


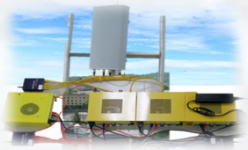

GENI and NDN

… or why should I use GENI?

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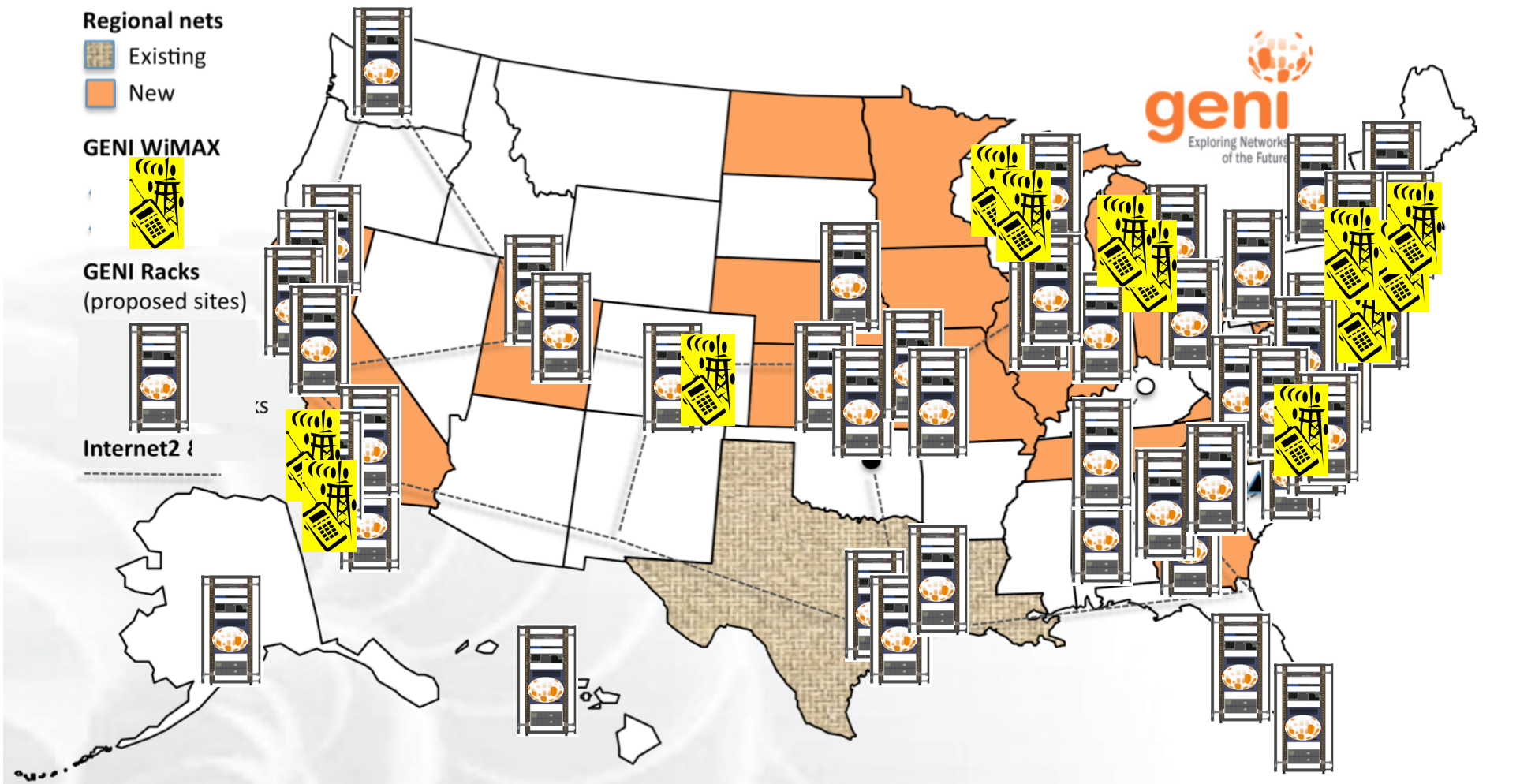
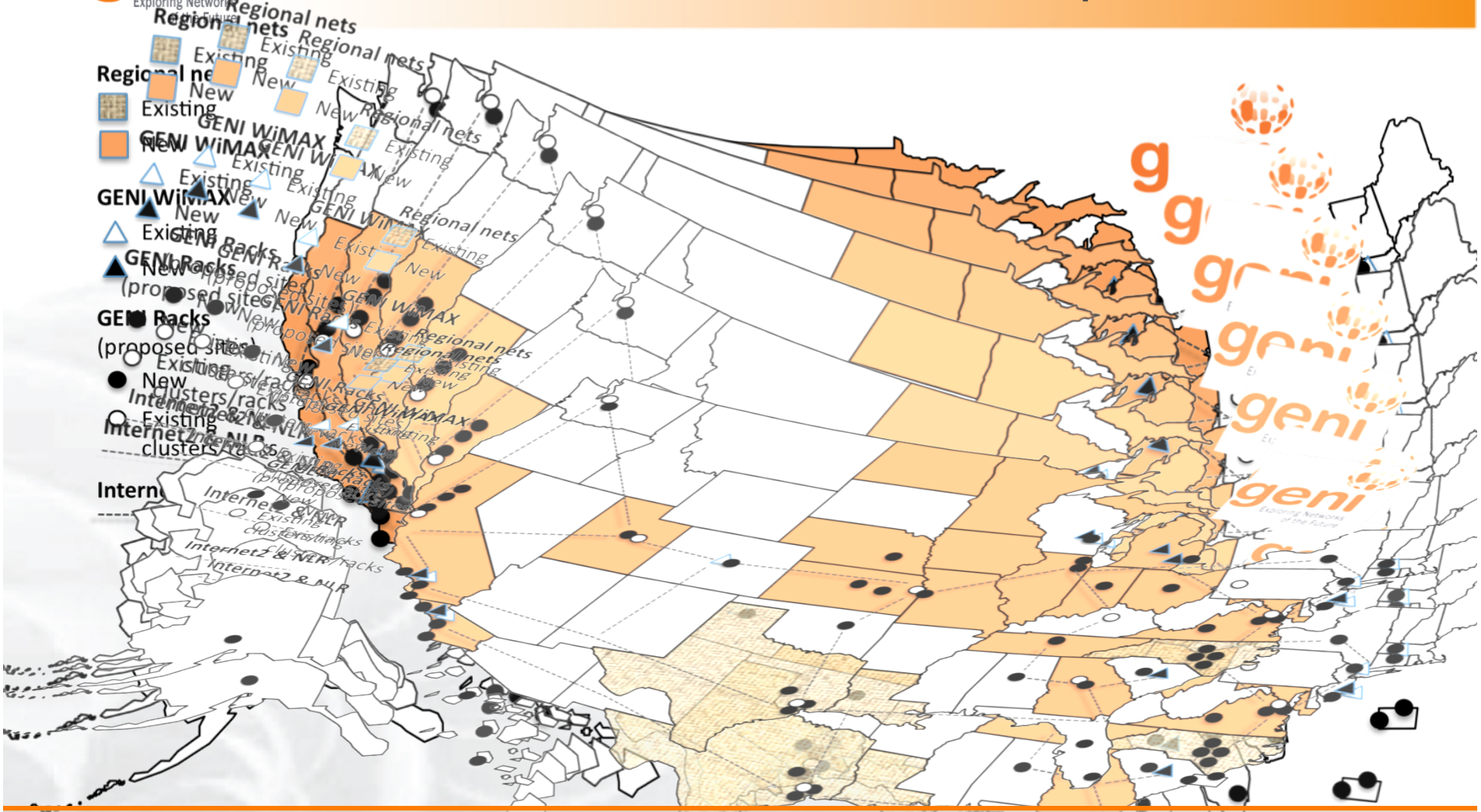
Sponsored by the National Science Foundation

