOC map-cache on
        this device."
    ::= { lispFeaturesEntry 10 }

lispFeaturesEtrMapCacheTtl OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The stored Record TTL of 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 }

lispFeaturesRouterTimeStamp OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of sysUpTime at which the LISP feature was
        enabled on this device.

        If this information was present at the most recent
        reinitialization of the local management subsystem,
        then this object contains a zero value."
    DEFVAL { 0 }
    ::= { lispFeaturesEntry 15 }

lispIidToVrfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LispIidToVrfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the mapping of a LISP Instance ID
        to a VRF."
    REFERENCE
        "RFC 6830, Section 5.5., and RFC 4382, Section 7."
    ::= { 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 {
    lispIidToVrfName          MplsL3VpnName
}

```

```

lispIidToVrfName OBJECT-TYPE
    SYNTAX      MplsL3VpnName
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The identifier for each VPN that is mapped to the
        given LISP Instance ID."
    ::= { 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
        "RFC 6830, Section 6.1."
    ::= { 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.

        Discontinuities in this monotonically increasing value occur
        at reinitialization of the management system.
        Discontinuities can also occur as a result of LISP features
        being removed, which can be detected by observing the value
        of lispFeaturesRouterTimeStamp."
    ::= { 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.

        Discontinuities in this monotonically increasing value occur
        at reinitialization of the management system.
        Discontinuities can also occur as a result of LISP features
        being removed, which can be detected by observing the value
        of lispFeaturesRouterTimeStamp."
    ::= { 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.

```


Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispFeaturesRouterTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispFeaturesRouterTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispFeaturesRouterTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features

being removed, which can be detected by observing the value of lispFeaturesRouterTimeStamp."

::= { 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.

This table represents all such mappings for the given LISP site to which this device belongs."

REFERENCE

"RFC 6830, Section 6."

::= { lispObjects 4 }

lispMappingDatabaseEntry OBJECT-TYPE

SYNTAX LispMappingDatabaseEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in lispMappingDatabaseTable."

INDEX { lispMappingDatabaseEidLength,
lispMappingDatabaseEid }

::= { lispMappingDatabaseTable 1 }

LispMappingDatabaseEntry ::= SEQUENCE {

lispMappingDatabaseEidLength	Integer32,
lispMappingDatabaseEid	LispAddressType,
lispMappingDatabaseLsb	Unsigned32,
lispMappingDatabaseEidPartitioned	TruthValue,
lispMappingDatabaseTimeStamp	TimeStamp,
lispMappingDatabaseDecapOctets	Counter64,
lispMappingDatabaseDecapPackets	Counter64,
lispMappingDatabaseEncapOctets	Counter64,
lispMappingDatabaseEncapPackets	Counter64

}

```
lispMappingDatabaseEidLength OBJECT-TYPE
    SYNTAX      Integer32 (5..39)
    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 (0..4294967295)
    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 }

lispMappingDatabaseTimeStamp OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of sysUpTime at which the EID Prefix information
        represented by this mapping database entry was configured
        on this device."
```

If this information was present at the most recent reinitialization of the local management subsystem, then this object contains a zero value."

```
DEFVAL { 0 }  
 ::= { lispMappingDatabaseEntry 5 }
```

lispMappingDatabaseDecapOctets OBJECT-TYPE

```
SYNTAX      Counter64  
MAX-ACCESS  read-only  
STATUS      current  
DESCRIPTION
```

"The number of octets, after decapsulation, of LISP packets that were decapsulated by this device addressed to a host within this EID-Prefix.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispMappingDatabaseTimeStamp."

```
 ::= { lispMappingDatabaseEntry 6 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispMappingDatabaseTimeStamp."

```
 ::= { lispMappingDatabaseEntry 7 }
```

lispMappingDatabaseEncapOctets OBJECT-TYPE

```
SYNTAX      Counter64  
MAX-ACCESS  read-only  
STATUS      current  
DESCRIPTION
```

"The number of octets, before encapsulation, of LISP packets that were encapsulated by this device, whose inner header source address matched this EID-Prefix.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispMappingDatabaseTimeStamp."

```
::= { lispMappingDatabaseEntry 8 }
```

```
lispMappingDatabaseEncapPackets OBJECT-TYPE
```

```
SYNTAX Counter64
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

"The number of LISP packets that were encapsulated by this device whose inner header source address matched this EID prefix.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of LISP features being removed, which can be detected by observing the value of lispMappingDatabaseTimeStamp."

