International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.808.1

Amendment 1

(01/2009)

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

Digital networks – General aspects

Generic protection switching – Linear trail and subnetwork protection

Amendment 1: Signal degradation as a trigger for protection switching in packet transport layer networks

Recommendation ITU-T G.808.1 (2006) – Amendment 1

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Recommendation ITU-T G.808.1

Generic protection switching – Linear trail and subnetwork protection

Amendment 1

Signal degradation as a trigger for protection switching in packet transport layer networks

Summary

Amendment 1 to Recommendation ITU-T G.808.1 presents the specification of SD-triggered protection in packet transport layer networks.

Source

Amendment 1 to Recommendation ITU-T G.808.1 (2006) was approved on 13 January 2009 by ITU-T Study Group 15 (2009-2012) under Recommendation ITU-T A.8 procedure.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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As of the date of approval of this Recommendation, ITU had 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/.

Recommendation ITU-T G.808.1

Generic protection switching – Linear trail and subnetwork protection

Amendment 1

Signal degradation as a trigger for protection switching in packet transport layer networks

1 Clause 1

Modify clause 1 as follows:

1 Scope

This Recommendation provides an overview of generic aspects of linear protection switching. It covers OTN-, SDH-, ~~and~~ ATM-, Ethernet transport and MPLS-TP based protection schemes. Overviews of ring protection and dual node subnetwork (e.g., ring) interconnection schemes will be provided in other Recommendations.

2 Clause 22.2

Add the following note at the end of clause 22.2:

NOTE – In the 1:1, 1:n, m:n and $(1:1)^n$ protection architectures of packet transport networks (PTN) the detection of SD on the standby entity cannot be based on the service frames; it can also not be based on the extra traffic because extra traffic can be added/dropped between the endpoints of the protection entity. Loss measurement (LM) is based on service frames, so it cannot be used in this case. However, by using a specific bridge at the source, SD-based protection can be achieved. Appendix VI describes the solution for supporting SD-triggered protection in PTN.

3 New Appendix VI

Add a new Appendix VI, as indicated below:

Appendix VI

Solution for SD-triggered protection in PTN

(This appendix does not form an integral part of this Recommendation)

NOTE 1 – The special SD behaviour described in this appendix is only required for the case of protection switching in packet transport layer networks (PTN).

The detection of SD (e.g., packet loss) is based on service packets. In 1+1 protection, normal traffic is sent permanently on both working and protection entities. Therefore, the detection of SD and the clearing of SD on both working and protection entities can be based only on the characteristics of the original traffic.

However in PTN with 1:1, 1:n, m:n and $(1:1)^n$ protection, there may be no end-to-end traffic on the standby transport entity, which makes the detection of SD based on LM impossible and, consequently, protection switch flapping may happen if no special measures are taken.

For this solution the detection of SD-W and SD-P is required and is used to prevent flapping.

Broadcast bridge for SD detection in SD-triggered protection

In the normal state, the normal traffic signal is bridged at the source only on the working transport entity and only the SD condition of the working transport entity can be evaluated. When SD is detected on the working transport entity, the sink end sends SD-W indication to the source end and the selector at the sink end switches to the protection transport entity. The bridge at the source end will then broadcast the normal traffic signal on both working and protection transport entities and the performance of both working and protection transport entities can be monitored. If SD is detected on the protection transport entity as well, i.e., SD-W and SD-P exist simultaneously, the sink end will continue selecting normal traffic signals from the protection transport entity, to avoid flapping between protection and working states.

The priority of SD-W and SD-P in the APS protocol is fixed as SD-W > SD-P, to avoid flapping between protection and working states.

NOTE 2 – The SD-W-based protection switch action described above is performed under the assumption that an SD condition on a transport entity is a rare condition, and it is thus unlikely that SD on the standby entity will co-exist with SD on the active entity.

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Printed in Switzerland
Geneva, 2009