International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.808.1

Amendment 1

(08/2012)

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

Digital networks – General aspects

Generic protection switching – Linear trail and subnetwork protection

Amendment 1

Recommendation ITU-T G.808.1 (2010) – Amendment 1

International Telecommunication Union

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Recommendation ITU-T G.808.1

Generic protection switching – Linear trail and subnetwork protection

Amendment 1

Summary

Amendment 1 to Recommendation ITU-T G.808.1 (2010) contains the following extensions and changes:

– extension of 1+1 compound link based SNC group protection with inherent monitoring (clause 11.3.7);

– addition of a 1+1 SNC/Ns protection example;

– addition of examples of APS protocol operations;

– enhancements to the texts and figures.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.808.1	2003-12-14	15
1.1	ITU-T G.808.1 (2003) Amd. 1	2005-07-14	15
2.0	ITU-T G.808.1	2006-03-29	15
2.1	ITU-T G.808.1 (2006) Amd. 1	2009-01-13	15
3.0	ITU-T G.808.1	2010-02-22	15
3.1	ITU-T G.808.1 (2010) Amd. 1	2012-08-06	15
3.2	ITU-T G.808.1 (2010) Amd. 2	2012-09-21	15

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/.

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Introduction

This amendment to the third version of ITU-T Recommendation G.808.1 (2010) contains the following extensions and changes:

– extension of 1+1 compound link based SNC group protection with inherent monitoring (clause 11.3.7);

– addition of a 1+1 SNC/Ns protection example;

– addition of examples of APS protocol operations;

– enhancements to the texts and figures.

Recommendation ITU-T G.808.1

Generic protection switching – Linear trail and subnetwork protection

Amendment 1

1) New clause 11.3.7

Add clause 11.3.7 as follows:

11.3.7 1+1 compound link based group SNC/I protection (CL_SNCG/I)

Figure 11-26 illustrates the case of 1+1 compound link based SNC group protection with inherent monitoring (CL-SNCG/I) protection between NEs A and Z.

There are two links (0, 1) in layer network Y supported by two server layer trails (0, 1) in layer network X. These two links form a compound link with two component links.

There is a set of normal signals in layer network Y, which have their working link connections on Link 1 (W), and their protection link connections on Link 0 (P). The normal signals are permanently bridged to both the working link connections and protection link connections (1+1 architecture).

There may be a set of non-pre-emptible unprotected signals on links 0 and 1. These signals are not protected.

NOTE 1 – Many implementations of trail protection protect the group of client layer signals and emulate the trail protection behaviour described in Appendix III. Such emulation of trail protection adds complexity that is not present in this CL-SNCG/I protection.

NOTE 2 – In this example, the server layer trails supporting the layer network Y component links are considered to belong to the same layer network X. This is not a requirement. These server layer trails may belong to different layer networks; e.g., X and W.

The layer X termination functions monitor the layer X characteristic information for signal fail and signal degrade, to determine the status of the layer Y component links and carried W and P link connections. APS information is transported over component link 0.

When layer X trail 0 detects a trail signal fail (TSF) or trail signal degrade (TSD) condition, then the CL-SNCG/I process in the Y connection function will switch the set of normal signals from the failed or degraded working set of link connections to the set of protection link connections.

