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YANG Data Model for IS-IS SRv6

Abstract

This document defines a YANG data model that can be used to configure and manage IS-IS SRv6 [[I-D.ietf-lsr-isis-srv6-extensions](https://datatracker.ietf.org/doc/draft-ietf-lsr-isis-srv6-extensions/)].

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](https://datatracker.ietf.org/doc/rfc2119/) [[RFC2119](https://datatracker.ietf.org/doc/rfc2119/)].

Status of This Memo

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Table of Contents

- [1. Overview](#)
- [2. IS-IS SRv6](#)
- [3. IS-IS SRv6 configuration](#)
 - [3.1. SRv6 activation](#)
 - [3.2. Locator setting](#)
 - [3.3. IP Fast reroute](#)
 - [3.4. Microloop avoidance](#)
- [4. IS-IS SRv6 YANG Module](#)
- [5. Security Considerations](#)
- [6. Contributors](#)
- [7. Acknowledgements](#)
- [8. IANA Considerations](#)
- [9. References](#)
 - [9.1. Normative References](#)
- [Appendix A. Configuration examples](#)
- [Authors' Addresses](#)

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 IPv6 Dataplane, and it is an augmentation to the IS-IS YANG data model.

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 [I-D.ietf-isis-yang-isis-cfg] which defines basic IS-IS configuration and state. This

module uses types defined in [[RFC6991](#)]. It also references [[RFC8349](#)], and [[I-D.ietf-spring-sr-yang](#)].

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?              bits
        +-ro srv6-msd
          +-ro max-segments-left?    uint8
          +-ro max-end-pop?           uint8
          +-ro max-h-encaps?          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?            bits
          +-ro algorithm?             uint8
          +-ro weight?                uint8
          +-ro endpoint-func
          |   +-ro flags?              uint8
          |   +-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?          bits
+--ro algorithm?           uint8
+--ro weight?              uint8
+--ro endpoint-func
| +--ro flags?              uint8
| +--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 locator* [locator]
+--ro mt-id?                uint16
+--ro flags?                bits
+--ro metric?               uint32
+--ro algorithm?            uint8
+--ro loc-size?             uint8
+--ro locator                inet:ipv6-address-no-zone
+--ro srv6-end-sids
| +--ro end-sid* [sid]
|   +--ro flags?            uint8
|   +--ro endpoint-func
|   | +--ro flags?          uint8
|   | +--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?	uint8
+-ro endpoint-func?	identityref
+-ro undefined-endpoint-func?	uint16

3. IS-IS SRv6 configuration

3.1. SRv6 activation

Activation of IS-IS SRv6 is done by setting the "enable" leaf to true. This triggers advertisement of SRv6 extensions based on the configuration parameters that have been setup using the base SRv6 module.

3.2. Locator setting

The basic SRv6 module defines the related locator leafs. When the IS-IS SRv6 module is enabled, set the locator by using the following strategy: firstly, it is reasonable to check whether the default locator is used, if not, to use the specified locator. The strategy is realized by adding the leaf "default-locator", "locator-name" .

3.3. IP Fast reroute

IS-IS SRv6 model augments the fast-reroute container. It brings the ability to activate ipv6 TI-LFA (topology independent LFA).

3.4. Microloop avoidance

IS-IS SRv6 model augments the micro-loop-avoidance container, this container including the leaf "srv6-enable" brings the ability to activate SRv6 avoid-microloop.

4. IS-IS SRv6 YANG Module

<CODE BEGINS> file "ietf-isis-srv6@2022-09-25.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 "draft-ietf-isis-yang-isis-cfg: YANG
      Data Model for 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 Working Group";

  contact
    "WG List: <mailto:spring@ietf.org>
    Author:   Zhibo Hu
              <mailto:huzhibo@huawei.com>
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              <mailto:daye@cisco.com>
    Author:   Yingzhen Qu
              <mailto:yingzhen.qu@futurewei.com>
    Author:   Qiufang Ma
              <mailto:maqiufang1@huawei.com>
```

```

";
description
  "The YANG module defines the configuration and operatioanl state
  for IS-IS extension to support Segment Routing over IPv6 data
  plane.

