

APN Flowspec

<https://datatracker.ietf.org/doc/html/draft-peng-apn-bgp-flowspec-00>

APN YANG Model

<https://datatracker.ietf.org/doc/html/draft-peng-apn-yang-00>

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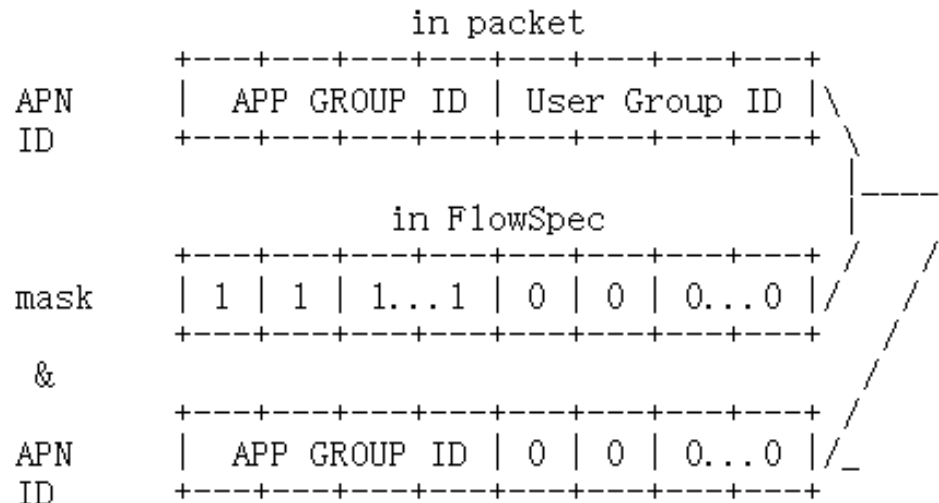
APN Flowspec

- Flowspec component - APN ID

- Encoding: <type (1 octet) = TBD, length (1 octet), mask (variable), APN ID (variable)>

- Example

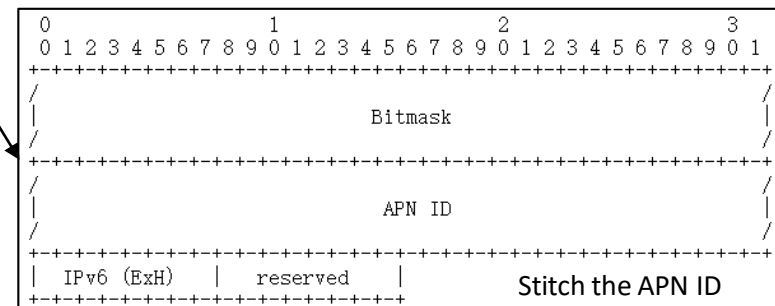
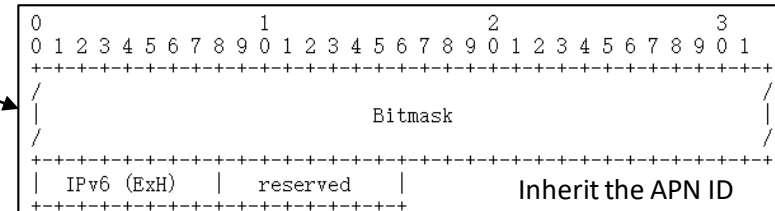
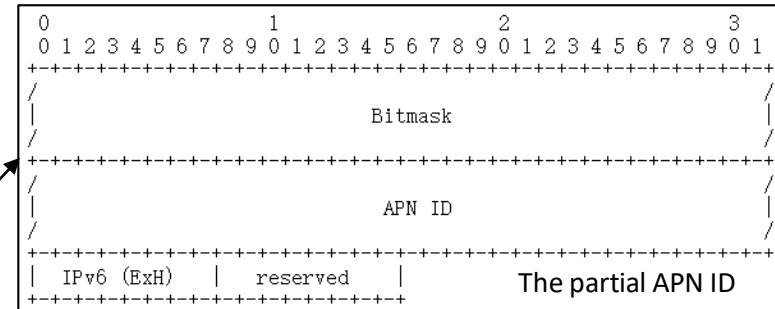
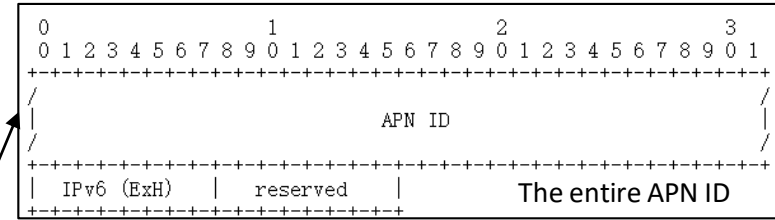
- The APN ID in the packet contains two parts, i.e. APP Group ID (0x300A) and User Group ID (0x0C08).
- In the Flow Spec, the mask is 0xFFFF0000 and the APN ID is 0x300A0000.
- Processing the match of the APN ID component is done by using the mask (0xFFFF0000) to indicate the bits of the APN ID carried in the packet to be matched against the one carried in the Flow Spec (0x300A0000). The result of this example is a successful match.



