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LISP Configuration YANG Model
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Abstract

This document describes a YANG data model to use with the Locator/ID Separation Protocol (LISP).

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LISP-YANG

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[1.](#) Introduction

The Locator/ID Separation Protocol (LISP) defines several network elements subject to be configured. This document presents the YANG data models required for basic configuration of all major LISP

[RFC6830]elements. The models also capture some essential operational data elements as well.

2. LISP Module

This module is the base LISP module that is augmented in multiple models to represent various LISP device roles.

2.1. Module Structure

```
module: ietf-lisp
  +--rw lisp
  |   +--rw locator-sets
  |   |   +--rw locator-set* [locator-set-name]
  |   |   |   +--rw locator-set-name    string
  |   |   |   +--rw (locator-type)?
  |   |   |   |   +--:(local-interface)
  |   |   |   |   |   +--rw interface* [interface-ref]
  |   |   |   |   |   |   +--rw interface-ref    if:interface-ref
  |   |   |   |   |   |   +--rw priority?        uint8
  |   |   |   |   |   |   +--rw weight?          uint8
  |   |   |   |   |   |   +--rw multicast-priority? uint8
  |   |   |   |   |   |   +--rw multicast-weight? uint8
  |   |   |   |   +--:(general-locator)
  |   |   |   |   |   +--rw locator* [id]
  |   |   |   |   |   |   +--rw id                string
  |   |   |   |   |   |   +--rw locator-address
  |   |   |   |   |   |   |   +--rw address-type    lisp-address-family-ref
  |   |   |   |   |   |   |   +--rw virtual-network-id? instance-id-type
  |   |   |   |   |   |   |   +--rw (address)?
  |   |   |   |   |   |   |   |   +--:(no-address)
  |   |   |   |   |   |   |   |   |   +--rw no-address?    empty
  |   |   |   |   |   |   |   |   +--:(ipv4)
  |   |   |   |   |   |   |   |   |   +--rw ipv4?          inet:ipv4-address
  |   |   |   |   |   |   |   |   +--:(ipv4-prefix)
  |   |   |   |   |   |   |   |   |   +--rw ipv4-prefix?    inet:ipv4-prefix
  |   |   |   |   |   |   |   |   +--:(ipv6)
  |   |   |   |   |   |   |   |   |   +--rw ipv6?          inet:ipv6-address
  |   |   |   |   |   |   |   |   +--:(ipv6-prefix)
```

```

| | | | +--rw ipv6-prefix?          inet:ipv6-prefix
| | | | +---:(mac)
| | | | | +--rw mac?                yang:mac-address
| | | | +---:(distinguished-name)
| | | | | +--rw distinguished-name? distinguished-name
| | | | +---:(as-number)
| | | | | +--rw as-number?          inet:as-number
| | | | +---:(null-address)
| | | | | +--rw null-address
| | | | |   +--rw address?         empty
| | | | +---:(afi-list)
| | | | | +--rw afi-list

```

```

| | | | | +--rw address-list*      simple-address
| | | | +---:(instance-id)
| | | | | +--rw instance-id
| | | | |   +--rw iid?            instance-id-type
| | | | |   +--rw mask-length?   uint8
| | | | |   +--rw address?       simple-address
| | | | +---:(as-number-lcaf)
| | | | | +--rw as-number-lcaf
| | | | |   +--rw as?            inet:as-number
| | | | |   +--rw address?       simple-address
| | | | +---:(application-data)
| | | | | +--rw application-data
| | | | |   +--rw address?        simple-address
| | | | |   +--rw protocol?       uint8
| | | | |   +--rw ip-tos?         int32
| | | | |   +--rw local-port-low? inet:port-number
| | | | |   +--rw local-port-high? inet:port-number
| | | | |   +--rw remote-port-low? inet:port-number
| | | | |   +--rw remote-port-high? inet:port-number
| | | | +---:(geo-coordinates)
| | | | | +--rw geo-coordinates
| | | | |   +--rw latitude?        bits
| | | | |   +--rw latitude-degrees? uint8
| | | | |   +--rw latitude-minutes? uint8
| | | | |   +--rw latitude-seconds? uint8
| | | | |   +--rw longitude?       bits
| | | | |   +--rw longitude-degrees? uint16
| | | | |   +--rw longitude-minutes? uint8
| | | | |   +--rw longitude-seconds? uint8

```

```

| | | | | +--rw altitude? int32
| | | | | +--rw address? simple-address
| | | | | +---:(nat-traversal)
| | | | | | +--rw nat-traversal
| | | | | | | +--rw ms-udp-port? uint16
| | | | | | | +--rw etr-udp-port? uint16
| | | | | | | +--rw global-etr-rloc? simple-address
| | | | | | | +--rw ms-rloc? simple-address
| | | | | | | +--rw private-etr-rloc? simple-address
| | | | | | | +--rw rtr-rlocs* simple-address
| | | | | +---:(explicit-locator-path)
| | | | | | +--rw explicit-locator-path
| | | | | | | +--rw hop* [hop-id]
| | | | | | | | +--rw hop-id string
| | | | | | | | +--rw address? simple-address
| | | | | | | | +--rw lrs-bits? bits
| | | | | +---:(source-dest-key)
| | | | | | +--rw source-dest-key
| | | | | | | +--rw source? simple-address

```

```

| | | | | +--rw dest? simple-address
| | | | | +---:(key-value-address)
| | | | | | +--rw key-value-address
| | | | | | | +--rw key? simple-address
| | | | | | | +--rw value? simple-address
| | | | | +---:(service-path)
| | | | | | +--rw service-path
| | | | | | | +--rw service-path-id? service-path-id-type
| | | | | | | +--rw service-index? uint8
| | | | | | +--rw priority? uint8
| | | | | | +--rw weight? uint8
| | | | | | +--rw multicast-priority? uint8
| | | | | | +--rw multicast-weight? uint8
| | | | | +--rw lisp-router-instances
| | | | | | +--rw lisp-router-instance* [lisp-router-instance-id]
| | | | | | | +--rw lisp-router-instance-id int32
| | | | | | | +--rw lisp-role* [lisp-role-type]
| | | | | | | | +--rw lisp-role-type lisp-role-ref
| | | | | | | | +--rw enabled? boolean
+--ro lisp-state
  +--ro lisp-router-instances
    +--ro lisp-router-instance* [lisp-router-instance-id]

```

```
    +---ro lisp-router-instance-id    int32
    +---ro lisp-role* [lisp-role-type]
        +---ro lisp-role-type        lisp-role-ref
        +---ro enabled?              boolean
```

2.2. Module Definition

```
<CODE BEGINS> file "ietf-lisp@2016-06-30.yang"
module ietf-lisp {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp";
  prefix lisp;
  import ietf-interfaces {
    prefix if;
  }
  import ietf-lisp-address-types {
    prefix lacf;
  }
  organization
    "IETF LISP (Locator/ID Separation Protocol) Working Group";
  contact
    "lisp@ietf.org";
  description
    "This YANG module defines the generic configuration
    and operational data for LISP. The module can be extended by
    vendors to define vendor-specific LISP configuration
    parameters and policies.
```

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This version of this YANG module is part of [RFC 6338](#); see the RFC itself for full legal notices.

";

```
revision 2016-06-30 {
```

```

description
  "Initial revision.";
reference
  "https://tools.ietf.org/html/rfc6830";
}
identity lisp-role {
  description
    "LISP router role.";
}
identity mapping-system {
  description
    "Mapping System interface";
}
identity single-node-mapping-system {
  base mapping-system;
  description
    "logically singular Map Server";
}
typedef mapping-system-ref {
  type identityref {
    base mapping-system;
  }
  description
    "Mapping System reference";
}

typedef lisp-role-ref {
  type identityref {
    base lisp-role;
  }
  description
    "LISP role reference";
}

```

```

typedef map-reply-action {
  type enumeration {
    enum no-action {
      value 0;
      description
        "Mapping is kept alive and no encapsulation occurs.";
    }
    enum natively-forward {

```

```

    value 1;
    description
        "Matching packets are not encapsulated or dropped but
        natively forwarded.";
}
enum send-map-request {
    value 2;
    description
        "Matching packets invoke Map-Requests.";
}
enum drop {
    value 3;
    description
        "Matching packets are dropped.";
}
}
description
    "Defines the lisp map-cache ACT type";
reference "https://tools.ietf.org/html/rfc6830#section-6.1.4";
}
typedef eid-id {
    type string;
    description
        "Type encoding of lisp-addresses to be generally used in EID
        keyed lists.";
}
typedef auth-key-type {
    type enumeration {
        enum none {
            value 0;
            description
                "No authentication.";
        }
        enum hmac-sha-1-96 {
            value 1;
            description
                "HMAC-SHA-1-96 (RFC2404) authentication is used.";
        }
        enum hmac-sha-256-128 {
            value 2;

```

description


```

        "HMAC-SHA-256-128 (RFC4868) authentication is used.";
    }
}
description
    "Enumeration of the authentication mechanisms supported by
    LISP.";
reference
    "https://tools.ietf.org/html/rfc6830#section-6.1.6";
}

```

```

grouping locator-properties {
    description
        "Properties of a RLOC";
    leaf priority {
        type uint8;
        description
            "Locator priority.";
    }
    leaf weight {
        type uint8;
        description
            "Locator weight.";
    }
    leaf multicast-priority {
        type uint8;
        description
            "Locator's multicast priority";
    }
    leaf multicast-weight {
        type uint8;
        description
            "Locator's multicast weight";
    }
}
}

```

```

grouping locators-grouping {
    description
        "Group that defines a list of LISP locators.";
    // vina: container?
    list locator {
        key "id";
        description
            "List of routing locators";
        leaf id {
            type string {
                length "1..64";
            }
        }
    }
}

```

```
        description
            "Locator id";
    }
    container locator-address {
        uses lcaf:lisp-address;
        description
            "The locator address provided in LISP canonical
            address format.";
    }
    uses locator-properties;
}

}

grouping local-locators-grouping {
    description
        "Group that defines a list of LISP locators.";
    list interface {
        key "interface-ref";
        description
            "The address type of the locator";
        leaf interface-ref {
            type if:interface-ref;
            description
                "The name of the interface supporting the locator.";
        }
        uses locator-properties;
    }
}

grouping servicing-eids-grouping {
    description
        "Group of EIDs serviced by the this lisp device.";
    container servicing-eids {
        description
            "This node defines list of EIDs serviced by the this"
            + " lisp device.";
        list servicing-eid {
            key "id";
            description
                "List of EIDs serviced by the this lisp device.";
            leaf id {
                type lisp:eid-id;
                description
                    "Id of serviced EID.";
            }
        }
        container eid-address {
```

```
uses lcaf:lisp-address;
description
```

```
        "Serviced EID address in generic LISP address format.";
    }
}
}
}
grouping mappings {
  description
    "Group that defines a list of LISP mappings.";
  list mapping {
    key "id";
    description
      "List of EID to RLOCs mappings.";
    leaf id {
      type eid-id;
      description
        "Id that uniquely identifies a mapping.";
    }
    container eid {
      uses lcaf:lisp-address;
      description
        "End-host Identifier (EID) to be mapped to a list of
        locators";
    }
    leaf ttl {
      type uint32;
      description
        "Mapping validity period.";
    }
    leaf authoritative {
      type bits {
        bit A {
          description
            "Authoritative bit.";
        }
      }
      description
        "Bit that indicates if mapping comes from an
        authoritative source.";
    }
  }
}
```

```
leaf static {
  type boolean;
  default "false";
  description
    "This leaf should be true if the mapping is static.";
}
choice locator-list {
  description
    "list of locartors are either negative, or positive.";
```

```
    case negative-mapping {
      leaf map-reply-action {
        type map-reply-action;
        description
          "Forwarding action for a negative mapping.";
      }
    }
    case positive-mapping {
      container rlocs {
        uses locators-grouping;
        description
          "List of locators for a positive mapping.";
      }
    }
  }
}

/* Configuration Data */
container lisp {
  description
    "Configuration parameters for LISP subsystem.";

  container locator-sets {
    description
      "Container that defines a named locator set which can be
      referenced elsewhere.";
    list locator-set {
      key "locator-set-name";
      description
        "Multiple locator sets can be configured.";
      leaf locator-set-name {
```

```

    type string {
      length "1..64";
    }
    description
      "Locator set name";
  }
  choice locator-type {
    description
      "Locator sets can be based on local interfaces, or
      general locators.";
    case local-interface {
      uses local-locators-grouping;
      description
        "List of locators in this set based on local
        interfaces.";
    }
  }

```

```

    case general-locator {
      uses locators-grouping;
      description
        "List of locators in this set based on lisp-address.";
    }
  }
}

```

```

container lisp-router-instances {
  description
    "Configuration of LISP router instances.";
  list lisp-router-instance {
    key "lisp-router-instance-id";
    description
      "Each entry contains configuration of a lisp-router
      instance.";
    leaf lisp-router-instance-id {
      type int32;
      description
        "Arbitrary lisp-router id.";
    }
  }
  list lisp-role {
    key lisp-role-type;
    description

