



Power-Aware and Computationally Efficient Optical Network Design



Date:

May 10, 2011

Time:

17:00 - 18:30

Place:

Lockheed Martin
4800 Bradford Dr.

Space is limited

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Power-Aware and Computationally-Efficient Optical Network Design

Dr. George Rouskas, IEEE Distinguished Lecturer

Abstract

The trends in the energy consumption of the Internet raise growing concerns about the environmental impact and sustainability of the global network. While building energy efficient equipment is important, we argue that power-aware network design and traffic engineering must be an integral part of the solution. In the first part of the talk, we will describe how traffic grooming, a traffic engineering approach for multi-layer networks, has the potential to lead to substantial energy savings.

Traffic grooming, and many optical network design problems, include routing and wavelength assignment (RWA), an NP-complete problem, as sub-problem, hence optimal solutions do not scale to realistic network topologies. We will present a new ILP formulation for RWA in ring networks that is based on a novel maximal independent set decomposition. The new formulation is "future-proof" and achieves more than two orders of magnitude decrease in running time compared to standard formulations, making it possible to solve optimally large network instances and to perform extensive "what-if" analysis.

Speaker Biography

George N. Rouskas is a Professor of Computer Science at North Carolina State University. He received the Diploma in Computer Engineering from the National Technical University of Athens (NTUA), Athens, Greece, in 1989, and his M.S. and Ph.D. degrees in Computer Science from the College of Computing, Georgia Institute of Technology, in 1991 and 1994, respectively. His research interests include network architectures and protocols, optical networks, network design, and performance evaluation. He is co-editor of a book and is an active member of IEEE.



Complimentary pizza for attendees!!