Digital Object Registry

Corporation for National Research Initiatives

Project Final Report – September 1, 2012 through July 31, 2013

1. Major Accomplishments

During the first three years, the scope of work on this project was to adapt the Handle System, along with components of the CNRI Digital Object Registry, to create a clearinghouse registry for principals, slices, and/or components in at least one GENI Spiral 1 control framework, capable of supporting limited operations. We have successfully adapted the Digital Object Registry and related technologies to build a GENI Federated Clearinghouse and a Distributed Hash Table for Seattle, aka Million Node GENI, led by Justin Cappos. The scope of work in Year 4 was to discuss, design, and develop a prototype of the Measurement Data Archive (MDA) service, which is now called the GENI Storage and Archive Service (GSAS). We made these services available by deploying them in production servers with high availability and network bandwidth.

The scope of work in Year 5 is to continue the discussions with the Instrumentation and Measurement (I&M) working group members to standardize the metadata schema used by the GSAS, evaluate the integration of the Handle System into the GSAS developed by the UNC team, and review and finalize a GENI experimental data plan.

During this year, we continued our collaboration with GENI members and System Engineers as part of the I&M Working Group. We:

- Discussed with UNC and BBN team members the specifics of the Handle System integration into the iRODS framework that is being used for implementing the GSAS.

- Discussed with BBN team members how to simplify the metadata schema that will be used within the GSAS.

- Produced a final version of the metadata schemas.

- Produced a draft of the data sharing policy.

- Made available the prototype of the MDA service.

- Continued to make available the Distributed Hash Table service for the Seattle project, led by Justin Cappos. We are looking for funding sources to keep this project up and running for the Seattle project.

- To demonstrate our interest and support for GENI, we have agreed to support University of Kentucky in their proposal to GENI on building

experimental tools that use the Handle System and CNRI-designed metadata schema.

1.a. Milestones achieved: During this year we completed all the milestones, S5.a, S5.b, and S5.c, as discussed below.

- Milestones S5.a and S5.b:

    o Attended GEC 15 and GEC 16 and participated in various I&M sessions and discussions on GENI experiments.

    o Designed, finalized, and released version 2 of the GENI object descriptor on June 13, 2013. Metadata schema is on the wiki page for the project here: http://groups.geni.net/geni/attachment/wiki/DigitalObjectRegistry/GENIObject-v2.0.xsd

    o We discussed integration of the Handle System into the MDA service with UNC and other I&M members. A preliminary version has been implemented by UNC, which has not yet been made available to CNRI.

- Milestone S5.c:

    o Drafted and released a version of the data sharing policy on July 24, 2014. The draft has been made available on the wiki: http://groups.geni.net/geni/attachment/wiki/DigitalObjectRegistry/GENI-RRS-Policy.docx

1.b. Deliverables: During this year, we made available the metadata schema and related examples on our wiki page for the project. We also made available a draft of the data sharing policy.

2. Description of Work Performed

2.a. Activities and Findings During This Period

Measurement Data Object Descriptor

BBN and CNRI participated in several telephone and webex sessions during the year to discuss and simplify the metadata schema identified during Year 4. CNRI as well as other GENI members documented the results of those discussions in detail on the relevant GENI wiki page. Schemas and examples are shared on the wiki page for the project.

GENI Research Results Sharing Policy

CNRI has drafted the first version of the data sharing policy. That document is available on the wiki page for the project.

2.b. Project Participants

CNRI discussed its project activities with a number of other GENI participants, but all work accomplished this quarter was performed by CNRI alone, guided by discussion with I&M members, including Harry Mussman, Marshall Brinn, and Jeanne Ohren. Names and email addresses of CNRI participants are available on the GENI wiki page for the project.

2.c. Publications

No publications were produced this quarter.

2.d. Outreach Activities

CNRI collaborated with BBN and other partners to use GENI infrastructure outside the scope of this funded project. One of the goals is to use GENI racks deployed at various campuses and make available a data management layer for archiving research data from participating organizations and agencies.

2.e. Collaborations

CNRI collaborated with I&M working group members to standardize the metadata schema and integrate the Handle System into the MDA service.

2.f. Other Contributions

Production Services

CNRI supported the GENI Measurement Data Archive prototype and the Distributed Hash Table services on hardware deployed in a collocation facility that features redundant power and air conditioning units, physical security, etc. A 100Mbps network pipe is dedicated to the machine. At the end of the performance period, CNRI will bring down the MDA prototype, as discussed with the GENI System Engineer Marshall Brinn.