

# Carrying VTN-ID in IPv6 Extension Header

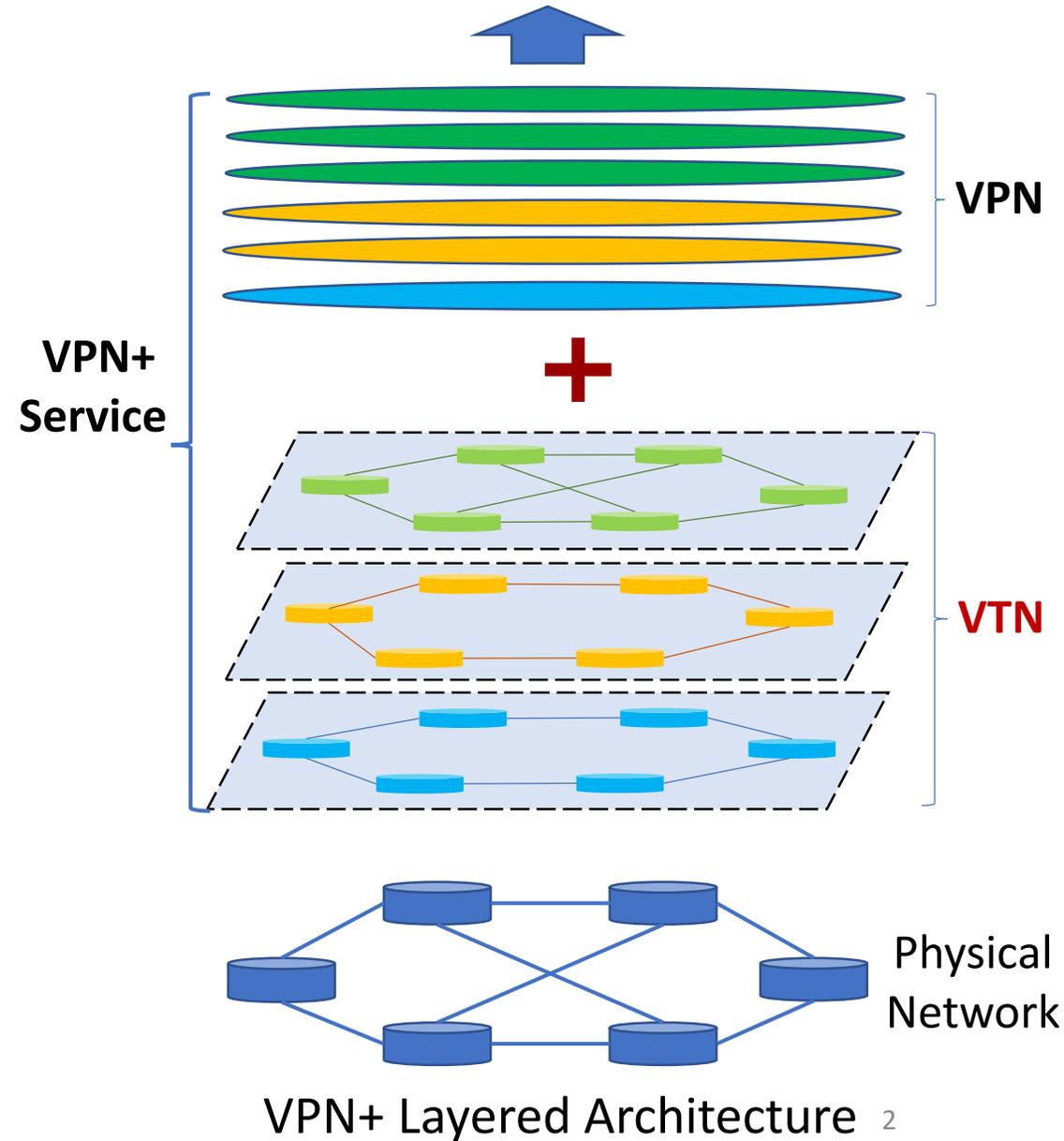
*draft-dong-6man-enhanced-vpn-vtn-id-01*

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# Background

- The VTN concept is introduced in *draft-ietf-teas-enhanced-vpn*
  - A **virtual underlay network** with the topology and network resources required by one or a group of VPN+ services
- Information of the associated VTN needs to be carried in data plane
  - Nodes can steer packet to the set of local network resource allocated to the VTN for packet processing
- This document proposes to carry VTN-ID in IPv6 extension headers
  - Applicable to IPv6/SRv6 networks



# Mechanisms in this draft

- A new IPv6 extension header option is defined to carry VTN-ID

Option Type	Option Data Len	Option Data
BBCTTTT	00000100	4-octet VTN ID

- **BB**: set to 00, if unrecognized, skip and continue processing
- **C**: set to 0, can not change en route
- **VTN ID**: 4-octet identifier of a VTN
  - match the length of network slice ID in wireless network (3GPP)
- It is RECOMMENDED to carry VTN option in IPv6 extension headers which can be processed hop-by-hop in forwarding plane

# Procedures

- VTN option insertion
  - Ingress node of IPv6/SRv6 domain encapsulates VTN option in an outer IPv6 header, according to traffic classification and mapping policy
- VTN based packet forwarding
  - Nodes which can parse VTN option SHOULD use VTN-ID to identify the VTN the packet belongs to, and use the local resource allocated to the VTN for packet forwarding
    - Forwarding behavior is based on both the destination IP and the VTN-ID
  - Nodes which cannot parse VTN option SHOULD ignore this option
    - Forwarding behavior is based on destination IP only

# Deployment considerations

- Taking implementations of Hop-by-Hop Options header into consideration
  - Packets containing Hop-by-Hop Options header may be dropped or assigned to a slow processing path [RFC 8200]
- Operator needs to make sure all the network nodes involved in a VTN can
  - either process the Hop-by-Hop Options header in packet forwarding,
  - or ignore the Hop-by-Hop Options header and continue to forward the packet based on other fields and headers.
- It is RECOMMENDED to configure nodes involved in VTN to process the Hop-by-Hop Options header if there is a nob for this.

# Next Steps

- Comments and feedbacks are welcome
- Revise the draft accordingly

Thank You