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An Information Model for Basic Network Policy and Filter Rules
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Abstract

This document contains the Basic Network Policy and Filters (BNP IM) Data Model which provides a policy model that support an ordered list of match-condition-action (aka event-condition-action (ECA)) for multiple layers (interface, L1-L4, application) and other factors (size of packet, time of day). The actions allow for setting actions (QOS and other), decapsulation, encapsulation, plus forwarding actions. The policy model can be used with the I2RS filter-based RIB.

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Table of Contents

1. Introduction	2
1.1. Definitions and Acronyms	2
1.2. Antecedents this Policy in IETF	2
2. Generic Route Filters/Policy Overview	3
3. BNP Rule Groups	4
4. BNP Generic Info Model in High Level Yang	6
5. i2rs-eca-policy Yang module	7
6. IANA Considerations	28
7. Security Considerations	28
8. Informative References	29
Authors' Addresses	30

1. Introduction

This generic network policy provide a model to support an ordered list of routing policy or an ordered list of filter rule. ne examples of the ordered-based filters is the I2RS Filter-based RIBs, and another is flow-specification filters. The first section of this draft contains an overview of the policy structure. The second provides a high-level yang module. The third contains the yang module.

1.1. Definitions and Acronyms

INSTANCE: Routing Code often has the ability to spin up multiple copies of itself into virtual machines. Each Routing code instance or each protocol instance is denoted as Foo_INSTANCE in the text below.

NETCONF: The Network Configuration Protocol

PCIM - Policy Core Information Model

RESTconf - http programmatic protocol to access yang modules

1.2. Antecedents this Policy in IETF

Antecedents to this generic policy are the generic policy work done in PCIM WG. The PCIM work contains a Policy Core Information Model (PCIM) [RFC3060], Policy Core Informational Model Extensions

[RFC3460] and the Quality of Service (QoS) Policy Information Model (QPIM) ([RFC3644]) From PCIM comes the concept that policy rules which are combined into policy groups. PCIM also refined a concept of policy sets that allowed the nesting and aggregation of policy groups. This generic model did not utilize the concept of sets of groups, but could be expanded to include sets of groups in the future.

2. Generic Route Filters/Policy Overview

This generic policy model represents filter or routing policies as rules and groups of rules.

The basic concept are:

Rule Group

A rule group is is an ordered set of rules .

Rule

A Rule is represented by the semantics "If Condition then Action".
A Rule may have a priority assigned to it.