```
::= { lispMappingDatabaseEntry 9 }
```

```
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
```

"RFC 6830, Section 6.2."

```
::= { 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,
    lispMappingDatabaseLocatorRlocTimeStamp  TimeStamp,
    lispMappingDatabaseLocatorRlocDecapOctets Counter64,
    lispMappingDatabaseLocatorRlocDecapPackets Counter64,
    lispMappingDatabaseLocatorRlocEncapOctets Counter64,
    lispMappingDatabaseLocatorRlocEncapPackets Counter64
}
```

```
lispMappingDatabaseLocatorRlocLength OBJECT-TYPE
    SYNTAX      Integer32 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispMappingDatabaseLocatorRloc."
    ::= { 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 (0..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The unicast priority of the RLOC."
    ::= { lispMappingDatabaseLocatorEntry 3 }
```

```
lispMappingDatabaseLocatorRlocWeight OBJECT-TYPE
    SYNTAX      Integer32 (0..100)
    MAX-ACCESS  read-only
    STATUS      current
```

DESCRIPTION

"The unicast weight of the RLOC."

::= { lispMappingDatabaseLocatorEntry 4 }

lispMappingDatabaseLocatorRlocMPriority OBJECT-TYPE

SYNTAX Integer32 (0..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The multicast priority of the RLOC."

::= { lispMappingDatabaseLocatorEntry 5 }

lispMappingDatabaseLocatorRlocMWeight OBJECT-TYPE

SYNTAX Integer32 (0..100)

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 }

```

lispMappingDatabaseLocatorRlocTimeStamp OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of sysUpTime at which the RLOC of the EID Prefix
        represented by this mapping database entry was configured
        on this device.

        If this information was present at the most recent
        reinitialization of the local management subsystem, then
        this object contains a zero value."
    DEFVAL { 0 }
    ::= { lispMappingDatabaseLocatorEntry 9 }

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.

        Discontinuities in this monotonically increasing value occur
        at reinitialization of the management system.
        Discontinuities can also occur as a result of database
        mappings getting reconfigured or RLOC status changes, which
        can be detected by observing the value of
        lispMappingDatabaseLocatorRlocTimeStamp."
    ::= { lispMappingDatabaseLocatorEntry 10 }

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.

        Discontinuities in this monotonically increasing value occur
        at reinitialization of the management system.

        Discontinuities can also occur as a result of database
        mappings getting reconfigured or RLOC status changes, which
        can be detected by observing the value of
        lispMappingDatabaseLocatorRlocTimeStamp."
    ::= { lispMappingDatabaseLocatorEntry 11 }

```


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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of database mappings getting reconfigured or RLOC status changes, which can be detected by observing the value of lispMappingDatabaseLocatorRlocTimeStamp."

```
::= { lispMappingDatabaseLocatorEntry 12 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of database mappings getting reconfigured or RLOC status changes, which can be detected by observing the value of lispMappingDatabaseLocatorRlocTimeStamp."

```
::= { lispMappingDatabaseLocatorEntry 13 }
```

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

"RFC 6830, Sections 6 and Section 12."

```
::= { 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,
    lispMapCacheEidTimeStamp  TimeStamp,
    lispMapCacheEidExpiryTime TimeTicks,
    lispMapCacheEidState      TruthValue,
    lispMapCacheEidAuthoritative TruthValue,
    lispMapCacheEidDecapOctets Counter64,
    lispMapCacheEidDecapPackets Counter64,
    lispMapCacheEidEncapOctets Counter64,
    lispMapCacheEidEncapPackets Counter64
}

lispMapCacheEidLength OBJECT-TYPE
    SYNTAX      Integer32 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispMapCacheEid."
    ::= { lispMapCacheEntry 1 }

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

lispMapCacheEidTimeStamp OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of sysUpTime at which the EID Prefix information
        represented by this entry was learned by this device."

