GMPLS Signaling Extensions for Shared Mesh Protection
(draft-he-teas-gmpls-signaling-smp-00)

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History

- Initial version of the draft (draft-he-ccamp-gmpls-signaling-smp-00) was submitted to CCAMP WG and reviewed during the IETF 102th meeting.

- Comment received from the IETF 102 meeting:
  - The draft is simply extending RFC 4872 to add a new protection type for SMP. This can be generalized and TEAS WG might be more appropriate.

- A new draft (draft-he-teas-gmpls-signaling-smp-00) was submitted to TEAS WG.

Changes

- Add text to generalize the SMP description
  - Add reference to G.808.3 (generic SMP)
  - Add reference to IETF RFC 7412 (SMP requirements for MPLS-TP)
- No changes to the signaling extension proposal
- Some editorials

Overview

- ITU G.808.3 defines the generic aspects of a SMP (Shared Mesh Protection) mechanism.

  - G.873.3 defines the protection switching operation and associated APS protocol for SMP at the ODU (optical data unit) layer.

  - IETF RFC 7412 provides requirements for any mechanism that would be used to implement SMP in an MPLS-TP network.

- This draft updates RFC 4872 to provide the extensions to the GMPLS signaling to support the control of SMP.

SMP Introduction

SMP (Shared Mesh Protection)
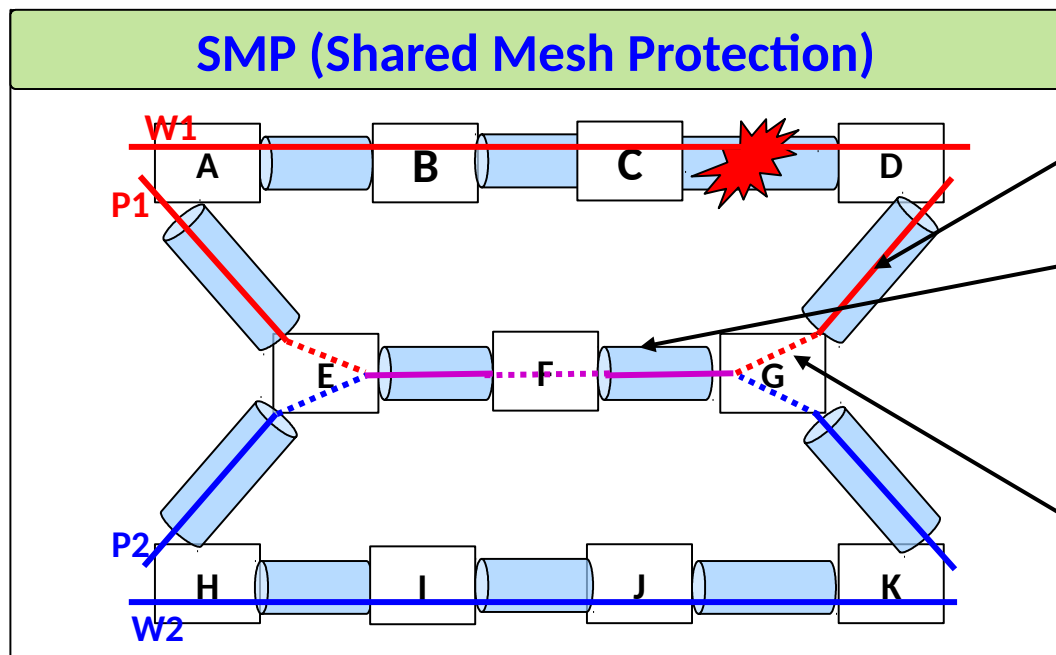
- **Resources** are **reserved** for the protection LSP at the provisioning stage, but
- **Cross-connects** of the protection LSP are **NOT pre-established** before protection switching.

- Common link and node resources can be **shared** by multiple protecting LSPs associated to physically disjoint working LSPs.

- When the working LSP fails, **APS messages** will be sent along the protection path to establish cross-connects, i.e. **activate the protection LSP**, and execute protection switching.