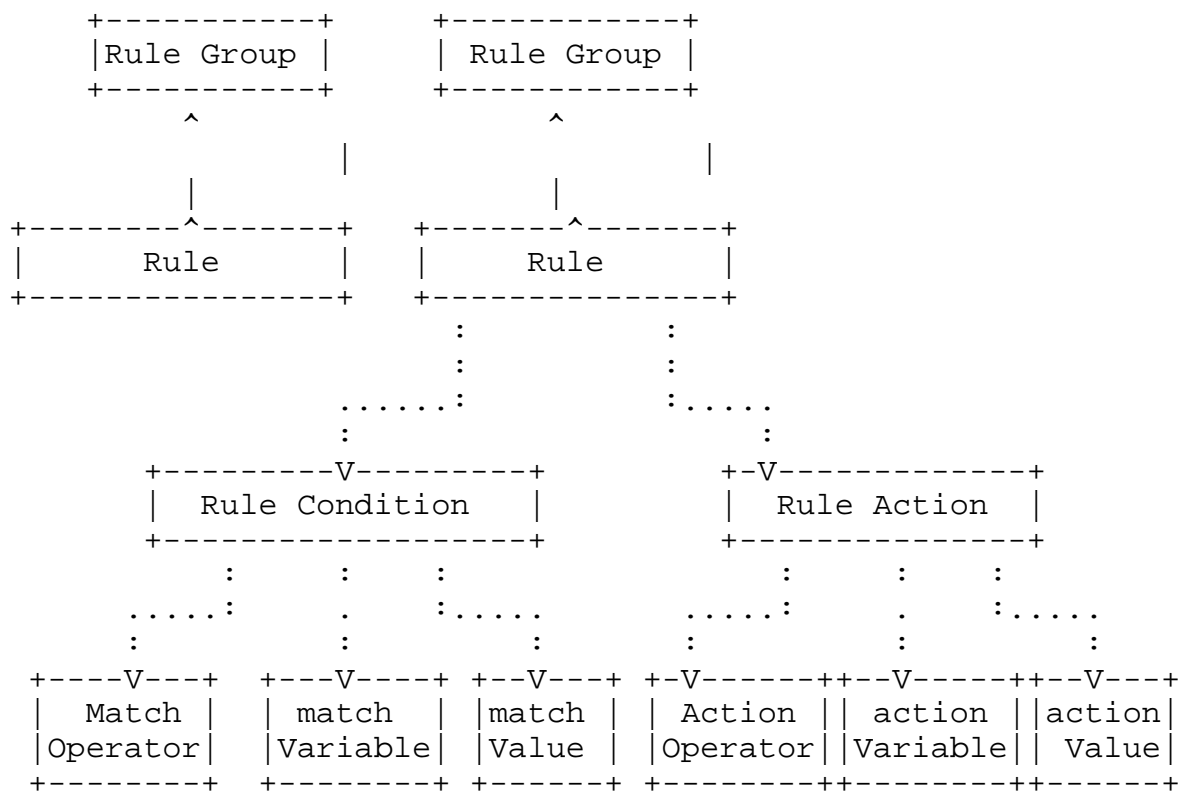


Figure 1: BNP structure

3. BNP Rule Groups

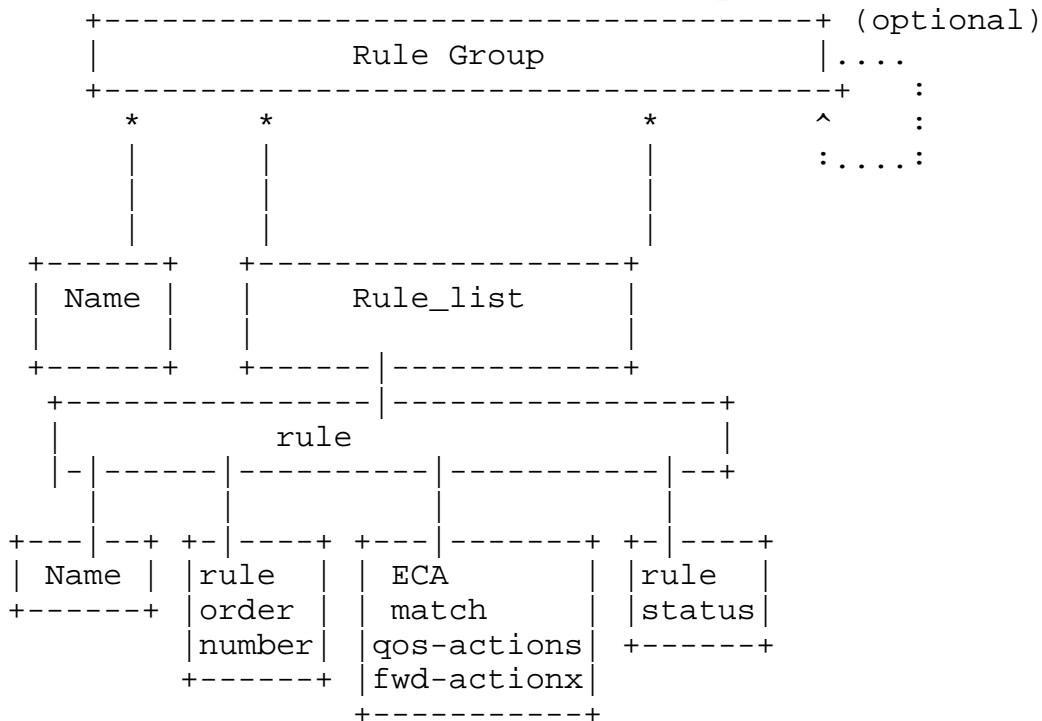
Rule groups have the following elements:

- o name that identifies the grouping of policy rules
- o role - that is a combination of target resource (E.g. IPv4 FB-FIB filters) and a scope (read, read-write, write-only).
- o list of rules

The rule has the following elements: name, order, status, priority, reference cnt, and match-action as shown as shown in figure 2. The order indicates the order of the rule within the list. The status of the rule is (active, inactive). The priority is the priority within a specific order of policy/filter rules. A reference count (refcnt) indicates the number of entities (E.g. network modules) using this policy. The generic rule match-action conditions have match operator, a match variable and a match value. The rule actions have an action operator, action variable, and an action value.