```



```

+--rw map-resolver* [id]
  +--rw id                    lisp:eid-id
  +--rw eid-address
    +--rw address-type        lisp-address-family-ref
    +--rw virtual-network-id? instance-id-type
    +--rw (address)?
      +--:(no-address)
      | +--rw no-address?      empty
      +--:(ipv4)
      | +--rw ipv4?           inet:ipv4-address
      +--:(ipv4-prefix)
      | +--rw ipv4-prefix?    inet:ipv4-prefix
      +--:(ipv6)
      | +--rw ipv6?           inet:ipv6-address
      +--:(ipv6-prefix)
      | +--rw ipv6-prefix?    inet:ipv6-prefix
      +--:(mac)
      | +--rw mac?            yang:mac-address
      +--:(distinguished-name)
      | +--rw distinguished-name? distinguished-name-type
      +--:(as-number)
      | +--rw as-number?      inet:as-number
      +--:(null-address)
      | +--rw null-address
      |   +--rw address?      empty
      +--:(afi-list)
      | +--rw afi-list
      |   +--rw address-list* simple-address
      +--:(instance-id)
      | +--rw instance-id
      |   +--rw iid?          instance-id-type
      |   +--rw mask-length? uint8
      |   +--rw address?      simple-address
      +--:(as-number-lcaf)
      | +--rw as-number-lcaf
      |   +--rw as?           inet:as-number
      |   +--rw address?      simple-address

```

```

| | +--:(application-data)
| | | +--rw application-data
| | |   +--rw address?      simple-address
| | |   +--rw protocol?     uint8

```



```

|         |--rw ip-tos?                int32
|         |--rw local-port-low?       inet:port-number
|         |--rw local-port-high?     inet:port-number
|         |--rw remote-port-low?     inet:port-number
|         |--rw remote-port-high?    inet:port-number
|     +--:(geo-coordinates)
|         |--rw geo-coordinates
|             |--rw latitude?         bits
|             |--rw latitude-degrees? uint8
|             |--rw latitude-minutes? uint8
|             |--rw latitude-seconds? uint8
|             |--rw longitude?       bits
|             |--rw longitude-degrees? uint16
|             |--rw longitude-minutes? uint8
|             |--rw longitude-seconds? uint8
|             |--rw altitude?        int32
|             |--rw address?         simple-address
|     +--:(nat-traversal)
|         |--rw nat-traversal
|             |--rw ms-udp-port?     uint16
|             |--rw etr-udp-port?    uint16
|             |--rw global-etr-rloc?  simple-address
|             |--rw ms-rloc?         simple-address
|             |--rw private-etr-rloc? simple-address
|             |--rw rtr-rlocs*       simple-address
|     +--:(explicit-locator-path)
|         |--rw explicit-locator-path
|             |--rw hop* [hop-id]
|                 |--rw hop-id      string
|                 |--rw address?    simple-address
|                 |--rw lrs-bits?   bits
|     +--:(source-dest-key)
|         |--rw source-dest-key
|             |--rw source?         simple-address
|             |--rw dest?          simple-address
|     +--:(key-value-address)
|         |--rw key-value-address
|             |--rw key?           simple-address
|             |--rw value?        simple-address
|     +--:(service-path)
|         |--rw service-path
|             |--rw service-path-id? service-path-id-type
|             |--rw service-index?  uint8
+--rw map-resolver-address*  inet:ip-address

```

```

+--rw proxy-etrs
| +--rw proxy-etr* [id]
| | +--rw id lisp:eid-id
| | +--rw eid-address
| | | +--rw address-type lisp-address-family-ref
| | | +--rw virtual-network-id? instance-id-type
| | | +--rw (address)?
| | | | +--:(no-address)
| | | | | +--rw no-address? empty
| | | | +--:(ipv4)
| | | | | +--rw ipv4? inet:ipv4-address
| | | | +--:(ipv4-prefix)
| | | | | +--rw ipv4-prefix? inet:ipv4-prefix
| | | | +--:(ipv6)
| | | | | +--rw ipv6? inet:ipv6-address
| | | | +--:(ipv6-prefix)
| | | | | +--rw ipv6-prefix? inet:ipv6-prefix
| | | | +--:(mac)
| | | | | +--rw mac? yang:mac-address
| | | | +--:(distinguished-name)
| | | | | +--rw distinguished-name? distinguished-name-type
| | | | +--:(as-number)
| | | | | +--rw as-number? inet:as-number
| | | | +--:(null-address)
| | | | | +--rw null-address
| | | | | | +--rw address? empty
| | | | +--:(afi-list)
| | | | | +--rw afi-list
| | | | | | +--rw address-list* simple-address
| | | | +--:(instance-id)
| | | | | +--rw instance-id
| | | | | | +--rw iid? instance-id-type
| | | | | | +--rw mask-length? uint8
| | | | | | +--rw address? simple-address
| | | | +--:(as-number-lcaf)
| | | | | +--rw as-number-lcaf
| | | | | | +--rw as? inet:as-number
| | | | | | +--rw address? simple-address
| | | | +--:(application-data)
| | | | | +--rw application-data
| | | | | | +--rw address? simple-address
| | | | | | +--rw protocol? uint8
| | | | | | +--rw ip-tos? int32
| | | | | | +--rw local-port-low? inet:port-number
| | | | | | +--rw local-port-high? inet:port-number
| | | | | | +--rw remote-port-low? inet:port-number
| | | | | | +--rw remote-port-high? inet:port-number

```

| | +--:(geo-coordinates)

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```
| | | +--rw geo-coordinates
| | |   +--rw latitude?          bits
| | |   +--rw latitude-degrees? uint8
| | |   +--rw latitude-minutes? uint8
| | |   +--rw latitude-seconds? uint8
| | |   +--rw longitude?         bits
| | |   +--rw longitude-degrees? uint16
| | |   +--rw longitude-minutes? uint8
| | |   +--rw longitude-seconds? uint8
| | |   +--rw altitude?          int32
| | |   +--rw address?           simple-address
| | | +--:(nat-traversal)
| | | | +--rw nat-traversal
| | | |   +--rw ms-udp-port?      uint16
| | | |   +--rw etr-udp-port?     uint16
| | | |   +--rw global-etr-rloc?  simple-address
| | | |   +--rw ms-rloc?           simple-address
| | | |   +--rw private-etr-rloc? simple-address
| | | |   +--rw rtr-rlocs*        simple-address
| | | +--:(explicit-locator-path)
| | | | +--rw explicit-locator-path
| | | | | +--rw hop* [hop-id]
| | | | |   +--rw hop-id          string
| | | | |   +--rw address?        simple-address
| | | | |   +--rw lrs-bits?       bits
| | | +--:(source-dest-key)
| | | | +--rw source-dest-key
| | | | | +--rw source?           simple-address
| | | | | +--rw dest?            simple-address
| | | +--:(key-value-address)
| | | | +--rw key-value-address
| | | | | +--rw key?              simple-address
| | | | | +--rw value?           simple-address
| | | +--:(service-path)
| | | | +--rw service-path
| | | | | +--rw service-path-id?  service-path-id-type
| | | | | +--rw service-index?    uint8
| | | +--rw proxy-etr-address*    inet:ip-address
+--rw map-cache
| +--rw mapping* [id]
```

```

| +--rw id                      eid-id
| +--rw eid
|   +--rw address-type          lisp-address-family-ref
|   +--rw virtual-network-id?   instance-id-type
|   +--rw (address)?
|     +--:(no-address)
|       | +--rw no-address?      empty
|       +--:(ipv4)

```

```

|   | +--rw ipv4?                inet:ipv4-address
|   | +--:(ipv4-prefix)
|   | | +--rw ipv4-prefix?      inet:ipv4-prefix
|   | +--:(ipv6)
|   | | +--rw ipv6?            inet:ipv6-address
|   | +--:(ipv6-prefix)
|   | | +--rw ipv6-prefix?     inet:ipv6-prefix
|   | +--:(mac)
|   | | +--rw mac?             yang:mac-address
|   | +--:(distinguished-name)
|   | | +--rw distinguished-name? distinguished-name-type
|   | +--:(as-number)
|   | | +--rw as-number?       inet:as-number
|   | +--:(null-address)
|   | | +--rw null-address
|   | |   +--rw address?       empty
|   | +--:(afi-list)
|   | | +--rw afi-list
|   | |   +--rw address-list*   simple-address
|   | +--:(instance-id)
|   | | +--rw instance-id
|   | |   +--rw iid?           instance-id-type
|   | |   +--rw mask-length?   uint8
|   | |   +--rw address?       simple-address
|   | +--:(as-number-lcaf)
|   | | +--rw as-number-lcaf
|   | |   +--rw as?            inet:as-number
|   | |   +--rw address?       simple-address
|   | +--:(application-data)
|   | | +--rw application-data
|   | |   +--rw address?       simple-address
|   | |   +--rw protocol?      uint8
|   | |   +--rw ip-tos?        int32

```

```

|         |--rw local-port-low?      inet:port-number
|         |--rw local-port-high?     inet:port-number
|         |--rw remote-port-low?     inet:port-number
|         |--rw remote-port-high?    inet:port-number
|     +---:(geo-coordinates)
|         |--rw geo-coordinates
|             |--rw latitude?         bits
|             |--rw latitude-degrees? uint8
|             |--rw latitude-minutes? uint8
|             |--rw latitude-seconds? uint8
|             |--rw longitude?        bits
|             |--rw longitude-degrees? uint16
|             |--rw longitude-minutes? uint8
|             |--rw longitude-seconds? uint8
|             |--rw altitude?         int32

```

```

|         |--rw address?              simple-address
|     +---:(nat-traversal)
|         |--rw nat-traversal
|             |--rw ms-udp-port?      uint16
|             |--rw etr-udp-port?     uint16
|             |--rw global-etr-rloc?  simple-address
|             |--rw ms-rloc?          simple-address
|             |--rw private-etr-rloc? simple-address
|             |--rw rtr-rlocs*        simple-address
|     +---:(explicit-locator-path)
|         |--rw explicit-locator-path
|             |--rw hop* [hop-id]
|                 |--rw hop-id        string
|                 |--rw address?      simple-address
|                 |--rw lrs-bits?     bits
|     +---:(source-dest-key)
|         |--rw source-dest-key
|             |--rw source?           simple-address
|             |--rw dest?            simple-address
|     +---:(key-value-address)
|         |--rw key-value-address
|             |--rw key?              simple-address
|             |--rw value?           simple-address
|     +---:(service-path)
|         |--rw service-path
|             |--rw service-path-id?  service-path-id-type

```

```

|           +--rw service-index?      uint8
+--rw ttl?                uint32
+--rw authoritative?      bits
+--rw static?             boolean
+--rw (locator-list)?
  +--:(negative-mapping)
  | +--rw map-reply-action?  map-reply-action
  +--:(positive-mapping)
    +--rw rlocs
      +--rw locator* [id]
        +--rw id                string
        +--rw locator-address
          | +--rw address-type      lisp-address-family-r
          | +--rw virtual-network-id? instance-id-type
          | +--rw (address)?
          |   +--:(no-address)
          |   | +--rw no-address?    empty
          |   +--:(ipv4)
          |   | +--rw ipv4?          inet:ipv4-addre
          |   +--:(ipv4-prefix)
          |   | +--rw ipv4-prefix?   inet:ipv4-prefi
          |   +--:(ipv6)

```

```

|           | +--rw ipv6?          inet:ipv6-addre
|           | +--:(ipv6-prefix)
|           | +--rw ipv6-prefix?   inet:ipv6-prefi
|           | +--:(mac)
|           | +--rw mac?           yang:mac-address
|           | +--:(distinguished-name)
|           | +--rw distinguished-name? distinguished-n
|           | +--:(as-number)
|           | +--rw as-number?      inet:as-number
|           | +--:(null-address)
|           | +--rw null-address
|           |   +--rw address?      empty
|           | +--:(afi-list)
|           | +--rw afi-list
|           |   +--rw address-list*  simple-address
|           | +--:(instance-id)
|           | +--rw instance-id
|           |   +--rw iid?          instance-id-type
|           |   +--rw mask-length?  uint8

```

```

|         +---rw address?          simple-address
+---:(as-number-lcaf)
|         +---rw as-number-lcaf
|         +---rw as?              inet:as-number
|         +---rw address?        simple-address
+---:(application-data)
|         +---rw application-data
|         +---rw address?          simple-address
|         +---rw protocol?        uint8
|         +---rw ip-tos?          int32
|         +---rw local-port-low?  inet:port-number
|         +---rw local-port-high? inet:port-number
|         +---rw remote-port-low? inet:port-number
|         +---rw remote-port-high? inet:port-number
+---:(geo-coordinates)
|         +---rw geo-coordinates
|         +---rw latitude?        bits
|         +---rw latitude-degrees? uint8
|         +---rw latitude-minutes? uint8
|         +---rw latitude-seconds? uint8
|         +---rw longitude?       bits
|         +---rw longitude-degrees? uint16
|         +---rw longitude-minutes? uint8
|         +---rw longitude-seconds? uint8
|         +---rw altitude?        int32
|         +---rw address?          simple-address
+---:(nat-traversal)
|         +---rw nat-traversal
|         +---rw ms-udp-port?     uint16

```

```

|         +---rw etr-udp-port?    uint16
|         +---rw global-etr-rloc? simple-address
|         +---rw ms-rloc?         simple-address
|         +---rw private-etr-rloc? simple-address
|         +---rw rtr-rlocs*      simple-address
+---:(explicit-locator-path)
|         +---rw explicit-locator-path
|         +---rw hop* [hop-id]
|         +---rw hop-id          string
|         +---rw address?        simple-address
|         +---rw lrs-bits?       bits
+---:(source-dest-key)

```