```

If this information was present at the most recent reinitialization of the local management subsystem, then this object contains a zero value."

```
DEFVAL { 0 }
 ::= { 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 }
```

`lispMapCacheEidDecapOctets` 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system. Discontinuities can also occur as a result of cache being

removed and replaced, which can be detected by observing the value of lispMapCacheEidTimeStamp."

::= { lispMapCacheEntry 7 }

lispMapCacheEidDecapPackets 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of cache being removed and replaced, which can be detected by observing the value of lispMapCacheEidTimeStamp."

::= { lispMapCacheEntry 8 }

lispMapCacheEidEncapOctets 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of cache being removed and replaced, which can be detected by observing the value of lispMapCacheEidTimeStamp."

::= { lispMapCacheEntry 9 }

lispMapCacheEidEncapPackets 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system. Discontinuities can also occur as a result of cache being removed and replaced, which can be detected by observing the value of lispMapCacheEidTimeStamp."

```
::= { 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

"RFC 6830, Section 6.3."

```
::= { 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,
lispMapCacheLocatorRlocTimeStamp	TimeStamp,
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 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispMapCacheLocatorRloc."
    ::= { 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 (0..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The unicast priority of the RLOC for this EID-Prefix
        (0-255); lower is more preferred."
    ::= { lispMapCacheLocatorEntry 3 }

lispMapCacheLocatorRlocWeight OBJECT-TYPE
    SYNTAX      Integer32 (0..100)
    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 (0..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The multicast priority of the RLOC for this EID-Prefix
        (0-255); lower is more preferred."
    ::= { lispMapCacheLocatorEntry 5 }

```

```

lispMapCacheLocatorRlocMWeight OBJECT-TYPE
    SYNTAX      Integer32 (0..100)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The multicast weight of the RLOC for this EID-Prefix
        (0 - 100) percentage."
    ::= { lispMapCacheLocatorEntry 6 }

lispMapCacheLocatorRlocState 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)."
```

```

    ::= { lispMapCacheLocatorEntry 7 }

lispMapCacheLocatorRlocTimeStamp OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of sysUpTime at which the RLOC of EID-Prefix
        information represented by this entry was learned by
        this device.

        If this information was present at the most recent
        reinitialization of the local management subsystem,
        then this object contains a zero value."
    DEFVAL { 0 }
    ::= { lispMapCacheLocatorEntry 8 }

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

```

```

lispMapCacheLocatorRlocLastWeightChange OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Time elapsed since the last change of the unicast weight
        of the RLOC for this EID-Prefix. Note that this is
        independent of lispMapCacheLocatorRlocTimeStamp."
    ::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of RLOC of cache being removed and replaced, which can be detected by observing the value of lispMapCacheLocatorRlocTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of RLOC of cache being removed and replaced, which can be detected by observing the value of lispMapCacheLocatorRlocTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of RLOC of cache being removed and replaced, which can be detected by observing the value of lispMapCacheLocatorRlocTimeStamp."

```
::= { 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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of RLOC of cache being removed and replaced, which can be detected by observing the value of lispMapCacheLocatorRlocTimeStamp."

::= { 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 addresses configured by Proxy-ITR are treated as routing locators and therefore can be part of this table."

REFERENCE

"RFC 6830, Section 6.3."

::= { 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,
lispConfiguredLocatorRlocTimeStamp	TimeStamp,
lispConfiguredLocatorRlocDecapOctets	Counter64,
lispConfiguredLocatorRlocDecapPackets	Counter64,
lispConfiguredLocatorRlocEncapOctets	Counter64,

```

    lispConfiguredLocatorRlocEncapPackets Counter64
}

lispConfiguredLocatorRlocLength OBJECT-TYPE
    SYNTAX      Integer32 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispConfiguredLocatorRloc."
    ::= { lispConfiguredLocatorEntry 1 }

lispConfiguredLocatorRloc OBJECT-TYPE
    SYNTAX      LispAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is an RLOC address configured on this device.
        It can be an RLOC that is local to this device or can be an
        RLOC that 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 }
```

```
lispConfiguredLocatorRlocTimeStamp OBJECT-TYPE
```

```
SYNTAX      TimeStamp
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The value of sysUpTime at which the RLOC was configured on
    this device.
```

```
    If this information was present at the most recent
    reinitialization of the local management subsystem, then
    this object contains a zero value."
```