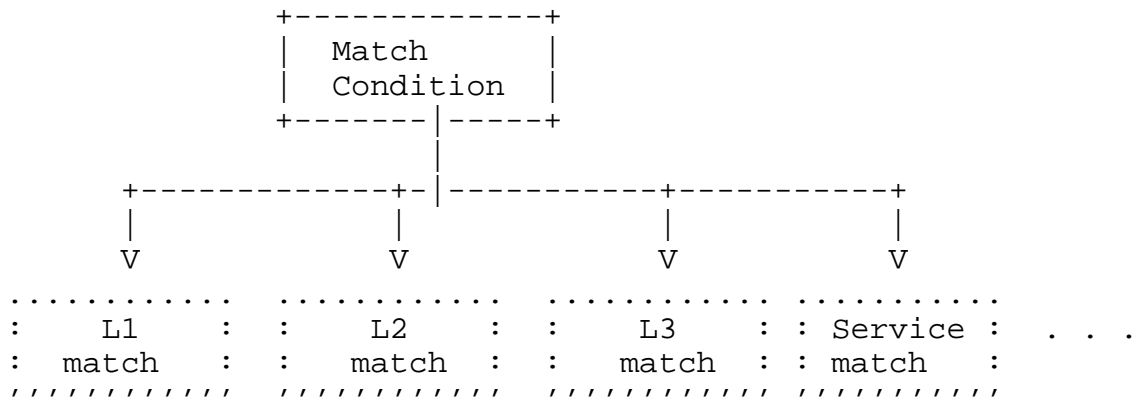
The generic rules can be included with other types of rules as figure 2 shows.

Figure 2 - Rule Group



The generic match conditions are specific to a particular layer are refined by matches to a specific layer (as figure 3 shows), and figure 5's high-level yang defines. The general actions may be generic actions that are specific to a particular layer (L1, L2, L3, service layer) or time of day or packet size. The qos actions can be setting fields in the packet at any layer (L1-L4, service) or encapsulating or decapsulating the packet at a layer. The fwd-actions are forwarding functions that forward on an interface or to a next-hop. The rule status is the operational status per rule.

Figure 3



4. BNP Generic Info Model in High Level Yang

Below is the high level inclusion

Figure 5

```

module:bnp-eca-policy
import ietf-inet
import ietf-interface
import ietf-i2rs-rib
import service-function-type prefix-sft
import service-function prefix-sf
import service-fucntion-chain prefix-sfc-sfc
    
```

Below is the high level yang diagram

```

module:i2rs-eca-policy
  +--i2rs-eca-policy
    +--rw rule-group* [group-name]
      |   +--rw group-name string
      |   +--rw rule* [rule-name]
      |     +--rw rule-name string
      |     +--rw order unit16
      |     +--rw installer
      |       +--rw rule-match-act
      |       +--rw bnp-matches
      |         +--case: interface-match
      |         +--case: L1-header-match
      |         +--case: L2-header-match
      |         +--case: L3-header-match
      |         +--case: L4-header-match
      |         +--case: Service-header-match
      |         +--case: packet-size
      |         +--case: time-of-day
      |       +--rw bnp-action
      |         +--rw number-actions
      |           +--case interface-actions
      |           +--case L1-action
      |           +--case L2-action
      |           +--case L3-action
      |           +--case L4-action
      |           +--case service-action
      |         +--rw bnp-forward
      |           +--rw interface interface-ref
      |           +--rw next-hop rib-nexthop-ref
      |           +--rw route-attributes
      |           +--rw rib-route-attributes-ref
      |         +--rw fb-std-drop
    +--ro eca-status
      +--group_status* [name]
      |   +--ro name string
      |     +--ro rule_status* [rule-name]
      |       +--ro rule-name string
      |       +--ro rule-status
      |       +--ro rule-inactive-reason
      |       +--ro rule-installer
      |       +--ro refcnt unit16

