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	09/27/10	D. Gurkan	Initial draft

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 three other GENI projects: (i) ORCA-BEN for integration with LEARN [LEARN_1] and measurement handler testing/implementation on Infinera Digital Transport Node (DTN) units; (ii) ERM [ERM_1] and (iii) IMF on interface definitions between measurement handler software (MHS) modules and the integrated and unified measurement frameworks. All projects integrate 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 to be deployed at 5 sites across Texas: Rice, UH, TAMU, UT, and LEARN Houston PoP. We are testing drivers and an emulated network with these switches in the lab.

With respect to the Infinera DTN remote access through ORCA-BEN: Infinera DTN measurement handler software has been released in a Perl Module form for ease of access and portability [MHS].

[2] Milestones

Milestone LEARN: S2.k List of measurement handlers for GENI (*Due on* 7/20/10, GEC8)

Based upon results of Data Plane Measurements project, collaborate with GPO and other projects in Cluster D, to establish a list of measurement handlers that are needed for commercial transport and measurement equipment that will be used in GENI.

Delivered on 7/20/10. Waiting for GPO system engineer feedback/approval.

Milestone LEARN: S2.d Initial integration LEARN into ORCA (*Due on* 7/20/10, GEC8)

Complete initial integration of the LEARN network into the ORCA control framework (GENI Cluster D), to enable GENI researchers to utilize the LEARN network for L2 (VLAN) transport between a limited number of sites, e.g., University of Houston and Rice University.

Late due to the senior personnel's re-allocation to another task in the university. A replacement person has been assigned by the UH CIO's office on September 14, 2010: Charles Chambers. He is learning about the project and progress through

weekly meetings. A meeting with the Cisco system engineer clarified how we can achieve tunneling and VLAN translation using the Cisco 3400's through METROACCESS IOS. Emulation of the network and ORCA handlers is the next step.

Milestone LEARN: S2.e Move broker to clearinghouse (*Due on* 9/30/10)

Move broker to Cluster D clearinghouse, and make control of L2 (VLAN) connections in LEARN available via the ORCA control framework to other GENI users.

Milestone LEARN: S2.f POC to GENI response team (*Due on* 9/30/10)

Provide POC to GENI Prototype Response and Escalation team.

Milestone LEARN: S2.g POC to GENI security team (*Due on* 9/30/10)

Provide POC to Security team.

Milestone LEARN: S2.l Contribution to GENI outreach (*Due on* 9/30/10)

Specific contribution to GENI outreach plan for Spiral 2.

[3] Deliverables Made

Milestone LEARN: S2.k List of measurement handlers for GENI (*Delivered on* 7/20/10, GEC8)

[4] Description of Work Performed During the Last Quarter

Attend and present poster at the perfSONAR workshop in July 2010:

During the workshop, the need for physical layer measurement representation inside the perfSONAR framework has been presented with a first attempt at the development of methods and interfaces for the Infinera DTN. Also, possible name space creation ideas have been proposed utilizing standards such as the ITU and the work of the IETF workgroup, CCAMP on optical layer impairment information models.

Release perl modules for Measurement Handler Software (MHS):

The code and documentation for the Measurement Handler Software was delivered to GPO. In addition, an installation guide has been created on IMF site [MHS].

[5] Activities and Findings

perfSONAR is a promising framework to display monitoring of parameters in the network and it is of interest to LEARN to equip their network with such a monitoring mechanism.

LEARN participation in research will need more input from the researchers in TX area. In this respect, we are planning to organize a workshop that will bring researchers together to discuss options to conduct research on LEARN infrastructure.

[6] Project Participants

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

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

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Caroline P. Lai, Columbia University, New York, caroline@ee.columbia.edu

[7] Publications

In preparation: an OFC paper on GEC8 demo of optical layer monitoring.

[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.

GENI ERM Project: Columbia University: Michael Wang, Caroline Lai, and Keren Bergman

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

[2] [ERM_1] C. P. Lai, M. S. Wang, K. Bergman, “Unified Measurement Framework: NetFPGA Cube Prototype,” Dec. 2009 [Online]. Available: http://groups.geni.net/geni/attachment/ticket/279/ERM_S2a_Dec09.pdf

[3] [MHS] Measurement Handler Installation Page: GENI-IMF [Online]. Available: https://geni-imf.renci.org/trac/wiki/MH-setup