Destination-IP-Community Filter for BGP Flow Specification

draft-wu-idr-flowspec-dip-community-filter

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BGP Flow Specification

- BGP flow specification specifies the distribution of traffic filter policy via BGP. [RFC 8955] [RFC 8956] [RFC 9117]

- BGP-FS policies
  - Match condition: n-tuple match
  - Action: modifies the packet and forwards/drops the packet

- Traditional BGP-FS component type
  - Source Prefix
  - Destination Prefix
  - Port
  - IP Protocol
  - and so on
In practice, excessive ACL entries are occupied.

Redirect all traffic from AS1 to AS3/4: First go to R3

<table>
<thead>
<tr>
<th>Destination Prefix</th>
<th>Source Prefix</th>
<th>Redirect to IP Next-hop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix 31</td>
<td>Prefix 11</td>
<td>R3</td>
</tr>
<tr>
<td>Prefix 32</td>
<td>Prefix 11</td>
<td>R3</td>
</tr>
<tr>
<td>Prefix 41</td>
<td>Prefix 11</td>
<td>R3</td>
</tr>
<tr>
<td>Prefix 42</td>
<td>Prefix 11</td>
<td>R3</td>
</tr>
</tbody>
</table>

More BGP FS Rules
What if, we use BGP community…

Redirect all traffic from AS1 to AS3/4:
First go to R3

<table>
<thead>
<tr>
<th>Destination Community</th>
<th>Source Prefix</th>
<th>Redirect to IP Next-hop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>Prefix 11</td>
<td>R3</td>
</tr>
</tbody>
</table>

BGP FS Rules

IP Prefix 31
IP Prefix 32

IP Prefix 41
IP Prefix 42

BGP updates with BGP community 1:1

BGP updates with BGP community 1:1
Destination-IP-Community Filter

- Type TBD - Destination-IP-Community
- Encoding: <type (1 octet), [op, value]>

- Operator:
  - **e** - end-of-list bit. Set in the last {op, value} pair in the list.
  - **a** - AND bit. If unset, the previous term is logically ORed with the current one. If set, the operation is a logical AND. It MUST be unset in the Destination-IP-Community filter.
  - **len** - The length of the value field for this operator given as (1 << len). This encodes 1 (len=00), 2 (len=01), 4 (len=10), and 8 (len=11) octets.
  - **lt** - less than comparison between data and value.
  - **gt** - greater than comparison between data and value.
  - **eq** - equality between data and value.

- Value:
Next Steps

- Add a Flow Spec v2 Section
- Keep improving the draft by discussions via emails