A Packet Loss and Delay Measurement Profile for MPLS-based Transport Networks
draft-ietf-mpls-tp-loss-delay-profile-02

Abstract

Procedures and protocol mechanisms to enable the efficient and accurate measurement of packet loss, delay, and throughput in MPLS networks are defined in RFC XXXX.

The MPLS Transport Profile (MPLS-TP) is the set of MPLS protocol functions applicable to the construction and operation of packet-switched transport networks.

This document describes a profile of the general MPLS loss, delay, and throughput measurement techniques that suffices to meet the specific requirements of MPLS-TP.

This document is a product of a joint Internet Engineering Task Force (IETF) / International Telecommunication Union Telecommunication Standardization Sector (ITU-T) effort to include an MPLS Transport Profile within the IETF MPLS and Pseudowire Emulation Edge-to-Edge (PWE3) architectures to support the capabilities and functionalities of a packet transport network as defined by the ITU-T.

This Informational Internet-Draft is aimed at achieving IETF Consensus before publication as an RFC and will be subject to an IETF Last Call.

[ RFC Editor, please remove this note before publication as an RFC and insert the correct Streams Boilerplate to indicate that the published RFC has IETF consensus. ]

[ RFC Editor, please replace XXXX with the RFC number assigned to draft-ietf-mpls-loss-delay. ]

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
1. Introduction

Procedures for the measurement of packet loss, delay, and throughput in MPLS networks are defined in [I-D.ietf-mpls-loss-delay]. This document describes a profile, i.e. a simplified subset, of these procedures that suffices to meet the specific requirements of MPLS-based transport networks [RFC5921] as defined in [RFC5860]. This profile is presented for the convenience of implementors who are concerned exclusively with the transport network context.

The use of the profile specified in this document is purely optional. Implementors wishing to provide enhanced functionality that is within the scope of [I-D.ietf-mpls-loss-delay] but outside the scope of this profile may do so, whether or not the implementation is restricted to the transport network context.

The assumption of this profile is that the devices involved in a measurement operation are configured for measurement by a means external to the measurement protocols themselves, for example via a Network Management System (NMS) or separate configuration protocol.
This document is a product of a joint Internet Engineering Task Force (IETF) / International Telecommunication Union Telecommunication Standardization Sector (ITU-T) effort to include an MPLS Transport Profile within the IETF MPLS and Pseudowire Emulation Edge-to-Edge (PWE3) architectures to support the capabilities and functionalities of a packet transport network as defined by the ITU-T.

2. Packet Loss Measurement (LM) Profile

When an LM session is externally configured, the values of several protocol parameters can be fixed in advance at the endpoints involved in the session, so that inspection or negotiation of these parameters is not required. These parameters, and their default values as specified by this profile, are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query control code</td>
<td>In-band response requested</td>
</tr>
<tr>
<td>Byte/packet Count (B) Flag</td>
<td>Packet count</td>
</tr>
<tr>
<td>Traffic-Class-specific (T) Flag</td>
<td>Traffic-class-scoped</td>
</tr>
<tr>
<td>Origin Timestamp Format (OTF)</td>
<td>IEEE 1588 version 1</td>
</tr>
</tbody>
</table>

This profile is restricted to direct-mode LM and therefore uses the MPLS Direct Packet Loss Measurement (DLM) Channel Type in the Associated Channel Header (ACH).

A simple implementation may assume that external configuration will ensure that both ends of the communication are using the default values for these parameters.

3. Packet Delay Measurement (DM) Profile

When a DM session is externally configured, the values of several protocol parameters can be fixed in advance at the endpoints involved in the session, so that inspection or negotiation of these parameters is not required. These parameters, and their default values as specified by this profile, are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query control code</td>
<td>In-band response requested</td>
</tr>
<tr>
<td>Querier Timestamp Format (QTF)</td>
<td>IEEE 1588 version 1</td>
</tr>
<tr>
<td>Responder Timestamp Format (RTF)</td>
<td>IEEE 1588 version 1</td>
</tr>
<tr>
<td>Responder’s Preferred Timestamp Format (RPTF)</td>
<td>IEEE 1588 version 1</td>
</tr>
</tbody>
</table>
This profile uses the MPLS Delay Measurement (DM) Channel Type in the Associated Channel Header (ACH).

A simple implementation may assume that external configuration will ensure that both ends of the communication are using the default values for these parameters.

4. Security Considerations

This document delineates a subset of the procedures specified in [I-D.ietf-mpls-loss-delay], and as such introduces no new security considerations in itself. The security considerations discussed in [I-D.ietf-mpls-loss-delay] apply also to the profile presented in this document.

5. IANA Considerations

This document introduces no new IANA considerations.

6. References

6.1. Normative References


6.2. Informative References

Authors’ Addresses

Dan Frost (editor)
Cisco Systems

Email: danfrost@cisco.com

Stewart Bryant (editor)
Cisco Systems

Email: stbryant@cisco.com