GpENI and GpENI-MMO Quarterly Report

March 2010

[fully hyperlinked wiki version online at https://wiki.ittc.ku.edu/gpeni/Quarterly_Reports#March_2010]

MAJOR ACCOMPLISHMENTS

Milestones Achieved

- [S2.i] due 31 Mar 2010, completed 31 Mar 2010 – Created integrated Web portal for MyPLC and MyVINI within GpENI
- [S2.l] due 31 Aug 2010, completed 17 Mar 2010 – GpENI–MAX Interconnection demonstrated at GEC7

Deliverables Made

- [S2.f] due 31 Mar 2010, completed 09 Mar 2010 – *On Interconnecting GpENI with MAX: A Report* [PDF]

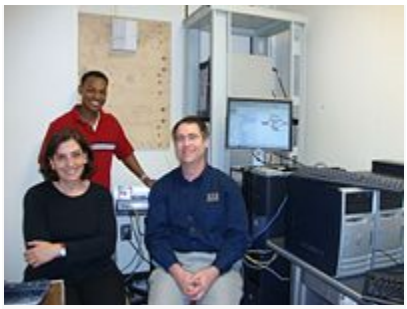
DESCRIPTION OF WORK PERFORMED DURING LAST QUARTER

Activities and Findings

Infrastructure deployment continues in two areas: international build-out (GpENI-MMO) continues with new L2TPv3 tunnels and node clusters operational. Project members participated in GEC7 and demonstrated GpENI. Interconnection and federation with other GpENI projects has begun, including MAX, SPP, ProtoGENI, and OpenFlow. Significant progress continues on the enhancement of the three GpENI sub-aggregates and their integration, as described in the following bullet items. Additional details for each one are provided on the GpENI Milestones and Deliverables page.

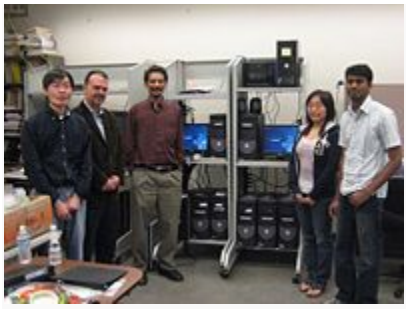
KU GpENI Node Cluster

James P.G. Sterbenz, **Cort Buffington**, Justin P. Rohrer, Egemen Çetinkaya, Abdul Jabbar



KSU GpENI Node Cluster

Caterina Scoglio, Ali Sydney, **Don Gruenbacher**



UMKC GpENI Node Cluster

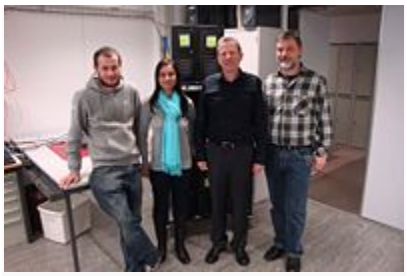
Haiyang Qian 钱海洋, Plarent Tirana,**Deep Medhi**, Xuan Liu 刘璇,Ramkumar Cherukuri

UNL GpENI Node Cluster

Dale Finkelson, Kent G. Christensen,**Byrav Ramamurthy**, Praga Angu, Mukesh Subedee

Lancaster GpENI Node Cluster

David Hutchison, **Andrew Scott**, James P.G. Sterbenz



ETH GpENI Node Cluster

Damian Friedli, Ajita Gupta, **Bernhard Plattner**, Thomas Steingruber

- **GpENI integration and management:** Integrated portal permitting slices to be created across GpENI PlanetLab and VINI nodes is available for testing purposes. Alternative integration strategies continue to be tested and explored in collaboration with Princeton. Discussions continue with MAX toward DCN sub-aggregate integration with PlanetLab. Nagios monitoring installed, configured, and demonstrated at GEC 7, and Cactus monitoring of KU VLAN switch installed and configured; accounts available on request to selected users with a need to monitor.

- **PlanetLab sub-aggregate:** A test version of the GpENI PLC was federated with the public PlanetLab, such that GpENI and public PlanetLab slices could share resources with one-another.

- **Routing and topology sub-aggregate:** Progress continues to be made on manual and automatic topology creation in a slice using Quagga. Investigation has begun of XORP as a programmable platform within the routing sub-aggregate, and a XORP instance has been manually created in a VINI slice.

- **DCN sub-aggregate:** GpENI–ProtoGENI–MAX interconnection successful and demonstrated with MAX project at GEC7.

European GpENI under deployment

- **Physical infrastructure:**VLAN interconnection has been established with ProtoGENI in the Kansas City Internet2 PoP, enabling connections with a number of other GENI projects, including SPP. Experimentation has begun with OpenFlow in GpENI. The L2TPv3 tunnel has been established to the IU GMOC, which is now operational and part of GpENI. A number of international node clusters are in the process of coming up, including Karlsruhe, Simula, Bern, and Tampare. Large scale tunnel plans have begun with Lancaster, Bern, ETH, and Simula expected to provide termination for multiple GpENI L2 tunnels.