```
DEFVAL { 0 }
```

```
 ::= { lispConfiguredLocatorEntry 5 }
```

```
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.
```

```
    Discontinuities in this monotonically increasing value occur
    at reinitialization of the management system.
```

```
    Discontinuities can also occur as a result of configured
    RLOC being removed and replaced, which can be detected by
    observing the value of lispConfiguredLocatorRlocTimeStamp."
```

```
 ::= { lispConfiguredLocatorEntry 6 }
```

```
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.
```

```
    Discontinuities in this monotonically increasing value occur
    at reinitialization of the management system.
```

```
    Discontinuities can also occur as a result of configured
    RLOC being removed and replaced, which can be detected by
    observing the value of lispConfiguredLocatorRlocTimeStamp."
```

```
 ::= { lispConfiguredLocatorEntry 7 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of configured RLOC being removed and replaced, which can be detected by observing the value of lispConfiguredLocatorRlocTimeStamp."

```
::= { lispConfiguredLocatorEntry 8 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of configured RLOC being removed and replaced, which can be detected by observing the value of lispConfiguredLocatorRlocTimeStamp."

```
::= { lispConfiguredLocatorEntry 9 }
```

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

"RFC 6833, Section 4."

```
::= { 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,
    lispEidRegistrationFirstTimeStamp TimeStamp,
    lispEidRegistrationLastTimeStamp TimeStamp,
    lispEidRegistrationLastRegisterSenderLength Integer32,
    lispEidRegistrationLastRegisterSender LispAddressType,
    lispEidRegistrationAuthenticationErrors Counter64,
    lispEidRegistrationRlocsMismatch Counter64
}
```

```
lispEidRegistrationEidLength OBJECT-TYPE
    SYNTAX      Integer32 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispEidRegistrationEid."
    ::= { 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.

    The value false implies the EID-Prefix is not registered
    with the Map Server. There are multiple scenarios when this
    could happen like authentication failures, routing problems,
    misconfigs to name a few."
 ::= { lispEidRegistrationEntry 5 }
```

lispEidRegistrationFirstTimeStamp OBJECT-TYPE

```
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value of sysUpTime at which the first valid register
    message for the EID Prefix information represented by this
    entry was received by this device.

    If this information was present at the most recent
    reinitialization of the local management subsystem, then
    this object contains a zero value."
 DEFVAL { 0 }
 ::= { lispEidRegistrationEntry 6 }
```

lispEidRegistrationLastTimeStamp OBJECT-TYPE

```
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value of sysUpTime at which the last valid register
    message for the EID Prefix information represented by this
    entry was received by this device."
```

If this information was present at the most recent reinitialization of the local management subsystem, then this object contains a zero value."

```
DEFVAL { 0 }
 ::= { lispEidRegistrationEntry 7 }
```

lispEidRegistrationLastRegisterSenderLength OBJECT-TYPE

SYNTAX Integer32 (5..39)

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 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of site config changes, which can be detected by observing the value of lispEidRegistrationFirstTimeStamp."

```
 ::= { lispEidRegistrationEntry 10 }
```

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.

Discontinuities in this monotonically increasing value occur at reinitialization of the management system.

Discontinuities can also occur as a result of site config changes, which can be detected by observing the value of `lispEidRegistrationFirstTimeStamp`."

```
::= { lispEidRegistrationEntry 11 }
```

`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

"RFC 6830, Section 6.1."

```
::= { 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,
  lispEidRegistrationEtrLastTimeStamp     TimeStamp,
  lispEidRegistrationEtrTtl               Unsigned32,
  lispEidRegistrationEtrProxyReply        TruthValue,
  lispEidRegistrationEtrWantsMapNotify    TruthValue
```

```
}
```

`lispEidRegistrationEtrSenderLength` OBJECT-TYPE

SYNTAX Integer32 (5..39)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object is used to get the octet-length of `lispEidRegistrationEtrSender`."

