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Performance Measurement for Geneve

Abstract

This document describes the method to achieve Performance Measurement (PM) in point-to-point Generic Network Virtualization Encapsulation (Geneve) unicast tunnels used to make up an overlay network.

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1. Introduction

"Generic Network Virtualization Encapsulation" (Geneve) [[RFC8926](#)] provides an encapsulation scheme that allows building an overlay network of tunnels by decoupling the address space of the attached virtual hosts from that of the network.

This document describes the use of "Simple Two-way Active Measurement Protocol" (STAMP) [[RFC8762](#)] and "Simple Two-Way Active Measurement Protocol Optional Extensions" (STAMP Optional Extensions) [[RFC8972](#)], to enable measuring the performance of the path between two Geneve tunnel endpoints, like delay, delay variation, and packet loss.

Analogous to [[RFC9521](#)], in this document, Network Virtualization Edge (NVE) represents the Geneve tunnel endpoint, Tenant System (TS) represents the physical or virtual device attached to a Geneve tunnel endpoint from the outside, Virtual Access Point (VAP) represents the NVE side of the interface between the NVE and the TS, the usage of Management Virtual Network Identifier (VNI) is described in [[I-D.ietf-nvo3-geneve-oam](#)] and outside the scope of this document.

2. Conventions Used in This Document

2.1. Abbreviations

FCS: Frame Check Sequence

Geneve: Generic Network Virtualization Encapsulation

NVE: Network Virtualization Edge

PM: Performance Measurement

SSID: STAMP Session Identifier

STAMP: Simple Two-way Active Measurement Protocol

TS: Tenant System

VAP: Virtual Access Point

VNI: Virtual Network Identifier

2.2. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

3. PM Packet Transmission over Geneve Tunnel

The PM session is originated and terminated at the VAP of an NVE. The selection of the PM packet encapsulation is based on how the VAP encapsulates the data packets. This document defines two formats of PM packet encapsulation in Geneve:

- *with Ethernet and IP/UDP encapsulation;

- *with IP/UDP encapsulation.

3.1. PM Encapsulation With Inner Ethernet/IP/UDP Header

If the VAP that originates the PM packets is used to encapsulate Ethernet data frames, then the PM packets are encapsulated in Geneve as described below. Note that here the PM packets are STAMP test packets.

The inner Ethernet header and IP header are encoded as defined in Section 4 of [\[RFC9521\]](#).

The destination UDP port MUST follow the STAMP UDP port usage defined in Section 4.1 of [[RFC8762](#)].

The STAMP test packet can be STAMP Session-Sender test packet or STAMP Session-Reflector test packet. The STAMP test packet is encoded as specified in [[RFC8762](#)] and [[RFC8972](#)].

When the PM packets are encapsulated in Geneve in this way, the values in the Geneve header MUST be set as specified in Section 4 of [[RFC9521](#)].

3.2. PM Encapsulation With Inner IP/UDP Header

If the VAP that originates the PM packets is used to encapsulate IP data packets, then the PM packets are encapsulated in Geneve as described below. Note that here the PM packets are STAMP test packets.

The STAMP test packet can be STAMP Session-Sender test packet or STAMP Session-Reflector test packet. The STAMP test packet is encoded as specified in [RFC8762] and [RFC8972].

When the PM packets are encapsulated in Geneve in this way, the values in the Geneve header MUST be set as specified in Section 5 of [RFC9521].

4. Demultiplexing of the PM packet

Once a packet is received, the NVE validates the packet as specified in Section 4.1 and 5.1 of [RFC9521], except that the received STAMP test packet would be processed by STAMP Session-Sender or STAMP Session-Reflector, instead of BFD.

Analogous to BFD over Geneve, multiple STAMP sessions for the same VNI may be running between two NVEs, so there needs to be a mechanism for demultiplexing received STAMP test packets to the proper session.

If the STAMP test packet is received with STAMP Session Identifier (SSID) equals to 0, then the procedure for demultiplexing the received STAMP test packets MUST follow the procedure for demultiplexing the received BFD packets with Your Discriminator equals to 0, which is specified in Section 4.1 and 5.1 of [RFC9521].

If the STAMP test packet is received with a non-zero SSID, then the STAMP session MUST be demultiplexed only with SSID as the key.

5. Security Considerations

Security issues discussed in [RFC8762], [RFC8972], [RFC8926] and [RFC9521] apply to this document.

6. IANA Considerations

This document has no IANA action requested.

7. Acknowledgements

TBA.

8. References

8.1. Normative References

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[RFC8174]

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