

Segment Routing for End-to-End IETF Network Slicing

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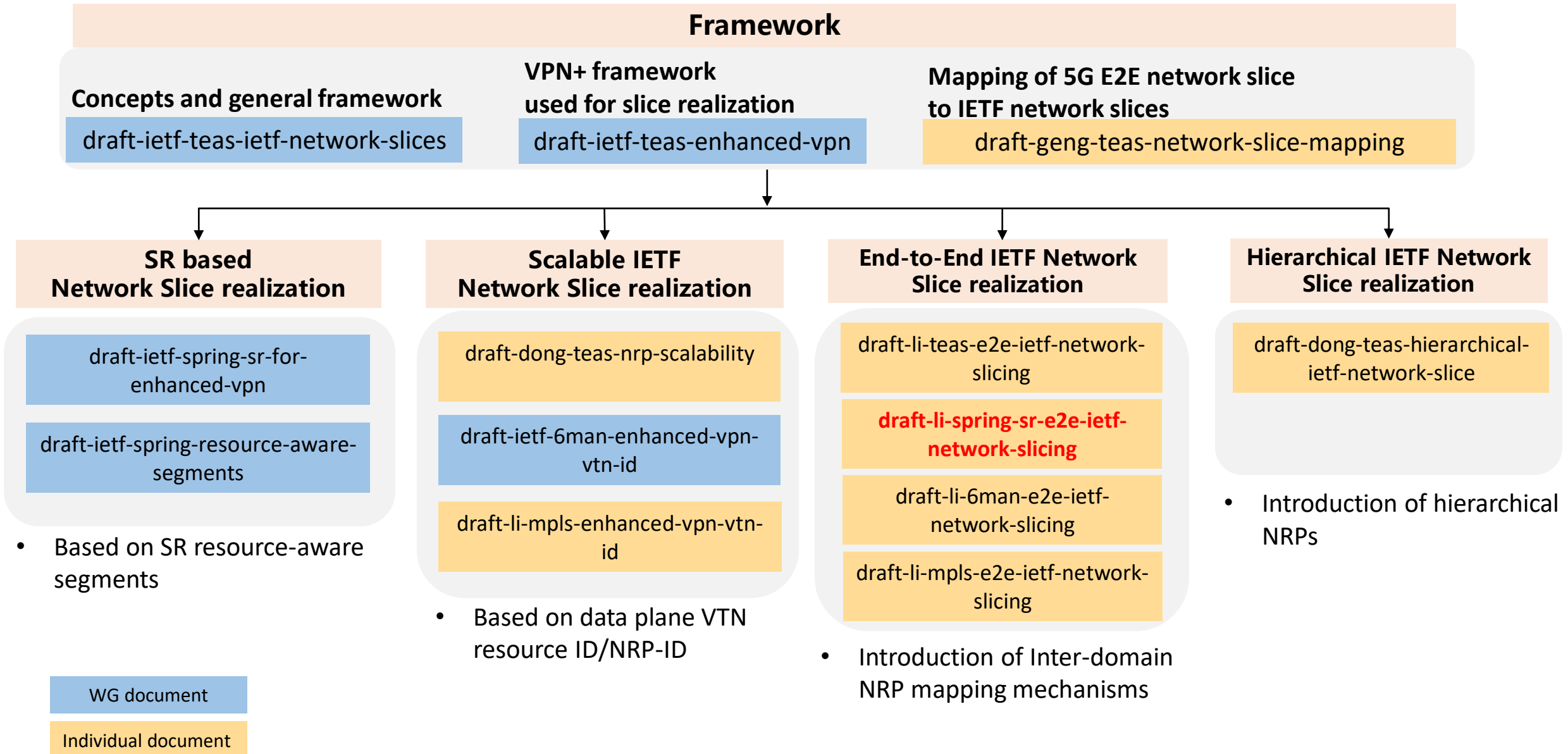
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Background

