Internet Engineering Task Force (IETF)
Request for Comments: 7052
Category: Experimental
ISSN: 2070-1721

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October 2013

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.

This document defines an Experimental Protocol for the Internet community. This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Not all documents approved by the IESG are a candidate for any level of Internet Standard; see Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc7052.

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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:

- 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.

- 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.

- 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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             subject to the license terms contained in, the Simplified
             BSD License set forth in Section 4.c of the IETF Trust's
             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

A thank you is owed to Dino Farinacci for his input, review, and comments on the initial versions of this document. In addition, the authors would like to gratefully acknowledge several others who have reviewed and commented on this document. They include Darrel Lewis, Isidor Kouvelas, Jesper Skriver, Selina Heimlich, Parna Agrawal, Dan Romascanu, and Luigi Iannone. Special thanks are owed to Brian Haberman, the Internet Area AD, for his very detailed review; Miguel Garcia for reviewing this document as part of the General Area Review Team; and Harrie Hazewinkel for the detailed MIB review and comments.

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