A NRP YANG Module
draft-wd-teas-nrp-yang-00

TEAS WG
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NRP model intention

- NS framework 6.1. Architecture to Realize IETF Network Slices
  - In realization, the NSC can use NRPs to map the connectivity constructs of one or multiple NS.
  - To provide SLOs and SLEs for the specific connectivity constructs, an NRP needs to have specific topology and resources.
- NRP model is network configure data model, per RFC 8309 definition.
  - Depending the NS service, NRP instantiation can be pre-built or dynamic along with a NS service request.

Figure 5: Architecture of an IETF Network Slice
NRP topology modelling

• To support SLOs and SLEs of the connectivity constructs, the nodes and links providing the resources need to be identified

• Based on NS framework, an NRP topology can be derived from a filter topology or from the underlay physical topology.

• Therefore, to support various use cases, NRP modeling considers the following approaches:

Multiple NRPs can share same base Layer 3 topology, TE topology, etc.

Underlay (Physical) Topology

Filter Topology

Reference to the topology

An NRP instantiation

Layer 3 Topology

TE Topology

SR Topology

IETF 8345

IETF Network Topology

Multiple NRPs can share same base Layer 3 topology, TE topology, etc.
NRP resource configuration modelling

• NRP Resources include:
  • Bandwidth reservation: network-wide and link-specific
  • NRP data plane ID: The data plane encapsulation and identifier used in data packets to map to the NRP
  • NRP control plane: The topology and SLO & SLE constraints used for route computation of the NRP

```
NRP resources attributes:
• Bandwidth reservation
• Data plane ID
• Control plane
• Steering policy
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```
[Node*]
[Link*]
nrp

“ietf-network:network-types” : “nrp”

nrp-network-attributes

nrp-link-attributes

Per link NRP bandwidth-reservation
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NRP monitoring

• NRP link status
• NRP link resource usage
• NRP link PM metrics
NRP modification

• Extended as network conditions change
  • E.g. bandwidth on specific links
Next Step

• Solicit comments and reviews from WG
augment /nw:networks/nw:network/nw:node:
  ++-rw nrp
  |   ++-rw nrp-arc-srv6
  |   ++-rw nrp-arc-srv6-sid
  |   ++-rw nrp-arc-srv6-label
  |   ++-rw nrp-arc-srv6-type
  |   ++-rw nrp-arc-srv6-type!
  |   ++-rw nrp-arc-srv6-mp-type!
  |   ++-rw steering-policy
  |   ++-rw acl-ref*  -> /acl:acls/acl/name