```
 ::= { 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 }
```

```
lispEidRegistrationEtrLastTimeStamp OBJECT-TYPE
```

```
SYNTAX      TimeStamp
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The value of sysUpTime at which the last valid register
    message from this ETR for the EID Prefix information
    represented by this entry was received by this device.
```

```
    If this information was present at the most recent
    reinitialization of the local management subsystem,
    then this object contains a zero value."
```

```
DEFVAL { 0 }
```

```
 ::= { lispEidRegistrationEtrEntry 3 }
```

```
lispEidRegistrationEtrTtl OBJECT-TYPE
```

```
SYNTAX      Unsigned32
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "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
  "RFC 6830, Section 6.1."
 ::= { 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 (5..39)
MAX-ACCESS not-accessible

```

```

STATUS      current
DESCRIPTION
  "This object is used to get the octet-length of
  lispEidRegistrationLocatorRloc."
 ::= { 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, it means the locator is
  local."
 ::= { lispEidRegistrationLocatorEntry 4 }

```

```

lispEidRegistrationLocatorPriority OBJECT-TYPE
SYNTAX      Integer32 (0..255)
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 (0..100)
    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 (0..255)
    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 (0..100)
    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
        "RFC 6833, Section 4.3."
    ::= { 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 (5..39)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object is used to get the octet-length of
        lispUseMapServerAddress."
    ::= { lispUseMapServerEntry 1 }

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

lispUseMapServerState OBJECT-TYPE
    SYNTAX      INTEGER {
        up (1),
        down (2),
        unreachable (3)
    }
    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
        "RFC 6833, Section 4.4."
    ::= { 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 (5..39)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This object is used to get the octet-length of
    lispUseMapResolverAddress."
 ::= { 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
    "RFC 6830, Section 6."
 ::= { 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 (5..39)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This object is used to get the octet-length of
    lispUseProxyEtrAddress."
 ::= { 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 (0..255)

```



```

MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The unicast priority of the PETR locator."
 ::= { lispUseProxyEtrEntry 3 }

```

```

lispUseProxyEtrWeight OBJECT-TYPE
SYNTAX      Integer32 (0..100)
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The unicast weight of the PETR locator."
 ::= { lispUseProxyEtrEntry 4 }

```

```

lispUseProxyEtrMPriority OBJECT-TYPE
SYNTAX      Integer32 (0..255)
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The multicast priority of the PETR locator."
 ::= { lispUseProxyEtrEntry 5 }

```

```

lispUseProxyEtrMWeight OBJECT-TYPE
SYNTAX      Integer32 (0..100)
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. It conveys
    whether the device supports the ETR feature, and,
    if so, the relevant state associated with that feature."
  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. It conveys
    whether the device supports the ITR feature, and,
    if so, the relevant state associated with that feature."
```

```
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. It conveys whether the device supports the Proxy-ETR feature, and, if so, the relevant state associated with that feature."

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. It
    conveys whether the device supports the Proxy-ITR
    feature, and, if so, the relevant state associated
    with that feature."
  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. It
    conveys whether the device supports the Map Server
    feature, and, if so, the relevant state associated
    with that feature."
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. It conveys whether the device supports the Map Resolver feature, and, if so, the relevant state associated with that feature."

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 reporting of basic
        LISP ETR parameters."
    ::= { lispGroups 1 }

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

```

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

lispMIBPitrGroup OBJECT-GROUP
  OBJECTS { lispFeaturesProxyItrEnabled,
            lispConfiguredLocatorRlocState,
            lispConfiguredLocatorRlocLocal
            }
  STATUS current
  DESCRIPTION
    "A collection of objects to support reporting of basic
    LISP Proxy-ITR parameters."
  ::= { lispGroups 4 }

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

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

lispMIBEtrExtendedGroup OBJECT-GROUP
  OBJECTS { lispFeaturesRlocProbeEnabled,
            lispFeaturesEtrAcceptMapDataEnabled,
            lispFeaturesEtrAcceptMapDataVerifyEnabled,
            lispMappingDatabaseEidPartitioned
            }
  STATUS current
```

DESCRIPTION

"A collection of objects to support reporting of
LISP features and properties on ETRs."

