# BGP-LS with Multi-topology for SR based VTN

*draft-xie-idr-bgpls-sr-vtn-mt-03*

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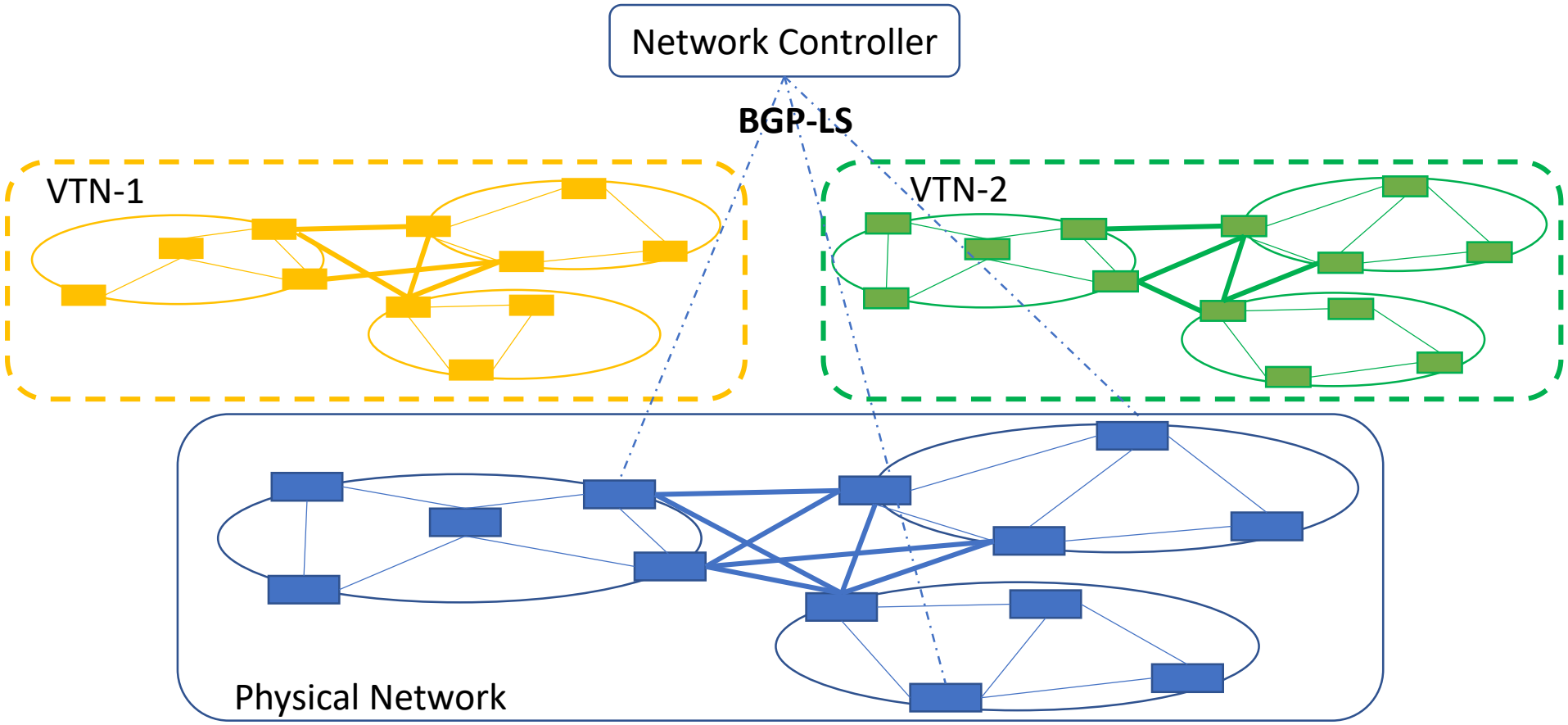
# Background

- A VTN is a virtual underlay network with the required topology and resource attributes to serve one or a group of enhanced VPN (VPN+) services
  - Introduced in draft-ietf-teas-enhanced-vpn
- The mechanism and procedure of building SR based VTNs are described in *draft-ietf-spring-sr-for-enhanced-vpn*
  - Based on the resource-aware segments defined in draft-ietf-spring-resource-aware-segments
- The IGP mechanisms for SR based VTN are discussed in LSR WG
  - The Multi-Topology based approach is described in draft-ietf-lsr-isis-sr-vtn-mt
- This documents describes the MT based BGP-LS mechanisms for SR based VTN
  - Align with the approach of MT based SR VTN in IGP
  - Distribute the VTN topology and resource attributes to network controller
  - The Inter-domain topology and TE attributes of VTN are also considered

# Scope of this Document

- BGP-LS is used to distribute the intra-domain topology, the inter-domain topology and the associated TE attributes of the VTNs to the network controller



# Mechanism in this document

- MT-ID is reused as the control plane identifier of VTN
  - It is assumed each VTN is associated with a unique logical topology

- Per-VTN Intra-Domain Topology Advertisement
  - Use MT-ID TLV in BGP-LS Link NLRI, Prefix NLRI to advertise the per-VTN topology information
  - Topology-specific SR SIDs are advertised using BGP-LS SR/SRv6 extensions

- Per-VTN Inter-Domain Topology Advertisement
  - Use MT-ID TLV with BGP-LS EPE to advertise the per-VTN inter-domain connectivity and the topology-specific Peer-Adj-SIDs, Peer-node-SIDs and Peer-set-SIDs.
  - MT-ID needs to be unified planed to ensure the consistency both in each domain and on the inter-domain links

# Mechanism in this document (Cont.)

- Advertise topology specific TE attributes
  - One link can participate in multiple VTNs
  - The topology-specific TE attributes are used to specify the resources allocated to each VTN
    - Use MT-ID TLV in the link NLRI, then the Maximum Link Bandwidth sub-TLV is used to advertise the sub-set of bandwidth allocated to the VTN identified by the MT-ID
    - The advertisement of other TE link attributes per VTN is for further study

# Scalability Considerations

- Each VTN is associated with a unique logical topology
  - Independent topology/route computation for each VTN is needed
- When a link or prefix participates in multiple topologies, separate NLRIs need to be generated to advertise the link or prefix in each topology, together with the topology-specific SIDs and TE attributes
  - This may increase the number of BGP Updates advertised to the controller
- The MT based SR VTN mechanism is applicable to network scenarios where a limited number of VTNs is needed

# Updates in -03 Version

- The document type is changed to informational
  - Aligned with the IGP MT based SR VTN draft
- In scalability considerations, add text to clarify the applicability of the MT based SR VTN approach
- Update the reference documents
- Editorial changes

# Next Steps

- The content of this document is stable
- Consider WG adoption?

# Thank You