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YANG Data Model for IS-IS SRv6
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Abstract

This document defines a YANG data model that can be used to configure and manage IS-IS Segment Routing over the IPv6 Data Plane.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Overview

YANG [RFC7950] is a data definition language used to define the contents of a conceptual data store that allows networked devices to be managed using NETCONF [RFC6241]. YANG is proving relevant beyond its initial confines, as bindings to other interfaces (e.g., REST) and encodings other than XML (e.g., JSON) are being defined. Furthermore, YANG data models can be used as the basis for implementation of other interfaces, such as CLI and programmatic APIs.

This document defines a YANG data model that can be used to configure and manage IS-IS Segment Routing over the IPv6 Data Plane [RFC9352], and it is an augmentation to the IS-IS YANG data model [RFC9130].

2. IS-IS SRv6

This document defines a model for IS-IS SRv6 feature. It is an augmentation of the IS-IS base model.

The IS-IS SRv6 YANG module requires support for the base srv6 module[I-D.ietf-spring-srv6-yang], which defines the global srv6 configuration independent of any specific routing protocol configuration, and support of IS-IS base model [RFC9130] which defines basic IS-IS configuration and state. This module uses types defined in [RFC6991]. It also references [RFC8349], and [RFC9020].

The figure below describes the overall structure of the isis-srv6 YANG module:

```
module: ietf-isis-srv6
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis:
    +--rw srv6-cfg
    |  +--rw enable?                 boolean
    |  +--rw default-locator?        boolean
    |  +--rw locator-name*           -> /rt:routing/sr:segment-routing
    |                                /srv6:srv6/locators/locator/name
    |  +--rw persistent-end-x-sid?   boolean
    +--rw micro-loop-avoidance
       +--rw srv6-enable?             boolean
       +--rw srv6-rib-update-delay?   uint16
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:fast-reroute:
    +--rw srv6-ti-lfa {srv6-ti-lfa}?
       +--rw enable?   boolean
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:database
          /isis:levels/isis:lsp/isis:router-capabilities:
    +--ro v6-capability
    |  +--ro flags?   identityref
    +--ro msd
       +--ro max-sl?        uint8
       +--ro max-end-pop?   uint8
       +--ro max-h_encap?   uint8
       +--ro max-end_d?     uint8
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:database
          /isis:levels/isis:lsp/isis:extended-is-neighbor/isis:neighbor:
    +--ro srv6-adjacency-sids
       +--ro end-x-sid* [sid]
          +--ro func-flags?           identityref
          +--ro algorithm?            uint8
          +--ro weight?               uint8
          +--ro endpoint-func
          |  +--ro flags?                      identityref
          |  +--ro endpoint-func?              identityref
          |  +--ro undefined-endpoint-func?    uint16
```

```
          +--ro sid                    srv6-sid-value
