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**Encoding Network Slice Identification for SRv6  
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**Abstract**

This document describe a method to encode network slicing identifier within SRv6 domain.

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## [1.](#) Introduction

SRv6 Network Programming[RFC8986] enables the creation of overlays with underlay optimization to be deployed in an SR domain[RFC8402].

As defined in [[RFC8754](#)], all inter-domain packets are encapsulated for the part of the packet journey that is within the SR domain. The outer IPv6 header [[RFC8200](#)] is originated by a node of the SR domain and is destined to a node of the SR domain.

This document describes a novel method to encode slice identifier in the outer IPv6 header of an SR domain. Unlike other proposed methods before, which will bring side effects on existed functions, by encoding network slicing identifier in the source IPv6 address of the outer header, this method avoids the drawbacks which previous proposals incur.

### [1.1.](#) Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

## [2.](#) Slice Identifier

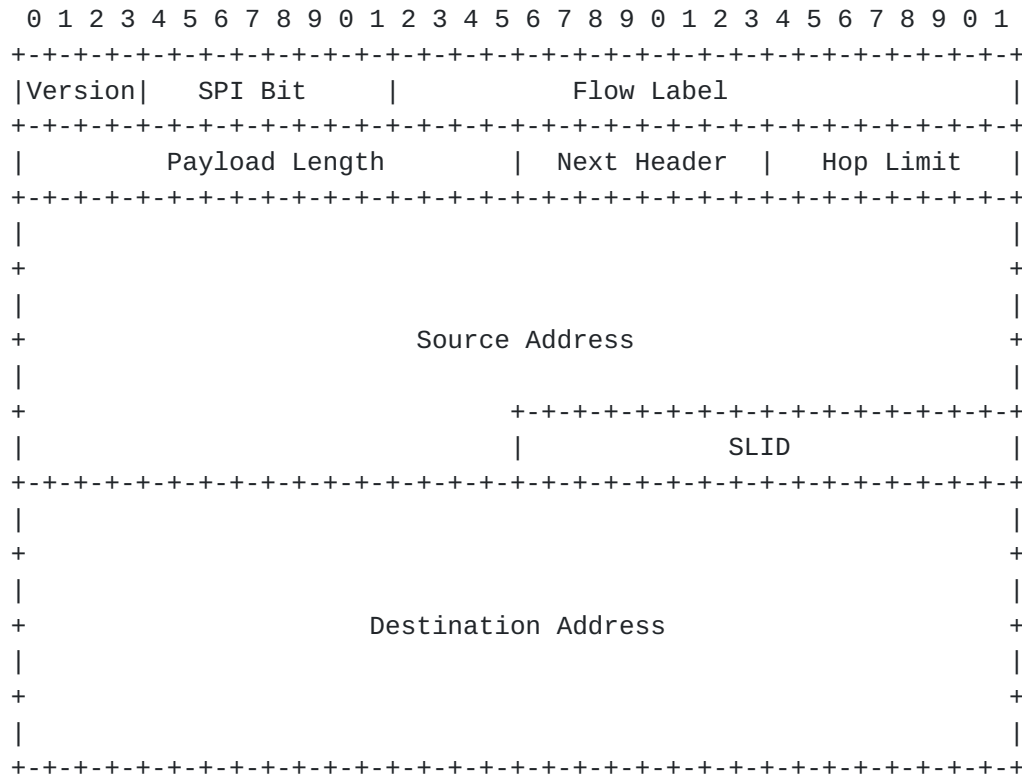
Slice identifier (SLID) is a 16-bit Identifier which uniquely defines a slicing of the network in the specified SR domain.

## [3.](#) SLID Assignment

When SR domain enables network slicing, the ingress PE should reserve 16 least significant bits in its locator for slicing use. When a packet enters the SR domain from an ingress PE, the ingress PE encapsulates the packet in an outer IPv6 header and optional SRH as defined in [[RFC8754](#)]. The ingress PE MAY also classify the packet into a slice and set the slice identifier as follows:



- o Set the SPI bit (SLID Presence Indicator) in the Traffic Class field of the outer IPv6 header.
- o Write this SLID in the 16 least significant bits of source address of the outer IPv6 header.



The choice of the SPI bit from within the IPv6 Traffic Class field is a domain-wide configuration and is outside the scope of this document.

#### 4. Per-Slice Forwarding

Any router within the SR domain that forwards a packet with SPI bit set uses the SLID to select a slice and apply per-slice policies.

## 5. Backward Compatibility

PE routers that do not set the SPI bit do not enable the SLID semantic of the IPv6 source address bits. Hence, SLID-aware routers would not attempt to classify these packets into a slice.

Any router that does not process the SPI nor the SLID forwards packets as usual.

## 6. Acknowledgements

The authors would like to thank AAAA, BBBB and CCCC for their insightful feedback on this document.

## 7. References

### 7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC8986] Filsfils, C., Camarillo, P., Leddy, J., Voyer, D., Matsushima, S., and Z. Li, "Segment Routing over IPv6 (SRv6) Network Programming", [RFC 8986](#), DOI 10.17487/RFC8986, February 2021, <<https://www.rfc-editor.org/info/rfc8986>>.
- [RFC8402] Filsfils, C., Ed., Previdi, S., Ed., Ginsberg, L., Decraene, B., Litkowski, S., and R. Shakir, "Segment Routing Architecture", [RFC 8402](#), DOI 10.17487/RFC8402, July 2018, <<https://www.rfc-editor.org/info/rfc8402>>.
- [RFC8754] Filsfils, C., Ed., Dukes, D., Ed., Previdi, S., Leddy, J., Matsushima, S., and D. Voyer, "IPv6 Segment Routing Header (SRH)", [RFC 8754](#), DOI 10.17487/RFC8754, March 2020, <<https://www.rfc-editor.org/info/rfc8754>>.

### 7.2. Informative References

- [RFC8200] Deering, S., and Hinden, D., "Internet Protocol, Version 6 (IPv6) Specification", [RFC 8200](#), DOI 10.17487/RFC8200, July 2017, <<https://www.rfc-editor.org/info/rfc8200>>.

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