```

+--:(afi-list)
|  +--rw afi-list
|    +--rw address-list*   simple-address
+--:(instance-id)
|  +--rw instance-id
|    +--rw iid?             instance-id-type
|    +--rw mask-length?    uint8
|    +--rw address?        simple-address
+--:(as-number-lcaf)
|  +--rw as-number-lcaf
|    +--rw as?             inet:as-number
|    +--rw address?        simple-address
+--:(application-data)
|  +--rw application-data
|    +--rw address?         simple-address
|    +--rw protocol?        uint8
|    +--rw ip-tos?          int32
|    +--rw local-port-low?  inet:port-number
|    +--rw local-port-high? inet:port-number
|    +--rw remote-port-low? inet:port-number
|    +--rw remote-port-high? inet:port-number
+--:(geo-coordinates)
|  +--rw geo-coordinates
|    +--rw latitude?         bits
|    +--rw latitude-degrees? uint8
|    +--rw latitude-minutes? uint8
|    +--rw latitude-seconds? uint8
|    +--rw longitude?        bits
|    +--rw longitude-degrees? uint16
|    +--rw longitude-minutes? uint8
|    +--rw longitude-seconds? uint8
|    +--rw altitude?         int32
|    +--rw address?          simple-address
+--:(nat-traversal)
|  +--rw nat-traversal
|    +--rw ms-udp-port?      uint16
|    +--rw etr-udp-port?    uint16
|    +--rw global-etr-rloc?  simple-address
|    +--rw ms-rloc?          simple-address
|    +--rw private-etr-rloc? simple-address
|    +--rw rtr-rlocs*        simple-address
+--:(explicit-locator-path)
|  +--rw explicit-locator-path

```

```

|         +--rw hop* [hop-id]
|           +--rw hop-id      string
|           +--rw address?    simple-address
|           +--rw lrs-bits?   bits
+---:(source-dest-key)
|   +--rw source-dest-key
|     +--rw source?  simple-address
|     +--rw dest?   simple-address
+---:(key-value-address)
|   +--rw key-value-address
|     +--rw key?    simple-address
|     +--rw value? simple-address
+---:(service-path)
|   +--rw service-path
|     +--rw service-path-id?  service-path-id-type
|     +--rw service-index?    uint8
augment /lisp:lisp-state/lisp:lisp-router-instances/lisp:lisp-router-instance/l
+--ro itr-state
+--ro map-cache
+--ro mapping* [id]
+--ro id          eid-id
+--ro eid
| +--ro address-type          lisp-address-family-ref
| +--ro virtual-network-id?   instance-id-type
| +--ro (address)?
|   +---:(no-address)
|   | +--ro no-address?      empty
|   +---:(ipv4)
|   | +--ro ipv4?           inet:ipv4-address
|   +---:(ipv4-prefix)
|   | +--ro ipv4-prefix?    inet:ipv4-prefix
|   +---:(ipv6)
|   | +--ro ipv6?           inet:ipv6-address
|   +---:(ipv6-prefix)
|   | +--ro ipv6-prefix?    inet:ipv6-prefix
|   +---:(mac)
|   | +--ro mac?            yang:mac-address
|   +---:(distinguished-name)
|   | +--ro distinguished-name? distinguished-name-type
|   +---:(as-number)
|   | +--ro as-number?      inet:as-number
|   +---:(null-address)
|   | +--ro null-address
|   |   +--ro address?      empty
|   +---:(afi-list)
|   | +--ro afi-list
|   |   +--ro address-list* simple-address
|   +---:(instance-id)

```

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```

|   +--ro instance-id
|   |   +--ro iid?          instance-id-type
|   |   +--ro mask-length? uint8
|   |   +--ro address?     simple-address
+--:(as-number-lcaf)
|   +--ro as-number-lcaf
|   |   +--ro as?          inet:as-number
|   |   +--ro address?    simple-address
+--:(application-data)
|   +--ro application-data
|   |   +--ro address?     simple-address
|   |   +--ro protocol?   uint8
|   |   +--ro ip-tos?     int32
|   |   +--ro local-port-low?  inet:port-number
|   |   +--ro local-port-high? inet:port-number
|   |   +--ro remote-port-low? inet:port-number
|   |   +--ro remote-port-high? inet:port-number
+--:(geo-coordinates)
|   +--ro geo-coordinates
|   |   +--ro latitude?    bits
|   |   +--ro latitude-degrees? uint8
|   |   +--ro latitude-minutes? uint8
|   |   +--ro latitude-seconds? uint8
|   |   +--ro longitude?   bits
|   |   +--ro longitude-degrees? uint16
|   |   +--ro longitude-minutes? uint8
|   |   +--ro longitude-seconds? uint8
|   |   +--ro altitude?    int32
|   |   +--ro address?     simple-address
+--:(nat-traversal)
|   +--ro nat-traversal
|   |   +--ro ms-udp-port?  uint16
|   |   +--ro etr-udp-port? uint16
|   |   +--ro global-etr-rloc? simple-address
|   |   +--ro ms-rloc?     simple-address
|   |   +--ro private-etr-rloc? simple-address
|   |   +--ro rtr-rlocs*   simple-address
+--:(explicit-locator-path)
|   +--ro explicit-locator-path
|   |   +--ro hop* [hop-id]
|   |   |   +--ro hop-id    string
|   |   |   +--ro address?  simple-address

```

```

|         |         +---ro lrs-bits?   bits
|         | +---:(source-dest-key)
|         |         +---ro source-dest-key
|         |         +---ro source?   simple-address
|         |         +---ro dest?    simple-address
|         | +---:(key-value-address)

```

```

|         |         +---ro key-value-address
|         |         +---ro key?     simple-address
|         |         +---ro value?   simple-address
|         | +---:(service-path)
|         |         +---ro service-path
|         |         +---ro service-path-id?  service-path-id-type
|         |         +---ro service-index?    uint8
+---ro ttl?                uint32
+---ro authoritative?     bits
+---ro static?            boolean
+---ro (locator-list)?
+---:(negative-mapping)
| +---ro map-reply-action?  map-reply-action
+---:(positive-mapping)
+---ro rlocs
+---ro locator* [id]
+---ro id                string
+---ro locator-address
| +---ro address-type    lisp-address-family-r
| +---ro virtual-network-id?  instance-id-type
| +---ro (address)?
| +---:(no-address)
| | +---ro no-address?    empty
| +---:(ipv4)
| | +---ro ipv4?         inet:ipv4-addre
+---:(ipv4-prefix)
| | +---ro ipv4-prefix?  inet:ipv4-prefi
+---:(ipv6)
| | +---ro ipv6?         inet:ipv6-addre
+---:(ipv6-prefix)
| | +---ro ipv6-prefix?  inet:ipv6-prefi
+---:(mac)
| | +---ro mac?         yang:mac-address
+---:(distinguished-name)
| | +---ro distinguished-name?  distinguished-n

```

```

|      +---:(as-number)
|      |  +---ro as-number?          inet:as-number
|      +---:(null-address)
|      |  +---ro null-address
|      |      +---ro address?    empty
|      +---:(afi-list)
|      |  +---ro afi-list
|      |      +---ro address-list*  simple-address
|      +---:(instance-id)
|      |  +---ro instance-id
|      |      +---ro iid?          instance-id-type
|      |      +---ro mask-length?  uint8
|      |      +---ro address?     simple-address

```

```

|      +---:(as-number-lcaf)
|      |  +---ro as-number-lcaf
|      |      +---ro as?          inet:as-number
|      |      +---ro address?    simple-address
|      +---:(application-data)
|      |  +---ro application-data
|      |      +---ro address?     simple-address
|      |      +---ro protocol?    uint8
|      |      +---ro ip-tos?      int32
|      |      +---ro local-port-low?  inet:port-number
|      |      +---ro local-port-high?  inet:port-number
|      |      +---ro remote-port-low?  inet:port-number
|      |      +---ro remote-port-high?  inet:port-number
|      +---:(geo-coordinates)
|      |  +---ro geo-coordinates
|      |      +---ro latitude?      bits
|      |      +---ro latitude-degrees?  uint8
|      |      +---ro latitude-minutes?  uint8
|      |      +---ro latitude-seconds?  uint8
|      |      +---ro longitude?      bits
|      |      +---ro longitude-degrees?  uint16
|      |      +---ro longitude-minutes?  uint8
|      |      +---ro longitude-seconds?  uint8
|      |      +---ro altitude?      int32
|      |      +---ro address?     simple-address
|      +---:(nat-traversal)
|      |  +---ro nat-traversal
|      |      +---ro ms-udp-port?  uint16

```

```

|         |         +---ro etr-udp-port?      uint16
|         |         +---ro global-etr-rloc?    simple-address
|         |         +---ro ms-rloc?         simple-address
|         |         +---ro private-etr-rloc? simple-address
|         |         +---ro rtr-rlocs*     simple-address
|         |         +---:(explicit-locator-path)
|         |         |         +---ro explicit-locator-path
|         |         |         |         +---ro hop* [hop-id]
|         |         |         |         |         +---ro hop-id      string
|         |         |         |         |         +---ro address?    simple-address
|         |         |         |         |         +---ro lrs-bits?   bits
|         |         |         +---:(source-dest-key)
|         |         |         |         +---ro source-dest-key
|         |         |         |         |         +---ro source?    simple-address
|         |         |         |         |         +---ro dest?      simple-address
|         |         |         +---:(key-value-address)
|         |         |         |         +---ro key-value-address
|         |         |         |         |         +---ro key?      simple-address
|         |         |         |         |         +---ro value?    simple-address
|         |         +---:(service-path)

```

```

|         |         +---ro service-path
|         |         |         +---ro service-path-id?  service-path-id-ty
|         |         |         +---ro service-index?    uint8
|         |         +---ro priority?                  uint8
|         |         +---ro weight?                    uint8
|         |         +---ro multicast-priority?        uint8
|         |         +---ro multicast-weight?          uint8

```

[3.2.](#) Module Definition

```

<CODE BEGINS> file "ietf-lisp-itr@2016-06-30.yang"
module ietf-lisp-itr {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-itr";
  prefix lisp-itr;
  import ietf-lisp {
    prefix lisp;
  }
  import ietf-lisp-address-types {
    prefix lacf;
  }
  import ietf-inet-types {

```

```

    prefix inet;
}
organization
  "IETF LISP (Locator/ID Separation Protocol) Working Group";
contact
  "lisp@ietf.org";
description
  "This YANG module defines the generic configuration
  data for a LISP ITR. The module can be extended by vendors
  to define vendor-specific configuration parameters and
  policies.

```

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This version of this YANG module is part of [RFC 6338](#); see the RFC itself for full legal notices.

```

";
revision 2016-06-30 {
  description

```

```

    "Initial revision.";
reference
  "https://tools.ietf.org/html/rfc6830";
}
identity itr {
  base lisp:lisp-role;
  description
    "LISP ITR.";
}
augment "/lisp:lisp/lisp:lisp-router-instances/"
+ "lisp:lisp-router-instance/lisp:lisp-role" {
  when "lisp:lisp-role-type = 'lisp-itr:itr'" {
    description
      "Augment is valid when LISP role type is ITR.";

```

```

}
description
  "This augments LISP devices list with ITR specific
  parameters.";
container itr-cfg {
  presence "LISP ITR operation enabled";
  description
    "ITR configuration";
  container rloc-probing {
    presence "RLOC probing active";
    description
      "RLOC-probing parameters";
    leaf interval {
      type uint16;
      units "seconds";
      description
        "Interval in seconds";
    }
    leaf retries {
      type uint8;
      description
        "Number of retries";
    }
    leaf retries-interval {
      type uint16;
      units "seconds";
      description
        "Interval in seconds between retries";
    }
  }
}
leaf itr-rlocs {
  type leafref {
    path "/lisp:lisp/lisp:locator-sets/lisp:locator-set/"
    + "lisp:locator-set-name";
  }
}

```

```

}
description
  "Reference to a locator set that the ITR includes in
  Map-Requests";
}
container map-resolvers {
  description

```



```

    "The Map-Resolvers configured for the ITR.";
list map-resolver {
  key "id";
  min-elements 1;
  description
    "List of Map-Resolvers configured for the ITR.";
  leaf id {
    type lisp:eid-id;
    description
      "Id of the EID for which the Map-Server is
        configured.";
  }
  container eid-address {
    uses lcaf:lisp-address;
    description
      "EID for which the Map-Resolver is configured.";
  }
  leaf-list map-resolver-address {
    type inet:ip-address;
    description
      "Map-Resolver RLOC address.";
  }
}
}
container proxy-etr {
  description
    "Proxy ETRs configured for the ITR.";
  list proxy-etr {
    key "id";
    description
      "List of PETR configured for the ITR.";
    leaf id {
      type lisp:eid-id;
      description
        "Id of the EID for which the PETR is configured.";
    }
    container eid-address {
      uses lcaf:lisp-address;
      description
        "EID for which the PETR is configured.";
    }
  }
}

```

```

        leaf-list proxy-etr-address{
            type inet:ip-address;
            description
                "PETR RLOC address.";
        }
    }
}
container map-cache{
    uses lisp:mappings;
    description
        "EID to RLOCs mappings cache.";
}
uses lisp:servicing-eids-grouping;

}
}
augment "/lisp:lisp-state/lisp:lisp-router-instances/"
+ "lisp:lisp-router-instance/lisp:lisp-role" {
    when "lisp:lisp-role-type = 'lisp-itr:itr'" {
        description
            "Augment is valid when LISP role type is ITR.";
    }
    description
        "This augments LISP devices list state with ITR specific
        parameters.";
    container itr-state {
        config false;
        description
            "ITR state.";
        container map-cache{
            uses lisp:mappings;
            description
                "EID to RLOCs mappings cache.";
        }
    }
}
}
}
<CODE ENDS>

```

4. LISP ETR Module

This module captures the configuration data model of a LISP ETR. The model also captures some operational data elements.

