

论文

BM-VF-SBD: 一种支持QoS的光突发交换数据信道调度算法

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收稿日期 2003-6-5 修回日期 2003-9-3 网络版发布日期 2008-4-30 接受日期

摘要

在光突发交换(OBS)网络中,数据信道的调度算法是一个关键问题。然而,当前的调度算法大多只强调带宽利用效率,而忽略了QoS支持。该文提出了一个算法BM-VF-SBD,其基本思想为:若所有信道上没有一个Void能容纳新突发,则搬移一些突发到别的信道后,再为新突发分配信道资源;若还失败,则再选择性地丢弃一些低优先级的突发,重复前面操作,它是利用BM, VF和SBD 3种机制减少带宽碎片,支持QoS。若以平衡二叉树组织Void和突发相关信息,它的计算复杂度与LAUC-VF和ODBR接近,小于 $O((2w+1)\log w)$ 。仿真表明它在带宽碎片率和突发损失率(包括总的和各个优先级的)上优于LAUC-VF和ODBR。

关键词 [信道调度](#) [波长变换](#) [光突发交换](#) [服务质量\(QoS\)](#)

分类号 [TN919.2](#)

BM-VF-SBD: A Data Channel Scheduling Algorithm to Support QoS for Optical Burst Switching Networks

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Abstract

In the Optical Burst Switching (OBS) network, the data channel scheduling is one of key issues. Bandwidth efficiency and QoS support are the two concerned focuses. However, the existing algorithms pay more attentions to bandwidth efficiency. In this paper, BM-VF-SBD, an efficient data channel scheduling algorithm is developed. It effectively integrates void filling, burst migration and selective burst discard to reduce the bandwidth fragment and support QoS. Its basic idea is in that a new burst is scheduled by migrating some bursts to other channels if none of voids in any channels can accommodate it; otherwise repeating the above processes after selectively dropping some bursts. Meanwhile under the balanced binary search tree data structure, its computational complexity will be $O((2w + 1)\log w)$ at most, and be close to that of LAUC-VF and ODBR. In the proposed algorithm, burst migration plays a key role in the improvement of bandwidth efficiency while selective burst discard has great effects on the two sides. The simulation results show that it performs much better than LAUC-VF and ODBR in burst loss probability (overall or individual) and bandwidth fragment ratio.

Key words [Channel scheduling](#) [Wavelength conversion](#) [Optical Burst Switching \(OBS\)](#) [QoS](#)

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