```

5. i2rs-eca-policy Yang module

```
//>CODE BEGINS< file "ietf-bnp-eca-policy@2016-01-03.yang"
```

```
module ietf-bnp-eca-policy {
```

```
namespace "urn:ietf:params:xml:ns:yang:ietf-bnp-eca-policy";
// replace with iana namespace when assigned
prefix "bnp-eca";

    import ietf-interfaces {
    prefix "if";
    }
    import ietf-inet-types {
    prefix inet;
    //rfc6991
    }

    import ietf-i2rs-rib {
    prefix "i2rs-rib";
    }

// meta
organization "IETF I2RS WG";

contact
    "email: shares@ndzh.com
    email: russ.white@riw.com
    email: linda.dunbar@huawei.com
    email: bill.wu@huawei.com";

description
    "This module describes a basic network policy
    model with filter per layer.";

    revision "2016-01-03" {
        description "initial revision";
        reference "draft-hares-i2rs-bnp-eca-policy-dm-01";
    }

// interfaces - no identity matches

// L1 header match identities
    identity l1-header-match-type {
    description
        " L1 header type for match ";
    }

identity l1-hdr-sonet-type {
    base l1-header-match-type;
    description
        " L1 header sonet match ";
    }
```



```
identity l1-hdr-OTN-type {
  base l1-header-match-type;
  description
  " L1 header OTN match ";
}

  identity l1-hdr-dwdm-type {
  base l1-header-match-type;
  description
  " L1 header DWDM match ";
}

  // L2 header match identities
identity l2-header-match-type {
  description
  " l2 header type for match ";
}

identity l2-802-1Q {
  base l2-header-match-type;
  description
  " l2 header type for 802.1Q match ";
}

identity l2-802-11 {
  base l2-header-match-type;
  description
  " l2 header type for 802.11 match ";
}

  identity l2-802-15 {
  base l2-header-match-type;
  description
  " l2 header type for 802.15 match ";
}

  identity l2-NVGRE {
  base l2-header-match-type;
  description
  " l2 header type for NVGRE match ";
}
  identity l2-mpls {
  base l2-header-match-type;
  description
  " l2 header type for MPLS match ";
}

  identity l2-VXLAN {
```

```
base l2-header-match-type;
  description
  " l2 header type for VXLAN match ";
}

// L3 header match identities
identity l3-header-match-type {
description
  " l3 header type for match ";
}

identity l3-ipv4-hdr {
  base l3-header-match-type;
  description
  " l3 header type for IPv4 match ";
}

identity l3-ipv6-hdr {
  base l3-header-match-type;
  description
  " l3 header type for IPv6 match ";
}

identity l3-gre-tunnel {
  base l3-header-match-type;
description
  " l3 header type for GRE tunnel match ";
}

// L4 header match identities

identity l4-header-match-type {
  description "L4 header
  match types. (TCP, UDP,
  SCTP, etc. )";
}

identity l4-tcp-header {
  base l4-header-match-type;
description "L4 header for TCP";
}

identity l4-udp-header {
  base l4-header-match-type;
  description "L4 header match for UDP";
}
```

```
identity l4-sctp-header {
  base l4-header-match-type;
  description "L4 header match for SCTP";
}

// Service header identities

identity service-header-match-type {
  description "service header
  match types: service function path
  (sf-path), SF-chain, sf-discovery,
  and others (added here)";
}

identity sf-chain-meta-match {
  base service-header-match-type;
  description "service header match for
  meta-match header";
}

identity sf-path-meta-match {
  base service-header-match-type;
  description "service header match for
  path-match header";
}

identity rule-status-type {
description "status
  values for rule: invalid (0),
  valid (1), valid and installed (2)";
}

identity rule-status-invalid {
base rule-status-type;
  description "invalid rule status.";
}

identity rule-status-valid {
  base rule-status-type;
  description "This status indicates
  a valid rule.";
}

identity rule-status-valid-installed {
  base rule-status-type;
  description "This status indicates
  an installed rule.";
```

```
}
identity rule-status-valid-inactive {
  base rule-status-type;
  description "This status indicates
              a valid ruled that is not installed.";
}
```

```
grouping interface-match {
  leaf match-if-name {
    type if:interface-ref;
    description "match on interface name";
  }
  description "interface
              has name, description, type, enabled
              as potential matches";
}
```

```
grouping interface-action {
  description
  "interface action up/down and
  enable/disable";
  leaf interface-up {
    type boolean;
    description
    "action to put interface up";
  }
  leaf interface-down {
    type boolean;
    description
    "action to put interface down";
  }
  leaf interface-enable {
    type boolean;
    description
    "action to enable interface";
  }
  leaf interface-disable {
    type boolean;
    description
    "action to disable interface";
  }
}
```

```
grouping L1-header-match {
  choice l1-header-match-type {
    case l1-hdr-sonet-type {
      // sonet matches
    }
  }
}
```

```
    }
    case L1-hdr-OTN-type {
    // OTN matches
    }
    case L1-hdr-dwdm-type {
    // DWDM matches
    }
  description
    "The Layer 1 header match choices";
  }
  description
    "The Layer 1 header match includes
    any reference to L1 technology";
}

grouping L1-header-actions {
  choice l1-header-match-type {
    case l1-hdr-sonet-type {
    // sonet actions
    }
    case L1-hdr-OTN-type {
    // OTN actions
    }
    case L1-hdr-dwdm-type {
    // DWDM actions
    }
    description "Choices for
    L1 header match types";
  }
  description "L1 header match
  types";
}

grouping L2-802-1Q-header {
  description
    "This is short-term 802.1 header
    match which will be replaced
    by reference to IEEE yang when
    it arrives. Qtag 1 is 802.1Q
    Qtag2 is 802.1AD";

  leaf vlan-present {
    type boolean;
    description " Include VLAN in header";
  }
  leaf qtag1-present {
    type boolean;
    description " This flag value indicates
```

```
        inclusion of one 802.1Q tag in header";
    }
    leaf qtag2-present{
        type boolean;
    description "This flag indicates the
        inclusion of second 802.1Q tag in header";
    }

    leaf dest-mac {
        type uint64; //change to uint48
    description "IEEE destination MAC value
        from the header";
    }
    leaf src-mac {
        type uint64; //change to uint48
    description "IEEE source MAC
        from the header";
    }

    leaf vlan-tag {
        type uint16;
    description "IEEE VLAN Tag
        from the header";
    }
    leaf qtag1 {
        type uint32;
    description "Qtag1 value
        from the header";
    }
    leaf qtag2 {
        type uint32;
    description "Qtag1 value
        from the header";
    }
    leaf L2-ethertype {
        type uint16;
    description "Ether type
        from the header";
    }
}

grouping L2-VXLAN-header {
    container vxlan-header {
        uses i2rs-rib:ipv4-header;
        leaf vxlan-network-id {
            type uint32;
            description "VLAN network id";
        }
    }
}
```

```
    }
    description " choices for
    L2-VLAN header matches.
    Outer-header only.
    Need to fix inner header. ";
  }
  description
    "This VXLAN header may
    be replaced by actual VXLAN yang
    module reference";
}

grouping L2-NVGRE-header {

  container nvgre-header {
    uses L2-802-1Q-header;
    uses i2rs-rib:ipv4-header;
    leaf gre-version {
      type uint8;
      description "L2-NVGRE GRE version";
    }
    leaf gre-proto {
      type uint16;
      description "L2-NVGRE protocol value";
    }
    leaf virtual-subnet-id {
      type uint32;
      description "L2-NVGRE subnet id value";
    }
  }
  leaf flow-id {
    type uint16;
    description "L2-NVGRE Flow id value";
  }
  // uses L2-802-1Q-header;
  description
    "This NVGRE header may
    be replaced by actual NVGRE yang
    module reference";
}
  description "Grouping for
  L2 NVGRE header.";
}

grouping L2-header-match {

  choice l2-header-match-type {
    case l2-802-1Q {
```

```

        uses L2-802-1Q-header;
    }
    case 12-802-11 {
        // matches for 802.11 headers
    }
    case 12-802-15 {
// matches for 802.1 Ethernet
}
    case 12-NVGRE {
        // matches for NVGRE
        uses L2-NVGRE-header;
    }
    case 12-VXLAN-header {
        uses L2-VXLAN-header;
    }
    case 12-mpls-header {
        uses i2rs-rib:mpls-header;
    }
    description "Choice of L2
        headers for L2 match";
}
description
    " The layer 2 header match includes
        any reference to L2 technology";
}

grouping L2-header-actions {
    choice l2-header-match-type {
        case 12-802-1Q {
            // actions for L2-802-1Q
        }
        case 12-802-11 {
            // actions for L2-802-11
        }
        case 12-802-15 {
// actions 802.1 Ethernet
}
        case 12-NVGRE {
            // actions for NVGRE
            leaf set-vsids {
                type boolean;
                description
                    "Boolean flag to set VSID in packet";
            }
            leaf set-flowids {
                type boolean;
                description
                    "Boolean flag to set VSID in packet";
            }
        }
    }
}

