GENI Desktop Tutorial

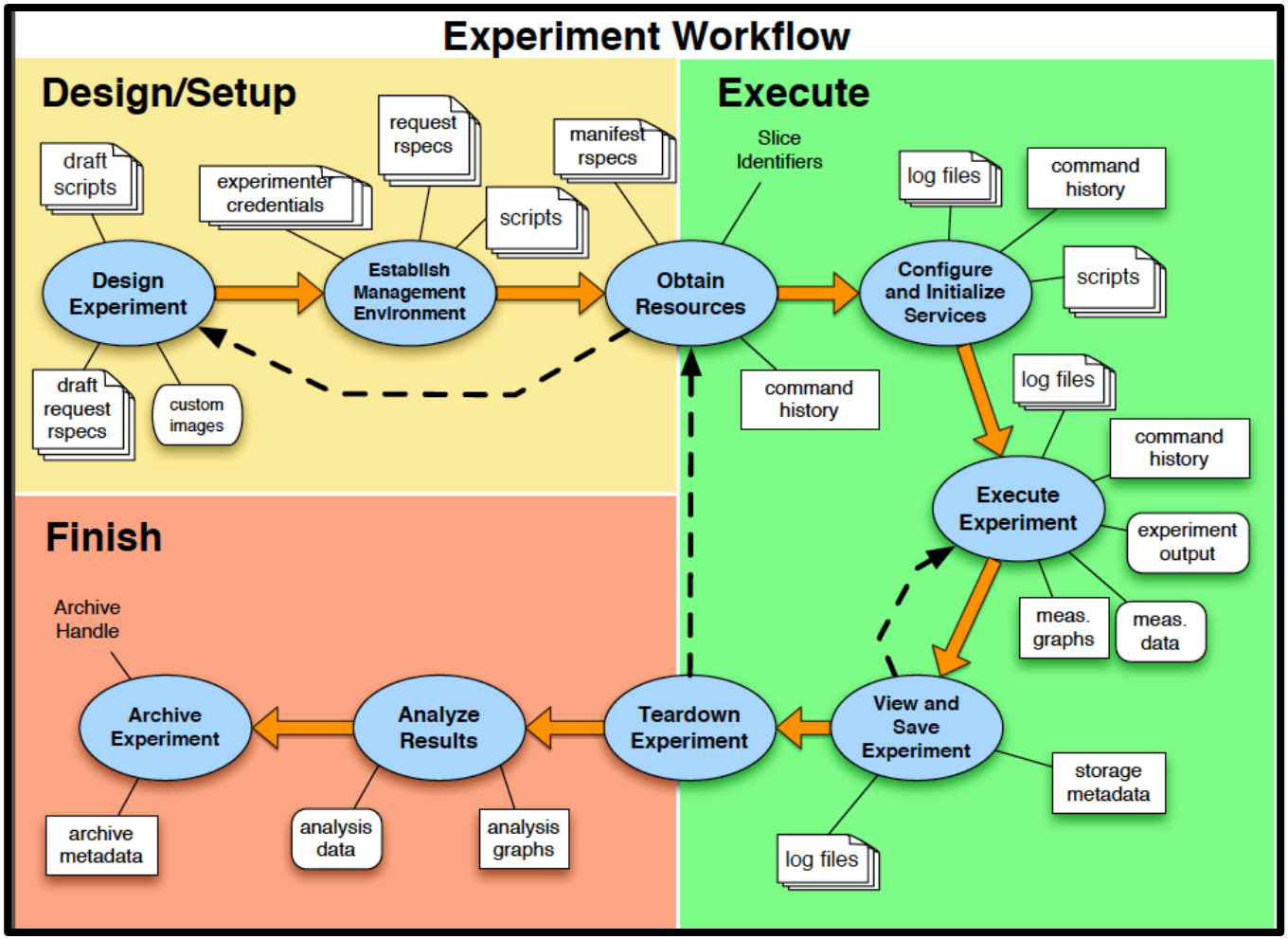
GEC 21

Jim Griffioen, Zongming Fei,
Hussamuddin Nasir, Charles Carpenter
Laboratory for Advanced Networking
University of Kentucky
Lexington, KY