          +--ro neighbor-id?           isis:system-id
          +--ro srv6-sid-structure
             +--ro lb-length?    uint8
             +--ro ln-length?    uint8
             +--ro fun-length?   uint8
             +--ro arg-length?   uint8
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:database
          /isis:levels/isis:lsp/isis:mt-is-neighbor/isis:neighbor:
    +--ro srv6-adjacency-sids
       +--ro end-x-sid* [sid]
          +--ro func-flags?           identityref
          +--ro algorithm?            uint8
          +--ro weight?               uint8
          +--ro endpoint-func
          |  +--ro flags?                      identityref
          |  +--ro endpoint-func?              identityref
          |  +--ro undefined-endpoint-func?   uint16
          +--ro sid                    srv6-sid-value
          +--ro neighbor-id?           isis:system-id
          +--ro srv6-sid-structure
             +--ro lb-length?    uint8
             +--ro ln-length?    uint8
             +--ro fun-length?   uint8
             +--ro arg-length?   uint8
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:database
          /isis:levels/isis:lsp:
    +--ro srv6-locators
       +--ro srv6-locator* []
          +--ro mt-id?             uint16
          +--ro locator-entries* []
             +--ro flags*                    identityref
             +--ro metric?                   uint32
             +--ro algorithm?                uint8
             +--ro loc-size?                 uint8
             +--ro locator?                  inet:ipv6-address-no-zone
             +--ro sub-tlv-len?              uint8
             +--ro srv6-end-sids
             |  +--ro end-sid* [sid]
             |     +--ro flags*                identityref
             |     +--ro endpoint-func
             |     |  +--ro flags*                      identityref
             |     |  +--ro endpoint-func?              identityref
             |     |  +--ro undefined-endpoint-func?   uint16
             |     +--ro sid                   srv6-sid-value
             |     +--ro srv6-sid-structure
```

```
            |        +--ro lb-length?    uint8
            |        +--ro ln-length?    uint8
            |        +--ro fun-length?   uint8
            |        +--ro arg-length?   uint8
            +--ro external-prefix-flag?    boolean
            +--ro readvertisement-flag?    boolean
            +--ro node-flag?               boolean
            +--ro ipv4-source-router-id?   inet:ipv4-address
            +--ro ipv6-source-router-id?   inet:ipv6-address
  augment /rt:routing/rt:control-plane-protocols
          /rt:control-plane-protocol/isis:isis/isis:interfaces
          /isis:interface/isis:adjacencies/isis:adjacency:
    +--ro end-x-sid* [value]
       +--ro value                   srv6-sid-value
       +--ro weight?                 uint8
       +--ro protection-requested?   boolean
       +--ro persistent?             boolean
       +--ro algorithm?              uint8
       +--ro endpoint-func
          +--ro flags?                     identityref
          +--ro endpoint-func?             identityref
          +--ro undefined-endpoint-func?   uint16
```

