Entropy Labels with deep label stacks (e.g. SPRING)

draft-kini-mpls-entropy-label-src-stacked-tunnels-01
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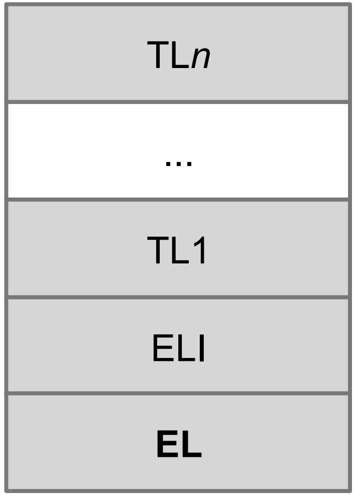
Background

- RFC 6790 specifies Entropy Label for load balancing
- <TL, ELI, EL> is inserted by ingress LSR
- Transit LSR " ...SHOULD use as much of the label stack as feasible as keys for the load balancing..."

Deep label stacks and load balancing in SPRING

- Ingress LSR pushes several tunnel labels making deep label stacks more prevalent
  - Depth dependent on explicit-route
  - Depth changes at LSRs along the path
- Explicit-route requires load balancing
  - ECMP in the shortest-path hops in an explicit-route
  - LAG in explicit-route

Single EL for entire label stack



TL*n*

...

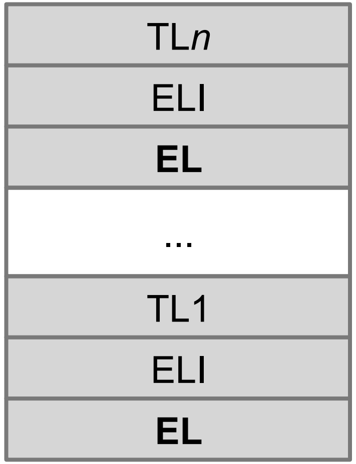
TL1

ELI

EL

EL is deep down the stack

EL per tunnel in the stack



TL*n*

ELI

EL

...

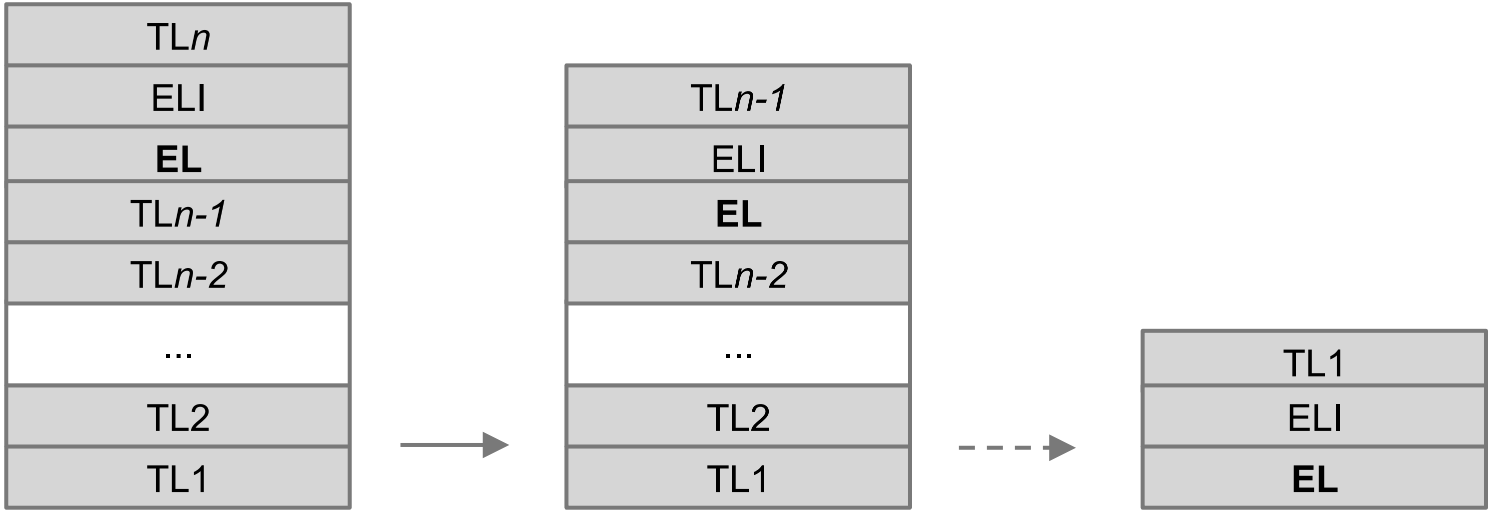
TL1

ELI

EL

Label stack depth is **three** times the number of tunnel labels

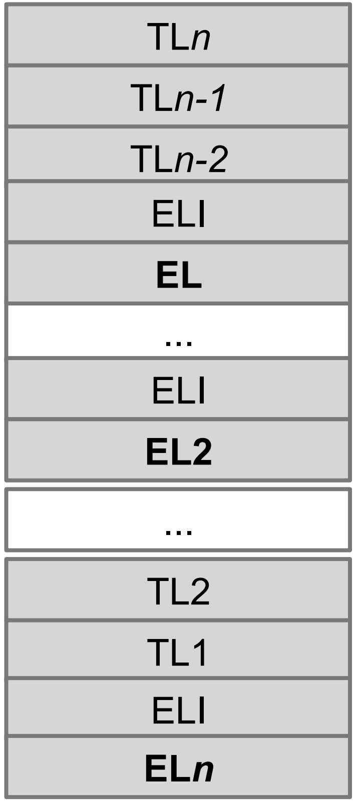
Re-usable EL in a stack



EL is **re-used after pop** by pushing under next tunnel label
Label operation changes, but end-to-end flow is consistently identified with single EL
EL is at a shallow depth along entire path.

EL at readable stack depths

Ingress LSR determines depth to insert ELs for that LSP via label-depth reading capability advertised (e.g. IGP) by each LSR.



TL*n*

TL*n-1*

TL*n-2*

ELI

EL

...

ELI

EL2

...

TL2

TL1

ELI

EL*n*

LSRs along the explicit-route until T*n-2* are able to read label stack depth until **EL**

Other work related to EL

- draft-ietf-mpls-forwarding
- draft-ravisingh-mpls-el-for-seamless-mpls

Questions/comments ?

Would like to ask for WG adoption.