Support for VTN in PCEP

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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 documents 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
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