RSVP-TE Extensions For Signaling GMPLS Restoration LSP

draft-gandhi-ccamp-gmpls-restoration-lsp-01

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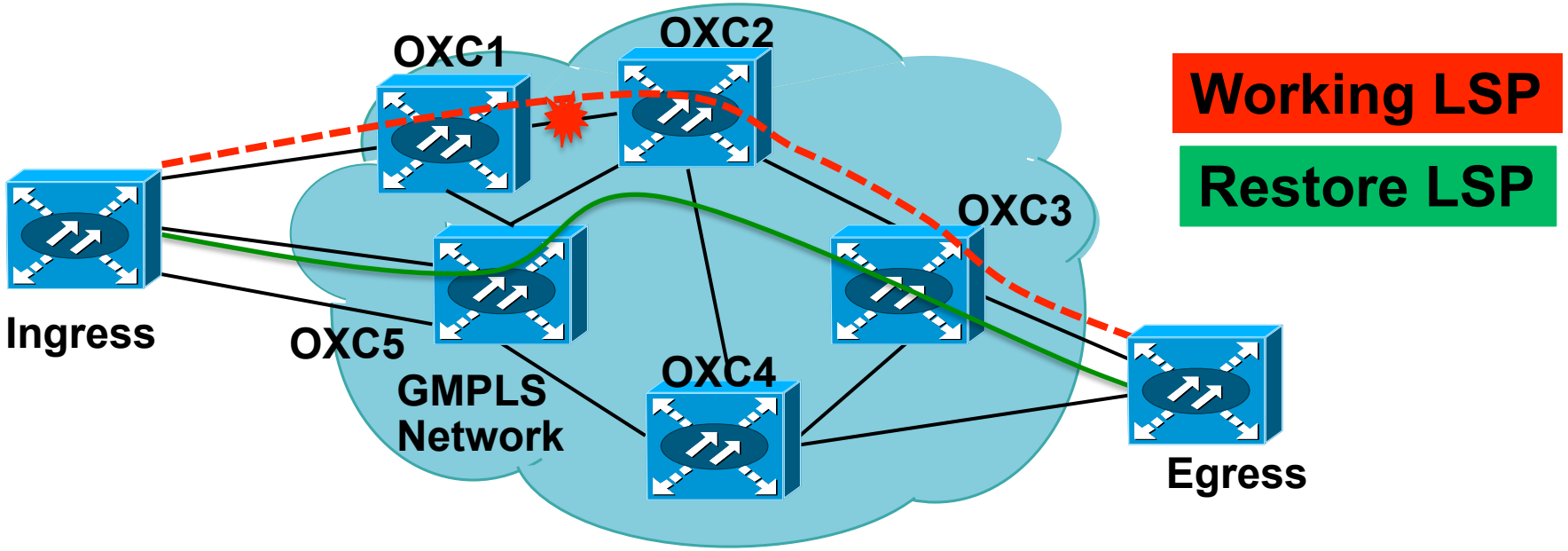
Outline