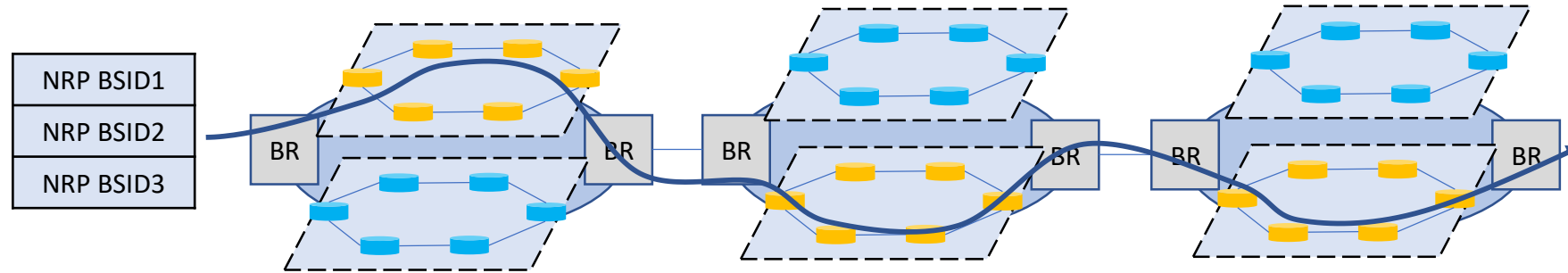
- Network slicing can be used to meet the connectivity and performance requirement of different services or customers in a shared network
- draft-ietf-teas-ietf-network-slices describes the concepts and general framework of IETF network slice
 - IETF network slices can be realized by mapping one or a group of connectivity constructs to an NRP
 - NRP is an instantiation of VTN defined in draft-ietf-teas-enhanced-vpn (VPN+)
- An end-to-end IETF network slice may span multiple network domains
 - In each domain, IETF network slice traffic needs to be mapped to a local NRP.
- This document describes the SR extensions to support end-to-end IETF network slice
 - By introducing NRP Binding Segments

IETF Network Slice Framework and VPN+ Realization



NRP Binding Segments

- NRP Binding Segment (BSID) is a special BSID used by the domain edge nodes to steer traffic into a local NRP
- The NRP BSID can be instantiated with SRv6 or SR-MPLS data plane



Types of NRP Binding Segments

- NRP-TE BSID: to steer traffic to an SR Policy associated with a local NRP
 - The first variant is to use one type of NRP BSID to specify the mapping of traffic to a SR policy which consists of list of resource-aware segments associated with a local NRP.
 - The second variant is to use one type of NRP BSID to specify the mapping of traffic to a SR policy which is bound to a local NRP ID.
- NRP-BE BSID: to steer traffic to follow the shortest path within a local domain NRP.
 - The first variant is to use one type of NRP BSID to determine a local NRP-ID, and instruct the encapsulation of the local NRP-ID into the packet at the domain edge node.
 - The second variant is to use one type of NRP BSID to specify the mapping of traffic to a local NRP, the local NRP-ID is specified in the associated fields by the ingress node, and is encapsulated into the packet at the domain edge node.

SRv6 Functions for NRP BSID

- SRv6 NRP-TE BSID
 - The first variant: End.B6.Encaps defined in RFC 8986 can be reused.
 - The second variant: End.B6NRP.Encaps
- SRv6 NRP-BE BSID
 - The first variant: End.NRP.Encaps
 - The second variant: End.BNRP.Encaps

NRP BSID in SR-MPLS

- Similarly, NRP BSID can be instantiated using SR-MPLS Binding SIDs with different semantics
 - Please refer to the draft for the details

Updates in -03 Version

- Aligns the terminology with IETF network slice and VPN+ draft
- Define two types NRP Binding Segments which are for SR TE and BE
- Editorial changes

Next Steps

- Comments and feedback are welcome
- Refine this draft accordingly

Thank You