NRPs YANG Modules

draft-ietf-teas-nrp-yang-02

TEAS WG

Jul. 2024

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Status of NRPs YANG Modules

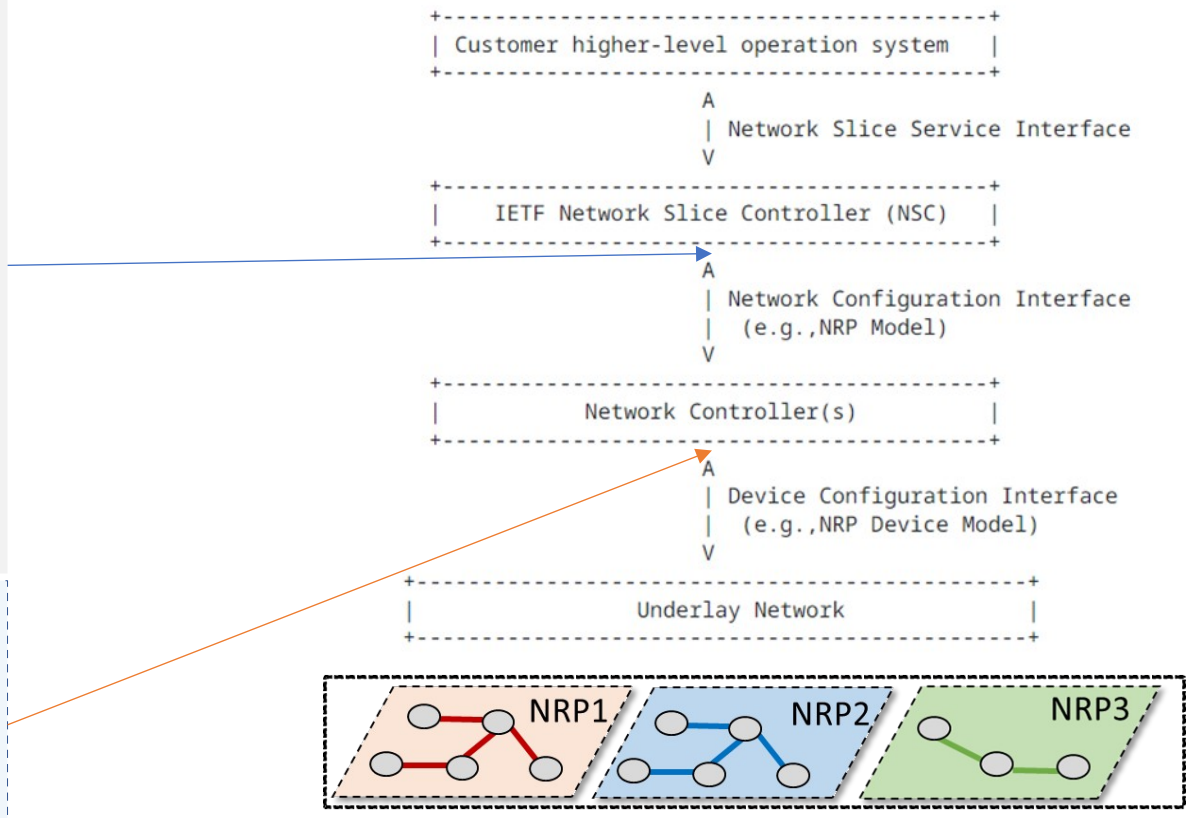
- Adopted as WG document before IETF 119, and presented in TEAS interim meeting
- **-02 updates summary**, mainly resolve the comments during WG adoption
  - Thanks Tom Petch, Adrian Farrel, Med Boucadair, Lius Contreras, Xuesong, Italo, Olga
  - **YANG model**:
    - Adds the standard **PHB profile list** per Med and Lius's comments, and in Section 3.2.3, descriptions to clarify the multiple PHBs for an NRP
    - **NRP monitoring** adds NRP specific node and link attributes augmentation on RFC 8345, following L3 topology augmentation practice, raised by Olga
    - Fix the YANG identity, "status" issues raised by Med
  - **Clarification**:
    - Abstract and Introduction Section: **RFC9543 NRP reference and NSS terms consistency**, etc.
    - Adds new section 3.1 to clarify the **NRP network and device models usage** in the context of NSC, network controllers, and devices
    - Section 3.2 adds description of **NRP policy modes (a), (b) and (c)**
    - Section 3.2.1 adds **resource reservation descriptions** for future augmentation, e.g. protection
    - Fix **YANG examples** in Appendix
- **Open issues from Med:**
  - #1 Add draft-bestbar-teas-yang-topology-filter when it is stable
  - #2 NRP device model is not a device model as it augments a network model

