Service Chaining using Unified Source Routing Instructions

draft-xu-mpls-service-chaining-03

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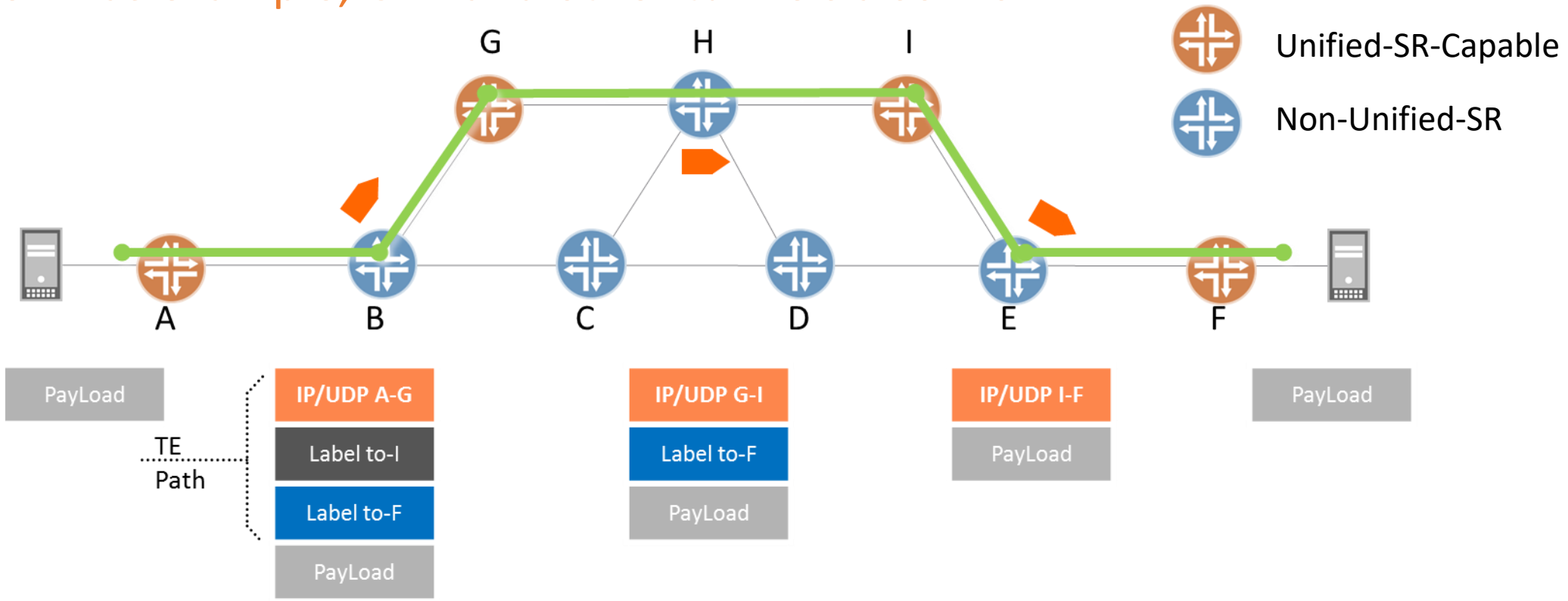
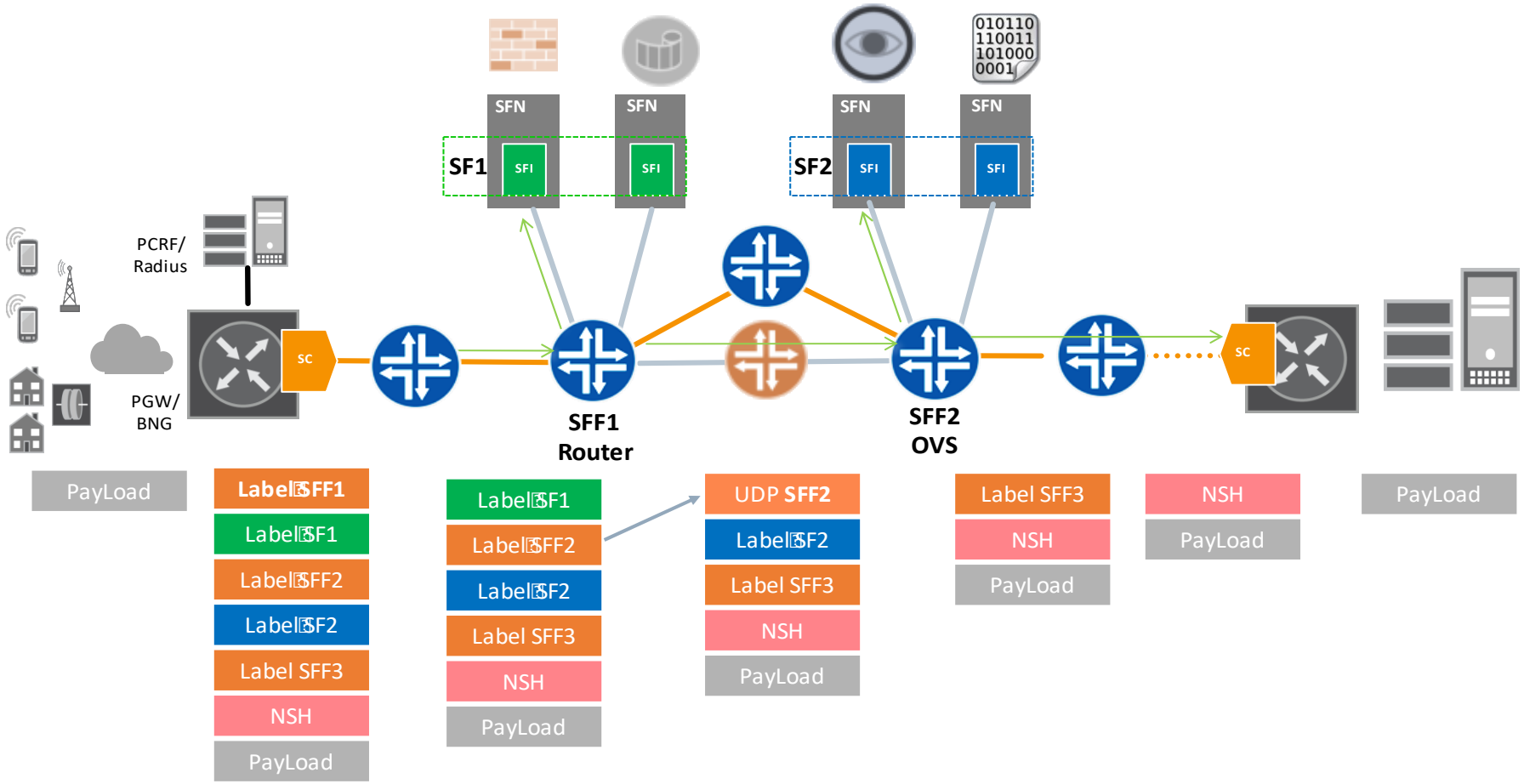
Unified SR: Source-Routing as Overlay