```



```

    }
    leaf vsi {
      type uint32;
      description
        "VSID value to set in packet";
    }
    leaf flow-id {
      type uint16;
      description
        "flow-id value to set in packet";
    }
  }
  case 12-VXLAN-header {
    leaf set-network-id {
type boolean;
      description
        "flag to set network id in packet";
    }
    leaf network-id {
      type uint32;
      description
        "network id value to set in packet";
    }
  }
  case 12-mpls-header {
    leaf pop {
      type boolean;
      description
        "Boolean flag to pop mpls header";
    }
    leaf push {
      type boolean;
      description
        "Boolean flag to push value into
        mpls header";
    }
    leaf mpls-label {
      type uint32;
      description
        "mpls label to push in header";
    }
  }
  description "L2 header choices
  for 802.1Q, 802.11, 802.15,
  NVGRE, VXLAN, MPLS";
}
description
  " The layer 2 header match includes

```

```
        any reference to L2 technology";
    }

grouping L3-header-match {
    choice L3-header-match-type {
        case l3-ipv4-hdr {
            uses i2rs-rib:ipv4-header;
        }
        case l3-ipv6-hdr {
            uses i2rs-rib:ipv6-header;
        }
        case L3-gre-tunnel {
            uses i2rs-rib:gre-header;
        }
        description "match for L3
                    headers for IPv4, IPv6,
                    and GRE tunnels";
    }
    description "match for L3 headers";
}

grouping ipv4-encapsulate-gre {
    leaf encapsulate {
        type boolean;
        description "flag to
                    encapsulate headers";
    }
    leaf ipv4-dest-address {
        type inet:ipv4-address;
        description "Destination
                    Address for GRE header";
    }
    leaf ipv4-source-address {
        type inet:ipv4-address;
        description "Source Address for GRE header";
    }
    description "encapsulation actions
                for IPv4 headers";
}

grouping l3-header-actions {
    choice l3-header-act-type {
        case l3-ipv4-hdr {
            leaf set-ttl {
                type boolean;
                description "flag to set TTL";
            }
        }
    }
}
```

```
    }
    leaf set-dscp {
      type boolean;
      description "flag to set DSCP";
    }
    leaf ttl-value {
      type uint8;
      description "TTL value to set";
    }
    leaf dscp-val {
type uint8;
      description "dscp value to set";
    }
}

case l3-ipv6-hdr {
  leaf set-next-header {
    type boolean;
    description
      "flag to set next routing
      header in IPv6 header";
  }
  leaf set-traffic-class {
    type boolean;
    description
      "flag to set traffic class
      in IPv6 header";

  }
  leaf set-flow-label {
    type boolean;
    description
      "flag to set flow label
      in IPv6 header";
  }
  leaf set-hop-limit {
    type boolean;
    description "flag
      to set hop limit in
      L3 packet";
  }
  leaf next-header {
    type uint8;
    description "value to
      set in next IPv6 header";
  }
  leaf traffic-class {
    type uint8;
    description "value to set
```

```
        in traffic class";
    }
    leaf flow-label {
        type uint16;
        description "value to set
            in IPOv6 flow label";
    }
    leaf hop-limit {
        type uint8;
        description "value to set
            in hop count";
    }
}

case L3-gre-tunnel {
    leaf decapsulate {
        type boolean;
        description "flag to
            decapsulate GRE packet";
    }
    description "GRE tunnel
        actions" ;
}
description "actions that can
    be performed on L3 header";
}
description "actions to
    be performed on L3 header";
}

grouping tcp-header-match {
    leaf tcp-src-port {
        type uint16;
        description "source port match value";
    }
    leaf tcp-dst-port {
        type uint16;
        description "dest port value
            to match";
    }
    leaf sequence-number {
        type uint32;
        description "sequence number
            value to match";
    }
    leaf ack-number {
```

```
        type uint32;
        description "action value to
            match";
    }
    description "match for TCP
        header";
}

grouping tcp-header-action {
    uses tcp-header-match;
    leaf set-tcp-src-port {
        type boolean;
        description "flag to set
            source port value";
    }
    leaf set-tcp-dst-port {
