

A YANG Data Model for Flow Specification

draft-wu-rtgwg-flowspec-yang-cfg-00

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Background

□ Goal

- To define a standardized YANG data model of Flow Specification for configuration, state data, RPC and notification.

□ Way to do that:

- Collect comments from interested parties and WG.
- Organize the work through rtg-yang-coord list and maybe attend interim meetings.
- Maybe setup a common GIT repository and verify it.

□ RFC & Drafts Covered

- RFC5575 Dissemination of Flow Specification Rules
- draft-liang-ospf-flowspec-extensions-03
- draft-you-isis-flowspec-extensions-00
- ...

Background

- ❑ First published as draft-wu-rtgwg-flowspec-cfg-00.
- ❑ Chair suggested the filename should reflect its content for YANG. So rename to draft-wu-rtgwg-flowspec-yang-cfg-00.
- ❑ Got help from YANG doctors for YANG syntax.

Overview(Configuration)

Flowspec YANG tree: flowspec-cfg/flow-route

```
+--rw flowspec-cfg
|  +--rw flow-route* [name]
|  |  +--rw name          string
|  |  +--rw filter-rules
|  |  ... ..
|  |  +--rw filter-actions
|  |  ... ..
```

Flow routes are organized into a list with name as the key.


One flow route can contain 12 kinds of different filtering rules at most.

One flow route can contain 4 kinds of different filtering actions at most.

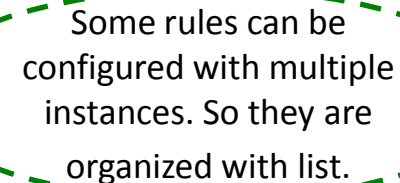
Overview(Configuration cont.)

Flowspec YANG tree: flowspec-cfg/flow-route/filter-rules

```
+--rw flowspec-cfg
|  +--rw flow-route* [name]
|    +--rw name      string
|    +--rw filter-rules
|      |  +--rw destination-prefix
|      |    ... ..
|      |  +--rw source-prefix
|      |    ... ..
|      |  +--rw ip-protocol
|      |    ... ..
|      |  +--rw port-number
|      |    ... ..
|      |  +--rw destination-port
|      |    ... ..
|      |  +--rw source-port
|      |    ... ..
|      |  +--rw icmp-type-value
|      |    ... ..
|      |  +--rw icmp-code-value
|      |    ... ..
|      |  +--rw tcp-flag
|      |    ... ..
|      |  +--rw pkt-len
|      |    ... ..
|      |  +--rw dscp
|      |    ... ..
|      |  +--rw fragment
|      |    ... ..
```



12 different kinds
of optional filter
rules.




Some rules can be
configured with multiple
instances. So they are
organized with list.

Overview(Configuration cont.)

▣ Flowspec YANG tree: flowspec-cfg/flow-route/filter-actions

```
+--rw flowspec-cfg
|  +--rw flow-route* [name]
|  |  +--rw name      string
|  |  +--rw filter-rules
|  |  ... ..
|  |  +--rw filter-actions
|  |  |  +--rw traffic-rate
|  |  |  |  +--rw rate?  Float
|  |  |  +--rw redirect
|  |  |  |  +--rw route-target?  String
|  |  |  +--rw traffic-marking
|  |  |  |  +--rw remark-dscp?  Union
|  |  |  +--rw traffic-deny
|  |  |  |  +--rw deny?  boolean
```



4 different kinds of optional filter actions.

Overview(State data)

Flowspec YANG tree: flowspec-state/flow-rib/flow-route

```
module: ietf-flowspec
  +--rw flowspec-cfg
    ... ..
  +--ro flowspec-state
    +--ro flowspec-rib
      | +--ro flowspec-route* [index islocal]
      |   +--ro index                uint32
      |   +--ro islocal              boolean
      |   +--ro local-name?          string
      |   +--ro neighbor?            inet:ip-address
      |   +--ro duration?            uint32
      |   +--ro filter-rules
      |     ... ..
      |   +--ro filter-actions
      |     ... ..
      |   +--ro protocol-specific
      |     ... ..
    +--ro flowspec-statis
      ... ..
```

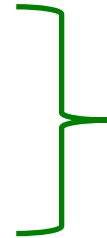
Flow specification state data includes running flowspec routes(rules & actions) and statistics.

Flow specification routes have protocol-specific part for different protocols.

Overview(State data cont.)

▣ Flowspec YANG tree: flowspec-state/flow-rib/flow-route

```
module: ietf-flowspec
  +--ro flowspec-state
    +--ro flowspec-rib
      |  +--ro flowspec-route* [index islocal]
      |  ... ..
      |  +--ro protocol-specific
      |    +--ro (protocol)?
      |      +--:(bgp)
      |        ... ..
      |      +--:(ospf)
      |        ... ..
      |      +--:(isis)
      |        ... ..
```



Protocol-specific part
definition for different
protocols.

Feedback

- ❑ YANG structure and syntax get help from YANG doctors. Wish to express gratitude here.
- ❑ The float type in this draft is defined by referencing the discussion in NETMOD mailing list.

Want to confirm this is the correct way to do.

```
typedef float {
  type union {
    type decimal64 {
      fraction-digits 14;
      range "-9999.99999999999999 .. 9999.99999999999999";
    }
    type decimal64 {
      fraction-digits 13;
      range "-99999.99999999999999 .. 99999.99999999999999";
    }
    type decimal64 {
      fraction-digits 12;
      range "-999999.99999999999999 .. 999999.99999999999999";
    }
    type decimal64 {
      fraction-digits 11;
      range "-9999999.99999999999999 .. 9999999.99999999999999";
    }
    type decimal64 {
      fraction-digits 10;
      range "-99999999.99999999999999 .. 99999999.99999999999999";
    }
    type decimal64 {
      fraction-digits 9;
      range "-999999999.99999999999999 .. 999999999.99999999999999";
    }
    type decimal64 {
      fraction-digits 8;
      range "-9999999999.99999999999999 .. 9999999999.99999999999999";
    }
  }
}
```

```
type decimal64 {
  fraction-digits 7;
  range "-99999999999.99999999 .. 99999999999.99999999";
}
type decimal64 {
  fraction-digits 6;
  range "-999999999999.99999999 .. 999999999999.99999999";
}
type decimal64 {
  fraction-digits 5;
  range "-9999999999999.99999999 .. 9999999999999.99999999";
}
type decimal64 {
  fraction-digits 4;
  range "-99999999999999.99999999 .. 99999999999999.99999999";
}
type decimal64 {
  fraction-digits 3;
  range "-999999999999999.99999999 .. 999999999999999.99999999";
}
type decimal64 {
  fraction-digits 2;
  range "-9999999999999999.99999999 .. 9999999999999999.99999999";
}
type decimal64 {
  fraction-digits 1;
  range "-99999999999999999.99999999 .. 99999999999999999.99999999";
}
}
```

Next step

- ❑ Collect feedback and comments for proposed part.
- ❑ Complete this data model and add missing parts.
 - State-data: statistics
 - RPCs
 - Notification
 - Cover more RFCs for flow specification updates
 - ?
- ❑ Looking for co-authors and wish more people to collaborate.