LISP MIB
draft-ietf-lisp-mib-06

Abstract

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

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1. Requirements Notation

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

2. Introduction

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

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

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

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

3. The Internet-Standard Management Framework

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

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

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

4. Definition of Terms

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

   Negative Map-Reply: a LISP Map-Reply message type that contains an
      empty locator-set. Returned in response to a Map-Request if the
      destination EID does not exist in the mapping database.
      Typically, this means that the "EID" being requested is an IP
      address connected to a non-LISP site. Information returned in a
      Negative Map-Reply is stored in the EID-to-RLOC Map-Cache.

[5](). **LISP MIB Objectives**

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

   o Provide a means for obtaining a list of enabled LISP features and
      the current status of configuration attributes related to those
      features. As an example, LISP capabilities which could be enabled
      include ITR, ETR, PITR, PETR, MS or MR support for IPv4 or IPv6
      address families. Other examples include, indicating whether
      rloc-probing is enabled, and indicating the configured map-cache
      limit value.

   o Provide a means for obtaining the current attributes of various
      LISP tables, such as the EID-to-RLOC policy data contained in the
      Map-Cache, or the local EID-to-RLOC policy data contained in the
      Mapping-Database.

   o Provide a means for obtaining the current operational statistics
      of various LISP functions, such as the number of packets
      encapsulated and decapsulated by the device. Other counters of
      operational interest, depending on LISP function, include things
      like the current number of map-cache entries, and the total number
      and rate of map-requests received and sent.

[6](). **Structure of LISP MIB Module**

[6.1](). **Overview of Defined Notifications**

   No LISP MIB notifications are defined.

6.2. Overview of Defined Tables

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[7](#). **LISP MIB Definitions**


```
LISP-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE,
    mib-2, Unsigned32, Counter64,
    Integer32, TimeTicks           FROM SNMPv2-SMI        -- [RFC 2578]
    TruthValue, TEXTUAL-CONVENTION,
    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;     -- [IANA]

lispMIB MODULE-IDENTITY
    LAST-UPDATED "201209280000Z" -- 28 September 2012
    ORGANIZATION
            "IETF Locator/ID Separation Protocol (LISP) Working Group"
    CONTACT-INFO
            "Email: lisp@ietf.org
            WG charter:
            http://www.ietf.org/html.charters/lisp-charter.html"
    DESCRIPTION
            "Locator/ID Separation Protocol (LISP) MIB Textual
             Conventions module. The LISP MIB is intended for
             management of LISP routers.

            Copyright (C) The IETF Trust (2012)."
    REVISION      "201209280000Z" -- 28 September 2012
    DESCRIPTION  "Initial version of the IETF LISP-MIB module. Published
                  as RFC xxxx."
-- RFC Ed.: RFC-editor pls fill in xxxx
     ::= { mib-2 XXX }
-- RFC Ed.: assigned by IANA, see section 10 for details

--
-- 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 that belong to those
         address-families. For convenience, this document refers to any
         such address as a LISP address. LispAddressType
         textual-convention consists of the following four-tuple:
          1. IANA Address Family Number: A field of length 2-octets,
             whose value is of the form following the assigned
             AddressFamilyNumbers textual-convention described in
             [IANA]. The enumerations are listed in [IANA]. Note that
             this list of address family numbers is maintained by IANA.
          2. Length of LISP address: A field of length 1-octet, whose
             value indicates the octet-length of the next (third) field
             of this LispAddressType four-tuple.
          3. LISP address: A field of variable length as indicated in
             the previous (second) field, whose value is an address of
             the IANA Address Family indicated in the first field of
             this LispAddressType four-tuple. Note that any of the
             IANA Address Families can be represented. Particularly
             when the address family is LISP Canonical Address Format
             (LCAF) [LCAF] with IANA assigned Address Family Number
             16387, then the first octet of this field indicates the
             LCAF type, and the rest of this field is same as the
             encoding format of the LISP Canonical Address after the
             length field, as defined in [LCAF].
          4. Mask-length of address: A 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 entitled lispMapCacheEntry. This object begins
         with the following entities:

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

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

             lispMapCacheEidLength = 8
             lispMapCacheEid = 1, 4, 10.10.10.0, 24

