# draft-guichard-sfc-nsh-sr-02

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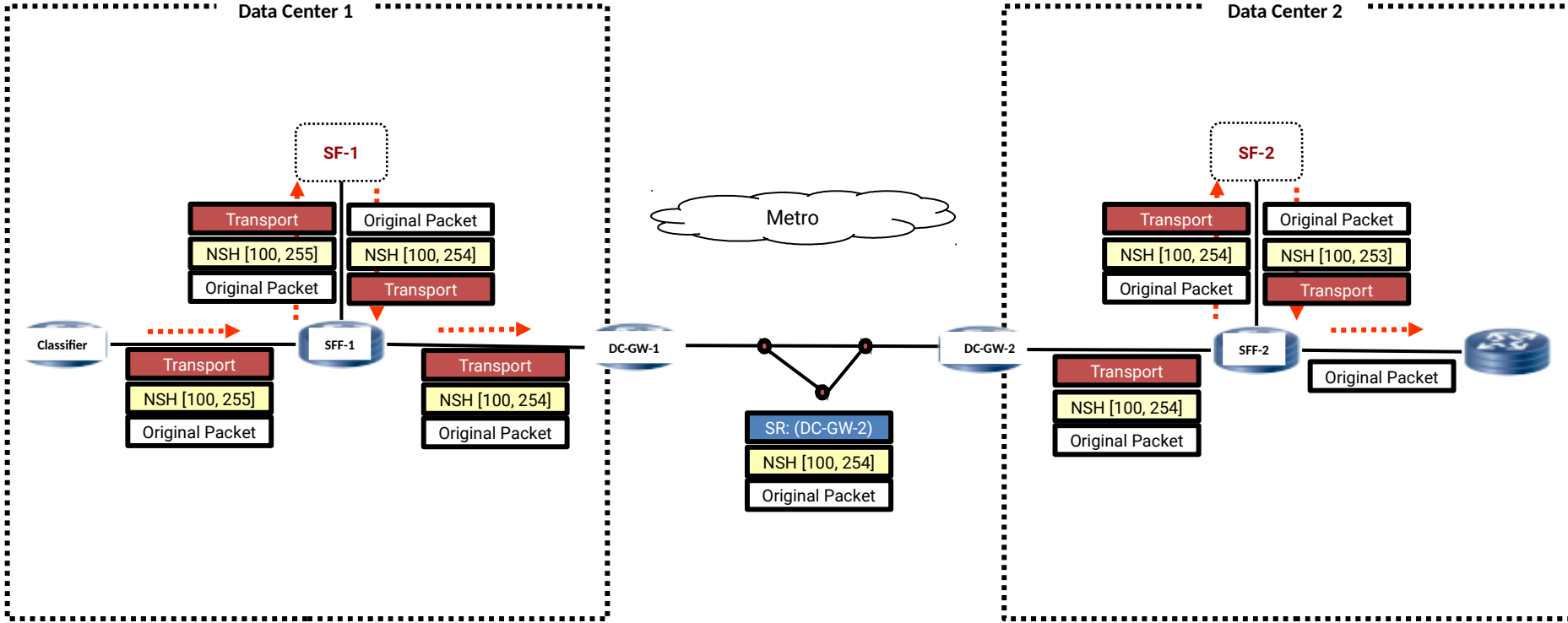
# Basic Intention of the Draft

- Describes two application scenarios where Network Service Header (NSH) and Segment Routing (SR) can be deployed together to support Service Function Chaining (SFC) in an efficient manner while maintaining separation of the service and transport planes as originally intended by the SFC architecture
- Scenario #1: NSH-based SFC with SR-based transport:
  - in this scenario segment routing provides the transport encapsulation between SFFs while NSH is used to convey and trigger SFC polices
- Scenario #2: SR-based SFC with integrated NSH service plane:
  - in this scenario each service hop of the SFC is represented as a segment of the SR segment-list. SR is responsible for steering traffic through the necessary SFFs as part of the segment routing path and NSH is responsible for maintaining the service plane, and holding the SFC instance context and associated metadata

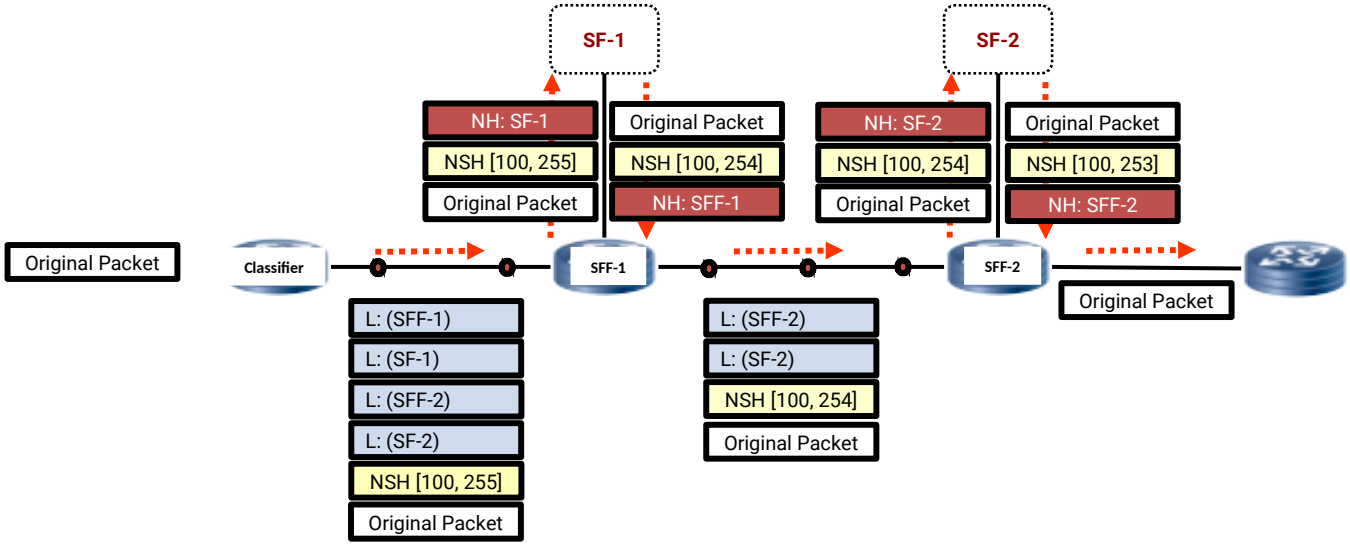
# NSH-based SFC with SR as the Transport Tunnel



# Stated Benefits of Scenario #1

- The network operator is able to take advantage of the transport- independent nature of the NSH encapsulation
- The network operator is able to take advantage of the traffic steering capability of SR where appropriate
- Light-weight NSH is used in the data center for SFC and avoids more complex hierarchical SFC schemes between data centers
- Clear responsibility division and scope between NSH and SR
- Applicable to any case where multiple segments of a service chain are distributed into multiple domains or where traffic-engineered paths are necessary between SFFs

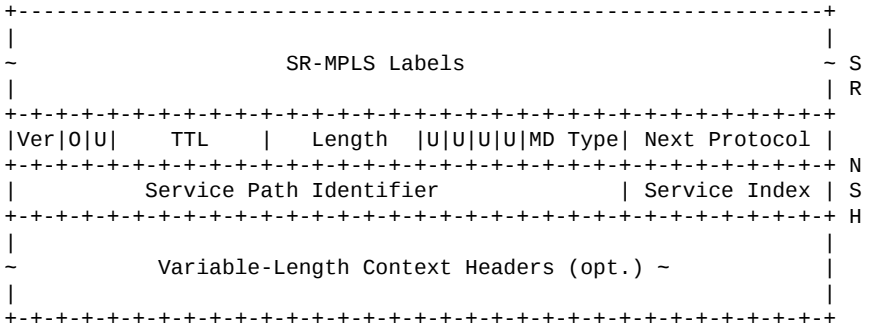
# SR-based SFC with Integrated NSH Service Plane



