Unified Source Routing Instructions using MPLS Label Stack

draft-xu-mpls-unified-source-routing-instruction-02

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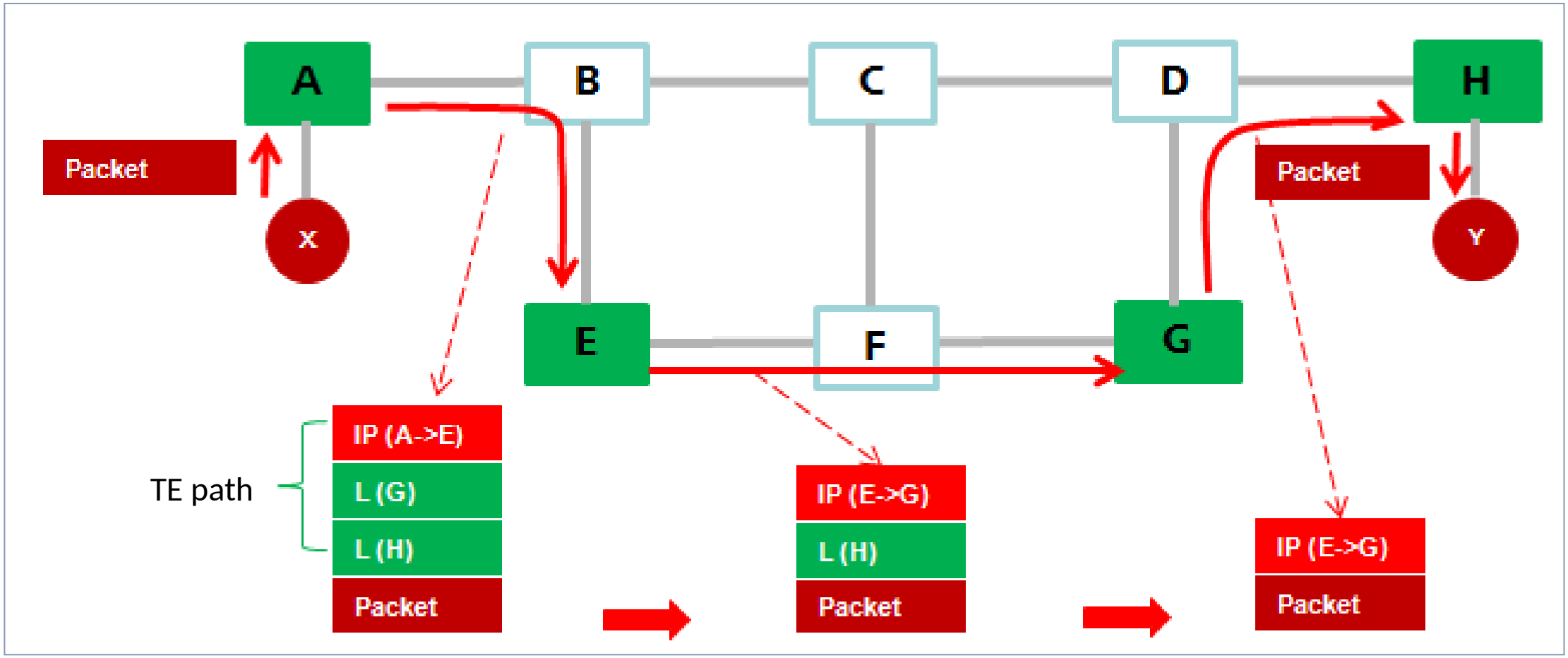
Changes since -00 version

- Three new co-authors added.
  - Gunter Van De Velde (Nokia)、Jeff Tantsura (Individual) and Shaowen Ma (Juniper)
- Add some text to clarify that the use of adj-SID is applicable to the unified source routing (SR) paradigm as well as the node-SID.
- Add some text to indicate the benefit of using the unified SR even in the fully upgraded MPLS-SPRING domain. i.e., to overcome the load-balancing dilemma encountered by MPLS-SPRING due to the RLD and MSD limitations.

