

# NRPs YANG Modules

[draft-ietf-teas-nrp-yang-01](#)

## TEAS WG

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**I E T F**

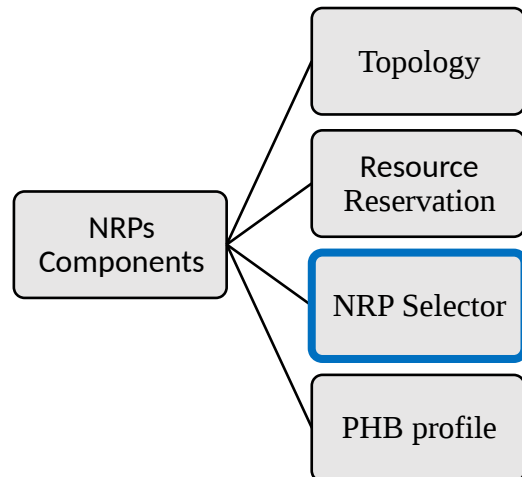
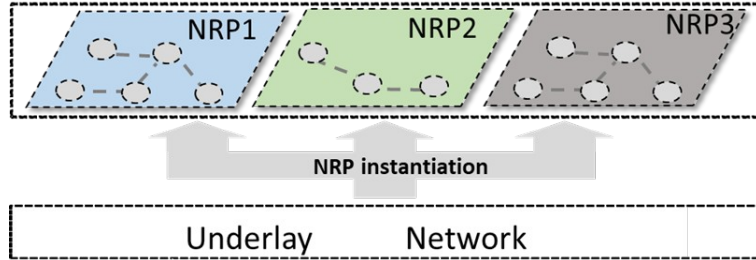
TEAS Interim

# Recap Background of NRPs YANG Modules

- The draft supports the management of NRPs as defined in RFC 9543, adopted by WG before last IETF 119.
  - Allocating and managing **subset of the buffer/queuing/scheduling** network resources according to specific Slice Service requirements
- Relevant documents:
  - draft-ietf-teas-ns-ip-mpls
  - draft-ietf-teas-nrp-scalability
  - **Both drafts indicate that there are multiple NRP data plane options**

# The data plane component in the overall NRPs instantiation model

- NRP “selector” is defined to accommodate the various data plane encapsulation types and values that are used to identify NRP-specific network resources (e.g. bandwidth)



```
module: ietf-nrp
  augment /nw:networks:
    +-rw nrp-policies
      +-rw nrp-policy* [name]
        +-rw name string
        +-rw nrp-id? uint32
        +-rw mode?
      identityref
        +-rw resource-reservation
        | ...
        +-rw selector
        | ...
        +-rw phb-profile? string
        +-rw topology
        ...
```

# NRP Selector Modelling

- Only one dedicated selector defined in draft-ietf-6man-enhanced-vpn-vtn-id
- Other encapsulation mechanisms overload the existing mechanisms, including ACL
- “mpls” container provides a place holder for future updates

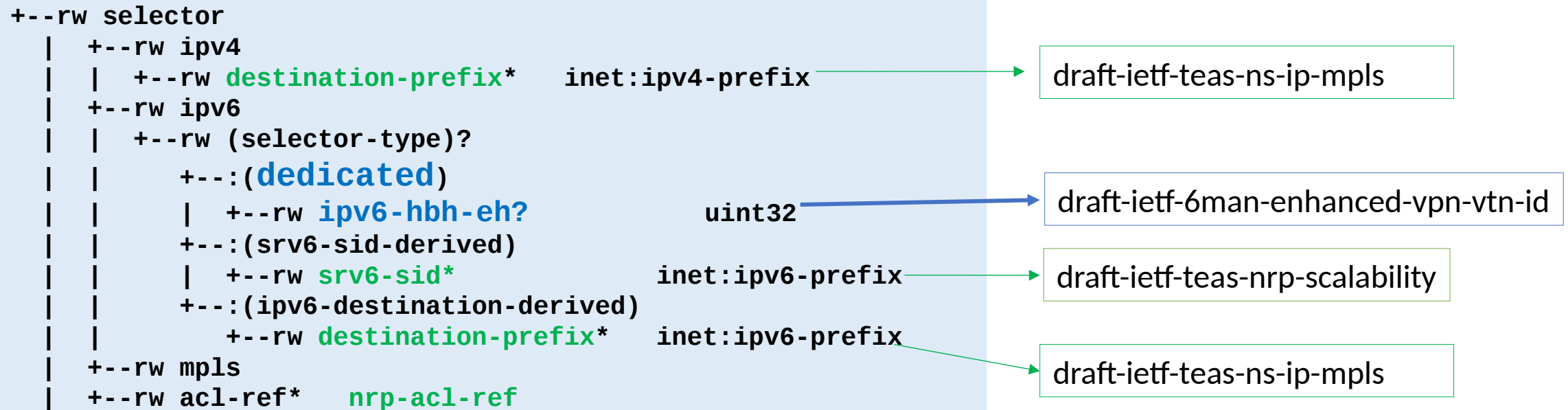


Figure 3: NRP Selector YANG subtree structure

# Next step

- Improve the NRPs models, and explain the usage with the Network Slice Service model
- Work on the issues collected in the WG adoption

