Accepted Manuscript

Efficient hybrid multicast approach in wireless data center network

Longting Zhu, Jigang Wu, Guiyuan Jiang, Long Chen, Siew-Kei Lam

PII: S0167-739X(17)31116-0
DOI: https://doi.org/10.1016/j.future.2018.01.012
Reference: FUTURE 3919

To appear in: *Future Generation Computer Systems*

Received date : 29 May 2017
Revised date : 2 December 2017
Accepted date : 4 January 2018

Please cite this article as: L. Zhu, J. Wu, G. Jiang, L. Chen, S.-K. Lam, Efficient hybrid multicast approach in wireless data center network, *Future Generation Computer Systems* (2018), https://doi.org/10.1016/j.future.2018.01.012

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Efficient Hybrid Multicast Approach in Wireless Data Center Network

Longting Zhu[a], Jigang Wu[a,*], Guiyuan Jiang[b], Long Chen[a], Siew-Kei Lam[b]

[a]*School of Computer Science and Technology, Guangdong University of Technology*
[b]*School of Computer Science and Engineering, Nanyang Technological University*

Abstract

Large-scale data center suffers from overload of data traffic on some bottleneck links, due to the fact that cloud-based services are mostly accomplished by group communications with multicast traffic. This paper investigates techniques of wireless transmission using multiple channels, instead of single available communication channel as reported in existing works, to enhance the flexibility of congestion control, and at the same time, considers load balance of different links. The objective is to meet the communication demands with as little as possible total data traffic, while simultaneously optimizes the load balancing among different links. The proposed two-stage framework jointly optimizes the transmission paths for both wireless and wired communications. The first stage models the interference relation via contradiction graph such that each node of the graph represents an alternative of a wireless link, and an edge indicates that two wireless links cannot coexist due to interference. As a result, the problem of finding the optimal arrangement for wireless communication without interference is transformed into the problem of finding the maximum independent set on the obtained contradiction graph. Also, an efficient strategy is proposed in this paper to construct contradiction graph from the wireless data center network, and to find the maximum independent set (MIS) whose elements indicates the destination nodes to be served by wireless links. The second stage

*Corresponding author
Email addresses: asjgwucn@outlook.com (Jigang Wu), gyjiang@ntu.edu.sg (Guiyuan Jiang), lonchen@mail.ustc.edu.cn (Long Chen), assklam@ntu.edu.sg (Siew-Kei Lam)

Download English Version:

https://daneshyari.com/en/article/6873127

Download Persian Version:

https://daneshyari.com/article/6873127

Daneshyari.com