NRPs YANG Modules

draft-ietf-teas-nrp-yang-01

TEAS WG
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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
      +--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

```
+--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
```

draft-ietf-teas-ns-ip-mpls

draft-ietf-6man-enhanced-vpn-vtn-id

draft-ietf-teas-nrp-scalability

draft-ietf-teas-ns-ip-mpls
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 *

|  |     |  +--:(ip6-destination-derived)

|  |     +--rw destination-prefix*

|  +--rw mpls

|  +--rw acl-ref* nrp-acl-ref

|  +--rw phb-profile? string

+--rw topology

...

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

Figure 6: NRPs Monitoring YANG subtree structure

**module: ietf-nrp-device**

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 nrp ...

Figure 7: NRPs Device YANG subtree high-level structure
NRP Selector “mpls” Changes

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

Figure 3: NRP Selector YANG subtree structure