International Telecommunication Union

ITU-T G.8113.2/Y.1372.2

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Amendment 1
(08/2017)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Packet over Transport aspects – MPLS over Transport aspects

SERIES Y: GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS, NEXT-GENERATION NETWORKS, INTERNET OF THINGS AND SMART CITIES

Internet protocol aspects – Transport

Operations, administration and maintenance mechanisms for MPLS-TP networks using the tools defined for MPLS

Amendment 1

Recommendation ITU-T G.8113.2/Y.1372.2 (2015) – Amendment 1

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Recommendation ITU-T G.8113.2/Y.1372.2

Operations, administration and maintenance mechanisms for MPLS-TP networks using the tools defined for MPLS

Amendment 1

Summary

Recommendation ITU-T G.8113.2/Y.1372.2 specifies operations, administration and maintenance (OAM) mechanisms based on the tools defined for multi-protocol label switching (MPLS) for data-plane OAM in MPLS transport profile (MPLS-TP) networks. It also specifies the MPLS-TP OAM packet formats, syntax and semantics of MPLS-TP OAM packet fields. The OAM mechanisms defined in this Recommendation assume common forwarding of the MPLS-TP user packets and MPLS-TP OAM packets.

Amendment 1 adds material related to client signal fail handling.

History

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Recommendation ITU-T G.8113.2/Y.1372.2

Operations, administration and maintenance mechanisms for MPLS-TP networks using the tools defined for MPLS

Amendment 1

Editorial note: This is a complete-text publication. Modifications introduced by this amendment are shown in revision marks relative to Recommendation ITU-T G.8113.2/Y.1372.2 (2015).

1 Scope

This Recommendation specifies operations, administration and maintenance (OAM) mechanisms based on the tools defined for multi-protocol label switching (MPLS) in IETF Requests for Comments, for data-plane OAM in MPLS transport profile (MPLS-TP) networks to meet the MPLS-TP OAM requirements defined in [IETF RFC 5860]. It also specifies the MPLS-TP OAM packet formats, syntax and semantics of MPLS-TP OAM packet fields.

The OAM mechanisms defined in this Recommendation assume common forwarding of the MPLS-TP user packets and MPLS-TP OAM packets. In transport networks using co-routed bidirectional point-to-point connections, the OAM return path is always in-band.

This Recommendation provides a representation of the MPLS-TP technology using the methodologies that have been used for other transport technologies [e.g., synchronous digital hierarchy (SDH), optical transport network (OTN) and Ethernet].[1]

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T G.805] Recommendation ITU-T G.805 (2000), *Generic functional architecture of transport networks*.

[ITU-T G.7712] Recommendation ITU-T G.7712/Y.1703 (2010), *Architecture and specification of data communication network*.

[ITU-T G.8010] Recommendation ITU-T G.8010/Y.1306 (2004), *Architecture of Ethernet layer networks*, plus Amendment 1 (2006) and Amendment 2 (2010).

[ITU-T G.8110.1] Recommendation ITU-T G.8110.1/Y.1370.1 (2011), *Architecture of Multi-Protocol Label Switching transport profile layer network*.

[1] This ITU-T Recommendation is intended to be aligned with the IETF RFCs applicable to MPLS normatively referenced by this Recommendation.

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[ITU-T G.8121.2] Recommendation ITU-T G.8121.2/Y.1381.2 (2013), *Characteristics of MPLS-TP equipment functional blocks supporting ITU-T G.8113.2/Y.1372.2 OAM mechanisms*.

[IETF RFC 3692] IETF RFC 3692 (2004), *Assigning Experimental and Testing Numbers Considered Useful*.

[IETF RFC 4379] IETF RFC 4379 (2006), *Detecting Multi-Protocol Label Switched (MPLS) Data Plane Failures*.

