

GEC 19

GENI Operations Plastic Slices Update

Josh Smift, GPO
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www.geni.net

- Artificial flexible experiments to exercise GENI
- Slivers at all sites with production GENI resources
- Simple traffic generation with iperf (TCP & UDP)
- Uses the GENI hardware OpenFlow network
- Original project started in April 2011:
 - Six runs of various levels of traffic
 - Two other operational tests
 - Another 20+ “continuation” rounds since then

<http://groups.geni.net/geni/wiki/PlasticSlices>

- Started with 6 - 8 OpenFlow Campus Trials sites:
 - MyPLC for compute nodes
 - Expedient for OpenFlow
- Dormant for several months after that
- Revived in March 2012 with 5 - 7 OFCT sites:
 - MyPLC compute nodes, FOAM for OpenFlow
- Added Utah ProtoGENI in October 2012
- Added 5 racks (and dropped OFCT) in April 2013
- 25 racks plus Utah PG in the most recent round

<http://groups.geni.net/geni/wiki/PlasticSlices/Continuation>

- We've started graphing data:
 - Graphs for each individual 55-minute run on each host
 - Daily graphs for each host
 - Graphs of the whole round for each host
 - Graphs of all the hosts in each slice (hard to read!)
- Groups of graphs for readability:
 - Traffic to or from any host at an aggregate
 - Traffic to and from all the hosts in a slice
 - Daily graphs for each host
 - The all-hosts in a slice graphs

- How do you tell how things are going?
 - The data's all there in the logs
 - ...but it's difficult and tedious to visualize
 - Scriptlets to try to grep out the relevant bits
- The graphs make it much easier to spot patterns:
 - Lots of gaps and loss at MOXI IG
 - Flat loss at UFL EG
 - More investigation next round (after GEC)

- VMs:
 - 25 racks x 8 slices x 2 VMs/slice = 400 VMs!
 - ...out of 1250, but that's still a lot of GENI for testing
 - That leaves plenty when the racks are new
 - Heavily-used racks have actually run out of VMs
 - Next round, drop production racks to two slices
 - Newer racks still in eight slices, to exercise them more
- Throughput:
 - Can't specify TCP bandwidth in this version of iperf
 - Uses as much as it can, i.e. a *lot* for close sites
 - Started using tc to limit throughput to 10 Mbps

- Out-of-bounds checking:
 - Still have pages and pages of graphs to scroll through
 - While parsing/processing, could note anomalies
 - Put those on a summary page, link to detailed graphs
- VTS:
 - Virtual switches in racks
 - Via the hardware OpenFlow network at first
 - With direct links between VTS switches soon