# NRPs YANG Tree

```

module: ietf-nrp
  augment /nw:networks:
    +--rw nrp-policies
      +--rw nrp-policy* [name]
        +--rw name                string
        +--rw nrp-id?             uint32
        +--rw mode?               identityref
        +--rw resource-reservation
          | ...
        +--rw selector
          | +--rw ipv4
          | | +--rw destination-prefix* inet:ipv4-prefix
          | +--rw ipv6
          | | +--rw (selector-type)?
          | | | +--:(dedicated)
          | | | | +--rw ipv6-hbh-eh?          uint32
          | | | +--:(srv6-sid-derived)
          | | | | +--rw srv6-sid*
          | | | | | inet:ipv6-prefix
          | | | +--:(ipv6-destination-derived)
          | | | | +--rw destination-prefix*
          | +--rw mpls
          +--rw acl-ref*          nrp-acl-ref
    +--rw phb-profile?          string
    +--rw topology
      ...
  
```

## NRP instantiation

Figure 1: NRP Policy subtree high-level structure

```

module: ietf-nrp-device
  augment /nw:networks/nrp:nrp-policies/nrp:nrp-policy:
    +--rw interfaces
      +--rw interface* [interface]
        +--rw interface          if:interface-ref
        +--rw resource-reservation
          | ...
        +--rw selector
          | ...
        +--rw phb-profile?       string
  
```

## NRP device

Figure 7: NRPs Device YANG subtree high-level structure

```

  augment /nw:networks/nw:network/nw:network-types:
    +--rw nrp!
  augment /nw:networks/nw:network/nw:node:
    +--ro nrp
      +--ro nrp-aware-dp-id
      ...
  augment /nw:networks/nw:network/nt:link:
    +--ro nrp
      +--ro link-partition-type? identityref
      +--ro bandwidth-value?    uint64
      +--ro nrp-aware-dp-id
      | ...
      +--ro statistics
      ...
  augment /nw:networks/nw:network/nw:node:
    +--ro nrps* [nrp-id]
      +--ro nrp-id          uint32
      +--ro nrp
      ...
  augment /nw:networks/nw:network/nt:link:
    +--ro nrps* [nrp-id]
      +--ro nrp-id          uint32
      +--ro link-partition-type? identityref
      +--ro bandwidth-value?    uint64
      +--ro nrp-aware-dp-id
      ...
  
```

## NRP monitoring

Figure 6: NRPs Monitoring YANG subtree structure

# NRP Selector “mpls” Changes

- “mpls” container provides a place holder for future updates.

```
+--rw selector
  +--rw ipv4
  | +--rw destination-prefix*   inet:ipv4-prefix
  +--rw ipv6
  | +--rw (selector-type)?
  |   +--:(dedicated)
  |   | +--rw ipv6-hbh-eh?      uint32
  |   +--:(srv6-sid-derived)
  |   | +--rw srv6-sid*        inet:ipv6-prefix
  |   +--:(ipv6-destination-derived)
  |   | +--rw destination-prefix*  inet:ipv6-prefix
  +--rw mpls
  | +--rw (selector-type)?
  |   +--:(dedicated)
  |   | +--rw label?           rt-types:mpls-label
  |   | +--rw label-position?  identityref
  |   | +--rw label-position-offset?  uint8
  |   +--:(derived)
  |   | +--rw forwarding-label?  empty
  +--rw acl-ref*   nrp-acl-ref
```

Figure 3: NRP Selector YANG subtree structure

```
+--rw selector
  | +--rw ipv4
  | | +--rw destination-prefix*   inet:ipv4-prefix
  +--rw ipv6
  | +--rw (selector-type)?
  |   +--:(dedicated)
  |   | +--rw ipv6-hbh-eh?      uint32
  |   +--:(srv6-sid-derived)
  |   | +--rw srv6-sid*        inet:ipv6-prefix
  |   +--:(ipv6-destination-derived)
  |   | +--rw destination-prefix*  inet:ipv6-prefix
  +--rw mpls
  +--rw acl-ref*   nrp-acl-ref
```

Figure 3: NRP Selector YANG subtree structure