

Anycast Routing and Wavelength Assignment Problem on WDM Network

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Abstract

Anycast refers to the transmission of data from a source node to (any) one member in the group of designed recipients in a network. When the physical network and the set of anycast requests are given, the Anycast Routing and Wavelength Assignment (ARWA) problem is to find a set of light-paths, one for each source, for anycasting messages to any one of the member in the anycast destination group such that not any path using the same wavelength passes through the same link. The goal of the ARWA problem is to minimize the number of used wavelengths. In this paper, the ARWA problem is formulated and studied; since ARWA problem is NP-hard, a three-phase genetic algorithm is proposed to solve it. This algorithm is used to find the close-to-optimal solution. Simulated results show that the proposed algorithm is able to achieve good performance.

Key word : Anycast;Genetic algorithm;NP-hard;Routing and wavelength assignment;WDM