```
      ... [skip] ...
```

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

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

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

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

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

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

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

          the length of the last field in lispMapCacheEid to be 1 octet,
          as computed by 11 - (2 + 1 + 1 + 1 + 1 + 1 + 4) = 1."

    REFERENCE
          "[LISP], Section 14.2."
     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 various LISP features
             that can be enabled on LISP devices."
         REFERENCE
             "[LISP], Section 4.0., 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. It's default value is 0."
         ::= { lispFeaturesEntry 1 }

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

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

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

    lispFeaturesProxyItrEnabled OBJECT-TYPE
        SYNTAX     TruthValue
```

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

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

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

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

    lispFeaturesMapCacheSize OBJECT-TYPE
        SYNTAX     Unsigned32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
            "Size of EID-to-RLOC map cache on this device."
        ::= { lispFeaturesEntry 9 }

    lispFeaturesMapCacheLimit OBJECT-TYPE
        SYNTAX     Unsigned32
        MAX-ACCESS read-only
        STATUS     current
```

```
        DESCRIPTION
            "Maximum permissible size of EID-to-RLOC map cache on
            this device."
        ::= { lispFeaturesEntry 10 }

    lispFeaturesEtrMapCacheTtl OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
            "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 LISP feature was enabled
             on this device.

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

     lispIidToVrfTable OBJECT-TYPE
         SYNTAX   SEQUENCE OF LispIidToVrfEntry
         MAX-ACCESS not-accessible
         STATUS   current
         DESCRIPTION
             "This table represents the mapping of LISP Instance ID
             to a VRF."
         REFERENCE
             "[LISP], Section 5.5."
         ::= { 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, as specified in
             [RFC4382, Section 7], that is mapped to the given
             LISP Instance ID."
             ::= { lispIidToVrfEntry 2 }

