

IDR FSv2 Interim Design Team 2: Group Filters

5/6/2024

Time: 10-11:30am ET



Next on Agenda for Design Team 2 (DT2)

FSv2 – More IP Filters

6) Emerging filters by Groups [15 minutes]

6a) CATS [5 minutes] [TBD]

[draft-lin-idr-cats-flowspec-ts]

6b) SAVnet [5 minutes] [Nan Geng]

[draft-geng-idr-flowspec-sav-03]

6c) APN – [5 minutes] [TBD]

[draft-peng-idr-apn-bgp-flowspec-00]

BGP Flow Specification for Computing-Aware Traffic Steering

draft-lin-idr-cats-flowspec-ts-00

authors: Changwang Lin and Huijuan Yao

CATS-ID: set in IP packet by filter process (TBD)

FSv2 CAT Filters: needs

- Identify CAT-ID location in the IPv4/IPv6 packet
- Filter on CAT-ID

Post-CAT Filter actions: TBD

FSv2 Action

Pre-Action filters: Any (?)

Action: set CAT-ID in packet

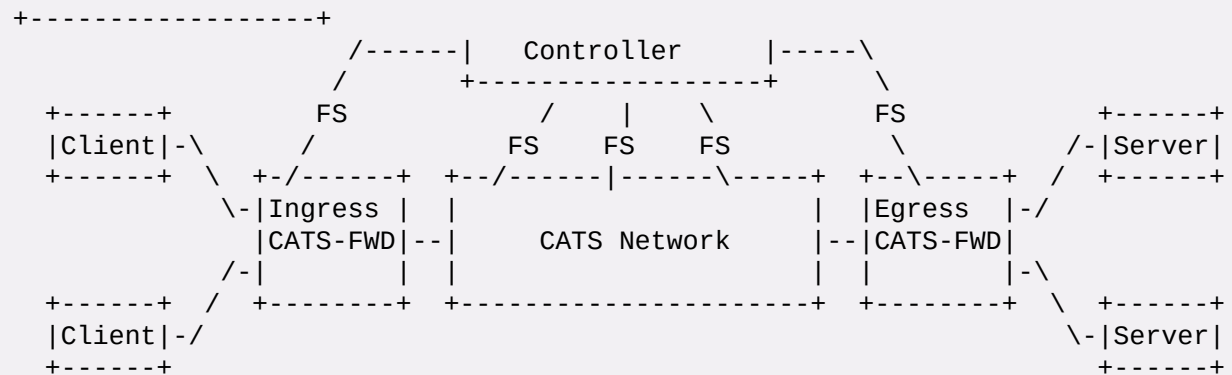


Figure 1. Flow Spec for CATS

BGP Flow Specification for Computing-Aware Traffic Steering

draft-lin-idr-cats-flowspec-ts-00 [2]

Filter: Needs to indicate where CS-ID is in IP packet (IPv4 or IPv6)

Actions: **same problem**

Current CS-ID

```
+-----+
| Component Type (1 octet) |
+-----+
| length (1 octet)        |
+-----+
| CS-ID (variable)        |
+-----+
```

Suggested CS-ID

```
+-----+
| Component Type (1 octet) |
+-----+
| length (1 octet)        |
+-----+
| Pkt Location (fixed length) |
+-----+
| CS-ID (variable)        |
+-----+
```

BGP Flow Specification for Source Address Validation

draft-geng-idr-flowspec-sav-03

authors: Nan Geng and Dan Li

Source validation: Validate source address comes from valid interfaces

Interfaces groups: set by configuration

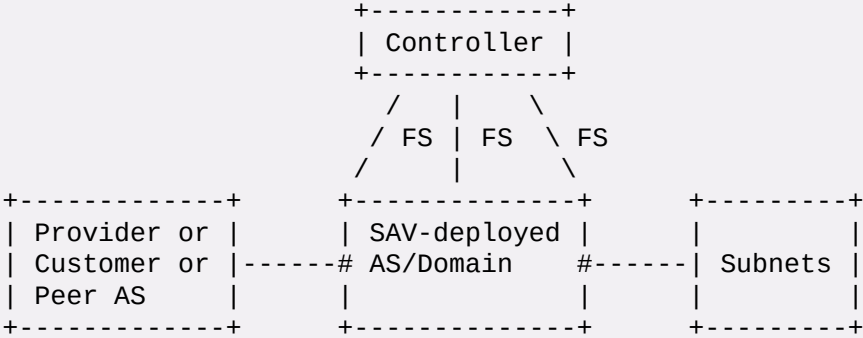
FSv2 SAV Filters: List of valid interfaces

SAV Filter: Must work with source address filters

FSv2 Action: Drop (? Copy before drop)

Issues:

1. Rule Scaling – needs hierarchy of filters + actions
- 2.



BGP Flow Specification for Source Address Validation

draft-geng-idr-flowspec-sav-03 [2]

