

Scalability Considerations for Network Resource Partition (NRP)

draft-dong-teas-nrp-scalability-01

Jie Dong, Zhenbin Li @Huawei

Liyan Gong, Fengwei Qin @China Mobile

Guangming Yang @China Telecom

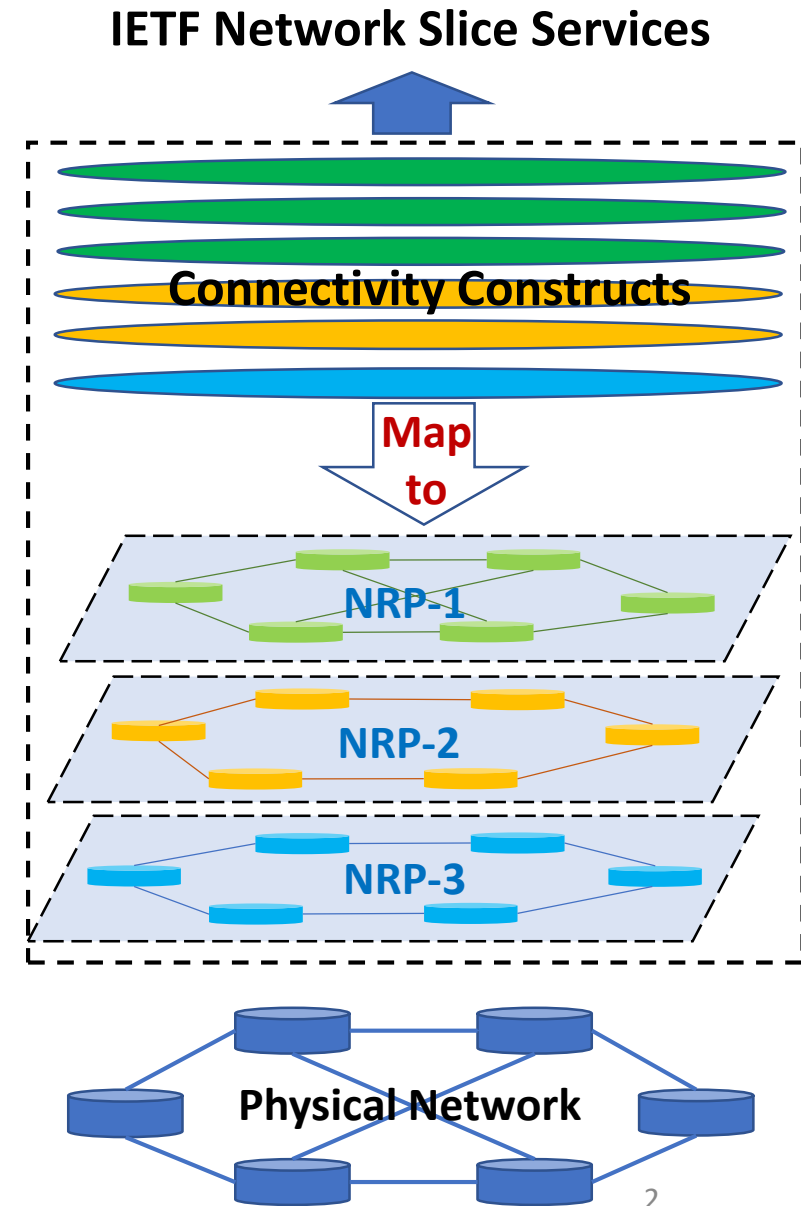
James Guichard @Futurewei

Gyan Mishra @Verizon

Tarek Saad, Vishnu Beeram @Juniper

Recap of VPN+ and Network Slicing

- VPN+ framework is described in *draft-ietf-teas-enhanced-vpn*
 - One typical use case is to deliver IETF network slices services
- The high-level realization architecture of IETF network slice is described in *draft-ietf-teas-ietf-network-slices*
 - Mapping network slice connectivity constructs to the underlay NRPs
- An NRP consists of a set of dedicated or shared network resources, and is associated with a (filter) topology
 - Can be used to support one or a group of network slice services
- The scalability of NRP is important for widely deployment of IETF network slices
 - This document provides scalability considerations of NRP in both the control plane and data plane



Updates after IETF 112

- The draft name is changed from vtn-scalability to nrp-scalability
 - Based on the terminology discussion in the WG and between the draft authors
 - The relationship between NRP and VTN is described in VPN+ framework
- New coauthors are added
 - Join effort in the alignment between several network slicing related documents
- Updates the descriptions and terminologies to align with IETF network slice draft
- The valuable review comments from Adrian and others are resolved

Next Steps

- This document provides the scalability analysis and optimization suggestions for the data plane and control plane of NRP
 - Provides guidance to the data plane and control plane mechanisms and protocol extensions
- The authors believe this version is ready for WG adoption
 - WG adoption request has been sent to the mail list at Feb. 7, 2022

Thank You

Proposed Scalability Optimizations

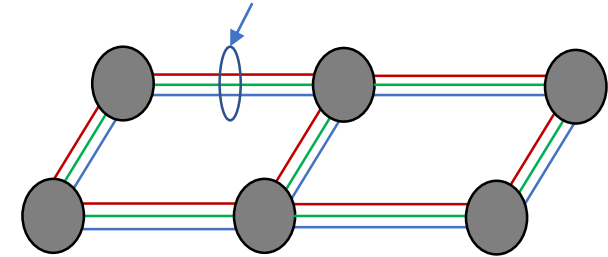
- Control plane scalability optimization

- Shared control protocol instances/sessions among multiple NRPs

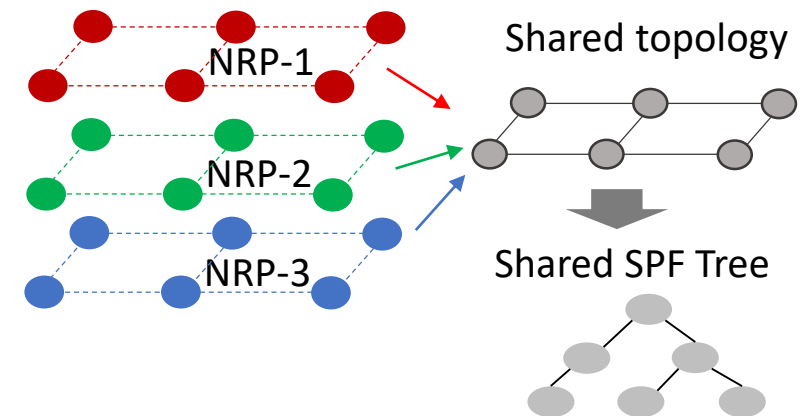
- Shared topology specific computation among multiple NRPs

- Hybrid control plane with the help of centralized controller

- Shared IGP instance and adjacency for multiple NRPs



- Shared topology and SPF computation between multiple NRPs



Proposed Scalability Optimizations (Cont.)

- Data plane scalability optimization
 - Decouple the resource ID from the topology-specific IDs used in packet forwarding
 - A data plane NRP ID can be introduced
 - IPv6 data plane
 - Based on IPv6 HBH extension header
 - MPLS data plane
 - Under discussion in MPLS Open DT

