GENI

Experimentation Update

GENI Engineering Conference 12
Kansas City, Missouri

Mark Berman
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www.geni.net

- **"GENI Template" configurations of GENI mesoscale infrastructure support**
  - Novel, non-IP networking experiments
  - Test and deployment of experimental and emerging service offerings
- **Seven example services / experiments this afternoon**
  - Experimental capabilities deep in network, some in a collaborative effort with SuperComputing 2011 OpenFlow research sandbox
  - Services providing direct support to users at network edge
- **New developments in GENI and US Ignite! are enabling more experiments and larger experiments**
  - Campus expansion and GENI rack deployments create more deep programmability assets
  - US Ignite! city participation introduces new opportunities for novel applications that reach whole communities

GEC11 (July) was the debut for two GENI templates supporting Nationwide IP and non-IP experiments

- ProtoGENI + Internet2

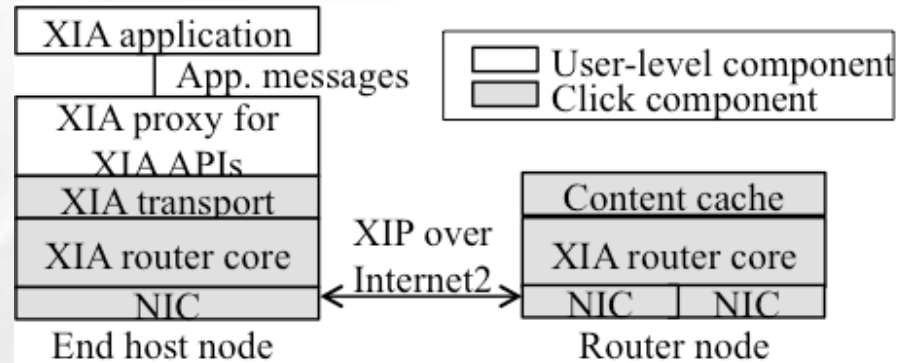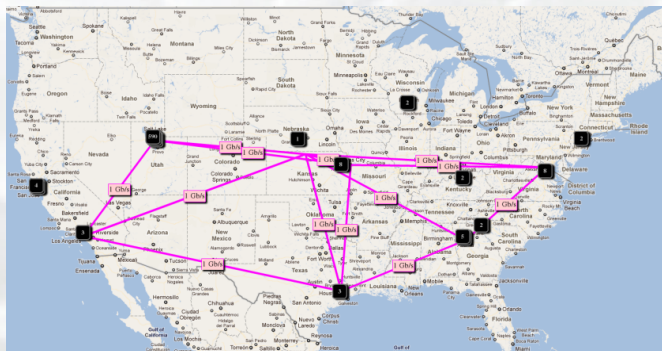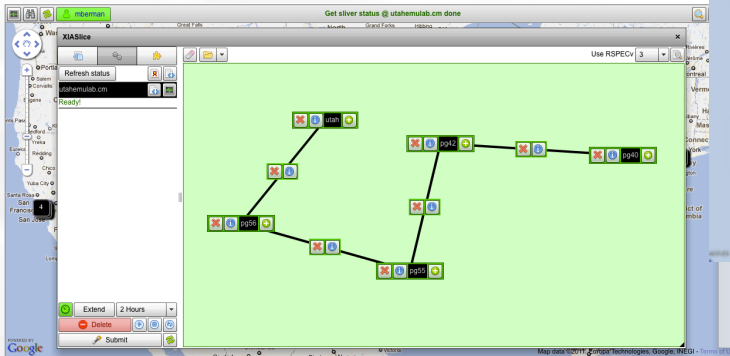- Mesoscale: PlanetLab, ProtoGENI, OpenFlow, I2, NLR

