Spring 2018 Seminar Series

Network Function Virtualization on Cloud File Systems

WEDNESDAY MARCH 7, 2018

11:00 AM – HEC 450

Network function virtualization has drawn extensive attentions as it promises to reshape the manner in which a network function service is provided, and to accelerate the innovation of network functions. On the other hand, to ensure the service availability, today's cloud file systems, such as Google file system and Hadoop file system, duplicate each data block with multiple replicas and distribute them to different locations. Thus, there are multiple targeted locations for a data block, and getting access of any one of these replicas is sufficient. Given this, a virtual network function chain in a data center could have multiple duplicated sources and/or destinations, which introduces a great potential to improve the performance of the entire data center network. In this talk, we study the virtual network function placement problem on cloud file systems. We first formulate it to a mixed integer programming problem. After showing the placement problem is NP-hard, we propose an approximation algorithm with bicriteria bounds. We also extend it to the on-line scenario. Comprehensive evaluation indicates the great performance of the proposed algorithms, which makes the proposed approximation solution a promising candidate for the deployment of network function virtualization in data center networks.

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I received my B.E. and M.S. degrees in information and communication engineering from Zhejiang University, Hangzhou, China, and I am currently a Ph.D. candidate in the Department of Electrical and Computer Engineering at Stony Brook University, anticipated to graduate in May this year. My research interests include data center network, cloud computing, big data, approximation algorithm and machine learning. I have published twelve papers in major journals and referred conference proceedings, and my work has led to three NSF proposals, which are awarded more than $1.6M grant in total. I also serve as reviewers for several key journals and conferences.