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4.1. Module Structure

```

module: ietf-lisp-etr
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:li
  +--rw etr-cfg!
  +--rw local-eids
    +--rw local-eid* [id]
      +--rw id                               lisp:eid-id
      +--rw eid-address
        | +--rw address-type                 lisp-address-family-ref
        | +--rw virtual-network-id?         instance-id-type
        | +--rw (address)?
        |   +--:(no-address)
        |   | +--rw no-address?              empty
        |   +--:(ipv4)
        |   | +--rw ipv4?                    inet:ipv4-address
        |   +--:(ipv4-prefix)
        |   | +--rw ipv4-prefix?            inet:ipv4-prefix
        |   +--:(ipv6)
        |   | +--rw ipv6?                    inet:ipv6-address
        |   +--:(ipv6-prefix)
        |   | +--rw ipv6-prefix?            inet:ipv6-prefix
        |   +--:(mac)
        |   | +--rw mac?                     yang:mac-address
        |   +--:(distinguished-name)
        |   | +--rw distinguished-name?      distinguished-name-type
        |   +--:(as-number)
        |   | +--rw as-number?               inet:as-number
        |   +--:(null-address)
        |   | +--rw null-address
        |   |   +--rw address?              empty
        |   +--:(afi-list)
        |   | +--rw afi-list
        |   |   +--rw address-list*         simple-address
        |   +--:(instance-id)
        |   | +--rw instance-id
        |   |   +--rw iid?                   instance-id-type
        |   |   +--rw mask-length?          uint8
        |   |   +--rw address?              simple-address
        |   +--:(as-number-lcaf)
        |   | +--rw as-number-lcaf
        |   |   +--rw as?                    inet:as-number
        |   |   +--rw address?              simple-address

```

```

|   +---:(application-data)
|   |   +---rw application-data
|   |       +---rw address?           simple-address
|   |       +---rw protocol?         uint8
|   |       +---rw ip-tos?           int32

```

```

|   +---rw local-port-low?           inet:port-number
|   +---rw local-port-high?          inet:port-number
|   +---rw remote-port-low?          inet:port-number
|   +---rw remote-port-high?         inet:port-number
+---:(geo-coordinates)
|   +---rw geo-coordinates
|       +---rw latitude?             bits
|       +---rw latitude-degrees?     uint8
|       +---rw latitude-minutes?     uint8
|       +---rw latitude-seconds?     uint8
|       +---rw longitude?            bits
|       +---rw longitude-degrees?    uint16
|       +---rw longitude-minutes?    uint8
|       +---rw longitude-seconds?    uint8
|       +---rw altitude?             int32
|       +---rw address?              simple-address
+---:(nat-traversal)
|   +---rw nat-traversal
|       +---rw ms-udp-port?          uint16
|       +---rw etr-udp-port?         uint16
|       +---rw global-etr-rloc?      simple-address
|       +---rw ms-rloc?              simple-address
|       +---rw private-etr-rloc?     simple-address
|       +---rw rtr-rlocs*            simple-address
+---:(explicit-locator-path)
|   +---rw explicit-locator-path
|       +---rw hop* [hop-id]
|           +---rw hop-id            string
|           +---rw address?          simple-address
|           +---rw lrs-bits?         bits
+---:(source-dest-key)
|   +---rw source-dest-key
|       +---rw source?              simple-address
|       +---rw dest?                simple-address
+---:(key-value-address)
|   +---rw key-value-address

```

```

|         |         +--rw key?      simple-address
|         |         +--rw value?   simple-address
|         +---:(service-path)
|             +--rw service-path
|                 +--rw service-path-id?  service-path-id-type
|                 +--rw service-index?    uint8
+---rw map-servers
|   +---rw map-server* [address]
|       +--rw address          inet:ip-address
|       +--rw auth-key?       string
|       +--rw auth-key-type?  lisp:auth-key-type
+---rw rlocs?                  -> /lisp:lisp/locator-sets/locator-s

```

```

+---rw record-ttl?          uint32
+---rw want-map-notify?    boolean
+---rw proxy-reply?        boolean
+---rw registration-interval?  uint16

```

[4.2.](#) Module Definition

```

<CODE BEGINS> file "ietf-lisp-etr@2016-06-30.yang"
module ietf-lisp-etr {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-etr";
  prefix lisp-etr;
  import ietf-lisp {
    prefix lisp;
  }
  import ietf-lisp-address-types {
    prefix lacf;
  }
  import ietf-inet-types {
    prefix inet;
  }
  organization
    "IETF LISP (Locator/ID Separation Protocol) Working Group";
  contact
    "lisp@ietf.org";
  description
    "This YANG module defines the generic configuration
    data for a LISP ETR. The module can be extended by vendors
    to define vendor-specific configuration parameters and
    policies."

```

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This version of this YANG module is part of [RFC 6338](#); see the RFC itself for full legal notices.

```
";
revision 2016-06-30 {
  description
    "Initial revision.";
  reference
    "https://tools.ietf.org/html/rfc6830";
```

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Expires July 11, 2017

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```
}
identity etr {
  base lisp:lisp-role;
  description
    "LISP ETR.";
}
augment "/lisp:lisp/lisp:lisp-router-instances/"
+ "lisp:lisp-router-instance/lisp:lisp-role" {
  when "lisp:lisp-role-type = 'lisp-etr:etr'" {
    description
      "Augment is valid when LISP device type is ETR.";
  }
  description
    "This augments LISP devices list with ETR specific
    parameters.";
  container etr-cfg {
    presence "LISP ETR operation enabled";
    description
      "ETR configuration parameters.";
    container local-eids {
      description
        "EIDs served by the ETR.";
```

```

list local-eid {
  key "id";
  min-elements 1;
  description
    "List of local EIDs.";
  leaf id {
    type lisp:eid-id;
    description
      "Unique id of local EID.";
  }
  container eid-address {
    uses lcaf:lisp-address;
    description
      "EID address in generic LISP address format.";
  }
  container map-servers {
    description
      "Map-Servers configured for the ETR.";
    list map-server {
      key "address";
      description
        "List of Map-Servers configured for the ETR.";
      leaf address {
        type inet:ip-address;
        description
          "Map-Server address.";
      }
    }
  }
}

```

```

}
leaf auth-key {
  type string;
  description
    "Map-Server authentication key.";
}
leaf auth-key-type {
  type lisp:auth-key-type;
  description
    "Map-Server authentication type.";
}
}
}
leaf rlocs {
  type leafref {

```

```

        path "/lisp:lisp/lisp:locator-sets/lisp:locator-set/"
        + "lisp:locator-set-name";
    }
    description
        "Locator set mapped to this local EID.";
}
leaf record-ttl {
    type uint32;
    description
        "Validity period of the EID to RLOCs mapping provided
        in Map-Replies.";
}
leaf want-map-notify {
    type boolean;
    default "true";
    description
        "Flag which if set in a Map-Register requests that a
        Map-Notify be sent in response.";
}
leaf proxy-reply {
    type boolean;
    default "false";
    description
        "Flag which if set in a Map-Register requests that the
        Map-Server proxy Map-Replies for the ETR.";
}
leaf registration-interval {
    type uint16;
    units "seconds";
    default "60";
    description
        "Interval between consecutive Map-Register messages.";
}
}

```

```

    }
}
} //etr-cfg
} //augment
} // lisp-etr
<CODE ENDS>

```


This module captures the configuration data model of a LISP Map Server [RFC6833]. The model also captures some operational data elements.

5.1. Module Structure

```

module: ietf-lisp-mapserver
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:li
  +--rw map-server-cfg
    +--rw sites
      | +--rw site* [site-id]
      |   +--rw site-id      uint64
      |   +--rw auth-key
      |     | +--rw auth-key-value?  string
      |     | +--rw auth-key-type?   lisp:auth-key-type
      |   +--rw eids
      |     +--rw eid* [id]
      |       +--rw id                                lisp:eid-id
      |       +--rw eid-address
      |         | +--rw address-type                lisp-address-family-ref
      |         | +--rw virtual-network-id?         instance-id-type
      |         | +--rw (address)?
      |         |   +--:(no-address)
      |         |   | +--rw no-address?              empty
      |         |   +--:(ipv4)
      |         |   | +--rw ipv4?                    inet:ipv4-address
      |         |   +--:(ipv4-prefix)
      |         |   | +--rw ipv4-prefix?             inet:ipv4-prefix
      |         |   +--:(ipv6)
      |         |   | +--rw ipv6?                    inet:ipv6-address
      |         |   +--:(ipv6-prefix)
      |         |   | +--rw ipv6-prefix?             inet:ipv6-prefix
      |         |   +--:(mac)
      |         |   | +--rw mac?                     yang:mac-address
      |         |   +--:(distinguished-name)
      |         |   | +--rw distinguished-name?     distinguished-name-ty
      |         |   +--:(as-number)
      |         |   | +--rw as-number?              inet:as-number
      |         |   +--:(null-address)

```

```

|     +---rw address?    empty
+---:(afi-list)
|     +---rw afi-list
|     +---rw address-list*  simple-address
+---:(instance-id)
|     +---rw instance-id
|     +---rw iid?          instance-id-type
|     +---rw mask-length?  uint8
|     +---rw address?     simple-address
+---:(as-number-lcaf)
|     +---rw as-number-lcaf
|     +---rw as?          inet:as-number
|     +---rw address?    simple-address
+---:(application-data)
|     +---rw application-data
|     +---rw address?     simple-address
|     +---rw protocol?    uint8
|     +---rw ip-tos?      int32
|     +---rw local-port-low?  inet:port-number
|     +---rw local-port-high? inet:port-number
|     +---rw remote-port-low? inet:port-number
|     +---rw remote-port-high? inet:port-number
+---:(geo-coordinates)
|     +---rw geo-coordinates
|     +---rw latitude?     bits
|     +---rw latitude-degrees?  uint8
|     +---rw latitude-minutes?  uint8
|     +---rw latitude-seconds?  uint8
|     +---rw longitude?      bits
|     +---rw longitude-degrees? uint16
|     +---rw longitude-minutes? uint8
|     +---rw longitude-seconds? uint8
|     +---rw altitude?      int32
|     +---rw address?     simple-address
+---:(nat-traversal)
|     +---rw nat-traversal
|     +---rw ms-udp-port?    uint16
|     +---rw etr-udp-port?   uint16
|     +---rw global-etr-rloc? simple-address
|     +---rw ms-rloc?       simple-address
|     +---rw private-etr-rloc? simple-address
|     +---rw rtr-rlocs*     simple-address
+---:(explicit-locator-path)
|     +---rw explicit-locator-path
|     +---rw hop* [hop-id]
|         +---rw hop-id     string
|         +---rw address?   simple-address

```

```

|         |         |         |         +---rw lrs-bits?    bits
|         |         |         |         +---:(source-dest-key)
|         |         |         |         |         +---rw source-dest-key
|         |         |         |         |         +---rw source?    simple-address
|         |         |         |         |         +---rw dest?     simple-address
|         |         |         |         |         +---:(key-value-address)
|         |         |         |         |         |         +---rw key-value-address
|         |         |         |         |         |         +---rw key?     simple-address
|         |         |         |         |         |         +---rw value?   simple-address
|         |         |         |         |         +---:(service-path)
|         |         |         |         |         |         +---rw service-path
|         |         |         |         |         |         |         +---rw service-path-id?  service-path-id-type
|         |         |         |         |         |         |         +---rw service-index?   uint8
|         |         |         |         |         +---rw more-specifics-accepted?  boolean
|         |         |         |         |         +---rw mapping-expiration-timeout? int16
|         |         |         |         +---rw mapping-system-type?    lisp:mapping-system-ref
augment /lisp:lisp-state/lisp:lisp-router-instances/lisp:lisp-router-instance/l
+---ro ms-state
+---ro registered-mappings
  +---ro mapping* [id]
    +---ro id          eid-id
    +---ro eid
      +---ro address-type          lisp-address-family-ref
      +---ro virtual-network-id?   instance-id-type
      +---ro (address)?
        +---:(no-address)
          | +---ro no-address?      empty
        +---:(ipv4)
          | +---ro ipv4?           inet:ipv4-address
        +---:(ipv4-prefix)
          | +---ro ipv4-prefix?   inet:ipv4-prefix
        +---:(ipv6)
          | +---ro ipv6?           inet:ipv6-address
        +---:(ipv6-prefix)
          | +---ro ipv6-prefix?   inet:ipv6-prefix
        +---:(mac)
          | +---ro mac?           yang:mac-address
        +---:(distinguished-name)
          | +---ro distinguished-name? distinguished-name-type
        +---:(as-number)
          | +---ro as-number?     inet:as-number
        +---:(null-address)
          | +---ro null-address
          |   +---ro address?     empty
        +---:(afi-list)
          | +---ro afi-list

```

