

Technical Status Report for Million Node GENI project (proposal 1645, NSF Grant CNS-0834243), for April 2009 through June 2009

**PI:** Professor Thomas Anderson

**Key Personnel:** Justin Cappos

## **Major accomplishments**

Milestones achieved

N/A

Deliverables made

d) Design doc for end-host node manager (7mo)

**Sent to Vicraj on 3 Apr 2009**

e) Reference implementation of end-host component for managing experiments (Node Manager) (8mo)

**Sent to Vicraj on 8 May 2009**

f) Reference implementation of a trivial experiment manager (a test client for the node manager) (8mo)

**Sent to Vicraj on 8 May 2009**

## **Description of work performed during last quarter**

Activities and findings

We built a security framework that allows remote execution of our programming language VM for the Million-node GENI. We focused on providing resource allocation on a per-node basis through our node manager. In addition to the per-program resource isonaltion and control that the programmin language VM gives, the node manager ensures that the sum of resource that are allocated to different programs does not exceed a threshold. We also constructed a trivial experiment manager that interacts with the node manager to simplify user tasks.

Project participants

Tom Anderson (PI)

Arvind Krishnamurthy (Senior Personnel)

Justin Cappos (Post Doc)

Ivan Beschastnikh (Ph. D. student)

Justin Samuel (Programmer)

Monzur Mohammad (Open Source Developer)  
Armon Dadger (Undergraduate)  
Brent Couvrette (Undergraduate)  
Cosmin Barsan (Undergraduate)  
Eric Kimbrel (Undergraduate)  
Jennifer Hanson (Undergraduate)  
Sean Ren (Undergraduate)  
Alper Sarikaya (Undergraduate)  
Tania Heim (Undergraduate)  
Conrad Meyer (Undergraduate)  
Huy Dang (Undergraduate)  
Yefete Yemuru (Undergraduate)  
Zachary Boka (Undergraduate)  
Kon Pik (Undergraduate)  
Anthony Honstain (Undergraduate)  
Jason Chen (Undergraduate)  
Vjekoslav Brajkovic (Undergraduate)

## Publications (individual and organizational)

We have an upcoming workshop on Seattle that will be co-convened with the CCSC-NW 2009 conference. An abstract from the workshop proposal will be published in the proceedings for the overall conference.

## Outreach activities

Our workshop on Seattle will draw educators in the Northwestern United States who are attending the CCSC-NW 2009 conference. We will have an overall tutorial about Seattle as well as different presentations by developers and educators about their experiences with Seattle. We hope that this will spur adoption by educators in the region.

This past quarter, the Million-node GENI platform was used in a graduate networking class at the ETH Zurich and a graduate systems research class at the University of Washington.

## Collaborations

We have deployed our software on PlanetLab, GpENI, and done automated deployments on Emulab. We have successfully integrated with the ProtoGENI cluster. We have made some initial strides with the Digital Object Registry folks to try to leverage their data store for Seattle node information.

## Other Contributions

None.