::= { lispGroups 7 }

lispMIBItrExtendedGroup OBJECT-GROUP

OBJECTS { lispFeaturesRlocProbeEnabled,
lispMapCacheEidState,
lispMapCacheEidAuthoritative,
lispMapCacheLocatorRlocTimeStamp,
lispMapCacheLocatorRlocLastPriorityChange,
lispMapCacheLocatorRlocLastWeightChange,
lispMapCacheLocatorRlocLastMPriorityChange,
lispMapCacheLocatorRlocLastMWeightChange,
lispMapCacheLocatorRlocLastStateChange,
lispMapCacheLocatorRlocRtt
}

STATUS current

DESCRIPTION

"A collection of objects to support reporting of
LISP features and properties on ITRs."

::= { lispGroups 8 }

lispMIBMapServerExtendedGroup OBJECT-GROUP

OBJECTS { lispEidRegistrationSiteName,
lispEidRegistrationSiteDescription,
lispEidRegistrationIsRegistered,
lispEidRegistrationFirstTimeStamp,
lispEidRegistrationLastTimeStamp,
lispEidRegistrationLastRegisterSenderLength,
lispEidRegistrationLastRegisterSender,
lispEidRegistrationEtrLastTimeStamp,
lispEidRegistrationEtrTtl,
lispEidRegistrationEtrProxyReply,
lispEidRegistrationEtrWantsMapNotify,
lispEidRegistrationLocatorIsLocal,
lispEidRegistrationLocatorPriority,
lispEidRegistrationLocatorWeight,
lispEidRegistrationLocatorMPriority,
lispEidRegistrationLocatorMWeight
}

STATUS current

DESCRIPTION

"A collection of objects to support the reporting of
LISP features and properties on Map Servers
related to EID registrations."

::= { lispGroups 9 }

```

lispMIBTuningParametersGroup OBJECT-GROUP
  OBJECTS { lispFeaturesMapCacheLimit,
            lispFeaturesEtrMapCacheTtl
          }
  STATUS current
  DESCRIPTION
    "A collection of objects used to support the reporting of
    parameters used to control LISP behavior and to tune
    performance."
  ::= { lispGroups 10 }

lispMIBEncapStatisticsGroup OBJECT-GROUP
  OBJECTS { lispMappingDatabaseTimeStamp,
            lispMappingDatabaseEncapOctets,
            lispMappingDatabaseEncapPackets,
            lispMappingDatabaseLocatorRlocTimeStamp,
            lispMappingDatabaseLocatorRlocEncapOctets,
            lispMappingDatabaseLocatorRlocEncapPackets,
            lispMapCacheEidTimeStamp,
            lispMapCacheEidEncapOctets,
            lispMapCacheEidEncapPackets,
            lispMapCacheLocatorRlocTimeStamp,
            lispMapCacheLocatorRlocEncapOctets,
            lispMapCacheLocatorRlocEncapPackets,
            lispConfiguredLocatorRlocTimeStamp,
            lispConfiguredLocatorRlocEncapOctets,
            lispConfiguredLocatorRlocEncapPackets
          }
  STATUS current
  DESCRIPTION
    "A collection of objects used to support the reporting of
    LISP encapsulation statistics for the device."
  ::= { lispGroups 11 }

lispMIBDecapStatisticsGroup OBJECT-GROUP
  OBJECTS { lispMappingDatabaseTimeStamp,
            lispMappingDatabaseDecapOctets,
            lispMappingDatabaseDecapPackets,
            lispMappingDatabaseLocatorRlocTimeStamp,
            lispMappingDatabaseLocatorRlocDecapOctets,
            lispMappingDatabaseLocatorRlocDecapPackets,
            lispMapCacheEidTimeStamp,
            lispMapCacheEidDecapOctets,
            lispMapCacheEidDecapPackets,
            lispMapCacheLocatorRlocTimeStamp,
            lispMapCacheLocatorRlocDecapOctets,
            lispMapCacheLocatorRlocDecapPackets,
            lispConfiguredLocatorRlocTimeStamp,
          }