- **Differences between SMP and SMR** (Share Meshed Restoration, referring to RFC4872): after failure happens:
  - **SMP:** using **data plane APS** for protection switching
  - **SMR**: using **control plane** GMPLS / **RSVP-TE signaling** for protection switching

- **Therefore, it is necessary to distinguish SMP from SMR during provisioning, so that each node involved behaves appropriately in the recovery phase**

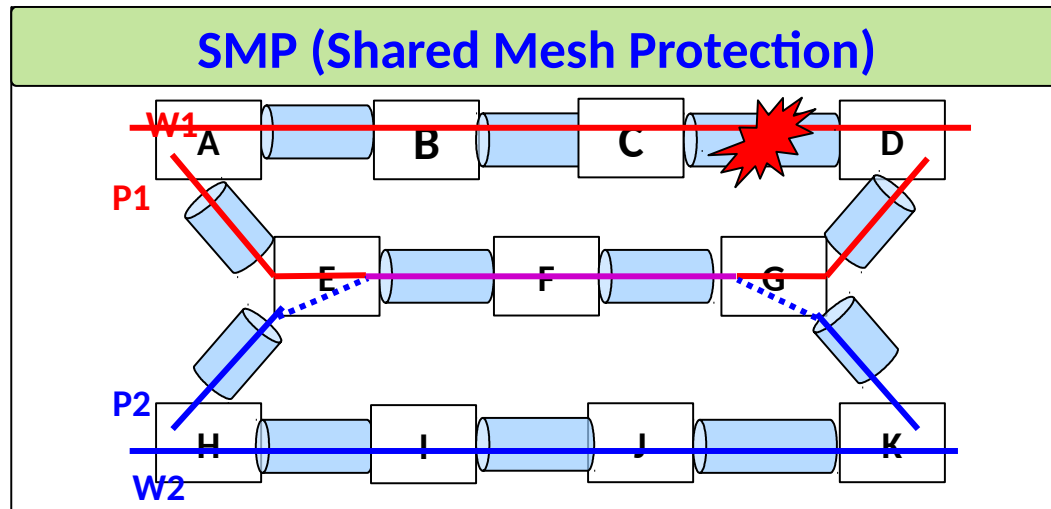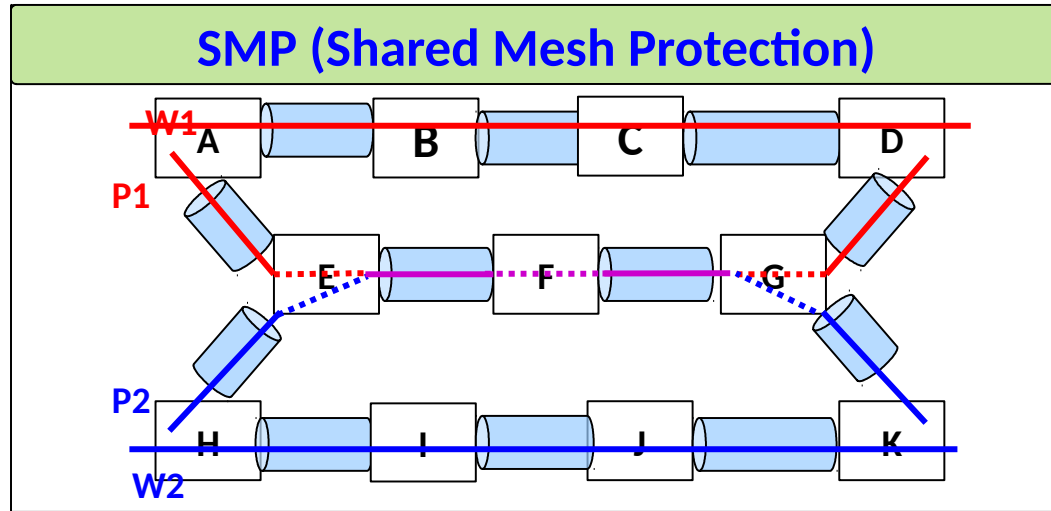# Signaling Primary LSPs