   lispGlobalStatsTable OBJECT-TYPE
        SYNTAX   SEQUENCE OF LispGlobalStatsEntry

```
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides global statistics for a given
            Instance ID per address-family on a LISP device."
        REFERENCE
            "[LISP], 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 re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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. In general, this table would be representative of all
            such mappings for the given LISP site to which this device
            belongs."
        REFERENCE
            "[LISP], Section 6.0."
        ::= { lispObjects 4 }

    lispMappingDatabaseEntry OBJECT-TYPE
        SYNTAX   LispMappingDatabaseEntry

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

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

lispMappingDatabaseEidLength OBJECT-TYPE
    SYNTAX     Integer32 (5..259)
    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
             re-initialization of the local management subsystem, then
             this object contains a zero value."
         ::= { lispMappingDatabaseEntry 5 }

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

             Discontinuities in this monotonically increasing value occur
             at re-initialization 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 re-initialization 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 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 re-initialization 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 re-initialization 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
            "[LISP], 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..259)
       MAX-ACCESS not-accessible
       STATUS     current
       DESCRIPTION
           "This object is used to get the octet-length of
           lispMappingDatabaseLocatorRloc, the next object."
       ::= { lispMappingDatabaseLocatorEntry 1 }

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

   lispMappingDatabaseLocatorRlocPriority OBJECT-TYPE
       SYNTAX     Integer32 (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
                re-initialization of the local management subsystem, then
                this object contains a zero value."
            ::= { 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 re-initialization of the management system.
                Discontinuities can also occur as a result of database
                mappings getting re-configured 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 re-initialization of the management system.
                Discontinuities can also occur as a result of database
                mappings getting re-configured 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 re-initialization of the management system.
           Discontinuities can also occur as a result of database
           mappings getting re-configured 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 re-initialization of the management system.
           Discontinuities can also occur as a result of database
           mappings getting re-configured 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
            "[LISP], Section 6.0., Section 12.0."
        ::= { 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..259)
          MAX-ACCESS not-accessible
          STATUS   current
          DESCRIPTION
              "This object is used to get the octet-length of
              lispMapCacheEid, the next object."
          ::= { lispMapCacheEntry 1 }

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

      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
          re-initialization of the local management subsystem, then
          this object contains a zero value."
      ::= { 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 re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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
             "[LISP], 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..259)
         MAX-ACCESS not-accessible
```

```
        STATUS      current
        DESCRIPTION
            "This object is used to get the octet-length of
            lispMapCacheLocatorRloc, the next object."
        ::= { lispMapCacheLocatorEntry 1 }

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

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

    lispMapCacheLocatorRlocWeight OBJECT-TYPE
        SYNTAX      Integer32 (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 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)
                    }
         MAX-ACCESS read-only
         STATUS     current
         DESCRIPTION
             "The state of this RLOC as per this device
             (1 = RLOC is up; 2 = RLOC is down)."
         ::= { lispMapCacheLocatorEntry 7 }

     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
             re-initialization of the local management subsystem,
             then this object contains a zero value."
         ::= { lispMapCacheLocatorEntry 8 }

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

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

     lispMapCacheLocatorRlocLastMPriorityChange OBJECT-TYPE
         SYNTAX     TimeTicks
```

```
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
           "Time since the last change of the multicast priority of the
           RLOC for this EID prefix."
       ::= { lispMapCacheLocatorEntry 11 }

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

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

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

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

           Discontinuities in this monotonically increasing value occur
           at re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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 Proxy-ITR
             configured addresses are treated as routing locators
             and therefore can be part of this table."
         REFERENCE
             "[LISP], 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..259)
         MAX-ACCESS not-accessible
         STATUS     current
         DESCRIPTION
             "This object is used to get the octet-length of
             lispConfiguredLocatorRloc, the next object."
         ::= { lispConfiguredLocatorEntry 1 }

     lispConfiguredLocatorRloc OBJECT-TYPE
         SYNTAX     LispAddressType
         MAX-ACCESS not-accessible
```

```
        STATUS      current
        DESCRIPTION
            "This object is a RLOC address configured on this device.
            It can be an RLOC that is local to this device or can be an
            RLOC which belongs to another ETR within the same site.
            Proxy-ITR address is treated as an RLOC."
        ::= { lispConfiguredLocatorEntry 2 }

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

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

    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
            re-initialization of the local management subsystem, then
            this object contains a zero value."
        ::= { 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 re-initialization 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 re-initialization 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 re-initialization 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 re-initialization 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
            "[LISP-MS], Section 4.0."
        ::= { 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,
        lispEidRegistrationRouteTag                  Unsigned32,
        lispEidRegistrationAuthenticationErrors      Counter64,
```

```
        lispEidRegistrationRlocsMismatch            Counter64
    }

    lispEidRegistrationEidLength OBJECT-TYPE
        SYNTAX      Integer32 (5..259)
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This object is used to get the octet-length of
            lispEidRegistrationEid, the next object."
        ::= { lispEidRegistrationEntry 1 }

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

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

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

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

     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
             re-initialization of the local management subsystem, then
             this object contains a zero value."
         ::= { 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
             re-initialization of the local management subsystem, then
             this object contains a zero value."
         ::= { lispEidRegistrationEntry 7 }

     lispEidRegistrationLastRegisterSenderLength OBJECT-TYPE
         SYNTAX   Integer32 (5..259)
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION
             "This object is used to get the octet-length of
             lispEidRegistrationLastRegisterSender, the next
             object."
         ::= { lispEidRegistrationEntry 8 }

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

     lispEidRegistrationRouteTag OBJECT-TYPE

```
        SYNTAX      Unsigned32 (0..4294967295)
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
            "Value of the routing table tag assigned to the given EID
            prefix."
        ::= { lispEidRegistrationEntry 10 }

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

            Discontinuities in this monotonically increasing value occur
            at re-initialization 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 }

    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 re-initialization 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 12 }


     lispEidRegistrationEtrTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF LispEidRegistrationEtrEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides the properties of ETRs that register
             the given EID prefix with this device when configured to
             be a Map-Server."
```

```
        REFERENCE
            "[LISP], 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..259)
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This object is used to get the octet-length of
            lispEidRegistrationEtrSender, the next object."
        ::= { lispEidRegistrationEtrEntry 1 }