Project Participants

- KU: James P.G. Sterbenz (Lead PI); Joseph B. Evans, Rick McMullen (co-Is); Ronqing Hui, Gary Minden (faculty), Egemen Çetinkaya, Mahmood A. Hameed, Abdul Jabbar, Justin P. Rohrer(GRAs); Michael Hulet, Wesley Mason, (network infrastructure)

- KSU: Caterina Scoglio, Don Gruenbacher (co-PIs); Yunzhao Li 李云钊, Ali Sydney, Nidhi Tare(GRAs); Sam Hays, Richard Becker (network infrastructure)

- UMKC: Deep Medhi (co-PI); Baek-Young Choi 최백영 (Co-I); Cory Beard, Khosrow Sohraby(faculty); Can Kanlı, Xuan Liu 刘璇, Juluri Parikshit, Haiyang Qian 钱海洋, (GRAs), Tim Sylvester, Sean Korzdorfer (REUs) Jim Schonemann (network infrastructure)

- UNL: Byrav Ramamurthy (co-PI); Pragatheeswaran Angu, Mukesh Subedee (GRAs); Kent G. Christensen (network infrastructure)

- IIT: Tricha Anjali (co-PI)

- Lancaster University (UK): David Hutchison (Co-I), Andrew Scott (faculty)

- ETH Zürich (Switzerland): Bernhard Plattner (Co-I)

- GPN: Greg Monaco (co-PI)

- Ciena: Jeff Verrant (co-PI); Jim Archuleta (co-I); John Lankford (network infrastructure)

- KanREN: Cort Buffington (co-PI), Brad Fleming (network infrastructure)

- MOREnet: Hank Niederhelm, PJ Clayton, Rex Peterson, Shannon Spurling (network infrastructure)

Full information on all project participants is available on the People and Institutions section of the GpENI wiki.

Presentations and Publications (individual and organizational)

James P.G. Sterbenz, Deep Medhi, Byrav Ramamurthy, Caterina Scoglio, David Hutchison, Bernhard Plattner, Tricha Anjali, Andrew Scott, Cort Buffington, Gregory E. Monaco, Don Gruenbacher, Rick McMullen, Justin P. Rohrer, John Sherrell, Pragatheeswaran Angu, Ramkumar Cherukuri, Haiyang Qian, Nidhi Tare,
"The Great Plains Environment for Network Innovation (GpENI): A Programmable Testbed for Future Internet Architecture Research",
Proceedings of the 6th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (TridentCom),
Berlin, Germany, 18–20 May 2010. (to appear),

James P.G. Sterbenz, Deep Medhi, Byrav Ramamurthy, Caterina Scoglio, Tricha Anjali, David Hutchison, Bernhard Plattner
"GpENI Status Update: GEC7",
Seventh GENI Engineering Conference (GEC7), Durham NC, 16 March 2010

James P.G. Sterbenz, Deep Medhi, Byrav Ramamurthy, Caterina Scoglio, Tricha Anjali, David Hutchison, Bernhard Plattner
"GpENI: Great Plains Environment for Network Innovation – A Programmable Testbed for Future Internet Research",
2nd Winter School in Complexity Sciences research seminar, ISCTE, Lisboa, 12 January 2010

Outreach Activities

- James P.G. Sterbenz, Justin P. Rohrer, Egemen Çetinkaya, and Mahmood A. Hameed (KU);Yunzhao Li 李云钊, Ali Sydney and Nidhi Tare (KSU); Ramkumar Cherukuri, Can Kanlı, Xuan Liu 刘璇, Juluri Parikshit, Tim Sylvester (UMKC); Pragatheeswaran Angu and Mukesh Subedee (UNL) attended GEC7 in Durham NC, 16–18 March 2010. GpENI was demonstrated and accompanied by the GpENI poster.

- James P.G. Sterbenz gave a presentation on GpENI as a research seminar at the *2nd Winter School in Complexity Sciences* at ISCTE, Lisboa, 12 January 2010.

- Discussions continue with regional and international institutions to expand the scope of GpENI (including G-Lab), and with Washington University to federate with the SPP backbone.

Collaborations

- UNL, KU, KanREN, and GPN collaborated with Rob Ricci to get connectivity between GpENI and ProtoGENI operational
- KSU collaborated with Tony Mack at Princeton to federate with PlanetLab
- UNL continued to extensively collaborate with Tom Lehman (MAX); Rob Ricci (ProtoGENI); Shannon Spurling and P.J. Clayton (GPN/MOREnet) to bring up GpENI–MAX VLAN connection.
- UMKC continued collaboration with Andy Bavier at Princeton on VINI matters, including GENIwrapper
- KU began discussions with Jon Turner and John DeHart on GpENI–SPP interconnection
- KU and UNL began discussions with Rob Sherwood to determine feasibility of porting NetFlow to Netgear switch
- KU continues collaboration with a number of regional and international partners to build out GpENI

Other Contributions

No other contributions to report.