

# GEC 18 Tutorial Part 3

## GENI Desktop and GEMINI I&M Services

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# Collaborators

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

# GENI Desktop Uses

- Basic Services
  - ▣ Login to "GENI"
  - ▣ Create slices
  - ▣ View slice topology
  - ▣ Ssh to slivers (nodes)

# GENI Desktop Uses

## ○ Basic Services

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## ○ I & M Services

- ❑ "Instrumentize" a slice (with measurement services)
- ❑ View measurement data
- ❑ Archive measurement data

# GENI Desktop Features

- Single sign-on to various GENI tools
- Interoperates with the GENI Portal, Flack, and iRods
- Supports InstaGENI and ExoGENI racks
- Access to all slices owned by user
- Slice creation/modification via Flack
- A windowing system interface
- Logical, Geographic, and List view of slice
- Single abstraction for interacting with a slice.
- Can be used with/without instrumentation.
- Quick access to (instantiated) resource details.
- Ssh access to a set of nodes.
- Ability to run commands across sets of nodes.
- Ability to upload files to sets of nodes.
- Optional instrumentation of a slice
- 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.

# GENI Desktop Login Page



# Welcome Page and Slice List



**Work With Your Slices** Select Project: GEC18 ▾

Click the slicename to open the GENI Desktop for that slice,  
or Select an Action to apply to all the checked slices.

Slice Name	Slice Status	Next Action	Expires
<input type="checkbox"/> GEC18:demo1	Has Resources	<input type="button" value="Initialize"/>	6 days 23:00:35
<input type="checkbox"/> GEC18:demo2	No Resources Present	<input type="button" value="FLACK"/>	6 days 23:01:13
<input type="checkbox"/> GEC18:demo3	No Resources Present	<input type="button" value="FLACK"/>	6 days 23:10:26
<input type="checkbox"/> GEC18:demo4	No Resources Present	<input type="button" value="FLACK"/>	6 days 23:11:17
<input type="checkbox"/> GEC18:demo5	No Resources Present	<input type="button" value="FLACK"/>	6 days 23:12:29
<input type="checkbox"/> GEC18:demo6	No Resources Present	<input type="button" value="FLACK"/>	6 days 23:25:55