GENI: Infrastructure for Experimentation



GENI provides compute resources that can be connected in experimenter specified Layer 2 topologies.

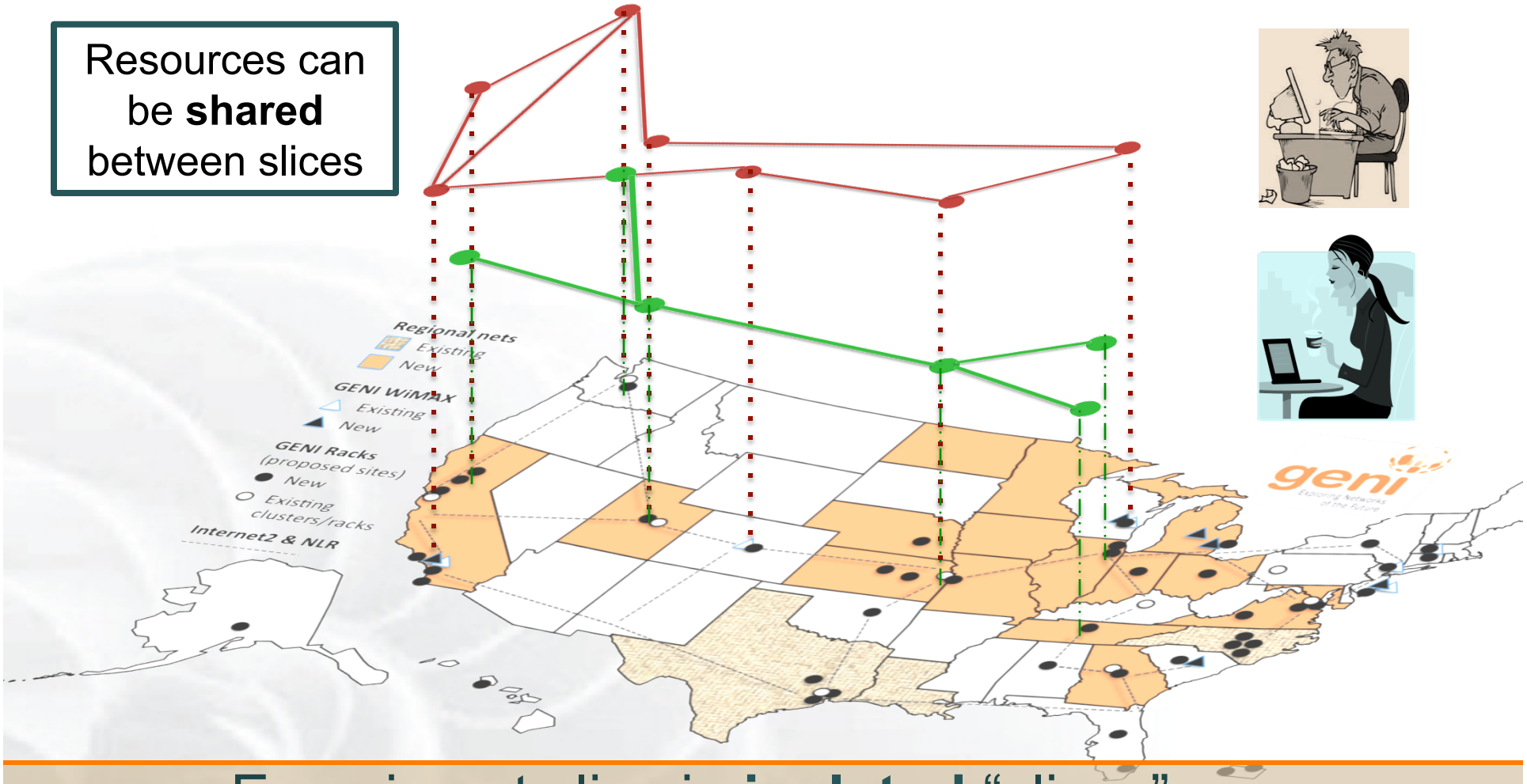
GENI: Infrastructure for Experimentation



GENI provides compute resources that can be connected in experimenter specified Layer 2 topologies.