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

    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
              re-initialization of the local management subsystem,
              then this object contains a zero value."
          ::= { 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
             "[LISP], 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..259)
         MAX-ACCESS not-accessible
         STATUS     current
         DESCRIPTION
             "This object is used to get the octet-length of
             lispEidRegistrationLocatorRloc, the next object."
         ::= { lispEidRegistrationLocatorEntry 1 }

    lispEidRegistrationLocatorRloc OBJECT-TYPE
         SYNTAX     LispAddressType
         MAX-ACCESS not-accessible
         STATUS     current
         DESCRIPTION
             "The locator of the given EID prefix being registered by the
             given ETR with this device."
         ::= { lispEidRegistrationLocatorEntry 2 }
```

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

    lispEidRegistrationLocatorIsLocal OBJECT-TYPE
        SYNTAX   TruthValue
        MAX-ACCESS read-only
        STATUS   current
        DESCRIPTION
            "Indicates if the given locator is local to the registering
            ETR. If this object is TRUE, 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
            "[LISP-MS], 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..259)
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
            "This object is used to get the octet-length of
            lispUseMapServerAddress, the next object."
        ::= { lispUseMapServerEntry 1 }

    lispUseMapServerAddress OBJECT-TYPE
        SYNTAX   LispAddressType

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

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


    lispUseMapResolverTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF LispUseMapResolverEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides the properties of the map-resolver(s)
            this device is configured to use."
        REFERENCE
            "[LISP-MS], 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..259)
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This object is used to get the octet-length of
            lispUseMapResolverAddress, the next object."
        ::= { lispUseMapResolverEntry 1 }

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

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


    lispUseProxyEtrTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF LispUseProxyEtrEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides the properties of all Proxy ETRs that
            this device is configured to use."
        REFERENCE
            "[INTERWORK], Section 6.0."
        ::= { 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..259)
           MAX-ACCESS not-accessible
           STATUS     current
           DESCRIPTION
               "This object is used to get the octet-length of
               lispUseProxyEtrAddress, the next object."
           ::= { lispUseProxyEtrEntry 1 }

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

       lispUseProxyEtrPriority OBJECT-TYPE
           SYNTAX     Integer32 (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."
             MODULE -- this module
             MANDATORY-GROUPS { lispMIBEtrGroup }

               GROUP   lispMIBItrGroup
               DESCRIPTION

                    "This group is optional."

            GROUP   lispMIBPetrGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBPitrGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBMapServerGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBMapResolverGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBEtrExtendedGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBItrExtendedGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBMapServerExtendedGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBTuningParametersGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBEncapStatisticsGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBDecapStatisticsGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBDiagnosticsGroup
            DESCRIPTION
                "This group is optional."

            GROUP   lispMIBVrfGroup
            DESCRIPTION

                    "This group is optional."

            ::= { lispCompliances 1 }

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

              GROUP   lispMIBEtrGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBPetrGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBPitrGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBMapServerGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBMapResolverGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBEtrExtendedGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBItrExtendedGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBMapServerExtendedGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBTuningParametersGroup
              DESCRIPTION
                  "This group is optional."

              GROUP   lispMIBEncapStatisticsGroup

```
              DESCRIPTION
                  "This group is optional."

              GROUP    lispMIBDecapStatisticsGroup
              DESCRIPTION
                  "This group is optional."

              GROUP    lispMIBDiagnosticsGroup
              DESCRIPTION
                  "This group is optional."

              GROUP    lispMIBVrfGroup
              DESCRIPTION
                  "This group is optional."

          ::= { lispCompliances 2 }

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

            GROUP    lispMIBEtrGroup
            DESCRIPTION
                  "This group is optional."

            GROUP    lispMIBItrGroup
            DESCRIPTION
                  "This group is optional."

            GROUP    lispMIBPitrGroup
            DESCRIPTION
                  "This group is optional."

            GROUP    lispMIBMapServerGroup
            DESCRIPTION
                  "This group is optional."

            GROUP    lispMIBMapResolverGroup
            DESCRIPTION
                  "This group is optional."

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

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

         GROUP    lispMIBMapServerExtendedGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBTuningParametersGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBEncapStatisticsGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBDecapStatisticsGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBDiagnosticsGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBVrfGroup
         DESCRIPTION
             "This group is optional."

      ::= { lispCompliances 3 }

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

         GROUP    lispMIBEtrGroup
         DESCRIPTION
             "This group is optional."

         GROUP    lispMIBItrGroup
         DESCRIPTION
             "This group is optional."

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

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

             GROUP    lispMIBMapResolverGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBEtrExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBItrExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBMapServerExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBTuningParametersGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBEncapStatisticsGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBDecapStatisticsGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBDiagnosticsGroup
             DESCRIPTION
                 "This group is optional."

             GROUP    lispMIBVrfGroup
             DESCRIPTION
                 "This group is optional."

