

SPRING
Internet-Draft
Intended status: Informational
Expires: September 19, 2018

D. Dukes, Ed.
C. Filsfils
P. Camarillo
Cisco Systems, Inc.
March 18, 2018

Comparative Analysis of MTU overhead in the context of SPRING
draft-dukes-spring-mtu-overhead-analysis-00

Abstract

This document provides an apples-to-apples comparative analysis of MTU overhead in the context of SPRING.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on September 19, 2018.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Internet-Draft

CAMTUSPRING

March 2018

Table of Contents

1.	Introduction	2
1.1.	Stateless IPv6 Encapsulation Within a VPN Context	2
1.1.1.	Analysis of MTU overhead	2
2.	Informative References	3
	Authors' Addresses	3

[1.](#) Introduction

This document provides an apples-to-apples comparative analysis of MTU overhead in the context of SPRING.

The first version of this document concentrates on stateless IPv6 encapsulation within a VPN context.

[1.1.](#) Stateless IPv6 Encapsulation Within a VPN Context

A VPN context provides routing and forwarding isolation at interface granularity on a Provider Edge (PE) node.

Encapsulation between PE nodes is used to forward traffic between the VPN contexts of remote nodes. Typically, this encapsulation encodes the remote node address and VPN context.

Stateless encapsulation requires no additional state be propagated between PE and provider (P) nodes.

[1.1.1.](#) Analysis of MTU overhead

VXLAN [[RFC7348](#)], LISP [[RFC6830](#)], GTP and SRv6 [[I-D.filsfils-spring-srv6-network-programming](#)] encapsulations are considered as they provide stateless encapsulation while supporting VPN contexts.

VXLAN, LISP, and GTP encapsulate all add VPN context via UDP.

- o VXLAN: 56 bytes : IPv6(40) + UDP(8) + VXLAN(8)
- o LISP: 56 bytes : IPv6(40) + UDP(8) + LISP(8)
- o GTP: 56 bytes : IPv6(40) + UDP(8) + GTP(8)

SRv6 encapsulates and includes the VPN context with the destination SID.

- o SRv6: 40 bytes : IPv6(40)

The SRv6 VPN SID encodes location and VPN context so IPv6 encapsulation is all that's required for the SRv6 case, i.e. there is no Segment Routing Extension Header (SRH)

[[I-D.ietf-6man-segment-routing-header](#)] required.

SRv6 results in a lower overhead than VXLAN, LISP, and GTP for stateless encapsulation within a VPN context.

[2.](#) Informative References

[I-D.filsfils-spring-srv6-network-programming]

Filsfils, C., Li, Z., Leddy, J., daniel.voyer@bell.ca, d., daniel.bernier@bell.ca, d., Steinberg, D., Raszuk, R., Matsushima, S., Lebrun, D., Decraene, B., Peirens, B., Salsano, S., Naik, G., Elmalky, H., Jonnalagadda, P., and M. Sharif, "SRv6 Network Programming", [draft-filsfils-spring-srv6-network-programming-04](#) (work in progress), March 2018.

[I-D.ietf-6man-segment-routing-header]

Previdi, S., Filsfils, C., Raza, K., Dukes, D., Leddy, J., Field, B., daniel.voyer@bell.ca, d., daniel.bernier@bell.ca, d., Matsushima, S., Leung, I., Linkova, J., Aries, E., Kosugi, T., Vyncke, E., Lebrun, D., Steinberg, D., and R. Raszuk, "IPv6 Segment Routing Header (SRH)", [draft-ietf-6man-segment-routing-header-09](#) (work in progress), March 2018.

[RFC6830] Farinacci, D., Fuller, V., Meyer, D., and D. Lewis, "The Locator/ID Separation Protocol (LISP)", [RFC 6830](#), DOI 10.17487/RFC6830, January 2013, <<https://www.rfc-editor.org/info/rfc6830>>.

[RFC7348] Mahalingam, M., Dutt, D., Duda, K., Agarwal, P., Kreeger, L., Sridhar, T., Bursell, M., and C. Wright, "Virtual eXtensible Local Area Network (VXLAN): A Framework for

Overlaying Virtualized Layer 2 Networks over Layer 3
Networks", [RFC 7348](https://www.rfc-editor.org/info/rfc7348), DOI 10.17487/RFC7348, August 2014,
<<https://www.rfc-editor.org/info/rfc7348>>.

Authors' Addresses

Darren Dukes (editor)
Cisco Systems, Inc.
Ottawa
CA

Email: ddukes@cisco.com

Dukes, et al.

Expires September 19, 2018

[Page 3]

Internet-Draft

CAMTUSPRING

March 2018

Clarence Filsfils
Cisco Systems, Inc.
Brussels
BE

Email: cfilsfil@cisco.com

Pablo Camarillo
Cisco Systems, Inc.
Spain

Email: pcamaril@cisco.com

Dukes, et al.

Expires September 19, 2018

[Page 4]