draft-litkowski-spring-non-protected-paths-01

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Issue to solve

- We want to be able to provide non protected LSPs using SPRING

- Multiple theorical possibilities

- We want to push for a single standard solution to be implemented to ensure deployability

Main changes in V01

- We enhanced the analysis of the different scenarios including pros/cons
  - Scenario#1: use Adj-SID only (B flag unset)
  - Scenario#2: combine Adj-SID with Node-SID strict SPF
  - Scenario#3: combine Adj-SID with Node-SID+a new protection flag
  - Scenario#4: combine Adj-SID with Node-SID that is not protected using a per node local policy
  - Scenario#5: combine Adj-SID with binding SID

Analysis

Criteria	Adj-SID only	Adj-SID+strict SPF node SID	Adj-SID+Node-SID with a new flag	Adj-SID+Node-SID not protected by a local policy	Adj-SID+binding SID
Label stack size	One label per hop	Reduced	Reduced	Reduced	Reduced
Controlplane	Negligible	Additional computation +additional N entries in RIB	Additional N entries in RIB	Additional N entries in RIB	Additional states on some LSRs
Dataplane	Additional entries (very few per node)	N additional entries	N additional entries	N additional entries	Variable
IP convergence impact	None	May double	May double	May double	None

Criteria	Adj-SID only	Adj-SID+strict SPF node SID	Adj-SID+Node-SID with a new flag	Adj-SID+Node-SID not protected by a local policy	Adj-SID+binding SID
Computation engine	Needs to select Adj-SID with B=0	Needs to select Adj-SID with B=0+strict SPF Node-SID	Needs to select Adj-SID with B=0+ Node-SID with flag unset	Needs to understand local policy on each node	Needs to place binding SID in a smart way
Protocol	N/A	N/A	Need a new flag	N/A	N/A
ECMP avoidance	Yes	Yes at the price of stack increase	Yes at the price of stack increase	Yes at the price of stack increase	Yes
Requirement fulfilment	Yes	Partially	Partially	Partially	Yes
Others					Requires controller session to all nodes

Conclusion

- The best approach would be to use Adj-SID only with B=0
- That may not be doable in all cases today due to label stack push limitations and packet inspection limits on current devices
- When a path is too long, we propose to rely on binding-SIDs
- We encourage vendors to support deeper label stacks in next generations of HW

Next steps

- Do the WG agree with our proposal ?

- We would like to ask for WG adoption