



GENI Desktop Instrumentation and Measurement Tools

Jim Griffioen, Zongming Fei, Hussamuddin Nasir,
Charles Carpenter, Jeremy Reed, Wesley Wu

Laboratory for Advanced Networking

University of Kentucky

GEC22 @ Washington D.C

March 23, 2015



Sponsored by the National Science Foundation

- Indiana University - GEMINI
- University of Utah – Jacks, Insta/ProtoGENI
- GPO – GENI Portal
- UNC RENC I – iRods, ExoGENI

What is the GeniDesktop ?

- **A tool that**
 - can create and manage slices and resources
 - Interacts with other GENI Authorities (Portal and Emulab) to provide access to slices created via any GENI tool.
 - supports multiple ways to “visualize” a slice, and
 - makes it easy to apply an operation to a subset of resources within a slice.
 - Uses a file-browser-like interface that users are familiar with. The analogy is selecting files in a file browser and applying an operation (regardless of the “view” – e.g., list view, icon view, detailed view, etc.)

What is a Global Node ?

- The GeniDesktop requires adding an additional Node, called a *Global Node (GN)* to each aggregate where slice has resources.
- Then GN runs a custom (global node) Disk Image
- GeniDesktop and the GEMINI Instrumentation framework interacts with your experiment's resources over the control plane via the Global Node
- A GN is automatically added by the GENI Desktop
 - Immediately if the GENI Desktop is used to allocate resources for your slice, or
 - at a latter time if some other tool (e.g., the portal or OMNI) was used to allocate resources for your slice.

- **Phase I: Initialize access to MP nodes (your resources)**
 - Load software onto MP to allow GN <-> MP interactions.
 - Available services include:
 - Slice visualization
 - MP information visualization
 - SSH access
 - File upload
 - Run commands
- **Phase II : Initialize Instrumentation and Measurement Services**
 - Load GEMINI software on GN and MPs needed to instrumentize and view measurement data
 - Available services include:
 - View commonly used active and passive traffic graphs
 - View detailed node information and less frequently used graphs
 - Configure instrumentation and measurement system
 - Archive measurement data

(New) GeniDesktop Features

- **A Simple Interface to create and manage slice via Jacks**
- An Advanced view to perform operation on multiple slices simultaneously – for power users
- **Interoperates with** the GENI Portal, **Jacks**, iRods and other services
- Supports InstaGENI and ExoGENI racks and cross-aggregate stitching
- A windowing system interface
- Logical, Geographic, and List view of slice
- Single abstraction for interacting with a slice.
- GEMINI Instrumentation (active and passive) provided automatically
- Quick access to (instantiated) resource details.
- **Provides a Local Archive Service with data/graph visualization for archives**
- SSH access to a set of nodes.
- Ability to run commands across sets of nodes.
- Ability to upload files to sets of nodes.
- Quick access to, and visualization of, commonly used measurement data.
- Ability to drill down to additional measurement information
- Ability to control active and passive measurements
- Ability to record notes about an experiment via a CMS
- and several other features.
- **Disk Image Creation for Instageni Nodes**
- **Resource validation Module**
- **Flow Management and Validation Module**

- Demonstration



<https://genidesktop.netlab.uky.edu>

Thank you

Questions ??

This material is based upon work supported in part by the National Science Foundation under grant numbers CNS-0834243 and CNS-1346688 Subcontract 1928 . Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of GPO Technologies, Corp, the GENI Project Office, or the National Science Foundation.