```
| |      +--ro address-list*   simple-address
| |      +---:(instance-id)
```

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```
| |      +--ro instance-id
| |      |   +--ro iid?           instance-id-type
| |      |   +--ro mask-length?  uint8
| |      |   +--ro address?      simple-address
+---:(as-number-lcaf)
| |      +--ro as-number-lcaf
| |      |   +--ro as?           inet:as-number
| |      |   +--ro address?     simple-address
+---:(application-data)
| |      +--ro application-data
| |      |   +--ro address?      simple-address
| |      |   +--ro protocol?    uint8
| |      |   +--ro ip-tos?      int32
| |      |   +--ro local-port-low?  inet:port-number
| |      |   +--ro local-port-high? inet:port-number
| |      |   +--ro remote-port-low? inet:port-number
| |      |   +--ro remote-port-high? inet:port-number
+---:(geo-coordinates)
| |      +--ro geo-coordinates
| |      |   +--ro latitude?      bits
| |      |   +--ro latitude-degrees?  uint8
| |      |   +--ro latitude-minutes?  uint8
| |      |   +--ro latitude-seconds?  uint8
| |      |   +--ro longitude?       bits
| |      |   +--ro longitude-degrees?  uint16
| |      |   +--ro longitude-minutes?  uint8
| |      |   +--ro longitude-seconds?  uint8
| |      |   +--ro altitude?        int32
| |      |   +--ro address?        simple-address
+---:(nat-traversal)
| |      +--ro nat-traversal
| |      |   +--ro ms-udp-port?    uint16
| |      |   +--ro etr-udp-port?   uint16
| |      |   +--ro global-etr-rloc? simple-address
| |      |   +--ro ms-rloc?        simple-address
| |      |   +--ro private-etr-rloc? simple-address
| |      |   +--ro rtr-rlocs*     simple-address
+---:(explicit-locator-path)
| |      +--ro explicit-locator-path
```

```

|         |         +---ro hop* [hop-id]
|         |         +---ro hop-id         string
|         |         +---ro address?      simple-address
|         |         +---ro lrs-bits?    bits
|         +---:(source-dest-key)
|         |         +---ro source-dest-key
|         |         +---ro source?     simple-address
|         |         +---ro dest?      simple-address
|         +---:(key-value-address)

```

```

|         |         +---ro key-value-address
|         |         +---ro key?        simple-address
|         |         +---ro value?     simple-address
|         +---:(service-path)
|         |         +---ro service-path
|         |         +---ro service-path-id?  service-path-id-type
|         |         +---ro service-index?   uint8
+---ro ttl?                uint32
+---ro authoritative?     bits
+---ro static?            boolean
+---ro (locator-list)?
+---:(negative-mapping)
| +---ro map-reply-action?  map-reply-action
+---:(positive-mapping)
+---ro rlocs
+---ro locator* [id]
+---ro id                  string
+---ro locator-address
| +---ro address-type      lisp-address-family-r
| +---ro virtual-network-id? instance-id-type
| +---ro (address)?
| +---:(no-address)
| | +---ro no-address?    empty
| +---:(ipv4)
| | +---ro ipv4?         inet:ipv4-addre
| +---:(ipv4-prefix)
| | +---ro ipv4-prefix?  inet:ipv4-prefi
| +---:(ipv6)
| | +---ro ipv6?         inet:ipv6-addre
| +---:(ipv6-prefix)
| | +---ro ipv6-prefix?  inet:ipv6-prefi
| +---:(mac)

```

```

|   |   |--ro mac?                               yang:mac-address
|   |--:(distinguished-name)
|   |   |--ro distinguished-name?             distinguished-n
|   |--:(as-number)
|   |   |--ro as-number?                       inet:as-number
|   |--:(null-address)
|   |   |--ro null-address
|   |       |--ro address?    empty
|   |--:(afi-list)
|   |   |--ro afi-list
|   |       |--ro address-list*    simple-address
|   |--:(instance-id)
|   |   |--ro instance-id
|   |       |--ro iid?              instance-id-type
|   |       |--ro mask-length?     uint8
|   |       |--ro address?         simple-address

```

```

|   |--:(as-number-lcaf)
|   |   |--ro as-number-lcaf
|   |       |--ro as?              inet:as-number
|   |       |--ro address?        simple-address
|   |--:(application-data)
|   |   |--ro application-data
|   |       |--ro address?         simple-address
|   |       |--ro protocol?       uint8
|   |       |--ro ip-tos?         int32
|   |       |--ro local-port-low? inet:port-number
|   |       |--ro local-port-high? inet:port-number
|   |       |--ro remote-port-low? inet:port-number
|   |       |--ro remote-port-high? inet:port-number
|   |--:(geo-coordinates)
|   |   |--ro geo-coordinates
|   |       |--ro latitude?        bits
|   |       |--ro latitude-degrees? uint8
|   |       |--ro latitude-minutes? uint8
|   |       |--ro latitude-seconds? uint8
|   |       |--ro longitude?       bits
|   |       |--ro longitude-degrees? uint16
|   |       |--ro longitude-minutes? uint8
|   |       |--ro longitude-seconds? uint8
|   |       |--ro altitude?        int32
|   |       |--ro address?         simple-address

```

```

|         +---:(nat-traversal)
|         |   +---ro nat-traversal
|         |     +---ro ms-udp-port?      uint16
|         |     +---ro etr-udp-port?    uint16
|         |     +---ro global-etr-rloc?  simple-address
|         |     +---ro ms-rloc?         simple-address
|         |     +---ro private-etr-rloc? simple-address
|         |     +---ro rtr-rlocs*       simple-address
|         +---:(explicit-locator-path)
|         |   +---ro explicit-locator-path
|         |     +---ro hop* [hop-id]
|         |       +---ro hop-id         string
|         |       +---ro address?      simple-address
|         |       +---ro lrs-bits?     bits
|         +---:(source-dest-key)
|         |   +---ro source-dest-key
|         |     +---ro source?         simple-address
|         |     +---ro dest?          simple-address
|         +---:(key-value-address)
|         |   +---ro key-value-address
|         |     +---ro key?            simple-address
|         |     +---ro value?         simple-address
|         +---:(service-path)

```

```

|         +---ro service-path
|         |   +---ro service-path-id?  service-path-id-ty
|         |   +---ro service-index?    uint8
+---ro priority?      uint8
+---ro weight?       uint8
+---ro multicast-priority? uint8
+---ro multicast-weight? uint8

```

5.2. Module Definition

```

<CODE BEGINS> file "ietf-lisp-mapserver@2016-06-30.yang"
module ietf-lisp-mapserver {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-mapserver";
  prefix lisp-ms;
  import ietf-lisp {
    prefix lisp;
  }
  import ietf-lisp-address-types {

```

```
    prefix lcaf;
}
organization
  "IETF LISP (Locator/ID Separation Protocol) Working Group";
contact
  "lisp@ietf.org";
description
  "This YANG module defines the generic configuration
  data for a LISP Map-Server. The module can be extended by
  vendors to define vendor-specific configuration parameters
  and policies.
```

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This version of this YANG module is part of [RFC 6338](#); see the RFC itself for full legal notices.

```
";
```

```
revision 2016-06-30 {
  description
    "Initial revision.";
  reference
```

```
    "https://tools.ietf.org/html/rfc6833";
}

identity ms {
  base lisp:lisp-role;
  description
    "LISP Map-Server.";
}

augment "/lisp:lisp/lisp:lisp-router-instances"
+ "/lisp:lisp-router-instance/lisp:lisp-role" {
```



```

when "lisp:lisp-role-type = 'lisp-ms:ms'" {
  description
    "Augment is valid when LISP device type is Map-Server.";
}
description
  "This augments LISP devices list with Map-Server specific
  parameters.";
container map-server-cfg {
  description
    "Map-Server configuration parameters.";
  container sites {
    description
      "Sites for which the Map-Server accepts registrations.";
    list site {
      key "site-id";
      description
        "List of sites for which the Map-Server accepts
        registrations.";
      leaf site-id {
        type uint64;
        description
          "Site identifier.";
      }
      container auth-key {
        description
          "Site authentication key.";
        leaf auth-key-value {
          type string;
          description
            "Clear text authentication key";
        }
        leaf auth-key-type {
          type lisp:auth-key-type;
          description
            "Authentication key type.";
        }
      }
    }
  }
}

```

```

container eids {
  description
    "EIDs registered by device.";
  list eid {

```

```

    key "id";
    description
      "List of EIDs registered by device.";
    leaf id {
      type lisp:eid-id;
      description
        "Id of the EID registered.";
    }
    container eid-address {
      uses lcaf:lisp-address;
      description
        "EID in generic LISP address format registered
        with the Map-Server.";
    }
    leaf more-specifics-accepted {
      type boolean;
      default "false";
      description
        "Flag indicating if more specific prefixes
        can be registered.";
    }
    leaf mapping-expiration-timeout {
      type int16;
      units "seconds";
      default "180"; //3 times the mapregister int
      description
        "Time before mapping is expired if no new
        registrations are received.";
    }
    // This model can be augmented to have below for per-eid auth-key
    //     leaf auth-key {
    //       description "clear text authentication key";
    //       type string;
    //     }
  }
}
}
}
leaf mapping-system-type {
  type lisp:mapping-system-ref;
  description
    "A reference to the mapping system";
}
}
}

```

```

    }

    augment "/lisp:lisp-state/lisp:lisp-router-instances"
    + "/lisp:lisp-router-instance/lisp:lisp-role" {
        when "lisp:lisp-role-type = 'lisp-ms:ms'" {
            description
                "Augment is valid when LISP device type is Map-Server.";
        }
        description
            "This augments LISP devices list state with Map-Server
            specific parameters.";
        container ms-state {
            config false;
            description
                "Map-Server state.";
            container registered-mappings {
                uses lisp:mappings;
                description
                    "Datastore of registred mappings.";
            }
        }
    }
}
<CODE ENDS>

```

6. LISP Map Resolver Module

This module captures the configuration data model of a LISP Map Resolver [[RFC6833](#)]. The model also captures some operational data elements.

6.1. Module Structure

```

module: ietf-lisp-mapresolver
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:li
  +--rw map-resolver-cfg
    +--rw mapping-system-type?    lisp:mapping-system-ref
    +--rw ms-address?             inet:ip-address

```

6.2. Module Definition

```

<CODE BEGINS> file "ietf-lisp-mapresolver@2016-06-30.yang"
module ietf-lisp-mapresolver {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-mapresolver";
  prefix lisp-mr;
  import ietf-lisp {
    prefix lisp;

```

```
}
```

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```
import ietf-inet-types {  
  prefix inet;  
}
```

```
organization
```

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

```
contact
```

```
  "lisp@ietf.org";
```

```
description
```

```
"This YANG module defines the generic configuration  
data for a LISP Map-Resolver. The module can be extended by  
vendors to define vendor-specific configuration parameters  
and policies.
```

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This version of this YANG module is part of [RFC 6338](#); see
the RFC itself for full legal notices.

```
";
```

```
revision 2016-06-30 {
```

```
  description
```

```
    "Initial revision.";
```

```
  reference
```

```
    "https://tools.ietf.org/html/rfc6833";
```

```
}
```

```
identity mr {
```

```
  base lisp:lisp-role;
```

```
  description
```

```
    "LISP Map-Resolver.";
```

```
}
```

```
augment "/lisp:lisp/lisp:lisp-router-instances"  
+ "/lisp:lisp-router-instance/lisp:lisp-role" {
```

```

when "lisp:lisp-role-type = 'lisp-mr:mr'" {
  description
    "Augment is valid when LISP device type is Map-Resolver.";
}
description
  "This augments LISP devices list with Map-Resolver specific
  parameters.";
container map-resolver-cfg {

```

```

  description
    "Map-Resolver configuration parameters.";
  leaf mapping-system-type {
    type lisp:mapping-system-ref;
    description
      "A reference to the mapping system";
  }
  leaf ms-address {
    when "../mapping-system-type = 'lisp-mr:single-node-mapping-system'";

    type inet:ip-address;
    description
      "address to reach the Map Server when "
      + "lisp-mr:single-node-mapping-system is being used.";
  }
} //map-resolver-cfg
} //aug

// TBD Operational model/container
//   container cached-mappings {
//     config false;
//     uses mappings;
//   }
}
<CODE ENDS>

```

[7.](#) LISP Proxy ITR Module

This module captures the configuration data model of a LISP Proxy ITR [[RFC6832](#)]. The model may also capture some operational data elements.

[7.1.](#) Module Structure

```

module: ietf-lisp-pitr
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:li
  +--rw proxy-itr-cfg!
    +--rw servicing-eids
      | +--rw servicing-eid* [id]
      |   +--rw id          lisp:eid-id
      |   +--rw eid-address
      |     +--rw address-type          lisp-address-family-ref
      |     +--rw virtual-network-id?  instance-id-type
      |     +--rw (address)?
      |       +--:(no-address)
      |       | +--rw no-address?      empty
      |       +--:(ipv4)
      |       | +--rw ipv4?           inet:ipv4-address

```