SMP (Shared Mesh Protection)
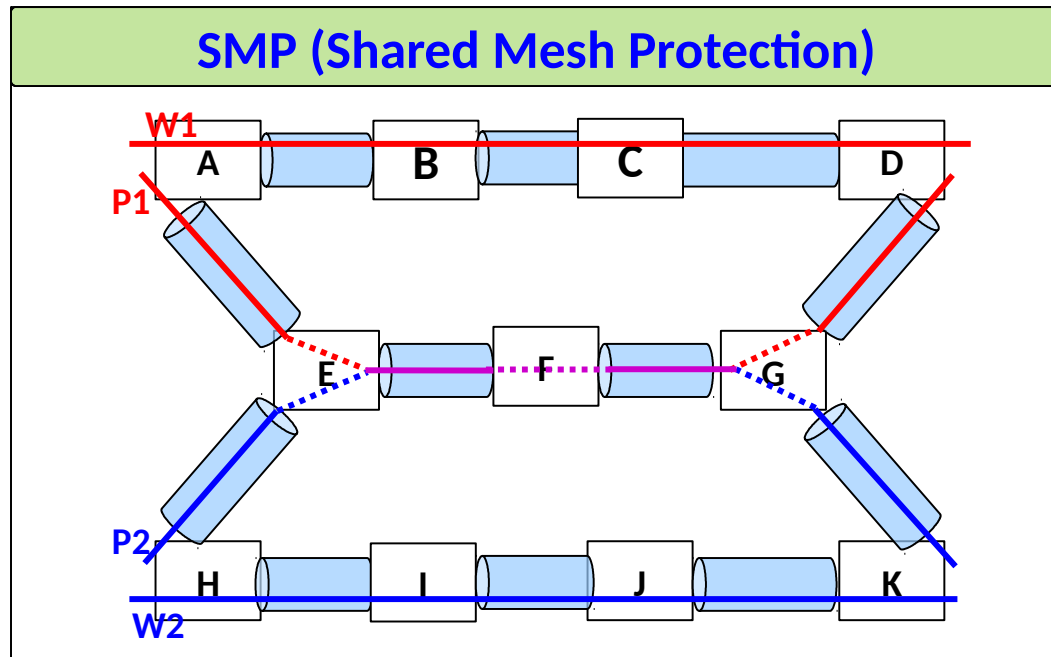
Provisioning Stage

- LSP Protection Type = "Shared Mesh Protection".
- S bit = 0, P bit = 0, N bit =1
- Association ID = associated secondary protecting LSP_ID.

Protection Switching Stage

- A bit (in in the ADMIN_STATUS object) set

Signaling Secondary LSPs

SMP (Shared Mesh Protection)

Provisioning Stage

- LSP Protection Type = "Shared Mesh Protection".
- S bit = 1, P bit = 1, N bit =1
- Association ID = associated primary working LSP_ID
- Include PRIMARY_PATH_ROUTE for recovery resource sharing at intermediate nodes

SMP (Shared Mesh Protection)

Protection Switching Stage

- Activation of a secondary LSP and protection switching to the activated protecting LSP is done using APS protocol in the data plane.
- S bit = 0, O bit = 1   (becomes the primary LSP)

Updates to Protection Object

Protection Object:

0										1										2										3	
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

Length																Class-Num (37)								C-Type (2)							
S	P	**N**	**O**	Reserved								**LSP Flags**				Reserved										Link Flags					
Reserved																															
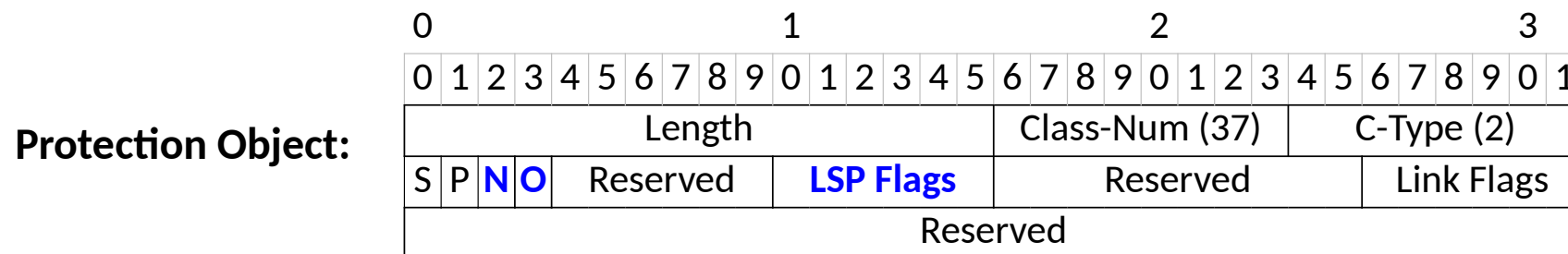
➢ **Secondary (S): no updates**

➢ **Protecting (P): no updates**

➢ **Notification (N): Add SMP case**

➢ **Operational (O): Add SMP case**

➢ **LSP Flags (recovery type)**

- 0x00 Unprotected

- 0x01 (Full) Rerouting

- 0x02 Rerouting without Extra-Traffic

- 0x04 1:N Protection with Extra-Traffic

- 0x08 1+1 Unidirectional Protection

- 0x10 1+1 Bidirectional Protection

- **0x11 Shared Mesh Protection (SMP)**

Next Steps

- Get feedbacks from the WG level and move forward.
- Since the extension is straight forward and simple, can we ask for con sideration of WG adoption ? ^^