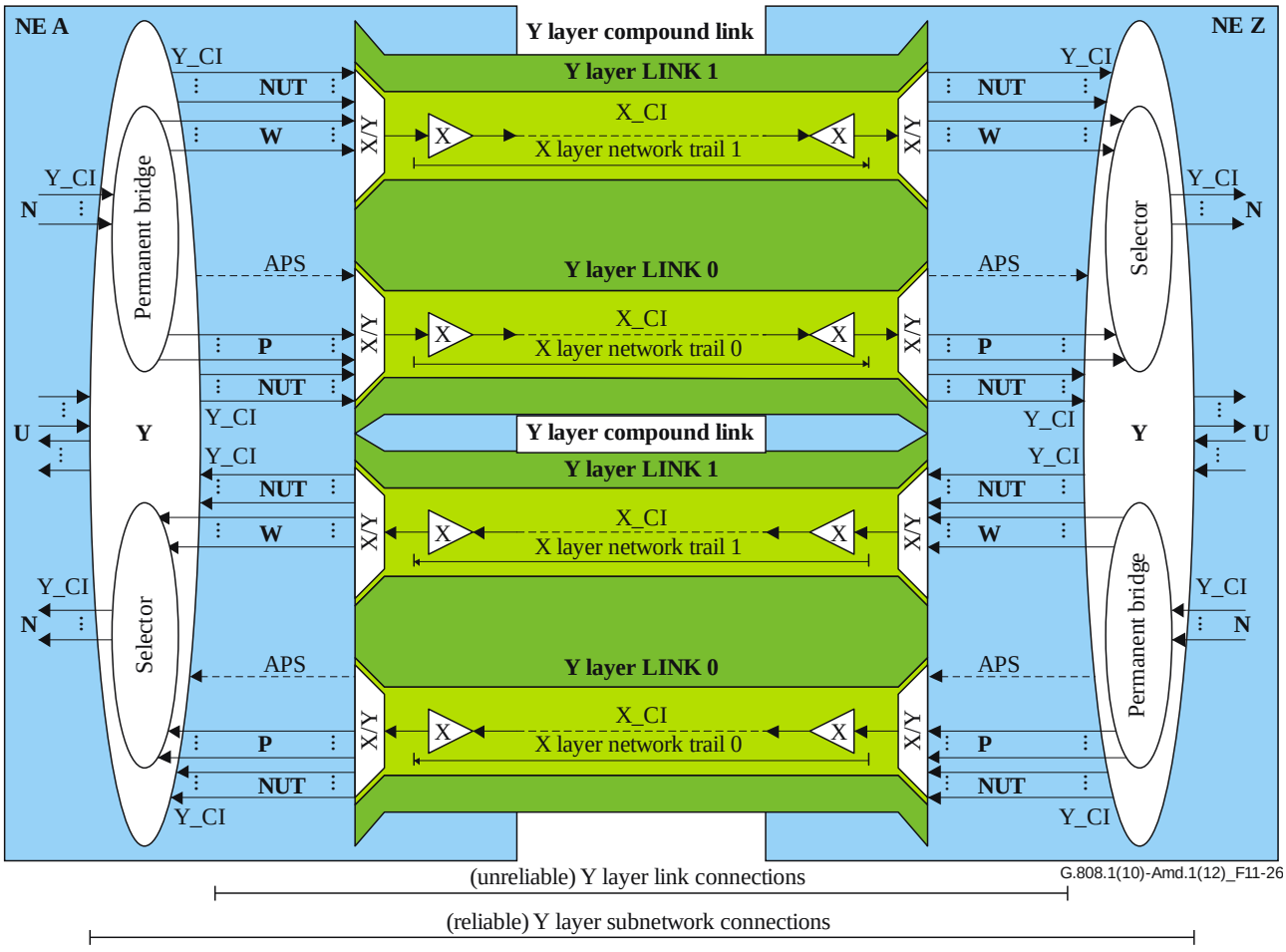

Figure 11-26 – 1+1 compound link subnetwork connection group protection with inherent monitoring (CL-SNCG/I) functional model

2) Clause 2

Add the following reference to clause 2:

[ITU-T G.780] Recommendation ITU-T G.780/Y.1351 (2008), *Terms and definitions for synchronous digital hierarchy (SDH) networks*.

3) Clause 4

3.1) Abbreviation replacements

Replace the following abbreviations with the updated versions shown underneath:

Current version

SNCG/I Inherently monitored Subnetwork Connection Group

SNCG/N Non-intrusively monitored Subnetwork Connection Group

New version

SNCG/I SNC Group protection with Inherent monitoring

SNCG/N SNC Group protection with Non-intrusive monitoring

3.2) Additions to clause 4

Add the following abbreviations to clause 4:

CIR	Committed Information Rate
EIR	Excessive Information Rate
SNCG/S	SNC Group protection with Sublayer monitoring
SNCG/T	SNC Group protection with Test trail monitoring
CL-SNCG/I	Compound Link SNC group protection with Inherent monitoring
ACL-SNCG/I	Adaptive Compound Link SNC Group protection with Inherent monitoring

4) Clause 7.2

The last sentence of clause 7.2 has been replaced to reflect that in some technology-specific cases, fall-back to the same bridge type may be required.