```

      | +--:(ipv4-prefix)
      |   | +--rw ipv4-prefix?      inet:ipv4-prefix
      | +--:(ipv6)
      |   | +--rw ipv6?            inet:ipv6-address
      | +--:(ipv6-prefix)
      |   | +--rw ipv6-prefix?     inet:ipv6-prefix
      | +--:(mac)
      |   | +--rw mac?             yang:mac-address
      | +--:(distinguished-name)
      |   | +--rw distinguished-name? distinguished-name-type
      | +--:(as-number)
      |   | +--rw as-number?       inet:as-number
      | +--:(null-address)
      |   | +--rw null-address
      |   |   +--rw address?      empty
      | +--:(afi-list)
      |   | +--rw afi-list
      |   |   +--rw address-list*  simple-address
      | +--:(instance-id)
      |   | +--rw instance-id
      |   |   +--rw iid?           instance-id-type
      |   |   +--rw mask-length?  uint8
      |   |   +--rw address?      simple-address
      | +--:(as-number-lcaf)
      |   | +--rw as-number-lcaf
      |   |   +--rw as?           inet:as-number

```

```

|     +--rw address?    simple-address
+--:(application-data)
|   +--rw application-data
|     +--rw address?    simple-address
|     +--rw protocol?   uint8
|     +--rw ip-tos?     int32
|     +--rw local-port-low?  inet:port-number
|     +--rw local-port-high? inet:port-number
|     +--rw remote-port-low? inet:port-number
|     +--rw remote-port-high? inet:port-number
+--:(geo-coordinates)
|   +--rw geo-coordinates
|     +--rw latitude?    bits
|     +--rw latitude-degrees?  uint8
|     +--rw latitude-minutes?  uint8
|     +--rw latitude-seconds?  uint8
|     +--rw longitude?     bits
|     +--rw longitude-degrees? uint16
|     +--rw longitude-minutes? uint8
|     +--rw longitude-seconds? uint8
|     +--rw altitude?     int32
|     +--rw address?     simple-address

```

```

+--:(nat-traversal)
|   +--rw nat-traversal
|     +--rw ms-udp-port?  uint16
|     +--rw etr-udp-port? uint16
|     +--rw global-etr-rloc? simple-address
|     +--rw ms-rloc?     simple-address
|     +--rw private-etr-rloc? simple-address
|     +--rw rtr-rlocs*   simple-address
+--:(explicit-locator-path)
|   +--rw explicit-locator-path
|     +--rw hop* [hop-id]
|       +--rw hop-id    string
|       +--rw address?  simple-address
|       +--rw lrs-bits? bits
+--:(source-dest-key)
|   +--rw source-dest-key
|     +--rw source?    simple-address
|     +--rw dest?     simple-address
+--:(key-value-address)

```

```

|         | +--rw key-value-address
|         |   +--rw key?      simple-address
|         |   +--rw value?  simple-address
+--:(service-path)
|         | +--rw service-path
|         |   +--rw service-path-id?  service-path-id-type
|         |   +--rw service-index?    uint8
+--rw map-resolvers
| +--rw map-resolver* [id]
|   +--rw id          lisp:eid-id
|   +--rw eid
|     +--rw address-type          lisp-address-family-ref
|     +--rw virtual-network-id?  instance-id-type
|     +--rw (address)?
|       +--:(no-address)
|       | +--rw no-address?      empty
|       +--:(ipv4)
|       | +--rw ipv4?            inet:ipv4-address
|       +--:(ipv4-prefix)
|       | +--rw ipv4-prefix?    inet:ipv4-prefix
|       +--:(ipv6)
|       | +--rw ipv6?            inet:ipv6-address
|       +--:(ipv6-prefix)
|       | +--rw ipv6-prefix?    inet:ipv6-prefix
|       +--:(mac)
|       | +--rw mac?             yang:mac-address
|       +--:(distinguished-name)
|       | +--rw distinguished-name?  distinguished-name-type
|       +--:(as-number)

```

```

|         | +--rw as-number?          inet:as-number
|         | +--:(null-address)
|         | +--rw null-address
|         |   +--rw address?      empty
+--:(afi-list)
| +--rw afi-list
|   +--rw address-list*  simple-address
+--:(instance-id)
| +--rw instance-id
|   +--rw iid?           instance-id-type
|   +--rw mask-length?  uint8
|   +--rw address?      simple-address

```



```

+--:(as-number-lcaf)
|   +--rw as-number-lcaf
|       +--rw as?          inet:as-number
|       +--rw address?    simple-address
+--:(application-data)
|   +--rw application-data
|       +--rw address?          simple-address
|       +--rw protocol?        uint8
|       +--rw ip-tos?          int32
|       +--rw local-port-low?  inet:port-number
|       +--rw local-port-high? inet:port-number
|       +--rw remote-port-low? inet:port-number
|       +--rw remote-port-high? inet:port-number
+--:(geo-coordinates)
|   +--rw geo-coordinates
|       +--rw latitude?        bits
|       +--rw latitude-degrees? uint8
|       +--rw latitude-minutes? uint8
|       +--rw latitude-seconds? uint8
|       +--rw longitude?       bits
|       +--rw longitude-degrees? uint16
|       +--rw longitude-minutes? uint8
|       +--rw longitude-seconds? uint8
|       +--rw altitude?        int32
|       +--rw address?         simple-address
+--:(nat-traversal)
|   +--rw nat-traversal
|       +--rw ms-udp-port?     uint16
|       +--rw etr-udp-port?    uint16
|       +--rw global-etr-rloc? simple-address
|       +--rw ms-rloc?         simple-address
|       +--rw private-etr-rloc? simple-address
|       +--rw rtr-rlocs*       simple-address
+--:(explicit-locator-path)
|   +--rw explicit-locator-path
|       +--rw hop* [hop-id]

```

```

|       +--rw hop-id          string
|       +--rw address?        simple-address
|       +--rw lrs-bits?       bits
+--:(source-dest-key)
|   +--rw source-dest-key

```



```

|         +--rw iid?           instance-id-type
|         +--rw mask-length?  uint8
|         +--rw address?      simple-address
+--:(as-number-lcaf)
|   +--rw as-number-lcaf
|     +--rw as?              inet:as-number
|     +--rw address?        simple-address
+--:(application-data)
|   +--rw application-data
|     +--rw address?         simple-address
|     +--rw protocol?       uint8
|     +--rw ip-tos?         int32
|     +--rw local-port-low?  inet:port-number
|     +--rw local-port-high? inet:port-number
|     +--rw remote-port-low? inet:port-number
|     +--rw remote-port-high? inet:port-number
+--:(geo-coordinates)
|   +--rw geo-coordinates
|     +--rw latitude?        bits
|     +--rw latitude-degrees? uint8
|     +--rw latitude-minutes? uint8
|     +--rw latitude-seconds? uint8
|     +--rw longitude?       bits
|     +--rw longitude-degrees? uint16
|     +--rw longitude-minutes? uint8
|     +--rw longitude-seconds? uint8
|     +--rw altitude?        int32
|     +--rw address?         simple-address
+--:(nat-traversal)
|   +--rw nat-traversal
|     +--rw ms-udp-port?     uint16
|     +--rw etr-udp-port?    uint16
|     +--rw global-etr-rloc? simple-address
|     +--rw ms-rloc?         simple-address
|     +--rw private-etr-rloc? simple-address
|     +--rw rtr-rlocs*       simple-address
+--:(explicit-locator-path)
|   +--rw explicit-locator-path
|     +--rw hop* [hop-id]
|       +--rw hop-id         string
|       +--rw address?       simple-address
|       +--rw lrs-bits?      bits
+--:(source-dest-key)
|   +--rw source-dest-key
|     +--rw source?          simple-address
|     +--rw dest?           simple-address
+--:(key-value-address)
|   +--rw key-value-address

```

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```

|     |     +--rw key?      simple-address
|     |     +--rw value?   simple-address
|     +---:(service-path)
|         +--rw service-path
|             +--rw service-path-id?  service-path-id-type
|             +--rw service-index?    uint8
+--rw ttl?                          uint32
+--rw authoritative?                 bits
+--rw static?                         boolean
+--rw (locator-list)?
    +---:(negative-mapping)
    | +--rw map-reply-action?  map-reply-action
    +---:(positive-mapping)
        +--rw rlocs
            +--rw locator* [id]
                +--rw id                          string
                +--rw locator-address
                    | +--rw address-type          lisp-address-family-r
                    | +--rw virtual-network-id?   instance-id-type
                    | +--rw (address)?
                    |     +---:(no-address)
                    |     | +--rw no-address?      empty
                    |     +---:(ipv4)
                    |     | +--rw ipv4?            inet:ipv4-addre
                    |     +---:(ipv4-prefix)
                    |     | +--rw ipv4-prefix?    inet:ipv4-prefi
                    |     +---:(ipv6)
                    |     | +--rw ipv6?            inet:ipv6-addre
                    |     +---:(ipv6-prefix)
                    |     | +--rw ipv6-prefix?    inet:ipv6-prefi
                    |     +---:(mac)
                    |     | +--rw mac?            yang:mac-address
                    |     +---:(distinguished-name)
                    |     | +--rw distinguished-name? distinguished-n
                    |     +---:(as-number)
                    |     | +--rw as-number?      inet:as-number
                    |     +---:(null-address)
                    |     | +--rw null-address
                    |     |     +--rw address?    empty
                    |     +---:(afi-list)
                    |     | +--rw afi-list
                    |     |     +--rw address-list*  simple-address

```

```

|      +---:(instance-id)
|      |   +---rw instance-id
|      |       +---rw iid?           instance-id-type
|      |       +---rw mask-length?   uint8
|      |       +---rw address?      simple-address
|      +---:(as-number-lcaf)

```

```

|      +---rw as-number-lcaf
|      |   +---rw as?           inet:as-number
|      |   +---rw address?     simple-address
+---:(application-data)
|   +---rw application-data
|       +---rw address?       simple-address
|       +---rw protocol?     uint8
|       +---rw ip-tos?       int32
|       +---rw local-port-low? inet:port-number
|       +---rw local-port-high? inet:port-number
|       +---rw remote-port-low? inet:port-number
|       +---rw remote-port-high? inet:port-number
+---:(geo-coordinates)
|   +---rw geo-coordinates
|       +---rw latitude?      bits
|       +---rw latitude-degrees? uint8
|       +---rw latitude-minutes? uint8
|       +---rw latitude-seconds? uint8
|       +---rw longitude?     bits
|       +---rw longitude-degrees? uint16
|       +---rw longitude-minutes? uint8
|       +---rw longitude-seconds? uint8
|       +---rw altitude?     int32
|       +---rw address?      simple-address
+---:(nat-traversal)
|   +---rw nat-traversal
|       +---rw ms-udp-port?   uint16
|       +---rw etr-udp-port?  uint16
|       +---rw global-etr-rloc? simple-address
|       +---rw ms-rloc?       simple-address
|       +---rw private-etr-rloc? simple-address
|       +---rw rtr-rlocs*     simple-address
+---:(explicit-locator-path)
|   +---rw explicit-locator-path
|       +---rw hop* [hop-id]

```

```

|         |         +--rw hop-id      string
|         |         +--rw address?   simple-address
|         |         +--rw lrs-bits?  bits
|         +---:(source-dest-key)
|         |         +--rw source-dest-key
|         |         +--rw source?   simple-address
|         |         +--rw dest?    simple-address
|         +---:(key-value-address)
|         |         +--rw key-value-address
|         |         +--rw key?     simple-address
|         |         +--rw value?   simple-address
|         +---:(service-path)
|         |         +--rw service-path

```

```

|         |         +--rw service-path-id?  service-path-id-type
|         |         +--rw service-index?    uint8
+--rw priority?          uint8
+--rw weight?           uint8
+--rw multicast-priority? uint8
+--rw multicast-weight?  uint8
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:lisp-router-instance
  +--ro pitr-state
    +--ro map-cache
      +--ro mapping* [id]
        +--ro id          eid-id
        +--ro eid
          | +--ro address-type          lisp-address-family-ref
          | +--ro virtual-network-id?   instance-id-type
          | +--ro (address)?
          |   +---:(no-address)
          |   | +--ro no-address?       empty
          |   +---:(ipv4)
          |   | +--ro ipv4?             inet:ipv4-address
          |   +---:(ipv4-prefix)
          |   | +--ro ipv4-prefix?     inet:ipv4-prefix
          |   +---:(ipv6)
          |   | +--ro ipv6?             inet:ipv6-address
          |   +---:(ipv6-prefix)
          |   | +--ro ipv6-prefix?     inet:ipv6-prefix
          |   +---:(mac)
          |   | +--ro mac?             yang:mac-address
          |   +---:(distinguished-name)

```

```

|   |--ro distinguished-name?      distinguished-name-type
+--:(as-number)
|   |--ro as-number?              inet:as-number
+--:(null-address)
|   |--ro null-address
|       |--ro address?            empty
+--:(afi-list)
|   |--ro afi-list
|       |--ro address-list*       simple-address
+--:(instance-id)
|   |--ro instance-id
|       |--ro iid?                instance-id-type
|       |--ro mask-length?       uint8
|       |--ro address?            simple-address
+--:(as-number-lcaf)
|   |--ro as-number-lcaf
|       |--ro as?                 inet:as-number
|       |--ro address?            simple-address
+--:(application-data)
|   |--ro application-data

