

SRv6 Upper-Layer Checksum

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Problem Statement

- In SRv6, when the last SID is a compressed one, the upper-layer checksum computation rule defined in RFC 8200 doesn't apply anymore
- Two examples when RFC 8200 doesn't apply:
 - In the NEXT-C-SID flavor of compressed SID, multiple SIDs may be carried in the IPv6 DA at the same time
 - In the REPLACE-C-SID flavor of compressed SID, the last element of the Routing header may be not a 128-bit address, but a 16-bit/32-bit compressed SID

Proposed Solution in this draft

- Keep RFC 8200 as is.
- Insert a 128-bit address of the final destination into the last SID, using a new SRH flag to indicate the insertion.
- The pseudo-code to process the new SRH flag (C-flag):
 - S01.2. IF C-flag is set and local configuration permits
 - C-flag processing {
 - If (Segment List[0] is locally instantiated or represents a local interface) {
 - a. Set Segments Left to 0.
 - b. Update IPv6 DA with Segment List[0].
 - }
 - Else {
 - If (IPv6 DA is locally instantiated as a PSP SID) {
 - a. Update IPv6 DA with Segment List[0].
 - b. Submit the packet to the egress IPv6 FIB lookup for transmission to the new destination.
 - }
 - }

Other Proposed Solutions

- During the discussions on and off the mailing list, there are two other proposed solutions:
 - Standardize that the last SID MUST be uncompressed. Keep RFC 8200 as is.
 - At the originating node, when the last SID is compressed, decompress it and put the resulting IPv6 DA into the pseudo-header for upper-layer checksum computation. Update RFC 8200 accordingly.

Next steps

- Ask for more reviews and comments
- Converge on one solution

Thank you!