

A new algorithm for routing and scheduling in optical omega network

ABSTRACT

Multistage interconnection networks (MIN) are popular in switching and communication applications. However, OMINs introduce crosstalk which results from coupling two signals within one Switching Element (SE). Under the constraint of avoiding crosstalk, what we will discuss in is how to realize a permutation that requires the minimum number of passes. In this paper, we are interested in a network called Omega Network, which has shuffle-exchange connection pattern. We propose a new algorithm called the ZeroY algorithm (ZeroY) to avoid crosstalk and route the traffic in an OM IN more efficiently. The results of the ZeroY algorithm are analyzed and compared with those of other algorithms (except the GA) in an Omega network. The ZeroY algorithm outperforms all the other algorithms in terms of the running time that are required for one permutation.

Keyword: Multistage interconnection networks (MIN); ZeroY; Omega Network; Routing algorithm