Use Cases and Requirements for MPLS-TP multi-failure protection

draft-cui-mpls-tp-mfp-use-case-and-requirements-01.txt

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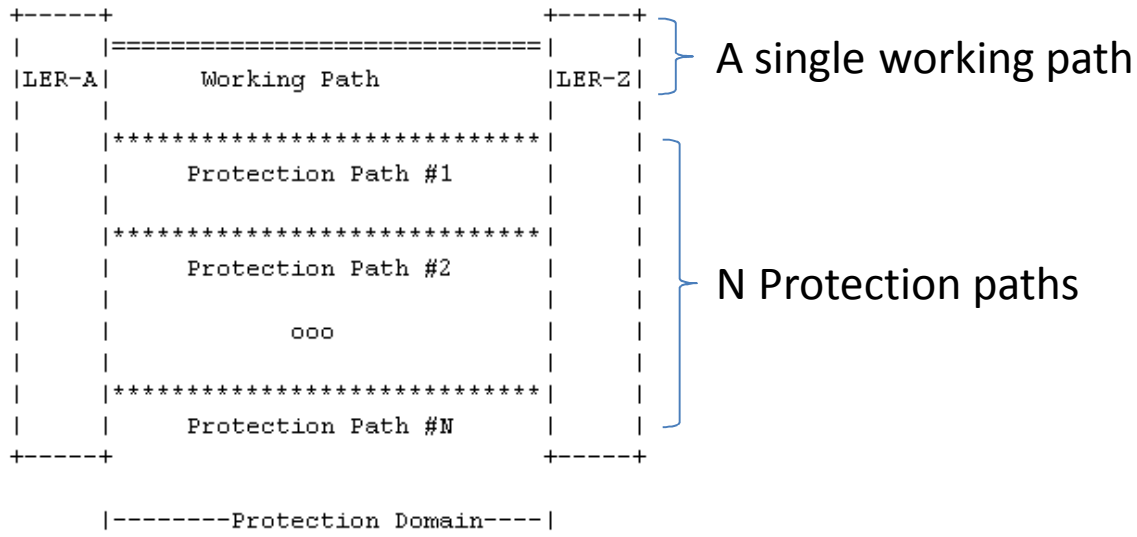
Objective of multi-failure protection

- To guarantee service continuity under multi-failure conditions by preparing N protection paths for a single working path.



Example of multi-failure protection

Comments from WG

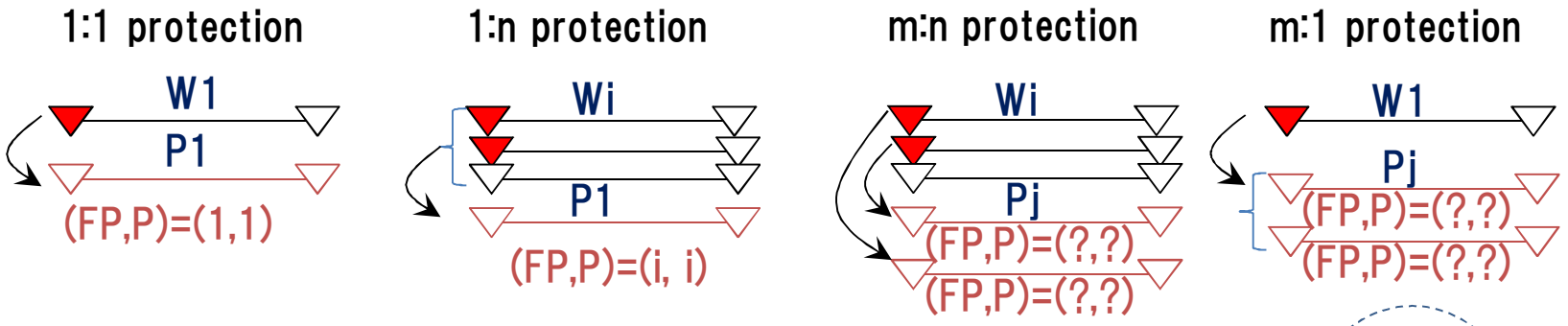
- 1:1 and 1:n already exist. Is this m:n?
- This is m:1. It should be covered under the umbrella of m:n.

	One protection path	multi protection paths
One working path	1:1	m:1
Multi working paths	1:n	m:n

Already exist

Which one should be chosen?

Protection schemes



Request field		1:1	1:n	m:n	m:1
FPath	j: fault on Pj	0	0	m(129,255)	m(129,255)
	i: fault on Wi	1	n(1,128)	n(1,128)	1
Path	j: data not on P	0	0	m(129,255)?	m(129,255)?
	i: data on P (From Wi)	1	n(1,128)	n(1,128)	1

m:n protection can be implemented by software, but difficult to be implemented by hardware, because a huge number of state machines need to be managed.