Collaborators

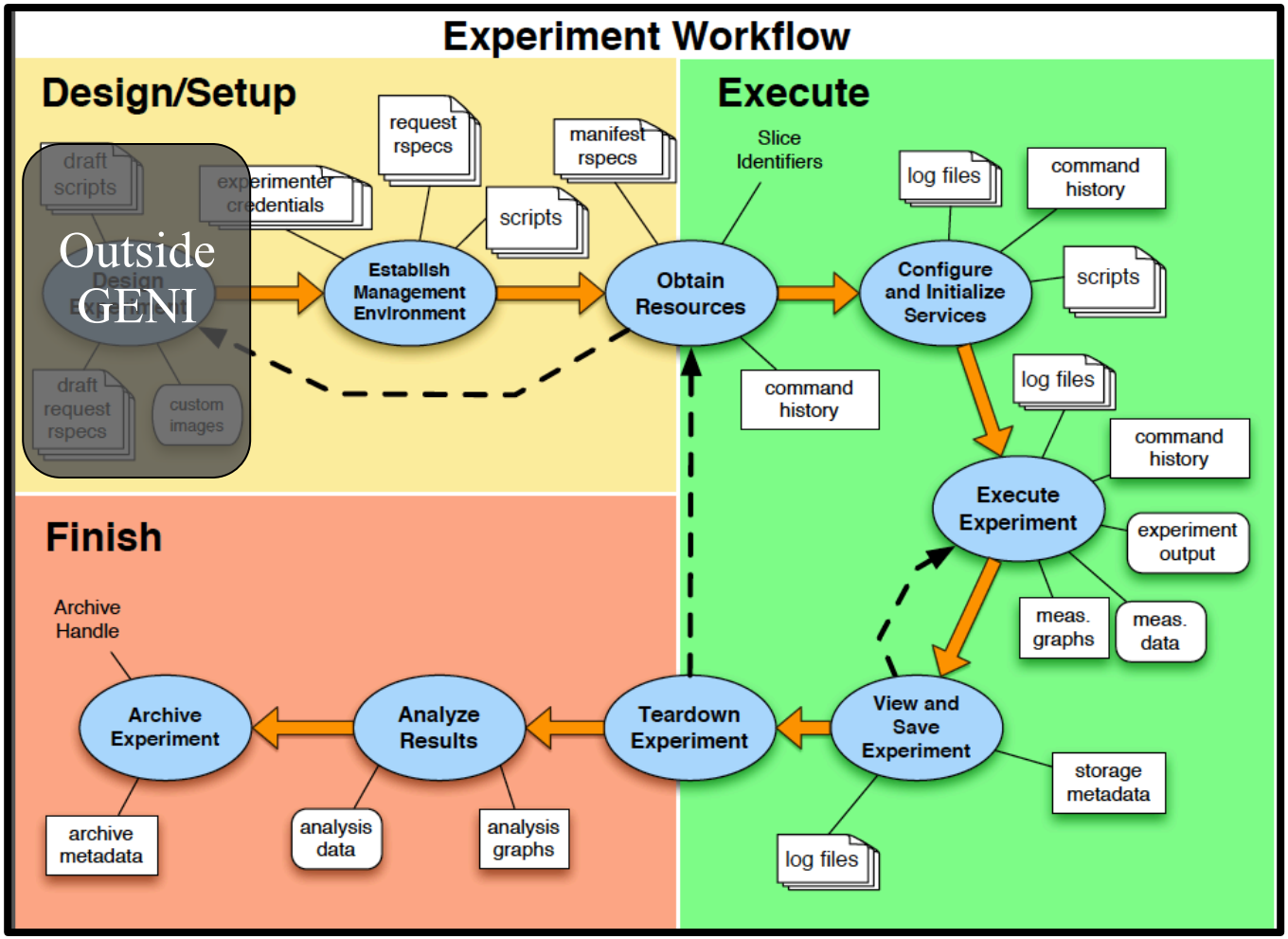
- Indiana University - GEMINI
- University of Utah – Flack, Jacks, InstaGENI
- GPO – GENI Portal
- UNC RENCI – iRods, ExoGENI