```

```

|   |--ro address?                simple-address
|   |--ro protocol?              uint8
|   |--ro ip-tos?                 int32
|   |--ro local-port-low?         inet:port-number
|   |--ro local-port-high?        inet:port-number
|   |--ro remote-port-low?        inet:port-number
|   |--ro remote-port-high?       inet:port-number
+--:(geo-coordinates)
|   |--ro geo-coordinates
|       |--ro latitude?           bits
|       |--ro latitude-degrees?   uint8
|       |--ro latitude-minutes?   uint8
|       |--ro latitude-seconds?   uint8
|       |--ro longitude?          bits
|       |--ro longitude-degrees?  uint16
|       |--ro longitude-minutes?  uint8
|       |--ro longitude-seconds?  uint8
|       |--ro altitude?           int32
|       |--ro address?            simple-address
+--:(nat-traversal)
|   |--ro nat-traversal

```

```

|         |--ro ms-udp-port?          uint16
|         |--ro etr-udp-port?         uint16
|         |--ro global-etr-rloc?     simple-address
|         |--ro ms-rloc?              simple-address
|         |--ro private-etr-rloc?    simple-address
|         |--ro rtr-rlocs*            simple-address
|     +---:(explicit-locator-path)
|         |--ro explicit-locator-path
|             |--ro hop* [hop-id]
|                 |--ro hop-id        string
|                 |--ro address?      simple-address
|                 |--ro lrs-bits?     bits
|     +---:(source-dest-key)
|         |--ro source-dest-key
|             |--ro source?            simple-address
|             |--ro dest?              simple-address
|     +---:(key-value-address)
|         |--ro key-value-address
|             |--ro key?                simple-address
|             |--ro value?              simple-address
|     +---:(service-path)
|         |--ro service-path
|             |--ro service-path-id?   service-path-id-type
|             |--ro service-index?     uint8
+---ro ttl?                            uint32
+---ro authoritative?                  bits
+---ro static?                          boolean

```

```

+---ro (locator-list)?
+---:(negative-mapping)
|   |--ro map-reply-action?  map-reply-action
+---:(positive-mapping)
+---ro rlocs
+---ro locator* [id]
+---ro id                                string
+---ro locator-address
|   |--ro address-type        lisp-address-family-r
|   |--ro virtual-network-id? instance-id-type
|   |--ro (address)?
|       +---:(no-address)
|           |--ro no-address?    empty
|       +---:(ipv4)

```



```

|   |   |--ro ipv4?                inet:ipv4-address
|   |   +---:(ipv4-prefix)
|   |   |--ro ipv4-prefix?       inet:ipv4-prefix
|   |   +---:(ipv6)
|   |   |--ro ipv6?                inet:ipv6-address
|   |   +---:(ipv6-prefix)
|   |   |--ro ipv6-prefix?       inet:ipv6-prefix
|   |   +---:(mac)
|   |   |--ro mac?                yang:mac-address
|   |   +---:(distinguished-name)
|   |   |--ro distinguished-name? distinguished-name
|   |   +---:(as-number)
|   |   |--ro as-number?         inet:as-number
|   |   +---:(null-address)
|   |   |--ro null-address
|   |   |   |--ro address?      empty
|   |   +---:(afi-list)
|   |   |--ro afi-list
|   |   |   |--ro address-list*  simple-address
|   |   +---:(instance-id)
|   |   |--ro instance-id
|   |   |   |--ro iid?          instance-id-type
|   |   |   |--ro mask-length?  uint8
|   |   |   |--ro address?      simple-address
|   |   +---:(as-number-lcaf)
|   |   |--ro as-number-lcaf
|   |   |   |--ro as?          inet:as-number
|   |   |   |--ro address?     simple-address
|   |   +---:(application-data)
|   |   |--ro application-data
|   |   |   |--ro address?      simple-address
|   |   |   |--ro protocol?    uint8
|   |   |   |--ro ip-tos?      int32
|   |   |   |--ro local-port-low? inet:port-number

```

```

|   |   |--ro local-port-high?    inet:port-number
|   |   |--ro remote-port-low?   inet:port-number
|   |   |--ro remote-port-high?  inet:port-number
|   |   +---:(geo-coordinates)
|   |   |--ro geo-coordinates
|   |   |   |--ro latitude?      bits
|   |   |   |--ro latitude-degrees? uint8

```


[7.2.](#) Module Definition

```
<CODE BEGINS> file "ietf-lisp-pitr@2016-06-30.yang"
module ietf-lisp-pitr {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-pitr";
  prefix lisp-pitr;
  import ietf-lisp {
    prefix lisp;
  }
  import ietf-lisp-address-types {
    prefix lacf;
  }
  import ietf-inet-types {
    prefix inet;
  }
  organization
    "IETF LISP (Locator/ID Separation Protocol) Working Group";
  contact
    "lisp@ietf.org";
  description
    "This YANG module defines the generic configuration
    data for a LISP PITR. The module can be extended by vendors
    to define vendor-specific configuration parameters and
    policies.

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    authors of the code. All rights reserved.

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    without modification, is permitted pursuant to, and subject
    to the license terms contained in, the Simplified BSD License
    set forth in Section 4.c of the IETF Trust's Legal Provisions
    Relating to IETF Documents
    (http://trustee.ietf.org/license-info).

    This version of this YANG module is part of RFC 6338; see
    the RFC itself for full legal notices.
    ";
  revision 2016-06-30 {
    description
      "Initial revision.";
    reference
      "https://tools.ietf.org/html/rfc6832";
  }
  identity pitr {
    base lisp:lisp-role;
    description
      "LISP PITR.";
  }
}
```

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```
}
augment "/lisp:lisp/lisp:lisp-router-instances"
+ "/lisp:lisp-router-instance/lisp:lisp-role" {
  when "lisp:lisp-role-type = 'lisp-pitr:pittr'" {
    description
      "Augment is valid when LISP device type is PITR.";
  }
  description
    "This augments LISP devices list with PITR specific
    parameters.";
  container proxy-itr-cfg {
    presence "LISP PITR operation enabled";
    description
      "Proxy-ITR configuration parameters.";

    uses lisp:servicing-eids-grouping;

    container map-resolvers {
      description
        "Map-Resolvers configured for PITR.";
      list map-resolver {
        key "id";
        description
          "List of Map-Resolvers configured for PITR.";
        leaf id {
          type lisp:eid-id;
          description
            "Id of EID for which the Map-Resolver is used.";
        }
        container eid {
          uses lcaf:lisp-address;
          description
            "EID for which the Map-Resolver is used.";
        }
        leaf-list address {
          type inet:ip-address;
          min-elements 1;
          description
            "List of Map-Resolver's addresses.";
        }
      }
    }
  }
  leaf itr-rlocs {
```

```
    type leafref {
      path "/lisp:lisp/lisp:locator-sets/lisp:locator-set/"
        + "lisp:locator-set-name";
    }
  description
```

```
    "Reference to a locator set that the Pitr includes in
      Map-Requests";
  }
  container map-cache{
    uses lisp:mappings;
    description
      "EID to RLOCs mappings cache.";
  }
}
}
augment "/lisp:lisp/lisp:lisp-router-instances"
+ "/lisp:lisp-router-instance/lisp:lisp-role" {
  when "lisp:lisp-role-type = 'lisp-pitr:pit'" {
    description
      "Augment is valid when LISP device type is Pitr.";
  }
  description
    "This augments LISP devices list state with Pitr specific
      parameters.";
  container pitr-state {
    config false;
    description
      "Pitr state.";
    container map-cache {
      uses lisp:mappings;
      description
        "EID to RLOCs mappings cache.";
    }
  }
}
}
}
<CODE ENDS>
```

8. LISP Proxy ETR Module

This module captures the configuration data model of a LISP Proxy ETR

[RFC6832]. The model may also capture some operational data elements.

8.1. Module Structure

```
module: ietf-lisp-petr
augment /lisp:lisp/lisp:lisp-router-instances/lisp:lisp-router-instance/lisp:li
  +--rw proxy-etr-cfg!
    +--rw servicing-eids
      +--rw servicing-eid* [id]
        +--rw id          lisp:eid-id
        +--rw eid-address
```

```
+--rw address-type          lisp-address-family-ref
+--rw virtual-network-id?   instance-id-type
+--rw (address)?
  +--:(no-address)
  | +--rw no-address?       empty
  +--:(ipv4)
  | +--rw ipv4?            inet:ipv4-address
  +--:(ipv4-prefix)
  | +--rw ipv4-prefix?    inet:ipv4-prefix
  +--:(ipv6)
  | +--rw ipv6?           inet:ipv6-address
  +--:(ipv6-prefix)
  | +--rw ipv6-prefix?    inet:ipv6-prefix
  +--:(mac)
  | +--rw mac?            yang:mac-address
  +--:(distinguished-name)
  | +--rw distinguished-name? distinguished-name-type
  +--:(as-number)
  | +--rw as-number?      inet:as-number
  +--:(null-address)
  | +--rw null-address
  |   +--rw address?      empty
  +--:(afi-list)
  | +--rw afi-list
  |   +--rw address-list* simple-address
  +--:(instance-id)
  | +--rw instance-id
  |   +--rw iid?          instance-id-type
  |   +--rw mask-length? uint8
```

```

|      +--rw address?          simple-address
+---:(as-number-lcaf)
|      +--rw as-number-lcaf
|      +--rw as?               inet:as-number
|      +--rw address?         simple-address
+---:(application-data)
|      +--rw application-data
|      +--rw address?          simple-address
|      +--rw protocol?         uint8
|      +--rw ip-tos?           int32
|      +--rw local-port-low?   inet:port-number
|      +--rw local-port-high?  inet:port-number
|      +--rw remote-port-low?  inet:port-number
|      +--rw remote-port-high? inet:port-number
+---:(geo-coordinates)
|      +--rw geo-coordinates
|      +--rw latitude?         bits
|      +--rw latitude-degrees? uint8
|      +--rw latitude-minutes? uint8

```

```

|      +--rw latitude-seconds? uint8
|      +--rw longitude?        bits
|      +--rw longitude-degrees? uint16
|      +--rw longitude-minutes? uint8
|      +--rw longitude-seconds? uint8
|      +--rw altitude?         int32
|      +--rw address?          simple-address
+---:(nat-traversal)
|      +--rw nat-traversal
|      +--rw ms-udp-port?      uint16
|      +--rw etr-udp-port?     uint16
|      +--rw global-etr-rloc?  simple-address
|      +--rw ms-rloc?          simple-address
|      +--rw private-etr-rloc? simple-address
|      +--rw rtr-rlocs*        simple-address
+---:(explicit-locator-path)
|      +--rw explicit-locator-path
|      +--rw hop* [hop-id]
|      +--rw hop-id           string
|      +--rw address?         simple-address
|      +--rw lrs-bits?        bits
+---:(source-dest-key)

```

```

|   +--rw source-dest-key
|       +--rw source?    simple-address
|       +--rw dest?     simple-address
+--:(key-value-address)
|   +--rw key-value-address
|       +--rw key?      simple-address
|       +--rw value?   simple-address
+--:(service-path)
    +--rw service-path
        +--rw service-path-id?  service-path-id-type
        +--rw service-index?    uint8

```

8.2. Module Definition

```

<CODE BEGINS> file "ietf-lisp-petr@2016-06-30.yang"
module ietf-lisp-petr {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-petr";
  prefix lisp-petr;
  import ietf-lisp {
    prefix lisp;
  }
  organization
    "IETF LISP (Locator/ID Separation Protocol) Working Group";
  contact
    "lisp@ietf.org";
  description

```

"This YANG module defines the generic configuration data for a LISP PETR. The module can be extended by vendors to define vendor-specific configuration parameters and policies.

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This version of this YANG module is part of [RFC 6338](#); see


```

    the RFC itself for full legal notices.
";
revision 2016-06-30 {
  description
    "Initial revision.";
  reference
    "https://tools.ietf.org/html/rfc6832";
}
identity petr {
  base lisp:lisp-role;
  description
    "LISP PETR.";
}
augment "/lisp:lisp/lisp:lisp-router-instances"
+ "/lisp:lisp-router-instance/lisp:lisp-role" {
  when "lisp:lisp-role-type = 'lisp-petr:petr'" {
    description
      "Augment is valid when LISP device type is PETR.";
  }
  description
    "This augments LISP devices list with PETR specific
    parameters.";
  container proxy-etr-cfg {
    presence "LISP PETR operation enabled";
    description
      "Proxy ETR configuration parameters.";

    uses lisp:servicing-eids-grouping;
  }//proxy-etr-cfg
}
}
<CODE ENDS>

```

[9.](#) LISP Address Types

This module captures the various LISP address types, and is an essential building block used in other LISP modules.

[9.1.](#) Module Definition

```
<CODE BEGINS> file "ietf-lisp-address-types@2015-11-05.yang"
```

```

module ietf-lisp-address-types {
  namespace "urn:ietf:params:xml:ns:yang:ietf-lisp-address-types";
  prefix laddr;
  import ietf-inet-types {
    prefix inet;
    revision-date 2013-07-15;
  }
  import ietf-yang-types {
    prefix yang;
    revision-date 2013-07-15;
  }
  organization
    "IETF LISP (Locator/ID Separation Protocol) Working Group";
  contact
    "lisp@ietf.org";
  description
    "This YANG module defines the LISP Canonical Address Formats
    (LCAF) for LISP. The module can be extended by vendors to
    define vendor-specific parameters.

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

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    the RFC itself for full legal notices.

