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

PI: Professor Thomas Anderson
Key Personnel: Justin Cappos

Major accomplishments

Milestones achieved

N/A

Deliverables made

1c) Reference implementation v0.1 of end-host VM (4mo)
Sent to Dr. Vicraj Thomas on 5 Jan 2009

Description of work performed during last quarter

Activities and findings

We built a reference implementation of the programming language VM for the Million-node GENI. We focused on providing a portable and secure solution with good resource isolation. Our VM is portable both in that it runs on a wide variety of OSes and also in that the user programs behave in the same way on each of the platforms. The VM also security checks and isolates the code that it runs. This prevents a malicious program from escaping the VM. Resource isolation prevents a program from consuming more resources than the amount it was allocated on the system.

Project participants

Tom Anderson (PI)
Arvind Krishnamurthy (Senior Personnel)
Justin Cappos (Post Doc)
Ivan Beschastnikh (Ph. D. student)
Richard Jordan (Open Source Developer)
Andreas Sekine (Undergraduate)
Armon Dadger (Undergraduate)
Brent Couvrette (Undergraduate)
Carter Butaud (Undergraduate)
Cosmin Barsan (Undergraduate)
Dennis Ding (Undergraduate)

Eric Kimbrel (Undergraduate)
Jennifer Hanson (Undergraduate)
Salikh Bagaveyev (Undergraduate)
Sean Ren (Undergraduate)
Michael Moshofsky (Undergraduate)
Alper Sarikaya (Undergraduate)
Mitchell Hashimoto (Undergraduate)
Tania Heim (Undergraduate)

Publications (individual and organizational)

J. Cappos, I. Beschastnikh, A. Krishnamurthy, T. Anderson. "Seattle: The Internet as a Testbed." *The 40th Technical Symposium of the ACM Special Interest Group for Computer Science Education (SIGCSE '09)*, Chattanooga, TN USA, March 2009

Outreach activities

Justin Cappos gave a presentation on the use of the Million-node GENI system for educational purposes at SIGCSE. The focus was how to allow researchers at universities to improve their networking classes by using our platform as a vehicle for students experimentation with the Internet. Justin Cappos also gave a presentation at the Python developer conference NorthWest Python Day about the Million-node GENI project.

In the past quarter, the Million-node GENI platform was used in student projects for undergraduate and graduate networking, graduate databases, and undergraduate distributed systems classes at the University of Washington. The Million-node GENI platform is currently being 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.

Other Contributions

None.