

Support for VTN in PCEP

draft-dong-pce-pcep-vtn-00

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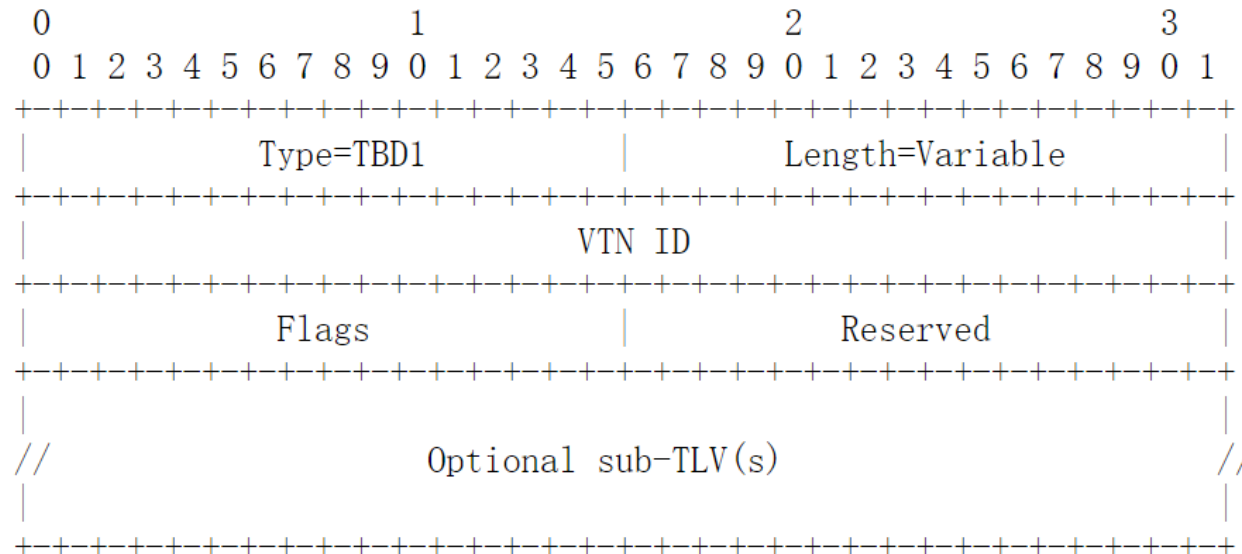
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Background

- 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
 - Introduced in draft-ietf-teas-enhanced-vpn
 - Can be used to enable enhanced VPNs (VPN+) for the network slice realization
- When computing or establishing a path in a VTN, PCE needs to take the VTN-specific resource and topology attributes into consideration
- This document describes the PCEP extensions to carry VTN information in PCEP messages for:
 - VTN-specific path computation request, response
 - VTN-specific path report and update
 - VTN-specific path initiation

PCEP Extensions

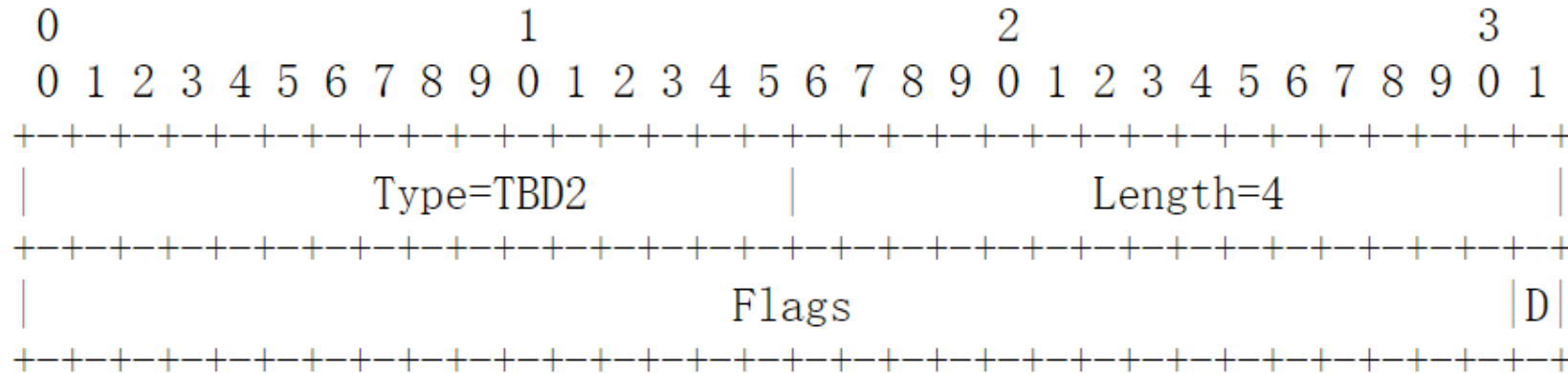
- A new TLV called “VTN TLV” is defined to carry the VTN ID and the related information in the LSPA Object



- VTN-ID: global significant 32-bit identifier
- Flags field: All the flags are reserved for future use
- Optional sub-TLVs: Can be used to carry additional VTN specific constraints

PCEP Extensions (Cont.)

- A new PCEP capability called “VTN-CAPABILITY” is introduced



- One bit called “D bit” is defined in the Flags field:
 - When set to 1 by PCC, it indicates that the PCC supports the encapsulation of data plane VTN-ID in data packet
 - When set to 1 by PCE, it indicates that the PCE supports to provide path computation result with the data plane VTN-ID

VTN-specific Path Computation

- VTN TLV can be used in basic PCE path computation
 - VTN TLV can be carried in a PCReq message to indicate the VTN in which the path computation is requested.
 - PCE SHOULD use the network resource and topology attributes associated with the specified VTN as the parameters of path computation.
 - VTN TLV may be carried in the PCRep message to indicate the PCC should use the VTN-specific resources the data plane VTN-ID in constructing the TE path.
 - In case of path computation failure, the PCRep message may carry the VTN TLV to indicate the computation in the VTN was not successful.

VTN-specific Path Report and Update

- VTN TLV can be used for Path report and update of Stateful PCE
 - PCC MAY include the VTN TLV in PCRpt message to indicate the VTN in which the TE path is reported.
 - PCE MAY include the VTN TLV in PCUpd Message to indicate the VTN in which the TE path needs to be updated.

VTN-specific Path Initiation

- VTN TLV can be used in PCE-Initiated LSP Setup
 - PCE MAY include the VTN TLV in PCInitiate message to indicate the VTN in which the path is to be created or deleted
 - PCC will use the VTN-specific resources and data plane VTN-ID (if D bit is negotiated) in constructing the TE path.
 - The mechanism is applicable to the initiation of MPLS LSPs and SR Policy candidate paths

Next Steps

- Comments and feedbacks are welcome
- Polish the draft based on feedbacks

Thank You