PCEP Extension for Native IP(Update)

[draft-ietf-pce-pcep-extension-native-ip]

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What The Proposal for PCEP extensions?

- Using PCEP to:
  - Build BGP peer dynamically and rapidly.
  - Populate differentiate prefixes between them.
  - Manipulate the path to BGP nexthop on demand based on real network conditions.
- Only key parameters needs to be transferred
  - compared contents bundle of NETCONF/YANG
- The PCEP Objects are included within <u>PCE Initiate LSP Request </u>Message(Original)

New PCEP Objects	Key Parameters	Usage
Peer Address List (PAL)	List of Peer Addresses	PCC uses this information to build BGP connection with the appointed peer
Peer Prefix Association (PPA)	Relation between Different Prefixes and their associated peer	PCC advertises different prefixes via different BGP peer.
Explicit Peer Route (EPR)	Explicit Routes to Peer Address	PCC builds the explicit routes to the peer address

New Proposal for Carrying The Key Info.

- [PCE-PCEP-Extension-for-PCE-Controller] defines the CCI object to transfer the central control instruction.

- "PCE in Native IP network" has some flavor of PCECC

- Similar procedure → Easy implementation after integration.
  - Define new CCI Object-Type
  - Put the key info. within CCI Object as TLV

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CCI Object-Type is TBD for Native IP network

 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                            CC-ID                              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Reserved           |             Flags              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                              |
//                       Optional TLV                         //
|                                                              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
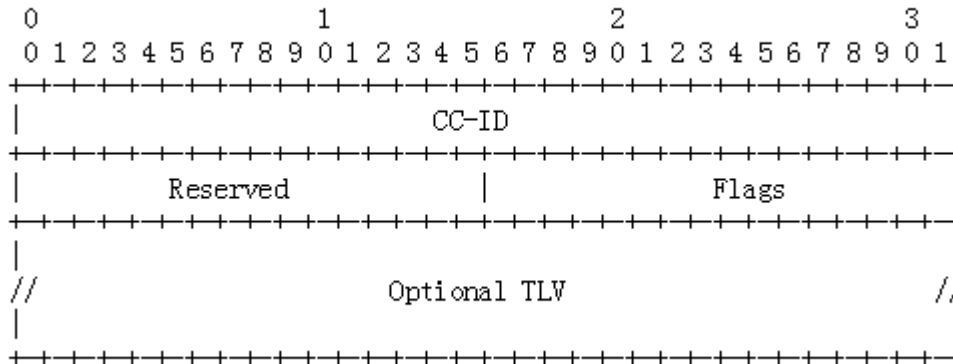
Figure 1: CCI Object Format

Updates on the Newly Defined TLV

TLV	Key Fields	Usage
Peer Address List (PAL)	Peer ID, AS, IP Address	Build BGP session Dynamically
Peer Prefix Association (PPA)	Peer ID, Associated Prefixes	Distribute the Prefixes dynamically
Explicit Peer Route (EPR)	Peer ID, Nexthop Address to the Peer	Manipulate the path to peer explicitly

Comments/Suggestions

- What issues do you need the WG to help with?
  - Review and comments for the proposed TLV extensions are welcome.
- What areas of contention have you encountered?
  - Coordination considerations with the management plane(NETCONF/YANG)
- What special input do you need from the WG?
  - Implementation considerations for the extension?

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Background for PCEP extensions

1. Scenarios and Solutions for TE in native IP network described in TEAS WG documents.

2. Without the help of PCE/SDN controller, it is not easy to meet the goal of E2E QoS.

3. We propose the following solutions:

   ✓ Deploy PCE/SDN Controller in the native IP network

   ✓ PCE/SDN Controller is responsible for the complex algorithm

   – Populate traffic prefixes via different BGP sessions between peers

   – Manipulate the path to BGP nexthop of these prefixes via PCEP

Dual/Multi-BGP Solution