3. IS-IS SRv6 configuration

3.1. SRv6 activation

IS-IS SRv6 activation is achieved by setting the "enable" leaf to true. This action triggers the advertisement of SRv6 extensions according to the configuration parameters defined in the base SRv6 module.

3.2. Locator setting

The basic SRv6 module defines the relevant locator leaves. When the IS-IS SRv6 module is enabled, set the locator using the following approach: first, check if the default locator is being used. If it is not, then use the specified locator. This strategy is implemented by adding the "default-locator" and "locator-name" leaves. .

3.3. IP Fast reroute

The IS-IS SRv6 model augments the fast-reroute container in the IS-IS base module with a leaf that enables TI-LFA (Topology Independent LFA).

3.4. Microloop avoidance

The IS-IS SRv6 model augments the micro-loop-avoidance container. This container includes the "srv6-enable" leaf, which activates SRv6 for microloop avoidance.

4. IS-IS SRv6 YANG Module

<CODE BEGINS> file "ietf-isis-srv6@2025-03-01.yang"

```
module ietf-isis-srv6 {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:"
          + "yang:ietf-isis-srv6";
  prefix isis-srv6;

  import ietf-routing {
    prefix rt;
    reference
      "RFC8349: A YANG Data Model for
                Routing Management (NMDA Version)";
  }
  import ietf-isis {
    prefix isis;
    reference
      "RFC 9130: YANG Data Model for the IS-IS Protocol";
  }
  import ietf-inet-types {
    prefix inet;
    reference
      "RFC 6991:Common YANG Data Types";
  }
  import ietf-segment-routing {
    prefix sr;
    reference
      "RFC 9020: YANG Data Model for Segment
                 Routing";
  }
  import ietf-srv6-base {
    prefix srv6;
    reference
      "draft-ietf-spring-srv6-yang: YANG Data
       Model for SRv6 Base and Static";
  }

  organization
    "IETF LSR - Link State Routing Working Group";
  contact
    "WG Web:   <https://datatracker.ietf.org/wg/lsr>
```

```
        WG List:  <mailto:lsr@ietf.org>

        Author:    Zhibo Hu
                   <mailto:huzhibo@huawei.com>
        Author:    Dan Ye
                   <mailto:daye@cisco.com>
        Author:    Yingzhen Qu
                   <mailto:yingzhen.ietf@gmail.com>
        Author:    Qiufang Ma
                  <mailto:maqiufang1@huawei.com>
      ";
    description
      "The YANG module defines the configuration and operational state
       for IS-IS extension to support Segment Routing over IPv6 data
       plane as defined in RFC9352.

       This YANG model conforms to the Network Management
       Datastore Architecture (NDMA) as described in RFC 8342.

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       authors of the code.  All rights reserved.

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       set forth in Section 4.c of the IETF Trust's Legal Provisions
       Relating to IETF Documents
       (https://trustee.ietf.org/license-info).

       This version of this YANG module is part of RFC XXXX
       (https://www.rfc-editor.org/info/rfcXXXX); see the RFC itself
       for full legal notices.

       The key words 'MUST', 'MUST NOT', 'REQUIRED', 'SHALL', 'SHALL
       NOT', 'SHOULD', 'SHOULD NOT', 'RECOMMENDED', 'NOT RECOMMENDED',
       'MAY', and 'OPTIONAL' in this document are to be interpreted as
       described in BCP 14 (RFC 2119) (RFC 8174) when, and only when,
       they appear in all capitals, as shown here.";

    revision 2025-03-01 {
      description
        "Initial revision.";
      reference
        "RFC XXXX: YANG Data Model for IS-IS SRv6";
    }

    /* Identities */
```

```
  identity SRV6_END_FUNC_TYPE {
    description
      "Base identity type for srv6 endpoint function code points.";
  }

  identity SRV6_END_FUNC_PSP_USP_USD {
    base SRV6_END_FUNC_TYPE;
    description
      "End (May support PSP, USP, USD).";
  }

  identity SRV6_END_X_FUNC_PSP_USP_USD {
    base SRV6_END_FUNC_TYPE;
    description
      "End.X(May support PSP, USP, USD)";
  }

  identity SRV6_END_T_FUNC_PSP_USP_USD {
    base SRV6_END_FUNC_TYPE;
    description
      "END (May support PSP, USP, USD)";
  }

  identity SRV6_END_FUNC_DX6 {
    base SRV6_END_FUNC_TYPE;
    description
      "End.DX6.";
  }

  identity SRV6_END_FUNC_DX4 {
    base SRV6_END_FUNC_TYPE;
    description
      "End.DX4.";
  }

  identity SRV6_END_FUNC_DT6 {
    base SRV6_END_FUNC_TYPE;
    description
      "End.DT6.";
  }

  identity SRV6_END_FUNC_DT4 {
    base SRV6_END_FUNC_TYPE;
    description
      "End.DT4.";
  }

