ExptTraining: Project Status Report

Period: March 2012 – Jul 2012 (GEC14: Jul 9-11)

I. Major accomplishments

A. Milestones achieved

- Initial testing of our Tmix traffic generation tools on Protogeni nodes
- Created a two session module to introduce students to GENI testbeds, including a Flack tutorial in April 2012.
- Successfully conducted a hands-on tutorial session, titled "Introduction to Network Experiments using the GENI CyberInfrastructure", at the ACM SIGMETRICS/ Performance conference on Jun 11, 2012. This was one of the two first GENI tutorials to be held at a non-GEC venue. The other one was conducted at Tridentcom by the GPO.
- Organized (under the leadership of Jeannie Albrecht) the "NSF Workshop on Designing Tools and Curricula for Undergraduate Courses in Distributed Systems", held in conjunction with GEC14, on Jul 8, 2012.

B. Deliverables made
http://cs.unc.edu/~aikat/geni/sigmetrics-2012-tutorial.htm

II. Description of work performed during last quarter

A. Activities and findings

- We began initial testing of our Tmix traffic generation tools on Protogeni nodes, and gave a demonstration of a sample experiment to Mark Berman and Niky Riga at GEC14.

While the following were not part of our contract, we identified these as mutual interests and worked with the GPO to accomplish them successfully:

- We created a two session module in Kevin Jeffay's COMP 431: "Internet Services and Protocols" class in April 2012 to introduce the students (seniors) to GENI testbeds and ran a Flack tutorial within the classroom. Those sessions were initially designed as a dry run for the Sigmetrics tutorial, and helped us work out a lot of kinks. They have also served as an example of how we can incorporate a simple "introduction to network

experimentation using GENI" within an upper-level undergraduate curriculum. We plan to pursue this further.

- We successfully conducted a hands-on tutorial session at the ACM SIGMETRICS/ Performance conference held in London on June 11, 2012 (http://www.sigmetrics.org/sigmetrics2012/tutorials.php). The tutorial, titled "Introduction to Network Experiments using the GENI CyberInfrastructure", was very well received and attended by a diverse audience consisting of students, faculty, and industry professionals. SIGMETRICS and Performance are respectively the flagship conferences of the ACM special interest group for the computer systems performance evaluation community and of the IFIP working group WG7.3 on performance modeling and analysis. Every 3 years, the two conferences join, and this is the 12th joint conference. See this for more details about our tutorial: http://cs.unc.edu/~aikat/geni/sigmetrics-2012-tutorial.htm

- We organized (under the leadership of Jeannie Albrecht) an all-day workshop held in conjunction with GEC14, on Jul 8, 2012. This "NSF Workshop on Designing Tools and Curricula for Undergraduate Courses in Distributed Systems", was engaging and informative due to the active participation of about 35 attendees. We will be writing a report on this during this next quarter.

B. Project participants

Kevin Jeffay, PI, UNC - Chapel Hill
Jay Aikat, UNC - Chapel Hill

C. Publications (individual and organizational)

Refereed Publication:
J. Aikat, S. Hasan, K. Jeffay, and F. D. Smith, *Towards Traffic Benchmarks for Empirical Networking Research: The Role of Connection Structure in Traffic Workload Modeling*, IEEE MASCOTS (Modeling, Analysis, and Simulation of Computer and Telecommunication Systems), Washington DC, August 2012.

Unrefereed Abstract:
J. Aikat and K. Jeffay, *Evolution of Networking Research into a Science*, COMBINE: the US Department of Energy (DoE) exploratory Workshop on Computational Modeling of Big Networks, Washington DC, September 11-12, 2012.

D. Outreach activities

- Tutorial conducted at the ACM SIGMETRICS/Performance 2012 conference in June 2012 in London. This tutorial, titled "Introduction to Network Experiments using the GENI CyberInfrastructure" introduced GENI and simple experiments on GENI to the researchers at the conference. We followed up with participants, after the conference, to encourage them to create accounts and use GENI resources.
- One of our students attended the GENI summer camp held by Kaiqi Xiong at RIT and gained immensely from this experience. With a travel grant from the GPO, this student attended the GEC14 and is now poised to use GENI resources for research leading to his Masters thesis.
- Jeffay successfully received a NSF Research Experience for Undergraduates (REU) supplement for this GENI project, Aug 2012 – Aug 2013, 1 year, $8,000.
- We will be introducing GENI resources to a large and diverse audience (participants from academia and industry) at the 2012 Grace Hopper Conference to be held in Baltimore, MD in October. This will be the first time the GENI project will be presented to such an audience at a non-GEC event outside of the two tutorials held in June 2012. We will setup a table during their "Lunchtime Table Sessions". Our session titled "Run your Systems / Networking Experiments using (free) GENI resources" will be presented on two days with information and sign-up sheets (for follow-up).

E. Collaborations

We collaborated closely with the ProtoGENI group in teaching the GENI module in the class at UNC, as well as in conducting the tutorial at SIGMETRICS.
We are also collaborating with Jeannie Albrecht to organize a second workshop related networking education pertaining to the science of experimentation using GENI and other resources, to be held at a GEC in 2013.

F. Other Contributions

Aikat served as an external member for the Program Committee for TRIDENTCOM 2012 (ICST Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities)