论文

一种全光波长路由器的设计及性能分析研究

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摘要
该文基于一种简单低成本的、波长转换节点共享型全光波长路由器结构，设计了以排队理论为基础的 M/M/T/T模型，研究了波长路由器在波分复用波长路由网络中的阻塞特性。数值结果表明，全光网波长路由器的阻塞特性与复用波长数目，链路波长利用率，节点接入光纤端口数，有无波长转换器密切相关。尤其在受限波长转换条件下的配置优化分析，可看出波长路由器无需可调谐器件，也能获得灵活的波长转换能力，不但可避免波长路由器因为精确调谐所开销的时间，而且所有的控制均为简单的开关控制，可降低工程实现的复杂度。

关键词　 波分复用　 光交换　 波长转换　 波长路由器

分类号　 TN929.11

Design and Performance Analysis of an All-Optics Wavelength Router

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Abstract
Based on the theory of queue, a blocking probability model M/M/T/T is presented for a simple and cost-effective architecture of all optical wavelength router to investigate the blocking probability of the wavelength router in WDM wavelength routed all-optical network. It is found that the blocking probability is relevant to the number of wavelength per link and the number of access fiber link ports, and with or without wavelength conversion. Especially, more attention is paid to the blocking performance of the router with limited wavelength convertible capability. And it is seen by the numerical computing that low conversion degree of the wavelength converter is more realistic to construct a wavelength router system with accurately tunable devices not used, not only switching time is to be minished, but also the complexity of carrying out in engineering is reduced.

Key words　 WDM　 Optical switching　 Wavelength conversion　 Wavelength router

DOI :

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