  identity SRV6_END_FUNC_DT64 {
```

```
    base SRV6_END_FUNC_TYPE;
    description
      "End.DT64.";
  }

  identity SRV6_END_FUNC_OP {
    base SRV6_END_FUNC_TYPE;
    description
      "END.OP .";
  }

  identity SRV6_END_FUNC_OTP {
    base SRV6_END_FUNC_TYPE;
    description
      "END.OTP .";
  }

  identity srv6-capability-bit {
    description
      "Base identity for SRv6 capability sub-TLV bits.";
    reference
      "RFC 9352: IS-IS Extensions to Support Segment Routing over
       the IPv6 Data Plane";
  }

  identity o-bit {
    base srv6-capability-bit;
    description
      "O-flag.";
    reference
      "RFC 9259: Operations, Administration, and Maintenance (OAM)
       in Segment Routing over IPv6 (SRv6)";
  }

  identity srv6-end-sid-bit {
    description
      "Base identity for SRv6 End SID sub-TLV bits.";
  }

  identity srv6-locator-bit {
    description
      "Base identity for SRv6 locator TLV bits.";
  }

  identity d-bit {
    base srv6-locator-bit;
    description
      "D-flag. up/down bit as described in RFC 5305.";
```

```
  }

  identity srv6-endx-sid-bit {
    description
      "Base identity for SRv6 End.X SID sub-TLV bits.";
  }

  identity b-bit {
    base srv6-endx-sid-bit;
    description
      "B-flag. Backup flag. If set, the End.X sid is
       eligible for protection.";
  }

  identity s-bit {
    base srv6-endx-sid-bit;
    description
      "S-flag. Set flag. When set, the End.X sid refers to
       a set of adjacencies (and therefore May be assigned
       to other adjacencies as well.";
  }

  identity p-bit {
    base srv6-endx-sid-bit;
    description
      "P-flag. Persistent flag. When set, the End.X sid is
       persistently allocated, i.e., the End.x sid value
       remains consistent across router restart and/or
       interface flap.";
  }

  /* typedef */

  typedef srv6-sid-value {
    type inet:ipv6-address-no-zone;
    description
      "16 Octets encoded sid value.";
  }

  /* Features */

  feature srv6-ti-lfa {
    description
      "Enhance SRv6 FRR with ti-lfa support";
  }

  /* Groupings */
```

```
    grouping srv6-sid-structures {
      description
        "This group defines SRv6 SID Structure sub-sub-TLV.";
      container srv6-sid-structure {
        description
          "SRv6 SID Structure sub-sub-TLV is used to advertise
           the structure of the SRv6 SID as defined in RFC 8986.";
        leaf lb-length {
          type uint8;
          description
            "SRv6 SID Locator Block length in bits.";
        }
        leaf ln-length {
          type uint8;
          description
            "SRv6 SID Locator Node length in bits.";
        }
        leaf fun-length {
          type uint8;
          description
            "SRv6 SID Function length in bits.";
        }
        leaf arg-length {
          type uint8;
          description
            "SRv6 SID Argument length in bits.";
        }
      }
    }

    grouping srv6-capability {
      description
        "SRV6 capability grouping.";
      container v6-capability {
        description
          "SRv6 capability.";
        leaf-list flags {
          type identityref {
            base srv6-capability-bit;
          }
          description
            "SRv6 Capability sub-TLV flag bits list.";
        }
      }
    }

    grouping srv6-endpoint-func {
      description
```

```
        "This group defines srv6 endpoint function";
      container endpoint-func {
        description
          "Srv6 Endpoint function Descriptor.";
        leaf-list flags {
          type identityref {
            base srv6-end-sid-bit;
          }
          description
            "SRv6 End SID sub-TLV  flag bits list. No flags
             are currently being defined.";
        }
        leaf endpoint-func {
          type identityref {
            base isis-srv6:SRV6_END_FUNC_TYPE;
          }
          description
            "The endpoint function.";
        }
        leaf undefined-endpoint-func {
          type uint16;
          description
            "Unknown endpoint func value.";
        }
      }
    }

    grouping srv6-end-sid {
      description
        "SRv6 Segment Identifier(SID) with Endpoint functions.";
      leaf-list flags {
        type identityref {
          base srv6-end-sid-bit;
        }
        description
          "SRv6 end sid flags.";
      }
      uses srv6-endpoint-func;
      leaf sid {
        type srv6-sid-value;
        description
          "SRV6 sid value.";
      }
      // sub-sub-tlvs