Lifecycle of a GENI Experiment



http://groups.geni.net/geni/wiki/ExperimentLifecycle

Lifecycle of a GENI Experiment



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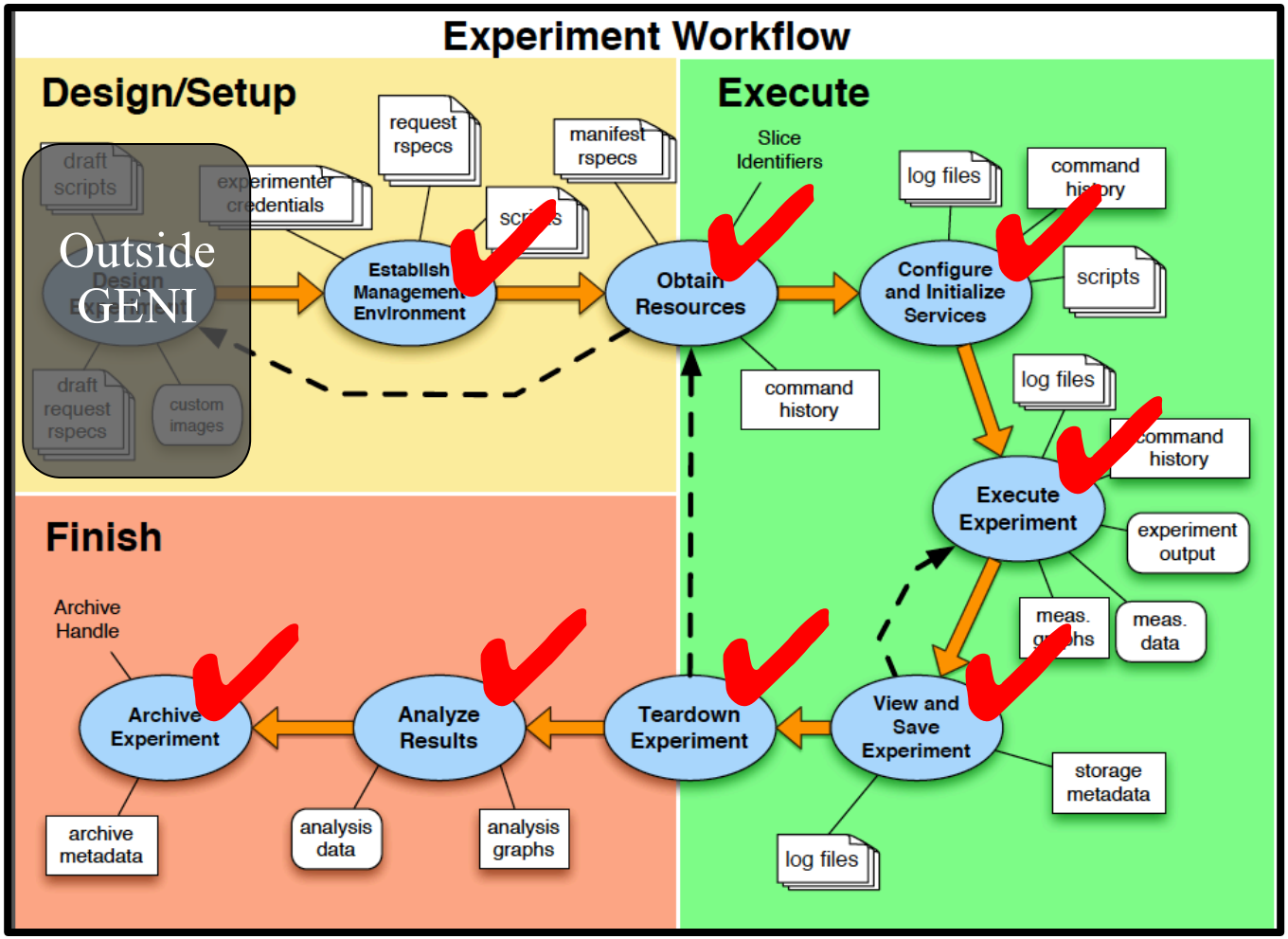
GENI Desktop Helps With:



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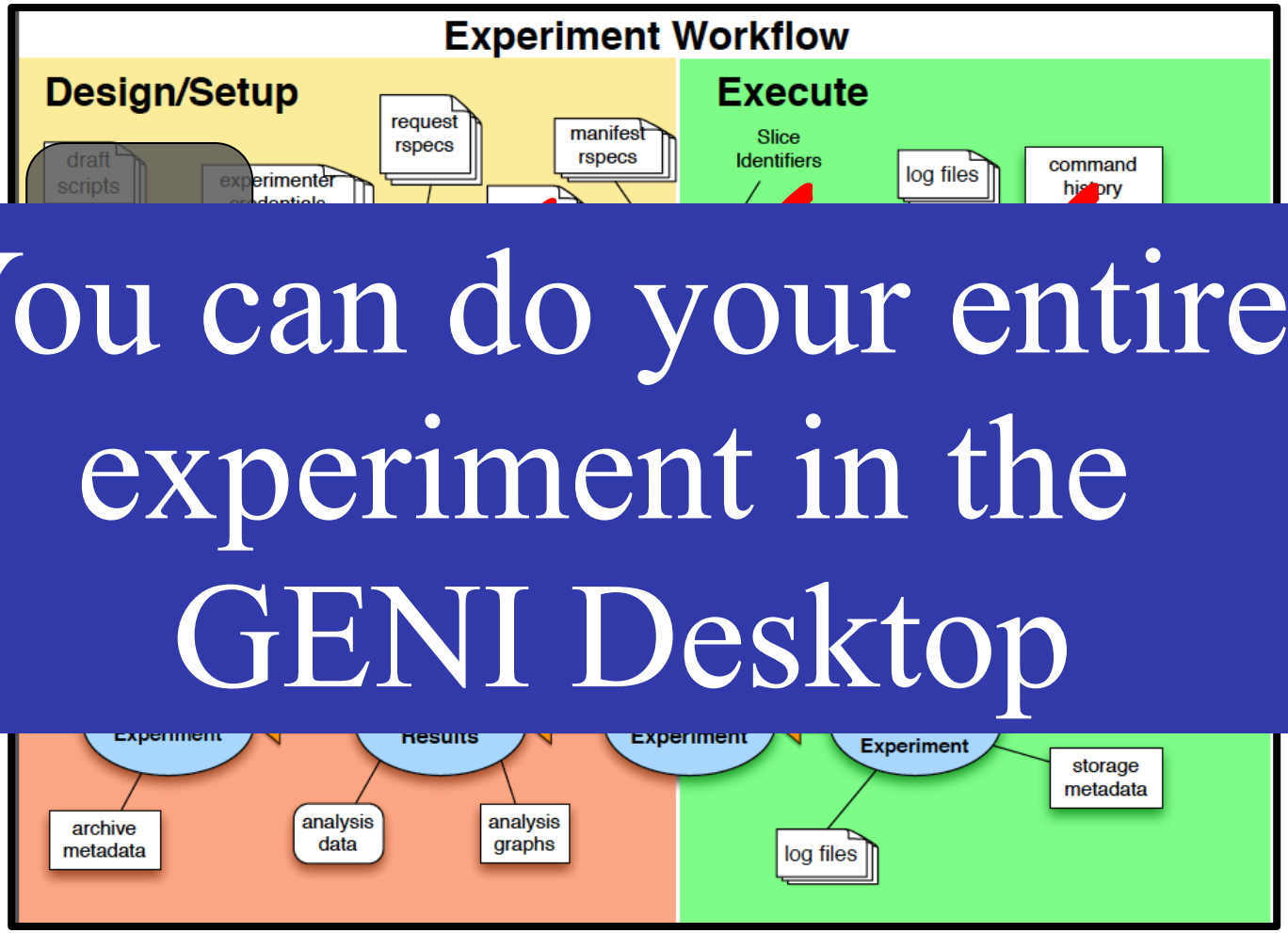

