PCEP Extensions for Remote-Initiated GMPLS LSP Setup

draft-ali-pce-remote-initiated-gmpls-lsp-02.txt

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Outline

- **Summary of Changes**

- **Scope**

- **Use cases**

- **Requirements**

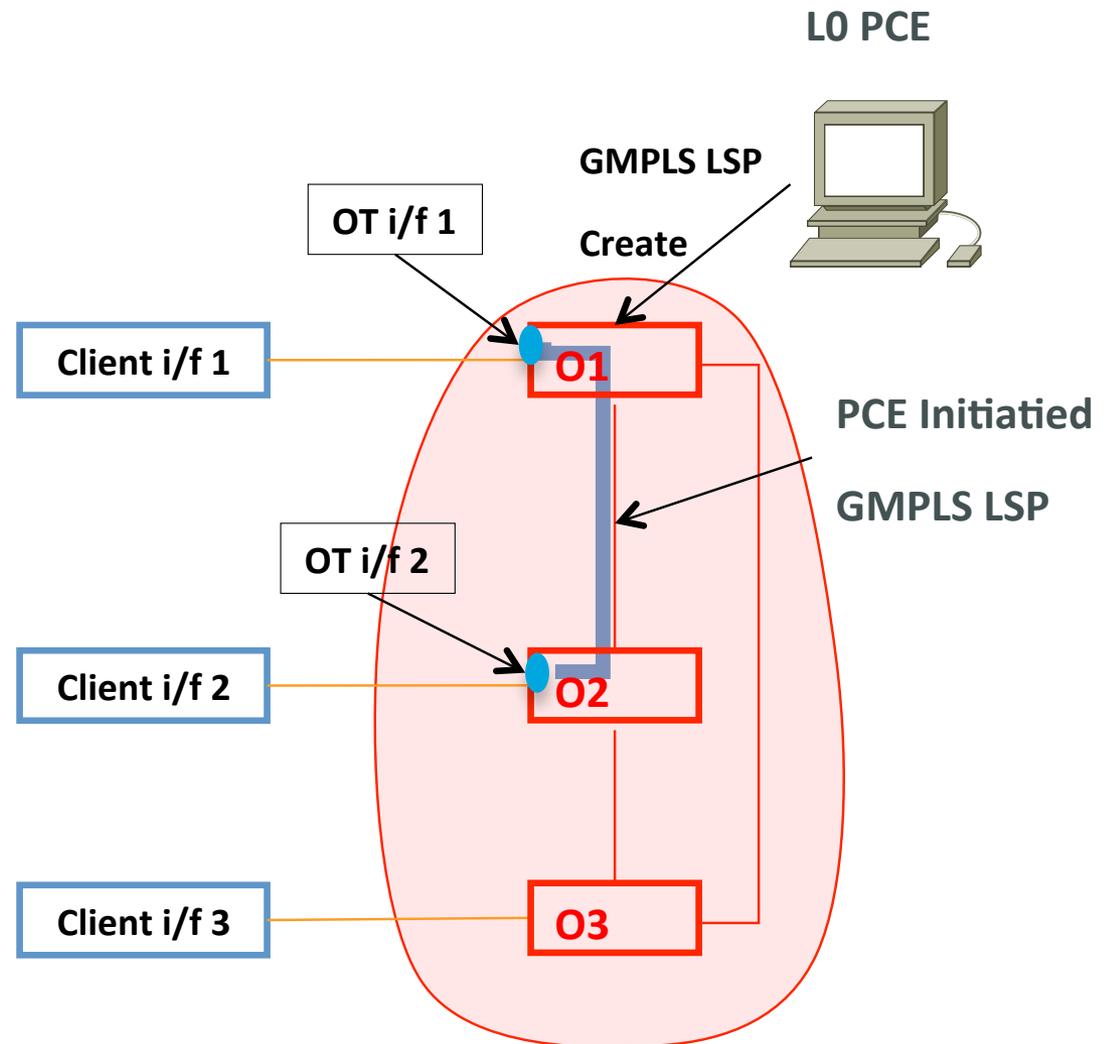- **Solution**

- **Next Steps**

Summary of Changes

- **Moved LSP usage to a separate draft (draft-ali-pce-remote-initiated-lsp-usage-00.txt).**

- **Sync'ed up with latest version of draft-crabbe-pce-pce-initiated-lsp.**

- **Misc. editorial changes to addressed comments received.**

- **Added Zhang Xian as a co-author.**

Scope

- **PCEP Extensions for PCE-initiated GMPLS LSP Setup in a Stateful PCE Model.**

- **Extends draft-crabbe-pce-pce-initiated-lsp for GMPLS LSPs and multilayer networks.**

