

Multi-scheme recovery in MPLS Networks: Preliminary results for a multi-scheme approach

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Abstract

MultiProtocol Label Switching (MPLS) networks have been proposed as a solution to offer reliable, efficient and differentiated telecommunication services. Nowadays several applications require high quality service and cannot recover from traffic loss using retransmissions. Routing protocols can be robust and survivable but take a long time to recover from faults, which will not be acceptable for many applications. Therefore several schemes and frameworks for MPLS recovery have been proposed to handle failures quickly [3].

The authors proposed [2] a multi-scheme recovery approach, which intends to increase overall network resilience, while using network resources efficiently by taking into account resilience requirements of different class types. This approach tries to offer protection to a set of services by choosing the most appropriate recovery scheme, taking into account the service class, the network state, and the characteristics of available recovery schemes. The appropriate recovery scheme [3] will therefore be chosen based on a combination of quantitative measures and qualitative classification.

The proposed recovery multi-scheme tries to ensure support for strict QoS guarantees, for different DiffServ classes [1], including in failure conditions. Bandwidth reservation (including, if required, pre-reservation) is carried out on a per-Diffserv class basis not just to the normal case but also in failure situations while trying to optimize the use of network resources. This work presents preliminary performance results from a study of the proposed multi-scheme.

Keywords: Multiprotocol Label Switching (MPLS), Recovery, Protection, Restoration, Network Performance

References

- [1] Faucheur, F. L. & Lai, W., 2003. Requirements for support of differentiated services-aware MPLS traffic engineering. IETF RFC 3564.
- [2] Jorge, L. M. G. & Gomes, T. M., "Multi-scheme recovery in MPLS networks", C. Guedes Soares & E. Zio (editores), Safety and Reliability for Managing Risk, Volume 3, Taylor & Francis (Balkema), Actas do congresso ESREL 2006, Estoril, 18-22 de Setembro de 2006, pág. 2263-2271, 2006.

[3] Jorge, L. M. G.& Gomes, T. M., Luísa Maria Garcia Jorge, Teresa Martinez Gomes, "Survey of Recovery Schemes in MPLS Networks", W. Zamojski, J. Mazurkiewicz, J. Sugier e T. Walkowiak (editores), DepCoS - RELCOMEX 2006, Dependability of Computer Systems, 25-27 de Maio de 2006, Szklarska Poreba, Polónia. pág. 110-118, 2006