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Comparative Analysis of MTU overhead in the context of SPRING
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Abstract

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

Status of This Memo

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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.

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

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

- 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

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