Single-layer Provisioning from Active Stateful PCE

- **The active stateful PCE can dynamically create or delete L0 services between client interfaces.**

L0 PCE

GMPLS LSP

Create

OT i/f 1

Client i/f 1

O1

PCE Initiatied

GMPLS LSP

OT i/f 2

Client i/f 2

O2

Client i/f 3

O3

Multi-layer Networks with Active Stateful PCE

- **Extends inter-layer path control models defined in [RFC5663] to active stateful PCE.**

  - ➢ **Higher layer signaling trigger,**

  - ➢ **PCE-VNTM cooperation model,**

  - ➢ **NMS-VNTM cooperation model (integrated flavor),**

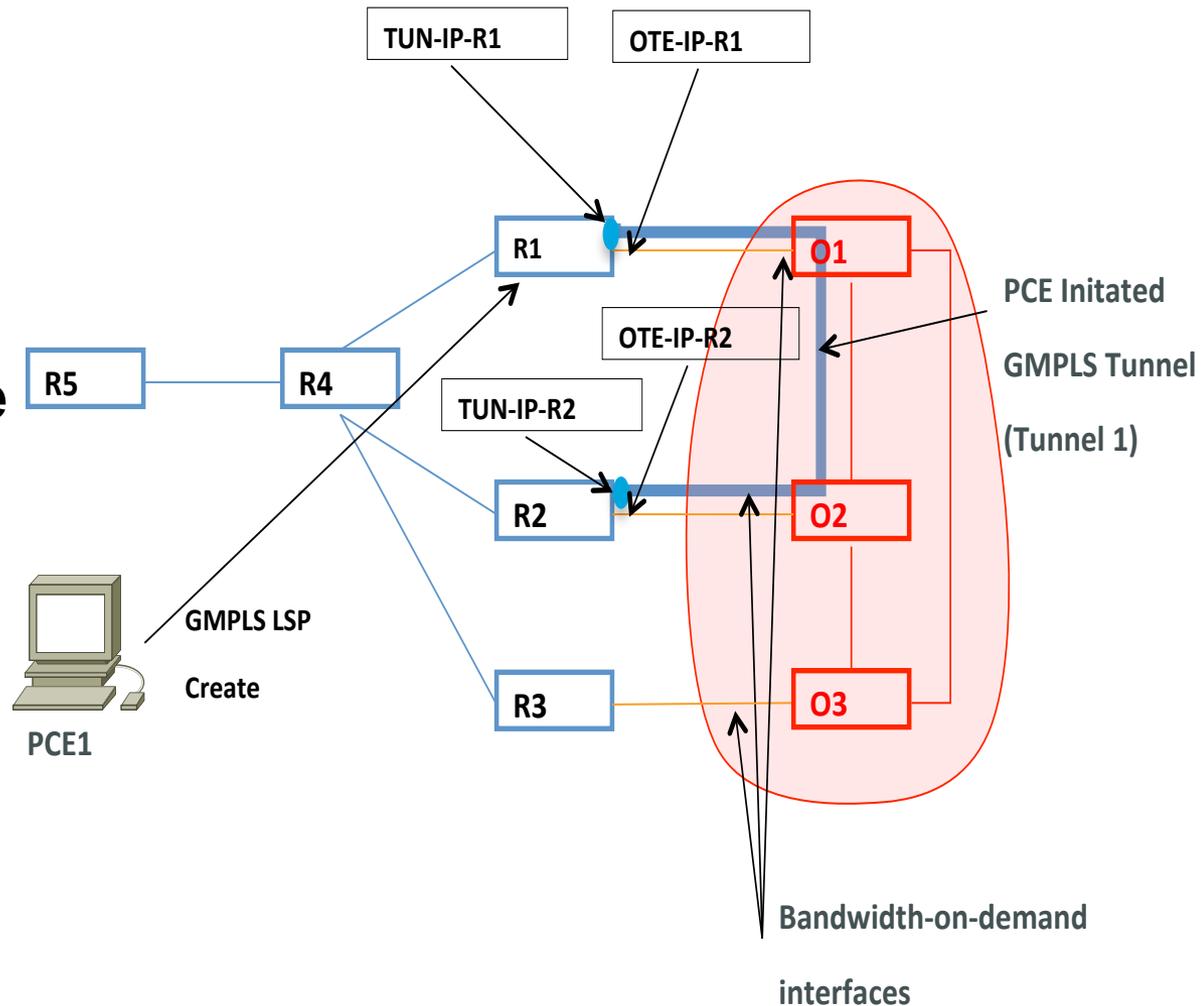 - ➢ **NMS-VNTM cooperation model (separated flavor).**

Higher Layer Signaling Trigger (Multilayer PCE)