Multiple GENI Experiments run Concurrently

Resources can be **shared** between slices

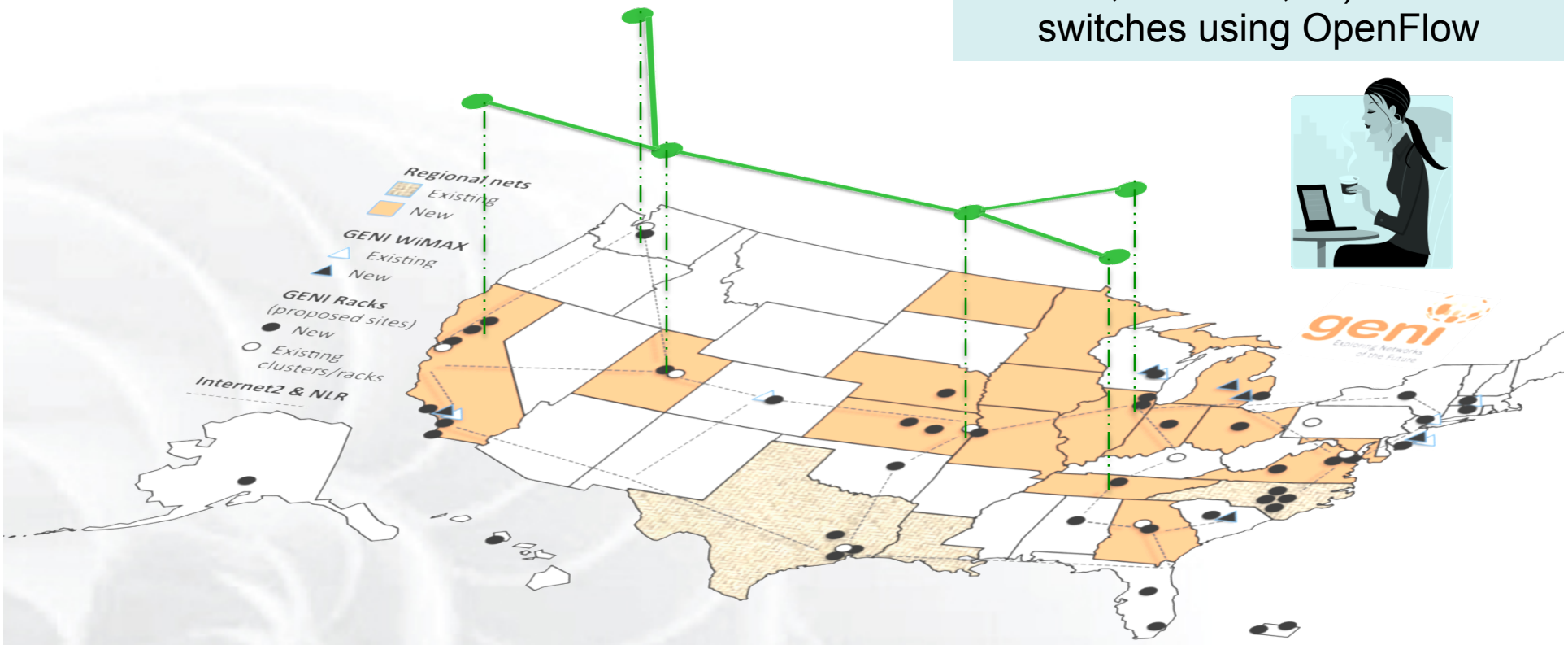


Experiments live in **isolated** "slices"

over 2300 users, dozen classes per semester

GENI is “Deeply Programmable”

I install software I want throughout my network slice (into routers, switches, …) or control switches using OpenFlow



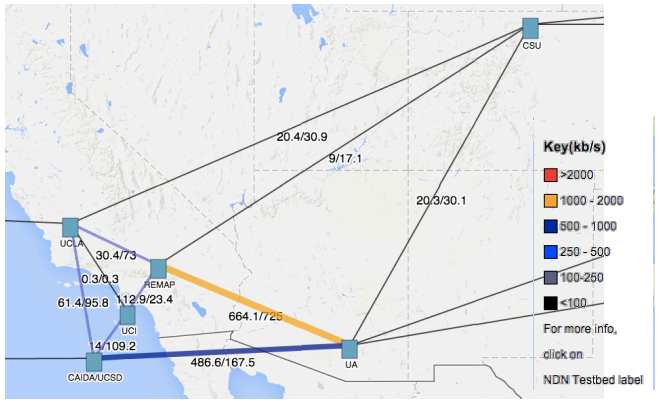
Experimenters can set up custom topologies, protocols and switching of flows

Other Key GENI Features

- Main design principles
  1. **Sliceable**: provide isolated sandboxes
  2. **Deeply programmable**: compute and storage in the network
- Wide Area Layer 2 networks
- Fine grained control over topology design
  - Geographical locations, size and type of topologies
- Tools for experimentation
  - Orchestrate large deployments, monitor, archive, automate
- Enables collaboration
  - Virtual lab
  - Easy to share experiment configurations

NDN-specific testbeds

- Production prototype NDN network, centrally managed
- ONL: single site programmable testbed



How can GENI help expand your testbed?