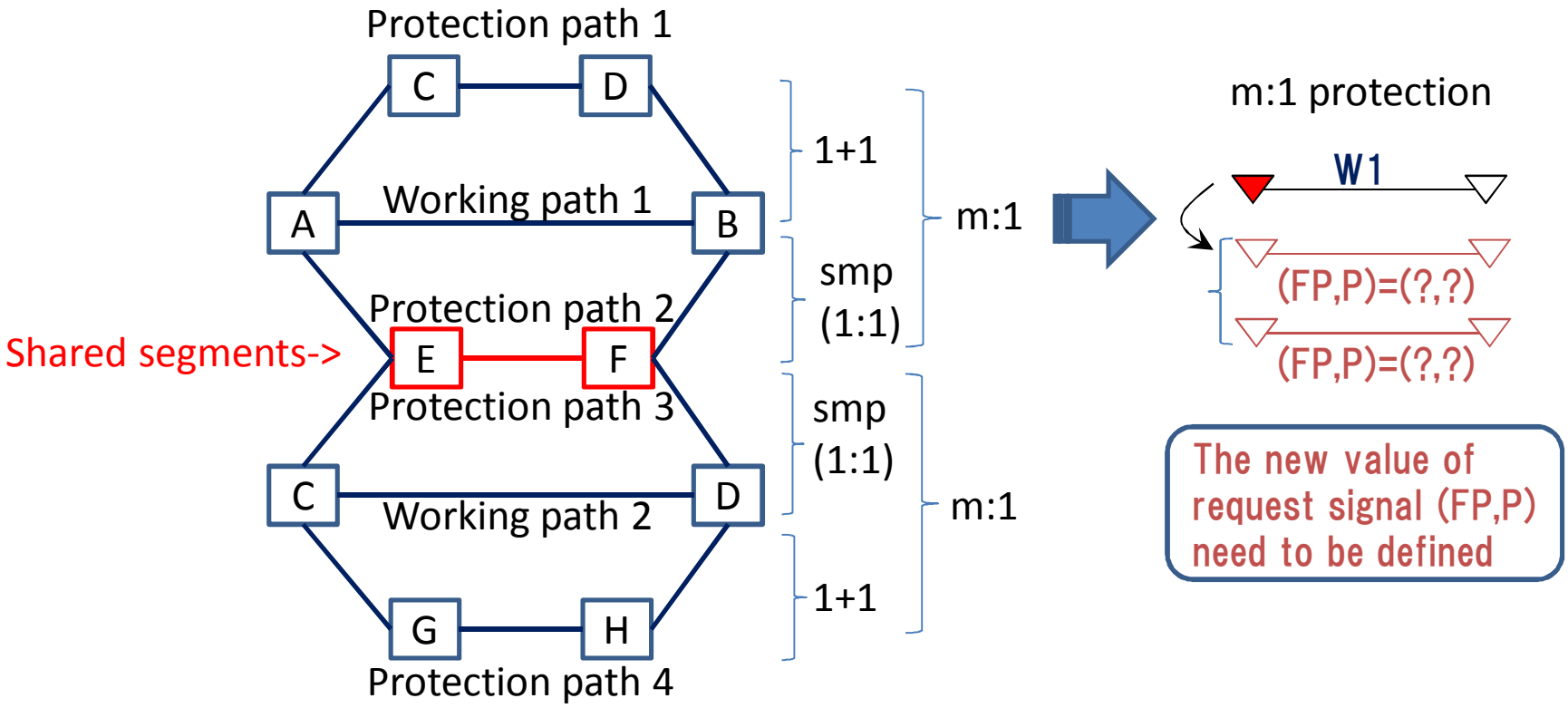
The necessity of multi-failure backups

- Operational pressure is reduced when a single failure occurs (service is still protected)
- Service providers can increase revenue by offering multi-tiered service levels.
  - Gold: protection for two failures.
  - Silver: protection for one failure.

m:1 protection protects against multiple failures, but the backup paths might be too costly.

Combination with SMP

- To reduce the cost for backup paths, m:1 protection can be combined with SMP.



The requirements

- m:1 protection function
  - Must protect against multiple failures.
  - Must meet the sub 50ms recovery requirements.
  - Should be easy to implement.
  - Backup paths can be shared with other working paths.

Summary

- Multi-failure protection such as m:1 protection should be supported in TP-enabled transport network.

- Solicit more comments from WG.