        type boolean;
        description "flag to set source port value";
    }
    description "Actions to
        modify TCP header";
}

grouping udp-header-match {
    leaf udp-src-port {
        type uint16;
        description "UDP source
            port match value";
    }
    leaf udp-dst-port {
        type uint16;
        description "UDP Destination
            port match value";
    }
    description "match values for
        UDP header";
}

grouping udp-header-action {
    uses udp-header-match;
    leaf set-udp-src-port {
        type boolean;
        description "flag to set
            UDP source port match value";
    }
    leaf set-udp-dst-port {
        type boolean;
    }
}
```

```
        description
            "flag to set UDP destination port match value";
    }
    description "actions to set
        values in UDP header";
}

grouping sctp-chunk {
    leaf chunk-type {
        type uint8;
        description "sctp chunk type value";
    }
    leaf chunk-flag {
        type uint8;
        description "sctp chunk type
            flag value";
    }

    leaf chunk-length {
        type uint16;
        description "sctp chunk length";
    }

    leaf chunk-data-byte-zero {
        type uint32;
        description "byte zero of
            stcp chunk data";
    }
    description "sctp chunk
        header match fields";
}

grouping sctp-header-match {
    uses sctp-chunk;
    leaf sctp-src-port {
        type uint16;
        description "sctp header match
            source port value";
    }
    leaf sctp-dst-port {
        type uint16;
        description "sctp header match
            destination port value";
    }
    leaf sctp-verify-tag {
        type uint32;
        description "sctp header match
            verification tag value";
    }
}
```

```
    }
    description "SCTP header
        match values";
}

grouping sctp-header-action {
    uses sctp-header-match;
    leaf set-stcp-src-port {
        type boolean;
        description "set source port in sctp header";
    }
    leaf set-stcp-dst-port {
        type boolean;
        description "set destination port in sctp header";
    }
    leaf set-stcp-chunk1 {
        type boolean;
        description "set chunk value in sctp header";
    }
    description "sctp header
        actions";
}

grouping L4-header-match {
    choice l4-header-match-type {
        case l4-tcp-header {
            uses tcp-header-match;
        }
        case l4-udp-header {
            uses udp-header-match;
        }
        case l4-sctp {
            uses sctp-header-match;
        }
    }
    description "L4 match
        header choices";
}
description "L4 header
    match type";
}

grouping l4-header-action {
    choice L4-header-match-type {
        case l4-tcp-header {
            uses tcp-header-action;
        }
        case l4-udp-header {
```

```
        uses udp-header-action;
    }
    case l4-sctp {
        uses sctp-header-action;
    }
    description "L4 header
        match action choices";
}
description "L4 header matches";
}

grouping service-header-match {
    choice service-header-match-type {
        case sf-chain-meta-match {
            description "uses
                sfc:service-function-chain-grouping:
                + sfc:service-function-chain";
        }
        case sf-path-meta-match {
            description " uses
                sfc-spf:service-function-paths:
                +sfc-spf:service-function-path;
        }
    }
    description "SFC header match
        choices";
}
description "SFC header and path
    matches";
}

grouping service-header-actions {
    choice service-header-match-type {
        case sf-chain-meta-match {
            leaf set-chain {
                type boolean;
                description "flag to set
                    chain in sfc. Should
                    be amended to use SFC service
                    chain matching. Uses
                    sfc-sfc:service-function-chain-grouping:
                    + sfc-sfcservice-function-chain";
            }
        }
        case sf-path-meta-match {
            leaf set-path {
                type boolean;
                description "flag to set path in
                    sfc header. Amend to use sfc-spf
```



```
        function headers. Uses
        sfc-spf:service-function-paths:
            + sfc-spf:service-function-path.";
        }
        }
        description "choices in SFC for