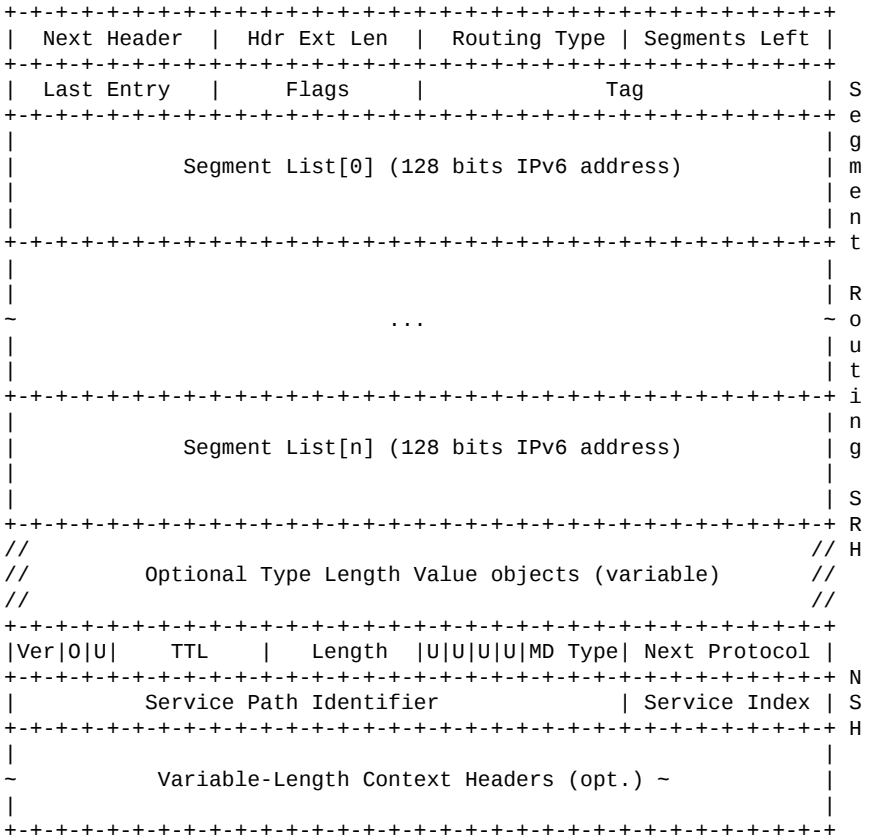
# Stated Benefits of Scenario #2

- It is economically sound for SF vendors to only support one unified SFC solution. The SF is unaware of the SR.
- It simplifies the SFF (i.e., the SR router) by nullifying the needs for re-classification and SR proxy.
- It provides a unique and standard way to pass metadata to SFs.
- SR is also used for forwarding purposes including between SFFs.
- It takes advantage of SR to eliminate the NSH forwarding state in SFFs. This applies each time strict or loose SFPs are in use.
- It requires no interworking as would be the case if MPLS-SR based SFC and NSH-based SFC were deployed as independent mechanisms in different parts of the network

# Encapsulation Details




SR-MPLS




SRv6

# Conclusions

- NSH-based service chaining and segment routing are complimentary technologies
- SR based SFC has several options, each has its own pros and cons
- NSH is designed to be transport agnostic, NSH based SFC is more and more accepted by the industry
- Segment Routing(SR) provides an efficient way for steering traffic without requiring intermediate nodes to maintain per-flow state
- By combining SR and NSH, a transport-independent SFC can be realized
- A solution that keeps merits of both NSH and SR is attractive

# Next Steps

- Request feedback from both SPRING and SFC WGs
- Then ask for adoption in the SPRING WG