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Network reliability in PTDN

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Recommendation ITU-T Y.2614

Network reliability in PTDN

Summary

This Recommendation identifies the objectives, architecture and mechanisms for network reliability in public packet telecommunication data networks (PTDNs), including a description of link protection, trail protection, network failure detection, protection switching trigger, and protection coordination mechanisms.

Keywords

FPBN, PTDN, reliability, link protection, trail protection

Introduction

Network reliability in PTDN is required to be provided using link protection and trail protection mechanisms. In both of protection mechanisms, a couple of protection types such as 1:1 and 1:n protection types is considered. In trail protection mechanism, three routing models can be implemented.

Furthermore, three routing models, i.e. dual path routing model, shortest path routing model and alternative routing model, can be used to implement the trail protection in PTDN.

- Dual path routing model is to pre-calculate two disjoint paths based on ear decomposition, to provide 1:1 protection type, from the source node to the destination node based on the network topology and resource information, which are the working path and the protection path.
- Shortest path routing model and Alternative routing model work together to provide 1:n protection type.
- Alternative routing model can provide 1: n protection type by itself. Alternative routing model can calculate several paths, one of them works as the working path, while the remaining paths will be protection paths.

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Network reliability in PTDN

1 Scope

This Recommendation identifies the objectives, architecture and mechanisms for network reliability in public packet telecommunication data networks (PTDNs), including a description of link protection, trail protection, network failure detection, protection switching trigger, and protection coordination mechanisms.

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 Y.2601] Recommendation ITU-T Y.2601 (2006), *Fundamental characteristics and requirements of future packet based networks*.
- [ITU-T Y.2611] Recommendation ITU-T Y.2611 (2006), *High-level architecture of future packet based networks*.
- [ITU-T Y.2612] Recommendation ITU-T Y.2612 (2009), *Generic requirements and framework of addressing, routing and forwarding in future packet-based networks*.
- [ITU-T Y.2613] Recommendation ITU-T Y.2613 (2010), *The general technical architecture for public packet telecommunication data network (PTDN)*.

3 Terms and Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 1:1 protection [b-ITU-T Y.1720]: A protection mechanism in which the traffic is sent only on the working path or the protection path.

3.1.2 bidirectional protection switching [b-ITU-T I.630]: A protection switching architecture in which, for a unidirectional failure, both directions (of the "trail", "subnetwork connection", etc.), including the affected direction and the unaffected direction, are switched to protection.

3.1.3 hold-off time [b-ITU-T Y.1720]: The time between declaration of signal degrade or signal fail, and the initialization of the protection switching algorithm.

3.1.4 manual protection [b-ITU-T M.2102]: Recovery is initiated by forced or manual switching to the alternative trail; return to original configuration is done by forced or manual switching to normal.