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

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  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 2022-09-25 {
  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 .";
}

/* 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-msds {
    description
        "means to advertise to advertise node/link specific
        values for Maxium Sid Depths(MSD) of various types";
    container srv6-msd {
        description
            "Maximum SRv6 SID Depths.";
        leaf max-segments-left {
            type uint8;
            description
                "The Maximum Segments Left MSD Type specifies
                the maximum value of the 'SL' field in the SRH
                of a received packet before applying the
                Endpoint behavior associated with a SID.";
        }
        leaf max-end-pop {
            type uint8;
            description
                "The Maximum End Pop MSD Type specifies the maximum
                number of SIDs in the SRH to which the router can
                apply 'PSP' or 'USP' behavior, as defined in flavors.";
        }
        leaf max-h-encaps {
            type uint8;
            description
                "The Maximum H.Encaps MSD Type specifies the maximum number
                of SIDs that can be included as part of the 'H.Encaps'
                behavior";
        }
        leaf max-end-d {
            type uint8;

```

```

        description
            "The maximum number of SIDs in an SRH when performing
            decapsulation associated with 'End.Dx' functions
            (e.g., 'End.DX6' and 'End.DT6').";
    }
}
}

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 length of each individual part of the SRv6 SID
            as defined in [I-D.ietf-spring-srv6-network-programming]";
        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 flags {
            type bits {

```

```

        bit o-flag {
            position 1;
            description
                "If set, then the router is able to
                use of the 0-bit in the Segment Routing Header(SRH)
                as defined in [draft-ietf-6man-segment-routing-header].";
        }
    }
    description
        "Flags.";
}
}
}

```

```

grouping srv6-endpoint-func {
    description
        "This group defines srv6 endpoint function";
    container endpoint-func {
        description
            "Srv6 Endpoint function Descriptor.";
        leaf flags {
            type uint8;
            description
                "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 flags {
        type uint8;
        description
            "NO flags are currently being defined.";
    }
}

```

```

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].";
    }
    leaf flags {
        type bits {
            bit d-flag {
                position 0;
                description
                    "When the locator is leaked from level-2 to level-1,
                     the d-flag must be set.";
            }
        }
        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.";
}
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 func-flags {
        type bits {
            bit b-flag {
                position 0;
                description
                    "Backup flag. If set, the End.X sid is
                    eligible for protection.";
            }

            bit s-flag {
                position 1;
                description
                    "Set flag. When set, the End.X sid refers to
                    a set of adjacencies (and therefore May be assigned
                    to other adjacencies as well.";
            }

            bit p-flag {
                position 2;
                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.";
            }
        }
    }
}

```



```

    }
    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 "/rt:routing/rt:control-plane-protocols/" +
    "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
        "This augment ISIS routing protocol when used";
}
description
    "This augments ISIS 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 ISIS 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 ISIS 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 ISIS 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 "/rt:routing/rt:control-plane-protocols/" +
    "rt:control-plane-protocol/rt:type = 'isis:isis'"{
    description
        "This augment ISIS routing protocol when used";
}
description
    "This augments ISIS 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 TILFA 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 "/rt:routing/rt:control-plane-protocols/" +
    "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
        "This augment ISIS routing protocol when used";
}
description
    "This augments ISIS protocol router capability.";
    uses srv6-capability;
    uses srv6-msds;
}

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 "/rt:routing/rt:control-plane-protocols/" +
    "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
        "This augment ISIS routing protocol when used.";
}
description
    "This augments ISIS 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 "/rt:routing/rt:control-plane-protocols/" +
        "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
        "This augment ISIS routing protocol when used.";
}
description
    "This augments ISIS 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 "/rt:routing/rt:control-plane-protocols/" +
        "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
        "This augment ISIS routing protocol when used.";
}
}

```

```

    }
    description
      "This augments ISIS protocol LSDB.";
    container srv6-locators {
      description
        "This defines srv6 locator tlvs.";
      list locator {
        key "locator";
        uses srv6-locator;
        description
          "List of srv6 locators.";
      }
    }
  }
}

augment "/rt:routing/" +
  "rt:control-plane-protocols/rt:control-plane-protocol"+
  "/isis:isis/isis:interfaces/isis:interface" +
  "/isis:adjacencies/isis:adjacency" {
  when "/rt:routing/rt:control-plane-protocols/"+
    "rt:control-plane-protocol/rt:type = 'isis:isis'" {
    description
      "This augment ISIS routing protocol when used.";
  }
  description
    "This augments ISIS 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.

6. Contributors

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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-srv
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>
        </srv6-cfg>
        <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>
        </micro-loop-avoidance>
        <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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