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

Digital networks – General aspects

Generic protection switching – Ring protection

Recommendation ITU-T G.808.2



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Recommendation ITU-T G.808.2

Generic protection switching – Ring protection

Summary

Recommendation ITU-T G.808.2 defines the generic functional models, characteristics and processes associated with various ring protection schemes for connection oriented networks; e.g., optical transport networks (OTNs), synchronous digital hierarchy (SDH) networks. It also defines the objectives and applications for these schemes. The protection scheme described in this Recommendation is shared ring protection.

Generic functional models, characteristics and processes for linear protection and interconnected subnetwork protection schemes are defined in other Recommendations.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.808.2	2013-11-22	15	11.1002/1000/7504-en

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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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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Recommendation ITU-T G.808.2

Generic protection switching – Ring protection

1 Scope

This Recommendation describes the generic aspects of ring protection switching. It covers synchronous digital hierarchy (SDH) and optical transport network (OTN) based protection schemes.

Overviews of ring protection and dual node subnetwork (e.g., dual ring) interconnect schemes will be provided in other Recommendations.

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.783] Recommendation ITU-T G.783 (2006), *Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks*.
- [ITU-T G.798] Recommendation ITU-T G.798 (2012), *Characteristics of optical transport network hierarchy equipment functional blocks*.
- [ITU-T G.841] Recommendation ITU-T G.841 (1998), *Types and characteristics of SDH network protection architectures*.
- [ITU-T G.870] Recommendation ITU-T G.870/Y.1352 (2012), *Terms and definitions for optical transport networks*.
- [ITU-T M.495] Recommendation ITU-T M.495 (1988), *Transmission restoration and transmission route diversity: terminology and general principles*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 long path:** [ITU-T G.841].
- 3.1.2 non-revertive (protection) operation:** [ITU-T G.870].
- 3.1.3 protection class: individual:** [ITU-T G.870].
- 3.1.4 revertive (protection) operation:** [ITU-T G.870].
- 3.1.5 ring switching:** [ITU-T G.841].
- 3.1.6 short path:** [ITU-T G.841].
- 3.1.7 span switching:** [ITU-T G.841].
- 3.1.8 steering:** [ITU-T G.870].
- 3.1.9 wrapping:** [ITU-T G.870].



3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 extra traffic: This is the traffic that will be discarded as soon as protection of the normal traffic is required. It will have the lowest availability of the three types of traffic because every protection switch in the ring affects it.

3.2.2 non-pre-emptible unprotected traffic: This is the traffic that will not be affected by the protection switch. It will have availability between that of the Normal traffic and the Extra traffic as it will be affected only by a defect in a section it passes.

3.2.3 normal traffic: This is the traffic that will be protected and will have the highest availability.

3.2.4 ring map: This is a map (table) present in each node on a ring that contains information regarding the order in which the nodes appear on the ring including their node IDs.

NOTE – Also present in each node is a ring circuit map, containing the cross-connection (added, dropped, and passed-through client traffic) maps of all nodes in the ring with the squelch table per node as a subset.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AIS	Alarm Indication Signal
APS	Automatic Protection Switching
BER	Bit Error Rate
DEG	Degraded
DLRing	Dedicated section Link Ring
ET	Extra Traffic (signal)
EXER-R	Exercise – Ring
EXER-S	Exercise – Span
FS-R	Forced Switch to protection – Ring
FS-S	Forced Switch to protection – Span
HO	Hold-Off
LOW-R	Lockout of Working channels – Ring switch
LOW-S	Lockout of Working channels – Span switch
LP-S	Lockout of Protection – Span
MS-R	Manual Switch to protection – Ring
MS-S	Manual Switch to protection – Span
NR	No Request
NUT	Non-pre-emptible Unprotected Traffic (signal)
OAM	Operations, Administration and Maintenance
OTN	Optical Transport Network
RR-R	Reverse Request – Ring
RR-S	Reverse Request – Span