";
  revision 2015-11-05 {
    description
      "Initial revision.";
    reference
      "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10";
  }
}

```

```

identity lisp-address-family {

```

```

description
  "Base identity from which identities describing LISP address
  families are derived.";
}
identity no-address-afi {
  base lisp-address-family;
  description
    "IANA Reserved.";
}
identity ipv4-afi {
  base lisp-address-family;
  description
    "IANA IPv4 address family.";
}
identity ipv4-prefix-afi {
  base lisp-address-family;
  description
    "IANA IPv4 address family prefix.";
}
identity ipv6-afi {
  base lisp-address-family;
  description
    "IANA IPv6 address family.";
}
identity ipv6-prefix-afi {
  base lisp-address-family;
  description
    "IANA IPv6 address family prefix.";
}
identity mac-afi {
  base lisp-address-family;
  description
    "IANA MAC address family.";
}
identity distinguished-name-afi {
  base lisp-address-family;
  description
    "IANA Distinguished Name address family.";
}
identity as-number-afi {
  base lisp-address-family;
  description
    "IANA AS Number address family.";
}
identity lcaf {
  base lisp-address-family;
  description

```

```
        "IANA LISP Canonical Address Format address family.";
    }
    identity null-address-lcaf {
        base lcaf;
        description
            "Null body LCAF type.";
    }
    identity afi-list-lcaf {
        base lcaf;
        description
            "AFI-List LCAF type.";
    }
    identity instance-id-lcaf {
        base lcaf;
        description
            "Instance-ID LCAF type.";
    }
    identity as-number-lcaf {
        base lcaf;
        description
            "AS Number LCAF type.";
    }
    identity application-data-lcaf {
        base lcaf;
        description
            "Application Data LCAF type.";
    }
    identity geo-coordinates-lcaf {
        base lcaf;
        description
            "Geo-coordinates LCAF type.";
    }
    identity opaque-key-lcaf {
        base lcaf;
        description
            "Opaque Key LCAF type.";
    }
    identity nat-traversal-lcaf {
        base lcaf;
        description
            "NAT-Traversal LCAF type.";
    }
    identity nonce-locator-lcaf {
        base lcaf;
        description
            "Nonce-Locator LCAF type.";
```

```
}  
identity multicast-info-lcaf {
```

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```
    base lcaf;  
    description  
        "Multicast Info LCAF type.";  
}  
identity explicit-locator-path-lcaf {  
    base lcaf;  
    description  
        "Explicit Locator Path LCAF type.";  
}  
identity security-key-lcaf {  
    base lcaf;  
    description  
        "Security Key LCAF type.";  
}  
identity source-dest-key-lcaf {  
    base lcaf;  
    description  
        "Source/Dest LCAF type.";  
}  
identity replication-list-lcaf {  
    base lcaf;  
    description  
        "Replication-List LCAF type.";  
}  
identity json-data-model-lcaf {  
    base lcaf;  
    description  
        "JSON Data Model LCAF type.";  
}  
identity key-value-address-lcaf {  
    base lcaf;  
    description  
        "Key/Value Address LCAF type.";  
}  
identity encapsulation-format-lcaf {  
    base lcaf;  
    description  
        "Encapsulation Format LCAF type.";  
}
```

```
identity service-path-lcaf {
  base lcaf;
  description
    "Service Path LCAF type.";
}
typedef instance-id-type {
  type uint32 {
    range "0..16777215";
  }
}
```

```
  description
    "Defines the range of values for an Instance ID.";
}
typedef service-path-id-type {
  type uint32 {
    range "0..16777215";
  }
  description
    "Defines the range of values for a Service Path ID.";
}
typedef distinguished-name-type {
  type string;
  description
    "Distinguished Name address.";
  reference
    "http://www.iana.org/assignments/address-family-numbers/
    address-family-numbers.xhtml";
}
typedef simple-address {
  type union {
    type inet:ip-address;
    type inet:ip-prefix;
    type yang:mac-address;
    type distinguished-name-type;
    type inet:as-number;
  }
  description
    "Union of address types that can be part of LCAFs.";
}
typedef lisp-address-family-ref {
  type identityref {
```

```

    base lisp-address-family;
  }
  description
    "LISP address family reference.";
}
typedef lcaf-ref {
  type identityref {
    base lcaf;
  }
  description
    "LCAF types reference.";
}

grouping lisp-address {
  description
    "Generic LISP address.";
}

```

```

leaf address-type {
  type lisp-address-family-ref;
  mandatory true;
  description
    "Type of the LISP address.";
}
leaf virtual-network-id {
  type instance-id-type;
  description
    "Virtual Network Identifier (instance-id) of the address.";
}
choice address {
  description
    "Various LISP address types, including IP, MAC, and LCAF.";

  leaf no-address {
    when "../address-type = 'laddr:no-addr-afi'" {
      description
        "When AFI is 0.";
    }
    type empty;
    description
      "No address.";
  }
  leaf ipv4 {

```

```

when "../address-type = 'laddr:ipv4-afi'" {
  description
    "When AFI is IPv4.";
}
type inet:ipv4-address;
description
  "IPv4 address.";
}
leaf ipv4-prefix {
  when "../address-type = 'laddr:ipv4-prefix-afi'" {
    description
      "When AFI is IPv4.";
  }
  type inet:ipv4-prefix;
  description
    "IPv4 prefix.";
}
leaf ipv6 {
  when "../address-type = 'laddr:ipv6-afi'" {
    description
      "When AFI is IPv6.";
  }
  type inet:ipv6-address;
}

```

```

  description
    "IPv6 address.";
}
leaf ipv6-prefix {
  when "../address-type = 'laddr:ipv6-prefix-afi'" {
    description
      "When AFI is IPv6.";
  }
  type inet:ipv6-prefix;
  description
    "IPv6 address.";
}
leaf mac {
  when "../address-type = 'laddr:mac-afi'" {
    description
      "When AFI is MAC.";
  }
  type yang:mac-address;
}

```



```

    description
      "MAC address.";
  }
  leaf distinguished-name {
    when "../address-type = 'laddr:distinguished-name-afi'" {
      description
        "When AFI is distinguished-name.";
    }
    type distinguished-name-type;
    description
      "Distinguished Name address.";
  }
  leaf as-number {
    when "../address-type = 'laddr:as-number-afi'" {
      description
        "When AFI is as-number.";
    }
    type inet:as-number;
    description
      "AS Number.";
  }
  container null-address {
    when "../address-type = 'laddr:null-address-lcaf'" {
      description
        "When LCAF type is null.";
    }
    description
      "Null body LCAF type";
    leaf address {
      type empty;
    }
  }

```

```

    description
      "AFI address.";
  }
  container afi-list {
    when "../address-type = 'laddr:afi-list-lcaf'" {
      description
        "When LCAF type is AFI-List.";
    }
    description
      "AFI-List LCAF type.";
  }

```

```

reference
  "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
  #section-4.16.1";
leaf-list address-list {
  type simple-address;
  description
    "List of AFI addresses.";
}
}
container instance-id {
  when "../address-type = 'laddr:instance-id-lcaf'" {
    description
      "When LCAF type is Instance-ID";
  }
  description
    "Instance ID LCAF type.";
  reference
    "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
    #section-4.2";
  leaf iid {
    type instance-id-type;
    description
      "Instance ID value.";
  }
  leaf mask-length {
    type uint8;
    description
      "Mask length.";
  }
  leaf address {
    type simple-address;
    description
      "AFI address.";
  }
}
container as-number-lcaf {
  when "../address-type = 'laddr:as-number-lcaf'" {

```

```

  description
    "When LCAF type is AS-Number.";
}
description

```

```

    "AS Number LCAF type.";
reference
    "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
    #section-4.3";
leaf as {
    type inet:as-number;
    description
        "AS number.";
}
leaf address {
    type simple-address;
    description
        "AFI address.";
}
}
container application-data {
    when "../address-type = 'laddr:application-data-lcaf'" {
        description
            "When LCAF type is Application Data.";
    }
    description
        "Application Data LCAF type.";
reference
    "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
    #section-4.4";
leaf address {
    type simple-address;
    description
        "AFI address.";
}
leaf protocol {
    type uint8;
    description
        "Protocol number.";
}
leaf ip-tos {
    type int32;
    description
        "Type of service field.";
}
leaf local-port-low {
    type inet:port-number;
    description
        "Low end of local port range.";
}

```

```
    }
    leaf local-port-high {
      type inet:port-number;
      description
        "High end of local port range.";
    }
    leaf remote-port-low {
      type inet:port-number;
      description
        "Low end of remote port range.";
    }
    leaf remote-port-high {
      type inet:port-number;
      description
        "High end of remote port range.";
    }
  }
}
container geo-coordinates {
  when "../address-type = 'laddr:geo-coordinates-lcaf'" {
    description
      "When LCAF type is Geo-coordinates.";
  }
  description
    "Geo-coordinates LCAF type.";
  reference
    "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
    #section-4.5";
  leaf latitude {
    type bits {
      bit N {
        description
          "Latitude bit.";
      }
    }
  }
  description
    "Bit that selects between North and South latitude.";
}
leaf latitude-degrees {
  type uint8 {
    range "0 .. 90";
  }
  description
    "Degrees of latitude.";
}
leaf latitude-minutes {
  type uint8 {
    range "0..59";
  }
}
```

}

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```
    description
      "Minutes of latitude.";
  }
  leaf latitude-seconds {
    type uint8 {
      range "0..59";
    }
    description
      "Seconds of latitude.";
  }
  leaf longitude {
    type bits {
      bit E {
        description
          "Longitude bit.";
      }
    }
    description
      "Bit that selects between East and West longitude.";
  }
  leaf longitude-degrees {
    type uint16 {
      range "0 .. 180";
    }
    description
      "Degrees of longitude.";
  }
  leaf longitude-minutes {
    type uint8 {
      range "0..59";
    }
    description
      "Minutes of longitude.";
  }
  leaf longitude-seconds {
    type uint8 {
      range "0..59";
    }
    description
      "Seconds of longitude.";
```

```
}
leaf altitude {
  type int32;
  description
    "Height relative to sea level in meters.";
}
leaf address {
  type simple-address;
```

```
    description
      "AFI address.";
  }
}
container nat-traversal {
  when "../address-type = 'laddr:nat-traversal-lcaf'" {
    description
      "When LCAF type is NAT-Traversal.";
  }
  description
    "NAT-Traversal LCAF type.";
  reference
    "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
    #section-4.6";
  leaf ms-udp-port {
    type uint16;
    description
      "Map-Server UDP port (set to 4342).";
  }
  leaf etr-udp-port {
    type uint16;
    description
      "ETR UDP port.";
  }
  leaf global-etr-rloc {
    type simple-address;
    description
      "Global ETR RLOC address.";
  }
  leaf ms-rloc {
    type simple-address;
    description
      "Map-Server RLOC address.";
```

```

}
leaf private-etr-rloc {
  type simple-address;
  description
    "Private ETR RLOC address.";
}
leaf-list rtr-rlocs {
  type simple-address;
  description
    "List of RTR RLOC addresses.";
}
}
container explicit-locator-path {
  when "../address-type = 'laddr:explicit-locator-path-lcaf'" {
    description

```

```

    "When LCAF type type is Explicit Locator Path.";
}
description
  "Explicit Locator Path LCAF type.";
reference
  "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
  #section-4.9";
list hop {
  key "hop-id";
  ordered-by user;
  description
    "List of locator hops forming the explicit path.";
  leaf hop-id {
    type string {
      length "1..64";
    }
    description
      "Unique identifier for the hop.";
  }
  leaf address {
    type simple-address;
    description
      "AFI address.";
  }
  leaf lrs-bits {
    type bits{

```

```

        bit lookup {
            description
                "Lookup bit.";
        }
        bit rloc-probe {
            description
                "RLOC-probe bit.";
        }
        bit strict {
            description
                "Strict bit.";
        }
    }
    description
        "Flag bits per hop.";
}
}
}
container source-dest-key {
    when "../address-type = 'laddr:source-dest-key-lcaf'" {
        description
            "When LCAF type type is Source/Dest.";
    }
}

```

```

    }
    description
        "Source/Dest LCAF type.";
    reference
        "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
        #section-4.11";
    leaf source {
        type simple-address;
        description
            "Source address.";
    }
    leaf dest {
        type simple-address;
        description
            "Destination address.";
    }
}
}
container key-value-address {
    when "../address-type = 'laddr:key-value-address-lcaf'" {

```



```

        description
            "When LCAF type type is Key/Value Address.";
    }
    description
        "Key/Value Address LCAF type.";
    reference
        "http://tools.ietf.org/html/draft-ietf-lisp-lcaf-10
        #section-4.11";
    leaf key {
        type simple-address;
        description
            "Address as Key.";
    }
    leaf value {
        type simple-address;
        description
            "Address as Value.";
    }
}
container service-path {
    when "../address-type = 'laddr:service-path-lcaf'" {
        description
            "When LCAF type service path identifier.";
    }
    description
        "Service Path LCAF type.";
    reference
        "http://tools.ietf.org/html/draft-ermagan-lisp-nsh-00";
    leaf service-path-id {

```

```

        type service-path-id-type;
        description
            "Service path identifier for the path for NSH header";
    }
    leaf service-index {
        type uint8;
        description
            "Service path index for NSH header";
    }
}
}
}
}

```

}

<CODE ENDS>

10. Acknowledgments

The tree view and the YANG model shown in this document have been formatted with the 'pyang' tool.

11. IANA Considerations

This memo includes no request to IANA.

12. Security Considerations

Security Considerations TBD

13. Normative References

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