

Wavelength Assignment Algorithms on Trees of Rings under Different Communication Models

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Abstract

This paper studies wavelength assignment algorithms on WDM all-optical trees of rings under different models: static, incremental and dynamic. It is shown that $5L/2$ is the tight bound of the number of required wavelengths for static trees of rings with load L . This paper also proposes an $O[\log_2(t+1)]$ -approximation and a $+h$ -approximation algorithm for incremental and dynamic trees of rings respectively, where t , h and R_i are the number of rings, the number of the layers of the underlying tree and the set of rings of layer i in the network respectively.

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摘要

研究了波分复用全光树环网在不同通信模型下的波长分配算法及其最坏性能分析.对于静态模型,证明了 $5L/2$ 是树环网所需波长数的紧界.对于动态模型,提出了一种近似比为 $O[\log_2(t+1)]$ 的波长分配算法,其中 h 为树环网的基树的层数, R_i 为树环网中处于第 i 层的环的集合, $|V(r)|$ 为环 r 上的节点数.对于增量模型,提出了一种近似度为 $O[\log_2(t+1)]$ 的波长分配算法,其中 t 为树环网中的环数.

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