G E N I

Global Environment for Network Innovations

GENI Quarterly Status Report

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Under Project Nr. 1733
"Programmable Measurements over Texas-based Research Network: LEARN"

Document Revision History

The following table provides the revision history for this document, summarizing the date at which it was revised, who revised it, and a brief summary of the changes. This list is maintained in chronological order so the earliest version comes first in the list.

Revision	Date	Revised By	Summary of Changes
1.0	03/28/2011	N. Karthik Ram	Initial draft
2.0	03/28/2011	D. Gurkan	Revision

Programmable Measurements over Texas-based Research Network: LEARN
GENI Quarterly Status Report
Project no: 1733

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[1] Major Accomplishments

This project involves collaboration with GENI project; ORCA-BEN for integration with LEARN [LEARN_1]. This project integrates with ORCA in Cluster D with extensibility considerations towards integration with any cluster in the future.

With respect to the ORCA-BEN integration with LEARN: We have successful installed and deployed an ORCA instance at our lab, ISSNet. Cisco 3400 switches have been purchased and deployed to 5 sites across Texas: Rice, UH, TAMU, UT, and LEARN Houston PoP. We demonstrated the connectivity between the deployed switches across the sites using VLAN translations on the core switch (LEARN 3400).

[2] Milestones

Milestone LEARN: S3.c Experimenter Outreach and GENI Publicity (Due 02/11/11 (late))

Milestone LEARN: S3.d Demonstration at GEC10 and Experimenter Outreach (Due 03/03/11 (late))

[3] Deliverables Made

Milestone LEARN: S3.d Integrating GENI ORCA with LEARN by deploying Cisco 3400 switches to 5 sites and provisioning VLANs over cluster D for GENI (GEC10)

[4] Description of Work Performed During the Last Quarter

Organized workshop on conducting research on LEARN, GENI-LEARN integration using ORCA in February 2011:

During the workshop, discussed the options available for research experiments on GENI – LEARN infrastructure like Network performance measurements and cross-layer communication research opportunities on LEARN by Deniz Gurkan from UH, Using GENI to Verify Automatically Synthesized Network Protocols by Alex Sprintson and Christopher Jasson Casey from T A&M, Network issues relevant to university infrastructures , Willis Marti, Texas A&M University, WiMax in UNT by Shengli Fu and Kamesh Namuduri, University of North Texas. Maestro: A System for Scalable OpenFlow Control by Zheng Cai, Rice University.

Discussed about ORCA-ION handlers possible extension and added flexibility of connections to other GENI infrastructure. As a part of Performance measurements perfSONAR implementation is in progress on LEARN.

Capabilities to be demonstrated include complete deployment of a Cisco switch (Cisco 3400) and a small Eucalyptus cluster (at UH and Rice Universities): University of Houston, Rice University, Texas A&M University, and UT-Austin, all assigned and controlled by the site authorities at University of Houston and participate in defining a plan for naming and stitching L2 connectivity across Cluster D.

Designed and developed a layer 2 connectivity between regional network BEN carrying VLAN 861 from NLR frame net which is translated and tunneled to respective data VLANs (3201,3203,3205,3207) associated with any of the four Universities (UH, RICE, Texas A&M, UT-Austin).During the GEC-10 demo we also demonstrated the inter VLAN communication between the Universities.

Configured Cisco ME 3400 switches and deployed to each University with the proper configuration to provide the layer 2 connectivity. LEARN switch is configured to perform VLAN translation and Q-in-Q tunneling.

Demonstrated an end to end connection between regional networks BEN and LEARN using simple ping test with VLAN translation and Q-in-Q tunneling from LEAN NLR interface to UH for BEN VLAN.

Presented a poster during the GEC-10 project demonstration for clear insight on the implementation of this project and also discussed with GPO about the enhancements that can be made on this project.

[5] Activities and Findings

LEARN participation in research will need more input from the researchers in TX area. In this respect, we organized a workshop which helped researchers get together to discuss options to conduct research on LEARN infrastructure.

Eucalyptus cluster implementation is in progress in terms of purchasing but pending additional funds from the GPO.

[6] Project Participants

PI: Deniz Gurkan, University of Houston, Texas, dgurkan@uh.edu

Senior Personnel: Charles Chambers, University of Houston, Texas, cchambers@uh.edu

[7] Publications

None

[8] Outreach Activities

None

[9] Collaborations

Cluster D: Renaissance Computing Institute (RENCI) and Duke University: Ilia Baldine, Yufeng Xin, Jeff Chase, and Varun Marupadi.

Ilia Baldine provides us the tools to become ORCA users on BEN with remote access through VPN.

GPO: Harry Mussman

We closely cooperated with Harry Mussman to create an updated version of the GENI Wikipage and to submit milestone reports and quarterly status reports. Discussions via e-mail on the design and planning of LEARN VLAN delivery to the GENI infrastructure were conducted.

LEARN of Texas: Akbar Kara, CTO of LEARN and Charles Chambers, University of Houston

[10]   Other Contributions

None.

[11]   Bibliography

[1] [LEARN_1] Programmable Measurements over Texas-based Research Network: LEARN [Online]. Available: http://groups.geni.net/geni/wiki/LEARN