        chain match and path match.";
        }
description "modify action for
SFC header.";
}

grouping rule_status {
    leaf rule-status {
        type string;
        description "status information
        free form string.";
    }
    leaf rule-inactive-reason {
        type string;
        description "description of
        why rule is inactive";
    }
    leaf rule-install-reason {
        type string;
        description "response on rule installed";
    }
    leaf rule-installer {
        type string;
        description "client id of installer";
    }
    leaf refcnt {
        type uint16;
        description "refernce count on rule. ";
    }
}
description
    "rule operational status";
}

grouping group_status {
    leaf name {
        type string;
        description "eca group name";
    }
    list rules_status {
        uses rule_status;
        description "eca rule list";
    }
}
```

```
    }
    description " group operational status";
  }

grouping packet-size-match {
  leaf l1-size-match {
    type uint32;
    description "L1 packet match size.";
  }
  leaf l2-size-match {
    type uint32;
    description "L2 packet match size.";
  }
  leaf l3-size-match {
    type uint32;
    description "L3 packet match size.";
  }
  leaf l4-size-match {
    type uint32;
    description "L4 packet match size.";
  }
  leaf service-meta-size {
    type uint32;
    description "service meta info match size.";
  }
  leaf service-meta-payload {
    type uint32;
    description "service meta-play match size";
  }
  description "packet size by layer
    only non-zero values are matched";
}

grouping time-day-match {

  description "matches for
    time of day.";
}

grouping eca-matches {
  uses interface-match;
  uses L1-header-match;
  uses L2-header-match;
  uses L3-header-match;
  uses L4-header-match;
  uses service-header-match;
  uses packet-size-match;
  uses time-day-match;
}
```

```
    description "ECA matches";
  }

  grouping eca-qos-actions {

    leaf cnt-actions {
      type uint32;
      description "count of ECA actions";
    }
    description "ECA set or change
      packet Actions. Actions may be
      added here for interface,
      L1, L2, L3, L4 nad service forwarding
      headers.";
  }

  grouping ip-next-fwd {
    leaf rib-name {
      type string;
      description "name of RIB";
    }
    leaf next-hop-name {
      type string;
      description "name of next hop";
    }
    description "ECA set or change
      packet Actions";
  }

  grouping eca-fwd-actions {
  leaf interface-fwd {
    type if:interface-ref;
    description "name of interface to forward on";
  }
  uses i2rs-rib:nexthop;
  uses ip-next-fwd;
  leaf drop-packet {
    type boolean;
    description "drop packet flag";
  }
  description "ECA forwarding actions";
}

  container bnp-eca-policy-set {
    container policy-groups {
      list rule-group {
        key "group-name";
      }
    }
  }
}
```

```

    leaf group-name {
        type string;
        description
            "name of group of rules";
    }
    list rule {
        key "rule-name";
        leaf rule-name {
            type string;
            description "name of rule";
        }
        leaf order-id {
            type uint16;
            description "Number of order
                in ordered list (ascending)";
        }
        leaf installer {
            type string;
            description
                "Id of I2RS client
                that installs this rule.";
        }
    }
    uses eca-matches;
    uses eca-qos-actions;
    uses eca-fwd-actions;
    description "ECA rules";
} // end of rule
description "groups of ECA rules";
} // end of group list
description "Policy groups.";
}
description "Policy sets.";
}
}
}
//<CODE ENDS>

```

6. IANA Considerations

This draft includes no request to IANA.

7. Security Considerations

These generic filters are used in the I2RS FB-RIBs to filter packets in a traffic stream, act to modify packets, and forward data packets. These I2RS filters operate dynamically at same level as currently deployed configured filter-based RIBs to filter, change, and forward traffic. The dynamic nature of this protocol requires that I2RS Filters track the installer of group information and rules.

This section will be augmented after a discussion with security experts.

8. Informative References

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