



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

Supporting Long Term Evolution in an Internet Architecture

by

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Time : 2:30pm – 3:30pm
Venue : Room 1009 William M.W. Mong Engineering Building
The Chinese University of Hong Kong

Abstract

Networking is fundamentally changing from the traditional model of a dumb data pipe to a system that combines computation and storage with the delivery of data. The Internet has transformed dramatically from its initial design and has grown far beyond its original vision. A future Internet design must facilitate this movement and, at the same time, accommodate dramatic evolutions we might experience in the future.

In this talk, we address the fundamental challenges in designing an Internet architecture that supports long-term evolution. We argue that interesting interactions between the network and the end-points can happen in the new environment and that they should be better managed and supported by the network architecture. To achieve this, we propose an integrated architecture that facilitates such interactions by supporting the evolution of the network's service model and systematically explore three different aspects of designing a network architecture that supports evolution.

First, we present a network design that supports graceful introduction of new network-level functionality in an efficient manner. Unlike the current Internet, this design allows the introduction of new network-level abstractions along with new functionality. Second, we explore the implications of the network design on end-points. We demonstrate that when networks provide new functionality, some of the features that were traditionally implemented purely at the end-points can now be better handled in cooperation with the network. Therefore, end-points' strategy may have to adapt to the functionality provided by the underlying network. Finally, designing a network architecture often requires designing a set of common behaviors that every routers, switches, and end-points must agree on. However, such common behaviors are especially hard to change once they are deployed, which significantly hinders the evolution in the network. However, we show that we can design a common behavior to support evolution.

In summary, this talk demonstrates that a future network architecture can benefit from a design that supports evolution and accommodates diversity at various layers of the network without sacrificing the performance and efficiency.

Biography

Dongsu Han is an assistant professor at KAIST (Department of Electrical Engineering). He received his Ph.D. from the Computer Science Department at Carnegie Mellon University (advisor Srinu Seshan) in December 2012. His research interests include broad areas of intelligent network architectures and distributed systems including Future Internet architectures, Big Data processing, Internet content delivery, and Software-Defined Networking.

**** ALL ARE WELCOME ****