

# Carrying VTN-ID in IPv6 Extension Header

*draft-dong-6man-enhanced-vpn-vtn-id-06*

Jie Dong, Zhenbin Li @Huawei

Chongfeng Xie, Chenhao Ma @China Telecom

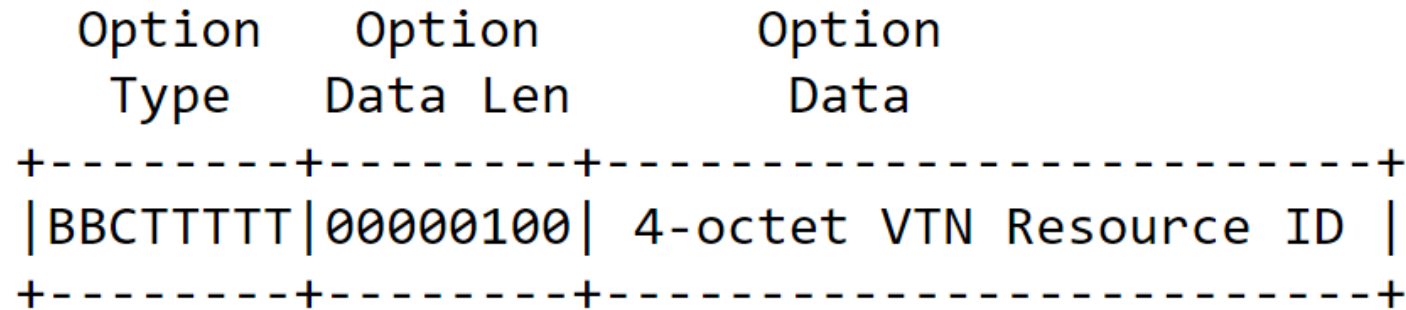
Gyan Mishra @Verizon

# Background

- Customers in 5G and other network scenarios require connectivity services with advanced characteristics
  - Such service is called enhanced VPN (VPN+) services
- A VTN is a virtual underlay network consisting of a set of dedicated or shared network resources, and is associated with a customized logical topology
  - Used as the virtual underlay to deliver one or a group of VPN+ services
- The identifier of the VTN needs to be carried in data packet, and parsed by each hop along the forwarding path
  - To steer packets to use the set of network resource allocated to the VTN for processing
- This document proposes a mechanism to carry VTN information in IPv6 HBH extension header

# Proposed Extensions

- A new option type is defined to carry VTN resource ID in HBH header



- **BB**: set to 00, if unrecognized, skip and continue processing
- **C**: set to 0, can not change en route
- **VTN Resource ID**: 4-octet identifier used to uniquely identify the set of network resources allocated to a VTN
  - match the length of network slice ID (S-NSSAI) defined in 3GPP for 5G

# Procedures

- Based on the classification/mapping policy, the ingress node of IPv6 domain encapsulates the received data packet with an outer IPv6 header, and the VTN option in the HBH header which contains the VTN resource ID the packet mapped to
- On each node along the packet forwarding path which can parse the VTN option
  - IPv6 destination address is used to determine the next-hop and the outgoing interface
  - VTN resource ID in the VTN option is used to further determine the set of local resources allocated on the outgoing interface for processing and sending the packets of the VTN
  - Traffic Class may be used to provide Diff-Serv treatment for packets of the same VTN
- The egress node of IPv6 domain decapsulates the outer IPv6 header, including the VTN option in the HBH header

# Comments and Resolution in 05/06 Version

- Comment #1: Is VTN-ID used to determine the path or the resource?
  - Resolution: The term is changed to VTN resource ID, and clarifies that its function is to determine the set of local resources allocated to the VTN
- Comment #2: Suggest to add text about the relationship between VTN and the topology control mechanisms
  - Resolution: Text about the mechanisms used to specify the VTN topology is added
- Comment #3: Suggest to add brief introduction about VPN, VPN+ and VTN as background information
  - Resolution: The introduction about VPN, VPN+ and VTN is added in the abstract and introduction

# Next Steps

- This document proposes a new IPv6 option type for per-hop forwarding treatment
  - HBH is the right approach for this application
- After recent discussion and revisions, the content of the document is stable
- The authors would like to request WG adoption on this draft

Thank You