GENI Meta-Operations Center Service Desk

Annual Status Report

Year Ending June 30, 2015

Marianne Chitwood – Principal Investigator

Summary

- Operating within Budget
- Completed all remaining Service Desk Statement of Work milestones
- Continuing to work on current and consistently improving support for the GENI Community
- Established a procedure for GENI LLR Requests
- Performed an LLR Request Table-top Exercise
- Performed Two LLR Request Exercises with ExoGENI and InstaGENI
- Continuing GENI Racks and Regionals turn-ups

Break-Down of GMOC Tickets for Various Events On GENI
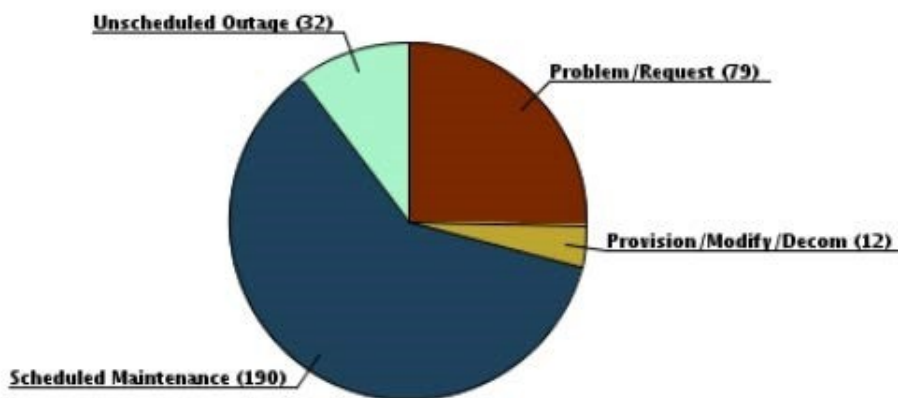
Problem/Request	80

Provision/Modify/Decom	13
Scheduled Maintenance	190
Unscheduled Outage	33

Major Accomplishments

Milestones Achieved

☐**S4.g Complete revisions of processes and documentation and begin production operation of support desk. Plan to report on efforts and successes at subsequent GECs. (August, 2012)**

Continued training for the Service Desk 24/7 staff and Co-SST (Vince Neil) of GMOC tools and current support – Emergency Stop, GENI Integrated Backbone Outages /Maintenances, I2/Indiana/MOXI FOAM workflow, Disruptive Experiments Reservation and Maintenance Freeze workflows, GMOC Database training, GENI Racks

GlobalNOC Service Desk at IUPUI, Indianapolis, IN

Outage/Maintenance tracking, etc...

Service Desk performed another GENI LLR Request exercise; this time with ExoGENI. Service Desk continues to work with upcoming Regionals and GENI Racks to setup Emergency Stop contacts in the GMOC database for Aggregates and making sure they're sending data to GMOC and other operational-ready tasks via a stream-lined GENI Aggregate GMOC Turn-up Process.

Deliverables Made

- GENI support processes and documentation updates and improvements

- Continued event tracking support of GENI Racks
- Continued database UI and functionality updates for Emergency Stop and LLR Process
- Continued to provide turn-up for GENI Racks and other aggregates via the GENI Aggregate GMOC Turn-up Process.
- Implemented and documented post-event/outage review process for FlowVisor outages and disruptive experiments.
- Continued support and stream-lining processes for growing number of GENI Tutorials, maintenance freezes and other resource reservation requests.
- Performed LLR Exercise with ExoGENI and InstaGENI.
- Improved Community Notifications by creating an Experimenters list.
- Clarified notifications by instituting standards for Maintenance Tutorial Reservation, and Disruptive Experiment ticket types.
- Created automated incoming mail escalation procedure for the GMOC ticketing system.
- GENI Internet2 Stitching Computational Service (SCS) implemented January 2015.
- Migrated from Internet2 ION services to Internet2 AL2S
- Demonstrated at GEC 22 independently redundant GMOC resources in the event of disaster recovery or site evacuation is required.
  - Participated in the yearly GlobalNOC Disaster Recovery exercise.

Description of Work Performed During Last Quarter

Activities and Findings

The GMOC Service Desk continues to operate by providing following areas of support for the GENI Community:

- **GENI Emergency Stop:** GMOC continues to maintain operational list of Emergency Stop contacts for all GENI Aggregates and the process for performing an Emergency Stop.
- **Disruptive Experiments and FlowVisor Outages Post-event Workflow:** GMOC Service Desk with GPO coordination continue to provide a workflow to handle post-event review for potentially disruptive experiments and/or FlowVisor outages that may have negatively affected

the GENI OpenFlow Mesoscale VLANs and other GENI resources that are being used by other experimenters across GENI. GMOC reviews all such events and works with GPO to track these issues and provide possible resolution and/or reporting FlowVisor events/bugs to ONL. GMOC SST will work with GPO and others in the GENI community to review FlowVisor outages and instabilities as well as other unexpected disruptions via GMOC monitoring and measurement tools.

