Minimization of SONET ADMs in ring networks revisited. (English) Zbl 1187.65063

Summary: We design improved approximation algorithms for two variants of the ADM minimization problem. SONET add-drop multiplexers (ADMs) are the dominant cost factor in SONET/WDM rings. The number of SONET ADMs required by a set of traffic streams (lightpaths) in a ring is determined by the routing and the wavelength assignment of the traffic streams. We consider both the arc version where the route of each traffic stream is given as input, and the chord version, where the routing is to be decided by the algorithm. The goal in both cases is to assign wavelengths so as to minimize the total number of used SONET ADMs.

MSC:
65K05 Numerical mathematical programming methods
90C27 Combinatorial optimization
90C35 Programming involving graphs or networks
78A15 Electron optics

Keywords: approximation algorithms; add-drop multiplexers; optical network design; synchronous optical network (SONET); wavelength division multiplexing (WDM)

Full Text: DOI

References:

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