International Telecommunication Union

ITU-T G.8113.2/Y.1372.2

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Internet protocol aspects – Transport

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

Recommendation ITU-T G.8113.2/Y.1372.2

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INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA AND OPTICAL SYSTEMS CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
MULTIMEDIA QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
PACKET OVER TRANSPORT ASPECTS	G.8000–G.8999
Ethernet over Transport aspects	G.8000–G.8099
MPLS over Transport aspects	**G.8100–G.8199**
Synchronization, quality and availability targets	G.8200–G.8299
Service Management	G.8600–G.8699
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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

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.

History

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Table of Contents

		Page
1	Scope	1
2	References	1
3	Definitions	2
	3.1 Terms defined elsewhere	2
	3.2 Terms defined in this Recommendation	3
4	Abbreviations and acronyms	3
5	Conventions	4
6	Functional components	5
	6.1 Maintenance entity (ME)	5
	6.2 Maintenance entity group (MEG)	5
	6.3 MEG end points (MEPs)	5
	6.4 MEG intermediate points (MIPs)	7
7	OAM functions	9
	7.1 Identification of OAM packets from user-traffic packets	9
	7.2 OAM functions specification	9
8	OAM protocol data unit (PDU) formats	14
	8.1 Continuity check and connectivity verification	14
	8.2 Transport plane loopback formats	14
	8.3 Alarm indication signal (AIS) and link down indication (LDI) formats	14
	8.4 Lock instruct (LI) and lock report (LKR) formats	14
	8.5 Test (TST) formats	14
	8.6 Loss measurement message/loss measurement reply (LMM/LMR) formats	14
	8.7 One-way delay measurement (1DM) formats	15
	8.8 Two-way delay measurement message/delay measurement reply (DMM/DMR) formats	15
	8.9 Client signal fail (CSF) formats	15
	8.10 Experimental message/experimental reply (EXM/EXR) formats	15
	8.11 Management communication channel and signalling communication channel formats	15
9	MPLS-TP OAM procedures	15
	9.1 Continuity check and connectivity verification	15
	9.2 Transport plane loopback procedures	15
	9.3 Alarm indication signal (AIS) and link down indication (LDI) procedures	15
	9.4 Lock indication (LI) and lock report (LKR) procedures	16
	9.5 Test (TST) procedures	16
	9.6 Loss measurement message/loss measurement reply (LMM/LMR) procedures	16

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Page

9.7 One-way delay measurement (1DM) procedures 16

9.8 Two-way delay measurement message/delay measurement reply (DMM/DMR) procedures 16

9.9 Client signal fail (CSF) procedures 16

10 Security 16

Appendix I – MPLS-TP network scenarios 17

I.1 Maintenance entity group (MEG) nesting example 17

Appendix II – Requirements traceability 18

Bibliography 21

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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

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*.

[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*.

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

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.

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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
IP	Internet Protocol
LCK	Locked Signal
LDI	Link Down Indication
LER	Label Edge Router
LI	Lock Instruct
LKR	Lock Report
LM	Loss Measurement
LMM	Loss Measurement Message
LMR	Loss Measurement Reply

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