

博士论坛

## HFC网络中P2P文件共享系统的按需广播算法

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收稿日期 2008-9-23 修回日期 2008-12-8 网络版发布日期 2009-2-19 接受日期

**摘要** 为了节省在HFC (Hybrid Fiber Cable) 网络中进行P2P (Peer to Peer) 文件共享的带宽资源, 提高带宽利用率, 提出了一种数据广播系统与P2P系统混合的网络拓扑结构, 利用广播空闲信道对文件资源索引进行广播。在此拓扑结构基础上, 提出了一种按需广播PRLS (Preemptive Request-Length-Serial) 算法, 提高广播调度的效率。仿真实验表明, 在用户平均等待时间和冷、热门索引的数据长度平衡两个指标上, PRLS算法有明显优势。

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分类号

## Pull-based broadcasting algorithm in P2P file-sharing system on HFC network

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### Abstract

Peer-to-peer file-sharing in HFC network is short of bandwidth resource. In order to raise band utilization rate, a hybrid network topology which integrates data broadcasting system and P2P systems is proposed by taking use of the free broadcasting channels to send the indexes of file resources. At the same time, the authors research of the classic pull-based data broadcasting algorithms under this network topology and design a pull-based algorithm-PRLS (Preemptive Request-Length-Serial), to improve the efficiency of broadcast scheduling. In the last part of this article comparisons are made between this algorithm and the former classical pull-based algorithms. Simulation experiments show that the performance of the algorithm is obviously better than them on users' average waiting time and the balance of broadcasted length between hot and cold file indexes, which verifies the effectiveness of the PRLS algorithm.

**Key words** [pull-based broadcast](#) [peer-to-peer](#) [network topology](#) [Preemptive Request-Length-Serial \(PRLS\)](#)

DOI: 10.3778/j.issn.1002-8331.2009.06.005

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