FSv2 Encoding

```
[type (1 octet)]
[component-length (1 octet)]
[interfaces: <numeric_op, value>+]
```

numeric_0p is: 1 octet

```

0      1      2      3      4      5      6      7
+---+---+---+---+---+---+---+---+
| e | a |   len   | 0 |lt |gt |eq |
+---+---+---+---+---+---+---+

```

value:

0										1										2										3									
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1								
+ - + - + - + - + -										+ - + - + - + - + -										+ - + - + - + - + -										+ - + - + - + - + -									
V R										Group Identifier (variable, 6, 14, 30, or 62 bits)										~																			
+ - + - + - + - + -										+ - + - + - + - + -										+ - + - + - + - + -										+ - + - + - + - + -									

Example of SAV Rules set

User-Order 1: Looks for a set of interface group address

User-Order 2: numeric_op3: compares source addresses

Where

V = if set (1) the interface set is valid for source prefix.

if clear (0), the interface set is invalid.

R = reserved

Dissemination of BGP Flow Specification Rules for APN

draft-peng-idr-apn-bgp-flowspec-00

authors: Shuping Peng, Zhenbin Li, Huiyue Zhang, Ran Pang, Yong Cui

Group-ID in packet

- Option in IPv6 Hop-by-Hop header
- Option in IPv6 destination
- TLV in SR header

FSv2 APN Filter: APN-ID match

- List or single match
- Where is APN-ID located?

FSv2 Action

Group ID in FSv2 stream

- Extended Community with Group ID and Sub-Group ID

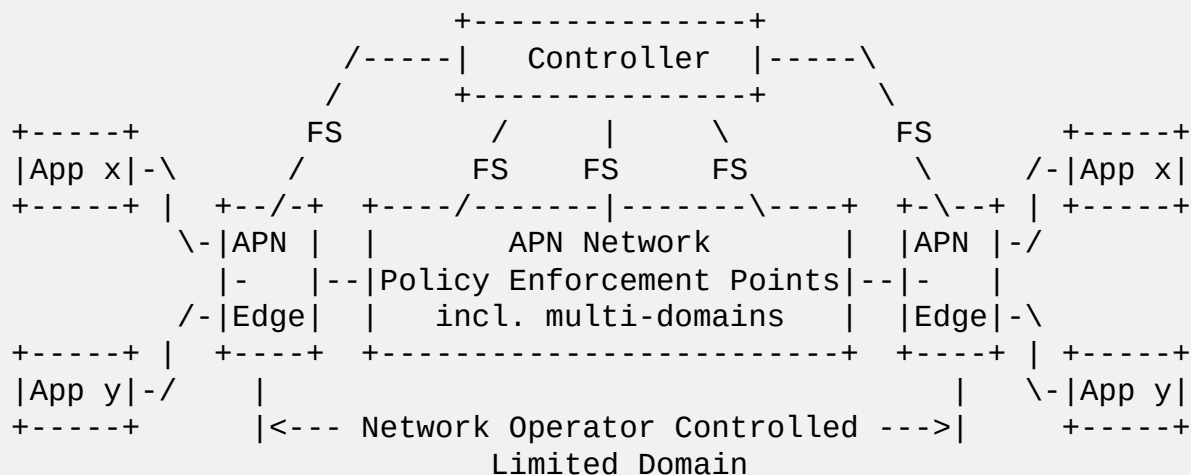


Figure 1. Flow Spec for APN

Dissemination of BGP Flow Specification Rules for APN draft-peng-idr-apn-bgp-flowspec-00 [2]

FSv2 Component APN

```

+-----+
| Component Type (1 octet) |
+-----+
| length (1 octet)         |
+-----+
| Mask-length (1 octet)    |
+-----+
| Mask (variable)          |
+-----+
| APN ID (variable)        |
+-----+

```

```

APN      +-----+
ID       | APP GROUP ID | User Group ID | \
         +-----+ \
           in FlowSpec
mask     +-----+ /
         | 1 | 1 | 1...1 | 0 | 0 | 0...0 | /
         +-----+ /
         &
APN      +-----+ /
ID       | APP GROUP ID | 0 | 0 | 0...0 | /_
         +-----+

```

Figure 2. The match example of the APN ID component

Dissemination of BGP Flow Specification Rules for APN draft-peng-idr-apn-bgp-flowspec-00 [2]

FSv2 Component APN Extended Community

```

0                                     1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
+ - + - + - + - + - + - + - + - + - + - + - +
| 0x03 or 0x43 | Sub-Type = TBD2 |
+ - + - + - + - + - + - + - + - + - + - + - +
|               Group ID           |
+ - + - + - + - + - + - + - + - + - + - + - +
|               Sub-Group ID        |
+ - + - + - + - + - + - + - + - + - + - + - +

```

Added to Traffic-Action

Ordered by Group ID,
then sub-group

Within a sub-Group

- If $T = 0$ (not set), if match this stops
- If $T = 1$ (set), then evaluation continues

5/6/2024



Questions?

FSv2 Design Team 2 - Interim 5/6/2024



Next on Agenda for Design Team 2 (DT2)

FSv2 – More IP Filters

7) Design 2 Questions [15 minutes]

8) Action items [5 minutes]