# IP and AS/community Filters for BGP Flow Specification

https://datatracker.ietf.org/doc/draft-wang-idr-flowspec-dip-origin-as-filter
https://datatracker.ietf.org/doc/draft-wang-idr-flowspec-sip-origin-as-filter
https://datatracker.ietf.org/doc/draft-wu-idr-flowspec-dip-community-filter
https://datatracker.ietf.org/doc/draft-wu-idr-flowspec-sip-community-filter

IETF 125 Shenzhen
Presenter: Yang Huang(Huawei)

Haibo Wang (Huawei)
Aijun Wang (China Telecom)
Shunwan Zhuang (Huawei)
Tao Qin (Huawei)

# BGP Flow Specification

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

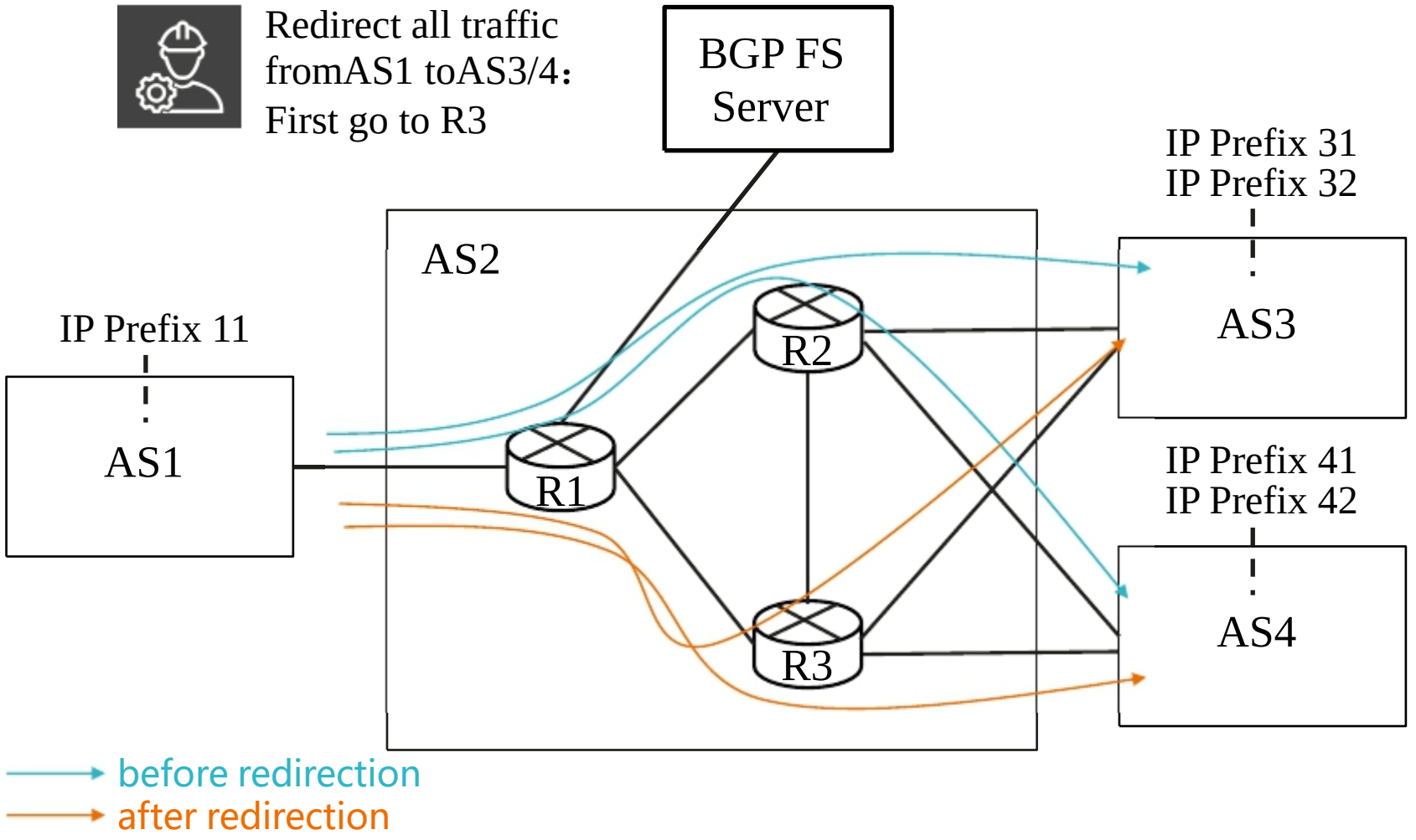
- BGP-FS policies
  - Match condition: n-tuple match
  - Action: modifies the packet and forwards/drops the packet

- 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 fromAS1 toAS3/4:
First go to R3




BGP FS Rules

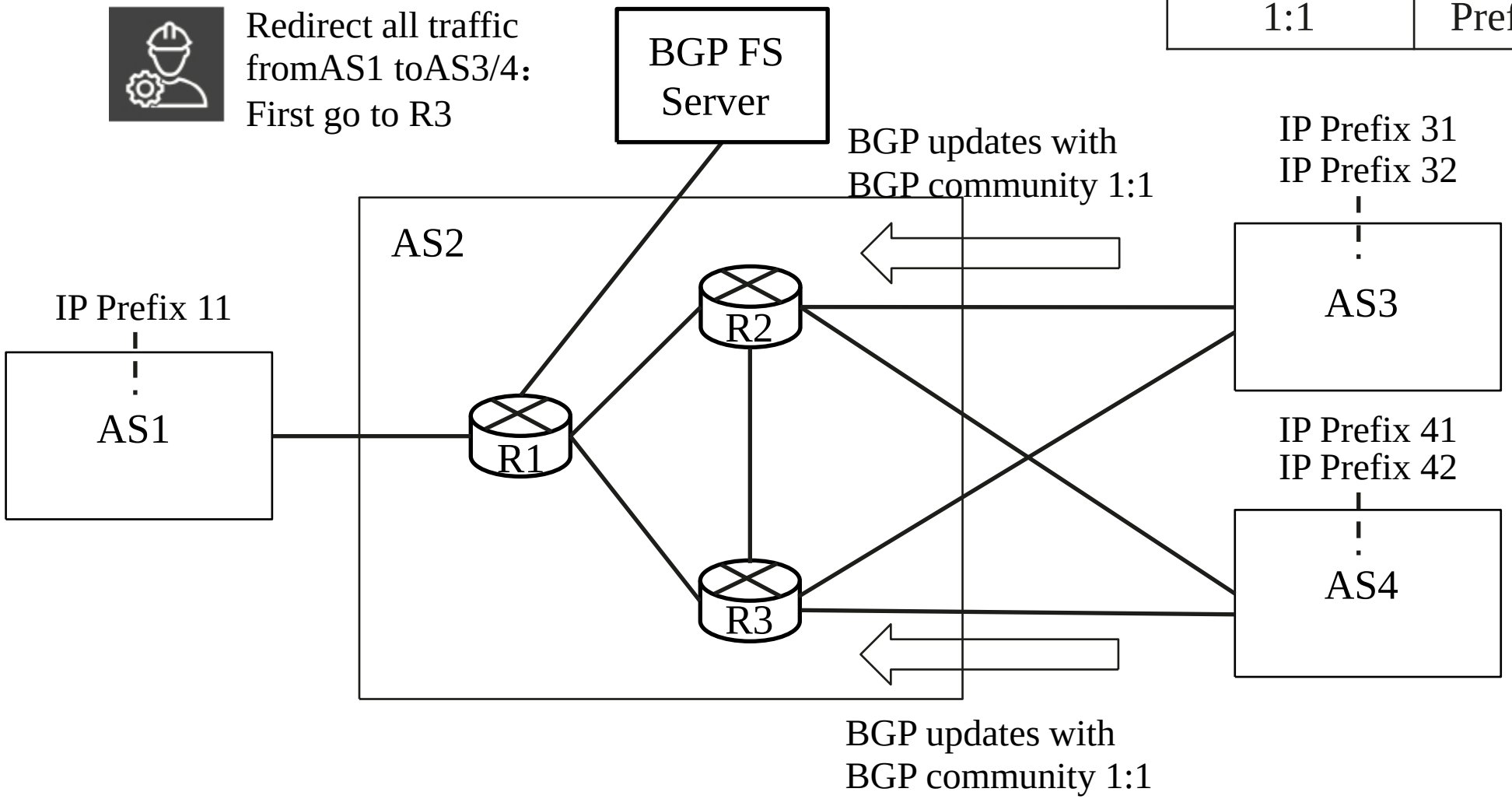
| Destination Prefix | Source Prefix | Redirect to IP Next-hop |
|---|---|---|
| Prefix 31 | Prefix 11 | R3 |
| Prefix 32 | Prefix 11 | R3 |
| Prefix 41 | Prefix 11 | R3 |
| Prefix 42 | Prefix 11 | R3 |
| More | | |

# What if, we use BGPcommunity…

BGP FS Rules

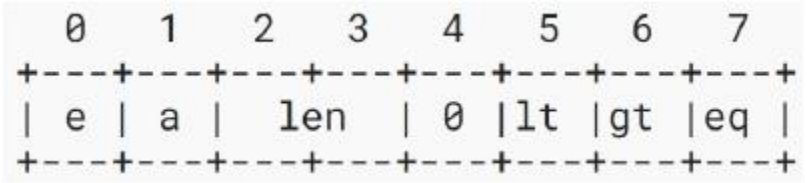
| Destination Community | Source Prefix | Redirect to IP Next-hop |
|---|---|---|
| 1:1 | Prefix 11 | R3 |

Redirect all traffic fromAS1 toAS3/4:
First go to R3



# 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 logicalAND. 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:

# Concerns about the use of control plane attributes

- In our scenario, there is no AS/Community information in forwarding plane, they are used only in control plane and then converted to one identifier which represent a kind of traffic classifier.
- Search the FIB information for more matching information of the flow rule, this is also used by other traffic process technology like QPPB(QoS policy propagation on BGP) or uRPF(unicast reverse path forwarding) .
- Or we can consider it as a extended IP matching filter for BGP flow spec， which compares to the basic matching components contained in the IP packet.
- Or it would be the limitation for us to use BGP Flow Spec rules efficiently.

# Why BGP Flow Specification

- Benefit for saving ACL resources and number of flow spec rules.
- Quick implementation by the widely used BGP flow specification technology.
- Classify the traffic with the basic BGP IPv4/IPv6 unicast route attributes(AS/Community).
- Efficient dynamic flow rules distribution for northbound applications.

# History of the draft

- v-00 for dip-origin-as-filter is submitted in 2019.
- Dip-community-filter is introduced in 2024.
- Dip-community-filter draft is presented and discussed in IDR in IETF119.
- Sip-origin-as-filter and sip-community-filter are introduced in 2026.

# Next Steps

- Requesting feedback and comments for improving these drafts
- Add a Flow Spec v2 Section

Thank You !