



Colloquium

Computer Science Department, Oklahoma State University

Dr. John Jacob

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3:25pm - 4:25pm, Thursday, February 5th, 2009

310 MSCS, Stillwater; 208 NCB, Tulsa

GENI: Overview & Plans

Global Environment for Network Innovations

Abstract

This talk introduces the Global Environment for Network Innovations (GENI), a suite of experimental network research infrastructure now being planned and prototyped. GENI prototyping is sponsored by the *National Science Foundation* to support experimental research in network science and engineering. As envisioned by the community, this suite will support a wide range of network science and engineering experiments such as new protocols and data dissemination techniques running over a substantial fiber optic infrastructure with next-generation optical switches, novel high-speed routers, city-wide experimental urban radio networks, high-end computational clusters, and sensor grids. All infrastructures are envisioned to be shared among a large number of individual, simultaneous experiments with extensive instrumentation that makes it easy to collect, analyze, and share real measurements. Core concepts for the suite of GENI infrastructure feature: **Programmability** - researchers may download software into GENI-compatible nodes to control how those nodes behave; **Virtualization and Other Forms of Resource Sharing** - whenever feasible, nodes implement virtual machines, which allow multiple researchers to simultaneously share the infrastructure; and each experiment runs within its own, isolated slice created end-to-end across the experiment's GENI resources; **Federation** - different parts of the GENI suite are owned and/or operated by different organizations, and the NSF portion of the GENI suite forms only a part of the overall "ecosystem"; and **Slice-based Experimentation** - GENI experiments will be an interconnected set of reserved resources on platforms in diverse locations. Researchers will remotely discover, reserve, configure, program, debug, operate, manage, and teardown distributed systems established across parts of the GENI suite. There is no pre-ordained outcome for these activities: the resultant GENI infrastructure suite could be the existing Internet, existing testbeds, federations of testbeds, something brand new (from small to large), federation of all of the above, and perhaps a federation with related international efforts. In this talk, we will present an overview of the GENI development effort, an introduction to the GENI architecture, and a discussion of how interested researchers can get involved in shaping the facility. (<http://www.geni.net/>)

Biography: Dr. John Jacob is currently supporting GENI as a systems engineer for the substrate working group. John has worked in the field of optical communications for 15 years. Prior to joining BBN Technologies in July, 2007, he was a satellite communication systems engineer at The MITRE Corporation developing free space laser communication terminals. John has also worked as an optical hardware design engineer at two Boston area start-ups developing fiber optic communication transport systems. Prior to moving to New England, John worked in the Network Systems Engineering department at MCI Worldcom (now Verizon) in Richardson, TX. John completed two post-doctoral positions in the field of fiber optic communications where his research was on ultrafast all-optical switching (Nippon Telephone and Telegraph - Yokosuka, Japan) and dispersion managed solitons (University of Maryland, Baltimore County and The Laboratory for Physical Sciences). John holds a B.A in Physics from Hendrix College and a PhD in Physics from Oklahoma State University.

(Refreshments will be served.)