INSTOOLS Project
University of Kentucky Quarterly GENI Report

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1 Major accomplishments

The following highlights our accomplishments during Q1 2010.

1.1 Milestones achieved

In the past quarter we continued to make progress toward our milestones. Some of our accomplishments include:

- continuing to support operation of the Kentucky ProtoGENI prototype, enabling basic experimentation through the ProtoGENI clearinghouse.

- developing a new web interface to the measurement system based on the Drupal content management system.

- reimplementing our instrumentation toolset to use the ProtoGENI API and successfully demonstrated the new code at GEC7.

- continuing to interact with the security group to develop authentication methods that will have broad applicability.

1.2 Deliverables made

None this quarter.

2 Description of work performed during last quarter

The following provides a description of our activities and results from the last quarter.

2.1 Activities and Findings

During this quarter we made significant progress on our instrumentation and measurement system including a significant rewrite of the code to provide a cleaner separation from the ProtoGENI code, replacement of the php-based web interface with a drupal-based content management system, and a partial integration of netflow services into the monitoring system.

The previous implementation of our INSTOOLS measurement system required placing "hooks" in the ProtoGENI code (i.e., rewriting and enhancing parts of the ProtoGENI source code). While this achieved our immediate objectives, it also made it difficult to keep pace with the frequent updates and changes being rolled out by the ProtoGENI

team. Each time a new version of the ProtoGENI code was released, we had to reimplement our changes in the new version. To achieve a level of separation from the ProtoGENI code, we redesigned our code so that it only interacts with ProtoGENI via the ProtoGENI API calls. In other words, we abandoned the modifications that we had made to ProtoGENI code itself, and instead developed ways to achieve the same results simply by making calls to the ProtoGENI API. In particular, we wrote scripts that capture the RSPEC before it goes to the ProtoGENI API, adds a measurement controller (MC) node along with the code needed on the MC, and then makes the API calls needed to initialize the experiment, the MC, and all the measurement points (nodes). As a result, our code is now only dependent on the ProtoGENI API, allowing the ProtoGENI implementation to change without affecting our code.

Another major step forward has been the integration of a content management system for purposes of displaying the collected measurement information. In particular, we integrated the Drupal content management system. We now load Drupal "nodes" into the database that render the graphs. Because each graph is a distinct drupal "node", users can define their own "views" of the measurement data, allowing them to display precisely the information they are interested in. It also allows users to define the theme/look-and-feel of the web interface to meet their needs. A screenshot of the new Drupal web interface is shown in Figure 1.
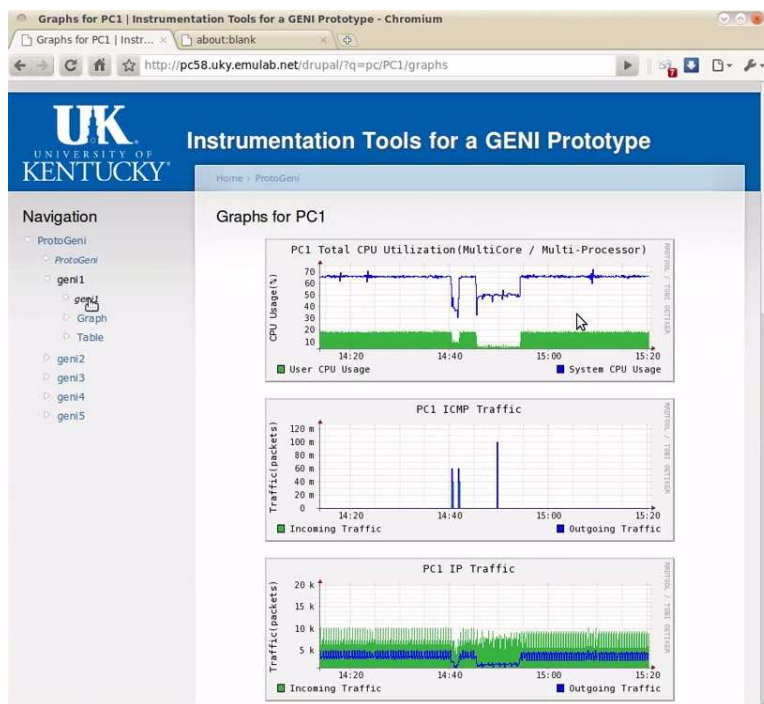

Figure 1: Screenshot of the new drupal web interface

We demonstrated our measurement system and new user interface at the GEC7 conference and had several good discussion with other measurement groups regarding ways to incorporate their measurement data into our measurement interface.

We have also begun to implement the software needed to incorporate netflow data into the INSTOOLS system. Although the implemenation is still in the early stages, we have been able to integrate with ProtoGENI in a straight-forward fashion, and we expect to be able to demonstrate this new feature at the next GEC meeting (GEC8).

As in previous quarters, we upgraded our ProtGENI software to incorporate the latest changes made by the Utah group. Changes to the manifest initially caused us some problems, but with a little work we were able to adjust our code to the new format.

We have also had discussions at various times with the security folks, informing them of the challanges we have

faced and learning more about the ABAC service they are developing.

2.2 Project participants

The following individuals have helped with the project in one way or another during the last quarter:

- Jim Griffioen - Project PI

- Zongming Fei - Project Co-PI

- Hussamuddin Nasir - Technician/programmer

- Xiongqi Wu - Research Assistant

- Jeremy Reed - Research Assistant (half time)

- Lowell Pike - Network administrator

- Woody Marvel - Assists in Emulab administration

2.3 Publications

None this quarter.

2.4 Outreach activities

We made a presentation about the INSTOOLS architecture and design at the GEC7 Instrumentation and Measurement Working Group meeting.

We have also had discussion with other measurement groups including the OnTimeMeasure group at Ohio State and the S3 Monitor group at Purdue.

2.5 Collaborations

Most of our collaborations continue to be with the Utah ProtoGENI team, and we continue to be actively involved in the bi-weekly meetings of the ProtoGENI cluster.

2.6 Other Contributions

None yet.