Graph augmented protection algorithms for multicast sessions against single link failures

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ABSTRACT

In this thesis, we study the problem of enhancing the survivability of the multicast tree in a network when a single link failure occurs. Due to the incremental demand for multicast in networks, how to enhance the survivability against link/node failures becomes an important issue. Current research on this topic often used edge-disjoint path-pairs to construct a survivable multicast tree. This approach may lead to the increase the length of primary transmission paths and then transmission delays. Therefore, in this thesis, we try to improve the survivability for an already built multicast tree. In other words, for a best suitable multicast tree, we will try to add as few links as possible to make this tree 2-edge-connected and then against single link failure. According to different link-adding strategies, we get two heuristic algorithms: the first one is Low Cost Survivable Multicast (LCSM), which gives a near-optimal solution; the other one is called Fast Discovery Survivable Multicast (FDSM), which is faster but need more links than LCSM.

Keywords: multicast, survivable, 2-edge-connected

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