NRP YANG Model Components: Recap

- [RFC9543] defines Network Resource Partition as the subset of the buffer/queuing/scheduling **resources** and associated policies on the **set of links** in the underlay network associated with the NRP
- [draft-ietf-teas-ns-ip-mpls] defines **NRP Policy** as a policy construct that enables instantiation of mechanisms in support of service specific **control and data plane behaviors** on topological elements associated with the NRP
- [draft-ietf-teas-nrp-scalability] further defines NRP IGP forwarding optimization mechanisms.

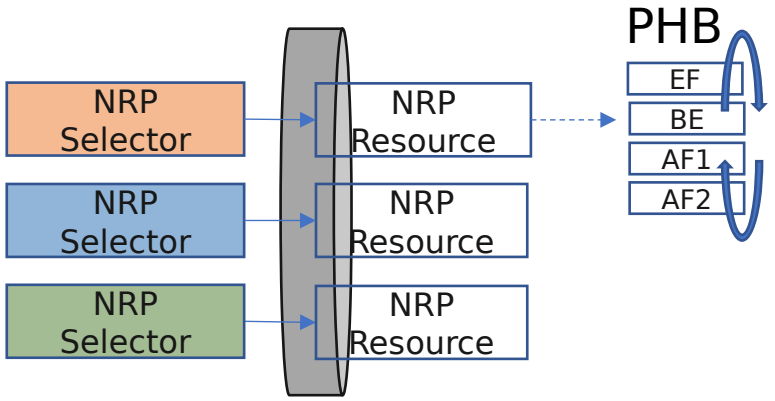
```
module: ietf-nrp
  augment /nw:networks:
    +--rw nrp-policies
       +--rw policy-profiles
       |  +--rw phb-profile-identifier* [id]
       |        ...
       +--rw nrp-policy* [name]
          +--rw name                        string
          +--rw nrp-id?                     uint32
    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

```
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?             leafref
```



New “phb-profile”

- PHB profiles can be shared among NRPs
- An NRP can support multiple PHB
  - NRP global PHB
  - Link specific PHB




```
module: ietf-nrp
  augment /nw:networks:
    +--rw nrp-policies
       +--rw policy-profiles
       |  +--rw phb-profile-identifier* [id]
       |        ...
       +--rw nrp-policy* [name]
          +--rw name                        string
          +--rw nrp-id?                     uint32
          +--rw mode?                       identityref
          +--rw resource-reservation
          |     ...
          +--rw selector
          |     ...
          +--rw phb-profile?                leafref
          +--rw topology
                ...
              +--rw (topology-type)?
              +--:(selection)
               |  +--rw select
               |     +--rw topology-group* [group-id]
               | ...
               |        +--rw links* [link-ref]
               |  ...
               |        +--rw phb-profile?        leafref
               +--:(filter)
                    +--rw filters
                    +--rw filter* [filter-ref]
                    |     ...
                       +--rw phb-profile?         leafref
```

#2: NRP Device Model Augments a Network Model

- Med:
  - The device model in the spec is not a device model as it augments a network model.
  - **“/nw:networks/nrp:nrp-policies/nrp:nrp-policy”** is the right root to make the augment?
- **Proposal**: the meaning of RFC 8345 “networks” is not clear in the context of NRP device configuration. We can simplify “nrp-device” by the reuse of “grouping” of “nrp” network model rather than augmentation

```
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?              leafref
```

#3 NRP selector

- Med: Do we exclude that a combination can be used a selector?
- **Proposal**: draft-ietf-teas-ns-ip-mpls or draft-ietf-teas-nrp-scalability may add the use cases of the combination?

```
+--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

Next Step

- Sync with the mechanisms defined in draft-ietf-teas-ns-ip-mpls and draft-ietf-teas-nrp-scalability
- Reviews and comments are always welcome