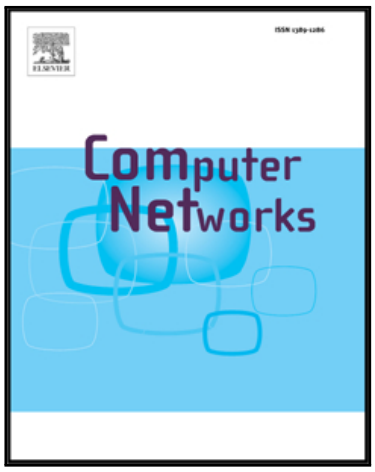

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A Stable Matching based Elephant Flow Scheduling Algorithm in Data Center Networks

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Abstract

With the development of cloud computing in recent years, data center networks have become a hot topic in both industrial and academic communities. Previous studies have shown that elephant flows, which usually carry large amount of data, are critical to the efficiency of data centers. How to schedule elephant flows efficiently becomes an important issue for maintaining high performance and avoiding network congestion. In this paper, we study the efficient flow scheduling problem in data centers with a focus on elephant flows. By applying stable matching theory, the scheduling problem is modeled and proven to be NP-Hard. Then, we propose *Fincher*, an efficient scheme leveraging Software-Defined Networking (SDN) to reduce latency and avoid congestions in data centers. We have implemented *Fincher* with POX controller and Mininet. Extensive evaluation results demonstrate that *Fincher* can improve bisection bandwidth by 30% and reduce flow completion time by 28% on average compared to ECMP and Hedera.

Keywords: Data Center Networking, Stable matching, Elephant Flow

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