1. Expand the core using nodes in GENI
   - Richer topology
   - Easy to bring up edge nodes
   - Layer 2 connectivity (multipoint AL2S VLAN)
2. Use as a sandbox
   - Easy to bring up multi-site private NDN networks
   - Experiment with wireless, SDN
   - Experiment with L2
3. Training
   - Tutorials, online available to all GENI Users
   - Classes

Outsource authentication, easier for new researchers to get up and running

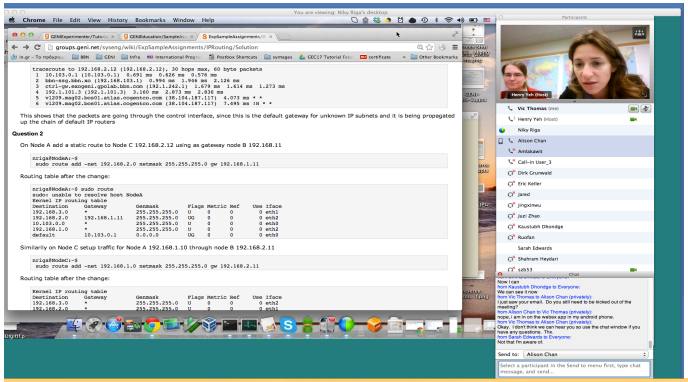
GENI and other Cloud providers

- Wide Area Layer 2 network
  - Extensive control over the network, geographic locations, isolated VLANs
- GENI provides diverse resources
  - Compute, storage, raw pcs, vm servers
  - Wireless infrastructure
  - Programmable switches
- Free for research and education

GENI's International Collaborations

GENI is working actively with peer efforts on five continents to define and adopt common concepts and APIs.

Upcoming GENI Events



Train-the-TA (Sep 11th – 18th)
Offered online at the start of each semester

GENI Engineering Conferences, held three times a year

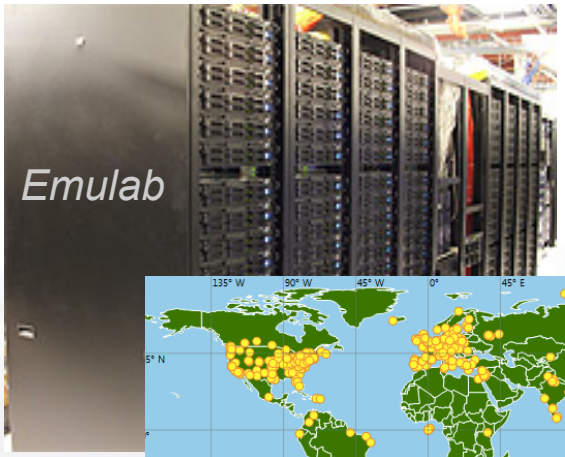
- Planning & discussion for experimenters, software, infrastructure
- **Tutorials** and workshops
- Travel grants to US academics for participant diversity

GEC22: Special event at Washington, March 2015

- Invitees to include **leaders from Government agencies**, **companies** and your peers from academia and industry
- Plenary demos to be one of the best show and tell performances
- A great **opportunity** to communicate your message and have maximum impact

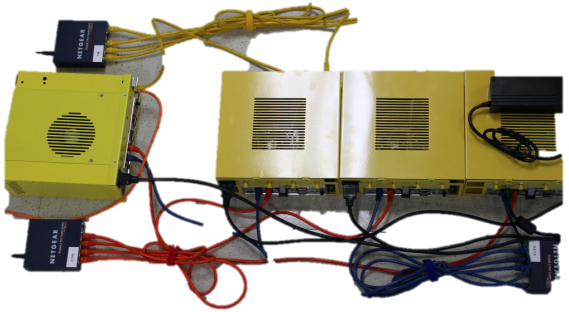
THANK YOU!