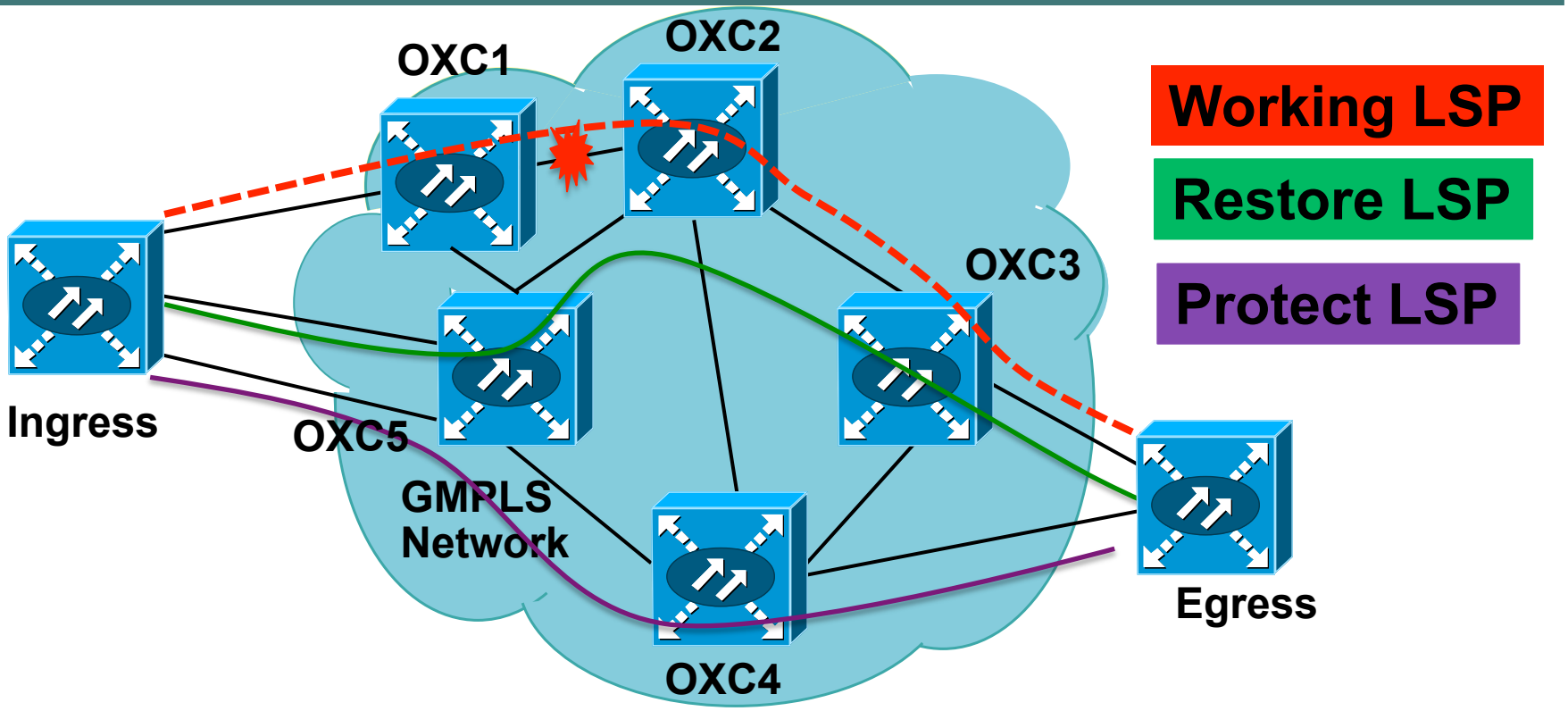
- Requirements and Use Cases
- Changes From Revision-00
- Solution
- Next Steps

Transport Requirements for Restoration LSP (1+R Use case)



- Resources for failed LSP need to be remain intact <u>at least in control plane</u> as:
  - The LSP follow a nominal path (minimum latency, minimum cost, etc.).
  - Deterministic behavior after failure is recovered (deterministic SLAs).
  - Revert operation to the failed resources is desirable.
- Restoration LSP is signaled <u>after</u> failure is detected.

Transport Requirements for Restoration LSP (1:1+R, 1+1+R Use cases)



- Same Requirements as outlined in previous slide.
- Restoration LSP is signaled after failure of working LSP and/ or protect LSP.

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Changes From Revision-00

- Revision-00 draft was presented in Atlanta, IETF-85
- Revision-00 draft proposed a solution using new T-bit in the PROTECTION object to identify restoration LSP
- Feedback from the meeting was to use ASSOCIATION object to identify restoration LSP
- RFC6689 suggests to use LSP_ID of itself (as association ID in the ASSOCIATION object) for restoration LSP
  - For 1+R, working LSP will also use the LSP_ID of itself.
  - Hence, one can not uniquely identify working LSP and restoration LSP
- This is being addressed in this draft

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Signaling Procedure For 1+R

- **Working LSP:**
  - **PROTECTION object with P = 0**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of itself [RFC6689].**
- **Restoration LSP:**
  - **PROTECTION object with P = 0**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of working LSP (recall that working is not torn down so LSP-ID of working is valid).**
- **If working LSP is torn down, restoration LSP inherits both PROTECTION and ASSOCIATION object properties from the working LSP [RFC6689].**

- **Note that RFC6689 states to use association ID = LSP-ID of itself for restoration LSP. We are proposing to modify that in the case of working LSP not torn down to use the LSP-ID of the LSP it is restoring to enable unique identification and resource sharing.**