        ::= { lispCompliances 4 }

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

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

             GROUP   lispMIBItrGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBPetrGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBPitrGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBMapResolverGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBEtrExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBItrExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBMapServerExtendedGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBTuningParametersGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBEncapStatisticsGroup
             DESCRIPTION
                 "This group is optional."

             GROUP   lispMIBDecapStatisticsGroup
             DESCRIPTION
                 "This group is optional."

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

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

         ::= { lispCompliances 5 }

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

            GROUP    lispMIBEtrGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBItrGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBPetrGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBPitrGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBMapServerGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBEtrExtendedGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBItrExtendedGroup
            DESCRIPTION
                "This group is optional."

            GROUP    lispMIBMapServerExtendedGroup
            DESCRIPTION
                "This group is optional."

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

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

          GROUP   lispMIBDecapStatisticsGroup
          DESCRIPTION
              "This group is optional."

          GROUP   lispMIBDiagnosticsGroup
          DESCRIPTION
              "This group is optional."

          GROUP   lispMIBVrfGroup
          DESCRIPTION
              "This group is optional."

      ::= { lispCompliances 6 }


  --
  -- Units of Conformance
  --

  lispMIBEtrGroup OBJECT-GROUP
      OBJECTS { lispFeaturesEtrEnabled,
                lispMappingDatabaseLsb,
                lispMappingDatabaseLocatorRlocPriority,
                lispMappingDatabaseLocatorRlocWeight,
                lispMappingDatabaseLocatorRlocMPriority,
                lispMappingDatabaseLocatorRlocMWeight,
                lispMappingDatabaseLocatorRlocState,
                lispMappingDatabaseLocatorRlocLocal,
                lispConfiguredLocatorRlocState,
                lispConfiguredLocatorRlocLocal,
                lispUseMapServerState
              }
      STATUS  current
      DESCRIPTION
              "A collection of objects to support basic
               management of LISP ETRs."
      ::= { lispGroups 1 }

  lispMIBItrGroup OBJECT-GROUP
      OBJECTS { lispFeaturesItrEnabled,
                lispFeaturesMapCacheSize,
                lispMappingDatabaseLsb,
                lispMapCacheLocatorRlocPriority,
                lispMapCacheLocatorRlocWeight,
```

```
                     lispMapCacheLocatorRlocMPriority,
                     lispMapCacheLocatorRlocMWeight,
                     lispMapCacheLocatorRlocState,
                     lispMapCacheEidTimeStamp,
                     lispMapCacheEidExpiryTime,
                     lispUseMapResolverState,
                     lispUseProxyEtrPriority,
                     lispUseProxyEtrWeight,
                     lispUseProxyEtrMPriority,
                     lispUseProxyEtrMWeight,
                     lispUseProxyEtrState
                   }
         STATUS   current
         DESCRIPTION
                 "A collection of objects to support basic
                  management of LISP ITRs."
         ::= { lispGroups 2 }

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

     lispMIBPitrGroup OBJECT-GROUP
         OBJECTS { lispFeaturesProxyItrEnabled,
                     lispConfiguredLocatorRlocState,
                     lispConfiguredLocatorRlocLocal
                   }