You can do your entire experiment in the GENI Desktop

http://groups.geni.net/geni/wiki/ExperimentLifecycle

Simple (but typical) Lifecycle

- Login to GENI Desktop
- Specify a slice name and create an (empty) slice
- Design a new slice topology, or select from a predefined set of topologies (RSPECs)
- Bind an RSPEC to resources (e.g., AMs)
- Create Slivers (i.e., reserve the resources)
- View information about the newly created slice and its resources
- Login (ssh) to the slice nodes
- Configure and load software onto the nodes
- Run experiments on the nodes
- Capture traffic graphs generated by the experiment
- View the traffic being sent in the experiment
- Archive the traffic graphs
- Teardown the slice

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GENI Desktop Features

- Single sign-on to various GENI tools
- Interoperates with the GENI Portal, Flack, and iRods
- Supports InstaGENI and ExoGENI racks and cross-aggregate stitching
- Access to all slices owned by user
- Slice creation/modification via Flack, the Portal, or RSPECs
- A windowing system interface
- Logical, Geographic, and List view of slice
- Single abstraction for interacting with a slice.
- Can be used with/without instrumentation (active or passive)
- Quick access to (slice) 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
- Ability to create super slices
- and several other features.

GENI Desktop Login Page

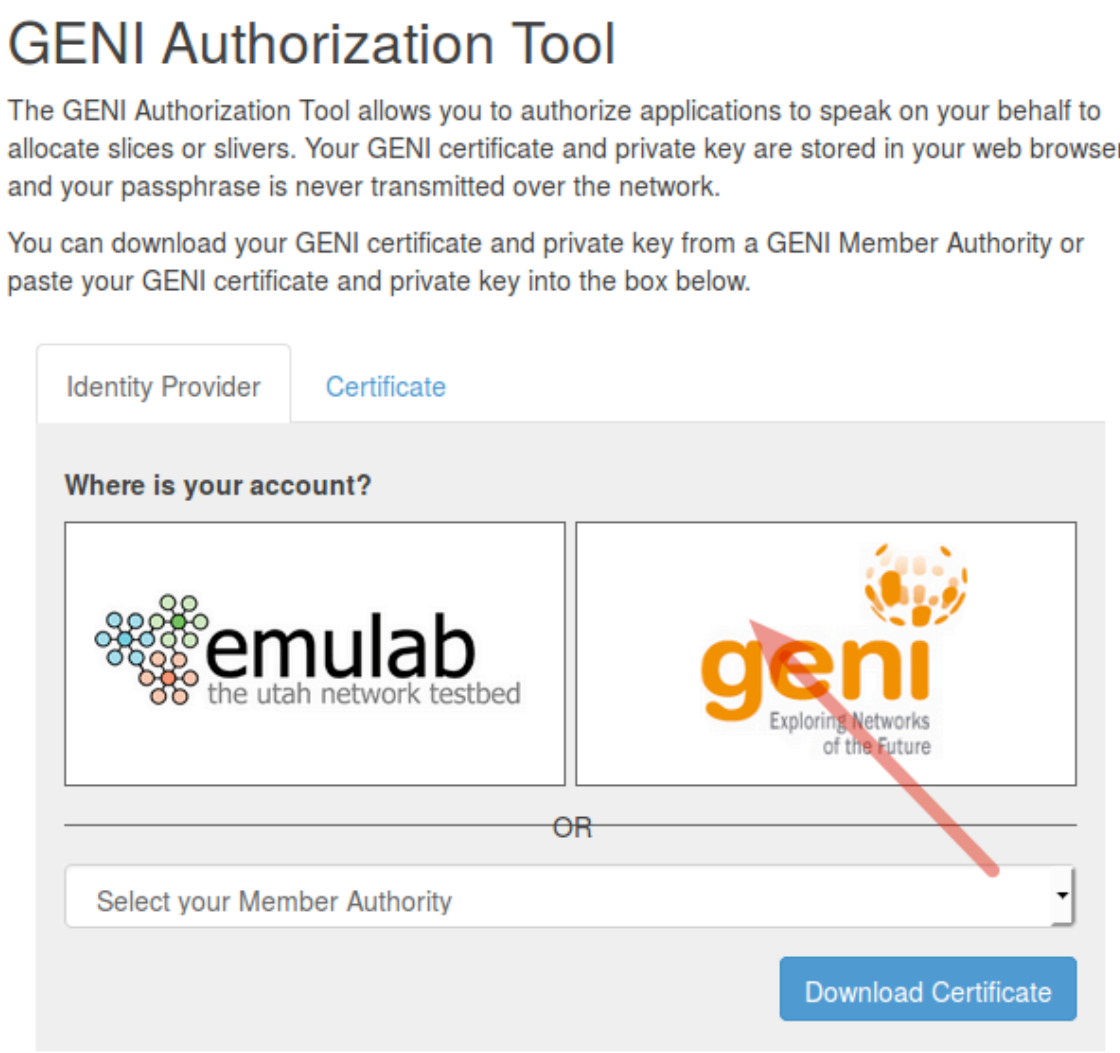
(http://genidesktop.netlab.uky.edu)

