Abstract

This document is to define the YANG data model for SFC configuration.

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1. Introduction

YANG [RFC6020] is a data definition language that was introduced to define the contents of a conceptual data store that allows networked devices to be managed using NETCONF [RFC6241]. This document defines a YANG data model for the configuration of SFC which data plane has been defined in [RFC8300].

2. Design tree for SFC YANG data model

module: ietf-sfc

  +--rw sfc-config
  |    +--rw sfc-enable? boolean
  |    +--rw sfc-domain* [sfc-domain-id]
  |    |    +--rw sfc-domain-id uint32
  |    |    +--rw ipv4-prefix? inet:ipv4-prefix
  |    |    +--rw ipv6-prefix? inet:ipv6-prefix
  |    +--rw sfc-sfp* [sfpid si]
  |    |    +--rw sfpid uint32
  |    |    +--rw si uint16
  |    +--rw metric? uint16
  |    +--rw (nexthop-trans-type)?
  |    |    +--:(ipv4-nexthop)
  |    |    |    +--rw nh-node-type? sfp-nexthop-type
  |    |    |    +--rw remote-ipv4? inet:ipv4-address
  |    |    +--:(ipv6-nexthop)
  |    |    |    +--rw nh-node-type? sfp-nexthop-type
  |    |    |    +--rw remote-ipv6? inet:ipv6-address
  |    |    +--:(mac-nexthops)
  |    |    |    +--rw nh-node-type? sfp-nexthop-type
  |    |    |    +--rw remote-mac? yang:mac-address
  |    |    +--:(vxlansgpe-nexthop)
  |    |    |    +--rw nh-node-type? sfp-nexthop-type
  |    |    |    +--rw remote-ip? inet:ipv4-address
  |    |    |    +--rw source-ip? inet:ipv4-address
  |    |    |    +--rw destination-ip? inet:ipv4-address
This container defines a YANG model to configure SFC. The SF Type listed in this YANG model is referenced by [I-D.ietf-sfc-use-case-mobility] and [I-D.ietf-sfc-dc-use-cases].
The YANG module defines a generic configuration model for SFC.

typedef sfp-nexthop-type {
  type enumeration {
    enum sff {
      value 1;
    }
    enum sf-firewall {
      value 2;
      enum sf-dpi {
        value 3;
      }
      enum sf-ids {
        value 4;
      }
      enum sf-edgefw {
        value 5;
      }
      enum sf-segfw {
        value 6;
      }
    }
  }
} /*Typedefs*/
enum sf-appfw {
  value 7 ;
}
enum sf-adc {
  value 8 ;
}
enum sf-woc {
  value 9 ;
}
enum sf-mon {
  value 10 ;
}
enum sf-sgw {
  value 11 ;
}
enum sf-pgw {
  value 12 ;
}
enum sf-hss {
  value 13 ;
}
enum sf-mme {
  value 14 ;
}
enum sf-pcrf {
  value 15 ;
}
enum sf-pcef {
  value 16 ;
}
enum sf-tdf {
  value 17 ;
}
enum sf-tssf {
  value 18 ;
}
enum sf-tds {
  value 19 ;
}
enum sf-pep {
  value 20 ;
}
enum sf-ims {
  value 21 ;
}
enum sf-li {
  value 22 ;
}
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    enum sf-proxy {
        value 23;
    }

    description "The nexthop node type.";
}

container sfc-config {
    leaf sfc-enable {
        type boolean;
        default false;
        description "Enable SFC.";
    }
    list sfc-domain {
        key "sfc-domain-id";
        leaf sfc-domain-id {
            type uint32;
            description "The identifier of the sfc domain.";
        }
        leaf ipv4-prefix {
            type inet:ipv4-prefix;
            description "The IPv4 address of the sff.";
        }
        leaf ipv6-prefix {
            type inet:ipv6-prefix;
            description "The IPv6 address of the sff.";
        }
    }
    list sfc-sfp {
        key "sfpid si";
        leaf sfpid {
            type uint32;
            description "The identifier of the SFP";
        }
        leaf si {
            type uint16;
            description "Service index.";
        }
        leaf metric {
            type uint16;
            description "Forwarding metric.";
        }
        choice nexthop-trans-type {
            case ipv4-nexthop {
                leaf nh-node-type {
                    type sfp-nexthop-type;
                    description "Nexthop node type.";
                }
                leaf remote-ipv4 {
                    type inet:ipv4-prefix;
                    description "The IPv4 address of the nexthop.";
                }

            }
case ipv4-nexthop {
    leaf nh-node-type {
        type sfp-nexthop-type;
        description "Nexthop node type.";
    }
    leaf remote-ipv4 {
        type inet:ipv4-address;
        description "Remote IPv4 address.";
    }
    description "The configuration for SFP nexthop which encapsulation type is ethernet&ipv4.";
}

case ipv6-nexthop {
    leaf nh-node-type {
        type sfp-nexthop-type;
        description "Nexthop node type.";
    }
    leaf remote-ipv6 {
        type inet:ipv6-address;
        description "Remote IPv6 address.";
    }
    description "The configuration for SFP nexthop which encapsulation type is ethernet&ipv6.";
}

case mac-nexthops {
    leaf nh-node-type {
        type sfp-nexthop-type;
        description "Nexthop node type.";
    }
    leaf remote-mac {
        type yang:mac-address;
        description "MAC address.";
    }
    description "The configuration for SFP nexthop which specifies the MAC address.";
}

case vxlan-gpe-nexthop {
    leaf nh-node-type {
        type sfp-nexthop-type;
        description "Nexthop node type.";
    }
    leaf remote-ip {
        type inet:ip-address;
        description "Remote IP address.";
    }
    leaf source-ip {
        description "The source IP address.";
        type inet:ipv4-address;
    }
    leaf destination-ip {
        description "The destination address.";
        type inet:ipv4-address;
    }
    leaf vni {
        type uint32;
        description "VNI.";
    }
    description "The configuration for SFP nexthop which specifies the VXLAN Green Peas encapsulation type.";
}
type uint32;
  mandatory true;
  description "VNI value of the tunnel."
}  

description "The configuration for SFP nexthop is vxlan-gpe."
}
  
  description "The configuration for SFP nexthop."
}

leaf last-sff {
  type boolean;
  default false;
  description "This is the SFP terminal."
}

<CODE ENDS>

4. Security Considerations

TBD.

5. IANA Considerations

TBD.

6. References

6.1. Normative References


6.2. Information References

[I-D.ietf-bess-nsh-bgp-control-plane]
[I-D.ietf-sfc-dc-use-cases]

[I-D.ietf-sfc-use-case-mobility]

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