- **GENI Racks and Regionals Turn-up Workflow:** GMOC Service Desk, Network Engineering groups in coordination with GPO continue to connect GENI Racks and Regionals to the GENI OpenFlow Core by tracking turn-ups by following the GENI Aggregate GMOC Turn-up Process, as well as engaging appropriate network and systems engineering groups to help troubleshoot any problems with connecting a GENI Regional to the Core backbone. GMOC started sending weekly reports for GENI Aggregates Turn-ups for all upcoming GENI Racks and Regional Aggregates that GMOC tracks and sends these reports to GPO and the Racks teams.

- **GENI LLR Request Exercise with ExoGENI:** GMOC along with currently designated GENI LLR representative, Stephen Schwab, a GPO representative, Ilya Baldin RENC, ExoGENI admin, conducted an exercise of an LLR Request test scenario based on the GMOC's LLR Request Process - GENI LLR Procedure Workflow.

  The finding of the exercise confirm that the over-all GMOC LLR Request Process works with 3rd party, such as an Aggregate Operator, however further tools development is needed and assuring proper data is submitted into the GMOC-DB in order to be able to find GENI resources and parties responsible for them. It remains clear that historical data of GENI resources linked to their slice owners, etc... is needed to properly handle the LLR requests as slices expire and often LLR requests can often come in with significant delay and it would be difficult to track an offending party/entity if slice ownership has change/expired. Related to this, it is also important for GENI to determine a policy of how long historical data is kept. Without this policy, GENI can be at risk of having LLR requests to look up and turn over arbitrary amounts past data. GPO should think about incorporating this as a policy going forward and as operational monitoring architecture is developed.

During this latest exercise identified 2 areas that needed addressed

1. If GMOC cannot determine who owns the offending IP/issue we will have to blast the ExoGENI and InstaGENI lists for help from both to help determine who can help us
   a. EXOGENI can create a tool to determine if an IP address is EXOGENI or not.
   b. OPS Monitoring should also be able to resolve the granularity issue and GMOC should be able to find information once Monitoring is up.
2. Who sets priority?
   a. We discussed that we (GMOC) should respond to initiator with an expectation of next Business day for resolution.
   b. No afterhours support unless its urgent, like court order etc..
      i. In such cases LLR representative should be contacted and make the decision.

GMOC-DB now has built-in functionality for looking up Project Owner as well as slice owner contact information, however Clearing House and Slice Authorities will need to begin sending this data to GMOC.

Lessoned learned from the first test were incorporated. GMOC provided a phone bridge and used a chat room and IRC channel for communication.

LLR representative had consistent access to the GMOC-DB, GMOC ticketing systems and other

GENI tools. GMOC will continue to make sure LLR is well represented as one of the Operational Monitoring use cases and tools and data is available to support LLR and Emergency stop as operational monitoring efforts progress.

GENI Integrated OpenFlow Backbone network support update: GMOC Service Desk worked with GPO network engineers to transition NLR Core resources to Internet2 during the pending shut-down of NLR.

Project Participants

During this time, key participants in GMOC Service Desk included:

- Marianne Chitwood, PI
- Jeremy Oakes, GENI SST
- Vince Neal, co-SST
- Adam Williamson, GlobalNOC Service Desk Supervisor
- Shannon Docker, GlobalNOC Project Management Team Representative

Outreach Activities

GMOC web site: GENI GMOC web site is continuing to be updated to provide up-to-date information on GENI Service Desk support including ticketing system, documents, tools and operations calendars.

Eldar Urumbaev presented about GMOC updates at GEC19 during the GENI Operations session. GMOC continues to collaborate with the GENI Rack teams, Regionals and Operational Monitoring project representatives to help in GENI's transition to Operations.

Collaborations

GMOC Service Desk representatives continue to join the bi-weekly Regionals call, GENI Rack Vendor calls as well as continuing representation on the Friday weekly calls with GPO: NetworkCore and Monitoring – providing GENI Ops agenda items and operational status report via a biweekly report as well as discuss any other operational items going forward.

During GEC18 GMOC representatives focused on discussing future GENI Operations and updates on current GMOC support, LLR Process and testing.

Planned Activities for Spiral 5

GMOC Service Desk will continue to provide full range of existing support as well as reach out into new areas of improved support including:

- Work on improving overall visibility and reporting in GENI.
    1. Transitioning GENI Core monitoring to GMOC.
    2. Other pro-active monitoring.
    3. Continue Emergency Stop and LLR support by stream-lining process and performing dry-runs with GPO and GENI LLR representatives.
    4. GMOC-DB UI and schema improvements for looking up IPs/MACs, Project Owner data to be submitted to the GMOC-DB for supporting LLR requests by easily identifying GENI resources. Making sure all Campuses are sending IP data to GMOC and GMOC is able to lookup Project Owner data from Clearing House and Slice Authorities.
    5. Node representation in the GMOC-DB and SNAPP.
    6. Work with monitoring project to research need/ability for targeted notifications.
- Continue to keep current the GMOC website home page and the GENI Meta Ops page on GENI Wiki to include current support features for experimenters and the GENI community as a whole.