



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering  
*Seminar*

**OpenNetVM: A high-performance NFV platform**

By

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**Date : 15<sup>th</sup> January, 2019 (Tue)**  
**Time : 11:30am – 12:30pm**  
**Venue : Room 1009, William M. W. Mong Engineering Building**  
**The Chinese University of Hong Kong**

Abstract

Communication networks are changing. They are becoming more and more “software-based.” The use of Network Function Virtualization (NFV) to run network services in software, along with the concept of Software Defined Networks (SDN), will lead to a largely software-based network environment. To truly achieve the vision of a high-performance software-based network that is flexible, lower-cost, and agile, a fast and carefully designed NFV platform along with a comprehensive SDN control plane is needed. Our high-performance NFV platform, OpenNetVM, enables high bandwidth network functions to operate at near line speed, while taking advantage of the flexibility and customization of low cost commodity servers. We envision a dynamic and flexible network that can support a smarter data plane than just simple switches that forward packets. We will describe scheduling frameworks for OpenNetVM that enables per-flow customization and rate-and-cost proportional fair scheduling of flows.

Use of OpenNetVM opens up opportunities to re-architect the way networks are put together. As an example, we demonstrate the utility of OpenNetVM for supporting future cellular networks (e.g., 5G and beyond). NFV enables dynamic management of capacity to support the Mobile Core Network of future cellular networks. Truly exploiting the opportunities of a software-based environment requires careful thinking about the protocols utilized as well. We will briefly describe CleanG, a simplified software-based architecture for the cellular core network with a simplified control plane protocol.

Biography

Dr. K. K. Ramakrishnan is Professor of Computer Science and Engineering at the University of California, Riverside. Previously, he was a Distinguished Member of Technical Staff at AT&T Labs-Research. He joined AT&T Bell Labs in 1994 and was with AT&T Labs-Research since its inception in 1996. Prior to 1994, he was a Technical Director and Consulting Engineer in Networking at Digital Equipment Corporation. Between 2000 and 2002, he was at TeraOptic Networks, Inc., as Founder and Vice President.

Dr. Ramakrishnan is an ACM Fellow, IEEE Fellow and an AT&T Fellow, recognized for his fundamental contributions on communication networks, congestion control, traffic management, VPN services, and a lasting impact on AT&T and the industry. His work on the "DECbit" congestion avoidance protocol received the ACM Sigcomm Test of Time Paper Award in 2006. He has published over 250 papers and has 170 patents issued in his name. K.K. has been on the editorial board of several journals and has served as the TPC Chair and General Chair for several networking conferences and has been a member of the National Research Council Panel on Information Technology for NIST. K. K. received his MTech from the Indian Institute of Science (1978), MS (1981) and Ph.D. (1983) in Computer Science from the University of Maryland, College Park, USA.

**\*\* ALL ARE WELCOME \*\***