Complete rerouting protection

Protection of communication against network failures is becoming increasingly important and in this paper we present the most capacity efficient protection method possible, the complete rerouting protection method, when requiring that all communication should be restored in case of a single link network failure. We present a linear programming model of the protection method and a column generation algorithm. For 6 real world networks, the minimal restoration overbuild network capacity is between 13% and 78%. We further study the importance of the density of the network, derive analytical bounds and study methods to speed up the column generation algorithm.

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