The GENI Desktop requires your authorization in order to act on your behalf. This requires that you sign a credential authorizing the GeniDesktop to speak for you when interacting with GENI services.

Authorize the GeniDesktop

FAQ/Help | Feedback/Bug Report

GENI Desktop Login Page



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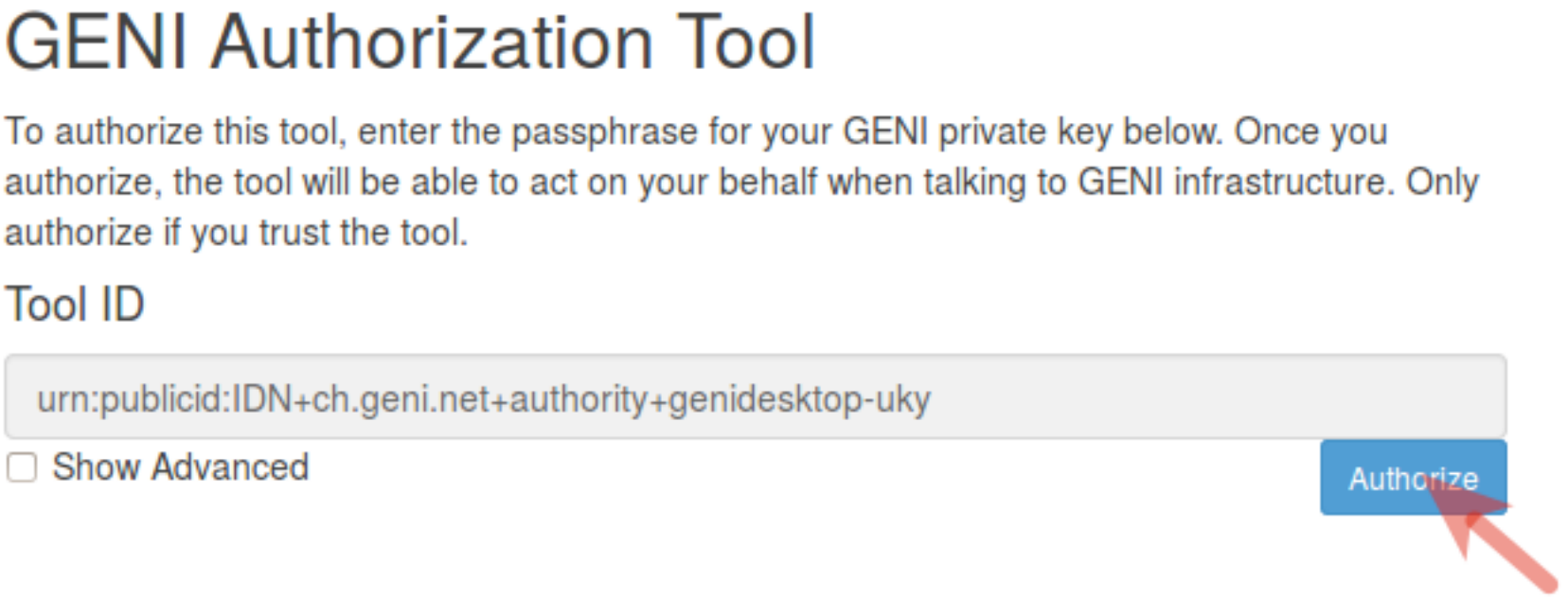
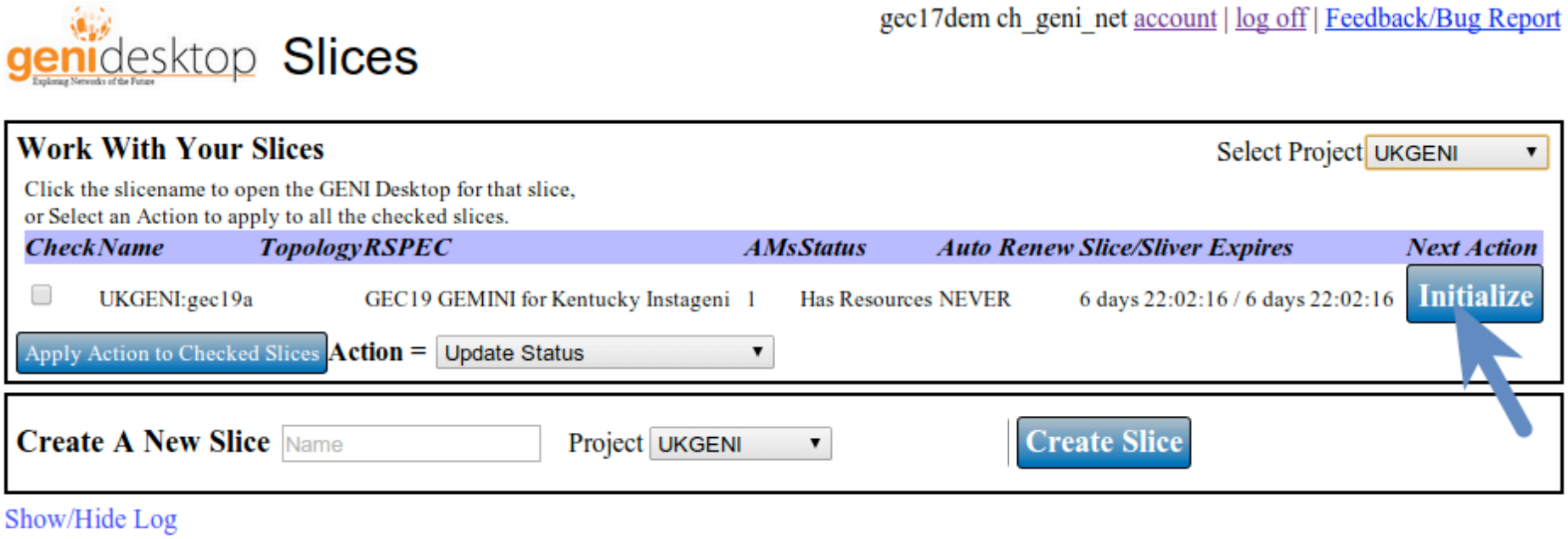


