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THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

Controlling the Internet to Improve Energy Efficiency

by

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Date : 18 April, 2011 (Mon.)
Time : 2:00-3:00pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

Internet data centres consume a significant and growing fraction of the world's energy. Dynamically controlling the allocation of work among data centres, and resources within them, is an important tool to reduce this consumption. This talk will describe techniques to balance energy consumption and performance at three scales: (a) setting the speed of a server, (b) managing sleep modes within a data centre, and (c) balancing load among data centres around the globe. Specifically, it will show that (a) Servers face a fundamental tradeoff between optimality, robustness to uncertainty in load, and fairness among jobs; (b) a causal "lazy" sleep controller performs to within a small factor of the optimal non-causal controller; and (c) careful choice of electricity tariffs is necessary to ensure that geographic load balancing provides environmental as well as cost benefits.

Biography

Lachlan Andrew is an ARC Future Fellow at Swinburne University of Technology's Centre for Advanced Internet Architectures. From 2005 to 2008, he was a senior research engineer in the Department of Computer Science at Caltech. Prior to that, he was a senior research fellow at the University of Melbourne and a lecturer at RMIT. His research interests include distributed control of resource allocation in communication networks, the dynamics of congestion control, and energy-efficient networking. He is an editor of IEEE/ACM Trans. Networking, and an area editor of Elsevier Computer Communications. He is a co-recipient of the best paper award at IEEE INFOCOM'11 and IEEE MASS'07.

**** ALL ARE WELCOME ****

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