PCEP Extensions for traffic steering support in Service Function Chaining

draft-wu-pce-traffic-steering-sfc-11
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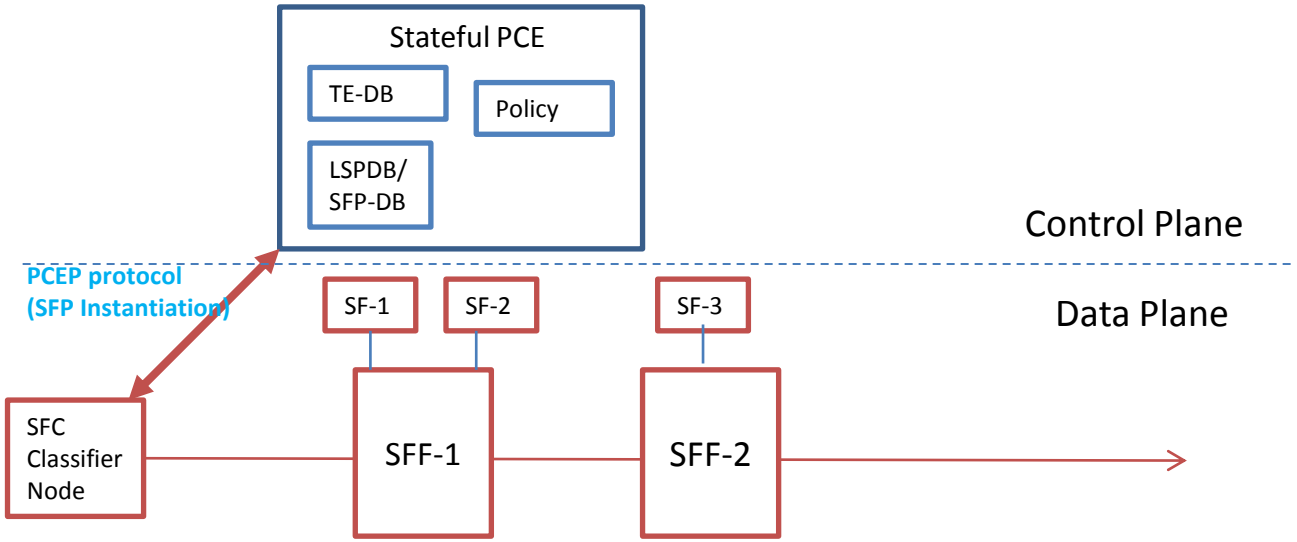
Latest Changes (v11)

- Address SFC chair's comment from SFC chir about carrying Service Path Header
- Added text on PCEP applicability to SFC to be consistent with draft-ietf-teas-pce-central-control-01

SFP instantiation via PCE

- Compute and instantiate Service Function Path by using PCE-initiated LSP instantiation
- Addresses path computation and classification requirements defined in section 5.2 of RFC7665



Stateful PCE:

- Computes and instantiates Service Function Path;
- Maintains classification rules and SFC forwarding Policy Table
- Makes sure appropriate policies are enforced by SFC Classifier and SFF Nodes;

Carrying NSH-Related Info in PCEP

- To prevent SFP ID conflict if ever one classifier assigns the same SFP ID to another Service Function Path
- In line with the SFC mapping rule documented in RFC 7665:
  - SFP ID and Service Index use is required

Next Steps

- The draft is aligned with SFC architecture (RFC 7665)
  - Also aligned with SFC control plane and teas WG *pce* central control drafts
- Ready to be accepted as WG doc.

Path Computation and Classification requirements in RFC7665 and I-D.ietf-sfc-control-plane and solution in this draft

centralized deployment model	**Requirements in RFC7665 and** draft-ietf-sfc-control-plane	**Protocol Design in the draft-wu-pce-traffic-steering-sfc-11**
Classification requirement or SFC mapping rule requirement (RFC7665 and Section 3.1.1 of draft-ietf-sfc-control-plane-08)	**RFC7665:** Provides requisite SFC data-plane information to the SFC architecture components **Draft-ietf-sfc-control-plane:** The control plane must instruct the classifier about the initial values of the Service Index (SI). Additional information such as a flow identifier, Service Index (SI), and/or other characteristics (e.g., the 5-tuple transport coordinates of the original packet) may be used for lookup purposes. The SFP Identifier (SFP-id) is used as a lookup key to determine forwarding action regardless of whether the SFC is fully constrained, partially constrained, or not constrained at all. The matching criteria for SFF can be more sophisticated. For example, it could be the SFP-id carried within the SFC encapsulation with any fields in the data packets	Determine Service Path ID and initial value of Service Index based on source address and destination address 5.2.1. SFP Identifiers TLV As described in section 4, SFP ID is predetermined and assigned by stateful PCE. The SFP Identifiers TLV MUST be included in the LSP object for SFPs. The SFP Identifier TLV is used by the classifier to select the SFP along which some traffic will be forwarded, according to the traffic classification rules applied by the classifier [RFC7665]. The SFP Identifier is part of the SFC metadata carried in packets and is used by the SFF to invoke service functions and identify the next SFF. The format of the SFP Identifier TLV is shown in Figure 4. 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 +-+ | Service Path ID | Service Index | +-+ Service Path ID (SPI): 24 bits Service Index (SI): 8 bits
Path Computation requirement (RFC7665 and Section 3.1.2 and Section 4.10.4 of draft-ietf-sfc-control-plane-08)	**RFC7665:** constructing SFPs, translating SFCs to forwarding paths, and propagating path information to participating nodes to achieve requisite forwarding behavior to construct the service overlay. **Draft-ietf-sfc-control-plane:** For some traffic engineering proposes, the SFP may be constrained by the control plane; as such, some SFPs can be fully specified (i.e., list all the SFF/SFs that need to be solicited) or partially specified (e.g., exclude some nodes, explicitly select which instance of a given SF needs to be invoked, etc.).	determine full sequence of SFF/SF associated with a Service Path ID The Explicit Route Object (ERO) is used to encode either a full sequence of SF instances or a specific sequence of SFFs and SFs to establish an SFP. If the said SFFs and SFs are identified with an IP address, the IP sub-object can be used as a SF/SFF identification means.