      uses srv6-sid-structures;
    }

    grouping srv6-locator {
```

```
      description
        "This group defines srv6 locator tlv.";
      leaf mt-id {
        type uint16 {
          range "0..4095";
        }
        description
          "Multitopology Identifier as defined in RFC5120.";
      }
      list locator-entries {
        description
          "Locator entries in an SRv6 locator tlv.";
        leaf-list flags {
          type identityref {
            base srv6-locator-bit;
          }
          description
            "Flags for SRv6 locator TLV.";
        }
        leaf metric {
          type uint32;
          description
            "Metric value.";
        }
        leaf algorithm {
          type uint8;
          description
            "Associated algorithm.";
        }
        leaf loc-size {
          type uint8;
          description
            "Number of bits in the locator field.";
        }
        leaf locator {
          type inet:ipv6-address-no-zone;
          description
            "Advertised SRV6 locator.";
        }
        leaf sub-tlv-len {
          type uint8;
          description
            "Number of octets used by sub-tlvs.";
        }
        container srv6-end-sids {
          description
            "This contains list of srv6 end sids.";
          list end-sid {
```

```
            key "sid";
            description
              "List of SRV6 SRv6 Segment Identifiers (SID)
               with Endpoint functions.";
            uses srv6-end-sid;
          }
        }
        uses isis:prefix-reachability-attributes;
        uses isis:prefix-ipv4-source-router-id;
        uses isis:prefix-ipv6-source-router-id;
      }
    }

    grouping srv6-adjacency-sid {
      description
        "SRv6 sid associated with an adjacency.";
      leaf-list func-flags {
        type identityref {
          base srv6-endx-sid-bit;
        }
        description
          "Flags for SRv6 end x SID.";
      }
      leaf algorithm {
        type uint8;
        description
          "Associated algorithm.";
      }
      leaf weight {
        type uint8;
        description
          "The value represents the weight of the End.X sid
           for the purpose of load balancing.";
      }
      uses srv6-endpoint-func;
      leaf sid {
        type srv6-sid-value;
        description
          "SRV6 sid value.";
      }
      leaf neighbor-id {
        type isis:system-id;
        description
          "Describes the system ID of the neighbor
           associated with the SID value. This is only
           used on LAN adjacencies.";
      }
      // sub-sub-tlvs
```

```
      uses srv6-sid-structures;
    }

    grouping srv6-adjacency-state {
      description
        "This group will extend adjacency state.";
      list end-x-sid {
        key "value";
        config false;
        leaf value {
          type srv6-sid-value;
          description
            "Value of the Adj-SID.";
        }
        leaf weight {
          type uint8;
          description
            "Weight associated with the End.X SID.";
        }
        leaf protection-requested {
          type boolean;
          description
            "Set to True if the End.X SID
             must be protected.";
        }
        leaf persistent {
          type boolean;
          description
            "Persistent flag. When set, the End.X sid is persistently
             allocated, i.e., the End.X sid value remains consistent
             across router restart and/or interface flap.";
        }
        leaf algorithm {
          type uint8;
          description
            "Associated algorithm.";
        }
        uses srv6-endpoint-func;
        description
          "List of End.X Segment IDs.";
      }
    }

    /* Cfg */

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis" {
```

```
      when "derived-from-or-self(../rt:type, 'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used";
      }
      description
        "This augments IS-IS protocol configuration
         with SRv6.";
      container srv6-cfg {
        leaf enable {
          type boolean;
          default "false";
          description
            "Enables SRv6 protocol extensions.";
        }
        leaf default-locator {
          type boolean;
          default "false";
          description
            "Enable IS-IS segment-routing IPv6 with default Locator.";
        }
        leaf-list locator-name {
          when "../default-locator = 'false'" {