- **A multilayer stateful PCE(s) establishes L0 circuits based on L3 demands.**

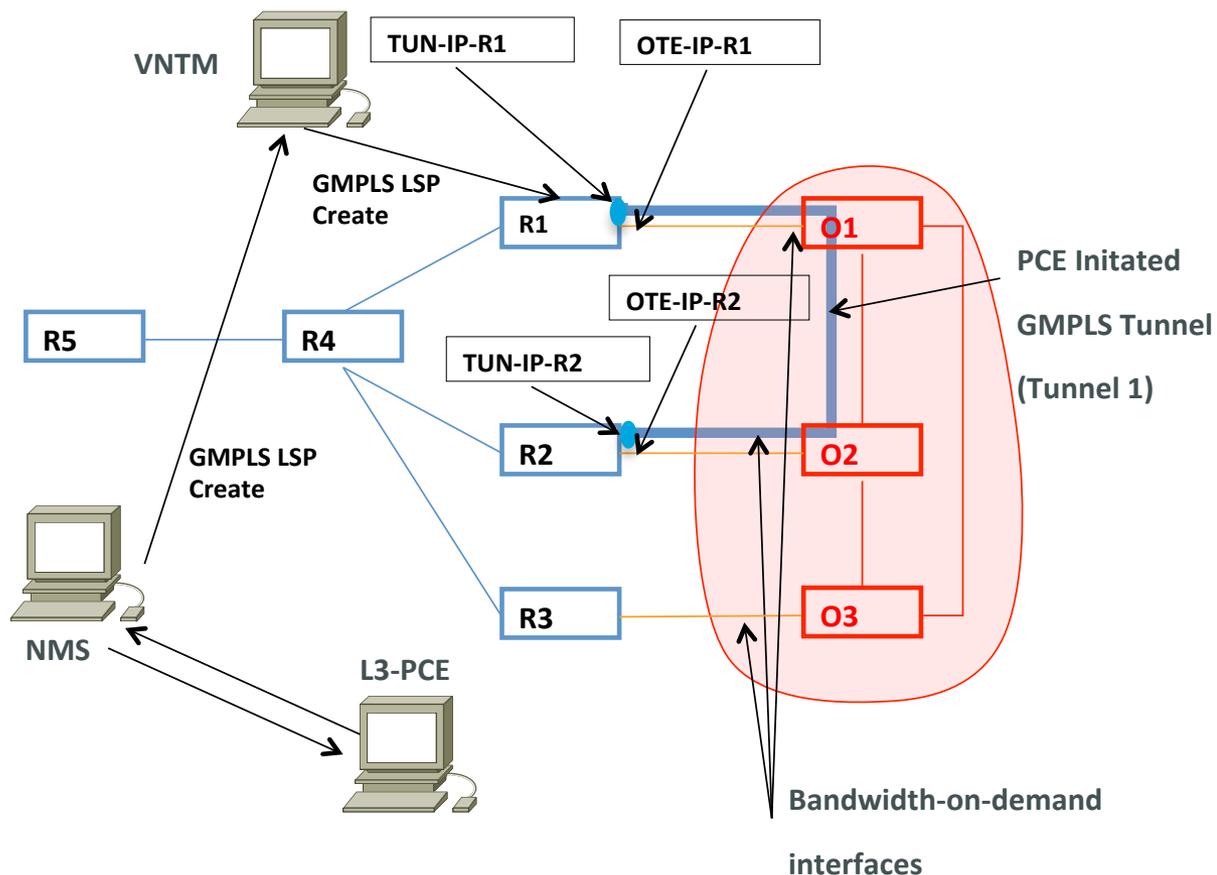- **PCE computes the L0 Paths and triggers L0 circuit creation.**
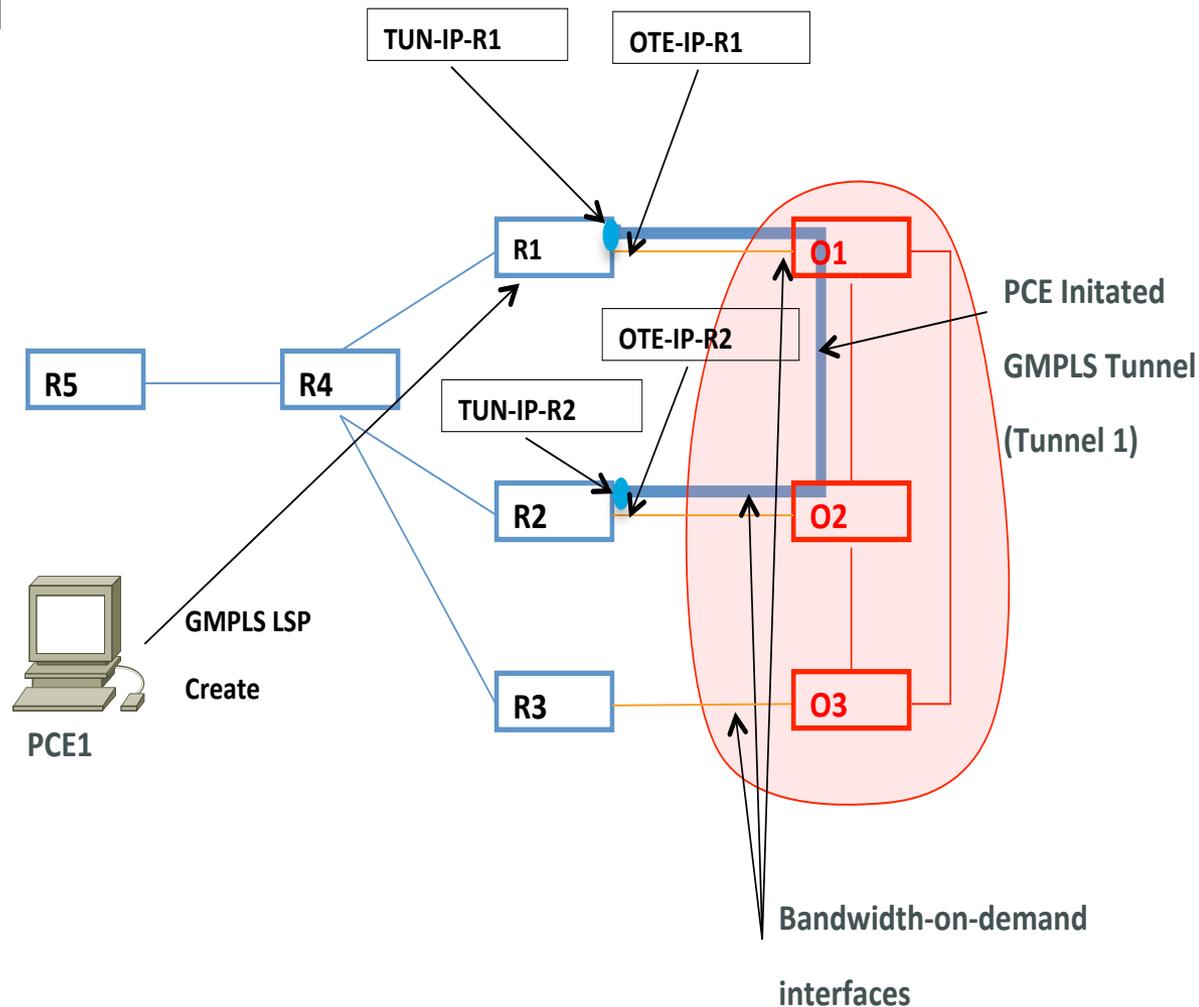
Higher Layer Signaling Trigger (L3 PCE)