[IETF RFC 4446] IETF RFC 4446 (2006), *IANA Allocations for Pseudowire Edge to Edge Emulation (PWE3).*

[IETF RFC 5226] IETF RFC 5226 (2008), *Guidelines for Writing an IANA Considerations Section in RFCs*.

[IETF RFC 5586] IETF RFC 5586 (2009), *MPLS Generic Associated Channel*.

[IETF RFC 5654] IETF RFC 5654 (2009), *Requirements of an MPLS Transport Profile*.

[IETF RFC 5718] IETF RFC 5718 (2010), *An In-Band Data Communication Network For the MPLS Transport Profile*.

[IETF RFC 5860] IETF RFC 5860 (2010), *Requirements for Operations, Administration, and Maintenance (OAM) in MPLS Transport Networks*.

[IETF RFC 5881] IETF RFC 5881 (2010), *Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)*.

[IETF RFC 5884] IETF RFC 5884 (2010), *Bidirectional Forwarding Detection (BFD) for MPLS Label Switched Paths (LSPs)*.

[IETF RFC 5921] IETF RFC 5921 (2010), *A Framework for MPLS in Transport Networks*.

[IETF RFC 6370] IETF RFC 6370 (2011), *MPLS Transport Profile (MPLS-TP) Identifiers*.

[IETF RFC 6371] IETF RFC 6371 (2011), *Operations, Administration, and Maintenance Framework for MPLS-based Transport Networks*.

[IETF RFC 6374] IETF RFC 6374 (2011), *Packet Loss and Delay Measurement for MPLS Networks*.

[IETF RFC 6375] IETF RFC 6375 (2011), *A Packet Loss and Delay Measurement Profile for MPLS-based Transport Networks*.

[IETF RFC 6423] IETF RFC 6423 (2011), *Using the Generic Associated Channel Label for Pseudowire in the MPLS Transport Profile (MPLS-TP).*

[IETF RFC 6426] IETF RFC 6426 (2011), *MPLS On-Demand Connectivity Verification and Route Tracing*.

[IETF RFC 6427] IETF RFC 6427 (2011), *MPLS Fault Management Operations, Administration, and Maintenance (OAM)*.

[IETF RFC 6428] IETF RFC 6428 (2011), *Proactive Connectivity Verification, Continuity Check and Remote Defect Indication for the MPLS Transport Profile*.

[IETF RFC 6435] IETF RFC 6435 (2011), *MPLS Transport Profile Lock Instruct and Loopback Functions*.

[IETF RFC 6478] IETF RFC 6478 (2012), *Pseudowire Status for Static Pseudowires.*

[IETF RFC 6923] IETF RFC 6923 (2013), *MPLS Transport Protocol (MPLS-TP) Identifiers Following ITU-T Conventions*.

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3 Definitions

This Recommendation introduces some terminology which is required to discuss the functional network components associated with OAM. These definitions are consistent with [ITU-T G.805] terminology.

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 defect [b-ITU-T G.806]: The density of anomalies has reached a level where the ability to perform a required function has been interrupted. Defects are used as input for performance monitoring, the control of consequent actions and for the determination of fault causes.

3.1.2 failure [b-ITU-T G.806]: The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected.

3.1.3 MPLS transport profile [b-ITU-T G.8113.1]: A set of multi-protocol label switching (MPLS) functions used to support packet transport services and network operations.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

1DM	One-way Delay Measurement
ACH	Associated Channel Header
AIS	Alarm Indication Signal
BFD	Bidirectional Forwarding Detection
C	Customer
CC	Continuity Check
CP	Connection Point
CSF	Client Signal Fail
CV	Connectivity Verification
DM	Delay Measurement
DMM	Delay Measurement Message
DMR	Delay Measurement Reply
EXM	Experimental OAM Message
EXR	Experimental OAM Reply
FFS	For Further Study
G-ACh	Generic Associated Channel
GAL	G-ACh Label
ICC	ITU Carrier Code
ID	Identifier

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