

GpENI and GpENI-MMO Quarterly Report

December 2009

[fully hyperlinked wiki version online at
https://wiki.ittc.ku.edu/gpeni/Quarterly_Reports#December_2009]

MAJOR ACCOMPLISHMENTS

Milestones Achieved

- [S1.c] due 15 Oct 2009, completed 20 Jul 2009 – GpENI: [Testbed available for limited external research](#)
- [S2.a] due 31 Oct 2009, completed 22 Oct 2009 – GpENI: Upgrade to PlanetLab 4.3 and GENIwrapper 8.5
- [S2.d] due 31 Dec 2009, completed 23 Oct 2009 – [researchers external to the GpENI project access to GpENI by providing GpENI accounts](#)

Deliverables Made

- [S1.d] due 15 Oct 2009, completed 14 Oct 2009 – [GpENI CoreDirector Component Manager Interface \[PDF\]](#)
- [S2.b] due 31 Oct 2009, completed 31 Oct 2009 – [DCN/ION in GpENI Investigation Report\[PDF\]](#)
- [S2.e] due 31 Dec 2009, completed 31 Dec 2009 – [GpENI VINI/Quagga Status and Configuration](#)

DESCRIPTION OF WORK PERFORMED DURING LAST QUARTER

Activities and Findings

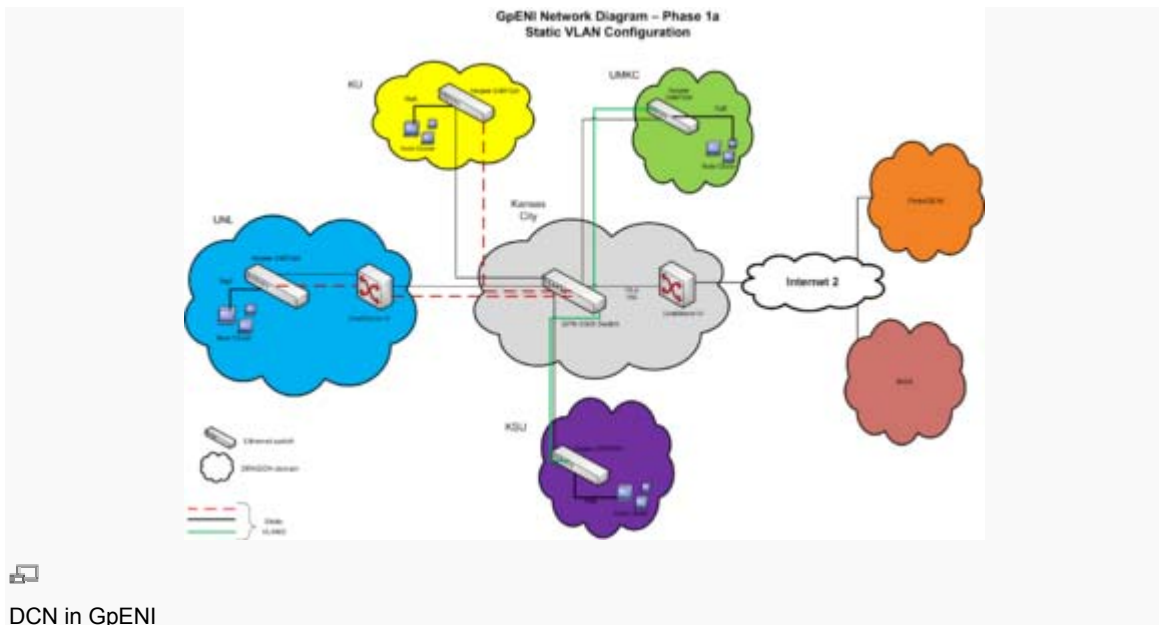


GpENI 2009 Path Demo

GpENI has been made available for limited access by the research community, and we are prepared to [take requests for external accounts](#). Project members participated in GEC6 and demonstrated GpENI. Significant progress was made on building the software infrastructure of GpENI for each of the three sub-aggregates: PlanetLab sub-aggregate (GpENI layers 7 and 4), VINI topology and programmable router sub-aggregate (layer 3), and DCN VLAN and ION sub-aggregate (layer 2), as described in the following bullet items. Additional details for each one are provided on the GpENI [Milestones and Deliverables](#) page.