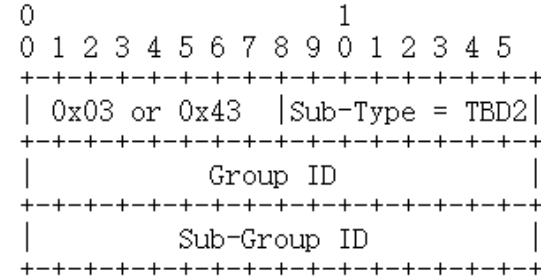
APN Flowspec

- Traffic filtering actions

Community Oxttss Sub-Type	action	encoding
TBD3	traffic-marking-apn (Section 7.1)	4/16-octet APN ID 1-octet IPv6 (ExH) Type 1-octet Reserved
TBD4	traffic-marking-apn-partial (Section 7.2)	4/16-octet Bitmask 4/16-octet APN ID 1-octet IPv6 (ExH) Type 1-octet Reserved
TBD5	inherit-apn (Section 7.3)	4/16-octet Bitmask 1-octet IPv6 (ExH) Type 1-octet Reserved
TBD6	stitch-apn (Section 7.2)	4/16-octet Bitmask 4/16-octet APN ID 1-octet IPv6 (ExH) Type 1-octet Reserved



APN Flowspec



- The ordering of FS is important for APN
 - There are other co-existing Flow Spec rules rather than only APN Flow Spec rules.
 - The different parts of the APN ID can be determined by the different Flow Spec rules.
- Usage Principles
 - Within a sub-group, the order is the same as the previously defined.
 - ✓ If the traffic-action Extended Community is carried and the Terminal Action (T, bit 47) is not set, when one condition in this sub-group is matched, the evaluation of any subsequent flow specifications within this sub-group stops; if T is set, then the evaluation continues;
 - ✓ If T is not carried, when one condition in this sub-group is matched, the evaluation of any subsequent flow specifications within this sub-group stops;
 - Between sub-groups
 - ✓ The sub-group is ordered with Sub-group ID, when the evaluation in one sub-group stops or finishes, it will start the evaluation in the following sub-group if there is any sub-group left.
 - Between groups
 - ✓ The group is ordered with Group ID, if at least one condition in this group is matched, when the evaluation of the flow specifications within the group reaches the end, the evaluation stops and the evaluation of the following group(s) will not start.

APN YANG Model

- APN ID Templates
- APN ID Marking
- APN Mapping Policies

```
module: ietf-apn
  +--rw apn!
    +--rw ipv6!
      +--rw global
        +--rw apn-id-inherit? apn-id-inherit-type
      +--rw apn-id-templates
        +--rw apn-id-template* [name]
          +--rw name string
          +--rw app-info-fields!
            +--rw app-fields
              +--rw app-field* [index]
                +--rw index uint32
                +--rw name string
                +--rw length? uint32
            +--rw user-info-fields!
              +--rw user-fields
                +--rw user-field* [index]
                  +--rw index uint32
                  +--rw name string
                  +--rw length? uint32
      +--rw apn-id-marking!
        +--rw filter
          | +--rw filter-type? apn-filter-type
          | +--rw ace-name? -> /acl:acls/acl/aces/a
          +--rw apn-ipv6-template -> /apn/ipv6/apn-id-
          +--rw app-fields
            | +--rw app-field* [name]
            | +--rw name -> /apn/ipv6/apn-id-templ
            | +--rw value uint32
          +--rw user-fields
            +--rw user-field* [name]
              +--rw name -> /apn/ipv6/apn-id-templ
              +--rw value uint32
      +--rw mapping-policys
        +--rw mapping-policy* [color]
          +--rw color uint32
          +--rw name string
          +--rw description? string
          +--rw apn-id-template? -> /apn/ipv6/apn-id-
          +--rw apn-ipv6-maps
            +--rw apn-ipv6-map* [index]
              +--rw index uint32
              +--rw app-fields
                +--rw app-field* [name]
                  +--rw name -> /apn/ipv6/apn-
                  +--rw value uint32
              +--rw user-fields
                +--rw user-field* [name]
                  +--rw name -> /apn/ipv6/apn-
                  +--rw value uint32
            +--rw (match-tunnel)
              +--rw (sr-policy)
                | +--rw color? uint32
              +--rw (ip)
                +--rw native-ip? empty
```

IPv6 data plane

Inherit APN ID

Define the templates of the structured APN ID

Fill in the template to set the APN ID

Map into tunnel/policies against the set APN ID

Thank you for your attention!