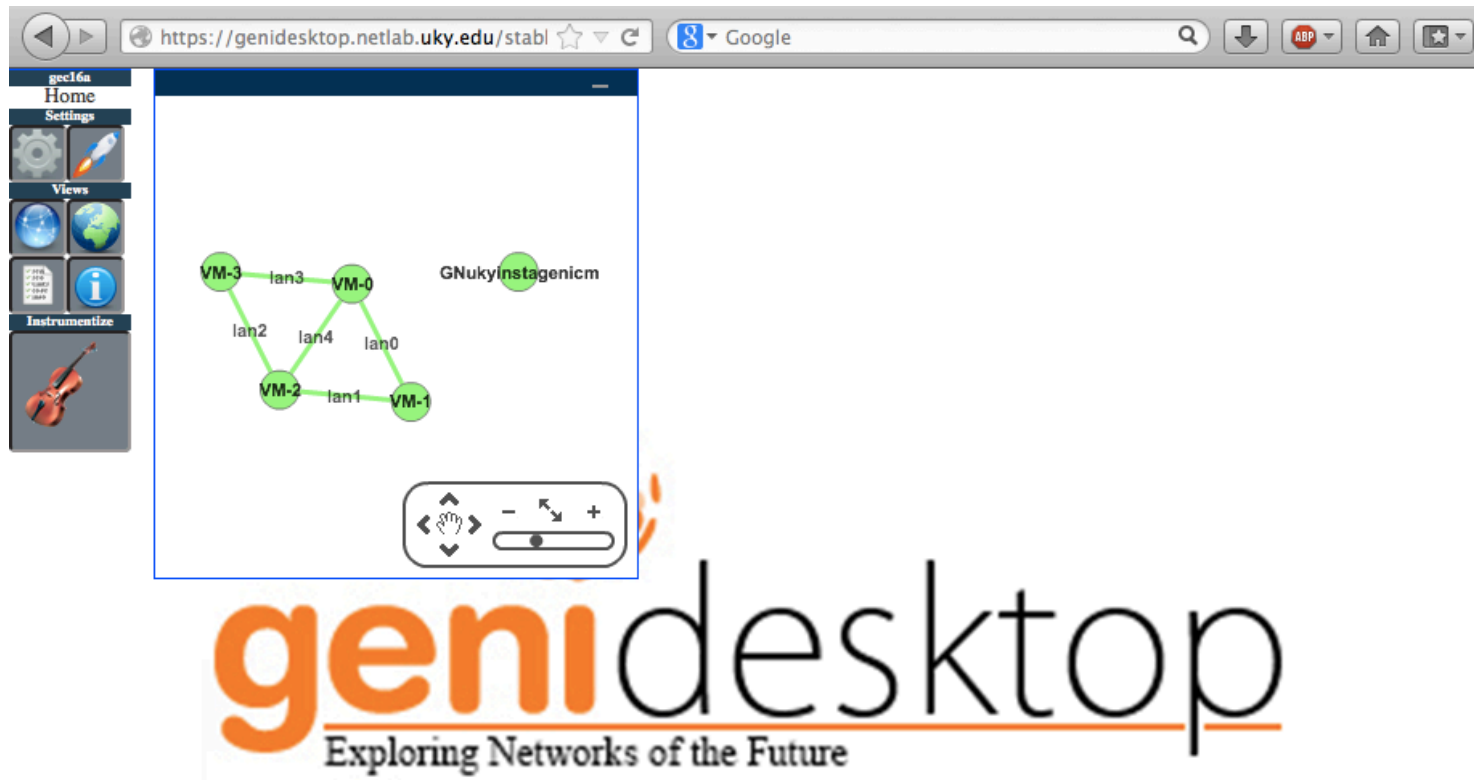
Action =  ▾

**Create A New Slice**

Name

Project  ▾

# Logical Topology View



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# Two Phase Initialization

- **Phase I: Initialize access to MP nodes**
  - Load software onto GN to allow it to act as a proxy for reaching MP nodes
  - GENI Desktop does this step for you if it has not yet been done.
  - Available services include:
    - ◆ Slice visualization
    - ◆ MP information visualization
    - ◆ Ssh access
    - ◆ File upload
    - ◆ Run commands
- **Phase II (Optional) : Initialize Instrumentation and Measurement Services**
  - Load 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

# I&M Traffic View

The screenshot displays the GeniDesktop web interface. On the left, a navigation sidebar includes 'Home', 'Settings', 'Views', and 'Renew Cert'. The main area features a network diagram with nodes labeled VM-0, VM-1, VM-2, VM-3, and VM-4, connected by links labeled lan1, lan2, lan3, and lan4. A 'GNukyinstagenicm' node is also present. Below the diagram is a zoom control. The right side of the interface is a grid of performance graphs for three VMs: VM-0, VM-2, and VM-2. The graphs include:

- VM-0: PCMI-13 Total CPU Utilization (MultiCore / Multi-Processor), PCMI-13 IOP Traffic, PCMI-13 IP Traffic, and PCMI-21 Total CPU Utilization (MultiCore / Multi-Processor).
- VM-2: PCMI-21 IOP Traffic and PCMI-21 IP Traffic.

The graphs show CPU usage and traffic over time, with a legend for 'User CPU Usage' and 'System CPU Usage'.

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grec13sc GEMINI Graphs Graphs

# The GENI Desktop

## Unifying Abstraction

- **Goal:**
  - Support multiple ways to “visualize” a slice, and
  - Make it easy to apply an operation to a subset of resources within a slice.
- **Common Requirement:**
  - **Select Resources:** Provide a unified well-known way to select resources, regardless of the “view” of the slice.
  - **Apply Operations:** Provide a unified well-known way to apply an operation to a set of resources.
- **Idea:** Use an abstraction familiar to users
- **Solution:** Model the interface after the well-known file browser interface. 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.)

# Slice/Topology "Views"

## ○ Three types of Views

### □ Logical View

- ◆ Provides a logical view of the topology and links between nodes. Nodes and links can be selected to identify a set of nodes/links.

### □ Geographic/Map View

- ◆ Provides a map view of the topology showing the geographic location where nodes are located and the links connecting them. Nodes and links can be selected to identify a set of nodes/links.

### □ List View

- ◆ A textual list of the nodes and links in a slice. Nodes and links can be selected to identify a set of nodes/links. The list can be filtered (searched) to reduce the number of nodes/links displayed.

## ○ Observations

- There is a single unified interaction model
- Selecting nodes/links in one view selects the same nodes/links in another view.
- Logical and Geographic views make it easy to visualize the topology and interconnections between nodes.
- The List view is useful for large topologies because the topology can be quickly filtered to nodes/links of interest.

# Demonstration

# Tutorial and Exercises

You will work through a set of exercises. We will give you an overview and examples, but **NOT** step-by-step instructions. The goal is for you to try out things on your own.

# Thank You!

# Questions?

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