            description
              "Only applies to non default locator.";
          }
          type leafref {
            path "/rt:routing/sr:segment-routing/srv6:srv6"
               + "/srv6:locators/srv6:locator/srv6:name";
          }
          description
            "Enable IS-IS segment-routing IPv6 with specified Locator.";
        }
        leaf persistent-end-x-sid {
          type boolean;
          default "false";
          description
            "Enable the persistent nature of End.X sid";
        }
        description
          "Configuration about IS-IS segment-routing IPv6.";
      }
      container micro-loop-avoidance {
        leaf srv6-enable {
          type boolean;
          default "false";
          description
            "Enable SRv6 avoid-microloop.Depend on SR IPv6 Enable.";
        }
```

```
        leaf srv6-rib-update-delay {
          type uint16 {
            range "1000..10000";
          }
          units "ms";
          default "5000";
          description
            "Set the route delivery delay for SRv6 avoid-microloop.
             Depend on SR IPv6 Enable.";
        }
        description
          "Enable IS-IS avoid-microloop.";
      }
    }

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:fast-reroute" {
      when "derived-from-or-self(../../rt:type, 'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used";
      }
      description
        "This augments IS-IS IPFRR with IPV6 TILFA.";
      container srv6-ti-lfa {
        if-feature "srv6-ti-lfa";
        leaf enable {
          type boolean;
          description
            "Enables SRv6 TI-LFA computation.";
        }
        description
          "SRv6 TI-LFA configuration.";
      }
    }

    /* Operational states */

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:database/isis:levels/isis:lsp"
          + "/isis:router-capabilities" {
      when "derived-from-or-self(../../../../../rt:type, 'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used";
      }
      description
        "This augments IS-IS protocol router capability.";
```

```
      uses srv6-capability;
      uses srv6:srv6-msd-signaled;
    }

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:database/isis:levels/isis:lsp"
          + "/isis:extended-is-neighbor/isis:neighbor" {
      when "derived-from-or-self(../../../../../../rt:type,"
         + "'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used.";
      }
      description
        "This augments IS-IS protocol neighbor.";
      container srv6-adjacency-sids {
        description
          "This defines svr6 end-x sids for the adjacency.";
        list end-x-sid {
          key "sid";
          uses srv6-adjacency-sid;
          description
            "List of end-x sids.";
        }
      }
    }

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:database/isis:levels/isis:lsp"
          + "/isis:mt-is-neighbor/isis:neighbor" {
      when "derived-from-or-self(../../../../../../rt:type,"
         + "'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used.";
      }
      description
        "This augments IS-IS protocol neighbor.";
      container srv6-adjacency-sids {
        description
          "This defines svr6 end-x sids for the adjacency.";
        list end-x-sid {
          key "sid";
          uses srv6-adjacency-sid;
          description
            "List of end-x sids.";
        }
      }
```

```
    }

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:database/isis:levels/isis:lsp" {
      when "derived-from-or-self(../../../../rt:type, 'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used.";
      }
      description
        "This augments IS-IS protocol LSDB with SRv6 locator tlvs.";

      container srv6-locators {
        description
          "SRv6 locator tlvs.";
        list srv6-locator {
          description
            "List of SRv6 locator tlv.";
          uses srv6-locator;
        }
      }
    }

    augment "/rt:routing/"
          + "rt:control-plane-protocols/rt:control-plane-protocol"
          + "/isis:isis/isis:interfaces/isis:interface"
          + "/isis:adjacencies/isis:adjacency" {
      when "derived-from-or-self(../../../../../rt:type,"
         + "'isis:isis')" {
        description
          "This augment IS-IS routing protocol when used.";
      }
      description
        "This augments IS-IS protocol operational state
         with segment routing.";
      uses srv6-adjacency-state;
    }

    /* Notifications */
  }
  <CODE ENDS>
```