This week, two Future Internet Architecture experiments are using these configurations
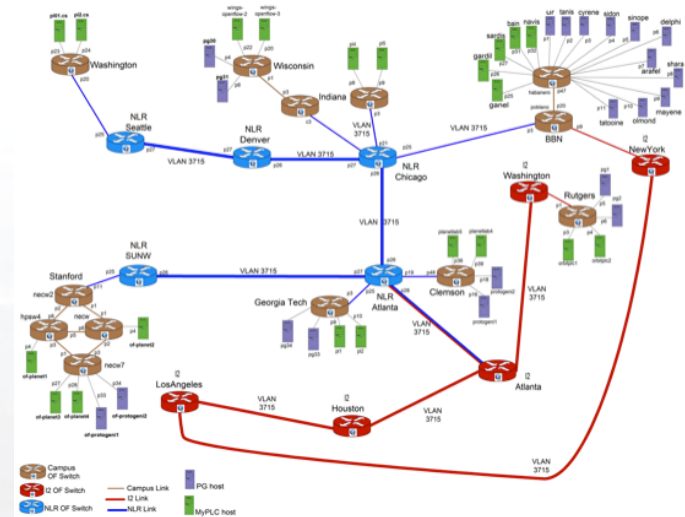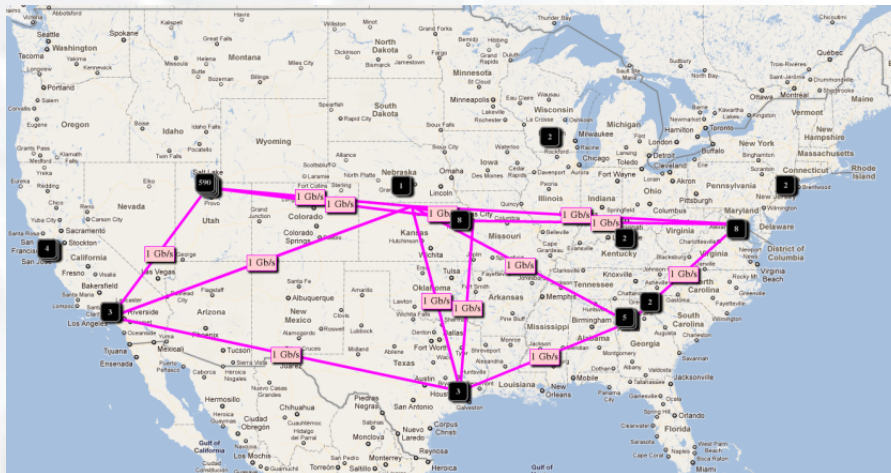
Experimenters are ready and eager to use new GENI capabilities.
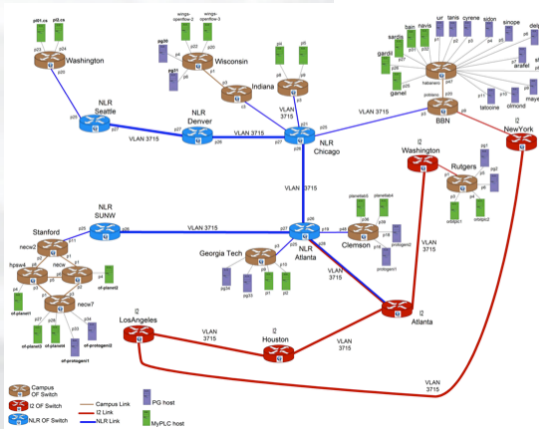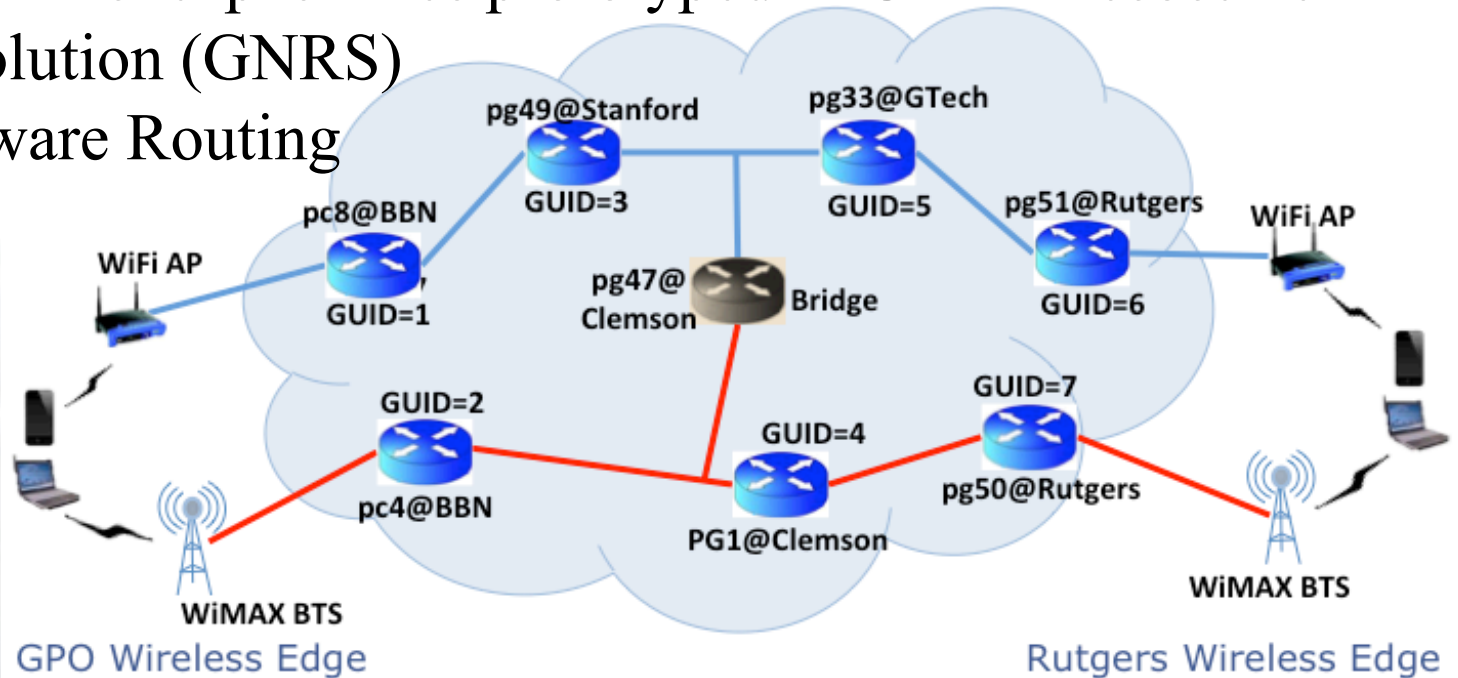
eXpressive Internet Architecture – XIA