UDP as example, GRE and other tunnels also work



- Unified SR leverages MPLS-SR by MPLS-in-UDP or MPLS-in-GRE and therefore it works across IPv4 and IPv6 underlying networks.
  - Combines the best of two worlds (e.g., the simplicity of IP and the flexible programming capability of MPLS).

Service Chain with Unified MPLS and NSH

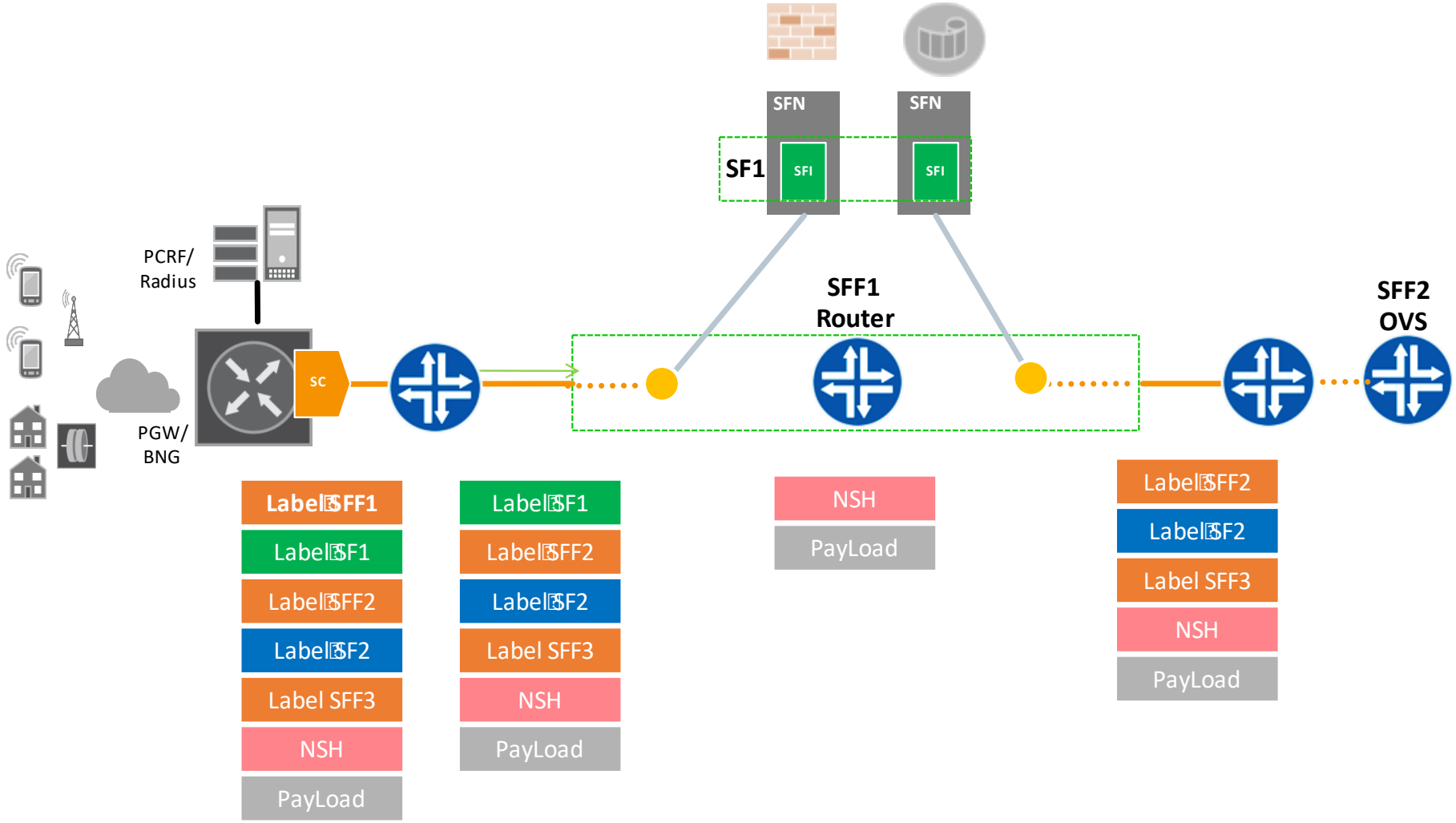


- The Unified SR can be leveraged to realize an transport-independent SFC encapsulation.
  - Since the Unified SR works across different networks including IPv4, IPv6 and MPLS, the SFC built on the Unified SR is transport-independent accordingly.

Leverage both SR and NSH for SFC
NSH as a metadata container

- The NSH spec has comprehensively defined the metadata format.
- Why not use the NSH directly as a metadata container:
  - The functionality of the Service Path Identifier (SPI) will indicate and mapping to a Label/UDP stack
  - The Service Index (SI) could be used to determine when to strip the metadata (i.e., the NSH).
  - Combined SPI/SI will add back the Unified MPLS label stack.
- More details would be specified in future versions.

Detail between SFF/SF with NSH



Advantages with NSH

- Not all router/switch can understand NSH to define a Path
  - VXLAN/NSH only can help with some one segment of Path, but SR can help with end-to-end Path
- Less states on SFF nodes.
- Leverage the efficient MPLS network programming capability.
  - Much better performance with MPLS processing in hardware other than NSH
- Built on the existing MPLS forwarding capabilities (e.g., MPLS forwarding capability and MPLS-in-UDP tunneling capability).

Next Steps

- WG adoption?