

Author's Accepted Manuscript

Joint Flow and Virtual Machine Placement in Hybrid Cloud Data Centers

Heejun Roh, Cheoulhoon Jung, Kyunghwi Kim, Sangheon Pack, Wonjun Lee



PII: S1084-8045(16)30310-1
DOI: <http://dx.doi.org/10.1016/j.jnca.2016.12.006>
Reference: YJNCA1789

To appear in: *Journal of Network and Computer Applications*

Received date: 23 September 2016
Revised date: 22 November 2016
Accepted date: 2 December 2016

Cite this article as: Heejun Roh, Cheoulhoon Jung, Kyunghwi Kim, Sangheon Pack and Wonjun Lee, Joint Flow and Virtual Machine Placement in Hybrid Cloud Data Centers, *Journal of Network and Computer Applications* <http://dx.doi.org/10.1016/j.jnca.2016.12.006>

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 galley proof before it is published in its final citable 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

Joint Flow and Virtual Machine Placement in Hybrid Cloud Data Centers

Heejun Roh^a, Cheoulhoon Jung^a, Kyunghwi Kim^a, Sangheon Park^b, Wonjun Lee^{a,*}

^aNetwork Research Lab., Korea University, Seoul 02841, Korea

^bMobile Network and Communications Lab., Korea University, Seoul 02841, Korea

Abstract

With the advance of virtualization technology, the current generation of cloud data centers contains diverse applications which generate massive inter-rack traffic in a distributed and unpredicted manner. However, since existing network architectures are not suitable to supply enough network capacity, there have been several research trials to improve the network capacity *with augmented wireless links*. Especially, architectural design and link scheduling of wireless-cum-wired hybrid data center networks are of their main interests. However, the existing approaches for hybrid data center networks with direct wireless links have limited performance improvements, since virtual machines are typically placed with less consideration of traffic locality.

To this end, in this paper, we conduct a novel approach to flow and virtual machine placement problems in hybrid data center networks. We first design a threshold-based, wireless link-aware flow placement algorithm with low complexity. To enhance traffic locality, we also suggest a set of virtual machine placement algorithms under the flow placement algorithm. To fully exploit the extra capacity of the wireless links, we propose a new clustering metric for the algorithms. Extensive simulation results in hybrid data center networks with 60 gigahertz wireless links shows that combination of the proposed algorithms achieves better performance compared to baseline algorithms in flow completion

*Corresponding author

Email address: wlee@korea.ac.kr (Wonjun Lee)

Download English Version:

<https://daneshyari.com/en/article/4955977>

Download Persian Version:

<https://daneshyari.com/article/4955977>

[Daneshyari.com](https://daneshyari.com)