XIA Click-router prototype deployed on ProtoGENI and Internet2

Figures courtesy: Rob Ricci, Matt Strum (U. Utah), Peter Steenkiste, Suk-Bok Lee (CMU)

Key Mobility First capabilities prototyped in GENI Mesoscale

- Name resolution (GNRS)
- Storage Aware Routing

pg49@Stanford GUID=3
pg33@GTech GUID=5
pg51@Rutgers GUID=6
pc8@BBN GUID=1
pg47@ Clemson Bridge
GUID=2 pc4@BBN
GUID=4 PG1@Clemson
GUID=7 pg50@Rutgers

WiFi AP
WiMAX BTS

GPO Wireless Edge
Rutgers Wireless Edge

— NLR path using VLANs 3716, 3799 (Clemson)
— I2 path using VLANs 3715, 3745(BBN), 3798 (Clemson)

ProtoGENI host running MF Router

Figures courtesy:
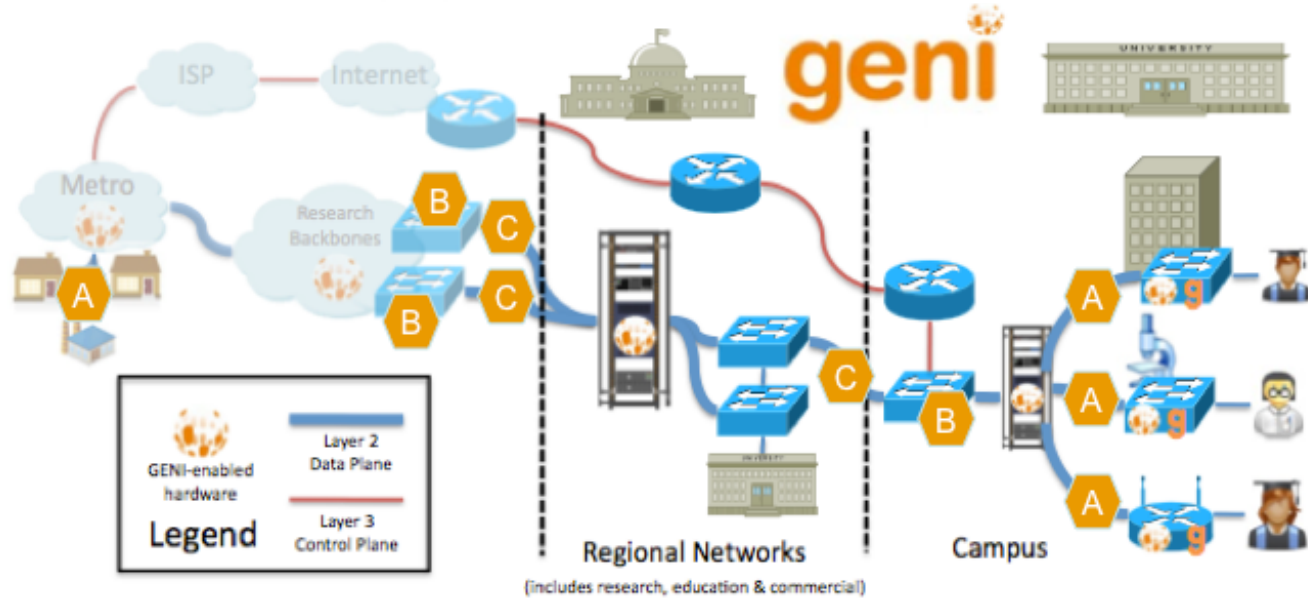Ivan Seskar, Kiran Nagaraja (Rutgers), Luisa Nevers (GPO)

