Service-level Based Light-tree Construction Algorithm in WDM Networks

鄭皓謙、黃鈴鈴

E-mail: 359821@mail.dyu.edu.tw

ABSTRACT

Because of the demand on high-speed and real-time communications, multicast strategy of WDM optical networks has been widely investigated. In order to construct multicast transmission, a light-tree which using the same wavelength on each fiber link must be built to transmit multicast messages. Many papers [5-8,11] discussed the problem of light-tree construction. A typical solution is Member-Only [7], which builds light-trees with fewer wavelengths but larger transmission delay than others. So Zhou [10] proposed DPBA (Distance Priority Based Algorithm) method to improve Member-Only by reducing tree height and average delay. When the destinations of a multicast transmission have different service levels, that is, a node with higher priority expects lower transmission delay. All above solutions cannot settle the problem. So we propose a new algorithm called Destination Priority Based Algorithm (DPA) in this thesis to improve DPBA by achieving better quality of service. Simulation shows that our algorithm can reduce the height of light-tree and the transmission delay of high priority nodes.

Keywords : WDM optical network、light-tree、multicast、service level

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