Benchmarking Methodology for Segment Routing

draft-ietf-bmwg-sr-bench-meth-03

Luis Contreras (Telefonica)
Bruno Decraene (Orange)
Giuseppe Fioccola (Huawei)
Eduard Vasilenko (Huawei)
Paolo Volpato (Huawei)

IETF 122, Bangkok, March 15-21

Draft Scope

- Segment Routing (SR) [RFC 8402] leverages the source routing paradigm and can be applied to both the MPLS data plane (SR-MPLS) and the IPv6 data plane (SRv6).
- However, there is no standard method defined to compare SR packet forwarding capabilities of network devices.
- The draft defines a standard method to benchmark the SR packet forwarding capabilities of network devices:
  - The draft extends RFC1242, RFC2544, RFC5180, RFC5695, and RFC8402 to SR networks.
  - It covers both SR-MPLS and SRv6 (including Compressed SIDs).

Draft Scope

- The RECOMMENDED topology for SR Forwarding Benchmarking is the same used for MPLS benchmarking [RFC5695], with some additions.
- The tests are performed using all the interfaces of a device.
  - Test reports have to indicate information such as the number of interfaces involved and their oversubscription ratio.
- The SID stack in scope has a minimum of two entries (two SIDs). RECOMMENDED more than two.
  - To simulate a SID list for explicit steering of packet flows through different nodes.
  - The maximum SID depth should be determined.

```
                 +-----------+
 +---------|           |<----------+
 | +-------|  Tester   |<--------+ |
 | | +-----|           |<------+ | |
 | | |     +-----------+       | | |
 | | |                         | | |
 | | |      +--------+         | | |
 | | +----->|        |---------+ | |
 | +------->|  DUT   |-----------+ |
 +--------->|        |-------------+
            +--------+
```

- Tests limited to underlay, like Headend encapsulations (H.Encaps.xxx), segment Endpoints (End, End.X), Endpoints with decapsulations (End.Dxxx).
  - Services (e.g. L2/L3 VPNs) are out of the scope of this document.

Draft History

- Adopted by BMWG after IETF 119.
  - Standalone document incorporating the previous drafts specific to SR-MPLS and SRv6.
- Version -00 uploaded in June 2024.
- Version -01 (July 2024) dealt with comments on fragmentation, throughput test on a destination node, and other editorial changes.
- Version -02 (October 2024) updated test descriptions with the compressed SID (SRv6).
- Version -03 (March 2025) fixed references and added minor edits.

Status and Next Steps

- Since IETF 121 the text is stable.
- On-going: cross-post to Spring and SRv6Ops:
  - Looking for comments from the SR experts there.
- Benchmarking tests using the draft are on-going:
  - Let us know if you performed SR performance tests, with this methodology or a different one.
  - Also, let us know if a public test activity can be referenced.
- Move to WGLC after feedback from cross-post.
- Thanks to all who will provide support and feedback.

Thank you