Replace:

Interworking between the two options is guaranteed.

with:

In general, interworking between the two options is guaranteed.

5) Clause 7.3

Replace the following text in Figure 7-4:

Protection (1-m)

with:

Protection (m-1)

6) Clause 11.2

6.1) Figure 11-10A

Renumber Figure 11-10 and replace its title:

Figure 11-10 – 1+1 SNC/N protection

with:

Figure 11-10A – 1+1 SNC/Ne protection

6.2) Figure 11-10B

Add the following figure after Figure 11-10A:

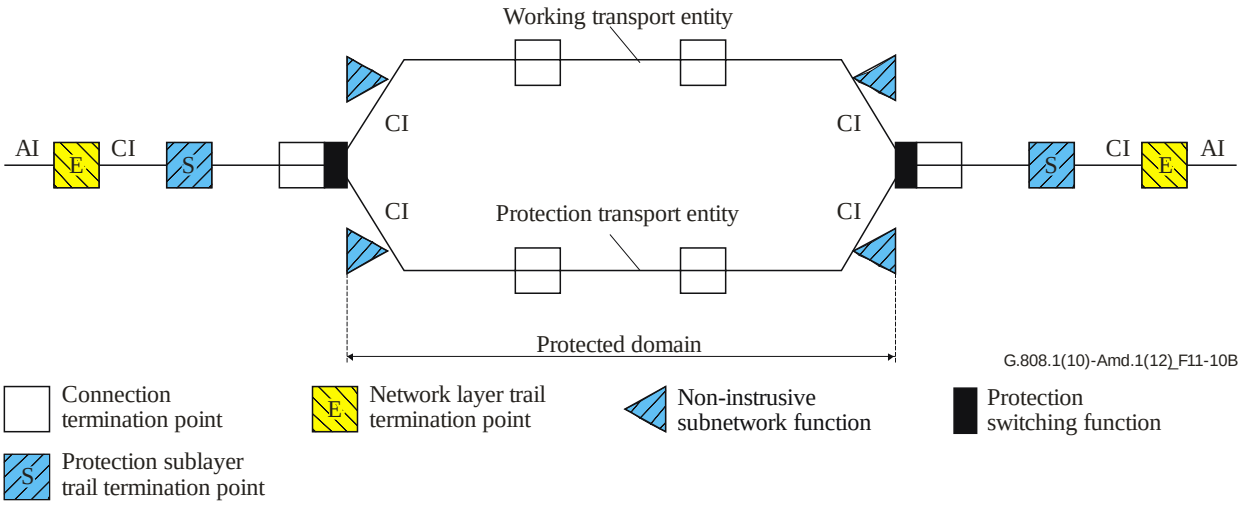

Figure 11-10B – 1+1 SNC/Ns protection

7) Clause 24.1

Renumber Figure 24-1 as Figure 24-1A and add the following figure at the end of clause 24.1:

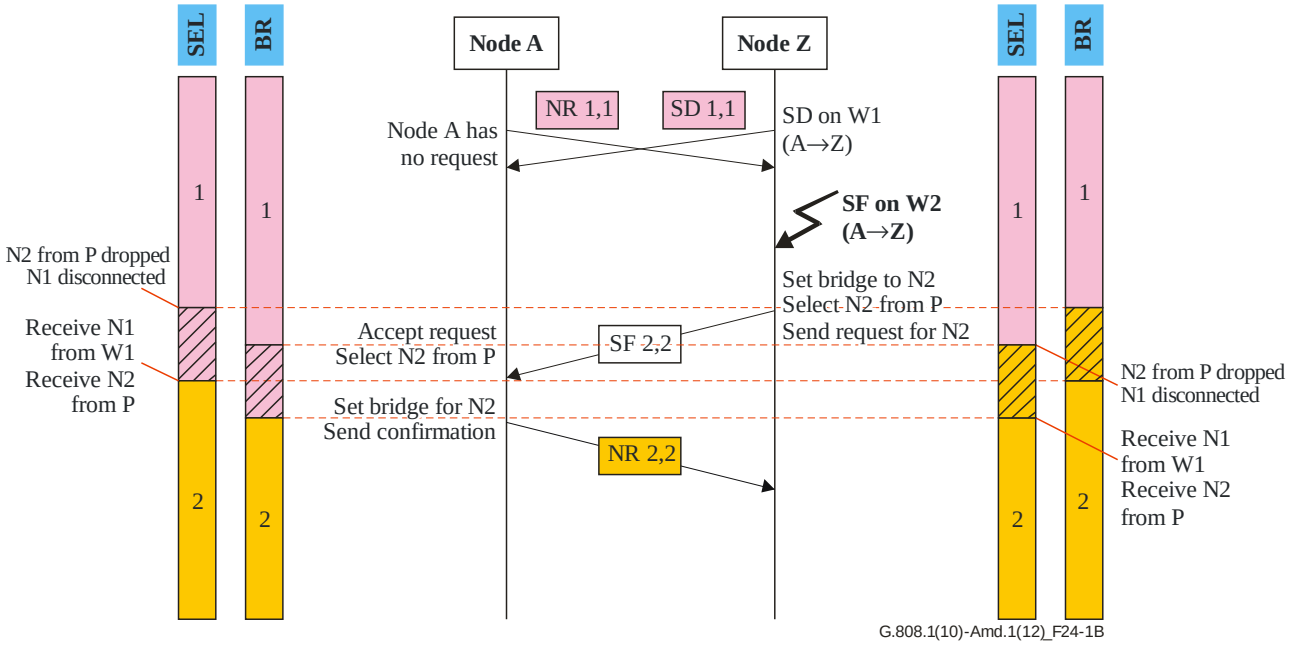

Figure 24-1B – 1-phase protocol example for $(1:1)^n$ architecture (multiple failures)

8) Clause 24.2

Renumber Figure 24-3 as Figure 24-3A and add the following figure at the end of clause 24.2:

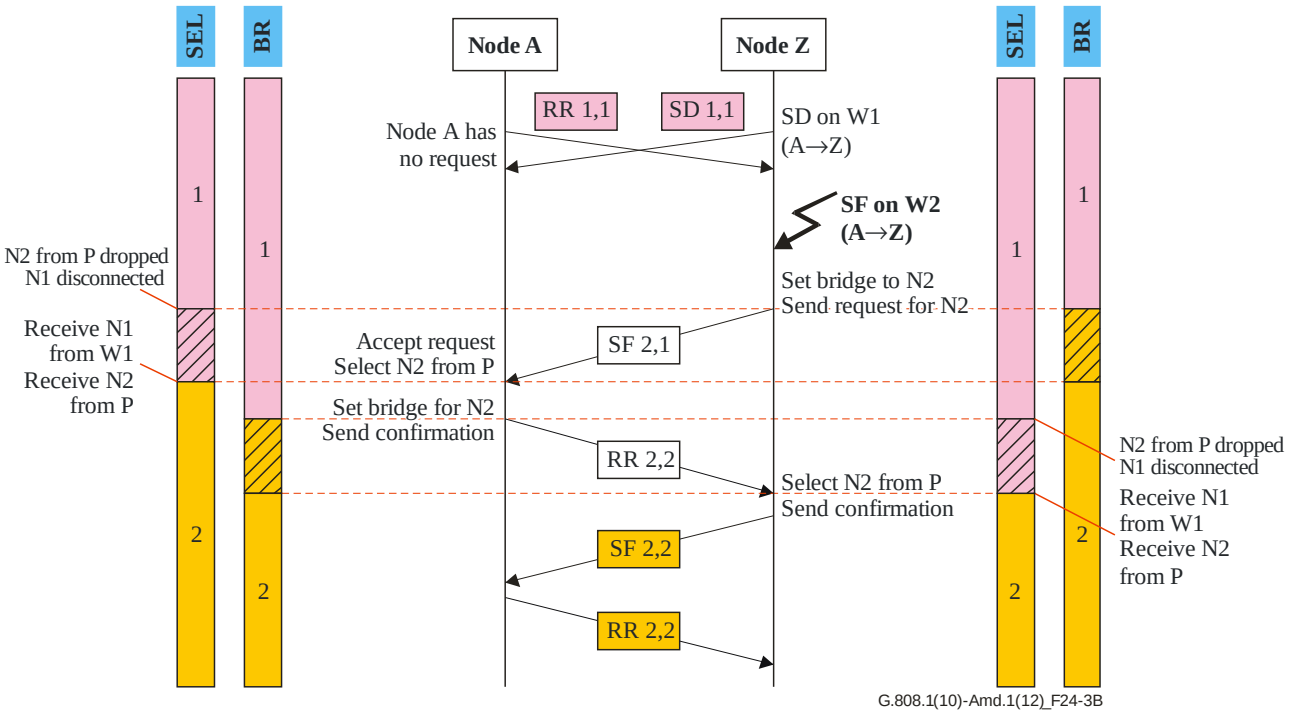

Figure 24-3B – 2-phase protocol example for $(1:1)^n$ architecture (multiple failures)

9) Clause 24.3

Add the following text and figure at the end of clause 24.3:

If an additional protection switching event that overrules the previous one occurs, the node detecting the event releases its selector before it sends a request for confirmation. See Figure 24-5.

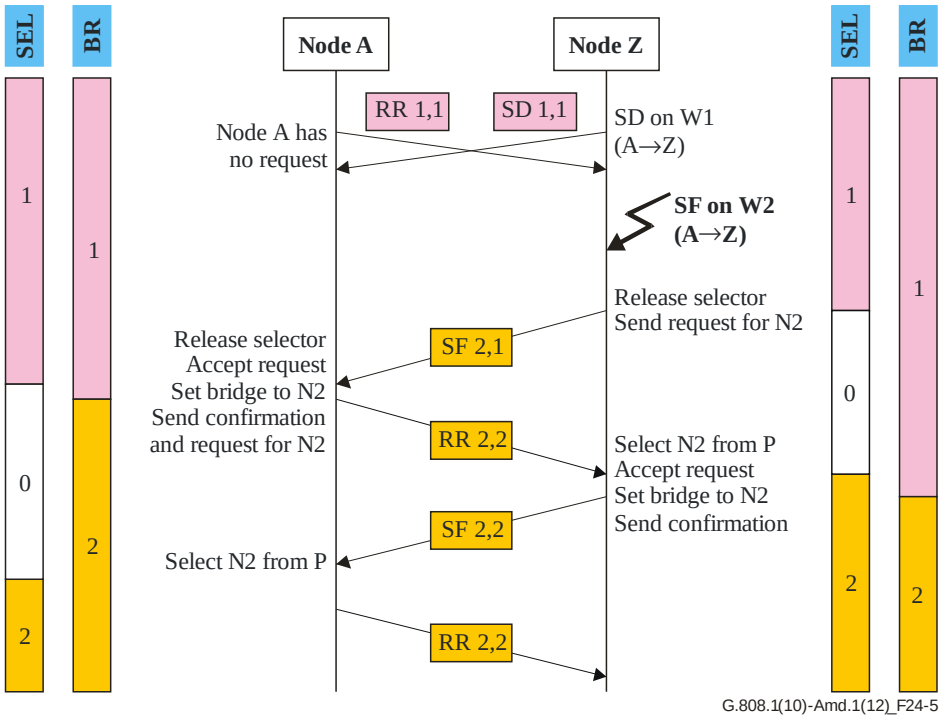

Figure 24-5 – 3-phase protocol example (multiple failures)

10) Clause 16

Replace the following text from clause 16:

0 null signal;

1… 2^n-2 normal traffic signal 1 to 2^n – 2;

2^n-1 extra traffic signal.

with:

0 null signal;

1… 2^n-k-1 normal traffic signal;

2^n-k … 2^n-1 extra traffic signal;

where k is the number of protection transport entities.

11) Clause 19.2

Replace the following text from point 2):

– **Lockout of signal #i** – temporarily disables access to composite link (i) from the ACL;

with:

– **Lockout of signal #i** – temporarily disables signal #i to be switched from currently assigned composite link to any other composite links of the ACL;

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