Experiments and services may be deployed at different points in the "stack" – close to the user, deep in the network, or both.
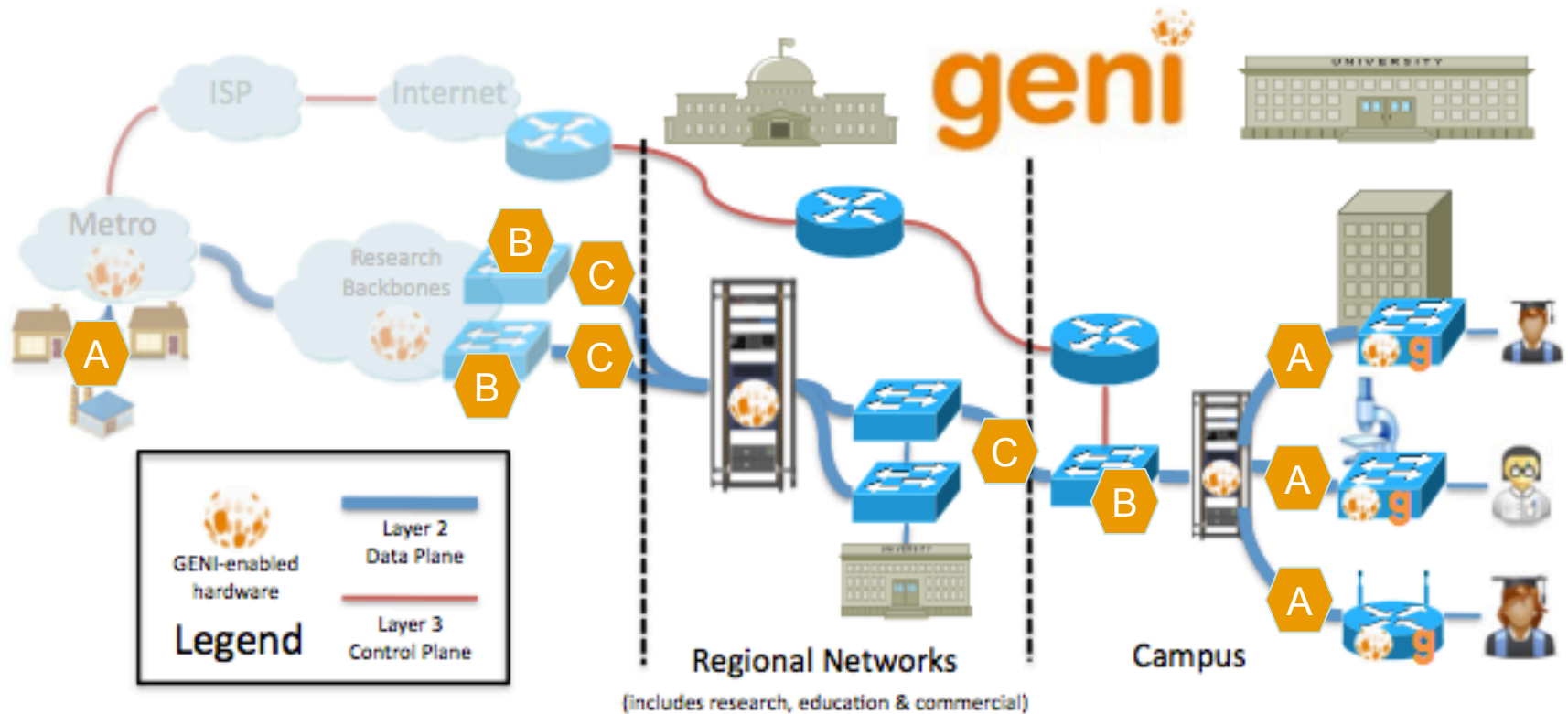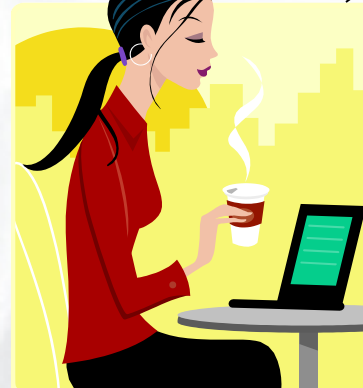