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

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

```
            ::= { lispGroups 5 }

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

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

    lispMIBItrExtendedGroup OBJECT-GROUP
        OBJECTS { lispFeaturesRlocProbeEnabled,
                  lispMapCacheEidState,
                  lispMapCacheEidAuthoritative,
                  lispMapCacheLocatorRlocTimeStamp,
                  lispMapCacheLocatorRlocLastPriorityChange,
                  lispMapCacheLocatorRlocLastWeightChange,
                  lispMapCacheLocatorRlocLastMPriorityChange,
                  lispMapCacheLocatorRlocLastMWeightChange,
                  lispMapCacheLocatorRlocLastStateChange,
                  lispMapCacheLocatorRlocRtt
                }
        STATUS  current
        DESCRIPTION
                "A collection of objects to support management
                 of LISP features and properties on ITRs."
        ::= { lispGroups 8 }

    lispMIBMapServerExtendedGroup OBJECT-GROUP
        OBJECTS { lispEidRegistrationSiteName,
                  lispEidRegistrationSiteDescription,
                  lispEidRegistrationIsRegistered,
                  lispEidRegistrationFirstTimeStamp,
                  lispEidRegistrationLastTimeStamp,
                  lispEidRegistrationLastRegisterSenderLength,
```

```
                lispEidRegistrationLastRegisterSender,
                lispEidRegistrationRouteTag,
                lispEidRegistrationEtrLastTimeStamp,
                lispEidRegistrationEtrTtl,
                lispEidRegistrationEtrProxyReply,
                lispEidRegistrationEtrWantsMapNotify,
                lispEidRegistrationLocatorIsLocal,
                lispEidRegistrationLocatorPriority,
                lispEidRegistrationLocatorWeight,
                lispEidRegistrationLocatorMPriority,
                lispEidRegistrationLocatorMWeight
            }
    STATUS  current
    DESCRIPTION
            "A collection of objects to support management
             of LISP features and properties on Map Servers."
    ::= { lispGroups 9 }

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

lispMIBEncapStatisticsGroup OBJECT-GROUP
    OBJECTS { lispMappingDatabaseTimeStamp,
              lispMappingDatabaseEncapOctets,
              lispMappingDatabaseEncapPackets,
              lispMappingDatabaseLocatorRlocTimeStamp,
              lispMappingDatabaseLocatorRlocEncapOctets,
              lispMappingDatabaseLocatorRlocEncapPackets,
              lispMapCacheEidTimeStamp,
              lispMapCacheEidEncapOctets,
              lispMapCacheEidEncapPackets,
              lispMapCacheLocatorRlocTimeStamp,
              lispMapCacheLocatorRlocEncapOctets,
              lispMapCacheLocatorRlocEncapPackets,
              lispConfiguredLocatorRlocTimeStamp,
              lispConfiguredLocatorRlocEncapOctets,
              lispConfiguredLocatorRlocEncapPackets
            }
    STATUS  current
    DESCRIPTION
            "A collection of LISP encapsulation statistics
```

```
                    by 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 LISP decapsulation statistics
                     by the device."
             ::= { lispGroups 12 }

        lispMIBDiagnosticsGroup OBJECT-GROUP
            OBJECTS { lispFeaturesRouterTimeStamp,
                      lispGlobalStatsMapRequestsIn,
                      lispGlobalStatsMapRequestsOut,
                      lispGlobalStatsMapRepliesIn,
                      lispGlobalStatsMapRepliesOut,
                      lispGlobalStatsMapRegistersIn,
                      lispGlobalStatsMapRegistersOut,
                      lispEidRegistrationAuthenticationErrors,
                      lispEidRegistrationRlocsMismatch
                    }
            STATUS  current
            DESCRIPTION
                    "Objects providing additional diagnostics
                    related to a LISP router."
             ::= { lispGroups 13 }

        lispMIBVrfGroup OBJECT-GROUP
            OBJECTS { lispIidToVrfName
                    }
            STATUS  current
            DESCRIPTION
```

                    "Objects providing information related to VRF
                     configurations on a LISP router."
            ::= { lispGroups 14 }

    END

8. Relationship to Other MIB Modules

8.1. MIB modules required for IMPORTS

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

9. Security Considerations

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

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

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

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

   Further, deployment of SNMP versions prior to SNMPv3 is NOT
   RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to
   enable cryptographic security. It is then a customer/operator
   responsibility to ensure that the SNMP entity giving access to an
   instance of these MIB modules is properly configured to give access
   to the objects only to those principals (users) that have legitimate
   rights to indeed GET or SET (change/create/delete) them.

10. IANA Considerations

   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 XXX }

   [Editor's Note (to be removed prior to publication): the IANA is
   requested to assign a value for "XXX" under the 'mib-2' subtree and
   to record the assignment in the SMI Numbers registry. When the
   assignment has been made, the RFC Editor is asked to replace "XXX"
   (here and in the MIB module) with the assigned value and to remove
   this note.]

11. References

11.1. Normative References

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   [RFC4760]   Bates, T., Chandra, R., Katz, D., and Y. Rekhter,
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Appendix A. Open Issues

   Open issues for the LISP MIB include the following:

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

Appendix B. Acknowledgments

   A thank you is owed to Dino Farinacci for his inputs and review
   comments on the initial versions of this draft. In addition, the
   authors would like to gratefully acknowledge several others who have
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