```

```

        lispConfiguredLocatorRlocDecapOctets,
        lispConfiguredLocatorRlocDecapPackets
    }
    STATUS current
    DESCRIPTION
        "A collection of objects used to support the reporting of
        LISP decapsulation statistics for the device."
    ::= { lispGroups 12 }

lispMIBDiagnosticsGroup OBJECT-GROUP
    OBJECTS { lispFeaturesRouterTimeStamp,
              lispGlobalStatsMapRequestsIn,
              lispGlobalStatsMapRequestsOut,
              lispGlobalStatsMapRepliesIn,
              lispGlobalStatsMapRepliesOut,
              lispGlobalStatsMapRegistersIn,
              lispGlobalStatsMapRegistersOut,
              lispEidRegistrationAuthenticationErrors,
              lispEidRegistrationRlocsMismatch
            }
    STATUS current
    DESCRIPTION
        "A collection of objects used to support the reporting of
        additional diagnostics related to the LISP control-plane
        state of a LISP device."
    ::= { lispGroups 13 }

lispMIBVrfGroup OBJECT-GROUP
    OBJECTS { lispIidToVrfName
            }
    STATUS current
    DESCRIPTION
        "A collection of objects used to support reporting of
        VRF-related information on a LISP device."
    ::= { 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 DEFINITIONS [IANA].

The LISP MIB imports mib-2, Unsigned32, Counter64, Integer32, and TimeTicks from SNMPv2-SMI -- [RFC2578].

The LISP MIB imports TruthValue, TEXTUAL-CONVENTION, TimeStamp, and TimeTicks from SNMPv2-TC -- [RFC2579].

The LISP MIB imports MODULE-COMPLIANCE from SNMPv2-TC -- [RFC2580].

The LISP MIB imports MplsL3VpnName from MPLS-L3VPN-STD-MIB -- [RFC4382].

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. So, if this MIB module is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB module 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.

Implementations SHOULD provide the security features described by the SNMPv3 framework (see [RFC3410]), and implementations claiming compliance to the SNMPv3 standard MUST include full support for authentication and privacy via the User-based Security Model (USM) [RFC3414] with the AES cipher algorithm [RFC3826]. Implementations MAY also provide support for the Transport Security Model (TSM) [RFC5591] in combination with a secure transport such as SSH [RFC5592] or TLS/DTLS [RFC6353].

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 this MIB module 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

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor -----	OBJECT IDENTIFIER value -----
lispMIB	{ mib-2 220 }

IANA has allocated a new value in the "SMI Network Management MGMT Codes Internet-standard MIB" subregistry of the "Network Management Parameters" registry, according to the following registration data:

```

Decimal: 220
Name: lispMIB
Description: Locator/ID Separation Protocol (LISP)
References: [RFC7052]

```

11. References

11.1. Normative References

- [IANA] IANA, "IANA-ADDRESS-FAMILY-NUMBERS-MIB DEFINITIONS", <<http://www.iana.org/assignments/ianaaddressfamilynumbers-mib>>.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
- [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.
- [RFC3414] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, RFC 3414, December 2002.

- [RFC3826] Blumenthal, U., Maino, F., and K. McCloghrie, "The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model", RFC 3826, June 2004.
- [RFC4382] Nadeau, T. and H. van der Linde, "MPLS/BGP Layer 3 Virtual Private Network (VPN) Management Information Base", RFC 4382, February 2006.
- [RFC5591] Harrington, D. and W. Hardaker, "Transport Security Model for the Simple Network Management Protocol (SNMP)", RFC 5591, June 2009.
- [RFC5592] Harrington, D., Salowey, J., and W. Hardaker, "Secure Shell Transport Model for the Simple Network Management Protocol (SNMP)", RFC 5592, June 2009.
- [RFC6353] Hardaker, W., "Transport Layer Security (TLS) Transport Model for the Simple Network Management Protocol (SNMP)", RFC 6353, July 2011.
- [RFC6830] Farinacci, D., Fuller, V., Meyer, D., and D. Lewis, "The Locator/ID Separation Protocol (LISP)", RFC 6830, January 2013.
- [RFC6832] Lewis, D., Meyer, D., Farinacci, D., and V. Fuller, "Interworking between Locator/ID Separation Protocol (LISP) and Non-LISP Sites", RFC 6832, January 2013.
- [RFC6833] Fuller, V. and D. Farinacci, "Locator/ID Separation Protocol (LISP) Map-Server Interface", RFC 6833, January 2013.

11.2. Informative References

- [LCAF] Farinacci, D., Meyer, D., and J. Snijders, "LISP Canonical Address Format (LCAF)", Work in Progress, September 2013.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, December 2002.

Appendix A. Acknowledgments

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