



THE CHINESE UNIVERSITY OF HONG KONG

Department of Information Engineering

Seminar

Heterogeneous Networks

by

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The Chinese University of Hong Kong

Abstract

Modern heterogeneous networks interconnect fiber, wireless and satellite networks. These communication modalities have very different Physical Layer properties and the interconnection often render traditional Internet Protocols very inefficient or inoperable. The connections occur at all Layers of the network and must accommodate the reality of the heterogeneity of communication modalities and dynamically changing capacities. There are many tough network problems at or near the network edge that are yet to be fully solved. This talk will identify many of the problematic areas that badly need protocol and hardware development. Possible solution techniques will be discussed and research forefront described. Solution techniques will include architectural principles, analysis, algorithmic techniques, and performance analysis/optimization. Our objective is to understand network architecture design from the performance and scalability viewpoint. Our research is aimed towards uncovering networking problems; especially those tied to Physical Layer communication system properties, and explore architecture constructs that may provide realistic solutions for the realization of an integrated heterogeneous network. We particularly concentrate on network management and control, as the most important architecture block of interconnected heterogeneous networks.

Biography

Vincent W. S. Chan, the Joan and Irwin Jacobs Professor of EECS, MIT, received his BS(71), MS(71), EE(72), and Ph.D.(74) degrees in EE all from MIT. From 1974 to 1977, he was an assistant professor, EE, at Cornell University. He joined MIT Lincoln Laboratory in 1977 and had been Division Head of the Communications and Information Technology Division until becoming the Director of the Laboratory for Information and Decision Systems (1999–2007). In 2008, he helped formed and is currently a member of the Claude E. Shannon Communication and Network Group at the Research Laboratory of Electronics of MIT. In July 1983, he initiated the Laser Intersatellite Transmission Experiment Program and in 1997, the follow-on GeoLITE Program. In 1989, he formed the All-Optical-Network Consortium among MIT, AT&T and DEC. He also formed and served as PI the Next Generation Internet Consortium, ONRAMP among AT&T, Cabletron, MIT, Nortel and JDS, and a Satellite Networking Research Consortium formed between MIT, Motorola, Teledesic and Globalstar. He has founded in 2009 and is serving as the Editor-in-Chief of a new IEEE/OSA Journal: Journal of Optical Communications and Networking. He has served on the boards and technical advisory boards of many commercial companies and government agencies and is currently a Member of the Corporation of Draper Laboratory and on the Board of Governors of the IEEE Communication Society. He is also an elected member of Eta-Kappa-Nu, Tau-Beta-Pi and Sigma-Xi, the Fellow of the IEEE and the Optical Society of America. Throughout his career, Professor Chan has spent his research focus on communication and networks, particularly on free space and fiber optical communication and networks and satellite communications. His work has led the way to the first successful laser communication demonstration in space and early deployment of WDM optical networks. His recent research emphasis is on heterogeneous (satcom, wireless and fiber) network architectures with stringent performance demands.

**** ALL ARE WELCOME ****