Benchmarking Methodology for IPv6 Segment Routing

draft-vfv-bmwg-srv6-bench-meth-06

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

Background

RFC 5180 defines the methodology for the benchmarking of IPv6 forwarding devices.

Segment Routing (SR), defined in RFC 8402, leverages the source routing paradigm and can be applied to the IPv6 data plane (**SRv6**)

- However, there is no standard method defined to compare and contrast the foundational SRv6 packet forwarding capabilities of network devices

- This new I-D aims to complement RFC 5695 and RFC 5180 by defining a methodology for benchmarking SRv6.

- It builds upon RFC 2544, RFC 5695, RFC 5180 and RFC 8402.

- RFC 4814, RFC 8219, and RFC 9004 are included for refinement of some specific points

SRv6 Forwarding Benchmarking Tests

For **SRv6**, new tests are added to characterize an **SRv6 Source Node**, an **SRv6 Segment Endpoint Node**, a **Transit Node**

- <u>SR source node</u> processing: insertion of the SRH, with SIDs stored in reverse order, and setting of the IPv6 DA as the first SID of the SR Policy.

- <u>SR segment endpoint node</u> processing: detection of the new active segment, modification of the IPv6 DA of the IPv6 header, and forwarding of the packets.

- <u>SR transit node</u> processing: forwarding of the packets containing the SR header. In SRv6 the transit nodes do not need to be SRv6 aware.

The overall procedure defines several **extensions to RFC 5695**:

- Test SID list longer than 1 SID (2 are recommended, many are optional)

- H.Encaps behavior is recommended, H.Encaps.XXX are possible

- End.X behavior to emulate traffic engineering scenario is recommended

- All flavors are recommended (PSP, USP, USD)

- Different Reporting Format

- At least one protocol for the SID population is recommended (ISIS or OSPF or SR Policy)

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Changes from -02

Address comments received at IETF 114 and mail alias:

- Buffer's size test (back-to-back) is added according to RFC 9004
- Reference to RFC 4814 on how to deal with L2 links that may have staffing Reference to RFC 4814 on how to deal with address randomization for equalization of link's load-balancing
- Reference to RFC 8219 on how to improve latency measurement optionally
- State that special capabilities just for tests are prohibited
- SR policies may be installed by many protocols
- Make at least a routing protocol mandatory
- Increase the test time
- Improvement for Reset test methodology (RFC 5695)
- Better alignment with the IETF Requirements Language
- Editor changes

Thanks to Gabor Lencse and Boris Khasanov for the feedback!

Changes from -03

Address comments received at IETF 115 and mail alias:

- Longer list of SID as an optional test
- Specify headend behavior (H.Encaps.XXX)
- Add a test for the transit node with decapsulation
- Add flavor tests (PSP, USP, USD)
- Readability improvements
- Editor changes

Thanks to Gabor Lencse and Bruno Decraene for the feedback!

Next Steps

The document looks stable.

We are asking for BMWG draft adoption.

- A WG adopted document would help the draft to get more attention from companies doing tests.
- 3rd party tests are also desired before it would become RFC.

Thank you