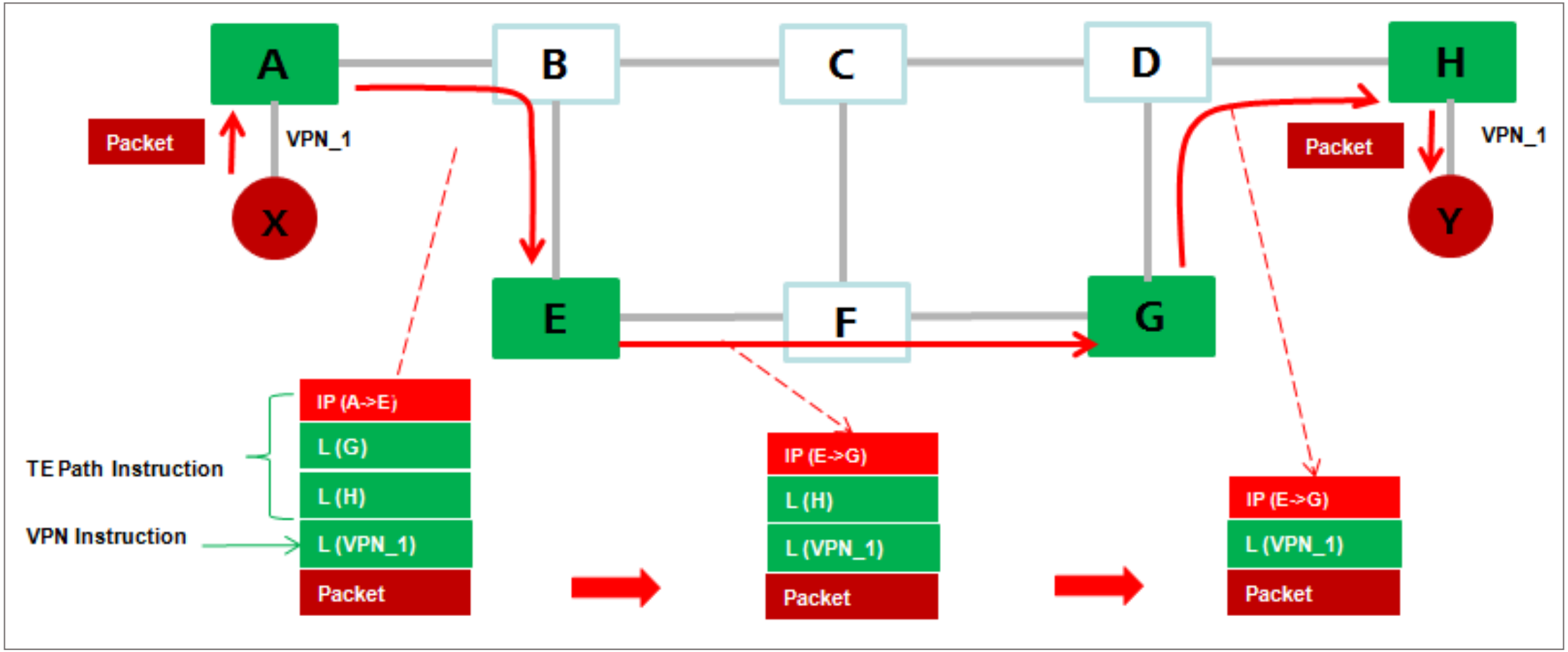
TE as an Overlay

- Traffic-Engineering (TE) capability was deemed as an underlay capability. However, it has now been successfully implemented and deployed as an overlay capability in practice (e.g., Google's B4 project).
  - "We considered a number of options for integrating existing routing protocols with centralized traffic engineering. In an aggressive approach, we would have built one integrated, centralized service combining routing (e.g., ISIS functionality) and traffic engineering. We instead chose to deploy routing and traffic engineering as independent services, with the standard routing service deployed initially and central TE subsequently deployed as an overlay." (a quote from Google's B4 paper for SIGCOMM13)

Unified SR: TE as an Overlay



Unified SR: VPN+TE as an Overlay



Advantages over SRv6

- More efficient network programming instructions (a.k.a., Less encapsulation overhead).
- Backward compatibility with MPLS-SPRING.
- Seamless integration with the existing MPLS VPN overlays.
- Better load-balancing capability by using MPLS-in-UDP [RFC7510].

Complement to MPLS-SPRING

- Facilitate the incremental deployment of MPLS-SPRING.
- Overcome the load-balancing dilemma encountered by MPLS-SPRING due to the maximum Readable Label-stack Depth (RLD) limitation (see draft-ietf-mpls-spring-entropy-label) and the Maximum SID Depth (MSD) hardware limitations (draft-ietf-ospf-segment-routing-msd).

Next Steps

- Comments and suggestions?