- **L3 PCE triggers L0 circuit creation but GMPLS signaling takes care of path computation and establishment of the LSP.**

TUN-IP-R1

OTE-IP-R1

R1

O1

OTE-IP-R2

R5

R4

TUN-IP-R2

R2

O2

R3

O3

PCE Initated GMPLS Tunnel (Tunnel 1)

GMPLS LSP Create

PCE1

Bandwidth-on-demand interfaces

NMS-VNTM Cooperation model (Separated Flavor)

- **NMS does not have information about all network information, so it consults L3 PCE.**

- **In case of there is no path in L3; NMS sends a message to the VNTM to create a GMPLS LSP at the lower layer.**

VNTM

TUN-IP-R1

OTE-IP-R1

GMPLS LSP Create

R1

O1

PCE Initated

GMPLS Tunnel

(Tunnel 1)

OTE-IP-R2

R5

R4

TUN-IP-R2

GMPLS LSP Create

R2

O2

NMS

R3

O3

L3-PCE

Bandwidth-on-demand

interfaces

GMPLS Requirements for Remote-Initiated LSPs

- **Support for multiple switching capabilities.**

- **Support for encoding type to be used by the LSP.**

- **Support for G-PID to be carried by the LSP.**

- **Technology specific Traffic Parameters.**

- **Support for Asymmetric Bandwidth.**

- **Support for unnumbered interfaces [RFC3477].**

- **Explicit label control.**

- **GMPLS protection and restoration [RFC4872], [RFC4873], etc.**

- **Specification of switching layer to be included or avoided.**

PCEP Extensions for Remote-Initiated GMPLS LSPs

- **PCInitiate message defined in [I-D. draft-crabbe-pce-pce-initiated-lsp] is extended to include GMPLS specific PCEP objects.**

- **Minor misc. changes to support GMPLS LSPs.**

Next Steps

- **We would like to make this draft a WG Document.**

Thank You.