# PCEP Extension for Flow Specification

draft-li-pce-pcep-flowspec-02

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## Document History/Status

- Was making good progress, but then stalled
- This revision
  - Injects new momentum
  - Updates the mechanism
    - No new messages
  - Retains the purpose and functionality

# Objectives

- When a PCE is in control of an LSP, how does it tell the head end what traffic to put on the LSP?
  - Applies to PCE-initiated LSPs and delegated LSPs
- When a PCE does load balancing TE, how does it know what traffic is on which LSP?
  - Applies to PCC-initiated LSPs
  - Also applies at the moment of delegation
- Don't re-invent wheels
  - Use existing BGP Flowspec encodings
  - BUT this is nothing to do with IDR

#### Mechanism (1/2)

- Capability advertisement in IGP and OPEN message
- New PCEP object
  - Flow Spec Object
  - 0, 1, or more instances on PCReq, PCRep, PCErr, PCInitiate, PCRpt, and PCUpd
  - Each instance describes a traffic flow using TLVs
- New PCEP TLV
  - Flow Filter TLV
  - Exactly one per Flow Spec Object
  - Comprised of sub-TLVs (next slide)
  - This TLV is only present to enable sub-TLV codepoint management

### Mechanism (2/2)

- Sub-TLVs
  - Flow Specification TLVs
  - Combined to describe the flow
  - TLV types as follows

- TLV value fields encoded as BGP specifications or as defined in this or new PCEP specs
- Additional TLVs defined for...
  - VPN Route Distinguisher
  - Multicast flows (for P2MP LSPs)

### For Example

- PCE initiates a new P2P LSP and wants it to be used for all traffic destined to 198.51.100.0/24 and all traffic destined to 203.0.113.0/24
- It sends a PCInitiate message for the LSP and includes a Flow Spec Object containing a Flow Filter TLV
- It includes two Flow Specification TLVs
  - Type = 0x0001 (IPv4 destination prefix)
    Length = 0x0004
    Value = prefix length in bits (1 octet) + prefix
    0x18C63364
  - Type = 0x0001 (IPv4 destination prefix)
    Length = 0x0004
    Value = prefix length in bits (1 octet) + prefix
     0x18CB0071

#### Work Still to be Done

- Push on with implementations
- Include examples
- Simplify / streamline main use cases
  - Consider removing some BGP Flowspecs that are "too complicated"
  - Special consideration of forwarding capabilities
- Consider ordering issues
  - This remains a challenge for Flowspec in BGP
  - It is even an issue for static routes
  - Need clear an unambiguous rules
- Understand from WG if this is:
  - In scope
  - Something they want to work on