Clustering for the Design of SONET Rings in Interoffice Telecommunications

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Abstract

Optical fiber systems play an essential role in today's telecommunications networks. The recently standardized SONET (Synchronous Optimal Network) technology has made rings the preferred architecture for designing survivable networks. The network design problem is very complex in nature, <u>because it involves not only the configuration of rings at the logical level, but also the mapping of this configuration into physical fiber paths. This paper deals with the problem of finding optimal clusters of offices, which can be used as the basis for designing logical rings.</u> A mathematical model of the problem is presented, and a heuristic solution based on the tabu search framework is developed to find optimal or near-optimal solutions.