NRP YANG Modules

draft-wdbsp-teas-nrp-yang

TEAS WG

July 2023

Bo Wu (Presenting), Dhruv Dhody (Huawei)
Vishnu Pavan Beeram (Juniper Networks)
Tarek Saad (Cisco)
Shaofu Peng (ZTE Corporation)
Background

• The authors of two drafts have produced a **new merged draft (after meeting IETF 116)** from **draft-bestbar-teas-yang-nrp-policy** and **draft-wd-teas-nrp-yang**
  - **draft-wdbsp-teas-nrp-yang**

• An NRP is a subset of the **resources** and associated **policies** on each of a **connected set of links** in the **underlay network**.

• This draft covers both **NRP network model** and **device model**
  - NRP instantiation and monitoring
Model Design Consideration

- ‘ietf-nrp’: Defines ‘nrp-policy’ to specify the topology associated with the NRP, resource partitioning and SLO mechanisms, control plane and/or data plane, can be realized in IP/MPLS network.

- ‘ietf-nrp-device’: Augment ‘ietf-nrp’ to allow NRP interfaces can override specific attributes.
NRP Device Model Components

- The NRP device model augments the NRP YANG data model and covers attributes of NRP interfaces.

```yang
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
        ...

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
```
Next Step

• Solicit WG adoption
• Continue working on unresolved items
• Reviews and comments are welcome
NRP 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 (max-bw-type)?
      |     |     |   +-rw maximum-bandwidth? uint64
      |     |     |   +-rw maximum-bandwidth-percent? rt-types:percentage
      |     |   +-rw selector
      |     |     |   +-rw ipv4
      |     |     |     |   +-rw destination-prefix* inet:ipv4-prefix
      |     |     |   +-rw ipv6
      |     |     |   |   +-rw (selector-type)?
      |     |     |     |     |   +-:(dedicated)
      |     |     |     |     |     |   ... |
      |     |     |     |     |   +-:(srv6-sid-derived)
      |     |     |     |     |     |     |   ... |
      |     |     |   +-rw mpls
      |     |     |     |   |   +-rw (selector-type)?
      |     |     |     |     |     |   +-:(dedicated)
      |     |     |     |     |     |     |   ... |
      |     |     |     |     |     |   +-:(derived)
      |     |     |     |     |     |     |   ... |
      |     |     |   +-rw acl-ref* nrp-acl-ref
      |     |   +-rw phb-profile? string
      |   +-rw topology
      |     |   +-rw igp-congruent!
      |     |   |   +-rw multi-topology-id? uint32
      |     |   |   +-rw algo-id? uint32
      |     |   |   +-rw sharing? boolean
      |     |   |-rw (topology-type)?
      |     |     |   |   +-:(selection)
      |     |     |     |   +-rw select
      |     |     |     |     |   ... |
      |     |     |   +-:(filter)
      |   +-rw filters

NRP instantiation

augment /nw:networks/nw:network/nw:network-types:
  +--rw nrp!

augment /nw:networks/nw:network/nw:node:
  +--ro nrp
  |   +--ro selector
  |       |   +-ro srv6? srv6-types:srv6-sid
  |       |   +-ro sr-mpls? rt-types:mpls-label
  |   +--ro selector
  |       |   +-ro bandwidth-value? uint64
  |       |   +-ro link-partition-type? identityref
  |       |   +-ro stats
  |       |     |   |   +-ro admin-status? te-types:te-admin-status
  |       |     |   |   +-ro oper-status? te-types:te-oper-status
  |       |     |   |     |   +-ro one-way-available-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |   +-ro one-way-utilized-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |     |   +-ro one-way-min-delay? uint32
  |       |     |   |     |     |     |     |   +-ro one-way-max-delay? uint32
  |       |     |   |     |     |     |     |     |   +-ro one-way-delay-variation? uint32
  |       |     |   |     |     |     |     |     |     |   +-ro one-way-packet-loss? decimal64

augment /nw:networks/nw:network/nw:node:
  +--ro nrps* [nrp-id]
  +--ro nrp
  |   +--ro selector
  |       |   +-ro srv6? srv6-types:srv6-sid
  |       |   +-ro sr-mpls? rt-types:mpls-label
  |   +--ro selector
  |       |   +-ro bandwidth-value? uint64
  |       |   +-ro link-partition-type? identityref
  |       |   +-ro stats
  |       |     |   |   +-ro admin-status? te-types:te-admin-status
  |       |     |   |   +-ro oper-status? te-types:te-oper-status
  |       |     |   |     |   +-ro one-way-available-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |   +-ro one-way-utilized-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |     |   +-ro one-way-min-delay? uint32
  |       |     |   |     |     |     |     |   +-ro one-way-max-delay? uint32
  |       |     |   |     |     |     |     |     |   +-ro one-way-delay-variation? uint32
  |       |     |   |     |     |     |     |     |     |   +-ro one-way-packet-loss? decimal64

NRP monitoring

augment /nw:networks/nw:network/nt:link:
  +--rw nrps* [nrp-id]
  +--rw nrp
  |   +--ro selector
  |       |   +-ro srv6? srv6-types:srv6-sid
  |       |   +-ro sr-mpls? rt-types:mpls-label
  |   +--ro selector
  |       |   +-ro bandwidth-value? uint64
  |       |   +-ro link-partition-type? identityref
  |       |   +-ro stats
  |       |     |   |   +-ro admin-status? te-types:te-admin-status
  |       |     |   |   +-ro oper-status? te-types:te-oper-status
  |       |     |   |     |   +-ro one-way-available-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |   +-ro one-way-utilized-bandwidth? rt-types:bandwidth-ieee-float32
  |       |     |   |     |     |     |   +-ro one-way-min-delay? uint32
  |       |     |   |     |     |     |     |   +-ro one-way-max-delay? uint32
  |       |     |   |     |     |     |     |     |   +-ro one-way-delay-variation? uint32
  |       |     |   |     |     |     |     |     |     |   +-ro one-way-packet-loss? decimal64