Signaling Procedure For 1+1+R

- **Working LSP:**
  - **PROTECTION object with P = 0**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of protect LSP (LSP_ID of itself when Protect is not UP) [RFC6689].**
- **Protect LSP:**
  - **PROTECTION object with P = 1**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of working LSP [RFC6689].**
- **Restoration LSP for working:**
  - **PROTECTION object with P = 0**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of working LSP.**
- **Restoration LSP for protect:**
  - **PROTECTION object with P = 1**
  - **LSP has ASSOCIATION object with association ID = LSP-ID of protect LSP.**
- **If working [protect] LSP is torn down, restoration LSP inherits both PROTECTION and ASSOCIATION object properties from the working [protect] LSP [RFC6689].**

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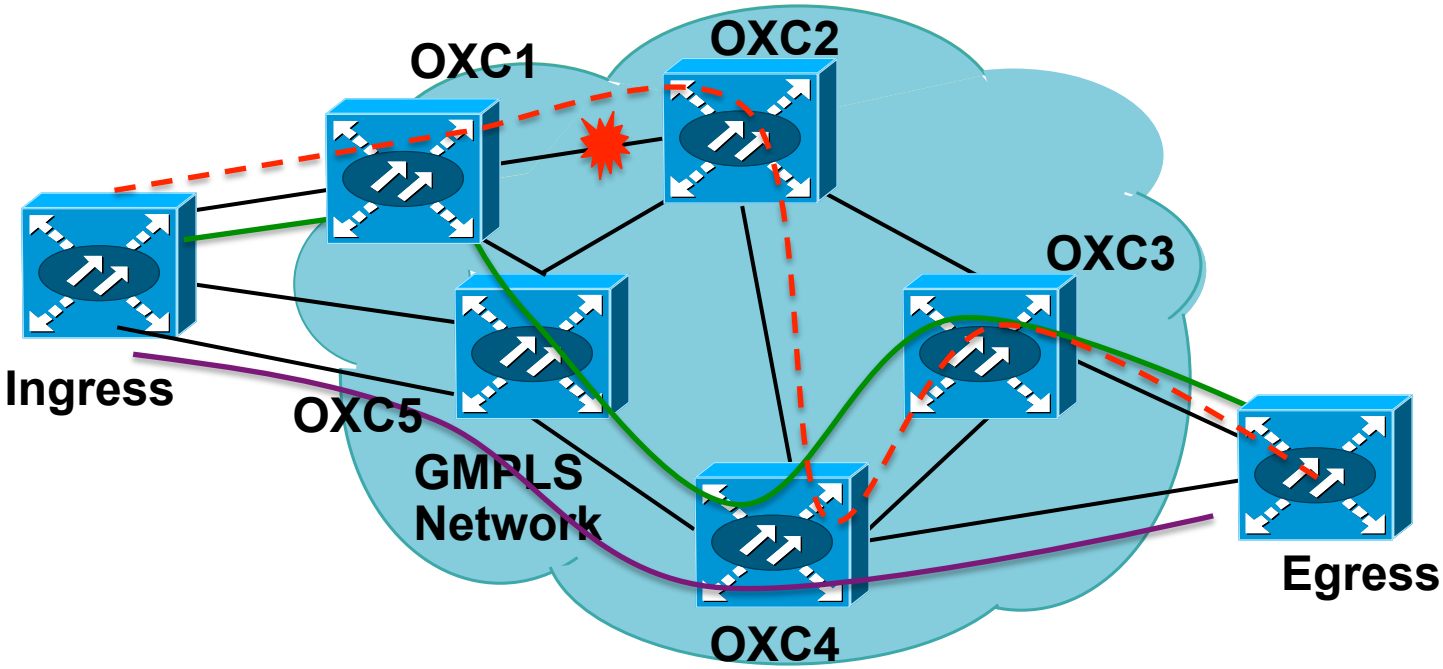
Next Steps

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

Thank You.

Use Case For (1+R, 1:1+R, 1+1+R) Resource Sharing – (No changes proposed in this draft)



1. When red working LSP fails, it is re-signaled with S = 1 to free up resources in data plane (but still kept in control plane).
2. Signal green restoration LSP with S = 0 to use shared data plane resources (from red working LSP).
3. OXC4 and OXC3 share resources between red and green LSPs as S bit is 1 and 0, respectively.
4. OXC5 and OXC4 do not share resources between green and purple LSPs as S bit is 0 in both LSPs.
5. Once the failure is repaired, green restoration LSP is torn down, red working LSP is resignaled with S = 0 to claim resources in data plane.