5. Security Considerations

The YANG modules specified in this document define a schema for data that is designed to be accessed via network management protocols such as NETCONF [RFC6241] or RESTCONF [RFC8040]. The lowest NETCONF layer is the secure transport layer, and the mandatory-to-implement secure transport is Secure Shell (SSH) [RFC6242]. The lowest RESTCONF layer is HTTPS, and the mandatory-to-implement secure transport is TLS [RFC8446].

The Network Configuration Access Control Model (NACM) [RFC8341] provides the means to restrict access for particular NETCONF or RESTCONF users to a pre-configured subset of all available NETCONF or RESTCONF protocol operations and content.

There are a number of data nodes defined in this YANG module that are writable/creatable/deletable (i.e., config true, which is the default). These data nodes may be considered sensitive or vulnerable in some network environments. Write operations (e.g., edit-config) to these data nodes without proper protection can have a negative effect on network operations. These are the subtrees and data nodes and their sensitivity/vulnerability:

/isis:isis/srv6-cfg

/isis:isis/micro-loop-avoidance

/isis:isis/srv6-ti-lfa

Writable data nodes represent the configuration of IS-IS SRv6, micro-loop avoidance and ti-lfa enablement. The ability to modify IS-IS SRv6 related configuration may allow the entire IS-IS domain to be compromised, and traffic could be hijacked.

Some of the readable data nodes in this YANG module may be considered sensitive or vulnerable in some network environments. It is thus important to control read access (e.g., via get, get-config, or notification) to these data nodes. These are the subtrees and data nodes and their sensitivity/vulnerability:

/isis:lsp/isis:router-capabilities/v6-capability

/isis:lsp/isis:router-capabilities/srv6-msd

/isis:lsp/isis:extended-is-neighbor/isis:neighbor/srv6-adjacency-sids

/isis:lsp/isis:mt-is-neighbor/isis:neighbor/srv6-adjacency-sids

/isis:lsp/srv6-locators

/isis:interface/isis:adjacencies/isis:adjacency/end-x-sid

Exposure of the LSDB will expose the detailed topology of the network and router capabilities, and may facilitate other attacks.

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7. Acknowledgements

TBD.

8. IANA Considerations

The IANA is requested to assign two new URIs from the IETF XML registry ([RFC3688]). Authors are suggesting the following URI:

URI: urn:ietf:params:xml:ns:yang:ietf-isis-srv6
Registrant Contact: IS-IS WG
XML: N/A, the requested URI is an XML namespace

This document also requests one new YANG module name in the YANG Module Names registry ([RFC6020]) with the following suggestion :

name: ietf-isis-srv6
namespace: urn:ietf:params:xml:ns:yang:ietf-isis-srv6 prefix: isis-srv6
reference: RFC XXXX

9. References

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Appendix A. Configuration examples

The following is an XML example using IS-IS SRv6 YANG module.

```
      <routing xmlns="urn:ietf:params:xml:ns:yang:ietf-routing">
        <control-plane-protocols>
       <control-plane-protocol>
         <isis xmlns="urn:ietf:params:xml:ns:yang:ietf-isis">
        <srv6-cfg>
         <enable>true</enable>
      <default-locator>false</default-locator>
      <locator-name>DOM0_ALG0</locator-name>
      <persistent-end-x-sid>true</persistent-end-x-sid>
        </srv6-cfg>
        <micro-loop-avoidance>
         <srv6-enable>true</srv6-enable>
      <srv6-rib-update-delay>2000</srv6-rib-update-delay>
        </micro-loop-avoidance>
      </isis>
       </control-plane-protocol>
     </control-plane-protocols>
      </routing>

      <routing xmlns="urn:ietf:params:xml:ns:yang:ietf-routing">
        <control-plane-protocols>
       <control-plane-protocol>
         <isis xmlns="urn:ietf:params:xml:ns:yang:ietf-isis">
              <fast-reroute>
         <srv6-ti-lfa>
        <enable>true</enable>
      </srv6-ti-lfa>
        </fast-reroute>
      </isis>
       </control-plane-protocol>
     </control-plane-protocols>
      </routing>
```

The following is the corresponding example using JSON format.

```
{
   "control-plane-protocols": {
      "control-plane-protocol": {
         "isis": {
            "srv6-cfg": {
               "enable": "true",
               "default-locator": "false",
               "locator-name": "DOM0_ALG0",
               "persistent-end-x-sid": "true"
            },
            "micro-loop-avoidance": {
               "srv6-enable": "true",
               "srv6-rib-update-delay": "2000"
            }
         }
      }
   }
}
```

```
{
   "control-plane-protocols": {
      "control-plane-protocol": {
         "isis": {
            "fast-reroute": {
               "srv6-ti-lfa": {
                  "enable": "true"
               }
            }
         }
      }
   }
}
```

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