Welcome Page and Slice List

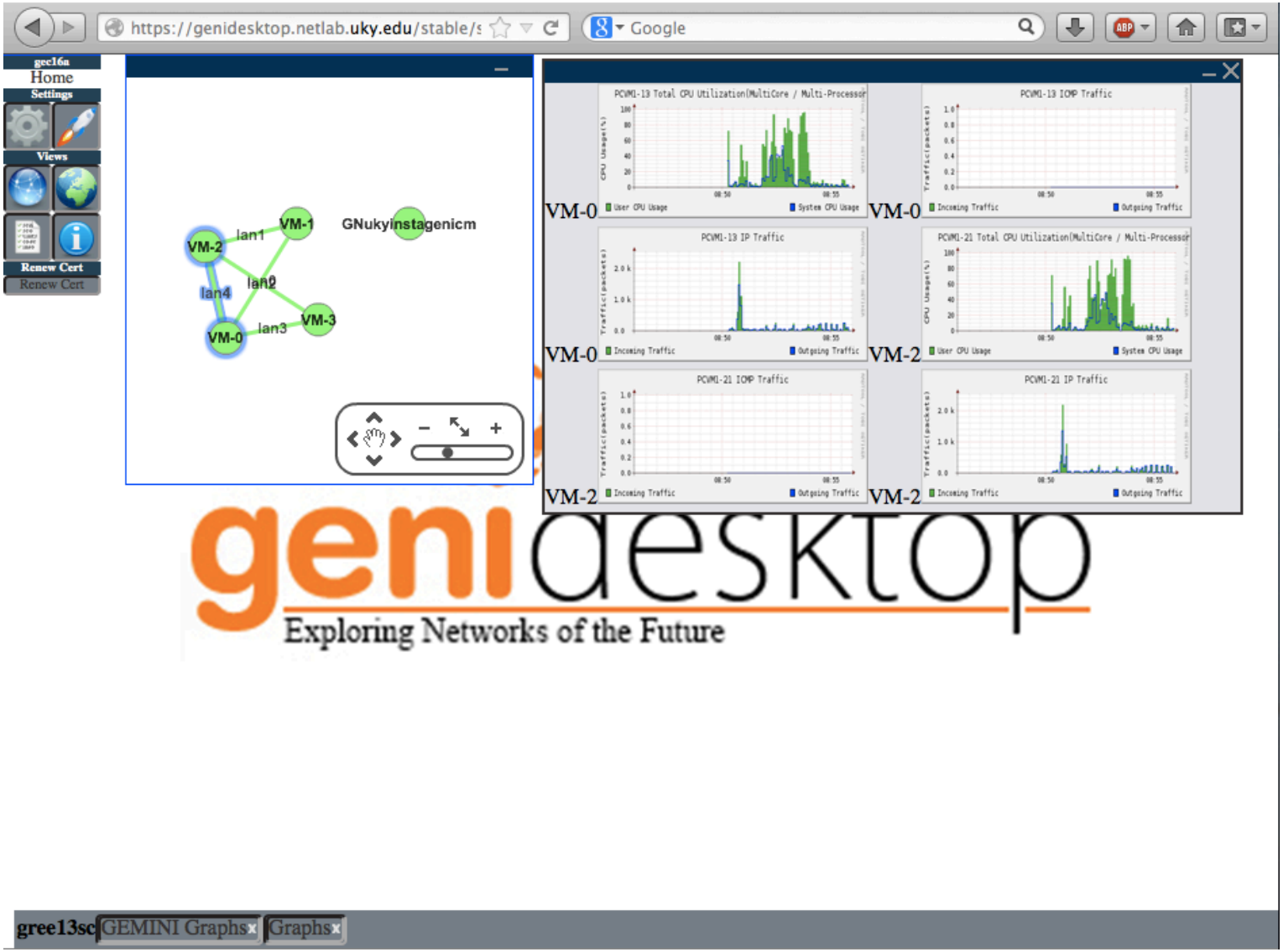


Two Phase Initialization

- Phase I (Automatic): 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
    - Verify the slice is operating correctly
    - Archive measurement data

Initialized View

I&M Traffic View



geni desktop
Exploring Networks of the Future

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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