

# BGP Extensions for Service-Oriented MPLS Path Programming (MPP)

draft-li-mpls-path-programming-04.txt

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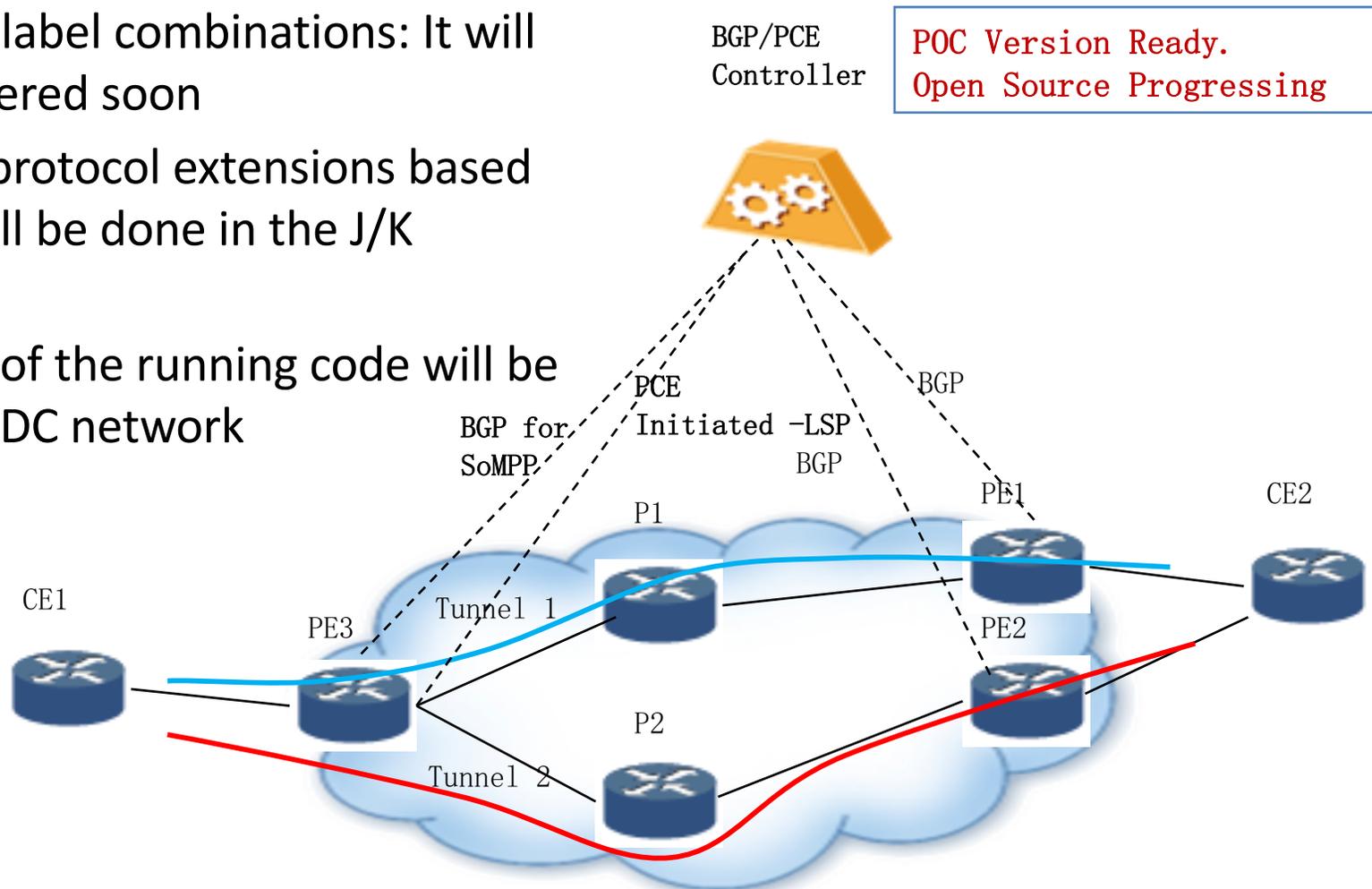
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# MPLS Path Programming(1)

- MPLS Path Programming (MPP)
  - draft-li-spring-mpls-path-programming  
draft-li-idr-mpls-path-programming
  - Concept:
    - Flexible Label Combination
    - Flexible Mapping of Service to MPLS Tunnel
  - Why IDR:
    - Using BGP NLRI to distribute MPLS Tunnels + Segments
    - Uses IDR drafts: RFC3170bis, draft-ietf-idr-tunnel-encaps, draft-previdi-idr-segment-routing-te-policy
  - Desire Feedback on combination

# Prototypes and Open Source of MPP

- Prototypes:
  - Flexibly map services to tunnels: It has been implemented.
  - Flexible label combinations: It will be delivered soon
- Delivery of protocol extensions based on ONOS will be done in the J/K version.
- Verification of the running code will be done in the DC network



# Segment Path Programming (1)

- Segment Path Programming (SPP)
  - draft-li-spring-segment-path-programming
  - Concept:
    - Flexible Segment Combination
    - Flexible Mapping of Service to Segment Path
  - The innovation of Generalized Segment and Segment Path is introduced and protocol extension requirements are proposed.

# MPLS/SR data sent from client to/from SDN controller

## MPLS Mapping

- Distribute local label mapping and global mappings to central controller/client
- Carry label stack for service-oriented MPLS path.
- Carry identifier of the transport MPLS path that links service MPLS path
- Specify end-points to accept the prefix advertised by the central controller.
- Be able to set priority prefix with attributes of MPLS path programming advertised by the central controller.
- Prioritize the central controller path over client paths
- draft-li-mpls-path-programming-04.txt

## • Segment Path Programming (SPP)

- Distributes Segment Binding from Client to/from Central Controller
- Distribute Segment (stack) for Segment Path of the service/network layer. (BGP )
- Distribute Segment (stack) for Segment Path of the transport layer (PCE)
- Segment stack if applied to MPLS

[See]

draft-li-isis-spp-extensions (March 21, 2016)

draft-li-idr-flowspec-redirect-generalized-sid-00

# Implementing Using IDR drafts

## □ draft-ietf-mpls-rfc3107bis

- Expand RFC3107 to Advertise MPLS Label Stack to one address prefix;
- Default, RFC3107 only advertise an MPLS Label to one address prefix

## □ draft-ietf-idr-tunnel-encaps

- Using Tunnel Encapsulation Attribute to advertise MPLS Label Stack Sub-TLV & Prefix-SID List
- The MPLS label stack sub-TLV extensions is similar as the protocol extensions defined by draft-li-idr-mpls-path-programming.

## □ draft-previdi-idr-segment-routing-te-policy

- Reusing Tunnel Encapsulation Attribute to advertise Tunnel Identifier & Segment List
- The Tunnel Identifier plus Segment List is similar as the "Extended Unicast Tunnel attribute" defined by draft-li-idr-mpls-path-programming.

# Feedback

- Implementing all three drafts seen to hit gray areas in 3 drafts
- Drafts overlap, and we'd like to provide feedback on drafts

# Next Step

- Implementation working ongoing
- Will be providing Feedback on
- Collaborative work under guidance of Routing Area ADs/SPRING WG Chairs/IDR WG Chairs.