GENI Compute Resources

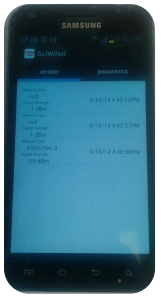


Existing Testbeds

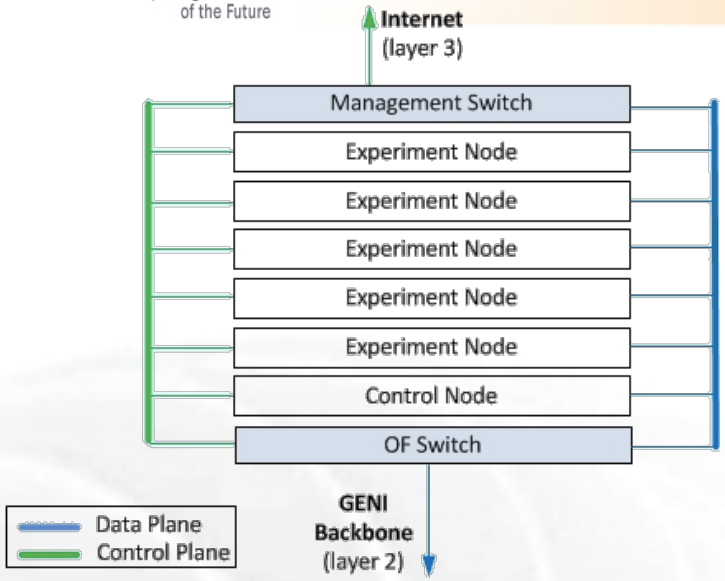
GENI Racks



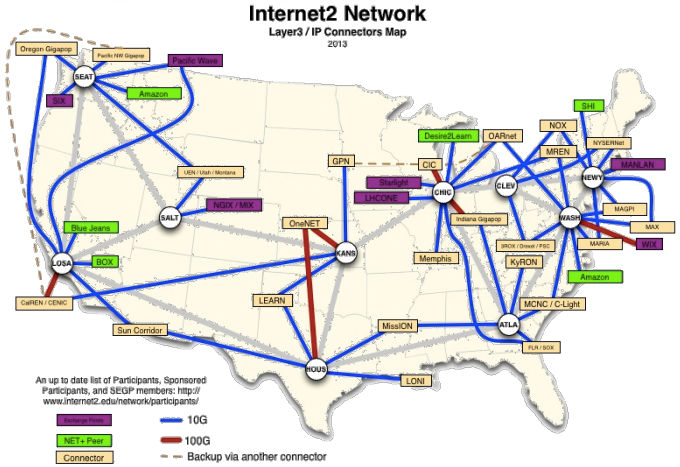
GENI Wireless compute nodes



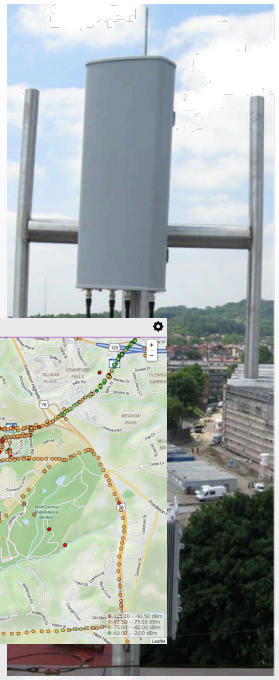
GENI Networking Resources

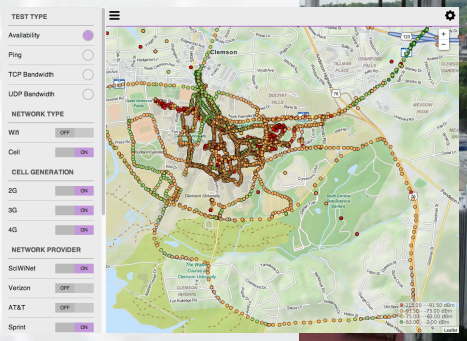


Networking within a Rack



National Research Backbones
(e.g. Internet2)





4G/3G
GENI network

WiMAX Base Stations

Regional Networks
(e.g. CENIC)