- **PlanetLab sub-aggregate:** PlanetLab was upgraded to the latest GENIwrapper version (4.3/8.5) and is thus now a true GENI sub-aggregate across all online GpENI nodes. Work has begun on integrating the PlanetLab and VINI/router sub-aggregates, and on federating GpENI with the public PlanetLab.
- **Routing and topology sub-aggregate:** VINI virtual topology has been automated with cron and work was done on understanding how to incorporate the [Quagga software routing suite](#) into VINI, and [configuration notes](#) were produced and presented at GEC6. A number of tools have been explored including Python scripting for myPLC, as well as SOAP and XML-RPC. GENIwrapper was installed on myVINI with Trellis to create the GpENI VINI/router sub-aggregate, and to prepare for integration with the PlanetLab sub-aggregate.

- **DCN sub-aggregate:** The first GpENI optical switch is deployed at UNL, a Ciena CoreDirector. Extensive testing has been done and the [CoreDirector Component Manager Interface](#) has been produced, which provides an overview of the CoreDirector, its management interface, and use in the DCN GpENI aggregate. Furthermore, planning occurred on the ways to deploy DCN in GpENI and interconnect to the Internet2 ION (Interoperable On-demand Network) production version of DCN, documented in the [DCN/ION in GpENI Investigation Report](#).



- **Physical infrastructure:** Discussions were begun with ProtoGENI on physical interconnection, both to facilitate interconnection with MAX as well as to enable future cross control framework experiments between GpENI (PlanetLab) and ProtoGENI. Significant work has been done to test L2TPv3 tunnels with the assistance of KanREN, and the first transatlantic tunnel is up between KU and Lancaster in the UK, with optical connectivity across JANET to Cambridge, the first European node cluster active. The Bern Switzerland node cluster became operational, temporarily via the public Internet. Planning began on build-out to international node clusters (GpENI-MMO project).

Project Participants

- KU: [James P.G. Sterbenz](#) (Lead PI); [Joseph B. Evans](#), [Rick McMullen](#) (co-Is); [Rongqing 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 Kanli](#), [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 Anqu](#), [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](#), [Tricha Anjali](#), [David Hutchison](#), [Bernhard Plattner](#)

“[GpENI Status Update: GEC6](#)”,

Sixth GENI Engineering Conference (GEC6), Salt Lake City UT, 16–18 November 2009

[James P.G. Sterbenz](#) [Джеймс Ф.Г. Стербэнз](#) [제임스 스틸벤츠](#), [David Hutchison](#), [Abdul Jabbar](#), [Justin P. Rohrer](#), and [Egemen Çetinkaya](#),

“[Resilience, Survivability, and Heterogeneity in the Postmodern Internet](#)”,

[Keynote address](#), [IEEE International Conference on Ultra Modern Communications \(ICUMT 2009\)](#) and [The Workshop on Reliable Networks Design and Modeling \(RNDM 2009\)](#), St.

Petersburg Санкт Петербург, Russia Россия, 12–14 October 2009;

[Invited presentation](#), [4th International Conference on Future Internet \(CFI 2009\)](#), Seoul 서울, Korea 대한민국 17–19 June 2009;

[Network Architectures and Services](#) seminar, Technische Universität München (TUM), Germany, 5 October 2009

Outreach Activities

- [James P.G. Sterbenz](#), [Justin P. Rohrer](#), [Egemen Çetinkaya](#), and [Abdul Jabbar](#) (KU); [Caterina Scoglio](#), [Ali Sydney](#), and [Nidhi Tare](#) (KSU); [Ramkumar Cherukuri](#), Soumick Dasgupta, Sean Korzdorfer, [Xuan Liu](#) 刘璇, [Tim Sylvester](#) (UMKC); [Pragatheeswaran Angu](#) and [Mukesh Subedee](#)(UNL) attended [GEC6](#) in Salt Lake City UT, 16–18 November 2010. GpENI was demonstrated and accompanied by the GpENI poster
- James P.G. Sterbenz gave a presentations on GpENI as parts of a [Keynote address](#) at [IEEE International Conference on Ultra Modern Communications \(ICUMT 2009\)](#) and [The Workshop on Reliable Networks Design and Modeling \(RNDM 2009\)](#), and a [Network Architectures and Services](#) seminar at Technische Universität München (TUM) Germany on 5 October 2009
- Discussions continue with regional and international institutions to expand the scope of GpENI

Collaborations

- UNL collaborated with Tom Lehman of MAX and Rob Ricci of ProtoGENI to make progress on the GpENI–ProtoGENI–MAX interconnection
- UMKC collaborated with Andy Bavier at Princeton to get Quagga running under VINI

Other Contributions

No other contributions to report.