Note: Conceptual architecture only.

Whew! I don't have to mess with the underlying network. (But I can if I want to.)

Wow! I can change the behavior of the underlying network. (But I don't have to.)

GENI expansion – GENI racks, more campuses

New support services, education, and training

- GENI summer camps and workshops
  - Seeking participants and instructors: see Kaiqi Xiong
- Tutorials at non-GENI venues (we're overbooked at GECs)
  - And expand capacity at GECs
- Expanded on-line tutorials and examples
- Targeted tools to facilitate "ready-to-go" experiments
  - Synthetic traffic / workloads for repeatable experiments
  - Low barrier-to-entry wireless sensor experimentation kits
- Operations support, helpdesk

Attend Experimenters' Roundtable on Friday to have your say.

Learn how to use GENI
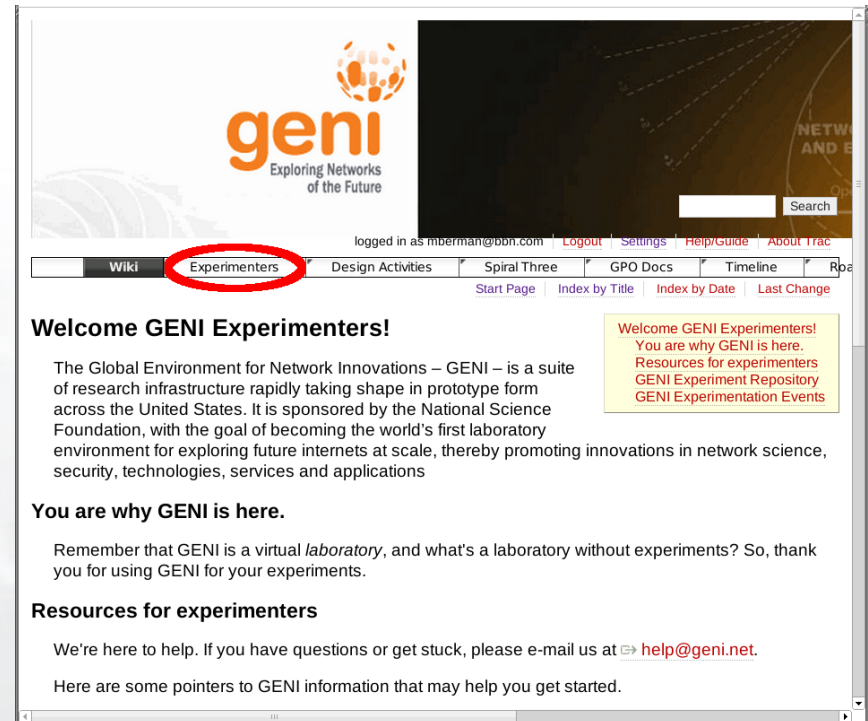
- Attend tutorials
- Visit the wiki:
  - http://groups.geni.net/geni/wiki/GeniExperiments

Get an account

- Stop by the GENI help table
- Instructions on the wiki

Start experimenting

- Help is available
  - help@geni.net
  - Mark Berman <mberman@bbn.com>